Administrative Topics Outline

Facility: PVNGS		Date of Examination:	11/30/20
Examination Level SRO		Operating Test Number:	2020 NRC

Administrative Topic (see Note)	Type Code*	Describe Activity to be Performed	
(A1)	M, R	JPM:	Determine the active/inactive status of 3 licensed operators
		KA:	2.1.1
		IR:	4.2
(A2)	N, R	JPM:	Determine the required shutdown based on SGTL indications
		KA:	2.1.7
		IR:	4.7
(A3)	N, R	JPM:	Pressurizer Head Vent surveillance and LCO 3.4.12
		KA:	2.2.22
		IR:	4.7
(A4)	D, R	JPM:	Determine hold points for work in a HRA and required approval to continue work
		KA:	2.3.4
		IR:	3.7
(A5)	N, R	JPM:	EAL Classification FS1.1
		KA:	2.4.41
		IR:	4.4

NOTE: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when all 5 are required.

*Type Codes & Criteria:

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

(D)irect from bank **(1)** (≤ 3 for ROs; ≤ 4 for SROs & RO retakes)

(N)ew or (M)odified from bank **(4)** (≥ 1)

(P)revious 2 exams **(0)** (≤ 1; randomly selected)

A1 The applicant is provided a list of all watches stood by three licensed operators during the previous quarter. The applicant must compare the watches stood by each individual to the requirements in 40DP-9OP02, Conduct of Shift Operations, and determine whether or not each of their licenses are active for the current quarter. This is a modified JPM.

A2 The applicant will be directed to determine the required shutdown based on SGTL indications per 40AO-9ZZ02, Excessive RCS Leakrate, Appendix F, Steam Generator Tube Leak Guidelines. This is a new JPM.

A3 The applicant will be directed to evaluate the results of surveillance 73ST-9XI24, Reactor and Pressurizer Vent Valves – Inservice Test and determine the operability of Pressurizer Head Vents in accordance with LCO 3.4.12. Based on the number of inoperable Pressurizer vent paths the applicant will determine the required actions and associated completion times. This is a new JPM.

A4 The applicant will be directed to determine the expected dose for a job in a High Radiation Area, hold points for the job, what approval is needed to exceed limits, and which of the Auxiliary Operators listed will perform the job. This is a bank JPM.

A5 The applicant will be directed to classify an emergency event using EP-0901, Classifications, and the EAL classification charts. This is a new JPM.

JPM INFORMATION

TASK:	1290020301 – Conduct of Shift Operations						
TASK STANDARD:	Determined that Operators #1 and #2 DO NOT have an active license and Operator #3 DOES have an active license as of July 1.						
K/A:	G 2.1.1	**RATING:**		RO:	3.8	SRO:	4.2
POSITION(S):	RO/SRO	**VALIDATION TIME:**		10 minutes			
REFERENCES:	40DP-9OP02, Conduct of Shift Operations						
LOCATION:	SIMULATOR		PLANT		CLASSROOM		X

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

APPROVALS

DEVELOPED/REVISED BY: Brian Garrettson **DATE:** 7/21/2020

VALIDATED BY: _____ **DATE:** _____

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:

- 40DP-9OP02, Conduct of Shift Operations, Section 4.8.4, Licensed Operator Watchstanding Proficiency.
- This JPM was written using Revision 72 of 40DP-9OP02, Conduct of Shift Operations. This JPM may be used with later revisions if it is verified that the later revision does not affect the Steps/Standards of the JPM.

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:

- Today is July 1, 2020
- You are reviewing the license status of 3 licensed operators based on watches stood in the previous quarter
- Operator # 1 received his SRO license on September 10 of 2018
- Operator # 2 received her SRO license on September 10 of 2018
- Operator # 3 received his SRO license on November 15 of 2019
- All operators are current in LOCT

INITIATING CUE:

- Using the provided list of watches stood by each of the 3 operators in the previous quarter, determine whether or not each of their licenses is active or not active as of July 1 per 40DP-9OP02, Conduct of Shift Operations.
- Document your answers below by circling the status of each operator license as of July 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 *	Determine if Operator # 1 license is active July 1.
Standard:	Determined that Operator # 1's license IS NOT active on July 1. **Answer Explanation:** An SRO license is considered active if they stand a minimum of five 12-hour shifts in the previous quarter. Per step 4.8.4.5 of 40DP-9OP02, Conduct of Shift Operations, at least one of those shifts must be in the CRS or SM position, the other shifts can be in a TS required RO position. However, the other shifts will not be counted if stood in the STA position. Therefore the SRO license is inactive.
Comments (required for UNSAT):	**SAT** **UNSAT**

JPM Step: 2 *	Determine if Operator # 2's license is active on July 1.
Standard:	Determined that Operator # 2's license IS NOT active on July 1. **Answer Explanation:** An SRO license is considered active if they stand a minimum of 60 hours in the previous quarter, which Operator # 2 completed, however partial shifts cannot be credited (per step 4.8.4.5 bullet 5), therefore, even though the 60 hours were met, the requirement for five 12-hour shifts was not. Therefore the SRO license is inactive.
Comments (required for UNSAT):	**SAT** **UNSAT**

JPM Step: 3 *	Determine if Operator # 3's license is active on July 1.	
Standard:	Determined that Operator # 3's license IS active on July 1. **Answer Explanation:** An SRO license is considered active if they stand a minimum of five 12-hour shifts in the previous quarter. Per step 4.8.4.5 of 40DP-9OP02, Conduct of Shift Operations, at least one of those shifts must be in the CRS or SM position, however the other 5 shifts can be in a TS required RO position. Therefore the SRO license remains active.	
Comments (required for UNSAT):		**SAT** **UNSAT**

JPM STOP TIME:

RECORD OF REVISIONS

REVISION #	REVISION DATE	REASON	COMMENTS
0	4/20/16	6	JPM created.
1	7/21/20	6	JPM modified to use on the 2020 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)

JPM INFORMATION

TASK:	L498457 – Direct actions from the Abnormal Operating Procedures						
TASK STANDARD:	Determined MODE 3 entry is required by 1800						
K/A:	G 2.1.7	**RATING:**	RO:	4.4	SRO:	4.7	
POSITION(S):	SRO	**VALIDATION TIME:**	5 minutes				
REFERENCES:	40AO-9ZZ02 Excessive RCS Leakrate, Appendix F, Steam Generator Tube Leak Guidelines						
LOCATION:	SIMULATOR		PLANT		CLASSROOM	X	

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

APPROVALS

DEVELOPED/REVISED BY: Brian Garrettson **DATE:** 7/22/20

VALIDATED BY: _____ **DATE:** _____

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, Appendix F, Steam Generator Tube Leak Guidelines
- This JPM was written using Revision 19 of 40AO-9ZZ02 Excessive RCS Leakrate. This JPM may be used with later revisions if it is verified that the later revision does not affect the Steps/Standards of the JPM.

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
- RU-141 and RU-142 are available
- A Steam Generator Tube Leak develops on Steam Generator #2

The following is a timeline of SG #2 leakrates between from 0800 to 1200:

Time	SG #2 Leak Rate
0800 (SGTL started)	55 gpd
0900	75 gpd
1000	100 gpd
1100	125 gpd
1200	150 gpd

INITIATING CUE:

- Based on the above timeline and using 40AO-9ZZ02 Excessive RCS Leakrate, Appendix F, Steam Generator Tube Leak Guidelines:
    - MODE 3 entry is REQUIRED no later than _____.

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 *	Determine when MODE 3 entry is required	
Standard:	Determined MODE 3 entry is required by 1800	
Comments (required for UNSAT):		**SAT** **UNSAT**

JPM STOP TIME: [ ]

RECORD OF REVISIONS

REVISION #	REVISION DATE	REASON	COMMENTS
0	7/22/20	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)

JPM INFORMATION

TASK:	1280010202 – Review the results of surveillance tests					
TASK STANDARD:	Determined that RCA-HV-103 is INOPERABLE due to an UNSATISFACTORY closed valve stroke time. Determined RCA-HV-106 is INOPERABLE due to UNSATISFACTORY opened valve stroke time. Determined that 3 of 4 Pressurizer Vent paths are INOPERABLE. Determined the REQUIRED ACTION is to restore vent paths to OPERABLE status and the COMPLETION TIME is 72 hours					
K/A:	G 2.2.40	**RATING:**	RO:	3.4	SRO:	4.7
POSITION(S):	SRO	**VALIDATION TIME:**	15 minutes			
REFERENCES:	73ST-9XI24, Reactor and Pressurizer Vent Valves - Inservice Test Technical Specifications Technical Specifications Basis					
LOCATION:	SIMULATOR		PLANT		CLASSROOM	X

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

APPROVALS

DEVELOPED/REVISED BY: Brian Garrettson **DATE:** 04/27/20

VALIDATED BY: _____ **DATE:** _____

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 #***

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PROCEDURES/MATERIALS:

- 73ST-9XI24, Reactor and Pressurizer Vent Valves - Inservice Test
- Technical Specifications
- Technical Specifications Basis
- This JPM was written using Revision 21 of 73ST-9XI24, Reactor and Pressurizer Vent Valves - Inservice Test. This JPM may be used with later revisions if it is verified that the later revision does not affect the Steps/Standards of the JPM.

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 3 is in MODE 4
- Pressurizer pressure is 410 psia
- The crew is performing 73ST-9XI24, Reactor and Pressurizer Vent Valves - Inservice Test, Section 6.1, Pressurizer Vent Valve Stroke Timing for RCA-HV-103, RCB-HV-105, RCA-HV-106, RCB-HV-108, and RCB-HV-109
- During the test all valves stroked full open and full closed SATISFACTORILY
- The following stroke times were recorded for each valve:

Valve	Stroke Time (seconds)	
	Open	Closed
RCA-HV-103	**1.9**	**2.3**
RCB-HV-105	**1.8**	**1.8**
RCA-HV-106	**2.2**	**3.1**
RCB-HV-108	**1.8**	**1.9**
RCB-HV-109	**1.7**	**1.9**

INITIATING CUE:

- How many, if any, Pressurizer Vent PATHS are INOPERABLE?
- Per LCO 3.4.12, Pressurizer Vents, what, if any, is the REQUIRED ACTION and associated COMPLETION TIME from the results of the surveillance assuming use of the Front-Stop Completion Time?

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 *	How many, if any, Pressurizer Vent PATHS are INOPERABLE
Standard:	Determined that 3 of 4 Pressurizer vent paths are INOPERABLE
Comments (required for UNSAT):	**SAT UNSAT**

JPM Step: 2 *	Per LCO 3.4.12, Pressurizer Vents, what, if any, is the REQUIRED ACTION and associated COMPLETION TIME from the results of the surveillance
Standard:	Determined the REQUIRED ACTION is to restore vent paths to OPERABLE status and the COMPLETION TIME is 72 hours
Comments (required for UNSAT):	**SAT UNSAT**

JPM STOP TIME: _____

RECORD OF REVISIONS

REVISION #	REVISION DATE	REASON	COMMENTS
0	7/22/20	6	Created JPM

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)

JPM INFORMATION

TASK:	L392178 – Perform the duties of the Emergency Coordinator					
TASK STANDARD:	Determined that Operator #1 will be used for the evolution. Determined that Emergency Coordinator authorization will be required when the operator has been in the area for 6.25 hours or 1815. Determined the required posting for the room is High Radiation Area.					
K/A:	G 2.3.4	**RATING:**	RO:	3.2	SRO:	3.7
POSITION(S):	SRO	**VALIDATION TIME:**	10 minutes			
REFERENCES:	75DP-9RP01, Radiation Exposure and Access Control 75RP-0RP01, Radiological Posting and Labeling EP-0905, Protective Actions					
LOCATION:	SIMULATOR		PLANT		CLASSROOM	X

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

APPROVALS

DEVELOPED/REVISED BY: Brian Garrettson **DATE:** 7/22/20

VALIDATED BY: _____ **DATE:** _____

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:

- 75DP-9RP01, Radiation Exposure and Access Control
- 75RP-0RP01, Radiological Posting and Labeling
- EP-0905, Protective Actions
- This JPM was written using Revision 22 of 75DP-9RP0, Revision 36 of 75RP-0RP01, and Revision 10 of EP-0905. This JPM may be used with later revisions if it is verified that the later revision does not affect the Steps/Standards of the JPM.

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:

- An unisolable LOCA is in progress in Unit 2 Auxiliary Building
- There is manual valve in the Auxiliary Building that will isolate the leak
- The dose rate in the area is 800 mrem/hr
- Per EP-0905, Protective Actions, it has been determined that the leak isolation will be "Protecting Valuable Property"
- 3 potential Auxiliary Operators have been selected to perform the isolation
- All 3 operators have the same lifetime cumulative dose
- Data for the Auxiliary Operators able to do the work is:
    - Operator #1 - 50 years old male
    - Operator #2 – 25 year old female
    - Operator #3 – 40 year old male

INITIATING CUE:

- You are the Emergency Coordinator
- Determine the following:
    - Which operator will be selected for the evolution?
    - If the AO is sent into the Auxiliary Building at 1200, when will Emergency Coordinator authorization be required to continue work per EP-0905, Protective Actions Section 6.7?
    - What is the required radiological posting for the room in which the task will be performed? (i.e., Radiation Area, High Radiation Area, Very High Radiation Area, or Locked High Radiation Area)

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 *	Determine which operator will be selected for the evolution
Standard:	Determined that Operator #1 will be used for the evolution because personnel greater than 45 years old should receive primary consideration
Comments (required for UNSAT):	**SAT UNSAT**

JPM Step: 2 *	Determine when Emergency Coordinator authorization is required
Standard:	Determined that Emergency Coordinator authorization will be required when the operator has been in the area for 6.25 hours or 1815 • 5 REM per event requires Emergency Coordinator authorization • The area is 800 mREM/hr • 5/0.8 = 6.25 hours
Comments (required for UNSAT):	**SAT UNSAT**

JPM Step: 3 *	Determine the radiological posting for the room
Standard:	Determined the required posting for the room is High Radiation Area
Comments (required for UNSAT):	**SAT UNSAT**

JPM STOP TIME:

RECORD OF REVISIONS

REVISION #	REVISION DATE	REASON	COMMENTS
0	8/1/17	6	Created JPM

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)

JPM INFORMATION

TASK:	1290240302 - Classify an event in accordance with the Emergency Plan					
TASK STANDARD:	Classified FS1.1 due to Fuel Clad Barrier Potential Loss – RVLMS < 21% plenum, RCS Barrier Loss – An automatic or manual ECCS (SIAS) actuation required by an unisolable RCS Leak, Containment Barrier Potential Loss – Containment Hydrogen Concentration > 4.9%					
K/A:	G 2.4.41	**RATING:**	RO:		SRO:	4.4
POSITION(S):	SRO	**VALIDATION TIME:**	15 minutes			
REFERENCES:	EP-0901, Classifications EAL Hot Chart					
LOCATION:	SIMULATOR		PLANT		CLASSROOM	X

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

APPROVALS

DEVELOPED/REVISED BY: Brian Garrettson **DATE:** 7/22/20

VALIDATED BY: _____ **DATE:** _____

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:

- EP-0901, Classifications
- EAL Hot Chart
- This JPM was written using Revision 13 of EP-0901, Classifications. This JPM may be used with later revisions if it is verified that the later revision does not affect the Steps/Standards of the JPM.

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 Large Break LOCA
- SIAS/CIAS/MSIS/CSAS have actuated
- Containment pressure is 12 psig and rising
- 'A' CS pump tripped
- Containment spray flow is 4500 gpm
- Containment Hydrogen concentration is 5.0% and rising
- Both Steam Generators are being fed with AFB-P01
- RU-148 is 7.0E+04 mR/hr
- RU-149 is 8.0E+04 mR/hr
- RVLMS indicates 0% in the plenum

INITIATING CUE:

- Classify the event in progress in progress

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.
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- Any step marked **UNSAT** requires comments.
- If this is the first JPM of the set, then ensure the examinee has been briefed.
- Step sequence is not critical unless noted or will prevent the **Task Standard** from being met.

JPM START TIME: [ ]

JPM Step: 1 *	Classify the event in accordance with EP-0901, Classification and the EAL Hot Chart	
Standard:	Classified FS1.1 **Fuel Clad Barrier Potential Loss** – RVLMS < 21% plenum **RCS Barrier Loss** – An automatic or manual ECCS (SIAS) actuation required by an unisolable RCS Leak **Containment Barrier Potential Loss** – Containment Hydrogen Concentration $\geq$ 4.9%	
Comments (required for UNSAT):		**SAT** **UNSAT**

JPM STOP TIME: [ ]

RECORD OF REVISIONS

REVISION #	REVISION DATE	REASON	COMMENTS
0	7/22/20	6	Created JPM

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)

Facility:	PVNGS	Date of Examination:	11/30/20
Exam Level:	SRO-I	Operating Test No.:	2020 NRC

Control Room Systems (8 for RO; 7 for SRO-I; 2 or 3 for SRO-U, including 1 ESF)			
System / JPM Title		Type Code*	Safety Function
S1	(029 EA1.12) ECC Directed Turbine Unloading – ATWS	A, D, S	1
S2	(006 A3.08) Verify Recirculation Actuation Signal actuation	A, D, EN, L, S	2
S3	(009 EA1.09) Isolate High Pressure Seal Cooler Leak	A, L, N, S	3
S4	(035 A2.01) Appendix 33, SG 1 Level Reduction Checklist	A, D, L, S	4P
S5	(E06 EA1.1) Appendix 44, Feeding With the Condensate Pumps	L, N, S	4S
S6	(058 AA2.03) Respond to a Loss of Class Control Power during EDG Load Run	A, N, S	6
S7	(012 A2.02) Set CEAC inoperability flags in the Core Protection Calculators following a Loss of Instrument Bus Power	N, S	7
In-Plant Systems (3 for RO; 3 for SRO-I; 3 or 2 for SRO-U)			
P1	(064 A1.03) Manual Control of EDG Jacket Water Temperature	A, N	6
P2	(068 AA1.01) Operate ADVs at the RSD Panel	D, E	4S
P3	(033 A2.02) Leak in Fuel Pool Cooling Heat Exchanger, Swap Fuel Pool Cooling Heat Exchangers	N, R	8

@	All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room.
* Type Codes	Criteria for SRO-I
(A)lternate path	4-6 **(6)**
(C)ontrol room	
(D)irect from bank	≤ 8 **(4)**
(E)mergency or abnormal in-plant	≥ 1 **(1)**
(EN)gineered safety feature	≥ 1 (control room system) **(1)**
(L)ow Power / Shutdown	≥ 1 **(4)**
(N)ew or (M)odified from bank including 1(A)	≥ 2 **(6 – 3A)**
(P)revious 2 exams	≤ 3 (randomly selected) **(0)**
(R)CA	≥ 1 **(1)**
(S)imulator	

NRC JPM Examination
Summary Description

S1 The applicant will be directed to perform a 100MW turbine load reduction per 40AO-9ZZ25, ECC Directed Turbine Unloading, Appendix A, Load Reduction. During the load reduction, the Main Turbine will trip and a RPCB signal will automatically occur. On the RPCB, one Subgroup of CEAs will fail to insert resulting in an automatic Reactor Trip signal. The Reactor will fail to automatically trip, requiring the applicant to recognize the ATWS condition and take action to manually trip the Reactor. This is a time-critical, alternate path, modified JPM covered by Safety Function 1.

S2 The applicant will be directed to perform 40EP-9EO03, LOCA, step 58, verification of RAS actuation. The applicant will determine that not all RAS actuated equipment automatically aligned to their actuated position and will take contingency actions in response to this condition. The applicant will have to identify the Train ‘B’ ESF pump suction valve from containment, SIB-UV-675, did not open and stop the Train ‘B’ HPSI and Train ‘B’ CS Pumps. This is a time critical, alternate path, bank JPM covered by Safety Function 2.

S3 The applicant will be directed to perform 40EP-9EO03, LOCA, step 10, isolation of a High Pressure Seal Cooler (HPSC) Leak. The applicant will stop all four RCPs, close the NC Containment Isolation Valves, isolate Controlled Bleedoff from the RCPs, direct an area operator to energize the HPSC Isolation Valves for the affected HPSC, then close the associated HPSC Isolation Valves from the Control Room. The applicant will determine that one the Controlled Bleedoff isolation valve for the affected RCP failed to close and will isolate bleedoff by closing the upstream isolation valves and the bleedoff relief valve isolation valve. This is an alternate path, bank JPM covered by Safety Function 3.

S4 The applicant will be directed to perform Appendix 33, SG 1 Level Reduction Checklist to control SG 1 level following a SG Tube Rupture. The applicant will take action to place High Rate SG Blowdown in service to the Condenser by operating valves from the Control Room and lower SG #1 level. However one of valves that must be opened must be bypassed in the field prior to operating in the Control Room to prevent severe water hammer and potential pipe damage locally in the field. This is an alternate path, bank JPM covered by Safety Function 4P. This JPM is directly related to PVNGS operating experience related to industrial safety.

S5 The applicant will be directed to perform Appendix 44, Feeding With the Condensate Pumps. The applicant will establish a flow path for feed directly from the Condensate Pumps and perform a controlled depressurization of the SG to re-establish feed flow. This is a new JPM covering Safety Function 4S.

S6 The applicant will be directed to reduce load on the ‘A’ EDG and disconnect the ‘A’ EDG from PBA-S03 following a EDG load run. When the applicant commences the load reduction, PKA-M41, Train ‘A’ Class DC Control Power Bus, will de-energize due to a fault. This will result in the ‘A’ EDG tripping however the EDG output breaker will remain closed due to the loss of control power. The applicant will diagnose the failure and direct an area operator to locally open the ‘A’ EDG output breaker to prevent damage to the ‘A’ EDG. This is an alternate path, new JPM covered by Safety Function 6.

S7 The applicant will be directed to set INOP flags for CEAC 2 in the Core Protection Calculators following a loss of power to PNC-D27 per 40AO-9ZZ13, Loss of Class Instrument or Control Power. The applicant will locate the correct CPC point ID, set the Function Enable keyswitch to ENABLED, and set a value of ‘2’ in each CPC module. This is a new JPM covered by Safety Function 7.

P1 The applicant will be directed to take manual control of Train ‘A’ EDG Jacket Water temperature per 40OP-9DG01, Emergency Diesel Generator A Section 6.11.5. Once taking manual control the applicant will recognize that temperature is lowering and must start the Jacket Water Circ Pump and ensure that Jacket Water Warmup Heater is in auto. This is an alternate path, new JPM covered by Safety Function 6.

P2 The applicant will be directed to perform ADV operations per 40AO-9ZZ18, Shutdown Outside the Control Room, Appendix D, ADV Operation to stabilize temperature after the CR was evacuated due to hot particle contamination. The applicant will take Local control of ADVs at the Remote Shutdown Panel and stabilize RCS temperature. This a bank JPM covered by Safety Function 4S.

P3 The applicant will be directed to swap Spent Fuel Pool heat exchangers due to a leak on the in-service heat exchanger per 40OP-9PC01, Fuel Pool Cooling. The applicant will perform a valve lineup to place the ‘B’ Fuel Pool heat exchanger in service and remove the ‘A’ Fuel Pool heat exchanger from service. This a new JPM covered by Safety Function 8.

JPM INFORMATION

TASK:	1250800201 – Respond to an event requiring entry into the ECC Directed Turbine Loading AOP						
TASK STANDARD:	Removed CEDMCS from Auto Sequential, lowered the local auto setpoint to ~ 20 psi above actual indicated pressure, placed SGN-PIC-1010 in LOCAL/AUTO, inserted a Manual Permissive signal on SBCS Valves 1001 and 1004, and commenced the turbine unloading using the Load Set Potentiometer within 11 minutes of the start of the JPM, and tripped the Reactor within 2 minutes of the Main Turbine trip						
K/A:	029 EA1.12	**RATING:**		RO:	4.1	SRO:	4.0
POSITION(S):	RO / SRO	**VALIDATION TIME:**		10 minutes			
REFERENCES:	40AO-9ZZ25, ECC Directed Turbine Unloading						
LOCATION:	SIMULATOR	X	PLANT		CLASSROOM		

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

APPROVALS

DEVELOPED/REVISED BY: John Rodgers **DATE:** 4/2/20

VALIDATED BY: _____ **DATE:** _____

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
- SIMULATOR SCENARIO FILES, MALFUNCTIONS, REMOTE FUNCTIONS, ETC. FOR SETUP:

COMMAND	DESCRIPTION
mfRD03F	CEA 89 Stuck
mfTC13 k:1	Turbine Trip
ATWS scenario	Prevents auto trip and manual trip at B05

INSTRUCTIONS FOR SETUP:

- Reset to IC-20 (or load JPM from IC-601 – if IC-601 is used, JPM setup steps are complete)
- Insert the malfunctions listed above
- Place the Pressurizer in Boron Equalization using all pressurizer backup heaters

REQUIRED CONDITIONS:

- CEDMCS in Auto Sequential
- Pressurizer in boron equalization

PROCEDURES/MATERIALS:

- 40AO-9ZZ25, ECC Directed Turbine Unloading
- This JPM was written using Revision 13 of ZZ25. This JPM may be performed using future revisions of 40AO-9ZZ25 provided the associated steps of the procedure remain unaffected

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
- The ECC has directed PVNGS to reduce site MW loading by 100 MW
- The CRS has entered 40AO-9ZZ25, ECC Directed Turbine Unloading, and determined that Unit 1 will perform the 100 MW load reduction
- Appendix D, Initial Actions, has been completed

INITIATING CUE:

- The CRS directs you to reduce Main Turbine load by 100 MW per 40AO-9ZZ25, ECC Directed Turbine Unloading, Appendix A, Load Reduction
- 3 minutes have elapsed since the ECC directed the turbine unloading
- Steps 1-3 of Appendix A have been completed
- Start on step 4
- **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	Record Main Generator Gross MW using ANY of the following: • ERFDADS/PMS point MAJ1 • Any alternate point
Standard:	Recorded Main Generator Gross MW
Comments (required for UNSAT):	**SAT** **UNSAT**

JPM Step: 2	Record the position of the Load Limit Potentiometer
Standard:	Recorded the position of the Load Limit Potentiometer
Comments (required for UNSAT):	**SAT** **UNSAT**

JPM Step: 3 *	Ensure CEDMCS is NOT in Auto Sequential
Standard:	Placed CEDMCS Mode Select Switch in a position OTHER THAN Auto Sequential (AS)
Comments (required for UNSAT):	**SAT** **UNSAT**

JPM Step: 4 *	Lower the Local Auto setpoint (black pen) on SGN-PIC-1010, SBCS Master, to 20 psi above the indicated actual pressure (red pen)
Standard:	Lowered the Local Auto setpoint to ~ 20 psi above the indicated actual pressure using the controller thumbwheel
Comments (required for UNSAT):	**SAT** **UNSAT**

JPM Step: 5 *	Perform the following to place SGN-PIC-1010, SBCS Master Control, in Local Auto: • Place the controller in MANUAL • Select the controller to LOCAL • Place the controller in AUTO
Standard:	Placed SGN-PIC-1010 in MANUAL by depressing the MAN pushbutton, placed the controller in LOCAL by selecting the Remote/Local switch to L, and placed the controller back in AUTO by depressing the AUTO pushbutton
Comments (required for UNSAT):	**SAT UNSAT**

JPM Step: 6	Ensure no Auto Demand signals are present for any SBCVs
Standard:	Verified no Auto Demand signals are present for any SBCVs
Comments (required for UNSAT):	**SAT UNSAT**

JPM Step: 7 *	Give BOTH of the following a Manual Permissive: • SGN-PV-1001, Valve 1 • SGN-PV-1004, Valve 4
Standard:	Inserted a manual permissive on SGN-PV-1001 and 1004 by placing handswitches SGN-HS-1001 and SGN-HS-1004 to MANUAL
Comments (required for UNSAT):	**SAT UNSAT**

JPM Step: 8 *	Commence turbine unloading by the amount determined in Section 3.0, Step 5, using the Load Limit Set Potentiometer
Standard:	Commenced the turbine unloading by rotating the Load Limit Set Potentiometer in the counter-clockwise direction within 11 minutes of the start of the JPM
Examiner Note:	**JPM Start Time: _____** **Time Turbine Load Reduction Commenced: _____** **Time Elapsed (must be ≤ 11 minutes): _____**
Examiner Note:	**When the applicant commences the turbine load reduction, direct the driver to INITIATE KEY 1**

Comments (required for UNSAT):	**SAT UNSAT**

Examiner Note:	**The following step represents the alternate path portion of the JPM**
JPM Step: 9 *	Manually trip the Reactor in response to the multiple valid Reactor trip signals and failure of the Reactor to automatically trip
Standard:	Manually tripped the Reactor from the Control Room (by opening MG Set Feeder Breakers L03 and L10 on B01) within 2 minutes of the ATWS **Time of ATWS: _____** **Time of Reactor Trip: _____** **Elapsed Time (must be ≤ 120 seconds): _____**
Examiner Cue:	When the applicant has tripped the Reactor, **"Another operator will perform Standard Post Trip Actions. This JPM is complete"**

Comments (required for UNSAT):	**SAT UNSAT**

JPM STOP TIME: _____

RECORD OF REVISIONS

REVISION #	REVISION DATE	REASON	COMMENTS
0	4/2/2020	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)

JPM INFORMATION

TASK:	1240040301 – Implement LOCA instructions and contingencies						
TASK STANDARD:	Stopped the HPSI and CS pumps on loop with failed containment sump suction valve, closed CHA-HV-531 and CHB-HV-530 within 5 minutes of starting the JPM, and closed SIB-UV-667.						
K/A:	006 A3.08	**RATING:**		RO:	4.2	SRO:	4.3
POSITION(S):	RO / SRO	**VALIDATION TIME:**		7 minutes			
REFERENCES:	40EP-9EO03, Loss of Coolant Accident						
LOCATION:	SIMULATOR	X	PLANT		CLASSROOM		

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

APPROVALS

DEVELOPED/REVISED BY: John Rodgers **DATE:** 8/15/2020

VALIDATED BY: _____ **DATE:** _____

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
- SIMULATOR SCENARIO FILES, MALFUNCTIONS, REMOTE FUNCTIONS, ETC. FOR SETUP:

COMMAND	DESCRIPTION
mfTH01A f:100	LOOP 1A LOCA – COLD LEG at 100% severity
cmMVRH04SIBUV675_6	Mechanical seizure of Containment Sump Isolation Valve SIB-UV-675
cmMVSI01SIBUV667_5	Automatic close signal failure: HPSI Pump to RWT Iso Valve SIB-UV-667

INSTRUCTIONS FOR SETUP:

- Reset to IC-20 (or load JPM from IC-602)
- Insert a Large Break LOCA (mfTH01A f:100)
- Insert a seizure of SIB-UV-675 in the closed position (cmMVRH04SIBUV675_6)
- Insert a failure of SIB-UV-667 to auto close on the RAS (cmMVSI01SIBUV667_5)
- Allow the reactor to automatically trip or manually trip the reactor
- Trip all 4 RCPs
- Allow Refueling Water Tank level to lower to Recirculation Actuation Signal (RAS) setpoint (9.4%)
    - **NOTE: You will receive a RAS in approximately 20-30 minutes**.
- When RAS initiates, GO TO FREEZE
- After the cue has been read, GO TO RUN

REQUIRED CONDITIONS:

- RAS actuated

PROCEDURES/MATERIALS:

- 40OP-9EO03, LOCA
- This JPM was written using Revision 44 of 40EP-9EO03, LOCA. This JPM may be performed using future revisions of 40EP-9EO03 provided the associated steps of the procedure remain unaffected

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:

- A large break LOCA has occurred in Unit 1
- The CRS has entered 40EP-9EO03, Loss of Coolant Accident
- A Recirculation Actuation Signal (RAS) has just actuated and Step 57 of 40EP-9EO03, Loss of Coolant Accident has just been completed

INITIATING CUE:

- The CRS has directed you to perform 40EP-9EO03, Loss of Coolant Accident, Step 58, 'a' through 'd'
- **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: [ ]

Examiner Note	**When the cue is read to the examinee, they have 5 minutes to complete JPM step 5 (close CHA-HV-531 and CHB-HV-530).** **Start Time:_____**	
JPM Step: 1	IF a RAS has actuated, THEN perform the following: • Ensure that both LPSI Pumps are stopped	
Standard:	Verified both LPSI pumps have stopped	
Comments (required for UNSAT):		**SAT UNSAT**

Examiner Note:	**The following step represents the alternate path portion of the JPM.**	
JPM Step: 2	IF a RAS has actuated, THEN perform the following: • Ensure that the ESF pump suction has shifted to the containment	
Standard:	Determined that the 'B' ESF pump suction valves from containment did open with the exception of SIB-UV-675, and transitioned to contingency step 58.b.1	
Examiner Note:	**The examinee should attempt to open SIB-UV-675 on B02, but the valve will not open. Failing to attempt to open SIB-UV-675 does NOT constitute a Critical Step failure**	
Comments (required for UNSAT):		**SAT UNSAT**

JPM Step: 3*	IF any ESF pump suctions can NOT be shifted to the containment sump, THEN perform the following: • IF ANY HPSI Pump is running with its associated Containment suction closed, THEN stop the affected HPSI Pump.	
Standard:	Stopped HPSI pump B by taking the handswitch SIB-HS-2 on B02 to "START" to pick up the override, then to "STOP" to stop the pump	
Comments (required for UNSAT):		**SAT** **UNSAT**

JPM Step: 4*	**IF** any ESF pump suctions can **NOT** be shifted to the containment sump, **THEN** perform the following: • **IF ANY** CS Pump is running with its associated Containment suction closed, **THEN** stop the affected CS Pump	
Standard:	Stopped CS pump B by taking the handswitch SIB-HS-6 on B02 to "START" to pick up the override, then to "STOP" to stop the pump	
Comments (required for UNSAT):		**SAT** **UNSAT**

JPM Step: 5*	Close BOTH of the following valves: • CHA-HV-531, RWT to Train A Safety Injection Valve • CHB-HV-530, RWT to Train B Safety Injection Valve
Standard:	Closed both CHA-HV-531, and CHB-HV-530 within 5 minutes of the start of the JPM. **Time JPM start: _____** **Time CHA-HV-531 and CHB-HV-530 closed: _____** **Elapsed Time (must be ≤ 5 minutes): _____**
Comments (required for UNSAT):	**SAT UNSAT**

JPM Step: 6 *	Ensure **ALL** of the following valves are closed: • SIA-UV-666, HPSI A Pump Recirc Valve • SIA-UV-664, Containment Spray Pump A Recirc Valve • SIA-UV-669, LPSI Pump A Recirc Valve • SIB-UV-667, HPSI B Pump Recirc Valve • SIB-UV-665, CS Pump B Recirc Valve • SIB-UV-668, LPSI Pump B Recirc Valve
Standard:	Closed SIB-UV-667 and ensured all of the other above valves are closed.
Examiner Cue	When the examinee has ensured all the above valves are closed: **"This JPM is complete."**
Comments (required for UNSAT):	**SAT UNSAT**

JPM STOP TIME: _____

RECORD OF REVISIONS

REVISION #	REVISION DATE	REASON	COMMENTS
01	4/18/2016	3	Changes to procedure numbering and order of actions in step 58; changes to JPM format.
02	8/15/2020	6	Updated JPM format, updated to rev 44 of LOCA

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)

JPM INFORMATION

TASK:	1250020401 – Respond to an RCS to NC Leak					
TASK STANDARD:	Stopped RCP 1A and 2A, closed NCB-UV-401, NCA-UV-402, and NCB-UV-403, isolated controlled bleedoff from all 4 RCPs using CHB-UV-505, CHA-UV-506, and CHA-HV-507, and closed HP Seal Cooler Isolation Valves RCN-HV-447 and RCN-HV-451					
K/A:	009 EA1.09	**RATING:**	RO:	3.6	SRO:	3.6
POSITION(S):	RO / SRO	**VALIDATION TIME:**	10 minutes			
REFERENCES:	40EP-9EO03, LOCA, Appendix 36, RCP HP Seal Cooler Breaker List					
LOCATION:	SIMULATOR	X	PLANT		CLASSROOM	

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

APPROVALS

DEVELOPED/REVISED BY: John Rodgers **DATE:** 8/15/2020

VALIDATED BY: _____ **DATE:** _____

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 any at power IC
- SIMULATOR SCENARIO FILES, MALFUNCTIONS, REMOTE FUNCTIONS, ETC. FOR SETUP:

COMMAND	DESCRIPTION
cmHXCV14RCEE05B_2 f:100	HPSC Leak on RCP 1B
cmMVCV14RCEHV431_6	RCP 1B Controlled Bleedoff Valve FTC
crB4CV14RCNHV447_1 f:CLOSE k:1	
crB4CV14RCNHV451_1 f:CLOSE k:2	

INSTRUCTIONS FOR SETUP:

- Reset to IC-20 (or load JPM from IC-603 – if IC-603 is used, JPM setup steps are complete with the exception of the remote functions for 447 and 451)
- Insert malfunctions listed above
- Manually trip the Reactor
- Manually initiate SIAS and CIAS
- Stop RCPs 1B and 2B

REQUIRED CONDITIONS:

- Ensure keys are removed from CHA-HS-507, RCN-HS-447, and RCN-HS-451
- **NOTE:** The driver should pull up the remote functions for RCN-HV-447 and 451 in preparation for closing since remote functions will not snap in the IC

PROCEDURES/MATERIALS:

- 40EP-9EO03, LOCA
- This JPM was written using Revision 44. This JPM may be performed using future revisions of 40EP-9EO03, LOCA provided the associated steps of the procedure remain unaffected

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 spurriously tripped from 100% power
- During SPTAs, a HPSC leak developed on the 1B RCP
- SIAS and CIAS were manually actuated
- RCP 1B and RCP 2B have been stopped
- The CRS has entered 40EP-9EO03, LOCA

INITIATING CUE:

- The CRS directs you to perform 40EP-9EO03, LOCA, Step 10, a through e
- An AO is standing by in the field to energize the HP Seal Cooler Isolation Valves

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 *	Stop all RCPs
Standard:	Stopped the 1A and 2A RCPs using the RCP handswitches on B04
Comments (required for UNSAT):	**SAT UNSAT**

JPM Step: 2 *	Close the Nuclear Cooling Water Containment Isolation Valves
Standard:	Closed NCB-UV-401, NCA-UV-402, and NCB-UV-403 at B07
Comments (required for UNSAT):	**SAT UNSAT**

Examiner Note:	**The following step represents the alternate path portion of the JPM**
JPM Step: 3 *	Isolate controlled bleedoff from the RCPs
Standard:	Attempted to isolate controlled bleedoff by taking RCN-HS-430/431/432/433 to close, recognized that RCH-HS-431 failed to close, and isolated controlled bleedoff via alternate means by taking handswitches CHB-HS-505, CHA-HS-506, and keyswitch CHA-HS-507 to close **NOTE: When examinee recognizes that RCN-HS-431 failed to close the valve, it is not necessary to attempt to close RCN-HS-430/432/433. Any of those valves failing to close requires use of 505/506/507. Closing 505/506/507 is the critical portion of this step**
Comments (required for UNSAT):	**SAT UNSAT**

JPM Step: 4 *	Energize the RCP HP Cooler Isolation Valves for ANY leaking RCP High Pressure Cooler(s). REFER TO Appendix 36, RCP HP Seal Cooler Breaker List
Standard:	Directed an AO to close the breakers for the 1B RCP HP Seal Cooler Isolation Valves, NHN-M1004 and NHN-M1005
Examiner Cue:	When the AO is directed to close NHN-M1004 and NHN-M1005: **Direct the Driver to INITIATE KEY 1 and/or KEY 2 as appropriate, then report "NHN-M1004 and NHN-M1005 are closed" when the VPI is illuminated on B04**
Comments (required for UNSAT):	**SAT UNSAT**

JPM Step: 5 *	Close the RCP HP Cooler Isolation Valves for ANY leaking High Pressure Cooler(s)
Standard:	Closed 1B RCP HP Seal Cooler Isolation Valves RCN-HV-447 and RCN-HV-451
Examiner Cue:	When the examinee has closed RCN-HV-447 and RCN-HV-451: **"Another operator will continue this procedure. This JPM is complete"**
Comments (required for UNSAT):	**SAT UNSAT**

JPM STOP TIME:

RECORD OF REVISIONS

REVISION #	REVISION DATE	REASON	COMMENTS
0	8/15/2020	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)

JPM INFORMATION

TASK:	0010030401 – Perform a SG 1 (2) high rate blowdown to the main condenser						
TASK STANDARD:	Placed the Blowdown Path Selector to OFF, 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						
K/A:	035 A2.01		**RATING:**		RO: 4.5	SRO:	4.6
POSITION(S):	RO / SRO		**VALIDATION TIME:**		10 minutes		
REFERENCES:	Appendix 33, Steam Generator 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:** 8/15/2020

VALIDATED BY: _____ **DATE:** _____

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
- SIMULATOR SCENARIO FILES, MALFUNCTIONS, REMOTE FUNCTIONS, ETC. FOR SETUP:

COMMAND	DESCRIPTION
IMF mfTH06A f:50	SG #1 Tube Rupture
IRF rfWD29 f:OPEN	
IRF rfWD30 f:OPEN	

INSTRUCTIONS FOR SETUP:

- Reset to IC-20 (or load JPM from IC-604)
- Insert the above malfunctions/remote functions
- Close all Blowdown Containment Isolation Valves (500P, 500Q, 500R, and 500S)
- Trip the reactor
- Initiate SIAS/CIAS
- Stop one RCP in each loop
- Lower Thot to < 540°F and isolate SG #1 per SA 113
- Use Aux Feed to raise level in SG#1 to 70% NR
- When SG#1 level reaches 70%, modify mfTH06A to f:5
- Acknowledge all alarms
- Go to FREEZE
- After the cue is read, go to RUN

REQUIRED CONDITIONS:

- SG #1 isolated
- SG #1 level ~ 70% NR

PROCEDURES/MATERIALS:

- 40EP-9EO10-033, Appendix 33, SG 1 Level Reduction Checklist
- This JPM was written using Revision 1. This JPM may be performed using future revisions of 40EP-9EO10-033 provided the associated steps of the procedure remain unaffected

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
- SG #1 has been isolated
- SG #1 NR level is approximately 70%

INITIATING CUE:

- The CRS directs you to reduce SG #1 level to 50-55% Narrow Range using 40EP-EO10-033, 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 *	Place SCN-HS-1, SG 1 Blowdown Path Selector in OFF
Standard:	Placed SCN-HS-1 in OFF
Comments (required for UNSAT):	**SAT** **UNSAT**

JPM Step: 2	Ensure SGA-UV-500P, SG 1 Common Upstream Isolation, is open
Standard:	Overrode and opened SGA-UV-500P
Comments (required for UNSAT):	**SAT** **UNSAT**

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

JPM 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 or SGE-HV-41
Examiner Note:	**It takes ~ 2 minutes for these valves to open**
Examiner Cue:	If the examinee asks the CRS which valve to use: **"What do you recommend?"** and concur with whichever valve they recommend.
Comments (required for UNSAT):	**SAT UNSAT**

Examiner Note:	**The following steps represent the alternate path portion of the JPM**
JPM 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 this valve prior to the bypass valves being opened is a safety hazard in the Turbine Building and constitutes failure of the JPM**
Comments (required for UNSAT):	**SAT UNSAT**

JPM Step: 6 *	Perform the following to open SGB-UV-500Q: • Direct an operator to perform the following: (100' MSSS NW Corner) o Unlock and open SGE-V293, "SGB-UV-500Q BYPASS HDR INLET ISOL VALVE".
Standard:	Directed an operator to unlock and open SGE-V293
Examiner Cue:	When directed to unlock and open SGE-V293, report: **"SGE-V293 is unlocked and open."**
Comments (required for UNSAT):	**SAT UNSAT**

JPM Step: 7 *	Perform the following to open SGB-UV-500Q: • Direct an operator to perform the following: (100' MSSS NW Corner) o Open SGE-V267, "SGB-UV-500Q BYPASS HDR OUTLET ISOL VALVE".	
Standard:	Directed an operator to open SGE-V267.	
Examiner Cue:	When directed to open SGE-V267, report: **"SGE-V267 is open."**	
Comments (required for UNSAT):		**SAT UNSAT**

JPM Step: 8 *	Perform the following to open SGB-UV-500Q: • Direct an operator to perform the following: (100' MSSS NW Corner) o Slowly open SGE-VA33, "SGB-UV-500Q BYPASS HEADER THROTTLE VALVE".	
Standard:	Directed an operator to open SGE-VA33	
Examiner Cue:	When directed to unlock and open SGE-VA33, report: **"SGE-VA33 is open."**	
Comments (required for UNSAT):		**SAT UNSAT**

JPM Step: 9 *	Open SGB-UV-500Q, SG 1 Common Downstream Isolation	
Standard:	Overrode and opened SGB-UV-500Q	
Comments (required for UNSAT):		**SAT UNSAT**

JPM Step: 10	Direct an operator to close ALL of the following valves: • SGE-V293 • SGE-V267 • SGE-VA33	
Standard:	Directed an operator to close SGE-V293, V267, and VA33.	
Examiner Cue:	When directed to close SGE-V293, V267, and VA33, report: **"SGE-V293, V267, and VA33 are all closed."**	
Comments (required for UNSAT):		**SAT UNSAT**

JPM Step: 11 *	Direct an operator to open ALL of the following valves: (100' Turbine Bldg between Heater Drain Tanks) • SCN-V088, "SCN-HV-018C OUTLET ISOLATION VALVE" (S/G #1 HIGH RATE B/D TO CONDENSER)	
Standard:	Directed an operator to open SCN-V088	
Examiner Cue:	When directed to open SCN-V088, report: **"SCN-V088 is open."**	
Comments (required for UNSAT):		**SAT UNSAT**

JPM Step: 12 *	Direct an operator to open ALL of the following valves: (100' Turbine Bldg between Heater Drain Tanks) • SCN-V099, "SCN-HV-018C INLET ISOLATION VALVE" (S/G #1 HIGH RATE B/D TO CONDENSER)	
Standard:	Directed an operator to open SCN-V099	
Examiner Cue:	When directed to open SCN-V099, report: **"SCN-V099 is open."**	
Comments (required for UNSAT):		**SAT UNSAT**

JPM Step: 13 *	Direct an operator to open ALL of the following valves: (100' Turbine Bldg between Heater Drain Tanks) • SCN-V071, "SCN-HV-018B OUTLET ISOLATION VALVE" (S/G #1 ABNOR RATE B/D TO CONDENSER)
Standard:	Directed an operator to open SCN-V071
Examiner Cue:	When directed to open SCN-V071, report: **"SCN-V071 is open."**
Comments (required for UNSAT):	**SAT UNSAT**

JPM Step: 14 *	Direct an operator to open ALL of the following valves: (100' Turbine Bldg between Heater Drain Tanks) • SCN-V072, "SCN-HV-018B INLET ISOLATION VALVE" (S/G #1 ABNOR RATE B/D TO CONDENSER)
Standard:	Directed an operator to open SCN-V072
Examiner Cue:	When directed to open SCN-V072, report: **"SCN-V072 is open."**
Comments (required for UNSAT):	**SAT UNSAT**

JPM Step: 15 *	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: 16 *	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 monitors SG 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

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)

JPM INFORMATION

TASK:	1240024201 – Perform SA 44 Feeding with Condensate Pumps						
TASK STANDARD:	Fast closed all Economizer FVIWs, closed the SG #2 Downcomer Valves, fast closed the SG #1 MSIVs, depressurized SG #1 using the ADV(s), and commenced feeding SG #1 using the Condensate Pump(s)						
K/A:	CE E06 EA1.1	**RATING:**		RO:	4.0	SRO:	3.9
POSITION(S):	RO / SRO	**VALIDATION TIME:**		15 minutes			
REFERENCES:	40EP-9EO10-044, Feeding With Condensate Pumps						
LOCATION:	SIMULATOR	X	PLANT		CLASSROOM		

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

APPROVALS

DEVELOPED/REVISED BY: John Rodgers **DATE:** 8/15/2020

VALIDATED BY: _____ **DATE:** _____

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
- SIMULATOR SCENARIO FILES, MALFUNCTIONS, REMOTE FUNCTIONS, ETC. FOR SETUP:

COMMAND	DESCRIPTION
AFN-P01 OOS Scenario	Remove AFN-P01 from service
mfFW22	AFA-P01 overspeed trip
mfED11C	LOP on PBB-S04
rfEG21 f:STOP	Emergency Stop 'B' EDG
mfMC01A f:100	Degraded vacuum A shell
mfMC01B f:100	Degraded vacuum B shell
mfMC01C f:100	Degraded vacuum C shell
Low SG and PZR pressure reset buttons overridden to RESET	Continuously reset MSIS and SIAS setpoints

INSTRUCTIONS FOR SETUP:

- Reset to IC-20 (or load JPM from IC-605)
- Insert the malfunctions listed above
- Hand OOS tags on AFN-P01
- When the Reactor trips, stabilize the plant per SPTAs
- Emergency stop the 'B' EDG
- Trip all 4 RCPs
- Close the SG Blowdown CIVs and all SG Sample Valves
- Start the 'E' Charging Pump
- Operate Aux Spray as needed to maintain RCS pressure 2225-2275 psia

REQUIRED CONDITIONS:

- Malfunctions and remote functions listed above inserted
- Reactor tripped
- All RCPs stopped
- 'A' and 'E' Charging Pumps running
- RCS pressure 2225-2275 psia
- All SG Blowdown CIVs and SG Sample Valves closed
- Low SG pressure and low Pressurizer pressure RESET pushbuttons on B05 overridden to RESET

PROCEDURES/MATERIALS:

- 40EP-9EO10-044, Feeding With Condensate Pumps
- This JPM was written using Revision 0. This JPM may be performed using future revisions of 40EP-9EO10-044 provided the associated steps of the procedure remain unaffected

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 a complete loss of vacuum
- AFN-P01 is OOS
- PBB-S04 is de-energized due to a bus fault
- The 'B' EDG has been emergency stopped
- AFA-P01 tripped on overspeed and cannot be reset
- The CRS has transitioned to 40EP-9EO06, Loss of All Feedwater

INITIATING CUE:

- The CRS directs you to restore feed to SG #1 using SG Downcomer Control Valve, SGN-FV-1113, per Appendix 44, Feeding With The Condensate Pumps
- Another operator will lower MSIS and SIAS setpoints as needed, and another operator will perform Appendix 5, RCS and Pressurizer Cooldown Log, during the evolution

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	IF SG #1 was selected, THEN perform the following: • Ensure BOTH SG 1 Downcomer Isolation Valves are open: o SGA-UV-172 o SGB-UV-130
Standard:	Verified both SGA-UV-172 and SGB-UV-130 are open
Comments (required for UNSAT):	**SAT** **UNSAT**

JPM Step: 2	IF SG #1 was selected, THEN perform the following: • Place SG 1 Downcomer Control Valve in MANUAL and close SGN-FV-1113
Standard:	Placed SGN-FV-1113 in MANUAL and lowered the output to zero to close the valve
Comments (required for UNSAT):	**SAT** **UNSAT**

JPM Step: 3	IF SG #1 was selected, THEN perform the following: • Ensure SGN-HV-1142, SG 1 Downcomer Block Valve, is open
Standard:	Verified SGN-HV-1142 is open
Comments (required for UNSAT):	**SAT** **UNSAT**

JPM Step: 4	IF SG #1 was selected, THEN perform the following: • Ensure SGN-HV-1143, SG 1 Downcomer Bypass Valve, is closed	
Standard:	Verified SGN-FV-1143 is closed	
Comments (required for UNSAT):		**SAT UNSAT**

JPM Step: 5 *	IF SG #1 was selected, THEN perform the following: • IF a MSIS has NOT occurred, THEN fast close ALL of the Economizer FWIVs: o SG 1 ▪ SGA-UV-174 ▪ SGB-UV-132 o SG 2 ▪ SGA-UV-177 ▪ SGB-UV-137	
Standard:	Fast Closed SGA-UV-174, SGB-UV-132, SGA-UV-177, and SGB-UV-137 using the Economizer FWIV Fast Close pushbuttons on B06	
Comments (required for UNSAT):		**SAT UNSAT**

JPM Step: 6	IF SG #1 was selected, THEN perform the following: • IF using the Downcomer Bypass Valve to feed SG 1, THEN ensure SGN-HV-1142, SG 1 Downcomer Block Valve, is closed	
Standard:	Marked step as N/A since the Downcomer Flow Control Valve will be used	
Comments (required for UNSAT):		**SAT UNSAT**

JPM Step: 7 *	IF SG #1 was selected, THEN perform the following: • Ensure BOTH SG 2 Downcomer valves are closed: o SGN-HV-1144, SG 2 Downcomer Block Valve o SGN-HV-1145, SG 2 Downcomer Bypass Valve
Standard:	Ensured SGN-HV-1144 and SGN-HV-1145 are closed
Comments (required for UNSAT):	**SAT UNSAT**

JPM Step: 8	IF SG #1 was selected, THEN perform the following: • GO TO Step 4
Standard:	Proceeded to Step 4
Comments (required for UNSAT):	**SAT UNSAT**

JPM Step: 9	**(Step 4)** Ensure at least ONE set of the following High Pressure Feedwater Heater isolation valves are open: • HP Heater Train A o FWN-HV-73 o FWN-HV-101 • HP Heater Train B o FWN-HV-74 o FWN-HV-102
Standard:	Verified both sets of HP Heater Train valves are open
Comments (required for UNSAT):	**SAT UNSAT**

JPM Step: 10	Ensure BOTH of the FWPTs are tripped by using the following: • FTN-HS-51 for FWPT A • FTN-HS-52 for FWPT B	
Standard:	Ensured BOTH FWPTs are tripped (both pumps are already tripped, but the examinee may still depress the trip pushbuttons)	
Comments (required for UNSAT):		**SAT** **UNSAT**

JPM Step: 11	Check BOTH FWPT Miniflow Valves are closed from the Control Room: • FWN-FV-1 • FWN-FV-2	
Standard:	Verified FWN-FV-1 and FWN-FV-2 are closed	
Comments (required for UNSAT):		**SAT** **UNSAT**

JPM Step: 12	Ensure at least ONE of the FWPT Discharge Valves are open from the Control Room: • FWN-HV-31 • FWN-HV-32	
Standard:	Verified FWN-HV-31 and FWN-HV-32 are open	
Comments (required for UNSAT):		**SAT** **UNSAT**

JPM Step: 13	Ensure at least ONE set of the following Low Pressure Feedwater Heater isolation valves are open: • LP Heater Train A o CDN-UV-214A o CDN-UV-214B • LP Heater Train B o CDN-UV-215A o CDN-UV-215B • LP Heater Train C o CDN-UV-216A o CDN-UV-216B
Standard:	Verified all three sets of LP Heater Train valves are open
Comments (required for UNSAT):	**SAT UNSAT**

JPM Step: 14	IF ANY Condensate Pumps are running, THEN GO TO Step 11
Standard:	Proceeded to Step 11
Comments (required for UNSAT):	**SAT UNSAT**

JPM Step: 15	**(Step 11)** IF RCS makeup is required, THEN perform the following: • Start all available charging pumps • Minimize letdown flow • Start one HPSI Pump • Open at least one HPSI Injection Valve
Standard:	Checked pressurizer level to determine whether or not RCS makeup is required
Examiner Cue:	If examinee determines RCS makeup is desired and attempts to take action: **"Another operator will maintain RCS inventory, continue with Appendix 44"**
Comments (required for UNSAT):	**SAT UNSAT**

JPM Step: 16	IF a MSIS or SIAS has NOT initiated, THEN lower or bypass the automatic initiation setpoint(s) for MSIS or SIAS as the cooldown and depressurization continues	
Standard:	Determined that another operator is responsible for lowering MSIS and SIAS setpoints from the initiating cue	
Comments (required for UNSAT):		**SAT** **UNSAT**

JPM Step: 17	Perform Appendix 5, RCS and Pressurizer Cooldown Log	
Standard:	Determined that another operator will perform Appendix 5 from the initiating cue	
Comments (required for UNSAT):		**SAT** **UNSAT**

JPM Step: 18 *	IF SG 1 was selected, THEN perform the following: • Fast close SG 1 MSIVs by using the following pushbuttons: o SGA-HS-251 o SGB-HS-253	
Standard:	Fast closed the SG #1 MSIVs by depressing SGA-HS-251 and SGB-HS-253	
Comments (required for UNSAT):		**SAT** **UNSAT**

JPM Step: 19 *	IF SG 1 was selected, THEN perform the following: • Lower SG 1 pressure below the condensate pump discharge pressure using SG 1 ADVs
Standard:	Commenced lowering SG #1 pressure by opening at least one SG #1 ADV To open SGA-HIC-184A: • Placed SGA-HS-184A in OPEN PERM • Placed SGC-HS-184B in OPEN PERM • Raised output on SG1 Line 1 ADV using the thumbwheel on SGA-HIC-184A To open SGB-HIC-178A: • Placed SGB-HS-178A in OPEN PERM • Placed SGD-HS-178B in OPEN PERM • Raised output on SG1 Line 2 ADV using the thumbwheel on SGB-HIC-178A
Comments (required for UNSAT):	**SAT UNSAT**

JPM Step: 20	IF SG 1 was selected, THEN perform the following: • Maintain SG 2 pressure less than 1200 psia
Standard:	Verified SG #2 pressure remains less than 1200 psia (pressure is being maintained by SBCS valves 1007 and 1008 in automatic)
Comments (required for UNSAT):	**SAT UNSAT**

JPM Step: 21	IF SG 1 was selected, THEN perform the following: • IF SG 1 is dry, THEN maintain feed flow rate of less than or equal to 1000 gpm
Standard:	Checked SG #1 level and determined SG #1 is NOT dry
Comments (required for UNSAT):	**SAT UNSAT**

Examiner Note:	**Feed flow will commence when SG #1 pressure is ~ 625 psia and SGN-FV-1113 has been throttled open**	
JPM Step: 22 *	IF SG 1 was selected, THEN perform the following: • IF using SG 1 Downcomer Control Valve, THEN throttle open SGN-FV-1113	
Standard:	Throttled open SGN-FV-1113 to align a flowpath for the Condensate Pumps to inject into SG #1	
Examiner Cue:	When feed flow has been established to SG #1: **"This JPM is complete"**	
Comments (required for UNSAT):		**SAT UNSAT**

JPM STOP TIME: [ ]

RECORD OF REVISIONS

REVISION #	REVISION DATE	REASON	COMMENTS
0	8/15/2020	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)

JPM INFORMATION

TASK:	0650010501 – Remotely start, manually load and unload a diesel generator						
TASK STANDARD:	Commenced lowering EDG loading to 3.6-4.4 MW, stabilized the load reduction between 3.6-4.4 MW, and directed an AO to locally open the 'A' EDG Output Breaker within 5 minutes of the loss of PKA-M41						
K/A:	058 AA2.03	**RATING:**		RO:	3.5	SRO:	3.9
POSITION(S):	RO / SRO	**VALIDATION TIME:**		10 minutes			
REFERENCES:	40OP-9DG01, Emergency Diesel Generator A,						
LOCATION:	SIMULATOR	X	PLANT		CLASSROOM		

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

APPROVALS

DEVELOPED/REVISED BY: John Rodgers **DATE:** 8/15/2020

VALIDATED BY: _____ **DATE:** _____

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
- SIMULATOR SCENARIO FILES, MALFUNCTIONS, REMOTE FUNCTIONS, ETC. FOR SETUP:

COMMAND	DESCRIPTION
mfED16A k:1	Loss of PKA-M41
crB2EG02PBAS03B_3 f:OPEN	Locally open the 'A' EDG Output Breaker

INSTRUCTIONS FOR SETUP:

- Reset to IC-20 (or load JPM from IC-606)
- Place the 'A' EDG on PBA-S03 and raise MW loading to ~5.2 MW

REQUIRED CONDITIONS:

- 'A' EDG loaded onto PBA-S03 and loaded to ~5.2 MW
- **NOTE:** The driver should have the remote function for local operation of PBA-S03B pulled up and ready for execution prior to each performance of the JPM

PROCEDURES/MATERIALS:

- 40OP-9DG01, Emergency Diesel Generator A
- This JPM was written using Revision 80 of 40OP-9DG01. This JPM may be performed using future revisions of 40OP-9DG01 provided the associated steps of the procedure remain unaffected

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
- The 'A' EDG is running fully loaded for a Normal Run
- The 'A' EDG has been loaded to 5.2 MW for the past 4 hours

INITIATING CUE:

- The CRS directs you to unload the 'A' EDG per 40OP-9DG01, Emergency Diesel Generator A, Section 6.7, Unloading Train A Diesel Generator

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	Reduce Train A Diesel Generator load per Appendix G – Loading and Unloading Schedule
Standard:	Referred to Appendix G to determine rate of load reduction and load stabilization times
Comments (required for UNSAT):	**SAT UNSAT**

Procedure Note:	• **It is beneficial to control thermal distribution during shutdown** • **It is recommended to gradually reduce load**
JPM Step: 2	**(From Appendix G)** Observe MW loading and duration per the Table before lowering to the next increment
Examiner Note:	**Data from the table referenced in this step:**

Design Load %	MW	MW Allowable Range	Minimum Duration
110	6.05	5.775-6.05	None
100	5.4	5.0-5.5	210 minutes* 10 minutes
75	4.0	3.6-4.4	5 minutes
50	2.7	2.3-3.1	5 minutes
25	1.4	1.0-1.8	5 minutes

*210 minutes is the recommended cumulative run time at 100% of design load. If the Diesel Generator was operated at greater than 100% of design load, it should be operated for a minimum of 10 minutes at 100% of design load before additional load reduction

Standard:	Determined that EDG loading should be stabilized and maintained between 3.6-4.4 MW for at least 5 minutes
Comments (required for UNSAT):	**SAT UNSAT**

JPM Step: 3 *	Commence reducing load on the 'A' EDG per the Appendix G unloading table (from 100% to 75% load)
Standard:	Commenced reducing load on the 'A' EDG by lowering speed on the 'A' EDG using handswitch PEA-SC-G01, and paused the load reduction when 'A' EDG MW loading is between 3.6-4.4 MW
Examiner Cue:	When the applicant has lowered 'A' EDG load to between 3.6-4.4 MW: **"A EDG MW load has been stable for 5 minutes"**
Comments (required for UNSAT):	**SAT UNSAT**

Examiner Note:	**When the applicant commences the next phase of EDG load reduction, direct the driver to INITIATE KEY 1, loss of PKA-M41. The following steps represent the alternate path portion of the JPM**
JPM Step: 4 *	Commence reducing load on the 'A' EDG per the Appendix G unloading table (from 75% to 50% load)
Standard:	Commenced reducing load on the 'A' EDG, diagnosed the subsequent loss of PKA-M41, and addressed EITHER ARP 1A04A or AOP 40AO-9ZZ13, Loss of Class Instrument or Control Power
Comments (required for UNSAT):	**SAT UNSAT**

JPM Step: 5	**(From ARP 1A04A)** IF panel PKA-M41, Class 125VDC Control Center has lost power, THEN GO TO 40AO-9ZZ13, Loss of Class Instrument or Control Power
Standard:	Referred to 40AO-9ZZ13, Loss of Class Instrument or Control Power (examinee may go directly to the AOP)
Comments (required for UNSAT):	**SAT UNSAT**

JPM Step: 6 *	**(From 40AO-9ZZ13)** IF DG A was paralleled with offsite power when this event occurred, THEN direct an operators to locally open PBA-S03B, DG A Output Breaker	
Standard:	Directed an AO to locally open PBA-S03B within 5 minutes of the loss of PKA-M41 **Time PKA-M41 was lost: _____** **Time AO directed to open PBA-S03B (must be ≤ 5 minutes): _____**	
Examiner Cue:	When the examinee directs an AO to locally open PBA-S03B, the driver will locally open PBA-S03B When PBA-S03B has been opened: **"This JPM is complete"**	
Comments (required for UNSAT):		**SAT UNSAT**

JPM STOP TIME: _____

RECORD OF REVISIONS

REVISION #	REVISION DATE	REASON	COMMENTS
0	8/15/2020	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)

JPM INFORMATION

TASK:	L392057 – Respond to an event requiring entry into the Loss of Class Instrument or Control Power AOP					
TASK STANDARD:	Navigated to the Change Addressable Constants screen, located tag name CEANOP, set a value of 2, enabled the Function Enable keyswitch, set the new value of 2 for the CEANOP addressable constant, and returned the Function Enable keyswitch back to OFF					
K/A:	012 A2.02	**RATING:**	RO:	3.6	SRO:	3.9
POSITION(S):	RO / SRO	**VALIDATION TIME:**	10 minutes			
REFERENCES:	40AO-9ZZ13, Loss of Class Instrument or Control Power					
LOCATION:	SIMULATOR	X	PLANT		CLASSROOM	

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

APPROVALS

DEVELOPED/REVISED BY: John Rodgers **DATE:** 8/15/2020

VALIDATED BY: _____ **DATE:** _____

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
- SIMULATOR SCENARIO FILES, MALFUNCTIONS, REMOTE FUNCTIONS, ETC. FOR SETUP:

COMMAND	DESCRIPTION
mfED12C	Loss of PNC-D27

INSTRUCTIONS FOR SETUP:

- Reset to IC-20 (or load JPM from IC-607)
- Insert malfunction listed above
- Place CEDMCS in STANDBY

REQUIRED CONDITIONS:

- **NOTE: Ensure paper which may print after examinee presses PRINT SCREEN is collected after each JPM**
- **NOTE: Ensure TAG NAME ARM1 is selected on all CPCs prior to each run of the JPM**

PROCEDURES/MATERIALS:

- 40AO-9ZZ13, Loss of Class Instrument or Control Power
- This JPM was written using Revision 31. This JPM may be performed using future revisions of 40AO-9ZZ13 provided the associated steps of the procedure remain unaffected

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 loss of PNC-D27 has just occurred
- The CRS has entered 40AO-9ZZ13, Loss of Class Instrument or Control Power

INITIATING CUE:

- The CRS directs you to perform Step 5 of 40AO-9ZZ13, Loss of Class Instrument or Control Power, to set INOP flags for CEAC 2 in all operable CPCs

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:	**The same process would be repeated on the 3 operable CPCs, however for the purpose of the JPM, the JPM can be stopped after the examinee has completed the task on any one CPC**
JPM Step: 1 *	IF ANY CPC is energized, AND NOT in bypass, THEN perform the following to set the CEAC 2 INOP flag in ALL OPERABLE CPCs: • From the Directory page, Touch the Addressable Constants button
Standard:	Pressed the Directory icon, then the Addressable Constants icon on the CPC screen
Comments (required for UNSAT):	**SAT UNSAT**

JPM Step: 2 *	IF ANY CPC is energized, AND NOT in bypass, THEN perform the following to set the CEAC 2 INOP flag in ALL OPERABLE CPCs: • From the Addressable Constants page, Touch the Change Addressable Constants button
Standard:	Pressed the Change Addressable Constants icon on the CPC screen
Comments (required for UNSAT):	**SAT UNSAT**

JPM Step: 3 *	IF ANY CPC is energized, AND NOT in bypass, THEN perform the following to set the CEAC 2 INOP flag in ALL OPERABLE CPCs: • Select CEANOP (#0062) in the "Enter Tag Name" field by using the pull down menu button
Standard:	Pressed the drop down icon, located the CEANOP and pressed the CEANOP icon on the CPC screen
Comments (required for UNSAT):	**SAT UNSAT**

JPM Step: 4	IF ANY CPC is energized, AND NOT in bypass, THEN perform the following to set the CEAC 2 INOP flag in ALL OPERABLE CPCs: • Touch the Print Screen button	
Standard:	Touched the Print Screen icon on the CPC screen	
Comments (required for UNSAT):		**SAT UNSAT**

JPM Step: 5 *	IF ANY CPC is energized, AND NOT in bypass, THEN perform the following to set the CEAC 2 INOP flag in ALL OPERABLE CPCs: • Enter the following value in the "Enter Value" field by inserting the curson and touching the appropriate keys from the displayed keyboard: o CEAC 2 inoperable: CPC Pt ID 0062 = 2	
Standard:	Touched the screen in the Enter Value box and entered a value of 2 on the CPC screen	
Comments (required for UNSAT):		**SAT UNSAT**

Procedure Note:	**The "SET VALUE" Button will be highlighted in yellow by the calculator software when the Function Enable keyswitch is placed in the ENABLED position**	
JPM Step: 6 *	IF ANY CPC is energized, AND NOT in bypass, THEN perform the following to set the CEAC 2 INOP flag in ALL OPERABLE CPCs: • Enable the Set Value Function by placing the "Function Enable" keyswitch to the "ENABLED" position	
Standard:	Rotated the OM Function Enable keyswitch clockwise 90° to the ENABLE position	
Comments (required for UNSAT):		**SAT UNSAT**

JPM Step: 7 *	IF ANY CPC is energized, AND NOT in bypass, THEN perform the following to set the CEAC 2 INOP flag in ALL OPERABLE CPCs: • Touch the "SET VALUE" button	
Standard:	Touched the SET VALUE icon on the CPC screen	
Comments (required for UNSAT):		**SAT UNSAT**

JPM Step: 8 *	IF ANY CPC is energized, AND NOT in bypass, THEN perform the following to set the CEAC 2 INOP flag in ALL OPERABLE CPCs: • Set the "Function Enable" keyswitch to the "OFF" position to disable the Set Value function	
Standard:	Rotated the OM Function Enable keyswitch counter-clockwise 90° to the OFF position	
Comments (required for UNSAT):		**SAT UNSAT**

JPM Step: 9	IF ANY CPC is energized, AND NOT in bypass, THEN perform the following to set the CEAC 2 INOP flag in ALL OPERABLE CPCs: • Verify that the new value of the addressable constant is correct by reading the displayed current value below the Tag Name	
Standard:	Confirmed that a value of 2 is displayed below the CEANOP tag name	
Examiner Cue:	When the examinee has confirmed that a value of 2 is displayed below the CEANOP tag name: **"This JPM is complete"**	
Comments (required for UNSAT):		**SAT UNSAT**

JPM STOP TIME: _____

RECORD OF REVISIONS

REVISION #	REVISION DATE	REASON	COMMENTS
0	8/15/2020	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)

JPM INFORMATION

TASK:	489751 – Perform System Alignments						
TASK STANDARD:	Performed procedure for taking EDG Jacket Water Cooling to Manual. Determined that Jacket Water temperature is 123°F and lowering by taking DGN-TI-25, Temperature Indication to position 6, and simulated starting the DG A Jacket Water Circ Pump.						
K/A:	064 A1.04	**RATING:**	RO:	2.8	SRO:	2.9	
POSITION(S):	RO / SRO	**VALIDATION TIME:**	10 minutes				
REFERENCES:	40OP-9DG01, Emergency Diesel Generator A						
LOCATION:	SIMULATOR		PLANT	X	CLASSROOM		

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

APPROVALS

DEVELOPED/REVISED BY: Brian Garrettson **DATE:** 08/31/2020

VALIDATED BY: _____ **DATE:** _____

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:

- 40OP-9DG01, Emergency Diesel Generator A
- This JPM was written using Revision 80. This JPM may be performed using future revisions of 40OP-9DG01, Emergency Diesel Generator A, provided the steps of the JPM are unaffected

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:

- 'A' EDG is in standby
- Automatic control of jacket water temperature is not working

INITIATING CUE:

- CRS has directed performing 40OP-9DG01, Emergency Diesel Generator A, step 6.11.5 Manual Control of Temperature

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	Ensure Train A Diesel Generator is in Standby
Standard:	Determined from the initiating cue that the 'A' EDG is in standby
Comments (required for UNSAT):	**SAT UNSAT**

JPM Step: 2	Ensure BOTH of the following handswitches are aligned as follows: • DGA-HS-27, DG A J.W. Warmup Heater, is placed to AUTO • DGA-HS-21, DG A Jacket Water Circ Pump is placed in AUTO/STOP
Standard:	Checked the following handswitches are in the following alignment: • DGA-HS-27, DG A J.W. Warmup Heater is in AUTO
Examiner Cue:	**When the examinee checks DGA-HS-27, DG A J.W. Warmup Heater is in "AUTO":** **"The switch is in the 'right' position"**
Comments (required for UNSAT):	**SAT UNSAT**

JPM Step: 3	Ensure BOTH of the following handswitches are aligned as follows: • DGA-HS-27, DG A J.W. Warmup Heater, is placed to AUTO • DGA-HS-21, DG A Jacket Water Circ Pump is placed in AUTO/STOP
Standard:	Checked the following handswitches are in the following alignment: • DGA-HS-21, DG A Jacket Water Circ Pump is in AUTO/STOP
Examiner Cue:	**When the examinee checks DGA-HS-21, DG A Jacket Water Circ Pump is in AUTO/STOP:** **"The switch is in the 'left' position, green light is ON, red light is OFF"**
Comments (required for UNSAT):	**SAT UNSAT**

JPM Step: 4	Ensure BOTH of the following MCC Breakers are closed: • PHA-M3325, Ckt Bkr for A DG Jacket Water Circ Pump DGA-P01 • PHA-3109, Ckt Bkr for A DG Jacket Water Heater DGA-M01
Standard:	Checked the following MCC breakers are closed: • PHA-M3325, Ckt Bkr for A DG Jacket Water Circ Pump DGA-P01
Examiner Cue:	**When the examinee checks PHA-M3325, Ckt Bkr for A DG Jacket Water Circ Pump DGA-P01 closed, inform them:** **"The Aux Building Operator is standing by at PHA-M33"** **When the examinee contacts the Aux Building Operator to check the status of PHA-M3325, inform them:** **"PHA-M3325, A DG Jacket Water Circ Pump DGA-P01 breaker is closed"**
Comments (required for UNSAT):	**SAT UNSAT**

JPM Step: 5	Ensure BOTH of the following MCC Breakers are closed: • PHA-M3325, Ckt Bkr for A DG Jacket Water Circ Pump DGA-P01 • PHA-3109, Ckt Bkr for A DG Jacket Water Heater DGA-M01
Standard:	Checked the following MCC breakers are closed: • PHA-3109, Ckt Bkr for A DG Jacket Water Heater DGA-M01
Examiner Cue:	**When the examinee checks PHA-3109, Ckt Bkr for A DG Jacket Water Heater DGA-M01 closed:** **"The breaker switch is in the vertical position"**
Comments (required for UNSAT):	**SAT UNSAT**

Examiner Note: The following steps represent the alternate path portion of the JPM	
JPM Step: 6 *	If BOTH of the following: • DGN-TI-25, Temperature Indication, Position 6, Jacket Water temperature, is approaching 170°F • DGN-TI-25, Temperature Indication, Position 6, Jacket Water temperature, is rising THEN place DGA-HS-27, DG A J.W. Warmup Heater to OFF
Standard:	Simulated placing DGN-TI-25, Temperature Indication to position 6, Jacket Water temperature and determined that Jacket Water Temperature is lowering and no action is required for approaching 170°F
Examiner Cue:	**When the examinee simulates placing DGN-TI-25 to position 6, use a pointer device to show that temperature is 123°F and lowering**
Comments (required for UNSAT):	**SAT UNSAT**

JPM Step: 7 *	If BOTH of the following: • DGN-TI-25, Temperature Indication, Position 6, Jacket Water temperature, is approaching 120°F • DGN-TI-25, Temperature Indication, Position 6, Jacket Water temperature, is falling
Standard:	Determined that temperature is approaching 120°F from the previous step
Examiner Cue:	**When the examinee simulates placing DGN-TI-25 to position 6, use a pointer device to show that temperature is 123°F and lowering**
Comments (required for UNSAT):	**SAT UNSAT**

JPM Step: 8 *	THEN perform the following: • Place DGA-HS-21, DG A Jacket Water Circ Pump, to START
Standard:	Placed DGA-HS-21, DG A Jacket Water Circ Pump, to START
Examiner Cue:	**When the examinee simulates placing DGA-HS-21, DG A Jacket Water Circ Pump, to START:** **"The switch is in the 'right' position, red light is ON, green light is OFF"** **Inform the examinee that "ANY SWITCH NOT IN AUTO" alarm is in on the annunciator panel**
Comments (required for UNSAT):	**SAT UNSAT**

JPM Step: 9	THEN perform the following: • Ensure DGA-HS-27, DG A J.W. Warmup Heater, is placed to AUTO
Standard:	Checked DGA-HS-27 DG A J.W. Warmup Heater is in AUTO
Examiner Cue:	**When the examinee checks DGA-HS-27, DG A J.W. Warmup Heater is in "AUTO":** **Examiner Note: The heater will automatically energize at 120°F** **"The switch is in the 'right' position, green light is ON, red light is OFF. This JPM is complete"**
Comments (required for UNSAT):	**SAT UNSAT**

JPM STOP TIME: [ ]

RECORD OF REVISIONS

REVISION #	REVISION DATE	REASON	COMMENTS
000	08/31/2020	6	New JPM

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)

JPM INFORMATION

TASK:	1250270101 – Respond to an event requiring entry into the Shutdown Outside the Control Room AOP					
TASK STANDARD:	Performed procedure for transferring and controlling SG pressure from the RSD panel. Simulated placing switches to "OPEN PERM", simulated pressing the "LOCAL" pushbutton on the ADV Controller(s), simulated adjusting the position demand to at least 30% to open the valve, and observed the ADV open to 30% and SG pressure lowering					
K/A:	068 AK3.06	**RATING:**	RO:	3.9	SRO:	4.3
POSITION(S):	RO / SRO	**VALIDATION TIME:**	10 minutes			
REFERENCES:	40AO-9ZZ18, Shutdown Outside Control Room					
LOCATION:	SIMULATOR		PLANT	X	CLASSROOM	

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

APPROVALS

DEVELOPED/REVISED BY: Brian Garrettson **DATE:** 08/20/2020

VALIDATED BY: _____ **DATE:** _____

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-9ZZ18, Shutdown Outside Control Room
- This JPM was written using Revision 21. This JPM may be performed using future revisions of 40AO-9ZZ18, Shutdown Outside Control Room provided the steps of the JPM are unaffected

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 has been evacuated due to hot particle contamination
- The SBCS was not controlling in automatic and an MSIS was initiated
- Pressure in both Steam Generators is 1205 psig and slowly rising

INITIATING CUE:

- CRS has directed you to operate ADVs on the Train ‘A’ remote shutdown panel to control SG pressures within a band of 1140 - 1200 psia per 40AO-9ZZ18, Shutdown Outside Control Room, Appendix D, ADV Operations

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	Ensure the output of the ADV Controller(s) that will be used is at minimum: • SGA-HIC-179B • SGA-HIC-184B • SGB-HIC-178B • SGB-HIC-185B	
Standard:	Determined that the output of the ADV Controller(s) that will be used were at minimum	
Examiner Cue:	**When the examinee checks the outputs of the Train 'A' ADV Controllers, use a pointer device to show that the output signal is "0"**	
Comments (required for UNSAT):		**SAT UNSAT**

JPM Step: 2 *	IF SGA-HV-179 will be operated, THEN place BOTH of the following switches to "OPEN PERM" • SGA-HS-179C • SGC-HS-179D	
Standard:	Simulated placing switches to "OPEN PERM"	
Examiner Cue:	**When the examinee simulates operating both switches to the OPEN PERM position, inform them for each switch manipulation:** **"Green light OFF, red light ON"**	
Comments (required for UNSAT):		**SAT UNSAT**

JPM Step: 3 *	IF SGA-HV-184 will be operated, THEN place BOTH of the following switches to "OPEN PERM" • SGA-HS-184C • SGC-HS-184D
Standard:	Simulated placing switches to "OPEN PERM"
Examiner Cue:	**When the examinee simulates operating both switches to the OPEN PERM position, inform them for each switch manipulation:** **"Green light OFF, red light ON"**
Comments (required for UNSAT):	**SAT UNSAT**

JPM Step: 4	IF SGB-HV-178 will be operated, THEN place BOTH of the following switches to "OPEN PERM" • SGB-HS-178C • SGD-HS-178D
Standard:	Determined step is N/A
Comments (required for UNSAT):	**SAT UNSAT**

JPM Step: 5	IF SGB-HV-185 will be operated, THEN place BOTH of the following switches to "OPEN PERM" • SGB-HS-185C • SGD-HS-185D
Standard:	Determined this step is N/A
Comments (required for UNSAT):	**SAT UNSAT**

JPM Step: 6 *	Perform the following for the ADV(s) to be operated: • Press the "LOCAL" pushbutton on the ADV Controller(s)
Standard:	Simulated pressing the "LOCAL" pushbutton on the ADV Controller(s).
Examiner Cue:	**When the examinee presses the LOCAL pushbutton for each controller, inform them:** **"The 'CR' white light is OFF, the 'LOCAL' white light is ON"**
Comments (required for UNSAT):	**SAT UNSAT**

JPM Step: 7 *	Perform the following for the ADV(s) to be operated: • Adjust the position demand to at least 30%
Standard:	Simulated adjusting the position demand to at least 30% to open the valve
Examiner Cue:	**Using a pointer device, indicate that the position demand signal is at '30%' for each controller and inform them:** **"The green and red lights are BOTH lit for each of the ADVs"**
Comments (required for UNSAT):	**SAT UNSAT**

JPM Step: 8	Perform the following for the ADV(s) to be operated: • WHEN the ADV opens, THEN adjust valve position as needed to control RCS heat removal rate
Standard:	Observed the ADVs open to 30% and SG pressure lowering
Examiner Cue:	**Once each ADV opens to 30%, SG pressures will start to lower and further adjustments are not needed. After indicating the ADVs are at 30%, inform them:** **"This JPM is complete"**
Comments (required for UNSAT):	**SAT UNSAT**

JPM STOP TIME:

RECORD OF REVISIONS

REVISION #	REVISION DATE	REASON	COMMENTS
001	08/27/08	3, 6	Revision 6 of 40AO-9ZZ18 Appendix D, enhanced Initiating CUE, and new JPM
002	08/20/20	6	Minor changes to Initiating Cue and Examiner Cues. Used for the 2020 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)

JPM INFORMATION

TASK:	1250530301 – Respond to a loss of Spent Fuel Pool level					
TASK STANDARD:	Performed procedure for placing the 'B' SFP Cooling HX in service. Simulated closing PCB-V018, Train B Fuel Pool Cooling Pump Discharge Valve, simulated opening PCE-028, Fuel Pool Cooling Trains Cross-tie Valve, simulated closing PCA-V027, Train A Fuel Pool Cooling Heat Exchanger Outlet Valve, Simulated throttling PCA-V014, PCA-P01 Discharge Valve, to maintain between 45 psig and 55 psig as read on PCN-PI-009, Fuel Pool Cool Pump 1 Dischg Local Panel					
K/A:	033 A2.03	**RATING:**		RO: 3.1	SRO:	3.5
POSITION(S):	RO / SRO	**VALIDATION TIME:**		12 minutes		
REFERENCES:	40OP-9PC01, Fuel Pool Cooling					
LOCATION:	SIMULATOR		PLANT	X	CLASSROOM	

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

APPROVALS

DEVELOPED/REVISED BY: Brian Garrettson **DATE:** 08/25/2020

VALIDATED BY: _____ **DATE:** _____

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:

- 40OP-9PC01, Fuel Pool Cooling
- This JPM was written using Revision 16. This JPM may be performed using future revisions of 40OP-9PC01, Fuel Pool Cooling provided the steps of the JPM are unaffected

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:

- There is an ISOLABLE leak on the in service 'A' Fuel Pool Heat Exchanger
- The 'A' Fuel Pool Cooling Pump is in service
- Spent Fuel Pool temperature is 110°F and slowly rising at a rate of 1°F/20 minues

INITIATING CUE:

- The CRS directs you to perform 40OP-9PC01, Fuel Pool Cooling Section 6.7, Swapping From Fuel Pool HX A to HX B With Fuel Pool Cooling Pump A In Service to isolate the leak
- Steps 6.7.1 - 6.7.4 are complete
- There is an operator stationed at PCN-PI-009, Fuel Pool Cool Pump 1 Discharge Local Panel with a radio when PCA-P01 Discharge Valve is throttled for pressure indication

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	Check PCB-P01, Fuel Pool Cooling Pump B, not running per Section 6.17.6, Checking PCB-P01, Fuel Pool Cooling Pump B, Not running
Standard:	Determined from the intial conditions that PCB-P01 is powered from its normal source PGB-L36 52-C4 and checked that PCB-HS-8, Fuel Pool Cooling Pump 2, is in "Stop"
Examiner Cue:	**When the examinee checks PCB-HS-8, Fuel Pool Cooling Pump 2, is in "STOP", inform them:** **"The switch is in the vertical position, green light is ON, red light is OFF"**
Comments (required for UNSAT):	**SAT UNSAT**

JPM Step: 2 *	Close PCB-V018, Train B Fuel Pool Cooling Pump Discharge Valve
Standard:	Simulated closing PCB-V018, Train B Fuel Pool Cooling Pump Discharge Valve
Examiner Cue:	**When the examinee simulates closing PCB-V018, Train B Fuel Pool Cooling Pump Discharge Valve, inform them:** **"The valve handwheel is in the full clockwise position, the valve stem is fully inserted"**
Comments (required for UNSAT):	**SAT UNSAT**

JPM Step: 3 *	Open PCE-028, Fuel Pool Cooling Trains Cross-tie Valve
Procedure Note: Control the opening of PCE-V028 to avoid rapid pressure equalization	
Standard:	Simulated opening PCE-028, Fuel Pool Cooling Trains Cross-tie Valve
Examiner Cue:	**When the examinee simulates closing PCE-028, Fuel Pool Cooling Trains Cross-tie Valve:** **"The valve handwheel is in the full counter-clockwise position, the valve stem is fully withdrawn"**
Comments (required for UNSAT):	**SAT UNSAT**

JPM Step: 4 *	Close PCA-V027, Train A Fuel Pool Cooling Heat Exchanger Outlet Valve
Standard:	Simulated closing PCA-V027, Train A Fuel Pool Cooling Heat Exchanger Outlet Valve
Examiner Cue:	**When the examinee simulates closing PCA-V027, Train A Fuel Pool Cooling Heat Exchanger Outlet Valve:** **"The valve handwheel is in the full clockwise position, the valve stem is fully inserted"**
Comments (required for UNSAT):	**SAT UNSAT**

JPM Step: 5	IF Fuel Pool temperature is in excess of 145°F, THEN perform the following • Review Limitation Step 3.2.4 • Consider additional cooling by placing Shutdown Cooling in service per 40OP-9PC05, Augmentation of Fuel Pool Cooling With Shutdown Cooling
Standard:	Determined that the step is N/A
Comments (required for UNSAT):	**SAT UNSAT**

JPM Step: 6 *	Throttle PCA-V014, PCA-P01 Discharge Valve, to maintain between 45 psig and 55 psig as read on PCN-PI-009, Fuel Pool Cool Pump 1 Dischg Local Panel
Standard:	Simulated throttling PCA-V014, PCA-P01 Discharge Valve, to maintain between 45 psig and 55 psig as read on PCN-PI-009, Fuel Pool Cool Pump 1 Dischg Local Panel
Examiner Cue:	**The examinee will contact the operator at PCN-PI-009 when they are ready to throttle the discharge valve. When contacted, inform them:** **"PCN-PI-009, Fuel Pool Cooling Pump Discharge pressure indicates 40 psig"** **When the examinee simulates throttling open PCA-V014, PCA-P01 Discharge Valve in the OPEN direction, inform them:** **"PCN-PI-009, Fuel Pool Cooling Pump Discharge pressure indicates 50 psig"** **If the examinee stops throttling once pressure is 50 psig, inform them:** **"This JPM is complete"**
Comments (required for UNSAT):	**SAT UNSAT**

JPM STOP TIME:

RECORD OF REVISIONS

REVISION #	REVISION DATE	REASON	COMMENTS
000	08/25/2020	6	New JPM

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)

Appendix D	Scenario Outline	Form ES-D-1

Facility: Palo Verde	Scenario: 1	Test: 2020 NRC Exam
Examiners:	Operators:	
Initial Conditions: 100% power, MOC, AFA-P01 OOS		
Turnover: Maintain 100% power		

Event Number	Event Type*	Event Description
1	I (CRS, BOP), TS (CRS)	Steam Generator #2 Flow transmitter RCD-PDT-125D fails low
2	C (All), TS (CRS)	Inadvertent Train 'A' CSAS
3	C (CRS, OATC)	Loss of Letdown
4	C (All), TS (CRS)	MFP Trip
5	M (All)	ESD inside Containment
6	C (CRS, BOP)	MSIS fails to auto actuate
7	C (OATC)	Train 'B' Containment Spray Pump trips ('A' CS Pump anti-pumped)
*(N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor, (TS) Technical Specification		

Actual	Target Quantitative Attributes
7	Total malfunctions (5-8)
2	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	EOP contingencies requiring substantive actions (0-2)
2	Critical tasks (2-3)

2020 NRC Exam Scenario # 1 Overview	
Event 1	Steam Generator #2 Flow transmitter RCD-PDT-125D will fail low. The crew will address the ARP and validate actual Steam Generator flow using alternate indications. The CRS will address Technical Specifications for the failed transmitter and direct the crew to bypass the affected RPS bistables.
Event 2	An inadvertent Train 'A' CSAS will occur. The crew will verify that an actual CSAS is not required and the CRS will enter 40AO-9ZZ17, Inadvertent PPS-ESFAS Actuations. The CRS will direct the crew to stop Train 'A' CS flow by stopping the 'A' CS Pump and closing the CS header isolation valve. The CRS will direct the restoration of NC flow by opening NCA-UV-402, NCW Containment Downstream Return Isolation Valve.
Event 3	The Train 'A' CSAS will also result in a loss of letdown. The CRS will enter 40AO-9ZZ05, Loss of Charging or Letdown, and direct the crew to either restore letdown or establish conditions for extended loss of Letdown.
Event 4	'A' MFP will trip causing a RPCB. The CRS will enter 40AO-9ZZ09, Reactor Power Cutback (Loss of Feedpump) and the crew will verify that all parameters are restoring. The CRS will direct the crew to remove RPCB from service.
Event 5	An ESD inside containment will require a manual Reactor trip. The CRS will enter 40EP-9EO01, Standard Post Trip Actions. After the Reactor Trip, a vacuum breaker valve will fail open causing the 'B' MFP to trip.
Event 6	SIAS and CIAS will actuate but MSIS will fail to auto-actuate and will require a manual actuation.
Event 7	'B' CS Pump will trip and 'A' CS Pump will require a manual start due to being anti-pumped during the inadvertent CSAS. The CS header isolation valve will be manually opened due to being overridden and closed during the inadvertent CSAS

Appendix D	Critical Task Summary NRC Exam Scenario # 1	Form ES-D-1

Critical Task # 1: When the Main Steam Isolation setpoints are exceeded, ensure Main Steam Isolation has actuated within 15 minutes of exceeding the MSIS setpoint.

Safety Significance: MSIS ensures acceptable consequences during an MSLB or FWLB (between the steam generator and the main feedwater check valve) either inside or outside containment. MSIS isolates both steam generators if either generator indicates a low pressure condition or a high level condition or if a high containment pressure condition exists. This prevents an excessive rate of heat extraction and subsequent cooldown of the RCS during these events. The 15 minute time requirement is based on the time that it takes to complete a round of Safety Function Status Checks since SPTAs is the first check on all safety functions. Normally 30 minutes is the time requirement for ESFAS failures, however since this failure will affect 4 Safety Functions, prompt action is expected from Operations Management.

Cueing: The crew should recognize the failure of MSIS to actuate when containment pressure exceeds 3.1 psig OR when either SG pressure lowers to less than 960 psia (both are setpoints for MSIS).

Measurable Performance Indicator: The crew will have to manually actuate MSIS by taking the four handswitches for each ESFAS channel actuation (on B05) to the actuate position. This can be confirmed by the red MSIS lights on the vertical section of B05 as well as the actuation logic lights for each actuation extinguishing on the horizontal section of B05.

Performance Feedback: The crew will have indication of successful actuations by observing the red SIAS/CIAS/MSIS lights on the vertical section of B05 as well as the actuation logic lights for each actuation extinguishing on the horizontal section of B05, as well as by observing the actuated equipment for each ESFAS actuation going to its actuated position.

***This Critical Task and the 15 minute time requirement meets Operations Management expectations for an Operating Crew**

Critical Task # 2: When the Containment Spray Actuation setpoint is exceeded, ensure adequate Containment Cooling to meet Safety Function requirements within 30 minutes of exceeding the CSAS setpoint.

Safety Significance: Potential degradation of any barrier to fission product release. Failure to maintain containment temperature and pressure control may challenge containment integrity. The 30 minute time requirement is based on 15 minutes (time requirement to complete Safety Function Status Checks) to diagnose the loss of Containment Spray, and 15 minutes for mitigating actions

Cueing: In addition to the procedural cue, the crew may use indications of Containment pressure, Containment temperature, Containment fan coolers, Containment Spray pumps, and Containment Spray flow to provide cue to perform elements of this task.

Measurable Performance Indicator: The task is identified by at least one member of the crew manipulating the controls to establish Containment Spray flow. If Containment pressure is > 8.5 psig, the crew should ensure a CSAS is actuated and at least one CS header is delivering > 4350 gpm on at least one header.

Performance Feedback: The task provides feedback by observing 4350 gpm on B02 and ERFDADS flow indicators and Containment pressure lowering.

***This Critical Task and the 30 minute time requirement meets Operations Management expectations for an Operating Crew**

NOTE: (Per NUREG-1021 Appendix D) 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

Appendix D	Driver Set-Up Instructions NRC Exam Scenario # 1	Form ES-D-1

Driver Setup Instructions	
	Reset to IC-20
	Run scenario file “NRC Scenario # 1”
	Hang OOS tags on AFA-P01

Event	Type	Malf #	Description	Final	Initiator
		rfFW59	AFA-P01 OOS	TRIP	
		rfFW60B		OFF	
		rfFW57		CLOSE	
		crB4FW08AFAHV32_1		OPEN	
		crB4FW08AFAUV37_1		OPEN	
		crB5FW08AFCHV33_1		OPEN	
		crB5FW08AFCUV36_1		OPEN	
		crB4MS13SGAUV134_1		OPEN	
		crB4MS13SGAUV138_1		OPEN	
1	MF	cmTRRX09RCDPDT125D_1	SG #2 Flow Transmitter 125D Fails Low	0	Key 1
2	MF	mfRP06G1	Inadvertent Train 'A' CSAS		Key 2
		mfRP06G2			
3			Loss of Letdown (due to CSAS)		
4	MF	mfFW17A	'A' MFP Trip		
5	MF	mrTH01C	ESD Inside Containment on SG #2	Ramp to 30	Key 5
	MF	cmAVMC01CDNHV45C_1	'C' Vacuum Breaker opens		Rx Trip
6	MF	cmSRRP01IRMSISAB1_2	MSIS Fails to Auto Actuate		
		cmSRRP01IRMSISAB2_2			
		cmSRRP01IRMSISAB3_2			
		cmSRRP01IRMSISAB4_2			
		cmSRRP01IRMSISAC1_2			
		cmSRRP01IRMSISAC2_2			
		cmSRRP01IRMSISAC3_2			
		cmSRRP01IRMSISAC4_2			
		cmSRRP01IRMSISAD1_2			
		cmSRRP01IRMSISAD2_2			
		cmSRRP01IRMSISAD3_2			
		cmSRRP01IRMSISAD4_2			
		cmSRRP01IRMSISBC1_2			
		cmSRRP01IRMSISBC2_2			

		cmSRRP01IRMSISBC3_2			
		cmSRRP01IRMSISBC4_2			
		cmSRRP01IRMSISBD1_2			
		cmSRRP01IRMSISBD2_2			
		cmSRRP01IRMSISBD3_2			
		cmSRRP01IRMSISBD4_2			
		cmSRRP01IRMSISCD1_2			
		cmSRRP01IRMSISCD2_2			
		cmSRRP01IRMSISCD3_2			
		cmSRRP01IRMSISCD4_2			
7	MF	MfRH01B	‘B’ Containment Spray Pump Trips		

Appendix D	Crew Turnover Sheet NRC Exam Scenario # 1	Form ES-D-1

Plant Conditions:

- Unit 1 is operating at 100% power, MOC

Equipment Out of Service:

- AFA-P01 was taken out of service last shift for preventative maintenance
    - LCO 3.7.5 Condition A and B has been entered

Planned Shift Activities:

- Maintain 100% power

Operating Test:	NRC	Scenario #	1	Event #	1	Page 9 of 21
Event Description:	SG #2 Flow Transmitter RCD-PDT-125D fails low					

Time	Position	Applicant Actions
Driver Cue: When directed, INITIATE KEY 1, RCD-PDT-125D fails low		
Indications available: • **5A12C LO RC FLOW SG 2 CH TRIP alarm**		
Examiner Note: The following steps are from the B05A Alarm Response Procedure alarm window 5A12C:		
Procedure Note: • **The following Technical Specifications may be impacted:** o **LCO 3.3.1, Reactor Protection System (RPS) Instrumentation - Operating** o **LCO 3.4.1, RCS Pressure, Temperature, and Flow Departure from Nucleate Boiling (DNB) Limits** o **LCO 3.4.4, RCS Loops – MODES 1 and 2** o **LCO 3.4.5, RCS Loops – MODE 3** o **LCO 3.4.6, RCS Loops – MODE 4**		
		Compare ALL of the following instrumentation to confirm the alarm: (B05) • RCA-PDI-115A, R0 SG 2 DP PDT-125A • RCB-PDI-115B, R0 SG 2 DP PDT-125B • RCC-PDI-115C, R0 SG 2 DP PDT-125C • RCD-PDI-115D, R0 SG 2 DP PDT-125D
		If the alarm is confirmed to be invalid, THEN perform the following: • IF BOTH of the following conditions exist: o The cause of the channel trip is unknown o Time for troubleshooting is available THEN notify I&C to troubleshoot the channel setpoint prior to placing channel in bypass. Place ANY affected channel in BYPASS at the associated Plant Protection System cabinet: • SBA-C01, Plant Protection Sys cabinet • SBB-C01, Plant Protection Sys cabinet • SBC-C01, Plant Protection Sys cabinet • SBD-C01, Plant Protection Sys cabinet
Examiner Note: The following steps are from 40OP-9SB02, Plant Protection System Bypass Operations, Section 6.1, Placing PPS Channel Parameters in Bypass:		
Procedure Note: • **PPS bypass operations are performed at the PPS system cabinets SBA-C01, SBB-C01, SBC-C01, SBD-C01.**		
		REFER TO Appendix A – PPS (RPS/ESFAS), Parameters, Indicators, LCOs/TLCOs.
		Select the channel to be placed in bypass: • D
		Select the parameter(s) to be placed in bypass: • 15 – SG-2 LO FLOW
		Request the SM/CRS enter and log the appropriate LCO/TLCO required actions.

Operating Test:	NRC	Scenario #	1	Event #	1	Page 10 of 21
Event Description:	SG #2 Flow Transmitter RCD-PDT-125D fails low					
Time	Position	Applicant Actions				

Technical Specifications: • **LCO 3.3.1, Reactor Protection System (RPS) Instrumentation – Operating, Condition A** o **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**		
		Place the selected parameter(s) in bypass.
		Perform Independent Verifications per 02DP-0ZZ01, Verification of Plant Activities.
Examiner Note: When the crew has placed parameter in bypass and the CRS has addressed Technical Specifications, or at the lead evaluator's discretion, proceed to Event 2, Inadvertent Train 'A' CSAS.		

Operating Test:	NRC	Scenario #	1	Event #	2	Page 11 of 21
Event Description:	Inadvertent Train 'A' CSAS					

Time	Position	Applicant Actions
Driver Cue: When directed, INITIATE KEY 2, Inadvertent Train 'A' CSAS		
Indications available: • **Multiple alarms** • **RCP Low Flow alarms (Loss of NC to RCPs)** • **All Train 'A' Safety Injection components will start and begin spray in containment**		
Examiner Note: The following steps are from 40AO-9ZZ17, Inadvertent PPS-ESFAS Actuations, Section 5.0 CSAS:		
Procedure Note: • **Overriding or anti-pumping equipment disables automatic operation of the equipment on a valid PPS-ESFAS actuation. Depending on plant conditions, this action may make the equipment inoperable.**		
		IF BOTH of the following: • Any Containment Spray Pump is running • The running Containment Spray Pump in 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
Procedure Caution: • **Attempting to close the Containment Spray Header Isolation Valves while the valves are stroking to their actuated position may trip the valve breaker on overload and allow continued spray flow by gravity drain.**		
		Override and close all open Containment Spray Header Isolation Valves
Procedure Note: • **Opening the NC Containment Supply Isolation Valve prior to opening the NC Containment Return Isolation Valves may result in lifting the NC reliefs in Containment.**		
		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
		IF BOTH of the following: • Seal Injection is NOT in service • Cooling water is NOT restored to ANY operating RCP within 3 minutes of the initial loss THEN perform the following: • Ensure the reactor is tripped • Stop all of the RCPs • Isolate controlled bleedoff

Operating Test:	NRC	Scenario #	1	Event #	2	Page 12 of 21
Event Description:	Inadvertent Train 'A' CSAS					
Time	Position	Applicant Actions				

		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
		IF IAA-UV-2, Outside Ctmt Isolation Valve, has closed, THEN perform the following: • IF ANY of the following valves have failed closed: o CHA-UV-516 o CHB-UV-515 o SGA-UV-500P o SGB-UV-500R • THEN place the handswitch(es) for the failed valve(s) to CLOSE • Override and open IAA-UV-2 • Ensure Pressurizer sprays are operating to control pressurizer pressure
		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
		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
		IF RCP Seal Bleedoff isolated to the VCT, THEN override and open the closed RCP Seal Bleedoff Isolation Valves
		IF SG Blowdown is isolated, THEN perform the following: • Inform Chemistry that Blowdown is isolated • PERFORM 40OP-9SG03, Operating the SG Blowdown System, to restore blowdown
		IF a CS Pump needs to be started, THEN perform the following: • IF SIAS has NOT actuated, THEN perform the following: o Inform an operator that the CS Pump breaker will close upon restoration of control power o Direct the operator to cycle control power to the CS Pump breaker(s) • IF SIAS actuated while the CS Pump(s) were stopped, THEN perform the following: o Place the CS Pump handswitch to START and release the switch o Place the CS Pump handswitch to START

Operating Test:	NRC	Scenario #	1	Event #	2	Page 13 of 21
Event Description:	Inadvertent Train 'A' CSAS					
Time	Position	Applicant Actions				

		Perform the following: • PERFORM Appendix C, PPS-ESFAS Check, Step 2 and Step 3, to check that equipment actuated as expected • Document components that failed to actuate in the Control Room Log • Ensure compliance with TS for components that failed to actuate or were overridden
		Ensure compliance with BOTH of the following: • LCO 3.3.5, ESFAS Instrumentation • LCO 3.3.6, ESFAS Logic and Manual Trip
Technical Specifications: • **LCO 3.3.6, Engineered Safety Features Actuation System (ESFAS) Logic and Manual Trip, Condition D** o **Restore channel to OPERABLE status within 48 hours** • **LCO 3.4.16, RCS Leakage Detection Instrumentation, Condition A** o **Perform SR 3.4.14.1 once per 24 hours and restore containment sump monitor to OPERABLE status within 30 days** • **LCO 3.6.3, Containment Isolation Valves, Condition A** o **Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured within 4 hours AND verify the affected penetration flow path is isolated once per 31 days following isolation for isolation devices outside containment and prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days for isolation devices inside containment** • **LCO 3.6.6, Containment Spray System, Condition A** o **Restore containment spray train to OPERABLE status within 72 hours** • **LCO 3.5.3, ECCS – Operating, Condition B (If HPSI/LPSI pumps are overridden and stopped)** o **Restore train to OPERABLE status within 72 hours**		
		IF the CSAS will NOT be reset at this time, THEN PERFORM Appendix C, PPS-ESFAS Check, Step 4.1

Operating Test:	NRC	Scenario #	1	Event #	3	Page 14 of 21
Event Description:	Loss of Letdown					
Time	Position	Applicant Actions				

Examiner Note: The CRS may implement 40AO-9ZZ05, Loss of Charging or Letdown while performing 40AO-9ZZ17, Inadvertent PPS-ESFAS Actuations concurrently. The following steps are from 40AO-9ZZ05, Loss of Charging or Letdown:		
		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
		IF BOTH of the following conditions are met: • The CRS determines seal injection and charging are to be stopped • Pressurizer level is rising and 56% level will be challenged THEN perform the following: • Place all Charging Pumps in PULL TO LOCK • Ensure controlled bleedoff is isolated on all standby RCPs prior to Seal 2 outlet temperature exceeding 250°F • Close the Seal Injection Flow Control Valves • IF the unit is in MODE 1, 2, or 3, THEN ensure compliance with LCO 3.4.9, Pressurizer • PERFORM Appendix C, Extended Operations Without Letdown, to adjust PZR level, Seal Injection, or VCT level
Examiner Note: When the crew has changed Blowdown constants and the CRS has addressed Technical Specifications, or at the lead evaluators discretion, proceed to Event 4, 'A' MFP Trip.		

Operating Test:	NRC	Scenario #	1	Event #	4	Page 15 of 21
Event Description:	'A' MFP Trip					

Time	Position	Applicant Actions
Driver Cue: When directed, INITIATE KEY 4, 'A' MFP Trip		
Indications available: • **6A03A FWPT A TRIP alarm** • **Reactor Power Cutback**		
Examiner Note: The following steps are from 40AO-9ZZ09, Reactor Power Cutback (Loss of Feedpump		
		IF reactor power was 74% or more, THEN perform the following: • Check that RPCB LOFP has actuated • Check that CEA subgroups 4, 5, and 22 have inserted
		IF reactor power was less than 74%, THEN check that CEAs are inserting as needed to match reactor and turbine power
		Check Main Turbine Setback – Runback has lowered Main Turbine load to 65% or less
		IF any CEA deviates from its subgroup by greater than 6.6 inches, AND ANY CEA Reg Group are below the Transient Insertion Limits, THEN perform the following: • Trip the reactor • GO TO SPTAs
		Direct the STA to PERFORM Appendix D, Status Check RPCB Loss of Feedpump
		IF BOTH Feed Pumps trip, THEN perform the following: • Trip the reactor • GO TO SPTAs
		Raise the Speed Bias on the operating Main Feed Pump to zero or more
		Restore and maintain SG levels 45-60% NR
		Check that BOTH of the following are being maintained in automatic: • RRS is adjusting CEAs to restore Tave/Tref +/- 3°F • SBCS opens if required to control main steam pressure at setpoint
		IF steaming to atmosphere, THEN inform RP and the RMS technician
		IF condenser hotwell level is less than 41 inches, THEN direct an operator to maintain the condenser hotwell level 41 inches or more using ANY of the following: • Hotwell makeup and reject controllers • CDN-HCV-154 • CDN-HCV-155
		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
		Perform a lamp test to ensure the LOAD LIMIT LIMITING light illuminates
		Reduce the load limit potentiometer until the potentiometer has positive control of the Main Turbine control valves

Operating Test:	NRC	Scenario #	1	Event #	4	Page 16 of 21
Event Description:	'A' MFP Trip					

Time	Position	Applicant Actions
		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
		Monitor CPC Point ID 0187, CPC ASI – Aux Trip
		IF ALL of the following conditions are met: • CPC Pt ID 0187 indicates greater than +/- 0.45 • CPC Pt ID 0187 is trending to +/- 0.5 • CPC Aux Trip on ASI is still possible THEN perform the following: • Trip the reactor • GO TO SPTAs
		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: To override the Pressurizer heaters, Pressurizer pressure needs to be >2225 psia. Also, the crew will use non-class backup heaters and may or may not energize class backup heaters.		
		Adjust Feedwater Control System DP as needed to maintain feed stability using Feedwater Pump Turbine Speed Setpoint Control: • FWPT A: SGN-FIC-1107 • FWPT B: SGN-FIC-1108
		IF COLSS is operable, THEN perform the following: • IF DNBR POL is being exceeded, THEN declare LCO 3.2.4, DNBR, NOT met and comply with the LCO actions • IF LPD POL is being exceeded, THEN declare LCO 3.2.1, LHR, NOT met and comply with the LCO actions
Technical Specifications: • **During validations only LCO 3.2.4 Departure From Nucleate Boiling Ratio (DNBR) was exceeding its Technical Specification value** o **LCO 3.2.4 Departure From Nucleate Boiling Ratio (DNBR), Condition A** ▪ **Restore the DNBR to within limit within 1 hour**		
		IF the post cutback xenon build-in results in Tavg dropping 5°F below Tref, THEN lower turbine load as necessary to maintain the Tavg/Tref mismatch between -5°F and -3°F
Examiner Note: When the crew has placed the Pressurizer in Boron Equalization and the CRS has addressed Technical Specifications, or at the lead evaluators discretion, proceed to Event 5, ESD Inside of Containment.		

Operating Test:	NRC	Scenario #	1	Event #	5,6,7	Page 17 of 21
Event Description:	ESD Inside of Containment / MSIS fails to auto actuate / 'B' Containment Spray Pump trip					

Time	Position	Applicant Actions
Driver Cue: When directed, INITIATE KEY 5, ESD Inside of Containment		
Indications available: • **Reactor power rising** • **Containment pressure rising** • **Steam Generator pressures lowering**		
Examiner Note: The Reactor will automatically trip on High Containment pressure if the crew does not manually trip before exceeding setpoints. When the Reactor trips, the 'C' Main Condenser Vacuum breaker will fail open causing the 'B' MFP to trip. The following steps are from 40EP-9EO01, Standard Post Trip Actions:		
		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

		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

		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

Operating Test:	NRC	Scenario #	1	Event #	5,6,7	Page 18 of 21
Event Description:	ESD Inside of Containment / MSIS fails to auto actuate / 'B' Containment Spray Pump trip					

Time	Position	Applicant Actions

		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

		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

		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

Operating Test:	NRC	Scenario #	1	Event #	5,6,7	Page 19 of 21
Event Description:	ESD Inside of Containment / MSIS fails to auto actuate / 'B' Containment Spray Pump trip					

Time	Position	Applicant Actions
Critical Task # 1: **When the Main Steam Isolation setpoints are exceeded, ensure Main Steam Isolation has actuated within 15 minutes of exceeding the MSIS setpoint.** **SAT / UNSAT**		

		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

		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
		  • (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

Critical Task # 2: **When the Containment Spray Actuation setpoint is exceeded, ensure adequate Containment Cooling to meet Safety Function requirements within 30 minutes of exceeding the CSAS setpoint.** **SAT / UNSAT**		
		Diagnose the event(s) in progress and GO TO the appropriate procedure
Examiner Note: The CRS will determine that an ESD inside of Containment is in progress. Stabilization of T_{COLD} will most likely have been completed during SPTAs. The CRS will enter 40EP-9EO05, ESD. The following steps are from 40EP-9EO05, ESD:		
		Monitor the 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

Operating Test:	NRC	Scenario #	1	Event #	5,6,7	Page 20 of 21
Event Description:	ESD Inside of Containment / MSIS fails to auto actuate / 'B' Containment Spray Pump trip					

Time	Position	Applicant Actions
		Ensure the event is being classified
		Open the Placekeeper and enter the EOP Entry Time
		IF pressurizer pressure drops to the SIAS setpoint, THEN check that SIAS is actuated.
		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
		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: o Appendix 10, Charging Pump Alternate Suction to the RWT / Restoration o Appendix 11, Charging Pump Alternate Suction to the SFP / Restoration • 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
		Ensure that MSIS is actuated.
		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.
		IF ANY RCPs are operating, THEN perform Appendix 16, RCP Trip Criteria and check the RCP operating limits satisfied.
		Determine the most affected Steam Generator by considering ALL of the following: • High steam flow from Steam Generator • Lowering steam generator pressure • Lowering steam generator level • Lowering RCS cold leg temperature
		IF the break is NOT isolated by MSIS, 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 40EP-9EO10-114, Appendix 114 - Steam Generator 2 Isolation:		
		Close BOTH ADVs on SG 2: • SGB-HV-185 • SGA-HV-179
		Close BOTH MSIVs on SG 2: • SGE-UV-171 • SGE-UV-181
		Ensure SGE-UV-183, SG 2 MSIV Bypass Valve, is closed

		Close BOTH SG 2 Economizer FIWVs: • SGA-UV-177 • SGB-UV-137
		Close BOTH SG 2 Downcomer Isolation Valves: • SGA-UV-175 • SGB-UV-135
		Close BOTH SG 2 Blowdown Containment Isolation Valves: • SGA-UV-500S • SGB-UV-500R
		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
		Check that the Steam Generator Safety Valves are closed
		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
		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
Examiner Note: When T_{COLD} is stabilized and SG #2 has been isolated, or at lead evaluator's discretion, the scenario may be terminated		

Appendix D	Scenario Outline	Form ES-D-1

Facility: Palo Verde	Scenario: 2	Test: 2020 NRC Exam
Examiners:	Operators:	
Initial Conditions: 50% power, MOC, AFA-P01 OOS		
Turnover: Maintain 50% power		

Event Number	Event Type*	Event Description
1	I (BOP)	Feed flow transmitter FT-1112X fails low
2	TS (CRS)	Class Battery Charger 'D' Trip
3	I (OATC)	VCT Level Transmitter CHN-LT-227 fails low
4	C (CRS, BOP)	Loss of PW Pump, standby pump FTAS
5	C (All), TS (CRS)	Dropped CEA
6	C (CRS, OATC)	2nd Dropped CEA, manual Reactor trip
7	C (CRS OATC)	After the Reactor trip, a Loss of Offsite Power occurs, and PBB-S04 Normal Supply Breaker fails to auto open
8	M	Loss of all feed • Train 'A' EDG trips (no power to AFN-P01) • AFB-P01 Seized Shaft
*(N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor, (TS) Technical Specification		

Actual	Target Quantitative Attributes
9	Total malfunctions (5-8)
3	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	EOP contingencies requiring substantive actions (0-2)
2	Critical tasks (2-3)

2020 NRC Exam Scenario # 2 Overview	
Event 1	Feed Flow transmitter FT-1112X will fail low. The crew will address the ARP and the failed transmitter will be placed in maintenance and the 3 element lockout will be removed. The crew will restore Feedwater flow to normal.
Event 2	Class Battery Charger ‘D’ will trip. The crew will address the ARP and determine the status of the Battery Charger and the CRS will address Technical Specifications.
Event 3	VCT Level Transmitter CHN-LT-227 will fail low. The crew will address the ARP and take action to re-align Charging Pump suction aligned to the VCT.
Event 4	The running Plant Cooling Water pump will trip and the standby pump will fail to auto-start. The crew will address the ARP and the CRS will enter 40AO-9ZZ03, Loss of Cooling Water. The crew will take action to start the standby pump manually.
Event 5	CEA 14 will drop. The CRS will enter 40AO-9ZZ11, CEA Malfunctions, and direct the crew to perform a downpower. The OATC will place CEDMCS in “Standby”. The downpower performed will raise Tavg 3°F greater than Tref. The CRS will address Technical Specifications for the deviated CEA.
Event 6	A second CEA will drop requiring a manual Reactor trip. The CRS will enter 40EP-9EO01, Standard Post Trip Actions
Event 7	After the Reactor trip, there will be a Loss of Offsite Power. Train ‘A’ EDG will trip, causing a loss of Class Bus PBA-S03. PBB-S04 Normal Supply Breaker fails to auto open. The crew will take action to open the supply breaker and the ‘B’ EDG will load onto the bus.
Event 8	AFB-P01 will trip on a seized shaft. The CRS will enter 40EP-9EO09 Functional Recovery. The crew will align Train ‘B’ EDG to PBA-S03 and AFN-P01 will be started to restore Feedwater.

Critical Task # 1: Restore power to one Class 4kV Bus prior within 15 minutes of a Loss of All Offsite and Onsite AC Power

Safety Significance: The crew will have to take manual action to restore power to one Class 4kV Bus within 15 minutes to prevent a Site Area Emergency declaration. A Site Area Emergency initiates a significant movement of people throughout the state and levels of public concern that may result in injuries and possible death

Cueing: The crew will have indication of Blackout conditions with 0 amp indications on both Class 4kV Buses. There will be a LOP annunciator on B05 and ERFDADS and there will be procedural direction during SPTAs.

Measurable Performance Indicator: The crew will restore power to PBB-S04 by opening the Normal Supply breaker to PBB-S04.

Performance Feedback: When the crew opens the PBB-S04 Supply breaker the breaker light on B01 will turn green, there will be 4kV voltage indication on PBB-S04, various alarms will clear on B01 annunciator panel, and partial lighting will restore in the control room.

***This Critical Task and the 15 minute time requirement meets Operations Management expectations for an Operating Crew**

Critical Task # 2: Restore power to Train 'A' Class 4kV Bus PBA-S03 prior to exiting MVAC-2, DGs, and restore feed to at least one SG prior to exiting HR-1, SG with no SI

Safety Significance: The crew will have to restore feed water to at least one SG to ensure adequate inventory in the SG(s) to remove decay heat from the core.

Cueing: The crew will have indication of a complete loss of feed water due to the loss of offsite power tripping both Main Feedwater Pumps, the loss of power to PBB-S03 (loss of AFN-P01), the seized shaft on AFB-P01, and the OOS AFA-P01. There will also be indication provided by all feed water flow indicators indicating 0 gpm to each SG.

Measurable Performance Indicator: The crew will have to close breakers to connect the 'B' EDG to PBA-S03, start AFN-P01, and open downcomer control valves to commence feeding at least one SG.

Performance Feedback: When the crew has restored power to PBA-S03, started AFN-P01, and aligned a feed path to at least one SG, the crew will have indication of feed flow to at least one SG as well as a rising trend on SG level(s), and depending on feed flow rate, a lowering trend on RCS temperature.

***This Critical Task and the restoration of power and feed prior to exiting FRP Success Paths meets Operations Management expectations for an Operating Crew**

NOTE: (Per NUREG-1021 Appendix D) 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

Driver Setup Instructions	
	Reset to IC-16
	Run scenario file “NRC Scenario # 2”
	Hang OOS tags on AFA-P01
	After taking the simulator to ‘Run’, ensure that the FWCS Process trouble alarm is acknowledged and reset through the DFWCS screen

Event	Type	Malf #	Description	Final	Initiator
		rfFW59	AFA-P01 OOS	TRIP	
		rfFW60B		OFF	
		rfFW57		CLOSE	
		crB4FW08AFAHV32_1		OPEN	
		crB4FW08AFAUV37_1		OPEN	
		crB5FW08AFCHV33_1		OPEN	
		crB5FW08AFCUV36_1		OPEN	
		crB4MS13SGAUV134_1		OPEN	
		crB4MS13SGAUV138_1		OPEN	
1	MF	cmTRFW04SGNFT1112X_1	Feed Flow Transmitter 1112X Fails Low	Ramp to 0	Key 1
2	MF	mfED15D	Class 'D' Battery Charger Trip		Key 2
3	MF	cmTRCV05CHNLT227_1	CHN-LT-227 fails low	0	Key 3
		crB4CV05CHNUV501_1	Remote Operation of UV-501, UV-514, and HV-536	OPEN	Key 11
		crB4CV08CHNUV514_1		OPEN	Key 12
		crB4CV08CHEHV536_1		OPEN	Key 13
4	MF	cmCPSW01PWNP01B_2	Loss of PW Pump, Standby FTAS		Key 4
		cmCPSW01PWNP01A_5			
5	MF	mfRD02A	Dropped CEA #14	100	Key 5
6	MF	mfRD02K	2nd Dropped CEA #57	100	Key 6
7	MF	mfED02	Loss of Offsite Power & ‘A’ EDG Trip		Rx Trip +5 sec
		mfEG02			
		mfEG06A			
7	MF	cmBKED06PBBS04K_1	PBB-S04 Supply Breaker fails to Open on LOP		
8	MF	cmCPFW07AFBP01_2	AFB-P01 Seized Shaft		

Appendix D	Crew Turnover Sheet NRC Exam Scenario # 2	Form ES-D-1

Plant Conditions:

- Unit 1 is operating at 50% power, MOC

Equipment Out of Service:

- AFA-P01 was taken out of service last shift for preventative maintenance
    - LCO 3.7.5 Condition A and B has been entered

Planned Shift Activities:

- Maintain 50% power

Operating Test:	NRC	Scenario #	2	Event #	1	Page 7 of 20
Event Description:	Feed flow transmitter FT-1112X fails low					
Time	Position	Applicant Actions				

Driver Cue: When directed, INITIATE KEY 1, FT-1112X fails low		
Indications Available: • **6A06A FWCS PROCESS TRBL alarm**		
Examiner Note: The following steps are from the B06A Alarm Response Procedure window 6A06A:		
		SFYS2 – Feedwater Control System Process Trouble • Check Steam Generator Water levels • Select the alarm manager by clicking the process button • Determine the alarm level • GO TO the appropriate alarm group based on displayed alarm level
		If ANY of the following are in alarm: • (x)FWCS1:B12, SG 1 Total Feedwater Flow 8% Deviation • (x)FWCS2:B12, SG 2 Total Feedwater Flow 8% Deviation THEN check ALL of the following at the DFWCS to validate the alarm • FT1112X, Transmitter to Total FW Flow to S/G 1 • FT1112Y, Transmitter to Total FW Flow to S/G 1 • FT1122X, Transmitter to Total FW Flow to S/G 2 • FT1122Y, Transmitter to Total FW Flow to S/G 2
		If ANY of the following are at fault: • FT1112X, Transmitter to Total FW Flow to S/G 1 • FT1112Y, Transmitter to Total FW Flow to S/G 1 • FT1122X, Transmitter to Total FW Flow to S/G 2 • FT1122Y, Transmitter to Total FW Flow to S/G 2 • FT1011, S/G 1 Line 1 Flow Transmitter • FT1012, S/G 1 Line 2 Flow Transmitter • FT1021, S/G 2 Line 1 Flow Transmitter • FT1022, S/G 2 Line 2 Flow Transmitter THEN perform the following at the DFWCS: • Place the faulty transmitter in Maintenance • Adjust the affected Steam Generator level setpoint to match the actual affected Steam Generator level • Remove the DFWCS Three Element lockout • Reset the DFWCS alarm at the Process Alarm page
Procedure Note: • **Failure of feedwater flow transmitter will cause JSCALOR to be unavailable**		
		• If the deviation is due to a failed transmitter, THEN evaluate BOTH of the following to determine if JSCALOR is impacted: o JSCALORC o NKBDELTC
Examiner note: When the crew has placed FT-1112X in maintenance or at the lead evaluator's discretion, proceed to Event 2, 'D' Class Battery Charger trip		

Operating Test:	NRC	Scenario #	2	Event #	2	Page 8 of 20
Event Description:	'D' Class Battery Charger trip					

Time	Position	Applicant Actions
Driver Action: When directed, INITIATE KEY 2, 'D' Class Battery Charger trip		
Indications Available: • **1A05C 125V 1E CC M44 CHGR D PNL D24 TRBL alarm** • **'D' Class Battery Charger output – 0 Amps**		
Examiner Note: The following steps are from the B01A Alarm Response Procedure window 1A05A:		
Procedure Note: • **Battery Charger current is limited to less than 300 amps. Normal Bus voltage is 129 to 138 Vdc**		
		Confirm alarm by observing ALL of the following • PKD-EI-M44, 125V DC Bus D voltmeter (B01) • PKD-II-M4404, Battery Charger D ammeter (B01) • PKD-M4401, 125 VDC Relaying and Metering Cubicle ground indication
		• Direct an Auxiliary Operator to investigate the cause of the alarm
Driver Cue: When contacted as the Control Building Operator to investigate the 'D' Class Battery Charger, wait 3 minutes and inform the CR: • **"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**		
		If BOTH of the following: • PKD-H14, Battery Charger D is inoperable • PKD-H14, Battery Charger D is required to satisfy LCO 3.8.4 THEN notify Electrical Maintenance to perform 32ST-9PK01, 77-Day Surveillance Test of Station Batteries within 2 hours.
Technical Specifications: • **LCO 3.8.4, DC Sources – Operating, Condition A** o **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**		
Examiner note: When the CRS has addressed Technical Specifications or at the lead evaluator's discretion, proceed to Event 3, VCT Level Transmitter CHN-LT-227 fails low		

Operating Test:	NRC	Scenario #	2	Event #	3	Page 9 of 20
Event Description:	VCT Level Transmitter CHN-LT-227 fails low					

Time	Position	Applicant Actions
Driver Action: When directed, INITIATE KEY 3, VCT Level Transmitter CHN-LT-227 fails low		
Indications Available: • **3A08B VCT LVL LO-LO alarm** • **Valve failures cause a boration of the RCS**		
Examiner Note: The following steps are from the B03A Alarm Response Procedure window 3A08B:		
		Check BOTH of the following: • CHN-LI-226, Volume Control Tank Level • ERFDADS or PC point CHL227
		IF the SM/CRS directs operating with one Charging Pump, THEN place one Charging Pump in operation per 40OP-9CH01, CVCS Normal Operations
		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: o CHN-UV-501, VCT Outlet, begins to stroke closed o 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
		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)

Operating Test:	NRC	Scenario #	2	Event #	3	Page 10 of 20
Event Description:	VCT Level Transmitter CHN-LT-227 fails low					
Time	Position	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)"**		
		Compare trends on ERFDADS for all of the following: • CHL226 • CHL227 • CHP225
		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
Procedure Note: • **De-energizing MCC Breaker NHN-M7209, Cktbkr for Charging Pump Suct Valve CHE-HV-536, may impact ANY of the following:** o **TLCO T3.1.100, Flow Paths – Shutdown** o **TLCO T3.1.101, Flow Paths – Operating**		
		Direct a Nuclear Operator to open MCC Breaker NHN-M7209, Cktbkr for Charging Pump Suct Valve CHE-HV-536
Driver Action: When directed to open breakers for UV-501, 514, and 536, insert the following keys associated with each valve: • **CHN-UV-501 – Key 11** • **CHN-UV-514 – Key 12** • **CHE-UV-536 – Key 13**		
		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 • 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-upto 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 • WHEN the Nuclear Operator confirms Step 4.3.1 is complete, THEN release CHN-HS-514, BORIC ACID MAKE-UP TO CHRG PMPS VLV
Examiner note: When the crew has de-energized all CVCS valves or at the lead evaluator's discretion proceed to Event 4, Loss of PW Pump, standby pump FTAS		

Operating Test:	NRC	Scenario #	2	Event #	4	Page 11 of 20
Event Description:	Loss of PW Pump, standby pump FTAS					
Time	Position	Applicant Actions				

Driver Action: When directed, INITIATE KEY 4, Loss of PW Pump, standby pump FTAS		
Indications Available: • **7A05B PCW DSCH PRESS HI-LO alarm** • **'B' Plant Cooling Water Pump brighter than normal green indicating light**		
Examiner Note: The following steps are from the B07A Alarm Response Procedure window 7A05B:		
		Check PWN-PI-13, Plant Cooling Water Supply Pressure, to confirm the alarm (B07)
		IF the standby pump has NOT started, THEN start the standby PW pump: (B07) • PWN-P01A, PWN-HS-0005, Plant Clg Water Pump A
		If the pump tripped on electrical fault, THEN direct an Auxiliary Operator to determine the cause at the switchgear • PWN-P01A, 4.16KV Bus NBN-S01H
Driver Cue: When directed to go investigate the 'B' PW Pump, wait 5 minutes and report: • **"The 'B' PW pump is not running and the motor is warm to the touch"** **When Directed to go to the 'B' PW Pump breaker, wait 3 minutes and report,** • **'The 'B' PW pump breaker is tripped and there is an 86 lockout"**		
Examiner Note: The CRS may enter 40AO-9ZZ03, Loss of Cooling Water, and direct starting the 'A' Plant Cooling Water instead of using the ARP. The following steps are from 40AO-9ZZ03, Loss of Cooling Water:		
		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
Examiner note: When the 'A' Plant Cooling Water pump has been started or at the lead evaluator's discretion proceed to Event 5, Dropped CEA		

Operating Test:	NRC	Scenario #	2	Event #	5	Page 12 of 20
Event Description:	Dropped CEA					

Time	Position	Applicant Actions
Driver Action: When directed, INITIATE KEY 5, Dropped CEA		
Indications Available: • **Reactor power lowering** • **Multiple alarms** • **CEA 14 rod bottom light**		
Examiner Note: The following steps are from 40AO-9ZZ11 CEA Malfunctions:		
		Check that at least one CEA is deviating from its group by greater than 6.6 inches
Procedure Note: • **Step 4 is NOT applicable if LCO 3.1.10, Special Test Exception, has been invoked during low power physics testing**		
		IF one CEA is deviating from its group by greater than 6.6 inches, AND any CEA Reg Group is below the Transient Insertion Limit, THEN perform the following: • Trip the Reactor • GO TO 40EP-9EO01, Standard Post Trip Actions
		IF two or more CEAs are deviating by greater than 9.9 inches from their associated group, then perform the following: • Trip the Reactor • GO TO 40EP-9EO01, Standard Post Trip Actions
		Ensure CEDMCS is in “STANDBY” “SB”
		Direct an operator to perform Appendix E, Initial Actions
		Record BOTH of the following: • CEA deviation time • Initial (pre-deviation) power level
Procedure Note: • **If the reason for the CEA deviation is known (e.g. ACTM actuation), an attempt to realign the CEA can be made. However due to the time limitations for a power reduction, continuing with the procedure is required until the CEA deviation is less than 6.6 inches.**		
		IF the CEA deviation is less than 9.9 inches, AND it can be realigned quickly without requiring troubleshooting, THEN concurrently perform BOTH of the following: • Align the deviated CEA with its group • Continue with the procedure until the CEA is aligned
Procedure Note: • **The intent of step 12 is to not require a power reduction if only one CEA has slipped and remains in the top ten inches of the core. If this is the case, the conditions in Step 12 are required to be met continuously throughout the event.**		

Operating Test:	NRC	Scenario #	2	Event #	5	Page 13 of 20
Event Description:	Dropped CEA					
Time	Position	Applicant Actions				

		If only ONE CEA is misaligned from its group by greater than 6.6. inches, AND ALL of the following conditions are continuously met from the time of the deviation: • All CEAs remain above 142.5" withdrawn by pulse counter, • All CEAs remain above 140.1" withdrawn by RSPT indication, • Reactor Power is > 95% Rated Thermal Power, • COLSS is in service • All CEACs in service • COLSS Azimuthal Power Tilt is less than 3.0% THEN GO TO Step 25
Procedure Note: • **The effects of a boration to the RCS may take 4 to 6 minutes to be seen, therefore initiating a boration (Step 16) should be done as soon as possible**		
		Perform the following to start a power reduction within 10 minutes of the intial CEA deviation: • Log the start time for power reduction • Lower the turbine load to raise T_{AVE} 3°F greater than T_{REF}
		Determine the required power reduction based on initial power from ONE of the following: • Greater than 45% to 70% - requires a 10% power reduction
		Calculate the number of gallons of boric acid needed (STA reactivity worksheet) for the downpower
		PERFORM Appendix J, Boration for Power Reduction to commence borating to the charging pump suction using BOTH of the following criteria: • Minimum rate of 35 gpm • Amount determined in Step 15
		Reduce reactor power to comply with the power reduction requirements of Appendix B, Core Power Reduction After a CEA Deviation
		Adjust turbine load to maintain T_{AVE} 3°F (+0.5°F/-0.0°F) greater than T_{REF}
Examiner Note: The following steps are from 40AO-9ZZ11 CEA Malfunctions, Appendix E, Initial Actions:		
		Direct an operator to go to the CEDM Control Room and perform the following: • Report all abnormal indications on the CEDM Control Cabinets • PERFORM 40AL-9SF01, Local Alarm Panel J-SFN-C01D Responses, for existing alarms
Driver Cue: When directed to go to the CEDMCS room to investigate the dropped CEA, wait 5 minutes and report: **"There is a CWP alarm at the local annunciator panel, I will perform the Alarm Response Procedure"**		

Operating Test:	NRC	Scenario #	2	Event #	5	Page 14 of 20
Event Description:	Dropped CEA					
Time	Position	Applicant Actions				

		Inform ALL of the following of the CEA malfunction: • I&C • Rx Engineering • SM
		Request a situation specific maneuvering game plan from Reactor Engineering
		If reactor power is greater 35% and a down power will be performed, THEN initiate boron equalization: • Override and energize all pressurizer backup heaters • Lower the setpoint on RCN-PIC-100, Pressurizer Pressure Controller to 2220 psia
Examiner Note: The following steps are from 40AO-9ZZ11 CEA Malfunctions, Appendix J, Boration for Power Reduction:		
		Set the boric acid makeup flow rate on CHN-FIC-210Y, Boric Acid Makeup to VCT Flow Control, to between 35 and 40 gpm
		Set the “Target” makeup volume on CHN-FQIS-210Y, Boric Acid Makeup Totalized Flow Control, to the amount determined by the CRS
		Place CHN-HS-210, Makeup Mode Select Switch, in BORATE
		Check one BAMP is running
		Ensure CHN-UV-527, Makeup to CHRG PMPS (VCT Bypass), is open
		IF the left pushbutton on CHN-FQIS-210Y indicates END, THEN press the END pushbutton
		IF the left pushbutton on CHN-FQIS-210Y indicates RESET, THEN press the RESET pushbutton
		Press the START pushbutton on CHN-FQIS-210Y
		Check for BOTH of the following: • CHN-FIC-210X indicates no RMW flow • Proper flow indicated on CHN-FIC-210Y
Examiner note: When the crew has lowered turbine load to raise T_{AVE} 3°F greater than T_{REF} or at the lead evaluator’s discretion proceed to Event 6, 2nd Dropped CEA		

Operating Test:	NRC	Scenario #	2	Event #	6,7,8	Page 15 of 20
Event Description:	LOOP / PBB-S04 Normal Supply Breaker fails to auto open / LOAF					

Time	Position	Applicant Actions
Driver Action: When directed, INITIATE KEY 6, 2nd Dropped CEA		
Examiner Note: When the 2nd CEA drops the crew will manually trip the Reactor. The following steps are from 40EP-9EO01, Standard Post Trip Actions:		
		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

		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

Examiner Note: The PBB-S04 Normal Supply breaker will fail to open. The RO will use the Supplemental SPTA Actions (DG Running With Output Breaker Open) to open the breaker and energize the bus. The following steps are from 40EP-9EO10-115, Appendix 115: SPTA Supplement Actions – DG Output Breaker Hard Card Development:		

		IF PBA-S03 or PBB-S04 is NOT powered from offsite power, AND the associated DG is running with its output breaker open, THEN perform the following:
		• Check BOTH of the following:
		  • DG frequency between 59.9 – 60.5 Hz
		  • DG voltage between 4080 – 4300V
		• Ensure BOTH of the following supply breakers on the affected bus are open (B01)
		  • Normal Supply breaker
		  • Alternate Supply breaker

Operating Test:	NRC	Scenario #	2	Event #	6,7,8	Page 16 of 20
Event Description:	LOOP / PBB-S04 Normal Supply Breaker fails to auto open / LOAF					
Time	Position	Applicant Actions				

Critical Task # 1: **Restore power to one Class 4kV Bus prior within 15 minutes of a Loss of All Offsite and Onsite AC Power** **SAT / UNSAT**		

		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

		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

		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

Operating Test:	NRC	Scenario #	2	Event #	6,7,8	Page 17 of 20
Event Description:	LOOP / PBB-S04 Normal Supply Breaker fails to auto open / LOAF					
Time	Position	Applicant Actions				

		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

		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

Operating Test:	NRC	Scenario #	2	Event #	6,7,8	Page 18 of 20
Event Description:	LOOP / PBB-S04 Normal Supply Breaker fails to auto open / LOAF					
Time	Position	Applicant Actions				

		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
		  • (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

		Diagnose the event(s) in progress and GO TO the appropriate procedure
Examiner Note: The CRS will diagnose Functional Recovery entry due to no Feedwater and the MVAC Safety Function not being met. Per MVAC-2 the crew will align power to PBA-S03 with the 'B' EDG and start AFN-P01. The following steps are from 40EP-9EO09, Functional Recovery:		
		Ensure the event is being classified
		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
		IF any RCPs are operating, THEN PERFORM Appendix 16, RCP Trip Criteria, and check the RCP operating limits satisfied
		Perform the following: • Ensure that the Steam Generator Sample Valves are open • Direct Chemistry to PERFORM 74DP-9ZZ05, Abnormal Occurrence Checklist
		Perform Appendix 117, Placing Hydrogen Analyzers in Service
		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
		Perform Section 5.0, Safety Function Status Check, for those success paths in use
		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
		WHEN reactor power is $2x10^{-6}$% or less, THEN PERFORM Appendix 8, Boron Dilution Alarm Check
The Following steps are from Success Path MVAC-2, Diesel Generators:		

Operating Test:	NRC	Scenario #	2	Event #	6,7,8	Page 19 of 20
Event Description:	LOOP / PBB-S04 Normal Supply Breaker fails to auto open / LOAF					

Time	Position	Applicant Actions
Procedure Note: • **Appendix 51, Electric Plant Single Line Diagram, is available as a reference when restoring the electric plant**		
		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, THEN GO TO step 11
		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, THEN PERFORM ONE of the following: • Appendix 58, Cross-Tie DG B to PBA-S03
The following steps are from 40EP-9EO10-058, Appendix 58 - Cross-Tie DG B to PBA-S03:		
		Direct an operator to PERFORM Attachment 58-A, Disable PBA-S03 Breakers
		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
		Ensure that PBA-S03B, Diesel Generator A 4.16 kV Breaker, is open
		Place ALL of the following in “PULL TO LOCK”: • Train A Containment Normal ACUs • Train A CEDM ACUs
		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”
		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 Normal Supply • Place synchronizing switch PBA-SS-S03K to “OFF”
		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: • Battery Charger A – PHA-M3523, “Battery Charger “A” E-PKA-H11” • Battery Charger C – PHA-M3111, “Battery Charger “C” E-PKC-H13” • Battery Charger AC – PHA-M3326, “Battery Charger “AC” E-PKA-H15”
Procedure Caution: • **The Diesel Generator’s two hour load limit of 6050 kW can be exceeded by closing in too many loads**		

Operating Test:	NRC	Scenario #	2	Event #	6,7,8	Page 20 of 20
Event Description:	LOOP / PBB-S04 Normal Supply Breaker fails to auto open / LOAF					

Time	Position	Applicant Actions
		Perform the following: • Stop non-essential loads on PBB-S04 • Reset and start loads on PBA-S03 as required
Critical Task # 2: **Restore power to Train 'A' Class 4kV Bus PBA-S03 prior to exiting MVAC-2, DGs, and restore feed to at least one SG prior to exiting HR-1, SG with no SI** **SAT / UNSAT**		
Examiner Note: The following steps are from Appendix 117, Placing Hydrogen Analyzers in Service:		
		Perform the following to place Hydrogen Analyzer Train A in service: • 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
		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: When power has been restored to PBB-S03, the crew starts AFN-P01 and commences feeding at least one Steam Generator, or at lead evaluator's discretion, the scenario may be terminated		

Appendix D	Scenario Outline	Form ES-D-1

Facility: Palo Verde	Scenario: 3	Test: 2020 NRC Exam
Examiners:	Operators:	
Initial Conditions: 100%, MOC, AFA-P01 OOS		
Turnover: Maintain 100% power		

Event Number	Event Type*	Event Description
1	I (CRS, BOP), TS (CRS)	Containment Pressure Transmitter HCA-PI-351A fails high
2	I (OATC)	Pressurizer Pressure Transmitter 100X fails low
3	C (CRS, OATC)	Letdown Line Leak
4	C (CRS, OATC)	Extended Loss of Letdown
5	C (CRS, BOP)	'C' Condenser Air Removal Pump Trip
6	C (CRS, OATC), TS (CRS)	RCS Leak
7	M (All)	SBLOCA
8	C (OATC)	'B' HPSI sheared shaft, 'A' HPSI fails to auto-start
*(N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor, (TS) Technical Specification		

Actual	Target Quantitative Attributes
7	Total malfunctions (5-8)
1	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	EOP contingencies requiring substantive actions (0-2)
2	Critical tasks (2-3)

2020 NRC Exam Scenario # 3 Overview	
Event 1	Containment Pressure Transmitter HCA-PI-351A will fail high. The crew will address the ARP and validate actual Containment pressure using alternate indications. The CRS will address Technical Specifications for the failed transmitter and direct the crew to bypass the affected RPS bistables.
Event 2	Pressurizer Pressure Transmitter 100X will fail low. The crew will address the ARP and validate the failed transmitter. The crew will restore Pressurizer pressure control by transferring the Pressurizer pressure control channel selector to channel 'Y'.
Event 3	A 30 gpm leak will occur in the Auxiliary Building. The crew will address the ARP and 40AO-9ZZ02 Excessive RCS Leakrate and isolate Letdown.
Event 4	The CRS will enter 40AO-9ZZ05 Loss of Charging or Letdown and direct the crew to establish conditions for extended loss of Letdown.
Event 5	'C' Condenser Air Removal Pump will trip on overcurrent. The crew will address the ARP, start the 'D' Condenser Air Removal Pump and align the suction to the Main Condenser.
Event 6	A small 25 gpm RCS leak will occur. The CRS will enter 40AO-9ZZ02, Excessive RCS Leakrate. After addressing Technical Specifications, the leak will increase and the CRS will direct the crew to start all available Charging Pumps and isolate Letdown. The leakrate will exceed Charging pump capacity and the CRS will direct a manual Reactor trip.
Event 7	The CRS will enter 40EP-9EO01, Standard Post Trip Actions. When SIAS actuates, the 'B' HPSI pump will have a sheared shaft and 'A' HPSI will fail to auto-start. After SPTAs are complete, the CRS will transition to 40EP-9EO03 and direct the crew to place Hydrogen Analyzers in service.

Critical Task # 1: When the Safety Injection Actuation setpoint is exceeded, ensure adequate Safety Injection flow to meet Safety Function requirements within 30 minutes of exceeding the SIAS setpoint.

Safety Significance: This is based on a degraded core cooling system. Inadequate SI flow may result in loss of Subcooled margin and/or core uncovery, and increases the risk of core damage. The 30 minute time requirement is based on 15 minutes (time requirement to complete Safety Function Status Checks) to diagnose the loss of HPSI flow, and 15 minutes for mitigating actions

Cueing: Board indications will provide the initial cue that the crew has lost the required SI flow. Procedural direction will provide the cue to initiate SI flow. Safety Function Status Check is also a possible cue to the crew that they have lost a safety function.

Measurable Performance Indicator: The crew will restore SI flow by manually starting the HPSI pump that failed to auto-start ('A' HPSI pump).

Performance Feedback: When the crew has started the 'A' HPSI pump there will be indication of HPSI flow on B02 analog indicators and ERFDADS digital indicators.

***This Critical Task and the 30 minutes time requirement meets Operations Management expectations for an Operating Crew**

Critical Task # 2: Place both Hydrogen Analyzers in service within 30 minutes of the LOCA

Basis for CT bounding criteria: Placing all available Hydrogen Analyzers in service within 30 minutes of the start of a LOCA is listed in the PVNGS Time Critical Action Program (TCA-55) and is based on the PVNGS UFSAR section 6.2.5.2.1.

Safety Significance: Per the PVNGS UFSAR, Hydrogen Analyzers must be placed in service within 30 minutes of a LOCA. The crew must be aware of hydrogen concentration inside containment to ensure the Containment Temperature and Pressure Control safety function is met, to determine when hydrogen recombiners or hydrogen purge must be placed in service, and to monitor potential EAL escalation criteria based on containment hydrogen levels.

Cueing: The crew will have procedural direction to place Hydrogen Analyzers in service per 40EP-9EO03, LOCA.

Measurable Performance Indicator: The crew will open the inside and outside containment isolation valve for the Hydrogen Analyzers and place the Power/Control handswitch for each analyzer to the "ANALYZE" position. The H2 analyzers must be in service within 30 minutes of the LOCA.

Performance Feedback: The crew will have indication of the CIVs being open as indicated by a red light on each valve and the red ANALYZE light being illuminated on each Hydrogen Analyzer.

***This Critical Task and the 30 minutes time requirement meets Operations Management expectations for an Operating Crew**

NOTE: (Per NUREG-1021 Appendix D) 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

Appendix D	Driver Set-Up Instructions NRC Exam Scenario # 3	Form ES-D-1

Driver Setup Instructions	
	Reset to IC-20
	Run scenario file “NRC Scenario # 3”
	Hang OOS tags on AFA-P01

Event	Type	Malf #	Description	Final	Initiator
		rfFW59	AFA-P01 OOS	TRIP	
		rfFW60B		OFF	
		rfFW57		CLOSE	
		crB4FW08AFAHV32_1		OPEN	
		crB4FW08AFAUV37_1		OPEN	
		crB5FW08AFCHV33_1		OPEN	
		crB5FW08AFCUV36_1		OPEN	
		crB4MS13SGAUV134_1		OPEN	
		crB4MS13SGAUV138_1		OPEN	
1	MF	cmTRCH05HCAPT351A_1	Containment Pressure Instrument 351A Fails High	20	Key 1
2	MF	cmTRRC03RCNPT100X_1	Pressurizer Pressure Transmitter 100X Fails Low	1500	Key 2
3	MF	mfCV04	Letdown Leak	3	Key 3
4			Loss of Letdown		
5	MF	cmDPMC03ARNP01C_6	‘C’ Condenser Air Removal Pump Trip		Key 5
6	MF	mfTH01A	RCS Leak	.01	Key 6
7	MF	mfTH01A	SBLOCA	0.12	
8	MF	cmCPSI01SIBP02_6	'B' HPSI Trips, 'A' HPSI FTAS		
		cmCPSI01SIAP02_5			

Appendix D	Crew Turnover Sheet NRC Exam Scenario # 3	Form ES-D-1

Plant Conditions:

- Unit 1 is operating at 100% power, MOC

Equipment Out of Service:

- AFA-P01 was taken out of service last shift for preventative maintenance
    - LCO 3.7.5 Condition A and B has been entered

Planned Shift Activities:

- Maintain 100% power

Operating Test:	NRC	Scenario #	3	Event #	1	Page 7 of 19
Event Description:	Containment Pressure Transmitter HCA-PI-351A fails high					

Time	Position	Applicant Actions
Driver Cue: When directed, INITIATE KEY 1, HCA-PI-351A fails high		
Indications available: • **5A06C HI CNTMT PRESS CH TRIP alarm**		
Examiner Note: The following steps are from the B05A Alarm Response Procedure alarm window 5A06C:		
Procedure Note: • **The following Technical Specifications may be impacted:** o **LCO 3.3.1, Reactor Protection System (RPS) Instrumentation - Operating** o **LCO 3.3.5 Engineered Safety Features Actuation System (ESFAS) Instrumentation** o **LCO 3.6.4, Containment Pressure**		
		Compare ALL of the following instrumentation to confirm the alarm: (B05) • HCA-PI-351A, Containment Pressure • HCB-PI-351B, Containment Pressure • HCC-PI-351C, Containment Pressure • HCD-PI-351D, Containment Pressure
		If the alarm is confirmed to be invalid, THEN place any affected channel in BYPASS at the associated Plant Protection System (PPS) cabinet:: • SBA-C01, Plant Protection Sys cabinet • SBB-C01, Plant Protection Sys cabinet • SBC-C01, Plant Protection Sys cabinet • SBD-C01, Plant Protection Sys cabinet
Examiner Note: The following steps are from 40OP-9SB02, Plant Protection System Bypass Operations, Section 6.1, Placing PPS Channel Parameters in Bypass:		
Procedure Note: • **PPS bypass operations are performed at the PPS system cabinets SBA-C01, SBB-C01, SBC-C01, SBD-C01.**		
		REFER TO Appendix A – PPS (RPS/ESFAS), Parameters, Indicators, LCOs/TLCOs.
		Select the channel to be placed in bypass: • A
		Select the parameter(s) to be placed in bypass: • 13 – Containment Pressure High
		Request the SM/CRS enter and log the appropriate LCO/TLCO required actions.
Technical Specifications: • **LCO 3.3.1, Reactor Protection System (RPS) Instrumentation – Operating, Condition A** o **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** • **LCO 3.3.5, Engineered Safety Features Actuation System (ESFAS) Instrumentation, Condition A** o **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**		
		Place the selected parameter(s) in bypass.

Operating Test:	NRC	Scenario #	3	Event #	1	Page 8 of 19
Event Description:	Containment Pressure Transmitter HCA-PI-351A fails high					
Time	Position	Applicant Actions				
		Perform Independent Verifications per 02DP-0ZZ01, Verification of Plant Activities.				
Examiner Note: When the crew has placed the parameter in bypass and the CRS has addressed Technical Specifications, or at the lead evaluator's discretion, proceed to Event 2, Pressurizer Pressure Transmitter 100X fails low						

Operating Test:	NRC	Scenario #	3	Event #	2	Page 9 of 19
Event Description:	Pressurizer Pressure Transmitter 100X fails low					

Time	Position	Applicant Actions
		Driver Cue: When directed, INITIATE KEY 2, Pressurizer Pressure Transmitter 100X fails low
		Indications available: • **4A01B PZR PRESS HI-LO alarm** • **All Pressurizer heaters energize** • **Pressurizer pressure rising**
		Examiner Note: The following steps are from the B04A Alarm Response Procedure alarm window 4A01B:
		Procedure note: • **Pressure dropping below 2100 psia will cause a step change reduction in CPC DNBR Margin (approx. 0.15) possibly resulting in CPC DNBR pre-trips or trips**
		Check BOTH of the following pressure instruments: • RCN-PR-100, L) Pressure PT-100X • RCN-PR-100, R) Pressure PT-100Y
		IF ONE of the following controlling channels is failed: • RCN-PR-100, L) Pressure PT-100X THEN place RCN-HS-100, Pressure Control Channel X/Y Selector, to the unaffected channel
		IF ANY of the following Pressurizer proportional heater handswitches indicate the tripped condition: • 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
		Examiner Note: When the crew has switched RCN-HS-100 to the unaffected channel and reset Pressurizer proportional heaters, or at the lead evaluator's discretion, proceed to Event 3, Letdown line leak

Operating Test:	NRC	Scenario #	3	Event #	3	Page 10 of 19
Event Description:	Letdown line leak					

Time	Position	Applicant Actions
		Driver Cue: When directed, INITIATE KEY 3, Letdown line leak
		Indications available: • **2B01A ESF EQPT RMS LVL HI alarm** • **ERFDADS will indicate approximately 30 gpm leakrate** • **Letdown control valves throttling closed**
		Examiner Note: The following steps are from the B02B Alarm Response Procedure alarm window 2B01A:
		Direct an Auxiliary Operator to perform the following: • Confirm the alarm • Determine the cause of the alarm
		IF the Auxiliary Operator identifies leakage, THEN direct the Auxiliary Operator to isolate the leakage
		Driver Cue: When directed to investigate for a leak in the Auxiliary Building, wait 5 minutes and report: **"There is a significant leak In the 80 foot West Mechanical Penetration room. It is located on letdown piping because there was steam issuing from the pipe.** **If directed to manually isolate the leak, report** **"I am currently outside of the room and I don't think it is safe for me to re-enter the room."**
		Examiner Note: The following steps are from 40AO-9ZZ02, Excessive RCS Leakrate:
		IF pressurizer level is lowering, AND additional makeup is required, THEN ensure all available Charging Pumps are running
		IF all available Charging Pumps are running, AND pressurizer level is lowering, THEN isolate letdown
		Ensure the event is being classified
		Procedure Note: • **Appendix I, LCO Required Action Tracker, is reference use, and may be performed by CRS, but should be provided to the SM or STA to be used as a guide to the LCO required actions**
		Initiate Appendix I, LCO Required Action Tracker
		IF the unit is in Mode 1-4, THEN ensure compliance with LCO 3.4.14, RCS Operational Leakage (REFER TO Appendix I, LCO Required Action Tracker)
		Direct Chemistry to perform 74DP-9ZZ05, Abnormal Occurrence Checklist
		Notify Radiation Protection that an RCS leak exists
		Determine the leakrate using ANY of the following: • Appendix A, 15 Minute Leak Rate Calculation • Appendix B, ERFDADS Calculation of RCS Water Inventory • 40ST-9RC05, Manual Calculation of RCS Water Inventory • 40ST-9RC08, OAP Calculation of RCS Water Inventory

Operating Test:	NRC	Scenario #	3	Event #	3	Page 11 of 19
Event Description:	Letdown line leak					
Time	Position	Applicant Actions				

		Attempt to identify the source of the leakage
		Direct an operator to walkdown charging and letdown piping
		IF a leak in Letdown is indicated, THEN perform the following: • IF the leak rate is such that letdown temperature can be lowered prior to isolation, THEN perform the following: o Reduce letdown flow using RCN-LIC-110 in manual to lower letdown temperature o WHEN Regenerative Heat Exchanger Letdown Temperature is less than 180°F as indicated on CHN-TI-221, THEN isolate letdown • IF the leak rate is such that letdown should be isolated as quickly as possible, OR leak location warrants no further cooling, THEN isolate letdown • PERFORM 40AO-9ZZ05, Loss of Charging or Letdown
Examiner Note: All validation crews isolated letdown without cooling it down		

Operating Test:	NRC	Scenario #	3	Event #	4	Page 12 of 19
Event Description:	Loss of Letdown					

Time	Position	Applicant Actions
		Examiner Note: Once the crew isolates Letdown, the CRS will enter 40AO-9ZZ05, Loss of Charging or Letdown. The following steps are from 40AO-9ZZ05, Loss of Charging or Letdown:
		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
		IF BOTH of the following conditions are met: • The CRS determines seal injection and charging are to be stopped • Pressurizer level is rising and 56% level will be challenged THEN perform the following: • Place all Charging Pumps in PULL TO LOCK • Ensure controlled bleedoff is isolated on all standby RCPs prior to Seal 2 outlet temperature exceeding 250°F • Close the Seal Injection Flow Control Valves • IF the unit is in MODE 1, 2, or 3, THEN ensure compliance with LCO 3.4.9, Pressurizer • PERFORM Appendix C, Extended Operations Without Letdown, to adjust PZR level, Seal Injection, or VCT level
		Examiner Note: When the crew has changed Blowdown constants and the CRS has addressed Technical Specifications, or at the lead evaluators discretion, proceed to Event 5, 'C' Main Condenser Air Removal Pump trip.

Operating Test:	NRC	Scenario #	3	Event #	5	Page 13 of 19
Event Description:	'C' Main Condenser Air Removal Pump					

Time	Position	Applicant Actions
Driver Cue: When directed, INITIATE KEY 5, 'C' Main Condenser Air Removal Pump trip		
Indications available: • **7A01A Condenser Air Removal System Trouble**		
		Determine the affected Air Removal Pump using 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
		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 ARN-P01D, D Air Removal Vacuum Pump, running • Open ONE Condenser suction valve as directed by the SM/CRS o ARN-UV-014, using ARN-HS-014, Cond A Air Removal Suction Vlv o ARN-UV-015, using ARN-HS-015, Cond B Air Removal Suction Vlv o ARN-UV-016, using ARN-HS-016, Cond C Air Removal Suction Vlv
		Direct an Auxiliary Operator to investigate the cause of the trip: • ARN-P01C – NGN-L01C4 – TB 140 ft
Driver Cue: When directed to investigate the cause of 'C' Condenser Air Removal Pump, wait 3 minutes and report: • **"The 'C' Condenser Removal Pump is not running and the motor is warm to the touch"** **When directed to investigate the 'C' Condenser Air Removal Pump breaker, wait 5 minutes and report:** • **"The 'C' Condenser Removal Pump breaker is tripped with an 86 lockout"**		
Examiner Note: When the crew has started the 'D' Air Removal pump and aligned it to the Main Condenser, or at the lead evaluator's discretion, proceed to Event 6, 'A' RCS Leak.		

Operating Test:	NRC	Scenario #	3	Event #	6	Page 14 of 19
Event Description:	RCS Leak					

Time	Position	Applicant Actions
Driver Cue: When directed, INITIATE KEY 6, RCS Leak		
		IF pressurizer level is lowering, AND additional makeup is required, THEN ensure all available Charging Pumps are running
		IF all available Charging Pumps are running, AND pressurizer level is lowering, THEN isolate letdown
		Ensure the event is being classified
Procedure Note: • **Appendix I, LCO Required Action Tracker, is reference use, and may be performed by CRS, but should be provided to the SM or STA to be used as a guide to the LCO required actions**		
		Initiate Appendix I, LCO Required Action Tracker
Technical Specifications: • **LCO 3.4.14, RCS Operational LEAKAGE, Condition A** o **Reduce LEAKAGE to within limits within 4 hours**		
		IF the unit is in Mode 1-4, THEN ensure compliance with LCO 3.4.14, RCS Operational Leakage (REFER TO Appendix I, LCO Required Action Tracker)
		Direct Chemistry to perform 74DP-9ZZ05, Abnormal Occurrence Checklist
		Notify Radiation Protection that an RCS leak exists
		Determine the leakrate using ANY of the following: • Appendix A, 15 Minute Leak Rate Calculation • Appendix B, ERFDADS Calculation of RCS Water Inventory • 40ST-9RC05, Manual Calculation of RCS Water Inventory • 40ST-9RC08, OAP Calculation of RCS Water Inventory
Examiner Note: When the CRS has evaluated Technical Specifications, or at the lead evaluators discretion proceed to Event 7, Small Break LOCA		

Operating Test:	NRC	Scenario #	3	Event #	7,8	Page 15 of 19
Event Description:	Small Break LOCA / 'B' HPSI Pump Trip, 'A' HPSI Pump FTAS					
Time	Position	Applicant Actions				

Driver Cue: When directed increase RCS Leak Rate, mfTH01A, severity to 0.1		
Examiner Note: When the leakrate increases to the point where all Charging Pumps are running with letdown isolated and Pressurizer level continues to lower, the crew will manually trip the Reactor. The following steps are from 40EP-9EO01, Standard Post Trip Actions:		
		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

		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

		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

		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

Operating Test:	NRC	Scenario #	3	Event #	7	Page 16 of 19
Event Description:	Small Break LOCA					
Time	Position	Applicant Actions				

Critical Task # 1: **When the Safety Injection Actuation setpoint is exceeded, ensure adequate Safety Injection flow to meet Safety Function requirements within 30 minutes of exceeding the SIAS setpoint.** **SAT / UNSAT**		
		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

		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

		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

		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
		  • (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

		Diagnose the event(s) in progress and GO TO the appropriate procedure
Examiner Note: The CRS will determine that a Small Break LOCA inside of Containment is in progress. The CRS will enter 40EP-9EO03, Loss of Coolant Accident. The following steps are from 40EP-9EO03, Loss of Coolant Accident:		
		Monitor the 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
		Ensure the event is being classified.
		Open the Placekeeper and enter the EOP Entry Time.
		If pressurizer pressure drops to the SIAS setpoint, then check that SIAS is actuated.
		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

		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
		• 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.

		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.
		If any RCPs are operating, then perform Appendix 16, RCP Trip Criteria and check the RCP operating limits satisfied.
		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.
		PERFORM Appendix 117, Placing Hydrogen Analyzers In Service.
		If containment pressure is 3 psig or more, then check CIAS is actuated.
		If CIAS has actuated, then perform the following: • Check that an isolation valve is closed for each containment penetration required to be closed
		IF the following conditions exist: • The Containment Spray Pump(s) are operating on the miniflow(s) • Containment pressure is not expected to exceed 8.5 psig within one hour of the CS Pump start THEN stop the Containment Spray Pump(s).
The following steps are from 40EP-9EO10-117, Appendix 117: Placing Hydrogen Analyzers in Service:		
		Perform the following to place Hydrogen Analyzer Train A in service: • 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
		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

Operating Test:	NRC	Scenario #	3	Event #	7	Page 19 of 19
Event Description:	Small Break LOCA					
Time	Position	Applicant Actions				

Critical Task # 2:

Place both Hydrogen Analyzers in service within 30 minutes of the LOCA

SAT / UNSAT

Examiner Note: When the crew has placed both Hydrogen Analyzer in service, or at lead evaluator's discretion, the scenario may be terminated

Appendix D	Scenario Outline	Form ES-D-1

Facility: Palo Verde	Scenario: 4	Test: 2020 NRC Exam
Examiners:	Operators:	
Initial Conditions: 2%, BOC		
Turnover: Maintain power at 2%		

Event Number	Event Type*	Event Description
1	TS (CRS)	RU-1 fails high
2	I (OATC)	Seal Injection controller CHN-FIC-242 fails to 100%
3	C (CRS, BOP), TS (CRS)	Inadvertent 'B' AFAS-1
4	I (All)	TT-111Y fails high
5	M (All)	SGTR ramped over 5 minutes
6		10 minutes after the Reactor trip an ESD occurs on the ruptured SG outside of Containment
7	C (OATC)	One CEA stuck out on the Reactor trip
*(N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor, (TS) Technical Specification		

Actual	Target Quantitative Attributes
7	Total malfunctions (5-8)
2	Malfunctions after EOP entry (1-2)
4	Abnormal events (2-4)
1	Major transients (1-2)
1	EOPs entered requiring substantive actions (1-2)
1	EOP contingencies requiring substantive actions (0-2)
2	Critical tasks (2-3)

Appendix D	Scenario Event Summary NRC Exam Scenario # 4	Form ES-D-1

2020 NRC Exam Scenario # 4 Overview	
Event 1	Containment Atmosphere Radiation Monitor RU-1 fails high. The crew will address the ARP and the CRS will address Technical Specifications.
Event 2	RCP 1B Seal Injection Flow controller CHN-FIC-242 fails to 100% causing the associated valve to close. The crew will address the ARP and take manual control of the controller and re-open the valve.
Event 3	A Train 'B' inadvertent AFAS occurs. The CRS will enter 40AO-9ZZ17, Inadvertent PPS-ESFAS Actuations. The crew will take action to stop feeding SG #1 with AFB-P01 to prevent overfeeding and Reactor power to rise.
Event 4	Loop 1A Temperature Transmitter TT-111Y fails high causing all charging pumps to causing letdown flow to lower and pressurizer level to rise. The crew will address the ARP and the CRS will enter 40AO-9ZZ16, RRS Malfunction. The crew will take manual control of Pressurizer level and stabilize level. The CRS will direct the crew to select the unaffected Tavg on the Reactor Regulating System panel
Event 5	A SGTR occurs on SG #1. The leak will be ~ 400 gpm and will ramp in over 5 minutes. The CRS will enter 40AO-9ZZ02, Excessive RCS Leakrate, and direct the crew to start all available Charging Pumps and isolate Letdown. The leakrate will exceed Charging pump capacity and the CRS will direct a manual Reactor trip.
Event 6	10 minutes after the Reactor trip an ESD occurs on the ruptured SG #1 outside of Containment. The CRS will enter 40EP-9EO09, Functional Recovery, and crew will feed SG #1 1360-1600 gpm.
Event 7	During the Reactor trip, one CEA will not insert into the core and the CRS will direct borating the RCS per 40EP-9EO10-103, Appendix 103: RCS Makeup / Emergency Boration

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.

Cueing: The crew will have indication of the stuck CEA from the Rod Bottom Light for the CEA failing to illuminate on the trip as well as the CPDS (CEA Position Display System) indicating one CEA failed to insert on the reactor trip.

Measurable Performance Indicator: The crew will align Charging Pump suction from the Refueling Water Tank (RWT) and ensure adequate Charging Pump flow of greater than or equal to 26 gpm. The crew will have to manually start a Charging Pump to achieve the minimum required boration flow of 26 gpm. Additionally, the crew will need to start at least one Charging Pump per step 4 of SPTAs for inventory control as well as to utilize Auxiliary Spray to control RCS pressure. Adequate boration flow can also be seen using the CVCS System Diagram using an ERFDADS computer display.

Performance Feedback: The crew will have indication of boration flow by ensuring the Charging Pump suction has been aligned to the Refueling Water Tank and Charging Pump flow is ≥ 26 gpm.

***This Critical Task and the 15 minute time requirement meets Operations Management expectations for an Operating Crew**

Critical Task # 2: Establish a feedrate of 1360-1600 gpm to SG #1 prior to exiting HR-2, RCS and Core Heat Removal, SG with SI.

Safety Significance: An event in which a SG has a tube leak or rupture concurrently with an unisolable steam leak to atmosphere will result in a radioactive release to the atmosphere. A feedrate of 1360-1600 gpm to the affected SG is performed in order to expeditiously establish sufficient inventory in the affected SG to ensure the U-tubes are covered (~ 45% NR), thus minimizing the release to the environment.

Cueing: The crew will have indication of SG tube leakage on SG #1 prior to the reactor trip from ERFDADS indicating a rising leakrate and SG #1 level rising. There will be no immediate Rad Monitor alarms because RU-142 measures N-16 and power is 2%. Once entering an EOP, the crew can also get confirmation from chemistry. The ESD outside of containment will be indicated steam flow on SG #1 rising and pressure on SG #1 lowering.

Measurable Performance Indicator: The crew will align 2 AFW pumps to supply feedwater to SG #1 for a total of 1360-1600 gpm, per step 15 of 40EP-9EO09, Functional Recovery, HR-2, SG with SI.

Performance Feedback: Total feed flow to the affected SG will be available using any ERFDADS computer terminal.

***This Critical Task and establishing feed to the Ruptured/Faulted SG prior to exiting the FRP Success Path requirement meets Operations Management expectations for an Operating Crew**

NOTE: (Per NUREG-1021 Appendix D) 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

Driver Setup Instructions	
	Reset to IC-8
	Run scenario file “NRC Scenario # 4”
	After the simulator is taken to ‘Run’, ensure that each SG is been fed ~ 200 gpm

Event	Type	Malf #	Description	Final	Initiator
1	MF	mfRM01G	RU-1 Fails High		Key 1
2	MF	cmCNCV04CHNFIC242_2	Seal Injection Controller Failure	100	Key 2
3	MF	mfRP06L1	Inadvertent 'B' AFAS-1		Key 3
		mfRP06L2			
4	MF	cmTRRX05RCNTT111Y	Temperature Transmitter 111Y Fails High	650	Key 4
5	MF	mfTH06A	SGTR on SG #1	Ramp to 40	Key 5
6	MF	mfMS03A	ESD Outside Containment	10	Rx Trip +10 min
7	MF	mfRD03K	1 Stuck CEA		

Appendix D	Crew Turnover Sheet NRC Exam Scenario # 4	Form ES-D-1

Plant Conditions:

- Unit 1 is operating at 2% power

Equipment Out of Service:

- None

Planned Shift Activities:

- Maintain 2% power

Operating Test:	NRC	Scenario #	4	Event #	1	Page 7 of 18
Event Description:	Containment Atmosphere Radiation Monitor RU-1 fails high					
Time	Position	Applicant Actions				

Driver Cue: When directed, INITIATE KEY 1, Containment Atmosphere Radiation Monitor RU-1 fails high

Available indications:

- **RMS RU-1 alarm**
- **RMS RU-1 indicates a step increase high**

The following steps are from 74AL-9SQ01, Radiation Monitoring System Alarm Validation and Response:

IF ANY of the following:

- Channel 1 alarms
- Channel 2 alarms
- Channel 3 alarms

THEN perform the following actions:

- Notify RP of the alarm
- IF ANY of the following:
  - The particulate channel indicates an increase in RCS leak rate (that is increasing radioactivity trend)
  - The gas channel indicates an increase in RCS leak rate (that is, increasing radioactivity trend)

  THEN perform an RCS water inventory balance per 40ST-9RC02, ERFDADS (Preferred) Calculation of RCS Water Inventory

Procedure Note:

- **The noble gas and particulate channels are Reactor Coolant System (RCS) leak detection channels required by Technical Specification 3.4.16. Alarm setpoints are set to alert personnel to a significant increase in RCS leakage. The iodine channel is used to only alert personnel to increased iodine levels for the purpose of keeping personnel exposure As Low As Reasonably Achievable (ALARA). The iodine channel is not used for indication of increased RCS leak rate**

Driver Cue: When contacted as Effluents to report the status of RU-1, report:

"RU-1 radiation monitor has failed"

Operating Test:	NRC	Scenario #	4	Event #	1	Page 8 of 18
Event Description:	Containment Atmosphere Radiation Monitor RU-1 fails high					
Time	Position	Applicant Actions				

Technical Specifications:

- **LCO 3.4.16, RCS Leakage Detection Instrumentation, Condition B**
  - **Analyze grab samples of the containment atmosphere once per 24 hours OR perform SR 3.4.14.1 once per 24 hours, AND restore required containment atmosphere radioactivity monitor to OPERABLE status within 30 days**

Examiner Note: When the CRS has evaluated Technical Specifications, or at the lead evaluator's discretion, proceed to Event 2 Seal Injection Controller CHN-FIC-242 fails to 100%

Operating Test:	NRC	Scenario #	4	Event #	2	Page 9 of 18
Event Description:	Seal Injection Controller CHN-FIC-242 fails to 100%					

Time	Position	Applicant Actions
Driver Cue: When directed, INITIATE KEY 2, Seal Injection Controller CHN-FIC-242 fails to 100%		
Available indications: • **3A11B RCP SEAL INJ FLOW HI-HI OR LO alarm**		
Examiner Note: The following steps are from 40AL-9RK3A, Panel B03A Alarm Responses alarm window 3A11B:		
		Check ALL of the following controllers: • CHN-FIC-241, Seal Inj to Reac Clnt Pmp 1A • CHN-FIC-242, Seal Inj to Reac Clnt Pmp 1B • CHN-FIC-243, Seal Inj to Reac Clnt Pmp 2A • CHN-FIC-244, Seal Inj to Reac Clnt Pmp 2B
Procedure Note: • **If only a single charging pump is available and running, then closing CHB-HV-255 may prevent a loss of letdown on high temperature**		
		If both of the following: • 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
		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)
		If the SM/CRS directs adjusting charging flow backpressure, THEN adjust CHN-PDIC-240, Charging Line to RC Loop 2A DP Control, to achieve between 2430 psig and 2500 psig on CHA-PI-212, Charging Pumps Dsch Header Pressure
Driver Cue: If directed to report CHN-PDIS-241 pressure, wait 3 minutes and report: **"RCP Seal Injection filter differential pressure CHN-PDIS-241 is 10 psid"**		
Examiner Note: When Seal Injection Controller CHN-FIC-242 has been restored, OR at the lead evaluator's discretion, proceed to Event 3 Inadvertent Train 'B' AFAS-1		

Operating Test:	NRC	Scenario #	4	Event #	3	Page 10 of 18
Event Description:	Inadvertent Train 'B' AFAS					

Time	Position	Applicant Actions
Driver Cue: When directed, INITIATE KEY 3, Inadvertent Train 'B' AFAS-1		
Available indications: • **Multiple alarms** • **AFB-P01 will commence feeding SG #1** • **Reactor power rising**		
The following steps are from 40AO-9ZZ17, Inadvertent PPS-ESFAS Actuations:		
		Override and operate Auxiliary Feedwater Valves as needed to control SG level
		IF AFA-P01 is running, perform the following: • Inform RP and the RMS technician of steaming to atmosphere • IF AFA-P01 speed is less than 1000 rpm for greater than 5 minutes, THEN trip AFA-P01 by pressing AFA-HS-54A, Essential STM Driven AFW Pump Manual Trip
		IF SG Blowdown is isolated, THEN perform the following: • Inform Chemistry that Blowdown is isolated • IF COLSS is operable, THEN PERFORM 40OP-9SG03, Operating the SG Blowdown System, to insert zero for BOTH of the following constants in the CMC and PC: o NKBMF1 o NKBMF2
		Perform the following: • PERFORM Appendix C, PPS-ESFAS Check, Step 2 and Step 3 to check that equipment actuated as expected • Document components that failed to actuate in the Control Room Log • Ensure compliance with TS for components that failed to actuate or were overridden
		Ensure compliance with BOTH of the following: • LCO 3.3.5, ESFAS Instrumentation • LCO 3.3.6, ESFAS Logic and Manual Trip
Technical Specifications: • **LCO 3.3.6, Engineered Safety Features Actuation System (ESFAS) Logic and Manual Trip, Condition D** o **Restore channel to OPERABLE status within 48 hours** • **LCO 3.6.3, Containment Isolation Valves, Condition A** o **Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured within 4 hours AND verify the affected penetration flow path is isolated once per 31 days following isolation for isolation devices outside containment and prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days for isolation devices inside containment** • **LCO 3.7.5, Auxiliary Feedwater (AFW) System, Condition B** o **Restore AFW train to OPERABLE status within 72 hours**		
		IF the AFAS will NOT be reset at this time, THEN PERFORM Appendix C, PPS-ESFAS Check, Step 4.1

Operating Test:	NRC	Scenario #	4	Event #	3	Page 11 of 18
Event Description:	Inadvertent Train 'B' AFAS					
Time	Position	Applicant Actions				

Examiner Note: When the CRS has evaluated Technical Specifications, or at the lead evaluator's discretion, proceed to Event 4 T_{COLD} Transmitter TT-111Y fails high

Operating Test:	NRC	Scenario #	4	Event #	4	Page 12 of 18
Event Description:	T_{COLD} Transmitter TT-111Y fails high					

Time	Position	Applicant Actions
Driver Cue: When directed, INITIATE KEY 4, T_{COLD} Transmitter TT-111Y fails high		
Available Indications: • **4A06A RC LOOPS TEMP HI alarm** • **Letdown flow control valves closing** • **Pressurizer level rising**		
The following steps are from 40AO-9ZZ16, RRS Malfunctions:		
		Ensure that CEDMCS is NOT in Auto Sequential
		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: o Local Auto o 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
		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
		If BOTH of the following: • ALL of the following are NOT identified as failed instruments: o RCN-TT-111Y o RCN-TT-121Y o RCN-TT-111X o RCN-TT-121X • RCN-TR-100 indicates a failed instrument in the Tavg circuit THEN perform Attachment C-2, Determining the Failed Tavg Instrument
		Determine the impact of the failure
		IF RRS is selected to ONE of the following: • Average • The affected instrument THEN perform the following: • IF RCN-LIC-110 is in Remote Auto, THEN transfer RCN-LIC-110 to MANUAL • Ensure RCN-LIC-110 is in ONE of the following: o Local Auto o Manual • Perform Appendix C, Operation of the Reactor Regulating System, to select the unaffected instrument at the RRS Test Panel

Operating Test:	NRC	Scenario #	4	Event #	4	Page 13 of 18
Event Description:	T_{COLD} Transmitter TT-111Y fails high					

Time	Position	Applicant Actions
		Check that Tavg/Tref mismatch is 3°F or less
		Place CEDMCS in the desired mode of operation
		IF Remote Automatic operation of the PLCS is desired, THEN perform the following: • Ensure RCN-LIC-110, Pressurizer Level Control, is in MANUAL • Transfer RCN-LIC-110, Pressurizer Level Control, to Remote Automatic
Examiner Note: When the crew checks DVM voltages, they will not be within the range provided in the procedure. The values in the procedure are for 100% power. The following steps are from 40AO-9ZZ16, RRS Malfunctions, Appendix C:		
		IF a temperature instrument 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 Tavg to be selected • Record voltage indicated on the DVM for the selected Tavg • Check that DVM voltage recorded represents the normal Tavg 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 Tavg input selector switch to the selected input • Inform the CRS of the status of the RRS panel
Examiner Note: When the crew has selected the unaffected instrument for T_{AVE}, or at the lead evaluator's discretion, proceed to Event 5 SGTR		

Operating Test:	NRC	Scenario #	4	Event #	5,6,7	Page 14 of 18
Event Description:	SGTR / Stuck CEA / ESD on Ruptured SG					

Time	Position	Applicant Actions
Driver Cue: When directed, INITIATE KEY 5, SGTR		
Available indications: • **Pressurizer level lowering** • **SG #1 level rising**		
		IF pressurizer level is lowering, AND additional makeup is required, THEN ensure all available Charging Pumps are running
		IF all available Charging Pumps are running, AND pressurizer level is lowering, THEN isolate letdown
		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
Examiner Note: When the leakrate increases to the point where all Charging Pumps are running with letdown isolated and Pressurizer level continues to lower, the crew will manually trip the Reactor. The following steps are from 40EP-9EO01, Standard Post Trip Actions:		
		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
The following steps are from 40EP-9EO10-103, Appendix 103: RCS Makeup / Emergency Boration:		
		Set the boric acid makeup flow rate on CHN-FIC-210Y, Boric Acid Makeup to VCT Flow Control, to less than or equal to 40 gpm
		Set the “Target” makeup volume (gallons) on CHN-FQIS-210Y, Boric Acid Makeup Totalized Flow Control, to a minimum of 5000 gallons
		Place CHN-HS-210, Makeup Mode Select Switch, in “BORATE”
		Check one Boric Acid Makeup Pump is running
		Ensure CHN-UV-527, Makeup to CHRG PMPS (VCT Bypass), is open
		If the left pushbutton on CHN-FQIS-210Y indicates “End”, THEN press the “End” pushbutton
		If the left pushbutton on CHN-FQIS-210Y indicates “Reset”, THEN press the “Reset” pushbutton
		Ensure at least one Charging Pump is running
		Ensure at least one of the running Charging Pumps is operating with handswitch in AFTER START
		Press the “Start” pushbutton on CHN-FQIS-210Y

Operating Test:	NRC	Scenario #	4	Event #	5,6,7	Page 15 of 18
Event Description:	SGTR / Stuck CEA / ESD on Ruptured SG					
Time	Position	Applicant Actions				

		Check for BOTH of the following: • CHN-FIC-210X indicates no Reactor Makeup Water flow (CHN-FV-210X closed) • Proper flow indicated on CHN-FIC-210Y
		Adjust the boric acid makeup setpoint on CHN-FIC-210Y to greater than or equal to 44 gpm
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.** **SAT / UNSAT**		
The following steps are a continuation of 40EP-9EO01, Standard Post Trip Actions		

		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

Examiner Note: The Main Generator output breakers will remain closed because Motor Operator Disconnect PL-910 is open		

		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

		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

		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

		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

Operating Test:	NRC	Scenario #	4	Event #	5,6,7	Page 17 of 18
Event Description:	SGTR / Stuck CEA / ESD on Ruptured SG					

Time	Position	Applicant Actions

		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

		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
		  • (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

		Diagnose the event(s) in progress and GO TO the appropriate procedure
Examiner Note: If the crew does not immediately diagnose SGTR, a chemistry sample will be requested at the beginning of each EOP.		
Driver Cue: If contacted as chemistry to sample both Steam Generators or to perform 74DP-9ZZ05, Abnormal Occurrence Checklist, ensure the CR has opened SG sample valves, wait 5 minutes and report: **"There is indication of Steam Generator tube leakage on SG #1. SG #2 is at background"**		
Examiner Note: 10 minutes after the Reactor is tripped, an unisolable ESD will occur on SG #1. The CRS will diagnose 2 events in progress and enter 40EP-9EO09, Functional Recovery. For a faulted/ruptured SG, the CRS will go directly to the following trigger step in 40EP-9EO09, Functional Recovery:		
		IF the SG with the tube rupture also has an ESD, AND it is uncontrollably steaming to atmosphere, THEN ensure at least ONE of the following conditions is met: • The affected SG has level being restored by feedwater flow 1360-1600 gpm • The affected SG has level 45-60% NR with feedwater available to maintain level

Operating Test:	NRC	Scenario #	4	Event #	5,6,7	Page 18 of 18
Event Description:	SGTR / Stuck CEA / ESD on Ruptured SG					
Time	Position	Applicant Actions				

Critical Task # 2:

Establish a feedrate of 1360-1600 gpm to SG #1 prior to exiting HR-2, RCS and Core Heat Removal, SG with SI

SAT / UNSAT

When the crew has commenced feeding SG #1 at 1360-1600 gpm and level is rising, or at lead evaluator's discretion, the scenario may be terminated

Facility: PVNGS		Date of Exam: 11/30/2020									Operating Test No.: 2020							
APPLICANT	EVENT TYPE	Scenarios												TOTAL	MINIMUM(*)		
		1			2			3			4 (spare)						
		CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION						
		SRO	OATC	BOP	SRO	OATC	BOP	SRO	OATC	BOP	SRO	OATC	BOP		R	I	U
I1	RX	-					-		-		-	-	-	**0**		**1**	
	NOR	-					-		-		-	-	-	**0**		**1**	
	I/C	1,2,3, 4,6					1,4,5		2,3,4, 6,8		1,3,4	2,3,7	3,4	**13**		**4**	
	MAJ	5					8		7		5,6	5,6	5,6	**3**		**2**	
	TS	1,2,4					-		-		1,3	-	-	**2**		**2**	
I2	RX		-		-					-				**0**		**1**	
	NOR		-		-					-				**0**		**1**	
	I/C		2,3,4, 7		2,4,5, 6,7					1,5				**11**		**4**	
	MAJ		5		8					7				**3**		**2**	
	TS		-		2,5					-				**2**		**2**	
I3	RX			-		-		-						**0**		**1**	
	NOR			-		-		-						**0**		**1**	
	I/C			1,2,4, 6		3,5,6 7		1,3,4, 5,6						**13**		**4**	
	MAJ			5		8		7						**3**		**2**	
	TS			-		-		1,6						**2**		**2**	
I4	RX	-					-		-					**0**		**1**	
	NOR	-					-		-					**0**		**1**	
	I/C	1,2,3, 4,6					1,4,5		2,3,4, 6,8					**13**		**4**	
	MAJ	5					8		7					**3**		**2**	
	TS	1,2,4					-		-					**2**		**2**	

Instructions:

1. Check the applicant level and enter the operating test number and Form ES-D-1 event numbers for each event type; TS are not applicable for RO applicants. ROs must serve in both the "at-the-controls" (ATC) and "balance-of-plant" (BOP) positions. Instant SROs (SRO-I) must serve in both the SRO and the ATC positions, including at least two instrument or component (I/C) malfunctions and one major transient, in the ATC position. If an SRO-I *additionally* serves in the BOP position, one I/C malfunction can be credited toward the two I/C malfunctions required for the ATC position.

2. Reactivity manipulations may be conducted under normal or *controlled* abnormal conditions (refer to Section D.5.d) but must be significant per Section C.2.a of Appendix D. (*) Reactivity and normal evolutions may be replaced with additional instrument or component malfunctions on a one-for-one basis.

3. Whenever practical, both instrument and component malfunctions should be included; only those that require verifiable actions that provide insight to the applicant's competence count toward the minimum requirements specified for the applicant's license level in the right-hand columns.

4. For licensees that use the ATC operator primarily for monitoring plant parameters, the chief examiner may place SRO-I applicants in either the ATC or BOP position to best evaluate the SRO-I in manipulating plant controls.

Facility: PVNGS		Date of Exam: 11/30/2020										Operating Test No.: 2020								
APPLICANT	EVENT TYPE	Scenarios																		
		1			2			3			4			TOTAL	MINIMUM(*)		
		CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION						
		SRO	OATC	BOP	SRO	OATC	BOP	SRO	OATC	BOP	SRO	OATC	BOP		R	I	U
I5	RX		-		-					-				**0**		**1**	
	NOR		-		-					-				**0**		**1**	
	I/C		2,3,4,7		2,4,5,6,7					1,5				**11**		**4**	
	MAJ		5		8					7				**3**		**2**	
	TS		-		2,5					-				**2**		**2**	
I6	RX			-		-		-						**0**		**1**	
	NOR			-		-		-						**0**		**1**	
	I/C			1,2,4,6		3,5,6,7		1,3,4,5,6						**13**		**4**	
	MAJ			5		8		7						**3**		**2**	
	TS			-		-		1,6						**2**		**2**	
I7	RX	-					-		-					**0**		**1**	
	NOR	-					-		-					**0**		**1**	
	I/C	1,2,3,4,6					1,4,5		2,3,4,6,8					**13**		**4**	
	MAJ	5					8		7					**3**		**2**	
	TS	1,2,4					-		-					**2**		**2**	
I8	RX		-		-					-				**0**		**1**	
	NOR		-		-					-				**0**		**1**	
	I/C		2,3,4,7		2,4,5,6,7					1,5				**11**		**4**	
	MAJ		5		8					7				**3**		**2**	
	TS		-		2,5					-				**2**		**2**	

Instructions:

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2. Reactivity manipulations may be conducted under normal or *controlled* abnormal conditions (refer to Section D.5.d) but must be significant per Section C.2.a of Appendix D. (*) Reactivity and normal evolutions may be replaced with additional instrument or component malfunctions on a one-for-one basis.

3. Whenever practical, both instrument and component malfunctions should be included; only those that require verifiable actions that provide insight to the applicant's competence count toward the minimum requirements specified for the applicant's license level in the right-hand columns.

4. For licensees that use the ATC operator primarily for monitoring plant parameters, the chief examiner may place SRO-I applicants in either the ATC or BOP position to best evaluate the SRO-I in manipulating plant controls.

Facility: PVNGS		Date of Exam: 11/30/2020																	
APPLICANT	EVENT TYPE	Scenarios												TOTAL	MINIMUM(*)		
		1			2			3			4						
		CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION						
		SRO	OATC	BOP	SRO	OATC	BOP	SRO	OATC	BOP	SRO	OATC	BOP		R	I	U
I9	RX			-		-		-						**0**		**1**	
	NOR			-		-		-						**0**		**1**	
	I/C			1,2,4,6		3,5,6 7		1,3,4,5,6						**13**		**4**	
	MAJ			5		8		7						**3**		**2**	
	TS			-		-		1,6						**2**		**2**	
I10	RX	-					-		-					**0**		**1**	
	NOR	-					-		-					**0**		**1**	
	I/C	1,2,3,4,6					1,4,5		2,3,4,6,8					**13**		**4**	
	MAJ	5					8		7					**3**		**2**	
	TS	1,2,4					-		-					**2**		**2**	
I11	RX		-		-					-				**0**		**1**	
	NOR		-		-					-				**0**		**1**	
	I/C		2,3,4,7		2,4,5,6,7					1,5				**11**		**4**	
	MAJ		5		8					7				**3**		**2**	
	TS		-		2,5					-				**2**		**2**	
I12	RX			-		-		-						**0**		**1**	
	NOR			-		-		-						**0**		**1**	
	I/C			1,2,4,6		3,5,6 7		1,3,4,5,6						**13**		**4**	
	MAJ			5		8		7						**3**		**2**	
	TS			-		-		1,6						**2**		**2**	

Instructions:

1. Check the applicant level and enter the operating test number and Form ES-D-1 event numbers for each event type; TS are not applicable for RO applicants. ROs must serve in both the "at-the-controls" (ATC) and "balance-of-plant" (BOP) positions. Instant SROs (SRO-I) must serve in both the SRO and the ATC positions, including at least two instrument or component (I/C) malfunctions and one major transient, in the ATC position. If an SRO-I *additionally* serves in the BOP position, one I/C malfunction can be credited toward the two I/C malfunctions required for the ATC position.

2. Reactivity manipulations may be conducted under normal or *controlled* abnormal conditions (refer to Section D.5.d) but must be significant per Section C.2.a of Appendix D. (*) Reactivity and normal evolutions may be replaced with additional instrument or component malfunctions on a one-for-one basis.

3. Whenever practical, both instrument and component malfunctions should be included; only those that require verifiable actions that provide insight to the applicant's competence count toward the minimum requirements specified for the applicant's license level in the right-hand columns.

4. For licensees that use the ATC operator primarily for monitoring plant parameters, the chief examiner may place SRO-I applicants in either the ATC or BOP position to best evaluate the SRO-I in manipulating plant controls.

Facility: PVNGS		Date of Exam: 11/30/2020															
APPLICANT	EVENT TYPE	Scenarios												TOTAL	MINIMUM(*)		
		1			2			3			4						
		CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION						
		SRO	OATC	BOP	SRO	OATC	BOP	SRO	OATC	BOP	SRO	OATC	BOP		R	I	U
I13	RX	-				-								**0**		**1**	
	NOR	-				-								**0**		**1**	
	I/C	1,2,3, 4,6				3,5,6 7								**9**		**4**	
	MAJ	5				8								**2**		**2**	
	TS	1,2,4				-								**2**		**2**	
I14	RX		-		-									**0**		**1**	
	NOR		-		-									**0**		**1**	
	I/C		2,3,4, 7		2,4,5, 6,7									**9**		**4**	
	MAJ		5		8									**2**		**2**	
	TS		-		2,5									**2**		**2**	

Instructions:

1. Check the applicant level and enter the operating test number and Form ES-D-1 event numbers for each event type; TS are not applicable for RO applicants. ROs must serve in both the "at-the-controls" (ATC) and "balance-of-plant" (BOP) positions. Instant SROs (SRO-I) must serve in both the SRO and the ATC positions, including at least two instrument or component (I/C) malfunctions and one major transient, in the ATC position. If an SRO-I *additionally* serves in the BOP position, one I/C malfunction can be credited toward the two I/C malfunctions required for the ATC position.

2. Reactivity manipulations may be conducted under normal or *controlled* abnormal conditions (refer to Section D.5.d) but must be significant per Section C.2.a of Appendix D. (*) Reactivity and normal evolutions may be replaced with additional instrument or component malfunctions on a one-for-one basis.

3. Whenever practical, both instrument and component malfunctions should be included; only those that require verifiable actions that provide insight to the applicant's competence count toward the minimum requirements specified for the applicant's license level in the right-hand columns.

4. For licensees that use the ATC operator primarily for monitoring plant parameters, the chief examiner may place SRO-I applicants in either the ATC or BOP position to best evaluate the SRO-I in manipulating plant controls.

ES-301	Competencies Checklist	Form ES-301-6

Facility: PVNGS Date of Examination: 11/30/2020 Operating Test No.: 2020

Competencies	APPLICANTS															
	RO ☐ SRO-I **1** ☐ SRO-U ☐				RO ☐ SRO-I **2** ☐ SRO-U ☐				RO ☐ SRO-I **3** ☐ SRO-U ☐				RO ☐ SRO-I **4** ☐ SRO-U ☐			
	SCENARIO				SCENARIO				SCENARIO				SCENARIO			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Interpret/Diagnose Events and Conditions	ALL	1,4, 5,8	2,3, 4,6, 7,8		2,3, 4,5. 7	ALL	1,5, 7		1,2, 4,5, 6	3,5, 6,7, 8	ALL		ALL	1,4, 5,8	2,3, 4,6, 7,8	
Comply with and Use Procedures (1)	ALL	1,4, 5,8	2,3, 4,6, 7,8		2,3, 4,5, 7	ALL	1,5, 7		1,2, 4,5, 6	3,5, 6,7, 8	ALL		ALL	1,4, 5,8	2,3, 4,6, 7,8	
Operate Control Boards (2)		1,4, 5,8	2,3, 4,6, 7,8		2,3, 4,5, 7	ALL	1,5, 7		1,2, 4,5, 6	3,5, 6,7, 8	ALL			1,4, 5,8	2,3, 4,6, 7,8	
Communicate and Interact	ALL	ALL	ALL		ALL	ALL	ALL		ALL	ALL	ALL		ALL	ALL	ALL	
Demonstrate Supervisory Ability (3)	ALL					ALL					ALL		ALL			
Comply with and Use TS (3)	1,2, 4					2,5					1,6		1,2, 4			

Notes:
(1) Includes TS compliance for an RO.
(2) Optional for an SRO-U.
(3) Only applicable to SROs.

Instructions:

Check the applicants' license type and enter one or more event numbers that will allow the examiners to evaluate every applicable competency for every applicant. (This includes all rating factors for each competency.) (Forms ES 303 1 and ES 303 3 describe the competency rating factors.)

Facility: PVNGS Date of Examination: 11/30/2020 Operating Test No.: 2020

Competencies	APPLICANTS															
	RO ☐ SRO-I **5** ☐ SRO-U ☐				RO ☐ SRO-I **6** ☐ SRO-U ☐				RO ☐ SRO-I **7** ☐ SRO-U ☐				RO ☐ SRO-I **8** ☐ SRO-U ☐			
	SCENARIO				SCENARIO				SCENARIO				SCENARIO			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Interpret/Diagnose Events and Conditions	2,3, 4,5. 7	ALL	1,5, 7		1,2, 4,5, 6	3,5 ,6, 7,8	ALL		ALL	1,4, 5,8	2,3, 4,6, 7,8		2,3, 4,5. 7	ALL	1,5, 7	
Comply with and Use Procedures (1)	2,3, 4,5, 7	ALL	1,5, 7		1,2, 4,5, 6	3,5 ,6, 7,8	ALL		ALL	1,4, 5,8	2,3, 4,6, 7,8		2,3, 4,5, 7	ALL	1,5, 7	
Operate Control Boards (2)	2,3, 4,5, 7	ALL	1,5, 7		1,2, 4,5, 6	3,5 ,6, 7,8	ALL			1,4, 5,8	2,3, 4,6, 7,8		2,3, 4,5, 7	ALL	1,5, 7	
Communicate and Interact	ALL	ALL	ALL		ALL	AL L	ALL		ALL	ALL	ALL		ALL	ALL	ALL	
Demonstrate Supervisory Ability (3)		ALL					ALL		ALL					ALL		
Comply with and Use TS (3)		2,5					1,6		1,2, 4					2,5		

Notes:
(1) Includes TS compliance for an RO.
(2) Optional for an SRO-U.
(3) Only applicable to SROs.

Facility: PVNGS Date of Examination: 11/30/2020 Operating Test No.: 2020

Competencies	APPLICANTS															
	RO ☐ SRO-I **9** ☐ SRO-U ☐				RO ☐ SRO-I **10** ☐ SRO-U ☐				RO ☐ SRO-I **11** ☐ SRO-U ☐				RO ☐ SRO-I **12** ☐ SRO-U ☐			
	SCENARIO				SCENARIO				SCENARIO				SCENARIO			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Interpret/Diagnose Events and Conditions	1,2, 4,5, 6	3,5, 6,7, 8	ALL		ALL	1,4, 5,8	2,3, 4,6, 7,8		2,3, 4,5. 7	ALL	1,5, 7		1,2, 4,5, 6	3,5, 6,7, 8	ALL	
Comply with and Use Procedures (1)	1,2, 4,5, 6	3,5, 6,7, 8	ALL		ALL	1,4, 5,8	2,3, 4,6, 7,8		2,3, 4,5, 7	ALL	1,5, 7		1,2, 4,5, 6	3,5, 6,7, 8	ALL	
Operate Control Boards (2)	1,2, 4,5, 6	3,5, 6,7, 8	ALL			1,4, 5,8	2,3, 4,6, 7,8		2,3, 4,5, 7	ALL	1,5, 7		1,2, 4,5, 6	3,5, 6,7, 8	ALL	
Communicate and Interact	ALL	ALL	ALL		ALL	ALL	ALL		ALL	ALL	ALL		ALL	ALL	ALL	
Demonstrate Supervisory Ability (3)			ALL		ALL					ALL					ALL	
Comply with and Use TS (3)			1,6		1,2, 4					2,5					1,6	

Notes:
(1) Includes TS compliance for an RO.
(2) Optional for an SRO-U.
(3) Only applicable to SROs.

Facility: PVNGS Date of Examination: 11/30/2020 Operating Test No.: 2020

Competencies	APPLICANTS															
	RO ☐ SRO-I **13** ☐ SRO-U ☐				RO ☐ SRO-I **14** ☐ SRO-U ☐				RO ☐ SRO-I ☐ SRO-U ☐				RO ☐ SRO-I ☐ SRO-U ☐			
	SCENARIO				SCENARIO				SCENARIO				SCENARIO			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Interpret/Diagnose Events and Conditions	ALL	1,4, 5,8	2,3, 4,6, 7,8		2,3,4 ,5.7	ALL	1,5, 7									
Comply with and Use Procedures (1)	ALL	1,4, 5,8	2,3, 4,6, 7,8		2,3,4 ,5,7	ALL	1,5, 7									
Operate Control Boards (2)		1,4, 5,8	2,3, 4,6, 7,8		2,3,4 ,5,7	ALL	1,5, 7									
Communicate and Interact	ALL	ALL	ALL		ALL	ALL	ALL									
Demonstrate Supervisory Ability (3)	ALL					ALL										
Comply with and Use TS (3)	1,2, 4					2,5										

Notes:
(1) Includes TS compliance for an RO.
(2) Optional for an SRO-U.
(3) Only applicable to SROs.