

## 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
<p>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.</p>			
<p>*Type Codes &amp; Criteria: (C)ontrol room, (S)imulator, or Class(R)oom  (D)irect from bank <b>(1)</b> (<math>\leq 3</math> for ROs; <math>\leq 4</math> for SROs &amp; RO retakes)  (N)ew or (M)odified from bank <b>(4)</b> (<math>\geq 1</math>)  (P)revious 2 exams <b>(0)</b> (<math>\leq 1</math>; randomly selected)</p>			

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## Administrative Topics Outline

### Task Summary

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- 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.

2020 PVNGS NRC Initial Exam JPM A1

**JPM INFORMATION**

<b>TASK:</b>	1290020301 – Conduct of Shift Operations					
<b>TASK STANDARD:</b>	Determined that Operators #1 and #2 DO NOT have an active license and Operator #3 DOES have an active license as of July 1.					
<b>K/A:</b>	G 2.1.1	<b>RATING:</b>	RO:	3.8	SRO:	4.2
<b>POSITION(S):</b>	RO/SRO	<b>VALIDATION TIME:</b>	10 minutes			
<b>REFERENCES:</b>	40DP-9OP02, Conduct of Shift Operations					
<b>LOCATION:</b>	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:** Brian Garrettson    **DATE:** 7/31/2020

**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.

## 2020 PVNGS NRC Initial Exam JPM A1

### **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 Palo Verde administrative procedural requirements
- Document your answers below by circling the status of each operator license as of July 1.

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**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.  <b>Answer Explanation:</b>  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):		<b>SAT      UNSAT</b>

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.  <b>Answer Explanation:</b>  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):		<b>SAT      UNSAT</b>

2020 PVNGS NRC Initial Exam JPM A1

JPM Step: 3 *	Determine if Operator # 3's license is active on July 1.	
Standard:	<p>Determined that Operator # 3's license IS active on July 1.</p> <p><b>Answer Explanation:</b></p> <p>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.</p>	
Comments (required for UNSAT):	<b>SAT</b>	<b>UNSAT</b>

**JPM STOP TIME:**

2020 PVNGS NRC Initial Exam JPM A1

**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)



# EXAMINEE

## 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 Palo Verde administrative procedural requirements.
- Document your answers below by circling the status of each operator license as of July 1.

Operator # 1 License: Active / Inactive

Operator # 2 License: Active / Inactive

Operator # 3 License: Active / Inactive

# EXAMINEE

2020 PVNGS NRC Initial Exam JPM A2

**JPM INFORMATION**

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

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

**APPROVALS**

**DEVELOPED/REVISED BY:** Brian Garrettson    **DATE:** 7/22/2020

**VALIDATED BY:** Brian Garrettson    **DATE:** 7/31/2020

**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.

2020 PVNGS NRC Initial Exam JPM A2

**PROCEDURES/MATERIALS:**

- 40AO-9ZZ02 Excessive RCS Leakrate, Appendix F, Steam Generator Tube Leak Guidelines
- Technical Specifications
- 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 per plant procedural requirements:
  - MODE 3 entry is REQUIRED no later than \_\_\_\_\_.

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**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):	<p style="text-align: center;"><b>SAT      UNSAT</b></p>

**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)

**EXAMINEE**

**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 per plant procedural requirements:
  - MODE 3 entry is REQUIRED no later than \_\_\_\_\_.

**EXAMINEE**

2020 PVNGS NRC Initial Exam JPM A3

**JPM INFORMATION**

<b>TASK:</b>	1280010202 – Review the results of surveillance tests					
<b>TASK STANDARD:</b>	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					
<b>K/A:</b>	G 2.2.40	<b>RATING:</b>	RO:	3.4	SRO:	4.7
<b>POSITION(S):</b>	SRO	<b>VALIDATION TIME:</b>	15 minutes			
<b>REFERENCES:</b>	73ST-9XI24, Reactor and Pressurizer Vent Valves - Inservice Test Technical Specifications Technical Specifications Basis					
<b>LOCATION:</b>	SIMULATOR		PLANT		CLASSROOM	X

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

**APPROVALS**

**DEVELOPED/REVISED BY:** Brian Garrettson    **DATE:** 4/27/2020

**VALIDATED BY:** Brian Garrettson    **DATE:** 5/1/2020

**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

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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:**

- 73ST-9XI24, Reactor and Pressurizer Vent Valves - Inservice Test
- Technical Specifications
- Technical Specifications Basis
- This JPM was written using Revision 22 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
<b>RCA-HV-103</b>	<b>1.9</b>	<b>2.3</b>
<b>RCB-HV-105</b>	<b>1.8</b>	<b>1.8</b>
<b>RCA-HV-106</b>	<b>2.2</b>	<b>3.1</b>
<b>RCB-HV-108</b>	<b>1.8</b>	<b>1.9</b>
<b>RCB-HV-109</b>	<b>1.7</b>	<b>1.9</b>

**INITIATING CUE:**

- How many, if any, Pressurizer Vent PATHS are INOPERABLE?
- Per Technical Specifications, 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?

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**INFORMATION FOR EVALUATOR USE:**

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- 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)

**EXAMINEE**

**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
<b>RCA-HV-103</b>	<b>1.9</b>	<b>2.3</b>
<b>RCB-HV-105</b>	<b>1.8</b>	<b>1.8</b>
<b>RCA-HV-106</b>	<b>2.2</b>	<b>3.1</b>
<b>RCB-HV-108</b>	<b>1.8</b>	<b>1.9</b>
<b>RCB-HV-109</b>	<b>1.7</b>	<b>1.9</b>

**INITIATING CUE:**

- Complete the highlighted portions of the Surveillance
  
- How many, if any, Pressurizer Vent PATHS are INOPERABLE?  
\_\_\_\_\_
  
- Per Technical Specifications, 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?  
\_\_\_\_\_  
\_\_\_\_\_

**EXAMINEE**

2020 PVNGS NRC Initial Exam JPM A4

**JPM INFORMATION**

<b>TASK:</b>	L392178 – Perform the duties of the Emergency Coordinator					
<b>TASK STANDARD:</b>	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.					
<b>K/A:</b>	G 2.3.4	<b>RATING:</b>	RO:	3.2	SRO:	3.7
<b>POSITION(S):</b>	SRO	<b>VALIDATION TIME:</b>	10 minutes			
<b>REFERENCES:</b>	75DP-9RP01, Radiation Exposure and Access Control 75RP-0RP01, Radiological Posting and Labeling EP-0905, Protective Actions					
<b>LOCATION:</b>	SIMULATOR		PLANT		CLASSROOM	X

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

**APPROVALS**

**DEVELOPED/REVISED BY:** Brian Garrettson    **DATE:** 7/22/2020

**VALIDATED BY:** Brian Garrettson    **DATE:** 7/31/2020

**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-9RP01, 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:**

- A 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 Auxiliary Operator will be selected for the evolution?
  - If the Auxiliary Operator 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)

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**INFORMATION FOR EVALUATOR USE:**

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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 *	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):		<b>SAT      UNSAT</b>

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 <ul style="list-style-type: none"> <li>5 REM per event requires Emergency Coordinator authorization</li> <li>The area is 800 mREM/hr</li> <li><math>5/0.8 = 6.25</math> hours</li> </ul>	
Comments (required for UNSAT):		<b>SAT      UNSAT</b>

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):		<b>SAT      UNSAT</b>

**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)

**EXAMINEE**

**INITIAL CONDITIONS:**

- A 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 Auxiliary Operator will be selected for the evolution?
  - If the Auxiliary Operator 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)

**Selected Auxiliary Operator: Operator # 1 / Operator # 2 / Operator # 3**

**Time Emergency Coordinator authorization required: \_\_\_\_\_**

**Radiological Posting: \_\_\_\_\_**

**EXAMINEE**

2020 PVNGS NRC Initial Exam JPM A5

**JPM INFORMATION**

<b>TASK:</b>	1290240302 - Classify an event in accordance with the Emergency Plan					
<b>TASK STANDARD:</b>	Classified FS1.1 within 15 minutes					
<b>K/A:</b>	G 2.4.41	<b>RATING:</b>	RO:	2.9	SRO:	4.4
<b>POSITION(S):</b>	SRO	<b>VALIDATION TIME:</b>	15 minutes			
<b>REFERENCES:</b>	EP-0901, Classifications EAL Hot Chart					
<b>LOCATION:</b>	SIMULATOR		PLANT		CLASSROOM	X

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

**APPROVALS**

**DEVELOPED/REVISED BY:** Brian Garrettson    **DATE:** 7/22/2020

**VALIDATED BY:** Brian Garrettson    **DATE:** 7/31/2020

**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.

## 2020 PVNGS NRC Initial Exam JPM A5

### **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**

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**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 *	Classify the event in accordance with EP-0901, Classification and the EAL Hot Chart
Standard:	Classified FS1.1 within 15 minutes  <b>Time Start:</b> _____ <b>Time Stop:</b> _____  <b>Answer Explanation:</b>  <b>Fuel Clad Barrier Potential Loss</b> – RVLMS < 21% plenum <b>RCS Barrier Loss</b> – An automatic or manual ECCS (SIAS) actuation required by an unisolable RCS Leak <b>Containment Barrier Potential Loss</b> – Containment Hydrogen Concentration $\geq$ 4.9%
Comments (required for UNSAT):	<b>SAT      UNSAT</b>

**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)



**EXAMINEE**

**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

**THIS IS A TIME CRITICAL JPM**

**Classification:** \_\_\_\_\_

**EXAMINEE**

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

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

2020 PVNGS NRC Initial Exam JPM P1

**JPM INFORMATION**

<b>TASK:</b>	489751 – Perform System Alignments					
<b>TASK STANDARD:</b>	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.					
<b>K/A:</b>	064 A1.04	<b>RATING:</b>	RO:	2.8	SRO:	2.9
<b>POSITION(S):</b>	RO / SRO	<b>VALIDATION TIME:</b>	10 minutes			
<b>REFERENCES:</b>	400P-9DG01, Emergency Diesel Generator A					
<b>LOCATION:</b>	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:** Brian Garrettson    **DATE:** 09/03/2020

**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.

## 2020 PVNGS NRC Initial Exam JPM P1

### 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

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**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):	<b>SAT      UNSAT</b>

JPM Step: 2	Ensure BOTH of the following handswitches are aligned as follows: <ul style="list-style-type: none"> <li>• DGA-HS-27, DG A J.W. Warmup Heater, is placed to AUTO</li> <li>• DGA-HS-21, DG A Jacket Water Circ Pump is placed in AUTO/STOP</li> </ul>
Standard:	Checked the following handswitches are in the following alignment: <ul style="list-style-type: none"> <li>• DGA-HS-27, DG A J.W. Warmup Heater is in AUTO</li> </ul>
Examiner Cue:	<b>When the examinee checks DGA-HS-27, DG A J.W. Warmup Heater is in “AUTO”:</b>  <b>“The switch is in the ‘right’ position”</b>
Comments (required for UNSAT):	<b>SAT      UNSAT</b>

JPM Step: 3	Ensure BOTH of the following handswitches are aligned as follows: <ul style="list-style-type: none"> <li>• DGA-HS-27, DG A J.W. Warmup Heater, is placed to AUTO</li> <li>• DGA-HS-21, DG A Jacket Water Circ Pump is placed in AUTO/STOP</li> </ul>
Standard:	Checked the following handswitches are in the following alignment: <ul style="list-style-type: none"> <li>• DGA-HS-21, DG A Jacket Water Circ Pump is in AUTO/STOP</li> </ul>
Examiner Cue:	<b>When the examinee checks DGA-HS-21, DG A Jacket Water Circ Pump is in AUTO/STOP:</b>  <b>“The switch is in the ‘left’ position, green light is ON, red light is OFF”</b>
Comments (required for UNSAT):	<b>SAT      UNSAT</b>



2020 PVNGS NRC Initial Exam JPM P1

JPM Step: 4	Ensure BOTH of the following MCC Breakers are closed: <ul style="list-style-type: none"> <li>• PHA-M3325, Ckt Bkr for A DG Jacket Water Circ Pump DGA-P01</li> <li>• PHA-3109, Ckt Bkr for A DG Jacket Water Heater DGA-M01</li> </ul>
Standard:	Checked the following MCC breakers are closed: <ul style="list-style-type: none"> <li>• PHA-M3325, Ckt Bkr for A DG Jacket Water Circ Pump DGA-P01</li> </ul>
<b>Examiner Cue:</b>	<p><b>When the examinee checks PHA-M3325, Ckt Bkr for A DG Jacket Water Circ Pump DGA-P01 closed, inform them:</b></p> <p><b>“The Aux Building Operator is standing by at PHA-M33”</b></p> <p><b>When the examinee contacts the Aux Building Operator to check the status of PHA-M3325, inform them:</b></p> <p><b>“PHA-M3325, A DG Jacket Water Circ Pump DGA-P01 breaker is closed”</b></p>
Comments (required for UNSAT):	
	SAT      UNSAT

JPM Step: 5	Ensure BOTH of the following MCC Breakers are closed: <ul style="list-style-type: none"> <li>• PHA-M3325, Ckt Bkr for A DG Jacket Water Circ Pump DGA-P01</li> <li>• PHA-3109, Ckt Bkr for A DG Jacket Water Heater DGA-M01</li> </ul>
Standard:	Checked the following MCC breakers are closed: <ul style="list-style-type: none"> <li>• PHA-3109, Ckt Bkr for A DG Jacket Water Heater DGA-M01</li> </ul>
<b>Examiner Cue:</b>	<p><b>When the examinee checks PHA-3109, Ckt Bkr for A DG Jacket Water Heater DGA-M01 closed:</b></p> <p><b>“The breaker switch is in the vertical position”</b></p>
Comments (required for UNSAT):	
	SAT      UNSAT

2020 PVNGS NRC Initial Exam JPM P1

<b>Examiner Note: The following steps represent the alternate path portion of the JPM</b>	
JPM Step: 6 *	<p>If BOTH of the following:</p> <ul style="list-style-type: none"> <li>• DGN-TI-25, Temperature Indication, Position 6, Jacket Water temperature, is approaching 170°F</li> <li>• DGN-TI-25, Temperature Indication, Position 6, Jacket Water temperature, is rising</li> </ul> <p>THEN place DGA-HS-27, DG A J.W. Warmup Heater to OFF</p>
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
<b>Examiner Cue:</b>	<b>When the examinee simulates placing DGN-TI-25 to position 6, use a pointer device to show that temperature is 123°F and lowering</b>
Comments (required for UNSAT):	
<p><b>SAT      UNSAT</b></p>	

JPM Step: 7 *	<p>If BOTH of the following:</p> <ul style="list-style-type: none"> <li>• DGN-TI-25, Temperature Indication, Position 6, Jacket Water temperature, is approaching 120°F</li> <li>• DGN-TI-25, Temperature Indication, Position 6, Jacket Water temperature, is falling</li> </ul>
Standard:	Determined that temperature is approaching 120°F from the previous step
<b>Examiner Cue:</b>	<b>When the examinee simulates placing DGN-TI-25 to position 6, use a pointer device to show that temperature is 123°F and lowering</b>
Comments (required for UNSAT):	
<p><b>SAT      UNSAT</b></p>	

2020 PVNGS NRC Initial Exam JPM P1

JPM Step: 8 *	THEN perform the following: <ul style="list-style-type: none"> <li>Place DGA-HS-21, DG A Jacket Water Circ Pump, to START</li> </ul>
Standard:	Placed DGA-HS-21, DG A Jacket Water Circ Pump, to START
Examiner Cue:	<p><b>When the examinee simulates placing DGA-HS-21, DG A Jacket Water Circ Pump, to START:</b></p> <p>“The switch is in the ‘right’ position, red light is ON, green light is OFF”</p> <p><b>Inform the examinee that “ANY SWITCH NOT IN AUTO” alarm is in on the annunciator panel</b></p>
Comments (required for UNSAT):	
SAT      UNSAT	

JPM Step: 9	THEN perform the following: <ul style="list-style-type: none"> <li>Ensure DGA-HS-27, DG A J.W. Warmup Heater, is placed to AUTO</li> </ul>
Standard:	Checked DGA-HS-27 DG A J.W. Warmup Heater is in AUTO
Examiner Cue:	<p><b>When the examinee checks DGA-HS-27, DG A J.W. Warmup Heater is in “AUTO”:</b></p> <p><b>Examiner Note: The heater will automatically energize at 120°F</b></p> <p>“The switch is in the ‘right’ position, green light is ON, red light is OFF. This JPM is complete”</p>
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)

**EXAMINEE**

**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

**EXAMINEE**

2020 PVNGS NRC Initial Exam JPM P2

**JPM INFORMATION**

<b>TASK:</b>	1250270101 – Respond to an event requiring entry into the Shutdown Outside the Control Room AOP					
<b>TASK STANDARD:</b>	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					
<b>K/A:</b>	068 AK3.06	<b>RATING:</b>	RO:	3.9	SRO:	4.3
<b>POSITION(S):</b>	RO / SRO	<b>VALIDATION TIME:</b>	10 minutes			
<b>REFERENCES:</b>	40AO-9ZZ18, Shutdown Outside Control Room					
<b>LOCATION:</b>	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:** Brian Garrettson    **DATE:** 09/03/2020

**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.

## 2020 PVNGS NRC Initial Exam JPM P2

### 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

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**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: <ul style="list-style-type: none"> <li>• SGA-HIC-179B</li> <li>• SGA-HIC-184B</li> <li>• SGB-HIC-178B</li> <li>• SGB-HIC-185B</li> </ul>
Standard:	Determined that the output of the ADV Controller(s) that will be used were at minimum
<b>Examiner Cue:</b>	<b>When the examinee checks the outputs of the Train ‘A’ ADV Controllers, use a pointer device to show that the output signal is “0”</b>
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” <ul style="list-style-type: none"> <li>• SGA-HS-179C</li> <li>• SGC-HS-179D</li> </ul>
Standard:	Simulated placing switches to “OPEN PERM”
<b>Examiner Cue:</b>	<b>When the examinee simulates operating both switches to the OPEN PERM position, inform them for each switch manipulation:</b>  <b>“Green light OFF, red light ON”</b>
Comments (required for UNSAT):	
	SAT      UNSAT

2020 PVNGS NRC Initial Exam JPM P2

JPM Step: 3 *	IF SGA-HV-184 will be operated, THEN place BOTH of the following switches to “OPEN PERM” <ul style="list-style-type: none"> <li>• SGA-HS-184C</li> <li>• SGC-HS-184D</li> </ul>
Standard:	Simulated placing switches to “OPEN PERM”
Examiner Cue:	<b>When the examinee simulates operating both switches to the OPEN PERM position, inform them for each switch manipulation:</b>  <b>“Green light OFF, red light ON”</b>
Comments (required for UNSAT):	<b>SAT      UNSAT</b>

JPM Step: 4	IF SGB-HV-178 will be operated, THEN place BOTH of the following switches to “OPEN PERM” <ul style="list-style-type: none"> <li>• SGB-HS-178C</li> <li>• SGD-HS-178D</li> </ul>
Standard:	Determined step is N/A
Comments (required for UNSAT):	<b>SAT      UNSAT</b>

JPM Step: 5	IF SGB-HV-185 will be operated, THEN place BOTH of the following switches to “OPEN PERM” <ul style="list-style-type: none"> <li>• SGB-HS-185C</li> <li>• SGD-HS-185D</li> </ul>
Standard:	Determined this step is N/A
Comments (required for UNSAT):	<b>SAT      UNSAT</b>

2020 PVNGS NRC Initial Exam JPM P2

JPM Step: 6 *	Perform the following for the ADV(s) to be operated: <ul style="list-style-type: none"> <li>Press the “LOCAL” pushbutton on the ADV Controller(s)</li> </ul>
Standard:	Simulated pressing the “LOCAL” pushbutton on the ADV Controller(s).
Examiner Cue:	<b>When the examinee presses the LOCAL pushbutton for each controller, inform them:</b>  <b>“The ‘CR’ white light is OFF, the ‘LOCAL’ white light is ON”</b>
Comments (required for UNSAT):	SAT      UNSAT

JPM Step: 7 *	Perform the following for the ADV(s) to be operated: <ul style="list-style-type: none"> <li>Adjust the position demand to at least 30%</li> </ul>
Standard:	Simulated adjusting the position demand to at least 30% to open the valve
Examiner Cue:	<b>Using a pointer device, indicate that the position demand signal is at ‘30%’ for each controller and inform them:</b>  <b>“The green and red lights are BOTH lit for each of the ADVs”</b>
Comments (required for UNSAT):	SAT      UNSAT

JPM Step: 8	Perform the following for the ADV(s) to be operated: <ul style="list-style-type: none"> <li>WHEN the ADV opens, THEN adjust valve position as needed to control RCS heat removal rate</li> </ul>
Standard:	Observed the ADVs open to 30% and SG pressure lowering
Examiner Cue:	<b>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:</b>  <b>“This JPM is complete”</b>
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)

**EXAMINEE**

**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

**EXAMINEE**

2020 PVNGS NRC Initial Exam JPM P3

**JPM INFORMATION**

<b>TASK:</b>	1250530301 – Respond to a loss of Spent Fuel Pool level					
<b>TASK STANDARD:</b>	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					
<b>K/A:</b>	033 A2.03	<b>RATING:</b>	RO:	3.1	SRO:	3.5
<b>POSITION(S):</b>	RO / SRO	<b>VALIDATION TIME:</b>	12 minutes			
<b>REFERENCES:</b>	40OP-9PC01, Fuel Pool Cooling					
<b>LOCATION:</b>	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:** Brian Garrettson    **DATE:** 09/03/2020

**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.

## 2020 PVNGS NRC Initial Exam JPM P3

### 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 minutes

#### 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

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**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 initial 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:	<b>When the examinee checks PCB-HS-8, Fuel Pool Cooling Pump 2, is in "STOP", inform them:</b>  <b>"The switch is in the vertical position, green light is ON, red light is OFF"</b>	
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:	<b>When the examinee simulates closing PCB-V018, Train B Fuel Pool Cooling Pump Discharge Valve, inform them:</b>  <b>"The valve handwheel is in the full clockwise position, the valve stem is fully inserted"</b>	
Comments (required for UNSAT):		SAT      UNSAT

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

2020 PVNGS NRC Initial Exam JPM P3

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:	<p><b>When the examinee simulates closing PCA-V027, Train A Fuel Pool Cooling Heat Exchanger Outlet Valve:</b></p> <p><b>“The valve handwheel is in the full clockwise position, the valve stem is fully inserted”</b></p>	
Comments (required for UNSAT):		<b>SAT      UNSAT</b>

JPM Step: 5	<p>IF Fuel Pool temperature is in excess of 145°F, THEN perform the following</p> <ul style="list-style-type: none"> <li>• Review Limitation Step 3.2.4</li> <li>• Consider additional cooling by placing Shutdown Cooling in service per 40OP-9PC05, Augmentation of Fuel Pool Cooling With Shutdown Cooling</li> </ul>	
Standard:	Determined that the step is N/A	
Comments (required for UNSAT):		<b>SAT      UNSAT</b>

2020 PVNGS NRC Initial Exam JPM P3

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:	<p><b>The examinee will contact the operator at PCN-PI-009 when they are ready to throttle the discharge valve. When contacted, inform them:</b></p> <p><b>“PCN-PI-009, Fuel Pool Cooling Pump Discharge pressure indicates 40 psig”</b></p> <p><b>When the examinee simulates throttling PCA-V014, PCA-P01 Discharge Valve in the CLOSE direction, inform them:</b></p> <p><b>“PCN-PI-009, Fuel Pool Cooling Pump Discharge pressure indicates 50 psig”</b></p> <p><b>If the examinee stops throttling once pressure is 50 psig, inform them:</b></p> <p><b>“This JPM is complete”</b></p>	
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)

**EXAMINEE**

**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 minutes

**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

**EXAMINEE**

2020 PVNGS NRC Initial Exam JPM S1

**JPM INFORMATION**

<b>TASK:</b>	1250800201 – Respond to an event requiring entry into the ECC Directed Turbine Loading AOP						
<b>TASK STANDARD:</b>	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						
<b>K/A:</b>	029 EA1.12	<b>RATING:</b>		RO:	4.1	SRO:	4.0
<b>POSITION(S):</b>	RO / SRO		<b>VALIDATION TIME:</b>		10 minutes		
<b>REFERENCES:</b>	40AO-9ZZ25, ECC Directed Turbine Unloading						
<b>LOCATION:</b>	SIMULATOR	X	PLANT		CLASSROOM		

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

**APPROVALS**

**DEVELOPED/REVISED BY:** John Rodgers    **DATE:** 4/2/2020

**VALIDATED BY:** Brian Garrettson    **DATE:** 8/6/2020

**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

## 2020 PVNGS NRC Initial Exam JPM S1

### **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**



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**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: <ul style="list-style-type: none"> <li>• ERFDADS/PMS point MAJ1</li> <li>• Any alternate point</li> </ul>	
Standard:	Recorded Main Generator Gross MW	
Comments (required for UNSAT):		<b>SAT      UNSAT</b>

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

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):		<b>SAT      UNSAT</b>

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):		<b>SAT      UNSAT</b>

2020 PVNGS NRC Initial Exam JPM S1

JPM Step: 5 *	Perform the following to place SGN-PIC-1010, SBCS Master Control, in Local Auto: <ul style="list-style-type: none"> <li>• Place the controller in MANUAL</li> <li>• Select the controller to LOCAL</li> <li>• Place the controller in AUTO</li> </ul>
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):	
<b>SAT      UNSAT</b>	

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):	
<b>SAT      UNSAT</b>	

JPM Step: 7 *	Give BOTH of the following a Manual Permissive: <ul style="list-style-type: none"> <li>• SGN-PV-1001, Valve 1</li> <li>• SGN-PV-1004, Valve 4</li> </ul>
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):	
<b>SAT      UNSAT</b>	

2020 PVNGS NRC Initial Exam JPM S1

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:	<b>JPM Start Time:</b> _____  <b>Time Turbine Load Reduction Commenced:</b> _____  <b>Time Elapsed (must be ≤ 11 minutes):</b> _____	
Examiner Note:	<b>When the applicant commences the turbine load reduction, direct the driver to INITIATE KEY 1</b>	
Comments (required for UNSAT):		SAT      UNSAT

Examiner Note:	<b>The following step represents the alternate path portion of the JPM</b>	
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  <b>Time of ATWS:</b> _____  <b>Time of Reactor Trip:</b> _____  <b>Elapsed Time (must be ≤ 120 seconds):</b> _____	
Examiner Cue:	When the applicant has tripped the Reactor,  <b>“Another operator will perform Standard Post Trip Actions. This JPM is complete”</b>	
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)

**EXAMINEE**

**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**

**EXAMINEE**

2020 PVNGS NRC Initial Exam JPM S2

**JPM INFORMATION**

<b>TASK:</b>	1240040301 – Implement LOCA instructions and contingencies						
<b>TASK STANDARD:</b>	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.						
<b>K/A:</b>	006 A3.08	<b>RATING:</b>		RO:	4.2	SRO:	4.3
<b>POSITION(S):</b>	RO / SRO	<b>VALIDATION TIME:</b>		7 minutes			
<b>REFERENCES:</b>	40EP-9EO03, Loss of Coolant Accident						
<b>LOCATION:</b>	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:** Brian Garrettson    **DATE:** 8/20/2020

**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



## 2020 PVNGS NRC Initial Exam JPM S2

### **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**

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**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:**

<b>Examiner Note</b>	<p><b>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).</b></p> <p><b>Start Time:</b> _____</p>	
JPM Step: 1	<p>IF a RAS has actuated, THEN perform the following:</p> <ul style="list-style-type: none"> <li>• Ensure that both LPSI Pumps are stopped</li> </ul>	
Standard:	<p>Verified both LPSI pumps have stopped</p>	
Comments (required for UNSAT):		<p><b>SAT      UNSAT</b></p>

<b>Examiner Note:</b>	<p><b>The following step represents the alternate path portion of the JPM.</b></p>	
JPM Step: 2	<p>IF a RAS has actuated, THEN perform the following:</p> <ul style="list-style-type: none"> <li>• Ensure that the ESF pump suction has shifted to the containment</li> </ul>	
Standard:	<p>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</p>	
<b>Examiner Note:</b>	<p><b>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</b></p>	
Comments (required for UNSAT):		<p><b>SAT      UNSAT</b></p>

2020 PVNGS NRC Initial Exam JPM S2

JPM Step: 3*	<p>IF any ESF pump suction can NOT be shifted to the containment sump, THEN perform the following:</p> <ul style="list-style-type: none"> <li>• IF ANY HPSI Pump is running with its associated Containment suction closed, THEN stop the affected HPSI Pump.</li> </ul>
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):	<p><b>SAT      UNSAT</b></p>

JPM Step: 4*	<p><b>IF</b> any ESF pump suction can <b>NOT</b> be shifted to the containment sump, <b>THEN</b> perform the following:</p> <ul style="list-style-type: none"> <li>• <b>IF ANY</b> CS Pump is running with its associated Containment suction closed, <b>THEN</b> stop the affected CS Pump</li> </ul>
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):	<p><b>SAT      UNSAT</b></p>

2020 PVNGS NRC Initial Exam JPM S2

JPM Step: 5*	<p>Close BOTH of the following valves:</p> <ul style="list-style-type: none"> <li>• CHA-HV-531, RWT to Train A Safety Injection Valve</li> <li>• CHB-HV-530, RWT to Train B Safety Injection Valve</li> </ul>
Standard:	<p>Closed both CHA-HV-531, and CHB-HV-530 within 5 minutes of the start of the JPM.</p> <p><b>Time JPM start:</b> _____</p> <p><b>Time CHA-HV-531 and CHB-HV-530 closed:</b> _____</p> <p><b>Elapsed Time (must be ≤ 5 minutes):</b> _____</p>
Comments (required for UNSAT):	<p><b>SAT      UNSAT</b></p>

JPM Step: 6 *	<p>Ensure <b>ALL</b> of the following valves are closed:</p> <ul style="list-style-type: none"> <li>• SIA-UV-666, HPSI A Pump Recirc Valve</li> <li>• SIA-UV-664, Containment Spray Pump A Recirc Valve</li> <li>• SIA-UV-669, LPSI Pump A Recirc Valve</li> <li>• <b>SIB-UV-667, HPSI B Pump Recirc Valve</b></li> <li>• SIB-UV-665, CS Pump B Recirc Valve</li> <li>• SIB-UV-668, LPSI Pump B Recirc Valve</li> </ul>
Standard:	Closed SIB-UV-667 and ensured all of the other above valves are closed.
<b>Examiner Cue</b>	<p>When the examinee has ensured all the above valves are closed:</p> <p><b>“This JPM is complete.”</b></p>
Comments (required for UNSAT):	<p><b>SAT      UNSAT</b></p>

**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)

**EXAMINEE**

**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**

**EXAMINEE**

2020 PVNGS NRC Initial Exam JPM S3

**JPM INFORMATION**

<b>TASK:</b>	1250020401 – Respond to an RCS to NC Leak					
<b>TASK STANDARD:</b>	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 or CHA-UV-506, and CHA-HV-507, and closed HP Seal Cooler Isolation Valves RCN-HV-447 and RCN-HV-451					
<b>K/A:</b>	009 EA1.09	<b>RATING:</b>	RO:	3.6	SRO:	3.6
<b>POSITION(S):</b>	RO / SRO	<b>VALIDATION TIME:</b>	5 minutes			
<b>REFERENCES:</b>	40EP-9EO03, LOCA Appendix 36, RCP HP Seal Cooler Breaker List					
<b>LOCATION:</b>	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:** Brian Garrettson    **DATE:** 8/20/2020

**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

## 2020 PVNGS NRC Initial Exam JPM S3

### **PROCEDURES/MATERIALS:**

- 40EP-9EO03, LOCA
- 40EP-9EO10-036, Appendix 36 - RCP HP Seal Cooler Breaker List
- This JPM was written using Revision 44 of 40EP-9EO03 and Revision 0 of 40EP-9EO10-036. This JPM may be performed using future revisions of 40EP-9EO03 and 40EP-9EO10-036 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 spuriously 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
- NC Surge Tank Level high alarm is in

#### **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

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**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:**

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

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

<b>Examiner Note:</b>	<b>The following step represents the alternate path portion of the JPM</b>	
<b>JPM Step: 3 *</b>	Isolate controlled bleedoff from the RCPs	
<b>Standard:</b>	<p>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 or CHA-HS-506, and keyswitch CHA-HS-507 to close</p> <p><b>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 or 506, and 507. Closing 505 or 506, and 507 is the critical portion of this step</b></p>	
<b>Comments (required for UNSAT):</b>		<b>SAT      UNSAT</b>

2020 PVNGS NRC Initial Exam JPM S3

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	
<b>Examiner Cue:</b>	When the AO is directed to close NHN-M1004 and NHN-M1005:  <b>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</b>	
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	
<b>Examiner Cue:</b>	When the examinee has closed RCN-HV-447 and RCN-HV-451:  <b>“Another operator will continue this procedure. This JPM is complete”</b>	
Comments (required for UNSAT):		SAT      UNSAT

**JPM STOP TIME:**

**RECORD OF REVISIONS**

REVISION #	REVISION DATE	REASON	COMMENTS
0	8/15/2020	6	JPM created
1	11/30/2020	6	Clarified the required valves needed to isolated Controlled Bleedoff in the task standard and JPM step 3.

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

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

**EXAMINEE**

**INITIAL CONDITIONS:**

- Unit 1 spuriously 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
- NC Surge Tank Level high alarm is in

**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

**EXAMINEE**

2020 PVNGS NRC Initial Exam JPM S4

**JPM INFORMATION**

<b>TASK:</b>	0010030401 – Perform a SG 1 (2) high rate blowdown to the main condenser						
<b>TASK STANDARD:</b>	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						
<b>K/A:</b>	035 A2.01	<b>RATING:</b>		RO:	4.5	SRO:	4.6
<b>POSITION(S):</b>	RO / SRO	<b>VALIDATION TIME:</b>		10 minutes			
<b>REFERENCES:</b>	Appendix 33, Steam Generator 1 Level Reduction Checklist						
<b>LOCATION:</b>	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:** Brian Garrettson    **DATE:** 8/20/2020

**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

## 2020 PVNGS NRC Initial Exam JPM S4

### **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

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**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):		<b>SAT      UNSAT</b>

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

JPM Step: 3	Ensure SGE-HV-47, SG 1 Downcomer Blowdown Isolation is closed	
Standard:	Ensured SGE-HV-47 is closed	
<b>Examiner Note:</b>	<b>It takes ~ 2 minutes for this valve to close</b>	
Comments (required for UNSAT):		<b>SAT      UNSAT</b>

2020 PVNGS NRC Initial Exam JPM S4

JPM Step: 4	Ensure that ONE of the following valves is open: <ul style="list-style-type: none"> <li>• SGE-HV-43, SG 1 Hot Leg Isolation</li> <li>• SGE-HV-41, SG 1 Cold Leg Isolation</li> </ul>
Standard:	Opened EITHER SGE-HV-43 or SGE-HV-41
<b>Examiner Note:</b>	<b>It takes ~ 2 minutes for these valves to open</b>
<b>Examiner Cue:</b>	If the examinee asks the CRS which valve to use:  <b>“What do you recommend?”</b> and concur with whichever valve they recommend.
Comments (required for UNSAT):	
	<b>SAT      UNSAT</b>

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

JPM Step: 6 *	Perform the following to open SGB-UV-500Q: <ul style="list-style-type: none"> <li>• Direct an operator to perform the following: (100' MSSS NW Corner) <ul style="list-style-type: none"> <li>○ Unlock and open SGE-V293, “SGB-UV-500Q BYPASS HDR INLET ISOL VALVE”.</li> </ul> </li> </ul>
Standard:	Directed an operator to unlock and open SGE-V293
<b>Examiner Cue:</b>	When directed to unlock and open SGE-V293, report:  <b>“SGE-V293 is unlocked and open.”</b>
Comments (required for UNSAT):	
	<b>SAT      UNSAT</b>

2020 PVNGS NRC Initial Exam JPM S4

JPM Step: 7 *	Perform the following to open SGB-UV-500Q: <ul style="list-style-type: none"> <li>• Direct an operator to perform the following: (100' MSSS NW Corner) <ul style="list-style-type: none"> <li>○ Open SGE-V267, “SGB-UV-500Q BYPASS HDR OUTLET ISOL VALVE”.</li> </ul> </li> </ul>
Standard:	Directed an operator to open SGE-V267.
<b>Examiner Cue:</b>	When directed to open SGE-V267, report:  <b>“SGE-V267 is open.”</b>
Comments (required for UNSAT):	<b>SAT      UNSAT</b>

JPM Step: 8 *	Perform the following to open SGB-UV-500Q: <ul style="list-style-type: none"> <li>• Direct an operator to perform the following: (100' MSSS NW Corner) <ul style="list-style-type: none"> <li>○ Slowly open SGE-VA33, “SGB-UV-500Q BYPASS HEADER THROTTLE VALVE”.</li> </ul> </li> </ul>
Standard:	Directed an operator to open SGE-VA33
<b>Examiner Cue:</b>	When directed to unlock and open SGE-VA33, report:  <b>“SGE-VA33 is open.”</b>
Comments (required for UNSAT):	<b>SAT      UNSAT</b>

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

2020 PVNGS NRC Initial Exam JPM S4

JPM Step: 10	Direct an operator to close ALL of the following valves: <ul style="list-style-type: none"> <li>• SGE-V293</li> <li>• SGE-V267</li> <li>• SGE-VA33</li> </ul>
Standard:	Directed an operator to close SGE-V293, V267, and VA33.
<b>Examiner Cue:</b>	When directed to close SGE-V293, V267, and VA33, report:  <b>“SGE-V293, V267, and VA33 are all closed.”</b>
Comments (required for UNSAT):	<b>SAT      UNSAT</b>

JPM Step: 11 *	Direct an operator to open ALL of the following valves: (100' Turbine Bldg between Heater Drain Tanks) <ul style="list-style-type: none"> <li>• SCN-V088, “SCN-HV-018C OUTLET ISOLATION VALVE” (S/G #1 HIGH RATE B/D TO CONDENSER)</li> </ul>
Standard:	Directed an operator to open SCN-V088
<b>Examiner Cue:</b>	When directed to open SCN-V088, report:  <b>“SCN-V088 is open.”</b>
Comments (required for UNSAT):	<b>SAT      UNSAT</b>

JPM Step: 12 *	Direct an operator to open ALL of the following valves: (100' Turbine Bldg between Heater Drain Tanks) <ul style="list-style-type: none"> <li>• SCN-V099, “SCN-HV-018C INLET ISOLATION VALVE” (S/G #1 HIGH RATE B/D TO CONDENSER)</li> </ul>
Standard:	Directed an operator to open SCN-V099
<b>Examiner Cue:</b>	When directed to open SCN-V099, report:  <b>“SCN-V099 is open.”</b>
Comments (required for UNSAT):	<b>SAT      UNSAT</b>

2020 PVNGS NRC Initial Exam JPM S4

JPM Step: 13 *	Direct an operator to open ALL of the following valves: (100' Turbine Bldg between Heater Drain Tanks) <ul style="list-style-type: none"> <li>SCN-V071, "SCN-HV-018B OUTLET ISOLATION VALVE" (S/G #1 ABNOR RATE B/D TO CONDENSER)</li> </ul>
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):	<b>SAT      UNSAT</b>

JPM Step: 14 *	Direct an operator to open ALL of the following valves: (100' Turbine Bldg between Heater Drain Tanks) <ul style="list-style-type: none"> <li>SCN-V072, "SCN-HV-018B INLET ISOLATION VALVE" (S/G #1 ABNOR RATE B/D TO CONDENSER)</li> </ul>
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):	<b>SAT      UNSAT</b>

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):	<b>SAT      UNSAT</b>



2020 PVNGS NRC Initial Exam JPM S4

JPM Step: 16 *	Maintain SG level by performing the following: <ul style="list-style-type: none"> <li>• Place SCN-HS-1, SG 1 Blowdown Path Selector in COND</li> <li>• WHEN SG 1 reaches the desired level, THEN place SCN-HS-1, SG 1 Blowdown Path Selector, in OFF</li> </ul>	
Standard:	Placed SCN-HS-1 in COND and monitors SG level.	
<b>Examiner Cue:</b>	Once level begins to lower in SG#1:  <b>“This JPM is complete.”</b>	
Comments (required for UNSAT):	<b>SAT</b>	<b>UNSAT</b>

**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)

**EXAMINEE**

**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

**EXAMINEE**

2020 PVNGS NRC Initial Exam JPM S5

**JPM INFORMATION**

<b>TASK:</b>	1240024201 – Perform SA 44 Feeding with Condensate Pumps						
<b>TASK STANDARD:</b>	Fast closed all Economizer FWIVs, 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)						
<b>K/A:</b>	CE E06 EA1.1	<b>RATING:</b>		RO:	4.0	SRO:	3.9
<b>POSITION(S):</b>	RO / SRO	<b>VALIDATION TIME:</b>		15 minutes			
<b>REFERENCES:</b>	40EP-9EO10-044, Feeding With Condensate Pumps						
<b>LOCATION:</b>	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:** Brian Garrettson    **DATE:** 8/20/2020

**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

## 2020 PVNGS NRC Initial Exam JPM S5

### **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

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**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: <ul style="list-style-type: none"> <li>• Ensure BOTH SG 1 Downcomer Isolation Valves are open:                         <ul style="list-style-type: none"> <li>○ SGA-UV-172</li> <li>○ SGB-UV-130</li> </ul> </li> </ul>
Standard:	Verified both SGA-UV-172 and SGB-UV-130 are open
Comments (required for UNSAT):	<b>SAT      UNSAT</b>

JPM Step: 2	IF SG #1 was selected, THEN perform the following: <ul style="list-style-type: none"> <li>• Place SG 1 Downcomer Control Valve in MANUAL and close SGN-FV-1113</li> </ul>
Standard:	Placed SGN-FV-1113 in MANUAL and lowered the output to zero to close the valve
Comments (required for UNSAT):	<b>SAT      UNSAT</b>

JPM Step: 3	IF SG #1 was selected, THEN perform the following: <ul style="list-style-type: none"> <li>• Ensure SGN-HV-1142, SG 1 Downcomer Block Valve, is open</li> </ul>
Standard:	Verified SGN-HV-1142 is open
Comments (required for UNSAT):	<b>SAT      UNSAT</b>



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JPM Step: 4	IF SG #1 was selected, THEN perform the following: <ul style="list-style-type: none"> <li>• Ensure SGN-HV-1143, SG 1 Downcomer Bypass Valve, is closed</li> </ul>	
Standard:	Verified SGN-FV-1143 is closed	
Comments (required for UNSAT):		<b>SAT      UNSAT</b>

JPM Step: 5 *	IF SG #1 was selected, THEN perform the following: <ul style="list-style-type: none"> <li>• IF a MSIS has NOT occurred, THEN fast close ALL of the Economizer FWIVs: <ul style="list-style-type: none"> <li>○ SG 1 <ul style="list-style-type: none"> <li>▪ SGA-UV-174</li> <li>▪ SGB-UV-132</li> </ul> </li> <li>○ SG 2 <ul style="list-style-type: none"> <li>▪ SGA-UV-177</li> <li>▪ SGB-UV-137</li> </ul> </li> </ul> </li> </ul>	
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):		<b>SAT      UNSAT</b>

JPM Step: 6	IF SG #1 was selected, THEN perform the following: <ul style="list-style-type: none"> <li>• IF using the Downcomer Bypass Valve to feed SG 1, THEN ensure SGN-HV-1142, SG 1 Downcomer Block Valve, is closed</li> </ul>	
Standard:	Marked step as N/A since the Downcomer Flow Control Valve will be used	
Comments (required for UNSAT):		<b>SAT      UNSAT</b>

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JPM Step: 7 *	IF SG #1 was selected, THEN perform the following: <ul style="list-style-type: none"> <li>• Ensure BOTH SG 2 Downcomer valves are closed:                         <ul style="list-style-type: none"> <li>○ SGN-HV-1144, SG 2 Downcomer Block Valve</li> <li>○ SGN-HV-1145, SG 2 Downcomer Bypass Valve</li> </ul> </li> </ul>	
Standard:	Ensured SGN-HV-1144 and SGN-HV-1145 are closed	
Comments (required for UNSAT):		<b>SAT      UNSAT</b>

JPM Step: 8	IF SG #1 was selected, THEN perform the following: <ul style="list-style-type: none"> <li>• GO TO Step 4</li> </ul>	
Standard:	Proceeded to Step 4	
Comments (required for UNSAT):		<b>SAT      UNSAT</b>

JPM Step: 9	<b>(Step 4)</b> Ensure at least ONE set of the following High Pressure Feedwater Heater isolation valves are open: <ul style="list-style-type: none"> <li>• HP Heater Train A                         <ul style="list-style-type: none"> <li>○ FWN-HV-73</li> <li>○ FWN-HV-101</li> </ul> </li> <li>• HP Heater Train B                         <ul style="list-style-type: none"> <li>○ FWN-HV-74</li> <li>○ FWN-HV-102</li> </ul> </li> </ul>	
Standard:	Verified one set of HP Heater Train valves are open	
Comments (required for UNSAT):		<b>SAT      UNSAT</b>

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JPM Step: 10	Ensure BOTH of the FWPTs are tripped by using the following: <ul style="list-style-type: none"> <li>• FTN-HS-51 for FWPT A</li> <li>• FTN-HS-52 for FWPT B</li> </ul>	
Standard:	Ensured BOTH FWPTs are tripped (both pumps are already tripped, but the examinee may still depress the trip pushbuttons)	
Comments (required for UNSAT):		<b>SAT      UNSAT</b>

JPM Step: 11	Check BOTH FWPT Miniflow Valves are closed from the Control Room: <ul style="list-style-type: none"> <li>• FWN-FV-1</li> <li>• FWN-FV-2</li> </ul>	
Standard:	Verified FWN-FV-1 and FWN-FV-2 are closed	
Comments (required for UNSAT):		<b>SAT      UNSAT</b>

JPM Step: 12	Ensure at least ONE of the FWPT Discharge Valves are open from the Control Room: <ul style="list-style-type: none"> <li>• FWN-HV-31</li> <li>• FWN-HV-32</li> </ul>	
Standard:	Verified FWN-HV-31 OR FWN-HV-32 is open	
Comments (required for UNSAT):		<b>SAT      UNSAT</b>

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JPM Step: 13	<p>Ensure at least ONE set of the following Low Pressure Feedwater Heater isolation valves are open:</p> <ul style="list-style-type: none"> <li>• LP Heater Train A <ul style="list-style-type: none"> <li>○ CDN-UV-214A</li> <li>○ CDN-UV-214B</li> </ul> </li> <li>• LP Heater Train B <ul style="list-style-type: none"> <li>○ CDN-UV-215A</li> <li>○ CDN-UV-215B</li> </ul> </li> <li>• LP Heater Train C <ul style="list-style-type: none"> <li>○ CDN-UV-216A</li> <li>○ CDN-UV-216B</li> </ul> </li> </ul>
Standard:	Verified at least one set of LP Heater Train valves is open
Comments (required for UNSAT):	<b>SAT      UNSAT</b>

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

JPM Step: 15	<p><b>(Step 11)</b> IF RCS makeup is required, THEN perform the following:</p> <ul style="list-style-type: none"> <li>• Start all available charging pumps</li> <li>• Minimize letdown flow</li> <li>• Start one HPSI Pump</li> <li>• Open at least one HPSI Injection Valve</li> </ul>
Standard:	Checked pressurizer level to determine whether or not RCS makeup is required
<b>Examiner Cue:</b>	<p>If examinee determines RCS makeup is desired and attempts to take action:</p> <p><b>“Another operator will maintain RCS inventory, continue with Appendix 44”</b></p>
Comments (required for UNSAT):	<b>SAT      UNSAT</b>

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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):		<b>SAT      UNSAT</b>

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):		<b>SAT      UNSAT</b>

JPM Step: 18 *	IF SG 1 was selected, THEN perform the following: <ul style="list-style-type: none"> <li>• Fast close SG 1 MSIVs by using the following pushbuttons:                         <ul style="list-style-type: none"> <li>○ SGA-HS-251</li> <li>○ SGB-HS-253</li> </ul> </li> </ul>	
Standard:	Fast closed the SG #1 MSIVs by depressing SGA-HS-251 OR SGB-HS-253	
Comments (required for UNSAT):		<b>SAT      UNSAT</b>

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JPM Step: 19 *	IF SG 1 was selected, THEN perform the following: <ul style="list-style-type: none"> <li>Lower SG 1 pressure below the condensate pump discharge pressure using SG 1 ADVs</li> </ul>
Standard:	Commenced lowering SG #1 pressure by opening at least one SG #1 ADV To open SGA-HIC-184A: <ul style="list-style-type: none"> <li>Placed SGA-HS-184A in OPEN PERM</li> <li>Placed SGC-HS-184B in OPEN PERM</li> <li>Raised output on SG1 Line 1 ADV using the thumbwheel on SGA-HIC-184A</li> </ul> To open SGB-HIC-178A: <ul style="list-style-type: none"> <li>Placed SGB-HS-178A in OPEN PERM</li> <li>Placed SGD-HS-178B in OPEN PERM</li> <li>Raised output on SG1 Line 2 ADV using the thumbwheel on SGB-HIC-178A</li> </ul>
Comments (required for UNSAT):	
<b>SAT      UNSAT</b>	

JPM Step: 20	IF SG 1 was selected, THEN perform the following: <ul style="list-style-type: none"> <li>Maintain SG 2 pressure less than 1200 psia</li> </ul>
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):	
<b>SAT      UNSAT</b>	

JPM Step: 21	IF SG 1 was selected, THEN perform the following: <ul style="list-style-type: none"> <li>IF SG 1 is dry, THEN maintain feed flow rate of less than or equal to 1000 gpm</li> </ul>
Standard:	Checked SG #1 level and determined SG #1 is NOT dry
Comments (required for UNSAT):	
<b>SAT      UNSAT</b>	

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<b>Examiner Note:</b>	<b>Feed flow will commence when SG #1 pressure is ~ 625 psia and SGN-FV-1113 has been throttled open</b>	
JPM Step: 22 *	IF SG 1 was selected, THEN perform the following: <ul style="list-style-type: none"> <li>• IF using SG 1 Downcomer Control Valve, THEN throttle open SGN-FV-1113</li> </ul>	
Standard:	Throttled open SGN-FV-1113 to align a flowpath for the Condensate Pumps to inject into SG #1	
<b>Examiner Cue:</b>	When feed flow has been established to SG #1:  <b>“This JPM is complete”</b>	
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)



**EXAMINEE**

**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

**EXAMINEE**

2020 PVNGS NRC Initial Exam JPM S6

**JPM INFORMATION**

<b>TASK:</b>	0650010501 – Remotely start, manually load and unload a diesel generator						
<b>TASK STANDARD:</b>	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						
<b>K/A:</b>	058 AA2.03	<b>RATING:</b>		RO:	3.5	SRO:	3.9
<b>POSITION(S):</b>	RO / SRO	<b>VALIDATION TIME:</b>		10 minutes			
<b>REFERENCES:</b>	40OP-9DG01, Emergency Diesel Generator A						
<b>LOCATION:</b>	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:** Brian Garrettson    **DATE:** 8/20/2020

**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

## 2020 PVNGS NRC Initial Exam JPM S6

### **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

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**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):		<b>SAT      UNSAT</b>

<b>Procedure Note:</b>	<ul style="list-style-type: none"> <li>It is beneficial to control thermal distribution during shutdown</li> <li>It is recommended to gradually reduce load</li> </ul>																										
JPM Step: 2	<b>(From Appendix G)</b> Observe MW loading and duration per the Table before lowering to the next increment																										
<b>Examiner Note:</b>	<b>Data from the table referenced in this step:</b>																										
<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="width: 25%;">Design Load %</th> <th style="width: 15%;">MW</th> <th style="width: 25%;">MW Allowable Range</th> <th style="width: 35%;">Minimum Duration</th> </tr> </thead> <tbody> <tr> <td>110</td> <td>6.05</td> <td>5.775-6.05</td> <td>None</td> </tr> <tr> <td>100</td> <td>5.4</td> <td>5.0-5.5</td> <td>210 minutes* 10 minutes</td> </tr> <tr> <td>75</td> <td>4.0</td> <td>3.6-4.4</td> <td>5 minutes</td> </tr> <tr> <td>50</td> <td>2.7</td> <td>2.3-3.1</td> <td>5 minutes</td> </tr> <tr> <td>25</td> <td>1.4</td> <td>1.0-1.8</td> <td>5 minutes</td> </tr> </tbody> </table>				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
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):		<b>SAT      UNSAT</b>																									

2020 PVNGS NRC Initial Exam JPM S6

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
<b>Examiner Cue:</b>	When the applicant has lowered 'A' EDG load to between 3.6-4.4 MW:  <b>"A EDG MW load has been stable for 5 minutes"</b>
Comments (required for UNSAT):	
	<b>SAT      UNSAT</b>

<b>Examiner Note:</b>	<b>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</b>
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):	
	<b>SAT      UNSAT</b>

JPM Step: 5	<b>(From ARP 1A04A)</b> 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):	
	<b>SAT      UNSAT</b>

2020 PVNGS NRC Initial Exam JPM S6

JPM Step: 6 *	<b>(From 40AO-9ZZ13)</b> 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  <b>Time PKA-M41 was lost:</b> _____  <b>Time AO directed to open PBA-S03B (must be ≤ 5 minutes):</b> _____	
<b>Examiner Cue:</b>	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):	<b>SAT</b>	<b>UNSAT</b>

**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)

**EXAMINEE**

**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

**EXAMINEE**

2020 PVNGS NRC Initial Exam JPM S7

**JPM INFORMATION**

<b>TASK:</b>	L392057 – Respond to an event requiring entry into the Loss of Class Instrument or Control Power AOP						
<b>TASK STANDARD:</b>	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						
<b>K/A:</b>	012 A2.02	<b>RATING:</b>		RO:	3.6	SRO:	3.9
<b>POSITION(S):</b>	RO / SRO	<b>VALIDATION TIME:</b>		7 minutes			
<b>REFERENCES:</b>	40AO-9ZZ13, Loss of Class Instrument or Control Power						
<b>LOCATION:</b>	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:** Brian Garrettson    **DATE:** 8/20/2020

**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**

## 2020 PVNGS NRC Initial Exam JPM S7

### **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

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**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:**

<b>Examiner Note:</b>	<b>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</b>	
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: <ul style="list-style-type: none"> <li>From the Directory page, Touch the Addressable Constants button</li> </ul>	
Standard:	Pressed the Directory icon, then the Addressable Constants icon on the CPC screen	
Comments (required for UNSAT):		<b>SAT      UNSAT</b>

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: <ul style="list-style-type: none"> <li>From the Addressable Constants page, Touch the Change Addressable Constants button</li> </ul>	
Standard:	Pressed the Change Addressable Constants icon on the CPC screen	
Comments (required for UNSAT):		<b>SAT      UNSAT</b>

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: <ul style="list-style-type: none"> <li>Select CEANOP (#0062) in the “Enter Tag Name” field by using the pull down menu button</li> </ul>	
Standard:	Pressed the drop down icon, located the CEANOP and pressed the CEANOP icon on the CPC screen	
Comments (required for UNSAT):		<b>SAT      UNSAT</b>

2020 PVNGS NRC Initial Exam JPM S7

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: <ul style="list-style-type: none"> <li>• Touch the Print Screen button</li> </ul>	
Standard:	Touched the Print Screen icon on the CPC screen	
Comments (required for UNSAT):		<b>SAT      UNSAT</b>

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: <ul style="list-style-type: none"> <li>• Enter the following value in the “Enter Value” field by inserting the cursor and touching the appropriate keys from the displayed keyboard: <ul style="list-style-type: none"> <li>○ CEAC 2 inoperable: CPC Pt ID 0062 = 2</li> </ul> </li> </ul>	
Standard:	Touched the screen in the Enter Value box and entered a value of 2 on the CPC screen	
Comments (required for UNSAT):		<b>SAT      UNSAT</b>

<b>Procedure Note:</b>	<b>The “SET VALUE” Button will be highlighted in yellow by the calculator software when the Function Enable keyswitch is placed in the ENABLED position</b>	
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: <ul style="list-style-type: none"> <li>• Enable the Set Value Function by placing the “Function Enable” keyswitch to the “ENABLED” position</li> </ul>	
Standard:	Rotated the OM Function Enable keyswitch clockwise 90° to the ENABLE position	
Comments (required for UNSAT):		<b>SAT      UNSAT</b>



2020 PVNGS NRC Initial Exam JPM S7

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: <ul style="list-style-type: none"> <li>• Touch the “SET VALUE” button</li> </ul>
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: <ul style="list-style-type: none"> <li>• Set the “Function Enable” keyswitch to the “OFF” position to disable the Set Value function</li> </ul>
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: <ul style="list-style-type: none"> <li>• Verify that the new value of the addressable constant is correct by reading the displayed current value below the Tag Name</li> </ul>
Standard:	Confirmed that a value of 2 is displayed below the CEANOP tag name
<b>Examiner Cue:</b>	When the examinee has confirmed that a value of 2 is displayed below the CEANOP tag name:  <b>“Another operator will continue with this procedure, this JPM is complete”</b>
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)

**EXAMINEE**

**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

**EXAMINEE**

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 / Loss of Letdown
3	C (All), TS (CRS)	MFP Trip
4	M (All)	ESD inside Containment
5	C (CRS, BOP)	MSIS fails to auto actuate
6	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
6	Total malfunctions (5-8)
2	Malfunctions after EOP entry (1-2)
3	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)
3	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. 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 3	'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 4	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 5	SIAS and CIAS will actuate but MSIS will fail to auto-actuate and will require a manual actuation.
Event 6	'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

**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 (Containment pressure – 3 psig OR SG Pressure Low – 960 psia – whichever is reached first)**

**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 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 (Containment pressure - 8.06 psig)**

**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**

**Critical Task # 3: Ensure all RCPs are secured within 30 minutes of the Train 'B' CSAS actuation (either manual or automatic actuation)**

**Safety Significance:** Potential degradation of any barrier to fission product release. Failure to perform this task may result in the failure of the RCP seals on RCPs which are operating and not satisfying the respective RCP operating limits

**Cueing:** Although initially cued by the CSAS alarm, the operators will be cued to perform this task by a procedural step in SPTAs. They will also be cued by abnormal RCP operation, such as temperature alarms, seal pressures, cooling water flow, etc.

**Measurable Performance Indicator:** The task is identified by at least one member of the crew manipulating the controls to stop the RCPs. The trip of the RCPs should be within 30 minutes of the loss of NC.

**Performance Feedback:** The crew will observe red lights off and green lights on on all of the RCP handswitches as well as 0 amps indicated on each RCP.

**\*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
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Driver Setup Instructions	
	Reset to IC-20
	Run scenario file "NRC Scenario # 1"
	Hang OOS tags on AFA-P01, place protected placards over AFB-P01 and AFN-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		

## Plant Conditions:

- Unit 1 is operating at 100% power, MOC
- There are no personnel inside Containment

## 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
  - AFB-P01 and AFN-P01 are protected

## Planned Shift Activities:

- Maintain 100% power

Operating Test:	NRC	Scenario #	1	Event #	1	Page 10 of 22
Event Description:		SG #2 Flow Transmitter RCD-PDT-125D fails low				
Time	Position	Applicant Actions				

<b>Driver Cue: When directed, INITIATE KEY 1, RCD-PDT-125D fails low</b>		
<b>Indications available:</b>		
<ul style="list-style-type: none"> <li>• 5A12C LO RC FLOW SG 2 CH TRIP alarm</li> </ul>		
<b>Examiner Note: The following steps are from the B05A Alarm Response Procedure alarm window 5A12C:</b>		
<b>Procedure Note:</b>		
<ul style="list-style-type: none"> <li>• The following Technical Specifications may be impacted: <ul style="list-style-type: none"> <li>○ LCO 3.3.1, Reactor Protection System (RPS) Instrumentation - Operating</li> <li>○ LCO 3.4.1, RCS Pressure, Temperature, and Flow Departure from Nucleate Boiling (DNB) Limits</li> <li>○ LCO 3.4.4, RCS Loops – MODES 1 and 2</li> <li>○ LCO 3.4.5, RCS Loops – MODE 3</li> <li>○ LCO 3.4.6, RCS Loops – MODE 4</li> </ul> </li> </ul>		
	BOP	Compare ALL of the following instrumentation to confirm the alarm: (B05) <ul style="list-style-type: none"> <li>• RCA-PDI-115A, R0 SG 2 DP PDT-125A</li> <li>• RCB-PDI-115B, R0 SG 2 DP PDT-125B</li> <li>• RCC-PDI-115C, R0 SG 2 DP PDT-125C</li> <li>• RCD-PDI-115D, R0 SG 2 DP PDT-125D</li> </ul>
	BOP	<p>If the alarm is confirmed to be invalid, THEN perform the following:</p> <ul style="list-style-type: none"> <li>• IF BOTH of the following conditions exist: <ul style="list-style-type: none"> <li>○ The cause of the channel trip is unknown</li> <li>○ Time for troubleshooting is available</li> </ul> </li> </ul> <p>THEN notify I&amp;C to troubleshoot the channel setpoint prior to placing channel in bypass.</p> <p>Place ANY affected channel in BYPASS at the associated Plant Protection System cabinet:</p> <ul style="list-style-type: none"> <li>• SBA-C01, Plant Protection Sys cabinet</li> <li>• SBB-C01, Plant Protection Sys cabinet</li> <li>• SBC-C01, Plant Protection Sys cabinet</li> <li>• SBD-C01, Plant Protection Sys cabinet</li> </ul>
<b>Examiner Note: The following steps are from 40OP-9SB02, Plant Protection System Bypass Operations, Section 6.1, Placing PPS Channel Parameters in Bypass:</b>		
<b>Procedure Note:</b>		
<ul style="list-style-type: none"> <li>• PPS bypass operations are performed at the PPS system cabinets SBA-C01, SBB-C01, SBC-C01, SBD-C01.</li> </ul>		
	BOP	REFER TO Appendix A – PPS (RPS/ESFAS), Parameters, Indicators, LCOs/TLCOs.
	BOP	Select the channel to be placed in bypass: <ul style="list-style-type: none"> <li>• D</li> </ul>
	BOP	Select the parameter(s) to be placed in bypass: <ul style="list-style-type: none"> <li>• 15 – SG-2 LO FLOW</li> </ul>
	BOP	Request the SM/CRS enter and log the appropriate LCO/TLCO required actions.

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Operating Test:	NRC	Scenario #	1	Event #	1	Page 11 of 22
Event Description:	SG #2 Flow Transmitter RCD-PDT-125D fails low					
Time	Position	Applicant Actions				

<b>Technical Specifications:</b>		
<ul style="list-style-type: none"> <li>• <b>LCO 3.3.1, Reactor Protection System (RPS) Instrumentation – Operating, Condition A</b> <ul style="list-style-type: none"> <li>○ <b>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</b></li> </ul> </li> </ul>		
	BOP	Place the selected parameter(s) in bypass.
	OATC	Perform Independent Verifications per 02DP-0ZZ01, Verification of Plant Activities.
<b>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.</b>		

Appendix D	Operator Actions	Form ES-D-2
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Operating Test:	NRC	Scenario #	1	Event #	2	Page 12 of 22
Event Description:	Inadvertent Train 'A' CSAS					
Time	Position	Applicant Actions				

<b>Driver Cue: When directed, INITIATE KEY 2, Inadvertent Train 'A' CSAS</b>		
<b>Indications available:</b>		
<ul style="list-style-type: none"> <li>• Multiple alarms</li> <li>• RCP Low Flow alarms (Loss of NC to RCPs)</li> <li>• All Train 'A' Safety Injection components will start and begin spray in containment</li> </ul>		
<b>Examiner Note: The following steps are from 40AO-9ZZ17, Inadvertent PPS-ESFAS Actuations, Section 5.0 CSAS:</b>		
<b>Procedure Note:</b>		
<ul style="list-style-type: none"> <li>• 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.</li> </ul>		
	OATC	<p>IF BOTH of the following:</p> <ul style="list-style-type: none"> <li>• Any Containment Spray Pump is running</li> <li>• The running Containment Spray Pump in NOT being used for SDC</li> </ul> <p>THEN perform the following:</p> <ul style="list-style-type: none"> <li>• IF SIAS has NOT actuated, THEN place the Containment Spray Pump hand switch in STOP to anti-pump the CS Pump</li> <li>• IF SIAS has actuated, THEN override and stop the Containment Spray Pump</li> </ul>
<b>Procedure Caution:</b>		
<ul style="list-style-type: none"> <li>• 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.</li> </ul>		
	OATC	Override and close all open Containment Spray Header Isolation Valves <b>(SIA-UV-672 is the only Spray Header valve that opened)</b>
<b>Procedure Note:</b>		
<ul style="list-style-type: none"> <li>• 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.</li> </ul>		
	BOP	<p>Open ANY of the following as needed to restore Nuclear Cooling Water to Containment:</p> <ul style="list-style-type: none"> <li>• NCA-UV-402, NCW Containment Downstream Return Isolation Valve</li> <li>• NCB-UV-403, NCW Containment Upstream Return Isolation Valve</li> <li>• NCB-UV-401, NCW Containment Upstream Supply Isolation Valve</li> </ul>
	OATC	<p>IF BOTH of the following:</p> <ul style="list-style-type: none"> <li>• Seal Injection is NOT in service</li> <li>• Cooling water is NOT restored to ANY operating RCP within 3 minutes of the initial loss</li> </ul> <p>THEN perform the following:</p> <ul style="list-style-type: none"> <li>• Ensure the reactor is tripped</li> <li>• Stop all of the RCPs</li> <li>• Isolate controlled bleedoff</li> </ul>

Appendix D	Operator Actions	Form ES-D-2
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Operating Test:	NRC	Scenario #	1	Event #	2	Page 13 of 22
Event Description:		Inadvertent Train 'A' CSAS				
Time	Position	Applicant Actions				

	OATC	<p>IF BOTH of the following:</p> <ul style="list-style-type: none"> <li>• Seal Injection is in service</li> <li>• Cooling water is NOT restore to ANY operating RCP within 10 minutes of the initial loss:</li> </ul> <p>THEN perform the following:</p> <ul style="list-style-type: none"> <li>• Ensure the reactor is tripped</li> <li>• Stop all of the RCPs</li> <li>• Isolate controlled bleedoff</li> </ul>
	OATC	<p>IF IAA-UV-2, Outside Ctrmt Isolation Valve, has closed, THEN perform the following:</p> <ul style="list-style-type: none"> <li>• IF ANY of the following valves have failed closed: <ul style="list-style-type: none"> <li>○ CHA-UV-516</li> <li>○ CHB-UV-515</li> <li>○ SGA-UV-500P</li> <li>○ SGB-UV-500R</li> </ul> </li> <li>• THEN place the handswitch(es) for the failed valve(s) to CLOSE</li> <li>• Override and open IAA-UV-2</li> <li>• Ensure Pressurizer sprays are operating to control pressurizer pressure</li> </ul>
	OATC	<p>IF letdown is isolated, THEN perform the following:</p> <ul style="list-style-type: none"> <li>• Ensure no more than one Charging Pump is running</li> <li>• PERFORM 40AO-9ZZ05, Loss of Charging or Letdown</li> </ul>
	OATC	<p>IF BOTH of the following:</p> <ul style="list-style-type: none"> <li>• Any Control Room Essential AHUs started</li> <li>• It is desired to stop the running Control Room Essential AHUs</li> </ul> <p>THEN override and stop the running fans</p>
	OATC	<p>IF RCP Seal Bleedoff isolated to the VCT, THEN override and open the closed RCP Seal Bleedoff Isolation Valves</p>
	BOP	<p>IF SG Blowdown is isolated, THEN perform the following:</p> <ul style="list-style-type: none"> <li>• Inform Chemistry that Blowdown is isolated</li> <li>• PERFORM 40OP-9SG03, Operating the SG Blowdown System, to restore blowdown</li> </ul>
	OATC	<p>IF a CS Pump needs to be started, THEN perform the following:</p> <ul style="list-style-type: none"> <li>• IF SIAS has NOT actuated, THEN perform the following: <ul style="list-style-type: none"> <li>○ Inform an operator that the CS Pump breaker will close upon restoration of control power</li> <li>○ Direct the operator to cycle control power to the CS Pump breaker(s)</li> </ul> </li> <li>• IF SIAS actuated while the CS Pump(s) were stopped, THEN perform the following: <ul style="list-style-type: none"> <li>○ Place the CS Pump handswitch to START and release the switch</li> <li>○ Place the CS Pump handswitch to START</li> </ul> </li> </ul>



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Operating Test:	NRC	Scenario #	1	Event #	2	Page 14 of 22
Event Description:		Inadvertent Train 'A' CSAS				
Time	Position	Applicant Actions				

	OATC	Perform the following: <ul style="list-style-type: none"> <li>• PERFORM Appendix C, PPS-ESFAS Check, Step 2 and Step 3, to check that equipment actuated as expected</li> <li>• Document components that failed to actuate in the Control Room Log</li> <li>• Ensure compliance with TS for components that failed to actuate or were overridden</li> </ul>
	CRS	Ensure compliance with BOTH of the following: <ul style="list-style-type: none"> <li>• LCO 3.3.5, ESFAS Instrumentation</li> <li>• LCO 3.3.6, ESFAS Logic and Manual Trip</li> </ul>
<b>Technical Specifications:</b> <ul style="list-style-type: none"> <li>• LCO 3.3.6, Engineered Safety Features Actuation System (ESFAS) Logic and Manual Trip, Condition D             <ul style="list-style-type: none"> <li>○ Restore channel to OPERABLE status within 48 hours</li> </ul> </li> <li>• LCO 3.4.16, RCS Leakage Detection Instrumentation, Condition A             <ul style="list-style-type: none"> <li>○ Perform SR 3.4.14.1 once per 24 hours and restore containment sump monitor to OPERABLE status within 30 days</li> </ul> </li> <li>• LCO 3.6.3, Containment Isolation Valves, Condition A             <ul style="list-style-type: none"> <li>○ 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</li> </ul> </li> <li>• LCO 3.6.6, Containment Spray System, Condition A             <ul style="list-style-type: none"> <li>○ Restore containment spray train to OPERABLE status within 72 hours</li> </ul> </li> <li>• LCO 3.5.3, ECCS – Operating, Condition B (If HPSI/LPSI pumps are overridden and stopped)             <ul style="list-style-type: none"> <li>○ Restore train to OPERABLE status within 72 hours</li> </ul> </li> <li>• LCO 3.7.11, Control Essential Filtration System (CREFS), Condition A (If Control Room Essential AHU fans are overridden and stopped).             <ul style="list-style-type: none"> <li>○ Restore CREFS train to OPERABLE status within 7 days</li> </ul> </li> </ul>		
	BOP	IF the CSAS will NOT be reset at this time, THEN PERFORM Appendix C, PPS-ESFAS Check, Step 4.1
	OATC	Override and align equipment as directed by the CRS
	OATC	Circle the as left condition of all components listed in the appropriate attachment

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Operating Test:	NRC	Scenario #	1	Event #	2	Page 15 of 22
Event Description:		Inadvertent Train 'A' CSAS				
Time	Position	Applicant Actions				

Actuation Leg		Component	Handswitch	Actuated Condition	In Actuated Condition (Circle one)	As Left Condition (Circle one)
1-3		Diesel Generator A	DGA-HS-1	Running	Y / N	Run / Stop
1-3		Control Room Essential AHU Fan A	HJA-HS-28	Running	Y / N	Run / Stop
1-3		Essential Chiller / Chilled Water Pump A	ECA-HS-1A	Running	Y / N	Run / Stop
1-3		Essential Cooling Water Pump A	EWA-HS-1	Running	Y / N	Run / Stop
1-3		Essential Spray Pond Pump A	SPA-HS-1	Running	Y / N	Run / Stop
	2-4	Containment Spray A Discharge to Spray Header 1 Valve	SIA-HS-672	Open	Y / N	Open / Closed
1-3		HPSI Pump A	SIA-HS-1	Running	Y / N	Run / Stop
1-3		Containment Spray Pump A	SIA-HS-5	Running	Y / N	Run / Stop
1-3		LPSI Pump A	SIA-HS-3	Running	Y / N	Run / Stop
1-3		RCP Control Bleed-Off Header to VCT Isolation Valve	CHA-HS-506	Closed	Y / N	Open / Closed
1-3		NCW Containment Downstream Return Isolation Valve	NCA-HS-402	Closed	Y / N	Open / Closed
1-3		Instrument Air Outside Containment Isolation Valve	IAA-HS-2	Closed	Y / N	Open / Closed

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Operating Test:	NRC	Scenario #	1	Event #	2	Page 16 of 22
Event Description:	Inadvertent Train 'A' CSAS					
Time	Position	Applicant Actions				

<b>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:</b>		
	OATC	<p>IF BOTH of the following occur at any time during this procedure:</p> <ul style="list-style-type: none"> <li>• Pressurizer level lowers to 33%</li> <li>• Restoration of charging is NOT impending</li> </ul> <p>THEN trip the Reactor</p>
	OATC	<p>IF BOTH of the following conditions are met:</p> <ul style="list-style-type: none"> <li>• The CRS determines seal injection and charging are to be stopped</li> <li>• Pressurizer level is rising and 56% level will be challenged</li> </ul> <p>THEN perform the following:</p> <ul style="list-style-type: none"> <li>• Place all Charging Pumps in PULL TO LOCK</li> <li>• Ensure controlled bleedoff is isolated on all standby RCPs prior to Seal 2 outlet temperature exceeding 250°F</li> <li>• Close the Seal Injection Flow Control Valves</li> <li>• IF the unit is in MODE 1, 2, or 3, THEN ensure compliance with LCO 3.4.9, Pressurizer</li> <li>• PERFORM Appendix C, Extended Operations Without Letdown, to adjust PZR level, Seal Injection, or VCT level</li> </ul>
<b>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 3, 'A' MFP Trip.</b>		

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Operating Test:	NRC	Scenario #	1	Event #	3	Page 17 of 22
Event Description:	'A' MFP Trip					
Time	Position	Applicant Actions				

<b>Driver Cue: When directed, INITIATE KEY 3, 'A' MFP Trip</b>		
<b>Indications available:</b>		
<ul style="list-style-type: none"> <li>• 6A03A FWPT A TRIP alarm</li> <li>• Reactor Power Cutback</li> </ul>		
<b>Examiner Note: The following steps are from 40AO-9ZZ09, Reactor Power Cutback (Loss of Feedpump)</b>		
	OATC	IF reactor power was 74% or more, THEN perform the following: <ul style="list-style-type: none"> <li>• Check that RPCB LOFP has actuated</li> <li>• Check that CEA subgroups 4, 5, and 22 have inserted</li> </ul>
	OATC	IF reactor power was less than 74%, THEN check that CEAs are inserting as needed to match reactor and turbine power
	BOP	Check Main Turbine Setback – Runback has lowered Main Turbine load to 65% or less
	OATC	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: <ul style="list-style-type: none"> <li>• Trip the reactor</li> <li>• GO TO SPTAs</li> </ul>
	CRS	Direct the STA to PERFORM Appendix D, Status Check RPCB Loss of Feedpump
	BOP	IF BOTH Feed Pumps trip, THEN perform the following: <ul style="list-style-type: none"> <li>• Trip the reactor</li> <li>• GO TO SPTAs</li> </ul>
	BOP	Raise the Speed Bias on the operating Main Feed Pump to zero or more
	BOP	Restore and maintain SG levels 45-60% NR
	CRS	Check that BOTH of the following are being maintained in automatic: <ul style="list-style-type: none"> <li>• RRS is adjusting CEAs to restore Tave/Tref +/- 3°F</li> <li>• SBCS opens if required to control main steam pressure at setpoint</li> </ul>
	CRS	IF steaming to atmosphere, THEN inform RP and the RMS technician
	BOP	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: <ul style="list-style-type: none"> <li>• Hotwell makeup and reject controllers</li> <li>• CDN-HCV-154</li> <li>• CDN-HCV-155</li> </ul>
	BOP	IF reactor power is 70% or less and stable, THEN perform the following: <ul style="list-style-type: none"> <li>• IF the RPCB AUTO ACTUATE OUT OF SERVICE pushbutton is NOT lit, THEN press the AUTO ACTUATE OUT OF SERVICE pushbutton</li> <li>• IF the RPCB TEST RESET pushbutton is NOT lit, THEN press the TEST RESET pushbutton</li> </ul>
	BOP	Perform a lamp test to ensure the LOAD LIMIT LIMITING light illuminates
	BOP	Reduce the load limit potentiometer until the potentiometer has positive control of the Main Turbine control valves

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Operating Test:	NRC	Scenario #	1	Event #	3	Page 18 of 22
Event Description:	'A' MFP Trip					
Time	Position	Applicant Actions				

	OATC	IF a RPCB has dropped CEA subgroups, AND BOTH of the following conditions are met: <ul style="list-style-type: none"> <li>CEA motion is only required to compensate for Xenon buildup</li> <li>Main Turbine load limiting light is on</li> </ul> THEN place CEDMCS in MANUAL SEQUENTIAL
	BOP	Monitor CPC Point ID 0187, CPC ASI – Aux Trip
	BOP	IF ALL of the following conditions are met: <ul style="list-style-type: none"> <li>CPC Pt ID 0187 indicates greater than +/- 0.45</li> <li>CPC Pt ID 0187 is trending to +/- 0.5</li> <li>CPC Aux Trip on ASI is still possible</li> </ul> THEN perform the following: <ul style="list-style-type: none"> <li>Trip the reactor</li> <li>GO TO SPTAs</li> </ul>
	OATC	Start boron equalization of the pressurizer by performing the following: <ul style="list-style-type: none"> <li>Energize pressurizer backup heaters as necessary</li> <li>Lower the setpoint on RCN-PIC-100, Pressurizer Pressure Controller, to 2220 psia</li> </ul>
<b>Examiner Note: To override the Pressurizer heaters, Pressurizer pressure needs to be &gt;2225 psia. Also, the crew will use non-class backup heaters and may or may not energize class backup heaters.</b>		
	BOP	Adjust Feedwater Control System DP as needed to maintain feed stability using Feedwater Pump Turbine Speed Setpoint Control: <ul style="list-style-type: none"> <li>FWPT A: SGN-FIC-1107</li> <li>FWPT B: SGN-FIC-1108</li> </ul>
	CRS	IF COLSS is operable, THEN perform the following: <ul style="list-style-type: none"> <li>IF DNBR POL is being exceeded, THEN declare LCO 3.2.4, DNBR, NOT met and comply with the LCO actions</li> <li>IF LPD POL is being exceeded, THEN declare LCO 3.2.1, LHR, NOT met and comply with the LCO actions</li> </ul>
<b>Technical Specifications:</b> <ul style="list-style-type: none"> <li>During validations only LCO 3.2.4 Departure From Nucleate Boiling Ratio (DNBR) was exceeding its Technical Specification value (if power indicated at Power Operating Limits [POLs] on B04 is exceeding the DNBR limit, than this LCO is not met) <ul style="list-style-type: none"> <li>LCO 3.2.4 Departure From Nucleate Boiling Ratio (DNBR), Condition A <ul style="list-style-type: none"> <li>Restore the DNBR to within limit within 1 hour</li> </ul> </li> </ul> </li> </ul>		
	BOP	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
<b>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 4, ESD Inside of Containment.</b>		

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Operating Test:	NRC	Scenario #	1	Event #	4,5,6	Page 19 of 22
Event Description:	ESD Inside of Containment / MSIS fails to auto actuate / 'B' Containment Spray Pump trip					
Time	Position	Applicant Actions				

<b>Driver Cue: When directed, INITIATE KEY 4, ESD Inside of Containment</b>		
<b>Indications available:</b>		
<ul style="list-style-type: none"> <li>• Reactor power rising</li> <li>• Containment pressure rising</li> <li>• Steam Generator pressures lowering</li> </ul>		
<b>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:</b>		
	BOP	Determine that Reactivity Control acceptance criteria are met: <ul style="list-style-type: none"> <li>• Check that reactor power is dropping</li> <li>• Check that startup rate is negative</li> <li>• Check that full strength CEAs are inserted</li> <li>• Check that the Main Turbine is tripped</li> </ul>
	OATC	Determine the Maintenance of Vital Auxiliaries acceptance criteria are met: <ul style="list-style-type: none"> <li>• Check the Main Generator output breakers are open</li> <li>• Check that station loads have transferred to offsite electrical power such that BOTH of the following conditions are met: <ul style="list-style-type: none"> <li>• All vital and non-vital AC buses are powered</li> <li>• All vital and non-vital DC buses are powered</li> </ul> </li> </ul>
	OATC	Determine that RCS Inventory Control acceptance criteria are met: <ul style="list-style-type: none"> <li>• Check that pressurizer level meets BOTH of the following: <ul style="list-style-type: none"> <li>• 10-65%</li> <li>• Trending as expected to 33-53% <ul style="list-style-type: none"> <li>• (CA) Restore and maintain pressurizer level to 33-53% by any of the following: <ul style="list-style-type: none"> <li>• Operation of PLCS</li> <li>• Manual operation of Charging Pumps and Letdown Control Valves</li> </ul> </li> </ul> </li> </ul> </li> <li>• Check that the RCS is 24°F or more subcooled <ul style="list-style-type: none"> <li>• (CA) IF the RCS is less than 24F subcooled, THEN stop all RCPs</li> </ul> </li> <li>• Check that BOTH of the following are in service to all RCPs: <ul style="list-style-type: none"> <li>• Seal injection</li> <li>• Nuclear Cooling Water <ul style="list-style-type: none"> <li>• (CA) Isolate controlled bleedoff from ANY RCP(s) as appropriate. REFER TO 40AO-9ZZ04, RCP Emergencies, Appendix E, Control Board B04 Label</li> </ul> </li> </ul> </li> </ul>

Operating Test:	NRC	Scenario #	1	Event #	4,5,6	Page 20 of 22
Event Description:		ESD Inside of Containment / MSIS fails to auto actuate / 'B' Containment Spray Pump trip				
Time	Position	Applicant Actions				

	OATC	<p>Determine that RCS Pressure Control acceptance criteria are met:</p> <ul style="list-style-type: none"> <li>• Pressurizer pressure is 1837-2285 psia</li> <li>• Pressurizer pressure is trending as expected to 2225-2275 psia <ul style="list-style-type: none"> <li>• (CA) Restore and maintain pressurizer pressure to the normal control band by ANY of the following: <ul style="list-style-type: none"> <li>• Operation of PPCS</li> <li>• Manual operation of pressurizer heaters and spray valves</li> </ul> </li> <li>• (CA) IF pressurizer pressure drops to the SIAS setpoint, THEN ensure that SIAS is actuated</li> <li>• (CA) IF pressurizer pressure remains below the SIAS setpoint, THEN stop ONE RCP in each loop</li> <li>• (CA) IF pressurizer pressure drops below the RCP NPSH limits, THEN stop all RCPs. REFER TO Appendix 2, Figures</li> </ul> </li> </ul>
	OATC	<p>Determine that Core Heat Removal acceptance criteria is met:</p> <ul style="list-style-type: none"> <li>• At least one RCP is operating</li> <li>• Loop delta-T is less than 10°F</li> <li>• RCS is 24°F or more subcooled</li> </ul>
	BOP	<p>Determine that RCS Heat Removal acceptance criteria are met:</p> <ul style="list-style-type: none"> <li>• Check that at least one SG meets BOTH of the following: <ul style="list-style-type: none"> <li>• Level is 35% WR or more</li> <li>• Feedwater is restoring or maintaining level 45-60% NR <ul style="list-style-type: none"> <li>• (CA) Restore and maintain level in at least one SG 45-60% NR</li> </ul> </li> </ul> </li> <li>• Check that Tc is 560-570°F <ul style="list-style-type: none"> <li>• (CA) IF Tc is greater than 570°F, THEN perform the following: <ul style="list-style-type: none"> <li>• Ensure that feedwater is being restored to at least one SG</li> <li>• Restore Tc to 560-570°F using SBCS or ADVs</li> </ul> </li> <li>• (CA) IF Tc is less than 560°F, THEN perform the following: <ul style="list-style-type: none"> <li>• Ensure feed flow is NOT excessive</li> <li>• Ensure SG Blowdown is isolated</li> <li>• Restore Tc to 560-570°F using SBCS or ADVs</li> <li>• IF MSIS has actuated AND the cooldown terminates, THEN stabilize Tc using ADVs</li> <li>• 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</li> </ul> </li> </ul> </li> <li>• Check that SG pressure is 1140-1200 psia <ul style="list-style-type: none"> <li>• (CA) IF SG pressure drops to the MSIS setpoint, THEN ensure MSIS has actuated</li> <li>• (CA) IF SG pressure is less than 1140 psia, THEN perform the following: <ul style="list-style-type: none"> <li>• Ensure the SBCS valves are closed</li> <li>• Ensure the ADVs are closed</li> </ul> </li> <li>• (CA) IF SG pressure is greater than 1200 psia, THEN restore and maintain SG pressure to less than 1200 psia using SBCS or ADVs</li> </ul> </li> </ul>

Operating Test:	NRC	Scenario #	1	Event #	4,5,6	Page 21 of 22
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 (Containment pressure – 3 psig OR SG Pressure Low – 960 psia – whichever is reached first)**

**SAT / UNSAT**

	OATC	<p>Determine that Containment Isolation acceptance criteria are met:</p> <ul style="list-style-type: none"> <li>• Check that containment pressure is less than 2.5 psig             <ul style="list-style-type: none"> <li>• (CA) IF containment pressure is 3 psig or more, THEN ensure that CIAS has been initiated</li> </ul> </li> <li>• Check BOTH of the following conditions:             <ul style="list-style-type: none"> <li>• No abnormal containment area activity</li> <li>• No abnormal steam plant activity</li> </ul> </li> </ul>
	OATC	<p>Determine that Containment Temperature and Pressure Control acceptance criteria are met:</p> <ul style="list-style-type: none"> <li>• Check that containment temperature is less than 117°F</li> <li>• Check that containment pressure is less than 2.5 psig             <ul style="list-style-type: none"> <li>• (CA) IF containment pressure is 3 psig or more, THEN ensure that CIAS has been initiated</li> <li>• (CA) IF containment pressure is 8.5 psig or more, THEN perform the following:                 <ul style="list-style-type: none"> <li>• Ensure CSAS is actuated</li> <li>• Ensure at least one Containment Spray header flow is greater than 4350 gpm</li> <li>• Stop all of the operating RCPs</li> <li>• Ensure RCP controlled bleedoff is isolated</li> </ul> </li> </ul> </li> </ul>

**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 (Containment pressure - 8.06 psig)**

**SAT / UNSAT**

**Critical Task # 3:**

**Ensure all RCPs are secured within 30 minutes of the Train 'B' CSAS actuation (either manual or automatic actuation)**

**SAT / UNSAT**

	CRS	Diagnose the event(s) in progress and GO TO the appropriate procedure
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Appendix D	Operator Actions	Form ES-D-2
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Operating Test:	NRC	Scenario #	1	Event #	4,5,6	Page 22 of 22
Event Description:	ESD Inside of Containment / MSIS fails to auto actuate / 'B' Containment Spray Pump trip					
Time	Position	Applicant Actions				

**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.**

**Examiner Note: When all RCPs have been stopped,  $T_{COLD}$  is stabilized, and once the CRS has entered 40EP-9EO05, Excess Steam Demand, or at lead evaluator's discretion, the scenario may be terminated**

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 20 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 (Start time is when Pressurizer pressure – 1837 psia OR Containment pressure - 3 psig), 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 uncover, 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**

Driver Setup Instructions	
	Reset to IC-20
	Run scenario file "NRC Scenario # 3"
	Hang OOS tags on AFA-P01, place protected placards over AFB-P01 and AFN-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			

## Plant Conditions:

- Unit 1 is operating at 100% power, MOC
- There are no personnel inside Containment

## 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
  - AFB-P01 and AFN-P01 are protected

## Planned Shift Activities:

- Maintain 100% power

Operating Test:	NRC	Scenario #	3	Event #	1	Page 7 of 20
Event Description:		Containment Pressure Transmitter HCA-PI-351A fails high				
Time	Position	Applicant Actions				

<b>Driver Cue: When directed, INITIATE KEY 1, HCA-PI-351A fails high</b>		
<b>Indications available:</b>		
<ul style="list-style-type: none"> <li>• 5A06C HI CNTMT PRESS CH TRIP alarm</li> </ul>		
<b>Examiner Note: The following steps are from the B05A Alarm Response Procedure alarm window 5A06C:</b>		
<b>Procedure Note:</b>		
<ul style="list-style-type: none"> <li>• The following Technical Specifications may be impacted: <ul style="list-style-type: none"> <li>○ LCO 3.3.1, Reactor Protection System (RPS) Instrumentation - Operating</li> <li>○ LCO 3.3.5 Engineered Safety Features Actuation System (ESFAS) Instrumentation</li> <li>○ LCO 3.6.4, Containment Pressure</li> </ul> </li> </ul>		
	BOP	Compare ALL of the following instrumentation to confirm the alarm: (B05) <ul style="list-style-type: none"> <li>• HCA-PI-351A, Containment Pressure</li> <li>• HCB-PI-351B, Containment Pressure</li> <li>• HCC-PI-351C, Containment Pressure</li> <li>• HCD-PI-351D, Containment Pressure</li> </ul>
	BOP	If the alarm is confirmed to be invalid, THEN place any affected channel in BYPASS at the associated Plant Protection System (PPS) cabinet:: <ul style="list-style-type: none"> <li>• SBA-C01, Plant Protection Sys cabinet</li> <li>• SBB-C01, Plant Protection Sys cabinet</li> <li>• SBC-C01, Plant Protection Sys cabinet</li> <li>• SBD-C01, Plant Protection Sys cabinet</li> </ul>
<b>Examiner Note: The following steps are from 40OP-9SB02, Plant Protection System Bypass Operations, Section 6.1, Placing PPS Channel Parameters in Bypass:</b>		
<b>Procedure Note:</b>		
<ul style="list-style-type: none"> <li>• PPS bypass operations are performed at the PPS system cabinets SBA-C01, SBB-C01, SBC-C01, SBD-C01.</li> </ul>		
	BOP	REFER TO Appendix A – PPS (RPS/ESFAS), Parameters, Indicators, LCOs/TLCOs.
	BOP	Select the channel to be placed in bypass: <ul style="list-style-type: none"> <li>• A</li> </ul>
	BOP	Select the parameter(s) to be placed in bypass: <ul style="list-style-type: none"> <li>• 13 – Containment Pressure High</li> </ul>
	BOP	Request the SM/CRS enter and log the appropriate LCO/TLCO required actions.
<b>Technical Specifications:</b>		
<ul style="list-style-type: none"> <li>• LCO 3.3.1, Reactor Protection System (RPS) Instrumentation – Operating, Condition A <ul style="list-style-type: none"> <li>○ 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</li> </ul> </li> <li>• LCO 3.3.5, Engineered Safety Features Actuation System (ESFAS) Instrumentation, Condition A <ul style="list-style-type: none"> <li>○ 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</li> </ul> </li> </ul>		
	BOP	Place the selected parameter(s) in bypass.



Appendix D	Operator Actions	Form ES-D-2
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Operating Test:	NRC	Scenario #	3	Event #	1	Page 8 of 20
Event Description:	Containment Pressure Transmitter HCA-PI-351A fails high					
Time	Position	Applicant Actions				

	OATC	Perform Independent Verifications per 02DP-0ZZ01, Verification of Plant Activities.
<b>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</b>		

Appendix D	Operator Actions	Form ES-D-2
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Operating Test:	NRC	Scenario #	3	Event #	2	Page 9 of 20
Event Description:	Pressurizer Pressure Transmitter 100X fails low					
Time	Position	Applicant Actions				

<b>Driver Cue: When directed, INITIATE KEY 2, Pressurizer Pressure Transmitter 100X fails low</b>		
<b>Indications available:</b>		
<ul style="list-style-type: none"> <li>• 4A01B PZR PRESS HI-LO alarm</li> <li>• All Pressurizer heaters energize</li> <li>• Pressurizer pressure rising</li> </ul>		
<b>Examiner Note: The following steps are from the B04A Alarm Response Procedure alarm window 4A01B:</b>		
<b>Procedure note:</b>		
<ul style="list-style-type: none"> <li>• 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</li> </ul>		
	OATC	Check BOTH of the following pressure instruments: <ul style="list-style-type: none"> <li>• RCN-PR-100, L) Pressure PT-100X</li> <li>• RCN-PR-100, R) Pressure PT-100Y</li> </ul>
	OATC	IF ONE of the following controlling channels is failed: <ul style="list-style-type: none"> <li>• RCN-PR-100, L) Pressure PT-100X</li> </ul> THEN place RCN-HS-100, Pressure Control Channel X/Y Selector, to the unaffected channel <b>(100Y)</b>
	OATC	IF ANY of the following Pressurizer proportional heater handswitches indicate the tripped condition: <ul style="list-style-type: none"> <li>• RCN-HS-100-1, Proportional Heaters Bank</li> <li>• RCN-HS-100-2, Proportional Heaters Bank</li> </ul> THEN take BOTH of the following Pressurizer proportional heater handswitches to ON: <ul style="list-style-type: none"> <li>• RCN-HS-100-1, Proportional Heaters Bank</li> <li>• RCN-HS-100-2, Proportional Heaters Bank</li> </ul>
<b>Examiner Note: When the crew has switched RCN-HS-100 to 100Y and reset Pressurizer proportional heaters, or at the lead evaluator's discretion, proceed to Event 3, Letdown line leak</b>		

Operating Test:	NRC	Scenario #	3	Event #	3	Page 10 of 20
Event Description:		Letdown line leak				
Time	Position	Applicant Actions				

<b>Driver Cue: When directed, INITIATE KEY 3, Letdown line leak</b>		
<b>Indications available:</b>		
<ul style="list-style-type: none"> <li>• 2B01A ESF EQPT RMS LVL HI alarm</li> <li>• ERFDADS will indicate approximately 30 gpm leakrate</li> <li>• Letdown control valves throttling closed</li> <li>• RU-9, Auxiliary Building Lower Level Ventilation Exhaust alarm</li> <li>• RU-156, 100-foot Auxiliary Building West Penetration Area Monitor</li> <li>• RU-157, 120-foot Auxiliary Building West Penetration Area Monitor</li> <li>• RU-153, 100-foot West Auxiliary Building Area Monitor</li> </ul>		
<b>Examiner Note: The following steps are from the B02B Alarm Response Procedure alarm window 2B01A:</b>		
	OATC	Direct an Auxiliary Operator to perform the following: <ul style="list-style-type: none"> <li>• Confirm the alarm</li> <li>• Determine the cause of the alarm</li> </ul>
	OATC	IF the Auxiliary Operator identifies leakage, THEN direct the Auxiliary Operator to isolate the leakage
<b>Driver Cue: When directed to investigate for a leak in the Auxiliary Building, wait 5 minutes and report:</b>		
<p>“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.</p> <p>If directed to manually isolate the leak, report</p> <p>“I am currently outside of the room and I don’t think it is safe for me to re-enter the room.”</p>		
<b>Examiner Note: The following steps are from 40AO-9ZZ02, Excessive RCS Leakrate:</b>		
	OATC	IF pressurizer level is lowering, AND additional makeup is required, THEN ensure all available Charging Pumps are running
	OATC	IF all available Charging Pumps are running, AND pressurizer level is lowering, THEN isolate letdown
	CRS	Ensure the event is being classified
<b>Procedure Note:</b>		
<ul style="list-style-type: none"> <li>• 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</li> </ul>		
	CRS	Initiate Appendix I, LCO Required Action Tracker
	CRS	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)
	CRS	Direct Chemistry to perform 74DP-9ZZ05, Abnormal Occurrence Checklist
	CRS	Notify Radiation Protection that an RCS leak exists

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Operating Test:	NRC	Scenario #	3	Event #	3	Page 11 of 20
Event Description:	Letdown line leak					
Time	Position	Applicant Actions				

	OATC	Determine the leakrate using ANY of the following: <ul style="list-style-type: none"> <li>Appendix A, 15 Minute Leak Rate Calculation</li> <li>Appendix B, ERFDADS Calculation of RCS Water Inventory</li> <li>40ST-9RC05, Manual Calculation of RCS Water Inventory</li> <li>40ST-9RC08, OAP Calculation of RCS Water Inventory</li> </ul>
	CRS	Attempt to identify the source of the leakage
	BOP	Direct an operator to walkdown charging and letdown piping
	OATC	IF a leak in Letdown is indicated, THEN perform the following: <ul style="list-style-type: none"> <li>IF the leak rate is such that letdown temperature can be lowered prior to isolation, THEN perform the following: <ul style="list-style-type: none"> <li>Reduce letdown flow using RCN-LIC-110 in manual to lower letdown temperature</li> <li>WHEN Regenerative Heat Exchanger Letdown Temperature is less than 180°F as indicated on CHN-TI-221, THEN isolate letdown <ul style="list-style-type: none"> <li>Letdown will be isolated using one of the following valves <ul style="list-style-type: none"> <li>CHB-UV-515</li> <li>CHA-UV-516</li> <li>CHB-UV-523</li> </ul> </li> </ul> </li> </ul> </li> <li>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</li> <li>PERFORM 40AO-9ZZ05, Loss of Charging or Letdown</li> </ul>
<b>Examiner Note: All validation crews isolated letdown without cooling it down</b>		

Appendix D	Operator Actions	Form ES-D-2
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Operating Test:	NRC	Scenario #	3	Event #	4	Page 12 of 20
Event Description:	Loss of Letdown					
Time	Position	Applicant Actions				

<b>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:</b>		
	OATC	<p>IF BOTH of the following occur at any time during this procedure:</p> <ul style="list-style-type: none"> <li>• Pressurizer level lowers to 33%</li> <li>• Restoration of charging is NOT impending</li> </ul> <p>THEN trip the Reactor</p>
	OATC	<p>IF BOTH of the following conditions are met:</p> <ul style="list-style-type: none"> <li>• The CRS determines seal injection and charging are to be stopped</li> <li>• Pressurizer level is rising and 56% level will be challenged</li> </ul> <p>THEN perform the following:</p> <ul style="list-style-type: none"> <li>• Place all Charging Pumps in PULL TO LOCK</li> <li>• Ensure controlled bleedoff is isolated on all standby RCPs prior to Seal 2 outlet temperature exceeding 250°F</li> <li>• Close the Seal Injection Flow Control Valves</li> <li>• IF the unit is in MODE 1, 2, or 3, THEN ensure compliance with LCO 3.4.9, Pressurizer</li> <li>• PERFORM Appendix C, Extended Operations Without Letdown, to adjust PZR level, Seal Injection, or VCT level</li> </ul>
<b>Examiner Note: When the crew has performed has isolated seal injection and the CRS has addressed Technical Specifications, or at the lead evaluators discretion, proceed to Event 5, 'C' Main Condenser Air Removal Pump trip.</b>		

Appendix D	Operator Actions	Form ES-D-2
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Operating Test:	NRC	Scenario #	3	Event #	5	Page 13 of 20
Event Description:	'C' Main Condenser Air Removal Pump					
Time	Position	Applicant Actions				

<b>Driver Cue: When directed, INITIATE KEY 5, 'C' Main Condenser Air Removal Pump trip</b>		
<b>Indications available:</b>		
<ul style="list-style-type: none"> <li>7A01A Condenser Air Removal System Trouble</li> </ul>		
<b>Examiner Note: The following steps are from 40AL-9RK7A, Panel B07A Alarm Responses alarm window 7A01A:</b>		
	BOP	<p>Determine the affected Air Removal Pump using the hand switch indicator lights on panel B07:</p> <ul style="list-style-type: none"> <li>ARN-HS-25, Cond Air Removal Pmp A</li> <li>ARN-HS-26, Cond Air Removal Pmp B</li> <li>ARN-HS-27, Cond Air Removal Pmp C</li> <li>ARN-HS-28, Cond Air Removal Pmp D</li> </ul>
	BOP	<p>IF ANY of the following conditions exist:</p> <ul style="list-style-type: none"> <li>ARN-P01A, A Air Removal Vacuum Pump, is stopped</li> <li>ARN-P01B, B Air Removal Vacuum Pump, is stopped</li> <li>ARN-P01C, C Air Removal Vacuum Pump, is stopped</li> </ul> <p>THEN perform the following:</p> <ul style="list-style-type: none"> <li>Ensure ARN-P01D, D Air Removal Vacuum Pump, running</li> <li>Open ONE Condenser suction valve as directed by the SM/CRS <ul style="list-style-type: none"> <li>ARN-UV-014, using ARN-HS-014, Cond A Air Removal Suction Vlv</li> <li>ARN-UV-015, using ARN-HS-015, Cond B Air Removal Suction Vlv</li> <li>ARN-UV-016, using ARN-HS-016, Cond C Air Removal Suction Vlv</li> </ul> </li> </ul>
	BOP	<p>Direct an Auxiliary Operator to investigate the cause of the trip:</p> <ul style="list-style-type: none"> <li>ARN-P01C – NGN-L01C4 – TB 140 ft</li> </ul>
<p><b>Driver Cue: When directed to investigate the cause of 'C' Condenser Air Removal Pump, wait 3 minutes and report:</b></p> <ul style="list-style-type: none"> <li>“The 'C' Condenser Removal Pump is not running and the motor is warm to the touch”</li> </ul> <p><b>When directed to investigate the 'C' Condenser Air Removal Pump breaker, wait 5 minutes and report:</b></p> <ul style="list-style-type: none"> <li>“The 'C' Condenser Removal Pump breaker is tripped with an 86 lockout”</li> </ul>		
<p><b>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.</b></p>		

Appendix D	Operator Actions	Form ES-D-2
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Operating Test:	NRC	Scenario #	3	Event #	6	Page 14 of 20
Event Description:	RCS Leak					
Time	Position	Applicant Actions				

<b>Driver Cue: When directed, INITIATE KEY 6, RCS Leak (~20 gpm)</b>		
<b>Indications available:</b>		
<ul style="list-style-type: none"> <li>Letdown Control Valves closing</li> <li>Containment Sump levels rising</li> <li>Containment humidity rising</li> <li>RU-1, Containment Atmosphere radiation alarm</li> </ul>		
	OATC	IF pressurizer level is lowering, AND additional makeup is required, THEN ensure all available Charging Pumps are running
	OATC	IF all available Charging Pumps are running, AND pressurizer level is lowering, THEN isolate letdown
	CRS	Ensure the event is being classified
<b>Procedure Note:</b>		
<ul style="list-style-type: none"> <li>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</li> </ul>		
	CRS	Initiate Appendix I, LCO Required Action Tracker
<b>Technical Specifications:</b>		
<ul style="list-style-type: none"> <li>LCO 3.4.14, RCS Operational LEAKAGE, Condition A &amp; B <ul style="list-style-type: none"> <li>Reduce LEAKAGE to within limits within 4 hours</li> <li>Required Action and associated Completion Time of Condition A not met, be in MODE 3 in 6 hours AND be in MODE 5 in 36 hours</li> </ul> </li> </ul>		
	CRS	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)
	CRS	Direct Chemistry to perform 74DP-9ZZ05, Abnormal Occurrence Checklist
	CRS	Notify Radiation Protection that an RCS leak exists
	OATC	Determine the leakrate using ANY of the following: <ul style="list-style-type: none"> <li>Appendix A, 15 Minute Leak Rate Calculation</li> <li>Appendix B, ERFDADS Calculation of RCS Water Inventory</li> <li>40ST-9RC05, Manual Calculation of RCS Water Inventory</li> <li>40ST-9RC08, OAP Calculation of RCS Water Inventory</li> </ul>
<b>Examiner Note: Validation crews used ERFDADS Leak Rate Determination. The following steps are from Appendix B, ERFDADS Leak Rate Determination:</b>		
	OATC	Ensure Tc is constant
	OATC	Check that pressurizer pressure is stable between 2235 psia and 2265 psia
	OATC	Ensure Chemistry is NOT drawing samples from the RCS or CVCS
	OATC	Ensure that ONE of the following conditions exist: <ul style="list-style-type: none"> <li>Letdown is aligned to the VCT</li> <li>Letdown is isolated</li> </ul>
	OATC	Ensure that ONE of the following conditions exist: <ul style="list-style-type: none"> <li>Charging pump suction is aligned to the VCT</li> <li>Charging pumps are stopped</li> </ul>

Appendix D	Operator Actions	Form ES-D-2
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Operating Test:	NRC	Scenario #	3	Event #	4	Page 15 of 20
Event Description:	Loss of Letdown					
Time	Position	Applicant Actions				

	OATC	Place CHN-FIC-210X, Reactor Makeup Water to VCT, in 'MANUAL' with zero output
	OATC	Place CHN-FIC-210Y, Boric Acid Makeup to VCT, in 'MANUAL' with zero output
	OATC	Place CHN-HS-527, Make-up to Charging Pumps (VCT Bypass) Valve in 'CLOSED'
	OATC	When CHN-UV-527 indicates closed, Then place CHN-HS-210, Makeup Mode Select Switch, in 'MANUAL'
	OATC	Select the 'RCS LEAK RATE' box on the SPDS Overview screen
	OATC	Select the 'TREND-1' button on the Analog Point Attributes screen for point SPDS5047
	OATC	Ensure both of the following on the trend screen for SPDS5047 <ul style="list-style-type: none"> <li>• Range (-20) to 80 gpm</li> <li>• Trend length 30 mins</li> </ul>
	OATC	If conditions (such as leakrate getting worse) require restoration of VCT Makeup prior to completing data collection, then go to step 18
	OATC	Allow the trend to run for at least 15 minutes, or until VCT level has lowered to 15%
	OATC	Step 18: Restore VCT makeup by performing the following: <ul style="list-style-type: none"> <li>• Place CHN-HS-210 in 'AUTO'</li> <li>• Place CHN-HS-527 in 'OPEN/AUTO'</li> <li>• Place CHN-FIC-210X in 'AUTO'</li> <li>• Place CHN-FIC-210Y in 'AUTO'</li> </ul>
<b>Examiner Note: When the CRS has evaluated Technical Specifications, or at the lead evaluators discretion proceed to Event 7, Small Break LOCA</b>		



Appendix D	Operator Actions	Form ES-D-2
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Operating Test:	NRC	Scenario #	3	Event #	7,8	Page 16 of 20
Event Description:	Small Break LOCA / 'B' HPSI Pump Trip, 'A' HPSI Pump FTAS					
Time	Position	Applicant Actions				

<b>Driver Cue: When directed increase RCS Leak Rate, mfTH01A, severity to 0.12 (~240 gpm)</b>		
<b>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:</b>		
	BOP	<p>Determine that Reactivity Control acceptance criteria are met:</p> <ul style="list-style-type: none"> <li>• Check that reactor power is dropping</li> <li>• Check that startup rate is negative</li> <li>• Check that full strength CEAs are inserted</li> <li>• Check that the Main Turbine is tripped</li> </ul>
	OATC	<p>Determine the Maintenance of Vital Auxiliaries acceptance criteria are met:</p> <ul style="list-style-type: none"> <li>• Check the Main Generator output breakers are open</li> <li>• Check that station loads have transferred to offsite electrical power such that BOTH of the following conditions are met: <ul style="list-style-type: none"> <li>• All vital and non-vital AC buses are powered</li> <li>• All vital and non-vital DC buses are powered</li> </ul> </li> </ul>
	OATC	<p>Determine that RCS Inventory Control acceptance criteria are met:</p> <ul style="list-style-type: none"> <li>• Check that pressurizer level meets BOTH of the following: <ul style="list-style-type: none"> <li>• 10-65%</li> <li>• Trending as expected to 33-53% <ul style="list-style-type: none"> <li>• (CA) Restore and maintain pressurizer level to 33-53% by any of the following: <ul style="list-style-type: none"> <li>• Operation of PLCS</li> <li>• Manual operation of Charging Pumps and Letdown Control Valves</li> </ul> </li> </ul> </li> </ul> </li> <li>• Check that the RCS is 24°F or more subcooled <ul style="list-style-type: none"> <li>• (CA) IF the RCS is less than 24F subcooled, THEN stop all RCPs</li> </ul> </li> <li>• Check that BOTH of the following are in service to all RCPs: <ul style="list-style-type: none"> <li>• Seal injection</li> <li>• Nuclear Cooling Water <ul style="list-style-type: none"> <li>• (CA) Isolate controlled bleedoff from ANY RCP(s) as appropriate. REFER TO 40AO-9ZZ04, RCP Emergencies, Appendix E, Control Board B04 Label</li> </ul> </li> </ul> </li> </ul>
	OATC	<p>Determine that RCS Pressure Control acceptance criteria are met:</p> <ul style="list-style-type: none"> <li>• Pressurizer pressure is 1837-2285 psia</li> <li>• Pressurizer pressure is trending as expected to 2225-2275 psia <ul style="list-style-type: none"> <li>• (CA) Restore and maintain pressurizer pressure to the normal control band by ANY of the following: <ul style="list-style-type: none"> <li>• Operation of PPCS</li> <li>• Manual operation of pressurizer heaters and spray valves</li> </ul> </li> <li>• (CA) IF pressurizer pressure drops to the SIAS setpoint, THEN ensure that SIAS is actuated</li> <li>• (CA) IF pressurizer pressure remains below the SIAS setpoint, THEN stop ONE RCP in each loop</li> <li>• (CA) IF pressurizer pressure drops below the RCP NPSH limits, THEN stop all RCPs. REFER TO Appendix 2, Figures</li> </ul> </li> </ul>

Appendix D	Operator Actions	Form ES-D-2
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Operating Test:	NRC	Scenario #	3	Event #	7	Page 17 of 20
Event Description:	Small Break LOCA					
Time	Position	Applicant Actions				

<p><b>Examiner Note: 'B' HPSI pump's shaft will shear and 'A' HPSI pump will fail to autostart. The crew will manually start 'A' HPSI pump.</b></p>		
<p><b>Critical Task # 1:</b></p> <p><b>When the Safety Injection Actuation setpoint is exceeded (Start time is when Pressurizer pressure – 1837 psia OR Containment pressure - 3 psig), ensure adequate Safety Injection flow to meet Safety Function requirements within 30 minutes of exceeding the SIAS setpoint.</b></p> <p><b>SAT / UNSAT</b></p>		
	OATC	<p>Determine that Core Heat Removal acceptance criteria is met:</p> <ul style="list-style-type: none"> <li>• At least one RCP is operating</li> <li>• Loop delta-T is less than 10°F</li> <li>• RCS is 24°F or more subcooled</li> </ul>
	BOP	<p>Determine that RCS Heat Removal acceptance criteria are met:</p> <ul style="list-style-type: none"> <li>• Check that at least one SG meets BOTH of the following: <ul style="list-style-type: none"> <li>• Level is 35% WR or more</li> <li>• Feedwater is restoring or maintaining level 45-60% NR <ul style="list-style-type: none"> <li>• (CA) Restore and maintain level in at least one SG 45-60% NR</li> </ul> </li> </ul> </li> <li>• Check that Tc is 560-570°F <ul style="list-style-type: none"> <li>• (CA) IF Tc is greater than 570°F, THEN perform the following: <ul style="list-style-type: none"> <li>• Ensure that feedwater is being restored to at least one SG</li> <li>• Restore Tc to 560-570°F using SBCS or ADVs</li> </ul> </li> <li>• (CA) IF Tc is less than 560°F, THEN perform the following: <ul style="list-style-type: none"> <li>• Ensure feed flow is NOT excessive</li> <li>• Ensure SG Blowdown is isolated</li> <li>• Restore Tc to 560-570°F using SBCS or ADVs</li> <li>• IF MSIS has actuated AND the cooldown terminates, THEN stabilize Tc using ADVs</li> <li>• 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</li> </ul> </li> </ul> </li> <li>• Check that SG pressure is 1140-1200 psia <ul style="list-style-type: none"> <li>• (CA) IF SG pressure drops to the MSIS setpoint, THEN ensure MSIS has actuated</li> <li>• (CA) IF SG pressure is less than 1140 psia, THEN perform the following: <ul style="list-style-type: none"> <li>• Ensure the SBCS valves are closed</li> <li>• Ensure the ADVs are closed</li> </ul> </li> <li>• (CA) IF SG pressure is greater than 1200 psia, THEN restore and maintain SG pressure to less than 1200 psia using SBCS or ADVs</li> </ul> </li> </ul>

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Operating Test:	NRC	Scenario #	3	Event #	7	Page 18 of 20
Event Description:	Small Break LOCA					
Time	Position	Applicant Actions				

	OATC	<p>Determine that Containment Isolation acceptance criteria are met:</p> <ul style="list-style-type: none"> <li>• Check that containment pressure is less than 2.5 psig <ul style="list-style-type: none"> <li>• (CA) IF containment pressure is 3 psig or more, THEN ensure that CIAS has been initiated</li> </ul> </li> <li>• Check BOTH of the following conditions: <ul style="list-style-type: none"> <li>• No abnormal containment area activity</li> <li>• No abnormal steam plant activity</li> </ul> </li> </ul>
	OATC	<p>Determine that Containment Temperature and Pressure Control acceptance criteria are met:</p> <ul style="list-style-type: none"> <li>• Check that containment temperature is less than 117°F</li> <li>• Check that containment pressure is less than 2.5 psig <ul style="list-style-type: none"> <li>• (CA) IF containment pressure is 3 psig or more, THEN ensure that CIAS has been initiated</li> <li>• (CA) IF containment pressure is 8.5 psig or more, THEN perform the following: <ul style="list-style-type: none"> <li>• Ensure CSAS is actuated</li> <li>• Ensure at least one Containment Spray header flow is greater than 4350 gpm</li> <li>• Stop all of the operating RCPs</li> <li>• Ensure RCP controlled bleedoff is isolated</li> </ul> </li> </ul> </li> </ul>
	CRS	Diagnose the event(s) in progress and GO TO the appropriate procedure
<p><b>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:</b></p>		
	CRS	<p>Monitor the SFSCs by performing the following:</p> <ul style="list-style-type: none"> <li>• Check that the Safety Function Status Check acceptance criteria are satisfied</li> <li>• Ensure that the Steam Generator Sample valves are open</li> <li>• Direct chemistry to perform 74DP-9ZZ05, Abnormal Occurrence Checklist</li> </ul>
	CRS	Ensure the event is being classified.
	CRS	Open the Placekeeper and enter the EOP Entry Time.
	OATC	If pressurizer pressure drops to the SIAS setpoint, then check that SIAS is actuated.
	OATC	<p>IF SIAS has actuated, THEN perform the following:</p> <ul style="list-style-type: none"> <li>• Check that the HPSI and LPSI Pumps have started</li> <li>• Check that safety injection flow is adequate. Refer to Appendix 2, Figures</li> </ul>

Operating Test:	NRC	Scenario #	3	Event #	7	Page 19 of 20
Event Description:		Small Break LOCA				
Time	Position	Applicant Actions				

	OATC	<p>IF SIAS has actuated, THEN perform the following:</p> <ul style="list-style-type: none"> <li>• 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: <ul style="list-style-type: none"> <li>• Appendix 10, Charging Pump Alternate Suction to the RWT / Restoration</li> <li>• Appendix 11, Charging Pump Alternate Suction to the SFP / Restoration</li> </ul> </li> <li>• 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.</li> </ul>
	OATC	<p>IF pressurizer pressure remains below the SIAS setpoint, THEN perform the following:</p> <ul style="list-style-type: none"> <li>• Ensure ONE RCP is stopped in each loop.</li> <li>• IF RCS subcooling is less than 24°F [44°F], THEN ensure all RCPs are stopped.</li> </ul>
	OATC	<p>If any RCPs are operating, then perform Appendix 16, RCP Trip Criteria and check the RCP operating limits satisfied.</p>
	OATC	<p>IF pressurizer pressure remains below the SIAS setpoint, THEN perform the following:</p> <ul style="list-style-type: none"> <li>• Ensure ONE RCP is stopped in each loop.</li> <li>• IF RCS subcooling is less than 24°F [44°F], THEN ensure all RCPs are stopped.</li> </ul>
	OATC	<p>PERFORM Appendix 117, Placing Hydrogen Analyzers In Service.</p>
	BOP	<p>If containment pressure is 3 psig or more, then check CIAS is actuated.</p>
	BOP	<p>If CIAS has actuated, then perform the following:</p> <ul style="list-style-type: none"> <li>• Check that an isolation valve is closed for each containment penetration required to be closed</li> </ul>
	OATC	<p>IF the following conditions exist:</p> <ul style="list-style-type: none"> <li>• The Containment Spray Pump(s) are operating on the miniflow(s)</li> <li>• Containment pressure is not expected to exceed 8.5 psig within one hour of the CS Pump start</li> </ul> <p>THEN stop the Containment Spray Pump(s).</p>
<p><b>The following steps are from 40EP-9EO10-117, Appendix 117: Placing Hydrogen Analyzers in Service:</b></p>		
	OATC	<p>Perform the following to place Hydrogen Analyzer Train A in service:</p> <ul style="list-style-type: none"> <li>• Open HPA-UV-1, Containment Isolation Valve</li> <li>• Open HPA-HV-7A/7B, Containment Isolation Valves</li> <li>• Place handswitch HPA-HS-9A, Power/Control, in the ANALYZE position</li> </ul>
	OATC	<p>Perform the following to place Hydrogen Analyzer Train B in service:</p> <ul style="list-style-type: none"> <li>• Open HPA-UV-2, Containment Isolation Valve</li> <li>• Open HPA-HV-8A/8B, Containment Isolation Valves</li> <li>• Place handswitch HPA-HS-10A, Power/Control, in the ANALYZE position</li> </ul>

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Operating Test:	NRC	Scenario #	3	Event #	7	Page 20 of 20
Event Description:	Small Break LOCA					
Time	Position	Applicant Actions				

<p><b>Critical Task # 2:</b></p> <p><b>Place both Hydrogen Analyzers in service within 30 minutes of the LOCA</b></p> <p><b>Start time is when all available charging pumps running and letdown isolated _____</b></p> <p><b>End time is when both Hydrogen Analyzer switches in the 'Analyze' position _____</b></p> <p><b>SAT / UNSAT</b></p> <p><b>Examiner Note: When the crew has placed both Hydrogen Analyzer in service, or at lead evaluator's discretion, the scenario may be terminated</b></p>
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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)

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  $\geq 26$  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  $\geq 26$  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 being fed at ~ 250 gpm
	Ensure that Tavg is $565 \pm 0.5^{\circ}\text{F}$ by adjusting SBCS master controller

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		

## Plant Conditions:

- Unit 1 is operating at 2% power BOC
- The pressurizer is in boron equalization
- Steam Generator level bands is 30-50% being fed with AFN-P01 via downcomer bypass valves
- There are no personnel in containment

## Equipment Out of Service:

- None

## Planned Shift Activities:

- Maintain 2% power

Operating Test:	NRC	Scenario #	4	Event #	1	Page 8 of 19
Event Description:		Containment Atmosphere Radiation Monitor RU-1 fails high				
Time	Position	Applicant Actions				

<b>Driver Cue: When directed, INITIATE KEY 1, Containment Atmosphere Radiation Monitor RU-1 fails high</b>		
<b>Available indications:</b>		
<ul style="list-style-type: none"> <li>• RMS RU-1 alarm</li> <li>• RMS RU-1 indicates a step increase high</li> </ul>		
<b>The following steps are from 74AL-9SQ01, Radiation Monitoring System Alarm Validation and Response:</b>		
	BOP	<p>IF ANY of the following:</p> <ul style="list-style-type: none"> <li>• Channel 1 alarms</li> <li>• Channel 2 alarms</li> <li>• Channel 3 alarms</li> </ul> <p>THEN perform the following actions:</p> <ul style="list-style-type: none"> <li>• Notify RP of the alarm</li> <li>• IF ANY of the following:               <ul style="list-style-type: none"> <li>○ The particulate channel indicates an increase in RCS leak rate (that is increasing radioactivity trend)</li> <li>○ The gas channel indicates an increase in RCS leak rate (that is, increasing radioactivity trend)</li> </ul> </li> </ul> <p>THEN perform an RCS water inventory balance per 40ST-9RC02, ERFDADS (Preferred) Calculation of RCS Water Inventory</p>
<b>Procedure Note:</b>		
<ul style="list-style-type: none"> <li>• 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</li> </ul>		
<b>Driver Cue: When contacted as RP/Effluents to report the status of RU-1, wait 1 minute and report:</b>		
<p>“RU-1 radiation monitor has failed”</p>		

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Operating Test:	NRC	Scenario #	4	Event #	1	Page 9 of 19
Event Description:	Containment Atmosphere Radiation Monitor RU-1 fails high					
Time	Position	Applicant Actions				

<b>Technical Specifications:</b>	
<ul style="list-style-type: none"> <li>• <b>LCO 3.4.16, RCS Leakage Detection Instrumentation, Condition B</b> <ul style="list-style-type: none"> <li>○ <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</b></li> </ul> </li> </ul>	
<b>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%</b>	

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Operating Test:	NRC	Scenario #	4	Event #	2	Page 10 of 19
Event Description:	Seal Injection Controller CHN-FIC-242 fails to 100%					
Time	Position	Applicant Actions				

<b>Driver Cue: When directed, INITIATE KEY 2, Seal Injection Controller CHN-FIC-242 fails to 100%</b>		
<b>Available indications:</b>		
<ul style="list-style-type: none"> <li>• 3A11B RCP SEAL INJ FLOW HI-HI OR LO alarm</li> </ul>		
<b>Examiner Note: The crew may mitigate the event using the ARP or AOP. The following steps are from 40AL-9RK3A, Panel B03A Alarm Responses alarm window 3A11B:</b>		
	OATC	Check ALL of the following controllers: <ul style="list-style-type: none"> <li>• CHN-FIC-241, Seal Inj to Reac Clnt Pmp 1A</li> <li>• CHN-FIC-242, Seal Inj to Reac Clnt Pmp 1B</li> <li>• CHN-FIC-243, Seal Inj to Reac Clnt Pmp 2A</li> <li>• CHN-FIC-244, Seal Inj to Reac Clnt Pmp 2B</li> </ul>
<b>Procedure Note:</b>		
<ul style="list-style-type: none"> <li>• If only a single charging pump is available and running, then closing CHB-HV-255 may prevent a loss of letdown on high temperature</li> </ul>		
	OATC	If both of the following: <ul style="list-style-type: none"> <li>• SM/CRS directs</li> <li>• Power is available to CHB-HV-0255, Seal Injection Containment Isolation</li> </ul> THEN close CHB-HV-0255, Seal Injection Containment Isolation, using CHB-HS-255, RCP SEAL INJ SPLY HDR ISOL VLV
	OATC	Perform the following for the alarming seal injection controller: <ul style="list-style-type: none"> <li>• Place the alarming seal injection controller in MANUAL</li> <li>• Adjust the alarming seal injection controller to establish seal injection flow between 6 gpm and 7.5 gpm (preferred flow of 6.6 gpm)</li> </ul>
	OATC	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
<b>Driver Cue: If directed to report CHN-PDIS-241 pressure, wait 3 minutes and report:</b>		
<b>“RCP Seal Injection filter differential pressure CHN-PDIS-241 is 10 psid”</b>		
<b>Examiner Note: The following step is from 40AO-9ZZ04, Reactor Coolant Pump Emergencies, Section 4.0:</b>		
	OATC	IF Seal Injection is in service, THEN adjust flow to 6.0 to 7.5 gpm
<b>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</b>		

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Operating Test:	NRC	Scenario #	4	Event #	3	Page 11 of 19
Event Description:		Inadvertent Train 'B' AFAS				
Time	Position	Applicant Actions				

<b>Driver Cue: When directed, INITIATE KEY 3, Inadvertent Train 'B' AFAS-1</b>		
<b>Available indications:</b>		
<ul style="list-style-type: none"> <li>• Multiple alarms</li> <li>• AFB-P01 will commence feeding SG #1</li> <li>• Reactor power rising</li> </ul>		
<b>The following steps are from 40AO-9ZZ17, Inadvertent PPS-ESFAS Actuations:</b>		
	BOP	<p>Override and operate Auxiliary Feedwater Valves as needed to control SG level</p> <p>The BOP will override and close the following valves:</p> <ul style="list-style-type: none"> <li>• AFB-HV-30</li> <li>• AFB-UV-34</li> </ul>
	BOP	<p>IF AFA-P01 is running, perform the following:</p> <ul style="list-style-type: none"> <li>• Inform RP and the RMS technician of steaming to atmosphere</li> <li>• 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</li> </ul>
	BOP	<p>IF SG Blowdown is isolated, THEN perform the following:</p> <ul style="list-style-type: none"> <li>• Inform Chemistry that Blowdown is isolated</li> <li>• 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: <ul style="list-style-type: none"> <li>○ NKBMF1</li> <li>○ NKBMF2</li> </ul> </li> </ul>
	OATC	<p>Perform the following:</p> <ul style="list-style-type: none"> <li>• PERFORM Appendix C, PPS-ESFAS Check, Step 2 and Step 3 to check that equipment actuated as expected</li> <li>• Document components that failed to actuate in the Control Room Log</li> <li>• Ensure compliance with TS for components that failed to actuate or were overridden</li> </ul>
<b>Driver Cue: If I&amp;C contacted to assist in troubleshooting the Inadvertent AFAS (the fuses will not indicate blown because there is no power), coordinate with the lead instructor, wait 5 minutes, enter the Control Room and inform the CRS:</b>		
<ul style="list-style-type: none"> <li>• "Train B AFAS-1 fuses 65 and 75 are blown"</li> </ul>		
	CRS	<p>Ensure compliance with BOTH of the following:</p> <ul style="list-style-type: none"> <li>• LCO 3.3.5, ESFAS Instrumentation</li> <li>• LCO 3.3.6, ESFAS Logic and Manual Trip</li> </ul>
<b>Technical Specifications:</b>		
<ul style="list-style-type: none"> <li>• LCO 3.3.6, Engineered Safety Features Actuation System (ESFAS) Logic and Manual Trip, Condition D <ul style="list-style-type: none"> <li>○ Restore channel to OPERABLE status within 48 hours</li> </ul> </li> <li>• LCO 3.7.5, Auxiliary Feedwater (AFW) System, Condition B <ul style="list-style-type: none"> <li>○ Restore AFW train to OPERABLE status within 72 hours</li> </ul> </li> </ul>		



Operating Test:	NRC	Scenario #	4	Event #	3	Page 12 of 19
Event Description:		Inadvertent Train 'B' AFAS				
Time	Position	Applicant Actions				

	OATC	IF the AFAS will NOT be reset at this time, THEN PERFORM Appendix C, PPS-ESFAS Check, Step 4.1
	OATC	Override and align equipment as directed by the CRS
	OATC	Circle the as left condition of all components listed in the appropriate attachment

**Attachment C-2**

**AFAS-1 Train B**

Actuation Leg	Component	Handswitch	Actuated Condition	In Actuated Condition (Circle one)	As Left Condition (Circle one)
2-4	Diesel Generator B	DGB-HS-2	Start	Y / N	Start / Stop
2-4	Essential Chiller/Chilled Water Pump B	ECB-HS-2A	Running	Y / N	Run / Stop
2-4	Essential Cooling Water Pump B	EWB-HS-2	Running	Y / N	Run / Stop
2-4	Essential Spray Pond Pump B	SPB-HS-2	Running	Y / N	Run / Stop
†	AFW to SG 1 Downstream Vlv	AFB-HS-34A	Open	Y / N	Open / Closed
1-3	AFW to SG 1 Upstream Vlv	AFB-HS-30A	Open	Y / N	Open / Closed
2-4	Essential Electric Aux Feed Pump	AFB-HS-10	Running	Y / N	Run / Stop
1-3	SG 1 Common Downstream Isol Vlv	SGB-HS-500Q	Closed	Y / N	Open / Closed
1-3	SG 2 Common Upstream Isol Vlv	SGB-HS-500R	Closed	Y / N	Open / Closed
1-3	SG 1 Downcomer Blowdown Downstream Vlv	SGB-HS-221	Closed	Y / N	Open / Closed
1-3	SG 1 Cold Leg Blowdown Downstream Vlv	SGB-HS-228	Closed	Y / N	Open / Closed
1-3	SG 1 Hot Leg Blowdown Downstream Vlv	SGB-HS-219	Closed	Y / N	Open / Closed
1-3	SG 2 Downcomer Blowdown Upstream Vlv	SGB-HS-226	Closed	Y / N	Open / Closed
1-3	SG 2 Hot Leg Blowdown Upstream Vlv	SGB-HS-224	Closed	Y / N	Open / Closed
1-3	SG 2 Cold Leg Blowdown Upstream Vlv	SGB-HS-222	Closed	Y / N	Open / Closed

† AFB-UV-34, AFW to SG 1 Downstream Vlv, will NOT actuate on a half leg trip.

**Examiner Note: When the CRS has evaluated Technical Specifications, or at the lead evaluator's discretion, proceed to Event 4 T<sub>COLD</sub> Transmitter TT-111Y fails high**

Operating Test:	NRC	Scenario #	4	Event #	4	Page 13 of 19
Event Description:		T <sub>COLD</sub> Transmitter TT-111Y fails high				
Time	Position	Applicant Actions				

<b>Driver Cue: When directed, INITIATE KEY 4, T<sub>COLD</sub> Transmitter TT-111Y fails high</b>		
<b>Available Indications:</b>		
<ul style="list-style-type: none"> <li>4A06A RC LOOPS TEMP HI alarm</li> <li>Letdown flow control valves closing</li> <li>Pressurizer level rising</li> </ul>		
<b>The following steps are from 40AO-9ZZ16, RRS Malfunctions:</b>		
	OATC	Ensure that CEDMCS is NOT in Auto Sequential
	OATC	Check that pressurizer level is trending to the proper setpoint for reactor power <b>Contingency Actions:</b> <ul style="list-style-type: none"> <li>IF RCN-LIC-110, Pressurizer Level Control, is in Remote Auto, THEN transfer RCN-LIC-110 to MANUAL</li> <li>Ensure RCN-LIC-110 is in ONE of the following:               <ul style="list-style-type: none"> <li>Local Auto</li> <li>Manual</li> </ul> </li> <li>Maintain pressurizer level 33 to 53%</li> <li>Ensure adequate charging flow for present plant conditions</li> <li>IF letdown isolates, THEN PERFORM 40AO-9ZZ05, Loss of Charging or Letdown</li> </ul>
	OATC	Determine the failed instrument by observing ALL of the following: <ul style="list-style-type: none"> <li>RCN-TT-111Y</li> <li>RCN-TT-121Y</li> <li>RCN-TT-111X</li> <li>RCN-TT-121X</li> <li>RCN-TR-100</li> </ul>
	BOP	If BOTH of the following: <ul style="list-style-type: none"> <li>ALL of the following are NOT identified as failed instruments:               <ul style="list-style-type: none"> <li>RCN-TT-111Y</li> <li>RCN-TT-121Y</li> <li>RCN-TT-111X</li> <li>RCN-TT-121X</li> </ul> </li> <li>RCN-TR-100 indicates a failed instrument in the Tavg circuit</li> </ul> THEN perform Attachment C-2, Determining the Failed Tavg Instrument
	CRS	Determine the impact of the failure
	OATC	IF RRS is selected to ONE of the following: <ul style="list-style-type: none"> <li>Average</li> <li>The affected instrument</li> </ul> THEN perform the following: <ul style="list-style-type: none"> <li>IF RCN-LIC-110 is in Remote Auto, THEN transfer RCN-LIC-110 to MANUAL</li> <li>Ensure RCN-LIC-110 is in ONE of the following:               <ul style="list-style-type: none"> <li>Local Auto</li> <li>Manual</li> </ul> </li> <li>Perform Appendix C, Operation of the Reactor Regulating System, to select the unaffected instrument at the RRS Test Panel</li> </ul>

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Operating Test:	NRC	Scenario #	4	Event #	4	Page 14 of 19
Event Description:		T <sub>COLD</sub> Transmitter TT-111Y fails high				
Time	Position	Applicant Actions				

	OATC	Check that Tavg/Tref mismatch is 3°F or less
	OATC	Place CEDMCS in the desired mode of operation ( <b>Manual Sequential</b> )
	OATC	IF Remote Automatic operation of the PLCS is desired, THEN perform the following: <ul style="list-style-type: none"> <li>• Ensure RCN-LIC-110, Pressurizer Level Control, is in MANUAL</li> <li>• Transfer RCN-LIC-110, Pressurizer Level Control, to Remote Automatic</li> </ul>
<b>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:</b>		
	BOP	IF a temperature instrument has failed, THEN perform the following: <ul style="list-style-type: none"> <li>• Press the TEST PROBE pushbutton</li> <li>• Check that DVM voltage indicates zero volts</li> <li>• Press the DVM pushbutton that corresponds to the Tavg to be selected</li> <li>• Record voltage indicated on the DVM for the selected Tavg (<b>4.3V</b>)</li> <li>• Check that DVM voltage recorded represents the normal Tavg for the current power level</li> <li>• WHEN evaluation of DVM voltage is complete, THEN press the TEST PROBE pushbutton to disconnect the DVM from the input</li> <li>• Place the Tavg input selector switch to the selected input (<b>Tavg Loop 2</b>)</li> <li>• Inform the CRS of the status of the RRS panel</li> </ul>
<b>Examiner Note: When the BOP has informed the CRS that Loop 2 T<sub>AVE</sub> has been selected at the RRS panel (Do not wait for the crew to place LIC-110 in Remote/Auto) or at the lead evaluator's discretion, proceed to Event 5 SGTR</b>		

Operating Test:	NRC	Scenario #	4	Event #	5,6,7	Page 15 of 19
Event Description:		SGTR / Stuck CEA / ESD on Ruptured SG				
Time	Position	Applicant Actions				

<b>Driver Cue: When directed, INITIATE KEY 5, SGTR</b>		
<b>Available indications:</b>		
<ul style="list-style-type: none"> <li>Pressurizer level lowering</li> <li>SG #1 level rising</li> </ul>		
<b>Driver Cue: If contacted as chemistry to sample both Steam Generators, ensure that SG sample valves are open, wait 5 minutes and report:</b>		
<b>“There is indication of Steam Generator tube leakage on SG #1. SG #2 is at background”</b>		
<b>Examiner Note: The following steps are from 40AO-9ZZ02, Excessive RCS Leakrate:</b>		
	OATC	IF pressurizer level is lowering, AND additional makeup is required, THEN ensure all available Charging Pumps are running
	OATC	IF all available Charging Pumps are running, AND pressurizer level is lowering, THEN isolate letdown
	CRS	IF ALL of the following conditions exist: <ul style="list-style-type: none"> <li>All available Charging Pumps are operating</li> <li>Letdown is isolated</li> <li>Pressurizer level is lowering</li> </ul> THEN perform the following: <ul style="list-style-type: none"> <li>Ensure that the Reactor is tripped</li> </ul> GO TO 40EP-9EO01, Standard Post Trip Actions
<b>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:</b>		
	BOP	Determine that Reactivity Control acceptance criteria are met: <ul style="list-style-type: none"> <li>Check that reactor power is dropping</li> <li>Check that startup rate is negative</li> <li>Check that full strength CEAs are inserted               <ul style="list-style-type: none"> <li>(CA) Borate the RCS until adequate SDM is established using Appendix 103, RCS Makeup/Emergency Boration</li> </ul> </li> <li>Check that the Main Turbine is tripped</li> </ul>
<b>The following steps are from 40EP-9EO10-103, Appendix 103: RCS Makeup / Emergency Boration:</b>		
	OATC	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
	OATC	Set the “Target” makeup volume (gallons) on CHN-FQIS-210Y, Boric Acid Makeup Totalized Flow Control, to a minimum of 5000 gallons
	OATC	Place CHN-HS-210, Makeup Mode Select Switch, in “BORATE”
	OATC	Check one Boric Acid Makeup Pump is running
	OATC	Ensure CHN-UV-527, Makeup to CHRG PMPS (VCT Bypass), is open
	OATC	If the left pushbutton on CHN-FQIS-210Y indicates “End”, THEN press the “End” pushbutton

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Operating Test:	NRC	Scenario #	4	Event #	5,6,7	Page 16 of 19
Event Description:	SGTR / Stuck CEA / ESD on Ruptured SG					
Time	Position	Applicant Actions				

	OATC	If the left pushbutton on CHN-FQIS-210Y indicates "Reset", THEN press the "Reset" pushbutton
	OATC	Ensure at least one Charging Pump is running
	OATC	Ensure at least one of the running Charging Pumps is operating with handswitch in AFTER START
	OATC	Press the "Start" pushbutton on CHN-FQIS-210Y
	OATC	Check for BOTH of the following: <ul style="list-style-type: none"> <li>• CHN-FIC-210X indicates no Reactor Makeup Water flow (CHN-FV-210X closed)</li> <li>• Proper flow indicated on CHN-FIC-210Y</li> </ul>
	OATC	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  $\geq 26$  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**

	BOP	Determine the Maintenance of Vital Auxiliaries acceptance criteria are met: <ul style="list-style-type: none"> <li>• Check the Main Generator output breakers are open</li> <li>• Check that station loads have transferred to offsite electrical power such that BOTH of the following conditions are met: <ul style="list-style-type: none"> <li>• All vital and non-vital AC buses are powered</li> <li>• All vital and non-vital DC buses are powered</li> </ul> </li> </ul>
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**Examiner Note: The Main Generator output breakers will remain closed because Motor Operator Disconnect PL-910 is open**

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Operating Test:	NRC	Scenario #	4	Event #	5,6,7	Page 17 of 19
Event Description:	SGTR / Stuck CEA / ESD on Ruptured SG					
Time	Position	Applicant Actions				

	OATC	<p>Determine that RCS Inventory Control acceptance criteria are met:</p> <ul style="list-style-type: none"> <li>• Check that pressurizer level meets BOTH of the following: <ul style="list-style-type: none"> <li>• 10-65%</li> <li>• Trending as expected to 33-53% <ul style="list-style-type: none"> <li>• (CA) Restore and maintain pressurizer level to 33-53% by any of the following: <ul style="list-style-type: none"> <li>• Operation of PLCS</li> <li>• Manual operation of Charging Pumps and Letdown Control Valves</li> </ul> </li> </ul> </li> </ul> </li> <li>• Check that the RCS is 24°F or more subcooled <ul style="list-style-type: none"> <li>• (CA) IF the RCS is less than 24F subcooled, THEN stop all RCPs</li> </ul> </li> <li>• Check that BOTH of the following are in service to all RCPs: <ul style="list-style-type: none"> <li>• Seal injection</li> <li>• Nuclear Cooling Water <ul style="list-style-type: none"> <li>• (CA) Isolate controlled bleedoff from ANY RCP(s) as appropriate. REFER TO 40AO-9ZZ04, RCP Emergencies, Appendix E, Control Board B04 Label</li> </ul> </li> </ul> </li> </ul>
	OATC	<p>Determine that RCS Pressure Control acceptance criteria are met:</p> <ul style="list-style-type: none"> <li>• Pressurizer pressure is 1837-2285 psia</li> <li>• Pressurizer pressure is trending as expected to 2225-2275 psia <ul style="list-style-type: none"> <li>• (CA) Restore and maintain pressurizer pressure to the normal control band by ANY of the following: <ul style="list-style-type: none"> <li>• Operation of PPCS</li> <li>• Manual operation of pressurizer heaters and spray valves</li> </ul> </li> <li>• (CA) IF pressurizer pressure drops to the SIAS setpoint, THEN ensure that SIAS is actuated</li> <li>• (CA) IF pressurizer pressure remains below the SIAS setpoint, THEN stop ONE RCP in each loop</li> <li>• (CA) IF pressurizer pressure drops below the RCP NPSH limits, THEN stop all RCPs. REFER TO Appendix 2, Figures</li> </ul> </li> </ul>
	OATC	<p>Determine that Core Heat Removal acceptance criteria is met:</p> <ul style="list-style-type: none"> <li>• At least one RCP is operating</li> <li>• Loop delta-T is less than 10°F</li> <li>• RCS is 24°F or more subcooled</li> </ul>

Operating Test:	NRC	Scenario #	4	Event #	5,6,7	Page 18 of 19
Event Description:		SGTR / Stuck CEA / ESD on Ruptured SG				
Time	Position	Applicant Actions				

	BOP	<p>Determine that RCS Heat Removal acceptance criteria are met:</p> <ul style="list-style-type: none"> <li>• Check that at least one SG meets BOTH of the following: <ul style="list-style-type: none"> <li>• Level is 35% WR or more</li> <li>• Feedwater is restoring or maintaining level 45-60% NR <ul style="list-style-type: none"> <li>• (CA) Restore and maintain level in at least one SG 45-60% NR</li> </ul> </li> </ul> </li> <li>• Check that Tc is 560-570°F <ul style="list-style-type: none"> <li>• (CA) IF Tc is greater than 570°F, THEN perform the following: <ul style="list-style-type: none"> <li>• Ensure that feedwater is being restored to at least one SG</li> <li>• Restore Tc to 560-570°F using SBCS or ADVs</li> </ul> </li> <li>• (CA) IF Tc is less than 560°F, THEN perform the following: <ul style="list-style-type: none"> <li>• Ensure feed flow is NOT excessive</li> <li>• Ensure SG Blowdown is isolated</li> <li>• Restore Tc to 560-570°F using SBCS or ADVs</li> <li>• IF MSIS has actuated AND the cooldown terminates, THEN stabilize Tc using ADVs</li> <li>• 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</li> </ul> </li> </ul> </li> <li>• Check that SG pressure is 1140-1200 psia <ul style="list-style-type: none"> <li>• (CA) IF SG pressure drops to the MSIS setpoint, THEN ensure MSIS has actuated</li> <li>• (CA) IF SG pressure is less than 1140 psia, THEN perform the following: <ul style="list-style-type: none"> <li>• Ensure the SBCS valves are closed</li> <li>• Ensure the ADVs are closed</li> </ul> </li> <li>• (CA) IF SG pressure is greater than 1200 psia, THEN restore and maintain SG pressure to less than 1200 psia using SBCS or ADVs</li> </ul> </li> </ul>
	OATC	<p>Determine that Containment Isolation acceptance criteria are met:</p> <ul style="list-style-type: none"> <li>• Check that containment pressure is less than 2.5 psig <ul style="list-style-type: none"> <li>• (CA) IF containment pressure is 3 psig or more, THEN ensure that CIAS has been initiated</li> </ul> </li> <li>• Check BOTH of the following conditions: <ul style="list-style-type: none"> <li>• No abnormal containment area activity</li> <li>• No abnormal steam plant activity</li> </ul> </li> </ul>

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Operating Test:	NRC	Scenario #	4	Event #	5,6,7	Page 19 of 19
Event Description:	SGTR / Stuck CEA / ESD on Ruptured SG					
Time	Position	Applicant Actions				

	OATC	<p>Determine that Containment Temperature and Pressure Control acceptance criteria are met:</p> <ul style="list-style-type: none"> <li>• Check that containment temperature is less than 117°F</li> <li>• Check that containment pressure is less than 2.5 psig <ul style="list-style-type: none"> <li>• (CA) IF containment pressure is 3 psig or more, THEN ensure that CIAS has been initiated</li> <li>• (CA) IF containment pressure is 8.5 psig or more, THEN perform the following: <ul style="list-style-type: none"> <li>• Ensure CSAS is actuated</li> <li>• Ensure at least one Containment Spray header flow is greater than 4350 gpm</li> <li>• Stop all of the operating RCPs</li> <li>• Ensure RCP controlled bleedoff is isolated</li> </ul> </li> </ul> </li> </ul>
	CRS	Diagnose the event(s) in progress and GO TO the appropriate procedure
<p><b>Examiner Note: If the crew does not immediately diagnose SGTR, a chemistry sample will be requested at the beginning of each EOP.</b></p>		
<p><b>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:</b></p>		
<p><b>“There is indication of Steam Generator tube leakage on SG #1. SG #2 is at background”</b></p>		
<p><b>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 (to achieve a 1360-1600 gpm feedrate, the BOP will either use AFA-P01 or re-energize panels that were load shed on SIAS and use AFB-P01 combined with AFN-P01):</b></p>		
	BOP	<p>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:</p> <ul style="list-style-type: none"> <li>• The affected SG has level being restored by feedwater flow 1360-1600 gpm</li> <li>• The affected SG has level 45-60% NR with feedwater available to maintain level</li> </ul>
<p><b>Critical Task # 2:</b></p> <p><b>Establish a feedrate of 1360-1600 gpm to SG #1 prior to exiting HR-2, RCS and Core Heat Removal, SG with SI</b></p> <p><b>SAT / UNSAT</b></p>		
<p><b>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</b></p>		



Facility: PVNGS			Date of Exam: 11/30/2020						Operating Test No.: 2020								
A P P L I C A N T	E V E N T  T Y P E	Scenarios												T O T A L	M I N I M U M <sup>(*)</sup>		
		1			2 (spare)			3			4						
		CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION				R	I	U
		S R O	O A T C	B O P	S R O	O A T C	B O P	S R O	O A T C	B O P	S R O	O A T C	B O P				
I1	RX	-	-	-	-	-	-	-	-	-	-	-	0	1			
	NOR	-	-	-	-	-	-	-	-	-	-	-	0	1			
	I/C	2,3,6	2,4,5,6,7	3,5,6,7	1,4,5	1,3,4,5,6				3,4			10	4			
	MAJ	4	8	8	8	7				5,6			4	2			
	TS	-	2,5	-	-	1,6				-			2	2			
I2	RX			-				-		-			0	1			
	NOR			-				-		-			0	1			
	I/C		1,2,3,5					2,3,4,6,8		1,3,4			12	4			
	MAJ		4					7		5,6			4	2			
	TS		-					-		1,3			2	2			
I3	RX	-							-		-		0	1			
	NOR	-							-		-		0	1			
	I/C	1,2,3,5							1,5		2,3,7		9	4			
	MAJ	4							7		5,6		4	2			
	TS	1,2,3							-		-		3	2			
I4	RX		-					-				-	0	1			
	NOR		-					-				-	0	1			
	I/C		2,3,6					1,3,4,5,6				3,4	10	4			
	MAJ		4					7				5,6	4	2			
	TS		-					1,6				-	2	2			

Instructions:

- 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.
- 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.
- 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.
- 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						
A P P L I C A N T	E V E N T  T Y P E	Scenarios												T O T A L	M I N I M U M(*)		
		1			2 (spare)			3			4						
		CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION						
		S R O	O A T C	B O P	S R O	O A T C	B O P	S R O	O A T C	B O P	S R O	O A T C	B O P				
												R	I	U			
15	RX			-					-								0
	NOR			-					-					0		1	
	I/C			1,2,3,5					2,3,4,6,8			1,3,4		12		4	
	MAJ			4					7			5,6		4		2	
	TS			-					-			1,3		2		2	
16	RX	-							-			-		0		1	
	NOR	-							-			-		0		1	
	I/C	1,2,3,5							1,5			2,3,7		9		4	
	MAJ	4							7			5,6		4		2	
	TS	1,2,3							-			-		3		2	
17	RX		-						-				-	0		1	
	NOR		-						-				-	0		1	
	I/C		2,3,6						1,3,4,5,6				3,4	10		4	
	MAJ		4						7			5,6		4		2	
	TS		-						1,6			-	-	2		2	
18	RX			-					-			-		0		1	
	NOR			-					-			-		0		1	
	I/C			1,2,3,5					2,3,4,6,8			1,3,4		12		4	
	MAJ			4					7			5,6		4		2	
	TS			-					-			1,3		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								
A P P L I C A N T	E V E N T  T Y P E	Scenarios												T O T A L	M I N I M U M(*)		
		1			2 (spare)			3			4						
		CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION						
		S R O	O A T C	B O P	S R O	O A T C	B O P	S R O	O A T C	B O P	S R O	O A T C	B O P				
I9	RX	-												0	1		
	NOR	-												0	1		
	I/C	1,2,3,5								1,5		2,3,7		9	4		
	MAJ	4								7		5,6		4	2		
	TS	1,2,3								-		-		3	2		
I10	RX		-							-				0	1		
	NOR		-							-				0	1		
	I/C		2,3,6						1,3,4,5,6			3,4		10	4		
	MAJ		4						7			5,6		4	2		
	TS		-						1,6			-		2	2		
I11	RX			-						-				0	1		
	NOR			-						-				0	1		
	I/C			1,2,3,5					2,3,4,6,8		1,3,4			12	4		
	MAJ			4					7		5,6			4	2		
	TS			-							1,3			2	2		
I12	RX	-												0	1		
	NOR	-												0	1		
	I/C	1,2,3,5								1,5		2,3,7		9	4		
	MAJ	4								7		5,6		4	2		
	TS	1,2,3												3	2		
Instructions:																	
<ol style="list-style-type: none"> <li>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 <i>additionally</i> serves in the BOP position, one I/C malfunction can be credited toward the two I/C malfunctions required for the ATC position.</li> <li>2. Reactivity manipulations may be conducted under normal or <i>controlled</i> 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.</li> <li>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.</li> <li>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.</li> </ol>																	

Facility: PVNGS			Date of Exam: 11/30/2020						Operating Test No.: 2020									
A P P L I C A N T	E V E N T  T Y P E	Scenarios												T O T A L	M I N I M U M (*)			
		1			2 (spare)			3			4							
		CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION							
		S R O	O A T C	B O P	S R O	O A T C	B O P	S R O	O A T C	B O P	S R O	O A T C	B O P		S R O	O A T C	B O P	R
I13	RX								-						0		1	
	NOR								-						0		1	
	I/C								1,3,4, 5,6					2,3,7	8		4	
	MAJ								7					5,6	3		2	
	TS								1,6					-	2		2	
I14	RX													-	0		1	
	NOR													-	0		1	
	I/C												2,3,4, 6,8	1,3,4	8		4	
	MAJ												7	5,6	3		2	
	TS												-	1,3	2		2	
Instructions:																		
<ol style="list-style-type: none"> <li>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 <i>additionally</i> serves in the BOP position, one I/C malfunction can be credited toward the two I/C malfunctions required for the ATC position.</li> <li>2. Reactivity manipulations may be conducted under normal or <i>controlled</i> 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.</li> <li>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.</li> <li>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.</li> </ol>																		

Facility: PVNGS		Date of Examination: 11/30/2020				Operating Test No.: 2020										
Competencies	APPLICANTS															
	RO <input type="checkbox"/>				RO <input type="checkbox"/>				RO <input type="checkbox"/>				RO <input type="checkbox"/>			
	SRO-I 1 <input type="checkbox"/>				SRO-I 2 <input type="checkbox"/>				SRO-I 3 <input type="checkbox"/>				SRO-I 4 <input type="checkbox"/>			
	SRO-U <input type="checkbox"/>				SRO-U <input type="checkbox"/>				SRO-U <input type="checkbox"/>				SRO-U <input type="checkbox"/>			
	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	2,3,4,6		ALL	3,4,5,6	2,3,4,5,7		2,3,4,6,7,8	ALL	ALL		1,5,7	2,3,5,6,7	2,3,4,6		ALL	3,4,5,6
Comply with and Use Procedures (1)	2,3,4,6		ALL	3,4,5,6	2,3,4,5,7		2,3,4,6,7,8	ALL	ALL		1,5,7	2,3,5,6,7	2,3,4,6		ALL	3,4,5,6
Operate Control Boards (2)	2,3,4,6		ALL	3,4,5,6	2,3,4,5,7		2,3,4,6,7,8	ALL	ALL		1,5,7	2,3,5,6,7	2,3,4,6		ALL	3,4,5,6
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					1,3	1,2,3						1,6	
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 <input type="checkbox"/>				RO <input type="checkbox"/>				RO <input type="checkbox"/>				RO <input type="checkbox"/>			
	SRO-I 5 <input type="checkbox"/>				SRO-I 6 <input type="checkbox"/>				SRO-I 7 <input type="checkbox"/>				SRO-I 8 <input type="checkbox"/>			
	SRO-U <input type="checkbox"/>				SRO-U <input type="checkbox"/>				SRO-U <input type="checkbox"/>				SRO-U <input type="checkbox"/>			
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	2,3,4,6,7,8	ALL	ALL	1,5,7	2,3,5,6,7	2,3,4,6	ALL	3,4,5,6	2,3,4,5,7	2,3,4,6,7,8	ALL			
Comply with and Use Procedures (1)		2,3,4,5,7	2,3,4,6,7,8	ALL	ALL	1,5,7	2,3,5,6,7	2,3,4,6	ALL	3,4,5,6	2,3,4,5,7	2,3,4,6,7,8	ALL			
Operate Control Boards (2)		2,3,4,5,7	2,3,4,6,7,8	ALL	ALL	1,5,7	2,3,5,6,7	2,3,4,6	ALL	3,4,5,6	2,3,4,5,7	2,3,4,6,7,8	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)				1,3	1,2,3				1,6				1,3			
<p>Notes:</p> <p>(1) Includes TS compliance for an RO.</p> <p>(2) Optional for an SRO-U.</p> <p>(3) Only applicable to SROs.</p>																

Facility: PVNGS		Date of Examination: 11/30/2020				Operating Test No.: 2020										
Competencies	APPLICANTS															
	RO <input type="checkbox"/> SRO-I 9 <input type="checkbox"/> SRO-U <input type="checkbox"/>				RO <input type="checkbox"/> SRO-I 10 <input type="checkbox"/> SRO-U <input type="checkbox"/>				RO <input type="checkbox"/> SRO-I 11 <input type="checkbox"/> SRO-U <input type="checkbox"/>				RO <input type="checkbox"/> SRO-I 12 <input type="checkbox"/> SRO-U <input type="checkbox"/>			
	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		1,5,7	2,3,5,6,7	2,3,4,6		ALL	3,4,5,6	2,3,4,5,7		2,3,4,6,7,8	AL L	ALL		1,5,7	2,3,5,6,7
Comply with and Use Procedures (1)	ALL		1,5,7	2,3,5,6,7	2,3,4,6		ALL	3,4,5,6	2,3,4,5,7		2,3,4,6,7,8	AL L	ALL		1,5,7	2,3,5,6,7
Operate Control Boards (2)	ALL		1,5,7	2,3,5,6,7	2,3,4,6		ALL	3,4,5,6	2,3,4,5,7		2,3,4,6,7,8	AL L	ALL		1,5,7	2,3,5,6,7
Communicate and Interact	ALL		ALL	ALL	ALL		ALL	ALL	ALL		ALL	AL L	ALL		ALL	ALL
Demonstrate Supervisory Ability (3)	ALL						ALL					AL L	ALL			
Comply with and Use TS (3)	1,2,3						1,6					1,3	1,2,3			
<b>Notes:</b> (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 <input type="checkbox"/>				RO <input type="checkbox"/>				RO <input type="checkbox"/>				RO <input type="checkbox"/>			
	SRO-I 13 <input type="checkbox"/>				SRO-I 14 <input type="checkbox"/>				SRO-I <input type="checkbox"/>				SRO-I <input type="checkbox"/>			
	SRO-U <input type="checkbox"/>				SRO-U <input type="checkbox"/>				SRO-U <input type="checkbox"/>				SRO-U <input type="checkbox"/>			
	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	3,4,5,6			2,3,4,6,7,8	ALL								
Comply with and Use Procedures (1)			ALL	3,4,5,6			2,3,4,6,7,8	ALL								
Operate Control Boards (2)			ALL	3,4,5,6			2,3,4,6,7,8	ALL								
Communicate and Interact			ALL	ALL			ALL	ALL								
Demonstrate Supervisory Ability (3)			ALL					ALL								
Comply with and Use TS (3)			1,6					1,3								
<p>Notes:</p> <p>(1) Includes TS compliance for an RO.</p> <p>(2) Optional for an SRO-U.</p> <p>(3) Only applicable to SROs.</p>																