

JPM#	6. Explanation (See below for instructions)	
SRO (A5)	See markups on draft submittal.	
SRO (A6)	See markups on draft submittal.	<div style="border: 2px solid red; padding: 5px; color: red; text-align: center;"> <b>*** ALL COMMENTS WERE RESOLVED DURING and FOLLOWING OPTEST VALIDATION *** MARKUPS ATTACHED AT END</b> </div>
SRO (A7)	See markups on draft submittal.	
SRO (A8)	See markups on draft submittal.	
SRO (A9)	See markups on draft submittal.	

Instructions for Completing Matrix  
**This form is not contained in or required by NUREG-1021.** Utilities are not required or encouraged to use it. The purpose of this form is to enhance regional consistency in reviewing operating tests. Additional information on these areas may be found in Examination Good Practices Appendix D. Check or mark any item(s) requiring comment and explain the issue in the space provided.

1. Determine whether the task is dynamic (D) or static (S). A dynamic task is one that involves continuous monitoring and response to varying parameters. A static task is basically a system reconfiguration or realignment.
2. Determine level of difficulty (LOD) using established 1-5 rating scale. Levels 1 and 5 represent inappropriate (low or high) discriminatory level for the license being tested.
3. Check the appropriate box when an attribute weakness is identified:
  - The initiating cue is not sufficiently clear to ensure the operator understands the task and how to begin.
  - The JPM does not contain sufficient cues that are objective (not leading).
  - All critical steps (elements) have not been properly identified.
  - Scope of the task is either too narrow (N) or too broad (B).
  - Excessive overlap with other part of operating test or written examination.
4. Check the appropriate box when a job content error is identified:
  - Topics not linked to job content (e.g., disguised task, not required in real job).
  - Task is trivial and without safety significance.
5. Based on the reviewer's judgment, is the JPM as written (U)nacceptable (requiring repair or replacement), in need of (E)ditorial enhancement, or (S)atisfactory?
6. Provide a brief description of any U or E rating in the explanation column.
7. Save initial review comments as normal black text; indicate how comments were resolved using **blue text** so that each JPM used on the exam is reflected by a (S)atisfactory resolution on this form.

JPM#	6. Explanation (See below for instructions)
S1	One minor edit of JPM cue sheet. Also move this sheet to the end of the JPM.
S2	See markups on draft submittal.
S3	See markups on draft submittal.
S4	See markups on draft submittal.
S5	See markups on draft submittal.
S6	See markups on draft submittal.
S7	See markups on draft submittal.
	GENERIC COMMENT: Need examiner cues for in-plants.
P1	See markups on draft submittal.
P2	See markups on draft submittal. Have another JPM for FPC system as indicated on the JPM markup.
P3	See markups on draft submittal. Examiner cues can be inferred from standards. No separate cues needed.

#### Instructions for Completing Matrix

**This form is not contained in or required by NUREG-1021.** Utilities are not required or encouraged to use it. The purpose of this form is to enhance regional consistency in reviewing operating tests. Additional information on these areas may be found in Examination Good Practices Appendix D. Check or mark any item(s) requiring comment and explain the issue in the space provided.

- Determine whether the task is dynamic (D) or static (S). A dynamic task is one that involves continuous monitoring and response to varying parameters. A static task is basically a system reconfiguration or realignment.
- Determine level of difficulty (LOD) using established 1-5 rating scale. Levels 1 and 5 represent inappropriate (low or high) discriminatory level for the license being tested.
- Check the appropriate box when an attribute weakness is identified:
  - The initiating cue is not sufficiently clear to ensure the operator understands the task and how to begin.
  - The JPM does not contain sufficient cues that are objective (not leading).
  - All critical steps (elements) have not been properly identified.
  - Scope of the task is either too narrow (N) or too broad (B).
  - Excessive overlap with other part of operating test or written examination.
- Check the appropriate box when a job content error is identified:
  - Topics not linked to job content (e.g., disguised task, not required in real job).
  - Task is trivial and without safety significance.
- Based on the reviewer's judgment, is the JPM as written (U)nacceptable (requiring repair or replacement), in need of (E)ditorial enhancement, or (S)atisfactory?
- Provide a brief description of any U or E rating in the explanation column.
- Save initial review comments as normal black text; indicate how comments were resolved using **blue text** so that each JPM used on the exam is reflected by a (S)atisfactory resolution on this form.

WT-2010-10		DRAFT OPERATING TEST COMMENTS		SCENARIOS
Scenario Set	10. Explanation (See below for instructions)			
1	See markups on draft submittal. Minor edits.			
2	Minimal scenario that may be the backup. See markups on draft submittal. Minor edits on page 10 of 16 on D2.			
3	No Comments			
<p><u>Instructions for Completing Matrix</u></p> <p><b>This form is not contained in or required by NUREG-1021.</b> Utilities are not required or encouraged to use it. The purpose of this form is to enhance regional consistency in reviewing operating test scenario sets. Additional information on these areas may be found in Examination Good Practices Appendix D. Check or mark any item(s) requiring comment and explain the issue in the space provided.</p> <ol style="list-style-type: none"> <li>ES: ES-301 checklists 4, 5, &amp; 6 satisfied.</li> <li>TS: Set includes SRO TS actions for each SRO, with required actions explicitly detailed.</li> <li>Crit: Each manipulation or evolution has explicit success criteria documented in Form ES-D-2.</li> <li>IC: Out of service equipment and other initial conditions reasonably consistent between scenarios and not predictive of scenario events and actions.</li> <li>Pred: Scenario sequence and other factors avoid predictability issues.</li> <li>TL: Time line constructed, including event and process triggered conditions, such that scenario can run without routine examiner cuing.</li> <li>L/C: Length and complexity for each scenario in the set is reasonable for the crew mix being examined, such that all applicants have reasonably similar exposure and events are needed for evaluation purposes.</li> <li>Eff: Sequence of events is reasonably efficient for examination purposes, especially with respect to long delays or interactions.</li> <li>Based on the reviewer's judgment, rate the scenario set as (U)nacceptable (requiring repair or replacement), in need of (E)ditorial enhancement, or (S)atisfactory.</li> <li>Provide a brief description of problem in the explanation column.</li> <li>Save initial review comments as normal black text; indicate how comments were resolved using <b>blue text</b> so that each JPM used on the exam is reflected by a (S)atisfactory resolution on this form.</li> </ol>				

**Waterford 3**

**2010 NRC SRO Exam**

**JOB PERFORMANCE MEASURE**

**A1**

**Review Completed Surveillance for Approval**

**EXAMINER REVIEW COMMENTS IN RED**

Applicant: \_\_\_\_\_

Examiner: \_\_\_\_\_

JOB PERFORMANCE MEASURE  
DATA PAGE

---

Task: Review and approve surveillance OP-903-117, Emergency Diesel Generator Fuel Oil Transfer Pump Operability Check.

Task Standard: Applicant's review discovered **three** errors ~~as identified in the key,~~ **and Applicant also the applicant correctly** evaluated Tech Specs ~~in accordance with~~ **as identified in** the key.

References: OP-903-117, Emergency Diesel Generator Fuel Oil Transfer Pump Operability Check

Time Critical:   No   Validation Time:   15   mins.

K/A 2.1.23, Ability to perform specific system and integrated plant procedures during all modes of plant operation. Importance Rating   4.4  

Applicant: \_\_\_\_\_

Time Start: \_\_\_\_\_ Time Finish: \_\_\_\_\_

Performance Time: \_\_\_\_\_ minutes

Performance Rating:           SAT                   UNSAT

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Examiner: \_\_\_\_\_  
Signature

Date: \_\_\_\_\_



**EXAMINER COPY ONLY**

Tools/Equipment/Procedures Needed:

OP-903-117, Emergency Diesel Generator Fuel Oil Transfer Pump Operability Check

Description:

This JPM is performed in the simulator, but use of the simulator is not required. The applicant will be given a completed OP-903-117, Attachment 1 for EDG Fuel Oil Transfer Pump A. The key **identifies-indicates the errors** that the applicant must identify. One of the errors will make EDG Fuel Oil Transfer Pump A inoperable. The applicant will be required to identify the correct Tech Spec.

READ TO APPLICANT

DIRECTION TO APPLICANT:

Each administrative JPM has a cue sheet with the instructions for that JPM. Each administrative JPM stands alone, and conditions from 1 JPM do not carry over to any other JPM. If you have any questions, raise your hand and I will come to your desk.

Provide all answers on the sheets provided.

Read the Initial Condition and Cues from the colored Applicant Cue Sheet, and then give the cue sheet to the applicant.

TASK ELEMENT 1	STANDARD
Review Attachment 10.1 for accuracy.	<p>The following errors must be identified:</p> <ul style="list-style-type: none"> <li>• The vibration meter and probe are past their calibration dates.</li> <li>• Pump differential pressure was calculated incorrectly. The corrected pressure is below the low limit of 70.7 PSID.</li> <li>• The flow calculation for EGF-109 A, Fuel Oil Transfer Pump A Discharge Check, was performed incorrectly. The corrected flow is greater than the required 30 gpm.</li> </ul>
Comment:	<p><b><u>Critical</u></b></p> <p><b>SAT / UNSAT</b></p>

TASK ELEMENT 2	STANDARD
Determine applicable Tech Spec associated with EDG Fuel Oil Transfer Pump A being inoperable.	<p>Tech Spec 3.8.1.1 b and d must be entered.</p> <p>Actions include:</p> <ul style="list-style-type: none"> <li>• Restore EDG A within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.</li> <li>• Restoration within 72 hours may be extended to 10 days if a temporary emergency diesel generator is verified available.</li> <li>• Complete OP-903-066, Electrical Breaker Alignment Check, within 1 hour, and at least every 8 hours thereafter.</li> </ul> <p>The following must be satisfied within 2 hours:</p> <ul style="list-style-type: none"> <li>• All required systems, subsystems, trains, components, and devices that depend on the remaining OPERABLE diesel generator as a source of emergency power must be OPERABLE</li> <li>• Emergency Feedwater Pump AB must be OPERABLE.</li> </ul>
Comment:	<p><b><u>Critical</u></b></p> <p><b>SAT / UNSAT</b></p>

**END OF TASK**



## APPLICANT CUE SHEET

(TO BE RETURNED TO EXAMINER ~~TO~~ UPON COMPLETION OF TASK)

### INITIAL CONDITIONS:

- Emergency Diesel Generator A Fuel Oil Transfer Pump IST has been completed in accordance with OP-903-117, Emergency Diesel Generator Fuel Oil Transfer Pump Operability Check.
- The completed attachment **for the surveillance** has been reviewed and is ready for SM/CRS review.

### INITIATING CUES:

- Review ~~the provided surveillance~~ **the attachment.** ~~Mark and provide~~ any comments on this sheet.

**Waterford 3**

**2010 NRC SRO Exam**

**JOB PERFORMANCE MEASURE**

**A2**

Review COLSS Constant Calculation in accordance with OP-004-005, Core Operating Limits Supervisory System Operation

Applicant: \_\_\_\_\_

Examiner: \_\_\_\_\_

| **EXAMINER REVIEW COMMENTS IN RED**

JOB PERFORMANCE MEASURE  
DATA PAGE

Task: Review COLSS constant calculation in accordance with OP-004-005, Core Operating Limits Supervisory System Operation

Task Standard: Applicant identified errors as identified in the key for Attachment 11.6, Calculation of Charging and Letdown Parameters.

References: OP-004-005, Core Operating Limits Supervisory System Operation

Time Critical: No Validation Time: 15 mins.

K/A	2.1.20, Ability to interpret and execute.	Importance Rating	3.04.6
	procedure steps		Change
			301-1

Applicant: \_\_\_\_\_

Time Start: \_\_\_\_\_ Time Finish: \_\_\_\_\_

Performance Time: \_\_\_\_\_ minutes

Performance Rating:            SAT                    UNSAT

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Examiner: \_\_\_\_\_  
Signature

Date: \_\_\_\_\_



**EXAMINER COPY ONLY**

Tools/Equipment/Procedures Needed:

Simulator / Plant Monitoring Computer  
OP-004-005, Core Operating Limits Supervisory System Operation

Description:

This JPM is performed in the simulator and use of the Plant Monitoring Computer is required. The applicant will be given a completed OP-004-005, Attachment 11.6 for COLSS Charging and Letdown Constants. The key identifies errors that the applicant must identify. There will be a combination of data collection and procedure execution errors.

READ TO APPLICANT

DIRECTION TO APPLICANT:

Each administrative JPM has a cue sheet with the instructions for that JPM. Each administrative JPM stands alone, and conditions from 1 JPM do not carry over to any other JPM. If you have any questions, raise your hand and I will come to your desk.

Provide all answers on the sheets provided.

Read the Initial Condition and Cues from the colored Applicant Cue Sheet, and then give the cue sheet to the applicant.

Evaluator Note
Provide the completed Attachment 11.6 on colored paper to the applicant.

TASK ELEMENT 1	STANDARD
Review Attachment 11.6 for accuracy.	<p>The following errors must be identified:</p> <ul style="list-style-type: none"> <li>• The data collected for PMC point A39103 was incorrect. 307.0 °F from point A39104 was recorded vice 354.38 °F. This affects the value of step 11.6.2.1. The correct value for step 11.6.2.1 is 329.0484.</li> <li>• Step 11.6.2.2 was calculated incorrectly. The parentheses were not used properly when the calculation was performed. The correct value for step 11.6.2.2 is 43705.72.</li> <li>• Step 11.6.2.4 was calculated incorrectly. The value 0.000031 was entered with too few characters. The correct value for step 11.6.2.4 is 0.021127.</li> </ul>
Comment:	<p><b><u>Critical</u></b></p> <p><b>SAT / UNSAT</b></p>

**END OF TASK**

## APPLICANT CUE SHEET

(TO BE RETURNED TO EXAMINER ~~TO~~ UPON COMPLETION OF TASK)

Plant conditions are as you see on the Simulator. Use of the Simulator, RM-11, and Plant Monitoring Computer is acceptable. You are not allowed to use any network computers.

Plant configuration was changed from 1 Charging Pump running to 2 Charging Pumps running.

You are the CRS and have been given a completed Attachment 11.6, Calculation of Charging and Letdown Parameters, from OP-004-005, Core Operating Limits Supervisory System Operation, to review.

Perform this review and mark any comments on this sheet.

**Place this page before the JPM CUE sheet so that the page count does not confuse the applicant.**

## **SIMULATOR OPERATOR INSTRUCTIONS**

Reset to IC-190

After all simulator generated alarms are clear, place the simulator in FREEZE.

Verify the parameters on the PMC match the values on the key.



**Waterford 3**  
**2010 NRC SRO Exam**  
**JOB PERFORMANCE MEASURE**

**A3**

**Evaluate Low Pressure Safety Injection  
Train B Operability**

Applicant: \_\_\_\_\_

Examiner: \_\_\_\_\_

**EXAMINER REVIEW COMMENTS IN RED**

JOB PERFORMANCE MEASURE  
DATA PAGE

---

Task: Evaluate the operability of Low Pressure Safety Injection Train B during the performance of OP-903-026, Emergency Core Cooling System Valve Lineup Verification.

---

Task Standard: Applicant determined the total gas volume for each of the 2 penetrations and determined that LPSI Train B became inoperable after the void was discovered at SI-134 B.

---

References: OP-903-026, Emergency Core Cooling System Valve Lineup Verification

---

Time Critical:  No  Validation Time:  20  mins.

K/A  2.2.40, Ability to apply Technical Specifications for a system  Importance Rating  4.7

---

Applicant: \_\_\_\_\_

Time Start: \_\_\_\_\_ Time Finish: \_\_\_\_\_

Performance Time: \_\_\_\_\_ minutes

Performance Rating:            SAT                            UNSAT

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Examiner: \_\_\_\_\_  
Signature

Date: \_\_\_\_\_

**EXAMINER COPY ONLY**

Tools/Equipment/Procedures Needed:

OP-903-026, Emergency Core Cooling System Valve Lineup Verification

Description:

This JPM is performed in the simulator, but use of the simulator is not required. The applicant will be provided information describing the results of surveillance OP-903-026, Emergency Core Cooling System Valve Lineup Verification. ~~He, and~~ will be required to evaluate void size ~~and location~~ to determine what the total gas volume was in the 2 locations of importance. The applicant will also be required to determine when in the testing sequence Low Pressure Safety Injection Train B became inoperable.

READ TO APPLICANT

DIRECTION TO APPLICANT:

Each administrative JPM has a cue sheet with the instructions for that JPM. Each administrative JPM stands alone, and conditions from 1 JPM do not carry over to any other JPM. If you have any questions, raise your hand and I will come to your desk.

Provide all answers on the sheets provided.

Read the Initial Condition and Cues from the colored Applicant Cue Sheet, and then give the cue sheet to the applicant.

Evaluator Note
The simulator is not required for this JPM. Provide the applicant with the colored cue sheet.

TASK ELEMENT 1	STANDARD
A. What was the total gas volume applicable to each of the 2 penetrations?	Penetration 36, for SI-1412 B and SI-133 B = 1.71 ft <sup>3</sup> Penetration 37, for SI-1402 B and SI-134 B = 1.459 ft <sup>3</sup>
Comment:	<b><u>Critical</u></b>  <b>SAT / UNSAT</b>

TASK ELEMENT 2	STANDARD
B. At what point in the sequence did Low Pressure Safety Injection Train B become inoperable, if any?	After the void was discovered at SI-134 B.
<p>Comment:</p> <p>Low Pressure Safety Injection Train B remained operable after SI-1412 B, SI-1402 B and SI-133 B voids were discovered. Low Pressure Safety Injection Train B was required to be declared inoperable after the void was discovered at SI-134 B.</p> <p>After step 3 of the listed sequence, the total gas volume for SI-1412 B and SI-133 B was 1.71 ft<sup>3</sup>, less than the limit of 1.802 ft<sup>3</sup> for that penetration.</p> <p>After step 4 of the above sequence, the total gas volume for SI-1402 B and SI-134 B was 1.459 ft<sup>3</sup>, above the limit of 1.229 ft<sup>3</sup> for that penetration.</p>	<b><u>Critical</u></b>  <b>SAT / UNSAT</b>

## END OF TASK

## APPLICANT CUE SHEET

(TO BE RETURNED TO EXAMINER ~~TO~~ UPON COMPLETION OF TASK)

OP-903-026, Emergency Core Cooling System Valve Lineup Verification, is in progress. The RCA Watch has discovered voids during the performance of the surveillance. After each void was discovered, actions were taken to fill that line before moving to the next location. The RCA Watch called in the following results in the order listed:

- |   |             |
|---|-------------|
| 1. SI-1412 B, RC Loop 1A FCV Downstream Vent                | 9 inch arc  |
| 2. SI-1402 B, LPSI Header to RC Loop 1B FCV Downstream Vent | 8 inch arc  |
| 3. SI-133 B, LPSI Pump B Discharge to RC Loop 2B Vent       | 10 inch arc |
| 4. SI-134 B, RC Loop 1 SHDN Cooling Warm-up Line Vent       | 7 inch arc  |

- A. What was the total gas volume applicable to each of the 2 penetrations?
- B. At what point in the sequence did Low Pressure Safety Injection Train B become inoperable, if any?

Record answers on this sheet.

**A.**

**B.**

**Waterford 3**

**2010 NRC SRO Exam**

**JOB PERFORMANCE MEASURE**

**A4**

**Review a Liquid Release Permit**

Applicant: \_\_\_\_\_

Examiner: \_\_\_\_\_

**EXAMINER REVIEW COMMENTS IN RED**

JOB PERFORMANCE MEASURE  
DATA PAGE

---

Task: Review and approve a liquid release permit in accordance with OP-007-001, Boron Management.

Task Standard: Applicant identified errors in the permit according to the key.

References: OP-007-001, Boron Management  
CE-003-514, Liquid Radioactive Release Permit  
EC-M84-001

Time Critical: No Validation Time: 20 mins.

K/A 2.3.6, Ability to approve release permits Importance Rating 3.8  
\_\_\_\_\_  
\_\_\_\_\_

Applicant: \_\_\_\_\_

Time Start: \_\_\_\_\_ Time Finish: \_\_\_\_\_

Performance Time: \_\_\_\_\_ minutes

Performance Rating:            SAT            UNSAT

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Examiner: \_\_\_\_\_  
Signature

Date: \_\_\_\_\_

**EXAMINER COPY ONLY**

Tools/Equipment/Procedures Needed:

OP-007-001, Boron Management  
EC-M84-001

Description:

This JPM is performed in the simulator and use of the Plant Monitoring Computer and the RM-11 Radiation Monitoring Computer is required. The applicant will be given a release permit for Boric Acid Condensate Tank B to authorize. The key identifies errors that the applicant must identify. There will be a combination of data collection errors from both the PMC and RM-11. There are also plant conditions that are not properly reflected in the permit. The applicant will be able to gather this information from the control panel alignment.

READ TO APPLICANT

DIRECTION TO APPLICANT:

Each administrative JPM has a cue sheet with the instructions for that JPM. Each administrative JPM stands alone, and conditions from 1 JPM do not carry over to any other JPM. If you have any questions, raise your hand and I will come to your desk.

Provide all answers on the sheets provided.

Read the Initial Condition and Cues from the colored Applicant Cue Sheet, and then give the cue sheet to the applicant.



Evaluator Note
Provide the Boric Acid Condensate Tank B Release Permit, printed on colored paper, to the applicant.

TASK ELEMENT 1	STANDARD
Review the Boric Acid Condensate Tank B Release Permit for accuracy.	<p><del>The 3</del>All of the [space] following errors must be identified:</p> <ul style="list-style-type: none"> <li>The data collected for Boric Acid Condensate Tank B was incorrect. The level for Waste Condensate Tank B was recorded instead. The tank percent and tank volume in gallons reflect the level in Waste Condensate Tank B.</li> <li>The permit list that 4 Circulating Water Pumps are running, but only 3 are running.</li> <li>The setpoint for the Boric Acid Condensate Radiation Monitor is reading 8.0 e-02 uCi/ml vice 6.50 e-01. This reading must be verified from the RM-11 computer.</li> <li>The Boric Acid Condensate Radiation Monitor is listed as PRM-IRE-0647 on various locations of the permit. The correct UNID number is PRM-IRE-0627.</li> </ul>
Comment:	<p><b><u>Critical</u></b></p> <p><b>SAT / UNSAT</b></p>

**END OF TASK**

## APPLICANT CUE SHEET

(TO BE RETURNED TO EXAMINER ~~TO~~ UPON COMPLETION OF TASK)

Plant conditions are as you see on the Simulator. Use of the Simulator, RM-11, and Plant Monitoring Computer is acceptable. You are not allowed to use any network computers.

Boric Acid Condensate Tank B is ready to be released and the Release Permit is in the Control Room for your review.

~~Perform this review~~ **Review the Release Permit** and ~~mark~~ **provide** any comments on this sheet.

## **SIMULATOR OPERATOR INSTRUCTIONS**

Reset to IC-190

After all simulator generated alarms are clear, place the simulator in FREEZE.

Verify the parameters on the PMC and RM-11 match the values on the key.

**PLACE THIS SHEET BEFORE THE APPLICANT CUE SHEET TO PREVENT PAGE SEQUENCE CONFUSION.**

**Waterford 3**  
**2010 NRC SRO Exam**  
**JOB PERFORMANCE MEASURE**

**A5**

**Classify Emergency Plan Entry Level**

Applicant: \_\_\_\_\_

Examiner: \_\_\_\_\_

**EXAMINER REVIEW COMMENTS IN RED.**

JOB PERFORMANCE MEASURE  
DATA PAGE

Task: Classify Emergency Plan Entry Level

Task Standard: Applicant determined correct Emergency Plan class and initiating condition.

References: EP-001-001 Recognition and Classification of Emergency Conditions

Time Critical: No Validation Time: 15 mins.

K/A 2.4.41, Knowledge of the emergency action level thresholds and classifications. Importance Rating 4.6

Applicant: \_\_\_\_\_

Time Start: \_\_\_\_\_ Time Finish: \_\_\_\_\_

Performance Time: \_\_\_\_\_ minutes

Performance Rating:           SAT           UNSAT

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Examiner: \_\_\_\_\_  
Signature

Date: \_\_\_\_\_

**EXAMINER COPY ONLY**

Tools/Equipment/Procedures Needed:

EP-001-001 Recognition and Classification of Emergency Conditions

Description:

This JPM is performed in the simulator and use of the Plant Monitoring Computer and the RM-11 Radiation Monitoring Computer is required. The applicant will be given plant conditions and directed to make the appropriate Emergency Plan class and initiating condition. The applicant will have to get data off of the RM-11 or Plant Monitoring computers to properly classify the event.

READ TO APPLICANT

DIRECTION TO APPLICANT:

Each administrative JPM has a cue sheet with the instructions for that JPM. Each administrative JPM stands alone, and conditions from 1 JPM do not carry over to any other JPM. If you have any questions, raise your hand and I will come to your desk.

Provide all answers on the sheets provided.

Read the Initial Condition and Cues from the colored Applicant Cue Sheet, and then give the cue sheet to the applicant.

TASK ELEMENT 1	STANDARD
Determine the correct Emergency Plan class and initiating condition.	Applicant declares an Alert based on initiating condition AA1, any UNPLANNED release of gaseous or liquid radioactivity to the environment that exceeds 200 times the radiological effluent ODCM limits for > 15 minutes.
<p>Comment:</p> <p>PLANT STACK Wide Range Gas Monitor PRM-IRE-0110, RE0110-4 will read &gt; 1.51E+07 uCi/sec, the Alert classification limit. It will be less than the Site Area Emergency limit of 2.55E+08 uCi/sec.</p> <p>Plant Stack PIG Gas Channels, PRM-IRE-0100.1S or 2S, RE0100.1-1 or RE0100.2-1 will be &gt; 3.45E-03 uCi/cc, the Unusual Event criteria. There is no criteria to upgrade from an Unusual Event to an Alert based on either Plant Stack PIG Gas Channel.</p>	<p style="text-align: center;"><b><u>Critical</u></b></p> <p style="text-align: center;"><b>SAT / UNSAT</b></p>

**END OF TASK**

## APPLICANT CUE SHEET

(TO BE RETURNED TO EXAMINER ~~TO~~ UPON COMPLETION OF TASK)

Plant conditions are as you see on the Simulator. Use of the Simulator, RM-11, and Plant Monitoring Computer is acceptable. You are not allowed to use any network computers.

A failure of the Gaseous Waste System has occurred. Conditions are as displayed on the simulator. These conditions have existed for 30 minutes.

You are the Shift Manager / Emergency Coordinator. Determine the appropriate Emergency Plan class and initiating condition.

Mark all of your conclusions on this sheet.



## **SIMULATOR OPERATOR INSTRUCTIONS**

Reset to IC-190

After all simulator generated alarms are clear, place the simulator in FREEZE.

Verify the parameters on the PMC match the values on the key.

**PLACE BEFORE APPLICANT CUE SHEET TO ELIMINATE PAGE SEQUENCE  
CONFUSION.**

**Waterford 3**

**2010 NRC SRO Exam**

**JOB PERFORMANCE MEASURE**

**S1**

**ATC Immediate Operator Actions on 2 Dropped  
CEAs**

Applicant: \_\_\_\_\_

Examiner: \_\_\_\_\_

JOB PERFORMANCE MEASURE  
DATA PAGE

Task: ATC Immediate Operator Actions on 2 Dropped CEAs

Task Standard: Applicant tripped the reactor using 32 A and 32 B breakers in accordance with OP-902-000 and completed the ATC operator's Standard Post Trip Actions.

References: OP-901-102, CEA or CEDMCS Malfunction  
OP-902-000, Standard Post Trip Actions

Alternate Path: Yes Time Critical: No Validation Time: 5 mins.

K/A 001 A2.13, ATWS Importance Rating 4.4 / 4.6  
RO / SRO

Applicant: \_\_\_\_\_

Time Start: \_\_\_\_\_ Time Finish: \_\_\_\_\_

Performance Time: \_\_\_\_\_ minutes

Performance Rating: SAT UNSAT

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Examiner: \_\_\_\_\_  
Signature

Date: \_\_\_\_\_

**EXAMINER COPY ONLY**

Tools/Equipment/Procedures Needed:

None

Description:

Applicant will position himself as the ATC operator at CP-2. CEAs 3 and 14 will drop into the core. The applicant should notice the condition, announce the condition, and trip the reactor without direction. The normal reactor trip pushbuttons will not function. The applicant should move to the first contingency and use the Diverse Reactor Trip pushbuttons. One of these buttons is faulted. The DRTS alarms will come in, but the CEA MG set load contactors will not open. The applicant should then move to the second contingency, and open both 32 Bus Feeder breakers, and reclose them 5 seconds later. The task should be stopped after the applicant completes the immediate operator actions for the ATC position.

DIRECTION TO APPLICANT:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Indicate to me when you understand your assigned task.

Read the Initial Condition and Cues from the colored Applicant Cue Sheet, and then give the cue sheet to the applicant.

## APPLICANT CUE SHEET

(TO BE RETURNED TO EXAMINER ~~TO~~ UPON COMPLETION OF TASK)

### INITIAL CONDITIONS:

- The plant is at 100% power.

### INITIATING CUES:

- Respond to conditions observed.
- Perform actions as required by the ATC operator.

<b>Evaluator Note</b>
<ol style="list-style-type: none"> <li>1. All of the listed steps are from OP-901-102, CEA or CEDMCS Malfunction, and OP-902-000, Standard Post Trip Actions, but the applicant is required to perform the listed steps from memory.</li> <li>2. Direct simulator operator to initiate trigger 1 when ready to begin.</li> </ol>

<b>TASK ELEMENT 1</b>	<b>STANDARD</b>
D.1. Determines 2 CEAs have dropped, attempts to trip the reactor from CP-2 or CP-8	Pushes both reactor trip pushbuttons on CP-2 or CP-8.
<p>Comment:</p> <p>Trip pushbuttons are faulted and Reactor Trip Circuit Breakers will not open.</p>	<p><b><u>Critical</u></b></p> <p><b>SAT / UNSAT</b></p>

<b>TASK ELEMENT 2</b>	<b>STANDARD</b>
1.a.1.2 Attempts to trip reactor using DRTS pushbuttons on CP-2.	Pushes both DRTS pushbuttons on CP-2.
<p>Comment:</p> <p>1 DRTS pushbutton is faulted and CEA MG set load contactors will not open.</p>	<p><b><u>Critical</u></b></p> <p><b>SAT / UNSAT</b></p>

<b>TASK ELEMENT 3</b>	<b>STANDARD</b>
<p>1.a.1.3 Open <b>BOTH</b> the following breakers for 5 seconds and close:</p> <ul style="list-style-type: none"> <li>• SST A32 FEEDER</li> <li>• SST B32 FEEDER</li> </ul>	Opens SST A32 FEEDER and SST B32 FEEDER breakers for 5 seconds and then re-closes both breakers.
<p>Comment:</p> <p>Evaluator: If applicant stops after re-closing the A and B 32 Feeder breakers, prompt him as the CRS to perform his Standard Post Trip Actions.</p>	<p><b><u>Critical</u></b></p> <p><b>SAT / UNSAT</b></p>

TASK ELEMENT 4	STANDARD
1. Determine Reactivity Control acceptance criteria are met: <ul style="list-style-type: none"> <li>• Check reactor power is dropping.</li> <li>• Check startup rate is negative.</li> <li>• Check less than <b>TWO</b> CEAs are <b>NOT</b> fully inserted.</li> </ul>	Verifies listed parameters.
Comment:	<u><b>Critical</b></u>  <b>SAT / UNSAT</b>

TASK ELEMENT 5	STANDARD
3. Determine RCS Inventory Control acceptance criteria are met: Check that the following conditions exist: <ul style="list-style-type: none"> <li>• Pressurizer level is 7% to 60%</li> <li>• Pressurizer level is trending to 33% to 60%</li> <li>• Check RCS subcooling is greater than or equal to 28 °F.</li> </ul>	Verifies listed parameters.
Comment:	<u><b>Critical</b></u>  <b>SAT / UNSAT</b>

TASK ELEMENT 6	STANDARD
4. Determine RCS Pressure Control acceptance criteria are met by checking that <b>BOTH</b> of the following conditions exist: <ul style="list-style-type: none"> <li>• Pressurizer pressure is 1750 psia to 2300 psia</li> <li>• Pressurizer pressure is trending to 2125 psia to 2275 psia</li> </ul>	Verifies listed parameters.
Comment:	<u><b>Critical</b></u>  <b>SAT / UNSAT</b>

TASK ELEMENT 7	STANDARD
5. Determine Core Heat Removal acceptance criteria are met: <ul style="list-style-type: none"> <li>• Check at least one RCP is operating.</li> <li>• Check operating loop <math>\Delta T</math> is less than 13 °F.</li> <li>• Check RCS subcooling is greater than or equal to 28 °F.</li> </ul>	Verifies listed parameters.
Comment:	<u><b>Critical</b></u>  <b>SAT / UNSAT</b>

TASK ELEMENT 8	STANDARD
6.b. Determine RCS Heat Removal acceptance criteria are met: <ul style="list-style-type: none"> <li>• Check RCS <math>T_{COLD}</math> is 530 °F to 550 °F</li> </ul>	Verifies listed parameters.
Comment:	<u><b>Critical</b></u>  <b>SAT / UNSAT</b>

TASK ELEMENT 9	STANDARD
7. Determine Containment Isolation acceptance criteria are met: <ul style="list-style-type: none"> <li>• Check containment pressure is less than 16.4 psia.</li> <li>• Check <b>NO</b> containment area radiation monitor alarms <b>OR</b> unexplained rise in activity.</li> <li>• Check <b>NO</b> steam plant activity monitor alarms <b>OR</b> unexplained rise in activity.</li> </ul>	Verifies listed parameters.
Comment:	<u><b>Critical</b></u>  <b>SAT / UNSAT</b>

**END OF TASK**



**SIMULATOR OPERATOR INSTRUCTIONS**

Reset to IC-195

Verify the following Malfunctions:

- No Trigger
  - rp01a, RPS manual pushbutton a
  - rp01b, RPS manual pushbutton b
  - rp01c, RPS manual pushbutton c
  - rp01d, RPS manual pushbutton d
  
- Trigger 1:
  - rd02a03, drop CEA 3
  - rd02a14, drop CEA 14

Verify the following Overrides:

- No Trigger
  - di-02a06s02-1, DRT pushbutton 1 of 2

Coordinate with examiner to initiate Trigger 1 on his cue.

**Waterford 3**

**2010 NRC SRO Exam**

**JOB PERFORMANCE MEASURE**

**S2**

**Failed Pressurizer Level Control due to Failed  
RCS Cold Leg Temperature Instrument and  
~~Pressurizer Level Control~~**

Applicant: \_\_\_\_\_

Examiner: \_\_\_\_\_

JOB PERFORMANCE MEASURE  
DATA PAGE

---

Task: Perform actions associated with a faulted Pressurizer level setpoint in accordance with OP-901-110, Pressurizer Level Control Malfunction.

---

Task Standard: Faulted Reactor Coolant Cold Leg temperature instrument was removed from service in accordance with OP-901-110.

---

References: OP-901-110, Pressurizer Level Control Malfunction

---

Alternate Path: Yes Time Critical: No Validation Time: 15 mins.

K/A	004 A2.22, Mismatch of Charging and Letdown flows	Importance Rating	3.2 / 3.1
		RO / SRO	

Applicant: \_\_\_\_\_

Time Start: \_\_\_\_\_ Time Finish: \_\_\_\_\_

Performance Time: \_\_\_\_\_ minutes

Performance Rating:            SAT                            UNSAT

Comments: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Examiner: \_\_\_\_\_  
Signature

Date: \_\_\_\_\_

**EXAMINER COPY ONLY**

Tools/Equipment/Procedures Needed:

OP-901-110, Pressurizer Level Control Malfunction

Description:

The applicant will be positioned as the ATC operator to start this task. The JPM will start with RCS Cold Leg temperature instrument RC-ITI-0111-Y failed high. The cue sheet will direct the applicant to match Charging and Letdown flow. This will be accomplished at CP-2. After the applicant reports that Charging and Letdown flows are matched and verifications made, the applicant will be directed to assume the role of the BOP operator and select the non-selected Cold Leg instrument. This is located behind CP-2. This selection will not function, requiring the applicant to remove the failed instrument from service at both Reactor Regulating drawers.

DIRECTION TO APPLICANT:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Indicate to me when you understand your assigned task.

Read the Initial Condition and Cues from the colored Applicant Cue Sheet, and then give the cue sheet to the applicant.

## APPLICANT CUE SHEET

(TO BE RETURNED TO EXAMINER ~~TO~~ UPON COMPLETION OF TASK)

### INITIAL CONDITIONS:

- Mode 1, 15% power
- Main Turbine testing in planned for next shift

### INITIATING CUES:

- You are the ATC operator
- Annunciator B-1, Pressurizer Level Hi/Lo, on Panel H has come into alarm.
- The CRS has entered OP-901-110, Pressurizer Level Control Malfunction, section E2, Pressurizer Level Setpoint Malfunction
- The CRS has directed you to raise Letdown flow to 120 – 126 gpm to match Charging and Letdown flow in accordance with step 1.

<b>Evaluator Note</b>
Direct the simulator operator to place the simulator in RUN when ready to start.

<b>TASK ELEMENT 1</b>	<b>STANDARD</b>
1. Place Pressurizer Level Controller (RC-ILIC-0110) in MAN AND adjust OUTPUT to slowly adjust letdown flow to restore Pressurizer level.	Letdown flow is raised to 120 – 126 gpm..
Comment:	<b><u>Critical</u></b> <b>SAT / UNSAT</b>

<b>Evaluator Note</b>
After the applicant reports that Charging and Letdown flows are approximately matched, direct him to perform steps 2 and 3.

<b>TASK ELEMENT 2</b>	<b>STANDARD</b>
2. Verify normal indications on ALL Safety Measurement Channel Hot Leg AND Cold Leg temperature indicators.	Hot and Cold Leg safety temperature indicators are verified on CP-7.
Comment:	<b>SAT / UNSAT</b>

<b>TASK ELEMENT 3</b>	<b>STANDARD</b>
3. Determine affected channel(s) by checking Reactor Regulating System (RRS) T <sub>AVG</sub> recorders (RC-ITR-0111 AND RC-ITR-0121).	Both channels are identified as affected by the failure.
Comment:	<b>SAT / UNSAT</b>

<b>Evaluator Note</b>
Inform the applicant that the CRS has completed steps 4 through 8. The CRS has directed him to evaluate steps 9 and 10. The applicant may have already identified and reported the failed instrument prior to reaching this step.

TASK ELEMENT 4	STANDARD
Procedure Note: Selecting the non-faulted channel may cause automatic actions to occur if actual level is not at program level.	Note reviewed.
Comment:	<b>SAT / UNSAT</b>

TASK ELEMENT 5	STANDARD
9. Check Reactor Regulating System (RRS) Hot Leg indicators (RC-ITI-0111-X AND RC-ITI-0121-X) for abnormal readings.	Hot Leg temperature indicators are verified to be reading normally.
Comment:	<b>SAT / UNSAT</b>

TASK ELEMENT 6	STANDARD
10. Check Reactor Regulating System (RRS) Cold Leg indicators (RC-ITI-0111-Y AND RC-ITI-0121-Y) for abnormal readings.	RC-ITI-0111-Y is identified as failed high.
Comment: <b>This is critical to identify failed instrument so that the correct procedure is performed.</b>	<u><b>Critical</b></u> <b>SAT / UNSAT</b>

Evaluator Cue
Cue the applicant that he is now filling the role of the BOP operator and that another operator is filling the role of the ATC operator.

Evaluator Cue
<p>Direct the applicant as following based on his report:</p> <ul style="list-style-type: none"> <li>♣ If he <b>correctly</b> identifies that Loop 1 Cold Leg (RC-ITI-0111-Y) is failed, then cue:  <u>“Perform step 10.1 <b>on-for</b> TCOLD LOOP 1 selector switch located behind CP-2 and verify setpoint restoration”.</u></li> <li>○ If he incorrectly identifies that Loop 1 Hot Leg (RC-ITI-0111-X) is failed, then cue:  <u>“Perform step 9.1 and select LOOP 2 for TAVE LOOP SELECTOR on BOTH RRS local cabinets (CP-12A AND CP-12B) and verify setpoint restoration”.</u></li> <li>○ If he incorrectly identifies that Loop 2 Hot Leg (RC-ITI-0121-X) is failed, then cue:  <u>“Perform step 9.2 and select LOOP 1 for TAVE LOOP SELECTOR on BOTH RRS local cabinets (CP-12A AND CP-12B) and verify setpoint restoration”.</u></li> <li>○ If he incorrectly identifies that Loop 2 Cold Leg (RC-ITI-0121-Y) is failed, then cue:  <u>“Perform step 10.2 <b>on-for</b> TCOLD LOOP 2 selector switch located behind CP-2 and verify setpoint restoration”.</u></li> </ul>

Evaluator Note
<p>Positioning the selector switch in the next step will not <b>affect-clear</b> the malfunction. The applicant should detect and report this additional failure/problem. The indications that are applicable include:</p> <ul style="list-style-type: none"> <li>• Recorder RC-ILR-0110 Setpoint does not return to normal, ~ 33%</li> <li>• All 3 Charging Pumps continue operating</li> <li>• T<sub>AVE</sub> Recorders RC-ITR-0111 and 0121 do not return to normal, ~ 550 °F</li> <li>• Pressurizer Level Hi/Lo Annunciator H B-1 does not clear</li> </ul>

TASK ELEMENT 7	STANDARD
10.1 Select presently non-selected position (ALT OR NORM) on TCOLD LOOP 1 selector switch located behind CP-2, Reactor Control	Loop 1 selector switch is placed in ALT.
<p>Comment:  <b>THIS STEP IS NOT CRITICAL</b></p>	<p><b><u>Critical</u></b></p> <p><b>SAT / UNSAT</b></p>



Evaluator Note
<p><del>The applicant should recommend removing the failed instrument at both Reactor Regulating panels. Request this recommendation if it has not already been made.</del></p> <p><b>Once recommended, direct the applicant to carry out this action. After the applicant recommends removing the failed instruments from the RRS, direct the applicant to remove the failed instrument at both RRS panels.</b></p>

TASK ELEMENT 8	STANDARD
10.1 Select LOOP 2 on BOTH RRS local cabinets (CP-12A AND CP-12B)	LOOP 2 is selected on both Reactor Regulating cabinets.
Comment:	<p><b><u>Critical</u></b></p> <p><b>SAT / UNSAT</b></p>

Evaluator Note
End task after the applicant verifies setpoint has been restored to normal, ~33%.

**END OF TASK**

## **SIMULATOR OPERATOR INSTRUCTIONS**

Reset to IC-196

Verify the following Malfunctions:

- RC18C set at 100% failure on Trigger 1.

Verify the following Overrides:

- DI-02B1S-0 overridden to Normal

Place the simulator in RUN

Initiate Trigger 1

Acknowledge panel annunciators

Place the simulator in FREEZE.

Place the simulator to RUN on direction from the evaluator.

# **Waterford 3**

## **2010 NRC SRO Exam**

### **JOB PERFORMANCE MEASURE**

# **S3**

## **Reduce RCS Pressure and Establish Pressurizer Level on a Failure of All Charging**

Applicant: \_\_\_\_\_

Examiner: \_\_\_\_\_

JOB PERFORMANCE MEASURE  
DATA PAGE

Task: Reduce RCS pressure with Main Spray and restore Pressurizer Level with High Pressure Safety Injection

Task Standard: Applicant reduced RCS pressure to below HPSI Pump shutoff head and established Safety Injection System flow in accordance with OP-901-112, Charging or Letdown Malfunction.

References: OP-901-112, Charging or Letdown Malfunction

Alternate Path: No Time Critical: No Validation Time: 20 mins.

K/A 006 A1.18, Pressurizer level and pressure Importance Rating 4.0 / 4.3  
RO / SRO

Applicant: \_\_\_\_\_

Time Start: \_\_\_\_\_ Time Finish: \_\_\_\_\_

Performance Time: \_\_\_\_\_ minutes

Performance Rating: SAT UNSAT

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Examiner: \_\_\_\_\_  
Signature

Date: \_\_\_\_\_

**EXAMINER COPY ONLY**

Tools/Equipment/Procedures Needed:

OP-901-112, Charging or Letdown Malfunction

Description:

The applicant will perform the roles of the ATC and BOP operators for this JPM. The initial conditions describe that the plant has experienced a loss of all Charging capacity. The applicable off normal procedure directs tripping the reactor and lowering RCS pressure to < 1400 psia. The JPM begins with the reactor tripped and Standard Post Trip Actions complete. The RCS will be at normal post trip pressure, 2250 psia. Main Spray will be used to accomplish the pressure reduction. After RCS pressure is below 1400 psia, a High Pressure Safety Injection Pump is started and flow established to restore Pressurizer level.

DIRECTION TO APPLICANT:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Indicate to me when you understand your assigned task.

Read the Initial Condition and Cues from the colored Applicant Cue Sheet, and then give the cue sheet to the applicant.

## APPLICANT CUE SHEET

(TO BE RETURNED TO EXAMINER ~~TO~~ UPON COMPLETION OF TASK)

### INITIAL CONDITIONS:

- The crew has entered OP-901-112, Charging or Letdown Malfunction, due to a piping weld failure downstream of CVC-209, Charging Pumps Header Isolation.
- The CRS has directed a reactor trip due to the lowering Pressurizer Level.
- OP-902-000, Standard Post Trip Actions, have been completed.

### INITIATING CUES:

- The CRS directs you to perform all of the remaining portions of step 2 in sub-section E<sub>1</sub>, Charging Malfunction, and establish a RCS pressure of 1250 – 1350 psia and restoring Pressurizer level to 30% using HPSI Pump A.

Evaluator Note
Direct the simulator operator to place the simulator in RUN when ready to start.

Evaluator Note
The Pressurizer Pressure Low Trip setpoint will need to be reset on 2 different occasions during the reduction of RCS pressure to < 1400 PSIA. <b>There is only 1 occasion listed.</b>
This step becomes applicable when either annunciator K B-16 or K C-16 alarm.

TASK ELEMENT 1	STANDARD
2.3 WHEN PZR PRESSURE LO PRETRIP annunciator alarms, THEN reset Pressurizer Pressure Low Trip setpoint on ALL FOUR channels.	Pressurizer Pressure low pressure setpoints are reset prior to receiving a Safety Injection Actuation
Comment:	<b><u>Critical</u></b> <b>SAT / UNSAT</b>

Evaluator Note
Since there is no Charging Flow, Pressurizer pressure must be reduced using Main Spray. Controller RC-IHIC-0100 at CP-2 should be taken to MANUAL and output raised to create Main Spray flow.

TASK ELEMENT 2	STANDARD
2.4 Reduce Pressurizer pressure to < 1400 PSIA.	Pressurizer pressure is reduced to 1250 – 1350 PSIA using Main Spray.
Comment:	<b><u>Critical</u></b> <b>SAT / UNSAT</b>

<b>Evaluator Note</b>
After Pressurizer pressure is < 1400 PSIA, the Main Spray valves should be throttled closed to prevent Pressurizer pressure from dropping below the minimum pressure for RCP operation, approximately 1250 PSIA.

<b>TASK ELEMENT 2</b>	<b>STANDARD</b>
2.5 Start ONE available HPSI Pump AND open associated valves as required to restore Pressurizer level:	HPSI Pump A is running.
Comment:	<b><u>Critical</u></b> <b>SAT / UNSAT</b>

<b>TASK ELEMENT 3</b>	<b>STANDARD</b>
2.5 Start ONE available HPSI Pump AND open associated valves as required to restore Pressurizer level:  <ul style="list-style-type: none"> <li>• HPSI Train A</li> <li>• HPSI COLD LEG INJECTION 1A (SI 225A)</li> <li>• HPSI COLD LEG INJECTION 1B (SI 226A)</li> <li>• HPSI COLD LEG INJECTION 2A (SI 227A)</li> <li>• HPSI COLD LEG INJECTION 2B (SI 228A)</li> </ul>	At least 1 HPSI flow control valve is throttled open and Pressurizer level is restored to > 25%.
Comment:	<b><u>Critical</u></b> <b>SAT / UNSAT</b>

**END OF TASK**



## **SIMULATOR OPERATOR INSTRUCTIONS**

Reset to IC-199

There are no Malfunctions or Overrides for this JPM.

**Waterford 3**

**2010 NRC SRO Exam**

**JOB PERFORMANCE MEASURE**

**S4**

**Place Shutdown Cooling Train A in Service**

Applicant: \_\_\_\_\_

Examiner: \_\_\_\_\_

JOB PERFORMANCE MEASURE  
DATA PAGE

Task: Place Shutdown Cooling Train A in Service

Task Standard: Applicant placed Shutdown Cooling Train A in service in accordance with OP-009-005 and secured Low Pressure Safety Injection Pump A after SI-405 A failed closed.

References: OP-009-005, Shutdown Cooling  
OP-901-131, Shutdown Cooling Malfunction

Alternate Path: Yes Time Critical: No Validation Time: 30 mins.

K/A 005 A4.01, Controls and indication for RHR pumps Importance Rating 3.6 / 3.4  
RO / SRO

Applicant: \_\_\_\_\_

Time Start: \_\_\_\_\_ Time Finish: \_\_\_\_\_

Performance Time: \_\_\_\_\_ minutes

Performance Rating: SAT UNSAT

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Examiner: \_\_\_\_\_  
Signature

Date: \_\_\_\_\_

**EXAMINER COPY ONLY**

Tools/Equipment/Procedures Needed:

OP-009-005, Shutdown Cooling

Description:

This task is performed at CP-8. The applicant must place Shutdown Cooling Train A in service. The fault in this task is that SI-405 A, RC Loop 2 SDC Suction Inside Containment Isol, will fail closed, requiring the applicant to secure Low Pressure Safety Injection Pump A. The task can be stopped after LPSI Pump A is secured.

DIRECTION TO APPLICANT:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Indicate to me when you understand your assigned task.

Read the Initial Condition and Cues from the colored Applicant Cue Sheet, and then give the cue sheet to the applicant.

## APPLICANT CUE SHEET

(TO BE RETURNED TO EXAMINER ~~TO~~ UPON COMPLETION OF TASK)

### INITIAL CONDITIONS:

- The plant is in Mode 4
- Protected Train is A
- RCS temperature is 280 °F
- RCS pressure is 340 PSIA
- Shutdown Cooling Train A has been placed in Standby in accordance with OP-009-005, Shutdown Cooling, section 5.3.

### INITIATING CUES:

- The CRS has directed you to place Shutdown Cooling Train A in service in accordance with OP-009-005, section 6.1.

TASK ELEMENT 1	STANDARD
Procedure Note: The Shutdown Cooling Train placed in service should be on the Protected Train.	Note reviewed.
Comment:	<b>SAT / UNSAT</b>

TASK ELEMENT 2	STANDARD
Procedure Caution: Following a design basis tornado event, delaying the initiation of Shutdown Cooling (SDC) for up to 7 days will be required to ensure the Component Cooling Water System is capable of removing Reactor Coolant System decay heat. The actual delay time will depend on UHS damage and ambient temperature and will be determined by engineering. Emergency Feedwater supports decay heat removal until SDC can be initiated.	Caution reviewed.
Comment:	<b>SAT / UNSAT</b>

TASK ELEMENT 3	STANDARD
6.1.1: Verify Shutdown Cooling Train A has been aligned to Standby condition in accordance with Section 5.3, Alignment of Shutdown Cooling Train A to Standby Condition.	Cue sheet lists this as complete.
Comment:	<b>SAT / UNSAT</b>

<b>Evaluator Note</b>
Any Dry Fan started in SLOW must be declared inoperable and Tech Spec 3.7.4 addressed.

TASK ELEMENT 4	STANDARD
6.1.2: Verify sufficient number of Dry Cooling Tower Fans running to accept increased heat load on CCW System.	Any fans started must be started in FAST.
Comment: Applicant may ask the CRS how many fans he wants running. If asked, respond to keep the fans in automatic and verify they cycle on as required. Any number of fans started is acceptable.	<b>SAT / UNSAT</b>

TASK ELEMENT 5	STANDARD
Procedure Caution: CC-963A is required to be maintained open while in Mode 4 to preserve the design temperature basis of piping and associated components at the CCW outlet of shutdown cooling heat exchanger A. With CC-963A open, flow through Shutdown Cooling Heat Exchanger A will be maintained above 2305 gpm.	Caution reviewed.
Comment:	<b>SAT / UNSAT</b>

TASK ELEMENT 6	STANDARD
6.1.3: Place Shutdown HX A CCW Flow Control, CC-963A, control switch to Open.	CC-963 A is opened.
Comment:	<b><u>Critical</u></b> <b>SAT / UNSAT</b>

TASK ELEMENT 7	STANDARD
(1) The following Reactor Coolant System limits shall be met for Shutdown Cooling Entry: RCS temperature limit: < 350 °F RCS pressure limit: < 392 psia (2) If Containment Spray Header A Isolation, CS-125 A, is open while Shutdown Cooling Train A is operating, then Containment Spray A riser may fill and possibly spray water into Containment, due to leakage past Containment Spray Pump A discharge stop check, CS-117A.	Caution reviewed.
Comment:	<b>SAT / UNSAT</b>

TASK ELEMENT 8	STANDARD
6.1.4: Unlock and Open RC Loop 2 SDC Suction Outside Containment Isol, SI-407A.	SI-407 A is opened.
Comment: Key 133 required.	<b><u>Critical</u></b> <b>SAT / UNSAT</b>

TASK ELEMENT 9	STANDARD
6.1.5: Notify Radiation Protection Department that Shutdown Cooling Train A is being placed in service.	Call is made.
Comment:	<b>SAT / UNSAT</b>

TASK ELEMENT 10	STANDARD
6.1.6: Start LPSI Pump A.	LPSI Pump A is started.
Comment: Annunciator LPSI Pump A Flow Lost (Cabinet M, F-3) is expected. It will clear when the applicant raises flow > 2900 gpm.	<b><u>Critical</u></b> <b>SAT / UNSAT</b>

TASK ELEMENT 11	STANDARD
6.1.7: Raise Shutdown Cooling flow by Manually adjusting LPSI Header Flow controller 2A/2B, SI-IFIC-0307, output until Shutdown Cooling Header A Flow indicates 4100 GPM, as indicated by RC Loop 2 Shdn Line Flow Indicator, SI-IFI-1307-A1.	Flow is raised to 4100 gpm.
Comment:	<b><u>Critical</u></b> <b>SAT / UNSAT</b>

TASK ELEMENT 12	STANDARD
6.1.8: Adjust LPSI Header Flow Controller 2A/2B, SI-IFIC-0307, setpoint potentiometer to 73%, and place controller to AUTO.	Setpoint potentiometer is set to 73%, and controller is placed in AUTO
Comment:	<b><u>Critical</u></b> <b>SAT / UNSAT</b>



TASK ELEMENT 13	STANDARD
6.1.9: Verify LPSI Header Flow Controller 2A/2B, SI-IFIC-0307, is maintaining 4100 GPM Shutdown Cooling Header A flow, as indicated by RC Loop 2 Shdn Line Flow Indicator, SI-IFI-1307-A1.	Flow is verified.
Comment:	<b>SAT / UNSAT</b>

TASK ELEMENT 14	STANDARD
Procedure note: If a sample was drawn prior to shutdown and no interim shutdown has occurred where SDC was placed in service and boron concentration could have been reduced, then sampling is not required.	Note reviewed.
Comment:	<b>SAT / UNSAT</b>

TASK ELEMENT 15	STANDARD
6.1.10: At SM/CRS discretion, direct Chemistry Department to sample Shutdown Cooling Train A for boron concentration.	None
Comment: Evaluator: When requested provide information to applicant that all required Chemistry requirements are met.	<b>SAT / UNSAT</b>

TASK ELEMENT 16	STANDARD
Procedure Note: Shutdown Cooling Train A requires one operable Low Pressure Safety Injection Flow Control Valve for the train to be operable.	Note reviewed.
Comment:	<b>SAT / UNSAT</b>

TASK ELEMENT 17	STANDARD
Procedure Caution: The Reactor Coolant System shall not exceed the 100 °F per hour cooldown rate of Technical Specification 3.4.8.1.	Caution reviewed.
Comment:	<b>SAT / UNSAT</b>

TASK ELEMENT 18	STANDARD
6.1.11.1: Open the following valves: <ul style="list-style-type: none"> <li>• SI-139A LPSI Header to RC Loop 2A Flow Control</li> <li>• SI-138A LPSI Header to RC Loop 2B Flow Control</li> </ul>	SI-139 A and SI-138 A are open.
Comment:	<b><u>Critical</u></b> <b>SAT / UNSAT</b>

TASK ELEMENT 19	STANDARD
6.1.11.2: Throttle Closed RC Loop 2 Shdn Cooling Warmup, SI-135A, until one of the following is within 100°F of Shutdown Cooling Train A temperature, as indicated by LPSI Pump A Discharge Header Temperature Indicator, SI-ITI-0351X: Hot Leg 2 temperature, as indicated by RC Loop 2 Hot Leg Temperature Indicator, RC-ITI-0122-HA	Temperature is within 100 °F
Comment: SI-135 A is a large gate valve with a very long stroke.	<b>SAT / UNSAT</b>

TASK ELEMENT 20	STANDARD
6.1.11.3: Close RC Loop 2 Shdn Cooling Warmup, SI-135 A.	SI-135 A is closed
Comment:	<b><u>Critical</u></b> <b>SAT / UNSAT</b>

Evaluator Note
Coordinate with the simulator operator to initiate trigger 1 to close SI-405 A.

TASK ELEMENT 21	STANDARD
Secure LPSI Pump A	LPSI Pump A is off.
Comment: <b>This is an immediate operator action IAW OP-901-131 D.1</b>	<b><u>Critical</u></b> <b>SAT / UNSAT</b>

**END OF TASK**

## **SIMULATOR OPERATOR INSTRUCTIONS**

Reset to IC-197

Verify the following Malfunctions:

- Si23a for SI-405 A

**Coordinate with the examiner so that when SI-135 A is fully closed at step 6.1.11.3, Trigger 1 is initiated to close SI-405 A.**

**Waterford 3**

**2010 NRC SRO Exam**

**JOB PERFORMANCE MEASURE**

**S5**

**Synchronize the Main Generator to the Grid**

Applicant: \_\_\_\_\_

Examiner: \_\_\_\_\_

JOB PERFORMANCE MEASURE  
DATA PAGE

Task: Synchronize the Main Generator to the grid in accordance with OP-010-004, Power Operations.

Task Standard: The Main Generator was synchronized to the grid with both Output Breakers closed in accordance with OP-010-004, Power Operations.

References: OP-010-004, Power Operations

Alternate Path: Yes Time Critical: No Validation Time: 30 mins.

K/A 062 A4.07, Synchronizing and paralleling of different AC supplies Importance Rating 3.1 / 3.1  
RO / SRO

Applicant: \_\_\_\_\_

Time Start: \_\_\_\_\_ Time Finish: \_\_\_\_\_

Performance Time: \_\_\_\_\_ minutes

Performance Rating: SAT UNSAT

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Examiner: \_\_\_\_\_  
Signature

Date: \_\_\_\_\_

**EXAMINER COPY ONLY**

Tools/Equipment/Procedures Needed:

OP-010-004, Power Operations

Description:

This JPM takes place at CP-1. The applicant will start the task with all Main Turbine testing complete and the unit running at 1800 rpm. The cue will direct the applicant to perform an auto synchronization of the Main Generator. The auto synchronization will fail to close either Main Generator Output Breaker. The applicant will then perform a manual synchronization.

DIRECTION TO APPLICANT:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Indicate to me when you understand your assigned task.

Read the Initial Condition and Cues from the colored Applicant Cue Sheet, and then give the cue sheet to the applicant.

## APPLICANT CUE SHEET

(TO BE RETURNED TO EXAMINER ~~TO~~ UPON COMPLETION OF TASK)

### INITIAL CONDITIONS:

- Plant is in Mode 1 at 15% power following a refueling outage
- All Main Turbine testing has been completed.
- Watch standers are standing by at the Main Transformers and the Generator Auxiliaries area.
- The Load Dispatcher and Southern Control have been notified that we are coming on line.

### INITIATING CUES:

- You are directed to synchronize the Main Generator to the grid using the auto synchronization circuit in accordance with OP-010-004, Power Operations.



TASK ELEMENT 1	STANDARD
Procedure Note: Monitor Main Transformer A(B) during the initial energization and loading phases of the transformer for indications of static discharging as evidenced by unusual bumping, thudding, crackling, popping, or similar noises. Notify System Engineering immediately if any unusual noises are emanating from the transformer tank.	Note reviewed.
Comment:	<b>SAT / UNSAT</b>

TASK ELEMENT 2	STANDARD
9.1.22 Close Generator Exciter Field Breaker on CP-1 to excite Generator field.	Breaker closed.
Comment:	<b><u>Critical</u></b> <b>SAT / UNSAT</b>

Evaluator Note
Local watchstander reports no unusual noises at the Main Transformers.

TASK ELEMENT 3	STANDARD
9.1.23 Locally verify Main Transformer Cooling System operating with no unusual noises.	Verification complete.
Comment:	<b>SAT / UNSAT</b>

Evaluator Note
Local watchstander reports Isophase Bus Duct Cooling Fan is operating normally.

TASK ELEMENT 4	STANDARD
9.1.24 Locally verify Generator Isophase Bus Duct Cooling Fan selected to Auto has started.	Verification complete.
Comment:	<b>SAT / UNSAT</b>

TASK ELEMENT 5	STANDARD
Procedure Caution: Do <u>not</u> leave synchronizer energized for longer than 5 minutes to prevent relay damage. Ensure that <u>only</u> one synchronizer circuit is energized at any time to prevent synchronizer malfunction.	Caution reviewed.
Comment:	<b>SAT / UNSAT</b>

TASK ELEMENT 6	STANDARD
9.1.25 Place Synchronizer Switch for first Generator Output Breaker to Manual, <u>and</u> verify Generator Running, GEN-EM-2210A, and Incoming, GEN-EM-2210B, voltmeters indicate voltage.	First Generator Output Breaker is placed in MANUAL.
Comment:	<b><u>Critical</u></b> <b>SAT / UNSAT</b>

TASK ELEMENT 7	STANDARD
Procedure Note: Voltage Regulator operation should be in accordance with Attachment 9.8, Entergy Guidelines Regarding Generator Voltage Regulator and Abnormal Frequency Operation.	Note reviewed.
Comment:	<b>SAT / UNSAT</b>

TASK ELEMENT 8	STANDARD
Procedure Caution: Exciter field amps shall not exceed 45 amps when matching incoming and running voltages with the base voltage adjuster.	Caution reviewed.
Comment:	<b>SAT / UNSAT</b>

TASK ELEMENT 9	STANDARD
9.1.26 Using Base Voltage Adjust Switch, raise Incoming (Generator) voltage, GEN-EM-2210B, to match Running (Grid) voltage, GEN-EM-2210A.	Voltage adjusted.
Comment:	<u><b>Critical</b></u> <b>SAT / UNSAT</b>

TASK ELEMENT 10	STANDARD
9.1.27 Place Synchronizer Switch for first Generator Output Breaker in Off.	First Generator Output Breaker is placed in OFF.
Comment: It does not matter which breaker is closed first.	<u><b>Critical</b></u> <b>SAT / UNSAT</b>

TASK ELEMENT 11	STANDARD
9.1.28 Place Auto Voltage Regulator switch in Test.	Voltage Regulator switch is in TEST.
Comment: <b>WHY IS THIS CRITICAL??? IF deviation already at zero then not performing this will not affect the JPM outcome.</b>	<u><b>Critical</b></u> <b>SAT / UNSAT</b>

TASK ELEMENT 12	STANDARD
9.1.29 Verify Voltage Regulator Balance needle deviates from zero in <u>both</u> directions, by rotating Voltage Regulator Adjust switch clockwise <u>and</u> counterclockwise.	Balance needle adjusted.
Comment:	<b>SAT / UNSAT</b>

TASK ELEMENT 13	STANDARD
9.1.30 Adjust Volt Reg Balance to zero, <u>and</u> place Auto Voltage Regulator switch to On.	Auto Voltage Regulator switch is in ON.
Comment:	<b><u>Critical</u></b> <b>SAT / UNSAT</b>

TASK ELEMENT 14	STANDARD
9.1.31 Adjust Turbine speed to 1801-1802 RPM, at SM/CRS discretion, in accordance with OP-005-007, Main Turbine Generator.	Speed verified.
Comment: <b>IF asked... provide a specific value</b>	<b>SAT / UNSAT</b>

TASK ELEMENT 15	STANDARD
9.1.32 Notify Load Dispatcher and Southern Control unit is ready to go on line.	Notification given in cue.
Comment:	<b>SAT / UNSAT</b>

TASK ELEMENT 16	STANDARD
9.1.33.1 Verify Auto Synchronization is disabled by placing Gen Bkr Auto Synch Switch in Disable.	Verification complete.
Comment:	<b>SAT / UNSAT</b>

TASK ELEMENT 17	STANDARD
Procedure Note: Auto Synchronizer controls Generator voltage when an Auto Synchronizer circuit is placed in service. It may take several revolutions (~ three) of the synchroscope before the Synch lights illuminate to allow circuit to adjust voltage and frequency.	Note reviewed.
Comment:	<b>SAT / UNSAT</b>

TASK ELEMENT 18	STANDARD
9.1.33.2 Place Synchronizer for first Generator Output Breaker to be closed in Auto.	Switch is in AUTO.
Comment:	<b><u>Critical</u></b> <b>SAT / UNSAT</b>

TASK ELEMENT 19	STANDARD
Procedure Note: Main Generator Voltage is matched with Switchyard Voltage when Incoming <u>and</u> Running Voltage needles are opposite one another.	Note reviewed.
Comment:	<b>SAT / UNSAT</b>

TASK ELEMENT 20	STANDARD
9.1.33.3 Verify proper operation of Main Generator Auto Synchronization circuit by <u>all</u> of the following: <ul style="list-style-type: none"> <li>• Synchroscope rotating slowly in the fast direction. (&lt; 1 rev per 10 sec)</li> <li>• Synch check lights are illuminated between 5 till and 12 o'clock.</li> <li>• Incoming voltage, GEN-EM-2210B, approximately equal to running voltage, GEN-EM-2210A.</li> </ul>	Verification complete.
Comment:	<b>SAT / UNSAT</b>

TASK ELEMENT 21	STANDARD
Procedure Note: Placing Gen Bkr Auto Synch switch in Enable allows Generator Output Breaker to close automatically. The Gen Bkr Auto Synch <u>must</u> be held in Enable until GOB closes.	Note reviewed.
Comment:	<b>SAT / UNSAT</b>

TASK ELEMENT 22	STANDARD
9.1.33.4 <u>When</u> Synchroscope passes “15 after 12 o'clock” position <u>and</u> Synch Check lights are extinguished, <u>then</u> place <u>and</u> hold Gen Bkr Auto Synch switch in Enable.	Switch is in ENABLE.
Comment:	<b><u>Critical</u></b> <b>SAT / UNSAT</b>

Evaluator Note
<p>The fault will prevent the Generator Output Breaker from closing. The applicant should eventually release the Auto Sync Switch and report the failure to the CRS.</p> <p>Direct the applicant as the CRS to sync the Main Generator in MANUAL <b>in accordance with step 9.1.34.</b></p>

TASK ELEMENT 23	STANDARD
9.1.33.7 Turn Synchronizer to OFF.	Switch is in OFF.
Comment:	<b><u>Critical</u></b> <b>SAT / UNSAT</b>

TASK ELEMENT 24	STANDARD
9.1.34.1 Place Synchronizer in Manual.	Switch is in MANUAL.
Comment:	<b><u>Critical</u></b> <b>SAT / UNSAT</b>

TASK ELEMENT 25	STANDARD
Procedure Note: Main Generator Voltage is matched with Switchyard Voltage when Incoming and Running voltage needles are opposite one another.	Note reviewed.
Comment:	<b>SAT / UNSAT</b>

TASK ELEMENT 26	STANDARD
9.1.34.2 Verify Incoming voltage, GEN-EM-2210B, is slightly higher than Running Voltage, GEN-EM-2210A.	Verification complete.
Comment:	<b>SAT / UNSAT</b>

TASK ELEMENT 27	STANDARD
9.1.34.3 Verify Synchroscope is rotating slowly in the fast direction.	Verification complete.
Comment:	<b>SAT / UNSAT</b>

TASK ELEMENT 28	STANDARD
9.1.34.4 <u>Verify</u> one complete revolution of the synchroscope every 15 seconds <u>or</u> greater, <u>before</u> attempting to close the Generator Output Breaker.	Verification complete.
Comment:	<b>SAT / UNSAT</b>

TASK ELEMENT 29	STANDARD
Procedure Caution: Attempt to close a generator output breaker only at 12 o'clock. Failure to do this could result in paralleling the generator out of phase.	Caution reviewed.
Comment:	<b>SAT / UNSAT</b>

TASK ELEMENT 30	STANDARD
9.1.34.5 <u>When</u> Synchroscope reaches slightly before 12 o' clock position and Synch Check lights are On, <u>then</u> Close the first Generator Output Breaker.	Generator Output Breaker is CLOSED.
Comment:	<b><u>Critical</u></b> <b>SAT / UNSAT</b>

TASK ELEMENT 31	STANDARD
9.1.34.6 Turn Synchronizer Switch to OFF.	Switch is in OFF.
Comment:	<b><u>Critical</u></b> <b>SAT / UNSAT</b>

TASK ELEMENT 32	STANDARD
9.1.35 Verify Generator has picked up approximately 5% load (~ 62 Mwe).	Verification complete.
Comment:	<b>SAT / UNSAT</b>

TASK ELEMENT 33	STANDARD
Procedure Note: <u>Prior to</u> closing the second Generator Output Breaker, wait at least 20 seconds after placing synchronizer in Manual to allow Synch Check Relay to realign.	Note reviewed.
Comment:	<b>SAT / UNSAT</b>

TASK ELEMENT 34	STANDARD
9.1.36.1 Place Synchronizer in Manual for remaining Generator Output Breaker.	Switch is in MANUAL.
Comment:	<b><u>Critical</u></b> <b>SAT / UNSAT</b>



TASK ELEMENT 35	STANDARD
9.1.36.2 Close the Generator Output Breaker.	Generator Output Breaker is CLOSED.
Comment:	<u><b>Critical</b></u>  <b>SAT / UNSAT</b>

TASK ELEMENT 36	STANDARD
9.1.36.3 Turn the Synchronizer switch to Off	Switch is in OFF.
Comment: <b>Is this critical (i.e. damage to equipment)??</b>	<u><b>Critical</b></u>  <b>SAT / UNSAT</b>

**END OF TASK**

## **SIMULATOR OPERATOR INSTRUCTIONS**

Reset to IC-196

There are no Malfunctions for this JPM.

Verify the following Overrides:

- DI-01A06S08-1 overridden to OFF

**Waterford 3**

**2010 NRC SRO Exam**

**JOB PERFORMANCE MEASURE**

**S6**

**Reset Containment Spray Actuation**

Applicant: \_\_\_\_\_

Examiner: \_\_\_\_\_

JOB PERFORMANCE MEASURE  
DATA PAGE

Task: Reset Containment Spray Actuation

Task Standard: CSAS initiation and actuation were reset in accordance with OP-902-009, Standard Appendices, Appendix 5 – E.

References: OP-902-009, Standard Appendices, Appendix 5 – E  
OP-902-004, Excess Steam Demand Recovery

Alternate Path: No Time Critical: No Validation Time: 10 mins.

K/A **012** A4.04, Bistable, trips, reset and test switches Importance Rating 3.3 / 3.3  
RO / SRO

Applicant: \_\_\_\_\_

Time Start: \_\_\_\_\_ Time Finish: \_\_\_\_\_

Performance Time: \_\_\_\_\_ minutes

Performance Rating: SAT UNSAT

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Examiner: \_\_\_\_\_  
Signature

Date: \_\_\_\_\_

**EXAMINER COPY ONLY**

Tools/Equipment/Procedures Needed:

OP-902-009, Standard Appendices, Appendix 5 – E  
OP-902-004, Excess Steam Demand Recovery

Description:

The JPM begins in an Excess Steam Demand event, after the applicable Steam Generator has blown dry. Containment Spray termination criteria are met. The applicant will be directed to reset CSAS. Actions for this task take place at CP-8, CP-10 A through D, and CP-33.

DIRECTION TO APPLICANT:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Indicate to me when you understand your assigned task.

Read the Initial Condition and Cues from the colored Applicant Cue Sheet, and then give the cue sheet to the applicant.

## APPLICANT CUE SHEET

(TO BE RETURNED TO EXAMINER ~~TO~~ UPON COMPLETION OF TASK)

### INITIAL CONDITIONS:

- An Excess Steam Demand event has occurred.
- The crew is implementing OP-902-004, Excess Steam Demand Recovery
- ~~The conditions of step 44 of OP-902-004 have been verified to be met.~~ **Do not give this. If the applicant wants, he can verify it in the control room using plant conditions (Step 27, not 44).**
- Containment Spray is NOT needed for iodine removal.

### INITIATING CUES:

- The CRS directs you, ~~the BOP operator,~~ to perform OP-902-009, Standard Appendices, Appendix 5 – E and reset CSAS.

<b>Evaluator Note</b>
When Applicant is ready, cue the simulator operator to place the simulator in RUN.

<b>TASK ELEMENT 1</b>	<b>STANDARD</b>
1.1 Place control switches for the following valves to CLOSE: <ul style="list-style-type: none"> <li>• CC-641, CCW RCP INLET OUTSIDE ISOL</li> <li>• CC-710, CCW RCP OUTLET INSIDE ISOL</li> <li>• CC-713, CCW RCP OUTLET OUTSIDE ISOL</li> </ul>	All 3 valve control switches are in CLOSED.
Comment:	<b><u>Critical</u></b>  <b>SAT / UNSAT</b>

<b>Evaluator Note</b>
To Reset CSAS Initiation relays, the following 4 steps must be performed on Channels A, B, C, and D.

<b>TASK ELEMENT 2</b>	<b>STANDARD</b>
1.2.a Place the Reset Permissive switch to "UNLK" position. (CP-10)	The applicable Reset Permissive switch is in UNLK.
Comment:  Applicant will need key 218 for this manipulation.	<b><u>Critical</u></b>  <b>SAT / UNSAT</b>

<b>TASK ELEMENT 3</b>	<b>STANDARD</b>
1.2.b Press CSAS Reset pushbutton.	CSAS Reset pushbutton is pressed.
Comment:	<b><u>Critical</u></b>  <b>SAT / UNSAT</b>

TASK ELEMENT 4	STANDARD
1.2.c Verify the initiation relay indicator lit on the ENGINEERED SAFETY FEATURES SYSTEM mimic.	Verification complete.
Comment:	<b>SAT / UNSAT</b>

TASK ELEMENT 5	STANDARD
1.2.d Place the Reset permissive switch to LK position	The applicable Reset Permissive switch is in the LK position.
Comment: This sequence must be repeated for Channels A – D.	<b><u>Critical</u></b> <b>SAT / UNSAT</b>

TASK ELEMENT 6	STANDARD
1.3.a Reset CSAS actuation logic on <b>BOTH</b> trains as follows: <ul style="list-style-type: none"> <li>• Press the CSAS Reset pushbuttons. (CP-33)</li> </ul>	CSAS Reset pushbuttons A & B have been de-pressed.
Comment: There are 2 buttons on CP-33 that must be pressed, 1 for Train A and 1 for Train B.	<b><u>Critical</u></b> <b>SAT / UNSAT</b>

TASK ELEMENT 7	STANDARD
1.3.b Verify the actuation relay indicator lit on the ENGINEERED SAFETY FEATURES SYSTEM mimic. (CP-10)	CP-10 verification is complete.
Comment:	<b>SAT / UNSAT</b>



TASK ELEMENT 8	STANDARD
1.4 Stop <b>ONE</b> CS pump at a time.	One Containment Spray Pump is secured.
Comment:	<u><b>Critical</b></u>  <b>SAT / UNSAT</b>

TASK ELEMENT 9	STANDARD
1.5 <b>IF</b> a CS pump is operating, <b>THEN</b> stop the remaining CS pump.	Second Containment Spray Pump is secured.
Comment:	<u><b>Critical</b></u>  <b>SAT / UNSAT</b>

TASK ELEMENT 10	STANDARD
1.6 Close the following Containment Spray valves: <ul style="list-style-type: none"> <li>• CS-125 A, CNTMT SPRAY HEADER A ISOL</li> <li>• CS-125 B, CNTMT SPRAY HEADER B ISOL</li> </ul>	CS-125 A and CS-125 B are closed.
Comment: Control switch must be taken to OPEN and then to CLOSE.	<u><b>Critical</b></u>  <b>SAT / UNSAT</b>

TASK ELEMENT 11	STANDARD
1.7 Place <b>BOTH</b> Containment Spray pump control switches to normal position.	Both Containment Spray pump control switches are in the normal position.
Comment:	<u><b>Critical</b></u>  <b>SAT / UNSAT</b>

**END OF TASK**

## SIMULATOR OPERATOR INSTRUCTIONS

Reset to IC-198

Verify the following Malfunctions:

- Ms11b      25%
- Ch09      50%

Place the Simulator in Run on the lead examiner's cue.

**Waterford 3**

**2010 NRC SRO Exam**

**JOB PERFORMANCE MEASURE**

**S7**

**Waste Condensate Tank Discharge**

Applicant: \_\_\_\_\_

Examiner: \_\_\_\_\_

JOB PERFORMANCE MEASURE  
DATA PAGE

---

Task: Waste Condensate Tank Discharge

Task Standard: Applicant initiated Waste Condensate Tank release in accordance with OP-007-004, Liquid Waste Management System, and secured the release after the flow controller failed to maximum output.

References: OP-007-004, Liquid Waste Management System  
CE-003-514, Liquid Radioactive Waste Release Permit (Computer)

Alternate Path: Yes Time Critical: No Validation Time: 15 mins.

K/A 068 A4.03, Stoppage of releases if limits exceeded Importance Rating 3.9 / 3.8  
RO / SRO

Applicant: \_\_\_\_\_

Time Start: \_\_\_\_\_ Time Finish: \_\_\_\_\_

Performance Time: \_\_\_\_\_ minutes

Performance Rating: SAT UNSAT

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Examiner: \_\_\_\_\_  
Signature

Date: \_\_\_\_\_

**EXAMINER COPY ONLY**

Tools/Equipment/Procedures Needed:

OP-007-004, Liquid Waste Management System  
Discharge Permit for Waste Condensate Tank A

Description:

The applicant will be tasked with initiating a discharge of Waste Condensate Tank A. The cue will ~~provide~~ **indicate** that the operator in the field has completed all required lineups and is standing by. When the applicant initiates flow, the flow controller output will fail high, causing discharge flow to exceed the 50 gpm permit flow limit. The flow controller will not be capable of securing flow. The applicant will stop discharge flow by closing the discharge isolation valves.

DIRECTION TO APPLICANT:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Indicate to me when you understand your assigned task.

Read the Initial Condition and Cues from the colored Applicant Cue Sheet, and then give the cue sheet to the applicant.

## APPLICANT CUE SHEET

(TO BE RETURNED TO EXAMINER ~~TO~~ UPON COMPLETION OF TASK)

### INITIAL CONDITIONS:

- Waste Condensate Tank A has been prepared for discharge.
- **The RCA Watch reports that he has completed step 6.10.6 of OP-007-004, Liquid Waste Management System, and that Attachment 11.4, Waste Condensate Tank Discharge Checklist, is complete.**

### INITIATING CUES:

- ~~• The RCA Watch reports that he has completed step 6.10.6 in OP-007-004, Liquid Waste Management System, and that Attachment 11.4, Waste Condensate Tank Discharge Checklist, is complete.~~
- The Control Room Supervisor directs you to commence discharging Waste Condensate Tank A, **starting at step 6.10.7 of OP-007-004 LWMS.**

TASK ELEMENT 1	STANDARD
6.10.7 On CP-4, Reset Liquid Waste Discharge Flow Integrator to zero.	Integrator is reset to zero.
Comment:	<u><b>Critical</b></u>  <b>SAT / UNSAT</b>

TASK ELEMENT 2	STANDARD
6.10.8 Record WCT level and Liquid Waste Discharge Integrator reading on Liquid Release Permit.	Reading is recorded on the Release Permit.
Comment:	<u><b>Critical</b></u>  <b>SAT / UNSAT</b>

TASK ELEMENT 3	STANDARD
6.10.9 Verify Liquid Waste Discharge Flow Controller, LWM-IFIC-0647, in Manual with 0% output.	Verification complete.
Comment:	<b>SAT / UNSAT</b>

TASK ELEMENT 4	STANDARD
Procedure Caution: If Circulating Water flow is reduced to less than that required by the discharge permit, then discharge shall be secured immediately.	Caution reviewed.
Comment:	<b>SAT / UNSAT</b>

Evaluator Note
The combined control switch on CP-4 will open LWM-441 and give an open permissive to LWM-442. LWM-442 is operated using controller LWM-IFIC-0647, also on CP-4. <b>What about LWM-315 A(B) in the procedure step 6.10.10.1??</b>

Evaluator Note
When flow rises above the trigger setpoint, the output of the controller will fail in the raise position. Flow will rise above the Permit limit of 50 gpm. The applicant will not be able to secure flow with the controller. The applicant will be required to secure flow by closing LWM-441 and LWM-442 using the control switch.

TASK ELEMENT 5	STANDARD
6.10.10 To start discharging WCT, momentarily position Liquid Waste Condensate Flow Control handswitch, LWM-441 and LWM-442, to Open and adjust flow using Liquid Waste Condensate Flow Controller, LWM-IFIC-0647, not to exceed value specified on Liquid Release Permit.	LWM-441 is opened using control switch. LWM-442 is throttled open using controller.?? <b>Procedure states: use LWM-315 A(B) as necessary to achieve desired flow.</b>
Comment: <b>The following step is the alternate path.</b>	<b><u>Critical</u></b> <b>SAT / UNSAT</b>

**Additional step: Attempt to stop flow using IFIC-0647**

TASK ELEMENT 6	STANDARD
Position Liquid Waste Condensate Flow Control Switch for LWM-441 and LWM-442 to Closed and verify LWM-441 and LWM-442 are closed.	LWM-441 and LWM-442 are closed.
Comment:	<b><u>Critical</u></b> <b>SAT / UNSAT</b>

## END OF TASK



## **SIMULATOR OPERATOR INSTRUCTIONS**

Reset to IC-197

There are no Malfunctions for this JPM.

Verify the following Overrides:

- DI-04A3A12C-3 is overridden to PUSH

Verify the following Event Trigger settings:

Trigger 7 is set as  $zaowdlwmifif0647(1) > 0.2$

**Waterford 3**

**2010 NRC SRO Exam**

**JOB PERFORMANCE MEASURE**

**P1**

**Reset Emergency Feedwater Pump AB**

Applicant: \_\_\_\_\_

Examiner: \_\_\_\_\_

JOB PERFORMANCE MEASURE  
DATA PAGE

---

Task: Reset overspeed device on Emergency Feedwater Pump AB during a Station Blackout.

Task Standard: The overspeed device on Emergency Feedwater Pump AB was reset in accordance with OP-902-005, Station Blackout Recovery.

References: OP-902-005, Station Blackout Recovery

Alternate Path: No Time Critical: No Validation Time: 10 mins.

K/A	<b>061</b> A2.04, Pump failure or improper operation	Importance Rating	<u>3.4 / 3.8</u>
		RO / SRO	

Applicant: \_\_\_\_\_

Time Start: \_\_\_\_\_ Time Finish: \_\_\_\_\_

Performance Time: \_\_\_\_\_ minutes

Performance Rating:            SAT                    UNSAT

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Examiner: \_\_\_\_\_  
Signature

Date: \_\_\_\_\_

**EXAMINER COPY ONLY**

Tools/Equipment/Procedures Needed:

OP-902-005, Station Blackout Recovery

Description:

This task takes place in the RCA. The task takes place during a simulated Station Blackout. This requires the applicant to simulate manual operation of MS-416, Emergency Feedwater Pump AB Trip Valve. All components are located on the -35 elevation. This JPM takes place in a location with numerous pipes and supports that are bump hazards, but no special PPE will be required for this task. There are no special radiological requirements to perform this task.

DIRECTION TO APPLICANT:

I will explain the initial conditions, and state the task to be performed. All steps for this JPM will be simulated, do not manipulate any plant components. Make all necessary communications to me. I will provide initiating cues and reports on other actions when directed by you. Indicate to me when you understand your assigned task.

Read the Initial Condition and Cues from the colored Applicant Cue Sheet, and then give the cue sheet to the applicant.

## APPLICANT CUE SHEET

### Do Not Manipulate Any Plant Components

(TO BE RETURNED TO EXAMINER ~~TO~~ UPON COMPLETION OF TASK)

#### INITIAL CONDITIONS:

- A Station Blackout event is in progress
- Emergency Feedwater Pump AB has tripped on an overspeed condition
- The Control Room has closed MS-401 A and MS-401 B.
- The Control Room has cycled MS-407 Open and Closed to depressurize the steam header. **Remove this bullet if this step is done locally per 10.1.b.**

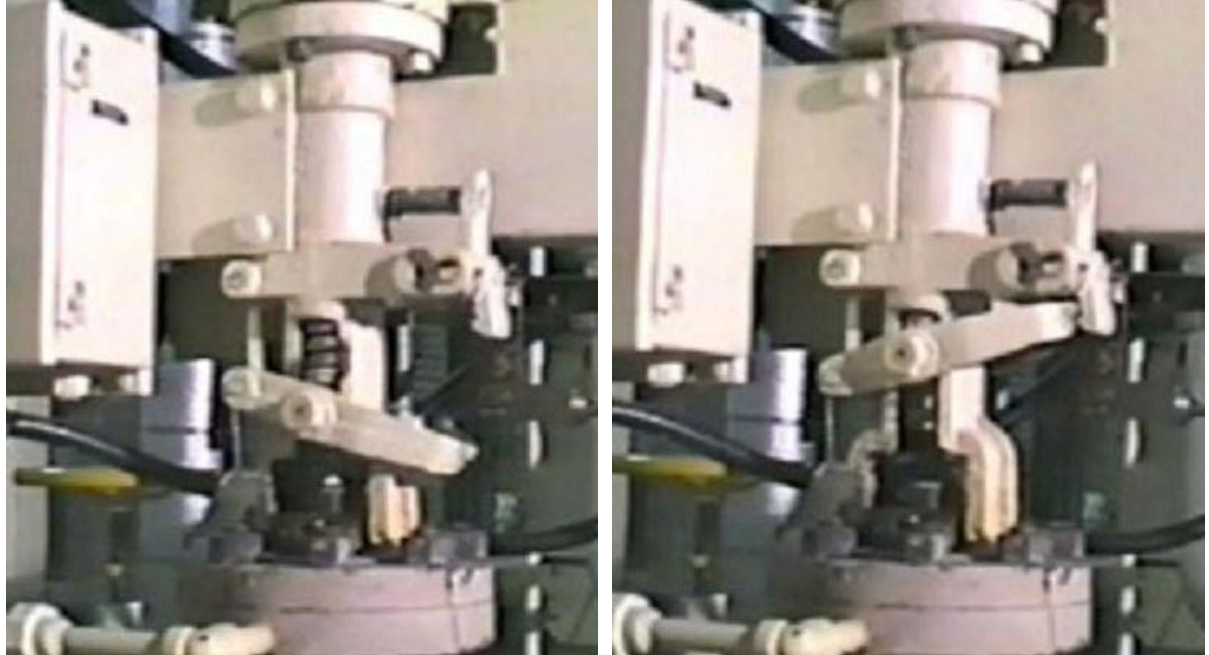
#### INITIATING CUES:

- The CRS directs you to reset Emergency Feedwater Pump AB **in accordance with OP-902-005, Step 10 RNO.**


TASK ELEMENT 1	STANDARD
10.1.a. Close <b>BOTH</b> PUMP AB TURB STM SUPPLY valves: MS-401 A and MS-401 B.	Provided in the cue.
Comment:	<b>SAT / UNSAT</b>

TASK ELEMENT 2	STANDARD
10.1.b. Locally verify the steam supply header depressurized using MS-407, EFW Pump AB Drip Pot Normal Drain Bypass.	Provided in cue.
Comment: <b>10.1.b states locally. Should this be done locally by the applicant?? Provide examiner cue...</b>	<b>SAT / UNSAT</b>

Evaluator Note
MS-416 trips closed on an overseed. In a Station Blackout, MS-416 MOV must be manually operated in the <u>closed</u> direction to position the valve for reset. The physical indication as this operation is performed would be the trip bar moving from a low, tripped position up to the trip latch.

Evaluator Note
MS-416 in the tripped position before and after MOV is manually operated:
<div style="display: flex; justify-content: space-around;">  </div>

TASK ELEMENT 3	STANDARD
10.1.c. Locally close MS 416, EFW Pump AB Turbine Stop Valve.	MS-416 is operated in the closed direction.
<b>EXAMINER CUE: Valve latching mechanism is full up.</b>	
Comment:	<b><u>Critical</u></b> <b>SAT / UNSAT</b>

Evaluator Note
The overspeed device is reset by moving the trip bar towards MS-416.


TASK ELEMENT 4	STANDARD
10.1.d. Verify mechanical Overspeed reset.	Overspeed device is reset.
<b>EXAMINER CUE: A cue to give to applicant for this task. OR A PICTURE.</b>	
Comment:	<b><u>Critical</u></b> <b>SAT / UNSAT</b>

TASK ELEMENT 5	STANDARD
10.1.e. Locally open MS 416, EFW Pump AB Turbine Stop Valve.	MS-416 is manually opened.
<b>EXAMINER CUE: Valve is fully CCW and valve stem is up.</b>	
Comment:	<u><b>Critical</b></u> <b>SAT / UNSAT</b>

TASK ELEMENT 6	STANDARD
10.1.f. Open <b>BOTH</b> PUMP AB TURB STM SUPPLY valves. <ul style="list-style-type: none"> <li>• MS 401A</li> <li>• MS 401B</li> </ul>	Communication made to the Control Room.
Comment:	<b>SAT / UNSAT</b>

**END OF TASK**



# Waterford 3

## 2010 NRC SRO Exam

### JOB PERFORMANCE MEASURE

# P2

## Aligning Spent Fuel Pool Purification

Applicant: \_\_\_\_\_

Examiner: \_\_\_\_\_

**THIS JPM DOES NOT SEEM DISCRIMINATING AND HAS A LOW IR. PLEASE HAVE ANOTHER JPM AVAILABLE TO REPLACE THIS (SECURE FROM RWSP PURIFICATION OR PLACE FPC IN RWSP PURIFICATION). WE WILL RUN THIS AND THE REPLACEMENT DURING VALIDATION.**

JOB PERFORMANCE MEASURE  
DATA PAGE

Task: Place the Spent Fuel Pool on purification in accordance with OP-002-006, Fuel Pool Cooling and Purification

Task Standard: The Spent Fuel Pool was aligned for purification in accordance with OP-002-006, Fuel Pool Cooling and Purification.

References: OP-002-006, Fuel Pool Cooling and Purification

Alternate Path: No Time Critical: No Validation Time: 15 mins.

K/A 033 K4.02, Maintenance of Spent Fuel Pool cleanliness Importance Rating 2.5 / 2.7  
RO / SRO

Applicant: \_\_\_\_\_

Time Start: \_\_\_\_\_ Time Finish: \_\_\_\_\_

Performance Time: \_\_\_\_\_ minutes

Performance Rating: SAT UNSAT

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Examiner: \_\_\_\_\_  
Signature

Date: \_\_\_\_\_

**EXAMINER COPY ONLY**

Tools/Equipment/Procedures Needed:

OP-002-006, Fuel Pool Cooling and Purification

Description:

This task takes place in the RCA, specific to the Fuel Handling Building. All components are located on the +1 elevation of the Fuel Handling Building. No special PPE will be required for this task. There are no special radiological requirements to perform this task.

DIRECTION TO APPLICANT:

I will explain the initial conditions, and state the task to be performed. All steps for this JPM will be simulated, do not manipulate any plant components. Make all necessary communications to me. I will provide initiating cues and reports on other actions when directed by you. Indicate to me when you understand your assigned task.

Read the Initial Condition and Cues from the colored Applicant Cue Sheet, and then give the cue sheet to the applicant.

**APPLICANT CUE SHEET****Do Not Manipulate Any Plant Components**

(TO BE RETURNED TO EXAMINER ~~TO~~ UPON COMPLETION OF TASK)

## INITIAL CONDITIONS:

- Refueling Water Storage Pool Purification has been in service for 2 days.
- Refueling Water Storage Pool Purification was secured 1 hour ago.

## INITIATING CUES:

- The CRS directs you to place the Spent Fuel Pool on purification.
- No system venting is required.

TASK ELEMENT 1	STANDARD
6.4.1 Verify Refueling Water Storage Pool Purification is secured in accordance with Section 6.7, Securing RWSP Purification.	Provided in cue.
Comment:	<b>SAT / UNSAT</b>

TASK ELEMENT 2	STANDARD
6.4.2 Throttle Fuel Pool Purif Pump Discharge Isolation, FS-318, to 2 turns Open.	FS-318 is throttled 2 turns open.
<b>EXAMINER CUE: Valve fully clockwise and then CCW 2 turns.</b>	
Comment:	<b><u>Critical</u></b> <b>SAT / UNSAT</b>

TASK ELEMENT 3	STANDARD
6.4.3 Close Fuel Pool Purification Pump breaker, FS-EBKR-314A-5D.	Breaker is closed.
<b>EXAMINER CUE: Breaker ON (or up etc.)</b>	
Comment: The 314 A Bus is located on the +1 elevation of the Fuel Handling Building.	<b><u>Critical</u></b> <b>SAT / UNSAT</b>

TASK ELEMENT 4	STANDARD
<p>Procedure Note.</p> <p>(1) Fuel Pool Purification Pump will not start if Fuel Pool level is &lt;41' 6".</p> <p>(2) Fuel Pool Purification components should be bypassed as necessary to maintain differential pressures less than or equal to the Maximum DP limit listed below. Chemistry Department should be notified when any of these components are bypassed (refer to Limitation 3.2.6 for applicable bypass valves):</p> <ul style="list-style-type: none"> <li>• Fuel Pool Purification Filter DP: 25 PSID</li> <li>• Fuel Pool Ion Exchanger Outlet Header Strainer DP: 10 PSID</li> <li>• Combined DP of Fuel Pool Ion Exchanger <u>and</u> Fuel Pool Ion Exchanger Outlet Header Strainer (aligned to sense differential pressure across both): 25 PSID</li> </ul>	Note reviewed.

Comment:	<b>SAT / UNSAT</b>
----------	--------------------

TASK ELEMENT 5	STANDARD
Procedure caution. If the Spent Fuel Pool temperature (PMC PIDs A47004 and A47005) rises to $\geq 135$ °F at any time during purification, <u>then</u> the Fuel Pool Purification Pump must be stopped or Fuel Pool ion exchanger resin damage may occur.	Caution reviewed.
Comment:	<b>SAT / UNSAT</b>

TASK ELEMENT 6	STANDARD
6.4.4 Start the Fuel Pool Purification Pump.	Pump started.
<b>EXAMINER CUE: Red light ON, pump amps, flow, noise etc.</b>	
Comment: The control switch for the Fuel Pool Purification Pump is located in the Fuel Pool Purification cubicle.	<b><u>Critical</u></b> <b>SAT / UNSAT</b>

TASK ELEMENT 7	STANDARD
6.4.5 If venting is required, <u>then</u> vent from the following valves: <ul style="list-style-type: none"> <li>• FS-319 Fuel Pool Purif Pump Discharge Header Vent</li> <li>• FS-324 Fuel Pool Purif Filter Vent</li> <li>• FS-344 Fuel Pool Ion Exchanger Outlet Header Vent</li> </ul>	Provided in the cue.
Comment:	<b>SAT / UNSAT</b>

TASK ELEMENT 8	STANDARD
6.4.6 Open Fuel Pool Purif Pump Discharge Isolation, FS-318.	FS-318 is full open.
<b>EXAMINER CUE: Fully clockwise</b>	
Comment:	<b><u>Critical</u></b> <b>SAT / UNSAT</b>

**END OF TASK**



**Waterford 3**  
**2010 NRC SRO Exam**  
**JOB PERFORMANCE MEASURE**

**P3**

**SUPS 014 AB Operation**

Applicant: \_\_\_\_\_

Examiner: \_\_\_\_\_

JOB PERFORMANCE MEASURE  
DATA PAGE

Task: Transfer SUPS 014 AB from Alternate to Normal AC power

Task Standard: SUPS 014 AB was transferred from Alternate to Normal AC alignment in accordance with OP-006-005, Inverters and Distribution.

References: OP-006-005, Inverters and Distribution

Alternate Path: Yes Time Critical: No Validation Time: 20 mins.

K/A 062 A3.04, Operation of inverter Importance Rating 2.7 / 2.9  
RO / SRO

Applicant: \_\_\_\_\_

Time Start: \_\_\_\_\_ Time Finish: \_\_\_\_\_

Performance Time: \_\_\_\_\_ minutes

Performance Rating: SAT UNSAT

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Examiner: \_\_\_\_\_  
Signature

Date: \_\_\_\_\_

**EXAMINER COPY ONLY**

Tools/Equipment/Procedures Needed:

OP-006-005, Inverters and Distribution

Description:

SUPS 014 AB will be simulated in the Alternate AC power alignment. Applicant will transfer SUPS 014 AB to the Normal AC alignment. All steps will be simulated in Switchgear Room A. No special PPE will be required for this task.

DIRECTION TO APPLICANT:

I will explain the initial conditions, and state the task to be performed. All steps for this JPM will be simulated, do not manipulate any plant components. Make all necessary communications to me. I will provide initiating cues and reports on other actions when directed by you. Indicate to me when you understand your assigned task.

Read the Initial Condition and Cues from the colored Applicant Cue Sheet, and then give the cue sheet to the applicant.

## APPLICANT CUE SHEET

### Do Not Manipulate Any Plant Components

(TO BE RETURNED TO EXAMINER ~~TO~~ UPON COMPLETION OF TASK)

#### INITIAL CONDITIONS:

- SUPS 014 AB is in the Alternate AC alignment
- The inverter was isolated in accordance with **OP-006-005, Inverters and Distribution, ~~steps-Step~~ 6.5.2.7.**

#### INITIATING CUES:

- The CRS directs you to place SUPS 014 AB in the Normal AC alignment in accordance with OP-006-005, Inverters and Distribution, section 6.5.3.

**PLACE THIS SHEET AT END OF JPM**

TASK ELEMENT 1	STANDARD
6.5.3.1.1 Place Normal Feeder breaker to ON.	Breaker is ON.
Comment:	<u>Critical</u> SAT / UNSAT

TASK ELEMENT 2	STANDARD
6.5.3.1.2 Verify Inverter Input Voltage > 121 VDC, then place Emergency Feeder breaker to ON.	Breaker is ON.
Comment:	<u>Critical</u> SAT / UNSAT

TASK ELEMENT 3	STANDARD
6.5.3.1.3 Depress and release Inverter Operate pushbutton.	Pushbutton is pressed and released.
Comment:	<u>Critical</u> SAT / UNSAT

TASK ELEMENT 4	STANDARD
6.5.3.2 Verify SUPS 014AB Static Switch Retransfer toggle switch in INHIBIT.	Verification complete.
Comment:	SAT / UNSAT

TASK ELEMENT 5	STANDARD
6.5.3.3 Place SUPS 014AB Alternate Feeder breaker to ON.	Breaker is ON.
Comment:	<p align="center"><u>Critical</u></p> <p align="center">SAT / UNSAT</p>

TASK ELEMENT 6	STANDARD
6.5.3.4 Depress and release SUPS 014AB Static Switch Transfer Test pushbutton.	Test pushbutton depressed and released.
Comment:	<p align="center"><u>Critical</u></p> <p align="center">SAT / UNSAT</p>

TASK ELEMENT 7	STANDARD
6.5.3.4.1 Verify Static Switch On Reserve light Illuminates.	Verification complete.
Comment:	<p align="center">SAT / UNSAT</p>

TASK ELEMENT 8	STANDARD
6.5.3.5 Depress and release SUPS 014AB Lamp Test/Reset pushbutton.	Pushbutton depressed and released.
Comment:	<p align="center"><u>Critical</u></p> <p align="center">SAT / UNSAT</p>

TASK ELEMENT 9	STANDARD
6.5.3.5.1 Verify Static Switch On Reserve light remains Illuminated.	Verification complete.
Comment:	<u>Critical</u> SAT / UNSAT

TASK ELEMENT 10	STANDARD
6.5.3.6 Place SUPS 014AB Output To PDP014AB breaker to ON.	Breaker is ON.
Comment:	<u>Critical</u> SAT / UNSAT

TASK ELEMENT 11	STANDARD
6.5.3.7 Place SUPS 014AB Bypass breaker to OFF.	Breaker is OFF.
Comment:	<u>Critical</u> SAT / UNSAT

TASK ELEMENT 12	STANDARD
6.5.3.8 Place SUPS 014AB AC Voltage Select Switch to INVERTER.	Select Switch is in INVERTER.
Comment:	<u>Critical</u> SAT / UNSAT

Evaluator Note
<p>When applicant observes the SUPS Output Voltage meter, provide indication of zero volts.</p> <p>If the applicant presses the Operate pushbutton, provide the indications provided in Task Element 13.</p> <p>If the applicant does not press the Operate pushbutton, then provide the indication that the <b>Static Switch On Reserve</b> light is still illuminated at Task Element 16.</p>

TASK ELEMENT 13	STANDARD
<p>6.5.3.9 If no voltage is indicated, then depress and release SUPS 014AB Inverter Operate pushbutton, and verify the following:</p> <ul style="list-style-type: none"> <li>• Inverter Phase Locked light Illuminated</li> <li>• Inverter Output voltage CN ~120 VAC (118.8 to 121.2 VAC)</li> <li>• Inverter Output voltage AN ~120 VAC (118.8 to 121.2 VAC)</li> <li>• Inverter Output voltage BN ~120 VAC (118.8 to 121.2 VAC)</li> <li>• Inverter Output frequency ~60 Hz (59.97 to 60.03 Hz)</li> </ul>	<p>Observes no voltage and presses and releases the Operate pushbutton.</p>
<p>Comment:</p>	<p><b><u>Critical</u></b></p> <p><b>SAT / UNSAT</b></p>

TASK ELEMENT 14	STANDARD
<p>6.5.3.10 Place SUPS 014AB Static Switch Retransfer toggle switch to AUTO.</p>	<p>Toggle Switch is in Auto.</p>
<p>Comment:</p>	<p><b><u>Critical</u></b></p> <p><b>SAT / UNSAT</b></p>



TASK ELEMENT 15	STANDARD
6.5.3.11 After approximately 30 seconds, depress and release SUPS 014AB Lamp Test/Reset pushbutton.	Pushbutton pressed and released.
Comment:	<u>Critical</u> SAT / UNSAT

TASK ELEMENT 16	STANDARD
6.5.3.11.1 Verify Static Switch On Reserve light Extinguished.	Verification complete.
Comment:	<u>Critical</u> SAT / UNSAT

**END OF TASK**

Facility:	WATERFORD 3	Scenario No.:	1	Op Test No.:	<b>NRC</b>
Examiners:	_____	Operators:	_____		
	_____		_____		
	_____		_____		
Initial Conditions:	<ul style="list-style-type: none"> <li>• 100%, 125 EFPD, AB buses aligned to Train B</li> <li>• Protected Train is B</li> <li>• Emergency Diesel Generator A is out of service.</li> </ul>				
Turnover:	<ul style="list-style-type: none"> <li>• Maintain 100 % power</li> </ul>				
Event No.	Malf. No.	Event Type*	Event Description		
1	H_105	I – ATC I – SRO	Remove Reactor Power Cutback from service in accordance with OP-004-015.		
2	RC22F2	TS – SRO I – SRO	Pressurizer pressure instrument RC-IPI-0102 B fails low.		
3	SG01B CV02C	TS – SRO C – SRO C – ATC	Steam Generator 2 tube leakage Charging Pump AB fails to auto start		
4	N/A	R- ATC N-BOP N-SRO	Rapid Plant Power Reduction due to Steam Generator tube leakage.		
5	RC08A RC09A RC10A	C – ATC C – SRO	Reactor Coolant Pump 1A seal failure, manual reactor trip		
6	SG01B	M-All	Steam Generator Tube Rupture		
7	RP08C	C – ATC C – SRO	Containment Isolation CVC-401 fails to auto close on CIAS		
8	MS11B	M – All	Main Steam line break on Steam Generator 2 inside Containment.		
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor					

---

## Scenario Event Description

### NRC Scenario 1

---

The crew assumes the shift at 100% power with instructions to maintain 100% power.

After assuming the shift, annunciator H1005, Reactor Power Cutback Single Channel Trouble, alarms and Reactor Power Cutback auto actuation fails. The crew will be contacted by I&C maintenance after reviewing the annunciator response procedure describing a failure of Reactor Power Cutback, requiring Reactor Power Cutback be removed from service in accordance with OP-004-015, Reactor Power Cutback. This manipulation is performed by the ATC operator at CP-2 and CP-7.

After Reactor Power Cutback is removed from service, Pressurizer pressure instrument RC-IPI-0102 B fails low. The ATC operator will receive the annunciators for this failure. The CRS should evaluate Tech Specs and enter Tech Spec 3.3.1 and 3.3.2 and determine that Plant Protection System bistable 6 for low Pressurizer pressure must be bypassed within 1 hour on Channel B. Tech Spec 3.3.3.5 and 3.3.3.6 should be referenced but not entered. Plant Monitoring Computer group SPDS indication of Pressurizer pressure is affected by this failure.

After the CRS evaluates Tech Specs but before bistable 6 is bypassed, a Steam Generator tube leak develops in Steam Generator 2. Charging Pump AB will be aligned as the first backup Charging Pump and it will fail to auto start on the lowering Pressurizer level. The ATC operator should make this diagnosis and start Charging Pump AB. The CRS should enter OP-901-202, Steam Generator Tube Leakage or High Activity. The size of the leak will require entering OP-901-212, Rapid Plant Power Reduction. For the power reduction, the ATC will perform Direct Boration to the RCS as well as Pressurizer boron equalization and ASI control with CEAs. The BOP will manipulate the controls to reduce Main Turbine load. The CRS should enter Tech Spec 3.4.5.2 for Steam Generator 2 leakage. The CRS may consider declaring Charging Pump AB inoperable due to its failure to auto start, but no Tech Spec entry is required.

Once the crew has commenced the power reduction and lowered power to ~ 90%, or at the lead examiner's cue, RCP 1a will develop multiple seal failures. The second and third seal failures will be timed to occur 3 minutes after the initial seal failure. The crew should have time to get out of normal procedure OP-901-130, Reactor Coolant Pump Malfunction, before the subsequent seals fail. With the second and third seals failing, the crew will be required to trip the reactor.

When the reactor is tripped, the Steam Generator tube leak will degrade to a rupture. The CRS should direct the ATC to initiate Safety Injection and Containment Isolation. Containment Isolation valve CVC-401 at CP-4 will fail to close on the CIAS, requiring the ATC operator to close the valve.

---

## Scenario Event Description

### NRC Scenario 1

---

After the crew completes OP-902-000, Standard Post Trip Actions and the CRS diagnoses into OP-902-007, Steam Generator Tube Rupture Recovery, the CRS should direct a rapid RCS cooldown to less than 520 °F T<sub>HOT</sub>. After this direction is given, a Main Steam Line break will develop on Steam Generator 2 inside Containment. The CRS should exit OP-902-007 and enter OP-902-008, Functional Recovery Procedure. Prioritization in OP-902-008 should result in Containment Isolation being priority 1. The crew should address Containment Isolation by using the steps in the Heat Removal section to isolate Steam Generator 2.

The scenario can be terminated after Steam Generator 2 is isolated, or at the lead examiners discretion.

---

## Scenario Event Description

### NRC Scenario 1

---

#### Critical Tasks

1. Trip any RCP not satisfying RCP operating limits.

This task is satisfied by securing all RCPs within 3 minutes of loss of CCW flow. The required task becomes applicable after Containment Spray has been actuated. The time requirement of 3 minutes is based on the RCP operating limit of 3 minutes without CCW cooling.

2. Prevent Opening the Main Steam Safety Valves.

This task is satisfied by the crew taking action to maintain Steam Generator #2 pressure below the safety valve setpoint by taking action to reduce RCS pressure to < 945 psia.

#### **Scenario Quantitative Attributes**

1. Total malfunctions (5–8)	8
2. Malfunctions after EOP entry (1–2)	2
3. Abnormal events (2–4)	3
4. Major transients (1–2)	2
5. EOPs entered/requiring substantive actions (1–2)	2
6. EOP contingencies requiring substantive actions (0–2)	1
7. Critical tasks (2–3)	2

**Scenario Notes:**

- A. Reset Simulator to IC-191.
- B. Verify the following Scenario Malfunctions are loaded:
  - 1. rc22f2 for Pressurizer level instrument RC-ILI-0102 B
  - 2. sg01B for Steam Generator #2 tube leak
  - 3. cv02c for Charging Pump AB
  - 4. rc08a, 09a, and 10a for RCP 1A
  - 5. rp08c for CVC-401
  - 6. ms11b for Steam Generator #2 steam line break
  - 7. eg10a for EDG A overspeed device
- C. Verify the following remotes
  - 1. egr27 for EDG B local alarm acknowledgement
- D. Verify the following overrides
  - 1. di-08a05s14-1 for closing FP-601 A set to trigger 9
  - 2. di-08a05s19-1 for closing IA-909 set to trigger 9
  - 3. di-04a04s10-1 for closing CVC-109 set to trigger 9
  - 4. di-02a05a2s34-0 for Reactor Power Cutback out of service set to trigger 1.
  - 5. di-02a05a2s30-0 for Reactor Power Cutback lamp test.
- E. Verify the following under Event Triggers:
  - 1. zdirpciastp(4).eq.1 is set on trigger 9
- F. Verify the following Control Board Conditions:
  - 1. Danger tag placed on EDG A control switch
  - 2. Danger tag placed on EDG A Output Breaker
- G. Verify EDG A output breaker is racked out and place danger tags on EDG A and its output breaker.
- H. Ensure Protected Train B sign is placed in SM office window.
- I. Verify EOOS is 8.5 Yellow
- J. Complete the simulator setup checklist.

Simulator Booth Instructions

Event 1      Reactor Power Cutback Failure

1. On Lead Examiner's cue, initiate Event Trigger 1.
2. After the annunciator response procedure is referenced, call the CRS as the on shift I&C technician. Report that during planned data collection, the Reactor Power Cutback Channel A has locked up and will not respond to any commands or signals.
3. If Work Week Manager is called, inform the caller that a work package will be assembled and a team will be sent to the Control Room.

Event 2      Pressurizer Pressure Instrument RC-IPI-0102 B Fails Low

1. On Lead Examiner's cue, initiate Event Trigger 2.
2. If Work Week Manager or I&C is called, inform the caller that a work package will be assembled and a team will be sent to the Control Room.
3. If sent to LCP-43, report RCS pressure indications are reading normal on all channels except for Channel B.

Event 3 / 4      Steam Generator #2 Tube Leak / Charging Pump AB Fails to Start / Rapid Plant Power Reduction

1. On Lead Examiner's cue, initiate Event Trigger 3.
2. If Chemistry or HP is called, acknowledge S/G tube leak and need to carry out the actions of UNT-005-032, Steam Generator Primary to Secondary Leakage.
3. If called as TGB watch to monitor Condensate System Polisher pressure, acknowledge and remove Polisher Vessel from service if necessary.
4. If called as the RCA Watch to check Charging Pump AB, report that it looks normal locally.

Event 5      Reactor Coolant Pump 1A seal failure

1. On Lead Examiner's cue, initiate Event Trigger 5.
2. If Engineering is called, acknowledge communication and report that engineering will investigate the RCP 1A failure.
3. If called as the RAB Watch to check RCP vibration in Switchgear room B, acknowledge communication, no report is necessary.

Event 4      Steam Generator #2 Tube Rupture

1. On Lead Examiner's cue, initiate change the severity of malfunction SG01B to 7% and ramp it in over a 1 minute period.
2. If called as RAB watch to check Emergency Diesel Generator B, initiate Trigger 16, after EDG B Trouble alarm clear, report it is running satisfactorily.

Event 5      Steam Generator #2 Steam Line Break

1. After the crew has entered OP-902-007 and commenced the rapid cooldown and on the Lead Examiner's cue, initiate Event Trigger 7.

Event 6      High Pressure Safety Injection Pump A fails to start

1. If called to check the HPSI Pump A breaker, report all indications are normal.
2. If called to check the HPSI Pump A locally, report all indications are normal.



NRC Scenario 1

**Scenario Timeline:**

<b>Event</b>	<b>Malfunction</b>	<b>Severity</b>	<b>Ramp HH:MM:SS</b>	<b>Delay</b>	<b>Trigger</b>
1	H_L05 Remove Reactor Power Cutback from service	N/A	N/A	N/A	1
1	DI-02A05A2S34-0 Reactor Power Cutback Auto Actuate	N/A	N/A	N/A	1
1	DI-02A05A2S30-0 Remove Reactor Power Cutback Lamp Test	N/A	N/A	N/A	1
2	RC22F2 Pressurizer pressure instrument RC-IPI-0102 B fails low	N/A	N/A	N/A	2
3	SG01 B Steam Generator #2 Tube Leak	0.6 %	00:3:00	NA	3
4	CV02C Charging Pump AB fails to auto start	N/A	N/A	N/A	N/A
5	RC08 RC09 RC10 Reactor Coolant Pump 1A seal failures	A 100 %	00:30 00:30 00:30	N/A 03:00 03:15	5
6	SG01 B Steam Generator #2 Tube Rupture	7.0 %	00:01:00	N/A	N/A
7	RP08C CVC-401 fails to close on CIAS	N/A	N/A	N/A	N/A
8	MS11B Main Steam Line Break S/G 2	12 %	03:00	N/A	8

**REFERENCES:**

Event	Procedures
1	OP-004-015, Reactor Power Cutback System
2	OP-009-007, Plant Protection System Tech Spec 3.3.1 and 3.3.2
3	OP-901-202, Steam Generator Tube Leakage or High Activity Tech Spec 3.4.5.2
4	OP-901-212, Rapid Plant Power Reduction Tech Spec 3.1.3.6 Regulating and Group P CEA Insertion Limits
5	OP-901-130, Reactor Coolant Pump Malfunction
6	OP-902-000, Standard Post Trip Actions OP-902-007, Steam Generator Tube Rupture Recovery OP-902-009, Standard Appendices, Appendix 1, Diagnostic Flow Chart
8	OP-902-008, Safety Function Recovery Procedure OP-902-009, Standard Appendices, Appendix 13, Stabilize RCS Temperature

Op Test No.:   NRC   Scenario #   1   Event #   1   Page   1   of   23  

Event Description: Remove Reactor Power Cutback from Service

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

	ATC	Recognize and report indications of failed Cutback Channel.
		Alarms:
		<ul style="list-style-type: none"> <li>Reactor Pwr Cutback Single Chnl Trouble (Cabinet H, L-5)</li> </ul>
		Indications:
		<ul style="list-style-type: none"> <li>Reactor Power Cutback AUTO ACTUATE OUT OF SERVICE pushbutton illuminated on CP-2</li> </ul>
	CRS	After receiving phone call from I&C Maintenance, directs ATC to remove Reactor Power Cutback from service.
	BOP	Step 8.1.2.1 Verify 65% bistable lamps on all four Nuclear Instrumentation Test Drawers Illuminated. <ul style="list-style-type: none"> <li>Lamps are located behind the main panels on CP-10 A – D.</li> </ul>
	ATC	Step 8.1.2.2 On CP-7, verify all four LOSS OF TURB BYPASS keyswitches in BYPASS and all four red BYPASS lamps Illuminated.
	ATC	Step 8.1.2.3 On CP-2, place LOSS OF TURBINE TRIP keyswitch to ENABLE.
	ATC	Step 8.1.2.4 On CP-7, place all four LOSS OF TURB BYPASS keyswitches to OFF and verify all four green OFF lamps Illuminate.
	BOP	Step 8.1.2.5 On Steam Bypass Control System Cabinet (IC-ECP-05), verify Reactor Power Cutback lamps Extinguished. <ul style="list-style-type: none"> <li>Lamps are located behind the main panels on CP-05, which is not modeled. Coach surrogate on this report.</li> </ul>
	ATC	Step 8.1.2.6 On CP-2, place LOSS OF LOAD keyswitch to TURBINE TRIP.
	CRS	Step 8.1.2.7 Notify the Duty Plant Manager that Loss of Turbine Trip has been placed in service.
<p>Examiner Note</p> <p>This event is complete after the ATC operator addresses the AUTO ACTUATE OUT OF SERVICE pushbutton at step 7.1.2</p> <p>Or</p> <p>As directed by the Lead Evaluator</p>		

Op Test No.:   NRC   Scenario #   1   Event #   2   Page   2   of   23  Event Description: Pressurizer Pressure Instrument Failure **Match title with D-1**

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

	ATC	Recognize and report indications of failed channel.
		Alarms:
		<ul style="list-style-type: none"> <li>RPS CHANNEL TRIP PZR PRESSURE LOW (Cabinet K, A-16)</li> </ul>
		<ul style="list-style-type: none"> <li>PZR PRESSURE LO PRETRIP B/D (Cabinet K, C-16)</li> </ul>
		<ul style="list-style-type: none"> <li>RPS CHANNEL B TROUBLE (Cabinet K, F-18)</li> </ul>
		Indications
		<ul style="list-style-type: none"> <li>Pressurizer pressure instrument RC-IP1-0102 B on CP-7 indicates pegged low.</li> </ul>
		<ul style="list-style-type: none"> <li>Pressurizer pressure indication on the Plant Monitoring Computer mimic SPDS averages the failed indicator with valid pressure indication.</li> </ul>
		<ul style="list-style-type: none"> <li>Pressurizer Pressure Lo trip and pre-trip lamps lit on CP-7 Channel B.</li> </ul>
	CRS	Review Tech Specs based on the failed instrument.
		<ul style="list-style-type: none"> <li>Refer to Tech Spec 3.3.3.5 and 3.3.3.6.</li> </ul>
		<ul style="list-style-type: none"> <li>Enter Tech Spec 3.3.1 (item 5) and 3.3.2 (items 1 and 3)</li> </ul>
		<ul style="list-style-type: none"> <li>Direct bypassing Channel B bistable 6 for Lo Pressurizer Pressure. This is a 1 hour action.</li> </ul>
	Note	OP-903-013, Monthly Channel Checks, does list this instrument for Tech Spec 3.3.3.5 and 3.3.3.6 applicability. Entry is not required, however, because the minimum channel requirements will still be met after the failure.
<p>Examiner Note</p> <p>This event is complete after the CRS evaluates Tech Specs</p> <p>Or</p> <p>As directed by the Lead Evaluator</p>		

Op Test No.:	<u>NRC</u>	Scenario #	<u>1</u>	Event #	<u>3 / 4</u>	Page	<u>3</u>	of	<u>23</u>
Event Description:	Steam Generator Tube Leakage / Charging Pump AB Fails to start / Rapid Plant Power Reduction								
Time	Position	Applicant's Actions or Behavior							

	ATC	Recognize and report indications of Steam Generator Tube Leakage.
		Alarms:
		<ul style="list-style-type: none"> <li>RAD MONITORING SYS ACTIVITY HI-HI (Cabinet L, A-9)</li> <li>VACUUM PUMPS EXHAUST ACTIVITY HI (Cabinet E, C-3)</li> </ul>
		Indications
		<ul style="list-style-type: none"> <li>RM-11 Rad Monitor indication will display rising activity on Main Steam Rad Monitor #2, Steam Generator #2 N-16 Rad Monitor, Main Condenser Vacuum Pumps WRGM, and the Blowdown radiation monitor.</li> <li>Steam Generator tube leakage indication rising as indicated on PMC Group PSLR (PMC PID C48304).</li> </ul>
	CRS	Enter and direct the implementation of OP-901-202, Steam Generator Tube Leakage or High Activity.
Examiner Note		
The following steps are from OP-901-202, Steam Generator Tube Leakage or High Activity.		
	CRS	<ol style="list-style-type: none"> <li>IF Pressurizer level <u>CANNOT</u> be maintained with available Charging Pumps, <u>THEN</u> perform the following: <ol style="list-style-type: none"> <li>Manually trip Reactor.</li> <li>Manually initiate Safety Injection Actuation (SIAS) <u>AND</u> Containment Isolation Actuation (CIAS).</li> <li><u>GO TO</u> OP-902-000, STANDARD POST TRIP ACTIONS.</li> </ol> </li> </ol>
	CRS	<p><b>Procedure NOTE</b></p> <p>(1) The calculated Primary to Secondary Leak Rate values must be considered valid, unless the reading can be quickly diagnosed as incorrect due to an obvious malfunction of the PMC or AE Discharge Rad Monitor.</p> <p>(2) The AE Discharge Rad Monitor is considered the primary Rad Monitor which has the sensitivity to measure small Primary to Secondary Leakage. The AE Discharge Rad Monitor reading inputs into the Primary to Secondary Leak Calculation on PMC Group PLSR. The MS Line N16 Rad Monitors may be used as verification of AE Discharge Rad Monitor <u>or</u> as primary indication <u>if</u> the AE Discharge Rad Monitor is OOS.</p>

Op Test No.:   NRC   Scenario #   1   Event #   3 / 4   Page   4   of   23  

Event Description: Steam Generator Tube Leakage / Charging Pump AB Fails to start / Rapid Plant Power Reduction

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

	CRS	<p>2. Determine RCS leak rate using <u>ANY</u> of the following:</p> <ul style="list-style-type: none"> <li>• Calculated Steam Generator leakage displayed on PMC Group PSLR (PMC PID C48304)</li> <li>• Calculated Steam Generator leakage displayed on PMC PID C48251 (RE5501 CH1 LEAK RATE) <u>and</u> C48252 (RE5501 CH2 LEAK RATE)</li> <li>• Approximate RCS leak rate by subtracting total of Letdown flow <u>AND</u> RCP CBO flow from Charging Flow</li> <li>• Calculated Charging / Letdown Mismatch displayed on PMC Group Leakrate (PMC PID S13001)</li> <li>• RCS Leak Rate calculation in accordance with OP-903-024, REACTOR COOLANT SYSTEM WATER INVENTORY BALANCE</li> <li>• Calculated steam generator leakage based upon chemistry sample, per CE-003-705, Determination Of Primary-To-Secondary Leak Rate</li> </ul>
	CRS	<p><b>Procedure NOTE</b> Any rise &gt;30 GPD/HR followed by a subsequent lowering of the rate of change would indicate a spike and a rapid power reduction is not required.</p>
	CRS	<p>3. <u>IF</u> Primary to Secondary Leakage in any Steam Generator is <math>\geq 75</math> GPD (<math>\sim 0.05</math> GPM) <u>AND</u> the rate of change is rising by <math>\geq 30</math> GPD/HR (<math>\sim 0.02</math> GPM/HR), <u>THEN</u> perform the following:</p> <p>3.1 Commence a rapid plant shutdown in accordance with OP-901-212, RAPID PLANT POWER REDUCTION, <u>AND</u> concurrently with this Procedure, reduce Plant Power to <math>\leq 50\%</math> within 1 hour.</p> <p>3.2 <u>WHEN</u> Plant Power is <math>\leq 50\%</math>, <u>THEN</u> in accordance with OP-901-212, RAPID PLANT POWER REDUCTION, <u>AND</u> concurrently with this Procedure, be in Mode 3 within 2 hours <u>AND</u> Mode 5 in the following 30 hours.</p>
		<ul style="list-style-type: none"> <li>• These conditions will be met. The CRS should enter OP-901-212 and perform it concurrently with OP-901-202.</li> <li>• Steps 1 through 15 of Steam Generator Tube Leakage or High Activity are listed here. The CRS should begin the steps of Rapid Plant Power Reduction before working these steps. The steps of OP-901-212, Rapid Plant Power Reduction follow step 15 of OP-901-202.</li> </ul>

Op Test No.:   NRC   Scenario #   1   Event #   3 / 4   Page   5   of   23  

Event Description: Steam Generator Tube Leakage / Charging Pump AB Fails to start / Rapid Plant Power Reduction

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

	CRS	7. Notify Chemistry Department to perform the following: 7.1 Provide current Plant status including the following: <ul style="list-style-type: none"> <li>• Primary to Secondary Leakrate</li> <li>• Primary to Secondary Leakage Rate of Change</li> <li>• Plant action(s) Operations is <u>OR</u> will be implementing (example: plant shutdown, rapid plant shutdown, monitoring)</li> </ul> 7.2 Carry out actions in accordance with UNT-005-032, STEAM GENERATOR PRIMARY-TO-SECONDARY LEAKAGE. 7.3 Begin sampling Steam Generators for activity. 7.4 Quantify Steam Generator Tube leakage.
	CRS	8. Notify Radiation Protection to carry out the actions of UNT-005-032, STEAM GENERATOR PRIMARY-TO-SECONDARY LEAKAGE.
	CRS / BOP	9. Verify BD-303, DISCHARGE TO WASTE, Locked Closed.
	CRS / BOP	10. Verify BD-1162, BD FLASH TANK VENT, Closed.
	CRS / BOP	11. Verify CD-145, CD DUMP TO WASTE POND, Closed. 11.1 Notify Chemistry prior to dumping Condensate from the Condenser Hotwell to the CST.
	Crew	12. Establish <u>AND</u> monitor a PMC Trend of the following PMC points: <ul style="list-style-type: none"> <li>• C48304PRI TO SEC LEAKAGE</li> <li>• C48305PRI TO SEC LEAK RATE CHANGE (GPD/HR)</li> <li>• C48251RE5501 CH1 LEAK RATE</li> <li>• C48252RE5501 CH2 LEAK RATE</li> </ul>
	CRS	<b>Procedure NOTE</b> Until arrangements are made for disposal of radioactively contaminated resin, Condensate Polisher Vessels should <u>NOT</u> be placed in service with resin loaded in the vessel.

Op Test No.:	<u>  NRC  </u>	Scenario #	<u>  1  </u>	Event #	<u>  3 / 4  </u>	Page	<u>  6  </u>	of	<u>  23  </u>
Event Description:		Steam Generator Tube Leakage / Charging Pump AB Fails to start / Rapid Plant Power Reduction							
Time	Position	Applicant's Actions or Behavior							

	CRS	<p>15. Remove from service <u>ANY</u> Condensate Polisher Vessels which are loaded with resin in accordance with OP-003-031, CONDENSATE POLISHER/BACKWASH TREATMENT.</p> <p>15.1 Do <u>not</u> place in service any condensate polisher vessel loaded with resin without the coordination of Chemistry.</p>
Examiner Note		
For the failure of Charging Pump AB failing to auto start on lowering level, this malfunction may occur before or after the Rapid Power Reduction is started, depending on the pace of the crew. Charging Pump AB would have auto started at ~ 53%, depending on power level.		
	ATC	Recognize and report indications of Charging Pump AB Auto Start Failure.
		Alarm (This alarm only comes in if Pressurizer Level drops to 3.9% below the Pressurizer Level Setpoint. If the ATC starts Charging Pump AB before this level, this alarm will not come in):
		<ul style="list-style-type: none"> <li>PRESSURIZER LEVEL HI/LO (Cabinet H, B-1)</li> </ul>
		Indications
		<ul style="list-style-type: none"> <li>Pressurizer level drops more than 2.5% below Pressurizer Level Setpoint and Charging Pump AB does not start.</li> </ul>
	ATC	Start Charging Pump AB by taking the control switch on CP-2 to ON.
Examiner Note		
The following steps are from OP-901-212, Rapid Plant Power Reduction.		
	CRS	<p><b>NOTE</b></p> <p>(1) A rapid power reduction is defined as approximately 30 MW/minute load reduction on the main turbine.</p> <p>(2) Power Reduction may be stopped at any point.</p> <p>(3) Some Steps of this procedure may not be applicable due to plant conditions. In these cases SM/CRS may NA the step.</p> <p>(4) Steps within this procedure may be performed concurrently or out of sequence with SM/CRS concurrence.</p>



Op Test No.:   NRC   Scenario #   1   Event #   3 / 4   Page   7   of   23  

Event Description: Steam Generator Tube Leakage / Charging Pump AB Fails to start / Rapid Plant Power Reduction

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

	ATC	Begin RCS Boration by <u>either</u> of the following methods as directed by the CRS: <ul style="list-style-type: none"> <li>• Direct Boration</li> <li>• Emergency Boration using one Charging Pump</li> </ul>
	CRS	Step 1: Begin RCS Boration by one of the following methods: up to 340 EFPD: Direct Boration or Emergency Boration using one Charging Pump
	ATC	Steps for Direct Boration:
		<b>CAUTION</b> (1) This section affects reactivity. This evolution should be crosschecked and completed prior to leaving CP-4. (2) At least one reactor coolant pump in each loop should be operating prior to performing direct boration operations to ensure proper chemical mixing.
		<ul style="list-style-type: none"> <li>• 6.7.1 Inform SM/CRS that this Section is being performed.</li> </ul>
		<b>NOTE</b> When performing a Plant down power where final RCS Boron Concentration needs to be determined, the following Plant Data Book figure(s) will assist the Operator in determining the required RCS Boron PPM change. <ul style="list-style-type: none"> <li>• 1.2.1.1 Power Defect Vs Power Level</li> <li>• 1.4.3.1 Inverse Boron Worth Vs. Tmod at BOC (&lt;30 EFPD)</li> <li>• 1.4.4.1 Inverse Boron Worth Vs. Tmod at Peak Boron (30 EFPD up to 170 EFPD)</li> <li>• 1.4.5.1 Inverse Boron Worth Vs. Tmod at MOC (170 EFPD up to 340 EFPD)</li> <li>• 1.4.6.1 Inverse Boron Worth Vs. Tmod at EOC (<math>\geq</math> 340 EFPD)</li> </ul>
		<ul style="list-style-type: none"> <li>• 6.7.2 At SM/CRS discretion, calculate volume of Boric Acid to be added on Attachment 11.6, Calculation of Boric Acid Volume for Direct Boration or VCT Borate Makeup Mode.</li> <li>• Should use Reactor Engineering Reactivity Worksheet</li> </ul>
		<ul style="list-style-type: none"> <li>• 6.7.3 Set Boric Acid Makeup Batch Counter to volume of Boric Acid desired.</li> </ul>
		<ul style="list-style-type: none"> <li>• 6.7.4 Verify Boric Acid Makeup Pumps selector switch aligned to desired Boric Acid Makeup Pump A(B).</li> </ul>

Op Test No.:   NRC   Scenario #   1   Event #   3 / 4   Page   8   of   23  

Event Description: Steam Generator Tube Leakage / Charging Pump AB Fails to start / Rapid Plant Power Reduction

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

		<ul style="list-style-type: none"> <li>6.7.5 Place Direct Boration Valve, BAM-143, control switch to AUTO.</li> </ul>
		<ul style="list-style-type: none"> <li>6.7.6 Place Makeup Mode selector switch to BORATE.</li> </ul>
		<ul style="list-style-type: none"> <li>6.7.7 Verify selected Boric Acid Makeup Pump A(B) Starts.</li> </ul>
		<ul style="list-style-type: none"> <li>6.7.8 Verify Direct Boration Valve, BAM-143, Opens.</li> </ul>
		<ul style="list-style-type: none"> <li><b>NOTE</b></li> <li>The Boric Acid Flow Totalizer will not register below 3 GPM. The Boric Acid Flow Totalizer is most accurate in the range of 10 - 25 GPM.</li> </ul>
		<ul style="list-style-type: none"> <li>6.7.9 If manual control of Boric Acid flow is desired, then perform the following:</li> </ul>
		<ul style="list-style-type: none"> <li>6.7.9.1 Verify Boric Acid Flow controller, BAM-IFIC-0210Y, in Manual.</li> </ul>
		<ul style="list-style-type: none"> <li>6.7.9.2 Adjust Boric Acid Flow controller, BAM-IFIC-0210Y, output to &gt;3 GPM flow rate.</li> </ul>
		<ul style="list-style-type: none"> <li>6.7.11 Verify Boric Acid Makeup Control Valve, BAM-141, Intermediate or Open.</li> </ul>
		<ul style="list-style-type: none"> <li>6.7.12 Observe Boric Acid flow rate for proper indication.</li> </ul>
	Note	This manipulation is performed at CP-4. The ATC should use the Reactivity Worksheet to recommend a boron quantity to the CRS.
	ATC	Perform Boron Equalization as follows:
		<ul style="list-style-type: none"> <li>Place available Pressurizer Pressure Backup Heater Control Switches to ON.</li> </ul>
		<ul style="list-style-type: none"> <li>Reduce Pressurizer Spray Valve Controller (RC-IHIC-0100) setpoint potentiometer to establish spray flow and maintain RCS pressure 2250 PSIA (2175 – 2265).</li> </ul>
		This manipulation is performed at CP-2.
	ATC	Operate CEAs to maintain ASI using CEA Reg. Group 6 or Group P Control Element Assemblies. Operate CEAs in Manual Group mode as follows:
		<ul style="list-style-type: none"> <li>6.7.1 Verify Plant Monitoring Computer operable in accordance with OP-004-012, Plant Monitoring Computer.</li> </ul>

Op Test No.:   NRC   Scenario #   1   Event #   3 / 4   Page   9   of   23  

Event Description: Steam Generator Tube Leakage / Charging Pump AB Fails to start / Rapid Plant Power Reduction

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

		<ul style="list-style-type: none"> <li>6.7.2 Position Group Select switch to desired group.</li> </ul>
		<ul style="list-style-type: none"> <li>6.7.3 Place Mode Select switch to MG and verify the following:               <ul style="list-style-type: none"> <li>White lights Illuminated on Group Selection Matrix for selected group</li> <li>MG light Illuminates</li> </ul> </li> </ul>
		<ul style="list-style-type: none"> <li>6.7.4 Operate CEA Manual Shim switch to INSERT group to desired height while monitoring the following:               <ul style="list-style-type: none"> <li>CEA Position Indicator selected CEA group is moving in desired direction</li> <li>If Reactor is critical, then monitor the following:                   <ul style="list-style-type: none"> <li>Reactor Power</li> <li>Reactor Coolant System (RCS) temperature</li> <li>Axial Shape Index (ASI)</li> </ul> </li> </ul> </li> </ul>
		<p><b>NOTE</b> The Operator should remain in the area in front of the CEA Drive Mechanism Control Panel when the Mode Select switch is not in OFF.</p>
		6.7.5 When desired set of moves have been completed, then place Mode Select switch to OFF.
	Note	CEA Group P should be used first to a low limit of 120 inches, followed by CEA Group 6 to a low limit of 120 inches to comply with Tech Spec 3.1.3.6.
		<ul style="list-style-type: none"> <li>This manipulation is performed at CP-2.</li> </ul>
	CRS	Notify the Load Dispatcher (Woodlands) that a rapid power reduction is in progress.
	CRS	Announce to Station Personnel over the Plant Paging System that a rapid plant power reduction is in progress.
	Crew	Maintain RCS Cold Leg Temperature 536°F to 549°F.

Op Test No.:   NRC   Scenario #   1   Event #   3 / 4   Page   10   of   23  

Event Description: Steam Generator Tube Leakage / Charging Pump AB Fails to start / Rapid Plant Power Reduction

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

	BOP	Commence Turbine load reduction by performing the following:
		<ul style="list-style-type: none"> <li>• Depress LOAD RATE MW/MIN pushbutton.</li> </ul>
		<ul style="list-style-type: none"> <li>• Set selected rate in Display Demand Window.</li> </ul>
		<ul style="list-style-type: none"> <li>• Depress ENTER pushbutton.</li> </ul>
		<ul style="list-style-type: none"> <li>• Depress REFERENCE pushbutton.</li> </ul>
		<ul style="list-style-type: none"> <li>• Set desired load in Reference Demand Window.</li> </ul>
		<ul style="list-style-type: none"> <li>• Depress ENTER pushbutton.</li> </ul>
		<ul style="list-style-type: none"> <li>• Depress GO pushbutton.</li> </ul>
		This manipulation is performed at CP-1. The BOP will set up the Main Turbine controls. The ATC will direct the BOP when to commence unloading the Main Turbine based on the drop in RCS Cold Leg temperature.
	CRS	When Reactor Power consistently indicates less than 98% power, as indicated on PMC PID C24631 [MAIN STEAM RAW POWER (MSBSRAW)], or an alternate point provided by Reactor Engineering, then verify the value of C24648 [BSCAL SMOOTHING VAL. APPLD (DUMOUT17)] automatically changes to 1.
<p>Examiner Note</p> <p>This event is complete after power has been reduced to the satisfaction of the Lead Evaluator.</p>		

Op Test No.:   NRC   Scenario #   1   Event #   5   Page   11   of   23  

Event Description: Reactor Coolant Pump 1A Seal Failure

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

	ATC / BOP	Recognize and report indications of RCP 1A seal failure.
		Indications
		<ul style="list-style-type: none"> <li>RCP 1A seal bleed off flow and temperature rising on the Plant Monitoring Computer and CP-2.</li> </ul>
		<ul style="list-style-type: none"> <li>RCP 1A seal pressures rising on the Plant Monitoring Computer and CP-2.</li> </ul>
	CRS	Enter and direct the implementation of OP-901-130, Reactor Coolant Pump Malfunction.
	CRS	IF Reactor Coolant Pump Seal has failed, THEN GO TO section E1, Seal Failure.
	Crew	<p>Procedure Note</p> <p>1. RCP Seal pressure and Control Bleedoff temperature and flow are normally as follows (assuming normal operating RCS temperature and pressure):</p> <ul style="list-style-type: none"> <li>Vapor Seal pressure: 25 to 45 PSIG</li> <li>Upper Seal pressure: 585 to 915 PSIG</li> <li>Middle Seal pressure: 1237 to 1815 PSIG</li> <li>CBO temperature: 135° to 190°F</li> <li>CBO flow: 1.2 to 1.8 GPM</li> </ul> <p>2. (If only one Reactor Coolant Pump Seal has failed on a Reactor Coolant Pump, THEN pump operation may continue provided the seal package is monitored for further degradation.</p>
	Crew	1. Inform System Engineer of Reactor Coolant Pump Seal failure.
	Crew	<p>Procedure Caution</p> <p>(1) CCW TEMPERATURES OF &lt;75° F COULD LEAD TO ESSENTIAL CHILLER TRIPS ON EVAPORATOR LOW REFRIGERANT PRESSURE.</p> <p>(2) CCW TEMPERATURE SHOULD BE CHANGED AT A RATE OF ≤ 10 °F IN ONE HOUR TO PREVENT DEGRADATION OF THE REACTOR COOLANT PUMP SEALS.</p>

Op Test No.:   NRC   Scenario #   1   Event #   5   Page   12   of   23  

Event Description:     Reactor Coolant Pump 1A Seal Failure

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

	CRS / BOP	2. IF Controlled Bleedoff temperature is rising, THEN lower Component Cooling Water temperature by ANY of the following: <ul style="list-style-type: none"> <li>• Start Dry Cooling Tower Fans.</li> <li>• Start Auxiliary Component Cooling Water Pump(s) AND associated Wet Cooling Tower Fans.</li> <li>• Start Auxiliary Component Cooling Water Pump(s) AND lower ACC-126A(B) setpoint.</li> </ul>
Examiner Note Seals are timed such that the second seal will fail 3 minutes after the first.		
		3. IF TWO OR MORE seals fail in rapid succession, (within 12 hours) THEN perform the following:
	ATC	3.1 Trip the Reactor.
	ATC	3.2 Secure affected Reactor Coolant Pump. <ul style="list-style-type: none"> <li>• Control switch is on CP-2.</li> </ul>
	Crew	3.3 GO TO OP-902-000, STANDARD POST TRIP ACTIONS.
Examiner Note This event is complete after the ATC operator trips the reactor. The severity of the SGTL should be updated upon reactor trip.		

Op Test No.:   NRC   Scenario #   1   Event #   6 / 7   Page   13   of   23  

Event Description: Steam Generator Tube Rupture / CVC-401 Fails to Close

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

Time	Position	Applicant's Actions or Behavior
	ATC / BOP	Recognize and report indications of Steam Generator Tube Rupture.
		Alarms
		<ul style="list-style-type: none"> <li>• PRESSURIZER LEVEL HI/LO (Cabinet H, B-1)</li> </ul>
		Indications
		<ul style="list-style-type: none"> <li>• Pressurizer level lowering &gt; Charging Pump capacity.</li> <li>• Lowering Pressurizer pressure.</li> <li>• Charging Pump A auto-starts if not already started.</li> </ul>
	ATC	If directed by CRS, trip Reactor using 2 Reactor Trip pushbuttons at CP-2.
	ATC	If directed by CRS, initiate Safety Injection Actuation (SIAS) and Containment Isolation Actuation (CIAS) at CP-7.
	ATC	Close CVC-401 after Containment isolation
		<ul style="list-style-type: none"> <li>• This component is on CP-4 and receives a CIAS closure signal. This step becomes applicable after the CIAS is actuated.</li> </ul>
	BOP	Start High Pressure Safety Injection Pump A
		This component is on CP-8 and receives a SIAS start signal. This step becomes applicable after the SIAS is actuated.
	CRS	Direct ATC and BOP to carry out Standard Post trip Actions.
	ATC	Determine <b>Reactivity Control</b> acceptance criteria are met: <ul style="list-style-type: none"> <li>• Check reactor power is dropping.</li> <li>• Check startup rate is negative.</li> <li>• Check less than <b>TWO</b> CEAs are <b>NOT</b> fully inserted.</li> </ul>

Op Test No.:   NRC   Scenario #   1   Event #   6 / 7   Page   14   of   23  

Event Description: Steam Generator Tube Rupture / CVC-401 Fails to Close

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

	BOP	Determine <b>Maintenance of Vital Auxiliaries</b> acceptance criteria are met: Check the Main Turbine is tripped: <ul style="list-style-type: none"> <li>• Governor valves closed</li> <li>• Throttle valves closed</li> </ul>
	BOP	Check the Main Generator is tripped: <ul style="list-style-type: none"> <li>• GENERATOR BREAKER A tripped</li> <li>• GENERATOR BREAKER B tripped</li> <li>• EXCITER FIELD BREAKER tripped</li> </ul>
	BOP	Check station loads are energized from offsite electrical power as follows: <b>Train A</b> <ul style="list-style-type: none"> <li>• A1, 6.9 KV non safety bus</li> <li>• A2, 4.16 KV non safety bus</li> <li>• A3, 4.16 KV safety bus</li> <li>• A-DC electrical bus</li> <li>• A or C vital AC Instrument Channel</li> </ul> <b>Train B</b> <ul style="list-style-type: none"> <li>• B1, 6.9 KV non safety bus</li> <li>• B2, 4.16 KV non safety bus</li> <li>• B3, 4.16 KV safety bus</li> <li>• B-DC electrical bus</li> </ul> B or D vital AC Instrument Channel
	ATC	Determine <b>RCS Inventory Control</b> acceptance criteria are met: Check that the following conditions exist: <ul style="list-style-type: none"> <li>• Pressurizer level is 7% to 60%</li> <li>• Pressurizer level is trending to 33% to 60%</li> <li>• Check RCS subcooling is greater than or equal to 28°F.</li> </ul>



Op Test No.:   NRC   Scenario #   1   Event #   6 / 7   Page   15   of   23  

Event Description: Steam Generator Tube Rupture / CVC-401 Fails to Close

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

	ATC	Determine <b>RCS Pressure Control</b> acceptance criteria are met by checking that <b>BOTH</b> of the following conditions exist: <ul style="list-style-type: none"> <li>• Pressurizer pressure is 1750 psia to 2300 psia</li> <li>• Pressurizer pressure is trending to 2125 psia to 2275 psia</li> </ul>
		<b>IF</b> pressurizer pressure is less than 1684 psia, <b>THEN</b> verify the following have initiated. <ul style="list-style-type: none"> <li>• SIAS</li> <li>• CIAS</li> </ul>
	ATC	Determine <b>Core Heat Removal</b> acceptance criteria are met: <ul style="list-style-type: none"> <li>• Check at least one RCP is operating.</li> <li>• Check operating loop <math>\Delta T</math> is less than 13°F.</li> <li>• Check RCS subcooling is greater than or equal to 28°F.</li> </ul>
	BOP	Determine <b>RCS Heat Removal</b> acceptance criteria are met: Check that at least one steam generator has <b>BOTH</b> of the following: <ul style="list-style-type: none"> <li>• Steam generator level is 5% to 80% NR</li> <li>• Main Feedwater is available to restore level within 50%-70% NR.</li> </ul>
	ATC	Check RCS TC is 530 °F to 550 °F
	BOP	Check steam generator pressure is 885 psia to 1040 psia.
	BOP	Check Feedwater Control in Reactor Trip Override: <ul style="list-style-type: none"> <li>• MAIN FW REG valves are closed</li> <li>• STARTUP FW REG valves are 13% to 21% open</li> <li>• Operating main Feedwater pumps are 3800 rpm to 4000 rpm</li> </ul>
	BOP	Reset moisture separator reheaters, and check the temperature control valves closed.

Op Test No.:   NRC   Scenario #   1   Event #   6 / 7   Page   16   of   23  

Event Description: Steam Generator Tube Rupture / CVC-401 Fails to Close

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

	ATC	Determine <b>Containment Isolation</b> acceptance criteria are met: <ul style="list-style-type: none"> <li>• Check containment pressure is less than 16.4 psia.</li> <li>• Check <b>NO</b> containment area radiation monitor alarms <b>OR</b> unexplained rise in activity.</li> <li>• Check <b>NO</b> steam plant activity monitor alarms <b>OR</b> unexplained rise in activity.</li> </ul>
	BOP	Determine <b>Containment Temperature and Pressure Control</b> acceptance criteria are met: <ul style="list-style-type: none"> <li>• Check containment temperature is less than or equal to 120°F.</li> <li>• Check containment pressure is less than 16.4 psia.</li> </ul>
	BOP	Secure AH-12 A or B on CRS direction after initiation of SIAS at CP-18.
	CRS	After review of Standard Post Trip Actions, use Appendix 1, Diagnostic Flow Chart of OP-902-009 to select appropriate optimal recovery procedure. <ul style="list-style-type: none"> <li>• Proper use of chart will result in use of OP-902-007, Steam Generator Tube Rupture Recovery</li> </ul>
	CRS	Enter and direct the implementation of OP-902-007, Steam Generator Tube Rupture Recovery.
	CRS	1. Confirm diagnosis of a SGTR: <ol style="list-style-type: none"> <li>a. Check Safety Function Status Check acceptance criteria are satisfied.</li> <li>b. <b>IF</b> steam generator sample path is available, <b>THEN</b> direct Chemistry to sample <b>BOTH</b> steam generators for activity.</li> </ol>
	Crew	2. Announce a Steam Generator Tube Rupture is in progress using the plant page.
	CRS	3. Advise the Shift Manager to REFER TO EP-001-001, "Recognition & Classification of Emergency Condition", and implement the Emergency Plan.

Op Test No.:   NRC   Scenario #   1   Event #   6 / 7   Page   17   of   23  

Event Description: Steam Generator Tube Rupture / CVC-401 Fails to Close

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

	CRS	4. <b>IF</b> power has been interrupted to either 3A or 3B safety buses, <b>THEN</b> perform Appendix 20, "Operation of DCT Sump Pumps".
		<ul style="list-style-type: none"> <li>• Step is not applicable.</li> </ul>
	CRS	5. REFER TO Section 6.0, "Placekeeper", and record the time of the reactor trip.
	CRS	6. <b>IF</b> Pressurizer pressure is less than 1684 psia, <b>THEN</b> verify SIAS has initiated.
	CRS	7. <b>IF</b> SIAS has initiated, <b>THEN</b> :
		a. Verify safety injection pumps have started.
		b. Check safety injection flow is within the following:
		<ul style="list-style-type: none"> <li>• Appendix 2-E, "HPSI Flow Curve"</li> <li>• Appendix 2-F, "LPSI Flow Curve"</li> </ul>
		c. Verify <b>ALL</b> available charging pumps are operating.
	CRS / ATC	8. <b>IF</b> Pressurizer pressure is less than 1621 psia, <b>AND</b> SIAS is actuated, <b>THEN</b> :
		a. Verify no more than two RCPs are operating.
		b. <b>IF</b> Pressurizer pressure is less than the minimum RCP NPSH of Appendix 2A-D, "RCS Pressure and Temperature Limits", <b>THEN</b> stop <b>ALL</b> RCPs.
		<ul style="list-style-type: none"> <li>• Step is not applicable.</li> </ul>
	CRS / BOP	9. <b>IF</b> RCPs are operating, <b>THEN</b> :
		a. Verify CCW available to RCPs.
		b. <b>IF</b> a CSAS is initiated, <b>THEN</b> stop <b>ALL</b> RCPs.
		c. <b>IF</b> RCS TC is less than 382°F, <b>THEN</b> verify no more than two RCPs are operating.

Op Test No.:   NRC   Scenario #   1   Event #   6 / 7   Page   18   of   23  

Event Description: Steam Generator Tube Rupture / CVC-401 Fails to Close

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

	BOP	10. Check a CCW pump is operating for each energized 4.16 KV safety bus.
	CRS / BOP	11. Commence a rapid RCS cooldown to less than 520 °F T <sub>Hot</sub> using the steam bypass valves.
		<ul style="list-style-type: none"> <li>• Since the Main Condenser is available at this point in the scenario, the CRS should direct the BOP to open Steam Bypass Valve #1 50% open to commence this rapid cooldown.</li> <li>• If the crew initiated a Main Steam Isolation Signal prior to this point, the rapid cooldown would be initiated by opening both Atmospheric Dump Valves 100% open.</li> </ul>
	ATC	13. <b>IF</b> MSIS is <b>NOT</b> present, <b>THEN</b> lower the automatic initiation setpoints as the cooldown and depressurization proceed for MSIS (low SG Pressure).
		<ul style="list-style-type: none"> <li>• The CRS should direct the ATC to perform this action during the rapid cooldown to &lt; 520 T<sub>HOT</sub>.</li> <li>• Reset MSIS setpoints on all 4 channels at CP-7.</li> </ul>
<p>Examiner Note</p> <p>This event is complete after commencing the rapid cooldown.</p>		

Op Test No.:   NRC   Scenario #   1   Event #   8   Page   19   of   23  

Event Description: Main Steam Line Break / Function Recovery Procedure

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

	ATC / BOP	Recognize and report indications of Main Steam Line Break.
		Alarms
		<ul style="list-style-type: none"> <li>• Containment Water Leakage Hi (Cabinet N, L-20)</li> <li>• Containment Water Leakage Hi-Hi (Cabinet N, K-20)</li> <li>• Containment Pressure Hi / Lo (Cabinet M, H-4)</li> <li>• Containment Pressure Hi / Lo (Cabinet N, H-14)</li> </ul>
		Indications
		<ul style="list-style-type: none"> <li>• Lowering Pressurizer level.</li> <li>• Lowering Pressurizer pressure.</li> <li>• Rising Containment pressure.</li> <li>• Lowering Steam Generator #2 pressure.</li> </ul>
	CRS	Recognize the second event in progress. Exit OP-902-007 and enter OP-902-008, Functional Recovery procedure.
	Crew	1. Announce that the Functional Recovery Procedure is in progress using the plant page.
	CRS	2. Advise the Shift Manager to REFER TO EP-001-001, "Recognition & Classification of Emergency Condition" and implement the Emergency Plan.
	CRS	3. REFER TO the "Placekeeper" and record the time of the reactor trip.
	ATC	<p>4. <b>IF</b> pressurizer pressure is less than 1621 psia, <b>AND</b> SIAS is actuated, <b>THEN</b>:</p> <p>a. Verify no more than two RCPs are operating.</p> <p>b. <b>IF</b> pressurizer pressure is less than the minimum RCP NPSH of Appendix 2A-D, "RCS Pressure and Temperature Limits", <b>THEN</b> stop <b>ALL</b> RCPs.</p>
	ATC	<p>5. <b>IF</b> RCPs are operating, <b>THEN</b>:</p> <p>a. <b>IF</b> a CSAS is initiated, <b>THEN</b> stop <b>ALL</b> RCPs.</p> <p>b. Verify CCW available to RCPs.</p> <p>c. <b>IF</b> RCS TC is less than 382°F [<b>384°F</b>], <b>THEN</b> verify no more than two RCPs are operating.</p>

Op Test No.:   NRC   Scenario #   1   Event #   8   Page   20   of   23  

Event Description: Main Steam Line Break / Function Recovery Procedure

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

**Critical Task**

Trip any RCP not satisfying RCP operating limits.

This task is satisfied by securing all RCPs within 3 minutes of loss of CCW flow / CSAS.

	ATC	Following initiation of CSAS (auto or manual) secure all running Reactor Coolant Pumps as follows: <ul style="list-style-type: none"> <li>Place each RCP control switch to stop at CP-2</li> </ul>
	CRS	6. Direct Chemistry to sample <b>BOTH</b> steam generators for activity and boron.
	CRS	7. <b>IF</b> power is lost to both 3A and 3B safety buses and <b>NOT</b> expected to be restored within 30 minutes, <b>THEN</b> perform the following: <ul style="list-style-type: none"> <li>This step is not applicable due to no power loss.</li> </ul>
	CRS	8. <b>IF</b> power is lost to both 3A and 3B safety buses and <b>NOT</b> expected to be restored within 30 minutes, <b>THEN</b> perform the following to reduce unnecessary station loads: <ul style="list-style-type: none"> <li>This step is not applicable due to no power loss.</li> </ul>
	CRS	9. <b>IF</b> power has been interrupted to either 3A or 3B safety buses, <b>THEN</b> perform Appendix 20, "Operation of DCT Sump Pumps". <ul style="list-style-type: none"> <li>This step is not applicable due to no power loss.</li> </ul>
	BOP	10. Place Hydrogen Analyzers in service as follows: <ul style="list-style-type: none"> <li><b>Train A</b> <ul style="list-style-type: none"> <li>Place Train A H2 ANALYZER CNTMT ISOL VALVE keyswitch to OPEN.</li> <li>Place H2 ANALYZER A POWER to ON.</li> <li>Check H2 ANALYZER A Pumps indicate ON.</li> </ul> </li> <li><b>Train B</b> <ul style="list-style-type: none"> <li>Place Train B H2 ANALYZER CNTMT ISOL VALVE keyswitch to OPEN.</li> <li>Place H2 ANALYZER B POWER to ON.</li> <li>Check H2 ANALYZER B Pumps indicate ON.</li> </ul> </li> </ul>

Op Test No.:   NRC   Scenario #   1   Event #   8   Page   21   of   23  

Event Description: Main Steam Line Break / Function Recovery Procedure

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

	CRS	<p>11. Identify success paths to be used to satisfy each safety function using <b>BOTH</b> of the following:</p> <ul style="list-style-type: none"> <li>• Resource Assessment Trees</li> <li>• Safety Function Tracking Sheet</li> </ul>
	Note	<ul style="list-style-type: none"> <li>• The CRS will perform the prioritization using the Resource Assessment Trees. The STA would use the Safety Function Tracking Sheets.</li> </ul>
		<p>Proper prioritization will result in Containment Isolation being priority 1 and RCS Inventory Control being priority 2.</p> <ul style="list-style-type: none"> <li>• The CRS may request plant data from the ATC and BOP operators during his prioritization. The CRS may ask for the BOP to verify Safety Injection Pumps are meeting the flow curves of OP-902-009, Appendix 2. Both High and Low Pressure Safety Injection Pumps are meeting their flow curves.</li> <li>• The Containment Isolation section of OP-902-008 will direct the CRS to carry out the actions in the Heat Removal section, <b>HR-2, steps 16-28</b>. These steps will direct reducing RCS pressure and Isolating S/G #2.</li> </ul>
	BOP	<p>16.1 Commence a rapid RCS cooldown to less than 520 °F T<sub>HOT</sub> using Steam Bypass valves.</p>
		<ul style="list-style-type: none"> <li>• The CRS should have already ordered this step in OP-902-007. Since the Main Steam Line Break is inside Containment, the Main Steam Isolation valves will now be closed. The CRS should now order the BOP to open both Atmospheric Dump Valves 100% to re-commence the rapid cooldown.</li> <li>• RCS temperature may already be &lt; 520 °F due to the Excess Steam Demand. In that case, this step is not applicable.</li> </ul>

Op Test No.:   NRC   Scenario #   1   Event #   8   Page   22   of   23  

Event Description: Main Steam Line Break / Function Recovery Procedure

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

**Critical Task**

Prevent opening the Main Steam Safety Valves

This task is satisfied by taking action to lower RCS pressure in accordance with step 17.

	ATC	<p>17. Depressurize the RCS by performing <b>ALL</b> of the following:</p> <p>a. Maintain pressurizer pressure within <b>ALL</b> of the following criteria:</p> <ul style="list-style-type: none"> <li>• Less than 945 psia [<b>915 psia</b>]</li> <li>• Within 50 psi of the most affected steam generator pressure</li> <li>• Within Appendix 2A-D, "RCS Pressure and Temperature Limits"</li> <li>• <b>IF</b> RCPs are operating, greater than the minimum RCP NPSH of Appendix 2A-D, "RCS Pressure and Temperature Limits"</li> </ul> <p>b. Operate main or auxiliary pressurizer spray.</p> <p>c. <b>IF</b> HPSI throttle criteria are met, <b>THEN</b> perform <b>ANY</b> of the following:</p> <ul style="list-style-type: none"> <li>• Control charging and letdown flow</li> <li>• Throttle HPSI flow</li> </ul>
	Note	<ul style="list-style-type: none"> <li>• The ATC operator should receive direction from the CRS to perform this step. He should evaluate plant conditions and decide on a minimum RCS pressure. The critical task is satisfied when the applicant takes action to start reducing RCS pressure (&lt; 945 PSIA does not need to be reached in the scenario).</li> <li>• Auxiliary Spray will be required since all RCPs will be secured.</li> <li>• HPSI throttle criteria will not be met at this point.</li> </ul>
	BOP	<b>IF</b> RCS T <sub>HOT</sub> is less than 520 °F, <b>THEN</b> isolate the most affected SG:
	BOP	a. Place the ADV setpoint to 980 psig and verify controller in AUTO.



Op Test No.:   NRC   Scenario #   1   Event #   8   Page   23   of   23  

Event Description: Main Steam Line Break / Function Recovery Procedure

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

	BOP	b. Verify the MSIV is closed.
	BOP	c. Verify the MFIV is closed.
	BOP	d. <b>IF</b> EFAS-2 is <b>NOT</b> initiated, <b>THEN</b> close EFW Isolation Valves: <ul style="list-style-type: none"> <li>• EFW 228B (SG 2 PRIMARY)</li> <li>• EFW 229B (SG 2 BACKUP)</li> </ul>
	BOP	e. Place EFW Flow Control Valves in MAN and close: <ul style="list-style-type: none"> <li>• EFW 224B, SG 2 PRIMARY</li> <li>• EFW 223B, SG 2 BACKUP</li> </ul>
	BOP	f. Close MS 401B, PUMP AB TURB STM SUPPLY SG 2.
	BOP	g. Close Main Steam Line 2 Drains: <ul style="list-style-type: none"> <li>• MS 120B NORMAL</li> <li>• MS 119B BYPASS</li> </ul>
	BOP	h. Close Steam Generator Blowdown isolation valves: <ul style="list-style-type: none"> <li>• BD 103B STM GEN 2 (OUT)</li> <li>• BD 102B STM GEN 2 (IN)</li> </ul>
	BOP	i. Check main steam safety valves are closed.

## Examiner Note

This event is complete after the CRS has directed Steam Generator #2 to be isolated

AND

The ATC operator has commenced reducing RCS pressure

Or

As directed by the Lead Evaluator.

Facility:	WATERFORD 3	Scenario No.:	2	Op Test No.:	<b>NRC</b>
Examiners:	_____	Operators:	_____		
	_____		_____		
	_____		_____		
Initial Conditions:	<ul style="list-style-type: none"> <li>• 100%, 125 EFPD, AB buses aligned to Train B.</li> <li>• Protected Train is B</li> <li>• Emergency Diesel Generator A is tagged out for planned maintenance.</li> </ul>				
Turnover:	<ul style="list-style-type: none"> <li>• Maintain 100 % power</li> <li>• Severe Thunderstorm Warning and Tornado Watch and in effect</li> </ul>				
Event No.	Malf. No.	Event Type*	Event Description		
1	CV01B	TS – SRO C – ATC C – SRO	Charging Pump B trips		
2	N/A	TS – SRO	Dry Cooling Tower Fan 8A reported with no oil in sight glass.		
3	FW27M FW28M	R – ATC N – BOP N – SRO	Heater 5 and 6 A isolate on high level. Normal plant power reduction to < 72%.		
4	RC04C RD24 A,B,E,F	M – All I – ATC I – SRO	RCP 2A Shaft Shear with automatic trip initiated but correct alignment of trip breakers do not open. Manual reactor trip.		
5	RD11A-44 RD11A-74 RD11A-68	C-ATC C - SRO	3 CEAs stick out on trip requiring Emergency Boration		
6	ED01 A, B, C, D	M-All	Loss of Off Site Power		
7	EG08B	C- BOP C - SRO	EDG B fails to auto-start		
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor					

---

## Scenario Event Description

### NRC Scenario 2

---

The crew assumes the shift at 100% power with instructions to maintain 100% power. Emergency Diesel Generator A is out of service due to a cracked lube oil strainer valve. Tech Spec 3.8.1.1 b and d have been entered. The turnover will include that the site is under a Severe Thunderstorm Warning and a Tornado Watch. All of the necessary actions of OP-901-521, Severe Weather and Flooding, have been accomplished.

After taking the shift, Charging Pump B will trip on motor overload. The crew should start Charging Pump AB or A and enter OP-901-112, Charging or Letdown Malfunction. The CRS should enter Tech Spec 3.1.2.4 and TRM 3.1.2.4. Additionally, the crew will no longer be in compliance with Tech Spec 3.8.1.1 d, requiring action within 2 hours. The CRS should direct the ATC to align Charging Pump AB to replace Charging Pump B and exit Tech Spec 3.1.2.4, comply with Tech Spec 3.8.1.1.b, and remain in TRM 3.1.2.4.

After the ATC aligns Charging Pump AB or at the lead examiners direction, the Outside Watch will call and report that during his rounds in the Dry Cooling Tower Area, he has discovered Dry Cooling Tower Fan 8A has a cracked oil housing and no oil is visible in the sight glass. The CRS should declare Dry Cooling Tower Fan 8A inoperable and enter Tech Spec 3.7.4 action c, which, due to the tornado watch, requires a shutdown if not restored in 1 hour.

After the CRS identifies the correct Tech Spec, Heater 5A Normal Level Control Valve will fail closed. The rising level will cause Heaters 5A and 6A to isolate. Based on guidance from OP-003-034, Feed Heater Vents and Drains, the crew should determine the need to commence a normal plant shutdown in accordance with OP-010-005, Plant Shutdown, to lower Main Generator load to less than 893 MWe, 72% power. The ATC will perform Pressurizer boron equalization, direct Boration to the RCS, as well as ASI control with CEAs. The BOP will manipulate the Main Turbine controls to reduce load.

Once the crew has commenced the power reduction and lowered power to ~ 90%, or at the lead examiner's discretion, Reactor Coolant Pump 2A will have a sheared shaft failure. The Plant Protection System will actuate, but 4 Reactor Trip Breakers will fail to open automatically. The crew should manually trip the reactor using the Diverse Reactor Trip System. After the reactor trip, 3 CEAs will fail to insert. The ATC should commence Emergency Boration in accordance with OP-901-103, Emergency Boration. The crew will carry out the immediate operator actions of OP-902-000, Standard Post Trip Actions.

During the review of Standard Post Trip Actions, a Loss of Off Site Power will occur. EDG B will fail to automatically start and have to be started manually by the BOP operator. The CRS should enter OP-902-003, Loss of Off Site Power/Loss of Forced Circulation Recovery. Once in OP-902-003, the CRS should direct the performance of OP-902-009, Standard Appendices, Appendix 20, Operation of DCT Sump Pumps. The scenario can be terminated after the CRS orders the performance of OP-902-009 Appendix 20 or at the lead examiners discretion.

---

## Scenario Event Description

### NRC Scenario 2

---

#### Critical Tasks

1. Manually trip the Reactor.

This task is satisfied by manually tripping the reactor within 1 minute of the failure of the automatic trip. The required task becomes applicable after the annunciators are received associated with the RCP 2A sheared shaft.

2. Establish reactivity control.

This task is satisfied by establishing Emergency Boration prior to completing Standard Post Trip Actions Reactivity Control verification. The required task becomes applicable after the Reactor is tripped and 2 CEAs remain stuck out following event 5.

3. Energize at least one vital electrical AC bus.

This task is satisfied by starting Emergency Diesel Generator B. This task becomes applicable following the loss of off site power triggered in event 7.

#### **Scenario Quantitative Attributes**

1. Total malfunctions (5-8)	6
2. Malfunctions after EOP entry (1-2)	2
3. Abnormal events (2-4)	2
4. Major transients (1-2)	2
5. EOPs entered/requiring substantive actions (1-2)	1
6. EOP contingencies requiring substantive actions (0-2)	1
7. Critical tasks (2-3)	3

**Scenario Notes:**

- A. Reset Simulator to IC-192.
- B. Verify the following Scenario Malfunctions:
  - 1. cv01b for Charging Pump B trip
  - 2. rc04c for RCP 2A sheared shaft
  - 3. rd24a for Reactor Trip Circuit Breaker 1 fail to open
  - 4. rd24b for Reactor Trip Circuit Breaker 2 fail to open
  - 5. rd24e for Reactor Trip Circuit Breaker 5 fail to open
  - 6. rd24f for Reactor Trip Circuit Breaker 6 fail to open
  - 7. rd11a44 for CEA 44 stuck
  - 8. rd11a68 for CEA 68 stuck
  - 9. ed01a for Off Site Feeder Breaker 7172 trip
  - 10. ed01b for Off Site Feeder Breaker 7176 trip
  - 11. ed01c for Off Site Feeder Breaker 7182 trip
  - 12. ed01d for Off Site Feeder Breaker 7186 trip
  - 13. eg10a for EDG A overspeed device
  - 14. eg08b for EDG B fail to auto start
  - 15. fw27m for Heater 5A NLCV
  - 16. fw28m for Heater 5A ALCV
- C. Verify the following Annunciators
  - 1. b\_e07 for Dry Cooling Tower 1 level high
  - 2. b\_e08 for Dry Cooling Tower 2 level high
- D. Verify the following Overrides
  - 1. egr27 for EDG B local alarm acknowledgement
- E. Verify the following Control Board Conditions:
  - 1. Danger tag placed on EDG A control switch
  - 2. Danger tag placed on EDG A Output Breaker
- F. Verify EDG A output breaker is racked out and place danger tags on EDG A and its output breaker.
- G. Ensure Protected Train B sign is placed in SM office window.
- H. Complete the simulator setup checklist.

Simulator Booth Instructions

Event 1      Charging Pump A Trips

1. On Lead Examiner's cue, initiate Event Trigger 1.
2. If called, the RCA should report a scent of burnt electrical components at Charging Pump B.
3. If Work Week Manager is called, inform the caller that a work package will be assembled and a team will be sent to the Control Room.

Event 2      Dry Cooling Tower Fan 8A Failure

1. On Lead Examiner's cue, call 4100 and report indication of a cracked oil housing on DCT Fan 8A reduction gear and that there is no oil visible in the sight glass.
2. If Work Week Manager is called, inform the caller that a work package will be assembled and a team will be sent to the Control Room.

Event 3      Heater 5A NLCV Failure / Normal Plant Power Reduction

1. On Lead Examiner's cue, initiate Event Trigger 3.
2. When called, have the TGB Watch report that Heater 5A NLCV is closed and that you do not know why. You will investigate and report back.
3. If Work Week Manager or I&C is called, inform the caller that a work package will be assembled and a team will be sent to the Control Room.

Event 4      Reactor Coolant Pump 2A Sheared Shaft / Trip Failure

1. On Lead Examiner's cue, initiate Event Trigger 4.
2. If the Work Week Manager or Duty Plant Manager is called, inform the caller that they will make the necessary calls.

Event 5      CEA 74 and 68 Fail to Insert / Emergency Boration

1. No calls for this malfunction should occur.

NRC Scenario 2

Event 6      Loss of Off Site Power

1. After the crew has completed Standard Post Trip Actions and on the Lead Examiner's cue, initiate Event Trigger 6.
2. If called as OSW watch report that a steady rain has been falling all shift.
3. If called to come to the Control Room to get a copy of OP-902-009, Appendix 20 for aligning the DCT Sump Pumps, report that you have a copy at the 314 Bus.

Event 8      Emergency Diesel Generator B fails to start

1. If called as RAB watch to check EDG B, initiate Trigger 9, and when the EDG B Trouble alarm is clear, report that it is running satisfactorily.

NRC Scenario 2

**Scenario Timeline:**

<b>Event</b>	<b>Malfunction</b>	<b>Severity</b>	<b>Ramp HH:MM:SS</b>	<b>Delay</b>	<b>Trigger</b>	
	EPR09 Precipitation at 1.5 inches per hour	A	1.5	N/A	N/A	N/A
	EGR29 EDG A output breaker racked out	A	N/A	NA	NA	N/A
	EG10 EDG A overspeed device pulled	A	N/A	NA	NA	N/A
1	CV01 Charging Pump B trip	B	N/A	N/A	N/A	1
2	N/A Dry Cooling Tower Fan 8A failure	N/A	N/A	N/A	N/A	N/A
3	FW27 FW28 Isophase Bus Fan failure	M M	0% 35%	N/A	N/A	3
4	RC04 RCP 2A Sheared Shaft	C	N/A	N/A	N/A	4
4	RD24 Reactor Trip Breakers 1, 2, 5, & 6 fail to open	A, B, E, F	N/A	N/A	N/A	N/A
5	RD11A CEA 44 stuck out after reactor trip	44	N/A	N/A	N/A	N/A
5	RD11A CEA 68 stuck out after trip	68	N/A	N/A	N/A	N/A
6	ED01 Loss of Off Site Power	A, B, C, D	N/A	N/A	N/A	6
7	EG08 EDG B Fail to Auto-start	B	N/A	N/A	N/A	N/A
	B_E07 B_E08 Dry Cooling Tower 1 & 2 high level alarm		N/A	N/A	00:02:30 00:04:00	6



**REFERENCES:**

Event	Procedures
1	OP-901-112, Charging or Letdown Malfunction Tech Spec 3.1.2.4, 3.8.1.1 TRM 3.1.2.4
2	Tech Spec 3.7.4
3	OP-003-034, Feed Heater Vents and Drains OP-500-001, Annunciator Response for Control Room Cabinet A OP-010-005, Plant Shutdown
4	OP-902-000, Standard Post Trip Actions OP-902-009, Standard Appendices, Appendix 1, Diagnostic Flow Chart
5	OP-901-103, Emergency Boration
6	OP-902-003, Loss of Off Site Power/Loss of Forced Flow OP-902-009, Standard Appendices, Appendix 20, Operation of Dry Cooling Tower Sump Pumps

Op Test No.:   NRC   Scenario #   2   Event #   1   Page   1   of   16  

Event Description: Charging Pump B Trip

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

	Note	All controls for the Charging manipulations are on CP-4
	ATC	Recognize and report indications of Charging Pump B trip.
		Alarms:
		• Charging Pump B Trip/Trouble (Cabinet G, B-6)
		• Charging Pumps Header Flow Lo (Cabinet G, H-5)
		• Charging Pump B Not Available (Cabinet G, A-6)
		Indications:
		• Charging flow and Charging Header pressure drop
		• Charging Pump B control switch indicates stop
Examiner Note		
<p>There are steps in off normal OP-901-112, Charging or Letdown Malfunction, to manually start a standby Charging Pump after verifying a suction path. It is acceptable for the CRS to direct this action prior to entering OP-901-112 to avoid isolating the Charging and Letdown system on high temperature. If this is directed, the CRS should still enter OP-901-112 even after a Charging Pump is running.</p>		
	CRS	Enter and direct the implementation of OP-901-112, Charging or Letdown Malfunction.
	CRS	1. Stop turbine load changes.
	CRS	3. IF a Charging Malfunction is indicated, THEN go to Subsection E <sub>1</sub> , Charging Malfunction.
		CRS should evaluate E <sub>0</sub> and go to sub-section E <sub>1</sub> .
	CRS	<p>Procedure Note</p> <p>If all Charging Pumps are secured, then LETDOWN STOP VALVE (CVC 101) will close on high REGEN HX TUBE OUTLET temperature if RCS is <math>\geq 470^{\circ}\text{F}</math>.</p>
		<p>This condition is applicable to the plant conditions. Regen Heat Exchanger temperature will rise to the 470 °F setpoint. Time is available for the crew to take action prior to isolation.</p>

Op Test No.:   NRC   Scenario #   2   Event #   1   Page   2   of   16  

Event Description: Charging Pump B Trip

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

	CRS	Procedure Caution THE REACTOR COOLANT SYSTEM WILL BE BORATED IF A CHARGING PUMP IS STARTED WITH THE RWSP AS THE MAKEUP WATER SOURCE.
	ATC	1. IF Charging Pumps have tripped, THEN perform the following:
		1.1 Verify open EITHER VCT DISCH VALVE (CVC 183) OR RWSP TO CHARGING PUMP (CVC 507). 1.2 IF Letdown has NOT isolated, THEN attempt to restart Charging Pump(s). 1.3 IF the Charging Pump can NOT be restarted, THEN verify closed LETDOWN STOP VALVE (CVC 101). 1.4 IF the reason for the Charging pump trip is corrected AND Pressurizer level is in normal operating band, THEN place Charging and Letdown in service in accordance with OP-002-005, CHEMICAL AND VOLUME CONTROL.
		<ul style="list-style-type: none"> <li>The ATC operator should verify a Charging Pump suction path via CVC-183 prior to starting another Charging Pump. Either Charging Pump A or AB can be started. This action is typically directed by the CRS.</li> </ul>
		<ul style="list-style-type: none"> <li>If the crew does not start another Charging Pump prior to Letdown isolating at 470 °F, then the crew should reestablish Charging and Letdown in accordance with OP-002-005.</li> </ul>
	CRS	2. IF normal Charging flow can NOT be established AND Pressurizer level falls below minimum Pressurizer level for operation in accordance with Attachment 1, Pressurizer Level Versus Tave Curve, THEN perform the following:
		This step should not be applicable due to the duration of the malfunction.
	Crew	3. IF the PMC is available, THEN display PMC Group CVCS and monitor Charging System parameters to determine cause of Charging malfunction.
		This data can be retrieved by any member of the crew. PMC point D39704, CVCS CHG PMP MTR B OVLD TRIP and D39702, CVCS CHG PMP MTR B TRP/TRBL will provide indication of the electrical failure of Charging Pump B.

Op Test No.:   NRC   Scenario #   2   Event #   1   Page   3   of   16  

Event Description: Charging Pump B Trip

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

	CRS	Evaluates Tech Spec and TRM 3.1.2.4 and enters both. Additionally, with Emergency Diesel A out of service, the crew will no longer be in compliance with Tech Spec 3.8.1.1.d. Tech Spec 3.1.2.4 can be exited and 3.8.1.1.d complied with by aligning Charging Pump AB to replace B for SIAS. The CRS should remain in TRM 3.1.2.4 after this operation.
	ATC	Align Charging Pump AB to replace B on SIAS by aligning the Pump AB Assignment switch to the B position on CP-4.
	CRS	Exit Tech Spec 3.1.2.4 and determine compliance with Tech Spec 3.8.1.1.d. Crew must remain in TRM 3.1.2.4.
<p>Examiner Note</p> <p>This event is complete after Charging Pump AB is aligned to replace Charging Pump B</p> <p>Or</p> <p>As directed by the Lead Evaluator</p>		

Op Test No.:   NRC   Scenario #   2   Event #   2   Page   4   of   16  

Event Description: Dry Cooling Tower Dry Fan 8A failure

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

		This failure is called in by the Outside Watch for the purpose of evaluating Tech Spec 3.7.4. The simulator operator will call the CRS on cue from the Lead Examiner.
	CRS	On receiving information regarding DCT Fan 8A, evaluates Tech Spec 3.7.4.
	Crew	A member of the crew should determine that DCT Fan 8A is under the missile shield.
	CRS	Determine that with a fan under the missile shield inoperable during a tornado watch (provided during the turnover), entry into Tech Spec 3.7.4.c is required.
		This is a 1 hour shutdown action. The tornado watch will not expire before this action is required. The crew will not perform a shutdown before the next malfunction is inserted.
<p>Examiner Note</p> <p>This event is complete when the CRS has completed addressing Tech Specs</p> <p>Or</p> <p>As directed by the Lead Evaluator</p>		

Op Test No.:   NRC   Scenario #   2   Event #   3   Page   5   of   16  

Event Description: 5A Normal Level Control Valve Failure / Plant shutdown

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

	BOP	Recognize and report indications of Heater 5A Normal Level Control Valve failure.						
		Alarms:						
		<ul style="list-style-type: none"> <li>Heater 5A Level Hi-Hi (Cabinet A, B-8)</li> <li>Heater 5A Level Hi/Lo (Cabinet A, C-8)</li> <li>Heater 5A Alt Drain Vlv Open (Cabinet A, D-8)</li> </ul>						
		Indications:						
		<ul style="list-style-type: none"> <li>Heater 5A level rising on the Plant Monitoring Computer</li> <li>Heater 5A &amp; 6A isolate when CD-189 A and CD-175 A close on CP-13</li> </ul>						
<b>Examiner Note</b> The annunciator response refers to OP-003-034, Feed Heater Vents and Drains. It directs a power reduction to 893 MWe, 72% power.								
	BOP	Report guidance from OP-500-001, Annunciator Response for Control Room Panel A: 1.4 Review OP-003-034, Feed Heater Vents and Drains, for Power Limitations associated with FHD Heater Strings out of service.						
	CRS	Refer to OP-003-034, Feed Heater Vents and Drains.						
	CRS	Limitation 3.2.1 Utilize the following table to determine the maximum allowed power level with the listed FW Heater(s) out of service. <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;"><u>OOS Condition</u></th> <th style="text-align: center;"><u>Bypass Open</u></th> <th style="text-align: center;"><u>Bypass Closed</u></th> </tr> </thead> <tbody> <tr> <td style="text-align: left;">Any Single IP or LP Heater (Note 1)</td> <td style="text-align: center;">893 MWe (72%)</td> <td style="text-align: center;">893 MWe (72%)</td> </tr> </tbody> </table>	<u>OOS Condition</u>	<u>Bypass Open</u>	<u>Bypass Closed</u>	Any Single IP or LP Heater (Note 1)	893 MWe (72%)	893 MWe (72%)
<u>OOS Condition</u>	<u>Bypass Open</u>	<u>Bypass Closed</u>						
Any Single IP or LP Heater (Note 1)	893 MWe (72%)	893 MWe (72%)						
CRS should conclude a power reduction to 72% is required.								

Op Test No.:   NRC   Scenario #   2   Event #   3   Page   6   of   16  

Event Description: 5A Normal Level Control Valve Failure / Plant shutdown

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

	CRS	Enters OP-010-005, Plant Shutdown.
	CRS	<p>Procedure Note</p> <p>(1) Because of the absence of adequate airflow across the installed thermocouples while in this alignment, computer points A58010, A58011, and A58012 should not be used to monitor Isophase Bus return air for temperature. Utilize a Pyrometer or equivalent to measure Isophase Bus Air exhaust temperature.</p> <p>(2) Isophase Bus return air temperature should not be allowed to rise above 158 °F.</p>
	Note	The CRS should direct the TGB Watch to perform steps 1.2 through 1.6. The watch will acknowledge the order and reply that he will get the procedure and start walking down the evolution. This task will not get accomplished during the scenario.
	Crew	9.1.2 Prior to commencing power reduction, notify Load Dispatcher.
	Crew	9.1.3 Announce to Station Personnel that a power reduction is in progress over the Plant Paging System.
	Crew	9.1.4 Maintain RCS Cold Leg Temperature 536 °F to 549 °F.
	ATC	9.1.5 Perform Boron Equalization as follows:
		<ul style="list-style-type: none"> <li>Place available Pressurizer Pressure Backup Heater Control Switches to ON.</li> </ul>
		<ul style="list-style-type: none"> <li>Reduce Pressurizer Spray Valve Controller (RC-IHIC-0100) setpoint potentiometer to establish spray flow and maintain RCS pressure 2250 PSIA (2175 – 2265).</li> </ul>
		This manipulation is performed at CP-2.
	Note	There is a procedure note describing what power indications are preferred for certain power ranges. The CRS should review this note, but the power reduction will not be carried out long enough to see this exercised.

Op Test No.:   NRC   Scenario #   2   Event #   3   Page   7   of   16  

Event Description: 5A Normal Level Control Valve Failure / Plant shutdown

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

	ATC	Begin Direct Boration as follows:
		6.7.2 At SM/CRS discretion, calculate volume of Boric Acid to be added on Attachment 11.6, Calculation of Boric Acid Volume for Direct Boration or VCT Borate Makeup Mode.
		These manipulations are performed at CP-4. The ATC should use the Reactivity Worksheet to recommend a boron quantity to the CRS.
		6.7.3 Set Boric Acid Makeup Batch Counter to volume of Boric Acid desired.
		The steps for setting the Boric Acid counter are not contained in this step. The ATC operator should press the UP arrow button, the ENTER button, enter the quantity of acid desired, press the ENTER button, and press the RESET button.
		6.7.4 Verify Boric Acid Makeup Pumps selector switch aligned to desired Boric Acid Makeup Pump A(B).
		6.7.5 Place Direct Boration Valve, BAM-143, control switch to AUTO.
		6.7.6 Place Makeup Mode selector switch to BORATE.
		6.7.7 Verify selected Boric Acid Makeup Pump A(B) Starts.
		6.7.8 Verify Direct Boration Valve, BAM-143, Opens.
		Procedure Note The Boric Acid Flow Totalizer will not register below 3 GPM. The Boric Acid Flow Totalizer is most accurate in the range of 10 - 25 GPM.
		6.7.9.1 Verify Boric Acid Flow controller, BAM-IFIC-0210Y, in Manual.
		6.7.9.2 Adjust Boric Acid Flow controller, BAM-IFIC-0210Y, output to >3 GPM flow rate.
		6.7.11 Verify Boric Acid Makeup Control Valve, BAM-141, Intermediate or Open.
		6.7.12 Observe Boric Acid flow rate for proper indication.
	BOP	Commence Turbine load reduction by performing the following:
		6.2.1.1 Depress LOAD/RATE MW/MIN pushbutton.
		6.2.1.2 Depress appropriate numerical pushbuttons for desired load rate.
		6.2.1.3 Depress ENTER pushbutton.



Op Test No.:   NRC   Scenario #   2   Event #   3   Page   8   of  16 

Event Description: 5A Normal Level Control Valve Failure / Plant shutdown

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

		Procedure Note Prior to changing Reference Demand, Main Turbine load must not be changing.
		6.2.2.1 Depress REF pushbutton.
		6.2.2.2 Depress appropriate numerical pushbuttons for desired MW load.
		6.2.2.3 Depress ENTER pushbutton.
		6.2.2.4 Depress GO pushbutton.
		6.2.2.5 Verify Turbine load change stops at the desired MW load.
		This manipulation is performed at CP-1. These steps are from OP-005-007, Main Turbine and Generator. The BOP will set up the Main Turbine controls. The ATC will direct the BOP when to commence unloading the Main Turbine based on the drop in RCS Cold Leg temperature.
	CRS / ATC	Procedure Caution CONTROL RODS SHOULD NEVER BE WITHDRAWN OR MANUALLY INSERTED EXCEPT IN A DELIBERATE CAREFULLY CONTROLLED MANNER WHILE CLOSELY MONITORING THE REACTOR'S RESPONSE.
	ATC	Operate CEAs to maintain ASI using CEA Reg. Group 6 or Group P Control Element Assemblies.
		Steps are contained in OP-004-005, Control Element Drive. Group P should be used first to a low limit of 120 inches, followed by CEA Group 6 to a low limit of 120 inches to comply with Tech Spec 3.1.3.6. This manipulation is performed at CP-2.

Op Test No.:   NRC   Scenario #   2   Event #   3   Page   9   of  16 

Event Description: 5A Normal Level Control Valve Failure / Plant shutdown

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

		Operate CEAs in Manual Group mode as follows:
		6.7.1 Verify Plant Monitoring Computer operable in accordance with OP-004-012, Plant Monitoring Computer.
		6.7.2 Position Group Select switch to desired group.
		6.7.3 Place Mode Select switch to MG and verify the following: <ul style="list-style-type: none"> <li>• White lights Illuminated on Group Selection Matrix for selected group</li> <li>• MG light Illuminates</li> </ul>
		6.7.4 Operate CEA Manual Shim switch to INSERT group to desired height while monitoring the following: <ul style="list-style-type: none"> <li>• CEA Position Indicator selected CEA group is moving in desired direction If Reactor is critical, then monitor the following:</li> <li>• Reactor Power</li> <li>• Reactor Coolant System (RCS) temperature</li> <li>• Axial Shape Index (ASI)</li> </ul>
		Procedure Note The Operator should remain in the area in front of the CEA Drive Mechanism Control Panel when the Mode Select switch is not in OFF.
		6.7.5 When desired set of moves have been completed, then place Mode Select switch to OFF.
	Crew	9.1.9 When reactor power consistently indicates less than 98% power, as indicated on computer point C24631, MAIN STEAM RAW POWER (MSBSRAW), or an alternate point provided by Reactor Engineering, then verify the value of C24648, BSCAL SMOOTHING VAL. APPLD (DUMOUT17), automatically changes to 1.
<p>Examiner Note</p> <p>This event is complete when the desired power reduction has been accomplished</p> <p>Or</p> <p>As directed by the Lead Evaluator</p>		

Op Test No.:   NRC   Scenario #   2   Event #   4 / 5   Page   10   of   16  

Event Description: RCP Shaft Shear with ATWS / Manual Reactor Trip / 2 CEAs Fail to Insert on Trip

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

	ATC	Recognize and report indications of Reactor Coolant Pump 2A shaft shear and failure of the automatic trip.
		Alarms:
		<ul style="list-style-type: none"> <li>RCP 2A Vibration Hi (Cabinet H, A-8)</li> </ul>
		<ul style="list-style-type: none"> <li>RCP 2A Lube Oil Pressure Lo (Cabinet H, E-7)</li> </ul>
		<ul style="list-style-type: none"> <li>RPS Channel Trip Local Power Density Hi (Cabinet K, A-11)</li> </ul>
		<ul style="list-style-type: none"> <li>RPS Channel Trip DNBR Lo (Cabinet K, A-12)</li> </ul>
		<ul style="list-style-type: none"> <li>RPS Channel Trip Coolant Flow Lost (Cabinet K, D-12)</li> </ul>
		Indications:
		<ul style="list-style-type: none"> <li>RCP 2A <math>\Delta</math> pressure and amps dropping</li> </ul>
		<ul style="list-style-type: none"> <li>All CEAs withdrawn</li> </ul>
		<ul style="list-style-type: none"> <li>4 Reactor Trip Circuit Breakers closed</li> </ul>
<b><u>Critical Task</u></b>		
Manually trip the Reactor.		
This task is satisfied by <del>establishing</del> manually tripping the reactor within 1 minute of the failure of the automatic trip.-		
	ATC	Trip the Reactor using Diverse Reactor Trip pushbuttons at CP-2
		The CRS may direct this operation, but the ATC operator should not request permission or wait for direction to perform this action.
	ATC	Recognize and report indications of 2 CEAs failure to insert.
		Indications:
		<ul style="list-style-type: none"> <li>CEA 74 and CEA 68 rod bottom lights not illuminated</li> </ul>
		<ul style="list-style-type: none"> <li>CEA 74 and CEA 68 upper electrical limit lights illuminated</li> </ul>

Op Test No.:   NRC   Scenario #   2   Event #   4 / 5   Page   11   of   16  

Event Description: RCP Shaft Shear with ATWS / Manual Reactor Trip / 2 CEAs Fail to Insert on Trip

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

	CRS	Direct direct ATC and BOP to carry out Standard Post trip Actions.
	ATC	Determine <b>Reactivity Control</b> acceptance criteria are met: <ul style="list-style-type: none"> <li>• Check reactor power is dropping.</li> <li>• Check startup rate is negative.</li> <li>• Check less than <b>TWO</b> CEAs are <b>NOT</b> fully inserted.</li> </ul>
<p><b><u>Critical Task</u></b></p> <p>Establish reactivity control.</p> <p>This task is satisfied by establishing Emergency Boration prior to completing Standard Post Trip Actions Reactivity Control verification.</p>		
	ATC	Determine 2 CEAs are stuck out and commence Emergency Boration:
		1. Place Makeup Mode selector switch to MANUAL.
		2. Align borated water source by performing one of the following:
		a. Initiate Emergency Boration using Boric Acid Pump as follows:
		<ul style="list-style-type: none"> <li>• Open Emergency Boration Valve, BAM-133.</li> </ul>
		<ul style="list-style-type: none"> <li>• Start one Boric Acid Pump.</li> </ul>
		<ul style="list-style-type: none"> <li>• Close recirc valve for Boric Acid Pump started:               <ul style="list-style-type: none"> <li>○ BAM-126A Boric Acid Makeup Pump Recirc Valve A</li> <li>○ BAM-126B Boric Acid Makeup Pump Recirc Valve B</li> </ul> </li> </ul>
		<u>OR</u>
		b. Initiate Emergency Boration using Gravity Feed as follows:
		<ul style="list-style-type: none"> <li>• Open the following Boric Acid Makeup Gravity Feed valves:               <ul style="list-style-type: none"> <li>○ BAM-113A Boric Acid Makeup Gravity Feed Valve A</li> <li>○ BAM-113B Boric Acid Makeup Gravity Feed Valve B</li> </ul> </li> </ul>
		3. Close VCT Disch Valve, CVC-183.
		4. Verify at least one Charging Pump operating and Charging Header flow $\geq$ 40 GPM.

Op Test No.:   NRC   Scenario #   2   Event #   4 / 5   Page   12   of   16  

Event Description: RCP Shaft Shear with ATWS / Manual Reactor Trip / 2 CEAs Fail to Insert on Trip

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

	BOP	Determine <b>Maintenance of Vital Auxiliaries</b> acceptance criteria are met: Check the Main Turbine is tripped: <ul style="list-style-type: none"> <li>• Governor valves closed</li> <li>• Throttle valves closed</li> </ul>
	BOP	Check the Main Generator is tripped: <ul style="list-style-type: none"> <li>• GENERATOR BREAKER A tripped</li> <li>• GENERATOR BREAKER B tripped</li> <li>• EXCITER FIELD BREAKER tripped</li> </ul>
	BOP	Check station loads are energized from offsite electrical power as follows: <b>Train A</b> <ul style="list-style-type: none"> <li>• A1, 6.9 KV non safety bus</li> <li>• A2, 4.16 KV non safety bus</li> <li>• A3, 4.16 KV safety bus</li> <li>• A-DC electrical bus</li> <li>• A or C vital AC Instrument Channel</li> </ul> <b>Train B</b> <ul style="list-style-type: none"> <li>• B1, 6.9 KV non safety bus</li> <li>• B2, 4.16 KV non safety bus</li> <li>• B3, 4.16 KV safety bus</li> <li>• B-DC electrical bus</li> </ul> B or D vital AC Instrument Channel
	ATC	Determine <b>RCS Inventory Control</b> acceptance criteria are met: Check that the following conditions exist: <ul style="list-style-type: none"> <li>• Pressurizer level is 7% to 60%</li> <li>• Pressurizer level is trending to 33% to 60%</li> <li>• Check RCS subcooling is greater than or equal to 28°F.</li> </ul>

Op Test No.:   NRC   Scenario #   2   Event #   4 / 5   Page   13   of   16  

Event Description: RCP Shaft Shear with ATWS / Manual Reactor Trip / 2 CEAs Fail to Insert on Trip

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

	ATC	Determine <b>RCS Pressure Control</b> acceptance criteria are met by checking that <b>BOTH</b> of the following conditions exist: <ul style="list-style-type: none"> <li>• Pressurizer pressure is 1750 psia to 2300 psia</li> <li>• Pressurizer pressure is trending to 2125 psia to 2275 psia</li> </ul>
	ATC	Determine <b>Core Heat Removal</b> acceptance criteria are met: <ul style="list-style-type: none"> <li>• Check at least one RCP is operating.</li> <li>• Check operating loop <math>\Delta T</math> is less than 13°F.</li> <li>• Check RCS subcooling is greater than or equal to 28°F.</li> </ul>
	BOP	Determine <b>RCS Heat Removal</b> acceptance criteria are met: Check that at least one steam generator has <b>BOTH</b> of the following: <ul style="list-style-type: none"> <li>• Steam generator level is 5% to 80% NR</li> <li>• Main Feedwater is available to restore level within 50%-70% NR.</li> </ul>
	ATC	Check RCS TC is 530°F to 550°F
	BOP	Check steam generator pressure is 885 psia to 1040 psia.
	BOP	Check Feedwater Control in Reactor Trip Override: <ul style="list-style-type: none"> <li>• MAIN FW REG valves are closed</li> <li>• STARTUP FW REG valves are 13% to 21% open</li> <li>• Operating main Feedwater pumps are 3800 rpm to 4000 rpm</li> </ul>
	BOP	Reset moisture separator reheaters, and check the temperature control valves closed.

Op Test No.:   NRC   Scenario #   2   Event #   4 / 5   Page   14   of   16  

Event Description: RCP Shaft Shear with ATWS / Manual Reactor Trip / 2 CEAs Fail to Insert on Trip

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

	ATC	Determine <b>Containment Isolation</b> acceptance criteria are met: <ul style="list-style-type: none"> <li>• Check containment pressure is less than 16.4 psia.</li> <li>• Check <b>NO</b> containment area radiation monitor alarms <b>OR</b> unexplained rise in activity.</li> <li>• Check <b>NO</b> steam plant activity monitor alarms <b>OR</b> unexplained rise in activity.</li> </ul>
	BOP	Determine <b>Containment Temperature and Pressure Control</b> acceptance criteria are met: <ul style="list-style-type: none"> <li>• Check containment temperature is less than or equal to 120°F.</li> <li>• Check containment pressure is less than 16.4 psia.</li> </ul>
	CRS	After review of Standard Post Trip Actions, use Diagnostic Flow Chart of OP-902-009 to select appropriate optimal recovery procedure. <ul style="list-style-type: none"> <li>• Proper use of chart will result in use of OP-902-001</li> </ul>
Examiner Note This event is complete when the ATC and BOP operators report that they have completed Standard Post Trip Actions and when the CRS commences the review Or As directed by the Lead Evaluator.		

Op Test No.:   NRC   Scenario #   2   Event #   6 / 7   Page   15   of   16  

Event Description: Loss of Off Site Power / Failure of Emergency Diesel Generator B to Auto Start

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

Time	Position	Applicant's Actions or Behavior
	Crew	Alarms
		<ul style="list-style-type: none"> <li>Multiple alarms associated with Loss of Off Site Power</li> </ul>
		Indications
		<ul style="list-style-type: none"> <li>Numerous alarms come in, all lights go off except for Control Room emergency lighting.</li> <li>Emergency Diesel Generator B control switch remains green.</li> </ul>
<b><u>Critical Task</u></b>		
Energize at least one vital electrical AC bus.		
This task is satisfied by starting Emergency Diesel Generator B.		
	BOP	Start Emergency Diesel Generator B at CP-1.
	CRS	Complete OP-902-009, Attachment 1, Diagnostic Flowchart. <ul style="list-style-type: none"> <li>Proper use of chart will result in use of OP-902-003, Loss of Off Site Power/Loss of Forced Flow Recovery.</li> </ul>
	Crew	1. Confirm diagnosis of a Loss of Offsite Power or a Loss of Forced Circulation by checking Safety Function Status Check Acceptance Criteria are satisfied.
	Crew	2. Announce a Loss of Offsite Power or a Loss of Forced Circulation is in progress using the plant page.
	CRS	3. Advise the Shift Manager to REFER TO EP-001-001, "Recognition & Classification of Emergency Condition" and implement the Emergency Plan.
	CRS	4. <b>IF</b> power has been interrupted to either 3A or 3B safety buses, <b>THEN</b> perform Appendix 20, "Operation of DCT Sump Pumps"
		CRS should direct this action to a non-licensed operator.



Op Test No.:   NRC   Scenario #   2   Event #   6 / 7   Page   16   of   16  

Event Description: Loss of Off Site Power / Failure of Emergency Diesel Generator B to Auto Start

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

	BOP	6. <b>IF</b> offsite power has been lost, <b>THEN</b> verify the sequencer has timed out for at least one 4.16KV safety bus.
	BOP	7. Check a CCW pump is operating for each energized 4.16KV safety bus.
	CRS / BOP	8. <b>IF</b> offsite power has been lost, <b>THEN</b> : a. Verify MSIVs are closed. b. Verify following steam generator blowdown isolation valves are closed: <ul style="list-style-type: none"> <li>• BD 102A, SG BLOWDOWN ISOL STM GEN 1 (IN)</li> <li>• BD 102B, SG BLOWDOWN ISOL STM GEN 2 (IN)</li> <li>• BD 103A, SG BLOWDOWN ISOL STM GEN 1 (OUT)</li> <li>• BD 103B, SG BLOWDOWN ISOL STM GEN 2 (OUT)</li> </ul>
		This step is marked such that the CRS can move this forward at his discretion. This step could be performed prior to directing the restoration of the Dry Cooling Tower Sump Pumps.
<p>Examiner Note</p> <p>This event is complete after directing performance of Appendix 20 to restore the Dry Cooling Tower Sump Pumps</p> <p>Or</p> <p>As directed by the Lead Evaluator.</p>		