NEXTera ENERGY SEABROOK

RO ADMIN JOB PERFORMANCE MEASURE- QPTR CALCULATION
Rev. 1

Student Name: _____ LMS #: _____

Evaluator Name: _____

SAT UNSAT

OFFICIAL NRC EXAMINATION MATERIAL

ACCESS IS LIMITED TO NRC EXAMINERS AND PERSONNEL THAT FULLY UNDERSTAND AND HAVE SIGNED ON TO THE 2010 NRC INITIAL EXAM SECURITY AGREEMENT.

PREPARED BY: _____ DATE: _____

APPROVED BY: _____ DATE: _____
TRAINING SUPERVISOR

JOB PERFORMANCE WORKSHEET

1.0 Task Number and Description:

Position: RO

0150200501 Perform A Manual QPTR Calculation

2.0 Conditions:

A Plant is now at 100% power after recovering from a dropped rod at EOL.
B. The main plant computer has been inoperable since yesterday (It was inoperable when the rod dropped).
C. The seven day QPTR surveillance is scheduled to be done this shift.
D. Incore/Excore calibration was performed yesterday (before the rod dropped).

3.0 Standards:

Perform the manual QPTR surveillance per RX1703, QPTR Surveillance.

4.0 Student Materials:

Copy of the Directions Tear-Off Sheet
Calculator
RX1703, QPTR Surveillance, Rev. 7, Chg. 2.

5.0 Limitations on performance:

Simulate/Perform all steps.

6.0 References:

Procedures

RX1703, QPTR Surveillance.
OS1000.05, Power Increase.
ON1251.01, Loss Of Plant Computer.

7.0 Setting:

Classroom

1. Examiner must prepare a completed RX1703A in advance. It shall reflect the JPM values for NI cabinet detector currents and the RE-17 100% power, 0% AFD values.
2. Use values listed in RE-17.

8.0 Safety Considerations:

None

9.0 Approximate Completion Time:

20 minutes

10.0 Directions to the Student(s):

Initial Conditions:

1. Plant is now at 100% power following the recovery of a dropped rod at EOL.
2. The main plant computer has been inoperable since yesterday.
3. The QPTR surveillance is scheduled to be done this shift.
4. Incore/Excore calibration was performed yesterday (before the rod dropped).
5. Detector current readings were taken by the Control Board Monitor at 0800.

	TOP (A) DETECTORS			
	N41	N42	N43	N44
Detector Current micoamps	184	182	181	179
	BOTTOM (B) DETECTORS			
	N41	N42	N43	N44
Detector Current micoamps	177	197	191	187

11.0 Initiating Cue:

Perform the QPTR Surveillance per RX1703. The QPTR alarm surveillance work order has been generated.

All independent verifications of calculations will be performed after you are completed. Provide your results to me.

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP *denotes a critical step	STANDARD *denotes critical standard	EVALUATION SAT UNSAT

1. P Start time _____ Initiating cue read.

CUE: If the student requests a Peer Check at any time during the JPM, respond: **"No one is available to peer check your actions. Please continue with the task".**

NOTE: For performance of JPM in classroom setting the student is provided with a copy of RX1703, Quadrant Power Tilt Ratio Surveillance. Student should refer to section 4.1 Surveillance With QPTR Alarm Inoperable.

2 P RECORD the Figure RE-17 revision and the date and time the operable power range currents were taken. Records today's date and the revision number of the RE-17 curve used ____ ____

NOTE: Detector current data for upper & lower detectors are provided. Detector Current value units are microamps. Student should be able to determine that all Power Range Detectors are operable when given the detector current data.

3. P RECORD the current output from the top (A) and bottom (B) detector of each channel on Form A, Quadrant Power Tilt Calculation Sheet Row 1. Records detector outputs.

N41 top (A) detector	____ ____
N42 top (A) detector	____ ____
N43 top (A) detector	____ ____
N44 top (A) detector	____ ____
N41 bottom (B) detector	____ ____
N42 bottom (B) detector	____ ____
N43 bottom (B) detector	____ ____
N44 bottom (B) detector	____ ____

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP *denotes a critical step	STANDARD *denotes critical standard	EVALUATION SAT UNSAT

CUE: If the student asks for independent verification of the values recorded in Row 1 of Form A, cue, evaluator to student, **" Form A Detector currents have been independently verified."**

NOTE: The student is provided with a copy of RE-17.

4. P Using data from Technical Data Book Figure RE-17, RECORD the 100% power, 0% AFD detector current, for the top (A) and bottom (B) detector of each channel on Form A, Quadrant Power Tilt Calculation Sheet Row 2.

   a. From Technical Data Book fig RE-17, Records 100% power, 0% AFD values:

      4 Top (A) Detectors _____ _____

   b. From Technical Data Book fig RE-17, Records 100% power, 0% AFD values:

      4 Bottom (B) Detectors _____ _____

*5. P CALCULATE the normalized detector current by dividing each detector current by its 100% power, 0% AFD current. RECORD the results on Form A, Quadrant Power Tilt Calculation Sheet Row 3.

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP *denotes a critical step	STANDARD *denotes critical standard	EVALUATION SAT	 UNSAT
		a. *Calculates and records Normalized Detector Currents: 4 Top (A) Detectors	____	____
		b. *Calculates and records Normalized Detector Currents: 4 Bottom (B) Detectors	____	____
*6.	P	CALCULATE the average normalized detector current for the top detectors and for the bottom detectors. RECORD the results on Form A, Quadrant Power Tilt Calculation Sheet Row 4.		
		a. *Calculates and records average normalized detector currents: Top (A) Detectors	____	____
		b. *Calculates and records average normalized detector currents: Bottom (B) Detectors	____	____

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP *denotes a critical step	STANDARD *denotes critical standard	EVALUATION SAT UNSAT
*7.	P	CALCULATE the Quadrant Power Tilt Ratio for each detector by dividing each normalized detector current by its associated average normalized detector current. COMPLETE Form A, Quadrant Power Tilt Calculation Sheet.	
		a. *Calculates and records QPTR for each detector: 4 Top (A) Detectors	_____ _____
		b. *Calculates and records QPTR for each detector: 4 Bottom (B) Detectors	_____ _____
*8.	P	Indicate the maximum QPTR by circling on Form A Row 5.	*Identifies (circles) the maximum power tilt ratio on Form A Row 5. _____ _____

CUE: If the student asks for independent verification of the Form A calculations, cue, evaluator to student, **" Form A calculations have been independently verified."**

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP *denotes a critical step	STANDARD *denotes critical standard	EVALUATION SAT UNSAT
*9.	P	Determine if LCO 3.2.4 is/is not met based on maximum QPTR.	
		*a. Identify in step 6 of Form A that LCO 3.2.4 is/is not met	____ ____
		*b. In Row 6 Form A circle YES/NO	____ ____

NOTE: See answer key for the correct item to circle in row 6 on Form A

CUE: "The JPM is complete."

10.	Stop time_____ Evaluator calculates the time to complete the task.	Time to complete the task ≤ 20 minutes.
11.	Obtain from student: Tear Off Sheets and any other training materials used in the performance of the JPM	

PERFORMANCE SUMMARY

Provide comments on unsatisfactory performance of an element/step or for deviation from performance as stated. Record interruptions in performance such as retraining, shift change, and processing of procedure changes. Recommend remedial training, if necessary.

TEAR-OFF SHEET FOR JPM
2009 RO-ADMIN#1

Initial Conditions:

1. Plant is now at 100% power following the recovery of a dropped rod at EOL.
2. The main plant computer has been inoperable since yesterday.
3. The QPTR surveillance is scheduled to be done this shift.
4. Incore/Excore calibration was performed yesterday (before the rod dropped).
5. Detector current readings were taken by the Control Board Monitor at 0800.

	TOP (A) DETECTORS			
	N41	N42	N43	N44
Detector Current micoamps	184	182	181	179
	BOTTOM (B) DETECTORS			
	N41	N42	N43	N44
Detector Current micoamps	177	197	191	187

Initiating Cue:

Perform the QPTR Surveillance per RX1703. The QPTR alarm surveillance work order has been generated.

All independent verifications of calculations will be performed after you are done. Provide your results to me.

NEXTera ENERGY SEABROOK

RO ADMIN JOB PERFORMANCE MEASURE- CALCULATE BORON CHANGE
Rev. 1

Student Name: _____ LMS #: _____

Evaluator Name: _____

SAT UNSAT

OFFICIAL NRC EXAMINATION MATERIAL

ACCESS IS LIMITED TO NRC EXAMINERS AND PERSONNEL THAT FULLY UNDERSTAND AND HAVE SIGNED ON TO THE 2010 NRC INITIAL EXAM SECURITY AGREEMENT.

PREPARED BY: _____ DATE: _____

APPROVED BY: _____ DATE: _____
TRAINING SUPERVISOR

1. Task Number and Description

Position RO

SBK 0040100601 Perform Boron Concentration Change Calculation

2. Conditions:

A. Plant is in Mode 3.
B. The RCS is 500°F and 2235 psig.
C. Pressurizer level is 25%
D. The crew is making preparations to go critical per OS1000.07.
E. RCS born sample is 1500 ppm.
F. The ECP boron concentration is 1120 ppm.
G. The MPCS Boron/Dilution program is not available.
H. The boron concentration change will take place at current RCS temperature.

3. Standards:

Calculate total volume required to lower RCS boron concentration (± 100 gals) per RS1735, Reactivity Calculations.

4. Student Materials:

Calculator
Copy of Tear Off Sheet.
Copy of RS1735, Reactivity Calculations Rev 4 Chg.8.
Copy of Primary TDB, Figure RE-14 Boration/Dilution Tables Rev. 01-00-01
Copy of Primary TDB, Figure RE-15 Boration/Dilution Temperature Correction, Rev. 01-00-00.

5. Limitations On Performance:

Perform all steps. Verbalize all actions to the evaluator.

6. References:

Procedures:

- OS1000.07, Approach To Criticality
- RS1735, Reactivity Calculations
- Primary TDB, Figure RE-14 Boration/Dilution Tables
- Primary TDB, Figure RE-15 Boration/Dilution Temperature Correction

7. Setting:

Simulator or Classroom.

8. Safety Considerations:

None.

9. Approximate Completion Time:

15 minutes

10. Directions To The Student:

A. You are the Primary Operator. You are going to perform a boron change calculation.

B. The following information is provided to you:

1. Plant is in Mode 3.
2. The RCS is 500°F and 2235 psig.
3. Pressurizer level is 25%.
4. The crew is making preparations to go critical per OS1000.07.
5. RCS born sample is 1500 ppm.
6. The ECP boron concentration is 1120 ppm.
7. The MPCS Boron/Dilution program is not available.
8. The boron concentration change will take place at current RCS temperature.

11. Initiating Cue:

US to Primary Operator, **"Primary Operator, using RS1735, calculate the total volume of RMW required to lower RCS boron concentration from the present boron concentration to that required for the ECP."**

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP	STANDARD	EVALUATION
	* denotes a critical step	* denotes a critical step	SAT UNSAT

NOTE: When the student demonstrates the ability to obtain controlled copies of RS1735, Reactivity Calculations, Primary TDB, Figure RE-14 Boration/Dilution Tables, and Primary TDB, Figure RE-15 Boration/Dilution Temperature Correction provide the student with the required documents.

1.	P	Start time _____	Initiating cue read		

CUE: If the student requests a Peer Check at any time during the JPM respond, **"No one is available to Peer Check your actions. Please continue with the task."**

2.	P	Obtain Form D, Dilution worksheet for manual calculation of dilution amount.	Obtains Form D, Dilution worksheet for manual calculation of dilution amount from RS1735, Reactivity Calculations.	____	____

NOTE: See key for values that student should enter on Form D.

3.	P	Enter expected T_{avg} at the time when concentration change is to be made on Form D item 1.	Enters expected T_{avg} at the time when concentration change is to be made on Form D item 1.	____	____
4.	P	Enter the present and desired boron concentration on Form D item 2.	Enter the present and desired boron concentration on Form D item 2.	____	____

NOTE: Item 3A requires a set of numbers (FROM, TO, and RMW). A value will be entered for each reading set of RE-14. For instance, changing from 1500→1400, 1400→1300, 1300→1200, and 1200→1120 would require four sets of numbers. See key for values that student should enter on Form D for item 3A.
RE-14 has dilution (RMW makeup) values in the upper right and boration values in the lower left (not used for this JPM) for each boron concentration change made of 100 ppm or less.

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT UNSAT

NOTE: See key for values that student should enter on Form D.

5.	P	Using TBD Figure RE-14 obtain the total required volume of Reactor Makeup Water (RMW) and enter on Form D item 3a.	Using TBD Figure RE-14 obtains the total required volume of Reactor Makeup Water (RMW) and enter on Form D item 3a.	_____ _____
6.	P	Temperature correction for dilutions. Perform one of the following: If T_{avg} is greater than or equal to 557°F then enter 1.0 on Form D item 3b. OR If T_{avg} is less than 557°F then use TDB Figure RE-15 to obtain the value to enter on Form D item 3b.	Temperature correction for dilutions. Performs one of the following: If T_{avg} is greater than or equal to 557°F then enters 1.0 on Form D item 3b. OR If T_{avg} is less than 557°F then uses TDB Figure RE-15 to obtain the value to enter on Form D item 3b.	_____ _____

NOTE: See key for values that student should enter on Form D.

*7.	P	Calculate the corrected Total Volume of RMW required in units of gallons as the product of items 3a and 3b and enters on Form D item 3c.	*Calculate the corrected Total Volume of RMW required in units of gallons as the product of items 3a and 3b and enters on Form D item 3c.	_____ _____

CUE: "The JPM is complete."

8.	Stop time _____ Evaluator calculates time to complete task	Time to complete task ≤ 15 minutes	
9.	Obtain from student: Tear Off sheets and any other training materials used in performance of this JPM.		_____ _____

PERFORMANCE SUMMARY

Provide comments on unsatisfactory performance of an element/step or for any deviation from performance as stated. Record interruptions in performance such as retraining, shift change, and processing of procedure changes. Recommend remedial training, if necessary.

TEAR OFF SHEET

Directions To The Student:

A. You are the Primary Operator. You are going to perform a boron change calculation.

B. The following information is provided to you:

1. Plant is in Mode 3.
2. The RCS is 500°F and 2235 psig.
3. Pressurizer level is 25%.
4. The crew is making preparations to go critical per OS1000.07.
5. RCS born sample is 1500 ppm.
6. The ECP boron concentration is 1120 ppm.
7. The MPCS Boron/Dilution program is not available.
8. The boron concentration change will take place at current RCS temperature.

Initiating Cue:

US to Primary Operator, **"Primary Operator, using RS1735, calculate the total volume of RMW required to lower RCS boron concentration from the present boron concentration to that required for the ECP."**

Examiner Key

KEY

Form D: Dilution Worksheet

(Sheet 1 of 1)

1. RCS Temp. (T_{AVG}) 500 °F

2. Desired Boron Change: From 1500 ppm To 1120 ppm

3. Gallons Required

3a. Gallons of RMW at 557°F RCS Temperature.

						RMW	
From	1500	ppm	To	1400	ppm	4294	gals.
From	1400	ppm	To	1300	ppm	4613	gals.
From	1300	ppm	To	1200	ppm	4982	gals.
From	1200	ppm	To	1120	ppm	4294	gals.
From		ppm	To		ppm		gals.
					Total	a 18183	gals.

NOTE

If RCS temperature is greater than or equal to 557 °F, then parameter "b" = 1.0

3b. Temperature Correction for T_{AVG} less than 557°F

TDB Figure RE-15 Correction Factor b = 1.06 (Range 1.05 to 1.07)

3c. Corrected Total Gallons Required

(a 18183 gals.) x (b 1.06) = 19274 gallons of RMW.

(Range 19092 to 19456)

Calculated By: _____ Date: _____

Independently Verified By: _____ Date: _____

NEXTera ENERGY SEABROOK

RO ADMIN JOB PERFORMANCE MEASURE- SHUTDOWN MARGIN (MODE 1)
Rev. 1

Student Name: _____ LMS #: _____

Evaluator Name: _____ _____

SAT UNSAT

OFFICIAL NRC EXAMINATION MATERIAL

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PREPARED BY: _____ DATE: _____

APPROVED BY: _____ DATE: _____
TRAINING SUPERVISOR

JOB PERFORMANCE WORKSHEET

1. Task Number and Description

Position RO

SBK 0010100401 Perform Shutdown Margin Calculation

2. Conditions:

1. The plant is in Mode 1, at 100% RTP.
2. Core age is 12000 MWD/MTU
3. RCS boron concentration is 1300 ppm.
4. During performance of OX1410.02, Quarterly Rod Operability Surveillance, rod H-2 dropped to the bottom of the core.
5. Rod H-2 cannot be moved.
6. OS1210.05, Dropped Rod actions are being performed.

3. Standards:

Determine the shutdown margin within ±0.035%ΔK/K.

4. Student Materials:

Copy of Tear Off Sheet.
Copy of RX1707, Shutdown Margin Surveillance Rev 7 Chg.7.
Copy of Primary TDB, Figure RE-8 Total Power Defect vs. Power And Boron Concentration Rev. 01-14-00.
Copy of Primary TDB, Figure RE-18 Shutdown Margin Values, Rev. 01-14-00.
Copy of Primary TDB, Figure RE-19 Control Bank Worth At RIL vs. Power Rev. 01-14-00.
Copy of Core Operating Limit Report SSTR Rev. 121.
Calculator.

5. Limitations On Performance:

Perform all steps. Verbalize all actions to the evaluator.

6. References:

Procedures:

- OS1210.05, Dropped Rod
- RX1707, Shutdown Margin Surveillance

Curves:

- Primary TDB, Figure RE-8 Total Power Defect vs. Power And Boron Concentration
- Primary TDB, Figure RE-18 Shutdown Margin Values
- Primary TDB, Figure RE-19 Control Bank Worth At RIL vs. Power

Technical Specifications/TRM:

- 3.1.3.1 Moveable Control assemblies Group Height
- 3.1.3.6 Control Rod Insertion Limits
- 3.1.1.1 Shutdown Margin >200°F
- Core Operating Limit Report

7. Setting:

Classroom.

8. Safety Considerations:

None.

9. Approximate Completion Time:

15 minutes

10. Directions To The Student:

1. The plant is in Mode 1, at 100% RTP.
2. Core age is 12000 MWD/MTU
3. RCS boron concentration is 1300 ppm.
4. During performance of OX1410.02, Quarterly Rod Operability Surveillance, rod H-2 dropped to the bottom of the core.
5. Rod H-2 cannot be moved.
6. OS1210.05, Dropped Rod actions are being performed.

11. Initiating Cue:

US to student (or student's name), **"Perform a shutdown margin calculation per RX1707, Shutdown Margin Surveillance."**

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP	STANDARD	EVALUATION
	* denotes a critical step	* denotes a critical step	SAT UNSAT

NOTE: When the student demonstrates the ability to obtain controlled copies of RX1707, Shutdown Margin Surveillance, Primary TDB, Figure RE-8 Total Power Defect vs. Power And Boron Concentration, Primary TDB, Figure RE-18 Shutdown Margin Values, Primary TDB, Figure RE-19 Control Bank Worth At RIL vs. Power, and Core Operating Limit Report, provide the student with the required documents when requested.

1.	P	Start time _____	Initiating cue read		

CUE: If the student requests a Peer Check at any time during the JPM respond, **"No one is available to Peer Check your actions. Please continue with the task."**

2.	P	Refer to section 4.4 of RX1707 Shutdown Margin Surveillance to complete Form C Shutdown Margin Determination Immovable, Untrippable, Or Dropped Rod(s) Part 1.	Refers to section 4.4 of RX1707 Shutdown Margin Surveillance to complete Form C Shutdown Margin Determination Immovable, Untrippable, Or Dropped Rod(s) Part 1.	_____	_____

NOTE: See key for all values that student should enter on Form D.

3.	P	Determine number of immoveable,untrippable or dropped rod(s) and enter on Form C block (a).	Determines number of immoveable,untrippable or dropped rod(s) and enters on Form C block (a).	_____	_____
4.	P	Determine maximum worth of individual immoveable,untrippable or dropped rod(s) using Primary TDB figure RE-18 and enter on Form C block (b).	Determines maximum worth of individual immoveable,untrippable or dropped rod(s) using Primary TDB figure RE-18 and enters on Form C block (b).	_____	_____
5.	P	Calculate total unavailable rod worth by multiplying (a) by (b) and enter on Form C block (c).	Calculates total unavailable rod worth by multiplying (a) by (b) and enters on Form C block (c).	_____	_____

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT UNSAT

CUE: If student requests boron concentration, reply, **"RCS boron concentration is 1300 ppm."**

6.	P	Determine total power defect for current relative power using Primary TDB figure RE-8 and enter on Form C block (d).	Determines total power defect for current relative power using Primary TDB figure RE-8 and enters on Form C block (d).	_____	_____
7.	P	Determine worth of the control banks inserted to the rod insertion limit for current relative power using Primary TDB figure RE-19 and enter on Form C block (e).	Determines worth of the control banks inserted to the rod insertion limit for current relative power using Primary TDB figure RE-19 and enters on Form C block (e).	_____	_____
8.	P	Determine total control and shutdown rod worth minus stuck rod and less 10% uncertainty using Primary TDB figure RE-18 and enter on Form C block (f).	Determines total control and shutdown rod worth minus stuck rod and less 10% uncertainty using Primary TDB figure RE-18 and enters on Form C block (f).	_____	_____
*9.	P	Calculate shutdown margin: [f - (c + d + e)] / 1,000.	Calculates shutdown margin: [f - (c + d + e)] / 1,000.	_____	_____

CUE: If student asks for independent verification, provide the following cue, **"Form C Part 1 has been independently verifed. Please continue."**

CUE: If student fails to report the shutdown margin adequacy determination, provide the cue, **"Is shutdown margin adequate?"**

*10.	P	Notify SM/US if the shutdown margin is less than the limit specified in the Core Operating Limits Report.	Notifies SM/US if the shutdown margin is less than the limit specified in the Core Operating Limits Report.	_____	_____

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP	STANDARD	EVALUATION
	* denotes a critical step	* denotes a critical step	SAT UNSAT
CUE:	**"The JPM is complete."**		
11.	Stop time _____ Evaluator calculates time to complete task	Time to complete task ≤ 15 minutes	
12.	Obtain from student: Tear Off sheets and any other training materials used in performance of this JPM.		_____ _____

PERFORMANCE SUMMARY

Provide comments on unsatisfactory performance of an element/step or for any deviation from performance as stated. Record interruptions in performance such as retraining, shift change, and processing of procedure changes. Recommend remedial training, if necessary.

TEAR OFF SHEET

Directions To The Student:

1. The plant is in Mode 1, at 100% RTP.
2. Core age is 12000 MWD/MTU
3. RCS boron concentration is 1300 ppm.
4. During performance of OX1410.02, Quarterly Rod Operability Surveillance, rod H-2 dropped to the bottom of the core.
5. Rod H-2 cannot be moved.
6. OS1210.05, Dropped Rod actions are being performed.

Initiating Cue:

US to student (or student's name), **"Perform a shutdown margin calculation per RX1707, Shutdown Margin Surveillance."**

NEXTera ENERGY SEABROOK

RO ADMIN JOB PERFORMANCE MEASURE- COP Exhaust RM Setpoints
Rev. 1

Student Name: _____ LMS #: _____

Evaluator Name: _____ _____

SAT UNSAT

OFFICIAL NRC EXAMINATION MATERIAL

ACCESS IS LIMITED TO NRC EXAMINERS AND PERSONNEL THAT FULLY UNDERSTAND AND HAVE SIGNED ON TO THE 2010 NRC INITIAL EXAM SECURITY AGREEMENT.

PREPARED BY: _____ DATE: _____

APPROVED BY: _____ DATE: _____
TRAINING SUPERVISOR

JOB PERFORMANCE WORKSHEET

1.0 Task Number and Description:

Position: RO/SRO
Task: 0290100401 Adjust Containment Pressure Using the COP System.
0290100401 Start-Up the COP System.
0710101302 Authorize Release of Gaseous Waste.

2.0 Conditions:

A. Plant is in Mode 1.
B. The previous shift has made preparations to place COP in service per OS1023.69 section 4.2.

3.0 Standards:

Verify COP Exhaust Radiation Monitors' Alert and Alarm setpoints prior to gaseous effluent release per OS1023.69 section 4.2.

4.0 Student Materials:

Copy of the Tear-Off sheet.
Copy of CS0917.02C GEW Containment Purge Release Permit
Copy of OS1023.69, Containment On-Line Purge System Operation

5.0 Limitations On Performance:

Perform all steps. Verbalize all actions to the evaluator.

6.0 References:

Procedures:

- CS0917.02, Gaseous Effluent Releases, Rev. 10, Chg. 12.
- OS1023.69, Containment On-Line Purge System Operation, Rev. 11.
- CP-4.1 Effluent Surveillance Program
- MA-4.6, RDMS Data Base Item Control

Sys	KA	Description	Value RO/SRO
Generic	A2.3.11	Ability to Control Radiation Releases	2.7/3.2

7.0 Setting:

Classroom

8.0 Safety Considerations:

None

9.0 Approximate Completion Time:

20 minutes

10.0 Directions To The Student(s):

A. You are the Primary Operator. You are going to verify the alert and alarm setpoints of the COP Exhaust Radiation Monitors prior to placing COP in service.

B. The following information is provided to you:

1. Plant is in Mode 1.
2. The previous shift has made preparations to place COP in service per OS1023.69, section 4.2.

C. Perform the task per OS1023.69 Containment On-Line Purge Operation, section 4.2.

D. Prerequisites for performance of OS1023.69 section 4.2 have been completed.

E. CS0917.02C, release permit, has already been approved.

11.0 Initiating Cue:

US to Primary Operator, **"Primary Operator, after reviewing the Gaseous Effluent Waste Containment Purge Release Permit, continue with preparations to place COP in service per OS1023.69 step 4.2.**

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP	STANDARD	EVALUATION
	* denotes a critical step	* denotes a critical step	SAT UNSAT
1.	P Start time	Initiating cue read.	
CUE:	If the student requests a Peer Check at any time during the JPM respond: **"No one is available to peer check your actions. Please continue with the task."**		
2.	P RECORDS the expected radiation monitor response from the Gaseous Effluent Waste (GEW) Containment Purge Release Permit, CH-L524.	RECORDS the value 9.1 as Expected Radiation Monitor Response per step 4.2.3.	_____ _____
3.	P DETERMINES the New COP Monitor Background Levels (CPM)	Per step 4.2.4, ADDs the Expected Radiation Monitor Response value to the Current COP radiation monitor background levels recorded in step 4.2.2	
		• RECORDS 2.08E+01 (+/- 4 CPM) for 1-RM-6527A-1	_____ _____
		• RECORDS 2.05E+01 (+/- 4 CPM) for 1-RM-6527A-2	_____ _____
		• RECORDS 2.03E+01 (+/- 4 CPM) for 1-RM-6527B-1	_____ _____
		• RECORDS 1.96E+01 (+/- 4 CPM) for 1-RM-6527B-2	_____ _____

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP	STANDARD	EVALUATION SAT	UNSAT
	* denotes a critical step	* denotes a critical step		

CUE: After student determines that it is necessary to make RDMS data base changes, **"Step 4.2.6.1 will be performed by the BOP operator and is in progress. Continue with step 4.2.6.2"**

NOTE: If the student determines that it is **not** necessary to perform step 4.2.6, then the JPM is complete and the JPM is a failure.

*4.	P	DETERMINES the Need to Make RDMS Data Base Changes.	*DETERMINES that it is necessary to perform step 4.2.6	_____	_____
*5.	P	CALCULATES the New ALERT ALARM setpoint for each Channel.	Per step 4.2.6.2, multiplies the New COP Monitor Background Level recorded in step 4.2.4 by 1.5		
			• *RECORDS 3.12E+01 (+/- 6 CPM) for 1-RM-6527A-1	_____	_____
			• *RECORDS 3.08E+01 (+/- 6 CPM) for 1-RM-6527A-2	_____	_____
			• *RECORDS 3.05E+01 (+/- 6 CPM) for 1-RM-6527B-1	_____	_____
			• *RECORDS 2.94E+01 (+/- 6 CPM) for 1-RM-6527B-2	_____	_____

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP	STANDARD	EVALUATION SAT	UNSAT
	* denotes a critical step	* denotes a critical step		
*6.	P	CALCULATES the New HIGH ALARM setpoint for each Channel.	Per step 4.2.6.3, multiplies the New COP Monitor Background Level recorded in step 4.2.4 by 1.95	
			• *RECORDS 4.06E+01 (+/- 8 CPM) for 1-RM-6527A-1	_____ _____
			• *RECORDS 3.99E+01 (+/- 8 CPM) for 1-RM-6527A-2	_____ _____
			• *RECORDS 3.96E+01 (+/- 8 CPM) for 1-RM-6527B-1	_____ _____
			• *RECORDS 3.82E+01 (+/- 8 CPM) for 1-RM-6527B-2	_____ _____
CUE:	**"The JPM is complete."**			
7.		Stop time Evaluator calculates time to complete task.	Time to complete the task ≤ 30 minutes.	

PERFORMANCE SUMMARY

Provide comments on unsatisfactory performance of an element/step or for deviation from performance as stated. Record interruptions in performance such as retraining, shift change, and processing of procedure changes. Recommend remedial training, if necessary.

TEAR-OFF SHEET

Directions to the Student:

A. You are the Primary Operator. You are going to verify the alert and alarm setpoints of the COP Exhaust Radiation Monitors prior to placing COP in service.

B. The following information is provided to you:

1. The plant is in Mode 1.
2. The previous shift has made preparations to place COP in service per OS1023.69 section 4.2.

C. Perform the task per per OS1023.69 Containment On-Line Purge Operation, section 4.2.

D. Prerequisites for performance of OS1023.69 section 4.2 have been completed.

E. CS0917.02C, release permit, has already been approved.

Initiating Cue:

US to Primary NSO, **"Primary Operator, after reviewing the Gaseous Effluent Waste Containment Purge Release Permit, continue with preparations to place COP in service per OS1023.69 step 4.2.3."**

NEXTera ENERGY SEABROOK

SRO ADMIN JOB PERFORMANCE MEASURE- VERIFY QPTR CALCULATION
Rev. 1

Student Name: _____ LMS #: _____

Evaluator Name: _____ _____

SAT UNSAT

OFFICIAL NRC EXAMINATION MATERIAL

ACCESS IS LIMITED TO NRC EXAMINERS AND PERSONNEL THAT FULLY UNDERSTAND AND HAVE SIGNED ON TO THE 2010 NRC INITIAL EXAM SECURITY AGREEMENT.

PREPARED BY: _____ DATE: _____

APPROVED BY: _____ DATE: _____
TRAINING SUPERVISOR

JOB PERFORMANCE WORKSHEET

1.0 Task Number and Description:

Position: RO

0150200501 Perform A Manual QPTR Calculation

2.0 Conditions:

A Plant is now at 100% power after recovering from a dropped rod at EOL.
B. The main plant computer has been inoperable since yesterday (It was inoperable when the rod dropped).
C. The seven day QPTR surveillance has been performed by an RO.
D. Incore/Excore calibration was performed yesterday (before the rod dropped).

3.0 Standards:

Verify the results of the manual QPTR surveillance per RX1703, QPTR Surveillance.

4.0 Student Materials:

Copy of the Directions Tear-Off Sheet
Calculator
RX1703, QPTR Surveillance, Rev. 7, Chg. 2.
Completed Form A: Quadrant Power Tilt Calculation Sheet

5.0 Limitations on performance:

Simulate/Perform all steps.

6.0 References:

Procedures

RX1703, QPTR Surveillance.
OS1000.05, Power Increase.
ON1251.01, Loss Of Plant Computer.

7.0 Setting:

Classroom

1. Use values listed in RE-17.
2. Give the student the completed copy of Form A: Quadrant Power Tilt Calculation Sheet.

8.0 Safety Considerations:

None

9.0 Approximate Completion Time:

20 minutes

10.0 Directions to the Student(s):

Initial Conditions:

1. Plant is now at 100% power following the recovery of a dropped rod at EOL.
2. The main plant computer has been inoperable since yesterday.
3. The QPTR surveillance has been performed by an RO.

	TOP (A) DETECTORS			
	N41	N42	N43	N44
Detector Current micoamps	184	182	181	179
	BOTTOM (B) DETECTORS			
	N41	N42	N43	N44
Detector Current micoamps	177	197	191	187

11.0 Initiating Cue:

Verify the results of the completed QPTR Surveillance per RX1703. The QPTR alarm surveillance work order has been generated.

Provide your results to me.

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP *denotes a critical step	STANDARD *denotes critical standard	EVALUATION SAT UNSAT
1.	P	Start time _____	Initiating cue read.	
CUE:	If the student requests a Peer Check at any time during the JPM, respond: **"No one is available to peer check your actions. Please continue with the task".**		
NOTE:	For performance of JPM in a classroom setting the student is provided with a copy of RX1703, Quadrant Power Tilt Ratio Surveillance.		
2	P	RECORD the Figure RE-17 revision and the date and time the operable power range currents were taken.	Records today's date and the revision number of the RE-17 curve used	____ ____
NOTE:	Detector current data for upper & lower detectors are provided. Detector Current value units are microamps. Student should be able to determine that all Power Range Detectors are operable when given the detector current data.		
3.	P	VERIFY that the current output from the top (A) and bottom (B) detector of each channel was correctly recorded on Form A, Quadrant Power Tilt Calculation Sheet Row 1.	Verifies outputs.	
			N41 top (A) detector	____ ____
			N42 top (A) detector	____ ____
			N43 top (A) detector	____ ____
			N44 top (A) detector	____ ____
			N41 bottom (B) detector	____ ____
			N42 bottom (B) detector	____ ____
			N43 bottom (B) detector	____ ____
			N44 bottom (B) detector	____ ____

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP *denotes a critical step	STANDARD *denotes critical standard	EVALUATION SAT UNSAT

CUE: If the student asks for independent verification of the values recorded in Row 1 of Form A, cue, evaluator to student, **" Form A Detector currents have been independently verified."**

NOTE: The student is provided with a copy of RE-17.

4. P Using data from Technical Data Book Figure RE-17, VERIFY that the 100% power, 0% AFD detector current, for the top (A) and bottom (B) detector of each channel was recorded correctly on Form A, Quadrant Power Tilt Calculation Sheet Row 2.

   a. From Technical Data Book fig RE-17, Records 100% power, 0% AFD values:

      4 Top (A) Detectors _____ _____

   b. From Technical Data Book fig RE-17, Records 100% power, 0% AFD values:

      4 Bottom (B)Detectors _____ _____

5. P VERIFY that the normalized detector current was calculated correctly by dividing each detector current by its 100% power, 0% AFD current. VERIFY the results from Form A, Quadrant Power Tilt Calculation Sheet Row 3.

D=Discuss P=Perform S=Simulate	ELEMENT/STEP *denotes a critical step	STANDARD *denotes critical standard	EVALUATION SAT	UNSAT
		a. Calculates and verifies Normalized Detector Currents: 4 Top (A) Detectors	_____	_____
		b. Calculates and verifies Normalized Detector Currents: 4 Bottom (B)Detectors	_____	_____
*6. P	VERIFY that the average normalized detector current for the top detectors and for the bottom detectors was calculated correctly. VERIFY the results from Form A, Quadrant Power Tilt Calculation Sheet Row 4.			
		a. Calculates and records average normalized detector currents: Top (A) Detectors	_____	_____
		* Candidate should identify that the calculated normalized detector current for the top detectors is incorrect.		
		b. Calculates and records average normalized detector currents: Bottom (B) Detectors	_____	_____

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP *denotes a critical step	STANDARD *denotes critical standard	EVALUATION SAT UNSAT
*7.	P	VERIFY that the Quadrant Power Tilt Ratio for each detector was calculated correctly by dividing each normalized detector current by its associated average normalized detector current. VERIFY the results from Form A, Quadrant Power Tilt Calculation Sheet.	
		*a. Calculates and records QPTR for each detector: 4 Top (A) Detectors * The student should identify that the calculated QPTR for each top detectors is incorrect.	_____ _____
		*b. Calculates and records QPTR for each detector: 4 Bottom (B)Detectors	_____ _____
*8.	P	VERIFY that the maximum QPTR was circled on Form A Row 5.	Verifies (circled) the maximum power tilt ratio on Form A Row 5. * The student should identify that the calculated maximum QPTR should be from top detector N-42. _____ _____

CUE: If the student asks for independent verification of the Form A calculations, cue, evaluator to student, **" Form A calculations have been independently verified."**

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP *denotes a critical step	STANDARD *denotes critical standard	EVALUATION SAT UNSAT
*9.	P	Determine if LCO3.2.4 is/is not met based on maximum QPTR.	
		*a. Identify in step 6 of Form A that LCO 3.2.4 is/is not met	____ ____
		*b. In Row 6 Form A circle YES/NO	____ ____
		* The student should identify that the QPTR value for channel N-41 and N-42 top detectors exceed 1.02 and that Tech. Spec. 3.2.4 LCO is NOT met.	

NOTE: See answer key for the correct item to circle in row 6 on Form A

CUE: "The JPM is complete."

10.	Stop time_____ Evaluator calculates the time to complete the task.	Time to complete the task ≤ 20 minutes.
11.	Obtain from student: Tear Off Sheets and any other training materials used in the performance of the JPM	

PERFORMANCE SUMMARY

Provide comments on unsatisfactory performance of an element/step or for deviation from performance as stated. Record interruptions in performance such as retraining, shift change, and processing of procedure changes. Recommend remedial training, if necessary.

TEAR-OFF SHEET FOR JPM
2009 RO-ADMIN#1

Initial Conditions:

1. Plant is now at 100% power following the recovery of a dropped rod at EOL.
2. The main plant computer has been inoperable since yesterday.
3. The QPTR surveillance has been performed by an RO.

	TOP (A) DETECTORS			
	N41	N42	N43	N44
Detector Current micoamps	184	182	181	179
	BOTTOM (B) DETECTORS			
	N41	N42	N43	N44
Detector Current micoamps	177	197	191	187

Initiating Cue:

Verify the results of the completed QPTR Surveillance. The QPTR alarm surveillance work order has been generated.

Provide your results to me.

NEXTera ENERGY SEABROOK

SRO ADMIN JOB PERFORMANCE MEASURE- VERIFY SHUTDOWN MARGIN (MODE 1)
Rev. 1

Student Name: _____ LMS #: _____

Evaluator Name: _____ _____

SAT UNSAT

OFFICIAL NRC EXAMINATION MATERIAL

ACCESS IS LIMITED TO NRC EXAMINERS AND PERSONNEL THAT FULLY UNDERSTAND AND HAVE SIGNED ON TO THE 2010 NRC INITIAL EXAM SECURITY AGREEMENT.

PREPARED BY: _____ DATE: _____

APPROVED BY: _____ DATE: _____
TRAINING SUPERVISOR

1. Task Number and Description

Position RO

SBK 0010100401 Perform Shutdown Margin Calculation

2. Conditions:

1. The plant is in Mode 1 at 100% RTP and stable.
2. Core age is 12000 MWD/MTU
3. RCS boron concentration is 1300 ppm.
4. During performance of OX1410.02, Quarterly Rod Operability Surveillance, rod H-2 dropped to the bottom of the core.
5. Rod H-2 cannot be moved.
6. OS1210.05, Dropped Rod actions are being performed.
7. The RO has completed RX1707, "Shutdown Margin Surveillance.

3. Standards:

Verify that results of the shutdown margin calculation are correct within ±0.035%ΔK/K.

4. Student Materials:

Copy of Tear Off Sheet.
Copy of RX1707, Shutdown Margin Surveillance Rev 7 Chg.7.
Copy of Primary TDB, Figure RE-8 Total Power Defect vs. Power And Boron Concentration Rev. 01-14-00.
Copy of Primary TDB, Figure RE-18 Shutdown Margin Values, Rev. 01-14-00.
Copy of Primary TDB, Figure RE-19 Control Bank Worth At RIL vs. Power Rev. 01-14-00.
Copy of Core Operating Limit Report SSTR Rev. 121.
Calculator.
Copy of completed Form C: Shutdown Margin Determination Immovable, Untrippable or Dropped Rod.

5. Limitations On Performance:

Perform all steps. Verbalize all actions to the evaluator.

6. References:

Procedures:

- OS1210.05, Dropped Rod
- RX1707, Shutdown Margin Surveillance

Curves:

- Primary TDB, Figure RE-8 Total Power Defect vs. Power And Boron Concentration
- Primary TDB, Figure RE-18 Shutdown Margin Values
- Primary TDB, Figure RE-19 Control Bank Worth At RIL vs. Power

Technical Specifications/TRM:

- 3.1.3.1 Moveable Control assemblies Group Height
- 3.1.3.6 Control Rod Insertion Limits
- 3.1.1.1 Shutdown Margin >200°F
- Core Operating Limit Report

7. Setting:

Classroom.

8. Safety Considerations:

None.

9. Approximate Completion Time:

15 minutes

10. Directions To The Student:

A. The following information is provided to you:

1. The plant is in Mode 1 at 100% RTP and stable.
2. Core age is 12000 MWD/MTU
3. RCS boron concentration is 1300 ppm.
4. During performance of OX1410.02, Quarterly Rod Operability Surveillance, rod H-2 dropped to the bottom of the core.
5. Rod H-2 cannot be moved.
6. OS1210.05, Dropped Rod actions are being performed.
7. The RO has completed RX1707, "Shutdown Margin Surveillance.

11. Initiating Cue:

Evaluator to student (or student's name), **"Review the shutdown margin calculation and report your findings."**

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP	STANDARD	EVALUATION
	* denotes a critical step	* denotes a critical step	SAT UNSAT

NOTE: When the student demonstrates the ability to obtain controlled copies of RX1707, Shutdown Margin Surveillance, Primary TDB, Figure RE-8 Total Power Defect vs. Power And Boron Concentration, Primary TDB, Figure RE-18 Shutdown Margin Values, Primary TDB, Figure RE-19 Control Bank Worth At RIL vs. Power, and Core Operating Limit Report, provide the student with the required documents when requested.

1.	P	Start time _____	Initiating cue read		

CUE: If the student requests a Peer Check at any time during the JPM respond, **"No one is available to Peer Check your actions. Please continue with the task."**

2.	P	Refer to section 4.4 of RX1707 Shutdown Margin Surveillance to complete Form C Shutdown Margin Determination Immovable, Untrippable, Or Dropped Rod(s) Part 1.	Refers to section 4.4 of RX1707 Shutdown Margin Surveillance to complete Form C Shutdown Margin Determination Immovable, Untrippable, Or Dropped Rod(s) Part 1.	_____	_____

NOTE: See key for all values that student should enter on Form D.

3.	P	Verify the correct number of immoveable,untrippable or dropped rod(s) were entered on Form C block (a).	Verifies the correct number of immoveable,untrippable or dropped rod(s) were entered on Form C block (a).	_____	_____
4.	P	Verify that the correct value for maximum worth of individual immoveable,untrippable or dropped rod(s) was entered on Form C block (b).	Verifies that the correct value of maximum worth of individual immoveable,untrippable or dropped rod(s) (using Primary TDB figure RE-18) was entered on Form C block (b).	_____	_____
5.	P	Verify that the calculation of total unavailable rod worth was performed correctly and entered on Form C block (c).	Verifies that the calculation of total unavailable rod worth was performed correctly (by multiplying (a) by (b)) and entered on Form C block (c).	_____	_____

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT UNSAT

CUE: If student requests boron concentration, reply, **"RCS boron concentration is 1300 ppm."**

6.	P	Verify that the correct value for total power defect is entered on Form C block (d).	Verifies that the correct value for total power defect for current relative power using Primary TDB figure RE-8 and enters on Form C block (d).	_____	_____
7.	P	Verify that the correct value of "worth of the control banks inserted to the rod insertion limit for current relative power" is entered on Form C block (e).	Verifies that the correct value of "worth of the control banks inserted to the rod insertion limit for current relative power" (using Primary TDB figure RE-19) is entered on Form C block (e).	_____	_____
8.	P	Verify that the correct value of "total control and shutdown rod worth minus stuck rod and less 10% uncertainty" is entered on Form C block (f).	Verifies that the correct value of "total control and shutdown rod worth minus stuck rod and less 10% uncertainty" (using using Primary TDB figure RE-18) is entered on Form C block (f).	_____	_____
*9.	P	Verify that the shutdown margin calculation was performed correctly: [f - (c + d + e)] / 1,000.	Verifies shutdown margin calculation performed correctly: [f - (c + d + e)] / 1,000. * Student should identify that the shutdown margin calculation was NOT performed correctly. Student should provide corrected calculation of shutdown margin. (See answer key for correct answer).	_____	_____

CUE: If student fails to report the shutdown margin adequacy determination, provide the cue, **"Is shutdown margin adequate?"**

10.	P	Notify SM/US if the shutdown margin is less than the limit specified in the Core Operating Limits Report.	Notifies SM/US if the shutdown margin is less than the limit specified in the Core Operating Limits Report.	_____	_____

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT UNSAT
CUE:	**"The JPM is complete."**		
11.	Stop time _____ Evaluator calculates time to complete task	Time to complete task ≤ 15 minutes	
12.	Obtain from student: Tear Off sheets and any other training materials used in performance of this JPM.		_____ _____

PERFORMANCE SUMMARY

Provide comments on unsatisfactory performance of an element/step or for any deviation from performance as stated. Record interruptions in performance such as retraining, shift change, and processing of procedure changes. Recommend remedial training, if necessary.

TEAR OFF SHEET

Directions To The Student:

A. The following information is provided to you:

1. The plant is in Mode 1 at 100% RTP and stable.
2. Core age is 12000 MWD/MTU
3. RCS boron concentration is 1300 ppm.
4. During performance of OX1410.02, Quarterly Rod Operability Surveillance, rod H-2 dropped to the bottom of the core.
5. Rod H-2 cannot be moved.
6. OS1210.05, Dropped Rod actions are being performed.
7. The RO has completed RX1707, "Shutdown Margin Surveillance.

Initiating Cue:

Evaluator to student (or student's name), **"Review the shutdown margin calculation and report your findings."**

SRO ADMIN JOB PERFORMANCE MEASURE-TECHNICAL SPECIFICATION DETERMINATION AND REQUIRED OFF-SITE NOTIFICATIONS

Rev. 1

Student Name: _____ LMS #: _____

Evaluator Name: _____ _____

SAT UNSAT

OFFICIAL NRC EXAMINATION MATERIAL

ACCESS IS LIMITED TO NRC EXAMINERS AND PERSONNEL THAT FULLY UNDERSTAND AND HAVE SIGNED ON TO THE 2010 NRC INITIAL EXAM SECURITY AGREEMENT.

PREPARED BY: _____ DATE: _____

APPROVED BY: _____ DATE: _____

TRAINING SUPERVISOR

JOB PERFORMANCE WORKSHEET

1.0 Task Number and Description:

Position: SRO

2.0 Conditions:

1. The plant is operating at full power.
2. The Shift Manager informs you that Charging Pump, CS-P-2A and Safety Injection Pump, SI-P-6B are both INOPERABLE.

3.0 Standards:

Identify the correct TS determination and identify the required off-site notifications and time periodicities in accordance with the Regulatory Compliance Manual (NARC).

4.0 Student Materials:

Copy of the Tear-Off Sheet
Seabrook Technical Specifications
Regulatory Compliance Manual (NARC)

5.0 Limitations on performance:

Perform all steps. Verbalize all actions to the evaluator.

6.0 References:

Seabrook Technical Specifications
Regulatory Compliance Manual (NARC)
Emergency Response Manual (SSER)
OS1000.06, POWER DECREASE

7.0 Setting:

Classroom

8.0 Safety Considerations:

None.

9.0 Approximate Completion Time:

20 minutes

Note to Evaluator - Obtain Tear-Off Sheets from student following JPM completion (Ops only).

JOB PERFORMANCE WORKSHEET

10.0 Directions to the Student:

The following information is provided to you:

1. The plant is operating at full power.
2. The Shift Manager informs you that Charging Pump, CS-P-2A and Safety Injection Pump, SI-P-6B are both INOPERABLE.

11.0 Initiating Cue: Shift Manager to Work Control Supervisor (or name), **"For the given plant conditions what regulatory notifications are required, if any, and justify your answer."**

Note to Evaluator - Obtain Tear-Off Sheets from student following JPM completion (Ops only).

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP *denotes a critical step	STANDARD *denotes critical standard	EVALUATION SAT UNSAT
1. P	Start time _____	Initiating cue read.	
*2. P	Obtains a copy of Technical Specifications and references applicable TS based on given plant conditions.	* Determines that there is no action statement for two inoperable trains of ECCS (TS 3.5.2) and therefore TS 3.0.3 applies.	_____ _____

NOTE: Continue with this JPM only if the correct TS call was made above, otherwise **CUE** that this JPM is complete.

CUE: SM to WCS, **"Using the Regulatory Compliance Manual (NARC), identify the required offsite notifications and time limits. The required shutdown (TS 3.0.3 action) began at 0200 this morning."**

NOTE: The student may refer to ER-1.1A to confirm there is no E-Plan implication.

NARC ACTIONS Outlined Below

*3.	P	Refer to the IMMEDIATE NOTIFICATION tab and reporting requirements table in the NARC to identify the following:	Refers to the IMMEDIATE NOTIFICATION tab and reporting requirements table in the NARC:	_____ _____

NOTE: If student asks if the shutdown has begun state **"The required shutdown began at 0200."**

		NRC Operations Center - within four hours	* Identifies notification to NRC Operations Center is required within 4 Hrs (Initiation of a TS required Shutdown)	_____ _____

CUE: If student wants to reference the OPMM or NAP-402, inform him it is not necessary.

Note to Evaluator - Obtain Tear-Off Sheets from student following JPM completion (Ops only).

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP *denotes a critical step	STANDARD *denotes critical standard	EVALUATION SAT UNSAT

NOTE: The student may also determine that the following on-site notifications should be made:

	NRC Resident Inspector – ASAP/1 hour	Identifies NRC Resident Inspector – ASAP (when any 4 hour notification or less is reported to the NRC or due to the additional notification section within 1 hour) ____ ____
	OPS./ ASST. OPS. Mgr – ASAP/1 hour	Identifies OPS./ ASST. OPS. Mgr – ASAP (any transient event/major equipment failure or due to the additional notifications section within 1 hour) ____ ____
	Licensing - ASAP	Identifies Regulatory Compliance – ASAP (when any 4 hour notification or less is reported to the NRC) ____ ____
	FPLE Communications – ASAP/1 hour	Identifies FPLE Communications – ASAP (any off-normal condition or due to the additional notifications section within 1 hour) ____ ____

CUE: The JPM is complete.

4.	Stop time Evaluator calculates the time to complete the task.	Start - Stop time is $\leq$ 25 minutes.

Note to Evaluator - Obtain Tear-Off Sheets from student following JPM completion (Ops only).

PERFORMANCE SUMMARY

Provide comments on unsatisfactory performance of an element/step or for deviation from performance as stated. Record interruptions in performance such as retraining, shift change, and processing of procedure changes. Recommend remedial training, if necessary.

Note to Evaluator - Obtain Tear-Off Sheets from student following JPM completion (Ops only).

TEAR-OFF SHEET

Directions to the Student:

The following information is provided to you:

1. The plant is operating at full power.
2. The Shift Manager informs you that Charging Pump, CS-P-2A and Safety Injection Pump, SI-P-6B are both INOPERABLE.

Initiating Cue:

Shift Manager to Work Control Supervisor (or name), **"For the given plant conditions what regulatory notifications are required, if any, and justify your answer."**

Note to Evaluator - Obtain Tear-Off Sheets from student following JPM completion (Ops only).

SRO ADMIN JOB PERFORMANCE MEASURE- EMERGENCY DOSE LIMIT EXTENSION
Rev. 1

Student Name: _____ LMS #: _____

Evaluator Name: _____ _____

SAT UNSAT

OFFICIAL NRC EXAMINATION MATERIAL

ACCESS IS LIMITED TO NRC EXAMINERS AND PERSONNEL THAT FULLY UNDERSTAND AND HAVE SIGNED ON TO THE 2010 NRC INITIAL EXAM SECURITY AGREEMENT.

PREPARED BY: _____ DATE: _____

APPROVED BY: _____ DATE: _____
TRAINING SUPERVISOR

JOB PERFORMANCE WORKSHEET

1.0 Task Number and Description:

Position: SRO

SBK 1190402303 Direct Emergency Response as Short Term Emergency Director.

2.0 Conditions:

1) The plant has suffered a large break LOCA.
2) The core has uncovered.
3) The TSC previously dispatched a team to the PAB Mechanical Penetration Area to perform emergency repair work on COP-V-4.
4) One of the workers at COP-V-4 is having severe chest pains.
5) The TSC is dispatching a team to perform life saving activities on the individual.
6) Radiation readings taken at the doorway to the Mechanical Penetration Area are 2 REM/Hr. Dose at COP-V-4 is conservatively estimated at 15 REM/Hr
7) The OSC conservatively estimates 1.5 hours to perform the lifesaving activity.

3.0 Standards:

Authorize an Emergency Dose Limit Extension per ER 4.3, Radiation Protection During Emergency Conditions.

4.0 Student Materials:

Copy of the Directions Tear-Off Sheet
Calculator
ER 4.3, Radiation Protection During Emergency Conditions

5.0 Limitations on performance:

Even if requested no Peer Checks will be provided during the JPM.

6.0 References:

Procedures
ER 4.3, Radiation Protection During Emergency Conditions.

7.0 Setting:

Classroom

8.0 Safety Considerations:

None

9.0 Approximate Completion Time:

20 minutes

10.0 Directions to the Student(s):

Initial Conditions:

1) The plant has suffered a large break LOCA.
2) The core has uncovered.
3) The TSC previously dispatched a team to the PAB Mechanical Penetration Area to perform emergency repair work on COP-V-4.
4) One of the workers at COP-V-4 is having severe chest pains.
5) The TSC is dispatching a team to perform life saving activities on the individual.
6) Radiation readings taken at the doorway to the Mechanical Penetration Area are 2 REM/Hr. Dose at COP-V-4 is conservatively estimated at 15 REM/Hr
7) The OSC conservatively estimates 1.5 hours to perform the lifesaving activity.

11.0 Initiating Cue:

You are the Short Term Emergency Director (STED).

Emergency Dose Limit Extensions have been requested for a three person team to enter the Mechanical Penetration Area to perform lifesaving activities.

Review the Emergency Dose limit Extensions and provide approval if appropriate.

Provide the completed Forms to me.

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP *denotes a critical step		STANDARD *denotes critical standard	EVALUATION SAT	UNSAT
1.	P	Start time _____	Initiating cue read.		

CUE: If the student requests a Peer Check at any time during the JPM, respond: **"No one is available to peer check your actions. Please continue with the task".**

NOTE: Provide the student with the 3 completed Emergency Dose Limit Extension sheets and a copy ER 4.3, Radiation Protection During Emergency Conditions. Students will evaluate and authorize the completed dose extensions.

NOTE: JPM task is approval of a task that is administrative in nature. Student may perform steps in any order, provided that critical tasks are all accomplished.

2	P	ER 4.3, step 5.1.2, 2a: Verifies dose extension for all workers exceeds 4500 mrem/yr (minimum level requiring STED approval)	a	Dose extension for NSO 24000 mrem	_____	_____
			b	Dose extension for Site EMT 24000 mrem	_____	_____
			c	Dose extension for HP Technician 24000 mrem	_____	_____
3	P	ER 4.3, Step 5.1.2, 2b, and Figure 2 Verifies dose extension is 25 rem or less for "Lifesaving" category	a	Dose extension for NSO 24000 mrem	_____	_____
			b	Dose extension for Site EMT 24000 mrem	_____	_____
			c	Dose extension for HP Technician 24000 mrem	_____	_____
4	P	ER 4.3, Step 5.1.2, 2c, and Figure 3 Verifies dose extension is up to 25 rem only for Volunteers fully aware of risks for "Lifesaving" category, and signified by	a	NSO has signed figure 4.	_____	_____

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate		ELEMENT/STEP *denotes a critical step	STANDARD *denotes critical standard	EVALUATION SAT	UNSAT
		employee signature on figure 4.			
			b Site EMT has signed figure 4.	_____	_____
			c HP Technician has signed figure 4.	_____	_____
5	*P	Authorizes Dose Extensions	*a Dose extensions signed.	_____	_____
CUE:		**"The JPM is complete."**			
6.		Stop time_____ Evaluator calculates the time to complete the task.	Time to complete the task ≤ 20 minutes.		
7		Obtain from student: Tear Off Sheets and any other training materials used in the performance of the JPM			

PERFORMANCE SUMMARY

Provide comments on unsatisfactory performance of an element/step or for deviation from performance as stated. Record interruptions in performance such as retraining, shift change, and processing of procedure changes. Recommend remedial training, if necessary.

TEAR-OFF SHEET

Initial Conditions:

1) The plant has suffered a large break LOCA.
2) The core has uncovered.
3) The TSC previously dispatched a team to the PAB Mechanical Penetration Area to perform emergency repair work on COP-V-4.
4) One of the workers at COP-V-4 is having severe chest pains.
5) The TSC is dispatching a team to perform life saving activities on the individual.
6) Radiation readings taken at the doorway to the Mechanical Penetration Area are 2 REM/Hr. Dose at COP-V-4 is conservatively estimated at 15 REM/Hr.
7) The OSC conservatively estimates 1.5 hours to perform the lifesaving activity.

Initiating Cue:

You are the Short Term Emergency Director (STED).

Emergency Dose Limit Extensions have been requested for a three person team to enter the Mechanical Penetration Area to perform lifesaving activities.

Review the Emergency Dose limit Extensions and provide approval if appropriate.

Provide the completed Forms to me.

NEXTera ENERGY SEABROOK

SRO ADMIN JOB PERFORMANCE MEASURE-POST SCENARIO EMERGENCY PLAN CLASSIFICATION AND NOTIFICATION
Rev. 1

Student Name: _____ LMS #: _____

Evaluator Name: _____ _____

SAT UNSAT

OFFICIAL NRC EXAMINATION MATERIAL

ACCESS IS LIMITED TO NRC EXAMINERS AND PERSONNEL THAT FULLY UNDERSTAND AND HAVE SIGNED ON TO THE 2010 NRC INITIAL EXAM SECURITY AGREEMENT.

PREPARED BY: _____ DATE: _____

APPROVED BY: _____ DATE: _____
TRAINING SUPERVISOR

JOB PERFORMANCE WORKSHEET

1.0 Task Number and Description:

Position: SRO

1190402003 Perform required notifications of on-site and off-site personnel for emergency events.

2.0 Conditions:

A. As applicable to associated simulator scenario.

3.0 Standards:

Classify the emergency condition and complete the State Notification Fact Sheet.

4.0 Student Materials:

Copy of the Tear-Off Sheet.
E-Plan folder drawer or copies of the following:
ER-1.1, Classification of Emergencies
ER-1.1A, Emergency Classification Flow Chart
ER-1.2, Emergency Plan Activation

5.0 Limitations On Performance:

Simulate/Perform all steps. Verbalize all actions to the evaluator.

6.0 References:

Procedures:

- RE-1.1, Classification of Emergencies
- ER-1.2, Emergency Plan Activation

7.0 Setting:

Simulator, post scenario in FREEZE.

Notes To Evaluator

• Because this JPM is done with the simulator in freeze the Control Board clock cannot be used to track time. The digital clock on the Communications Console or a wristwatch must be used. There is a reminder cue in the body of the JPM.

8.0 Safety Considerations:

Note to Evaluator - Obtain Tear Off Sheets from student following JPM completion (Ops only).

None

9.0 Approximate Completion Time:

30 minutes

10.0 Directions To The Student(s):

A. You are the Work Control Supervisor.

B. The following information is provided to you:

1) The plant was initially in Mode 1.

C. The evaluator will act as the Shift Manager and provide the cues and communications for this JPM. Do you have any questions?

11.0 Initiating Cue:

Shift Manager to Work Control Supervisor, **"Work Control Supervisor, classify the Emergency Condition based on the most severe condition experienced during the scenario and complete the State Notification Fact Sheet."**

Note to Evaluator - Obtain Tear Off Sheets from student following JPM completion (Ops only).

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP	STANDARD	EVALUATION
	* denotes a critical step	* denotes a critical step	SAT UNSAT
1.	P Start time	Initiating cue read.	
* 2. Performs ER-1.1 Section 5.1 Emergency Classification for Post Scenario Evaluation			
NOTE: ER-1.1, Step 2, Dose Projection is not applicable.			
	P Review applicable forms: ER-1.1A: Emergency Initiating Condition Matrix Modes 1, 2, 3 and 4. ER-1.1C, Fission Product Barrier Degradation Matrix Modes 1, 2, 3 and 4. ER-1.1B, Emergency Initiating Condition Matrix, Modes 5, 6, and Defueled	Reviews applicable forms.	____ ____
	P Circle the potential emergency initiating condition(s) on each form.	Circles the potential emergency initiating condition.	____ ____
	P For category A, E, H, S and C events, refer to initiating condition EAL(s) in Figure 1 and verify that the EAL is met or the intent is met.	Verifies that the EAL is met or the intent is met.	____ ____
	P Identify the most severe (highest) emergency classification for which the EAL(s) is met or the intent of the initiating condition is met.	*Identifies the most severe (highest) emergency classification.	____ ____
	P If an emergency classification is warranted, immediately implement Station Emergency Response Procedure ER 1.2, Emergency Plan Activation.	Implements procedure ER-1.2.	____ ____

Note to Evaluator - Obtain Tear Off Sheets from student following JPM completion (Ops only).

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP	STANDARD	EVALUATION
	* denotes a critical step	* denotes a critical step	SAT UNSAT

NOTE: The student is expected to use the applicable Emergency Plan binder from the drawer.

INSTRUCTOR CUE: DO NOT RESET THE SIMULATOR UNTIL THE CANDIDATE HAS AQUIRED THE DATA TO DETERMINE THE E-PLAN CLASSIFICATION!

CUE: If the sim is in freeze, when the student looks at the MCB clock, inform them that **"The MCB clock is not running. Please use the Communications Console clock or your wristwatch to determine the time."**

*3.	P	Acquires applicable binder.	Acquires binder.	_____	_____

NOTE: Expected emergency classification is identified at the end of each simulator exam scenario description.

CUE: Shift Manager to Work Control Supervisor, "There is no Code Yellow condition imminent or in progress".

	P	Determine if a Code Yellow condition exists.	* Determines if a Code Yellow condition exists.	_____ _____
	P	Declare emergency via a crew update.	*Declares emergency and records time of update.	_____ _____

Time of Declaration_____ When student performs the update.

EVALUATOR CUE: Ask the candidate if they still need the simulator for data for this JPM. **If not** then direct the simulator operator to reset the simulator.

*4.	P	Complete ER-2.0B, State Notification Fact Sheet. • Block 1-Leave Blank	Completes ER-2.0B: • Block 1- Leaves blank.	_____ _____

CUE: If asked, STED to WCS, **"Time of declaration was _____ based on your update."**

Note to Evaluator - Obtain Tear Off Sheets from student following JPM completion (Ops only).

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP	STANDARD	EVALUATION SAT	UNSAT
	* denotes a critical step	* denotes a critical step		
	• Block 2- Check (applicable emergency plan classification).	*• Block 2- Checks "Declared" and checks (applicable emergency plan classification) and enters time declared.	____	____
	• Block 3- Enter emergency initiating condition.	*• Enters appropriate initiating condition.	____	____
	• Block 4- Use applicable protective action recommendations.	*• Checks applicable PARS.	____	____

NOTE: The candidate should determine if there has been a release based upon scenario conditions.

	• Determines if a release has occurred.	* • Block 5-checks a release has/has not occurred.	____	____

NOTE: When student presents form for authorization: **Make no comments of any sort on the information recorded. Evaluator should sign form as STED**

	• Block 6-Self explanatory.	• Block 6- STED authorizes by signing and dating the form.	____	____

Time State Notification Fact Sheet completed_____.

		*Time State Notification Fact Sheet Completed – Time of Declaration = _____ (Must be <15 minutes)	____	____

CUE: "The JPM is complete."

5.	Stop time	Time to complete the task ≤ 30 minutes.	

Note to Evaluator - Obtain Tear Off Sheets from student following JPM completion (Ops only).

PERFORMANCE SUMMARY

Provide comments on unsatisfactory performance of an element/step or for deviation from performance as stated. Record interruptions in performance such as retraining, shift change, and processing of procedure changes. Recommend remedial training, if necessary.

Note to Evaluator - Obtain Tear Off Sheets from student following JPM completion (Ops only).

TEAR-OFF SHEET

Directions to the Student:

Evaluator gives Tear-Off sheet to the student.

A. You are the Work Control Supervisor. You are going to activate the emergency plan based on the following information.

B. The following information is provided to you:

1) The plan was initially in Mode 1.

C. The evaluator will act as the Shift Manager and provide the cues and communications for this JPM. Do you have any questions?

Initiating Cue:

Shift Manager to Work Control Supervisor, **"Work Control Supervisor, classify the Emergency Condition based on the most severe condition experienced during the scenario, and complete the State Notification Fact Sheet."**

Note to Evaluator - Obtain Tear Off Sheets from student following JPM completion (Ops only).

SRO ADMIN JPM

POST SCENARIO EMERGENCY PLAN CLASSIFICATION AND NOTIFICATION

ANSWER KEY: SIMULATOR EXAM #1

Simulator Exam #1
Answer Key Sheet 1 of 3

EMERGENCY INITIATING CONDITION MATRIX
Modes 1, 2, 3 and 4

	UNUSUAL EVENT		ALERT		SITE AREA EMERGENCY		GENERAL EMERGENCY	
Category A - Abnormal Rad Levels/Radiological Effluent								
AU1	Any UNPLANNED release of gaseous or liquid radioactivity to the environment > 2 times the ODCM limits for ≥ 60 minutes *Op. Modes: All*	AA1	Any UNPLANNED release of gaseous or liquid radioactivity to the environment > 200 times the ODCM limits for ≥ 15 minutes *Op. Modes: All*	AS1	Actual or projected offsite dose > 100 mRem TEDE or 500 mRem Thyroid CDE *Op. Modes: All*	AG1	Actual or projected offsite dose > 1,000 mRem TEDE or 5,000 mRem Thyroid CDE *Op. Modes: All*
		AA2	Damage to irradiated fuel or loss of water level that has or will result in the uncovering of irradiated fuel outside the reactor vessel *Op. Modes: All*				
AU2	Unexpected increase in plant radiation *Op. Modes: All*	AA3	Release of radioactive material or increases in radiation levels within the facility that impedes operation of systems required to maintain safe operations or to establish or maintain cold shutdown *Op. Modes: All*				
Category E - Events Related to ISFSI Malfunction								
EU1	Damage to a loaded cask CONFINEMENT BOUNDARY *Op. Mode: All*							
Category H - Hazards and Other Conditions Affecting Plant Safety								
HU1	Natural and destructive phenomena affecting the PROTECTED AREA *Op. Modes: All*	HA1	Natural and destructive phenomena affecting the plant VITAL AREA *Op. Modes: All*					
HU2	FIRE within PROTECTED AREA boundary not extinguished within 15 minutes of detection *Op. Modes: All*	HA2	FIRE or EXPLOSION affecting the operability of plant safety systems required to establish or maintain safe shutdown *Op. Modes: All*					
HU3	Release of toxic, corrosive, asphyxiant or flammable gases deemed detrimental to normal operation of the plant *Op. Modes: All*	HA3	Release of a toxic, corrosive, asphyxiant or flammable gas within or contiguous to a VITAL AREA affecting equipment required to maintain safe operations, or establish or maintain safe shutdown *Op. Modes: All*					
HU4	Confirmed security event which indicates a potential degradation in the level of safety of the plant *Op. Modes: All*	HA4	Confirmed security event in a plant PROTECTED AREA *Op. Modes: All*					
		HA8	Notification of HOSTILE ACTION within the Owner Controlled Area *Op. Modes: All*	HS4	Notification of HOSTILE ACTION within the PROTECTED AREA *Op. Modes: All*	HG1	Security event resulting in loss of physical control of the facility *Op. Modes: All*
		HA7	Notification of an airborne attack threat *Op. Modes: All*				
		HA5	Control Room evacuation has been initiated *Op. Modes: All*	HS2	Control Room evacuation has been initiated and plant control cannot be established *Op. Modes: All*		
HU6	Other conditions existing which in the judgment of the STED/SED warrant declaration of an Unusual Event *Op. Modes: All*	HA6	Other conditions existing which in the judgment of the STED/SED warrant declaration of an Alert *Op. Modes: All*	HS3	Other conditions existing which in the judgment of the STED/SED warrant declaration of Site Area Emergency *Op. Modes: All*	HG2	Other conditions existing which in the judgment of the STED/SED warrant declaration of General Emergency *Op. Modes: All*
Category S - System Malfunction								
SU1	Loss of all offsite power to AC emergency buses for > 15 minutes *Op. Modes: 1, 2, 3, 4*	SA5	Power to AC emergency buses reduced to a single power source for > 15 minutes such that any additional single failure would result in station blackout *Op. Modes: 1, 2, 3, 4*	SS1	Loss of both AC emergency buses for > 15 minutes *Op. Modes: 1, 2, 3, 4*	SG1	Prolonged loss of both AC emergency buses *Op. Modes: 1, 2, 3, 4*
		SA2	ATWS and manual reactor shutdown from the MCB was successful *Op. Modes: 1, 2, 3*	SS2	ATWS and manual reactor shutdown from the MCB was NOT successful *Op. Modes: 1, 2*	SG2	ATWS and all manual actions to shutdown the reactor were NOT successful, AND extreme challenge to Core Cooling or Heat Sink *Op. Modes: 1, 2*
SU2	Inability to reach required shutdown within Technical Specification limits *Op. Modes: 1, 2, 3, 4*			SS3	Loss of all vital DC power for > 15 minutes *Op. Modes: 1, 2, 3, 4*		
SU3	UNPLANNED loss of most or all safety system annunciation or indication in the Control Room for > 15 minutes *Op. Modes: 1, 2, 3, 4*	SA4	UNPLANNED loss of most or all safety system annunciation or indication in Control Room with either (1) a SIGNIFICANT TRANSIENT in progress, or (2) compensatory indicators are unavailable *Op. Modes: 1, 2, 3, 4*	SS6	Inability to monitor a SIGNIFICANT TRANSIENT in progress *Op. Modes: 1, 2, 3, 4*		
SU4	Fuel clad degradation *Op. Modes: 1, 2, 3, 4*						
SU5	RCS leakage *Op. Modes: 1, 2, 3, 4*						
SU6	UNPLANNED loss of all onsite or offsite communications capabilities *Op. Modes: 1, 2, 3, 4*						
SU8	Inadvertent criticality *Op Modes: 3, 4*						

Modes 1, 2, 3 and 4

Simulator Exam # 1
Sheet 3 of 3

Seabrook Station State Notification Fact Sheet

Time Notification Initiated: NH _____ MA _____

Block 1: This is: _____ _____ at Seabrook Station.
Name Title

Time when Candidate make crew update announcement

Block 2:

Time Declared:		OR	Time Terminated:
_____	[✓] Unusual Event [ ] Alert [ ] Site Area Emergency [ ] General Emergency		_____

Block 3: The emergency initiating condition is SU5.

Block 4: We recommend the following protective actions:

[✓] None [ ] As follows

New Hampshire

ERPA	Town	Shelter	Evacuate
A.	Seabrook	[ ]	[ ]
	Hampton Falls	[ ]	[ ]
C.	Kensington	[ ]	[ ]
	S. Hampton	[ ]	[ ]
D.	Hampton	[ ]	[ ]
	N. Hampton	[ ]	[ ]
F.	Brentwood	[ ]	[ ]
	E. Kingston	[ ]	[ ]
	Exeter	[ ]	[ ]
	Newfields	[ ]	[ ]
	Newton	[ ]	[ ]
	Kingston	[ ]	[ ]
G.	Greenland	[ ]	[ ]
	Stratham	[ ]	[ ]
	Rye	[ ]	[ ]
	New Castle	[ ]	[ ]
	Portsmouth	[ ]	[ ]

Massachusetts

ERPA	Town	Shelter	Evacuate
B.	Amesbury	[ ]	[ ]
	Salisbury	[ ]	[ ]
E.	Merrimac	[ ]	[ ]
	Newburyport	[ ]	[ ]
	Newbury	[ ]	[ ]
	West Newbury	[ ]	[ ]

Beaches

Evacuate
[ ] Seabrook Beach
[ ] Hampton Beach

Close
[ ] Parker River National Wildlife Refuge
[ ] Plum Island Beach
[ ] Salisbury Beach

Potassium Iodide (General Emergency only)
[ ] Implement KI plans for the general public

Block 5: A radiological release
[✓] Has not occurred
[ ] Has occurred and is continuing
[ ] Occurred but has been terminated

Block 6: Authorized by: _____ _____ _____
STED / SED / RM Date Time

Block 7: Acknowledge receipt of this message with your name.

New Hampshire: _____ Massachusetts: _____
Name of Dispatcher Name of Dispatcher

SRO ADMIN JPM

POST SCENARIO EMERGENCY PLAN CLASSIFICATION AND NOTIFICATION

ANSWER KEY: SIMULATOR EXAM #2

Simulator Exam #2
Sheet 1 of 3

EMERGENCY INITIATING CONDITION MATRIX
Modes 1, 2, 3 and 4

UNUSUAL EVENT		ALERT		SITE AREA EMERGENCY		GENERAL EMERGENCY	
Category A - Abnormal Rad Levels/Radiological Effluent							
AU1	Any UNPLANNED release of gaseous or liquid radioactivity to the environment > 2 times the ODCM limits for ≥ 60 minutes *Op. Modes: All*	AA1 →	Any UNPLANNED release of gaseous or liquid radioactivity to the environment > 200 times the ODCM limits for ≥ 15 minutes *Op. Modes: All*	AS1 →	Actual or projected offsite dose > 100 mRem TEDE or 500 mRem Thyroid CDE *Op. Modes: All*	AG1 →	Actual or projected offsite dose > 1,000 mRem TEDE or 5,000 mRem Thyroid CDE *Op. Modes: All*
		AA2	Damage to irradiated fuel or loss of water level that has or will result in the uncovering of irradiated fuel outside the reactor vessel *Op. Modes: All*				
AU2	Unexpected increase in plant radiation *Op. Modes: All*	AA3 →	Release of radioactive material or increases in radiation levels within the facility that impedes operation of systems required to maintain safe operations or to establish or maintain cold shutdown *Op. Modes: All*				
Category E - Events Related to ISFSI Malfunction							
E-HU1	Damage to a loaded cask CONFINEMENT BOUNDARY *Op. Mode: All*						
Category H - Hazards and Other Conditions Affecting Plant Safety							
HU1	Natural and destructive phenomena affecting the PROTECTED AREA *Op. Modes: All*	HA1 →	Natural and destructive phenomena affecting the plant VITAL AREA *Op. Modes: All*				
HU2	FIRE within PROTECTED AREA boundary not extinguished within 15 minutes of detection *Op. Modes: All*	HA2 →	FIRE or EXPLOSION affecting the operability of plant safety systems required to establish or maintain safe shutdown *Op. Modes: All*				
HU3	Release of toxic, corrosive, asphyxiant or flammable gases deemed detrimental to normal operation of the plant *Op. Modes: All*	HA3 →	Release of a toxic, corrosive, asphyxiant or flammable gas within or contiguous to a VITAL AREA affecting equipment required to maintain safe operations, or establish or maintain safe shutdown *Op. Modes: All*				
HU4	Confirmed security event which indicates a potential degradation in the level of safety of the plant *Op. Modes: All*	HA4 →	Confirmed security event in a plant PROTECTED AREA *Op. Modes: All*				
		HA8	Notification of HOSTILE ACTION within the Owner Controlled Area *Op. Modes: All*	HS4 →	Notification of HOSTILE ACTION within the PROTECTED AREA *Op. Modes: All*	HG1 →	Security event resulting in loss of physical control of the facility *Op. Modes: All*
		HA7	Notification of an airborne attack threat *Op. Modes: All*				
		HA5	Control Room evacuation has been initiated *Op. Modes: All*	HS2 →	Control Room evacuation has been initiated and plant control cannot be established *Op. Modes: All*		
HU5	Other conditions existing which in the judgment of the STED/SED warrant declaration of an Unusual Event *Op. Modes: All*	HA6 →	Other conditions existing which in the judgment of the STED/SED warrant declaration of an Alert *Op. Modes: All*	HS3 →	Other conditions existing which in the judgment of the STED/SED warrant declaration of Site Area Emergency *Op. Modes: All*	HG2 →	Other conditions existing which in the judgment of the STED/SED warrant declaration of General Emergency *Op. Modes: All*
Category S - System Malfunction							
SU1	Loss of all offsite power to AC emergency buses for > 15 minutes *Op. Modes: 1, 2, 3, 4*	SA5 →	Power to AC emergency buses reduced to a single power source for > 15 minutes such that any additional single failure would result in station blackout *Op. Modes: 1, 2, 3, 4*	SS1 →	Loss of both AC emergency buses for > 15 minutes *Op. Modes: 1, 2, 3, 4*	SG1 →	Prolonged loss of both AC emergency buses *Op. Modes: 1, 2, 3, 4*
		SA2	ATWS and manual reactor shutdown from the MCB was successful *Op. Modes: 1, 2, 3*	SS2 →	ATWS and manual reactor shutdown from the MCB was NOT successful *Op. Modes: 1, 2*	SG2 →	ATWS and all manual actions to shutdown the reactor were NOT successful, AND extreme challenge to Core Cooling or Heat Sink *Op. Modes: 1, 2*
SU2	Inability to reach required shutdown within Technical Specification limits *Op. Modes: 1, 2, 3, 4*			SS3	Loss of all vital DC power for > 15 minutes *Op. Modes: 1, 2, 3, 4*		
SU3	UNPLANNED loss of most or all safety system annunciation or indication in the Control Room for > 15 minutes *Op. Modes: 1, 2, 3, 4*	SA4 →	UNPLANNED loss of most or all safety system annunciation or indication in Control Room with either (1) a SIGNIFICANT TRANSIENT in progress, or (2) compensatory indicators are unavailable *Op. Modes: 1, 2, 3, 4*	SS6 →	Inability to monitor a SIGNIFICANT TRANSIENT in progress *Op. Modes: 1, 2, 3, 4*		
SU4	Fuel clad degradation *Op. Modes: 1, 2, 3, 4*						
SU5	RCS leakage *Op. Modes: 1, 2, 3, 4*						
SU6	UNPLANNED loss of all onsite or offsite communications capabilities *Op. Modes: 1, 2, 3, 4*						
SU8	Inadvertent criticality *Op Modes: 3, 4*						

Modes 1, 2, 3 and 4

Simulator Exam #2
Sheet 2 of 3

Figure 1
Initiating Conditions and Emergency Action Levels

SYSTEM MALFUNCTION

SS2

Initiating Condition -- **SITE AREA EMERGENCY**

ATWS and manual reactor shutdown from the MCB was NOT successful

Operating Mode Applicability: 1 and 2

Emergency Action Levels:

1. An automatic reactor trip signal did NOT result in neutron flux < 5%.

AND

2. Manual action(s) taken at the MCB did NOT result in neutron flux < 5%.

NOTE

Manual action is considered "not successful" if action away from the Main Control Board (MCB) is required to shutdown the reactor.

Simulator Exam #3
Sheet 3 of 3

Seabrook Station State Notification Fact Sheet

me when
ew update
nouncement
as made.

Time Notification Initiated: NH _____ **MA** _____

Block 1: This is: _____ _____ **at Seabrook Station.**
Name **Title**

Block 2:

Time Declared:		OR	Time Terminated:
_____	[ ] Unusual Event [ ] Alert [✓] Site Area Emergency [ ] General Emergency		_____

Block 3: The emergency initiating condition is SS2.

Block 4: We recommend the following protective actions:

[✓] None [ ] As follows

New Hampshire

ERPA	Town	Shelter	Evacuate
A.	Seabrook	[ ]	[ ]
	Hampton Falls	[ ]	[ ]
C.	Kensington	[ ]	[ ]
	S. Hampton	[ ]	[ ]
D.	Hampton	[ ]	[ ]
	N. Hampton	[ ]	[ ]
F.	Brentwood	[ ]	[ ]
	E. Kingston	[ ]	[ ]
	Exeter	[ ]	[ ]
	Newfields	[ ]	[ ]
	Newton	[ ]	[ ]
	Kingston	[ ]	[ ]
G.	Greenland	[ ]	[ ]
	Stratham	[ ]	[ ]
	Rye	[ ]	[ ]
	New Castle	[ ]	[ ]
	Portsmouth	[ ]	[ ]

Massachusetts

ERPA	Town	Shelter	Evacuate
B.	Amesbury	[ ]	[ ]
	Salisbury	[ ]	[ ]
E.	Merrimac	[ ]	[ ]
	Newburyport	[ ]	[ ]
	Newbury	[ ]	[ ]
	West Newbury	[ ]	[ ]

Beaches

Evacuate
[ ] Seabrook Beach
[ ] Hampton Beach

Close
[ ] Parker River National Wildlife Refuge
[ ] Plum Island Beach
[ ] Salisbury Beach

Potassium Iodide (General Emergency only)
[ ] Implement KI plans for the general public

Block 5: A radiological release
[✓] Has not occurred
[ ] Has occurred and is continuing
[ ] Occurred but has been terminated

Block 6: Authorized by: _____ _____ _____
STED / SED / RM **Date** **Time**

Block 7: Acknowledge receipt of this message with your name.

New Hampshire: _____ **Massachusetts:** _____
Name of Dispatcher **Name of Dispatcher**

SRO ADMIN JPM

POST SCENARIO EMERGENCY PLAN CLASSIFICATION AND NOTIFICATION

ANSWER KEY: SIMULATOR EXAM #3

Simulator Exam #3
Sheet 1 of 7

EMERGENCY INITIATING CONDITION MATRIX
Modes 1, 2, 3 and 4

UNUSUAL EVENT		ALERT		SITE AREA EMERGENCY		GENERAL EMERGENCY	
Category A - Abnormal Rad Levels/Radiological Effluent							
AU1	Any UNPLANNED release of gaseous or liquid radioactivity to the environment > 2 times the ODCM limits for ≥ 60 minutes *Op. Modes: All*	AA1 →	Any UNPLANNED release of gaseous or liquid radioactivity to the environment > 200 times the ODCM limits for ≥ 15 minutes *Op. Modes: All*	AS1 →	Actual or projected offsite dose > 100 mRem TEDE or 500 mRem Thyroid CDE *Op. Modes: All*	AG1 ↓	Actual or projected offsite dose > 1,000 mRem TEDE or 5,000 mRem Thyroid CDE *Op. Modes: All*
		AA2	Damage to irradiated fuel or loss of water level that has or will result in the uncovering of irradiated fuel outside the reactor vessel *Op. Modes: All*				
AU2	Unexpected increase in plant radiation *Op. Modes: All*	AA3 →	Release of radioactive material or increases in radiation levels within the facility that impedes operation of systems required to maintain safe operations or to establish or maintain cold shutdown *Op. Modes: All*				
Category E - Events Related to ISFSI Malfunction							
E-HU1	Damage to a loaded cask CONFINEMENT BOUNDARY *Op. Mode: All*						
Category H - Hazards and Other Conditions Affecting Plant Safety							
HU1	Natural and destructive phenomena affecting the PROTECTED AREA *Op. Modes: All*	HA1 →	Natural and destructive phenomena affecting the plant VITAL AREA *Op. Modes: All*				
HU2	FIRE within PROTECTED AREA boundary not extinguished within 15 minutes of detection *Op. Modes: All*	HA2 →	FIRE or EXPLOSION affecting the operability of plant safety systems required to establish or maintain safe shutdown *Op. Modes: All*				
HU3	Release of toxic, corrosive, asphyxiant or flammable gases deemed detrimental to normal operation of the plant *Op. Modes: All*	HA3 →	Release of a toxic, corrosive, asphyxiant or flammable gas within or contiguous to a VITAL AREA affecting equipment required to maintain safe operations, or establish or maintain safe shutdown *Op. Modes: All*				
HU4	Confirmed security event which indicates a potential degradation in the level of safety of the plant *Op. Modes: All*	HA4 →	Confirmed security event in a plant PROTECTED AREA *Op. Modes: All*				
		HA8	Notification of HOSTILE ACTION within the Owner Controlled Area *Op. Modes: All*	HS4 →	Notification of HOSTILE ACTION within the PROTECTED AREA *Op. Modes: All*	HG1 ↓	Security event resulting in loss of physical control of the facility *Op. Modes: All*
		HA7	Notification of an airborne attack threat *Op. Modes: All*				
		HA5	Control Room evacuation has been initiated *Op. Modes: All*	HS2 →	Control Room evacuation has been initiated and plant control cannot be established *Op. Modes: All*		
HU5	Other conditions existing which in the judgment of the STED/SED warrant declaration of an Unusual Event *Op. Modes: All*	HA6 →	Other conditions existing which in the judgment of the STED/SED warrant declaration of an Alert *Op. Modes: All*	HS3 →	Other conditions existing which in the judgment of the STED/SED warrant declaration of Site Area Emergency *Op. Modes: All*	HG2 ↓	Other conditions existing which in the judgment of the STED/SED warrant declaration of General Emergency *Op. Modes: All*
Category S - System Malfunction							
SU1	Loss of all offsite power to AC emergency buses for > 15 minutes *Op. Modes: 1, 2, 3, 4*	SA5 →	Power to AC emergency buses reduced to a single power source for > 15 minutes such that any additional single failure would result in station blackout *Op. Modes: 1, 2, 3, 4*	SS1 →	Loss of both AC emergency buses for > 15 minutes *Op. Modes: 1, 2, 3, 4*	SG1 ↓	Prolonged loss of both AC emergency buses *Op. Modes: 1, 2, 3, 4*
		SA2	ATWS and manual reactor shutdown from the MCB was successful *Op. Modes: 1, 2, 3*	SS2 →	ATWS and manual reactor shutdown from the MCB was NOT successful *Op. Modes: 1, 2*	SG2 ↓	ATWS and all manual actions to shutdown the reactor were NOT successful, AND extreme challenge to Core Cooling or Heat Sink *Op. Modes: 1, 2*
SU2	Inability to reach required shutdown within Technical Specification limits *Op. Modes: 1, 2, 3, 4*			SS3	Loss of all vital DC power for > 15 minutes *Op. Modes: 1, 2, 3, 4*		
SU3	UNPLANNED loss of most or all safety system annunciation or indication in the Control Room for > 15 minutes *Op. Modes: 1, 2, 3, 4*	SA4 →	UNPLANNED loss of most or all safety system annunciation or indication in Control Room with either (1) a SIGNIFICANT TRANSIENT in progress, or (2) compensatory indicators are unavailable *Op. Modes: 1, 2, 3, 4*	SS6 →	Inability to monitor a SIGNIFICANT TRANSIENT in progress *Op. Modes: 1, 2, 3, 4*		
SU4	Fuel clad degradation *Op. Modes: 1, 2, 3, 4*						
SU5	RCS leakage *Op. Modes: 1, 2, 3, 4*						
SU6	UNPLANNED loss of all onsite or offsite communications capabilities *Op. Modes: 1, 2, 3, 4*						
SU8	Inadvertent criticality *Op Modes: 3, 4*						

OR

Modes 1, 2, 3 and 4

Simulator Exam #3 Sheet 2 of 7

Figure 1
Initiating Conditions and Emergency Action Levels

SYSTEM MALFUNCTION

SA-1

Initiating Condition -- **ALERT**

UNPLANNED loss of most or all safety system annunciation or indication in Control Room with either (1) a SIGNIFICANT TRANSIENT in progress, or (2) compensatory indicators are unavailable

Operating Mode Applicability: 1, 2, 3 and 4

Emergency Action Levels:

1. a. UNPLANNED loss of approximately 75% or more of UA annunciators for > 15 minutes.

OR

b. UNPLANNED loss of approximately 75% or more of Main Control Board indications for > 15 minutes.

OR

c. UNPLANNED loss of approximately 75% or more of radiation monitor indications for > 15 minutes.

AND

2. Either of the following: (a or b)

a. A SIGNIFICANT TRANSIENT is in progress.

OR

b. Compensatory indications are unavailable.

NOTE

SIGNIFICANT TRANSIENT is an UNPLANNED event involving one or more of the following: (1) automatic turbine runback >25% thermal reactor power, (2) electrical load rejection >25% full electrical load, (3) Reactor Trip, (4) Safety Injection Activation, or (5) thermal power oscillations >10%

Simulator Exam #3
Sheet 3 of 7

Figure 1
Initiating Conditions and Emergency Action Levels

SYSTEM MALFUNCTION

SA5

Initiating Condition -- **ALERT**

Power to AC emergency buses reduced to a single power source for > 15 minutes such that any additional single failure would result in station blackout

Operating Mode Applicability: 1, 2, 3 and 4

Emergency Action Levels:

Note: The Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition has exceeded, or will likely exceed, the applicable time.

1. At least one AC emergency bus is energized - Bus E5 AND/OR Bus E6.

AND

2. Only one power source is available to the energized bus/buses such that the loss of this source would result in a station blackout.

AND

3. 15 minutes has elapsed with only one power source available.

NOTE

There are six power sources to consider:

- Newington 345 kV offsite power
- Skobie Pond 345 kV offsite power
- Tewksbury 345 kV offsite power
- Emergency Diesel Generator A
- Emergency Diesel Generator B
- SEPS. For SEPS to be considered available, both SEPS diesel generator sets must be functional.

Simulator Exam #3
Sheet 4 of 7

Seabrook Station State Notification Fact Sheet

Time Notification Initiated: NH _____ MA _____

Time when new update announcement was made

Block 1: This is: _____ _____ at Seabrook Station.
Name Title

Block 2:

Time Declared:		OR	Time Terminated:
_____	[ ] Unusual Event [✓] Alert [ ] Site Area Emergency [ ] General Emergency		_____

Block 3: The emergency initiating condition is SA4 or SA5

Block 4: We recommend the following protective actions:

[✓] None [ ] As follows

New Hampshire

ERPA	Town	Shelter	Evacuate
A.	Seabrook	[ ]	[ ]
	Hampton Falls	[ ]	[ ]
C.	Kensington	[ ]	[ ]
	S. Hampton	[ ]	[ ]
D.	Hampton	[ ]	[ ]
	N. Hampton	[ ]	[ ]
F.	Brentwood	[ ]	[ ]
	E. Kingston	[ ]	[ ]
	Exeter	[ ]	[ ]
	Newfields	[ ]	[ ]
	Newton	[ ]	[ ]
	Kingston	[ ]	[ ]
G.	Greenland	[ ]	[ ]
	Stratham	[ ]	[ ]
	Rye	[ ]	[ ]
	New Castle	[ ]	[ ]
	Portsmouth	[ ]	[ ]

Massachusetts

ERPA	Town	Shelter	Evacuate
B.	Amesbury	[ ]	[ ]
	Salisbury	[ ]	[ ]
E.	Merrimac	[ ]	[ ]
	Newburyport	[ ]	[ ]
	Newbury	[ ]	[ ]
	West Newbury	[ ]	[ ]

Beaches

Evacuate
[ ] Seabrook Beach
[ ] Hampton Beach

Close
[ ] Parker River National Wildlife Refuge
[ ] Plum Island Beach
[ ] Salisbury Beach

Potassium Iodide (General Emergency only)
[ ] Implement KI plans for the general public

Block 5: A radiological release
[✓] Has not occurred
[ ] Has occurred and is continuing
[ ] Occurred but has been terminated

Block 6: Authorized by: _____ _____ _____
STED / SED / RM Date Time

Block 7: Acknowledge receipt of this message with your name.

New Hampshire: _____ Massachusetts: _____
Name of Dispatcher Name of Dispatcher

Simulator Exam #3 Sheet 5 of 7

*If 15 minutes had elapsed from start of event #5 until SEPS breaker closed in ECA0.0.

EMERGENCY INITIATING CONDITION MATRIX
Modes 1, 2, 3 and 4

UNUSUAL EVENT		ALERT		SITE AREA EMERGENCY		GENERAL EMERGENCY	
Category A - Abnormal Rad Levels/Radiological Effluent							
AU1	Any UNPLANNED release of gaseous or liquid radioactivity to the environment > 2 times the ODCM limits for ≥ 60 minutes *Op. Modes: All*	AA1 →	Any UNPLANNED release of gaseous or liquid radioactivity to the environment > 200 times the ODCM limits for ≥ 15 minutes *Op. Modes: All*	AS1 →	Actual or projected offsite dose > 100 mRem TEDE or 500 mRem Thyroid CDE *Op. Modes: All*	AG1 →	Actual or projected offsite dose > 1,000 mRem TEDE or 5,000 mRem Thyroid CDE *Op. Modes: All*
		AA2	Damage to irradiated fuel or loss of water level that has or will result in the uncovering of irradiated fuel outside the reactor vessel *Op. Modes: All*				
AU2	Unexpected increase in plant radiation *Op. Modes: All*	AA3 →	Release of radioactive material or increases in radiation levels within the facility that impedes operation of systems required to maintain safe operations or to establish or maintain cold shutdown *Op. Modes: All*				
Category E - Events Related to ISFSI Malfunction							
E-HU1	Damage to a loaded cask CONFINEMENT BOUNDARY *Op. Mode: All*						
Category H - Hazards and Other Conditions Affecting Plant Safety							
HU1	Natural and destructive phenomena affecting the PROTECTED AREA *Op. Modes: All*	HA1 →	Natural and destructive phenomena affecting the plant VITAL AREA *Op. Modes: All*				
HU2	FIRE within PROTECTED AREA boundary not extinguished within 15 minutes of detection *Op. Modes: All*	HA2 →	FIRE or EXPLOSION affecting the operability of plant safety systems required to establish or maintain safe shutdown *Op. Modes: All*				
HU3	Release of toxic, corrosive, asphyxiant or flammable gases deemed detrimental to normal operation of the plant *Op. Modes: All*	HA3 →	Release of a toxic, corrosive, asphyxiant or flammable gas within or contiguous to a VITAL AREA affecting equipment required to maintain safe operations, or establish or maintain safe shutdown *Op. Modes: All*				
HU4	Confirmed security event which indicates a potential degradation in the level of safety of the plant *Op. Modes: All*	HA4 →	Confirmed security event in a plant PROTECTED AREA *Op. Modes: All*				
		HA8	Notification of HOSTILE ACTION within the Owner Controlled Area *Op. Modes: All*	HS4 →	Notification of HOSTILE ACTION within the PROTECTED AREA *Op. Modes: All*	HG1 →	Security event resulting in loss of physical control of the facility *Op. Modes: All*
		HA7	Notification of an airborne attack threat *Op. Modes: All*				
		HA5	Control Room evacuation has been initiated *Op. Modes: All*	HS2 →	Control Room evacuation has been initiated and plant control cannot be established *Op. Modes: All*		
HU5	Other conditions existing which in the judgment of the STED/SED warrant declaration of an Unusual Event *Op. Modes: All*	HA6 →	Other conditions existing which in the judgment of the STED/SED warrant declaration of an Alert *Op. Modes: All*	HS3 →	Other conditions existing which in the judgment of the STED/SED warrant declaration of Site Area Emergency *Op. Modes: All*	HG2 →	Other conditions existing which in the judgment of the STED/SED warrant declaration of General Emergency *Op. Modes: All*
Category S - System Malfunction							
SU1	Loss of all offsite power to AC emergency buses for > 15 minutes *Op. Modes: 1, 2, 3, 4*	SA5 →	Power to AC emergency buses reduced to a single power source for > 15 minutes such that any additional single failure would result in station blackout *Op. Modes: 1, 2, 3, 4*	SS1 →	Loss of both AC emergency buses for > 15 minutes *Op. Modes: 1, 2, 3, 4*	SG1 →	Prolonged loss of both AC emergency buses *Op. Modes: 1, 2, 3, 4*
		SA2	ATWS and manual reactor shutdown from the MCB was successful *Op. Modes: 1, 2, 3*	SS2 →	ATWS and manual reactor shutdown from the MCB was NOT successful *Op. Modes: 1, 2*	SG2 →	ATWS and all manual actions to shutdown the reactor were NOT successful, AND extreme challenge to Core Cooling or Heat Sink *Op. Modes: 1, 2*
SU2	Inability to reach required shutdown within Technical Specification limits *Op. Modes: 1, 2, 3, 4*			SS3	Loss of all vital DC power for > 15 minutes *Op. Modes: 1, 2, 3, 4*		
SU3	UNPLANNED loss of most or all safety system annunciation or indication in the Control Room for > 15 minutes *Op. Modes: 1, 2, 3, 4*	SA4 →	UNPLANNED loss of most or all safety system annunciation or indication in Control Room with either (1) a SIGNIFICANT TRANSIENT in progress, or (2) compensatory indicators are unavailable *Op. Modes: 1, 2, 3, 4*	SS6 →	Inability to monitor a SIGNIFICANT TRANSIENT in progress *Op. Modes: 1, 2, 3, 4*		
SU4	Fuel clad degradation *Op. Modes: 1, 2, 3, 4*						
SU5	RCS leakage *Op. Modes: 1, 2, 3, 4*						
SU6	UNPLANNED loss of all onsite or offsite communications capabilities *Op. Modes: 1, 2, 3, 4*						
SU8	Inadvertent criticality *Op Modes: 3, 4*						

Modes 1, 2, 3 and 4

Simulator Exam #3 Sheet 6 of 7

* If 15 minutes had elapsed from start of event #5 until SEPs breaker closed in ECA-0.0.

Figure 1
Initiating Conditions and Emergency Action Levels

SYSTEM MALFUNCTION

SS1

Initiating Condition -- **SITE AREA EMERGENCY**

Loss of both AC emergency buses for > 15 minutes

Operating Mode Applicability: 1, 2, 3 and 4

Emergency Action Levels:

Note: The Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition has exceeded, or will likely exceed, the applicable time.

1. BOTH AC emergency buses E5 AND E6 are de-energized.

AND

2. 15 minutes has elapsed with BOTH AC emergency buses E5 AND E6 de-energized.

NOTE
For a bus to be considered energized from SEPS, both SEPS diesel generator sets must be functional.

Simulator Exam #3 Sheet 7 of 7

* If 15 minutes had elapsed from start of event #5 until SEP's breaker closed in ECA-0.0

Seabrook Station State Notification Fact Sheet

Time when new state announcement was made

Time Notification Initiated: NH _____ MA _____

Block 1: This is: _____ (Name) _____ (Title) at Seabrook Station.

Block 2:

Time Declared:		OR	Time Terminated:
_____	[ ] Unusual Event [ ] Alert [✓] Site Area Emergency [ ] General Emergency		_____

Block 3: The emergency initiating condition is SS1.

Block 4: We recommend the following protective actions:

[✓] None [ ] As follows

New Hampshire

ERPA	Town	Shelter	Evacuate
A.	Seabrook	[ ]	[ ]
	Hampton Falls	[ ]	[ ]
C.	Kensington	[ ]	[ ]
	S. Hampton	[ ]	[ ]
D.	Hampton	[ ]	[ ]
	N. Hampton	[ ]	[ ]
F.	Brentwood	[ ]	[ ]
	E. Kingston	[ ]	[ ]
	Exeter	[ ]	[ ]
	Newfields	[ ]	[ ]
	Newton	[ ]	[ ]
	Kingston	[ ]	[ ]
G.	Greenland	[ ]	[ ]
	Stratham	[ ]	[ ]
	Rye	[ ]	[ ]
	New Castle	[ ]	[ ]
	Portsmouth	[ ]	[ ]

Massachusetts

ERPA	Town	Shelter	Evacuate
B.	Amesbury	[ ]	[ ]
	Salisbury	[ ]	[ ]
E.	Merrimac	[ ]	[ ]
	Newburyport	[ ]	[ ]
	Newbury	[ ]	[ ]
	West Newbury	[ ]	[ ]

Beaches

Evacuate

[ ] Seabrook Beach
[ ] Hampton Beach

Close

[ ] Parker River National Wildlife Refuge
[ ] Plum Island Beach
[ ] Salisbury Beach

Potassium Iodide (General Emergency only)

[ ] Implement KI plans for the general public

Block 5: A radiological release
[✓] Has not occurred
[ ] Has occurred and is continuing
[ ] Occurred but has been terminated

Block 6: Authorized by: _____ (STED / SED / RM) _____ (Date) _____ (Time)

Block 7: Acknowledge receipt of this message with your name.

New Hampshire: _____ (Name of Dispatcher) Massachusetts: _____ (Name of Dispatcher)

SRO ADMIN JPM

POST SCENARIO EMERGENCY PLAN CLASSIFICATION AND NOTIFICATION

ANSWER KEY: SIMULATOR EXAM #4

FISSION PRODUCT BARRIER DEGRADATION MATRIX
Modes 1, 2, 3 and 4

	Fuel Clad Barrier		Reactor Coolant System Barrier		Containment Barrier	
Sub-Category	**Potential Loss**	**Loss**	**Potential Loss**	**Loss**	**Potential Loss**	**Loss**
1. CSF Status	Core Cooling (C) Orange **OR** Heat Sink (H) Red	Core Cooling (C) Red	RCS Integrity (P) Red (w/ RCS press > 300 psig) **OR** Heat Sink (H) Red		Containment (Z) Red	Emergency Coolant Recirculation (F) Orange
2. Core Exit TCs	Core Exit TCs ≥ 725° F	Core Exit TCs ≥ 1,100° F			1. a. Core Exit TCs ≥ 1,100° F **AND** b. FR-C.1 not effective within 15 minutes. **OR** 2. a. Core Exit TCs ≥ 725° F **AND** b. RVLIS full range level ≤ 40% **AND** c. FR-C.1 not effective within 15 minutes.	
3. Reactor Vessel Level	RVLIS dynamic head • ≤ 44% with 4 RCPs running • ≤ 30% with 3 RCPs running • ≤ 20% with 2 RCPs running • ≤ 13% with 1 RCP running RVLIS full range level • ≤ 40% with no RCP running					
4. RCS Activity		RCS activity > 300 uCi/gm Dose Equivalent I-131 (as determined per Procedure CS0925.01, Reactor Coolant Post Accident Sampling)				
5. RCS Leakage			Unisolable leak > the capacity of one centrifugal charging pump in the normal charging mode.	RCS subcooling < 40°F due to an RCS leak		
6. S/G Rupture or Fault				Entry into Procedure E-3		1. RUPTURED S/G is also FAULTED outside of containment **OR** 2. Primary-to-Secondary leak rate > 10 gpm with unisolable steam release from affected S/G to the environment
7. Containment Pressure					1. Cnmt. pressure > 52 psig and increasing **OR** 2. Cnmt. hydrogen concentration ≥ 6% **OR** 3. a. Cnmt. pressure > 18 psig **AND** b. No Cnmt. Building Spray (CBS)	1. Rapid unexplained pressure decrease following initial increase **OR** 2. Containment pressure response not consistent with LOCA conditions
8. Containment Radiation Monitor		Post-LOCA Radiation Monitors RM-6576A-1 or RM-6576B-1 ≥ 95 R/hr		Post-LOCA Radiation Monitors RM-6576A-1 or RM-6576B-1 ≥ 16 R/hr	Post-LOCA Radiation Monitors RM-6576A-1 or RM-6576B-1 ≥ 1,305 R/hr	
9. Containment Isolation Valves						Cnmt. Isolation Valve(s) not closed **AND** direct pathway to the environment exists after Cnmt. Isolation signal
10. STED/SED Judgment	Any condition in the opinion of the STED/SED that indicates a Potential Loss of the Fuel Clad Barrier (consider inability to monitor barrier).	Any condition in the opinion of the STED/SED that indicates a Loss of the Fuel Clad Barrier (consider inability to monitor barrier).	Any condition in the opinion of the STED/SED that indicates a Potential Loss of the RCS Barrier (consider inability to monitor barrier).	Any condition in the opinion of the STED/SED that indicates a Loss of the RCS Barrier (consider inability to monitor barrier).	Any condition in the opinion of the STED/SED that indicates a Potential Loss of the Containment Barrier (consider inability to monitor barrier).	Any condition in the opinion of the STED/SED that indicates a Loss of the Containment Barrier (consider inability to monitor barrier).

Enter a checkmark in all white blanks to the right for each "Potential Loss" or "Loss" noted above. When all checkmarks have been entered, note each column that has all white blanks checked. Read up or down that column to determine the emergency classification.

Barrier Status		**Unusual Event** **FU1** - ANY Loss or Potential Loss of Containment Barrier		**Alert** **FA1** - ANY Loss or Potential Loss of EITHER Fuel Clad or RCS Barriers				**Site Area Emergency** **FS1** - Loss or Potential Loss of ANY Two Barriers												**General Emergency** **FG 1** - Loss of ANY Two Barriers AND Loss or Potential Loss of Third Barrier			
Fuel Clad Potential Loss	Enter ✓ →																						
Fuel Clad Loss	Enter ✓ →																						
RCS Potential Loss	Enter ✓ →																						
RCS Loss	Enter ✓ →						X																
Containment Potential Loss	Enter ✓ →																						
Containment Loss	Enter ✓ →																						
Emergency Classification →		UE	UE	Alert	Alert	Alert	Alert	SAE	SAE	SAE	SAE	SAE	SAE	SAE	SAE	SAE	SAE	SAE	SAE	GE	GE	GE	GE

Simulator Exam #4
Sheet 1 of 2

Simulator Exam #4
Sheet 2 of 2

Seabrook Station State Notification Fact Sheet

Time that new update announcement was made

Time Notification Initiated: NH _____ MA _____

Block 1: This is: _____ (Name) _____ (Title) at Seabrook Station.

Block 2:

Time Declared:		Time Terminated:
_____	[ ] Unusual Event [✓] Alert [ ] Site Area Emergency [ ] General Emergency	_____

OR

Block 3: The emergency initiating condition is FA1.

Block 4: We recommend the following protective actions:

[✓] None [ ] As follows

New Hampshire

ERPA	Town	Shelter	Evacuate
A.	Seabrook	[ ]	[ ]
	Hampton Falls	[ ]	[ ]
C.	Kensington	[ ]	[ ]
	S. Hampton	[ ]	[ ]
D.	Hampton	[ ]	[ ]
	N. Hampton	[ ]	[ ]
F.	Brentwood	[ ]	[ ]
	E. Kingston	[ ]	[ ]
	Exeter	[ ]	[ ]
	Newfields	[ ]	[ ]
	Newton	[ ]	[ ]
	Kingston	[ ]	[ ]
G.	Greenland	[ ]	[ ]
	Stratham	[ ]	[ ]
	Rye	[ ]	[ ]
	New Castle	[ ]	[ ]
	Portsmouth	[ ]	[ ]

Massachusetts

ERPA	Town	Shelter	Evacuate
B.	Amesbury	[ ]	[ ]
	Salisbury	[ ]	[ ]
E.	Merrimac	[ ]	[ ]
	Newburyport	[ ]	[ ]
	Newbury	[ ]	[ ]
	West Newbury	[ ]	[ ]

Beaches

Evacuate

[ ] Seabrook Beach
[ ] Hampton Beach

Close

[ ] Parker River National Wildlife Refuge
[ ] Plum Island Beach
[ ] Salisbury Beach

Potassium Iodide (General Emergency only)

[ ] Implement KI plans for the general public

Block 5: A radiological release

[ ] Has not occurred
[✓] Has occurred and is continuing
[ ] Occurred but has been terminated

Block 6: Authorized by: _____ (STED / SED / RM) _____ (Date) _____ (Time)

Block 7: Acknowledge receipt of this message with your name.

New Hampshire: _____ (Name of Dispatcher)

Massachusetts: _____ (Name of Dispatcher)

JOB PERFORMANCE MEASURE Sa Rev. 1

FR-H.1 BLEED AND FEED

Student Name: _____ LMS #: _____

Evaluator Name: _____ _____

SAT UNSAT

OFFICIAL NRC EXAMINATION MATERIAL

ACCESS IS LIMITED TO NRC EXAMINERS AND PERSONNEL THAT FULLY UNDERSTAND AND HAVE SIGNED ON TO THE 2010 NRC INITIAL EXAM SECURITY AGREEMENT.

PREPARED BY: _____ DATE: _____

APPROVED BY: _____ DATE: _____

TRAINING SUPERVISOR

JOB PERFORMANCE WORKSHEET

1.0 Task Number and Description:

Position: RO

0060401501 Monitor The Safety Injection System When Activated
0060501201 Feed And Bleed The RCS During Inadequate Core Cooling

2.0 Conditions:

A. A reactor trip has occurred.
B. A loss of all feedwater capability has forced a transition to FR-H.1, Response to Loss of Secondary Heat Sink.

3.0 Standards:

Initiate bleed and feed per FR-H.1, Response To Loss Of Secondary Heat Sink.

4.0 Student Materials:

Copy of the Tear-Off Sheet
FR-H.1, Response to Loss Of Secondary Heat Sink, Rev. 34.

5.0 Limitations on performance:

Perform all steps. Verbalize all actions to the evaluator.
Even if requested, no Peer Checks will be provided during the JPM.

6.0 References:

Procedures:

FR-H.1, Response To Loss Of Secondary Heat Sink.

Sys	KA	Description	Value RO/SRO
EPE 074	EK3.04	Tripping RCPs.	3.9/4.2
EPE 074	EK3.05	Activating HPI system.	4.2/4.5
EPE 074	EK3.11	Guidance contained in EOP for inadequate core cooling	4.0/4.4

Sa

7.0 Setting:

If performed as a pair with JPM Sh, Reset to IC # 81 or IC #382.
For stand alone, reset the simulator to IC #382 or any 100% IC which contains the following:

1. Initialize to the 100% IC and place simulator in RUN.
2. Insert malfunctions mfRPS001 and mfRPS002 failure of automatic reactor trip Train A & B.
3. In panel graphics section PCF07 insert override for RC-PCV-456B control switch to AUTO.
4. Insert remote function rmvMSV129 Value=0
5. Insert malfunctions mfFW039 and mfFW041 FW-P113 trip (faulty 86 device) Bus 4 & 5.
6. Insert component remote function bkFW37B RF: rack-out, Rack out breaker for FW-P37B and mvFW347 RF: open breaker to deenergize breaker for FW-V347 EFW mini-flow valve. Place FW-P37B control switch in PTL.
7. Insert malfunctions mfFW038 and mfFW054 Delay 10 seconds to trip both MFPs on low LO pressure.
8. Complete all actions of FR-S.1 and when S/G WR levels <30% trip the reactor.
9. Place the simulator in FREEZE.

Place simulator in RUN (only as long as needed) to ensure all alarms are acknowledged prior to start of JPM.
Ensure 3 S/G WR levels <30%, conditions for immediate Bleed and Feed exist.
Place danger tags on the motor-driven EFW pump and mini-flow valve control switches.

8.0 Safety Considerations:

None

9.0 Approximate Completion Time:

15 minutes

10.0 Directions to the Student(s):

1. You are the Secondary Operator.
2. The motor-driven EFW pump is tagged out.
3. A transition from FR-S.1 to FR-H.1, Response To Loss Of Secondary Heat Sink, has occurred.
4. You are the only Operator in the control room and you must perform all control board operations.

11.0 Initiating Cue:

"Implement FR- H.1."

Sa

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP *denotes a critical step	STANDARD *denotes critical standard	EVALUATION SAT UNSAT

NOTE: Ensure that student is ready to begin the JPM before placing simulator in run.

1.		Start time _____	Initiating cue read.

CUE: If the student requests a Peer Check at any time during the JPM, respond: **"No one is available to peer check your actions. Please continue with the task".**

2.	P	Check If Secondary Heat Sink Is Required:		
		• RCS pressure - GREATER THAN ANY NON-FAULTED SG PRESSURE	• Checks RCS pressure - GREATER THAN ANY NON-FAULTED SG PRESSURE	_____ _____
		• RCS hot leg temperature - GREATER THAN 350°F	• Checks RCS hot leg temperature - GREATER THAN 350°F	_____ _____
3.	P	Check CCP Status - AT LEAST ONE AVAILABLE	Checks CCP Status - AT LEAST ONE AVAILABLE	_____ _____
4.	P	Student identifies need for RCS bleed and feed as described in Step 3, Caution.	Identifies 3 SG wide range levels <30%.	_____ _____
*5.	P	Check RCP status:		
		• All RCPs - STOPPED.	• Verifies RCPs all running	_____ _____
		• (RNO) Stop all RCPs.	• * Stops all RCPs	_____ _____
*6.	P	Actuate SI.	*Actuates SI	_____ _____
7.	P	Verifies RCS Feed Path:		
		a. Check pump status: • CCPs - AT LEAST ONE RUNNING - OR - • SI pumps - AT LEAST ONE RUNNING	a. Verifies at least one CCP or SI pump running.	_____ _____
		b. Check valve alignment for operating pumps - PROPER EMERGENCY ALIGNMENT ON STATUS PANEL	b. Verifies proper valve alignment for operating pumps on both status panels:	_____ _____
		• TRAIN A – Cold Leg		

Sa

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP *denotes a critical step	STANDARD *denotes critical standard	EVALUATION SAT	UNSAT
	Injection • TRAIN B – Cold Leg Injection			
*8. P	Establish RCS Bleed Path:	Establishes RCS bleed path:		
	a. Verify power to PZR PORV block valves - AVAILABLE	a. Verifies power to PORV block valves available.	_____	_____
	b. Verify PZR PORV block valves - BOTH OPEN	b. Verifies PORV block valves both open.	_____	_____
	c. Open both PZR PORVs	c. Performs the following: * • Opens PORV-455A. * • Attempts to open PORV-455B.	_____ _____	_____ _____
9. P	Verify Adequate RCS Bleed Path: • PORVs - BOTH OPEN	• Verifies A PORV is open. • Recognizes B PORV is closed.	_____ _____	_____ _____
	• PZR PORV block valves - BOTH OPEN	• Verifies both block valves open	_____	_____
*10 P	Perform the following: a. Open reactor head vent isolations: • RC-FV-2881 • RC-V323	a. Opens reactor head vents isolations: * • RC-FV-2881 * • RC-V323	_____ _____	_____ _____
CUE:	**"The JPM is complete."**			
11.	Stop time _____ Evaluator calculates the time to complete the task.	Time to complete the task ≤ 15 minutes.		
12.	Obtain from student: Tear Off Sheets and any other		_____	

Sa

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP *denotes a critical step	STANDARD *denotes critical standard	EVALUATION SAT UNSAT
	training materials used in the performance of the JPM		

Sa

PERFORMANCE SUMMARY

Provide comments on unsatisfactory performance of an element/step or for deviation from performance as stated. Record interruptions in performance such as retraining, shift change, and processing of procedure changes. Recommend remedial training, if necessary.

Sa

TEAR OFF SHEET FOR JPM Sa

Directions to the Student:

1. You are the Secondary Operator.
2. The motor-driven EFW pump is tagged out.
3. A transition from FR-S.1 to FR-H.1, Response To Loss Of Secondary Heat Sink, has occurred.
4. You are the only Operator in the control room and you must perform all control board operations.

Initiating Cue:

Implement FR-H.1.

NEXTera ENERGY SEABROOK

JOB PERFORMANCE MEASURE JPM Sb Rev. 1

RECOVER FROM A CRFRM ACTUATION

Student Name: _____ LMS #: _____

Evaluator Name: _____ _____

SAT UNSAT

OFFICIAL NRC EXAMINATION MATERIAL

ACCESS IS LIMITED TO NRC EXAMINERS AND PERSONNEL THAT FULLY UNDERSTAND AND HAVE SIGNED ON TO THE 2010 NRC INITIAL EXAM SECURITY AGREEMENT.

PREPARED BY: _____ DATE: _____

APPROVED BY: _____ DATE: _____

TRAINING SUPERVISOR

JOB PERFORMANCE WORKSHEET

1.0 Task Number and Description:

Position: RO

1050400301 Remove the control room ventilation system from the filter recirculation mode.

2.0 Conditions:

A. The plant is at 100% power.
B. I&C was performing maintenance on control room east air intake rad monitor RM-6506A2. It was in HIGH alarm due to this maintenance procedure. The appropriate paperwork and Tech. Specs. were in place for performance of this maintenance.
C. A spurious RDMS HIGH radiation alarm was subsequently received on control room east air intake rad monitor RM-6506A1. This resulted in an "A" train CRFRM ESF actuation.
D. F7009, CTL RM MAKEUP AIR FLTR RECIRC MODE, is in alarm.
E. While the US was executing OS1252.02, AIRBORNE HIGH RADIATION, based on the HIGH rad signal on RM-6506A1, I&C reported that the HIGH rad signals on RM-6506A1 & RM-6506A2 were due to the maintenance activities. After consultation with HP, the US has determined that the CRFRM Actuation was spurious.
F. The US is now executing step 11 of OS1223.01, LOSS OF CONTROL ROOM VENTILATION OR AIR CONDITIONING.

3.0 Standards:

A. Secure from the CRFRM per OS1023.51, CONTROL ROOM VENTILATION AND AIR CONDITIONING SYSTEM OPERATION.
B. Align control room ventilation to the normal makeup mode per OS1023.51, CR VENTILATION AND AIR CONDITIONING SYSTEM OPERATION.

4.0 Student Materials:

Copy of the Tear-Off Sheet.
OS1023.51, Control Room Ventilation and Air Conditioning System Operation, Rev 15 Pages 1-5 and 39-40.

5.0 Limitations on performance:

Simulate/Perform all steps. Verbalize all actions to the evaluator.

6.0 References:

Procedures

OS1223.01, Loss of Control Room Ventilation or Air Conditioning.
OS1023.51, Control Room Ventilation and Air Conditioning System Operation.

Technical Specifications

3.3.3.1, RAD MONITORING FOR PLANT OPS.
3.7.6, CR AREA VENTILATION.

Sys	KA	Description	Value RO/SRO
013	K1.13	HVAC.	2.8/3.1
013	K1.18	Premature Reset of ESF actuation.	3.7/4.1
013	K4.10	Safeguards equip control reset.	3.3/3.7
013	A3.02	Operation and actuated equipment.	4.1/4.2
2.1	2.1.30	Ability to locate and operate components.	4.3/4.4
2.1	2.1.23	Ability to perform integrated specific plant procedures all modes.	4.4/4.0
072	K1.04	Control Room Ventilation.	3.3/3.5

7.0 Setting:

If performed as a pair with JPM Sd, Reset to IC # 82.
For stand alone, reset the simulator to IC #398 or any 100% IC which contains the following:

1. Initialize to the 100% IC
2. Train A of normal CBA running and Train B of normal CBA in standby per OS1023.51, CR VENTILATION AND AIR CONDITIONING SYSTEM Operation.
3. Insert malfunctions mfRM014 RM-6506A-1 Final Value=200and mfRM015 RM-6506A-2 Final Value=200 to actuate HIHI alarm
4. Place the simulator in RUN.
5. Ensure this 2 of 2 "A" train CRFRM signal resulted in the following CBA line-up:
   - CBA-FN-27A is OFF.
   - CBA-DP-53A remains OPEN (closes on "B" train CRFRM signal).
   - CBA-FN-27B remains OFF.
   - CBA-DP-53B remains CLOSED.
   - CBA-DP-27A OPENS and CBA-FN-16A STARTS.
   - CBA-DP-27B remains CLOSED and CBA-FN-16B remains OFF.
   - CBA-DP-28 shuts.
   - CBA-FN-15 is tripped.
   - CBA-DP-1058 remains OPEN
6. Delete the high rad malfunctions on RM-6506A1 & RM-6506A2. Acknowledge CP-295 to ensure rad monitors are "green".
7. Override the Green Light for CBA-DP-28 to ON.
8. Place the simulator in FREEZE.

Place the simulator in RUN. Acknowledge all alarms.

8.0 Safety Considerations:

None

9.0 Approximate Completion Time:

25 minutes

10.0 Directions to the Student(s):

1. You are the Primary Operator.
2. The US is executing step 11 of OS1223.01, LOSS OF CONTROL ROOM VENTILATION OR AIR CONDITIONING.

11.0 Initiating Cue:

Shutdown the "A" train of control room ventilation from filter recirculation mode and place the "A" train of the control room normal makeup and ventilation supply system in service per OS1023.51. All procedural Prerequisites have been completed.

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP *denotes a critical step	STANDARD *denotes critical standard	EVALUATION SAT	UNSAT
1.	Start time _____	Initiating cue read.		
NOTE:	Student should use OS1023.51, sections 4.17 and 4.18.			
2. P	CHECK/PLACE the following control switches to AUTO:	Checks the following switches in auto:		
	• CR MAKE-UP AIR TRAIN A FILTER RECIRC MODE	• CR MAKE-UP AIR TRAIN A FILTER RECIRC MODE.	_____	_____
	• CR MAKE-UP AIR TRAIN B FILTER RECIRC MODE	• CR MAKE-UP AIR TRAIN B FILTER RECIRC MODE.	_____	_____
NOTE:	Both control switches should be in AUTO.			
NOTE:	When CBA-DP-27A goes full closed, CBA-FN-16A stops. When CBA-FN-16A stops, the CRFRM actuation signal resets. If the student does not wait until CBA-DP-27A is closed, which in turn stops CBA-FN-16A, the "A" train CRFRM actuation will reinitiate, causing CBA-DP-27A to re-open.			
*3. P	PLACE the following control switches to STOP, and HOLD until the exhaust damper CLOSES:	Performs the following:		
	• CBA-DP-27A EMER MU FLTR DAMPER	*• Positions and holds CBA-DP-27A control switch in STOP until the damper closes	_____	_____
	• CBA-DP-27B EMER MU FLTR DAMPER	• Observes CBA-DP-27B already closed. (Placing switch to close not required)	_____	_____
CUE:	US to student: **"Use OS1023.51, section 4.18 to place Train A CBA Normal Ventilation In Service."**.			
4.	CHECK CLOSED/CLOSE CBS-DP-53B, CR MU AIR DAMPER.	Verifies CBA-DP-53B closed.	_____	_____

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP *denotes a critical step	STANDARD *denotes critical standard	EVALUATION SAT	UNSAT
5. P	CHECK OPEN/OPEN CBA-DP-53A, CR MU AIR DAMPER	Verifies open CBA-DP-53A	_____	_____
*6. P	START CBA-FN-27A, Control Room makeup air fan	*Starts CBA-FN-27A.	_____	_____

NOTE: CTL RM STATIC PRESS CONTROLLER is on CP-23. CP-23 is not simulated.

CUE: When the student identifies actions for the CTL RM STATIC PRESS CONTROLLER on CP-23, Evaluator to student, **"CTL RM STATIC PRESS CONTROLLER is in AUTO and set at 0.3 inches."**

7.	S	At CP-23, CHECK or PLACE the CTL RM STATIC PRESS CONTROLLER to AUTO set at 0.3 inches.	Checks the CTL RM STATIC PRESS CONTROLLER in auto set at 0.3 inches.	_____	_____
8.	P	CHECK OPEN/OPEN CBA-DP-1058, Control Room exhaust isolation damper.	Verifies CBA-DP-1058 is open.	_____	_____
9.	P	CHECK/PLACE the control switch for CBA-FN-15, Control Room exhaust fan in AUTO	Verifies CBA-FN-15 switch is in auto.	_____	_____

CUE: When the student identifies actions for the CTL RM STATIC PRESS CONTROLLER on CP-23, Evaluator to student, **"CTL RM STATIC PRESS CONTROLLER is in auto with input pressure indication at 0.3 inches WC."**

10.	S	At CP-23, CHECK or PLACE the CTL RM STATIC PRESS CONTROLLER to AUTO set at 0.3 inches.	Checks the CTL RM STATIC PRESS CONTROLLER in auto set at 0.3 inches.	_____	_____
*11.	P	PLACE and MAINTAIN the control switch for CBA-DP-28, Control Room exhaust modulate damper to OPEN until intermediate position of the damper is indicated, then allow the switch to spring return to AUTO	*Places CBA-DP-28 to open until intermediate is indicated, and then releases to auto.	_____	_____

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate		ELEMENT/STEP *denotes a critical step	STANDARD *denotes critical standard	EVALUATION SAT	UNSAT
12.	P	VERIFY CBA-FN-15, Control Room exhaust fan STARTS.	Verifies CBA-FN-15 starts	_____	_____
13.	S	VERIFY CBA-DP-28, Control Room exhaust modulate damper MODULATES to control pressure.	Verifies CBA-DP-28 modulates to control pressure.	_____	_____

CUE: (If required) Evaluator to student, **"CTL RM STATIC PRESS CONTROLLER input pressure indication is 0.3 inches WC and stable."**

CUE: **"The JPM is complete."**

14.	Stop time _____ Evaluator calculates the time to complete the task.	Time to complete the task ≤ 25 minutes.	
15.	Obtain from student: Tear Off Sheets and any other training materials used in the performance of the JPM		_____

PERFORMANCE SUMMARY

Provide comments on unsatisfactory performance of an element/step or for deviation from performance as stated. Record interruptions in performance such as retraining, shift change, and processing of procedure changes. Recommend remedial training, if necessary.

TEAR OFF SHEET FOR JPM Sb

Directions to the Student:

1. You are the Primary Operator.
2. The US is executing step 11 of OS1223.01, LOSS OF CONTROL ROOM VENTILATION OR AIR CONDITIONING.

Initiating Cue:

Shutdown the "A" train of control room ventilation from filter recirculation mode and place the "A" train of the control room normal makeup and ventilation supply system in service per OS1023.51. All procedural Prerequisites have been completed.

NEXTera ENERGY SEABROOK

JOB PERFORMANCE MEASURE JPM New Sc Rev. 1

Loss of Containment Instrument Air

Student Name: _____ LMS #: _____

Evaluator Name: _____ _____

SAT UNSAT

OFFICIAL NRC EXAMINATION MATERIAL

ACCESS IS LIMITED TO NRC EXAMINERS AND PERSONNEL THAT FULLY UNDERSTAND AND HAVE SIGNED ON TO THE 2010 NRC INITIAL EXAM SECURITY AGREEMENT.

PREPARED BY: _____ DATE: _____

APPROVED BY: _____ DATE: _____

TRAINING SUPERVISOR

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT UNSAT

1. Task Number and Description:

NA

2. Conditions:

A. The plant is at about 95% power.
B. SA-C-4B is tagged out of service for motor replacement.

3. Standards:

Restore a containment instrument air compressor to service.

4. Student Materials:

Copy of the Tear-Off sheet.
ON1242.02, Rev 11

5. Limitations on performance:

Simulate all steps. Verbalize all actions to the evaluator.
Even if requested, no Peer Checks will be provided during the JPM.

6. References:

Procedures:
ON1242.02, Loss Of Containment Instrument Air

Sys	KA	Description	Value RO/SRO
078	K1.03	Knowledge of the physical connections and/or cause-effect relationships between the IAS and Containment Air	3.3/3.4
078	K3.01	Knowledge of the effect that a loss or malfunction of the IAS will have on the Containment air syatem	3.1/3.4
078	A3.012	Ability to mnonitor automatic operation of the IAS, including Air pressure	3.1/3.2

7. Setting:

If performed as a pair with JPM Sg, Reset the simulator to IC# 84.
For stand alone performance, reset the simulator to IC #30 or any IC which contains the following:

A. Initialize to any 100% IC and place the simulator in RUN.
B. Reduce power to 95%
C. Place SA-C-4B control switch to OFF and Tag
D. Rack out the breaker for SA-C-4B as Follows:
   SELECT Component Remote Functions
   SELECT SERVICE AIR (Component)
   DOUBLE CLICK cSAC4B, SA Compressor 4b 460V MCC E631 D95
   SELECT RACKOUT
   INSERT
E. Place the simulator in FREEZE.

8. Safety Considerations:

None.

9. Approximate Completion Time:

10 mins

10. Directions to the Student:

1. You are the Secondary Operator
2. SA-C-4B is tagged out due to a motor replacement.

11. Initiating Cue:

"Respond to your indications."

DATA SHEET FOR JPM Sc

CUE: If the student requests a Peer Check at any time during the JPM, respond: **"No one is available to peer check your actions. Please continue with the task".**

1. Start time _____ Initiating cue read

Simulator Operator:
Trip SA-C-4A as Follows:
SELECT Component Remote Functions
SELECT SERVICE AIR (Component)
DOUBLE CLICK cSAC4A, SA Compressor 4A 460V MCC E531 D93
SELECT RACKOUT
INSERT

*2	P	Respond to D-Point Alarm D5068.	Refers to D5068 VPRO	_____	_____
		• Verify Cont Air Compressor A tripped at MCB	• Verifies Cont Air Compressor A tripped at MCB	_____	_____
		• Check Contm 1A hdr press on IA-PI-8024 at MCB or on station computer (A0977).	• Checks Contm 1A hdr press on IA-PI-8024 at MCB or on station computer (A0977).	_____	_____

CUE: When directed to cycle breaker, respond: "**Understand, cycle the breaker for SA-C-4A at MCC 531, Node <D93>." Verify that the control switch for SA-C-4A is in OFF.**

NOTE: If the breaker is cycled using the abnormal procedure, this VPRO step is not critical.

		• Dispatch an operator to ESS-SWGR to reset compressor by cycling the breaker at MCC-531 <D93>	* • Dispatches an operator to ESS-SWGR to reset compressor by cycling the breaker at MCC-531 <D93>	_____	_____
		• Refer to ON1242.02, Loss Of Containment Instrument Air.	• Refers to ON1242.02, Loss Of Containment Instrument Air.	_____	_____
3.	P	Check Containment Instrument Air System:			

NOTE: The performance of either bulleted step below will allow transition to the RNO.

		• Containment instrument air pressure - GREATER THAN 95 PSIG AND INCREASING	• Checks Containment instrument air pressure - GREATER THAN 95 PSIG AND INCREASING, answer is; No	_____	_____
		OR			

		• Containment instrument air compressors - BOTH RUNNING	• Checks Containment instrument air compressors - BOTH RUNNING, answer is; None running.	____ ____
*4.	P	Perform The following:	Student refers to Step 1 RNO	____ ____
		a. Cross connect containment instrument air system with instrument air by opening the following valve: • IA-V530	*a. Opens IA-V530	____ ____

NOTE: The following step is a long-term action and is met by determining instrumentation/MPCS points that will be used.

		• Monitor containment pressure for instrument air header leakage.	• Monitors containment pressure for instrument air header leakage.	____ ____

CUE: When directed to cycle breaker, respond: "**Understand, cycle the breaker for SA-C-4A at MCC 531, Node <D93>." Verify that the control switch for SA-C-4A is in OFF.**

NOTE: If the breaker was cycled using the VPRO, this step should be already completed.

*5.	P	IF a compressor has tripped, reset the compressor by cycling the supply breaker: SAC-4A MCC-531,Node <D93>	• *Directs NSO to cycle the supply breaker for SAC-4A at MCC 531, Node <D93>	____ ____

Simulator Operator: After IA-V530 has been opened and verification that the control switch is in off: Delete Component Remote Function: csAC4A SA Compressor 4a 460V MCC E531 D93. Notify the candidate: **"The breaker for SA-C-4A has been cycled open and closed."**

		IF a compressor has tripped, reset the compressor by cycling the supply breaker: SAC-4B MCC-631,Node <D95>	• Recognizes that SAC-4B is tagged out. Breaker cannot be cycled.	____ ____

NOTE: With low IA header pressure indicated, the compressor will start when the control switch is taken to the AUTO position.

		• Manually restart compressor.	• *Places the SA-C-4A control switch to AUTO.	____ ____

DATA SHEET FOR JPM Sc

CUE: "The JPM is complete."

6.	Stop time _____ Evaluator calculates the time to complete the task.	Time to complete the task ≤ 10 minutes.	
7.	Obtain from student: Tear Off Sheets and any other training materials used in the performance of the JPM		_____

PERFORMANCE SUMMARY

Provide comments on unsatisfactory performance of an element/step or for deviation from performance as stated. Record interruptions in performance such as retraining, shift change, and processing of procedure changes. Recommend remedial training, if necessary.

JPM Sc

TEAR OFF SHEET FOR JPM Sc

Directions to the Student:

1. You are the Secondary Operator
2. SA-C-4B is tagged out due to a motor replacement.

Initiating Cue:

Respond to your indications.

NEXTera ENERGY SEABROOK

JOB PERFORMANCE MEASURE JPM Sd Rev. 1

TRANSFER SERVICE WATER FROM THE COOLING TOWER TO THE OCEAN

Student Name: _____ LMS #: _____

Evaluator Name: _____ _____

SAT UNSAT

OFFICIAL NRC EXAMINATION MATERIAL

ACCESS IS LIMITED TO NRC EXAMINERS AND PERSONNEL THAT FULLY UNDERSTAND AND HAVE SIGNED ON TO THE 2010 NRC INITIAL EXAM SECURITY AGREEMENT.

PREPARED BY: _____ DATE: _____

APPROVED BY: _____ DATE: _____

TRAINING SUPERVISOR

1. Task Number and Description

Position RO

SBK 0760103401 Switch From SW To Cooling Tower Operation

2. Conditions:

A. The plant is operating at 100% power.
B. On line maintenance/retests are complete on the Service Water system Train A pump house valves.
C. The SM has directed that Train A Service Water be transferred back to the ocean from the cooling tower.
D. All pre-starts are complete for the "A" Service Water pump (SW-P-41A).

3. Standards:

Perform steps of OS1016.05 to restore Service Water to the ocean and respond to events as warranted.

4. Student Materials:

Copy of Tear Off Sheet.
Copy of OS1016.05 Service Water Cooling Tower Operation, Rev. 10, Section 2 and 3 pages 5-9, Section 4.4 pages 26-28, Figures 1-5 pages 55-61, and Form L.
ODI-05 Pump Pre-start guidelines SW-P-41A page 49, Rev. 00

5. Limitations On Performance:

Perform all steps. Verbalize all actions to the evaluator.
Even if requested no Peer Checks will be provided during the JPM.

6. References:

Procedures:

- OS1016.05 Service Water Cooling Tower Operation

Sys	KA	Description	Value RO/SRO
076	A2.01	Ability to predict the impacts of loss of SW and use procedures to correct , control, or mitigate the consequences of those malfunctions or operations.	3.5/3.7
076	K3.01	Knowledge of the effect that a loss of SW will have on closed cooling water.	3.4/3.6

7. Setting:

If performed as a pair with JPM Sb, Reset to IC # 82.
For stand alone, Reset the simulator to IC #363 or any 100% IC which contains the following:

A. Initialize to any 100% IC and place the simulator in RUN.
B. Place Train A Service Water on the cooling tower per OS1016.05, Service Water Cooling Tower Operation.
C. Insert component malfunction cSWV22 460V MCC E514 CR7 fail closed.
D. Place SW-P-41C control switch in PTL.
E. Insert component remote function cSWP41C 4.16KV Bus E5 AQ4 RF:rackout.
F. Insert component remote function cSWV22 460V MCC E514 CR7 RF:open breaker.
G. Insert malfunction mfSW001 SW-P-41A OC trip.

Place the simulator in RUN. Acknowledge all alarms. Place tags on SW-P-41C and SW-V-22 control switches.

8. Safety Considerations:

None.

9. Approximate Completion Time:

20 minutes

10. Directions To The Student:

1. You are the Secondary Operator.
2. All prerequisites, limitations, and pre-starts for SW-P-41A are complete.

11. Initiating Cue:

Transfer Train A Service Water from the Cooling Tower to the ocean using OS1016.05, section 4.4.

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT UNSAT
1.	Start time _____	Initiating cue read	

CUE: If the student requests a Peer Check at any time during the JPM respond, **"No one is available to Peer Check your actions. Please continue with the task."**

NOTE: Student may re-verify prerequisites, precautions & limitations and pre-starts.

CUE: If student asks, state: **"The fire protection system has not been used to fill the cooling tower, no chemistry sampling is required."**

CUE: Inform student: **"Form L, Cooling Tower Flush NPDES Tracking Sheet has been recorded and tracked by US."**

NOTE: Student may put up color graphic on the MPCS for Service water.

2.	P	Check SW Train B is aligned to the ocean.	Checks SW Train B is aligned to the ocean.	_____	_____
3	P	Record initial Cooling tower level from either SW-LI-6139 or A1537 and record on Form L.	Records initial Cooling tower level from either SW-LI-6139 or A1537 and record on Form L.	_____	_____

CUE: When student attempts to determine the position of SW-V-44, provide cue, **"SW-V-44 is open."**

4.	P	If SW-V-44, SW isolation from the intake structure is closed, perform the following:	Investigates the position of SW-V-44	_____	_____

CUE: If the student begins to perform pump pre-start checks, provide cue, **"All pre-starts are complete."**

CUE: If the student inquires about the prestart checklist requiring SW-V-20, 34, and 54 in a different position, respond: **"SW-V-20, 34, and 54 are repositioned by the performance of the procedure, continue with the procedure."**

5.	P	Perform SW ocean pump pre-starts as determined by the US.	Inquires / Determines that the control room pre-start checks are complete.	_____	_____
*6.	P	Open SW-V-20, SW Train A to discharge structure.	*Opens SW-V-20, SW Train A to discharge structure.	_____	_____

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT	UNSAT
*7. P	Close SW-V-34, SW Train A return to cooling tower.	*Closes SW-V-34, SW Train A return to cooling tower.	_____	_____
*8. P	Simultaneously place and hold control switch for SW-V54, cooling tower pump A discharge to throttle close and control switch for SW-V-56, cooling tower Train A spray header test to open until valves reposition	*Simultaneously manipulate switches until valves reposition as follows: • SW-V-54 control switch to throttle close • SW-V-56 control switch to open	_____	_____

CUE: If requested to make a plant announcement, inform the student; **"The announcement for starting Service Water pump 41A has been made."**

CUE: If informed that the cooling tower basin low level alarm has been received, inform student; **"Copy, low cooling tower basin level. I will dispatch a field operator to initiate fill of the cooling tower basin."**

*9.	P	Start the desired Train A ocean SW pump.	*Starts SW-P-41A.	_____	_____

CUE: If student informs US that SW-P41A tripped, respond; **"What is your recommendation to proceed"**

10.	P	Verify the selected SW pump discharge valve opens.	Recognizes SW-V-2 not open and SW-P-41A tripped	_____	_____

NOTE: The student may use VPRO for D5513 to initiate a TA and open SW-V-54 or Abnormal Procedure OS1216.11, Degraded Ultimate Heat Sink step 8 RNO to open SW-V-54.

*11.	P	In accordance with caution prior to step 4.4.9: Reopen SW-V-54	*Re-opens SW-V-54	_____	_____

CUE: **"The JPM is complete."**

12.	Stop time _____ Evaluator calculates time to complete task	Time to complete task ≤ 20 minutes	
13.	Obtain from student:		_____ _____

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP	STANDARD	EVALUATION
	* denotes a critical step	* denotes a critical step	SAT UNSAT
	Tear Off sheets and any other training materials used in performance of this JPM.		

PERFORMANCE SUMMARY

Provide comments on unsatisfactory performance of an element/step or for any deviation from performance as stated. Record interruptions in performance such as retraining, shift change, and processing of procedure changes. Recommend remedial training, if necessary.

TEAR OFF SHEET FOR JPM Sd

Directions To The Student:

1. You are the Secondary Operator.
2. All prerequisites, limitations, and pre-starts for SW-P-41A are complete.

Initiating Cue:

Transfer Train A Service Water from the Cooling Tower to the ocean using OS1016.05, section 4.4.

NEXTera ENERGY SEABROOK

JOB PERFORMANCE MEASURE JPM Se Rev. 1

LOWER SI ACCUMULATOR LEVEL

Student Name: _____ LMS #: _____

Evaluator Name: _____ _____

SAT UNSAT

OFFICIAL NRC EXAMINATION MATERIAL

ACCESS IS LIMITED TO NRC EXAMINERS AND PERSONNEL THAT FULLY UNDERSTAND AND HAVE SIGNED ON TO THE 2010 NRC INITIAL EXAM SECURITY AGREEMENT.

PREPARED BY: _____ DATE: _____

APPROVED BY: _____ DATE: _____

TRAINING SUPERVISOR

1.0 Task Number and Description

Position RO

SBK 0060100201 Monitor The Safety Injection System

2.0 Conditions:

2.1 The "A" Accumulator Level has increased to above the Technical Specification Limit due to containment / system temperature increase.

3.0 Standards:

Decrease the "A" Accumulator level to clear the High Level Alarm.

4.0 Student Materials:

Copy of Tear Off Sheet.
Copy of OS1005.05 Safety Injection System Operation Rev. 12, Pages 32-34.

5.0 Limitations On Performance:

Perform all steps. Verbalize all actions to the evaluator.
Even if requested no Peer Checks will be provided during the JPM.

6.0 References:

Procedures:
- OS1005.05 Safety Injection System Operation

Technical Specifications:
- 3.5.1.1 ECCS Accumulators – Hot Standby, Startup, and Power Operation

Drawings
- 1-SI-B20455 Safety Injection System

Sys	KA	Description	Value RO/SRO
006	A1.13	Ability to predict and/or monitor (to prevent exceeding design basis limits) accumulator pressure, level, boron concentration.	3.5/3.7

7.0 Setting:

If performed as a pair with JPM Sf, Reset to IC # 83.
For stand alone, Reset the simulator to any 100%IC which contains the following:

A. Initialize to an IC at 100% power.
B. Raise "A" Accumulator level to > 6473 Gallons. Verify F5498, SI Accumulator Level High alarm is in.
C. Use "GD ACCUMS" on MPCS to view Accumulator level and pressure "A" points.
D. Verify "A" Accumulator pressure is 640- 660 psig., or adjust as necessary.
E. Using Safety Injection Local Panel, OPEN SI-V-67.
F. Freeze the simulator.

8.0 Safety Considerations:

None.

9.0 Approximate Completion Time:

20 minutes

10.0 Directions To The Student:

1. You are the Primary Operator
2. You are going to the lower the "A" Accumulator level.
3. All applicable prerequisites of OS1005.05 Safety Injection System Operation are complete.
4. The Primary NSO is standing by to support local valve manipulations.

11.0 Initiating Cue:

Lower the 'A' Accumulator level to clear the high level alarm, using OS1005.05, Safety Injection System Operation.

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT UNSAT
1.	Start time _____	Initiating cue read	

CUE: If the student requests a Peer Check at any time during the JPM respond, **"No one is available to Peer Check your actions. Please continue with the task."**

CUE: If the student inquires about consideration for initially raising accumulator pressure, respond; **"Pressure appears to be sufficient, continue with lowering level and monitor pressure as appropriate."**

CUE: If the student exhibits inability to locate the specific accumulator MPCS points, provide the direction to use Group Display "GD ACCUMS" or Single Value Display SVD A0413.

2.	P	If desired, PRESSURIZE the accumulator to be drained per Section 4.4, Pressurizing an Accumulator.	Determines that Accumulator pressure is sufficient to support the drain-down evolution.	_____	_____

CUE: If student requests leak testing status, respond, **"Check valve leak testing is not in progress."**

3.	P	VERIFY that check valve leak testing is not in progress.	VERIFIES that check valve leak testing is not in progress.	_____	_____
4.	P	CHECK CLOSED/CLOSE SI-V-157, SI accumulator fill.	CHECKS CLOSED SI-V-157, SI accumulator fill.	_____	_____
5.	P	CHECK CLOSED/CLOSE SI-V-62, test line header isolation ORC.	CHECKS CLOSED SI-V-62, test line header isolation ORC.	_____	_____
6	P	CHECK CLOSED/CLOSE SI-V-131, test iso for SI cold legs 1,2,3,4 checks.	CHECKS CLOSED SI-V-131, test iso for SI cold legs 1,2,3,4.	_____	_____

CUE: If the student indicates that they would use an electronic database to determine valve locations for the following step, respond; **"The Primary NSO is standing by to perform local actions for SI-V-67 and 69."**

7.	P	ALIGN the SI test header to the PDT by performing the following:			

CUE: When the Primary NSO is directed to check open/open SI-V-67, provide repeat-back and respond: **"SI-V-67 has been verified open."**

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT UNSAT
	• CHECK OPEN/OPEN SI-V-67, isolation for PDT and boron recovery storage tanks 66A and 66B.	• Directs local actions to CHECK OPEN/OPEN SI-V-67, isolation for PDT and boron recovery storage tanks 66A and 66B.	_____ _____

CUE: When the Primary NSO is directed to check closed/close SI-V-69, provide repeat-back and respond: **"SI-V-69 is closed."**

	• CHECK CLOSED/CLOSE SI-V-69, test line isolation for RWST.	• Directs local actions to CHECK CLOSED/CLOSE SI-V-69, test line isolation for RWST.	_____ _____

CUE: If student inquires respond, **"SI test header pressure will not be monitored at this time."**

8.	P	If SI test line pressure is to be monitored, then UNLOCK and OPEN SI-V-61, SI-PI-929/PT-2491 isolation.	Inquires / determines that SI test line pressure will not be monitored.	_____ _____
*9	P	OPEN SI-V-70, test line header isolation IRC.	*OPENS SI-V-70, test line header isolation IRC.	_____ _____
*10	P	OPEN the valve for the accumulator to be drained: • SI-V-15, accumulator A drain/fill isolation	*OPENS SI-V-15, accumulator A drain / fill isolation.	_____ _____

NOTE: Accumulator level Tech. Spec. limits are 6121 gallons to 6596 gallons, with an alarm setpoint of 6473 gallons.

*11	P	CYCLE OPEN and CLOSED SI-V-62, test line header isolation ORC and MONITOR accumulator level and pressure.	*CYCLES OPEN and CLOSED SI-V-62, test line header isolation ORC and MONITORS accumulator level and pressure.	_____ _____
*12	P	When accumulator has been drained to the desired level, CLOSE the valve opened in step 4.6.9: • SI-V-15, accumulator A drain/fill isolation	• When accumulator High Level alarm resets, Closes SI-V-15, accumulator A drain/fill isolation. •	_____ _____

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP	STANDARD	EVALUATION
	* denotes a critical step	* denotes a critical step	SAT UNSAT
CUE:	**"The JPM is complete."**		
13.	Stop time _____ Evaluator calculates time to complete task	Time to complete task ≤ 20 minutes	
14.	Obtain from student: Tear Off sheets and any other training materials used in performance of this JPM.		_____

PERFORMANCE SUMMARY

Provide comments on unsatisfactory performance of an element/step or for any deviation from performance as stated. Record interruptions in performance such as retraining, shift change, and processing of procedure changes. Recommend remedial training, if necessary.

TEAR OFF SHEET FOR JPM Se

Directions To The Student:

1. You are the Primary Operator
2. You are going to the lower the "A" Accumulator level.
3. All applicable prerequisites of OS1005.05 Safety Injection System Operation are complete.
4. The Primary NSO is standing by to support local valve manipulations.

Initiating Cue:

Lower the 'A' Accumulator level to clear the high level alarm, using OS1005.05, Safety Injection System Operation.

JOB PERFORMANCE MEASURE JPM Sf Rev. 1

EMERGENCY TRIP OF DIESEL GENERATOR 1B

Student Name: _____ LMS #: _____

Evaluator Name: _____ _____

SAT UNSAT

OFFICIAL NRC EXAMINATION MATERIAL

ACCESS IS LIMITED TO NRC EXAMINERS AND PERSONNEL THAT FULLY UNDERSTAND AND HAVE SIGNED ON TO THE 2010 NRC INITIAL EXAM SECURITY AGREEMENT.

PREPARED BY: _____ DATE: _____

APPROVED BY: _____ DATE: _____

TRAINING SUPERVISOR

JOB PERFORMANCE WORKSHEET

1.0 Task Number and Description:

Position: RO

0640402501 Restore off-site power to Bus E5/E6

2.0 Conditions:

A. Bus E6 was being supplied by the RAT (Reserve Auxiliary Transformer) to support a scheduled UAT (Unit Auxiliary Transformer) breaker inspection. The tagging clearance for the UAT breaker had not been started.
B. A failure on the Bus 6 RAT breaker caused the breaker to trip open.
C. DG "B" started and restored power to bus E6.
D. Plant conditions have stabilized. The Shift Manager has directed the Unit Supervisor to transfer bus E6 to the UAT and shutdown DG "B".
E. The SM and US have decided to use Attachment L of OS1246.01, LOSS OF OFFSITE POWER-PLANT SHUTDOWN, as guidance in restoring off-site power to bus E6.

3.0 Standards:

Attempt to restore off-site power to bus E6 and respond to degraded DG "B" condition as necessary.

4.0 Student Materials:

Copy of the Tear-Off Sheet.
Attachment L of OS1246.01, LOSS OF OFFSITE POWER-PLANT SHUTDOWN, Rev. 15

5.0 Limitations On Performance:

Simulate/Perform all steps. Verbalize all actions to the evaluator. Even if requested, no peer checks will be provided during the JPM.

6.0 References:

Procedures: Attachment L of OS1246.01, LOSS OF OFFSITE POWER-PLANT SHUTDOWN

Sys	KA	Description	Value RO/SRO
064	A4.07	Ability to manually operate and/or monitor in the control room: Transfer EDG with load to grid.	3.4/3.4

7.0 Setting:

Simulator:

If performed as a pair with JPM Se, Reset to IC # 83.
For stand alone, Initialize the simulator to any 100% power IC with the following setup:

A. Place the simulator in RUN.
B. Transfer Bus E6 to the RAT. Place the UAT breaker in Normal After Stop.
C. Remove CS-P-2B from service by placing Danger Tags and racking out the breaker. CS-P-2B is removed from service so it does not interfere with the JPM. The CCP's start on a LOP.
   SELECT: Component Remote Functions
   SELECT: bkCS1P2B_52 RACKOUT
D. Insert component malfunction: bkEDE6RAT, 4160V Bus E6 A72 trip.
E. Check for the following:
   - EPS sequenced loads start, as applicable with the plant remaining at power.
   - SGBD isolated.
   - SW-V-5 closed.
F. Clear RAT amber light and PLACE RAT breaker in PTL
G. Establish a 4-Point trend for the following Analog Points:
   - A2732 DG 1B Vlts
   - A2734 DG 1B Gen Field Amps
   - A2735 DGB Watts
   - A2736 DG1B Vars

8.0 Safety Considerations:

None

9.0 Approximate Completion Time:

20 minutes

10.0 Directions To The Student(s):

1. You are the Secondary Operator
2. While supplying Bus 6 for maintenance activities, a failure on the Bus 6 RAT breaker caused the breaker to trip open.
3. DG "B" started and restored power to bus E6.
4. The US has decided to use Attachment L of OS1246.01, LOSS OF OFFSITE POWER-PLANT SHUTDOWN, as guidance in restoring off-site power to bus E6.
5. Due to a radio system failure, an NSO is standing by at telephone extension 4082 to assist.

11.0 Initiating Cue:
"Restore offsite power to bus E6, via the UAT, using Attachment L of OS1246.01, LOSS OF OFFSITE POWER-PLANT SHUTDOWN."

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate		ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT	 UNSAT
1		Start time	Initiating cue read.		

Evaluator CUE: If the student asks if the grid is stable, respond: **"The grid is stable."**

2	P	IF AC emergency bus is deenergized, THEN restore offsite power as follows:	Recognizes that Bus 6 is energized and continues with step 2.	_____	_____
3	P	Raise DG frequency to 60.2 to 60.4 Hz.	Raises "B" DG frequency to 60.2 to 60.4 Hz.	_____	_____
*4	P	Place the DG synch. Selector switch in the RAT or UAT position.	*Places the Bus 6 synch. Selector switch in the UAT position.	_____	_____
*5	P	Reset RMO (Remote Manual Override).	*Resets "B" Train RMO.	_____	_____
6	P	Adjust EDG voltage to match INCOMING VOLTS with RUNNING VOLTS	Matches "B" EDG voltage $\pm$ 10 Kv	_____	_____
*7	P	Adjust EDG frequency so that the synch meter is going slowly in the fast direction.	* Adjusts "B" EDG speed as required.	_____	_____
*8	P	Close the RAT or UAT Transformer breaker when synchronized.	*Closes the Bus 6 UAT breaker when synchronized.	_____	_____
9	P	Place the synch selector switch in OFF.	Places the Bus 6 synch selector switch in OFF.	_____	_____

Instructor NOTE: The DB B Lube Oil Pressure Low and DG B Aux. Lube Oil Pump Running alarms should be initiated before the EDG can be unloaded.

Instructor CUE: Run scenario: Len / Len, DG LOP Test
-or-
Insert malfunction: svo6608DGB f:1
Insert malfunction: svo6611DGB f:1

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP	STANDARD	EVALUATION SAT	UNSAT
	* denotes a critical step	* denotes a critical step		

Floor Evaluator NOTE: Wait for the associated low lube oil pressure alarms to go into alarm prior to providing the following CUE.

Floor Evaluator CUE: Before the candidate starts unloading the EDG, notify the candidate that the Roving NSO makes an urgent report to the Control Room via the telephone; **"There is a large amount of lube oil spraying from the Bravo diesel engine."**

NOTE: On a low lube oil condition the emergency diesel engines should automatically trip. This scenario simulates failure of the automatic trip. Based on the VAS (Video Alarm System) alarm and report from the field, it is expected that the candidate will perform a manual emergency shutdown of the diesel generator.

10	P	Acknowledge the report from the field and the MPCS VAS (Video Alarm System) alarm condition.	Acknowledges the report from the field.	_____	_____
			Acknowledges the MPCS VAS alarm condition.	_____	_____

Evaluator NOTE: The intention of the JPM is for the student to identify and recommend/perform an emergency shutdown of EDG 1B.

Evaluator CUE: If the student recommends stopping the diesel generator, say: **"I Concur."**

*11	P	Perform emergency shutdown of DG-1B by simultaneously pressing BOTH Emergency Stop pushbuttons.	*Performs an emergency shutdown of DG-1B by simultaneously pressing BOTH Emergency Stop pushbuttons.	_____	_____

Evaluator CUE: "The JPM is complete."

12		Stop time_____ Evaluator calculates the time to complete the task.	Start-Stop is $\leq$ 20 minutes.	
13		Obtain from student: Tear Off sheets and any other training materials used in performance of this JPM.		_____

PERFORMANCE SUMMARY

Provide comments on unsatisfactory performance of an element/step or for deviation from performance as stated. Record interruptions in performance such as retraining, shift change, and processing of procedure changes. Recommend remedial training, if necessary.

TEAR OFF SHEET FOR JPM Sf

Directions to the Student:

1. You are the Secondary Operator
2. While supplying Bus 6 for maintenance activities, a failure on the Bus 6 RAT breaker caused the breaker to trip open.
3. DG "B" started and restored power to bus E6.
4. The US has decided to use Attachment L of OS1246.01, LOSS OF OFFSITE POWER-PLANT SHUTDOWN, as guidance in restoring off-site power to bus E6.
5. Due to a radio system failure, an NSO is standing by at telephone extension 4082 to assist.

Initiating Cue:

Restore offsite power to bus E6, via the UAT, using Attachment L of OS1246.01, LOSS OF OFFSITE POWER-PLANT SHUTDOWN.

NEXTera ENERGY SEABROOK

JOB PERFORMANCE MEASURE JPM Sg Rev. 1

RECOVER A DROPPED ROD

Student Name: _____ LMS #: _____

Evaluator Name: _____ _____

SAT UNSAT

OFFICIAL NRC EXAMINATION MATERIAL

ACCESS IS LIMITED TO NRC EXAMINERS AND PERSONNEL THAT FULLY UNDERSTAND AND HAVE SIGNED ON TO THE 2010 NRC INITIAL EXAM SECURITY AGREEMENT.

PREPARED BY: _____ DATE: _____

APPROVED BY: _____ DATE: _____

TRAINING SUPERVISOR

JOB PERFORMANCE WORKSHEET

1. Task Number and Description

Position RO

SBK 0010400301 Operate single full length control rod (misalignment)

2. Conditions:

A. The plant is at approximately 95% power following a dropped rod in control bank D (CBD) group 2, identified as H-8.
B. The plant has been stabilized using turbine load control, with rod control in manual.
C. I&C has completed replacing a blown fuse on the stationary gripper.

3. Standards:

Align the dropped rod with its bank per OS1210.05 Dropped Rod.

4. Student Materials:

Copy of Tear Off Sheet.
Copy of OS1210.05 Dropped Rod Rev 13.

5. Limitations On Performance:

Perform all steps. Verbalize all actions to the evaluator.
Even if requested no Peer Checks will be provided during the JPM.

6. References:

Procedures:

- OS1210.05 Dropped Rod

Technical Specifications:

- 3.1.1.1 SDM Tavg Greater Than 200°
- 3.1.3.1 Moveable Control Assemblies Group height
- 3.1.3.2 Moveable Control Assemblies Position Indication Systems
- 3.1.3.5 Shutdown Rod Insertion Limit
- 3.1.3.6 Control Rod Insertion Limit
- 3.2.1 Axial Flux Difference
- 3.2.4 Quadrant power Tilt Ratio

Drawings:

- 1-NHY-509049 Rod Control

Sys	KA	Description	Value RO/SRO
001	K4.09	Knowledge of CRDS design features and/or interlocks which provide for recovery of a dropped rod	3.9/4.1

7. Setting:

Simulator:

If performed as a pair with JPM Sc, Reset the simulator to IC# 84.
For stand alone, Reset the simulator to IC# 300 or any 100% IC and reduce power to ~95% power. Complete simulator setup by performing the following:

A. Insert malfunction mfCP018, Dropped Rod H-8.
B. Place the simulator in RUN and stabilize the plant per OS1210.05
   1. Place rods in MANUAL.
   2. Match Tave/Tref by reducing turbine load.
   3. Acknowledge alarms.
C. Verify Bank Demand Counters reflect expected plant conditions.
D. Delete malfunction mfCP018, Dropped Rod H-8.

Place the simulator in RUN as long as needed to ensure all alarms are acknowledged prior to start of the JPM.

8. Safety Considerations:

None

9. Approximate Completion Time:

20 minutes

10. Directions To The Student(s):

1. You are the Primary Operator.
2. We have a dropped rod in control bank D (CBD) group 2, identified as H-8.
3. The plant has been stabilized using turbine load control, with rod control in manual.
4. I&C has completed replacing blown fuses on the stationary gripper.

11. Initiating Cue:

"Continue with OS1210.05 at step 4, to recover the dropped rod."

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT UNSAT
1.	Start time _____	Initiating cue read	

CUE: If the student requests a Peer Check at any time during the JPM respond, **"No one is available to Peer Check your actions. Please continue with the task."**

CUE: Note prior to step 4 should be reviewed, if student contacts SM or RE for rod recovery recommendation, respond: **"Recover the dropped rod in an expeditious manner."**

2.	P	Check rod control urgent failure alarm - RESET • D7746 • Local power cabinet • Local logic cabinet	Checks rod control urgent failure alarm - RESET • D7746 • Contacts NSO and Inquires about Local power cabinet alarm. • Contacts NSO and Inquires about Local logic cabinet alarm	_____ _____ _____	_____ _____ _____

CUE: When student requests the NSO to locally verify logic and power cabinet alarms, respond, **"There are currently no alarms on the logic or power cabinets."**

*3.	P	Align rod control system for dropped rod recovery:			
		a. Place the rod bank selector switch to – Affected Bank Position	*a. Place the rod bank selector switch to – CBD	_____	_____
		b. Except for the dropped rod, place all the lift coil disconnect switches for the affected bank to – Rod Disconnected	*b. Places all the lift coil disconnect switches for the Control Bank D to – Rod Disconnected except for rod H-8	_____	_____
		c. Record the affected group step counter position.	c. Records the CBD group 2 step counter position	_____	_____

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT UNSAT

CUE: Due to differences between the simulator and the plant if student asks for direction on how to reset counter position, respond, **"Depress step counter 'RS' pushbutton."**

	d. Reset the affected group step counter to zero	*d. Resets the CBD group 2 step counter position to zero	_____	_____
	e. Hold and maintain the pulse to analog converter Auto-Man switch in Man until rod withdrawal is complete	*e. Directs NSO to hold and maintain the pulse to analog converter Auto-Man switch in Man until rod withdrawal is complete	_____	_____

CUE: **Simulator Operator**: When directed NSO to Primary Operator, **"I copy, hold the P/A converter Auto-Man switch to Man until rod withdrawal is complete."**

NOTE: **Simulator Operator** Place P/A converter switch in Man as follows:
Select Local Panels
Select Rod Drive System
Select Pulse to Analog Converter
Select Hold in Manual

CUE: **Simulator Operator** : NSO to Primary Operator, **"The P/A converter Auto-Man switch is being held in Man."**

*4.	P	Withdraw the dropped rod until the step counter reaches the previously recorded position:			
		a. Verify that the dropped rod is the only rod moving by DRPI	*a. Verifies that only rod H-8 is withdrawing.	_____	_____

CUE: When asked for method of maintaining Tavg on program, US to Primary Operator, **"The Secondary Operator will maintain Tavg with turbine load adjustments while you withdraw the control rod."**

	b. Maintain programmed Tavg using boration and/or turbine loading as recommended by Reactor Engineering.	b. Discusses controlling Tavg with the US.	_____	_____

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT	UNSAT
	c. Withdraw rod to previously recorded position.	*c. Withdraws rod H-8 to previously recorded position.	_____	_____
*5. P	Align rod control system for normal operation:			
	a. Return the Pulse to Analog Converter Auto-Man switch to Auto.	*a. Directs NSO to return the Pulse to Analog Converter Auto-Man switch to Auto.	_____	_____

CUE: **Simulator Operator:** NSO to Primary Operator, **"I copy, return The P/A converter Auto-Man switch to Auto."**

NOTE: **Simulator Operator** Place P/A converter switch in Auto as follows:
Select Local Panels
Select Rod Drive System
Select Pulse to Analog Converter
Select Hold in Automatic

CUE: **Simulator Operator:** NSO to Primary Operator, **"The P/A converter Auto-Man switch is in Auto."**

	b. Reset the rod control urgent failure alarm by depressing the rod control alarm reset pushbutton.	*b. Depresses the rod control alarm reset pushbutton.	_____	_____
	c. Place all the lift coil disconnect switches to Rod Connect.	*c. Places all the lift coil disconnect switches for Control Bank D to Rod Connect.	_____	_____
	d. Return Rod Bank Selector Switch to Man.	*d. Returns Rod Bank Selector Switch to Man.	_____	_____
	e. If necessary, reset the power range rate trip.	e. If necessary, rotates rate mode reset switch to reset for affected NIs.	_____	_____

PERFORMANCE SUMMARY

Provide comments on unsatisfactory performance of an element/step or for any deviation from performance as stated. Record interruptions in performance such as retraining, shift change, and processing of procedure changes. Recommend remedial training, if necessary.

TEAR OFF SHEET FOR JPM Sg

Directions To The Student:

1. You are the Primary Operator.
2. We have a dropped rod in control bank D (CBD) group 2, identified as H-8.
3. The plant has been stabilized using turbine load control, with rod control in manual.
4. I&C has completed replacing blown fuses on the stationary gripper.

Initiating Cue:

Continue with OS1210.05 at step 4, to recover the dropped rod.

NEXTera ENERGY SEABROOK

JOB PERFORMANCE MEASURE JPM Sh Rev. 1

START HYDROGEN RECOMBINERS

Student Name: _____ LMS #: _____

Evaluator Name: _____ _____

SAT UNSAT

OFFICIAL NRC EXAMINATION MATERIAL

ACCESS IS LIMITED TO NRC EXAMINERS AND PERSONNEL THAT FULLY UNDERSTAND AND HAVE SIGNED ON TO THE 2010 NRC INITIAL EXAM SECURITY AGREEMENT.

PREPARED BY: _____ DATE: _____

APPROVED BY: _____ DATE: _____

TRAINING SUPERVISOR

JOB PERFORMANCE WORKSHEET

1.0 Task Number and Description:

Position: RO

0280500201 Start 'A' H_2 Recombiner From The Main Control Room.

2.0 Conditions:

A. A reactor trip with SI occurred from 100% power due to a large break LOCA.
B. The US transitioned through E-0, E-1, ES-1.3, and back to E-1 and is now at step 17.
C. Hydrogen concentration in containment is 3.4%

3.0 Standards:

Place a hydrogen recombiner in service.

4.0 Student Materials:

Copy of the Tear-Off Sheet.
Copy of OS1023.40, Hydrogen Recombiner Operation, Rev. 7, Chg. 2.
Calculator.

5.0 Limitations On Performance:

Simulate/Perform all steps. Verbalize all actions to the evaluator.
Even if requested, no Peer Checks will be provided during the JPM.

6.0 References:

Procedures:

- E-1, Loss of Reactor or Secondary Coolant
- OS1023.40, Hydrogen Recombiner Operation.

Sys	KA	Description	Value RO/SRO
028	A2.02	LOCA condition and concern over hydrogen.	3.5/3.9
028	A2.03	The hydrogen/air concentration in excess of limit flame propagation or detonation with resulting equipment damage in containment.	3.4/4.0
2.1	2.1.23	Ability to perform specific system and integrated plant procedures during all modes of operation.	4.3/4.4
2.1	2.1.8	Ability to coordinate personnel activities outside the control room.	3.4/4.1
2.1	2.1.31	Ability to locate control room switches, controls, and indications, and determine that they are correctly reflecting the desired plant lineup.	4.6/4.3

7.0 Setting:

If performed as a pair with JPM Sa, reset the simulator to IC-81. When run as a pair, simulator conditions will not reflect the conditions identified below.

If running as a stand alone JPM, Reset the simulator to IC #356 or any 100% IC which contains the following:

A. Initialize to the 100% IC and place simulator in RUN.
B. Insert malfunction mfRC024A RCS Cold Leg 12 LOCA (double ended shear).
C. Run the simulator while performing the following per E-0 and E-1:
    1. Trip RCPs.
    2. Reset SI.
    3. Throttle EFW back to approximately 150 gpm per generator.
    4. Shutdown both EDGs. Close SW-V16, and 18. Reset both engines.
    5. Swap to cold leg recirculation when RWST level decreases to 120,478 gallons IAW ES-1.3. Insert component remote function mvCS1LCV112D 460V MCC-512 breaker open and mvCS1LCV-112E 460V MCC-612 breaker open when required in ES-1.3.
    6. Complete the actions of E-1 through step 17.
    7. Using panel graphics display sections PGR06A and PGR06B insert overrides on Hydrogen Analyzer A meter AND Hydrogen Analyzer B meter. Override to 3.4 for both meters.
    8. Insert the following overrides Safety Injection Analog outputs for Containment pressure:
    IOOZMAOSIPI2576 Final Value=4
    IOOZMAOSIPI2577 Final Value=4
    IOOZMAOSIPR934B Final Value=4
    IOOZMAOSIPR934R Final Value=4
    IOOZMAOSIPR935B Final Value=4
    IOOZMAOSIPR935R Final Value=4
    IOOZMAOSIPI934 Final Value=4
    IOOZMAOSIPI935 Final Value=4
    IOOZMAOSIPI936 Final Value=4
    IOOZMAOSIPI937 Final Value=4
D. Place the simulator in FREEZE.

The **simulator must be in RUN** to allow the PWR OUT meter to respond to the potentiometer.
Verify the "PWR OUT" potentiometer is at MINIMUM prior to beginning the JPM.

8.0 Safety Considerations:

None

9.0 Approximate Completion Time:

20 minutes

10.0 Directions To The Student(s):

1. You are the Secondary Operator.
2. You are going to place Hydrogen Recombiner 'A' in service.
3. The crew is presently at step 17 of E-1 Loss of Reactor or Secondary Coolant and they have checked containment H_2 concentration, which is 3.4 %.
4. Containment Pressure is 4 psig on SI-PI-934 and SI-PI-935.

11.0 Initiating Cue:

Place Hydrogen Recombiner 'A' in service per OS1023.40, Hydrogen Recombiner Operation.

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP	STANDARD	EVALUATION SAT	UNSAT
	* denotes a critical step	* denotes a critical step		

NOTE: When the student is ready to begin place the simulator in run.

1. Start time_____ Initiating cue read.

CUE: If the student request a Peer Check at any time during the JPM, respond: **"No one is available to peer check your actions. Please continue with the task".**

CUE: If asked by the student, **"The electrical lineup has been completed"**.

2.	P	Verify the white PWR. IN AVAIL. light is energized.	Verifies the PWR. IN AVAIL. light is energized.	____	____
3.	P	Set the PWR. ADJ. potentiometer to zero.	Turns PWR ADJ pot to 000.	____	____
*4.	P	Place the PWR. OUT SW. switch to the ON position and VERIFY that the red light on the switch plate comes on.	* • Moves switch to ON position.	____	____
			• Verifies the red light is on.	____	____

CUE: At each power level, inform the student; **"The stated time has elapsed."**

*5.		Energize the Hydrogen Recombiner heater by PERFORMING the following:	Energizes the recombiner:		
	P	a. TURN the PWR. ADJ. Potentiometer clockwise until 5 kW is indicated on the PWR. OUT meter. MAINTAIN the 5 kW value for at least 10 minutes.	*a. Turns the PWR ADJ pot clockwise until 5 kW is indicated.	____	____
	P	b. TURN the PWR. ADJ. Potentiometer clockwise until 10 kW is indicated on the PWR. OUT meter. MAINTAIN the 10 kW value for at least 10 minutes.	*b. Turns the PWR ADJ pot clockwise until 10 kW is indicated.	____	____

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT	 UNSAT
P	c. TURN the PWR. ADJ. Potentiometer clockwise until 20 kW is indicated on the PWR. OUT meter. MAINTAIN the 20 kW value for at least 5 minutes.	*c. Turns the PWR ADJ pot clockwise until 20 kW is indicated.	____	____
P	d. DETERMINE the recombiner power setting per Form A, Power Out Setpoint Calculation.	d. Refers to Form A.	____	____
P	e. Calculate the H_2 recombiner power setpoint by performing the following:			
P	DETERMINE the current containment pressure from SI-PI-934 or SI-PI-935, MCB containment pressure indicators.	• Determines the current containment pressure from the "Directions to the Student" section of the JPM Tear-Off Sheet provided.	____	____
P	Current Containment Pressure + 14.7 psi = psia	* • Converts cntmnt pressure to psia and records on data sheet (= 18.7 psia).	____	____
P	• Using containment absolute pressure, pre-accident containment average temperature and Figure 2, Recombiner Power Correction Factor Curve determine the Pressure Factor (C_p).	* • Determines C_p and Records on data sheet - (C_p = 1.17 - 1.20). Enter student C_p value: C_p =_____	____	____
P	• MULTIPLY the Pressure Factor (C_p) by Reference Power (45.24 kW). (C_p) x 45.24 = Power Setting kW	* • Multiplies C_p by the reference power. Records on data sheet - (52.9 – 54.3 kW). Enter student KW value: KW =_____	____	____

CUE: If the student requests a second person verification, respond: **"For the purpose of this evaluation, a second verification will not be performed. Please continue with the procedure."**

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT	 UNSAT
	• Have a second person VERIFY the power setting calculation.	• Requests second person verification.	_____	_____
P	f. Turn the PWR. ADJ. potentiometer clockwise until the power setpoint, as calculated in Step 4.2.4.4, is indicated on the PWR OUT meter.	*f. Turns the PWR ADJ pot clockwise until the power setpoint is indicated on the PWR OUT meter.	_____	_____

CUE: When student mentions that conference with the TSC is necessary to determine recombiner effectiveness, inform the student, **"The SM is aware of this and in contact with the TSC on this matter."**

P	g. CONFER with the TSC to determine recombiner effectiveness and the need to make adjustments to recombiner power.	g. Attempts to confer with the TSC.	_____	_____

CUE: **"The JPM is complete."**

6.	Stop time _____ Evaluator calculates the time to complete the task.	Time to complete the task ≤ 20 minutes.	
7.	Obtain from student: Tear Off Sheets and any other training materials used in the performance of the JPM		_____

PERFORMANCE SUMMARY

Provide comments on unsatisfactory performance of an element/step or for deviation from performance as stated. Record interruptions in performance such as retraining, shift change, and processing of procedure changes. Recommend remedial training, if necessary.

TEAR OFF SHEET FOR JPM Sh

Directions to the Student:

1. You are the Secondary Operator.
2. You are going to place Hydrogen Recombiner 'A' in service.
3. The crew is presently at step 17 of E-1 Loss of Reactor or Secondary Coolant and they have checked containment H_2 concentration, which is 3.4 %.
4. Containment Pressure is 4 psig on SI-PI-934 and SI-PI-935.

Initiating Cue:

Place Hydrogen Recombiner 'A' in service per OS1023.40, Hydrogen Recombiner Operation.

NEXTera ENERGY SEABROOK

IN-PLANT JOB PERFORMANCE MEASURE 'A' Rev. 1

LOCAL REACTOR TRIP

Student Name: _____ LMS #: _____

Evaluator Name: _____

SAT UNSAT

OFFICIAL NRC EXAMINATION MATERIAL

ACCESS IS LIMITED TO NRC EXAMINERS AND PERSONNEL THAT FULLY UNDERSTAND AND HAVE SIGNED ON TO THE 2010 NRC INITIAL EXAM SECURITY AGREEMENT.

PREPARED BY: _____ DATE: _____

APPROVED BY: _____ DATE: _____

TRAINING SUPERVISOR

JOB PERFORMANCE WORKSHEET

1. Task Number and Description

SBK 0010101604 Locally Operate Reactor Trip Breaker
SBK 0010150204 Trip Rod Drive Motor Generator Sets
SBK 0120100104 Locally Trip Reactor trip Breaker and Bypass Breaker

2. Conditions:

A. The crew has entered FR-S.1, Response To Nuclear Power Generation/ATWS
B. The reactor cannot be tripped from the main control room.
C. The reactor trip bypass breakers are open and racked out.

3. Standards:

Simulate locally tripping the reactor.

4. Student Materials:

Copy of Tear Off Sheet.

5. Limitations On Performance:

Simulate all steps. Verbalize all actions to the evaluator.
Even if requested no Peer Checks will be provided during the JPM.

6. References:

Procedures:

- FR-S.1 Response To Nuclear Power Generation/ATWS.
- NAP-402 Conduct Of Operations

Sys/Proc	KA	Description	Value RO/SRO
007- Reactor Trip	EA2.04	If the reactor should have tripped but has not, carry out actions in ATWS EOP.	4.4/4.6
2.4- Emergency Proc./Plan	2.4.35	Knowledge of local NSO tasks during emergency operations.	3.8/4.0

7. Setting:

In-Plant. Train 'A' Essential Switchgear Room.

8. Safety Considerations:

Do **NOT** permit opening of reactor trip breaker cubicles or rod drive MG set cubicles.

9. Approximate Completion Time:

5 minutes

10. Directions To The Student:

Evaluator gives Tear Off sheet to the student.

Initial Conditions:

A. You are the Secondary NSO.

B. The following information is provided to you:

1. The crew has entered FR-S.1, Response To Nuclear Power Generation/ATWS
2. The reactor cannot be tripped from the main control room.
3. The reactor trip bypass breakers are open and racked out.

11. Initiating Cue:

US to Secondary NSO, **"Secondary NSO, locally trip the reactor."**

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT UNSAT
1. P	Start time _____	Initiating cue read	

CUE: If the student requests a Peer Check at any time during the JPM respond, **"No one is available to Peer Check your actions. Please continue with the task."**

CUE: If required upon arrival at the reactor trip breakers, US to Secondary NSO, **"Secondary NSO, locally open the reactor trip breakers."**

NOTE: **CAUTION** DO NOT allow the student to depress the trip plate because this will cause an actual reactor trip.

CUE: Evaluator to student, **"The reactor trip breakers indicate closed."**

2.	S	Open the reactor trip breakers locally:			
		a. Depress red trip plate for reactor trip breaker RTA.	a. Simulates depressing red trip plate for reactor trip breaker RTA.	_____	_____

CUE: When student simulates depressing red trip plate for reactor trip breaker RTA, evaluator to student, **"The reactor trip breaker does not open."**

		Depress red trip plate for reactor trip breaker RTB.	b. Simulates depressing red trip plate for reactor trip breaker RTB.	_____	_____

CUE: When student simulates depressing red trip plate for reactor trip breaker RTB, evaluator to student, **"The reactor trip breaker does not open."**

3.	S	Inform the control room that the reactor trip breakers will not open.	Inform the control room that the reactor trip breakers will not open.	_____	_____

CUE: US to Secondary NSO,**"I understand, the reactor trip breakers will not open. What action do you recommend?"**

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT UNSAT

NOTE: The student should recommend opening the Rod Drive MG Set input/output breakers (preferred method) **or** may recommend opening the Rod Drive MG Set supply breakers located at US-11 and US-23 (alternate method). Either method is acceptable.

*4	Provide recommended action to examiner.	Student provides recommended action to examiner.	_____ _____

CUE: · If the student recommends one of the acceptable methods then state **"I understand, continue with your recommended actions."**

· If the recommendation does not include one of the acceptable methods then state **"The JPM is complete."**

CAUTION: DO NOT allow the student to actually open or jar the MG set breakers.

NOTE: If the student recommends actions to open the Rod Drive MG Set motor/generator breakers (preferred method) then go to JPM step 5.

If the student recommends actions to open the Rod Drive MG Set supply breakers at US-11 and US-23 then go to JPM step 9.

NOTE: The order in which the breakers are opened is not critical. At least one breaker being opened (motor or generator) for each MG set is critical.

*5.	S	Open the input (motor) and/or output (generator) breaker for both MG sets:		
		*a. Open "A" MG set motor and/or generator breaker.	*a. Simulates opening "A" MG set motor and/or generator breaker.	_____ _____

CUE: When student simulates rotating each breaker handle switch to TRIP, evaluator to student,**"Red light extinguishes and green light illuminates. The breaker opens."**

	*b. Open "B" MG set motor and/or generator breaker.	*b. Simulates opening "B" MG set motor and/or generator breaker.	_____ _____

CUE: When student simulates rotating each breaker handle switch to TRIP, evaluator to student,**"Red light extinguishes and green light illuminates. The breaker opens."**

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT	UNSAT
6. S	Inform the control room that the input and output breakers for both rod drive MG sets are open.	Informs the control room that the input and output breakers for both rod drive MG sets are open.	_____	_____

CUE: US to Secondary NSO,"**I copy, the input and output breakers for both rod drive MG sets are open. All control rods are inserted.**"

CUE: **"The JPM is complete."**

7.	Stop time _____ Evaluator calculates time to complete task	Time to complete task ≤ 20 minutes		
8.	Obtain from student: Tear Off sheets and any other materials used.		_____	_____

NOTE: The order in which the Rod Drive MG Set supply breakers are opened is not critical, however both breakers must be opened.

*9	Open the Rod Drive MG Set supply breaker at US-11 (Node AG5)	Opens the Rod Drive MG Set supply breaker at US-11 (Node AG5)	_____	_____
*10	Open the Rod Drive MG Set supply breaker at US-23 (Node AM6)	Opens the Rod Drive MG Set supply breaker at US-23 (Node AM6)	_____	_____

CUE: When the student notifies the control room that the Rod Drive MG Set supply breakers are both open state: **"I copy, both Rod Drive MG Set supply breakers are open. All control rods are inserted"**

CUE: "The JPM is complete."

11	Stop time_____ Evaluator calculates time to complete task	Time top complete task ≤ 20 minutes		

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT	UNSAT
12	Obtain from student: Tear Off sheets and any other materials used.		____	____

PERFORMANCE SUMMARY

Provide comments on unsatisfactory performance of an element/step or for any deviation from performance as stated. Record interruptions in performance such as retraining, shift change, and processing of procedure changes. Recommend remedial training, if necessary.

TEAR OFF SHEET FOR JPM In-Plant 'A'

Directions To The Student:

A. You are the Secondary NSO.

B. The following information is provided to you:

1. The crew has entered FR-S.1, Response To Nuclear Power Generation/ATWS
2. The reactor cannot be tripped from the main control room.
3. The reactor trip bypass breakers are open and racked out.

Initiating Cue:

US to Secondary NSO, **"Secondary NSO, locally trip the reactor**

NEXTera ENERGY SEABROOK

IN-PLANT JOB PERFORMANCE MEASURE 'B' Rev. 1

HYDROGEN ANALYZER LOCAL OPERATION

Student Name: _____ LMS #: _____

Evaluator Name: _____

SAT UNSAT

OFFICIAL NRC EXAMINATION MATERIAL

ACCESS IS LIMITED TO NRC EXAMINERS AND PERSONNEL THAT FULLY UNDERSTAND AND HAVE SIGNED ON TO THE 2010 NRC INITIAL EXAM SECURITY AGREEMENT.

PREPARED BY: _____ DATE: _____

APPROVED BY: _____ DATE: _____

TRAINING SUPERVISOR

JOB PERFORMANCE WORKSHEET

1. Task Number and Description

SBK 0280101104 Align Hydrogen Analyzer to the Analyze Mode

2. Conditions:

1. The reactor tripped from 100% power due to a large break LOCA.
2. The crew transitioned to FR-C.1, Response to Inadequate Core Cooling.
3. Both hydrogen analyzers have been in standby for > 6 hours.
4. Chemistry has installed the sample vessel for the Train A Hydrogen Analyzer.
5. General dose rates are 10 mr/hr and no indications of radiation streaming are present. It is safe to enter the hydrogen analyzer room and no SCBA is required.

3. Standards:

Simulate placing the hydrogen analyzer in the ANALYZE mode per OS1023.71, Operation of the H2 Analyzers.

4. Student Materials:

Copy of Tear Off Sheet.
Copy of OS1023.71, Operation of the H_2 Analyzers.

5. Limitations On Performance:

Simulate all steps. Verbalize all actions to the evaluator.
Even if requested no Peer Checks will be provided during the JPM.

6. References:

Procedures:

- OS1023.71, Operation of the H_2 Analyzers
- FR-C.1, Response to Inadequate Core Cooling
- ECA-0.2 Loss Of All AC Power Recovery With SI Required

Technical Specifications:

- 3.6.1.1 Containment Integrity

Sys	KA	Description	Value RO/SRO
028-HRPS	A4.03	Ability to manually operate/monitor H_2 sampling and analysis of containment atmosphere	3.1/3.3

7. Setting:

Plant. H_2 Analyzer Room.

8. Safety Considerations:

Hearing protection.

9. Approximate Completion Time:

15minutes

10. Directions To The Student:

Evaluator gives Tear Off sheet to the student.

Initial Conditions:

1. The reactor tripped from 100% power due to a large break LOCA.
2. The crew transitioned to FR-C.1, Response to Inadequate Core Cooling.
3. Both hydrogen analyzers have been in standby for > 6 hours.
4. Chemistry has installed the sample vessel for the Train A Hydrogen Analyzer.
5. General dose rates are 10 mr/hr and no indications of radiation streaming are present. It is safe to enter the hydrogen analyzer room and no SCBA is required.

11. Initiating Cue:

OSC Coordinator to NSO, **"NSO, simulate placing Train A H_2 analyzer in the ANALYZE mode per OS1023.71, Operation of the H_2 Analyzers."**

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP	STANDARD	EVALUATION
	* denotes a critical step	* denotes a critical step	SAT UNSAT

NOTE: When student demonstrates the ability to obtain a controlled copy of OS1023.71, Operation of the H_2 Analyzers provide the student with a copy of OS1023.71, Operation of the H_2 Analyzers

1. P Start time _____ Initiating cue read

CUE: If the student requests a Peer Check at any time during the JPM respond, **"No one is available to Peer Check your actions. Please continue with the task."**

2. S Notify HP and Chemistry — Simulates notifying HP and Chemistry _____ _____

NOTE: The requirements of OS1090.05 shall be waived during the implementation of EOPs. Configuration control will be re-established during recovery operations.

CUE: If student requests permission to unlock and open CGC-V3 and V10, provide cue, **"you have permission to unlock and open CGC-V3 and V10 per step 4.3.1.2 of OS1023.71."**

*3. S Unlock and open the following valves:

*a. Simulates unlocking and opening CGC-V3 _____ _____

CUE: When student simulates unlocking and opening CGC-V3, evaluator to NSO, **"The valve is unlocked, the handwheel turns and the valve opens."**

*b. Simulates unlocking and opening CGC-V10 _____ _____

CUE: When student simulates unlocking and opening CGC-V10, evaluator to NSO, **"The valve is unlocked , the handwheel turns and the valve opens."**

*4. S Open CGC-V-12 hydrogen analyzer A train supply ORC isolation. — *Simulates opening CGC-V-12 hydrogen analyzer A train supply ORC isolation. _____ _____

CUE: When student simulates opening CGC-V12, evaluator to NSO, **"The handwheel turns and the valve opens."**

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP	STANDARD	EVALUATION
	* denotes a critical step	* denotes a critical step	SAT UNSAT

NOTE: DO NOT allow the student to open the cabinet when simulating alignment of the sample vessel.

CUE: If asked, the Chemistry Tech reports, **"The sample vessel is installed in the Train A H_2 analyzer."**

CUE: If the student inquires about gloves for operation of potentially hot sample vessel isolation valves, then provide cue, **"Gloves have been obtained."**

*5	S	Open the following valves:			
			*a. Simulates opening CGC-V58 hydrogen analyzer A Train sample vessel inlet isolation.	____	____

CUE: When student simulates opening CGC-V58, evaluator to NSO, **"The handwheel turns and the valve opens."**

			*b. Simulates opening CGC-V59 hydrogen analyzer A Train sample vessel outlet isolation.	____	____

CUE: When student simulates opening CGC-V59, evaluator to NSO, **"The handwheel turns and the valve opens."**

*6.	S	Place the main power switch on CP-173A to ANALYZE	Simulates informing control room that main power switch at CP-173A must be placed to ANALYZE	____	____

CUE: When NSO calls the control room, US to NSO, **"The main power switch has been placed in ANALYZE."**

CUE: **"The JPM is complete."**

7.		Stop time _____	Time to complete task ≤ 15 minutes
		Evaluator calculates time to complete task	

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT UNSAT
8.	Obtain from student: Tear Off sheets and any other training materials used in performance of this JPM.		____ ____

PERFORMANCE SUMMARY

Provide comments on unsatisfactory performance of an element/step or for any deviation from performance as stated. Record interruptions in performance such as retraining, shift change, and processing of procedure changes. Recommend remedial training, if necessary.

TEAR OFF SHEET FOR In-Plant 'B'

Directions To The Student:

1. The reactor tripped from 100% power due to a large break LOCA.
2. The crew transitioned to FR-C.1, Response to Inadequate Core Cooling.
3. Both hydrogen analyzers have been in standby for > 6 hours.
4. Chemistry has installed the sample vessel for the Train A Hydrogen Analyzer.
5. General dose rates are 10 mr/hr and no indications of radiation streaming are present. It is safe to enter the hydrogen analyzer room and no SCBA is required.

Initiating Cue:

OSC Coordinator to NSO, **"NSO, simulate placing Train A H_2 analyzer in the ANALYZE mode per OS1023.71, Operation of the H_2 Analyzers."**

NEXTera ENERGY SEABROOK

IN-PLANT JOB PERFORMANCE MEASURE 'C' Rev. 1

ALIGN ALTERNATE (FIREWATER) COOLING TO CCP LUBE OIL COOLER

Student Name: _____ LMS #: _____

Evaluator Name: _____

SAT UNSAT

OFFICIAL NRC EXAMINATION MATERIAL

ACCESS IS LIMITED TO NRC EXAMINERS AND PERSONNEL THAT FULLY UNDERSTAND AND HAVE SIGNED ON TO THE 2010 NRC INITIAL EXAM SECURITY AGREEMENT.

PREPARED BY: _____ DATE: _____
INSTRUCTOR

APPROVED BY: _____ DATE: _____
TRAINING SUPERVISOR

JOB PERFORMANCE WORKSHEET

1. Task Number and Description

Position NSO

SBK 0040160004 Align/Remove Alternate Cooling To Charging pump Lube Oil Coolers

2. Conditions:

A. Plant is in Mode 3.
B. CS-P-2A is not available.
C. Train B PCCW has been lost.
D. The US has entered OS1212.01, PCCW System Malfunction.

3. Standards:

Simulate manually aligning alternate cooling to CS-P-2B per OS1002.02, Operation Of Letdown, Charging, and Seal Injection.

4. Student Materials:

Copy of Tear Off Sheet.
Copy of OS1002.02, Operation Of Letdown, Charging, and Seal Injection.
Section 4.21 pages 64 - 65.

5. Limitations On Performance:

Simulate all steps. Verbalize all actions to the evaluator.
Even if requested no Peer Checks will be provided during the JPM.

6. References:

Procedures:

- OS1212.01, PCCW System Malfunction.
- OS1002.02, Operation Of Letdown, Charging, and Seal Injection

Sys	KA	Description	Value RO/SRO
004	K1.18	Knowledge of the physical connections and/or cause-effect relationships between the CVCS and the following systems: CCWS	2.9/3.2

7. Setting:

Plant. PAB 25 ft and PAB 7 ft.

8. Safety Considerations:

Health Physics postings and ALARA.

9. Approximate Completion Time:

20 minutes

10. Directions To The Student:

Evaluator gives Tear Off sheet to the student.

Initial Conditions:

A. You are the Primary NSO.

B. The following information is provided to you:

1. Plant is in Mode 3.
2. Train B PCCW has been lost.
3. The crew is taking actions to align alternate cooling to the 2B charging pump lube oil cooler.
4. The Roving NSO and a Fire Fighter have been dispatched to connect the drain hose from the Charging Pump lube oil cooler outlet to a storm drain.

11. Initiating Cue:

US to Primary NSO, **"Primary NSO (or student's name), simulate aligning Fire Protection (FP) water as alternate cooling to CS-P-2B lube oil cooler using OS1002.02 section 4.21. Inform the control room as soon as cooling flow has been established."**

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT UNSAT

NOTE: When student demonstrates the ability to obtain a controlled copy OS1002.02, Operation Of Letdown, Charging, and Seal Injection provide the student with the required portions OS1002.02, Operation Of Letdown, Charging, and Seal Injection.

1. P Start time _____ Initiating cue read

CUE: If the student requests a Peer Check at any time during the JPM respond, **"No one is available to Peer Check your actions. Please continue with the task."**

NOTE: Student should review CAUTION prior to step 4.21.1.

2. S Notify Chemistry to issue a Non-Rad realease permit. Simulates informing control room to have Chemistry issue a Non-Rad realease permit. _____ _____

CUE: When student simulates informing control room, US to NSO,**"Chemistry has generated the Non-Rad release permit and it is in the control room."**

3. S Connect a drain hose from Charging pump lube oil coolers outlet to the storm drain. Reads step for connecting a drain hose from Charging pump lube oil coolers outlet to the storm drain. _____ _____

CUE: If the student inquires about the drain hose, evaluator to student,**"The drain hose has been connected by the Roving NSO and Fire Fighter."**

4. S Refer to listed Technical Specifications for applicability. Simulates informing control room to refer to Technical Specifications for applicability. _____ _____

CUE: If student informs control room to refer to Technical Specifications, US to NSO, **"All applicable Tech Specs have been entered."**

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT	UNSAT
5. S	Check that CS-P-2B is in Pull To Lock.	Simulate checking that CS-P-2B is in Pull To Lock.	_____	_____

CUE: When student checks on the status of CS-P-2B, US to NSO,**"CS-P-2B is in Pull To Lock."**

NOTE: Valves CC-V-315, CC-V-318, CC-V-1292, DM-V-793, and CC-V-1294 are all located along the wall, outside the degassifier room in the main passageway of the PAB 25 ft. across from the sampling room.

CUE: If the student requests permission to unlock and close CC-V-318, PCCW return from CS-P-2B oil cooler and CC-V315, supply to CS-P-2B oil cooler, US to NSO,**"You have permission to unlock and close CC-V-318 and CC-V-315."**

NOTE: Required keys would be on the Primary NSO key ring.

*6. S Unlock and close the following valves:

*a. Simulates unlocking and closing CC-V-318, PCCW return from CS-P-2B oil cooler. _____ _____

CUE: When student simulates unlocking and closing CC-V-318, evaluator to student,**"The valve is unlocked. The valve is closed."**

*b. Simulates unlocking and closing CC-V315, PCCW supply to CS-P-2B oil cooler. _____ _____

CUE: When student simulates unlocking and closing CC-V-315, evaluator to student,**"The valve is unlocked. The valve is closed."**

NOTE: Student should not perform step 4.21.6. Fire Protection water is being used for alternate cooling.

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT	UNSAT
*7.	S Fire protection water is to be aligned to the CS-P-2B oil cooler. Align the following valves			
		*a. Simulates closing CC-V-1297 FP alternate CCP cooling tell tale drain.	_____	_____

CUE: When student simulates closing CC-V-1297, evaluator to student, **"The valve is closed."**

		*b. Simulates releasing locking pin and opens FP-V-1129 Charging pump oil coolers alternate supply.	_____	_____

CUE: When student simulates releasing the locking pin and opening FP-V-1129, evaluator to student, **"The locking pin releases. The valve is open."** If student does not simulate release of locking pin, cue,**"The valve does not move."**

		*c. Simulates releasing locking pin and opens CC-V-1290 Fire water alternate cooling supply to CS-P-2B oil cooler.	_____	_____

CUE: When student simulates releasing the locking pin and opening CC-V-1290, evaluator to student, **"The locking pin releases. The valve is open."** If student does not simulate release of locking pin, cue,**"The valve does not move."**

NOTE: Student should review NOTE prior to step 4.21.8..

*8.	S	Throttle CC-V-1294 CS-P-2B oil cooler alternate cooling outlet as necessary to maintain 10-30 gpm.	Simulates releasing locking pin and throttling open CC-V-1294 CS-P-2B oil cooler alternate cooling outlet.	_____	_____

CUE: When student simulates releasing the locking pin and throttling CC-V-1294, evaluator to student, **"The locking pin releases. The valve is throttled open. You hear flow."** If student does not simulate release of locking pin, cue,**"The valve does not move."**

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT	UNSAT
9. S	Check flow on CC-FISL-2218.	Simulates checking flow on CC-FISL-2218.	____	____

CUE: When student simulates checking flow, evaluator to student, **"The indicator shows 25 gpm."**

10. S	Inform control room that alternate cooling using Fire Protection water has been established to CS-P-2B oil cooler at 25 gpm.	Simulates informing control room that alternate cooling using Fire Protection water has been established to CS-P-2B oil cooler at 25 gpm.	____	____

CUE: "The JPM is complete."

11.	Stop time _____ Evaluator calculates time to complete task	Time to complete task ≤ 20 minutes		
12.	Obtain from student: Tear Off sheets and any other training materials used in performance of this JPM.		____	____

PERFORMANCE SUMMARY

Provide comments on unsatisfactory performance of an element/step or for any deviation from performance as stated. Record interruptions in performance such as retraining, shift change, and processing of procedure changes. Recommend remedial training, if necessary.

TEAR OFF SHEET FOR JPM IN-PLANT 'C'

Directions To The Student:

A. You are the Primary NSO.

B. The following information is provided to you:

1. Plant is in Mode 3.
2. Train B PCCW has been lost.
3. The crew is taking actions to align alternate cooling to the 2B charging pump lube oil cooler.
4. The Roving NSO and a Fire Fighter have been dispatched to connect the drain hose from the Charging Pump lube oil cooler outlet to a storm drain.

Initiating Cue:

US to Primary NSO, **"Primary NSO (or student's name), simulate aligning Fire Protection (FP) water as alternate cooling to CS-P-2B lube oil cooler using OS1002.02 section 4.21. Inform the control room as soon as cooling flow has been established."**

Seabrook Station 2010 NRC Exam-Simulator Scenarios

Facility: Seabrook **Scenario No.: 1** **Op-Test No.:**
Examiners: D. Silk **Operators:** _____

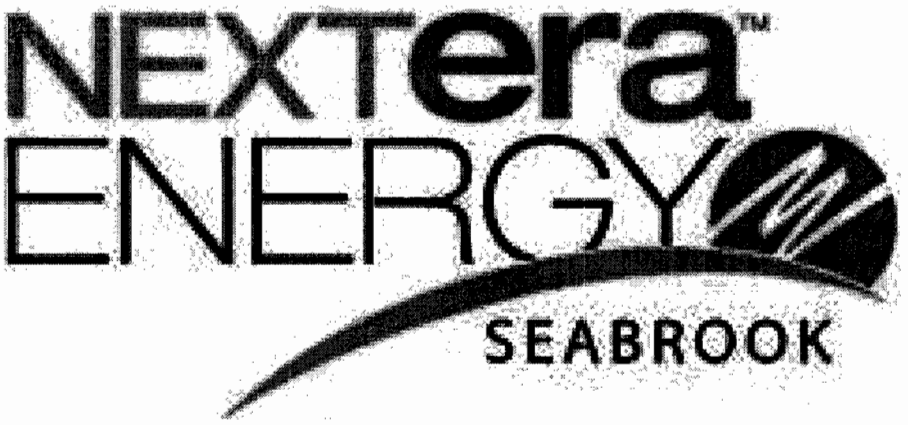
Initial Conditions: MOL 50% power. Both Main feed Pumps and one Heater Drain pump is in service.
Turnover:

- Plant is at 55% power.
- FW-FK-520, "B" SG FRV controller has experienced a failure of its auto tracking driver card. This failure prevents automatic operation of the "B" FRV. The controller is currently in manual requiring operator intervention to control "B" SG water level. Additional manpower for feed station operations is not available at this time.
- Procedure OS1000.05, Power Increase is being performed and is completed to step 4.3.10.
- Maintain AFD on target.
- Increase power to 75% at 5%/hour.
- SW-P-41C tagged out for motor replacement.

Event No.	Malf. No.	Event Type*	Event Description
1	IOOZMDIF WFK520M	BOP **C**	FW-FK-520, "B" SG FRV controller had previously experienced a failure of its auto tracking driver card. This failure prevents automatic operation of the "B" FRV. The controller is in manual requiring BOP intervention to control the "B" SG level during the following At-Power events.
2		PSO **R** BOP **N** US **N**	Crew begins a 5%/hr. power increase
3	ptFWPT505	PSO **I** US **I, TS** BOP **I**	Turbine Impulse Pressure PT-505 Fails Low causing automatic rod insertion
4	RCLT459	PSO **I** US **I, TS**	RC-LI-459 PZR Level, Channel 1 Fails High, requiring manual control of charging and letdown.
5	mfRC049C	PSO C US C,TS	Crew responds to a 20 GPM RCS Leak. Supports E Plan Classification (End of scenario)
6	mfHF001 mfHF002 svo7186HF rvMSAVR36 rvMSAVR50	PSO **M** US **M** BOP **M**	Crew responds to sequential loss of EHC pumps with complete loss producing an automatic Turbine/Reactor trip signal. A turbine trip - Reactor trip will occur when EHC pressure decays below 1100 psig or when MANUALLY tripped by the crew. When the MSIVs are shut, two SG safeties will fail open causing the need for a SI.
7	avMSVSV2 avMSVCV2 mfRPS019 mfRPS020	BOP **C**	One Turbine Stop and Control valve sticks Open requiring a Manual MSI.
8	mfSI003 mfSI004	PSO **C**	SI pumps A & B will fail to auto-start on the SI signal and require manual actions to start

* **(N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor**

Note: Anticipated AOP/EOP flow-path: OS1235.05, OS1201.07, OS1201.02, E-0, E-2, ES 1.1 or E-1



2009-2010 LOIT NRC SIMULATOR EXAMINATION # 01

Rev. 2

OFFICIAL NRC EXAMINATION MATERIAL

ACCESS IS LIMITED TO NRC EXAMINERS AND PERSONNEL THAT FULLY UNDERSTAND AND HAVE SIGNED ON TO THE 2010 NRC INITIAL EXAM SECURITY AGREEMENT.

PREPARED BY: _____ DATE: _____
INSTRUCTOR

APPROVED BY: _____ DATE: _____
TRAINING SUPERVISOR

REVIEWED BY: _____ DATE: _____
SME (OPTIONAL)

SCENARIO

The Scenario begins with the plant at 55% power. SW-P-41C is danger tagged out for motor replacement. Both Main feed Pumps and one Heater Drain pump are in service.

FW-FK-520, "B" SG FRV controller has experienced a failure of its auto tracking driver card. This failure prevents automatic operation of the "B" FRV. The controller is currently in manual requiring operator intervention to control the "B" SG level. Additional manpower for feed station operations is not available at this time.

After the crew begins to increase power, FW-PT-505 fails low. This is addressed in Abnormal Procedure OS1235.05, "Turbine Impulse Pressure PT-505 or PT-506 Instrument Failure."

RC-LT-459 will fail high. The crew should take manual control of charging flow. This failure is addressed with Abnormal Procedure OS1201.07, "PZR Level Instrument Failure." Also during this failure, a 20 gpm RCS leak will develop on the instrument sensing line. After initially addressing, or in parallel with the instrument failure, it is expected that the crew will address the RCS leak using Abnormal Procedure OS1201.02, "RCS Leak."

The running EHC pump will trip and the standby EHC pump will start. The standby pump will have a sheared shaft and EHC pressure will continue to decrease. The crew will need to recognize the decreasing EHC pressure and manually trip the reactor or respond to an automatic turbine trip/reactor trip demand. The #2 turbine stop and control valves will stick "as-is" on the trip. Automatic Main Steam Isolation (MSI) will fail to actuate, requiring the crew to manually close the main steam isolation valves to prevent an excessive cooldown.

When the Main Steam Isolation Valves are shut, one safety valve on "B" & "C" Steam Generators will open and subsequently stick open, requiring a manual or an automatic Safety Injection. SI-P-6A and SI-P-6B will fail to start on the Safety Injection, requiring a manual start. The crew will enter E-0, "Reactor Trip or Safety Injection" and may enter ES-0.1, "Reactor Trip Response" before transitioning back to E-0 and then to E-2, "Faulted Steam Generator", to address the depressurization of the "B" & "C" Steam Generators.

Anticipated AOP/EOP flow-path: OS1235.05, OS1201.07, OS1201.02, E-0, E-2, ES 1.1 or E-1

SIMULATOR SETUP

1. ☐ Reset the simulator to 50-55 % power with both MFPs in service, Middle of Core Life condition. **This setup has been snapped into password protected IC# 90. Alternately, any other 55% IC can be used, and conditions established using Scenario Sim test EV1 or manually entered as described below.**

2. ☐ Set Protected Train as "B" on MPCS and MCB.

3. Tag out SW-P-41C by inserting the following:
   - ☐ Override cSWP41C SW-P-41C breaker racked out
   - ☐ Remote Function cSWV22 SW-V-22 breaker open
   - ☐ Tag the Control Switch for SW-P-41C

4. ☐ Verify Pressurizer Level Channel LT-459 is Selected for control.

5. Actuate the following scenario to insert malfunctions and activate triggers for the exam setup:
   - ☐ SELECT: **Scenarios**
   - ☐ SELECT: **Demo exams**
   - ☐ SELECT: **Exam #01 setup**
   - ☐ SELECT: **RUN**

   Verify the following were inserted and activated:
   - ☐ **mfSI003,** SI PUMP 6A FAILS TO AUTO START
   - ☐ **mfSI004**, SI PUMP 6B FAILS TO AUTO START
   - ☐ **avMSVSV2**, t:1 d:0, MT STOP VLV #2 FAILS OPEN
   - ☐ **mfRPS019**, MS ISOLATION FAILS TO ACTUATE (TRN A)
   - ☐ **mfRPS020**, MS ISOLATION FAILS TO ACTUATE (TRN B)

   Verify the following event trigger has been activated. This will insert malfunctions to fail open SG safety valves on 'B' and 'C' Steam Generators when Main Steamline Isolation Train "B" switch is turned to ACTUATE:
   - ☐ SELECT: **Event Triggers** (Top bar)
   - ☐ SELECT: **Demo Exams/Exam 01 MSI B and C**
   - ☐ VERIFY: **Activated**

6. Using Panel Graphic Section E, FW-FK-520 controller, Fail the "B" FRV controller to Manual as follows:
   - ☐ SELECT: Insert OR
   - ☐ SELECT: FW-FK-520 "Manual" pushbutton
   - ☐ When the initial override window appears, SELECT: Cancel
   - ☐ When the next window appears for IOOZMDIFWFK520M enter final value: "Manual"
   - ☐ SELECT: Insert

Continued on next page

7 Disable the B EHC Pump trouble alarm D7186 as follows:

- ☐ SELECT: D-Points
- ☐ SELECT: Hydraulic Fluid
- ☐ SELECT: svo7186HF
- ☐ SELECT: Final Value = Return
- ☐ SELECT: Insert

SHIFT TURNOVER

- Plant is at 55% power.
- FW-FK-520, "B" SG FRV controller has experienced a failure of its auto tracking driver card. This failure prevents automatic operation of the "B" FRV. The controller is currently in manual requiring operator intervention to control "B" SG water level. Additional manpower for feed station operations is not available at this time.
- Procedure OS1000.05 is being performed and is completed to step 4.3.10.
- Maintain AFD on target.
- Increase power to 75% at 5%/hour.
- SW-P-41C tagged out for motor replacement.

SCENARIO OUTLINE

EVENT	INSTRUCTION	COMMENTS
Shift Turnover	Shift turnover information as stated.	
Event 1		**BOP (C)** FW-FK-520, "B" SG FRV controller had previously experienced a failure of its auto tracking driver card. This failure prevents automatic operation of the "B" FRV. The controller is currently in manual requiring BOP intervention to control the "B" SG level during the following At-Power events.
Event 2 5%/hr. power increase		**PSO (R), US (N), BOP (N)** Crew Begins the Power increase IAW MPE Procedure OS1000.05, Power Increase.
Shift Turnover	Shift turnover information as stated.	
		The crew should prepare for and initiate a power increase at 5%/hr. **Unit Supervisor:** A brief reactivity review will take place discussing the temperature limits for Tave to be used in the power increase. The temperature band will normally be $\pm$ 1.5°F with rods in Auto or $\pm$ 3 °F with rods in manual. Dilution will be used for temperature control during the power increase. Control rods will be used for AFD and temperature control.

EVENT	INSTRUCTION	COMMENTS
		Turbine Operations: The BOP will increase turbine load using automatic DEHC operations. Using the laminated sheets, Figure 9 of OS1000.05, The basic steps are: • Check the Load Set is in Hold mode. • Insert the desired loading Rate. • Insert the desired Power Level. • When RCS temperature begins to Increase, Select "Load." • Monitor turbine loading using "Load Status" is Loading and "Load Actual" increases. The BOP should verify the change with control valve position change, temperature change and power change. • At any time during the automatic loading, the power increase can be stopped by activating the "Hold" function. **Reactor Power change**: The crew will use dilution to increase temperature during the turbine load increase. A dilution value will be determined to change the boron concentration and increase power/temperature. If control rods are used in manual to control AFD / temperature, the operator will verify rod speed, place the Rod Motion Selector (In-Hold-Out) switch to the OUT direction and withdraw the rods a maximum of three steps. The PSO will monitor temperature and power as confirmation of actions.

EVENT	INSTRUCTION	COMMENTS
		Using the laminated sheets OS1008.01, Figure 2, Dilution Check List, the PSO will set up the controllers for the required dilution volume and rate. The high level steps are: • Verify the pumps in AUTO • Verify the makeup valves are in AUTO • Place Blender Mode Start Switch to STOP • Place the Mode Selector Switch to DILUTE or ALT DILUTE • Set the quantity and flow rate on CIS-FIQ-111 controller **Note:** During validation the crew used a dilution value of 775 gals at 13 gpm. • If not desired, select OFF for the "Stepback Feature" • Set the Mode Start Switch to START • Verify the pumps and valves respond • Verify Plant Response. • Restore System to Automatic control

Allow the crew to demonstrate a power increase or at Chief Examiners discretion, enter the next Event:

EVENT	INSTRUCTION	COMMENTS
Event 3 FW-PT-505 fails low	Enter the Turbine Impulse Press Channel FW-PT-505 Failure as follows: ☐ SELECT: **MF List** ☐ SELECT: **FEEDWATER (Component)** ☐ SELECT: **ptFWPT505** ☐ **Double Click** ☐ SELECT: **Fails Low** ☐ SELECT: **Insert**	**PSO(I), US(I, TS), BOP(I)** Turbine Impulse Pressure FW-PT-505 fails low. If Control Rods are selected to auto, automatic rod insertion occurs. **Alarms:** B7457 Rod Motion Detected D4421 Tavg -Tref Deviation US may direct termination of the dilution and placing rods in manual. Crew Enters OS1235.05, Turbine Impulse Pressure PT-505 or PT- 506 Instrument failure. **Step 1:** Check FW-PT-505 Failed: • The BOP checks FW-PT-505 Failed using FW-PI-505 or Tref indication. • PSO places rods in manual. • PSO/BOP monitor Tavg at program temp., using Tavg indication or RCS cold leg temperature. The Crew will likely withdraw rods in 3-step increments or reduce turbine load to restore temperature. **Step 2:** BOP Checks Condenser Steam Dumps: • Checks Steam dump valves closed. • Transfers Steam dump control to the STM Press Mode. • Adjust Steam dump controller output, places in AUTO. • Verifies interlock switches in NA RESET

EVENT	INSTRUCTION	COMMENTS
	Place FW-PT-505 in Bypass as follows: ☐ SELECT: **Panel Overview** ☐ SELECT: **AMSAC CP-519** ☐ SELECT: **TB IMP 505** **Instructor Cue:** If Ops. Management contacted regarding the power increase, respond to continue the power increase.	**Step 3:** PSO verifies P-13 Status Light for Turbine Power above 10%. **Step 4:** US verifies TS compliance and determines: • T.S. 3.3.1, Table 3.3-1, Item 18.f, Action 8, is applicable. **Step 5:** Crew verifies ATWAS Mitigation Input Status: • US directs I&C to place the failed channel in Operate Bypass. **Alarm:** D7899 ATWAS Mitigation Sys Byp/Trouble • BOP verifies UL-28 B-1, Turbine power above 20% - status light energized. US may contact Ops. Management with regards to continuing with the power increase.

Allow the crew to complete ON1235.05 or at Chief Examiners discretion prior to entering the next Event:

EVENT	INSTRUCTION	COMMENTS
Event 4 RC-LT-459 Failure	Enter the pressurizer Level Channel failure over 5 minutes as follows: ☐ SELECT: **MF List** ☐ SELECT: **REACTOR COOLANT (Component)** ☐ SELECT: **ltRCLT459** ☐ **Double Click** ☐ SELECT: **FAIL TO SPECIFIED VALUE** ☐ ENTER: **100%** ☐ ENTER: **Ramp Rate of 300 secs** ☐ SELECT: **INSERT** ☐ **Input Event 5 as a simultaneous failure.** **SIMULATOR OPERATOR CUE: Shortly after initiating Event 4, Insert malfunctions for Event 5.**	**PSO(I), US(I,TS)** RC-LI-459, PZR Level, channel 1, fails high, requiring manual control of charging and letdown. No letdown isolation occurs due to the failure of the channel high. Crew may take manual control of charging and/or letdown flow and / or isolate letdown due to flashing, using Skill Of The Operator. **Alarms:** • D4436 PZR LVL Deviation High & BU Htrs On • F7861 PZR Level High Channel trip Crew Enters OS1201.07, PZR Level Instrument Failure. **Step 1:** PSO checks Pressurizer controlling channel failed. **Step 2:** PSO Realigns PZR Level Instruments: • Manually controls level using Letdown and Charging • Selects an alternate level channel for control • Selects an alternate level channel for recorder **Step 3:** PSO will not need to Reset heaters **Step 4:** PSO checks letdown NOT isolated, US goes to step 7. **Step 7:** PSO aligns pressurizer level control by verifying controller setpoint and placing RC-LK-459 and CS-FK-121 in Auto. (Time dependent). **Step 8:** PSO verifies redundant bistables on UL-6, Pressurizer Level High, NOT tripped.

EVENT	INSTRUCTION	COMMENTS
		Step 9: US verifies TS compliance and determines the following are applicable: • T.S. 3.3.1, Reactor Trip System Instrumentation; Table 3.3-1, Item 11, Action 6 is applicable • T.S. 3.3.3.6, Accident Monitoring Instrumentation; Table 3.3.10, Item 5, Action A for PAM indication • T.S. 3.3.3.5, Remote Shutdown Systems; Table 3.3-9, Item 5, Action A for RSSD indication
	To place LB-459A in Bypass perform the following:	US Coordinates with I&C to place bistables in bypass or tripped.
	☐ SELECT: **CP1 Bypass Cabinet** ☐ SELECT : **Door Open** ☐ SELECT: **Enable** ☐ SELECT: **Panel Overview** ☐ SELECT: **BTI CP1** Position the following switches to bypass: ☐ **LB- 459, High Reactor Trip BS-1** ☐ SELECT: **CP1 Bypass Cabinet** ☐ SELECT : **Door Closed** ☐ SELECT: **Enable**	

EVENT	INSTRUCTION	COMMENTS
Event 5- 20 gpm RCS Leak	Shortly after initiating Event 3, insert the following malfunction for a 20 gpm leak ramped in over 5 minutes, simulating a leak on the pressurizer instrument sensing line: ☐ Select: **MF List** ☐ Select: **Reactor Coolant** ☐ Select: **mfRC049C** ☐ Select: **Final Value = 20** ☐ Select: **Ramp = 600** ☐ Select: **Insert** If an NSO is sent to the RSS panel to check indication, after 2 minutes, **Inform the control room that RC-LT-7334 indicates off-scale high.** (common instrument sensing line) **NOTE:** Due to no SM immediately available for the crew, it is not expected that the US will investigate ER 1.1, Classification of Emergencies, as directed by OS1201.02, step #2. A notation to follow up with the SM is sufficient at this point in the scenario.	**PSO(C), US(C,TS)** Supports E-Plan UE call on SU5 (End of Scenario) Crew responds to a 20 gpm RCS leak IAW Abnormal Procedure OS1201.02, RCS Leak **RDMS Alarms:** • Containment Particulate High and High High • Containment Gaseous High and High High • Containment Backup Gas High and High High **Step 1:** PSO Checks If Pressurizer Level Can Be Maintained by: • controlling charging • controlling letdown • checking level stable or increasing. **Step 2:** US makes notation to discuss with SM, ER1.1, Classification Of Emergencies, SU5. **Step 3:** US determines step 4 is the appropriate step Transition for a suspected RCS leak. **Step 4:** PSO Isolates Potential RCS Leakage Sources: • Checks Safety or PORV leakage using PORV tailpipe temps, and Acoustic monitor alarms • Checks reactor head vents isolated, RC-FV-2881 and RC-V323 • Checks Excess Letdown isolated, CS-V175 and CS-V176 • Checks Phase A Status lights for RCS sample lines indicate valves are closed • Checks reactor vessel flange leakoff temperature Normal • Checks valve stem leakoff header temperature, D7805 and D7804 not in alarm. • BOP checks SG tubes intact using rad monitors for MS line, SG blowdown, and Condenser air

EVENT	INSTRUCTION	COMMENTS
		evacuation. Calls Chemistry for sample. • PSO checks SI discharge header pressure< 800 psig • US determines RCS leakage is NOT isolated and goes to step 16. **Step 16:** US continues efforts to determine leak source by considering plant walk-downs or containment entry. **Step 17:** Estimate RCS Leak Rate: • Crew stabilizes Tavg • PSO maintains Pzr level stable • Crew estimates leak rate using VCT level, Containment sump levels, and/or PZR/VCT mass balance. **Step 18:** US verifies TS Compliance and determines the following apply: • T.S. 3.4.6.2, Reactor Coolant System Leakage, Action b. Action a will have to be evaluated once the exact leak location is determined. • T.S. 3.4.10, Structural Integrity, will have to be evaluated once the exact leak location is determined.

Allow the crew to estimate the leak size and determine Tech. Spec. Compliance or at Chief Examiners discretion, enter the next sequence of Events:

EVENT	INSTRUCTION	COMMENTS
Event 6 EHC Pumps Trip with EOP Entry	Insert the following to fail Turbine control valve #2 As-Is, partially open, following the impending turbine trip.	
	☐ SELECT: **Sim Diagram MS3** ☐ SELECT: **CV2** ☐ SELECT: **Fail As Is** ☐ SELECT: **INSERT**	
	RUN the following scenario to initiate loss of both EHC pumps:	
	☐ SELECT: **Scenario** ☐ SELECT: **Demo exams** ☐ SELECT: **Exam #01 EHC** ☐ SELECT: **RUN**	**PSO(M),US(M),BOP(M)** Crew Responds to sequential loss of EHC pumps with eventual complete loss producing an automatic Turbine/Reactor trip signal.
	Malfunction mfHF001, HF-P-54A, "A" EHC Pump Over Current Trip will actuate.	**Alarms:** D7185 EHC PUMP A TROUBLE. Crew is expected to monitor HF pressure and dispatch an NSO to the EHC skid. The crew may choose to have the BOP start the standby pump using "skill of the operator" or VPRO direction.
	IF the crew does not start the standby EHC pump, it will start automatically at 1300 psig.	**Alarms:** D7180, EHC HEADER PRESSURE LOW D7183, EHC STANDBY PUMP AUTO START

EVENT	INSTRUCTION	COMMENTS
		The Crew should refer to D7185 VPRO for additional guidance: • Verify started/start EHC Pump B and leave control switch in run. • Stop EHC Pump A. • Verify EHC system operation per ON1031.10, Operation of Electro-Hydraulic control system. • Have an NSO check HF-P-54A or the breaker on MCC-141 <C66>
	Following the loss of the "A" EHC pump, three minutes into Event 5, a combination of I/O overrides and malfunctions will make it appear that there is a "problem" with the "B" EHC pump. The scenario first simulates internal pump mechanical problems (loss of load and low amps) that eventually lead to a sheared shaft.	The BOP should determine that HF pressure is decreasing. It is expected that the crew will trip the plant based on continuously decreasing EHC pressure. **Alarms:** D7180, EHC HEADER PRESSURE LOW A turbine trip - Reactor trip will occur when EHC pressure decays below 1100 psig or when MANUALLY tripped by the crew. The #2 turbine stop & control valves stick open requiring the crew to manually close the MSIVs to stop the cooldown. When the MSIVs are shut, two SG safeties, one on B and one on C steam lines will fail open. The steam flow / cooldown will cause a safety injection (automatic or manual). US will transition to E-2 at step 9 of E-0 after SI has actuated. The Crew will enter E-0: **Step 1**: PSO verifies Reactor Trip

EVENT	INSTRUCTION	COMMENTS
Event 7 Turbine trip failure		**Step 2:** BOP verifies Turbine Trip **BOP(C), CCT-1**: #2 Stop and #2 Control valves are stuck as-is. The BOP will have to recognize this from valve position and/or excessive cooldown, attempt a manual turbine trip, and then isolate steam by using MSIVs. **Step 3:** BOP verifies power to emergency busses **Step 4:** PSO verifies SI is NOT actuated, and checks if SI is required: • RCS pressure <1800 • Pressurizer Level < 7% • Containment Pressure > 4 psig • RCS subcooling< 40 degrees • SG pressure < 585 PSO manually actuates SI, if automatic SI has not yet occurred. **NOTE:** Skill of the operator could be used to start SI pumps at this point. **NOTE:** Normally the PSO will be assigned actions to complete Attachment "A" of E-0, while the BOP continues processing of E-0. It is possible that these roles could be reversed. **Step 5:** PSO completes ESF Attachment A: • Verifies Phase A actuation by Status Panel • Verifies Safeguard Equipment alignment by Status Panel. Uses RNO to manually start SI pumps.

EVENT	INSTRUCTION	COMMENTS
Event 8 SI pumps A & B start failure		**PSO(C)** SI pumps A & B will fail to auto-start on the SI signal and require manual actions to start. • Verifies Feedwater isolation by Status Panel • Verifies both trains of PCCW Pumps running • Verifies ECCS flow (Based upon timing, if RCS pressure has decreased to <1700 psig, this step provides an additional opportunity to start SI pumps if not previously done, to meet CCT) • Verifies MS-V129 open • Verify both trains of Service Water Pumps operating • Verifies Service Water flow to EDGs > 900 GPM • Checks if Main Steam Lines should be isolated. This should have been completed earlier based upon turbine control valve stuck open. Goes to next step. • Checks Containment pressure < 18 psig • Verifies EFW flow total > 500 gpm • Reset of RMO is not required • Notifies US of verification status including manual actions to start SI pumps. **Step 6:** BOP monitors RCS temperature NOT stable, US refers to RNO: • Stops dumping steam • Checks MSR steam isolated • Monitors cooldown and adjust EFW flow to above 500 gpm • Throttles to maintain SG levels > 6% Narrow range in at least 1 SG. • With cooldown continuing, verifies MSIVS and Bypasses closed, and closes Upstream drain valves MSD-V-44 and 45.

EVENT	INSTRUCTION	COMMENTS
		Step 7: BOP Checks RCS isolated. **Step 8:** BOP Checks if RCPs should be stopped and based upon subcooling > 40 degs. US Goes to step 9. **Step 9:** BOP determines SG pressure boundary is NOT intact, based upon B & C SG pressures decreasing in an uncontrolled manner. US proceeds to E-2, Faulted Steam Generator Isolation. **Step 1:** BOP checks MSIVS and Bypasses Closed **Step 2:** BOP checks A & D SG pressure boundaries are intact. **Step 3:** BOP identifies B & C SGs are faulted. **Step 4:** BOP checks B & C SGs are not isolated and isolates steam flow to the EFW pump by closing MS-V-394. **CCT-2** **Step 5:** BOP checks CST level > 250,000 gals. **Step 6:** BOP checks secondary radiation is normal. **Step 7:** PSO checks if ECCS flow can be reduced: • Subcooling > 40 deg. • Secondary heat sink > 65 % SG wide range level • RCS pressure stable or increasing • PZR level > 7% • US transitions to ES- 1.1 SI Termination, Step 1 or E-1 if the steam generators have not yet completely blown down. During the post-scenario JPM, the US will evaluate the correct Emergency Response classification based on SU5, RCS Leak
Terminate Exam	Terminate the examination when the crew transitions to ES-1.1 SI Termination, or E-1, Loss of Reactor or Secondary Coolant, or at the Chief Examiner's discretion.	Anticipated AOP/EOP flow-path: OS1235.05, OS1201.07, OS1201.02, E-0, E-2, ES 1.1 or E-1 Possible brief transition may be from E-0 to ES-0.1 and back to E-0, based upon timing.

R-Reactivity, N-Normal, I-Instrument, C-Component, M-Major

CREW CRITICAL TASKS

1. MANUALLY actuate main steamline isolation or close MSIVs before a severe (Orange Path) challenge develops to either the subcriticality or the integrity CSF or before transition to ECA-2.1, whichever happens first,(CCT E-0,O)

2. Isolate the faulted Steam Generators before transition out of E-2, Faulted Steam Generator Isolation, or ECA-2.1, Uncontrolled Depressurization of All Steam Generators.(CCT E-2,A)

Seabrook Station 2010 NRC Exam-Simulator Scenarios

Facility: Seabrook **Scenario No.:** 3 **Op-Test No.:**

Examiners: Dave Silk _____ **Operators:** _____

_____ _____

_____ _____

Initial Conditions: MOL, 100% Power.
Turnover:

- The plant is at 100% power.
- Decrease plant power at 10%/hr to 45% power to allow for repairs of FW-P-32A oil leak. Currently at Step 1.3 of OS1000.06, Figure 6
- Main Steam Atmospheric Steam Dump ("A" ASDV), MS-PV-3001 is Danger Tagged closed due to excessive seat leakage. MS-V-5 is closed and tagged. Tech. Spec. 3.7.1.6 and 3.6.3 were entered 4 days ago.
- SW-P-41C tagged out for motor replacement.

Event No.	Malf. No.	Event Type*	Event Description
1		PSO **R** BOP **N** US **N**	Decrease plant power @ 10%/hr.
2	ttRCTT411	PSO **I** US **I,TS**	RCS Loop 1 Tcold will fail high causing inward control rod motion.
3	ptMSPK3004	BOP **C** US **TS**	"D" ASDV controlling pressure channel will fail high causing "D" ASDV to open.
4	mfCS012	PSO **C** US **C, TS**	Letdown line leak requiring letdown isolation.
5	mfED038 mfED031 mfED034 avMSVSV2	PSO **M** BOP **M** US **M**	Loss of Offsite Power, complicated by "A" EDG failure to start, "B" EDG starts then trips on low oil pressure and Steam Driven EFW pump trips on overspeed.
6	mfSW013 mfSW015 mfSW017 mfFW055	BOP C	On Bus 6 power restoration from SEPs no Service Water Pump will start. The Motor Driven EFW Pump Trips on Overcurrent.
7	rmvMSV129	BOP **C** US **C**	Crew directs reset and restart of FW-P37A (terry turbine) to establish EFW flow to the Steam Generators.

* **(N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor**

Note: Anticipated AOP/EOP flow-path: OS1201.08, OS1201.02, E-0, ECA-0.0, E-0, ES-0.1

NEXTera ENERGY SEABROOK

2009-2010 LOIT NRC SIMULATOR EXAMINATION # 03

Rev. 2

OFFICIAL NRC EXAMINATION MATERIAL

ACCESS IS LIMITED TO NRC EXAMINERS AND PERSONNEL THAT FULLY UNDERSTAND AND HAVE SIGNED ON TO THE 2010 NRC INITIAL EXAM SECURITY AGREEMENT.

PREPARED BY: _____ DATE: _____
INSTRUCTOR

REVIEWED BY: _____ DATE: _____
SME (Optional)

APPROVED BY: _____ DATE: _____
TRAINING SUPERVISOR

SCENARIO

The simulator is initialized at 100% power. SW-P-41C is danger tagged out for motor replacement. 'A" ASDV is tagged out of service due to seat leakage.

The A Main Feed Pump has a small control system oil leak that cannot be repaired with the pump operating. The crew will start a 10% per hour downpower to 45% power.

The Loop 1 Tcold instrument (TE-411) will fail high. The crew responds with OS1201.08, "Tave/Delta T Instrument Failure".

The "D" ASDV controlling pressure channel will fail high causing "D" ASDV to open. The BOP operator should recognize the "D" ASDV opening is due to a failed pressure channel. The ASDV controller is placed in MANUAL and the valve is closed to prevent an uncontrolled power/reactivity increase.

A leak in the letdown line at the inlet to the Reactor Coolant Filter will be initiated. Letdown flow will be reduced approximately 50%, causing VCT level to decrease. The crew responds using OS1201.02, "RCS Leak".

A Loss of Offsite Power will occur. The 'B' EDG will start and then trip on low lube oil pressure caused by a lube oil leak. The 'A' EDG fails to start. The crew will recover power to Bus E6 via the Supplemental Emergency Power System (SEPS).

The EFW Turbine Trip Throttle valve will close for unknown reasons. Recovery of the EFW turbine will be delayed until later in the scenario.

Upon restoration of power to Bus E6, the "B' train SW pump will not Auto restart and action must be taken to start a pump to restore SW flow. The crew will enter E-0 and ECA-0.0 for these events.

During the recovery of Bus E6, the Motor Driven EFW Pump will trip on Overcurrent requiring the use of the Turbine driven EFW pump to restore EFW flow to the SGs.

Anticipated AOP/EOP flow-path: OS1201.08, OS1201.02, E-0, ECA-0.0, E-0, ES-0.1

SIMULATOR SETUP

1. Reset the simulator to a 100%, Middle of Core Life condition. **This setup has been snapped to password protected IC92. Alternately, any other 100% IC (IC-30) can be used, and conditions established using Scenario Sim test EV3 or manually input as described below.**

2. ☐ Set Protected Train as "B" on MPCS and MCB

3. If EV3 is to be used, establish the exam setup by running the following scenario:

☐	Select: Scenario
☐	Select: Len
☐	Select: Sim test EV3
☐	Select Run

4. ☐ **Verify the following conditions were entered:**

5. Insert the following Malfunction and Overrides to fail the Auto Start of "A" EDG; Electrical Distribution:

☐	IMF mfED031, DG-1A Auto Start Failure
☐	Override the DG-1A Emergency Start pushbutton to RELEASE.
☐	On Panel Graphic PHF09, Override the "A" EDG Emergency Stop Pushbuttons to STOP

6. Insert the following Malfunction to Trip the "B" EDG on Low Lube Oil Pressure, Electrical Malfunctions:

☐	IMF mfED034, DG-1B Low Lube Oil Press Trip

7. Set up the ASDV "A" Closure and Isolation with MS-V5:

☐	On Sim Diagram MS1, for MS-V5 Select the Remote Function, rfMS009, and Set Final value to 0
☐	On MS-PK-3001, place the controller to Manual and Minimum Output
☐	On Sim Diagram MS1, MS-PV-3001, Component Malfunction
☐	SELECT: FAIL CLOSED
☐	SELECT: INSERT
☐	PLACE MCB jog switch to CLOSED for MS-PV-3001 and place a Control Board Tag.

Continued on next page.

8. Using Malfunctions, Service Water, Insert the following malfunctions to prevent Auto Start of SW-P-41B, 41D and P-110B

- ☐ IMF mfSW013, SW-P-41B Fails to Auto Start
- ☐ IMF mfSW015, SW-P-41D Fails to Auto Start
- ☐ IMF mfSW017, SW-P-110B Fails to Auto Start

9. Activate trigger for FW-P-37A Overspeed.

- ☐ LOIT, L3059I, Loss of FW-P-37A on Overspeed

10. Setup the Malfunction for FW-P-37B to Trip on Overcurrent after starting in ECA-0.0.

- ☐ Malfunctions, Feedwater
- ☐ SELECT: mfFW055, FW-P-37B Overcurrent Trip
- ☐ SELECT: INSERT

11. Tag out SW-P-41C by inserting the following:

- ☐ Override cSWP41C, SW-P-41C breaker racked out
- ☐ Remote Function cSWV22, SW-V-22 breaker open
- ☐ Tag the Control Switch for SW-P-41C

SHIFT TURNOVER

- The plant is at 100% power.
- Decrease plant power at 10%/hr to 45% power to allow for repairs of FW-P-32A oil leak. Currently at Step 1.3 of OS1000.06, Figure 6
- Main Steam Atmospheric Steam Dump ("A" ASDV), MS-PV-3001 is Danger Tagged closed due to excessive seat leakage. MS-V-5 is closed and tagged. Tech. Spec. 3.7.1.6 and 3.6.3 were entered 4 days ago.
- SW-P-41C tagged out for motor replacement.

SCENARIO OUTLINE

EVENT	INSTRUCTION	COMMENTS
Shift Turnover	Shift turnover information as stated.	Operators should review alarms and indications
Event 1: Decrease plant power @ 10%/hr.		**PSO (R) BOP (N) US (N)** The crew should prepare for and initiate a plant shutdown at 10%/hr. The US should use OS1000.06, Power Decrease procedure and reference Figure 6, Rapid Power Decrease Guidelines. **Unit Supervisor:** A brief reactivity review will take place discussing the temperature limits for Tave to be used in the power decrease. The temperature band will normally be -3°F to +3°F. Boration will be used for temperature control during the power decrease. Control rods will be used for AFD and temperature control. **Turbine Operations**: The BOP will decrease turbine load using automatic DEHC operations. Using the laminated sheets, Figure 12 of OS1000.06, The basic steps are: • Insert the desired loading Rate. • Insert the desired Power Level. • Monitor turbine loading using "Load Status" is Unloading and "Load Actual" decreases. The BOP should verify the change with control valve position change, temperature change and power change. • At any time during the automatic unloading, the power increase can be stopped by activating the "Hold" function. **Reactor Power change**: The crew will use control rods in automatic to control temperature during the turbine load decrease. Using ODI-56, a boration value will be determined to change the boron concentration and decrease power/temperature. If control rods are used in manual the operator will verify rod speed, place the Rod Motion Selector

EVENT	INSTRUCTION	COMMENTS
		(in-Hold-Out) switch to the "IN" direction and insert the rods a maximum of three steps. He will monitor temperature and power as confirmation of his actions. Using the laminated sheets for Figure 3 of OS1008.01, Boration Check List, the RO will set up the controllers for the required boration volume and rate. The high level steps are: • Verify the pumps in AUTO • Verify the makeup valves are in AUTO • Place Blender Mode Start Switch to STOP • Place the Mode Selector Switch to Borate • Set the quantity on CIS-FIQ-111 and CIS-FIQ-110 controllers • Set the Mode Start Switch to START • Verify the pumps and valves respond • Verify Plant Response. Restore System to Automatic control.

Allow the crew to commence the downpower or at Chief Examiners discretion prior to entering the next Event.

EVENT	INSTRUCTION	COMMENTS
Event 2: RCS Loop 1 Tcold fails high	Initiate the instrument failure as follows: ☐ SELECT Malfunction: **Reactor Coolant (Component)** ☐ SELECT Component: **ttRCTT411** ☐ SELECT: **FAIL HIGH** ☐ SELECT: **INSERT**	**PSO (I) US (I,TS)** RCS Loop 1 Tcold will fail high causing inward control rod motion. Control Rods step in based on Tavg/Tref deviation. The crew should diagnose that rods are stepping in due to an instrument failure. The PSO should recommend and/or the Unit Supervisor should direct the PSO to place rods in manual using "skill of the operator." **Alarms:** F5298, OTDT Chan Trip D4422, Average Tavg High D4421, Tavg-Tref Deviation B7457, Rod Motion Detected UL-6, A3, RC Loop 1, TB-411C OTDT, momentarily lit, transient condition The crew responds using OS1201.08, Tavg/Delta T Instrument Failure: **Step 1:** The PSO should identify that Loop 1 Tave instrument has failed. **Step 2:** The US should direct the PSO to place rods in MANUAL. This action may already have taken place prior to the procedure step as a "skill of the operator" task.

EVENT	INSTRUCTION	COMMENTS
		• BOP checks condenser steam dumps closed. • PSO adjusts charging and letdown flow as necessary to restore PZR level. **Step 3:** The PSO defeats the Loop 1 ΔT input, Loop 1 Tavg input, and selects a non-affected loop for the ΔT,OT,OP recorder. **The following Alarms Reset:** F5298, OTDT Chan Trip D4422, Average Tavg High The following alarms will have occurred and will remain in alarm: VAS F8115, RC Loop 1 Tavg Deviation VAS F8119, RC Loop 1 Delta T Deviation **Step 4:** The PSO verifies that Tavg is within 1°F of Tref. If not, the US directs PSO to manually withdraw rods or the BOP to reduce turbine load to restore temperature. • PSO places rods back in automatic. • PSO checks PZR level at program, and restores level control to automatic • BOP checks steam dumps in NA RESET NOTE; As a power decrease is planned rods may remain in MANUAL. **Step 5:** The RO should verify that there are no redundant bi-stable lights lit for the following: • UL-1, T Avg Lo Loop To FW Iso • UL-1, T Avg Lo-Lo Loop Stm Dmp Iso • UL-6, RCS Loop OTΔT • UL-6, RCS Loop OPΔT • UL-12, Tavg Lo Loop To FW Iso

EVENT	INSTRUCTION	COMMENTS
		Step 6: The Unit Supervisor should identify Tech. Spec. 3.3.1, Reactor Trip System Instrumentation, Item 7, Over Temperature ΔT and Item 8, Over Power ΔT are applicable. • Requires affected bistables to be placed in the trip condition within 6 hours. T.R 19, Feedwater Isolation On Low Tavg Coincident With Reactor Trip is not applicable due to 3 other channels available.
	If I&C is directed to bypass the failed instrument, RCS Loop 1 Tcold, RC-TI-411, perform the following:	The Unit Supervisor may coordinate with I&C to place the affected bistables to bypass, using BTI, for up to 6 hours.
☐	SELECT: **CP1 Bypass Cabinet**	
☐	SELECT : **Door Open**	
☐	SELECT: **Enable**	
☐	SELECT: **Panel Overview**	
☐	SELECT: **BTI CP1**	
	Position the following switches to bypass:	
☐	**TB411G**	
☐	**TB411C**	
☐	**TB412G**	
☐	**TB412C**	
☐	SELECT: **CP1 Bypass Cabinet**	
☐	SELECT : **Door Closed**	
☐	SELECT: **Enable**	

Allow the crew to complete the abnormal procedure or at Chief Examiners discretion prior to entering the next Event.

EVENT		INSTRUCTION	COMMENTS
Event 3: ASDV Failure	☐	SELECT: **MALFS**	**BOP (C), US (TS)** "D" ASDV controlling pressure channel will fail high causing "D" ASDV to open. **Alarms:** D5217, ASDV D Not Full Closed BOP operator recognizes "D" ASDV opening due to a failed pressure channel. Using "Skill of the Operator" the US will direct taking manual control of the ASDV and closing the valve. The BOP will place the ASDV controller in MANUAL and close the valve to stop uncontrolled power/reactivity excursion. The BOP/Crew should also refer to the Alarm Response Procedure for D5217 to verify response. • Verify S/G pressure and compare to ASDV controllers setpoint. **(instrument failure)** • Adjust ASDV controller setpoint and/or transfer steam load the condenser as required. **(Not required)** • If an ASDV has failed open: o Places/Verifies ASDV control switch in close o Locally isolates ASDV as necessary by closing MS-V-49. **(Not necessary)** o Places/Verifies controller for the ASDV in manual minimum
	☐	SELECT: **Main Steam (Component)**	
	☐	SELECT: **ptMSPK3004**	
	☐	SELECT: **Fail to Specified Value**	
	☐	INSERT FINAL VALUE: **1500**	
	☐	INPUT RAMP TIME: **45**	
	☐	SELECT: **INSERT**	

EVENT	INSTRUCTION	COMMENTS
		• The US evaluates Tech. Specs: o TS 3.7.1.6, Atmospheric Relief Valves. The crew is already in Action A due to the "A" ASDV being tagged out. The US should determine that the "D" ASDV is operable, based upon the availability to control the valve using the "Jog" switch. No additional actions are required. o TS 3.6.3, Containment Isolation Valves. The valve remains operable as a containment isolation valve, no additional actions are required.

Following US review of Tech. Specs. or at Chief Examiners discretion continue with the next Event.

EVENT	INSTRUCTION	COMMENTS
Event 4: Initiation of a letdown line leak.	☐ SELECT: **Malfunctions** ☐ SELECT: **Chemical and Volume Control:** ☐ SELECT: **mfCS012, Letdown Line Leak At Filter Inlet To Reactor Coolant** ☐ INPUT Value: **0.5** ☐ SELECT: **INSERT**	**PSO (C), US (C,TS)** **Alarms:** RDMS High Alarm, RM6541, PAB 7 ft North B7399, RCS Unidentified Leak Rate High B8266, RCS Unidentified Leak Rate Warning RDMS High Alarm, RM6508-2, High Range PAB North El-7 RO should identify decrease in VCT level. **NOTE:** The crew could initially enter OS1252.03 Area High Radiation abnormal. The crew responds with OS1201.02, RCS Leak: The Unit Supervisor should alert the crew to the Caution Statement prior to step 1: If the plant is in Mode 1,2,or 3 with SI accumulators aligned for injection and pressurizer level can not be maintained greater than 7% using normal charging lineup, then perform the following: 1) Trip reactor 2) When the reactor trip is verified, then actuate SI 3) Go to E-0, REACTOR TRIP OR SAFETY INJECTION. **Step 1:** The PSO will control charging and letdown flow as necessary to maintain pressurizer level, and verify that pressurizer level is stable or increasing. This is a continuous action step. The RNO response for this step reflects the information contained in the procedure caution as described above. **Step 2:** The US may refer to ER-1.1, Classification of Emergencies for potential E-Plan classification. **Step 3:** The crew should identify that a CVCS leak is suspected. The US should proceed to Step 6. **Step 6:** The Unit Supervisor will direct the PSO to isolate letdown.

EVENT	INSTRUCTION	COMMENTS
		• The PSO will close the following valves: o CS-HCV-189 o CS-HCV-190 o CS-V-145 o RC-V-81 • PSO isolates charging to the loops: o Closes CS-HCV-182 o Maintains seal inj. flow 6-13 gpm utilizing CS-FCV-121 in manual. o Closes Charging Line isolation valves CS-V-142 and CS-V-143. **Alarms:** When letdown flow is isolated the following alarms will occur: VAS B8166, Pzr Stm/Chg Line ΔT Approach Limit When the charging line isolation valves are closed the following alarms will occur: VAS D7853, Chg Pmp Disch Combined Hdr Flow Low VAS D7872, Chg Header Contm Iso VLV-142 Closed VAS D7873, Chg Header Contm Iso VLV-143 Closed When a VCT auto makeup occurs at 30% level the following alarm will occur" VAS D4660, BA Makeup VLV-110B to Chg Pmp Open
	Instructor CUE: After completion of Step 7, have the NSO report that the leak appears to be from the inlet to the reactor coolant filter, CS-F-1.	**Step 7:** The crew should identify that the leak is isolated by verifying the following parameters: • Pressurizer level-Increasing at a rate equal to the difference between seal injection and seal return. • Containment air particulate and gas monitor. Stable or Decreasing. Since the leak was in the PAB, the US may also reference PAB monitors. • Containment temperature and pressure. Stable or

EVENT	INSTRUCTION	COMMENTS
		Decreasing • Containment sump A and B levels. Normal or Decreasing **Step 8:** The crew will be checking charging and letdown system integrity based on: • VCT level decrease-Equal to the difference between seal injection and seal return. • PAB radiation levels-Stable or decreasing. **NOTE: The outcome of these verifications is time dependent. The RNO step directs dispatching HP/NSO's to determine the source of the leak. If the source cannot be identified the step directs entering OS1202.02, Charging System Failure. The crew could also enter procedure OS1252.03, Area High Radiation abnormal.** **Step 9:** The Unit Supervisor should direct the PSO to establish excess letdown. Excess letdown is necessary to remove the inventory being added to the RCS via seal injection flow. NOTE: Do not exceed Excess Letdown Heat Exchanger outlet temperature of 175^{0}F. Do not exceed Excess Letdown Heat Exchanger outlet pressure of 150 psig. The PSO establishes excess letdown as follows: • Opens CC-V-434, Excess Letdown Heat Exchanger Cooling Water isolation valve • Checks open CS-V-167 and 168, Excess Letdown Containment Isolation valves • Checks closed CS-HCV-123, Excess Letdown flow control valve. • Opens CS-V-175 and 176, Excess Letdown Containment Isolation valves. • Flushes Excess Letdown to RCDT, Aligns CS-V-170 to RCDT, Slowly opens CS-HCV-123 to flush for greater

EVENT	INSTRUCTION	COMMENTS

than 5 minutes, then closes CS-HCV-123.
- Aligns CS-V-170 to Seal Return Header.
- Establish Excess Letdown flow via CS-HCV-123. The RO should limit flow such that excess letdown heat exchanger outlet temp is <175°F and outlet pressure is <150 psig.
- Using the MPCS, the PSO will remove data point A0620, Letdown Outlet Flow, from the plant calorimetric calculation.

Step 10: PSO confirms RCS Leakage has stopped by verifying:
- VCT level stable
- Containment radiation particulate & gas stable or decreasing
- Containment temperature and pressure stable or decreasing
- Containment sump A & B level trends decreasing or normal

Step 11: US Minimizes effect of loss of Normal letdown:
- Contacts Chemistry & HP regarding loss of demin. flow and RCS hydrogen maintenance,
- Verify Tech. Spec. Compliance: These T.S. 's are not currently applicable however, follow up will be needed if RCS chemistry samples indicate limits exceeded.
  - T.S. 3.4.7, Chemistry
  - T.S. 3.4.8, Specific Activity

US goes to step 18

Step 18: US verifies Tech. Spec. Compliance:
- T.S. 3.4.6.2, Reactor Coolant System Leakage
- T.S. 3.4.10, Structural Integrity

Since the leak was on the letdown System, this is not considered RCS leakage and T.S. does not apply.

Following US review of Tech. Specs. at step 18 or at Chief Examiners discretion continue with the next series of Events.

EVENT	INSTRUCTION	COMMENTS
Event 5: The plant has a loss of offsite power.	Initiate the loss of power as follows: ☐ SELECT: **Malfunctions** ☐ SELECT: **Electrical Distribution** ☐ SELECT: **mfED038, Loss of Offsite Power.** ☐ SELECT: **INSERT**	**PSO (M), BOP (M), US (M)** The Crew enters E-0 and performs the Immediate Actions steps and exits at step 3 to ECA-0.0. **ECA-0.0, LOSS OF ALL AC POWER** **Step 1:** The RO verifies that the reactor is tripped: • Checks reactor trip and bypass breakers open. • Checks neutron flux decreasing.
	Trip the Turbine Driven EFW pump as follows: ☐ SELECT: **Sim Diagram: FW3** ☐ LEFT Click on **MS-V129** ☐ SELECT: **MANUAL ADJUST** ☐ SELECT: **Final Position = 0** ☐ SELECT: **INSERT**	**Step 2:** The BOP verifies that the turbine is tripped: • Checks all stop valves closed. • Checks generator breaker open.
	NOTE: This pump will not be restored until after the power restoration in ECA-0.0. Provide delay statements to control room if asked about status, i.e., can not reset valve, having difficulty with washer and need maintenance assistance.	**NOTE:** The 'A' DG fails to start and no actions will recover the 'A' DG. The 'B' EDG will trip on Low Lube Oil Pressure.
	NOTE: If the crew request the B EDG placed in Maintenance: ☐ SELECT: **Local Panels** ☐ SELECT: **DG System** ☐ SELECT: **DG B** ☐ SELECT: **SS-9710 to Maintenance**	**Step 3:** The PSO checks the RCS Isolated. •Pressurizer PORVs closed •Letdown isolation valves closed CS-V-145 Or RC-LCV-459 Or RC-LCV-460 •Closes Excess Letdown valves CS-V-175 and 176 •RCS Sample Valves closed

EVENT	INSTRUCTION	COMMENTS
	Instructor CUE: • NSO will find a large quantity of oil on the "B" EDG skid. Finds oil line to engine oil pressure switches ruptured. • NSO finds nothing obviously wrong with "A" EDG. If directed by crew to prevent uncontrolled start, use DG Local Panels to set LOCAL on the LOCAL/REMOTE switch. • If previously directed by the crew, as time allows, report as HP that steam lines show no change in radiation levels.	**Step 4:** The BOP should identify that there is no EFW flow. MS-V-129 is tripped closed but no indication due to LOP. The crew should utilize Step 4 RNO, and direct an NSO to locally start the steam driven EFW pump per OS1036.03, RESETTING THE STEAM DRIVEN EFW PUMP TRIP VALVE. **Step 5:** The crew should continue efforts to restore power. SEP's is available • BOP place UAT and RAT breaker switches in Pull-To-Lock. • BOP should attempt an emergency start of EDG 'A'. **Instructor Cue; A Slave relay start at K603 test switch S909 is unsuccessful.** Neither EDG will be able to function. The RNO for this step is to use the SEP's diesel generator. SEP's is available.
Event 6 SW pump does not auto-start .	**Instructor CUE:** **Delay restoration of EFW flow from the turbine driven pump until Bus E6 is re-energized and B EFW pump trips on Overcurrent.** **This satisfies a CCT.**	**Upon Bus 6 power restoration from SEPs no Service water pump will start. The Motor Driven EFW Pump Trips on Overcurrent.** **CCT 2** US directs **Step 5 RNO: B:** BOP performs the following: IF SEPS bus feeder breaker is aligned to Bus 6, THEN: 1) Places the following equipment control switches in PULL TO LOCK position: • DG 1B output breaker • CBS-P-9B • SI-P-6B 2) Manually closes SEPS Bus 6 breaker. 3) US goes to Step 5f.

EVENT	INSTRUCTION	COMMENTS
Event 7 EFW pump trip **Event 6** (Continued) Restoration of SW	When the crew dispatches an NSO to the field to reset the EFW pump, perform the following (around step 5g of ECA-0.0): ☐ Using Panel Graphic FW3: **Open FW-V-346** ☐ SELECT: **Component Remote Functions Summary** ☐ SELECT: **rmvMSV129** ☐ SELECT: **Manual Adjust** ☐ SELECT: **1.0** ☐ SELECT: **INSERT**	**Step 5f:** Verifies EPS – ACTUATED AND SEQUENCING **Step5g:** Crew checks equipment loaded: • Charging pump • Thermal barrier cooling pump • PCCW pump • EFW pump **BOP (C): The EFW Pump will trip on Overcurrent when the Bus is re-energized, requiring the Turbine Driven EFW Pump to be restored to recover feedwater flow and SG level.** • SW or cooling tower pump NOT running, BOP must Reset RMO and manually start SW-P-41D. **BOP (C), CCT 1: Sub step g. has the operator verify one ocean SW pump or cooling tower pump running. The crew should identify that Train 'B' has no pumps running. The RNO for the step directs manually starting a SW pump. The RMO relay needs to be reset to restart the SW pump.** • BOP Checks AC emergency busses – AT LEAST ONE ENERGIZED • BOP Checks AC emergency busses – ALL ENERGIZED • BOP Checks emergency bus – NOT POWERED BY EMERGENCY DIESEL . US refers to Step 5j. RNO: If Emergency Bus is powered by SEPS, then maintain SEPS load limit per ATTACHMENT A while performing actions in other procedures in effect.

EVENT	INSTRUCTION	COMMENTS
		• US returns to procedure and step in effect. FRPs shall now be implemented as required. **If a RED path exists at this time for Heat Sink, the crew will transition to FR-H.1, Response to Loss of Secondary Heat Sink, and verify actions to recover the turbine driven EFW pump are successful to restore >500 gpm EFW flow.** Crew Returns to E-0 Step 3 as the procedure and step in effect: **Step 3A:** BOP verifies AC emergency busses - AT LEAST ONE ENERGIZED **Step 3B**: BOP responds AC emergency busses – BOTH NOT ENERGIZED. US refers to 3B RNO: Try to restore power to other train from emergency diesel generator or offsite source as time permits. Do NOT use SEPS. **SEPS is supplying Bus E6.** **Step 4:** PSO Checks If SI Is Actuated: Checks SI annunciators NOT lit for train A and B US Refers to RNO to Check if SI is required: • RCS pressure - LESS THAN 1800 PSIG • Pressurizer level - LESS THAN 7% • Containment pressure - GREATER THAN 4 PSIG • RCS subcooling - LESS THAN 40°F • Any SG pressure - LESS THAN 585 PSIG
	If SI was actuated, the crew will continue with E-0 step 5.	SI should NOT be required: IF SI is required, THEN manually actuate.

EVENT	INSTRUCTION	COMMENTS
	SI should not be required and crew transitions to ES-0.1, Reactor Trip Response.	IF SI is NOT required, THEN go to ES-0.1, REACTOR TRIP RESPONSE, Step 1 Anticipated AOP/EOP flow-path: OS1201.08, OS1201.02, E-0, ECA-0.0, E-0, ES-0.1

Terminate examination when the crew transitions to ES-0.1 and stabilizes RCS temperature with the ASDVs, or processes past step 5 of E-0 or at Chief Examiner direction.

Instructor NOTE: restore A-Point A0620, Letdown Outlet Flow, to scan at the end of the scenario.

Emergency Plan:
The charging system leak does not qualify as an RCS leak, so no e-plan call is made based on this event.

Post scenario JPM- Alert E-plan classification on:

- Alert based upon EAL SA4, Unplanned Loss of most or all safety system annunciation or indication in Control Room (RDMS) with a significant transient in progress.
- Alert based upon EAL SA5, Power to AC emergency buses reduced to a single power source for >15 minutes such that any additional single failure would result in station blackout. (as validated)
- **IF** 15 minutes had elapsed from the start of Event 5 (LOP Event) until the SEPS breaker was closed at ECA 0.0 step 5.b RNO, then SAE on EAL SS1,Both AC buses E5 and E6 de-energized for > 15 minutes

CREW CRITICAL TASKS

1. Manually start an ocean Service Water Pump or a Cooling Tower Pump.

2. Energize at least one AC Emergency bus before transition out of E-0, Reactor trip or Safety Injection, unless the transition is to ECA 0.0, in which case the critical task must be performed before placing safeguards equipment in the pull to lock position as directed by Step 6 of ECA-0.0.