

JOB PERFORMANCE MEASURE

JPM
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JPM TITLE: COOLING TOWER PUMP COMPREHENSIVE TEST DATA

JPM NUMBER: 2018 LOIT NRC Exam RO Admin JPM "A" REV. 0

K/A 2.1.25, Ability to interpret reference materials, such as graphs, curves, tables, etc.

EVALUATION LOCATION: In-Plant: ☐

Simulator: ☐

Admin: ☒

Estimated time for Completion: 20 Min

Alternate Path: NO

Time Critical: NO

PREPARED BY: Sean M. Riley **DATE:** 12/28/17

APPROVED BY: Chris Adams **DATE:** 12/28/17
TRAINING SUPERVISOR

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

ALL STEPS IN THIS CHECKLIST ARE TO BE PERFORMED PRIOR TO USE.

REVIEW STATEMENTS	YES	NO	N/A
1. Are all items on the signature page filled in correctly?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Has the JPM been reviewed and validated by SMEs?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Can the required conditions for the JPM be appropriately established in the simulator if required?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4. Do the performance steps accurately reflect trainee's actions in accordance with plant procedures?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Is the standard for each performance item specific as to what controls, indications and ranges are required to evaluate if the trainee properly performed the step?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Has the completion time been established based on validation data or incumbent experience?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. If the task is time critical, is the time critical portion based upon actual task performance requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8. Is the job level appropriate for the task being evaluated if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Is the K/A appropriate to the task and to the licensee level if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Is justification provided for tasks with K/A values less than 3.0?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Have the performance steps been identified and classified (Critical / Sequence / Time Critical) appropriately?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Have all special tools and equipment needed to perform the task been identified and made available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Are all references identified, current, accurate, and available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Have all required cues (as anticipated) been identified for the evaluator to assist task completion?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Are all critical steps supported by procedural guidance? (e.g., if licensing, EP or other groups were needed to determine correct actions, then the answer should be NO.)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. If the JPM is to be administered to an LOIT student, has the required knowledge been taught to the individual prior to administering the JPM? TPE does not have to be completed, but the JPM evaluation may not be valid if they have not been taught the required knowledge.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

All questions/statements must be answered "YES" or "N/A" or the JPM is not valid for use. If all questions/statements are answered "YES" or "N/A," then the JPM is considered valid and can be performed as written. The individual(s) performing the initial validation shall sign and date the cover sheet.

Protected Content: (CAPRs, corrective actions, licensing commitments, etc. associated with this material)

ASSOCIATED TASK DESCRIPTION:

076: Service Water System (SWS): Perform a service water pump test

STANDARDS:

- 1) Obtain applicable pump test acceptance criteria.
- 2) Analyze field data to determine adherence to Tech. Spec. acceptance criteria.

SET-UP:

1. Using the latest revision of OX1416.05, "Service Water Cooling Tower Pumps Quarterly and 2 Year Comprehensive Test", rev. 27, develop an answer key using "Form C: PM Number SW-OT031 Test Data Sheet".
2. Prepare a completed copy of field data for Form C, Sheet 3 of 6, Step 4.3.9.5 (vibration data)

Required Materials:

- Turnover Sheet.
- OX1416.05, "Service Water Cooling Tower Pumps Quarterly and 2 Year Comprehensive Test", rev. 27
- OX1456.86, "Operability Testing of IST Pumps"
- Vibration Data Sheet for 2018 LOIT NRC Exam RO Admin JPM "A"

Directions to the Student:

Evaluator gives Turnover sheet to the student

- A. You are the BOP Operator. You are in the process of performing the 2 Year Comprehensive Test on the Train “A” Cooling Tower Pump.
- B. The following information is provided to you:
 - 1. You are about to perform the 2 Year Comprehensive Test on the Train “A” Cooling Tower Pump per “OX1416.05, “Service Water Cooling Tower Pumps Quarterly and 2 Year Comprehensive Test”.
 - 2. You will be obtaining the applicable test acceptance criteria for “OX1416.05, Form C: PM Number SW-OT031 Test”
- C. Perform the task using OX1456.86, Operability Testing of IST Pumps”.
- D. We will begin after the "Initiating Cue" is read. Do you have any questions?

INITIATING CUE:

Evaluator to Primary Operator, **“BOP Operator (or student’s name), “Obtain all of the required test acceptance criteria for the 2 Year Comprehensive Test on the Train “A” Cooling Tower Pump and enter the criteria on “OX1416.05, Form C: PM Number SW-OT031 Test”**

JPM PERFORMANCE INFORMATION

Start Time: _____

NOTE: When providing "Evaluator Cues" to the examinee, care must be exercised to avoid prompting the examinee. Typically cues are only provided when the examinee's actions warrant receiving the information (i.e., the examinee looks or asks for the indication).

NOTE: Critical steps are marked with a "YES" below the performance step number. Failure to meet the standard for any critical step shall result in failure of this JPM.

NOTE: 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:	See answer key for information that should be entered on "OX1416.05, Form C: PM Number SW-OT031 Test"
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Performance Step: 01 Critical - YES	Refer to Figure 2, Pump Instrumentation and Uncertainties, and Figure 3, IST Pump Criteria, and OBTAIN the associated pump's instrumentation and Technical Specification Acceptance Criteria, respectively. RECORD on applicable pump surveillance procedure Test Data Sheets.
Standard:	Student refers to OX1456.86, Operability Testing of IST Pumps", Figures 2 and 3 and RECORDS the acceptance criteria on "OX1416.05, Form C: PM Number SW-OT031 Test" for the following: <ul style="list-style-type: none"> • Step 4.3.9.5 (sheet 3 of 6), vibration points 1-5 • Step 4.3.9.6 (sheet 4 of 6), pump differential pressure
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Note:	After reading the following cue, provide the Train "A" Cooling Tower Pump Vibration Data Sheet to the student.
Cue:	When the student states that they have recorded all of the acceptance criteria for Form C state " Time has passed and the NSO has obtained the Train "A" Cooling Tower Pump vibration data. Per OX1416.05, Step 4.3.9.5, record the pump vibration data on Form C and determine if the data meets Tech. Spec. operability requirements. "

Performance Step: 02 Critical - YES	RECORD Cooling Tower Pump "A" vibration data on Form C: Test Data Sheet
Standard:	Student records Cooling Tower Pump "A" vibration data on Form C: Test Data Sheet
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

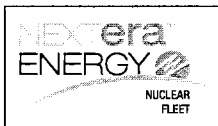
Note:	See answer key for "OX1416.05, Form C: PM Number SW-OT031 Test" for correct information.
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Performance Step: 03 Critical - YES	Determine if vibration data meets Tech. Spec. acceptance criteria.
Standard:	Determines if vibration data meets Tech. Spec. acceptance criteria
Note:	Information given must agree with results shown on the key.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Terminating Cues: The JPM is complete

NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.

Stop Time: _____



2018 LOIT NRC Exam RO Admin JPM "A"

JPM
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Examinee: _____

Evaluator: _____

☐ RO ☐ SRO ☐

Date: _____

PERFORMANCE RESULTS:

SAT:

UNSAT:

COMMENTS/FEEDBACK: (Comments shall be made for any steps graded unsatisfactory).

EXAMINER NOTE: ENSURE ALL EXAM MATERIAL IS COLLECTED AND PROCEDURES CLEANED, AS APPROPRIATE.

EVALUATOR'S SIGNATURE: _____

NOTE: Only this page needs to be retained in examinee's record if completed satisfactorily. If unsatisfactory performance is demonstrated, the entire JPM should be retained.

TURNOVER SHEET

Directions to the Student:

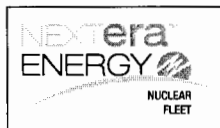
Evaluator gives Turnover sheet to the student

- A. You are the BOP Operator. You are in the process of performing the 2 Year Comprehensive Test on the Train "A" Cooling Tower Pump.
- B. The following information is provided to you:
 - 1. You are about to perform the 2 Year Comprehensive Test on the Train "A" Cooling Tower Pump per "OX1416.05, "Service Water Cooling Tower Pumps Quarterly and 2 Year Comprehensive Test".
 - 2. You will be obtaining the applicable test acceptance criteria for "OX1416.05, Form C: PM Number SW-OT031 Test".
- C. Perform the task using OX1456.86, Operability Testing of IST Pumps".
- D. We will begin after the "Initiating Cue" is read. Do you have any questions?

INITIATING CUE:

Evaluator to Primary Operator, **"BOP Operator (or student's name), "Obtain all of the required test acceptance criteria for the 2 Year Comprehensive Test on the Train "A" Cooling Tower Pump and enter the criteria on "OX1416.05, Form C: PM Number SW-OT031 Test"**

NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.



JOB PERFORMANCE MEASURE

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JPM TITLE: CALCULATE BLENDED MAKEUP TO THE VCT

JPM NUMBER: 2018 LOIT NRC Exam RO Admin JPM "B" REV. 0

K/A 2.1.37, Knowledge of procedures, guidelines, or limitations associated with reactivity management.

EVALUATION LOCATION: In-Plant: ☐

Simulator: ☐

Admin: ☒

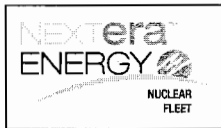
Estimated time for Completion: 20 Min

Alternate Path: NO

Time Critical: NO

PREPARED BY: Sean M. Riley **DATE:** 12/28/17

APPROVED BY: Chris Adams **DATE:** 12/28/17
TRAINING SUPERVISOR



JOB PERFORMANCE MEASURE

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JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

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REVIEW STATEMENTS	YES	NO	N/A
1. Are all items on the signature page filled in correctly?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Has the JPM been reviewed and validated by SMEs?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Can the required conditions for the JPM be appropriately established in the simulator if required?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4. Do the performance steps accurately reflect trainee's actions in accordance with plant procedures?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Is the standard for each performance item specific as to what controls, indications and ranges are required to evaluate if the trainee properly performed the step?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Has the completion time been established based on validation data or incumbent experience?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. If the task is time critical, is the time critical portion based upon actual task performance requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8. Is the job level appropriate for the task being evaluated if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Is the K/A appropriate to the task and to the licensee level if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Is justification provided for tasks with K/A values less than 3.0?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Have the performance steps been identified and classified (Critical / Sequence / Time Critical) appropriately?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Have all special tools and equipment needed to perform the task been identified and made available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Are all references identified, current, accurate, and available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Have all required cues (as anticipated) been identified for the evaluator to assist task completion?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Are all critical steps supported by procedural guidance? (e.g., if licensing, EP or other groups were needed to determine correct actions, then the answer should be NO.)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. If the JPM is to be administered to an LOIT student, has the required knowledge been taught to the individual prior to administering the JPM? TPE does not have to be completed, but the JPM evaluation may not be valid if they have not been taught the required knowledge.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

All questions/statements must be answered "YES" or "N/A" or the JPM is not valid for use. If all questions/statements are answered "YES" or "N/A," then the JPM is considered valid and can be performed as written. The individual(s) performing the initial validation shall sign and date the cover sheet.

Protected Content: (CAPRs, corrective actions, licensing commitments, etc. associated with this material)

ASSOCIATED TASK DESCRIPTION:

0040102501 Manually makeup to the VCT (blended makeup)

STANDARDS:

Calculate the required flow controller and totalizer setpoints for a 250 gallon manual blended makeup to the VCT.

SET-UP:

1. Using the latest revision of RX1735, Form E, "Blended Makeup Worksheet", develop an answer key.

Required Materials:

- Turnover Sheet.
- RS1735, Reactivity Calculations
- Daily Chemistry Report
- RE-02, Shutdown Boron Concentration Versus Temperature
- Calculator

Directions to the Student:

Evaluator gives Tear Off sheet to the student.

Evaluator reads the following to student (Optional for multiple JPMs):

- A. You are the Primary Operator. You are going to perform calculations for a 250 gallon blended makeup to the Volume Control Tank (VCT).
- B. The following information is provided to you:
 - 1. A 250 gallon manual blended makeup to the VCT is required.
 - 2. Makeup total flow rate will be 50 gpm.
 - 3. The makeup boron concentration will be at the current Reactor Coolant System concentration.
 - 4. 'A' Boric Acid Storage Tank will be used for the blended makeup.
- C. We will begin after the Initiating Cue is read.
- D. I will act as the Unit Supervisor and provide cues and communications for this JPM. Do you have any questions?

Initiating Cue:

Unit Supervisor to Primary Operator, **“Primary Operator (or student’s name), determine the required flow controller and totalizer setpoints for a 250 gallon manual blended makeup to the Volume Control Tank (VCT). Discuss the results with me.”**

JPM PERFORMANCE INFORMATION

Start Time: _____

NOTE: When providing "Evaluator Cues" to the examinee, care must be exercised to avoid prompting the examinee. Typically cues are only provided when the examinee's actions warrant receiving the information (i.e., the examinee looks or asks for the indication).

NOTE: Critical steps are marked with a "YES" below the performance step number. Failure to meet the standard for any critical step shall result in failure of this JPM.

NOTE: 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."

Performance Step: 01 Critical - NO	Obtain copy of procedure RX1735.
Standard:	Student obtains copy of RX1735.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 02 Critical - NO	Determine the required flow controller and totalizer setpoints for a 250 gallon manual blended makeup to the Volume Control Tank 1. Enter the desired makeup boron concentration.
Standard:	Student enters the desired makeup boron concentration (C_{MU}) for the RCS from the Daily chemistry Report in Step 1 of Form E. (1268 ppm)
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 03 Critical - NO	Determine the required flow controller and totalizer setpoints for a 250 gallon manual blended makeup to the Volume Control Tank 2. Enter the ¹⁰ B adder value from RE-2
Standard:	Student enters the ¹⁰ B adder value from RE-2 (79 ppm)
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 04 Critical - NO	Determine the required flow controller and totalizer setpoints for a 250 gallon manual blended makeup to the Volume Control Tank 3. ENTER the desired makeup flow rate SETPOINT: FIQ-111 (F _{TOT}).
Standard:	Student enters the desired makeup flow rate SETPOINT: FIQ-111 (F _{TOT}) in step 2 of Form E. (50 gpm)
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 05 Critical - NO	Determine the required flow controller and totalizer setpoints for a 250 gallon manual blended makeup to the Volume Control Tank 4. Enter the actual Boric Acid Storage Tank concentration (C _{BAST}).
Standard:	Student enters the actual Boric Acid Storage Tank concentration (C _{BAST}) from the Daily Chemistry Report in step 3 of Form E. (7416 ppm)
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 06 Critical - NO	Determine the required flow controller and totalizer setpoints for a 250 gallon manual blended makeup to the Volume Control Tank. 5. Enter the desired makeup quantity target: FIQ-111 (GTOT).
Standard:	Student enters the desired makeup quantity TARGET: FIQ-111 (G _{TOT}) in step 4 of Form E. (250 gallons)
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 07 Critical - YES	Determine the required flow controller and totalizer setpoints for a 250 gallon manual blended makeup to the Volume Control Tank. 6. CALCULATE the boric acid flow rate setpoint: FIQ-111 (FBA):
Standard:	Student enters the values from steps 1, 2 & 3 in the equation and calculates the boric acid flow rate SETPOINT: FIQ-111 (FBA). (8.0 GPM. Range 7.9-8.1 GPM)
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

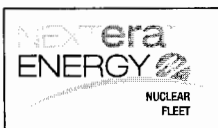
Performance Step: 08 Critical - YES	Determine the required flow controller and totalizer setpoints for a 250 gallon manual blended makeup to the Volume Control Tank. 7. CALCULATE the boric acid quantity target: FIQ-111 (G _{BA}):
Standard:	Student enters the values from steps 1, 3 & 4 in the equation and calculates the boric acid quantity TARGET: FIQ-111 (GBA). (40 gallons. Range 39.5-40.5 gallons)
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 09 Critical - NO	Calculated By signature and Date.
Standard:	Student signs and dates the Calculated By signature and Date line.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Terminating Cues: The JPM is complete

NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.

Stop Time: _____



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Examinee: _____

Evaluator: _____

☐ RO ☐ SRO ☐

Date: _____

PERFORMANCE RESULTS:

SAT:

UNSAT:

COMMENTS/FEEDBACK: (Comments shall be made for any steps graded unsatisfactory).

**EXAMINER NOTE: ENSURE ALL EXAM MATERIAL IS COLLECTED AND PROCEDURES
CLEANED, AS APPROPRIATE.**

EVALUATOR'S SIGNATURE: _____

*NOTE: Only this page needs to be retained in examinee's record if completed satisfactorily. If
unsatisfactory performance is demonstrated, the entire JPM should be retained.*

TURNOVER SHEET

Directions to the Student:

Directions to the Student:

Evaluator gives Tear Off sheet to the student.

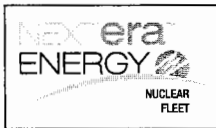
Evaluator reads the following to student (Optional for multiple JPMs):

- C. You are the Primary Operator. You are going to perform calculations for a 250 gallon blended makeup to the Volume Control Tank (VCT).
- D. The following information is provided to you:
 - 5. A 250 gallon manual blended makeup to the VCT is required.
 - 6. Makeup total flow rate will be 50 gpm.
 - 7. The makeup boron concentration will be at the current Reactor Coolant System concentration.
 - 8. 'A' Boric Acid Storage Tank will be used for the blended makeup.
- C. We will begin after the Initiating Cue is read.
- D. I will act as the Unit Supervisor and provide cues and communications for this JPM. Do you have any questions?

Initiating Cue:

Unit Supervisor to Primary Operator, **“Primary Operator (or student’s name), determine the required flow controller and totalizer setpoints for a 250 gallon manual blended makeup to the Volume Control Tank (VCT). Discuss the results with me.**

NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.



JOB PERFORMANCE MEASURE

JPM
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JPM TITLE: SHUTDOWN MARGIN (MODE 2)

JPM NUMBER: 2018 LOIT NRC Exam RO Admin JPM "C" REV. 0

K/A 2.2.12, Knowledge of surveillance procedures

EVALUATION LOCATION: In-Plant: ☐

Simulator: ☐

Admin: ☒

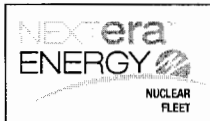
Estimated time for Completion: 20 Min

Alternate Path: NO

Time Critical: NO

PREPARED BY: Sean M. Riley **DATE:** 12/28/17

APPROVED BY: Chris Adams **DATE:** 12/28/17
TRAINING SUPERVISOR



JOB PERFORMANCE MEASURE

JPM
Page 2 of 11

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

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REVIEW STATEMENTS	YES	NO	N/A
1. Are all items on the signature page filled in correctly?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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4. Do the performance steps accurately reflect trainee's actions in accordance with plant procedures?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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6. Has the completion time been established based on validation data or incumbent experience?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. If the task is time critical, is the time critical portion based upon actual task performance requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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9. Is the K/A appropriate to the task and to the licensee level if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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12. Have all special tools and equipment needed to perform the task been identified and made available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Are all references identified, current, accurate, and available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Have all required cues (as anticipated) been identified for the evaluator to assist task completion?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Are all critical steps supported by procedural guidance? (e.g., if licensing, EP or other groups were needed to determine correct actions, then the answer should be NO.)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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Protected Content: (CAPRs, corrective actions, licensing commitments, etc. associated with this material)

ASSOCIATED TASK DESCRIPTION:

0010100401 Perform shutdown margin calculation

STANDARDS:

Determine the shutdown margin within +/- 0.15% $\Delta K/K$.

SET-UP:

1. Using the latest revision of RX1707, Form C, "Shutdown Margin Determination Immovable, Untrippable or Dropped Rod(s)", develop an answer key.

Required Materials:

- Turnover Sheet.
- RX1707, Shutdown Margin Surveillance
- BOL Primary Tech. Data Book
- Technical Specifications
- Technical Requirements

Directions to the Student:

Evaluator gives Tear Off sheet to the student.

Evaluator reads the following to student (Optional for multiple JPMs):

- A. You are going to calculate Shutdown Margin in MODE 2.
- B. The following information is provided to you:
 - 1) The plant is in MODE 2, Beginning of Life (BOL) at 3% power.
 - 2) RCS boron concentration is 1298 ppm.
 - 3) Rod H-2 has dropped to the bottom of the core.
 - 4) Rod H-2 cannot be moved.
 - 5) All other rods are fully withdrawn.
 - 6) The Unit Supervisor has entered procedure OS1210.05, DROPPED ROD.
- C. The evaluator will act as the Unit Supervisor and provide the cues and communications for this JPM. Do you have any questions?

Initiating Cue:

Unit Supervisor to Primary Operator, **“Calculate Shutdown Margin and let me know if we are in compliance with Technical Specifications.”**

JPM PERFORMANCE INFORMATION

Start Time: _____

NOTE: When providing "Evaluator Cues" to the examinee, care must be exercised to avoid prompting the examinee. Typically cues are only provided when the examinee's actions warrant receiving the information (i.e., the examinee looks or asks for the indication).

NOTE: Critical steps are marked with a "YES" below the performance step number. Failure to meet the standard for any critical step shall result in failure of this JPM.

NOTE: 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:	The student should calculate SDM per RX1707, Section 4.4.
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Performance Step: 01 Critical - NO	Obtain copy of procedure RX1707.
Standard:	Obtains copy of RX1707.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 02 Critical - YES	COMPLETE Part 1 of RX1707, Form C: Shutdown Margin Determination-Immovable, Untrippable, or Dropped Rod(s). a. RECORD number of dropped rods.
Standard:	a. Records number of dropped rods. (value a=1)
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 03 Critical - YES	COMPLETE Part 1 of RX1707, Form C: Shutdown Margin Determination-Immovable, Untrippable, or Dropped Rod(s). b. Obtain/Record RE-18 value for dropped rod.
Standard:	b. Obtains/Records RE-18 value for dropped rod. (value b=1051 pcm)
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 04 Critical - YES	COMPLETE Part 1 of RX1707, Form C: Shutdown Margin Determination-Immovable, Untrippable, or Dropped Rod(s). c. Calculate total unavailable rod worth.
Standard:	c. Calculates total unavailable rod worth. (value c=1051 pcm)
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 05 Critical - NO	COMPLETE Part 1 of RX1707, Form C: Shutdown Margin Determination-Immovable, Untrippable, or Dropped Rod(s). d. Obtain/Record total power defect.
Standard:	d. Obtains/Records total power defect. (Range: 50 to 80 pcm)
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 06 Critical - NO	<p>COMPLETE Part 1 of RX1707, Form C: Shutdown Margin Determination-Immovable, Untrippable, or Dropped Rod(s).</p> <p>e. Obtain/Record worth of the control rods inserted to the rod insertion limit-For current relative power.</p>
Standard:	<p>e. Obtains/Records worth of the control rods inserted to the rod insertion limit-For current relative power. (Range: 1925 to 1975 pcm)</p>
Performance:	<p>SATISFACTORY _____ UNSATISFACTORY _____</p>

Performance Step: 07 Critical - NO	<p>COMPLETE Part 1 of RX1707, Form C: Shutdown Margin Determination-Immovable, Untrippable, or Dropped Rod(s).</p> <p>f. Obtain/Record total control and shutdown rod worth minus stuck rod and 10% uncertainty.</p>
Standard:	<p>f. Obtains/Records total control and shutdown rod worth minus stuck rod and 10% uncertainty. (value f=4854 pcm)</p>
Performance:	<p>SATISFACTORY _____ UNSATISFACTORY _____</p>

Performance Step: 08 Critical - YES	<p>COMPLETE Part 1 of RX1707, Form C: Shutdown Margin Determination-Immovable, Untrippable, or Dropped Rod(s).</p> <p>g. Calculate shutdown margin.</p>
Standard:	<p>g. Calculates shutdown margin. (Within 0.15% $\Delta K/K$ of 1.79% $\Delta K/K$. Acceptable range: 1.64 to 1.94 %$\Delta K/K$)</p>
Performance:	<p>SATISFACTORY _____ UNSATISFACTORY _____</p>

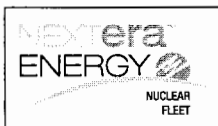
Performance Step: 09 Critical - YES	COMPLETE Part 1 of RX1707, Form C: Shutdown Margin Determination-Immovable, Untrippable, or Dropped Rod(s). h. Determine if shutdown margin is adequate by comparing the calculated shutdown margin with the COLR shutdown margin limit.
Standard:	h. Determines if shutdown margin is adequate by comparing the calculated shutdown margin with the COLR shutdown margin limit. (COLR Shutdown Margin requirement is: In MODES 1, 2, and 3 the Shutdown Margin shall be greater than 1.3%ΔK/K)
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 10 Critical - NO	INFORM Unit Supervisor of results.
Standard:	Informs Unit Supervisor of results.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Terminating Cues: The JPM is complete

NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.

Stop Time: _____



2018 LOIT NRC Exam RO Admin JPM "C"

JPM
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11

Examinee: _____

Evaluator: _____

☐ RO ☐ SRO ☐

Date: _____

PERFORMANCE RESULTS:

SAT:

UNSAT:

COMMENTS/FEEDBACK: (Comments shall be made for any steps graded unsatisfactory).

EXAMINER NOTE: ENSURE ALL EXAM MATERIAL IS COLLECTED AND PROCEDURES
CLEANED, AS APPROPRIATE.

EVALUATOR'S SIGNATURE: _____

*NOTE: Only this page needs to be retained in examinee's record if completed satisfactorily. If
unsatisfactory performance is demonstrated, the entire JPM should be retained.*

TURNOVER SHEET

Directions to the Student:

Evaluator gives Tear Off sheet to the student.

Evaluator reads the following to student (Optional for multiple JPMs):

- A. You are going to calculate Shutdown Margin in MODE 2.
- B. The following information is provided to you:
 - 1) The plant is in MODE 2, Beginning of Life (BOL) at 3% power.
 - 2) RCS boron concentration is 1298 ppm.
 - 3) Rod H-2 has dropped to the bottom of the core.
 - 4) Rod H-2 cannot be moved.
 - 5) All other rods are fully withdrawn.
 - 6) The Unit Supervisor has entered procedure OS1210.05, DROPPED ROD.
- C. The evaluator will act as the Unit supervisor and provide the cues and communications for this JPM. Do you have any questions?

Initiating Cue:

Unit Supervisor to Primary Operator, **“Calculate Shutdown Margin and let me know if we are in compliance with Technical Specifications.”**

NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.

JOB PERFORMANCE MEASURE

JPM TITLE: INITIATE A LIQUID EFFLUENT WASTE SAMPLE REQUEST

JPM NUMBER: 2018 LOIT NRC Exam RO Admin JPM "D" REV. 0

K/A 2.3.11, Ability to control radiation releases

EVALUATION LOCATION: In-Plant: ☐

Simulator: ☐

Admin: ☒

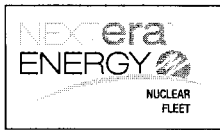
**Estimated time for
Completion:** 20 Min

Alternate Path: NO

Time Critical: NO

PREPARED BY: Sean M. Riley **DATE:** 12/28/17

APPROVED BY: Chris Adams **DATE:** 12/28/17
TRAINING SUPERVISOR



JOB PERFORMANCE MEASURE

JPM
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JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

ALL STEPS IN THIS CHECKLIST ARE TO BE PERFORMED PRIOR TO USE.

REVIEW STATEMENTS	YES	NO	N/A
1. Are all items on the signature page filled in correctly?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Has the JPM been reviewed and validated by SMEs?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Can the required conditions for the JPM be appropriately established in the simulator if required?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4. Do the performance steps accurately reflect trainee's actions in accordance with plant procedures?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Is the standard for each performance item specific as to what controls, indications and ranges are required to evaluate if the trainee properly performed the step?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Has the completion time been established based on validation data or incumbent experience?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. If the task is time critical, is the time critical portion based upon actual task performance requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8. Is the job level appropriate for the task being evaluated if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Is the K/A appropriate to the task and to the licensee level if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Is justification provided for tasks with K/A values less than 3.0?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Have the performance steps been identified and classified (Critical / Sequence / Time Critical) appropriately?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Have all special tools and equipment needed to perform the task been identified and made available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Are all references identified, current, accurate, and available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Have all required cues (as anticipated) been identified for the evaluator to assist task completion?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Are all critical steps supported by procedural guidance? (e.g., if licensing, EP or other groups were needed to determine correct actions, then the answer should be NO.)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. If the JPM is to be administered to an LOIT student, has the required knowledge been taught to the individual prior to administering the JPM? TPE does not have to be completed, but the JPM evaluation may not be valid if they have not been taught the required knowledge.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

All questions/statements must be answered "YES" or "N/A" or the JPM is not valid for use. If all questions/statements are answered "YES" or "N/A," then the JPM is considered valid and can be performed as written. The individual(s) performing the initial validation shall sign and date the cover sheet.

Protected Content: (CAPRs, corrective actions, licensing commitments, etc. associated with this material)

ASSOCIATED TASK DESCRIPTION:

1190153001 Initiate a Liquid Effluent Waste Sample Request (LEWSR) for a tank discharge.

STANDARDS:

Using CP-4.1, Effluent Sampling Program and ON1018.07, Waste Test Tank Recirculation, initiate the following:

- Form CP4.1A, Liquid Effluent Waste Sample Request

SET-UP:

1. Using the latest revision of Form CP 4.1A, “Liquid Effluent Waste Sample Request, develop an answer key.

Required Materials:

- Turnover Sheet.
- Copy of CP-4.1, Effluent Sampling Program
- Copy of ON1018.07, Waste Test Tank Recirculation
- Calculator

Directions to the Student:

Evaluator gives Tear Off sheet to the student.

Evaluator reads the following to student (Optional for multiple JPMs):

- A. You are the Primary Operator. You are going to initiate a Liquid Effluent Waste Sample Request.
- B. The following information is provided to you:
 - 1) The plant is in MODE 1 with two ocean Service Water and two Circulating Water pumps running with no expected change of configuration.
 - 2) WL-TK-63A, "A" Waste Test Tank has been filled to 18,000 gallons.
 - 3) WL-TK-63A, "A" Waste Test Tank, was placed on recirculation at 0800 today per ON1018.07, Waste Test Tank Recirculation.
 - 4) WL-TK-63A, "A" Waste Test Tank has to be sampled to prepare a LEW permit for a release to the transition Structure.
 - 5) Projected release start time is normally 8 hours after placing the tank on recirc.
- C. We will begin after the Initiating Cue is read.
- D. I will act as the Unit Supervisor and provide the cues and communications for this JPM. Do you have any questions?

Initiating Cue:

Unit Supervisor to Primary Operator, "**Primary Operator (or students name), initiate a Liquid Effluent Waste Sample Request for WL-TK-63A, 'A' Waste Test Tank. Discuss the results with me.**"

JPM PERFORMANCE INFORMATION

Start Time: _____

NOTE: When providing "Evaluator Cues" to the examinee, care must be exercised to avoid prompting the examinee. Typically cues are only provided when the examinee's actions warrant receiving the information (i.e., the examinee looks or asks for the indication).

NOTE: Critical steps are marked with a "YES" below the performance step number. Failure to meet the standard for any critical step shall result in failure of this JPM.

NOTE: 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:	When the student demonstrates the ability to obtain a controlled copy of CP-4.1, Effluent Sampling Program and ON1018.07, Waste Test Tank Recirculation, provide the student with the required document(s).
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Note:	It is assumed that the student will use CP 4.1 to process through the verification and check ON1018.07 to verify the tank volumes and recirculation flow rate. The student may choose to verify the tank volume and recirculation rate prior to referring to CP 4.1. These steps can be performed in any order as long as all steps are completed correctly.
--------------	--

Performance Step: 01 Critical - YES	Complete section 1 of CP 4.1A. a. Name of tank, sump, or SG demin vessel to be sampled.
Standard:	Student enters WTT "A"
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Cue:	If the student wants to verify the amount of liquid in the 'A' Waste Test Tank using the Main Plant Computer, tell them "The MPCS indicates 18,000 gallons."
-------------	---

Performance Step: 02 Critical - YES	Complete section 1 of CP 4.1A. b. Total tank or sump volume to be discharged or transferred.
Standard:	Student enters 18,000 gallons for total tank or sump volume.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Note:	The recirculation rate for WTT 'A' is 150 gpm.
--------------	--

Performance Step: 03 Critical - YES	Complete section 1 of CP 4.1A. c. Recirculation rate
Standard:	Student enters the recirculation rate of 150 gpm and calculates the recirculation required time to be 240 minutes.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

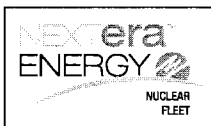
Performance Step: 04 Critical - YES	Complete section 1 of CP 4.1A. d. Recirculation starting time and date
Standard:	Student enters 0800 and today's date.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 05 Critical - YES	Complete section 1 of CP 4.1A. e. Sample date and time
Standard:	Student enters 1200 and today's date.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 06 Critical - NO	Complete section 1 of CP 4.1A. f. Disposition of tank
Standard:	Student enters DISCHARGE as disposition.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 07 Critical - NO	Complete section 1 of CP 4.1A. g. The projected CW and SW pump combination for the discharge
Standard:	Student enters 2 CW pumps and 2 SW pumps.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 08 Critical - NO	Complete section 1 of CP 4.1A. h. The projected release start date and time
Standard:	Student enters 1600 and today's date.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

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Performance Step: 09 Critical - NO	Complete section 1 of CP 4.1A. i. Date, time of request, and initials of originator
Standard:	Student enters time, date, and initials.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 10 Critical - NO	Complete section 1 of CP 4.1A. j. Date, time, and initials of individual that performed verification of operational data
Standard:	Student hands form to Unit Supervisor for verification.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Terminating Cues: The JPM is complete**NOTE:** Ensure the turnover sheet that was given to the examinee is returned to the evaluator.**Stop Time:** _____

Examinee: _____ **Evaluator:** _____

☐ RO ☐ SRO ☐

Date: _____

PERFORMANCE RESULTS:

SAT:

UNSAT:

COMMENTS/FEEDBACK: (Comments shall be made for any steps graded unsatisfactory).

EXAMINER NOTE: ENSURE ALL EXAM MATERIAL IS COLLECTED AND PROCEDURES CLEANED, AS APPROPRIATE.

EVALUATOR’S SIGNATURE: _____

NOTE: Only this page needs to be retained in examinee’s record if completed satisfactorily. If unsatisfactory performance is demonstrated, the entire JPM should be retained.

TURNOVER SHEET

Directions to the Student:

- A. You are the Primary Operator. You are going to initiate a Liquid Effluent Waste Sample Request.
- B. The following information is provided to you:
 - 1) The plant is in MODE 1 with two ocean Service Water and two Circulating Water pumps running with no expected change of configuration.
 - 2) WL-TK-63A, "A" Waste Test Tank has been filled to 18,000 gallons.
 - 3) WL-TK-63A, "A" Waste Test Tank, was placed on recirculation at 0800 today per ON1018.07, Waste Test Tank Recirculation.
 - 4) WL-TK-63A, "A" Waste Test Tank has to be sampled to prepare a LEW permit for a release to the transition Structure.
 - 5) Projected release start time is normally 8 hours after placing the tank on recirc.
- C. We will begin after the Initiating Cue is read.
- D. I will act as the Unit Supervisor and provide the cues and communications for this JPM. Do you have any questions?

Initiating Cue:

Unit Supervisor to Primary Operator, "**Primary Operator (or students name), initiate a Liquid Effluent Waste Sample Request for WL-TK-63A, 'A' Waste Test Tank. Discuss the results with me.**"

NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.



JOB PERFORMANCE MEASURE

JPM
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JPM TITLE: DETERMINE TECH SPEC AOT

JPM NUMBER: 2018 LOIT NRC Exam SRO Admin JPM "A" REV. 0

K/A: K/A 2.1.20, Ability to interpret and execute procedure steps.

EVALUATION LOCATION: In-Plant: ☐

Simulator: ☐

Admin: ☒

Estimated time for Completion: 20 Min

Alternate Path: NO

Time Critical: NO

PREPARED BY: Sean M. Riley **DATE:** 12/28/17

APPROVED BY: Chris Adams **DATE:** 12/28/17
TRAINING SUPERVISOR

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

ALL STEPS IN THIS CHECKLIST ARE TO BE PERFORMED PRIOR TO USE.

REVIEW STATEMENTS	YES	NO	N/A
1. Are all items on the signature page filled in correctly?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Has the JPM been reviewed and validated by SMEs?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Can the required conditions for the JPM be appropriately established in the simulator if required?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4. Do the performance steps accurately reflect trainee's actions in accordance with plant procedures?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Is the standard for each performance item specific as to what controls, indications and ranges are required to evaluate if the trainee properly performed the step?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Has the completion time been established based on validation data or incumbent experience?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. If the task is time critical, is the time critical portion based upon actual task performance requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8. Is the job level appropriate for the task being evaluated if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Is the K/A appropriate to the task and to the licensee level if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Is justification provided for tasks with K/A values less than 3.0?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Have the performance steps been identified and classified (Critical / Sequence / Time Critical) appropriately?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Have all special tools and equipment needed to perform the task been identified and made available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Are all references identified, current, accurate, and available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Have all required cues (as anticipated) been identified for the evaluator to assist task completion?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Are all critical steps supported by procedural guidance? (e.g., if licensing, EP or other groups were needed to determine correct actions, then the answer should be NO.)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. If the JPM is to be administered to an LOIT student, has the required knowledge been taught to the individual prior to administering the JPM? TPE does not have to be completed, but the JPM evaluation may not be valid if they have not been taught the required knowledge.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

All questions/statements must be answered "YES" or "N/A" or the JPM is not valid for use. If all questions/statements are answered "YES" or "N/A," then the JPM is considered valid and can be performed as written. The individual(s) performing the initial validation shall sign and date the cover sheet.

Protected Content: (CAPRs, corrective actions, licensing commitments, etc. associated with this material)

ASSOCIATED TASK DESCRIPTION:

1190101801 Apply Technical Specification actions to existing plant conditions

STANDARDS:

Evaluate plant conditions using Technical Specifications

SET-UP:

1. Using the latest revision of ODI.30, and Tech. Spec 3.3.2 develop an answer key.
2. In the section containing information provided to the student and in the applicable cue, ensure all the information is consistent with current revisions of required materials. If required, update any information.
3. Ensure that the marked up copy of IX1680.921, Tech Specs, and ODI.30 are made available to the student when requested.

Required Materials:

- Turnover sheet
- IX1680.921, “Solid State Protection System (SSPS) Train A Actuation Logic Test
- ODI.30 Allowed Outage Time Work
- Technical Specifications 3.3.2 ESF Actuation System Instrumentation
- Calculator

Directions to the Student:

Evaluator gives Turnover sheet to the student

- A. You are the Unit Supervisor. You are going to evaluate plant conditions using Technical Specifications.
- B. The following information is provided to you:
 - 1. The plant is in Mode 1, 95% power.
 - 2. I&C determined that Logic Switch "A" is faulty and has failed its quarterly surveillance (IX1680.921).
 - 3. The Shift Manager has confirmed that the switch is inoperable.
 - 4. All required control systems were in automatic and no other equipment was out of service.
- C. Perform the task using the applicable Technical Specification Action statement and any applicable guidance for determining the time requirements for Mode changes.
- D. We will begin after the "Initiating Cue" is read. Do you have any questions?

INITIATING CUE:

Evaluator to Unit Supervisor, " Unit Supervisor (or student's name), an I&C Technician was performing the Train "A" Logic Test per IX1680.921, Section 4.6 "Logic and Permissives Circuitry Test" and determined that the "Logic Switch A" test was unsatisfactory for switch position #6, as shown on "Table 3: Logic Test: Logic Switch A". The Shift Manager has confirmed that the switch is inoperable as of 1500 hours. I&C said they can obtain parts and repair the switch in approximately 24 hours.

Identify the applicable Technical Specification Action and determine what time the plant must be in Mode 3.

JPM PERFORMANCE INFORMATION

Start Time: _____

NOTE: When providing "Evaluator Cues" to the examinee, care must be exercised to avoid prompting the examinee. Typically cues are only provided when the examinee's actions warrant receiving the information (i.e., the examinee looks or asks for the indication).

NOTE: Critical steps are marked with a "YES" below the performance step number. Failure to meet the standard for any critical step shall result in failure of this JPM.

NOTE: 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:	<u>When requested</u> , provide the student with the applicable Tech Specs and ODI.30.

Performance Step: 01	Evaluate Technical Specifications 3.3.1.
Critical – YES	
Standard:	Determines that T.S. Table 3.3-1 item 20 applies. Action 7 requires that with the number of OPERABLE channels one less than the minimum channels OPERABLE requirement, restore the inoperable channel to OPERABLE status within 6 hours or be in at least HOT STANDBY within the next 6 hours; however, one channel may be bypassed for up to 4 hours for surveillance testing per Specification 4.3.1.1, provided the other channel is OPERABLE.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 02 Critical - NO	Refers to ODI.30 to calculate AOT - Upon entering an applicable LCO determine the appropriate AOT worksheet using Figure 6.1, AOT flowchart as a guide. <ul style="list-style-type: none"> Is the LCO in question shown on list A. Determine if the LCO in question is 3.0.3 or is prompt action to initiate a shutdown and cooldown required. Goes to ODI.30A or ODI.30B.
Standard:	Using Figure 6.1, AOT flowchart as a guide determines the following: <ul style="list-style-type: none"> Determines that the LCO in question is not shown in List A.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Note:	See answer key for information that should be entered on ODI.30-Figure 6.1 and Form ODI.30A.
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Performance Step: 03 Critical - NO	Using Figure 6.1, AOT flowchart as a guide determine the following: <ul style="list-style-type: none"> Is the LCO in question 3.0.3?
Standard:	Determines that the LCO in question is not 3.0.3
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 04 Critical - NO	Using Figure 6.1, AOT flowchart as a guide determine the following: <ul style="list-style-type: none"> Inability to reach required Shutdown mode within Technical Specification limits.
Standard:	Determines that the crew will be able to reach the required Shutdown mode within Technical Specification limits and that no E Plan declaration is required
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 05 Critical - NO	On Form ODI.30A, enter Technical Specification LCO #, Action #, and entered from mode - information.
Standard:	Enters LCO specific information on Form ODI.30A.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 06 Critical - NO	Enter # HRS AOT provided before mode reduction to mode 3 required for item a.
Standard:	Enters # HRS AOT provided before mode reduction to mode 3 required for item a.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 07 Critical - NO	Enter # HRS provided to change modes to mode 3 (zero if entered from mode 3 or 4) for item b.
Standard:	Enters # HRS provided to change modes to mode 3 (zero if entered from mode 3 or 4) for item b.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 08 Critical – NO	Enter # HRS additional AOT provided in mode 3 before reduction to mode 4 or 5 required (circle applicable mode) for item c.
Standard:	Enters # HRS additional AOT provided in mode 3 before reduction to mode 4 or 5 required (circle applicable mode) for item c.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 09	Enter # HRS provided to change modes from mode 3 to mode 4 or 5 (circle applicable mode) for item d.
Critical – NO	
Standard:	Enters # HRS provided to change modes from mode 3 to mode 4 or 5 (circle applicable mode) for item d.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 10	Enter time/date LCO action statement entered on line 1 for item e.
Critical – NO	
Standard:	Enters time/date LCO action statement entered on line 1 for item e.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 11	Circle applicable mode - action statement entered from.
Critical – NO	
Standard:	Circles applicable mode - action statement entered from. Goes to line 2.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 12	Calculate time/date mode reduction to mode 3 must be started by and enter time/date on line 2 item f.
Critical – NO	
Standard:	Calculates time/date mode reduction to mode 3 must be started by and enters time/date on line 2 item f.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 13	Calculate time/date plant must be in mode 3.
Critical – YES	
Standard:	Calculates time/date plant must be in mode 3.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Terminating Cues: The JPM is complete.

NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.

Stop Time: _____

TURNOVER SHEET

Directions to the Student:

Directions to the Student:

Evaluator gives Turnover sheet to the student

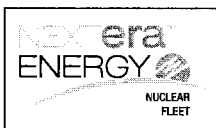
- A. You are the Unit Supervisor. You are going to evaluate plant conditions using Technical Specifications.
- B. The following information is provided to you:
 - 1. The plant is in Mode 1, 95% power.
 - 2. I&C determined that Logic Switch "A" is faulty and has failed its quarterly surveillance (IX1680.921).
 - 3. The Shift Manager has confirmed that the switch is inoperable.
 - 5. All required control systems were in automatic and no other equipment was out of service.
- C. Perform the task using the applicable Technical Specification Action statement and any applicable guidance for determining the time requirements for Mode changes.
- D. We will begin after the "Initiating Cue" is read. Do you have any questions?

INITIATING CUE:

Evaluator to Unit Supervisor, " **Unit Supervisor (or student's name), an I&C Technician was performing the Train "A" Logic Test per IX1680.921, Section 4.6 "Logic and Permissives Circuitry Test" and determined that the "Logic Switch A" test was unsatisfactory, as shown on "Table 3: Logic Test: Logic Switch A". The Shift Manager has confirmed that the switch is inoperable as of 1500 hours. I&C said they can obtain parts and repair the switch in approximately 24 hours.**

Identify the applicable Technical Specification Action and determine what time the plant must be in Mode 3.

NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.



Examinee: _____

Evaluator: _____

☐ RO ☐ SRO ☐

Date: _____

PERFORMANCE RESULTS:

SAT:

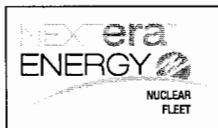
UNSAT:

COMMENTS/FEEDBACK: (Comments shall be made for any steps graded unsatisfactory).

EXAMINER NOTE: ENSURE ALL EXAM MATERIAL IS COLLECTED AND PROCEDURES CLEANED, AS APPROPRIATE.

EVALUATOR'S SIGNATURE: _____

NOTE: Only this page needs to be retained in examinee's record if completed satisfactorily. If unsatisfactory performance is demonstrated, the entire JPM should be retained



JOB PERFORMANCE MEASURE

JPM
Page 1 of 11

JPM TITLE: REVIEW BLENDED MAKEUP CALCULATION TO VCT

JPM NUMBER: 2018 LOIT NRC Exam SRO Admin JPM "B" REV. 0

K/A 2.1.37, Knowledge of procedures, guidelines, or limitations associated with reactivity management.

EVALUATION LOCATION: In-Plant: ☐

Simulator: ☐

Admin: ☒

Estimated time for Completion: 20 Min

Alternate Path: NO

Time Critical: NO

PREPARED BY: Sean M. Riley **DATE:** 12/28/17

APPROVED BY: Chris Adams **DATE:** 12/28/17
TRAINING SUPERVISOR

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

ALL STEPS IN THIS CHECKLIST ARE TO BE PERFORMED PRIOR TO USE.

REVIEW STATEMENTS	YES	NO	N/A
1. Are all items on the signature page filled in correctly?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Has the JPM been reviewed and validated by SMEs?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Can the required conditions for the JPM be appropriately established in the simulator if required?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4. Do the performance steps accurately reflect trainee's actions in accordance with plant procedures?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Is the standard for each performance item specific as to what controls, indications and ranges are required to evaluate if the trainee properly performed the step?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Has the completion time been established based on validation data or incumbent experience?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. If the task is time critical, is the time critical portion based upon actual task performance requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8. Is the job level appropriate for the task being evaluated if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Is the K/A appropriate to the task and to the licensee level if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Is justification provided for tasks with K/A values less than 3.0?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Have the performance steps been identified and classified (Critical / Sequence / Time Critical) appropriately?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Have all special tools and equipment needed to perform the task been identified and made available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Are all references identified, current, accurate, and available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Have all required cues (as anticipated) been identified for the evaluator to assist task completion?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Are all critical steps supported by procedural guidance? (e.g., if licensing, EP or other groups were needed to determine correct actions, then the answer should be NO.)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. If the JPM is to be administered to an LOIT student, has the required knowledge been taught to the individual prior to administering the JPM? TPE does not have to be completed, but the JPM evaluation may not be valid if they have not been taught the required knowledge.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

All questions/statements must be answered "YES" or "N/A" or the JPM is not valid for use. If all questions/statements are answered "YES" or "N/A," then the JPM is considered valid and can be performed as written. The individual(s) performing the initial validation shall sign and date the cover sheet.

Protected Content: (CAPRs, corrective actions, licensing commitments, etc. associated with this material)

ASSOCIATED TASK DESCRIPTION:

0040102501 Manually makeup to the VCT (blended makeup)

STANDARDS:

Review the flow controller and totalizer setpoint calculations for a 250 gallon manual blended makeup to the VCT.

SET-UP:

1. Using the latest revision of RX1735, Form E, “Blended Makeup Worksheet”, develop a handout sheet for the student to review.

Required Materials:

- Turnover Sheet.
- RS1735, Reactivity Calculations
- Daily Chemistry Report
- RE-02, Shutdown Boron Concentration Versus Temperature
- Calculator

Directions to the Student:

Evaluator gives Tear Off sheet to the student.

Evaluator reads the following to student (Optional for multiple JPMs):

- A. You are the Unit Supervisor. You are going to review calculations for a 250 gallon blended makeup to the Volume Control Tank (VCT).
- B. The following information is provided to you:
 - 1. A 250 gallon manual blended makeup to the VCT is required.
 - 2. Makeup total flow rate will be 50 gpm.
 - 3. The makeup boron concentration will be at the current Reactor Coolant System concentration.
 - 4. 'A' Boric Acid Storage Tank will be used for the blended makeup.
- C. We will begin after the Initiating Cue is read.
- D. I will act as the Shift Manager and provide cues and communications for this JPM. Do you have any questions?

Initiating Cue:

Shift Manager to Unit Supervisor, **"Unit Supervisor (or student's name), review the calculations for a 250 gallon manual blended makeup to the Volume Control Tank (VCT) on RS1735, Reactivity Calculations, Form E. Record on the tear off sheet any issues that you find on Form E. Correct any issues that you find. Discuss the results with me."**

JPM PERFORMANCE INFORMATION

Start Time: _____

NOTE: When providing "Evaluator Cues" to the examinee, care must be exercised to avoid prompting the examinee. Typically cues are only provided when the examinee's actions warrant receiving the information (i.e., the examinee looks or asks for the indication).

NOTE: Critical steps are marked with a "YES" below the performance step number. Failure to meet the standard for any critical step shall result in failure of this JPM.

NOTE: 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."

Performance Step: 01 Critical - NO	Obtain copy of procedure RX1735.
Standard:	Student obtains copy of RX1735.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 02 Critical - NO	Determine the required flow controller and totalizer setpoints for a 250 gallon manual blended makeup to the Volume Control Tank 1. Enter the desired makeup boron concentration.
Standard:	Student verifies the desired makeup boron concentration (C_{MU}) for the RCS from the Daily Chemistry Report was entered. (1268 ppm)
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 03 Critical - NO	Determine the required flow controller and totalizer setpoints for a 250 gallon manual blended makeup to the Volume Control Tank 2. Enter the ¹⁰ B adder value from RE-2
Standard:	Student verifies that the correct ¹⁰ B adder value was entered. (79 ppm)
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

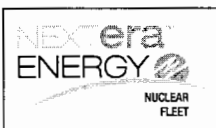
Performance Step: 04 Critical - NO	Determine the required flow controller and totalizer setpoints for a 250 gallon manual blended makeup to the Volume Control Tank 3. ENTER the desired makeup flow rate SETPOINT: FIQ-111 (F _{TOT}).
Standard:	Student verifies that the desired makeup flow rate SETPOINT: FIQ-111 (F _{TOT}) was entered. (50 gpm)
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 05 Critical - NO	Determine the required flow controller and totalizer setpoints for a 250 gallon manual blended makeup to the Volume Control Tank 4. Enter the actual Boric Acid Storage Tank concentration (C _{BAST}).
Standard:	Student verifies that the actual Boric Acid Storage Tank concentration (C _{BAST}) from the Daily Chemistry Report was entered. (7416 ppm)
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 06 Critical - NO	Determine the required flow controller and totalizer setpoints for a 250 gallon manual blended makeup to the Volume Control Tank. 5. Enter the desired makeup quantity target: FIQ-111 (GTOT).
Standard:	Student verifies that the desired makeup quantity TARGET: FIQ-111 (G _{TOT}) was entered. (250 gallons)
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 07 Critical - YES	Determine the required flow controller and totalizer setpoints for a 250 gallon manual blended makeup to the Volume Control Tank. 6. CALCULATE the boric acid flow rate setpoint: FIQ-111 (FBA):
Standard:	Student performs independent calculation and verifies that the calculated boric acid flow rate SETPOINT: FIQ-111 (FBA) is correct. (8.0 GPM. Range 7.9-8.1 GPM)
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 08 Critical - YES	Determine the required flow controller and totalizer setpoints for a 250 gallon manual blended makeup to the Volume Control Tank. 7. CALCULATE the boric acid quantity target: FIQ-111 (G _{BA}):
Standard:	Student performs independent calculation and verifies that the calculated boric acid quantity TARGET: FIQ-111 (GBA) is correct. (40 gallons. Range 39.5-40.5 gallons)
Performance:	SATISFACTORY _____ UNSATISFACTORY _____



2018 LOIT NRC Exam SRO Admin JPM "B"

JPM
Page 9 of 11

Performance Step: 09 Critical - NO	SRO approval by signature and Date.
Standard:	Student signs and dates the Approval By signature and date line.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Terminating Cues: The JPM is complete

NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.

Stop Time: _____

TURNOVER SHEET

Directions to the Student:

Evaluator gives Tear Off sheet to the student.

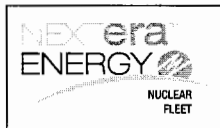
Evaluator reads the following to student (Optional for multiple JPMs):

- A. You are the Unit Supervisor. You are going to review calculations for a 250 gallon blended makeup to the Volume Control Tank (VCT).
- B. The following information is provided to you:
 - 1. A 250 gallon manual blended makeup to the VCT is required.
 - 2. Makeup total flow rate will be 50 gpm.
 - 3. The makeup boron concentration will be at the current Reactor Coolant System concentration.
 - 4. 'A' Boric Acid Storage Tank will be used for the blended makeup.
- C. We will begin after the Initiating Cue is read.
- D. I will act as the Shift Manager and provide cues and communications for this JPM. Do you have any questions?

Initiating Cue:

Shift Manager to Unit Supervisor, **"Unit Supervisor (or student's name), review the calculations for a 250 gallon manual blended makeup to the Volume Control Tank (VCT) on RS1735, Reactivity Calculations, Form E. Record on the tear off sheet any issues that you find on Form E. Correct any issues that you find. Discuss the results with me."**

NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.



JOB PERFORMANCE MEASURE

JPM
Page 1 of 9

JPM TITLE: REVIEW SHUTDOWN MARGIN SURVEILLANCE (MODE 2)

JPM NUMBER: 2018 LOIT NRC Exam SRO Admin JPM "C" REV. 0

K/A 2.2.12, Knowledge of surveillance procedures

EVALUATION LOCATION: In-Plant: ☐

Simulator: ☐

Admin: ☒

Estimated time for Completion: 20 Min

Alternate Path: NO

Time Critical: NO

PREPARED BY: Sean M. Riley **DATE:** 12/28/17

APPROVED BY: Chris Adams **DATE:** 12/28/17
TRAINING SUPERVISOR

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

ALL STEPS IN THIS CHECKLIST ARE TO BE PERFORMED PRIOR TO USE.

REVIEW STATEMENTS	YES	NO	N/A
1. Are all items on the signature page filled in correctly?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Has the JPM been reviewed and validated by SMEs?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Can the required conditions for the JPM be appropriately established in the simulator if required?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4. Do the performance steps accurately reflect trainee's actions in accordance with plant procedures?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Is the standard for each performance item specific as to what controls, indications and ranges are required to evaluate if the trainee properly performed the step?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Has the completion time been established based on validation data or incumbent experience?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. If the task is time critical, is the time critical portion based upon actual task performance requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8. Is the job level appropriate for the task being evaluated if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Is the K/A appropriate to the task and to the licensee level if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Is justification provided for tasks with K/A values less than 3.0?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Have the performance steps been identified and classified (Critical / Sequence / Time Critical) appropriately?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Have all special tools and equipment needed to perform the task been identified and made available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Are all references identified, current, accurate, and available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Have all required cues (as anticipated) been identified for the evaluator to assist task completion?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Are all critical steps supported by procedural guidance? (e.g., if licensing, EP or other groups were needed to determine correct actions, then the answer should be NO.)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. If the JPM is to be administered to an LOIT student, has the required knowledge been taught to the individual prior to administering the JPM? TPE does not have to be completed, but the JPM evaluation may not be valid if they have not been taught the required knowledge.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

All questions/statements must be answered "YES" or "N/A" or the JPM is not valid for use. If all questions/statements are answered "YES" or "N/A," then the JPM is considered valid and can be performed as written. The individual(s) performing the initial validation shall sign and date the cover sheet.

Protected Content: (CAPRs, corrective actions, licensing commitments, etc. associated with this material)

ASSOCIATED TASK DESCRIPTION:

0010100401 Perform shutdown margin calculation

1190101802 Apply Technical Specification Actions to existing plant conditions

STANDARDS:

Review shutdown margin calculations and determine impact on Technical Specifications.

SET-UP:

1. Using the latest revision of RX1707, Form C, "Shutdown Margin Determination Immovable, Untrippable or Dropped Rod(s)", develop handout sheet and answer key.

Required Materials:

- Turnover Sheet.
- RX1707, Shutdown Margin Surveillance
- BOL Primary Tech. Data Book
- Technical Specifications
- Technical Requirements

Directions to the Student:

Evaluator gives Tear Off sheet to the student.

Evaluator reads the following to student (Optional for multiple JPMs):

- A. You are going to review and approve a Shutdown Margin in MODE 1.
- B. The following information is provided to you:
 - 1) The plant is in MODE 1, End of Life (EOL) at 80% power.
 - 2) RCS boron concentration is 850 ppm.
 - 3) Rod H-2 has dropped to the bottom of the core.
 - 4) Rod H-2 cannot be moved.
 - 5) All other rods are fully withdrawn.
 - 6) A Shutdown Margin Calculation has been performed as required by T.S. 3.1.3.1.
- 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 Unit Supervisor, **"Based on given plant conditions review the Shutdown Margin Calculation and report your findings to me."**

JPM PERFORMANCE INFORMATION

Start Time: _____

NOTE: When providing "Evaluator Cues" to the examinee, care must be exercised to avoid prompting the examinee. Typically cues are only provided when the examinee's actions warrant receiving the information (i.e., the examinee looks or asks for the indication).

NOTE: Critical steps are marked with a "YES" below the performance step number. Failure to meet the standard for any critical step shall result in failure of this JPM.

NOTE: 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:	The student should review SDM per RX1707, Section 4.4.
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Performance Step: 01 Critical - NO	Obtain copy of procedure RX1707.
Standard:	Student obtains copy of RX1707.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 02 Critical - NO	Review shutdown margin calculation provided on the Handout Sheet.
Standard:	Student reviews the provided shutdown margin calculation.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

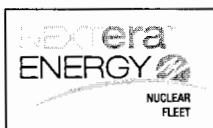
Performance Step: 03	Review RX1707, “Shutdown Margin Surveillance” procedure.
Critical - NO	
Standard:	Student reviews RX1707, “Shutdown Margin Surveillance” procedure.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 04	Review data used to perform SDM calculation
Critical - NO	
Standard:	Student reviews data used on Form C.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 05	Review COLR
Critical - NO	
Standard:	Student reviews COLR in Tech Requirement Manual to determine required SDM for Mode 1.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 06	Review SDM calculation on Handout Sheet (Form C)
Critical - YES	
Standard:	Student recognizes that the calculated shutdown margin value is incorrect. (Power defect data from RE-8 (item d on Form C) was entered incorrectly. The value should be 2200 pcm vice 1850 pcm.)
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

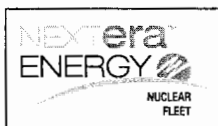
Performance Step: 07	Recalculate shutdown margin.
Critical - YES	

**2018 LOIT NRC Exam SRO Admin JPM "C"****JPM**
Page 7 of 9

Standard:	Student recalculates shutdown margin. (Within 0.15% $\Delta K/K$ of 1.79% $\Delta K/K$. Acceptable range: 1.013 to 1.093 % $\Delta K/K$)
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 08 Critical - YES	Compare calculated shutdown margin value to the limit specified in the COLR.
Standard:	Student determines that shutdown margin is inadequate/less than that required by the COLR. (COLR SDM limit is 1.3% $\Delta K/K$)
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Terminating Cues: The JPM is complete**NOTE:** Ensure the turnover sheet that was given to the examinee is returned to the evaluator.**Stop Time:** _____



2018 LOIT NRC Exam SRO Admin JPM "C"

JPM
Page 8 of 9

Examinee: _____

Evaluator: _____

☐ RO ☐ SRO ☐

Date: _____

PERFORMANCE RESULTS:

SAT:

UNSAT:

COMMENTS/FEEDBACK: (Comments shall be made for any steps graded unsatisfactory).

EXAMINER NOTE: ENSURE ALL EXAM MATERIAL IS COLLECTED AND PROCEDURES
CLEANED, AS APPROPRIATE.

EVALUATOR'S SIGNATURE: _____

*NOTE: Only this page needs to be retained in examinee's record if completed satisfactorily. If
unsatisfactory performance is demonstrated, the entire JPM should be retained.*

TURNOVER SHEET

Directions to the Student:

Evaluator gives Tear Off sheet to the student.

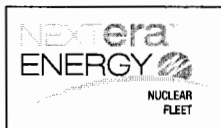
Evaluator reads the following to student (Optional for multiple JPMs):

- A. You are going to review and approve a Shutdown Margin in MODE 1.
- B. The following information is provided to you:
 - 1) The plant is in MODE 1, End of Life (EOL) at 80% power.
 - 2) RCS boron concentration is 850 ppm.
 - 3) Rod H-2 has dropped to the bottom of the core.
 - 4) Rod H-2 cannot be moved.
 - 5) All other rods are fully withdrawn.
 - 6) A Shutdown Margin Calculation has been performed as required by T.S. 3.1.3.1.
- 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 Unit Supervisor, **“Based on given plant conditions review the Shutdown Margin Calculation and report your findings to me.”**

NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.



JOB PERFORMANCE MEASURE

JPM
Page 1 of 11

JPM TITLE: REVIEW LIQUID EFFLUENT WASTE SAMPLE REQUEST

JPM NUMBER: 2018 LOIT NRC Exam SRO Admin JPM "D" REV. 0

K/A 2.3.11, Ability to control radiation releases

EVALUATION LOCATION: In-Plant: ☐

Simulator: ☐

Admin: ☒

Estimated time for Completion: 20 Min

Alternate Path: NO

Time Critical: NO

PREPARED BY: Sean M. Riley **DATE:** 12/28/17

APPROVED BY: Chris Adams **DATE:** 12/28/17
TRAINING SUPERVISOR

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

ALL STEPS IN THIS CHECKLIST ARE TO BE PERFORMED PRIOR TO USE.

REVIEW STATEMENTS	YES	NO	N/A
1. Are all items on the signature page filled in correctly?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Has the JPM been reviewed and validated by SMEs?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Can the required conditions for the JPM be appropriately established in the simulator if required?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4. Do the performance steps accurately reflect trainee's actions in accordance with plant procedures?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Is the standard for each performance item specific as to what controls, indications and ranges are required to evaluate if the trainee properly performed the step?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Has the completion time been established based on validation data or incumbent experience?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. If the task is time critical, is the time critical portion based upon actual task performance requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8. Is the job level appropriate for the task being evaluated if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Is the K/A appropriate to the task and to the licensee level if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Is justification provided for tasks with K/A values less than 3.0?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Have the performance steps been identified and classified (Critical / Sequence / Time Critical) appropriately?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Have all special tools and equipment needed to perform the task been identified and made available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Are all references identified, current, accurate, and available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Have all required cues (as anticipated) been identified for the evaluator to assist task completion?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Are all critical steps supported by procedural guidance? (e.g., if licensing, EP or other groups were needed to determine correct actions, then the answer should be NO.)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. If the JPM is to be administered to an LOIT student, has the required knowledge been taught to the individual prior to administering the JPM? TPE does not have to be completed, but the JPM evaluation may not be valid if they have not been taught the required knowledge.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

All questions/statements must be answered "YES" or "N/A" or the JPM is not valid for use. If all questions/statements are answered "YES" or "N/A," then the JPM is considered valid and can be performed as written. The individual(s) performing the initial validation shall sign and date the cover sheet.

Protected Content: (CAPRs, corrective actions, licensing commitments, etc. associated with this material)

ASSOCIATED TASK DESCRIPTION:

0690301502 Authorize a release of liquid waste

STANDARDS:

Using CP-4.1, Effluent Sampling Program and ON1018.07, Waste Test Tank Recirculation, verify the following:

- Form CP4.1A, Liquid Effluent Waste Sample Request

SET-UP:

1. Using the latest revision of Form CP 4.1A, “Liquid Effluent Waste Sample Request, develop an answer key.

Required Materials:

- Turnover Sheet.
- Copy of CP-4.1, Effluent Sampling Program
- Copy of ON1018.07, Waste Test Tank Recirculation
- Calculator

Directions to the Student:

Evaluator gives Tear Off sheet to the student.

Evaluator reads the following to student (Optional for multiple JPMs):

- A. You are the Unit Supervisor. You are going to perform the verification of a Liquid Effluent Waste Sample Request, using the information provided.
- B. The following information is provided to you:
- 1) The plant is in MODE 1 with two ocean Service Water and two Circulating Water pumps running with no expected change of configuration.
 - 2) WL-TK-63A, "A" Waste Test Tank has been filled to 18,000 gallons.
 - 3) WL-TK-63A, "A" Waste Test Tank, was placed on recirculation at 0800 today per ON1018.07, Waste Test Tank Recirculation.
 - 4) WL-TK-63A, "A" Waste Test Tank has to be sampled to prepare a LEW permit for a release to the transition Structure.
 - 5) Projected release start time is normally 8 hours after placing the tank on recirc.
 - 6) The Primary Operator has completed Section 1 of CP 4.1A, Liquid Effluent Waste Sample Request.
- C. We will begin after the Initiating Cue is read.
- D. I 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 Unit Supervisor, **"Unit Supervisor (or students name), Section 1 of Form CP 4.1A is complete. Please perform the verification. Record any issues that you find on the tear-off sheet. Correct any issues that you find. Discuss the results with me."**

JPM PERFORMANCE INFORMATION

Start Time: _____

NOTE: When providing "Evaluator Cues" to the examinee, care must be exercised to avoid prompting the examinee. Typically cues are only provided when the examinee's actions warrant receiving the information (i.e., the examinee looks or asks for the indication).

NOTE: Critical steps are marked with a "YES" below the performance step number. Failure to meet the standard for any critical step shall result in failure of this JPM.

NOTE: 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:	When the student demonstrates the ability to obtain a controlled copy of CP-4.1, Effluent Sampling Program and ON1018.07, Waste Test Tank Recirculation, provide the student with the required document(s).
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Note:	It is assumed that the student will use CP 4.1 to process through the verification and check ON1018.07 to verify the tank volumes and recirculation flow rate. The student may choose to verify the tank volume and recirculation rate prior to referring to CP 4.1. These steps can be performed in any order as long as all steps are completed correctly.
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Performance Step: 01 Critical - NO	Section 1 of CP 4.1A is completed by the Primary Operator and provides the following information: a. Name of tank, sump, or SG demin vessel to be sampled.
Standard:	Student verifies WTT "A" is entered.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Cue:	If the student wants to verify the amount of liquid in the 'A' Waste Test Tank using the Main Plant Computer, tell them "The MPCS indicates 18,000 gallons."
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Performance Step: 02 Critical - NO	Section 1 of CP 4.1A is completed by the Primary Operator and provides the following information: b. Total tank or sump volume to be discharged or transferred.
Standard:	Student verifies that 18,000 gallons is consistent with initial conditions and indications.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Note:	The recirculation rate for WTT A is actually 150 gpm. Waste Holdup Sump recirculation rate is 400 gpm. The student must correct this mistake to ensure adequate tank recirculation prior to sampling.
Cue:	If the Shift Manager (Evaluator) is informed that the recirculation rate is incorrect, say "The Primary Operator must have been thinking about the Waste Holdup Sump recirculation rate."
Cue:	If the student (Unit Supervisor) gives the form back to the Primary Operator to correct, say: "Use your corrected values and complete the verification."
Performance Step: 03 Critical - YES	Section 1 of CP 4.1A is completed by the Primary Operator and provides the following information: c. Recirculation rate
Standard:	Student corrects the recirculation rate to 150 gpm and the recirculation required time to be 240 minutes.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 04 Critical - NO	Section 1 of CP 4.1A is completed by the Primary Operator and provides the following information: d. Recirculation starting time and date
Standard:	Student verifies 0800 and today's date.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 05 Critical - YES	Section 1 of CP 4.1A is completed by the Primary Operator and provides the following information: e. Sample date and time
Standard:	Student corrects sample time to 1200.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 06 Critical - NO	Section 1 of CP 4.1A is completed by the Primary Operator and provides the following information: f. Disposition of tank
Standard:	Student verifies DISCHARGE disposition.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 07 Critical - NO	Section 1 of CP 4.1A is completed by the Primary Operator and provides the following information: g. The projected CW and SW pump combination for the discharge
Standard:	Student verifies 2 CW pumps and 2 SW pump combination is entered.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 08 Critical - NO	Section 1 of CP 4.1A is completed by the Primary Operator and provides the following information: h. The projected release start date and time
Standard:	Student verifies projected start time of 1600 is entered.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

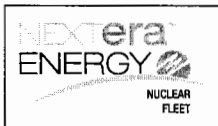
Performance Step: 09 Critical - NO	Section 1 of CP 4.1A is completed by the Primary Operator and provides the following information: i. Date, time of request, and initials of originator
Standard:	Student verifies time, date, and initials are entered.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 10 Critical - NO	Section 1 of CP 4.1A is completed by the Primary Operator and provides the following information: j. Date, time, and initials of individual that performed verification of operational data
Standard:	Student enters date, time, and initials.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Terminating Cues: **The JPM is complete**

NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.

Stop Time: _____



2018 LOIT NRC Exam SRO Admin JPM "D"

JPM
Page 10 of
11

Examinee: _____

Evaluator: _____

☐ RO ☐ SRO ☐

Date: _____

PERFORMANCE RESULTS:

SAT:

UNSAT:

COMMENTS/FEEDBACK: (Comments shall be made for any steps graded unsatisfactory).

EXAMINER NOTE: ENSURE ALL EXAM MATERIAL IS COLLECTED AND PROCEDURES CLEANED, AS APPROPRIATE.

EVALUATOR'S SIGNATURE: _____

NOTE: Only this page needs to be retained in examinee's record if completed satisfactorily. If unsatisfactory performance is demonstrated, the entire JPM should be retained.

TURNOVER SHEET

Directions to the Student:

- A. You are the Unit Supervisor. You are going to perform the verification of a Liquid Effluent Waste Sample Request, using the information provided.
- B. The following information is provided to you:
- 1) The plant is in MODE 1 with two ocean Service Water and two Circulating Water pumps running with no expected change of configuration.
 - 2) WL-TK-63A, "A" Waste Test Tank has been filled to 18,000 gallons.
 - 3) WL-TK-63A, "A" Waste Test Tank, was placed on recirculation at 0800 today per ON1018.07, Waste Test Tank Recirculation.
 - 4) WL-TK-63A, "A" Waste Test Tank has to be sampled to prepare a LEW permit for a release to the transition Structure.
 - 5) Projected release start time is normally 8 hours after placing the tank on recirc.
 - 6) The Primary Operator has completed Section 1 of CP 4.1A, Liquid Effluent Waste Sample Request.
- C. We will begin after the Initiating Cue is read.
- D. I 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 Unit Supervisor, **"Unit Supervisor (or students name), Section 1 of Form CP 4.1A is complete. Please perform the verification. Record any issues that you find on the tear-off sheet. Correct any issues that you find. Discuss the results with me."**

NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.

JPM TITLE: POST SCENARIO E PLAN CLASSIFICATION AND STATE NOTIFICATION (SIM SCENARIO DEPENDENT)

JPM NUMBER: 2018 LOIT NRC Exam SRO Admin JPM "E" REV. 0

K/A: K/A 2.4.41, Knowledge of SRO responsibilities in emergency plan implementation

EVALUATION LOCATION: In-Plant: ☐
Simulator: ☐
Admin: ☒

Estimated time for Completion: 20 Min

Alternate Path: NO

Time Critical: YES

PREPARED BY: Sean M. Riley **DATE:** 12/28/17

APPROVED BY: Chris Adams **DATE:** 12/28/17
TRAINING SUPERVISOR

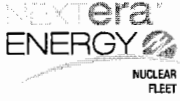
JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

ALL STEPS IN THIS CHECKLIST ARE TO BE PERFORMED PRIOR TO USE.

REVIEW STATEMENTS	YES	NO	N/A
1. Are all items on the signature page filled in correctly?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Has the JPM been reviewed and validated by SMEs?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Can the required conditions for the JPM be appropriately established in the simulator if required?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4. Do the performance steps accurately reflect trainee's actions in accordance with plant procedures?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Is the standard for each performance item specific as to what controls, indications and ranges are required to evaluate if the trainee properly performed the step?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Has the completion time been established based on validation data or incumbent experience?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. If the task is time critical, is the time critical portion based upon actual task performance requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8. Is the job level appropriate for the task being evaluated if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Is the K/A appropriate to the task and to the licensee level if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Is justification provided for tasks with K/A values less than 3.0?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Have the performance steps been identified and classified (Critical / Sequence / Time Critical) appropriately?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Have all special tools and equipment needed to perform the task been identified and made available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Are all references identified, current, accurate, and available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Have all required cues (as anticipated) been identified for the evaluator to assist task completion?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Are all critical steps supported by procedural guidance? (e.g., if licensing, EP or other groups were needed to determine correct actions, then the answer should be NO.)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. If the JPM is to be administered to an LOIT student, has the required knowledge been taught to the individual prior to administering the JPM? TPE does not have to be completed, but the JPM evaluation may not be valid if they have not been taught the required knowledge.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

All questions/statements must be answered "YES" or "N/A" or the JPM is not valid for use. If all questions/statements are answered "YES" or "N/A," then the JPM is considered valid and can be performed as written. The individual(s) performing the initial validation shall sign and date the cover sheet.

Protected Content: (CAPRs, corrective actions, licensing commitments, etc. associated with this material)

	2018 LOIT NRC Exam SRO Admin JPM “E”	JPM Page 3 of 16
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ASSOCIATED TASK DESCRIPTION:

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

STANDARDS:

Classify the emergency condition and complete the State Notification Fact Sheet within the required time.

SET-UP:

1. Simulator, post scenario in FREEZE

Note 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.

Directions to the Student:

Evaluator gives Turnover sheet to the student

- A. You are the Work Control Supervisor. You will classify the Emergency Condition based on the most severe condition experienced during the scenario and complete the State Notification Fact Sheet.
- B. The following information is provided to you:
 - 1. The plant condition is as applicable to associated simulator scenario.
 - 2. Perform the task using ER-1.1, Classification of Emergencies.
 - 3. No code yellow security event in progress.
- C. This task is time critical.
- D. We will begin after the "Initiating Cue" is read. Do you have any questions?

INITIATING CUE:

Evaluator to Work Control Supervisor, **"Work Control Supervisor (or student's name), classify the Emergency Condition based on the most severe condition experienced during the scenario. Complete the State Notification Fact Sheet."**

JPM PERFORMANCE INFORMATION

Start Time: _____

NOTE: When providing “Evaluator Cues” to the examinee, care must be exercised to avoid prompting the examinee. Typically cues are only provided when the examinee’s actions warrant receiving the information (i.e., the examinee looks or asks for the indication).

NOTE: Critical steps are marked with a “YES” below the performance step number. Failure to meet the standard for any critical step shall result in failure of this JPM.

NOTE: 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 enters ER 1.1, Classification of Emergencies (blue binder)
Performance Step: 01 Critical – NO	Depending upon the plant mode in effect when the potential emergency initiating condition occurs, review the following forms: <ul style="list-style-type: none"> ER 1.1 A, 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
Standard:	Depending upon the plant mode in effect when the potential emergency initiating condition occurs, student review the following forms: <ul style="list-style-type: none"> ER 1.1 A, 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
Performance:	SATISFACTORY _____ UNSATISFACTORY _____
Cue:	If the student is considering an emergency classification under a radiological effluent EAL which requires a dose projection (RS1 or RG1), cue the following, “No dose projection will be performed. Please continue with the next step.”

Performance Step: 02 Critical - YES	If an emergency classification is being considered under a radiological effluent EAL which requires a dose projection (RS1 or RG1), implement offsite dose assessment using procedure ER 5.3, “Operation of Rad Dose V”
Standard:	Student goes to step 3 of ER 1.1.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 03 Critical - YES	Circle the potential emergency initiating condition(s) on each Form. This assessment must be performed promptly to support the goal of making an emergency declaration within 15 minutes of initial EAL indications becoming available in the Control Room.
Standard:	Student circles the potential emergency initiating condition(s) on each Form.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 04 Critical - NO	For Category R, E, H, M and C events, refer to the initiating condition EAL(s) in Figure 1 and verify that either the EAL(s) is met or the intent is met. All Category F EALs are presented on Form ER 1.1C (i.e., not in Figure 1).
Standard:	Student verifies that the EAL is met or the intent of the initiating condition is met.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 05 Critical - YES	Identify the most severe (highest) emergency classification for which the EAL(s) is met or the intent of the initiating condition is met.
Standard:	Student identifies the most severe (highest) emergency classification for which the EAL(s) is met or the intent of the initiating condition is met.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Note:	Student reviews NOTE prior to step 9.
--------------	---------------------------------------

Performance Step: 06 Critical – YES	If an emergency declaration is warranted, immediately implement Station Emergency Response Procedure ER 1.2, Emergency Plan Activation.
Standard:	Student determines an emergency declaration is warranted and immediately implements Station Emergency Response Procedure ER 1.2, Emergency Plan Activation.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Note:	<p>Student enters ER 1.2, Emergency Plan Activation and obtains the appropriate binder.</p> <ul style="list-style-type: none"> • Unusual Event (Green binder) • Alert (Yellow binder) • Site Area Emergency (Orange binder) • General Emergency (Red binder)
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Cue:	When the student gets to the step to assume the role of the STED, if asked, the Evaluator responds “I am the STED.”
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Performance Step: 07	Assume the role of STED.
Critical – NO	
Standard:	Student verifies Shift Manager is the STED.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 08	Implement one of the following forms based on the emergency classification:
Critical – YES	<ul style="list-style-type: none"> • Form ER 1.2A, Unusual Event Checklist - Short Term Emergency Director. • Form ER 1.2B, Alert Checklist - Short Term Emergency Director. • Form ER 1.2C, Site Area Emergency Checklist - Short Term Emergency Director. • Form ER 1.2D, General Emergency Checklist - Short Term Emergency Director.
Standard:	Student implements ONE of the following forms based on the emergency classification: <ul style="list-style-type: none"> • Form ER 1.2A, Unusual Event Checklist - Short Term Emergency Director. • Form ER 1.2B, Alert Checklist - Short Term Emergency Director. • Form ER 1.2C, Site Area Emergency Checklist - Short Term Emergency Director. • Form ER 1.2D, General Emergency Checklist - Short Term Emergency Director.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 9	If entering this checklist during a code yellow security event, implement ER1.2 actions in parallel with the code yellow actions directed by OS1290.03. Make both the security and the emergency classification related plant announcements per OS1290.03 and ER 1.2.
Critical – YES	
Standard:	Student recalls from the Turnover Sheet no code yellow security event in progress.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

NOTE:	Student reviews CAUTION prior to step 2.
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NOTE:	The time recorded for the UPDATE starts the 15 minute clock to notify the states. This task is time critical.
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Performance Step: 10	Declare the emergency via a crew UPDATE by announcing the emergency classification. Enter the time of the UPDATE _____. This is the time of the emergency declaration.
Critical – YES	
Standard:	STED declares the emergency via a crew UPDATE by announcing the emergency classification and records the time of the UPDATE.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 11	Enter the emergency initiating condition designation (e.g., RU1, etc.) _____.
Critical – YES	
Standard:	Student enters the emergency initiating condition designation.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

NOTE:

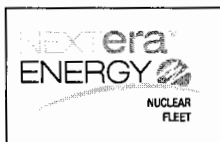
Depending on the type of declaration, the student may have to perform the next step. If not, then N/A the next step.

Performance Step: 12 Critical – YES	DETERMINE REMOTE MONITORING AREA (RMA) ACTIVATION
Standard:	Student determines remote monitoring area (RMA) activation.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 13 Critical – YES	NOTIFY GUARD ISLAND SECURITY <ol style="list-style-type: none"> Contact Guard Island Security at x4006 or x4008. Direct implementation of procedure GN1332.00, Security Response to a Declared Radiological Emergency. Provide the following information: <ul style="list-style-type: none"> A _____ has been declared. Time of declaration per step 2 The emergency initiating condition per step 3 The remote monitoring area is/is not being activated
Standard:	Student notifies guard island security as follows: <ol style="list-style-type: none"> Contacts Guard Island Security at x4006 or x4008. Directs implementation of procedure GN1332.00, Security Response to a Declared Radiological Emergency. Provides the following information: <ul style="list-style-type: none"> A _____ has been declared. Time of declaration per step 2 The emergency initiating condition per step 3 The remote monitoring area is/is not being activated
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 14 Critical – YES	NOTIFY STATION PERSONNEL <ol style="list-style-type: none"> Ensure Gaitronics night muting is off. Sound the plant emergency alarm. Using the Gaitronics override, make the proper announcement. Repeat the plant emergency alarm. Using the Gaitronics override, repeat the proper announcement.
Standard:	Student notifies station personnel as follows: <ol style="list-style-type: none"> Ensures Gaitronics night muting is off. Sounds the plant emergency alarm. Using the Gaitronics override, makes the proper announcement. Repeats the plant emergency alarm. Using the Gaitronics override, repeats the proper announcement.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 15 Critical – YES	COMPLETE FORM ER 2.0B, STATE NOTIFICATION FACT SHEET <ol style="list-style-type: none"> Block 1 - Leave blank Block 2 – Enter time declared from step 2 and check the proper event. Block 3 – Enter the emergency initiating condition designation Block 4 - Check the proper block(s). Block 5 - Use the procedure "release" guidance when completing this block. Block 6 – Requires authorization signature of the STED or SED
NOTE:	Depending on the type of declaration, the student may have to determine appropriate protective action recommendations.
NOTE:	When student presents form for authorization: Make no comments of any sort on the information recorded. Evaluator should sign form as STED
Standard:	Student completes ER 2.0B, State Notification Fact Sheet <ol style="list-style-type: none"> Block 1 - Leaves blank Block 2 – Enters time declared from step 2 and check the proper event. Block 3 – Enters the emergency initiating condition designation Block 4 - Checks the proper block(s). Block 5 - Uses the procedure "release" guidance when completing this block. Block 6 – Requires authorization signature of the STED or SED
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

**2018 LOIT NRC Exam SRO Admin JPM "E"****JPM**
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16

CUE:	"The JPM is complete."
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Performance Step: 16 Critical – YES	Stop time _____
NOTE:	Evaluator calculates time difference from JPM Step 11 to Step 17. This time must be ≤ 15 minutes for SAT JPM.
Standard:	Time to complete critical task ≤ 15 minutes
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.

TURNOVER SHEET

Directions to the Student:

Evaluator gives Turnover sheet to the student

- A. You are the Work Control Supervisor. You will classify the Emergency Condition based on the most severe condition experienced during the scenario and complete the State Notification Fact Sheet.
- B. The following information is provided to you:
 - 1. The plant condition is as applicable to associated simulator scenario.
 - 2. Perform the task using ER-1.1, Classification of Emergencies.
 - 3. No code yellow security event in progress.
- C. This task is time critical.
- D. We will begin after the "Initiating Cue" is read. Do you have any questions?

INITIATING CUE:

Evaluator to Work Control Supervisor, **"Work Control Supervisor (or student's name), classify the Emergency Condition based on the most severe condition experienced during the scenario. Complete the State Notification Fact Sheet."**

NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.

Evaluator: _____

Date: _____

UNSAT: ☐[illegible]

EVALUATOR'S SIGNATURE: _____

2018 LOIT NRC Exam SRO Admin JPM "E"

2018 LOIT NRC Exam SRO Admin JPM "E"

ANSWER KEY

	Emergency Plan Classification
Sim Exam #1	MA1: Loss of all but one AC power source to emergency busses for 15 minutes or longer.
Sim Exam #2	FA1: Any loss or potential loss of either fuel clad or RCS barriers.
Sim Exam #3	<p>MA5: Automatic or manual trip fails to shutdown the reactor, and subsequent manual actions taken at the Main Control Board are not successful in shutting down the reactor.</p> <p>-or-</p> <p>FA1: Any loss or potential loss of either fuel clad or RCS barriers.</p>
Sim Exam #4	FA1: Any loss or potential loss of either fuel clad or RCS barriers.

JOB PERFORMANCE MEASURE

TITLE: SHIFTING FROM CCP TO PDP

JPM NUMBER: 2018 LOIT NRC Exam Sim JPM "A" **REV. 0**

SAFETY FUNCTION 1: Reactivity Control

K/A: 004, Chemical and Volume Control System, A4.08, Ability to manually operate and/or monitor in the control room: Charging

EVALUATION LOCATION: In-Plant: ☐

Simulator: ☒

Admin: ☐

Estimated time for Completion: 20 Min

Alternate Path: NO

Time Critical: NO

PREPARED BY: Sean M. Riley **DATE:** 12/28/17

APPROVED BY: Chris Adams **DATE:** 12/28/17
TRAINING SUPERVISOR

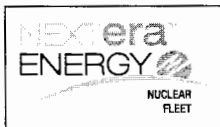
JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

ALL STEPS IN THIS CHECKLIST ARE TO BE PERFORMED PRIOR TO USE.

REVIEW STATEMENTS	YES	NO	N/A
1. Are all items on the signature page filled in correctly?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Has the JPM been reviewed and validated by SMEs?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Can the required conditions for the JPM be appropriately established in the simulator if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Do the performance steps accurately reflect trainee's actions in accordance with plant procedures?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Is the standard for each performance item specific as to what controls, indications and ranges are required to evaluate if the trainee properly performed the step?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Has the completion time been established based on validation data or incumbent experience?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. If the task is time critical, is the time critical portion based upon actual task performance requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8. Is the job level appropriate for the task being evaluated if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Is the K/A appropriate to the task and to the licensee level if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Is justification provided for tasks with K/A values less than 3.0?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Have the performance steps been identified and classified (Critical / Sequence / Time Critical) appropriately?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Have all special tools and equipment needed to perform the task been identified and made available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Are all references identified, current, accurate, and available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Have all required cues (as anticipated) been identified for the evaluator to assist task completion?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Are all critical steps supported by procedural guidance? (e.g., if licensing, EP or other groups were needed to determine correct actions, then the answer should be NO.)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. If the JPM is to be administered to an LOIT student, has the required knowledge been taught to the individual prior to administering the JPM? TPE does not have to be completed, but the JPM evaluation may not be valid if they have not been taught the required knowledge.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

All questions/statements must be answered "YES" or "N/A" or the JPM is not valid for use. If all questions/statements are answered "YES" or "N/A," then the JPM is considered valid and can be performed as written. The individual(s) performing the initial validation shall sign and date the cover sheet.

Protected Content: (CAPRs, corrective actions, licensing commitments, etc. associated with this material)



JOB PERFORMANCE MEASURE

JPM
Page 3 of 13

ASSOCIATED TASK DESCRIPTION:

0040103901 Operate Charging System Under Normal/Abnormal Conditions

STANDARDS:

Shift charging from a centrifugal charging pump to the positive displacement charging pump.

SIMULATOR SET-UP:

1. Reset the simulator to IC 30.
2. Place the simulator in RUN.
3. Adjust letdown flow to 80 gpm.
4. Place Simulator in FREEZE

Directions to the Student:

Evaluator gives Tear-Off sheet to the student.

- A. You are the Primary Operator. You are going to shift from the centrifugal charging pump to the positive displacement charging pump.
- B. The following information is provided to you:
 - 1) The plant is in MODE 1 at 100% power.
 - 2) Tech. Support needs the PDP in service to evaluate long term operation capabilities.
 - 3) OS1002.02, Operation of the Letdown, Charging, and Seal Injection prerequisites are complete.
 - 4) All PDP pump pre-start checks are complete and satisfactory.
 - 5) Heater HTR-369-A, PDP Stabilizer/Separator Heater has been energized for 1 hour.
- C. Perform the task in accordance with the appropriate procedure.
- D. We will begin after the "Initiating Cue" is read. Do you have any questions?

Initiating Cue:

Unit Supervisor to Primary Operator, **"Shift charging from the running centrifugal charging pump to the positive displacement charging pump."**

JPM PERFORMANCE INFORMATION

Start Time: _____

NOTE: When providing "Evaluator Cues" to the examinee, care must be exercised to avoid prompting the examinee. Typically cues are only provided when the examinee's actions warrant receiving the information (i.e., the examinee looks or asks for the indication).

NOTE: Critical steps are marked with a "YES" below the performance step number. Failure to meet the standard for any critical step shall result in failure of this JPM.

NOTE: 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 student asks for boron sample results say: " The boron sample was taken and boron concentration is within 5 ppm of the Reactor Coolant System concentration. "

Performance Step: 01 Critical - No	VERIFY RC-SK-459A, PDP speed controller is in MANUAL and set to MINIMUM.
Standard:	Verifies RC-SK-459A, PDP speed controller is in MANUAL and set to MINIMUM.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Note:	Student may mention need to enter applicable Tech. Spec. per step 4.10.5.
Cue:	If the student mentions addressing Tech. Specs., say: " I will address the Tech. Specs., continue with the evolution. "
Performance Step: 02 Critical – No	PLACE the control switch for the standby centrifugal charging pump in PULL-TO-LOCK.
Standard:	Places the control switch for the standby centrifugal charging pump in PULL-TO-LOCK.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 03 Critical - YES	OPEN CS-V-205, PDP minimum flow valve.
Standard:	Opens CS-V-205, PDP minimum flow valve.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 04 Critical - NO	PERFORM pump prestarts.
Standard:	Verifies that pump pre-starts had already been completed.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 05 Critical - YES	START CS-P-128, Positive Displacement Charging Pump.
Standard:	Starts CS-P-128, Positive Displacement Charging Pump.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 06 Critical - YES	INCREASE speed of CS-P-128 to 30%.
Standard:	Increases speed of CS-P-128 to 30%.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 07 Critical - YES	CHECK or PLACE CS-FCV-121, charging flow controller in MANUAL.
Standard:	Places CS-FCV-121, charging flow controller in MANUAL.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 08 Critical - No	ADJUST seal injection flow to between 6 to 8 gpm.
Standard:	Adjusts seal injection flow to between 6 to 8 gpm.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 09 Critical – No	ADJUST total charging flow to between 65 and 75 gpm.
Standard:	Adjusts total charging flow to between 65 and 75 gpm.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Cue:	When the student verbalizes that the PDP must be run for 12 minutes, provide the cue, "For the purpose of the JPM, the pump has been operating for 12 minutes."
Performance Step: 10 Critical - YES	After the PDP has been running for at least 12 minutes, PLACE the control switch for CS-V-205 to THROTTLE CLOSE.
Standard:	Places the control switch for CS-V-205 to THROTTLE CLOSE.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 11 Critical - NO	ADJUST the following to maintain the desired charging and seal injection flows until CS-V-205 is full closed: <ul style="list-style-type: none"> • CS-FCV-121, charging flow control. • CS-HCV-182, RCP seal flow control
Standard:	Adjusts valves as necessary
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 12 Critical -NO	Simultaneously THROTTLE CLOSED CS-FCV-121, charging flow control valve, and INCREASE speed of CS-P-128, positive disp. charging pump, until letdown and charging flows are matched.
Standard:	Simultaneously throttles closed CS-FCV-121, charging flow control valve, and INCREASE speed of CS-P-128, positive disp. charging pump, until letdown and charging flows are matched.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 13 Critical - YES	PLACE RC-LK-459, master level controller, in MANUAL.
Standard:	Places RC-LK-459, master level controller, in MANUAL.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Note:	The expectation is that the student will adjust controllers so as to achieve a bumpless transfer.
Performance Step: 14 Critical - NO	MATCH the output of RC-LK-459, master level controller, with then output of RC-SK-459A, PDP speed controller.
Standard:	Matches the output of RC-LK-459, master level controller, with then output of RC-SK-459A, PDP speed controller.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 15 Critical - YES	PLACE RC-SK-459A, PDP speed controller, in AUTO.
Standard:	Places RC-SK-459A, PDP speed controller, in AUTO.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 16 Critical - YES	PLACE RC-LK-459, master level controller, in AUTO.
Standard:	Places RC-LK-459, master level controller, in AUTO.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Cue:	IF the student requests Unit Supervisor direction to stop the centrifugal charging pump, respond, "Stop the centrifugal charging pump."
Performance Step: 17 Critical - YES	As directed by the Unit Supervisor, STOP the running centrifugal charging pump and PLACE the control switch in NORMAL AFTER STOP.
Standard:	Stops STOP the running centrifugal charging pump and PLACE the control switch in NORMAL AFTER STOP.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Cue:	If the student asks, say: "The Aux. Lube Oil Pump is running."
Performance Step: 18 Critical - NO	PLACE the control switch for CS-V-205, PDP minimum flow valve, to AUTO.
Standard:	Places the control switch for CS-V-205, PDP minimum flow valve, to AUTO.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Terminating Cues: The JPM is complete.

NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.

Stop Time: _____

Examinee: _____

Evaluator: _____

☐ RO ☐ SRO ☐

Date: _____

PERFORMANCE RESULTS:

SAT:

--

UNSAT: ☐

COMMENTS/FEEDBACK: (Comments shall be made for any steps graded unsatisfactory).

EXAMINER NOTE: ENSURE ALL EXAM MATERIAL IS COLLECTED AND PROCEDURES CLEANED, AS APPROPRIATE.

EVALUATOR'S SIGNATURE: _____

TURNOVER SHEET

Directions to the Student:

Evaluator gives Tear-Off sheet to the student.

- A. You are the Primary Operator. You are going to shift from the centrifugal charging pump to the positive displacement charging pump.
- B. The following information is provided to you:
 - 1) The plant is in MODE 1 at 100% power.
 - 2) Tech. Support needs the PDP in service to evaluate long term operation capabilities.
 - 3) OS1002.02, Operation of the Letdown, Charging, and Seal Injection prerequisites are complete.
 - 4) All PDP pump pre-start checks are complete and satisfactory.
 - 5) Heater HTR-369-A, PDP Stabilizer/Separator Heater has been energized for 1 hour.
- C. Perform the task in accordance with the appropriate procedure.
- D. We will begin after the "Initiating Cue" is read. Do you have any questions?

Initiating Cue:

Unit Supervisor to Primary Operator, **"Shift charging from the running centrifugal charging pump to the positive displacement charging pump."**

TITLE: PRESSURIZER LEVEL CHANNEL FAILURE

JPM NUMBER: 2018 LOIT NRC Exam Sim JPM "B" **REV.** 0

SAFETY FUNCTION 2: Reactor Coolant System Inventory Control

K/A: 011, Pressurizer Level Control System, A2.07, Ability to (a) predict the impacts of the following malfunctions or operations on the PZR LCS, and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunction or operations: Isolation of letdown

EVALUATION LOCATION: In-Plant: ☐

Simulator: ☒

Admin: ☐

Estimated time for Completion: 20 Min

Alternate Path: NO

Time Critical: NO

PREPARED BY: Sean M. Riley **DATE:** 12/28/17

APPROVED BY: Chris Adams **DATE:** 12/28/17
TRAINING SUPERVISOR

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

ALL STEPS IN THIS CHECKLIST ARE TO BE PERFORMED PRIOR TO USE.

REVIEW STATEMENTS	YES	NO	N/A
1. Are all items on the signature page filled in correctly?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Has the JPM been reviewed and validated by SMEs?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Can the required conditions for the JPM be appropriately established in the simulator if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Do the performance steps accurately reflect trainee's actions in accordance with plant procedures?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Is the standard for each performance item specific as to what controls, indications and ranges are required to evaluate if the trainee properly performed the step?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Has the completion time been established based on validation data or incumbent experience?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. If the task is time critical, is the time critical portion based upon actual task performance requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8. Is the job level appropriate for the task being evaluated if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Is the K/A appropriate to the task and to the licensee level if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Is justification provided for tasks with K/A values less than 3.0?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Have the performance steps been identified and classified (Critical / Sequence / Time Critical) appropriately?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Have all special tools and equipment needed to perform the task been identified and made available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Are all references identified, current, accurate, and available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Have all required cues (as anticipated) been identified for the evaluator to assist task completion?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Are all critical steps supported by procedural guidance? (e.g., if licensing, EP or other groups were needed to determine correct actions, then the answer should be NO.)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. If the JPM is to be administered to an LOIT student, has the required knowledge been taught to the individual prior to administering the JPM? TPE does not have to be completed, but the JPM evaluation may not be valid if they have not been taught the required knowledge.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

All questions/statements must be answered "YES" or "N/A" or the JPM is not valid for use. If all questions/statements are answered "YES" or "N/A," then the JPM is considered valid and can be performed as written. The individual(s) performing the initial validation shall sign and date the cover sheet.

Protected Content: (CAPRs, corrective actions, licensing commitments, etc. associated with this material)

ASSOCIATED TASK DESCRIPTION:

0110400101 Identify PZR Level Instrument Failure

STANDARDS:

Respond to Pressurizer level instrument failure per OS1201.07, PZR Level Instrument Failure.

SIMULATOR SET-UP:

Reset the simulator to any 100% power IC and perform the following.

1. Reset the simulator to IC 300 or any 100% power IC.
2. Ensure that LT-459 is selected for controlling PZR level channel and for the PZR level recorder.
3. Place the simulator in RUN.
4. Acknowledge any alarms and setup trends
5. Ensure at least one DEHC screen shows the status of the Main Turbine stop and control valves.
6. Place Simulator in FREEZE
7. With the simulator in FREEZE run scenario file L0007J located in the JPM setup scenarios folder.
8. LT-459 fails low 20 seconds after simulator is placed in RUN.

Directions to the Student:

Evaluator gives Turnover sheet to the student

- A. You are the Primary Operator.
- B. The following information is provided to you:
 - 1. The plant is at 100% power.
 - 2. An event will occur. Respond to plant conditions. The BOP will NOT assist you.
 - 3. Due to the nature of the JPM, you will NOT be permitted to review any procedures before the JPM begins.
- C. Perform the task in accordance with the appropriate procedure.
- D. We will begin after the "Initiating Cue" is read. Do you have any questions?

INITIATING CUE:

Evaluator to Primary Operator, **"Primary Operator (or student's name), when an event occurs, identify the event. Perform the actions for the required procedure. If required, perform any immediate actions from memory for the applicable procedure and inform the evaluator when the immediate actions are complete."**

NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.

JPM PERFORMANCE INFORMATION

Start Time: _____

NOTE: When providing "Evaluator Cues" to the examinee, care must be exercised to avoid prompting the examinee. Typically cues are only provided when the examinee's actions warrant receiving the information (i.e., the examinee looks or asks for the indication).

NOTE: Critical steps are marked with a "YES" below the performance step number. Failure to meet the standard for any critical step shall result in failure of this JPM.

NOTE: 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:	When student identifies the failed PZR level instrument, give the student OS1201.07, PZR Level Instrument Failure. Student may use skill of the operator to reduce charging as necessary to maintain PZR level on program.

Performance Step: 01 Critical - No	Check pressurizer level channels.
Standard:	Checks pressurizer level channels and observes that LT-459 is failed low.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Comments:	Note and caution prior to step 2 should be read.
Performance Step: 02 Critical – No	Manually control PZR level at program.
Standard:	Reduces charging flow. Adjusts seal injection flow as necessary to manually control PZR level at program.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 03	Select an alternate level channel for control/backup as necessary.
Critical - NO	
Standard:	Selects alternate level channels L-461/L-460 for control/backup.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 04	Select an alternate level channel for the recorder as necessary.
Critical - NO	
Standard:	Selects an alternate level channel for the recorder as necessary <ul style="list-style-type: none"> L-461 L-460
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 05	Verify Pzr heaters on as follows:
Critical - YES	Reset or manually control Pzr heaters as necessary.
Standard:	Resets the Pzr control group of heaters.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 06	Check if letdown was isolated:
Critical - NO	Letdown isolation valves closed <ul style="list-style-type: none"> RC-LCV-459 RC-LCV-460.
Standard:	Checks if letdown was isolated: Observes letdown isolation valve RC-LCV-459 closed.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 07 Critical - YES	Verify charging flow greater than 50 gpm.
Standard:	Verify or adjusts charging flow greater than 50 gpm.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 08 Critical - No	Verify Pzr level greater than 17%.
Standard:	Verifies Pzr level greater than 17%.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 09 Critical – No	Align PCCW to letdown heat exchanger as follows: <ul style="list-style-type: none"> • CC-V-341 – open • CS-TK-130 – auto.
Standard:	Verifies PCCW alignment to letdown heat exchanger by checking: <ul style="list-style-type: none"> • CC-V-341 – open • CS-TK-130 – auto.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 10 Critical - YES	Close letdown flow control valves: <ul style="list-style-type: none"> • CS-HCV-189 • CS-HCV-190.
Standard:	Checks closed/closes letdown flow control valves: <ul style="list-style-type: none"> • CS-HCV-189 • CS-HCV-190.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 11 Critical - YES	Open letdown line isolation valve RC-LCV-459.
Standard:	Opens letdown line isolation valve RC-LCV-459.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 12 Critical - No	Open letdown line isolation valve RC-LCV-460.
Standard:	Checks open letdown line isolation valve RC-LCV-460.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 13 Critical - YES	Open letdown line isolation valve CS-V-145.
Standard:	Opens letdown line isolation valve CS-V-145.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Comments:	It is expected that the student will take manual control of CS-PK-131 to approximately 15%, and then slowly open a flow control valve to establish letdown flow. When CS-PK-131 input pressure equals setpoint pressure (about 350 psig), the student should return CS-PK-131 to auto.

Performance Step: 14 Critical - Yes	Manually control or monitor CS-PK-131 response and establish letdown flow using: <ul style="list-style-type: none"> • CS-HCV-189 • CS-HCV-190.
Standard:	Manually control or monitor CS-PK-131 response and establish letdown flow using: <ul style="list-style-type: none"> • CS-HCV-189 • CS-HCV-190.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Terminating Cues: The JPM is complete

NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.

Stop Time: _____

Examinee: _____

Evaluator: _____

☐ RO ☐ SRO ☐

Date: _____

PERFORMANCE RESULTS:

SAT: UNSAT: ☐

COMMENTS/FEEDBACK: (Comments shall be made for any steps graded unsatisfactory).

EXAMINER NOTE: ENSURE ALL EXAM MATERIAL IS COLLECTED AND PROCEDURES CLEANED, AS APPROPRIATE.

EVALUATOR'S SIGNATURE: _____

TURNOVER SHEET

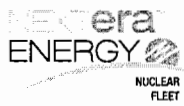
Directions to the Student:

- A. You are the Primary Operator.
- B. The following information is provided to you:
 - 1. The plant is at 100% power.
 - 2. An event will occur. Respond to plant conditions. The BOP will NOT assist you.
 - 3. Due to the nature of the JPM, you will NOT be permitted to review any procedures before the JPM begins.
- C. Perform the task in accordance with the appropriate procedure.
- D. We will begin after the "Initiating Cue" is read. Do you have any questions?

INITIATING CUE:

Evaluator to Primary Operator, **"Primary Operator (or student's name), when an event occurs, identify the event. Perform the actions for the required procedure. If required, perform any immediate actions from memory for the applicable procedure and inform the evaluator when the immediate actions are complete."**

NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.



JOB PERFORMANCE MEASURE

JPM
Page 1 of 11

TITLE: ISOLATE ACCUMULATORS

JPM NUMBER: 2018 LOIT NRC Exam Sim JPM "C" **REV.** 0

SAFETY FUNCTION 3: Reactor Pressure Control

K/A: 006, Emergency Core Cooling System (ECCS), A4.02, Ability to manually operate and/or monitor in the control room: Valves

EVALUATION LOCATION: In-Plant: ☐

Simulator: ☒

Admin: ☐

**Estimated time
for Completion:** 10 Min

Alternate Path: YES

Time Critical: NO

PREPARED BY: Sean M. Riley **DATE:** 12/28/17

APPROVED BY: Chris Adams **DATE:** 12/28/17
TRAINING SUPERVISOR

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

ALL STEPS IN THIS CHECKLIST ARE TO BE PERFORMED PRIOR TO USE.

REVIEW STATEMENTS	YES	NO	N/A
1. Are all items on the signature page filled in correctly?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Has the JPM been reviewed and validated by SMEs?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Can the required conditions for the JPM be appropriately established in the simulator if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Do the performance steps accurately reflect trainee's actions in accordance with plant procedures?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Is the standard for each performance item specific as to what controls, indications and ranges are required to evaluate if the trainee properly performed the step?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Has the completion time been established based on validation data or incumbent experience?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. If the task is time critical, is the time critical portion based upon actual task performance requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8. Is the job level appropriate for the task being evaluated if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Is the K/A appropriate to the task and to the licensee level if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Is justification provided for tasks with K/A values less than 3.0?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Have the performance steps been identified and classified (Critical / Sequence / Time Critical) appropriately?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Have all special tools and equipment needed to perform the task been identified and made available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Are all references identified, current, accurate, and available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Have all required cues (as anticipated) been identified for the evaluator to assist task completion?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Are all critical steps supported by procedural guidance? (e.g., if licensing, EP or other groups were needed to determine correct actions, then the answer should be NO.)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. If the JPM is to be administered to an LOIT student, has the required knowledge been taught to the individual prior to administering the JPM? TPE does not have to be completed, but the JPM evaluation may not be valid if they have not been taught the required knowledge.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

All questions/statements must be answered "YES" or "N/A" or the JPM is not valid for use. If all questions/statements are answered "YES" or "N/A," then the JPM is considered valid and can be performed as written. The individual(s) performing the initial validation shall sign and date the cover sheet.

Protected Content: (CAPRs, corrective actions, licensing commitments, etc. associated with this material)

ASSOCIATED TASK DESCRIPTION:

0060100801 Isolate Accumulators

STANDARDS:

Isolate SI accumulators in accordance with step 15 of E-1

SIMULATOR SET-UP:

Reset the simulator to IC #325 or any 100% IC which contains the following:

1. Place the simulator in RUN.
2. Using Panel Graphics PBF10, override the control switch for SI-V-17, Accum B Isolation Valve to open.
3. Insert the following malfunctions:
 - Reactor Coolant mfRC049A for RCS cold leg 1 Leak (0-100%)
4. Allow automatic Reactor Trip and Safety Injection.
5. Complete all required actions of E-0 and all actions of E-1 through step 12.
6. Complete alignment for cold leg recirculation per ES-1.3.
7. Insert the following component remote functions when required by ES-1.3:
 - CVCS (component) mvCS1LCV112D 460V MCC E512 RF:Open Breaker.
 - CVCS (component) mvCS1LCV112E 460V MCC E612 RF:Open Breaker.
8. Allow hot leg temperature to decrease to <370°F to provide conditions for accumulator isolation.
9. Place the simulator in FREEZE.

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

Directions to the Student:

Evaluator gives Turnover sheet to the student

- A. You are the Primary Operator. You are going to isolate the Safety Injection Accumulators per step 15 of E-1.
- B. The following information is provided to you:
1. Due to an RCS LOCA, the following has occurred:
 - Automatic Reactor Trip
 - Automatic Safety Injection
 - Automatic CBS actuation
 2. All associated actions of E-0, Reactor Trip Or Safety Injection, are complete.
 3. FR-P.1, Response To Imminent Pressurized Thermal Shock Conditions, is complete.
 4. E-1, Loss Of Reactor Or Secondary Coolant, has been completed through step 14.
 5. ES-1.3, Transfer To Cold Leg Recirculation, is complete.
 6. The US has returned to E-1, and is ready to process step 15.
- C. Perform the task using E-1, Loss Of Reactor Or Secondary Coolant.
- D. We will begin after the "Initiating Cue" is read. Do you have any questions?

INITIATING CUE:

Evaluator to Primary Operator, **"Primary Operator (or student's name), isolate the SI accumulators in accordance with step 15 of E-1."**

NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.

JPM PERFORMANCE INFORMATION

Start Time: _____

NOTE: When providing "Evaluator Cues" to the examinee, care must be exercised to avoid prompting the examinee. Typically cues are only provided when the examinee's actions warrant receiving the information (i.e., the examinee looks or asks for the indication).

NOTE: Critical steps are marked with a "YES" below the performance step number. Failure to meet the standard for any critical step shall result in failure of this JPM.

NOTE: 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: When student demonstrates the ability to obtain a controlled copy of the procedure, provide the student with E-1, Loss Of Reactor Or Secondary Coolant.

Performance Step: 01 Critical – NO	Check if SI accumulators should be isolated: At least two RCS hot leg temperatures less than 370°F.
Standard:	Verifies at least two RCS hot leg temperatures less than 370°F.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 02 Critical - YES	Check power to isolation valves – available: Energize MCC-522 and MCC-622.
Standard:	Using MCB control switches, closes the following breakers: <ul style="list-style-type: none"> • MCC-522. • MCC-622.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 03 Critical - NO	Check power to isolation valves – available: Power available lights – lit.
Standard:	Verifies power available lights lit for the following valves: <ul style="list-style-type: none"> • SI-V-3. • SI-V-32. • SI-V-17. • SI-V-47.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 04 Critical - NO	Reset SI.
Standard:	Resets SI or reports that SI was previously reset.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 05 Critical - YES	Close all SI accumulator isolation valves.
Standard:	Closes SI accumulator isolation valve SI-V-3.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 06 Critical – YES	Close all SI accumulator isolation valves.
Standard:	Closes SI accumulator isolation valve SI-V-32.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Note:	The student should recognize that SI-V-17 will not close and the correct response is to refer to the RNO and vent the B accumulator.
Performance Step: 07 Critical – NO	Close all SI accumulator isolation valves.
Standard:	Attempts to close SI accumulator isolation valve SI-V-17
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 08 Critical – YES	Close all SI accumulator isolation valves.
Standard:	Closes SI accumulator isolation valve SI-V-47.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 09 Critical – YES	Vent any unisolated accumulators by cycling the accumulator vent valves.
Standard:	Vents any unisolated accumulators as follows: Open the following valves to vent "B" accumulator: <ul style="list-style-type: none"> • SI-FV-2482. • SI-FV-2483.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Note:	"B" accumulator pressure will take approximately 10 minutes to depressurize from 108 psig to 18 psig. Pressure trend is an extremely slow decreasing trend below 18 psig. Provide the following cue when the student demonstrates the ability to monitor accumulator pressure.
Cue:	If necessary, provide the following cue: US to PSO, " B accumulator has been vented adequately. "
Performance Step: 10 Critical – NO	Vent any unisolated accumulators by cycling the accumulator vent valves.
Standard:	Vents any unisolated accumulators as follows: Closes the following valves: <ul style="list-style-type: none"> • SI-FV-2482. • SI-FV-2483.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 11 Critical – NO	Deenergize MCC-522 and MCC-622.
Standard:	Using MCB control switches, open the following breakers: <ul style="list-style-type: none"> • MCC-522. • MCC-622.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Terminating Cues: The JPM is complete

NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.

Stop Time: _____

Examinee: _____

Evaluator: _____

☐ RO ☐ SRO ☐

Date: _____

☐ RO ☐ SRO

PERFORMANCE RESULTS:

SAT:

UNSAT:

COMMENTS/FEEDBACK: (Comments shall be made for any steps graded unsatisfactory).

EXAMINER NOTE: ENSURE ALL EXAM MATERIAL IS COLLECTED AND PROCEDURES
CLEANED, AS APPROPRIATE.

EVALUATOR'S SIGNATURE: _____

TURNOVER SHEET

Directions to the Student:

- A. You are the Primary Operator. You are going to isolate the Safety Injection Accumulators per step 15 of E-1.
- B. The following information is provided to you:
 1. Due to an RCS LOCA, the following has occurred:
 - Automatic Reactor Trip
 - Automatic Safety Injection
 - Automatic CBS actuation
 2. All associated actions of E-0, Reactor Trip Or Safety Injection, are complete.
 3. FR-P.1, Response To Imminent Pressurized Thermal Shock Conditions, is complete.
 4. E-1, Loss Of Reactor Or Secondary Coolant, has been completed through step 14.
 5. ES-1.3, Transfer To Cold Leg Recirculation, is complete.
 6. The US has returned to E-1, and is ready to process step 15.
- C. Perform the task using E-1, Loss Of Reactor Or Secondary Coolant.
- D. We will begin after the "Initiating Cue" is read. Do you have any questions?

INITIATING CUE:

Evaluator to Primary Operator, **"Primary Operator (or student's name), isolate the SI accumulators in accordance with step 15 of E-1."**

NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.

JOB PERFORMANCE MEASURE

TITLE: POST LOCA PORV OPERATION

JPM NUMBER: 2018 LOIT NRC Exam Sim JPM "D" **REV.** 0

SAFETY FUNCTION 4: Heat Removal From Reactor Core: Primary System

K/A: 002, Reactor Coolant System, A2.01, 2.1.23 Ability to perform specific system and integrated plant procedures during all modes of plant operation.

EVALUATION LOCATION:

In-Plant: ☐

Simulator: ☒

Admin: ☐

**Estimated time
for Completion:** 15 Min

Alternate Path: NO

Time Critical: NO

PREPARED BY: Sean M. Riley **DATE:** 1/8/17

APPROVED BY: Chris Adams **DATE:** 1/8/17
TRAINING SUPERVISOR

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

ALL STEPS IN THIS CHECKLIST ARE TO BE PERFORMED PRIOR TO USE.

REVIEW STATEMENTS	YES	NO	N/A
1. Are all items on the signature page filled in correctly?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Has the JPM been reviewed and validated by SMEs?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Can the required conditions for the JPM be appropriately established in the simulator if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Do the performance steps accurately reflect trainee's actions in accordance with plant procedures?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Is the standard for each performance item specific as to what controls, indications and ranges are required to evaluate if the trainee properly performed the step?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Has the completion time been established based on validation data or incumbent experience?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. If the task is time critical, is the time critical portion based upon actual task performance requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8. Is the job level appropriate for the task being evaluated if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Is the K/A appropriate to the task and to the licensee level if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Is justification provided for tasks with K/A values less than 3.0?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Have the performance steps been identified and classified (Critical / Sequence / Time Critical) appropriately?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Have all special tools and equipment needed to perform the task been identified and made available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Are all references identified, current, accurate, and available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Have all required cues (as anticipated) been identified for the evaluator to assist task completion?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Are all critical steps supported by procedural guidance? (e.g., if licensing, EP or other groups were needed to determine correct actions, then the answer should be NO.)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. If the JPM is to be administered to an LOIT student, has the required knowledge been taught to the individual prior to administering the JPM? TPE does not have to be completed, but the JPM evaluation may not be valid if they have not been taught the required knowledge.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

All questions/statements must be answered "YES" or "N/A" or the JPM is not valid for use. If all questions/statements are answered "YES" or "N/A," then the JPM is considered valid and can be performed as written. The individual(s) performing the initial validation shall sign and date the cover sheet.

Protected Content: (CAPRs, corrective actions, licensing commitments, etc. associated with this material)

ASSOCIATED TASK DESCRIPTION:

0100400201 Operate PORV/Block Valve to Control RCS Pressure

STANDARDS:

- Depressurize the RCS to refill the pressurizer using step 11 of ES-1.2
- Verify conditions for starting and start RCP “C”

SIMULATOR SET-UP:

- € Reset the simulator to IC #322
 - € Abort Event Trigger ET0024J1
 - € Abort Event Trigger ET0024J2
- € Place the simulator in RUN as long as needed to ensure all alarms are acknowledged prior to start of the JPM. NOTE: if simulator is run too long prior to starting JPM, subcooling requirement >40°F may not be met.c

Directions to the Student:

Evaluator gives Turnover sheet to the student

- A. You are the Primary Operator. You are going to depressurize the RCS to refill the pressurizer.
- B. The following information is provided to you:
 - 1. The reactor tripped from 100% due to a LOCA and Safety Injection has actuated.
 - 2. All actions were completed in E-0 and E-1.
 - 3. The crew is presently at step 11 in ES-1.2, Post LOCA Cooldown And Depressurization.
 - 4. An RCS cooldown to cold shutdown is in progress.
- C. Perform the task using ES-1.2, Post LOCA Cooldown And Depressurization.
- D. We will begin after the "Initiating Cue" is read. Do you have any questions?

INITIATING CUE:

Evaluator to Primary Operator, **"Primary Operator (or student's name), depressurize the RCS to refill the pressurizer using step 11 of ES-1.2."**

NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.

JPM PERFORMANCE INFORMATION

Start Time: _____

NOTE: When providing "Evaluator Cues" to the examinee, care must be exercised to avoid prompting the examinee. Typically cues are only provided when the examinee's actions warrant receiving the information (i.e., the examinee looks or asks for the indication).

NOTE: Critical steps are marked with a "YES" below the performance step number. Failure to meet the standard for any critical step shall result in failure of this JPM.

NOTE: 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: When student demonstrates the ability to obtain a controlled copy of the procedure, provide the student with ES-1.2, Post LOCA Cooldown And Depressurization.

Note:	If a first out alarm actuates during JPM performance inform student that first out was inadvertently reset and to continue with the JPM.

Performance Step: 01 Critical – NO	PZR level less than 30% [44% adverse].
Standard:	Verifies PZR level less than 30% [44% adverse].
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 02 Critical - YES	Open normal PZR spray valve(s) to refill PZR.
Standard:	Verifies normal spray is not available.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 03 Critical - YES	ES-1.2 RNO step 11b. Use one PZR PORV to refill PZR.
Standard:	Opens one PZR PORV (with associated block valve open): RC-PCV-456A (with Block valve RC-V-122 open) OR RC-PCV-456B (with Block valve RC-V-124 open).
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 04 Critical - NO	PZR level greater than 30% [44% adverse].
Standard:	Monitors PZR level until greater than 30% [44% adverse]. Continues with ES-1.2 step 12.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____
Note:	ES-1.2 step 11c RNO directs operator to continue with step 12 of ES-1.2 while waiting for PZR level to increase to greater than 30% [44% adverse].

Note:	The student may wait for depressurization to be completed. If so they will close the PORV via JPM performance step 8.
Note:	Student should review Caution and Notes prior to step 12.
Cue:	If required, provide the following cue, evaluator to student, "RCP seal cooling had NOT been previously lost."

Performance Step: 05 Critical - NO	Check if an RCP should be started: All RCPs stopped.
Standard:	Checks all RCPs stopped.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 06 Critical – NO	Check if an RCP should be started: RCS subcooling greater than 40°F.
Standard:	Checks RCS subcooling greater than 40°F.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 07 Critical – NO	Check if an RCP should be started: PZR level greater than 30% [44% adverse].
Standard:	Checks PZR level less than 30% [44% adverse]. Returns to ES-1.2 step 11.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 08 Critical – YES	When PZR level is greater than 30% [44% adverse] stop the RCS depressurization: <ul style="list-style-type: none"> If PORV in use then close PZR PORV.
Standard:	When PZR level is greater than 30% [44% adverse] stop the RCS depressurization: Closes PORV
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 09 Critical – NO	Establish conditions for starting RCP(s) per Attachment F
Standard:	Transitions to Attachment F
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Note:	Performance steps 10 through 17 are associated with Attachment F
Performance Step: 10 Critical – NO	Check 13.8Kv energized.
Standard:	Verifies 13.8Kv energized.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 11 Critical – NO	Check PCCW pumps-One pump running per loop.
Standard:	Verifies one pump running per loop.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 12 Critical – NO	Check PCCW Containment Valves to RCP Motors-Open.
Standard:	Verifies all PCCW Containment Valves to RCP Motors-Open.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 13 Critical – NO	Check one Thermal Barrier Pump running.
Standard:	Verifies one Thermal Barrier Pump running.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 14 Critical – NO	Check Seal Injection-Greater than 6 gpm to each RCP.
Standard:	Verifies Seal Injection-Greater than 6 gpm to each RCP.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 15 Critical – NO	Check number 1 seal delta-p greater than 220 psid.
Standard:	Verifies number 1 seal delta-p greater than 220 psid.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 16 Critical – NO	Check Pressurizer Spray Valves closed.
Standard:	Verifies Pressurizer Spray Valves closed.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 17 Critical – YES	Check selected RCP lift pumps-Running.
Standard:	Verifies that the RCP lift pumps are not running <u>AND</u> starts the lift pump for RCP "C".
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Note:	Student should return to procedure step 12d.
Performance Step: 18 Critical – YES	When RCP support conditions are established, then start RCP 1C.
Standard:	Starts RCP 1C.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Terminating Cues: The JPM is complete

NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.

Stop Time: _____

Examinee: _____

Evaluator: _____

☐ RO ☐ SRO ☐

Date: _____

PERFORMANCE RESULTS:

SAT: UNSAT: **COMMENTS/FEEDBACK:** (Comments shall be made for any steps graded unsatisfactory).

EXAMINER NOTE: ENSURE ALL EXAM MATERIAL IS COLLECTED AND PROCEDURES
CLEANED, AS APPROPRIATE.

EVALUATOR'S SIGNATURE: _____

TURNOVER SHEET

Directions to the Student:

- A. You are the Primary Operator. You are going to depressurize the RCS to refill the pressurizer.
- B. The following information is provided to you:
 - 1. The reactor tripped from 100% due to a LOCA and Safety Injection has actuated.
 - 2. All actions were completed in E-0 and E-1.
 - 3. The crew is presently at step 11 in ES-1.2, Post LOCA Cooldown And Depressurization.
 - 4. An RCS cooldown to cold shutdown is in progress.
- C. Perform the task using ES-1.2, Post LOCA Cooldown And Depressurization.
- D. We will begin after the "Initiating Cue" is read. Do you have any questions?

INITIATING CUE:

Evaluator to Primary Operator, **"Primary Operator (or student's name), depressurize the RCS to refill the pressurizer using step 11 of ES-1.2."**

NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.

TITLE: TRANSFER SERVICE WATER FROM THE COOLING TOWER TO THE OCEAN

JPM NUMBER: 2018 LOIT NRC Exam Sim JPM "E" REV. 0

SAFETY FUNCTION 4: Heat Removal From Reactor Core: Secondary System

K/A: 076, Service Water System, A4.01, Ability to manually operate and/or monitor in the control room: SWS pumps

EVALUATION LOCATION: In-Plant: ☐

Simulator: ☒

Admin: ☐

**Estimated time
for Completion:** 20 Min

Alternate Path: YES

Time Critical: NO

PREPARED BY: Sean M. Riley **DATE:** 12/28/17

APPROVED BY: Chris Adams **DATE:** 12/28/17
TRAINING SUPERVISOR

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

ALL STEPS IN THIS CHECKLIST ARE TO BE PERFORMED PRIOR TO USE.

REVIEW STATEMENTS	YES	NO	N/A
1. Are all items on the signature page filled in correctly?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Has the JPM been reviewed and validated by SMEs?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Can the required conditions for the JPM be appropriately established in the simulator if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Do the performance steps accurately reflect trainee's actions in accordance with plant procedures?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Is the standard for each performance item specific as to what controls, indications and ranges are required to evaluate if the trainee properly performed the step?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Has the completion time been established based on validation data or incumbent experience?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. If the task is time critical, is the time critical portion based upon actual task performance requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8. Is the job level appropriate for the task being evaluated if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Is the K/A appropriate to the task and to the licensee level if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Is justification provided for tasks with K/A values less than 3.0?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Have the performance steps been identified and classified (Critical / Sequence / Time Critical) appropriately?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Have all special tools and equipment needed to perform the task been identified and made available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Are all references identified, current, accurate, and available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Have all required cues (as anticipated) been identified for the evaluator to assist task completion?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Are all critical steps supported by procedural guidance? (e.g., if licensing, EP or other groups were needed to determine correct actions, then the answer should be NO.)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. If the JPM is to be administered to an LOIT student, has the required knowledge been taught to the individual prior to administering the JPM? TPE does not have to be completed, but the JPM evaluation may not be valid if they have not been taught the required knowledge.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

All questions/statements must be answered "YES" or "N/A" or the JPM is not valid for use. If all questions/statements are answered "YES" or "N/A," then the JPM is considered valid and can be performed as written. The individual(s) performing the initial validation shall sign and date the cover sheet.

Protected Content: (CAPRs, corrective actions, licensing commitments, etc. associated with this material)

ASSOCIATED TASK DESCRIPTION:

0760100501 Operate Service Water Pumps in Various Combinations

STANDARDS:

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

SIMULATOR SET-UP:

Reset the simulator to IC 331.

Alternatively reset to any 100% IC which contains the following:

1. Place the simulator in RUN.
 2. Place Train A service water on the cooling tower per OS1016.05, Service Water Cooling Tower Operation.
 3. Place SW-P-41C control switch in PTL.
 4. Insert the following malfunctions:
 - Service water SW001 SW-P-41A OC trip.
 - Service water (component) cSWV22 SW-V-22 SW PUMP C DISCHARGE ISOLATION 460V MCC E514 CR7 fail closed.
 5. Insert the following remote functions:
 - Service water (component) cSWP41C SW-P-41C TRAIN A SVCE WTR PMPC 4160 V Bus E5 AQ4 RF: rackout.
 - Service water (component) cSWV22 SW-V-22 SW PUMP C DISCHARGE ISOLATION 460V MCC E514 CR7 RF: open breaker.
 6. Raise cooling tower basin level to 43.7' as follows:
 - Select External Params
 - Select Tank levels
 - Select epLEVTK17 Cooling Tower Basin SW-TK-1(ft.)
 - Insert final value = 43.7 ramp time = 120
 7. Place the simulator in FREEZE after cooling tower basin level reaches 43.7'.
- € Place a tag on SW-P41-C control switch.
- € Place the simulator in RUN as long as needed to ensure all alarms are acknowledged prior to start of the JPM.

Directions to the Student:

Evaluator gives Turnover sheet to the student

- A. You are the Secondary Operator you are going to transfer Train A Service Water from the cooling tower to the ocean.
- B. The following information is provided to you:
 - 1. The plant is operating at 100% power.
 - 2. On line maintenance/retests are complete on the Service Water system Train A pump house valves.
 - 3. SW-P-41C is tagged out for maintenance.
 - 4. The SM has requested that Train A Service Water be transferred back to the ocean from the cooling tower.
 - 5. All pre-starts are complete on the "A" Service Water pump (SW-P-41A).
- C. Perform the task using OS1016.05 Service Water Cooling Tower Operation.
- D. We will begin after the "Initiating Cue" is read. Do you have any questions?

INITIATING CUE:

Evaluator to Secondary Operator, **"Secondary Operator (or student's name), using OS1016.05, section 4.4, transfer Train A Service Water from the Cooling Tower to the ocean. All prerequisites, precautions and pre-starts for SW-P-41A are complete."**

NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.

JPM PERFORMANCE INFORMATION

Start Time: _____

NOTE: When providing "Evaluator Cues" to the examinee, care must be exercised to avoid prompting the examinee. Typically cues are only provided when the examinee's actions warrant receiving the information (i.e., the examinee looks or asks for the indication).

NOTE: Critical steps are marked with a "YES" below the performance step number. Failure to meet the standard for any critical step shall result in failure of this JPM.

NOTE: 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: When student demonstrates the ability to obtain a controlled copy of the procedure, provide the student with the applicable section of OS1016.05 Service Water Cooling Tower Operation.

Note:	Student should review notes and cautions prior to steps being performed. Student may put up the color graphic on MPCS for service water.

Performance Step: 01 Critical – NO	Check SW Train A and SW Train B is aligned to the cooling tower.
Standard:	Checks SW Train A only is aligned to the cooling tower. Checks SW Train B is aligned to the ocean.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Note:	If student asks state that fire protection has not been used to fill the cooling tower and no chemistry sampling is required.

Performance Step: 02 Critical - NO	Record initial cooling tower level (transferring from the cooling tower) on form L, Cooling Tower Flush NPDES Tracking Sheet.
Standard:	No action required.
Cue:	Provide the following cue, "Initial cooling tower level (transferring from the cooling tower) has been recorded on form L, Cooling Tower Flush NPDES Tracking Sheet and will be tracked by the US."
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 03 Critical - NO	Determine if SW-V-44 is closed.
Standard:	Determines that SW-V-44 is open.
Cue:	Student may use MPCs color graphics to determine position If required, provide cue, "SW-V-44 is open."
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Cue:	If the student begins to perform pump pre-start checks, provide cue, "All pre-starts are complete. Previous pump start was two days ago."
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Performance Step: 04 Critical - YES	Open SW-V20, SW Train A to discharge structure.
Standard:	Opens SW-V20, SW Train A to discharge structure.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 05 Critical – YES	Close SW-V-34, SW Train A return to cooling tower.
Standard:	Closes SW-V-34, SW Train A return to cooling tower.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 06 Critical – YES	Simultaneously place and hold the control switch for SW-V-54, cooling tower pump A discharge to throttle close and the control switch for SW-V-56, cooling tower Train A spray header test valve to open until valves reposition.
Standard:	Simultaneously places and holds the listed control switches until the valves reposition as follows: <ul style="list-style-type: none"> • SW-V-54 control switch to throttle close. • SW-V-56 control switch to open.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Cue:	If requested by the student make a plant announcement, "Starting Service Water pump 41A."
Cue:	If the cooling tower basin low level alarm is received, inform student, "Copy, low cooling tower basin level. I will dispatch an NSO to initiate fill of the cooling tower basin."

Note:	SW-P-41A will trip when started
Performance Step: 07 Critical – NO	Start the desired Train A ocean SW pump.
Standard:	Starts SW-P-41A.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Note:	SW-V-2 does not open due to SW-P-41A tripping. Student should apply the caution prior to step 4.4.9 and promptly realign to the cooling tower per step 4.4.10.
Performance Step: 08 Critical – NO	Check the selected SW pump discharge valve opens.
Standard:	Checks SW-V-2 and observes valve is not open and SW-P-41A tripped.
Cue:	If student informs US that SW-P-41A tripped and/or SW-V-2 did not open, respond, " Continue with OS 1016.05. "
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 9 Critical – YES	If SW flow cannot be restored reopen SW-V-54, cooling tower pump A discharge isolation.
Standard:	Reopens SW-V-54, cooling tower pump A discharge isolation.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Cue:	<ul style="list-style-type: none"> If the student is an RO candidate then state "Go to OS1216.01, Degraded Ultimate Heat Sink", and then hand the student a copy of OS1216.01. If the student is an SRO candidate then <u>DO NOT</u> cue them to go to OS1216.01. When the student states that they are going to OS1216.01 then hand the student a copy of OS1216.01.
Performance Step: 10 Critical – YES	If SW flow cannot be restored, go to OS1216.01, "Degraded Ultimate Heat Sink", as appropriate.
Standard:	Transitions to OS1216.01, "Degraded Ultimate Heat Sink"
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Note:	The remaining performance steps pertain to OS1216.01.
Performance Step: 11 Critical – YES	Determine Appropriate Response: <ul style="list-style-type: none"> If affected SW train is aligned to the ocean then go to step 2. If affected SW train is aligned to the cooling tower, then go to step 8. If a tower actuation is in progress then go to step 4.
Standard:	Goes to step 2
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 12 Critical – YES	Check for Ocean System Failure: <ol style="list-style-type: none"> Ocean service water pumps-One pump running per train with associated discharge valve open.
Standard:	Identifies that no ocean service water pump is running on Train A
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 13 Critical – NO	Reset RMO as necessary.
Standard:	Determines that it is not necessary to reset RMO
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 14 Critical – YES	Manually start ocean service water pump. If pump cannot be started then actuate TA for the affected train.
Standard:	Actuates TA for Train A
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 15 Critical – NO	Go to step 4.
Standard:	Goes to step 4.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Terminating Cues: The JPM is complete

NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.

Stop Time: _____

Examinee: _____

Evaluator: _____

☐ RO ☐ SRO ☐

Date: _____

PERFORMANCE RESULTS:

SAT:

UNSAT:

COMMENTS/FEEDBACK: (Comments shall be made for any steps graded unsatisfactory).

EXAMINER NOTE: ENSURE ALL EXAM MATERIAL IS COLLECTED AND PROCEDURES
CLEANED, AS APPROPRIATE.

EVALUATOR'S SIGNATURE: _____

TURNOVER SHEET

Directions to the Student:

- A. You are the Secondary Operator you are going to transfer Train A Service Water from the cooling tower to the ocean.
- B. The following information is provided to you:
 - 1. The plant is operating at 100% power.
 - 2. On line maintenance/retests are complete on the Service Water system Train A pump house valves.
 - 3. SW-P-41C is tagged out for maintenance.
 - 4. The SM has requested that Train A Service Water be transferred back to the ocean from the cooling tower.
 - 5. All pre-starts are complete on the "A" Service Water pump (SW-P-41A).
- C. Perform the task using OS1016.05 Service Water Cooling Tower Operation.
- D. We will begin after the "Initiating Cue" is read. Do you have any questions?

INITIATING CUE:

Evaluator to Secondary Operator, **"Secondary Operator (or student's name), using OS1016.05, section 4.4, transfer Train A Service Water from the Cooling Tower to the ocean. All prerequisites, precautions and pre-starts for SW-P-41A are complete."**

NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.

TITLE: CONTAINMENT BARRIER BREACH**JPM NUMBER:** 2018 LOIT NRC Exam Sim JPM "F" **REV.** 0**SAFETY FUNCTION** 5: Containment Integrity**K/A:** 103, Containment System, A3.01, Ability to monitor automatic operation of the containment system, including: Containment Isolation

EVALUATION LOCATION: In-Plant: ☐
Simulator: ☒
Admin: ☐

**Estimated time
for Completion:** 15 Min**Alternate Path:** YES**Time Critical:** NO**PREPARED BY:** Sean M. Riley **DATE:** 12/28/17**APPROVED BY:** Chris Adams **DATE:** 12/28/17
TRAINING SUPERVISOR

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

ALL STEPS IN THIS CHECKLIST ARE TO BE PERFORMED PRIOR TO USE.

REVIEW STATEMENTS	YES	NO	N/A
1. Are all items on the signature page filled in correctly?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Has the JPM been reviewed and validated by SMEs?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Can the required conditions for the JPM be appropriately established in the simulator if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Do the performance steps accurately reflect trainee's actions in accordance with plant procedures?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Is the standard for each performance item specific as to what controls, indications and ranges are required to evaluate if the trainee properly performed the step?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Has the completion time been established based on validation data or incumbent experience?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. If the task is time critical, is the time critical portion based upon actual task performance requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8. Is the job level appropriate for the task being evaluated if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Is the K/A appropriate to the task and to the licensee level if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Is justification provided for tasks with K/A values less than 3.0?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Have the performance steps been identified and classified (Critical / Sequence / Time Critical) appropriately?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Have all special tools and equipment needed to perform the task been identified and made available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Are all references identified, current, accurate, and available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Have all required cues (as anticipated) been identified for the evaluator to assist task completion?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Are all critical steps supported by procedural guidance? (e.g., if licensing, EP or other groups were needed to determine correct actions, then the answer should be NO.)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. If the JPM is to be administered to an LOIT student, has the required knowledge been taught to the individual prior to administering the JPM? TPE does not have to be completed, but the JPM evaluation may not be valid if they have not been taught the required knowledge.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

All questions/statements must be answered "YES" or "N/A" or the JPM is not valid for use. If all questions/statements are answered "YES" or "N/A," then the JPM is considered valid and can be performed as written. The individual(s) performing the initial validation shall sign and date the cover sheet.

Protected Content: (CAPRs, corrective actions, licensing commitments, etc. associated with this material)

ASSOCIATED TASK DESCRIPTION:

0130400201 Manually Initiate Engineered Safety Features

STANDARDS:

Manually align at least ONE train of Phase "A" Containment Isolation Valves per E-0, "Reactor Trip or Safety Injection, Attachment A

SIMULATOR SET-UP:

1. Reset the simulator to IC 30.
2. Place the simulator in RUN.
3. Ensure “A” CCP is running and “B” CCP is in standby.
4. Acknowledge any alarms and setup trends
5. Ensure at least one DEHC screen shows the status of the Main Turbine stop and control valves.
6. Place Simulator in FREEZE
7. With the simulator in FREEZE run scenario 2018 NRC Exam JPM F.
8. Rx trip/Train A SI will occur 20 seconds after simulator is placed in RUN.

Directions to the Student:

Evaluator gives Turnover sheet to the student

- A. You are the Primary Operator.
- B. The following information is provided to you:
 - 1. The plant is at 100% power.
 - 2. An event will occur. Respond to plant conditions. The BOP will NOT assist you.
 - 3. Due to the nature of the JPM, you will NOT be permitted to review any procedures before the JPM begins.
- C. Perform the task in accordance with the appropriate procedure.
- D. We will begin after the "Initiating Cue" is read. Do you have any questions?

INITIATING CUES:

Evaluator to Primary Operator, **"Primary Operator (or student's name), when an event occurs, identify the event. Perform the actions for the required procedure. If required, perform any immediate actions from memory for the applicable procedure and inform the evaluator when the immediate actions are complete."**

NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.

JPM PERFORMANCE INFORMATION

Start Time: _____

NOTE: When providing "Evaluator Cues" to the examinee, care must be exercised to avoid prompting the examinee. Typically cues are only provided when the examinee's actions warrant receiving the information (i.e., the examinee looks or asks for the indication).

NOTE: Critical steps are marked with a "YES" below the performance step number. Failure to meet the standard for any critical step shall result in failure of this JPM.

NOTE: 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:	When student identifies the reactor trip provide the following cue, " Perform your immediate actions. "

Performance Step: 01 Critical - NO	Verify Reactor Trip. <ul style="list-style-type: none"> Rod bottom lights lit. Reactor trip and bypass breakers open Neutron flux decreasing.
Standard:	Verifies Reactor Trip. <ul style="list-style-type: none"> Verifies and reports rod bottom lights lit. Verifies and reports Reactor trip and bypass breakers open Verifies and reports neutron flux decreasing.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 02 Critical - NO	Verify Turbine Trip. a. Either condition: <ul style="list-style-type: none"> All stop valves closed -OR- All control valves closed b. Generator breaker open.
Standard:	Verifies Turbine Trip. a. Either condition: <ul style="list-style-type: none"> All stop valves closed -OR- All control valves closed b. Generator breaker open.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 03 Critical - NO	Verify power to AC emergency buses: a. AC emergency buses - at least one energized b. AC emergency buses – both energized.
Standard:	Verifies power to AC emergency buses: a. Verifies and reports: AC emergency buses - at least one energized Bus E5 or E6 energized b. Verifies and reports: AC emergency buses – both energized Bus E5 and E6 energized.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 04 Critical - NO	Check if SI is actuated: a. Check SI annunciators lit: <ul style="list-style-type: none"> Train A Train B
Standard:	Checks if SI is actuated: a. Checks and reports SI annunciator: <ul style="list-style-type: none"> Train A lit Train B lit
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 05 Critical - NO	Check if SI is actuated: b. Verify both trains of SI actuated.
Standard:	Checks if SI is actuated: b. Verifies both trains of SI actuated.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 06 Critical - NO	All immediate action steps were performed in order.
Standard:	First 4 immediate action steps of E-0 must be performed in order.
Cue:	When informed that immediate actions are complete respond using proper 3 way communication.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Note:	After the student completes the immediate actions they may manually actuate the Phase “A” (T) signal per skill of the operator. If not, they must do it per Attachment “A”.
Note:	Provide the student with E-0 Reactor Trip Or Safety Injection Attachment A. Do not provide the student Attachment A laminated sheets. Per Attachment A, verbal communication of manual action is not required.
Cue:	Provide the following cue, “Perform ESF Actuation Verification per Attachment A. The BOP operator has returned and has been briefed on plant conditions. He will continue with E-0 at step 6.”

Performance Step: 07 Critical - NO	Verify Containment Isolation Phase A actuation – all status panel lights lit <ul style="list-style-type: none"> • Train A. • Train B.
Standard:	Verifies Containment Isolation Phase A actuation – all status panel lights lit-NO <ul style="list-style-type: none"> • Verifies that all status panel lights are NOT lit.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 08 Critical - YES	Manually actuate "T" signal for BOTH trains.
Standard:	Manually actuate "T" signal for BOTH trains. <ul style="list-style-type: none"> • Manually actuates "T" signal for both trains.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____
Comments:	

Performance Step: 09 Critical - YES	Manually align at least ONE train of equipment by status panel.
Standard:	Manually aligns at least ONE train of equipment for the following containment penetrations: <ul style="list-style-type: none"> • RCDT Pumps Outlet: <ul style="list-style-type: none"> • WLD-V-81, "RCDT Pumps Outlet Isolation IRC, <u>OR</u> • WLD V-82, "RCDT Pumps Outlet Isolation ORC • RCP Seals to Seal Water Heat Exchanger: <ul style="list-style-type: none"> • CS-V-167, "RCP Seals to Seal Water HX" , <u>OR</u> • CS-V-168, "RCP Seals to Seal Water HX"
Performance:	SATISFACTORY _____ UNSATISFACTORY _____
Comments:	

Performance Step: 10 Critical - NO	Manually align BOTH trains of equipment by status panel, as necessary, while continuing with this attachment.
Standard:	Manually aligns BOTH trains of equipment by status panel, as necessary, while continuing with this attachment.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____
Comments:	

Performance Step: 11 Critical - NO	Verify Safeguard Equipment Alignment-PROPER ALIGNEMENT BY STATUS PANEL <ul style="list-style-type: none"> • TRAIN A-COLD LEG INJECTION • TRAIN B- COLD LEG INJECTION
Standard:	Verifies Safeguard Equipment Alignment-PROPER ALIGNEMENT BY STATUS PANEL-YES <ul style="list-style-type: none"> • TRAIN A-COLD LEG INJECTION • TRAIN B- COLD LEG INJECTION
Performance:	SATISFACTORY _____ UNSATISFACTORY _____
Comments:	The Train B status lights will show EAH-FN-5B not running. This condition is satisfactory as EAH-FN-5A is running.

Performance Step: 12 Critical – NO	Verify feedwater isolation – proper alignment indicated by status panel.
Standard:	Verifies feedwater isolation – proper alignment indicated by status panel.-YES
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 13 Critical - No	Verify PCCW pumps running: <ul style="list-style-type: none"> a. Loop A – one pump running b. Loop B – one pump running c. Thermal barrier cooling pumps- at least one running.
Standard:	Verifies PCCW pumps running: <ul style="list-style-type: none"> a. Loop A – one pump running - Yes b. Loop B – one pump running - Yes c. Thermal barrier cooling pumps- at least one running – Yes.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 14 Critical - No	Verify ECCS flow: <ul style="list-style-type: none"> a. CCP flow indicator – check for flow to RCS cold legs b. RCS pressure – less than 1700 psig.
Standard:	Verify ECCS flow: <ul style="list-style-type: none"> a. CCP flow indicator – checks SI-FI-917 and verifies flow to RCS cold legs b. RCS pressure – verifies pressure is less than 1700 psig.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 15 Critical - No	SI pump flow indications-CHECK FOR FLOW <ul style="list-style-type: none"> • TRAIN A • TRAIN B
Standard:	SI pump flow indications-CHECK FOR FLOW-YES <ul style="list-style-type: none"> • TRAIN A • TRAIN B
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 16 Critical - No	RCS pressure-LESS THAN 300 PSIG
Standard:	RCS pressure-LESS THAN 300 PSIG-NO. RNO-Go to Step 6.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 17 Critical - No	Verify MS-V129 is open.
Standard:	Verifies MS-V129 is open.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 18 Critical - No	Verify service water pumps running: <ul style="list-style-type: none"> • Train A – one pump running • Train B – one pump running.
Standard:	Verifies service water pumps running: <ul style="list-style-type: none"> • Train A – one pump running - Yes • Train B – one pump running – Yes.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 19 Critical - No	Verify SW flow to diesels greater than required: 900 GPM on ocean OR 1800 GPM on cooling tower <ul style="list-style-type: none"> • Train A.
---	--

Standard:	Verifies SW flow to diesels is greater than required: 900 GPM on ocean OR 1800 GPM on cooling tower
Performance:	SATISFACTORY _____ UNSATISFACTORY _____
Comments:	

Performance Step: 20 Critical - No	Check if main steam line isolation required: <ul style="list-style-type: none"> • Any SG pressure less than 585 psig without prior P-11 block • Main steam line isolation annunciator lit • Containment pressure greater than 4 psig • SG pressure rate high bistable lit with prior P-11 block.
Standard:	Checks main steam line isolation is required: <ul style="list-style-type: none"> • Any SG pressure less than 585 psig without prior P-11-NO • Main steam line isolation annunciator lit-YES • Containment pressure greater than 4 psig-YES • No SG pressure rate high bistable lit with prior P-11 block.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 21 Critical - No	Verify MSIV and MSIV bypass valves-CLOSED
Standard:	Verifies MSIV and MSIV bypass valves-CLOSED
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 22 Critical - No	Check containment pressure has remained less than 18 psig by pressure recorder.
Standard:	Check containment pressure has remained less than 18 psig by pressure recorder-NO
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 23 Critical - No	Verify containment isolation Phase B ("P" signal) and containment spray actuated: <ul style="list-style-type: none"> All Phase B status lights-LIT
Standard:	Verify containment isolation Phase B ("P" signal) and containment spray actuated: <ul style="list-style-type: none"> Verifies all Phase B status lights-LIT
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 24 Critical - No	Verify total EFW flow-Greater than 500 GPM
Standard:	Verifies total EFW flow-Greater than 500 GPM
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 25 Critical - No	Reset RMO as necessary.
Standard:	Resets RMO as necessary.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Terminating Cues: The JPM is complete

NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.

Stop Time: _____

Examinee: _____

Evaluator: _____

☐ RO ☐ SRO

Date: _____

PERFORMANCE RESULTS:

SAT:

UNSAT:

COMMENTS/FEEDBACK: (Comments shall be made for any steps graded unsatisfactory).

EXAMINER NOTE: ENSURE ALL EXAM MATERIAL IS COLLECTED AND PROCEDURES CLEANED, AS APPROPRIATE.

EVALUATOR'S SIGNATURE: _____

NOTE: Only this page needs to be retained in examinee's record if completed satisfactorily. If unsatisfactory performance is demonstrated, the entire JPM should be retained.

TURNOVER SHEET**Directions to the Student:**

- A. You are the Primary Operator.
- B. The following information is provided to you:
 - 1. The plant is at 100% power.
 - 2. An event will occur. Respond to plant conditions. The BOP will NOT assist you.
 - 3. Due to the nature of the JPM, you will NOT be permitted to review any procedures before the JPM begins.
- C. Perform the task in accordance with the appropriate procedure.
- D. We will begin after the "Initiating Cue" is read. Do you have any questions?

INITIATING CUES:

Evaluator to Primary Operator, "**Primary Operator (or student's name), when an event occurs, identify the event. Perform the actions for the required procedure. If required, perform any immediate actions from memory for the applicable procedure and inform the evaluator when the immediate actions are complete.**"

NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.



JOB PERFORMANCE MEASURE

JPM
Page 1 of 10

JPM TITLE: OFFSITE POWER RESTORATION

JPM NUMBER: 2018 LOIT NRC Exam Sim JPM "G" **REV. 0**

SAFETY FUNCTION 6: Electrical

K/A: 062 AC Electrical Distribution System, A4.03, Ability to manually operate and/or monitor in the control room: Synchroscope, including an understanding of running and incoming voltages.

TASK APPLICABILITY:

☒ RO ☐ SRO ☐ STA ☐ Non-Lic ☐ SRO CERT ☐ OTHER: _____

EVALUATION LOCATION: In-Plant: ☐

Simulator: ☒

Admin: ☐

**Estimated time
for Completion:** 20 Min

Alternate Path: NO

Time Critical: NO

PREPARED BY: Sean M. Riley **DATE:** 2/12/18

APPROVED BY: Chris Adams **DATE:** 2/12/18
TRAINING SUPERVISOR

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

ALL STEPS IN THIS CHECKLIST ARE TO BE PERFORMED PRIOR TO USE.

REVIEW STATEMENTS	YES	NO	N/A
1. Are all items on the signature page filled in correctly?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Has the JPM been reviewed and validated by SMEs?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Can the required conditions for the JPM be appropriately established in the simulator if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Do the performance steps accurately reflect trainee's actions in accordance with plant procedures?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Is the standard for each performance item specific as to what controls, indications and ranges are required to evaluate if the trainee properly performed the step?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Has the completion time been established based on validation data or incumbent experience?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. If the task is time critical, is the time critical portion based upon actual task performance requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8. Is the job level appropriate for the task being evaluated if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Is the K/A appropriate to the task and to the licensee level if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Is justification provided for tasks with K/A values less than 3.0?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
11. Have the performance steps been identified and classified (Critical / Sequence / Time Critical) appropriately?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Have all special tools and equipment needed to perform the task been identified and made available to the trainee?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
13. Are all references identified, current, accurate, and available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Have all required cues (as anticipated) been identified for the evaluator to assist task completion?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Are all critical steps supported by procedural guidance? (e.g., if licensing, EP or other groups were needed to determine correct actions, then the answer should be NO.)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. If the JPM is to be administered to an LOIT student, has the required knowledge been taught to the individual prior to administering the JPM? TPE does not have to be completed, but the JPM evaluation may not be valid if they have not been taught the required knowledge.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

All questions/statements must be answered "YES" or "N/A" or the JPM is not valid for use. If all questions/statements are answered "YES" or "N/A," then the JPM is considered valid and can be performed as written. The individual(s) performing the initial validation shall sign and date the cover sheet.

Protected Content: (CAPRs, corrective actions, licensing commitments, etc. associated with this material)

ASSOCIATED TASK DESCRIPTION:

062, A.C. Electrical Distribution, Restore an Engineering Safeguards Bus to Service

STANDARDS:

Restore power to at least one AC emergency bus using the UAT

SIMULATOR SET-UP:

Reset the simulator to IC 303.

1. Place the simulator in FREEZE.
2. Place tags on DG-1A breaker control switch and the normal and emergency start switches.
3. Place the simulator in RUN as long as needed to ensure all alarms are acknowledged prior to start of the JPM.

Alternatively reset to any 100% IC which contains the following:

1. Place the control switch for DG-1A breaker in pull to lock.
2. Insert the following malfunctions:
 - a. Electrical Distribution mfED031 to prevent auto start of DG1A.
 - b. Electrical Distribution malfunctionmfED038 loss of offsite power.
3. Insert the following functions:
 - a. Electrical Distribution (Component) bKEDE5DG4 4.16KV Bus E5 A54 RF:Rack-Out to rack out DG-1A breaker.
4. Insert the following overrides:
 - a. Using panel graphics override diesel generator A control switch to NORMAL on panel PHF.
 - b. Using panel graphics override diesel generator A emergency start pushbutton to RELEASE on panel PHF.
 - c. Using panel graphics override UL status light "A diesel not available" to ON on panel PHF.
5. Place the simulator in RUN.
6. Perform the actions of E-0 and ES-0.1 through ES-0.1 step 8 RNO sub step g.
7. Delete electrical distribution malfunctionmfED038 loss of offsite power.
8. Place the simulator in FREEZE.

Place tags on DG-1A breaker control switch and the normal and emergency start switches.

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

Required Materials: Turnover sheet
ES-0.1, Reactor Trip Response, Attachment G, Offsite Power Restoration To Bus E5 And Bus E6 Rev.37.

General References: ES-0.1, Reactor Trip Response.

Task Standards: Restore offsite power to busses 5 and 6 using Attachment G of ES-0.1.

Directions to the Student:

Evaluator gives Turnover sheet to the student

A. You are the Secondary Operator.

B. The following information is provided to you:

1. The plant tripped from 100% power due to a loss of offsite power.
2. DG-1A is inoperable and tagged out due to governor problems.
3. The US transitioned from E-0 to ES-0.1 and has completed step 8 RNO sub step g.
4. Bus 5 is deenergized and bus 6 is powered from DG-1B.
5. The system dispatcher reports grid conditions are stable. Offsite power has been restored.

C. Perform the task using ES-0.1 Attachment G.

D. We will begin after the "Initiating Cue" is read. Do you have any questions?

INITIATING CUE:

Evaluator to Secondary Operator, **"Secondary Operator (or student's name), restore offsite power to bus E5 and E6 using Attachment G of ES-0.1. Restore bus 5 first."**

NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.

JPM PERFORMANCE INFORMATION

Start Time: _____

NOTE: When providing "Evaluator Cues" to the examinee, care must be exercised to avoid prompting the examinee. Typically cues are only provided when the examinee's actions warrant receiving the information (i.e., the examinee looks or asks for the indication).

NOTE: Critical steps are marked with a "YES" below the performance step number. Failure to meet the standard for any critical step shall result in failure of this JPM.

NOTE: 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: When student demonstrates the ability to obtain a controlled copy of the procedure, provide the student with ES-0.1, Reactor Trip Response, Attachment G, Offsite Power Restoration To Bus E5 And Bus E6.

Note:	If a first out actuates during JPM performance inform student that first out was inadvertently reset and to continue with the JPM.

Cue:	US to student, "The system dispatcher reports grid condition are now stable and are expected to remain stable."

Cue:	If student asks which offsite source to use, provide the following cue: "the UAT is the preferred offsite source."
Performance Step: 01 Critical – YES	Close bus 5 UAT or RAT breaker while holding RMO bypass switch in the bypass position.
Standard:	Closes bus 5 UAT breaker while holding RMO bypass switch in the bypass position.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Cue:	If required, provide the following cue, "Termination of emergency boration will be performed by another operator. Continue with ES-0.1 Attachment G."

Performance Step: 02 Critical - YES	Raise DG-1B frequency to 60.2 to 60.4 Hz.
Standard:	Raises DG-1B frequency to 60.2 to 60.4 Hz.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Cue:	If student asks which offsite source to use, provide the following cue: "the UAT is the preferred offsite source."
Performance Step: 03 Critical - YES	Place DG-1B synch selector switch in the UAT or RAT position.
Standard:	Places DG-1B synch selector switch in the UAT position.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 04 Critical - NO	Reset RMO.
Standard:	Resets RMO is not necessary. It was previously performed.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 05 Critical - NO	Adjust DG-1B voltage to match incoming volts with running volts.
Standard:	Adjusts DG-1B voltage to match incoming volts with running volts.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 06 Critical – YES	Adjust frequency so that the synch meter is rotating slowly in the fast direction.
Standard:	Adjusts frequency so that the synch meter is rotating slowly in the fast direction.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 07 Critical – YES	Close the UAT or RAT breaker when synchronized.
Standard:	Closes the UAT breaker when synchronized.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 08 Critical - NO	Place the synch selector switch in off.
Standard:	Places the synch selector switch in off.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Terminating Cues: The JPM is complete.

NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.

Stop Time: _____

Examinee: _____

Evaluator: _____

☐ RO ☐ SRO ☐

Date: _____

☐ LOIT RO ☐ LOIT SRO

PERFORMANCE RESULTS:

SAT:

UNSAT: ☐

COMMENTS/FEEDBACK: (Comments shall be made for any steps graded unsatisfactory).

EXAMINER NOTE: ENSURE ALL EXAM MATERIAL IS COLLECTED AND PROCEDURES CLEANED, AS APPROPRIATE.

EVALUATOR'S SIGNATURE: _____

TURNOVER SHEET

Directions to the Student:

- A. You are the Secondary Operator.
- B. The following information is provided to you:
 - 1. The plant tripped from 100% power due to a loss of offsite power.
 - 2. DG-1A is inoperable and tagged out due to governor problems.
 - 3. The US transitioned from E-0 to ES-0.1 and has completed step 8 RNO sub step g.
 - 4. Bus 5 is deenergized and bus 6 is powered from DG-1B.
 - 5. The system dispatcher reports grid conditions are stable. Offsite power has been restored.
- C. Perform the task using ES-0.1 Attachment G.
- D. We will begin after the "Initiating Cue" is read. Do you have any questions?

INITIATING CUE:

Evaluator to Secondary Operator, **"Secondary Operator (or student's name), restore offsite power to bus E5 and E6 using Attachment G of ES-0.1. Restore bus 5 first."**

NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.



JOB PERFORMANCE MEASURE

JPM
Page 1 of 10

JPM TITLE: POWER RANGE NI FAILURE

JPM NUMBER: 2018 LOIT NRC EXAM SIM JPM "H" REV. 0

SAFETY FUNCTION 7: Instrumentation

EVALUATION LOCATION:

In-Plant:	<input type="checkbox"/>	Control Room:	<input type="checkbox"/>
Simulator:	<input checked="" type="checkbox"/>	Other:	<input type="checkbox"/>
Lab:	<input type="checkbox"/>		

Time for Completion: 20 Min

Alternate Path NO

Time Critical NO

PREPARED BY: Sean M. Riley **DATE:** 12/28/17

APPROVED BY: Chris Adams **DATE:** 12/28/17
TRAINING SUPERVISOR

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

ALL STEPS IN THIS CHECKLIST ARE TO BE PERFORMED PRIOR TO USE.

REVIEW STATEMENTS	YES	NO	N/A
1. Are all items on the signature page filled in correctly?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Has the JPM been reviewed and validated by SMEs?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Can the required conditions for the JPM be appropriately established in the simulator if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Do the performance steps accurately reflect trainee's actions in accordance with plant procedures?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Is the standard for each performance item specific as to what controls, indications and ranges are required to evaluate if the trainee properly performed the step?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Has the completion time been established based on validation data or incumbent experience?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. If the task is time critical, is the time critical portion based upon actual task performance requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8. Is the job level appropriate for the task being evaluated if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Is the K/A appropriate to the task and to the licensee level if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Is justification provided for tasks with K/A values less than 3.0?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
11. Have the performance steps been identified and classified (Critical / Sequence / Time Critical) appropriately?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Have all special tools and equipment needed to perform the task been identified and made available to the trainee?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
13. Are all references identified, current, accurate, and available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Have all required cues (as anticipated) been identified for the evaluator to assist task completion?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Are all critical steps supported by procedural guidance? (e.g., if licensing, EP or other groups were needed to determine correct actions, then the answer should be NO.)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. If the JPM is to be administered to an LOIT student, has the required knowledge been taught to the individual prior to administering the JPM? TPE does not have to be completed, but the JPM evaluation may not be valid if they have not been taught the required knowledge.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

All questions/statements must be answered "YES" or "N/A" or the JPM is not valid for use. If all questions/statements are answered "YES" or "N/A," then the JPM is considered valid and can be performed as written. The individual(s) performing the initial validation shall sign and date the cover sheet.

Protected Content: (CAPRs, corrective actions, licensing commitments, etc. associated with this material)

SIMULATOR SET-UP:

Reset the simulator to **IC 304**

-or-

Reset the simulator to **IC 300** and perform the following:

1. Allow simulator to run, acknowledge and clear all alarms.
2. Place Simulator in FREEZE
3. Select SCENARIO
4. Select "JPM setup scenarios"
5. Select **L0054J**
6. Leave simulator in FREEZE. (N-42 fails to 120% 20 seconds after the simulator is placed in RUN)

Required Materials: Turnover sheet
OS1211.04, Power Range NI Instrument Failure Rev. 16.

General References: Procedures:
OS1211.04, Power Range NI Instrument Failure.
OP9.2, Transient Response Procedure User's Guide.

Technical Specifications:
3.3.1 Reactor Trip System Instrumentation.
3.2.4 QPTR.

Drawings:
1-NHY-509043, 509044 NI Functional Diagrams.

Task Standards: Identify a failed Power Range NI channel, stabilize plant conditions and remove NI channel from service per OS1211.04, Power Range NI Instrument Failure.

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

DURING THE JPM, ENSURE PROPER SAFETY PRECAUTIONS, FME, AND/OR RADIOLOGICAL CONCERNS AS APPLICABLE ARE FOLLOWED.

Directions to the Student:

Evaluator gives Turnover sheet to the student

- A. You are the Primary Operator.
- B. The following information is provided to you:
 - 1. The plant is at 100% power.
 - 2. An event will occur. Respond to plant conditions. The BOP will NOT assist you.
 - 3. Due to the nature of the JPM, you will NOT be permitted to review any procedures before the JPM begins.
- C. Perform the task in accordance with the appropriate procedure.
- D. We will begin after the "Initiating Cue" is read. Do you have any questions?

INITIATING CUE:

Evaluator to Primary Operator, "**Primary Operator (or student's name), when an event occurs, identify the event. Perform the actions for the required procedure. If required, perform any immediate actions from memory for the applicable procedure and inform the evaluator when the immediate actions are complete.**"

NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.

JPM PERFORMANCE INFORMATION

Start Time: _____

NOTE: When providing "Evaluator Cues" to the examinee, care must be exercised to avoid prompting the examinee. Typically cues are only provided when the examinee's actions warrant receiving the information (i.e., the examinee looks or asks for the indication).

NOTE: Critical steps are marked with a "YES" below the performance step number. Failure to meet the standard for any critical step shall result in failure of this JPM.

NOTE: 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:	It is acceptable for the student to place rods in manual after the student acknowledges that load is not decreasing or after the failed Power Range channel is identified. This is in accordance with OP9.2, Transient Response Procedure User's Guide using skill of the operator.

Note:	When student identifies the failed Power Range instrument N-42, give the student OS1211.04, Power Range NI Instrument Failure.
Performance Step: 01 Critical – NO	Diagnose the event, Power Range channel NI-42 failed high.
Standard:	Recognizes and reports Power Range channel NI-42 failed high.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 02 Critical – NO	Stabilize plant conditions: Check Power Range channel failed high.
Standard:	Checks and reports Power Range channel NI-42 failed high.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

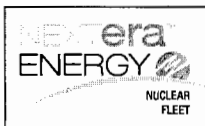
Performance Step: 03 Critical - YES	Stabilize plant conditions: Place rod control in manual.
Standard:	Places rod control in manual if not already performed.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 04 Critical - YES	Stabilize plant conditions: Select Rod Stop Bypass switch –to failed channel.
Standard:	Selects N42 on the rod stop bypass switch.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 05 Critical - NO	Stabilize plant conditions: Check Tavg within 1°F of Tref. Step 1d RNO action: If Tavg >Tref by more than 1°F, manually control rod motion or turbine load to restore temperature.
Standard:	Checks Tavg within 1°F of Tref. An instructor acting as the BOP operator should adjust turbine load to control temperature if required.
Cue:	If required, provide the following cue, "The BOP operator will manually adjust turbine load."
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 06 Critical - YES	Bypass the failed Power Range channel: Select the following NI cabinet switches to the failed channel: <ul style="list-style-type: none"> • Upper Section Detector Current Comparator switch. • Lower Section Detector Current Comparator switch. • Power Mismatch Bypass switch. • If not previously selected, Rod Stop Bypass switch. • Comparator Channel Defeat switch.
Standard:	Select the following NI cabinet switches to the failed channel: <ul style="list-style-type: none"> • Upper Section Detector Current Comparator switch. Selects N42. • Lower Section Detector Current Comparator switch. Selects N42. • Power Mismatch Bypass switch. Selects N42. • If not previously selected, Rod Stop Bypass switch. Selects N42. • Comparator Channel Defeat switch. Selects N42.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 07 Critical - NO	Trip the affected channel bistables: Verify redundant bistables not tripped: UL-6: <ul style="list-style-type: none"> • RCS LOOP OTΔT. • PR HIGH TRIP. • PR HIGH RATE TRIP. • If power is less than P-10 PR LOW TRIP.
Standard:	Verifies and reports that redundant bistables are not tripped: UL-6: <ul style="list-style-type: none"> • RCS LOOP OTΔT. • PR HIGH TRIP. • PR HIGH RATE TRIP. • If power is less than P-10 PR LOW TRIP. N/A - Power is >P-10.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____



2018 LOIT NRC EXAM SIM JPM "H"

JPM
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Performance Step: 08 Critical - YES	Trip the affected channel bistables: Remove control power fuses to trip the bistables for the affected power range channel.
Standard:	Removes N42 control power fuses to trip the bistables for the affected power range channel.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Terminating Cues: The JPM is complete.

NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.

Stop Time: _____



Examinee: _____

Evaluator: _____

☐ RO ☐ SRO ☐ STA ☐ Non-Lic ☐ SRO CERT

Date: _____

☐ LOIT RO ☐ LOIT SRO

PERFORMANCE RESULTS:

SAT: UNSAT:

Remediation required:

YES NO **COMMENTS/FEEDBACK: (Comments shall be made for any steps graded unsatisfactory).****EXAMINER NOTE: ENSURE ALL EXAM MATERIAL IS COLLECTED AND PROCEDURES
CLEANED, AS APPROPRIATE.****EVALUATOR'S SIGNATURE:** _____*NOTE: Only this page needs to be retained in examinee's record if completed satisfactorily. If
unsatisfactory performance is demonstrated, the entire JPM should be retained.*

TURNOVER SHEET

Directions to the Student:

- A. You are the Primary Operator.
- B. The following information is provided to you:
 - 1. The plant is at 100% power.
 - 2. An event will occur. Respond to plant conditions. The BOP will NOT assist you.
 - 3. Due to the nature of the JPM, you will NOT be permitted to review any procedures before the JPM begins.
- C. Perform the task in accordance with the appropriate procedure.
- D. We will begin after the "Initiating Cue" is read. Do you have any questions?

INITIATING CUE:

Evaluator to Primary Operator, **"Primary Operator (or student's name), when an event occurs, identify the event. Perform the actions for the required procedure. If required, perform any immediate actions from memory for the applicable procedure and inform the evaluator when the immediate actions are complete."**

NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.

JOB PERFORMANCE MEASURE

JPM TITLE: PLACE WASTE TEST TANK ON RECIRCULATION

JPM NUMBER: 2018 LOIT NRC Exam In Plant JPM "I" **REV. 0**

SAFETY FUNCTION 9: Radioactivity Release

K/A: 068, Liquid Radwaste System (LRS), 2.1.30, Ability to locate and operate components, including local controls.

EVALUATION LOCATION: In-Plant: ☒

Simulator: ☐

Admin: ☐

Estimated time for Completion: 20 Min

Alternate Path: NO

Time Critical: NO

PREPARED BY: Sean M. Riley **DATE:** 12/28/17

APPROVED BY: Chris Adams **DATE:** 12/28/17
TRAINING SUPERVISOR

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

ALL STEPS IN THIS CHECKLIST ARE TO BE PERFORMED PRIOR TO USE.

REVIEW STATEMENTS	YES	NO	N/A
1. Are all items on the signature page filled in correctly?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Has the JPM been reviewed and validated by SMEs?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Can the required conditions for the JPM be appropriately established in the simulator if required?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4. Do the performance steps accurately reflect trainee's actions in accordance with plant procedures?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Is the standard for each performance item specific as to what controls, indications and ranges are required to evaluate if the trainee properly performed the step?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Has the completion time been established based on validation data or incumbent experience?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. If the task is time critical, is the time critical portion based upon actual task performance requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8. Is the job level appropriate for the task being evaluated if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Is the K/A appropriate to the task and to the licensee level if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Is justification provided for tasks with K/A values less than 3.0?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Have the performance steps been identified and classified (Critical / Sequence / Time Critical) appropriately?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Have all special tools and equipment needed to perform the task been identified and made available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Are all references identified, current, accurate, and available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Have all required cues (as anticipated) been identified for the evaluator to assist task completion?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Are all critical steps supported by procedural guidance? (e.g., if licensing, EP or other groups were needed to determine correct actions, then the answer should be NO.)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. If the JPM is to be administered to an LOIT student, has the required knowledge been taught to the individual prior to administering the JPM? TPE does not have to be completed, but the JPM evaluation may not be valid if they have not been taught the required knowledge.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

All questions/statements must be answered "YES" or "N/A" or the JPM is not valid for use. If all questions/statements are answered "YES" or "N/A," then the JPM is considered valid and can be performed as written. The individual(s) performing the initial validation shall sign and date the cover sheet.

Protected Content: (CAPRs, corrective actions, licensing commitments, etc. associated with this material)

ASSOCIATED TASK DESCRIPTION:

068, Liquid Radwaste System (LRS), Perform lineups of the reactor coolant waste (RCW) system

STANDARDS:

Complete local actions to place WTT "A" on recirculation per ON1018.07, "Waste Test Tank Recirculation", section 4.1.

Directions to the Student:

Evaluator gives Turnover sheet to the student

- A. You are the Waste Process Building NSO. You are going to simulate placing the "A" Waste Test Tank on recirculation.
- B. The following information is provided to you:
 - 1. Plant is at 100% power.
 - 2. The control room has directed you to place the "A" Waste Test Tank on recirculation.
 - 3. All prerequisites are complete.
- C. Perform the task using ON1018.07, "Waste Test Tank Recirculation".
- D. We will begin after the "Initiating Cue" is read. Do you have any questions?

INITIATING CUE:

Evaluator to Waste Process Building NSO, **"Waste Process Building NSO (or student's name), simulate placing the "A" Waste Test Tank on recirculation per ON1018.07, "Waste Test Tank Recirculation", section 4.1.**

JPM PERFORMANCE INFORMATION

Start Time: _____

NOTE: When providing "Evaluator Cues" to the examinee, care must be exercised to avoid prompting the examinee. Typically cues are only provided when the examinee's actions warrant receiving the information (i.e., the examinee looks or asks for the indication).

NOTE: Critical steps are marked with a "YES" below the performance step number. Failure to meet the standard for any critical step shall result in failure of this JPM.

NOTE: 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."

Performance Step: 01 Critical - NO	Check open/open WL-V-168, by placing the control switch for WL-V-168, WL-TK-63B Inlet Valve, to open.
Standard:	Simulates opening WL-V-168.
Cue:	When the student initially checks the position of WL-V-168, evaluator to student, "The green light is lit. The red light is out."
Cue:	When the student simulates taking the control switch for WL-V-168 to open, evaluator to student, "The red light is lit. The green light goes out."
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 02 Critical - YES	Check closed/close WL-V-166, by placing the control switch for WL-V-166, WL-TK-63A Inlet Valve to close.
Standard:	Simulates closing WL-V-166.
Cue:	When the student initially checks the position of WL-V-166, evaluator to student, "The red light is lit. The green light is out."
Cue:	When the student simulates taking the control switch for WL-V-166 to close, evaluator to student, "The green light is lit. The red light goes out."
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 03 Critical - NO	Verify closed WL-V-99, waste test tank pump WL-P-96A and WL-P-96B cross connect.
Standard:	Simulates checking WL-V-99 closed.
Cue:	When the student simulates checking WL-V-99 closed, evaluator to student, "WL-V-99 indicates closed"
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 04 Critical - NO	Verify closed WL-V-105, waste test tank pump WL-P-96A discharge.
Standard:	Simulates checking WL-V-105 closed.
Cue:	When the student simulates checking WL-V-105 closed, evaluator to student, "WL-V-105 indicates closed"
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 05 Critical - NO	Verify closed WL-V-114, waste test tanks WL-TK-63A and WL-TK-63B recirculation cross connect.
Standard:	Simulates checking WL-V-114 closed.
Cue:	When the student simulates checking WL-V-114 closed, evaluator to student, "WL-V-114 indicates closed"
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 06 Critical - NO	Verify closed WL-V-108, waste test tank pumps WL-P-96A and WL-P-96B discharge header stop.
Standard:	Simulates checking WL-V-108 closed.
Cue:	When the student simulates checking WL-V-108 closed, evaluator to student, "WL-V-108 indicates closed."
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 07 Critical - NO	Verify open WL-V-221, waste test WL-TK-63A recirculation.
Standard:	Simulates checking WL-V-221 open.
Cue:	When the student simulates checking WL-V-221 open, evaluator to student, "The valve stem is risen above the valve wheel."
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 08 Critical - YES	Open WL-V-170, waste test WL-TK-63A FO 1441 isolation.
Standard:	Simulates opening WL-V-170.
Cue:	When the student simulates opening WL-V-170 open, evaluator to student, "The handwheel turns counter clockwise and the stem rises."
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 09 Critical - YES	Start WL-P-96A, waste test tank pump A and verify discharge pressure stabilizes at approximately 75 to 90 PSIG..
Standard:	Simulates starting WL-P-96A.
Cue:	When the student simulates starting WL-P-96A, evaluator to student, "The red light is lit."
Standard:	Simulates verifying that discharge pressure stabilizes at approximately 75 to 90 PSIG
Cue:	When the student simulates checking pump discharge pressure, evaluator to student "Pump discharge pressure stabilizes at 80 PSIG"
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Terminating Cues: The JPM is complete

NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.

Stop Time: _____

Examinee: _____ Evaluator: _____

☐ RO ☐ SRO ☐

Date: _____

PERFORMANCE RESULTS:

SAT:

UNSAT:

COMMENTS/FEEDBACK: (Comments shall be made for any steps graded unsatisfactory).

EXAMINER NOTE: ENSURE ALL EXAM MATERIAL IS COLLECTED AND PROCEDURES CLEANED, AS APPROPRIATE.

EVALUATOR'S SIGNATURE: _____

NOTE: Only this page needs to be retained in examinee's record if completed satisfactorily. If unsatisfactory performance is demonstrated, the entire JPM should be retained.

TURNOVER SHEET

Directions to the Student:

- A. You are the Waste Process Building NSO. You are going to simulate placing the "A" Waste Test Tank on recirculation.
- B. The following information is provided to you:
 - 1) Plant is at 100% power.
 - 2) The control room has directed you to place the "A" Waste Test Tank on recirculation.
 - 3) All prerequisites are complete.
- C. We will begin after the "Initiating Cue" is read. Do you have any questions?

INITIATING CUE:

Evaluator to Waste Process Building NSO, "**Waste Process Building NSO (or student's name), simulate placing the "A" Waste Test Tank on recirculation per ON1018.07, "Waste Test Tank Recirculation", section 4.1.**"

NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.



JOB PERFORMANCE MEASURE

JPM
Page 1 of 8

JPM TITLE: SHIFT STARTUP FEED PUMP SUCTION

JPM NUMBER: 2018 LOIT NRC Exam In Plant JPM "J" **REV. 0**

SAFETY FUNCTION 4: Heat Removal From Reactor Core

K/A: 061, Auxiliary/Emergency Feedwater (AFW) System, K4.01, Knowledge of AFW design feature (s) and/or interlocks which provide for the following: Water sources and priority of use.

EVALUATION LOCATION: In-Plant: ☒

Simulator: ☐

Lab: ☐

Estimated time for Completion: 15 Min

Alternate Path: NO

Time Critical: NO

PREPARED BY: _____ **DATE:** _____

APPROVED BY: _____ **DATE:** _____
TRAINING SUPERVISOR

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

ALL STEPS IN THIS CHECKLIST ARE TO BE PERFORMED PRIOR TO USE.

REVIEW STATEMENTS	YES	NO	N/A
1. Are all items on the signature page filled in correctly?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Has the JPM been reviewed and validated by SMEs?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Can the required conditions for the JPM be appropriately established in the simulator if required?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4. Do the performance steps accurately reflect trainee's actions in accordance with plant procedures?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Is the standard for each performance item specific as to what controls, indications and ranges are required to evaluate if the trainee properly performed the step?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Has the completion time been established based on validation data or incumbent experience?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. If the task is time critical, is the time critical portion based upon actual task performance requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8. Is the job level appropriate for the task being evaluated if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Is the K/A appropriate to the task and to the licensee level if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Is justification provided for tasks with K/A values less than 3.0?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Have the performance steps been identified and classified (Critical / Sequence / Time Critical) appropriately?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Have all special tools and equipment needed to perform the task been identified and made available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Are all references identified, current, accurate, and available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Have all required cues (as anticipated) been identified for the evaluator to assist task completion?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Are all critical steps supported by procedural guidance? (e.g., if licensing, EP or other groups were needed to determine correct actions, then the answer should be NO.)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. If the JPM is to be administered to an LOIT student, has the required knowledge been taught to the individual prior to administering the JPM? TPE does not have to be completed, but the JPM evaluation may not be valid if they have not been taught the required knowledge.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

All questions/statements must be answered "YES" or "N/A" or the JPM is not valid for use. If all questions/statements are answered "YES" or "N/A," then the JPM is considered valid and can be performed as written. The individual(s) performing the initial validation shall sign and date the cover sheet.

Protected Content: (CAPRs, corrective actions, licensing commitments, etc. associated with this material)

ASSOCIATED TASK DESCRIPTION:

0610100401 Feed Stem Generators With EFW System

STANDARDS:

Shift SUFP suction by opening the SUFP low suction tap and bypassing the SUFP low suction pressure trip.”

Directions to the Student:

Evaluator gives Turnover sheet to the student

- A. You are the Secondary NSO. You are going to simulate performing local actions required to establish SUFP flow in accordance with OS1200.01, Attachment A.
- B. The following information is provided to you:
 - 1. A fire in the EFW pump house has caused the plant to perform a Safe Shutdown from the control room.
 - 2. Neither the motor driven nor the turbine driven EFW pumps are available.
 - 3. Power is available to Bus 5 and the SUFP is available.
 - 4. US is directing establishing SUFP flow in accordance with OS1200.01 Attachment A.
 - 5. The control room has completed Attachment A steps 1 through 7.
 - 6. CST level is 210,000 gallons.
 - 7. The plant is in Mode 3.
- C. Perform the task in accordance with OS1200.01, Attachment A.
- D. We will begin after the "Initiating Cue" is read. Do you have any questions?

INITIATING CUE:

Evaluator to Secondary NSO, **"Secondary NSO (or student's name), simulate aligning the SUFP suction to the CST lower tap per OS1200.01, Attachment A, Step 8.**

JPM PERFORMANCE INFORMATION

Start Time: _____

NOTE: When providing "Evaluator Cues" to the examinee, care must be exercised to avoid prompting the examinee. Typically cues are only provided when the examinee's actions warrant receiving the information (i.e., the examinee looks or asks for the indication).

NOTE: Critical steps are marked with a "YES" below the performance step number. Failure to meet the standard for any critical step shall result in failure of this JPM.

NOTE: 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:	The required key is on the Secondary NSO key ring. CO-V-142 handwheel has arrows in both directions for open. Student must rotate handwheel in the counter clockwise direction to open.

Performance Step: 01	Unlock and open CO-V-142 CST lower tap isolation.
Critical - YES	
Standard:	Simulates unlocking and opening CO-V-142 CST lower tap isolation.
Cue:	When student simulates unlocking and rotating handwheel counter clockwise to open CO-V-142, evaluator to student, " The valve is unlocked. The valve is open. "
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 02 Critical - NO	Inform US that CO-V-142 CST lower tap isolation is unlocked and open.
Standard:	Simulates informing US that CO-V-142 CST lower tap isolation is unlocked and open.
Cue:	US to NSO, "I understand, CO-V-142 is unlocked and open."
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 03 Critical - YES	Place SUFP low suction pressure trip in Bypass.
Standard:	Simulates placing SUFP low suction pressure trip in Bypass.
Cue:	When student simulates placing SUFP low suction pressure trip in Bypass, evaluator to student, "The switch is in the Bypass position."
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 04 Critical - NO	Inform US that SUFP low suction pressure trip is in Bypass.
Standard:	Simulates informing US that SUFP low suction pressure trip is in Bypass.
Cue:	US to NSO, "I understand, SUFP low suction pressure trip is in Bypass."
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Terminating Cues: The JPM is complete.

NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.

Stop Time: _____

Examinee: _____

Evaluator: _____

☐ RO ☐ SRO ☐

Date: _____

☐ LOIT RO ☐ LOIT SRO

PERFORMANCE RESULTS:

SAT:

UNSAT:

COMMENTS/FEEDBACK: (Comments shall be made for any steps graded unsatisfactory).

EXAMINER NOTE: ENSURE ALL EXAM MATERIAL IS COLLECTED AND PROCEDURES
CLEANED, AS APPROPRIATE.

EVALUATOR'S SIGNATURE: _____

*NOTE: Only this page needs to be retained in examinee's record if completed satisfactorily. If
unsatisfactory performance is demonstrated, the entire JPM should be retained.*

TURNOVER SHEET

Directions to the Student:

Evaluator gives Turnover sheet to the student

- A. You are the Secondary NSO. You are going to simulate performing local actions required to establish SUFP flow in accordance with OS1200.01, Attachment A.
- B. The following information is provided to you:
 - 1. A fire in the EFW pump house has caused the plant to perform a Safe Shutdown from the control room.
 - 2. Neither the motor driven nor the turbine driven EFW pumps are available.
 - 3. Power is available to Bus 5 and the SUFP is available.
 - 4. US is directing establishing SUFP flow in accordance with OS1200.01 Attachment A.
 - 5. The control room has completed Attachment A steps 1 through 7.
 - 6. CST level is 210,000 gallons.
 - 7. The plant is in Mode 3.
- C. Perform the task in accordance with OS1200.01, Attachment A.
- D. We will begin after the "Initiating Cue" is read. Do you have any questions?

INITIATING CUE:

Evaluator to Secondary NSO, **"Secondary NSO (or student's name), simulate aligning the SUFP suction to the CST lower tap per OS1200.01, Attachment A, Step 8.**

NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.



JOB PERFORMANCE MEASURE

JPM
Page 1 of 9

JPM TITLE: LOCAL REACTOR TRIP

JPM NUMBER: 2018 LOIT NRC Exam In Plant JPM "K" **REV.** 0

SAFETY FUNCTION 1: Reactivity Control

K/A: 001, Control Rod Drive System, A2.13, Ability to (a) predict the impacts of the following malfunctions or operations on the CRDS-and (b) based on those predictions, use procedures to correct, control, or mitigate consequences of those malfunctions or operations: ATWS

EVALUATION LOCATION: In-Plant: ☒

Simulator: ☐

Lab: ☐

**Estimated time
for Completion:** 20 Min

Alternate Path: YES

Time Critical: NO

PREPARED BY: _____ **DATE:** _____

APPROVED BY: _____ **DATE:** _____
TRAINING SUPERVISOR

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

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14. Have all required cues (as anticipated) been identified for the evaluator to assist task completion?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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All questions/statements must be answered "YES" or "N/A" or the JPM is not valid for use. If all questions/statements are answered "YES" or "N/A," then the JPM is considered valid and can be performed as written. The individual(s) performing the initial validation shall sign and date the cover sheet.

Protected Content: (CAPRs, corrective actions, licensing commitments, etc. associated with this material)

ASSOCIATED TASK DESCRIPTION:

0010102901 Operate the Control Rod Drive System to Shutdown the Reactor

STANDARDS:

Perform actions to locally open the reactor trip breakers per Step 6 of FR-S.1.

Directions to the Student:

Evaluator gives Turnover sheet to the student

A. You are the Secondary NSO. You are going to simulate locally tripping the reactor.

B. The following information is provided to you:

1. The reactor has a trip demand and should have tripped but both reactor trip breakers are still closed and control rods are withdrawn.
2. The reactor trip bypass breakers are open and racked out.
3. The Primary Operator has unsuccessfully tried to manually trip the reactor from both reactor trip switch locations on the MCB.
4. You are being directed to perform FR-S.1 Step 6a RNO to locally trip the reactor.

C. Perform the task per verbal instructions from the Unit Supervisor.

D. We will begin after the "Initiating Cue" is read. Do you have any questions?

INITIATING CUE:

Evaluator to Secondary NSO, “**Secondary NSO (or student’s name), locally open the reactor trip breakers per Step 6 of FR-S.1**” and inform the control room of your actions.

JPM PERFORMANCE INFORMATION

Start Time: _____

NOTE: When providing "Evaluator Cues" to the examinee, care must be exercised to avoid prompting the examinee. Typically cues are only provided when the examinee's actions warrant receiving the information (i.e., the examinee looks or asks for the indication).

NOTE: Critical steps are marked with a "YES" below the performance step number. Failure to meet the standard for any critical step shall result in failure of this JPM.

NOTE: 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 a copy of FR-S.1 step 6

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

Cue:	If required provide the following cue, " The reactor trip breaker position indicating flag is red. " Repeat as necessary.
Performance Step: 01 Critical - NO	Open the reactor trip breakers locally.
Standard	Simulates depressing red trip plate for each reactor trip breaker, RTA and RTB
Cue:	After demonstrating attempting to locally trip each of the reactor trip breakers, provide the following cue, " The reactor trip breaker operating button does not depress. " Repeat as necessary.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 02 Critical - NO	Inform the control room that the reactor trip breakers will not open
Standard	Informs the control room that the reactor trip breakers will not open
Cue:	"I copy, the reactor trip breakers will not open. Continue with the procedure."
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 03 Critical –YES	Open the input (motor) and/or output (generator) for "A" MG sets:
Standard:	Simulates opening "A" MG set motor and/or generator breaker
Cue:	"Red light extinguishes and green light illuminates. The breaker opens."
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 03 Critical –YES	Open the input (motor) and/or output (generator) for "B" MG sets:
Standard:	Simulates opening "B" MG set motor and/or generator breaker
Cue:	"Red light extinguishes and green light illuminates. The breaker opens."
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Performance Step: 04 Critical - NO	Inform the control room that the input and/or output breakers for both rod drive MG sets are open.
Standard:	Informs the control room that the input and/or output breakers for both rod drive MG sets are open.
CUE	"I copy, the input/output breakers for both rod drive MG sets are open. All control rods are inserted."
Performance:	SATISFACTORY _____ UNSATISFACTORY _____

Terminating Cues: The JPM is complete.

NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.

Stop Time: _____

TURNOVER SHEET

Directions to the Student:

- A. You are the Secondary NSO. You are going to simulate locally tripping the reactor.
- B. The following information is provided to you:
 - 1. The reactor has a trip demand and should have tripped but both reactor trip breakers are still closed and control rods are withdrawn.
 - 2. The reactor trip bypass breakers are open and racked out.
 - 3. The Primary Operator has unsuccessfully tried to manually trip the reactor from both reactor trip switch locations on the MCB.
 - 4. You are being directed to perform FR-S.1 Step 6a RNO to locally trip the reactor.
- C. Perform the task per verbal instructions from the Unit Supervisor.
- D. We will begin after the "Initiating Cue" is read. Do you have any questions?

INITIATING CUE:

Evaluator to Secondary NSO, **"Secondary NSO (or student's name), locally open the reactor trip breakers per Step 6 of FR-S.1."**

NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.

SIMULATOR EXERCISE GUIDE

SITE: Seabrook Station

Revision #: 0

LMS ID: n/a

LMS Rev. Date: n/a

SEG TITLE: 2018 LOIT NRC Exam #1

SEG TYPE: ☐ Training

☒ Evaluation

PROGRAM: ☐ LOCT ☒ LOIT ☐ Other:

DURATION: 90 minutes

Developed by:	<u>Sean M. Riley</u>	<u>12/18/17</u>
	Instructor/Developer	Date

Reviewed by:	<u>Bob Duarte</u>	<u>12/18/17</u>
	Instructor (Instructional Review)	Date

Validated by:	<u>Bob Duarte</u>	<u>12/18/17</u>
	SME (Technical Review)	Date

Approved by:	<u>Chris Adams</u>	<u>12/18/17</u>
	Training Supervision	Date

Approved by:	<u>Sean Doody</u>	<u>12/18/17</u>
	Training Program Owner (Line)	Date

OVERVIEW / SEQUENCE OF EVENTS

OVERVIEW

- Initial Condition: The “B” Emergency Diesel Generator is removed from service for maintenance. Tech. Spec. 3.8.1.1, actions b and d were entered at 0200.
- After the crew assumes the watch the ISO dispatcher will call and request that plant output be reduced to 1100 MWe net within 30 minutes. The crew will perform a rapid downpower.
- Once the crew has completed the downpower, or at the Lead Examiners discretion, the Steam Generator “A” controlling pressure instrument will fail high. The crew should take manual control of the “A” Feedwater Reg. Valve and implement OS1235.04, “SG Feed Flow-Steam Flow or Steam Pressure Instrument Failure”.
- The “A” Charging Pump will then trip. The crew will implement OS1202.02, “Charging System Failure” and start the “B” Charging Pump.
- Once the crew has mitigated the charging pump failure then the “B” Pressurizer Spray Valve output signal will drift high. The crew should implement OS1201.06, “PZR Pressure Instrument/Component Failure” and take manual control of the “B” spray valve controller.
- Subsequently there will be a loss of offsite power and the “A” Emergency Diesel Generator will trip. The crew will enter E-0, “Reactor Trip or Safety Injection” and then transition to ECA-0.0, “Loss of All AC Power. The crew should re-energize Emergency Bus E6 using SEPs and exit ECA-0.0 at Step 5.
- The Electrically Driven EFW Pump will not automatically start and must be manually started at ECA-0.0, Step 5g RNO.
- The “B” PCCW Pump will trip and the “D” pump will not automatically start. The crew should take manual action to start the “D” pump.

SEQUENCE OF EVENTS

Example table provided below. Modify or delete as needed to meet site/scenario-specific requirements.

ALL TIMES IN THIS SCENARIO ARE APPROXIMATE

Event #	Description
1.	Rapid downpower to 1100 MWe
2.	Steam Generator pressure instrument fails high
3.	"A" Charging Pump trip
4.	"B" Pressurizer Spray Valve output signal drifts high
5.	Loss of offsite power w/"A" Emergency Diesel Generator trip
6.	Component Cooling Water Pump 11B trip with failure of standby pump to start
7.	Electric driven Emergency Feedwater Pump failure to automatically start with turbine driven pump tripped

SIMULATOR SET UP INSTRUCTIONS

- Reset the simulator to IC-30, MOL, 100% Power, C19, Stable Xenon
- Verify that Train “A” is protected
- On MPCs: SV C0755, “1”
- Remove the “B” Emergency Diesel Generator from service by performing the following:
 - € SELECT: CRF List
 - € SELECT: Component-Electrical Distribution
 - € SELECT: Breakers
 - € SELECT: bkEDE6DG
 - € Action: SELECT “Rack Out”
 - € SELECT: Insert
 - € SELECT: Local Panels
 - € SELECT: DG System
 - € SELECT: DG B
 - € SELECT: SS9710, LOCAL/REMOTE/MAINTENANCE
 - € SELECT: MAINTENANCE
 - € Place “B” EDG breaker control switch in PTL
 - € Put information tag on “B” EDG breaker control switch
- Perform the following to fail CC-P-11D from automatically starting:
 - € SELECT: MF List
 - € SELECT: Primary Component Cooling
 - € SELECT: mfCC015, CC-P-11D Fails to Auto Start
 - € Final: SELECT: “1:True”
 - € SELECT: Insert
- Perform the following to fail the electric driven EFW pump from automatically starting:
 - € SELECT: MF List
 - € SELECT: Feedwater
 - € SELECT: mfFW052, FW-P-37B Auto Start Failure
 - € Final: SELECT: “1:Fail”
 - € SELECT: Insert

(CONTINUED ON NEXT PAGE)

- **Perform the following to insert the “A” Emergency Diesel Generator Low Lube Oil Pressure trip:**
 - € **SELECT: MF List**
 - € **SELECT: Electrical Distribution**
 - € **SELECT: mfED032, DG-1A Low Lube Oil Pressure Trip**
 - € **Final: SELECT: “1:True”**
 - € **SELECT: Insert**

- **Perform the following to ensure the boron concentration in the blender pipes = 0:**
 - € **SELECT: Sim Diagrams**
 - € **SELECT: CS 5**
 - € **SELECT: rfCS028**
 - € **Final Value: INPUT “0”**
 - € **Ramp Time: INPUT “10”**
 - € **SELECT: Insert**

- **Activate the following Event Trigger:**
 - € **SELECT: Event Triggers**
 - € **SELECT: NRC**
 - € **SELECT: Demo Exams**
 - € **SELECT: 2018 NRC Exam 1 ET 1**
 - € **SELECT: Open**
 - € **SELECT: Activate**

SHIFT TURNOVER INFORMATION

See Turnover Sheet

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
Event 1: Rapid downpower to 1100 MWe	<p>Perform the following:</p> <p>Call the Unit Supervisor as ISO dispatcher and request that the crew reduce plant output to 1100MWe net within 30 minutes, per grid contingency requirement.</p> <p>If the US calls the Shift Manager to make ODI-61 notifications state "I Understand, I will make Joint Owner and NDDO notifications per ODI.61."</p> <p>If the crew directs an NSO to place the Heater Drain Pumps in Flow Control Mode, then perform the following:</p> <ul style="list-style-type: none"> € SELECT: Local Panels € SELECT: Feedwater/MVD/HD € Take 1-HD-LY-4508-A, "A HDP Discharge Valve" to MANUAL and then back to AUTO. € Take 1-HD-LY-4508-B, "B HDP Discharge Valve" to MANUAL and then back to AUTO. 	<p>Event 1: PSO (R), BOP (N), US (N)</p> <p>The US should update the crew and inform them of the required time for the plant output to be at 1100MWe net.</p> <p>NOTE: The crew should reduce load to less than 1100 MWe Net, as read by computer point C6123</p>

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
Event 1: (Continued)		<p>The crew should perform the power decrease utilizing OS1231.04, Rapid Downpower:</p> <ol style="list-style-type: none"> 1. Perform Notifications Per ODI.61, Redeclaration/Joint Owner Notification Guidelines. <ul style="list-style-type: none"> • The US should ask the SM to perform the notifications. 2. Perform Down Power Briefing per Attachment A, as time permits: <ul style="list-style-type: none"> • US should perform a rapid downpower brief utilizing OS1231.04, Rapid Downpower, Attachment A. The brief should discuss the following: <ul style="list-style-type: none"> • The plant load schedule • The Tavg/Tref control band. With control rods in automatic the crew should maintain Tavg/Tref between -1°F and +3.5°F. • The US should state that AFD should be maintained near the administrative control band. • The crew should discuss reactivity control: <ul style="list-style-type: none"> • Boration control: <ul style="list-style-type: none"> • The crew should use ODI.56 to determine the required boration quantity. • A boration flow rate should be used such that Tavg/Tref is controlled within the prescribed band and to avoid rod insertion limits. • Rod control: <ul style="list-style-type: none"> • The crew should discuss that the preferred method is to have control rods in Automatic to expedite power reduction.

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
<p>Event 1: (Continued)</p>		<ul style="list-style-type: none"> • Turbine Control: <ul style="list-style-type: none"> • The crew should discuss that turbine load should be reduced so as to maintain load schedule, and that load may be adjusted as needed to help maintain Tavg/Tref within control ban. 3. Align rod control system <ul style="list-style-type: none"> • The US should direct the PSO to verify in auto or place in auto. 4. Determine Boration Value <ul style="list-style-type: none"> • The PSO should determine the required boration to reduce load to 1100MWe net, per ODI.56 5. Perform Boration <ul style="list-style-type: none"> • The crew should use a normal boration. Normal boration is initiated per Attachment B: <ul style="list-style-type: none"> • PSO should place the Blender Mode Start Switch to Stop. • PSO should place the Boric Acid Blender Mode Selector Switch to Borate. • The PSO should set the desired Boric Acid quantity and flow rate. • The PSO should turn off the Step Back feature. • The PSO should turn the Blender Mode Start Switch to Start and Hold for approximately one second. • The PSO and BOP should continue to verify that the plant is responding as expected for the boration. • When the boric acid supply counter has added the desired quantity the PSO should Verify that the boration stops, turn the Blender Mode Start Switch to Stop, set the proper boric acid flow rate, place the Blender Mode Selector Switch to Auto, and then turn the Blender Mode Start Switch to Start.

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
Event 1: (Continued)		6. Reduce Turbine Load to Desired Power Limit: <ul style="list-style-type: none"> • BOP should direct an NSO to place the Heater Drain control to Flow Control Mode. • BOP should place the turbine load limit tracking to ON • The BOP should reduce turbine load by selecting the desired Load Ramp Rate and Load Setpoint. 7. Initiate PZR Forced Sprays <ul style="list-style-type: none"> • The PSO should force pressurizer sprays by energizing pressurizer backup heaters. 8. Monitor Rod Position <ul style="list-style-type: none"> • The PSO should continuously monitor that the rod insertion limit LO LO alarms are reset <ul style="list-style-type: none"> • RNO. If the RIL LO Lo alarms actuate then the crew should perform a rapid boration per Attachment D until the Lo Lo alarms are reset. 9. Check Stem Dump Operation <ul style="list-style-type: none"> • The BOP should check steam dumps CLOSED 10. Perform Equipment Shutdown Actions <ul style="list-style-type: none"> • NOTE: This is an ongoing action that will not be completed during the timeframe of the exam. 11. Check plant at desired level <ul style="list-style-type: none"> • When the plant reaches desired level the crew should stop the boration and the Us should inform ISO-NE Dispatcher that the plant is at the desired load. <ul style="list-style-type: none"> • The crew should reduce load to less than 1100 MWe Net, as read by computer point C6123
	When the crew has completed the downpower, or at the Lead Examiner's discretion, proceed to the next event.	

<p>Event 2: Steam Generator pressure instrument fails high</p>	<p>Perform the following:</p> <ul style="list-style-type: none"> € SELECT: CMF List € SELECT: Component-Feedwater € SELECT-Pressures € SELECT: trFWPT514 € SELECT: "Fail to High Limit" € SELECT: Insert 	<p>Event 2: BOP (I), US (I,TS)</p> <p>Associated Alarms:</p> <ul style="list-style-type: none"> • D4706, "SG A Stm Flow/Feed Flow Mismatch" • When SG "A" level gets to 55%: <ul style="list-style-type: none"> • D4770, "SG A Lvl Ref Deviation" • UA-53, A-3, "SG A Level Hi/Lo" <p>NOTE: When the initial alarms come in the US will ask the BOP if a controlling channel has failed. The BOP should identify that PT-514 has failed and is the controlling channel. The US will then direct the BOP to take manual control of the "A" Feedwater Regulating Valve and maintain SG level 45-55%. This action is done as a <u>Skill of the Operator Task</u> prior to formally implementing OS1235.04, ""SG Feed Flow-Steam Flow or Steam Pressure Instrument Failure".</p> <p>The US should implement OS1235.04, ""SG Feed Flow-Steam Flow or Steam Pressure Instrument Failure".</p> <p>Step 1: Check Steam Generator Water Level Control</p> <ol style="list-style-type: none"> a. Identify Failed Instrument-Controlling Channel Failed YES- BOP should identify that FW-FI-512 (Steam Flow) is affected. b. Place affected steam generator feed control valve-MANUAL BOP should place the "A" Feed Reg. Valve in MANUAL. c. Control feed flow to maintain narrow range level-45% to 55% BOP should manually operate the feed reg. valve to establish stable level at 45% to 55%.
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SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE

<p>Event 2 (continued)</p>	<p>If the crew calls the WCS/WWM for the FW-PT-514 failure, then respond “Understand that FW-PT-514 has failed high. A troubleshooting team is being formed.”</p>	<p>Step 2: Realign Steam Generator Level Control</p> <ol style="list-style-type: none"> a. Monitor feedwater system response and select an alternate channel for control BOP should select the alternate Feed Flow Channel <p>Step 3: Align Steam Generator Water Level Control</p> <ol style="list-style-type: none"> a. Check the following: <ul style="list-style-type: none"> • Steam flow/feed flow signals-Matched • Steam Generator level-At Prog Level 50%. b. Verify proper feed regulating valve controller setpoint and place controller in AUTO BOP should manually return level to 50%, match steam flow/feed flow and then place the controller back to AUTO <p>Step 4: Check For Failure Of A Steam Generator Pressure Instrument:</p> <ol style="list-style-type: none"> a. Any steam generator pressure channel-FAILED YES-BOP should identify the FW-PI-514A has failed high. b. Verify redundant steam pressure channel bistables-NOT Tripped <ul style="list-style-type: none"> • UL1-SG Press Rate Hi MSI SG Press Lo SI/MSI YES-PSO should identify that redundant channel bistables are NOT tripped. c. Verify Tech Spec Compliance US should identify the following applicable actions: <ul style="list-style-type: none"> • TS 3.3.2, Engineering Safety Feature Actuation Instrumentation, item 1e, action 18 • TS 3.3.2, Engineering Safety Feature Actuation Instrumentation, item 4d, action 18 • TS 3.3.2, Engineering Safety Feature Actuation Instrumentation, item 4e, action 18 •
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SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
	When the crew has completed OS1235.04, or at the Lead Examiner's discretion, proceed to the next event.	
Event 3: "A" Charging Pump trip	<p>Perform the following:</p> <ul style="list-style-type: none"> € SELECT: MF List € SELECT: Chemical and Volume Control € SELECT: mfCS016, CS-P-2A OC Trip € Final: Select "1:True" € SELECT: Insert <p>If the crew calls the WCS/WWM for the "A" Charging Pump trip, then respond "Understand that the "A" Charging Pump has tripped. A troubleshooting team is being formed."</p>	<p>Event 3: PSO (C), US (C,TS)</p> <p>Associated Alarms:</p> <ul style="list-style-type: none"> • UA-52, C-3, "RCP Seal Injection Flow Lo" • D7853, "Chg Pmp Disch Combined Hdr Flow Low" • D4652, "Cntrfgl Chg Pump A Bkr Trip & L/O" • D4676, "RCP A Seal Injection Flow Low" • D4677, "RCP B Seal Injection Flow Low" • D4678, "RCP C Seal Injection Flow Low" • D4679, "RCP D Seal Injection Flow Low" <p>NOTE: The crew may close CS-V-145 utilizing skill of the operator.</p> <p>The US should implement OS1202.02, "Charging System Failure".</p> <p>Step 1: Check Letdown-Normal:</p> <ul style="list-style-type: none"> a. Charging flow-Greater than 50 gpm: NO-PSO should identify that the running charging pump has tripped and that charging flow is 0 gpm. <ul style="list-style-type: none"> • RNO-Reduce letdown flow while monitoring REGEN heat exchanger letdown outlet temperature. Note: The crew may close CS-V-145 to prevent flashing in the heat exchanger.

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
<p>Event 3 (Cont.)</p>		<p>Step 2: Monitor RCP Seal and Bearing Cooling Inlet Temperature:</p> <ol style="list-style-type: none"> Check RCP seal and bearing inlet temperature indication: PSO should monitor seal water inlet temperature on color graphics and check the following alarms reset: A RCP-A0606 OR A0605 B RCP-A0608 OR A0607 C RCP-A0610 OR A0609 D RCP-A0612 OR A0611 Monitor seal water inlet temperature-Less than 230°F YES-PSO should identify that inlet temperature is less than 230°F Monitor seal water inlet temperature-Less than 184°F YES-PSO should identify that inlet temperature is less than 184°F <p>Step 3: Check charging Pumps-One Pump Running NO-PSO should identify that CS-P-2A tripped and pump 2B is in standby. RNO-Start one centrifugal charging pump: PSO should start CS-P-2B by performing the following:</p> <ul style="list-style-type: none"> Place CS-FK-121 in manual minimum Start CS-P-2B Slowly increase output of CS-FK-121 Adjust CS-HCV-182 as necessary for RCP seal injection flow

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
Event 3 (Cont.)	<p>If the crew directs an NSO to walk down the PAB, then after 5 minutes contact the Control Room and state "I have walked down the PAB and see no indication of any leaks."</p> <p>If the crew directs an NSO check sump pump timers, then after 5 minutes contact the Control Room and state "All sump pump timers are unchanged."</p> <p>If the crew directs an NSO to walk down the "A" Charging Pump breker, after 5 minutes contact the control room as the NSO and state "The "A" Charging Pump breakers shows an overcurrent trip."</p>	<p>Step 4: Check Seal Injection Flow Status:</p> <ul style="list-style-type: none"> a. Check seal water injection filter differential pressure- Less than 19 PSID YES-PSO should identify that CS-F-4A differential pressure is approximately 3 PSID b. Seal Injection flow-Greater than 6 gpm to each RCP YES or ADJUST-PSO should be controlling seal injection flow using CS-HCV-182 <p>Step 5: Check if Charging System Is Intact:</p> <ul style="list-style-type: none"> a. Check the following: PAB and Containment radiation levels, PAB and containment sump levels, PAB area walkdown: YES-The PSO/US should determine that all conditions are NORMAL. US should transition to Step 9 <p>Step 9: Check VCT Conditions-NORMAL</p> <ul style="list-style-type: none"> a. VCT Level-Greater than 30% YES-PSO should determine that VCT level is greater than 30%

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
Event 3 (Cont.)		<p>Step 10: Check If Normal Letdown Can Be Established</p> <ol style="list-style-type: none"> Verify charging flow-Greater than 50 GPM PSO should verify flow is greater than 50gpm or adjust CS-FK-121 to raise flow. Pressurizer level-Greater than 17% YES-PSO should verify that level is adequate. Establish normal letdown: PSO should establish letdown as follows: <ul style="list-style-type: none"> Align PCCW to Letdown Heat Exchanger: <ul style="list-style-type: none"> CC-V341 Open-YES CS-TK-130 Auto-YES Close letdown flow control valves: <ul style="list-style-type: none"> CS-HCV 189 and 190 Open letdown line isolation valves: <ul style="list-style-type: none"> RC-LCV-459 RC-LCV-460 CS-V145 Manually control or monitor CS-PK-131 response and establish letdown flow using letdown flow control valves.

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
Event 3 (Cont.)		<p>Step 12: Restore normal pressurizer level</p> <ul style="list-style-type: none"> a. Control charging and letdown flow b. Control RCP seal injection flow <p>PSO should be adjusting all three parameters pursuant to placing CS-FK-121 back in AUTO. This evolution may take a while well level restores to setpoint.</p> <p>Step 13: Verify Tech. Spec. Compliance:</p> <ul style="list-style-type: none"> • US should identify that TS 3.5.2, ECCS Subsystems-Tavg Greater Than or Equal to 350°F, action a applies. • US should identify that Tech Spec. 3.8.1.1, action d is affected: <p>“With one diesel generator inoperable in addition to ACTION b or c above, verify that:</p> <ol style="list-style-type: none"> 1. All required systems, subsystems, trains, components, and devices that depend on the remaining OPERABLE diesel generator as a source of emergency power are also OPERABLE...” <p><u>If these conditions are not satisfied within 4 hours be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.</u></p>
	<p>When the crew has completed OS1202.02, or at the Lead Examiner's discretion, proceed to the next event.</p>	

<p>Event 4: "B" Pressurizer Spray Valve output signal drifts high</p>	<p>Perform the following:</p> <ul style="list-style-type: none"> € SELECT: CMF List € SELECT: Component-Reactor Coolant € SELECT: Controllers € SELECT: ctRCPK455C € Action: SELECT "Fail Output (Auto)" € FINAL: Enter 100 € RAMP TIME: Enter 120 € SELECT: Insert <p>If the crew calls the WCS/WWM for the "B" Pressurizer Spray Valve controller failure, then respond "Understand that the "B" Pressurizer Spray Valve controller has failed. A troubleshooting team is being formed."</p>	<p>Event 4: PSO (C), US (C)</p> <p>Initial Alarm: D4327, "PZR Pressure Low and Backup Heaters On" (Note: alarm occurs approx. 1 minute after insertion of the component failure)</p> <p>NOTE: Depending on the timeliness of the crew's response, pressure may drop below the Tech. Spec. 3.2.5, "DNB Parameters" value of 2185 PSIG. In this case the crew should discuss that they are below the DNB Tech. Spec. limit and should expedite recovering pressure.</p> <p>US may direct the PSO to manually close the "B" PZR Spray Valve using "Skill of the Operator".</p> <p>The US should implement OS1201.06, "PZR Pressure Instrument/Component Failure"</p> <p>Step 1: Check PORVs closed PSO should respond YES</p> <p>Step 2 Check Normal Spray Valves CLOSED NO-PSO should identify that the "B" spray valve is opening.</p> <ul style="list-style-type: none"> • RNO- If PZR pressure is less than 2260 psig then verify PZR spray control is functioning properly • PSO should respond NO • If PZR spray control has failed then manually close spray valves. • PSO may have already closed the spray valve using "Skill of the Operator", if not then they should close the valve.
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SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
Event 4 (Cont.)		<p>Step 3: Check Pressurizer Pressure Channels PSO should respond that none have failed</p> <ul style="list-style-type: none"> RNO- Check pressurizer pressure controllers failed YES- PSO should respond YES (RC-PK-455C auto output signal failed to 100%) RC-PK-455C will have to remain in manual <p>Step 4: Realign Pressure Instruments- No need to do so as no pressure channels have failed.</p> <p>Step 5: Align Pressurizer Pressure Control PSO/US should discuss that RC-PK-455C will have to remain in MANUAL.</p> <p>Step 6: Verify Redundant Bistables-NOT TRIPPED No need to do so as no pressure channels have failed.</p> <p>Step 7: Verify Technical Specification Compliance No Tech. Specs apply</p>
	When the crew has completed OS1201.06, or at the Lead Examiner's discretion, proceed to the next event.	

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
Event 5: Loss of offsite power w/"A" Emergency Diesel Generator trip	Perform the following: <ul style="list-style-type: none"> € SELECT: MF List € SELECT: Electrical Distribution € SELECT: mfED038, Loss of Offsite Power (No Power) € Final: SELECT: "1:True" € SELECT: Insert 	Event 5: PSO (M), BOP (M) US (M) The US should implement E-0, "Reactor Trip or Safety Injection" <ul style="list-style-type: none"> Step 1: Verify Reactor Trip: YES-PSO should verify that the reactor is tripped. Step 2: Verify Turbine Trip: YES-BOP should verify that the turbine is tripped. Step 3: Verify Power to AC Emergency Busses: <ul style="list-style-type: none"> a. AC Emergency Busses-At Least One Energized NO-The BOP should identify that the "A" Emergency Diesel has tripped. RNO-If power cannot be restored to at least one AC emergency bus then go to ECA-0.0, "Loss of All AC Power"

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
<p>Event 5: (Cont.)</p>	<p>When the crew has completed ECA-0.0, Step 2 then call as the dispatcher and state the following: "This is the dispatcher. For your information we expect to restore your offsite power source within the next 2-3 hours."</p>	<p>The US should implement ECA-0.0, "Loss of All AC Power"</p> <p>Step 1: Verify Reactor Trip: YES-PSO should verify that the reactor is tripped.</p> <p>Step 2: Verify Turbine Trip: YES-BOP should verify that the turbine is tripped.</p> <p>Step 3: Check if RCS is Isolated:</p> <ul style="list-style-type: none"> a. Letdown isolation valves-CLOSED: NO- PSO should identify that CS-V-145, RC-LCV-459, and RC-LCV-460 are all open. RNO- PSO should manually close CS-V-145 and CS-V-150. b. PZR PORV's CLOSED: YES- PSO should identify that the PORVs are closed. c. Excess letdown valves-CLOSED YES- PSO should identify that the valves are closed. d. RCS sample valves CLOSED BY PHASE A STATUS PANELS: YES- PSO should identify that the valves are closed. <p>Step 4: Verify EFW Flow- Greater Than 500 GPM Total Flow YES- BOP should identify that flow is greater than 500 GPM.</p>

<p>Event 5: (Cont.)</p>	<p>NOTE: The simulator does not have the physical K relay switch for Train A. There is a photo of the switch that the operator will point to. The Lead Examiner or a booth instructor should state the following if the operator simulates operating Test Switch 909:</p> <p>“Indications are as shown on the main control board.”</p> <p>If the crew dispatches an NSO to investigate the “A” EDG, after 2-3 minutes states “Control Room, this is the Rover NSO, there is a large quantity of lube oil spilled on the floor around the “A” Emergency Diesel Generator.</p> <p>If the crew directs the NSO to place the “A” EDG in “Maintenance” then perform the following:</p> <ul style="list-style-type: none"> € SELECT: Local Panels € SELECT: DG System € SELECT: DG “A” € PLACE SS 9700, “Local, Remote, Maintenance” switch to “Maintenance” 	<p>Step 5: Try to Restore Power To Any AC Emergency Bus:</p> <ol style="list-style-type: none"> a. Place all UAT and RAT supply breaker control switches for the emergency busses in PULL TO LOCK position. BOP should perform these actions. b. Manually start emergency diesel generator(s) from the main control room: <ul style="list-style-type: none"> • Emergency Start • Slave relay K603 test switch S909 <p>Note: The diesel will not start by either method, however the diesel had tripped on low lube oil pressure so there should not be an attempt to start it.</p> <p>RNO: If SEPS bus feeder breaker is aligned to Bus 6, THEN:</p> <ol style="list-style-type: none"> 1) Place the following equipment in PULL TO LOCK position: <ul style="list-style-type: none"> • DG 1B output breaker BOP should do this. • CBS-P-9B PSO should do this. • SI-P-6B PSO should do this. • CAN fans 1A, 1B, and 1D PSO should do this <p>Critical Task 1: Energize at least one ac emergency bus before placing safeguards equipment control switches in pull-to-lock (ECA-0.0, Step 6)</p> <ol style="list-style-type: none"> 2) Manually close SEPS Bus 6 breaker. If breaker will not close, THEN go to Step 6
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<p>Event 5: (Cont.)</p> <p>Event 6: Component Cooling Water Pump 11B trip with failure of standby pump to start</p> <p>Event 7: Electric driven Emergency Feedwater Pump failure to automatically start with turbine driven pump tripped</p>	<p>If the control room directs the NSO to reset the Steam Driven EFW Pump trip valve then response a minute later “The Steam Driven EFW Pump mechanical trip valve is mechanically bound.”</p>	<div style="text-align: right;">3) Go to Step 5f.</div> <p>f. Verify EPS-ACTUATED AND SEQUENCING: YES-BOP should verify actuation.</p> <p>Critical Task 2: Manually start electric driven EFW pump prior to exiting ECA-0.0</p> <p>NOTE: CC-P-11B will trip on overcurrent 3 minutes after Bus 6 is energized</p> <p>Critical Task 3: Manually start CC-P-11D prior to exiting ECA-0.0.</p> <p>g. Check equipment loaded:</p> <ul style="list-style-type: none"> • Charging pump YES • Thermal barrier cooling pump YES • PCCW pump YES • EFW pump NO <p style="margin-left: 150px;">RNO-BOP should reset RMO and restart the electric driven EFW pump.</p> <p>h. Check AC emergency busses-AT LEAST ONE ENERGIZED: YES-BOP should identify that Bus 6 is energized.</p>
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		<p>i. Check AC emergency bus-ENERGIZED BY EMERGENCY DIESEL GENERATOR: NO- BOP should identify that Bus 6 is energized by SEPS. RNO</p> <ol style="list-style-type: none"> 1) Maintain SEPS load limit per Attachment A while continuing with next step. 2) Stop any unloaded emergency diesel generator None running 3) If it is expected that at least one AC emergency bus will be energized from an emergency diesel generator or offsite power source within 4 hours of SBO event, then go to step 5j. <p>j. Check Train A DC Buses 11A and 11C-NOT CROSS TIED YES-Bop should state that buses are not cross tied.</p> <p>k. Return to procedure and step in effect. FRPs shall now be implemented as required. US should transition back to E-0, "Reactor Trip or Safety Injection</p>
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		<p>US should transition to E-0</p> <p>Step 1: Verify Reactor Trip: YES-PSO should verify that the reactor is tripped.</p> <p>Step 2: Verify Turbine Trip YES-BOP should verify that the reactor is tripped.</p> <p>Step 3: Verify Power to AC Emergency Busses</p> <ol style="list-style-type: none"> AC emergency busses-AT LEAST ONE ENERGIZED YES- BOP should identify that Bus 6 is energized. AC emergency busses- BOTH ENERGIZED NO-Bus 5 is de-energized RNO-If power can not be restored, then try to restore power per Attachment B after immediate actions are complete, as time and resources permit. <p>Step 4: Check if SI is Actuated:</p> <ol style="list-style-type: none"> Check SI annunciators lit: NO-PSO should identify that SI is not actuated RNO- Check if SI is required: <ul style="list-style-type: none"> RCS pressure less than 1800 PSIG NO-PSO should identify Pressurizer level less than 7% NO-PSO should identify Containment pressure greater than 4 PSIG NO-PSO should identify RCS subcooling-Less than 40°F NO-PSO should identify Any SG pressure-Less than 585 PSIG NO-BOP should identify
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		IF SI is NOT required, Then go to ES-0.1, REACTOR TRIP RESPONSE, Step 1.
	End the exam when the crew transitions to ES-0.1 or at the Lead Examiner's discretion.	Emergency Plan Classification: MA1: Loss of all but one AC power source to emergency busses for 15 minutes or longer.

***** END OF SCENARIO**

QUANTITATIVE ATTRIBUTES

(Use this form for NRC/INPO Evaluations only as required to document associated quantitative information.)

Malfunctions:

Before EOP Entry:

1. Steam Generator pressure instrument fails high.
2. "A" Charging Pump trip.
3. "B" Pressurizer Spray Valve output signal drifts high.

After EOP Entry:

1. Component Cooling Water Pump 11B trip with failure of standby pump to start
2. Electric driven Emergency Feedwater Pump failure to automatically start with turbine driven pump tripped

Abnormal Events:

1. Steam Generator pressure instrument fails high.
2. "A" Charging Pump trip
3. "B" Pressurizer Spray Valve output signal drifts high

Major Transient:

1. Loss of offsite power w/ "A" emergency diesel generator trip

Critical Tasks:

- 1) Energize at least one ac emergency bus before placing safeguards equipment control switches in pull-to-lock (ECA-0.0, Step 6)
- 2) Manually start electric driven EFW pump prior to exiting ECA-0.0
- 3) Manually start CC-P-11D prior to exiting ECA-0.0.



SIMULATOR EXERCISE GUIDE

SEG
Page 1 of 30

SITE: Seabrook Station

Revision #: 0

LMS ID: n/a

LMS Rev. Date: n/a

SEG TITLE: 2018 LOIT NRC Exam #2

SEG TYPE: ☐ Training

☒ Evaluation

PROGRAM: ☐ LOCT ☒ LOIT ☐ Other:

DURATION: 90 minutes

Developed by:	<u>Sean M. Riley</u>	<u>12/18/17</u>
	Instructor/Developer	Date

Reviewed by:	<u>Bob Duarte</u>	<u>12/18/17</u>
	Instructor (Instructional Review)	Date

Validated by:	<u>Bob Duarte</u>	<u>12/18/17</u>
	SME (Technical Review)	Date

Approved by:	<u>Chris Adams</u>	<u>12/18/17</u>
	Training Supervision	Date

Approved by:	<u>Sean Doody</u>	<u>12/18/17</u>
	Training Program Owner (Line)	Date

OVERVIEW / SEQUENCE OF EVENTS

OVERVIEW:

- Prior to assuming the watch the crew will perform the necessary reactivity calculations to support a power increase from 75% to 100% power at a rate of $\leq 10\%/hr$.
- Once the crew has commenced the power increase the "C" Feedwater Reg. Valve will fail to 100% output concurrent with the controlling level instrument failing low. As a result the "C" Feedwater Reg. Valve must remain in manual. The crew will implement OS1235.03, "SG Level Instrument Failure". The US should address applicable Tech. Specs.
- RCS Loop 1 Tcold instrument will fail high. The crew will implement OS1201.08, "Tavg/Delta T Instrument Failure". The US should address applicable Tech. Specs.
- RCS Loop 3 will develop a 30 gpm hot leg leak. The crew will implement OS1201.02, "RCS Leak". The crew should quantify the leak. The US should address applicable Tech. Specs.
- Once the crew has quantified the RCS hot leg leak it will increase in size to a 1000 gpm LOCA. The crew should manually trip the reactor, actuate Safety Injection, and implement E-0, "Reactor Trip or Safety Injection."
 - When the reactor trip occurs Main Turbine Stop Valve 1 and Control Valve 2 do not close automatically, and turbine does not trip manually, requiring the BOP to manually actuate a Main Steamline Isolation per E-0 immediate action step 2.
 - When the Safety Injection occurs both Safety Injection Pumps and the "B" RHR Pump fail to start automatically, requiring the PSO to manually start the pumps per E-0, Attachment A.
- The crew should transition to E-1, "Loss of Reactor or Secondary Coolant"
- The exam will terminate when the crew transitions to ES-1.2, "Post LOCA Cooldown and Depressurization"

SEQUENCE OF EVENTS
ALL TIMES IN THIS SCENARIO ARE APPROXIMATE

Event #	Description
1.	Power Increase
2.	"C" Feedwater Reg Valve Fails to 100% Output Concurrent with Controlling Level Channel Failing Low
3.	RCS Loop 1 Tcold Instrument Fails High
4.	RCS Loop 3 Hot Leg Leak (30 gpm)
5.	RCS Hot Leg Break
6.	Main Turbine Stop Valve 1 and Control Valve 2 Stick Open. Manual MSI Required
7.	"A" and "B" SI and "B" RHR Pumps Fail to Auto Start on SI

SIMULATOR SET UP INSTRUCTIONS

- Reset the simulator to IC-32, MOL, 75% Power, Stable Xenon
- Perform the following to fail auto start of S-P-6A, SI-P-6B, and RH-P-8B:

- € SELECT: MF List
- € SELECT: Safety Injection
- € SELECT: mfSI003, SI Pump P-6A Fails to Auto Start
- € Final: 1:True
- € SELECT: Insert

- € SELECT: mfSI004, SI Pump P-6B Fails to Auto Start
- € Final: 1:True
- € SELECT: Insert

- € SELECT: MF List
- € SELECT: Residual Heat Removal
- € SELECT: mfRH006, RH-Pump P-8B Fails to Auto Start
- € Final: 1:True
- € SELECT: Insert

- Perform the following to fail open Turbine Stop Valve #1:
 - € SELECT: CMF List
 - € SELECT: Component-Main Steam
 - € SELECT: VMODs
 - € SELECT: avMSVSV1, 1-MS-SV-1, Main Stop Valve #1
 - € Action: SELECT "Fail Open"
 - € SELECT:Insert

(CONTINUED ON NEXT PAGE)

- **Perform the following to fail MSI auto actuation:**

- € **SELECT: MF List**
- € **SELECT: Reactor Protection**
- € **SELECT: mfRPS019, "MS Isolation Fails to Auto Actuate (Train "A")"**
- € **Final: 1:True**
- € **SELECT: Insert**

- € **SELECT: mfRPS020, "MS Isolation Fails to Auto Actuate (Train "B")"**
- € **Final: 1:True**
- € **SELECT: Insert**

- **Activate the following Event Trigger:**

- € **SELECT: Event Triggers**
- € **SELECT: NRC**
- € **SELECT: Demo Exams**
- € **SELECT: 2018 NRC Exam 2 ET1**
- € **SELECT: Open**
- € **SELECT: Activate**

SHIFT TURNOVER INFORMATION

- The plant is at 75% power.
- Current RCS boron concentration is 1090 ppm.
- AFD is -1.97% and within admin band.
- Commence power increase to 100% power at a rate not to exceed 10%/hr.
- Power increase should commence per OS1000.05, "Power Increase", Step 4.2.27.

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
Event 1 Power Increase		<p>Event 1: PSO (R), BOP (N), US (N)</p> <p>The crew should commence the power increase per OS1000.05, "Power Increase", Step 4.2.47:</p> <p>Step 4.2.47 SET up to change turbine load to desired power not to exceed 100% at the load ramp rate determined by the US.</p> <ul style="list-style-type: none"> US will direct the BOP to set up the turbine controls but NOT commence changing turbine load. BOP will set up the turbine controls per OS1000.10, Figure 18: Turbine Loading/Unloading Instructions. <p>Step 4.2.48 DETERMINE the dilution volume required for the desired plant ramp rate to the desired power level.</p> <ul style="list-style-type: none"> The crew will have calculated the required dilution prior to assuming the watch. <p>Step 4.2.49 COMMENCE an RCS dilution which will maintain the desired ramp rate.</p> <ul style="list-style-type: none"> US will direct the PSO to commence the dilution. PSO will perform the dilution utilizing OS1008.01, "Chemical and Volume Control System Makeup Operation". <p>Step 4.2.50 When RCS temperature begins to increase and turbine loading is desired, COMMENCE turbine load change.</p> <ul style="list-style-type: none"> US will direct the BOP to commence turbine loading BOP will commence turbine loading per OS1000.10, Figure 18: Turbine Loading/Unloading Instructions.
	Once the crew has commenced the power increase, at the Lead Examiners direction, proceed to the next event.	

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
Event 2 "C" Feedwater Reg Valve Fails to 100% Output Concurrent with Controlling Level Channel Failing Low	<p>Perform the following:</p> <ul style="list-style-type: none"> € SELECT: CMF List € SELECT: Component-Feedwater € SELECT: Levels € SELECT: trFWLT553 € Action: SELECT Fail to Low Limit" € SELECT: Insert <ul style="list-style-type: none"> € SELECT: CMF List € SELECT: Component-Feedwater € SELECT: Controllers € SELECT: ctFWFK530 € Action: SELECT "Fail Output Auto" € Final: Input 100 € Ramp Time: Input 30 € SELECT: Insert <p>If the crew calls the WCS/WWM for the FW-LT-553 failure, then respond "Understand that FW-LT-553 has failed low. A troubleshooting team is being formed."</p>	<p>Event 2: BOP (I,C), US (I,C,TS)</p> <p>Associated Alarms:</p> <ul style="list-style-type: none"> F4841, SG C Level Lo Lo D4772, SG C Level Ref Deviation D4878, SG C Level Low D4710, SG C Stm Flow/Feed Flow Mismatch UA-53, C-3, SG C Level Hi/Lo <p>NOTE: When the initial alarms come in the US will ask the BOP if a controlling channel has failed. The BOP should identify that LT-553 has failed and is the controlling channel. The US will then direct the BOP to take manual control of the "C" Feedwater Regulating Valve and maintain SG level 45-55%. This action is done as a <u>Skill of the Operator Task</u> prior to formally implementing OS1235.03, SG Level Instrument Failure</p> <p>The US should implement OS1235.03, SG Level Instrument Failure</p> <p>Step 1: Check Steam Generator Water Level Control:</p> <ol style="list-style-type: none"> a. Identify failed instrument-CONTROLLING CHANNEL FAILED <ul style="list-style-type: none"> • BOP should state YES. (LT-553 has failed low) b. Place affected steam generator feed control valve-MANUAL <ul style="list-style-type: none"> • BOP should have already placed the "C" feed reg valve in MANUAL per the Skill of the Operator task described above. c. Control feed flow to maintain narrow range level-45% to 55% <ul style="list-style-type: none"> • BOP should be controlling level utilizing the feed reg valve in MANUAL

<p>Event 2 (Cont.)</p>		<p>Step 2 Realign Steam Generator Level Instruments:</p> <ol style="list-style-type: none"> Monitor feedwater system response and select an alternate level channel for control. <ul style="list-style-type: none"> BOP should select alternate channel LT-539 <p>Step 3 Align Steam Generator Water Level Control:</p> <ol style="list-style-type: none"> Check the following: <ul style="list-style-type: none"> Steam flow/feed flow signals MATCHED Steam generator level-AT PROGRAMMED LEVEL 50%(45% to 55%) <ul style="list-style-type: none"> BOP should respond YES when conditions are met. Verify proper feed regulating valve controller setpoint and place controller-AUTO <ul style="list-style-type: none"> BOP will place the controller in AUTO and should identify that the controller output signal goes to 100%. BOP should notify the US of the failed controller output signal. Per step 3,b., RNO, the US should direct the BOP to return the controller to MANUAL and to manually control narrow range level-45% to 55%. <p>NOTE: The "C" Feed Reg Valve will have to remain in MANUAL for the rest of the scenario.</p> <p>Step 4 Verify Redundant Channels Bistables <u>NOT</u> Tripped</p> <ul style="list-style-type: none"> UL-1, SG LVL HI HI FW ISO TURB TRIP <ul style="list-style-type: none"> PSO should respond YES (not tripped) UL-6, SG LVL LO LO <ul style="list-style-type: none"> PSO should respond YES (not tripped) UL-12, SG LVL HI HI FW ISO TURB TRIP <ul style="list-style-type: none"> BOP should respond YES (not tripped)

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
Event 2 (Cont.)		<p>Step 5 Verify Technical Specification Compliance:</p> <p>a. Refer to technical specifications:</p> <ul style="list-style-type: none"> US should review applicable Tech. Specs and determine the following: <ul style="list-style-type: none"> 3.3.1, Reactor Trip Instrumentation, Item 13, Action 6 (Required to trip bistables within 6 hours) 3.3.2, ESFAS Instrumentation, Item 5b, Action 18 (Required to trip bistables within 6 hours) 3.3.2, ESFAS Instrumentation, Item 6a, Action 18 (Required to trip bistables within 6 hours) 3.3.2, ESFAS Instrumentation, Item 7c, Action 18 (Required to trip bistables within 6 hours) 3.3.2, ESFAS Instrumentation, Item 10c, Action 18 (Required to trip bistables within 6 hours) NOTE: 3.3.3.6, Accident Monitoring Instrumentation, item 7 is NOT APPLICABLE as the failed instrument is not a PAM channel. <p>b. Coordinate with I&C to perform the following:</p> <ul style="list-style-type: none"> If desired for testing or troubleshooting, place bistables BYPASS. <p>NOTE: This activity would occur later and is not within the time scope of the exam.</p> <ul style="list-style-type: none"> Within 6 hours trip the appropriate bistables per Attachment A. <p>NOTE: This activity would occur later and is not within the time scope of the exam.</p> <p>Step 6 Verify ATWS Mitigation System Status:</p> <p>a. Check for an ATWS mitigation channel-FAILED</p> <ul style="list-style-type: none"> BOP should respond NO. RNO-Return to procedure in effect.

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
	Once the crew has completed OS1235.03, or at the Lead Examiners direction, proceed to Event 3	
Event 3 RCS Loop 1 Tcold Instrument Fails High	Perform the following: <ul style="list-style-type: none"> € SELECT: CMF List € SELECT: Component-Reactor Coolant € SELECT: Temperatures € SELECT: trRCTT411 € Action: SELECT "Fail to High Limit" € SELECT: Insert 	Event 3: PSO (I), US (I,TS) Associated Alarms: B7457, Rod Motion Detected F5298, OTDT Chan Trip D4435, Pressurizer Level Deviation Low D4421, Tavg-Tref Deviation UA-52, C-7, PZR Level Deviation Lo NOTE: If Control Rods are in automatic they will begin inserting. When the initial alarms come in the US will ask the BOP if turbine load is decreasing. The BOP should respond NO. The US will then direct the PSO to place Control Rods in MANUAL. This action is done as a <u>Skill of the Operator Task</u> prior to formally implementing OS1201.08, Tavg/Delta T Instrument Failure.

<p>Event 3 (Cont.)</p>	<p>If the crew calls the WCS/WWM for the RC-TT-411 failure, then respond “Understand that RC-TT-411 has failed high. A troubleshooting team is being formed.”</p>	<p>The US should implement OS1201.08, Tavg/Delta T Instrument Failure.</p> <p>Step 1 Check Any Tavg Channel-FAILED:</p> <p>a. PSO should respond YES (Loop 1 Tavg is failed high)</p> <p>Step 2 Stabilize Plant Conditions:</p> <p>a. Place Rod Control-MANUAL</p> <ul style="list-style-type: none"> • If the Control Rods were in automatic the PSO should have already placed Rod Control in MANUAL per the Skill of the Operator task described above. <p>b. Check condenser steam dump valves-CLOSED</p> <ul style="list-style-type: none"> • BOP should respond YES <p>c. As necessary, manually restore pressurizer level program. NOTE: It will likely not be necessary to manually restore pressurizer level. The crew will likely continue to monitor in automatic.</p> <p>Step 3 Defeat Affected Loop ΔT and Tavg Inputs:</p> <ul style="list-style-type: none"> • PSO should depress the Loop 1 ΔT channel defeat pushbutton. • PSO should depress the Loop 1 Tavg channel defeat pushbutton. • PSO should select an non affected channel for the ΔT, OT, OP recorder. <p>Step 4 Verify Operation of Control Systems:</p> <p>a. Check Tavg-WITHIN 1°F OF Tref. NOTE: If the Control Rods were initially in automatic they will have begun to insert. The answer to Step 4a is dependent upon how timely the crew was in placing Control Rods in MANUAL. The RNO for this step states “Manually control rod motion or turbine load to restore temperature”. The crew will likely commence withdrawing Control Rods .</p>
<p>Event 3 (Cont.)</p>		<p>b. Check pressurizer level-AT PROGRAMMED LEVEL</p>

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
		<ul style="list-style-type: none"> • If the RNO is needed: <ul style="list-style-type: none"> • PSO will manually control charging and letdown to restore pressurizer level to programmed level. c. Restore pressurizer level to automatic as necessary. NOTE: The need to perform this step is dependent on the conditions stated above. d. Verify both steam dump interlock selector switches in the NA RESET NA BYPASS INTERLOCK (neutral) position. <ul style="list-style-type: none"> • BOP should respond YES <p>Step 5 Verify Redundant Channel Bistables- <u>NOT</u> Tripped:</p> <ul style="list-style-type: none"> • UL-1 <ul style="list-style-type: none"> • T AVG LO LOOP TO FW ISO <ul style="list-style-type: none"> • PSO should respond YES (not tripped) • T AVG LO LO LOOP STM DMP ISO <ul style="list-style-type: none"> • PSO should respond YES (not tripped) • UL-6 <ul style="list-style-type: none"> • RCS LOOP OTΔT <ul style="list-style-type: none"> • PSO should respond YES (not tripped) • RCS LOOP OPΔT <ul style="list-style-type: none"> • PSO should respond YES (not tripped) • UL-12 <ul style="list-style-type: none"> • TAVG LO LOOP TO FW ISO <ul style="list-style-type: none"> • BOP should respond YES (not tripped)

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
Event 3 (Cont.)		<p>Step 6 Verify Technical Specification And Technical Requirement Compliance:</p> <ul style="list-style-type: none"> a. Refer to Technical Specifications: <ul style="list-style-type: none"> • US should identify the following applicable Tech. Spec. items: <ul style="list-style-type: none"> • T.S. 3.3.1, Reactor Trip System Instrumentation; Table 3.3-1, Items 7 & 8, ACTION 6 • T.R. 19, Feedwater Isolation On Low Tavg Coincident With Reactor Trip- TR conditions are met. b. Coordinate with I&C to perform the following: <ul style="list-style-type: none"> 1) If desired for testing or troubleshooting, place bistables BYPASS. <p>NOTE: This activity would occur later and is not within the time scope of the exam.</p> 2) Within 6 hours trip the appropriate bistables per Attachment A. <p>NOTE: This activity would occur later and is not within the time scope of the exam.</p>
	Once the crew has completed OS1201.08, or at the Lead Examiners direction, proceed to Event 4.	

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
Event 4 RCS Loop 3 Hot Leg Leak (30 gpm)	<p>Perform the following:</p> <ul style="list-style-type: none"> € SELECT: MF List € SELECT: Reactor Coolant € SELECT: mfRC048C, RCS Hot Leg 3 Leak 0-100% € Final: Input .02143 € SELECT: Insert <p>NOTE: During exam simulator testing the input value of .02143 created a 30 gpm leak. The input value may have to be adjusted as necessary.</p> <p>To monitor the leak rate:</p> <ul style="list-style-type: none"> € CLICK ON: Data € SELECT: Open Tables <p>The data table is located at: Seadragon/app/Seabrook DB/Tables/RCS</p>	<p>Event 4: PSO (C), US (C,TS) Associated Alarm: RDMS Panel, "Containment Recirc Noble Gas Hi Hi"</p> <p>NOTE:</p> <ul style="list-style-type: none"> • The PSO should identify a decreasing pressurizer level trend. • During implementation of OS1201.02, "RCS Leak" the US should direct the PSO to adjust charging and letdown flow rates to stabilize level in an effort to calculate the RCS leak rate. • The RCS leak rate is calculated by stabilizing pressurizer level and then calculating: $\text{RCS Leak} = \text{Charging Flow} - (\text{Letdown flow} + \text{Seal Return Flow})$ <p>The US should implement OS1201.02, "RCS Leak".</p> <p>Step 1 Check if Pressurizer Level Can Be Maintained:</p> <ol style="list-style-type: none"> a. Control charging and letdown flow as necessary to maintain PZR level on program. <ul style="list-style-type: none"> • PSO should commence adjusting charging and letdown flows in an attempt to quantify the RCS leak rate. • BOP may provide a backup calculation utilizing the RCS mass balance computer data. b. Check pressurizer level-STABLE OR INCREASING <ul style="list-style-type: none"> • PSO should respond NO. • RNO-Perform the following: <ol style="list-style-type: none"> 1) Reduce letdown as necessary. 2) Increase charging flow as necessary

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
Event 4 (Cont.)		<p>NOTE: This step is a continuous action step. US should read the step to the PSO with the PSO understanding that the step is continuous action.</p> <ul style="list-style-type: none"> If PZR level can <u>NOT</u> be maintained greater than 7%, <u>THEN</u> perform the following: <ul style="list-style-type: none"> <u>IF</u> in MODE 1, 2, or 3 with SI accumulators aligned for injection, <u>THEN</u> perform the following: <ul style="list-style-type: none"> a) Trip reactor b) <u>WHEN</u> reactor trip verified, <u>THEN</u> actuate SI c) Go to E-0, REACTOR TRIP OR SAFETY INJECTION, Step 1. <p>Step 2 Refer to ER1.1: CLASSIFICATION OF EMERGENCIES NOTE: 3 person crew. US is not responsible for classifying the event during the scenario.</p> <p>Step 3 Determine Appropriate Procedure Step Transition:</p> <ul style="list-style-type: none"> <u>If</u> RCS leak is suspected, <u>THEN</u> go to Step 4 US should transition to Step 5.

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
	<p>Once the crew has determined the RCS leak rate, or at the Lead Examiners direction, proceed to Event 5</p>	<p>NOTE:</p> <p>The US should review T.S. 3.4.6.2, Reactor Coolant System Leakage. Action b applies (leakage is greater than 1 gpm UNIDENTIFIED LEAKAGE). Required action is to reduce the leakage rate to within limits within 4 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.</p> <p>NOTE: The intent of this event is to proceed to Event 5 once the crew has quantified the RCS leak. Implementation of the remaining steps in OS1201.02 below is dependent on the crews timeliness of quantifying the leak.</p>

<p>Event 5</p> <p>RCS Hot Leg Break</p>	<p>Perform the following:</p> <ul style="list-style-type: none"> € SELECT: MF List € SELECT: Reactor Coolant € SELECT: mfRC048C, RCS Hot Leg 3 Leak 0-100% € Final: Input .92 € SELECT: Modify 	<p>Event 5: PSO (M), BOP (M), US (M)</p> <p>The crew should utilize the OS1201.02 continuous action step as described above. The crew should manually trip the reactor, actuate Safety Injection, and implement E-0, "Reactor Trip or Safety Injection."</p> <p>The US should implement E-0, "Reactor Trip or Safety Injection":</p> <p style="padding-left: 40px;">Step 1: Verify Reactor Trip</p> <ul style="list-style-type: none"> a. Rod bottom lights-LIT b. Reactor trip and bypass breakers-OPEN c. Neutron flux-DECREASING <p style="padding-left: 80px;">YES-PSO should verify that the reactor is tripped.</p> <p>Critical Task: Manually actuate Main Steam Isolation signal before transitioning to E-1, "Loss of Reactor or Secondary Coolant"</p>
<p>Event 6</p> <p>Main Turbine Stop Valve 1 and Control Valve 2 Stick Open. Manual MSI Required</p>		<p>Event 6: BOP (C), US (C)</p> <p style="padding-left: 40px;">Step 2: Verify Turbine Trip:</p> <ul style="list-style-type: none"> a. Either condition: <ul style="list-style-type: none"> • All stop valves-CLOSED, or • All control valves-CLOSED <p style="padding-left: 40px;">NO-The BOP should identify that Stop Valve #1 and Control Valve #2 are both open.</p> • RNO: The BOP should attempt to manually trip the turbine. The turbine will not trip so the BOP should close the MSIVs utilizing the Main Steam Isolation actuation switch.

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
Event 5 (Cont.)		<p>Step 3: Verify Power to AC Emergency Busses:</p> <ul style="list-style-type: none"> a. AC emergency busses-AT LEAST ONE ENERGIZED YES- The BOP should identify that both busses E5 and E6 are energized. b. AC emergency busses-BOTH ENERGIZED YES- The BOP should identify that both busses E5 and E6 are energized. <p>Step 4: Check if SI is Actuated:</p> <ul style="list-style-type: none"> a. Check SI annunciators let: <ul style="list-style-type: none"> • TRAIN A, or • TRAIN B YES-PSO should identify both train SI annunc.lit. b. Verify both trains of SI-ACTUATED YES-PSO should identify both train SI annunc.lit. <p>Critical Task: Manually start either SI-P-6A or 6B before transitioning to E-1, "Loss of Reactor or Secondary Coolant"</p>
Event 7 "A" and "B" SI and "B" RHR Pumps Fail to Auto Start on SI		<p>Event 7: PSO (C), US (C)</p> <p>Step 5: Perform ESF Actuation Verification per Attachment A:</p> <p>NOTE: The PSO will perform Attachment A. SI-P-6A and 6B and RH-P-8B failed to start automatically. The PSO should manually start the pumps per Attachment A, Step 2, as described below:</p>

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
Event 5 (Cont.)		<p>Attachment A Step 2: Verify Safeguard Equipment Alignment- PROPER ALIGNMENT BY STATUS PANEL</p> <ul style="list-style-type: none"> • Train A- Cold Leg Injection • Train B-Cold Leg Injection <p>NO-The PSO should identify that not all equipment is aligned per status panel.</p> <ul style="list-style-type: none"> • RNO Perform the following: <ul style="list-style-type: none"> a. If EFW flow control valves are closed then do not open valves to a faulted or ruptured SG unless needed for cooldown. b. Align at least <u>ONE</u> train of equipment as follows: <ul style="list-style-type: none"> 1) Manually align valves by status panel or per Attachments N, O, or P. PSO should identify that all valves are properly aligned. 2) Reset RMO as necessary Not necessary 3) Manually start pumps by status panel YES-PSO should manually restart at least one SI pump and RH-P8B.

Event 5 (Cont.)

- 4) Manually start fans by status panel
Not necessary

Note: The following material is a continuation of the main body of E-0, starting at Step 6.

Step 6: Monitor RCS Temperature-Stable or Trending to 557°F

- Tavg recorder, or Wide range cold leg temperature recorders

NOTE: Depending on the RCS temperature trend, the BOP should identify the need to perform RNO actions. With a LOCA, temperature will be less than 557°F and trending down due to ECCS injection. In this case the BOP should perform the following RNO actions:

- RNO:
 - a. Stop dumping steam to condenser and atmosphere
 - b. Check MS to MSRs isolated.
 - c. If cooldown continues then open EFW mini-flow valves and throttle total feed flow to maintain greater than 500 GPM
 - d. When SG level is adequate then throttle EFW flow to maintain SG level between 15% and 50%
 - e. If cooldown continues then:
 - Close MSIVs
 - Close MSIV bypass valves
 - Close upstream drains

Event 5 (Cont.)

Step 7: Check RCS Isolated:

- a. Check letdown valves- CLOSED
YES-PSO should verify that CS-V-145, RC-LCV-459, and RC-LCV-460 are all closed.
- b. PORVs-CLOSED
YES-PSO should verify that the PORVs are closed.
- c. Normal PZR spray valves-CLOSED
YES- PSO should verify that the spray valves are closed.

Step 8: Check if RCP's Should Be Stopped

NOTE: During simulator based testing subcooling was greater than 40° and the RCPs were left running. If Subcooling is less than 40° then the PSO or BOP should check at least one ECCS pump running and then stop all of the RCPs.

Step 9: Check if SG Pressure Boundary is faulted:

- a. Check pressures in all SGs
 - Any SG pressure decreasing in an uncontrolled manner, or
 - Any SG completely depressurized
 NO-BOP should identify that there are no faulted SGs

Step 10: Check if SG U-Tubes Are Intact:

- Main Steamline radiation normal on each line
 - Condenser air evacuation radiation normal
 - Steam generator blowdown radiation normal
 - SG narrow range level-No uncontrolled level increase
- YES-BOP should identify that SG U-Tubes are intact

Step 11: Check if RCS is Intact:

- Containment radiation-Normal
 - Containment pressure-Normal
 - Containment building level-Normal
- NO-The PSO should identify that the RCS is NOT intact.
- RNO- Go to E-1, "Loss of Reactor or Secondary Coolant", Step 1.

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
Event 5 (Cont.)		<p>The US should implement E-1, "Loss of Reactor or Secondary Coolant":</p> <p>NOTE: Step 1 is a continuous action step</p> <p>Step 1: Check if RCPs Should Be Stopped</p> <ul style="list-style-type: none"> a. ECCS pumps-At least one running <ul style="list-style-type: none"> • CCP -or- • SI Pump YES-CCPs and SI pumps should be running. b. RCS subcooling-Less than 40°F <p>Answer should initially be NO</p> <ul style="list-style-type: none"> • RNO-Go to step 2. <p>Step 2: Check if SG Pressure Boundary is Faulted</p> <ul style="list-style-type: none"> a. Check pressures in all SGs <ul style="list-style-type: none"> • Any SG decreasing in an uncontrolled manner -or- • Any SG completely depressurized NO-BOP should identify that SG pressures are all stable for plant conditions. <ul style="list-style-type: none"> • RNO-Go to Step 3 <p>Step 3: Check Intact SG Levels</p> <p>NOTE: This step is a continuous action.</p> <ul style="list-style-type: none"> a. Check SG level-Greater Than: <ul style="list-style-type: none"> • Normal Containment 65% wide range in at least two SGs <p>-or-</p> 6% narrow range in at least one SG <p>YES-BOP should identify that SG level is greater than requirement</p>

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
Event 5 (Cont.)		<p>b. Open EFW pump mini-flow valves and control feed flow to maintain narrow range level between 6% and 50% (15% to 50% for adverse containment)</p> <p>Step 4: Check Secondary Radiation</p> <ul style="list-style-type: none"> • Main steamline radiation-Normal on each line. • Condenser air evacuation radiation-Normal • Steam Generator Blowdown-Normal • SG narrow range level-No uncontrolled level increase YES-The BOP should identify that all indication of secondary radiation are normal. <p>Step 5: Check PZR PORV and Block Valves</p> <ul style="list-style-type: none"> a. Power to block valves available YES b. PORVs closed YES c. Block valves-At least one open YES <p>Step 6: Check if ECCS Flow Should Be Reduced</p> <ul style="list-style-type: none"> a. RCS subcooling-Greater than 40°F YES b. Secondary heat sink: <ul style="list-style-type: none"> • Total EFW flow greater than 500 GPM YES c. RCS pressure-Stable or Increasing NO <ul style="list-style-type: none"> • RNO-Go to Step 7 <p>Step 7: Check if Containment Spray Should be Stopped:</p> <ul style="list-style-type: none"> a. Spray pumps-Running NO <ul style="list-style-type: none"> • RNO-Go to step 8

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
Event 5 (Cont.)		<p>Step 8: Check if RHR Pumps Should be Stopped:</p> <ul style="list-style-type: none"> a. Check if RHR Pumps Should be Stopped: <ul style="list-style-type: none"> 1) Pressure-Greater than 300 PSIG YES 2) Pressure-Stable or increasing NO RNO-Go to Step 9 <p>NOTE: Depending on event timing, the crew may return to Step 1 from step 9.</p> <p>Step 9: Check RCS and SG Pressure:</p> <ul style="list-style-type: none"> • Check pressures in all SGs Stable or Increasing YES • Check RCS Pressure-Stable or Decreasing YES <p>Step 10: Check if Diesel Generators Should be Stopped:</p> <ul style="list-style-type: none"> a. Reset SI b. Verify all AC busses-Energized by Offsite Power From UATs or RATs YES c. Stop unloaded emergency diesel generators and reset for auto start BOP should stop diesels and reset.

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
Event 5 (Cont.)		<p>Step 11: Initiate Evaluation of Plant Status:</p> <ul style="list-style-type: none"> a. Verify cold leg recirculation capability YES-PSO should verify that availability requirements of both trains are met b. Verify PCCW flow to RHR heat exchangers required: <ul style="list-style-type: none"> 1) RHR pumps-Running YES 2) Verify PCCW flow to RHR heat exchangers YES c. Verify PCCW flow to CBS heat exchangers required: <ul style="list-style-type: none"> 1) CBS pumps-Running NO RNO-Go to Step 11d d. Check for Containment Leakage-Auxiliary Building Radiation Levels Normal Using RDMS YES e. Consult with TSC and obtain post accident samples while continuing with this procedure. f. Evaluate ESF equipment operation per Attachment A <p>Step 12: Check if RCS Cooldown and Depressurization is Required</p> <ul style="list-style-type: none"> a. RCS pressure-Greater than 300 PSIG YES b. Go to ES-1.2, Post LOCA Cooldown and Depressurization, Step 1 <p>NOTE: Depending on event/crew timing the crew will meet conditions to go to either SI Termination or Cooldown and Depressurization.</p>

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
	<p>End the exam when the crew transitions to ES-1.2, "Post LOCA Cooldown and Depressurization" or at the Lead Examiners discretion.</p>	<p>Emergency Plan Classification:</p> <ul style="list-style-type: none"> When the RCS leak occurs in Event 4: MU4: RCS leakage for 15 minutes or longer. When the RCS break occurs in Event 5: FA1: Any loss or potential loss of either fuel clad or RCS barriers.

*** END OF SCENARIO ***

QUANTITATIVE ATTRIBUTES

(Use this form for NRC/INPO Evaluations only as required to document associated quantitative information.)

Malfunctions:

Before EOP Entry:

1. "C" Feedwater Regulating Valve fails to 100% output concurrent with controlling level channel failing high
2. RCS Loop 1 Tcold instrument fails high

After EOP Entry:

1. When the reactor trip occurs Main Turbine Stop Valve 1 and Control Valve 2 do not close automatically, and turbine does not trip manually, requiring the BOP to manually actuate a Main Steamline Isolation per E-0 immediate action step 2.
2. When the Safety Injection occurs both Safety Injection Pumps and the "B" RHR Pump fail to start automatically, requiring the PSO to manually start the pumps per E-0, Attachment A.

Abnormal Events:

1. "C" Feedwater Regulating Valve fails to 100% output concurrent with controlling level channel failing high
2. RCS Loop 1 Tcold instrument fails high
3. RCS Loop 3 Cold Leg Leak (30 gpm)

Major Transient:

1. RCS Cold Leg Break

Critical Tasks:

1. Manually actuate Main Steam Isolation signal before transitioning to E-1, "Loss of Reactor or Secondary Coolant"
2. Manually start either SI-P-6A or 6B before transitioning to E-1, "Loss of Reactor or Secondary Coolant"

SIMULATOR EXERCISE GUIDE

SITE: Seabrook Station

Revision #: 0

LMS ID: n/a

LMS Rev. Date: n/a

SEG TITLE: 2018 LOIT NRC Exam #3

SEG TYPE: ☐ Training ☒ Evaluation

PROGRAM: ☐ LOCT ☒ LOIT ☐ Other:

DURATION: 90 minutes

Developed by:	<u>Sean M. Riley</u>	<u>12/18/17</u>
	Instructor/Developer	Date

Reviewed by:	<u>Bob Duarte</u>	<u>12/18/17</u>
	Instructor (Instructional Review)	Date

Validated by:	<u>Bob Duarte</u>	<u>12/18/17</u>
	SME (Technical Review)	Date

Approved by:	<u>Chris Adams</u>	<u>12/18/17</u>
	Training Supervision	Date

Approved by:	<u>Sean Doody</u>	<u>12/18/17</u>
	Training Program Owner (Line)	Date

OVERVIEW / SEQUENCE OF EVENTS

OVERVIEW:

- Prior to assuming the watch the crew will perform the necessary reactivity calculations to support a power decrease from 100% to 45% power at a rate of 25%/hr.
- Once the crew has commenced the power decrease the "A" Service Water Pump will trip. The crew will implement OS1216.01, "Degraded Ultimate Heat Sink", and initiate a Tower Actuation to Train "A" SW. SW-V-54, "Cooling Tower Pump "A" Discharge Valve will not open automatically and should be opened manually. The US should address applicable Tech. Specs.
- Once the crew has mitigated the Service Water event then Pressurizer level instrument RC-LT-459 will fail high. The crew should implement OS1201.07, "PZR Level Instrument Failure". The US should address applicable Tech. Specs.
- Once the crew has mitigated the Pressurizer level instrument failure then two control rods will drop. Per OS1210.05, "Dropped Rod" the crew should trip the reactor. The reactor will not trip from the Main Control Board, necessitating implementation of FR-S.1, "Response to Nuclear Power Generation/ATWS. The reactor will have to be tripped locally. Also, the crew will have to start the Steam Driven EFW Pump.
- When the crew transitions from FR-S.1 back to E-0, "Reactor Trip or Safety Injection" a RCS large break LOCA will occur on the Loop 2 Cold Leg. Safety Injection will automatically actuate, however CBS will not automatically actuate on Train "A" and CBS-P-9B will trip when it starts. The crew will have to manually start CBS-P-9A.
- Per E-0 diagnostic steps the crew should transition to E-1, "Loss of Reactor or Secondary Coolant". Depending on the crews timing they may have to implement FR-Z.1, "Response to High Containment Pressure" based on an ORANGE PATH.
- The crew should process through E-1 based on large break indications. The exam ends at E-1, Step 13, "check if Transfer to Cold Leg Recirculation is Required".

SEQUENCE OF EVENTS

ALL TIMES IN THIS SCENARIO ARE APPROXIMATE

Event #	Description
1.	Power decrease at 25%/hr
2.	Loss of ocean Service Water Pump Train "A"
3.	Pressurizer level instrument RC-LT-459 fails high
4.	ATWS w/local reactor trip required followed by large break cold leg loss of coolant.
5.	EFW Pump "B" trips with no start of EFW Pump "A"
6.	No automatic CBS signal Train "A" w/ Train "B" CBS pump tripped.

SIMULATOR SET UP INSTRUCTIONS

- Reset the simulator to IC-30, MOL, 100% Power, Stable Xenon
- Perform the following to tag out the Startup Feedwater Pump:
 - € SELECT: CRF List
 - € SELECT: Component-Feedwater
 - € SELECT: Breakers
 - € SELECT: bkFWP113
 - € Action: SELECT "Rack Out"
 - € SELECT: Insert

 - € SELECT: bkFWP113AF
 - € Action: SELECT "Rack Out"
 - € SELECT: Insert

 - € SELECT: bkFWP161
 - € Action: SELECT "Rack Out"
 - € SELECT: Insert

 - € Place tags on both control switches for the SUFP and for the Prelube Pump.
- Place the simulator in RUN
- Perform the following to create ATWS event:
 - € SELECT: MF List
 - € SELECT: Reactor Protection
 - € SELECT: mFRPS001, Automatic Reactor Trip Failure (Train A)
 - € Final: SELECT "1:True"
 - € SELECT: Insert

 - € SELECT: mFRPS002, Automatic Reactor Trip Failure (Train B)
 - € Final: SELECT "1:True"
 - € SELECT: Insert

 - € SELECT: mFRPS027, Reactor Trip Switches Fail to Actuate (Train A)
 - € Final: SELECT "1:True"
 - € SELECT: Insert

(Continued on next page)

- € **SELECT: mFRPS028, Reactor Trip Switches Fail to Actuate (Train B)**
- € **Final: SELECT “1:True”**
- € **SELECT: Insert**

- **Perform the following to prevent SW-P-41C from starting:**
 - € **SELECT: CMF List**
 - € **SELECT: Component-Service Water**
 - € **SELECT: Breakers**
 - € **SELECT: cSWP41C, SW-P-41C Train A Svc Wtr Pmp C**
 - € **Action: SELECT “Persistent Trip”**
 - € **SELECT: Insert**

- **Perform the following to prevent SW-V-54 from automatically opening:**
 - € **SELECT: CMF List**
 - € **SELECT: Component-Service Water**
 - € **SELECT: MOVs**
 - € **SELECT: cSWV54, Cooling Tower Pump A Discharge Isolation**
 - € **SELECT: Fail to Open**
 - € **SELECT: Insert**

- **Perform the following to prevent CBS Train “A” from automatically actuating:**
 - € **SELECT: MF List**
 - € **SELECT: Reactor Protection**
 - € **SELECT: mFRPS015, Cntmt Spray Fails to Auto Actuate (Train A)**
 - € **Final: SELECT “1:True”**
 - € **SELECT: Insert**

- **Perform the following to prevent MS-V-393 and 394 from opening on ATWS:**
 - € **SELECT: CMF List**
 - € **SELECT: Component-Main Steam**
 - € **SELECT: AOVs**
 - € **SELECT: svMS1V393**
 - € **Action: SELECT “Fail Closed”**
 - € **SELECT: Insert**

 - € **SELECT: svMS1V394**
 - € **Action: SELECT “Fail Closed”**
 - € **SELECT: Insert**

(Continued on next page)

- **Perform the following to activate Event Trigger 1:**

- € **SELECT: Event Triggers**
- € **SELECT: NRC**
- € **SELECT: Demo Exams**
- € **SELECT: 2018 NRC Exam 3 ET1**
- € **SELECT: Open**
- € **SELECT: Activate**

- **Perform the following to activate Event Trigger 2:**

- € **SELECT: Event Triggers**
- € **SELECT: NRC**
- € **SELECT: Demo Exams**
- € **SELECT: 2018 NRC Exam 3 ET2**
- € **SELECT: Open**
- € **SELECT: Activate**

- **Perform the following to activate Event Trigger 3:**

- € **SELECT: Event Triggers**
- € **SELECT: NRC**
- € **SELECT: Demo Exams**
- € **SELECT: 2018 NRC Exam 3 ET3**
- € **SELECT: Open**
- € **SELECT: Activate**

- **Perform the following to activate Event Trigger 4:**

- € **SELECT: Event Triggers**
- € **SELECT: NRC**
- € **SELECT: Demo Exams**
- € **SELECT: 2018 NRC Exam 3 ET4**
- € **SELECT: Open**
- € **SELECT: Activate**

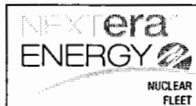
(Continued on next page)

- **Perform the following to activate Event Trigger 5:**

- € **SELECT: Event Triggers**
- € **SELECT: NRC**
- € **SELECT: Demo Exams**
- € **SELECT: 2018 NRC Exam 3 ET5**
- € **SELECT: Open**
- € **SELECT: Activate**

SHIFT TURNOVER INFORMATION

- Provide crew with ODI.56, MOL
- See turnover sheet



2018 LOIT NRC Simulator Exam #3

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SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
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<p>Event 1</p> <p>Power decrease at 25%/hr</p>		<p>Event 1: PSO (R), BOP (N), US (N)</p> <p>NOTE: The crew may use the ODI.56 boron value for a 25%/hr downpower. The crew should perform the power decrease utilizing OS1231.04, Rapid Downpower:</p> <ol style="list-style-type: none"> 1. Perform Notifications Per ODI.61, Redeclaration/Joint Owner Notification Guidelines. <ul style="list-style-type: none"> • The US should ask the SM to perform the notifications. 2. Perform Down Power Briefing per Attachment A, as time permits: <ul style="list-style-type: none"> • US should perform a rapid downpower brief utilizing OS1231.04, Rapid Downpower, Attachment A. The brief should discuss the following: <ul style="list-style-type: none"> • The plant load schedule • The Tavg/Tref control band. With control rods in automatic the crew should maintain Tavg/Tref between -1°F and +3.5°F. • The US should state that AFD should be maintained near the administrative control band. • The crew should discuss reactivity control: <ul style="list-style-type: none"> • Boration control: <ul style="list-style-type: none"> • The crew should use ODI.56 to determine the required boration quantity. • A boration flow rate should be used such that Tavg/Tref is controlled within the prescribed band and to avoid rod insertion limits. • Rod control: <ul style="list-style-type: none"> • The crew should discuss that the preferred method is to have control rods in Automatic to expedite power reduction.
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SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
		<ul style="list-style-type: none"> • Turbine Control: <ul style="list-style-type: none"> • The crew should discuss that turbine load should be reduced so as to maintain load schedule, and that load may be adjusted as needed to help maintain Tavg/Tref within control ban. 3. Align rod control system <ul style="list-style-type: none"> • The US should direct the PSO to verify in auto or place in auto. 4. Determine Boration Value <ul style="list-style-type: none"> • The PSO should determine the required boration to reduce load to 50%, per ODI.56 5. Perform Boration <ul style="list-style-type: none"> • The crew should use a normal boration. Normal boration is initiated per Attachment B: <ul style="list-style-type: none"> • PSO should place the Blender Mode Start Switch to Stop. • PSO should place the Boric Acid Blender Mode Selector Switch to Borate. • The PSO should set the desired Boric Acid quantity and flow rate. • The PSO should turn off the Step Back feature. • The PSO should turn the Blender Mode Start Switch to Start and Hold for approximately one second. • The PSO and BOP should continue to verify that the plant is responding as expected for the boration. • When the boric acid supply counter has added the desired quantity the PSO should Verify that the boration stops, turn the Blender Mode Start Switch to Stop, set the proper boric acid flow rate, place the Blender Mode Selector Switch to Auto, and then turn the Blender Mode Start Switch to Start.

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
		<p>6. Reduce Turbine Load to Desired Power Limit:</p> <ul style="list-style-type: none"> • BOP should direct an NSO to place the Heater Drain control to Flow Control Mode. • BOP should place the turbine load limit tracking to ON • The BOP should reduce turbine load by selecting the desired Load Ramp Rate and Load Setpoint. <p>7. Initiate PZR Forced Sprays</p> <ul style="list-style-type: none"> • The PSO should force pressurizer sprays by energizing pressurizer backup heaters. <p>8. Monitor Rod Position</p> <ul style="list-style-type: none"> • The PSO should continuously monitor that the rod insertion limit LO LO alarms are reset <ul style="list-style-type: none"> • RNO. If the RIL LO Lo alarms actuate then the crew should perform a rapid boration per Attachment D until the Lo Lo alarms are reset. <p>9. Check Stem Dump Operation</p> <ul style="list-style-type: none"> • The BOP should check steam dumps CLOSED <p>10. Perform Equipment Shutdown Actions</p> <ul style="list-style-type: none"> • NOTE: This is an ongoing action that will not be completed during the timeframe of the exam. <p>11. Check plant at desired level</p> <ul style="list-style-type: none"> • When the plant reaches desired level the crew should stop the boration.
	<p>Once the crew has commenced the power increase, at the Lead Examiners direction, proceed to the next event.</p>	

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
Event 2 Loss of ocean Service Water Pump Train "A"	Perform the following: <ul style="list-style-type: none"> € SELECT: MF List € SELECT: Service Water € SELECT: mfSW001, A SW Pmp Overcurrent Trip € Final: SELECT "1:True" € SELECT: Insert 	Event 2: BOP (C), US (I,C,TS) Initial Alarms: <ul style="list-style-type: none"> D5523, SW PMP A BKR Trip L/O UA-54-A-1, SW Train A Press Lo <p>NOTE: The crew may initially utilize the D5523 Alarm Response Procedure. The steps for that procedure are:</p> <ul style="list-style-type: none"> 1.1 Verify SW Pump A tripped by amber light indication on MCB. 1.2 If available verify started/start SW pump C. (Pump will not start) <ul style="list-style-type: none"> 1.2.1 Red Flag Control Switch SW Pump C 1.3 If SW Pump C not available, initiate Train "A" TA from MCB. <p>The US should implement OS1216.01, "Degraded Ultimate Heat Sink".</p> <p>Step 1: Determine Appropriate Response</p> <ul style="list-style-type: none"> • If affected SW train is aligned to the ocean then go to Step 2 <p>YES-BOP should verify that SW is aligned to the ocean</p> <p>Step 2: Check For Ocean Service Water Pump Failure</p> <ul style="list-style-type: none"> a. Ocean service water pumps-One Pump Running Per Train With Associated Discharge Valve Open <p>NO-BOP should verify no ocean SW pumps are running</p> <p>RNO</p> <ul style="list-style-type: none"> 1) Reset RMO if necessary Not necessary 2) Manually start ocean service water pump. If pump cannot be started then:

<p>Event 2 (Cont.)</p>		<p>a. Actuate TA for the affected train(S) The BOP should actuate Train "A" TA</p> <p>b. Go to Step 4</p> <p>Step 4: Verify Tower Actuation Sequence</p> <p>a. Verify proper TA alignment by status panel indication NO-The BOP should identify improper status light indication for SW-V-54 on UL-16 RNO:</p> <p>a. Align equipment for affected train per status panel. BOP should manually open SW-V-54</p> <p>b. Check cooling tower boundary intact and cooling tower basin level stable or rising. YES-BOP should verify that SW-V-4, SW-V-20, and SW-V-74 are all closed and that cooling tower basin level is stable.</p> <p>Step 5: Determine Step Transition</p> <ul style="list-style-type: none"> If one Cooling Tower Pump is in service then go top Step 7. US should transition to Step 7 <p>Step 7: Align Equipment With One Cooling Tower Pump In Service BOP should perform the following</p> <ol style="list-style-type: none"> Place Ocean SW Pump control switches in Pull to Lock Place the Train "A" Cooling Tower Pump control switch in Normal After Start Reset Train "A" TA Operate sprays and fans per Attachment A as necessary Initiate normal cooling tower makeup as necessary <p>US should perform the following</p> <ol style="list-style-type: none"> Notify Chemistry and Security that the cooling tower is in operation Go to Step 9
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SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
Event 2 (Cont.)	<p>If the crew calls the WCS/WWM for the "A" SW pump trip, then respond "Understand that SW Pump "A" has tripped. A troubleshooting team is being formed."</p> <p>If the crew dispatches an NSO to walk down Bus 5, after 5 minutes state "The overcurrent relays have actuated for the breakers for Service Water Pump "A" and "C".</p> <p>If the crew instructs an NSO to check SCCW heat exchanger outlet temperature, then after 3 minutes respond "SCCW heat exchanger outlet temperature is 81°F and stable"</p>	<p>Step 9: Determine SW System Status</p> <ol style="list-style-type: none"> a. Check SW system heat loads <ol style="list-style-type: none"> 1) Check PCCW Train A and Train B heat exchanger outlet temperature <ul style="list-style-type: none"> • Train A 65-75°F • Train B 65-78°F YES-PSO should verify that SW temperatures are within band 2) Check SCCW heat exchanger outlet temperature 77-95°F BOP should dispatch an NSO to check temperatures locally 3) Check service water flow to running diesel-Greater Than Required BOP should determine that no diesel is running b. Verify Technical Specification compliance <ul style="list-style-type: none"> • T.S. 3.7.4, Service Water System. action d. US should verify SW Tech Spec actions Two Service Water Loops inop c. Return to procedure and step in effect.
	<p>Once the crew has completed OS1216.01, or at the Lead Examiners direction, proceed to Event 3</p>	

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
Event 3 Pressurizer level instrument RC-LT-459 fails high	Perform the following: <ul style="list-style-type: none"> € SELECT: CMF List € SELECT: Component-Reactor Coolant € SELECT: Levels € SELECT: trRCLT459 € Action: SELECT "Fail to High Limit" € SELECT: Insert 	Event 3: PSO (I), US (I,TS) Associated Alarms: D4436, PZR Level Deviation High and BU Htrs On F7861, PZR Level High Channel Trip D4676, RCP A Seal Injection Flow Low D4677, RCP B Seal Injection Flow Low D4678, RCP C Seal Injection Flow Low D4679, RCP D Seal Injection Flow Low UA-52, C-6, PZR Level Deviation Hi NOTE: When the initial alarms come in the US will ask the PSO if a controlling channel has failed. The BOP should identify that LT-459 has failed and is the controlling channel. The US should then direct the PSO to take manual control of charging and raise flow. This action is done as a <u>Skill of the Operator Task</u> . The US should implement OS1201.07, "PZR Level Instrument Failure Step 1 Check Pressurizer Level Channels <ul style="list-style-type: none"> • Controlling Channel-FAILED YES-PSO should determine that RC-LT-459 has failed high and that it is the controlling channel.

Event 3 (Cont.)

Step 2: Realign Pressurizer Level Instruments

- a. Manually control pressurizer level-AT PROGRAM
PSO should take manual control of charging and raise flow back to normal
- b. Select an alternate level channel for control/backup as necessary
PSO should select the 461/460 combination
- c. Select an alternate level channel for recorder as necessary
PSO should select either channel 460 or 461

Step 3: Verify Pressurizer Heaters-ON

- a. Reset or manually control pzs heaters as necessary
PSO should determine that there is no need

Step 4: Check If Letdown Was Isolated

- a. Letdown valves closed
RC-LCV-459
-or-
RC-LCV-460
NO-PSO should verify that letdown is still in service
RNO-Go to Step 7

Note: Step 7 may be an open/ongoing step as the board operator will have to return pressurizer level back to programmed value in order to return level control to automatic.



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SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE

<p>Event 3 (Cont.)</p>		<p>Step 7: Align Pressurizer Level Control</p> <p>a. Verify proper controller setpoint and place controller in auto</p> <ul style="list-style-type: none"> • RC-PK-459 • CS-FK-121 <p>RNO-Manually control pressurizer level using letdown and charging to maintain program level. When desired, verify proper controller setpoint and place controller in automatic.</p> <p>Step 8: Verify Redundant Channel Bistables-Not Tripped</p> <p>a. UL-6</p> <ul style="list-style-type: none"> • Pressurizer Level Hi YES-PSO should verify that there are no redundant channel bistables lit. <p>Step 9: Verify Technical Specification Compliance</p> <p>a. US should identify the following applicable items:</p> <ul style="list-style-type: none"> • T.S. 3.3.1, Reactor Trip System Instrumentation, Table 3.3-1, Item 11-Action 6 • T.S. 3.3.3.5, RSS, Table 3.3-9, item 5 • T.S. 3.3.3.6, Accident Monitoring Instrumentation, Table 3.3.10, Item 5 <p>NOTE: The US should call I&C, however the following step will not take place.</p> <p>b. Coordinate with I&C to perform the following</p> <ol style="list-style-type: none"> 1) If desired for testing or troubleshooting, place bistable to bypass using BTI for up to 6 hours. 2) Within 6 hours trip appropriate bistables per Attachment A

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
	Once the crew has completed OS1201.07, or at the Lead Examiners direction, proceed to Event 4.	
<p>Event 4 ATWS w/local reactor trip required followed by large break cold leg loss of coolant.</p>	<p>Perform the following:</p> <ul style="list-style-type: none"> € SELECT: MF List € SELECT: Rod Control and Position € SELECT: mfCP011, RCCA F8 and H2 Rod Drop € Final: SELECT "1:True" € SELECT: Insert 	<p>Event 4: PSO (M), BOP (M), US (N)</p> <p>Associated Alarms:</p> <ul style="list-style-type: none"> D7749, Two or More Rods on Bottom D7730, One Rod on Bottom D7753, Control Rod Deviation D4327, PZR Pressure Low and BU Htrs On <p>The US should implement OS1210.05, "Dropped Rod"</p> <p>Step 1: Stabilize Plant Conditions</p> <ul style="list-style-type: none"> a. Check only one rod dropped <ul style="list-style-type: none"> NO-The PSO should identify that two rods have dropped. RNO-If more than one rod dropped, then perform the following: <ul style="list-style-type: none"> 1) Trip the reactor NO-The PSO should attempt to trip the reactor using both MCB reactor trip switches and identify that the reactor did not trip.

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
Event 4 (Cont.)		<p>The US should implement E-0, "Reactor Strip or Safety Injection"</p> <p>Step 1: Verify Reactor Trip</p> <ul style="list-style-type: none"> • Rod bottom lights lit NO • Reactor trip and bypass breakers open NO • Neutron flux decreasing NO <p>RNO-Manually trip reactor, if reactor will not trip the go to FR-S.1, "Response to Nuclear Power Generation/ATWS"</p>

<p>Event 4 (Cont.)</p>	<p>NOTE: Trip the reactor locally after FR-S.1, step 4 and prior to Step 7, unless the crew never dispatches NSOs for local trip. This is so that the examiners can observe initiation of rapid boration prior to local reactor trip.</p> <p>To trip the reactor locally perform the following:</p> <ul style="list-style-type: none"> € SELECT: Malfunctions (Top of screen) € SELECT: mfRPS027, Reactor Trip Switches Fail to Activate (Train A) € SELECT: Delete € SELECT: : mfRPS028, Reactor Trip Switches Fail to Activate (Train B) € SELECT: Delete 	<p>The US should implement FR-S.1, "Response to Nuclear Power Generation/ATWS"</p> <p>Critical Task 1: Commence inserting control rods (in auto or manually) and initiate emergency boration prior to operators locally tripping the reactor.</p> <p>Step 1: Verify Reactor Trip NO</p> <p>RNO-Manually trip reactor, If reactor will not trip then:</p> <ul style="list-style-type: none"> • Verify control rods are being inserted in auto -or- • Manually insert control rods PSO should be monitoring that rods are inserting in auto and then manually insert if rods stop inserting. <p>Step 2: Verify Turbine Trip NO</p> <p>RNO:</p> <ul style="list-style-type: none"> a. Manually trip turbine. If turbine will not trip then close MSIVs BOP should manually trip the turbine b. When generator output is zero MWe, then manually open generator breaker BOP should open generator breaker <p>Step 3: Check EFW Pumps Running</p> <ul style="list-style-type: none"> a. Motor driven pump running NO-BOP should identify that the motor driven pump has tripped
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SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE

<p>Event 4 (Cont.)</p> <p>Event 5 EFW Pump "B" trips with no start of EFW Pump "A"</p>		<p>Critical Task 2: Start Steam Driven EFW Pump prior to exiting FR-S.1, "Response to Nuclear Power Generation/ATWS"</p> <p>Event 5: BOP (C), US (C)</p> <ul style="list-style-type: none"> b. Motor driven pump running <ul style="list-style-type: none"> • MS-V-393-Open • MS-V-394-Open • MS-V-395-Open • MS-V-129, Trip Valve-Open <p>NO-BOP should identify that MS-V-393,394, and 395 are all closed. RNO-Open valves to establish at least one steam supply BOP should open MS-V-393 and/or MS-V-394 and verify that MS-V-395 opens after a 28 second time delay.</p> <p>Step 4: Initiate Emergency Boration of RCS</p> <ul style="list-style-type: none"> a. At least one CCP running YES b. Align boration path PSO should start a boric acid pump, open CS-V-426 c. Align charging flow path PSO should Place CS-FK-121 in manual and charge at max rate, and align CCP suction to the RWST d. Check PZR pressure-Less than 2385 PSIG PSO should verify that pressure is less than 2385 PSIG
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SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
Event 4 (Cont.)	<p>NOTE: When the crew transitions to E-0, Reactor Trip or Safety Injection initiate</p> <p>Event 6:</p> <p>Perform the following:</p> <ul style="list-style-type: none"> € SELECT: MF List € SELECT: Reactor Coolant € SELECT: mfRC024B, RCS Cold Leg 2 LOCA € Final: SELECT "1:True" € SELECT: Insert 	<p>Step 5: Verify Containment Ventilation Isolation YES-PSO should verify that bCOP and CAP valves 1-4 are all closed</p> <p>NOTE: The crew should have dispatched an NSO to locally trip the reactor, if they did so then the reactor will have been tripped at this point</p> <p>Step 6: Check If The Following Trips Have Occurred</p> <ul style="list-style-type: none"> a. Reactor trip YES-PSO should verify that the reactor has tripped b. Turbine trip YES-BOP should verify that the turbine has tripped <p>Step 7: Check If Reactor Is Subcritical</p> <ul style="list-style-type: none"> a. Check power range channels-Less than 5% YES-BOP should verify b. Check intermediate range flux rate-Zero or negative YES-BOP should verify c. Check gammametrics intermediate range flux level-less than 5% YES-BOP should verify d. Check gammametrics intermediate range flux rate-Zero or negative YES-BOP should verify e. Continue boration to obtain adequate shutdown margin during subsequent actions f. Return to procedure and step in effect US should transition back to E-0

<p>Event 4 (Cont.)</p>		<p>The US should implement E-0, "Reactor Trip or Safety Injection</p> <p>Step 1: Verify reactor trip Yes-The PSO should verify that the reactor is tripped</p> <p>Step 2: Verify Turbine Trip</p> <p>a. Either condition:</p> <ul style="list-style-type: none"> • All stop valves-CLOSED, or • All control valves-CLOSED <p>YES-The BOP should identify that all Stop Valves and Control Valves are closed.</p> <p>Step 3: Verify Power to AC Emergency Busses:</p> <p>a. AC emergency busses-AT LEAST ONE ENERGIZED YES- The BOP should identify that both busses E5 and E6 are energized.</p> <p>b. AC emergency busses-BOTH ENERGIZED YES- The BOP should identify that both busses E5 and E6 are energized.</p> <p>Step 4: Check if SI is Actuated:</p> <p>a. Check SI annunciators let:</p> <ul style="list-style-type: none"> • TRAIN A, or • TRAIN B <p>YES-PSO should identify both train SI annunc.lit.</p> <p>b. Verify both trains of SI-ACTUATED YES-PSO should identify both train SI annunc.lit.</p>

<p>Event 4 (Cont.)</p> <p>Event 6 No automatic CBS signal Train "A" w/ Train "B" CBS pump tripped</p>		<p>Critical Task 3: Start CBS-P-9A prior to transitioning to E-1, Loss of Reactor or Secondary Coolant"</p> <p>Event 6: PSO (C), US (C)</p> <p>Step 5: Perform ESF Actuation Verification per ATTACHMENT A:</p> <p>NOTE: The PSO will perform Attachment A. The Train "A" CBS signal failed to automatically actuate. Also the Train "B" CBS pump will trip on overcurrent when it starts. The PSO should manually actuate Train "A" CBS and verify that at least one CBS pump is running per Attachment A, Step 10, as described below:</p> <p style="padding-left: 40px;">Attachment A Step 10: Check Containment Pressure-Has Remained Less Than 18 PSIG By Pressure Recording</p> <p style="padding-left: 40px;">NO-The PSO should identify that containment pressure went above 18 PSIG and that a CBS signal is warranted.</p> <p style="padding-left: 40px;">RNO: Verify containment Phase B ("P" Signal) and containment spray actuated:</p> <ol style="list-style-type: none"> a. All Phase B status lights-LIT <ul style="list-style-type: none"> Train A Train B <p style="margin-left: 40px;">NO-The PSO should identify that not all status lights are lit</p> b. If not, then actuate both CBS/P/CVI manual actuation switches for each train. The PSO should manually actuate the CBS/P/CVI switches. <p>c. Reset RMO as necessary</p>
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SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
Event 4 (Cont.)		<p>Not necessary</p> <p>d. Manually align valves and equipment as necessary by status panel. All equipment should be aligned with the exception of the "B" CBS pump because it tripped.</p> <p>e. Stop all RCPs If not already done so, the PSO should stop all RCPs.</p> <p>Note: The following material is a continuation of the main body of E-0, starting at Step 6.</p> <p>Step 6: Monitor RCS Temperature-Stable or Trending to 557°F</p> <ul style="list-style-type: none"> Tavg recorder, or Wide range cold leg temperature recorders <p>NOTE: Due to the large break LOCA temperature will be less than 557°F and trending down due to ECCS injection. In this case the BOP should perform the following RNO actions:</p> <ul style="list-style-type: none"> RNO: <ul style="list-style-type: none"> a. Stop dumping steam to condenser and atmosphere b. Check MS to MSRs isolated. c. If cooldown continues then open EFW mini-flow valves and throttle total feed flow to maintain greater than 500 GPM d. When SG level is adequate then throttle EFW flow to maintain SG level between 15% and 50%

<p>Event 4 (Cont.)</p>		<p>e. If cooldown continues then:</p> <ul style="list-style-type: none"> • Close MSIVs • Close MSIV bypass valves • Close upstream drains <p>Step 7: Check RCS Isolated:</p> <ol style="list-style-type: none"> Check letdown valves- CLOSED YES-PSO should verify that CS-V-145, RC-LCV-459, and RC-LCV-460 are all closed. PORVs-CLOSED YES-PSO should verify that the PORVs are closed. Normal PZR spray valves-CLOSED YES- PSO should verify that the spray valves are closed. <p>Step 8: Check if RCP's Should Be Stopped RCP's should be stopped per Attachment A or at this step, whichever is arrived at first.</p> <p>Step 9: Check if SG Pressure Boundary is faulted:</p> <ol style="list-style-type: none"> Check pressures in all SGs <ul style="list-style-type: none"> • Any SG pressure decreasing in an uncontrolled manner, or • Any SG completely depressurized NO-BOP should identify that there are no faulted SGs <p>Step 10: Check if SG U-Tubes Are Intact:</p> <ul style="list-style-type: none"> • Main Steamline radiation normal on each line • Condenser air evacuation radiation normal • Steam generator blowdown radiation normal • SG narrow range level-No uncontrolled level increase YES-BOP should identify that SG U-Tubes are intact

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
Event 4 (Cont.)		<p>NOTE: Per E-0, Step 11 the crew should transition to E-1, "Loss of Reactor or Secondary Coolant". Depending on the crews timing they may need to implement FR-Z.1, "Response to High Containment Pressure" based on an ORANGE PATH.</p> <p>Step 11: Check if RCS is Intact:</p> <ul style="list-style-type: none"> • Containment radiation-Normal • Containment pressure-Normal • Containment building level-Normal <p>NO-The PSO should identify that the RCS is NOT intact.</p> <ul style="list-style-type: none"> • RNO- Go to E-1, "Loss of Reactor or Secondary Coolant", Step 1. • <p>The US should implement E-1, "Loss of Reactor or Secondary Coolant"</p> <p>NOTE: RCPs should have already been stopped.</p> <p>Step 1: Check if RCPs Should Be Stopped</p> <ol style="list-style-type: none"> a. ECCS pumps-At least one running <ul style="list-style-type: none"> • CCP -or- • SI Pump <p>YES-CCPs and SI pumps should be running.</p> b. RCS subcooling-Less than 40°F <p>YES</p>

Event 4 (Cont.)

Step 2: Check if SG Pressure Boundary is Faulted

- a. Check pressures in all SGs
 - Any SG decreasing in an uncontrolled manner
 - or-
 - Any SG completely depressurized
 NO-BOP should identify that SG pressures are all stable for plant conditions.
 - RNO-Go to Step 3

Step 3: Check Intact SG Levels

NOTE: This step is a continuous action.

- a. Check SG level-Greater Than:
 - Normal Containment
 - 65% wide range in at least two SGs
 - or-
 - 6% narrow range in at least one SG
 YES-BOP should identify that SG level is greater than requirement
- b. Open EFW pump mini-flow valves and control feed flow to maintain narrow range level between 6% and 50% (15% to 50% for adverse containment)

Step 4: Check Secondary Radiation

- Main steamline radiation-Normal on each line.
 - Condenser air evacuation radiation-Normal
 - Steam Generator Blowdown-Normal
 - SG narrow range level-No uncontrolled level increase
- YES-The BOP should identify that all indication of secondary radiation are normal.

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE

<p>Event 4 (Cont.)</p>		<p>Step 5: Check PZR PORV and Block Valves</p> <ul style="list-style-type: none"> a. Power to block valves available YES b. PORVs closed YES c. Block valves-At least one open YES <p>Step 6: Check if ECCS Flow Should Be Reduced</p> <ul style="list-style-type: none"> a. RCS subcooling-Greater than 40°F NO <ul style="list-style-type: none"> • RNO-Go to Step 7 <p>NOTE: Step 7 is a continuous action step.</p> <p>Step 7: Check if Containment Spray Should be Stopped:</p> <ul style="list-style-type: none"> a. Spray pumps-Running YES b. Containment pressure-Less than 4.0 PSIG RNO- Go to step 8 <p>Step 8: Check if RHR Pumps Should be Stopped:</p> <ul style="list-style-type: none"> a. Check if RHR Pumps Should be Stopped: <ul style="list-style-type: none"> 1) Pressure-Greater than 300 PSIG NO RNO- Go to step 10 <p>Step 10: Check if Diesel Generators Should be Stopped:</p> <ul style="list-style-type: none"> a. Reset SI b. Verify all AC busses-Energized by Offsite Power From UATs or RATs YES c. Stop unloaded emergency diesel generators and reset for auto start BOP should stop diesels and reset.
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SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
Event 4 (Cont.)		<p>Step 11: Initiate Evaluation of Plant Status:</p> <ul style="list-style-type: none"> a. Verify cold leg recirculation capability YES-PSO should verify that availability requirements of both trains are met b. Verify PCCW flow to RHR heat exchangers required: <ul style="list-style-type: none"> 1) RHR pumps-Running YES 2) Verify PCCW flow to RHR heat exchangers YES c. Verify PCCW flow to CBS heat exchangers required: <ul style="list-style-type: none"> 1) CBS pumps-Running YES 2) Verify PCCW flow to RHR heat exchangers YES d. Check for Containment Leakage-Auxiliary Building Radiation Levels Normal Using RDMS YES e. Consult with TSC and obtain post accident samples while continuing with this procedure. f. Evaluate ESF equipment operation per Attachment A <p>Step 12: Check if RCS Cooldown and Depressurization is Required</p> <ul style="list-style-type: none"> a. RCS pressure-Greater than 300 PSIG NO RNO-If RHR pump flow is indicated, then go to Step 13 PSO should verify that RHR pump flow is indicated. <p>Step 13: Check if Transfer to Cold Leg Recirculation is Required</p>

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
	<p>End the exam when the crew has reached Step 13, or at the Lead Examiner's discretion.</p>	<p>Emergency Plan Classification:</p> <p>MA5: Automatic or manual trip fails to shutdown the reactor, and subsequent manual actions taken at the Main Control Board are not successful in shutting down the reactor.</p> <p>-or-</p> <p>FA1: Any loss or potential loss of EITHER Fuel Clad or RCS Barriers.</p>

*** END OF SCENARIO ***

QUANTITATIVE ATTRIBUTES

(Use this form for NRC/INPO Evaluations only as required to document associated quantitative information.)

Malfunctions:*Before EOP Entry:*

1. Loss of ocean Service Water pumps Train "A"
2. Pressurizer level instrument RC-LT-459 fails high _____

After EOP Entry:

1. EFW Pump "B" trips with no start of EFW Pump "A"
2. No automatic CBS signal Train "A" w/ Train "B" CBS pump tripped.

Abnormal Events:

1. Loss of ocean Service Water pumps Train "A"
2. Pressurizer level instrument RC-LT-459 fails high
3. EFW Pump "B" trips with no start of EFW Pump "A"
4. No automatic CBS signal Train "A" w/ Train "B" CBS pump tripped.

Major Transient:

ATWS w/local reactor trip required followed by large break cold leg loss of coolant.

Critical Tasks:

1. Commence inserting control rods (in auto or manually) and initiate emergency boration prior to operators locally tripping the reactor.
2. Start Steam Driven EFW Pump prior to exiting FR-S.1, "Response to Nuclear Power Generation/ATWS"
3. Start CBS-P-9A prior to transitioning to E-1, Loss of Reactor or Secondary Coolant"