ES-301	Administrative Topics Outline	Form ES-301-1

Facility: South Texas Project **Date of Examination:** 7-12-2021

Examination Level: RO ■ SRO □ **Operating Test Number:** LOT 25 NRC Exam

Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations A1 KA Importance: 4.4	M,MR	Determine if natural circulation cooling exists following Station Blackout G2.1.7 Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation.
Conduct of Operations A2 KA Importance: 4.6	D,R	Performs the Independent Verification of the QPTR calculation. G2.1.20 Ability to interpret and execute procedural steps.
Equipment Control A3 KA Importance: 4.1	M,NR	Prepare ECO for AFW. G2.2.13 Knowledge of tagging and clearance procedures.
Radiation Control A4 KA Importance: 3.2	D,P,R	Calculate Maximum Stay Time (Room M108C) G2.3.4 Knowledge of radiation exposure limits under normal and emergency conditions.

NOTE: RO applicants require only 4 items unless they are retaking only the administrative topics (which would require all five items, Emergency Procedures/Plan).

*Type Codes & Criteria: (C)ontrol room, (S)imulator, or Class(R)oom
(D)irect from bank (≤ 3 for ROs; ≤ 4 for SROs & RO retakes)
(N)ew or (M)odified from bank (≥ 1)
(P)revious 2 exams (≤ 1; randomly selected)

ES-301 Administrative Topics Outline Form ES-301-1

Facility: South Texas Project **Date of Examination: 7-12-2021**

Examination Level: RO □ SRO ■ **Operating Test Number: LOT 25 NRC Exam**

Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations A5 KA Importance: 4.6	D,R	Calculate SDM with a Misaligned Control Rod and Determine Applicable Technical Specifications. G2.1.37 Knowledge of procedures, guidelines or limitations associated with Reactivity Management.
Conduct of Operations A6 KA Importance: 4.4	D,P,R	Review a Power Range NI Channel Calibration to evaluate Technical Specifications G2.1.23 Ability to perform specific system and integrated plant procedures during all modes of operation.
Equipment Control A7 KA Importance: 4.7	N,R	Review an AFW Surveillance and Determine Operability G2.2.40 Ability to apply Technical Specifications for a system
Radiation Control A8 KA Importance: 3.7	N,R	Select individual to exceed dose limit for accident mitigation. G2.3.4 Knowledge of radiation exposure limits under normal or emergency conditions.
Emergency Procedures/Plan A9 KA Importance: 4.6	M,R	Determine EAL G2.4.41 Knowledge of the emergency action level thresholds and classifications.

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

*Type Codes & Criteria: (C)ontrol room, (S)imulator, or Class(R)oom
(D)irect from bank (≤ 3 for ROs; ≤ 4 for SROs & RO retakes)
(N)ew or (M)odified from bank (≥ 1)
(P)revious 2 exams (≤ 1; randomly selected)

STP LOT-25
NRC Admin JPM Description

RO

(A1) Determine if Natural Circulation Cooling Exists
Demonstrate the ability to determine if natural circulation exists using 0POP05-EO-EC01, Loss of All AC Power Recovery Without SI Required. [LOT 13 Audit A2, Originally Static Simulator JPM] [NOTE: Bank JPM is documented to be performed in a static simulator, in order to verify plant parameters for natural circulation. This should be modifiable for a classroom setting, by providing pictures of the various parameter trends: SG pressures, Hot Leg Temps, CETs, cold leg temps.]

(A2) Verify an Excore QPTR Calculation
Demonstrate the ability to perform and/or verify a QPTR. 0PSP10-NI-0002, Excore QPTR Determination. [LOT 22 NRC 2018 JPM A1]

(A3) Prepare ECO for the AFW
Demonstrate knowledge of tagging and clearance procedure for the AFW system.. [New JPM]

(A4) Calculate Maximum Stay Time (Room 108C)
Demonstrate knowledge of radiation exposure limits under normal and emergency conditions. [LOT 23 2019 NRC JPM A4]

SRO

(A5) Calculate SDM with a Misaligned Control Rod and Determine Applicable Technical Specifications

Demonstrate the ability perform a SDM and apply appropriate TSs if required. 0PSP10-ZG-0005, Shutdown Margin Verification – Modes 1 and 2. [LOT 22 NRC 2018 JPM A5]

]

(A6) Review a Power Range NI Channel Calibration to evaluate Technical Specifications

NOTE: Name changed from 'Review Calorimetric Heat Balance to Evaluate Acceptance Criteria'

Demonstrate the ability to perform a Calorimetric Verification and evaluate TSs. 0PEP02-CU-0001, Calorimetric Verification, and 0PSP03-NI-0001, Power Range NI Channel Calibration. [LOT 23 2019 NRC JPM A6]

(A7) Review an AFW Surveillance and Determine Operability

Demonstrate the ability to apply Technical Specifications for a system. Use technical specifications to determine operability for the applicable train based on reviewing a surveillance. [NEW JPM]

(A8) Select Individual to Exceed Exposure Limits for Accident Mitigation in an Emergency

During a declared ALERT, choose from 2 volunteers the one individual to exceed occupational dose limits, IAW site specific procedures. [NEW JPM. See Callaway 2020 JPM A8 for reference]

(A9) Determine Emergency Action Level

Demonstrate the ability to correctly determine an Emergency Action Level for a given condition requiring entry into the STPNOC Emergency Action Plan.

STPNOC

Job Performance Measure

DETERMINE IF NATURAL CIRCULATION EXISTS FOLLOWING STATION BLACKOUT

JPM Number: NRC A1

Revision Number: 0

Date: 07/12/2021

Developed By: _____ _____
Instructor (Print/Sign) Date

Approved By: _____ _____
Training Supervisor (Print/Sign) Date

Approved By: _____ _____
Line Management (Print/Sign) Date

NOTE: N/A signature blocks if this JPM is being used on an NRC LOT Exam.

Revision Record (Summary)

Revision 0; Updated from the Final Submittal on the LOT 13 NRC exam.

SIMULATOR SETUP INSTRUCTIONS

1. This is an Admin JPM.

INITIAL CONDITIONS

A reactor trip has occurred with a loss of all AC power. The crew has responded to the reactor trip and loss of all AC power AND has regained power from an emergency diesel generator. All actions have been completed up to Step 17 of 0POP05-EO-EC01, Loss of All AC Power Recovery Without SI Required. Containment pressure is 0.3 psig.

INITIATING CUE

The Unit Supervisor directs you to

- Determine if natural circulation exists according to the criteria listed in the loss of all AC power recovery actions, Step 17.
- Document all reasons of how your determination was made.

Fill in the JPM Start Time when the student acknowledges the Initiating Cue.

Information For Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes critical steps.

If Time Critical, estimated time is the Time Critical time.

Number any comments in the "Comment Number" column on the following pages. Then annotate that comment in the "Comments" section. The comment section should be used to document: the reason that a step is marked as unsatisfactory, marginal performance relating to management expectations, or problems the examinee had while performing the JPM. Comments relating to procedural or equipment issues should be entered and tracked using the site's appropriate tracking system.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The timeclock starts when the candidate acknowledges the initiating cue.

Task Standard:

Operator determines that Natural Circulation DOES NOT exist by describing as a MINIMUM that SG pressures, RCS hot leg temperatures and Core exit T/Cs are NOT STABLE or LOWERING. JPM Step 2, 3, 4 completed.

JPM Start Time: _____

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
NOTE Provide Initial Cue Sheet, Student HO1 of 0POP05-EO-EC01, Loss of all AC Power Recovery Without SI Required, Step 17 & Addendum 8, Saturation Curve. Handout also includes QDPS Data for determining Natural Circulation. When the student has reviewed the Initial Cue and they have indicated they are ready to begin the JPM, then record the start time for the JPM. A KEY is provided for the evaluator.					
1	Verify Natural Circulation: • RCS Subcooling based on core exit T/C – Greater Than 35ºF [45ºF] (Step 17a)	Operator determines that Subcooling has lowered from 68ºF to 62ºF, but is still greater than 35ºF, so this is SATISFACTORY.	___	___	___
*2	Verify the following parameters: • SG pressures – STABLE OR LOWERING (Step 17b, 1st bullet)	Operator determines that SG pressure has risen from 1208 psig to 1263 psig and is UNSATISFACTORY.	___	___	___
*3	Verify the following parameters: • RCS hot leg temperatures – STABLE OR LOWERING (Step 17b, 2nd bullet)	Operator determines that RCS hot leg temperatures have risen from 586ºF to 591ºF and is UNSATISFACTORY.	___	___	___
*4	Verify the following parameters: • Core exit T/Cs – STABLE OR LOWERING (Step 17b, 3rd bullet)	Operator determines that CET temperatures have risen from 597ºF to 602ºF and is UNSATISFACTORY.	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
5	Verify the following parameters: RCS cold leg temperatures – AT SATURATION TEMPERATURE FOR SG PRESSURE, REFER TO ADDENDUM 8, SATURATION CURVE (Step 17b, 4th bullet)	Operator determines that plotted point is directly on (or very near) the saturation line of Addendum 8. **NOTE:** **Operator may state that it is not possible to determine SATISFACTORY OR UNSATISFACTORY from the position of the plotted point.**	___	___	___
CUE	This JPM is completed				

JPM Stop Time: _____

JPM SUMMARY

Operator's Name: _____ **Job Title**: ☐ RO ☐SRO

JPM Title: DETERMINE IF NATURAL CIRCULATION EXISTS FOLLOWING STATION BLACKOUT

JPM Number: NRC A1 Revision Number: 0

Task Number and Title: 82288, Perform a Loss of all AC power recovery without SI required.

K/A Number and Importance: G2.1.7 4.4/4.7

Suggested Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☒ Other

Alternate Path: ☐ Yes ☒ No

Task Designed For: ☐ SRO Only ☒ RO/SRO ☐ AO/RO/SRO

Time Critical: ☐ Yes ☒ No

Level of Difficulty: **3**

Reference(s): 0POP05-EO-EC01, Loss of All AC Power Recovery Without SI Required, Rev. 19

Actual Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☐ Other

Testing Method: ☐ Simulate ☐ Perform

Estimated Time to Complete: 10 minutes **Actual Time Used:** _____ minutes

Critical Steps (*) 2, 3, 4

Evaluation Summary:
Were all the Critical Steps performed satisfactorily? ☐ Yes ☐ No

The operator's performance was evaluated against standards contained within this JPM and has been determined to be: ☐ Satisfactory ☐ Unsatisfactory

Comments: _____

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Evaluator's Name: _____
(Print)

Evaluator's Signature: _____ **Date**: _____

Student Handout

INITIAL CONDITIONS

A reactor trip has occurred with a loss of all AC power. The crew has responded to the reactor trip and loss of all AC power AND has regained power from an emergency diesel generator. All actions have been completed up to Step 17 of 0POP05-EO-EC01, Loss of All AC Power Recovery Without SI Required. Containment pressure is 0.3 psig.

INITIATING CUE

The Unit Supervisor directs you to

- Determine if natural circulation exists according to the criteria listed in the loss of all AC power recovery actions, Step 17.
- Document all reasons of how your determination was made.

Answer:

STPNOC

Job Performance Measure

VERIFY AN EXCORE QPTR CALCULATION

JPM Number: NRC A2

Revision Number: 0

Date: 07/12/2021

Developed By: _____ _____
Instructor (Print/Sign) Date

Approved By: _____ _____
Training Supervisor (Print/Sign) Date

Approved By: _____ _____
Line Management (Print/Sign) Date

NOTE: N/A Signature blocks if this JPM is being used on an NRC LOT Exam.

Revision Record (Summary)

Revision 0, Drafted JPM for use on LOT 22 NRC Exam.

SIMULATOR SETUP INSTRUCTIONS

This is an Admin JPM – No simulator setup instructions required.

INITIAL CONDITIONS

Unit 2 has been at approximately 100% steady state power for several months. One (1) hour ago, Control Rod M12 (Control Bank 'D') dropped fully into the core. The crew has stabilized the plant and preparations are being made to lower Reactor power.

Control Room Annunciator 05M3 Window B-3, PR LOWER DET FLUX DEV HI/AUTO DEF, has alarmed. The Shift Manager has had a QPTR calculation done using the manual method (i.e. without use of the Plant Computer or RO Calculator).

INITIATING CUE

The Unit Supervisor instructs you to perform the Independent Verification of the QPTR calculation required by Step 5.2.9 of 0PSP10-NI-0002, Excore QPTR Determination.

You are expected to correct any errors found, including subsequent entries/calculations, AND, once any corrections are made, determine if the Acceptance Criteria is/are met per step 5.3.

Additional information:

- All Excore Nuclear Instrumentation Channels are operable.
- The U2 Plant Curve Book Figure 5.1 is the latest approved version for purposes of this JPM AND there are no errors in the data of Figure 5.1.
- Reactor Power is stable and meets the requirements of 0PSP10-NI-0002 Step 4.3.
- Reactor Power is 99.7% by U1169, average NI power.

Fill in the JPM Start Time when the student acknowledges the Initiating Cue.

Information For Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes critical steps.

If Time Critical, estimated time is the Time Critical time.

Number any comments in the "Comment Number" column on the following pages. Then annotate that comment in the "Comments" section. The comment section should be used to document: the reason that a step is marked as unsatisfactory, marginal performance relating to management expectations, or problems the examinee had while performing the JPM. Comments relating to procedural or equipment issues should be entered and tracked using the site's appropriate tracking system.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The timeclock starts when the candidate acknowledges the initiating cue.

Task Standard:

The applicant must successfully discover an error on Form 3, accurately calculate the QPTR to at least 2 decimal places and determine Acceptance Criteria.

QPTR should be LTR = 1.032 and the Acceptance Criteria is NOT met.

JPM steps 1 and 2 completed.

JPM Start Time: _____

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
NOTE Hand out the Initial Conditions & Initiating Cue sheet and the Student HO1 of 0PSP10-NI-0002, Excore QPTR Determination. Hand out Student Copy of U2 Plant Curve Book Figure 5.1, Incore-Excore Cross-Calibration Constants. (The data in this copy may be different from that contained in the current Plant Curve Book. The KEY is based off the data from this Student Handout.) When the student has reviewed the Initial Conditions & Initiating Cue and they have indicated they are ready to begin the JPM, then record the start time for the JPM. A KEY is provided for the Examiner. Actual numerical results will vary somewhat due to rounding and possibly using a 'most conservative' approach. Because of this, there will be a range of numerical results, however the end result should be the same (i.e. numbers within the possible range should all indicate that Tech Spec QPTR Acceptance Criteria is NOT met.)					
*1	Performs the Independent Verification of the QPTR calculation. (Required by step 5.2.9)	Determined there is an error on the calculation of NI-43 data and recalculated the result. **Note:** For N44L, the '100% Power Detector Current' should be 424.5 from Figure 5.1. The value used (445.4) by the performer is for NI 44 Upper Detector. After performing the division correctly, the result should be an LTR of 1.032. Refer to the KEY to see details.	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*2	Correct any errors found and determine if the Acceptance Criteria is met. (Step 5.3)	Based on the error found for NI 44 data, the applicant has corrected subsequent error carried forward results, LTR = 1.032 and has determined the Acceptance Criteria is NOT met. **Note:** Refer to the KEY to see details of the 'error carried forward' data and the final result that is NOT within the Acceptance Criteria of procedure section 6.1.	___	___	___
CUE	This JPM is complete				

JPM Stop Time: _____

JPM SUMMARY

Operator's Name: _____ **Job Title**: ☐ RO ☐SRO

JPM Title: VERIFY AN EXCORE QPTR CALCULATION
JPM Number: NRC A2 Revision Number: 0
Task Number and Title: 37750, Perform a Quadrant Power Tilt Ratio calculation.
K/A Number and Importance: 2.1.20 4.6/4.6
Suggested Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☒ Other
Alternate Path: ☐ Yes ☒ No
Task Designed For: SRO Only ☐; RO/SRO ☒; AO/RO/SRO ☐
Time Critical: ☐ Yes ☒ No
Level of Difficulty: 3
Reference(s): 0PSP10-NI-0002, Excore QPTR Determination, Rev. 17.
Plant Curve Book Figure 5.1, Incore-Excore Cross-Calibration Constants

Actual Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☐ Other
Testing Method: ☐ Simulate ☐ Perform
Estimated Time to Complete: 15 minutes **Actual Time Used:** _____ minutes
Critical Steps (*) 1 & 2

Evaluation Summary:
Were all the Critical Steps performed satisfactorily? ☐ Yes ☐ No

The operator's performance was evaluated against standards contained within this JPM and has been determined to be: ☐ Satisfactory ☐ Unsatisfactory

Comments: _____

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_____

Evaluator's Name: _____
(Print)

Evaluator's Signature: _____ **Date**: _____

Student Handout

INITIAL CONDITIONS

Unit 2 has been at approximately 100% steady state power for several months. One (1) hour ago, Control Rod M12 (Control Bank 'D') dropped fully into the core. The crew has stabilized the plant and preparations are being made to lower Reactor power.

Control Room Annunciator 05M3 Window B-3, PR LOWER DET FLUX DEV HI/AUTO DEF, has alarmed. The Shift Manager has had a QPTR calculation done using the manual method (i.e. without use of the Plant Computer or RO Calculator).

INITIATING CUE

The Unit Supervisor instructs you to perform the Independent Verification of the QPTR calculation required by Step 5.2.9 of 0PSP10-NI-0002, Excore QPTR Determination.

You are expected to correct any errors found, including subsequent entries/calculations, AND, once any corrections are made, determine if the Acceptance Criteria is/are met per step 5.3.

Additional information:

- All Excore Nuclear Instrumentation Channels are operable.
- The U2 Plant Curve Book Figure 5.1 is the latest approved version for purposes of this JPM AND there are no errors in the data of Figure 5.1.
- Reactor Power is stable and meets the requirements of 0PSP10-NI-0002 Step 4.3.
- Reactor Power is 99.7% by U1169, average NI power.

DOCUMENT ON FORM 1 AND FORM 3 OF HANDOUT

STPNOC

Job Performance Measure

PREPARE AN ECO FOR AUXILIARY FEEDWATER PUMP 11

JPM Number: NRC A3

Revision Number: 0

Date: 07/12/2021

Developed By:	N/A Instructor (Print/Sign)	N/A Date
Approved By:	N/A Training Supervisor (Print/Sign)	N/A Date
Approved By:	N/A Line Management (Print/Sign)	N/A Date

NOTE: N/A signature blocks if this JPM is being used on an NRC LOT Exam.

Revision Record (Summary)

Revision 0, Drafted JPM for use on the LOT 25 NRC exam.

SIMULATOR SETUP INSTRUCTIONS

This is an Admin JPM – No simulator setup instructions required.

INITIAL CONDITIONS

Unit 1 is at 100% power.

The Auxiliary Feedwater Pump 11 oil has to be replaced.

INITIATING CUE

The Unit Supervisor directs you to prepare an ECO to tag out AFW Pump 11 based on the ECO request received from Mechanical Maintenance.

NOTE:

- The Oracle ECO Database is unavailable.

Fill in the JPM Start Time when the student acknowledges the Initiating Cue.

Information For Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes critical steps.

If Time Critical, estimated time is the Time Critical time.

Number any comments in the "Comment Number" column on the following pages. Then annotate that comment in the "Comments" section. The comment section should be used to document: the reason that a step is marked as unsatisfactory, marginal performance relating to management expectations, or problems the examinee had while performing the JPM. Comments relating to procedural or equipment issues should be entered and tracked using the site's appropriate tracking system.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The timeclock starts when the candidate acknowledges the initiating cue.

Task Standard:

Correctly prepares an ECO which will Mechanically and Rotationally isolate AFW Pump #11 in accordance with 0PGP03-ZO-EC01A, Equipment Clearance Order Instructions.

In JPM Step #1 the following components are correctly identified and positioned:

- *CRHS AFW Pump #11: Type – Caution OR Danger; IV – Y; Action – Hang; Sequence - 1*
- *SWGR E1A Cub. 8: Type – Danger; Boundary – B; IV – Y; Action – Hang; Sequence – 2; Position – RACKED OUT*
- *1-AF-0041, AFW PUMP #11 Discharge Valve: Type – Danger; Boundary – B; IV – Y; Action – Hang; Sequence – 3; Position – CLOSED*
- *1-AF-0039, AFW PUMP #11 Recirc Valve: Type – Danger; Boundary – B; IV – Y; Action – Hang; Sequence – 3; Position – CLOSED*

NOTE:

Also see the KEY supplied with JPM.

JPM Start Time: _____

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
NOTE Provide the following Student Handouts: • Initial Conditions & Initiating Cue Sheet • HO1 – ECO request completed by maintenance. 0PGP03-ZO-ECO1A, Form 2 • HO2 – 0PGP03-ZO-ECO1A, Form 3, with Pages 1 & 2 filled out and Form 9, ECO Preparation Checklist • HO3 – Blank copy of 0PGP03-ZO-ECO1A • HO4 – Auxiliary Feedwater P&ID, 1F00024 • HO5 – SWGR E1A Drawing, 9-E-PKAA-01 The student should also use Form 9, ECO Preparation Checklist, but it is not required for this JPM. This JPM has a KEY for the Examiner.					

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*1	Completes Page 3 of Form 3	Identifies and enters as a MINIMUM the following: • CRHS AFW Pump #11 Type – Caution OR Danger IV - Y Action – Hang Sequence - 1 • SWGR E1A Cub. 8 Type – Danger Boundary - B IV - Y Action – Hang Sequence – 2 Position – RACKED OUT • 1-AF-0041, AFW PUMP #11 Discharge Valve Type – Danger Boundary - B IV - Y Action – Hang Sequence – 3 Position – CLOSED • 1-AF-0039, AFW PUMP #11 Recirc Valve Type – Danger Boundary - B IV - Y Action – Hang Sequence – 3 Position – CLOSED **NOTE:** **See Examiners Key**	___	___	___
CUE	This JPM is complete				

JPM Stop Time: _____

JPM SUMMARY

Operator's Name: _____ **Job Title**: ☐ RO ☐SRO

JPM Title: PREPARE AN ECO FOR AUXILIARY FEEDWATER PUMP 11

JPM Number: A3 Revision Number: 0

Task Number and Title: CRO-68950, Prepare Equipment Clearances

K/A Number and Importance: 2.2.13 4.1/4.3

Suggested Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☒ Other

Alternate Path: ☐ Yes ☒ No

Task Designed For: ☐ SRO Only ☒ RO/SRO ☐ AO/RO/SRO

Time Critical: ☐ Yes ☒ No

Level of Difficulty: 4

Reference(s): 0PGP03-ZO-ECO1A, Equipment Clearance Order Instructions, Rev. 32; 1F00024#1; 9-E-PKAA-01#1

Actual Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☐ Other

Testing Method: ☐ Simulate ☐ Perform

Estimated Time to Complete: 20 minutes **Actual Time Used:** _____ minutes

Critical Steps (*) 1

Evaluation Summary:
Were all the Critical Steps performed satisfactorily? ☐ Yes ☐ No

The operator's performance was evaluated against standards contained within this JPM and has been determined to be: ☐ Satisfactory ☐ Unsatisfactory

Comments: _____

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Evaluator's Name: _____
(Print)

Evaluator's Signature: _____ **Date**: _____

Student Handout

INITIAL CONDITIONS

Unit 1 is at 100% power.

The Auxiliary Feedwater Pump 11 oil has to be replaced.

INITIATING CUE

The Unit Supervisor directs you to prepare an ECO to tag out AFW Pump 11 based on the ECO request received from Mechanical Maintenance.

NOTE:

- The Oracle ECO Database is unavailable.

STPNOC

Job Performance Measure

CALCULATE MAXIMUM STAY TIME (Rm M108C)

JPM Number: NRC A4

Revision Number: 0

Date: 07/12/2021

Developed By: _____ _____
Instructor (Print/Sign) Date

Approved By: _____ _____
Training Supervisor (Print/Sign) Date

Approved By: _____ _____
Line Management (Print/Sign) Date

NOTE: N/A signature blocks if this JPM is being used on an NRC LOT Exam.

Revision Record (Summary)

Revision 0; Updated from the Final Submittal on the LOT 23 NRC exam.

SIMULATOR SETUP INSTRUCTIONS

1. This is an Admin JPM.

INITIAL CONDITIONS

Unit 1 is shutdown for maintenance. An individual has been assigned to work on ED-FV-7800 that is located in room 108C in the Unit 1 MAB. The worker has the following radiation history:

- 40 year old radiation worker.
- NRC Form 4 on file
- Lifetime exposure 5.75 Rem TEDE.
- Annual exposure 1.4 Rem TEDE.

INITIATING CUE

You are to determine the maximum length of time the worker may spend in the area of the valve without exceeding the STPNOC Administrative Action Level (AAL) for Annual TEDE.

Use the Survey Map given for room 108C.

Fill in the JPM Start Time when the student acknowledges the Initiating Cue.

Information For Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes critical steps.

If Time Critical, estimated time is the Time Critical time.

Number any comments in the "Comment Number" column on the following pages. Then annotate that comment in the "Comments" section. The comment section should be used to document: the reason that a step is marked as unsatisfactory, marginal performance relating to management expectations, or problems the examinee had while performing the JPM. Comments relating to procedural or equipment issues should be entered and tracked using the site's appropriate tracking system.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The timeclock starts when the candidate acknowledges the initiating cue.

Task Standard:

*Calculates the maximum stay time of **12 hours** that the worker may spend in the radiation area without exceeding the Administrative Action Level (AAL) for Annual TEDE.*
JPM Step 2.

JPM Start Time: _____

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
NOTE Provide Initial Cue Sheet, Student HO1 of 0PGP03-ZR-0050, Radiation Protection Program, and HO2 Survey Map. When the student has reviewed the Initial Cue and they have indicated they are ready to begin the JPM, then record the start time for the JPM. A KEY is provided.					
1	Obtain value for AAL on Annual TEDE from plant procedure.	Obtains the AAL on Annual TEDE of **2.0 Rem** from 0PGP03-ZR-0050, Radiation Protection Program procedure. **NOTE:** **Candidate may or may not reference plant procedures to determine the Annual TEDE AAL.** **Reference: 0PGP03-ZR-0050, Radiation Protection Program, Step 6.5.1.**	___	___	___
*2	Calculate the maximum stay time without exceeding the Annual TEDE AAL.	Determines that 1-ED-FV-7800 is in a 50 mrem/hr radiation field as per the Survey Map and calculates the maximum stay time to be **12 hours**. **NOTE:** **AAL for Annual TEDE 2000mr** **Annual exposure TEDE -1400mr** **Available Margin 600mr** Available Margin / Dose Rate = Max. Stay Time 600 mr / 50 mr/hour = **12 hours**	___	___	___
CUE	This JPM is completed				

JPM Stop Time: _____

JPM SUMMARY

Operator's Name: _____ **Job Title**: ☐ RO ☐SRO

JPM Title: CALCULATE MAXIMUM STAY TIME (Rm M108C)

JPM Number: NRC A4 Revision Number: 0

Task Number and Title: 92186 - Given the title of an administrative procedure, DISCUSS the requirements associated with the referenced procedure.

K/A Number and Importance: 2.3.4 3.2/3.7

Suggested Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☒ Other

Alternate Path: ☐ Yes ☒ No

Task Designed For: ☐ SRO Only ☒ RO/SRO ☐ AO/RO/SRO

Time Critical: ☐ Yes ☒ No

Level of Difficulty: **3**

Reference(s): 0PGP03-ZR-0050, Radiation Protection Program, Rev 16

Actual Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☐ Other

Testing Method: ☐ Simulate ☐ Perform

Estimated Time to Complete: 10 minutes **Actual Time Used:** _____ minutes

Critical Steps (*) 2

Evaluation Summary:
Were all the Critical Steps performed satisfactorily? ☐ Yes ☐ No

The operator's performance was evaluated against standards contained within this JPM and has been determined to be: ☐ Satisfactory ☐ Unsatisfactory

Comments: _____

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Evaluator's Name: _____
(Print)

Evaluator's Signature: _____ **Date**: _____

Student Handout

INITIAL CONDITIONS

Unit 1 is shutdown for maintenance. An individual has been assigned to work on ED-FV-7800 that is located in room 108C in the Unit 1 MAB. The worker has the following radiation history:

- 40 year old radiation worker.
- NRC Form 4 on file
- Lifetime exposure 5.75 Rem TEDE.
- Annual exposure 1.4 Rem TEDE.

INITIATING CUE

You are to determine the maximum length of time the worker may spend in the area of the valve without exceeding the STPNOC Administrative Action Level (AAL) for Annual TEDE.

Use the Survey Map given for room 108C.

Write Answer Below

STPNOC

Job Performance Measure

REVIEW SDM CALCULATION

JPM Number: NRC A5

Revision Number: 0

Date: 07/12/2021

Developed By: _____ _____
Instructor (Print/Sign) Date

Approved By: _____ _____
Training Supervisor (Print/Sign) Date

Approved By: _____ _____
Line Management (Print/Sign) Date

NOTE: N/A Signature blocks if this JPM is being used on an NRC LOT Exam.

Revision Record (Summary)

Revision 0, Drafted JPM for use on LOT 22 NRC Exam.

SIMULATOR SETUP INSTRUCTIONS

1. This is an Admin JPM.

INITIAL CONDITIONS:

Unit 1 is operating at 100% power during Cycle 23. During the performance of 0PSP03-RS-0001, Monthly Control Rod Operability, all three (3) Control Rods in Control Bank 'D', Group 2, failed to return to their original height of 245 steps after being inserted.

I&C has determined the following for the three (3) Control Rods affected:

- Control Rods H-8 and M-4 are known to be untrippable (mechanically stuck).
- Control Rod D-12 slipped to a lower position and has been determined to be trippable.

NOTE the following additional information:

- Reactor power is stable at 100% by U1169.
- Core Burnup is 16,500 MWD/MTU per BEACON Monitor.
- Full Out Position (FOP) And Bank Overlap (BOL) are set as follows:
  - FOP = 255
  - BOL = 118
- RCS Boron is 280 ppm.
- Rod H-8 is at 240 steps.
- Rod M-4 is at 240 steps.
- Rod D-12 is at 234 steps.
- Control Bank 'D', Group 1, is at 245 steps.
- All other Rods are at 255 steps.
- A Logbook entry has been made.

The Crew is making preparations to shutdown the unit per TS 3.1.3.1.

A Shutdown Margin Calculation was performed in accordance with 0PSP10-ZG-0005, Shutdown Margin Verification - Modes 1 and 2, using the MANUAL method, to verify compliance with Technical Specifications.

INITIATING CUE:

You are the Shift Manager. Perform a second review of the test data per step 5.17 of 0PSP10-ZG-0005, Shutdown Margin Verification - Modes 1 and 2, to determine if the Test Results are ACCEPTABLE or UNACCEPTABLE.

NOTE: In reviewing the test data, the Rod Worth pcm given in steps 5.8.3, 5.8.4 & 5.8.5 AND Power Defect pcm given in step 5.8.9 have already been reviewed for accuracy and are correctly recorded.

Fill in the JPM Start Time when the student acknowledges the Initiating Cue.

Information For Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes critical steps.

If Time Critical, estimated time is the Time Critical time.

Number any comments in the "Comment Number" column on the following pages. Then annotate that comment in the "Comments" section. The comment section should be used to document: the reason that a step is marked as unsatisfactory, marginal performance relating to management expectations, or problems the examinee had while performing the JPM. Comments relating to procedural or equipment issues should be entered and tracked using the site's appropriate tracking system.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The timeclock starts when the candidate acknowledges the initiating cue.

Task Standard:

Determines the SDM calculation is in error, calculates the correct SDM, determines SDM requirements are NOT met and TS 3.1.1.1, Boration Control, applies as per procedure Acceptance Criteria Step 6.0.

JPM Steps 2, 3, 4, 5, 6 completed.

JPM Start Time: _____

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
NOTE Provide the Student the Initial Conditions and Initiating Cue Sheet. Provide the Student HO, a copy of 0PSP10-ZG-0005, Shutdown Margin Verification – Modes 1 and 2. (References of Plant Curve Book Figure 5.4, Mode 1 and 2 Minimum Shutdown Margin, and Unit 1 Cycle 23 NDR used to help create this JPM should NOT be required.) Technical Specifications should be made available. If available, use a binder for the Student Handout on this JPM. A KEY has been prepared for this JPM to aid in determining satisfactory performance.					
1	The Shift Manager SHALL: • PERFORM a second review of the test data. *(Step 5.17 and 5.17.1)*	Reviews the surveillance.	___	___	___
NOTE The following error is credible because of the total number of Control Rods that were affected. Only the steps effected by the error are included.					
*2	Review number of Inoperable RCCA (immovable as a result of excessive friction or mechanical interference, or known to be untrippable). *(Step 5.5.6)*	Determines that 2 control rods (instead of 1) should have been marked as INOPERABLE due to excessive friction or mechanical interference or known to be untrippable.	___	___	___
*3	Review Inoperable RCCA Worth (INOP RW) = (AMRSR) x (Number of Inoperable RCCA) = 5.8.4 x 5.5.6 *(Step 5.8.7)*	Determines that calculated value should be 3462 pcm instead of 1731 pcm because 2 control rods are untrippable.	___	___	___
*4	Review available RCCA Worth = (ARI LMRSR) - (IRW) - (ARCW) - (INOP RW) = 5.8.3 - 5.8.5 - 5.8.6.2.c - 5.8.7 *(Step 5.8.8)*	Determines that the calculated value should be 2482 pcm instead of 4213 pcm. Mistake carried forward from Performance Step 2.	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*5	Review actual Shutdown Margin = (Available RCCA Worth) + (Total Power Defect) = 5.8.8 + 5.8.9 *(Step 5.5.10)*	Determines that calculated value should be -241 pcm instead of 1490 pcm. Mistake carried forward from Performance Step 2.	___	___	___
*6	Review comparison of actual shutdown margin to required shutdown margin. *(Step 5.8.12)*	Determines that Actual SDM is NOT greater than Required SDM. The surveillance is UNACCEPTABLE. Acceptance Criteria from step 6.0 is NOT satisfied and TS 3.1.1.1 for Shutdown Margin Modes 1 and 2 applies. **NOTE for Examiner:** **If JPM is turned in as second review ACCEPTABLE, then collected paper work from student and terminate JPM.** **If JPM is turned in as UNACCEPTABLE and no reason is given, then ask the student to document what acceptance criteria was NOT met and WHY prior to terminating the JPM. Also follow up with TS 3.1.1.1 and associated TS Action if not included.**	___	___	___
CUE	This JPM is complete				

JPM Stop Time: _____

JPM SUMMARY

Operator's Name: _____ **Job Title**: ☐ RO ☐SRO

JPM Title: REVIEW SDM CALCULATION

JPM Number: NRC A5 Revision Number: 0

Task Number and Title: 76950 (SRO), Perform a Shutdown Margin Verification.

K/A Number and Importance: 2.1.37 4.3/4.6

Suggested Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☒ Other

Alternate Path: ☐ Yes ☒ No

Task Designed For: SRO Only ☒; RO/SRO ☐; AO/RO/SRO ☐

Time Critical: ☐ Yes ☒ No

Level of Difficulty: 4

Reference(s): 0PSP10-ZG-0005, Shutdown Margin Verification – Modes 1 and 2, Rev. 6
NDR Unit 1 Cycle 23
Unit 1 Plant Curve Book Figure 5.4, Rev. 27

Actual Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☐ Other

Testing Method: ☐ Simulate ☐ Perform

Estimated Time to Complete: 45 minutes **Actual Time Used:** _____ minutes

Critical Steps (*) 2, 3, 4, 5, 6

Evaluation Summary:
Were all the Critical Steps performed satisfactorily? ☐ Yes ☐ No

The operator's performance was evaluated against standards contained within this JPM and has been determined to be: ☐ Satisfactory ☐ Unsatisfactory

Comments: _____

_____

_____

_____

_____

_____

_____

Evaluator's Name: _____
(Print)

Evaluator's Signature: _____ **Date**: _____

Student Handout

INITIAL CONDITIONS:

Unit 1 is operating at 100% power during Cycle 23. During the performance of 0PSP03-RS-0001, Monthly Control Rod Operability, all three (3) Control Rods in Control Bank 'D', Group 2, failed to return to their original height of 245 steps after being inserted.

I&C has determined the following for the three (3) Control Rods affected:

- Control Rods H-8 and M-4 are known to be untrippable (mechanically stuck).
- Control Rod D-12 slipped to a lower position and has been determined to be trippable.

NOTE the following additional information:

- Reactor power is stable at 100% by U1169.
- Core Burnup is 16,500 MWD/MTU per BEACON Monitor.
- Full Out Position (FOP) And Bank Overlap (BOL) are set as follows:
  - FOP = 255
  - BOL = 118
- RCS Boron is 280 ppm.
- Rod H-8 is at 240 steps.
- Rod M-4 is at 240 steps.
- Rod D-12 is at 234 steps.
- Control Bank 'D', Group 1, is at 245 steps.
- All other Rods are at 255 steps.
- A Logbook entry has been made.

The Crew is making preparations to shutdown the unit per TS 3.1.3.1.

A Shutdown Margin Calculation was performed in accordance with 0PSP10-ZG-0005, Shutdown Margin Verification - Modes 1 and 2, using the MANUAL method, to verify compliance with Technical Specifications.

INITIATING CUE:

You are the Shift Manager. Perform a second review of the test data per step 5.17 of 0PSP10-ZG-0005, Shutdown Margin Verification - Modes 1 and 2, to determine if the Test Results are ACCEPTABLE or UNACCEPTABLE.

NOTE: In reviewing the test data, the Rod Worth pcm given in steps 5.8.3, 5.8.4 & 5.8.5 AND Power Defect pcm given in step 5.8.9 have already been reviewed for accuracy and are correctly recorded.

STPNOC

Job Performance Measure

REVIEW A POWER RANGE NI CHANNEL CALIBRATION & EVALUATE TSs

JPM Number: NRC A6

Revision Number: 0

Date: 07/12/2021

Developed By: _____ _____
Instructor (Print/Sign) Date

Approved By: _____ _____
Training Supervisor (Print/Sign) Date

Approved By: _____ _____
Line Management (Print/Sign) Date

NOTE: N/A signature blocks if this JPM is being used on an NRC LOT Exam.

Revision Record (Summary)

Revision 0; Updated from the Final Submittal on the LOT 23 NRC exam.

SIMULATOR SETUP INSTRUCTIONS

1. This is an Admin JPM.

INITIAL CONDITIONS

Unit 1 is being brought back to 100% power after a 7 day forced outage. Currently Delta-T power is at 98%. A Reactor Operator has performed a calorimetric per step 7.65.4 of 0POP03-ZG-0005, Plant Startup to 100%.

INITIATING CUE

You are the Shift Manager and you have been given the calorimetric, 0PSP03-NI-0001, Power Range NI Channel Calibration, for review per step 6.11.12.

Determine why the surveillance is ACCEPTABLE or UNACCEPTABLE, and required actions, IF any.

NOTE:

- **The RO Calculator for performing NI-0001 was NOT working.**
- **0PEP02-CU-0001, Calorimetric Verification, has been performed.**
- **You are NOT required to determine Reportability.**

Fill in the JPM Start Time when the student acknowledges the Initiating Cue.

Information For Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes critical steps.

If Time Critical, estimated time is the Time Critical time.

Number any comments in the "Comment Number" column on the following pages. Then annotate that comment in the "Comments" section. The comment section should be used to document: the reason that a step is marked as unsatisfactory, marginal performance relating to management expectations, or problems the examinee had while performing the JPM. Comments relating to procedural or equipment issues should be entered and tracked using the site's appropriate tracking system.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.0The timeclock starts when the candidate acknowledges the initiating cue.

Task Standard:

The Shift Manager determines that the Qsec %power from Data Sheet 3 was transcribed incorrectly over to Data Sheet 2 and calculates the correct As Left Difference. This miscalculation caused the As Left Difference between Qsec %power and %RTP on all 4 Power Range NI Channels to be in error.

The Shift Manager determines from the miscalculation that all 4 Power Range NI Channels must be adjusted and that Power Range Channel NI-0041 is INOPERABLE until the channel is adjusted. Refer to TS 3.3.1, Instrumentation, for Power Range Neutron Flux.

JPM Step 1.

JPM Start Time: _____

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
NOTE Provide Initial Conditions & Initiating Cue Sheet and Student HO of 0PSP03-NI-0001, Power Range NI Channel Calibration. When the student has reviewed the Initiating Cue and they have indicated they are ready to begin the JPM, then record the start time for the JPM. A KEY is provided for the Examiner.					
*1	The Shift Manager/Unit Supervisor SHALL: • PERFORM a second review of the test data. • SIGN and RECORD the date and time on Data Sheet 1. • TRANSFER the Data Package in accordance with 0PGP03-ZA-0055, Plant Surveillance Scheduling. (Step 6.11.12) **CUE:** **If the student identifies the error regarding Qsec %power but says Data Sheet 3 was written incorrectly instead of Data Sheet 2 then inform them that ICS point ICQUG1118O is reading correctly at 97.77%**	• The Shift Manager determines that the Qsec %power from Data Sheet 3 was transcribed incorrectly over to Data Sheet 2 and calculates the correct As Left Difference. This miscalculation caused the As Left Difference between Qsec %power and %RTP on all 4 Power Range NI Channels to be in error. • The Shift Manager determines from the miscalculation that all 4 Power Range NI Channels must be adjusted and that Power Range Channel NI-0041 is INOPERABLE until the channel is adjusted. Refer to TS 3.3.1, Instrumentation, for Power Range Neutron Flux.	___	___	___
CUE	This JPM is completed				

JPM Stop Time: _____

JPM SUMMARY

Operator's Name: _____ **Job Title**: ☐ RO ☐SRO

JPM Title: REVIEW A POWER RANGE NI CHANNEL CALIBRATION AND EVALUATE TSs

JPM Number: NRC A6 Revision Number: 0

Task Number and Title: SRO-12000 Authorize the start of and review surveillance tests.

K/A Number and Importance: 2.1.23 4.3/4.4

Suggested Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☒ Other

Alternate Path: ☐ Yes ☒ No

Task Designed For: ☒ SRO Only ☐ RO/SRO ☐ AO/RO/SRO

Time Critical: ☐ Yes ☒ No

Level of Difficulty: **3**

Reference(s): 0PSP03-NI-0001, Power Range NI Channel Calibration, Rev 31

Actual Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☐ Other

Testing Method: ☐ Simulate ☐ Perform

Estimated Time to Complete: 30 minutes **Actual Time Used:** _____ minutes

Critical Steps (*) 1

Evaluation Summary:

Were all the Critical Steps performed satisfactorily? ☐ Yes ☐ No

The operator's performance was evaluated against standards contained within this JPM and has been determined to be: ☐ Satisfactory ☐ Unsatisfactory

Comments:_____

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_____

Evaluator's Name: _____
(Print)

Evaluator's Signature: _____ **Date**: _____

Student Handout

INITIAL CONDITIONS

Unit 1 is being brought back to 100% power after a 7 day forced outage. Currently Delta-T power is at 98%. A Reactor Operator has performed 0PSP03-NI-0001, Power Range NI Channel Calibration, per step 7.65.4 of 0POP03-ZG-0005, Plant Startup to 100%.

INITIATING CUE

You are the Shift Manager and you have been given 0PSP03-NI-0001, Power Range NI Channel Calibration, for review per step 6.11.12.

Determine why the surveillance is ACCEPTABLE or UNACCEPTABLE, and required actions, IF any.

NOTE:

- **The RO Calculator for performing NI-0001 was NOT working.**
- **0PEP02-CU-0001, Calorimetric Verification, has been performed.**
- **You are NOT required to determine Reportability.**

WHEN YOU'VE COMPLETED YOUR REVIEW, PRESENT YOUR RESULTS TO THE EXAMINER.

WRITE RESULTS BELOW:

STPNOC

Job Performance Measure

REVIEW AN AFW PUMP SURVEILLANCE AND DETERMINE OPERABILITY

JPM Number: NRC A7

Revision Number: 0

Date: 7/12/2021

Developed By: _____ _____
Instructor (Print/Sign) Date

Approved By: _____ _____
Training Supervisor (Print/Sign) Date

Approved By: _____ _____
Line Management (Print/Sign) Date

NOTE: N/A signature blocks if this JPM is being used on an NRC LOT Exam.

Revision Record (Summary)

Revision 0; New JPM for LOT 25

SIMULATOR SETUP INSTRUCTIONS

1. This is an Admin JPM.

INITIAL CONDITIONS

Unit 2 has completed the performance of 0PSP03-AF-0001, Auxiliary Feedwater Pump 11(21) Inservice Test, for Auxiliary Feedwater Pump 21.

INITIATING CUE

You are the Shift Manager. Perform and complete the 'Plant Operations Review' of 0PSP03-AF-0001, Auxiliary Feedwater Pump 11(21) Inservice Test, on the Procedure Performance Data Sheet.

NOTE: The Surveillance Test Data Sheets indicated all sections of 0PSP03-AF-0001, Auxiliary Feedwater Pump 11(21) Inservice Test, were performed EXCEPT Section 5.5, AFW ARC Valve AF0036 Inservice Test.

Fill in the JPM Start Time when the student acknowledges the Initiating Cue.

Information For Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes critical steps.

If Time Critical, estimated time is the Time Critical time.

Number any comments in the "Comment Number" column on the following pages. Then annotate that comment in the "Comments" section. The comment section should be used to document: the reason that a step is marked as unsatisfactory, marginal performance relating to management expectations, or problems the examinee had while performing the JPM. Comments relating to procedural or equipment issues should be entered and tracked using the site's appropriate tracking system.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The timeclock starts when the candidate acknowledges the initiating cue.

Task Standard: *The Shift Manager has reviewed the completed surveillance 0PSP03-AF-0001 and identified the following error:*

Step 5.4.13.1 was wrongly N/A'd. As a result, 2-AF-0040 was NOT closed. With 2-AF-0040 NOT closed, full flow of Auxiliary Feedwater in Train A will be diverted back to the AFWST. Train A AFW is INOPERABLE per TS 3.7.1.2 until 2-AF-0040 is returned to a closed position.

JPM Step 1 completed.

JPM Start Time: _____

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
NOTE Provide Initial Conditions & Initiating Cue Sheet and Student HO of 0PSP03-AF-0001, Auxiliary Feedwater Pump 11(21) Inservice Test. When the student has reviewed the Initiating Cue and they have indicated they are ready to begin the JPM, then record the start time for the JPM. A KEY is NOT provided with this JPM. See TASK STANDARD on previous page.					
*1	Perform and complete the Plant Operations Review of 0PSP03-AF-0001, Auxiliary Feedwater Pump 11(21) Inservice Test. (Procedure Data Sheet)	The Shift Manager has reviewed 0PSP03-AF-0001. The Shift Manager has identify the following error: • Step 5.4.13.1 was wrongly N/A'd. • As a result, 2-AF-0040 was NOT closed. • Train A AFW is INOPERABLE per TS 3.7.1.2 until 2-AF-0040 is returned to a closed position.	___	___	___
CUE	This JPM is complete				

JPM Stop Time: _____

JPM SUMMARY

Operator's Name: _____ **Job Title**: ☐ RO ☐SRO

JPM Title: REVIEW AN AFW SURVEILLANCE AND DETERMINE OPERABILITY

JPM Number: NRC A7 Revision Number: 0

Task Number and Title: SRO-148213, Authorize the Start of and Review Surveillance Tests

K/A Number and Importance: G2.2.40 3.4/4.7

Suggested Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☒ Other

Alternate Path: ☐ Yes ☒ No

Task Designed For: ☒ SRO Only ☐ RO/SRO ☐ AO/RO/SRO

Time Critical: ☐ Yes ☒ No

Level of Difficulty: 4

Reference(s): 0PSP03-AF-0001, Auxiliary Feedwater Pump 11(21) Inservice Test, Rev. 45
0PGP03-ZE-0004, Plant Surveillance Program

Actual Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☐ Other

Testing Method: ☐ Simulate ☐ Perform

Estimated Time to Complete: 15 minutes **Actual Time Used:** _____ minutes

Critical Steps (*) 1

Evaluation Summary:
Were all the Critical Steps performed satisfactorily? ☐ Yes ☐ No

The operator's performance was evaluated against standards contained within this JPM and has been determined to be: ☐ Satisfactory ☐ Unsatisfactory

Comments: _____

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_____

Evaluator's Name: _____
(Print)

Evaluator's Signature: _____ **Date**: _____

Student Handout

INITIAL CONDITIONS

Unit 2 has completed the performance of 0PSP03-AF-0001, Auxiliary Feedwater Pump 11(21) Inservice Test, for Auxiliary Feedwater Pump 21.

INITIATING CUE

You are the Shift Manager. Perform and complete the 'Plant Operations Review' of 0PSP03-AF-0001, Auxiliary Feedwater Pump 11(21) Inservice Test, on the Procedure Performance Data Sheet.

NOTE: The Surveillance Test Data Sheets indicated all sections of 0PSP03-AF-0001, Auxiliary Feedwater Pump 11(21) Inservice Test, were performed EXCEPT Section 5.5, AFW ARC Valve AF0036 Inservice Test.

STPNOC

Job Performance Measure

SELECT INDIVIDUAL TO EXCEED EXPOSURE LIMITS IN AN EMERGENCY

JPM Number: NRC A8

Revision Number: 0

Date: 7/12/2021

Developed By: _____ _____
Instructor (Print/Sign) Date

Approved By: _____ _____
Training Supervisor (Print/Sign) Date

Approved By: _____ _____
Line Management (Print/Sign) Date

NOTE: N/A signature blocks if this JPM is being used on an NRC LOT Exam.

Revision Record (Summary)

Revision 0, New JPM for LOT 25

SIMULATOR SETUP INSTRUCTIONS

1. This is an Admin JPM.

INITIAL CONDITIONS

An ALERT has been declared at STPNOC. The Station is evaluating the following:

- A containment entry is required in order to take actions that will avert a total loss of RCP 1A motor.
- Dose rates in the area are 4450 mrem/hr.
- It will take 2 hours to complete the work.
- The Emergency Director has authorized that 10CFR 20 limits CAN be exceeded.
- Adam has volunteered to enter and perform the work. His annual exposure is 1200 mrem.
- Blake has volunteered to enter and perform the work. His annual exposure is 1000 mrem.

INITIATING CUE

You are the Emergency Director and must determine each volunteer's total annual exposure if each were to go in and perform the task AND determine if entry is allowed for either volunteer.

Fill in the JPM Start Time when the student acknowledges the Initiating Cue.

Information For Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes critical steps.

Number any comments in the "Comment Number" column on the following pages. Then annotate that comment in the "Comments" section. The comment section should be used to document: the reason that a step is marked as unsatisfactory, marginal performance relating to management expectations, or problems the examinee had while performing the JPM.

The timeclock starts when the candidate acknowledges the initiating cue.

Task Standard: *The applicant calculated Adam's TEDE = 10.1 REM and Blake's TEDE = 9.9 REM, and determined that Adam **CANNOT** perform the task because he would exceed the 10 REM limit for protecting valuable property, but Blake **CAN** perform the job because he would be below the 10 REM limit for protecting valuable property.*

JPM Steps 1, 2, 3, 4 completed.

JPM Start Time: _____

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
NOTE Provide Initial Conditions & Initiating Cue Sheet and Student HO of 0ERP01-ZV-IN06, Radiological Exposure Guidelines. When the student has reviewed the Initiating Cue and they have indicated they are ready to begin the JPM, then record the start time for the JPM. A KEY is NOT provided with this JPM. See TASK STANDARD on previous page.					
*1	Calculate Adam's estimated dose	Calculate Adam's estimated dose (1200 mR) + (4450 mR/hr * 2hr) = 10,100 mR = 10.1 Rem	___	___	___
*2	Calculate Blake's estimated dose	Calculate Blake's estimated dose (1000 mR) + (4450 mR/hr * 2hr) = 9900 mR = 9.9 Rem	___	___	___
*3	Determine if Adam is allowed entry.	Determined that Adam is **NOT** allowed entry. 0ERP01-ZV-IN06, Add. 1, shows that approval for TEDE Exposure Limit of 5-10 Rem must be based on protection of valuable property, life-saving activities OR protecting large populations. Exposure of >10 Rem must be based on life-saving activities OR protecting large populations. Actions to prevent damage to the RCP would be considered valuable property.	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*4	Determine if Blake is allowed entry.	Determined that Blake IS allowed entry. 0ERP01-ZV-IN06, Add. 1, shows that approval for TEDE Exposure Limit of 5-10 Rem must be based on protection of valuable property, life-saving activities OR protecting large populations. Actions to prevent damage to the RCP would be considered valuable property. Blake's exposure for completing the work would be <10 Rem.	___	___	___
CUE	This JPM is completed				

JPM Stop Time: _____

JPM SUMMARY

Operator's Name: _____ **Job Title**: ☐ RO ☒SRO

JPM Title: SELECT INDIVIDUAL TO EXCEED EXPOSURE LIMITS IN AN EMERGENCY

JPM Number: NRC A8 Revision Number: 0

Task Number and Title: SRO – 11230, Act as the Emergency Director in the Control Room

K/A Number and Importance: G.2.3.4 3.2/3.7

Suggested Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☒ Other

Alternate Path: ☐ Yes ☒ No

Task Designed For: ☒ SRO Only ☐ RO/SRO ☐ AO/RO/SRO

Time Critical: ☐ Yes ☒ No

Level of Difficulty: **2**

Reference(s): 0ERP01-ZV-IN06, Radiological Exposure Guidelines, Rev. 8
10CFR20.1201, Occupational Dose Limits for Adults

Actual Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☒ Other

Testing Method: ☐ Simulate ☒ Perform

Estimated Time to Complete: 10 minutes **Actual Time Used:** _____ minutes

Critical Steps (*) 1, 2, 3, 4

Evaluation Summary:
Were all the Critical Steps performed satisfactorily? ☐ Yes ☐ No

The operator's performance was evaluated against standards contained within this JPM and has been determined to be: ☐ Satisfactory ☐ Unsatisfactory

Comments: _____

_____

_____

_____

_____

_____

_____

Evaluator's Name: _____
(Print)

Evaluator's Signature: _____ **Date**: _____

Student Handout

INITIAL CONDITIONS

An ALERT has been declared at STPNOC. The Station is evaluating the following:

- A containment entry is required in order to take actions that will avert a total loss of RCP 1A motor.
- Dose rates in the area are 4450 mrem/hr.
- It will take 2 hours to complete the work.
- The Emergency Director has authorized that 10CFR 20 limits CAN be exceeded.
- Adam has volunteered to enter and perform the work. His annual exposure is 1200 mrem.
- Blake has volunteered to enter and perform the work. His annual exposure is 1000 mrem.

INITIATING CUE

You are the Emergency Director and must determine each volunteer's total annual exposure if each were to go in and perform the task AND determine if entry is allowed for either volunteer.

ANSWER BELOW:

Adam's estimated TEDE dose: _____ mR

Can Adam enter containment and complete the task? Why or why not?

YES / NO

Blake's estimated TEDE dose: _____ mR

Can Blake enter containment and complete the task? Why or why not?

YES / NO

STPNOC

Job Performance Measure

DECLARE EMERGENCY ACTION LEVELS

JPM Number: NRC A9

Revision Number: 0

Date: 7/12/2021

Developed By: _____ _____
Instructor (Print/Sign) Date

Approved By: _____ _____
Training Supervisor (Print/Sign) Date

Approved By: _____ _____
Line Management (Print/Sign) Date

NOTE: N/A signature blocks if this JPM is being used on an NRC LOT Exam.

Revision Record (Summary)

Revision 0; Modified JPM

SIMULATOR SETUP INSTRUCTIONS

1. This is an Admin JPM.

INITIAL CONDITIONS

Both Units are at 100% power.

- Unit 1 is performing 0PSP03-AF-0007, AFW Pump 14 Inservice Test.
- AFW Pump 14 is running at 3600 rpm.

9M01-E-8, SEISMIC EVENT, alarms.

- The Shift Manager confirms a seismic event has occurred.
- AFW Pump 14 trips and the Plant Operator reports that the shaking felt at the pump caused the overspeed trip device linkage connecting rod to bend and then break off the pump.

INITIATING CUE

You are the Emergency Director and you are to classify the event at its **MINIMUM** Emergency Classification Level including the corresponding Initiating Condition and specific Emergency Action Level (EAL).

THIS JPM IS TIME CRITICAL.

Fill in the JPM Start Time when the student acknowledges the Initiating Cue.

Information For Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes critical steps.

If Time Critical, estimated time is the Time Critical time.

Number any comments in the "Comment Number" column on the following pages. Then annotate that comment in the "Comments" section. The comment section should be used to document: the reason that a step is marked as unsatisfactory, marginal performance relating to management expectations, or problems the examinee had while performing the JPM. Comments relating to procedural or equipment issues should be entered and tracked using the site's appropriate tracking system.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The timeclock starts when the candidate acknowledges the initiating cue.

Task Standard:

Operator declares the following in accordance with 0ERP01-ZV-IN01, Emergency Classification:

***Emergency Classification** – ALERT, **Initiating Condition** – SA9, **Specific EAL** – EAL - 1 a AND b.2. Also see KEY provided.*

JPM Start Time: _____

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
NOTE Provide a copy of 0ERP01-ZV-IN01, Emergency Classification, and/or laminated copies of the Emergency Classification Charts from Addendum 4, 5, 6 and 7. Use a binder, if available, for the Student Handouts for this JPM. The ALERT classification is based on SA9 EAL - 1 a AND b2 (Hazardous event affecting a SAFETY SYSTEM needed for the current operating mode. The event has caused VISIBLE DAMAGE to a SAFETY SYSTEM component or structure needed for the current operating mode.) A KEY is provided for the Evaluator.					
*1	Classify the event in accordance with Addendum 1 in 0ERP01-ZV-IN01.	**Time Critical Start Time** _____ Classifies the event at the MINIMUM Emergency Classification Level including the corresponding Initiating Condition and specific Emergency Action Level (EAL). **ALERT** based on **SA9 EAL - 1 a AND b.2** **Time Critical Stop Time** _____	___	___	___
2	Implement 0ERP01-ZV-SH01, Shift Manager.	0ERP01-ZV-SH01, Shift Manager, is implemented.	___	___	___
CUE	This JPM is complete (Must be completed within 15 minutes.)				

JPM Stop Time: _____

JPM SUMMARY

Operator's Name: _____ **Job Title**: ☐ RO ☐SRO

JPM Title: DECLARE EMERGENCY ACTION LEVELS

JPM Number: A9 Revision Number: 0

Task Number and Title: SRO-12800, Activate the Emergency Plan

K/A Number and Importance: G2.4.41 2.9/4.6

Suggested Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☒ Other

Alternate Path: ☐ Yes ☒ No

Task Designed For: ☒ SRO Only ☐ RO/SRO ☐ AO/RO/SRO

Time Critical: ☒ Yes ☐ No

Level of Difficulty: 4

Reference(s): 0ERP01-ZV-IN01, Emergency Classification, Rev. 12
0ERP01-ZV-SH01, Shift Manager, Rev. 33

Actual Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☐ Other

Testing Method: ☐ Simulate ☐ Perform

Estimated Time to Complete: 15 minutes **Actual Time Used:** _____ minutes

Critical Steps (*) 1

Evaluation Summary:
Were all the Critical Steps performed satisfactorily? ☐ Yes ☐ No

The operator's performance was evaluated against standards contained within this JPM and has been determined to be: ☐ Satisfactory ☐ Unsatisfactory

Comments: _____

_____

_____

_____

_____

_____

_____

Evaluator's Name: _____
(Print)

Evaluator's Signature: _____ **Date**: _____

Student Handout

INITIAL CONDITIONS

Both Units are at 100% power.

- Unit 1 is performing 0PSP03-AF-0007, AFW Pump 14 Inservice Test.
- AFW Pump 14 is running at 3600 rpm.

9M01-E-8, SEISMIC EVENT, alarms.

- The Shift Manager confirms a seismic event has occurred.
- AFW Pump 14 trips and the Plant Operator reports that the shaking felt at the pump caused the overspeed trip device linkage connecting rod to bend and then break off the pump.

INITIATING CUE

You are the Emergency Director and you are to classify the event at its **MINIMUM** Emergency Classification Level including the corresponding Initiating Condition and specific Emergency Action Level (EAL).

THIS JPM IS TIME CRITICAL.

Record MINIMUM Emergency Classification Level including the corresponding Initiating Condition and specific EAL below:

Emergency Classification Level _____

Initiating Condition _____

Specific EAL _____

Facility: South Texas Project **Date of Examination:** 7-12-21

Exam Level: RO ■ SRO-I ☐ SRO-U ☐ **Operating Test No.:** LOT 25 NRC

Control Room Systems: * 8 for RO, 7 for SRO-I, and 2 or 3 for SRO-U

System / JPM Title	Type Code*	Safety Function
a. (S1) Perform Emergency Boration of RCS KA: 004 A4.07 (3.9/3.7)	A,D,S	1
b. (S2) Raise SI Accumulator Level KA: 006 4.07 (4.4/4.4)	D,EN,L,S	2
c. (S3) Respond to CCW Leak after Swapping CCW Pumps KA: 008 A4.01 (3.3/3.1)	A,EN,M,S	8
d. (S4) MSIV Operability Test KA: 039 K4.01 (2.9/2.8)	D,S	4S
e. (S5) Place H2 Monitoring in Service KA: 028 A4.03 (3.1/3.3)	D,S	5
f. (S6) Respond to Failed SR NI KA: 015 A4.03 (3.8/3.9)	D,L,S	7
g. (S7) Respond to Stuck Open PZR Spray Valve KA: 010 A4.01 (3.7/3.5)	A,N,S	3
h. (S8) Perform Immediate Actions for a RX Trip with LOOP KA: 064 A4.06 (3.9/3.9)	A,N,S	6
In-Plant Systems: * 3 for RO, 3 for SRO-I, and 3 or 2 for SRO-U		
i. (P1) Locally Trip the Reactor KA: 001 A4.06 (2.9/3.2)	D,E	1
j. (P2) Perform EDG Post Run Checklist with Overspeed Butterfly Valve NOT Fully Latched KA: 064 A4.06 (3.9/3.9)	A,E,N	6
k. (P3) Place a Second Spent Fuel Pool Cooling Train (B) in Service KA: 033 A4.02 (2.4/2.8)	N,R	4P

* All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions, all 5 SRO-U systems must serve different safety functions, and in-plant systems and functions may overlap those tested in the control room.

* Type Codes	Criteria for RO/SRO-I/SRO-U
(A)lternate Path	4-6 / 4-6 / 2-3
(C)ontrol Room	
(D)irect from Bank	≤ 9 / ≤ 8 / ≤ 4
(E)mergency or abnormal in-plant	≥ 1 / ≥ 1 / ≥ 1
(EN) gineered Safety Features	≥ 1 / ≥ 1 / ≥ 1 (control room system)
(L)ow-Power / Shutdown	≥ 1 / ≥ 1 / ≥ 1
(N)ew or (M)odified from bank including 1(A)	≥ 2 / ≥ 2 / ≥ 1
(P)revious 2 exams	≤ 3 / ≤ 3 / ≤ 2 (randomly selected)
(R)CA	≥ 1 / ≥ 1 / ≥ 1
(S)imulator	

Facility: South Texas Project **Date of Examination:** 7-12-21

Exam Level: RO ☐ SRO-I ■ SRO-U ☐ **Operating Test No.:** LOT 25 NRC

Control Room Systems: * 8 for RO, 7 for SRO-I, and 2 or 3 for SRO-U

System / JPM Title	Type Code*	Safety Function
a.		
b. (S2) Raise SI Accumulator Level KA: 006 4.07 (4.4/4.4)	D,EN,L,S	2
c. (S3) Respond to CCW Leak after Swapping CCW Pumps KA: 008 A4.01 (3.3/3.1)	A,EN,M,S	8
d. (S4) MSIV Operability Test KA: 039 K4.01 (2.9/2.8)	D,S	4S
e. (S5) Place H2 Monitoring in Service KA: 028 A4.03 (3.1/3.3)	D,S	5
f. (S6) Respond to Failed SR NI KA: 015 A4.03 (3.8/3.9)	D,L,S	7
g. (S7) Respond to Stuck Open PZR Spray Valve KA: 010 A4.01 (3.7/3.5)	A,N,S	3
h. (S8) Perform Immediate Actions for a RX Trip with LOOP KA: 064 A4.06 (3.9/3.9)	A,N,S	6
In-Plant Systems: * 3 for RO, 3 for SRO-I, and 3 or 2 for SRO-U		
i. (P1) Locally Trip the Reactor KA: 001 A4.06 (2.9/3.2)	D,E	1
j. (P2) Perform EDG Post Run Checklist with Overspeed Butterfly Valve NOT Fully Latched KA: 064 A4.06 (3.9/3.9)	A,E,N	6
k. (P3) Place a Second Spent Fuel Pool Cooling Train (B) in Service KA: 033 A4.02 (2.4/2.8)	N,R	4P

* All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions, all 5 SRO-U systems must serve different safety functions, and in-plant systems and functions may overlap those tested in the control room.

* Type Codes	Criteria for RO/SRO-I/SRO-U
(A)lternate Path	4-6 / 4-6 / 2-3
(C)ontrol Room	
(D)irect from Bank	≤ 9 / ≤ 8 / ≤ 4
(E)mergency or abnormal in-plant	≥ 1 / ≥ 1 / ≥ 1
(EN) gineered Safety Features	≥ 1 / ≥ 1 / ≥ 1 (control room system)
(L)ow-Power / Shutdown	≥ 1 / ≥ 1 / ≥ 1
(N)ew or (M)odified from bank including 1(A)	≥ 2 / ≥ 2 / ≥ 1
(P)revious 2 exams	≤ 3 / ≤ 3 / ≤ 2 (randomly selected)
(R)CA	≥ 1 / ≥ 1 / ≥ 1
(S)imulator	

Facility: South Texas Project **Date of Examination:** 7-12-21

Exam Level: RO ☐ SRO-I ☐ SRO-U ■ **Operating Test No.:** LOT 25 NRC

Control Room Systems: * 8 for RO, 7 for SRO-I, and 2 or 3 for SRO-U

System / JPM Title	Type Code*	Safety Function
a. (S1) Perform Emergency Boration of RCS KA: 004 A4.07 (3.9/3.7)	A,D,S	1
b.		
c. (S3) Respond to CCW Leak after Swapping CCW Pumps KA: 008 A4.01 (3.3/3.1)	A,EN,M,S	8
d.		
e.		
f. (S6) Respond to Failed SR NI KA: 015 A4.03 (3.8/3.9)	D,L,S	7
g.		
h.		
In-Plant Systems: * 3 for RO, 3 for SRO-I, and 3 or 2 for SRO-U		
i.		
j. (P2) Perform EDG Post Run Checklist with Overspeed Butterfly Valve NOT Fully Latched KA: 064 A4.06 (3.9/3.9)	A,E,N	6
k. (P3) Place a Second Spent Fuel Pool Cooling Train (B) in Service KA: 033 A4.02 (2.4/2.8)	N,R	4P

* All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions, all 5 SRO-U systems must serve different safety functions, and in-plant systems and functions may overlap those tested in the control room.

* Type Codes	Criteria for RO/SRO-I/SRO-U
(A)lternate Path	4-6 / 4-6 / 2-3
(C)ontrol Room	
(D)irect from Bank	≤ 9 / ≤ 8 / ≤ 4
(E)mergency or abnormal in-plant	≥ 1 / ≥ 1 / ≥ 1
(EN) gineered Safety Features	≥ 1 / ≥ 1 / ≥ 1 (control room system)
(L)ow-Power / Shutdown	≥ 1 / ≥ 1 / ≥ 1
(N)ew or (M)odified from bank including 1(A)	≥ 2 / ≥ 2 / ≥ 1
(P)revious 2 exams	≤ 3 / ≤ 3 / ≤ 2 (randomly selected)
(R)CA	≥ 1 / ≥ 1 / ≥ 1
(S)imulator	

STP LOT-25
NRC Systems JPM Description

Control Room Systems JPMs

(S1) **Perform Emergency Boration of RCS**
Unit 1 failed to automatically trip when two channels of pressurizer pressure low bistables were tripped. The crew is performing actions of 0POP05-EO-FRS1, Response To Nuclear Power Generation – ATWS. The Unit Supervisor directs to initiate emergency boration of the RCS in accordance with the procedure. However, during the performance of the JPM, the only running charging pump will trip prior to the operator reaching Step 4b of the procedure. The applicant must correctly establish emergency boration flowpath and flowrates in accordance with procedure 0POP05-EO-FRS1, "Response To Nuclear Power Generation – ATWS" in which there are no running charging pumps. [NRC LOT-17]

(S2) **Raise SI Accumulator Level**
Unit 2 is in Mode 3. A low-level alarm for the 2A Accumulator has been received. The applicant is directed to restore level. The applicant must successfully use the HHSI Pump 2A and fill the SI accumulator to clear the alarm. Additionally, the applicant must secure filling before reaching a high level. This will be done in accordance with 0POP02-SI-0001, "Safety Injection Accumulators." This is from the licensee's bank labeled JPM Number: [NRC LOT-22 S2].

(S3) **Respond to CCW Leak after Swapping CCW Pumps**
Unit 1 is in Mode 5. RHR Pumps 1B and 1C are in service. The applicant is tasked by the Unit Supervisor to start CCW Pump 1A in preps to start RHR Pump 1A. A leak will develop when CCW Pump 1A starts. The applicant must correctly address the leak and secure CCW Pump 1A in accordance with 0POP04-CC-0001, "Component Cooling Water System Leak." This is modified from the licensee's bank labeled JPM Number: NRC S1. [NRC LOT-16]

(S4) **MSIV Operability Test**
Unit 1 is in Mode 5. The off-going shift has completed preparations for performing operability testing "A" MSIV FSV-7414 and MSIB FV-7412. The applicant must correctly perform timed strokes of "A" MSIV FSV-7414 and MSIB FV-7412 and determine if they are within the acceptance criteria per 0PSP03-MS-0002, "Main Steam System Cold Shutdown Valve Operability Test." This is from the licensee's bank labeled JPM NO: NRC-007. [NRC LOT-10]

(S5) **Place H2 Monitoring in Service**
Unit 1 has experienced a Large Break LOCA. The control room has completed standard post trip actions. The Unit Supervisor has directed to check containment H2 concentration per procedure. The applicant must correctly place the H2 monitors in service in accordance with 0POP05-EO-EO10, "Loss of Reactor or Secondary Coolant." This is from the licensee's bank labeled JPM Number: LOT 22 Audit S1. [NRC LOT-21]

(S6) **Respond to Failed SR NI**
Unit 1 is in Mode 3 preparing for reactor startup. Source Range Nuclear Instrument Channel NI 31 has failed low. The Unit Supervisor has directed the applicant to respond to the failure. The applicant must correctly place the Source Range Channel Level Trip to BYPASS, the High Flux Shutdown switch to BLOCK and set NI-32 for Audible Count Rate in accordance with 0POP04-NI-0001, "Nuclear Instrument Malfunction." This is from the licensee's bank labeled JPM Number: S8. [NRC LOT-22]

Control Room Systems JPMs (continued)

(S7) **Respond to Stuck Open PZR Spray Valve**
Unit 1 is at 100% and the PRZR PRESS DEV LO B/U HTRS ON alarm actuates. The Unit Supervisor has directed the applicant to respond to the alarm. Procedures 0POP09-AN-04M8, "Annunciator Lampbox 04M8 Response Instructions" and 0POP04-RP-0001, "Loss of Automatic Pressurizer Pressure Control" will be used to determine the cause of the alarm. The applicant must identify that a normal pressurizer spray valve is open and stuck open. Actions to mitigate the pressure drop will fail resulting in manually tripping the reactor and securing RCPs 1A and 1D. [NEW]

(S8) **Perform Immediate Actions for a RX Trip with LOOP**
Unit 1 has just experienced a reactor trip with a LOOP. The Main Steam to Deaerator Valves are open and Emergency Diesel Generator for Train B did not start. The applicant is directed to perform immediate actions in 0POP05-EO-EO00, Reactor Trip or Safety Injection. The applicant must successfully close the Main Steam to Deaerator Valves and restore power to Train B ESF 4.16 KV Bus by emergency starting ESF/DG #12 and closing the DG output breaker. [NEW]

In Plant Systems JPMs

(P1) **Locally Trip the Reactor**
Unit 1 is at 100% and experiences a loss of all feedwater. Reactor did not automatically trip when S/G LO-LO level setpoint was reached. Manual actions to trip the reactor in the control room are not successful. The Unit Supervisor has directed the applicant to manually trip the reactor. The applicant must correctly perform actions to manually trip the reactor in accordance with 0POP05-EO-EO00, "Reactor Trip or Safety Injection." This JPM will begin outside the control room. The applicant must ultimately operate the reactor trip breakers in the Rod Control Equipment Room. This is from the licensee's bank labeled JPM NO: P1 [NRC LOT-18].

(P2) **Perform EDG Post Run Checklist with Overspeed Butterfly Valve NOT Fully Latched**
Unit 1 EDG 11(21) has been locally stopped. Unit Supervisor has directed to complete the DG Post Run Checklist 2. Applicant will find that the Diesel Air Intake Butterfly Valve has not fully latched. Applicant must successfully reset the valve locally at the turbocharger or by depressing the engine overspeed shutdown air reset valve at the overspeed trip governor. [NEW]

(P3) **Place a Second Spent Fuel Pool Cooling Train (B) in Service**
Unit 1 is a full power. Unit Supervisor has directed that both trains of spent fuel pool cooling be placed in service. Initial condition will have the "A" train running. Applicant must correctly step thru station procedure 0POP02-FC-0001, "Spent Fuel Pool Cooling and Cleanup System" Section 6.1 to start Train B of spent fuel pool cooling. Step 6.1.1 has already been completed. [NEW]
NOTE:
KA 033 A4.02 is being used for this task. The rating is 2.4 for RO and 2.8 for SRO. Given the industry emphasis on SFP Cooling after the Fukushima accident the regulator agrees that SFP Cooling is of sufficient importance to be evaluated on an NRC Initial Exam.

Scheduling

NOTE: All Control Room JPMs will be performed dynamically in the Simulator. JPMs will be performed as follows:

- S1 has its own IC – RO and SROU ONLY
- S2 and S6 together – RO and SROI ONLY S2. All Students S6. Perform S6 first.
- S3 and S4 together – All Students S3 RO and SROI ONLY S4. Perform S3 first.
- S5 has its own IC – RO and SROI ONLY.
- S7 has its own IC – RO and SROI ONLY. DO NOT perform with S8.
- S8 has its own IC – RO and SROI ONLY. DO NOT perform with S7.
- P1 – RO and SROI ONLY.
- P2 – All Students
- P3 – All Students. RCA

STPNOC

Job Performance Measure

PERFORM EMERGENCY BORATION OF RCS

JPM Number: NRC S1

Revision Number: 0

Date: 07/12/2021

Developed By: _____ _____
Instructor (Print/Sign) Date

Approved By: _____ _____
Training Supervisor (Print/Sign) Date

Approved By: _____ _____
Line Management (Print/Sign) Date

NOTE: N/A signature blocks if this JPM is being used on an NRC LOT Exam.

Revision Record (Summary)

Revision 0, Updated from the Final Submittal on the LOT 17 NRC exam.

SIMULATOR SETUP INSTRUCTIONS

NOTE: The following IC setup may be modified depending on JPMs that may be performed at the same time with this one.

IC Setup

1. Select normal 100% IC.
2. Insert malfunction, 03-09-02, to trip CCP 1B 3 seconds after red light comes on for CV-MOV-0218, Alternate Boration Isolation valve.
3. Insert malfunction, 01-12-02, for ATWS and block the incoming breaker handswitch for LC 1L1 to prevent the breaker from opening.
4. Insert a value of 0.5 for PT-0455, 02-19-01, and PT-458, 02-19-04. This will cause PZR pressure on those two channels to lower to 2100 psig and signal an OTDT Reactor Trip.
5. Insert malfunctions to prevent AUTO Turbine Trip, 06-02-01, and insertion of Control Rods, 01-09-01 and 01-09-02.
6. Place Rod Control in Manual.
7. Go to RUN on the simulator, immediately manually trip the main turbine, start ALL AFW Pumps and then go back to FREEZE on the simulator.
8. Save IC to a designated IC for LOT NRC Exam usage.

After IC is Stored and ready to perform JPM

1. For LOT NRC Exam this JPM is scheduled to be performed by itself.
2. Ensure “DO NOT USE” signs taped to Communications Consoles to help eliminate usage.
3. Check and clean the following procedures:
   - 0POP05-EO-FRS1, Response to Nuclear Power Generation - ATWS

NOTE: It is okay to use a similar IC to the IC listed below, provided the IC actually used is verified to be compatible with this and other JPMs that are scheduled to be run concurrently. {Delete this NOTE if **not** applicable.}

5. Reset the simulator to IC 190 and verify the following:
   - Red light at the end of CP-010 is out
   - ICS annunciators have stopped counting up
6. Place simulator in RUN and quickly silence/acknowledge/reset alarms, **including plant computer/ICS alarms.**
7. PLACE simulator in FREEZE.
8. When the student and the examiners are ready to proceed, place the simulator in RUN.
9. There is no simulator lesson plan for this JPM.

SIMULATOR SETUP INSTRUCTIONS (continued next page)

SIMULATOR SETUP INSTRUCTIONS (continued from previous page)

Booth Instructor Actions

1. The booth operator will need to be prepared to silence alarms NOT associated with placing Emergency Boration in service.

INITIAL CONDITIONS

Unit 1 was at full power when, due to an error while performing maintenance, two (2) channels of Pressurizer Pressure were lowered causing a Reactor Trip signal on OTDT. The Reactor failed to automatically trip and the Control Rods could not be manually or automatically inserted. The crew is performing the actions of 0POP05-EO-FRS1, Response To Nuclear Power Generation – ATWS, and have completed steps 1 through 3.

INITIATING CUE

The Unit Supervisor directs you to initiate emergency boration of the RCS in accordance with Step 4 of 0POP05-EO-FRS1, Response to Nuclear Power Generation – ATWS.

NOTE: Normal annunciator response has been suspended by the Unit Supervisor.

Fill in the JPM Start Time when the student acknowledges the Initiating Cue.

Information For Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes critical steps.

If Time Critical, estimated time is the Time Critical time.

Number any comments in the "Comment Number" column on the following pages. Then annotate that comment in the "Comments" section. The comment section should be used to document: the reason that a step is marked as unsatisfactory, marginal performance relating to management expectations, or problems the examinee had while performing the JPM. Comments relating to procedural or equipment issues should be entered and tracked using the site's appropriate tracking system.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The timeclock starts when the candidate acknowledges the initiating cue.

Task Standard:

Charging Pump 1A has been started and Emergency Boration flowpath through CV-MOV-0218, Alternate Boration Isolation valve has been established with flowrate (FI-0120A) greater than 50 gpm and charging flowrate (FI-0205A) greater than 50 gpm.
JPM Steps 1, 2, 3, 4, 6, 7, 10, 11 are completed.

JPM Start Time: _____

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
NOTE Hand out the Student Initiating Cue Sheet. The operator will use the simulator copy of the procedure. Ensure it is clean before beginning.					
*1	INITIATE Emergency Boration Of RCS: • OPEN alternate boration isolation valve (Step 4.a) **CUE:** **If asked about the trip of CCP 1B an operator will report back that CCP 1B breaker has an overcurrent trip indicated and the pump motor has an acrid smell.**	Operator has opened CV-MOV-0218, Alternate Boration Isolation valve. **NOTE:** **After placing the switch for CV-MOV-0218 in OPEN, CCP 1B will trip.**	___	___	___
ALTERNATE PATH begins here.					

*2	CCPs - AT LEAST ONE RUNNING
	RNO
	PERFORM the following:
	• CLOSE seal injection isolation valves
	  • "SEAL INJ ISOL MOV-0033A"
	  • "SEAL INJ ISOL MOV-0033B"
	  • "SEAL INJ ISOL MOV-0033C"
	  • "SEAL INJ ISOL MOV-0033D"
	(Step RNO 4.b.1)
		Operator closed all 4 seal injection isolation valves, CV-MOV-0033 A-D by placing each handswitch in CLOSE.	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*3	CCPs - AT LEAST ONE RUNNING **RNO** PERFORM the following: • CLOSE the CCP discharge valve for the CCP to be started (Step RNO 4.b.2)	Operator closed CCP discharge valve, CV-MOV-8377A, by placing the handswitch in CLOSE.	___	___	___
*4	CCPs - AT LEAST ONE RUNNING **RNO** PERFORM the following: • CLOSE the charging flow control valve (Step RNO 4.b.3)	Operator closed Charging Flow Control Valve, CV-FCV-0205 by placing the controller in manual and lowering the demand to 0%. **NOTE:** **The next step, RNO 4.b.4, will be N/A because CV-FCV-0205 closed.**	___	___	___
5	CCPs - AT LEAST ONE RUNNING **RNO** PERFORM the following: • OPEN the recirculation valve for the CCP to be started. (Step RNO 4.b.5)	Operator verified Recirc valve, CV-FCV-201, open. NOTE: Recirc valve, CV-FCV-201, is already open.	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*6	CCPs - AT LEAST ONE RUNNING **RNO** PERFORM the following: • START one CCP (Step 4.b.6) **CUE:** **If asked an operator reports CCP 1A is good for a start.**	Operator started CCP 1A by placing the handswitch in START.	___	___	___
*7	CCPs - AT LEAST ONE RUNNING **RNO** PERFORM the following: • OPEN the CCP discharge valve for the pump that was started. (Step 4.b.7)	Operator Re-Opened CCP discharge valve, CV-MOV-8377A, by placing the handswitch in OPEN.	___	___	___
8	Charging flow – ESTABLISHED (Step 4.c)	Operator has determined that charging flow is established. **NOTE:** **Charging flow is technically established with no flow because Charging Flow Control Valve, CV-FCV-0205, was closed in JPM step 4. No actions are required to be performed, however, operator may go through RNO steps.**	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
9	CHECK boration source aligned to the Boric Acid Tanks • Emergency Boration flowpath OR • Normal Boration flowpath (Step 4.d)	Operator aligned for emergency boration by completing procedure step 4.a (JPM step 1)	___	___	___
*10	CONTROL charging to MAINTAIN GREATER THAN 50 GPM charging flow on "CHG FLOW FI-0205A" (Step 4.e)	Operator established greater than 50 gpm flow on FI-0205A by manually opening the charging flow control valve, CV-FCV-0205 using the valve controller and raising the demand signal.	___	___	___
*11	ENSURE at least one boric acid pump RUNNING (Step 4.f)	Operator started at least one boric acid pump.	___	___	___
12	CHECK emergency boration flowpath in service • MAINTAIN emergency boration flowrate - GREATER THAN 50 GPM "ALT BORATE FLOW" "FI-0120A" (Step 4.g)	Operator checked that emergency boration flow on FI-0120A is also at greater than 50 gpm.	___	___	___
CUE	This JPM is completed				

JPM Stop Time: _____

JPM SUMMARY

Operator's Name: _____ **Job Title**: ☐ RO ☐SRO

JPM Title: PERFORM EMERGENCY BORATION OF RCS

JPM Number: NRC S1 Revision Number: 0

Task Number and Title: T83536 - Respond to Nuclear Power Generation/ATWS

K/A Number and Importance: 004 A4.07 3.9/3.7

Suggested Testing Environment: ☒ Simulator ☐ Control Room ☐ In-Plant ☐ Other

Alternate Path: ☒ Yes ☐ No

Task Designed For: ☐ SRO Only ☒ RO/SRO ☐ AO/RO/SRO

Time Critical: ☐ Yes ☒ No

Level of Difficulty: **3**

Reference(s): 0POP05-EO-FRS1, Response to Nuclear Power Generation – ATWS, Rev 21

Actual Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☐ Other

Testing Method: ☐ Simulate ☐ Perform

Estimated Time to Complete: 8 minutes **Actual Time Used:** _____ minutes

Critical Steps (*) 1, 2, 3, 4, 6, 7, 10, 11

Evaluation Summary:
Were all the Critical Steps performed satisfactorily? ☐ Yes ☐ No

The operator's performance was evaluated against standards contained within this JPM and has been determined to be: ☐ Satisfactory ☐ Unsatisfactory

Comments: _____

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Evaluator's Name: _____
(Print)

Evaluator's Signature: _____ **Date**: _____

Student Handout

INITIAL CONDITIONS

Unit 1 was at full power when, due to an error while performing maintenance, two (2) channels of Pressurizer Pressure were lowered causing a Reactor Trip signal on OTDT. The Reactor failed to automatically trip and the Control Rods could not be manually or automatically inserted. The crew is performing the actions of 0POP05-EO-FRS1, Response To Nuclear Power Generation – ATWS, and have completed steps 1 through 3.

INITIATING CUE

The Unit Supervisor directs you to initiate emergency boration of the RCS in accordance with Step 4 of 0POP05-EO-FRS1, Response to Nuclear Power Generation – ATWS.

NOTE: Normal annunciator response has been suspended by the Unit Supervisor.

STPNOC

Job Performance Measure

FILL AN SI ACCUMULATOR

JPM Number: NRC S2

Revision Number: 0

Date: 07/12/2021

Developed By: _____ _____
Instructor (Print/Sign) Date

Approved By: _____ _____
Training Supervisor (Print/Sign) Date

Approved By: _____ _____
Line Management (Print/Sign) Date

NOTE: N/A Signature blocks of this JPM is being used on an NRC LOT Exam.

Revision Record (Summary)

Revision 0, Updated from the Final Submittal on the LOT 22 NRC exam.

SIMULATOR SETUP INSTRUCTIONS

NOTE: The following IC setup may be modified depending on JPMs that may be performed at the same time with this one.

IC Setup

1. This JPM can performed in any Mode with the Accumulators filled and pressurized.
2. Using 0POP02-SI-0001, Safety Injection Accumulators, lower Accumulator Tank 1A level to about 8825 gallons and enough to bring in Accumulator Tank 1A HI/LO level alarm.
3. Save IC to a designated IC for LOT NRC Exam usage.

After IC is Stored and ready to perform JPM

1. For LOT 25 NRC Exam this JPM is scheduled to be performed with JPM S6.
2. Ensure “DO NOT USE” signs taped to Communications Consoles to help eliminate usage.
3. Check and clean the following procedures:
   - 0POP02-SI-0001, Safety Injection Accumulators
   - POP09 procedures for panel 001

NOTE: It is okay to use a similar IC to the IC listed below, provided the IC actually used is verified to be compatible with this and other JPMs that are scheduled to be run concurrently. {Delete this NOTE if **not** applicable.}

5. Reset the simulator to IC 191 and verify the following:
6. Red light at the end of CP-010 is out
7. ICS annunciators have stopped counting up
8. FROM THE BOOTH, place simulator in run and quickly silence/acknowledge/reset alarms, **including plant computer/ICS alarms.**
9. On an ICS monitor near CP001, pull up Accumulator Tank 1A level and pressure trend.
10. PLACE simulator in FREEZE.
11. When the student and the examiners are ready to proceed, place the simulator in RUN.
12. There is no simulator lesson plan for this JPM.

Booth Instructor Actions

1. Prior to starting this JPM for each student perform the following to clear ICS trends:
   - Ensure the simulator is in FREEZE
   - On the Simulator Booth ICS drop 239 pull up the ‘Simstation Test Interface’ window
     - Select Control Mode ‘STANDALONE’
     - Select Trend Data ‘RESET’
     - Select Control Mode ‘PMC’
2. When in RUN pull up Accumulator Tank 1A level and pressure trend on an ICS monitor near CP001

INITIAL CONDITIONS

Unit 2 is in Mode 3. The “ACC TK 2A LEVEL HI/LO” (1M02-B3) alarm was received. A low level in the “2A” Accumulator has been verified to be valid.

The current “2A” SI Accumulator Boron Concentration is 2850 ppm.

All other accumulator pressures and levels are in their Tech Spec bands.

INITIATING CUE

The Unit Supervisor directs you to clear “ACC TK 2A LEVEL HI/LO” (1M02-B3) alarm by restoring level in the “2A” Accumulator per 0POP02-SI-0001, Safety Injection Accumulators, Section 5.0, Filling Accumulators.

Prerequisites have been verified:

- 0POP02-SI-0002, Safety Injection System Initial Lineup, is complete.
- Instrument Air is in service and available per 0POP02-IA-0001, Instrument Air.
- High Pressure N2 is in service per 0POP02-NI-0001, High Pressure N2 System, Section 7.0.
- A remote vent path is available to vent the RHR System.

Plant Operators are available locally.

Fill in the JPM Start Time when the student acknowledges the Initiating Cue.

Information For Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes critical steps.

If Time Critical, estimated time is the Time Critical time.

Number any comments in the "Comment Number" column on the following pages. Then annotate that comment in the "Comments" section. The comment section should be used to document: the reason that a step is marked as unsatisfactory, marginal performance relating to management expectations, or problems the examinee had while performing the JPM. Comments relating to procedural or equipment issues should be entered and tracked using the site's appropriate tracking system.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The timeclock starts when the candidate acknowledges the initiating cue.

Task Standard:

Starts HHSI Pump 2A; opens Accumulator 2A Fill Valve, SI-FV-3973, to begin filing SI Accumulator 2A & clear "ACC TK 2A LEVEL HI/LO" annunciator; closes SI-FV-3973 prior to "ACC TK 2A LEVEL HI/LO" annunciator coming back in due to high level or exceeding the TS limit of 9100 gallons; and then secures HHSI Pump 2A.
JPM steps 6, 7, 9, 10 completed.

JPM Start Time: _____

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
NOTE Hand out the Student copy of the Initial Conditions & Initiating Cue and the Student HO, 0POP02-SI-0001, Safety Injection Accumulators. **Because Unit 1 temporary accumulator settings are NOT modeled in the simulator this JPM is written for Unit 2.**					
1	IF Reactor Coolant System Pressure is less than 1900 psig, THEN ISOLATE the High Head Safety Injection Pump from RCS by performing the following: (Step 5.1) **CUE:** **If asked, 0PSP03-RC-0006, RCS Inventory, is NOT in progress.**	N/As all steps associated with step 5.1 due to RCS pressure > 1900 psig.	___	___	___
2	VERIFY OPEN High Head Safety Injection (HHSI) Pump "MINI FLOW ISOL" valves for the train associated with the accumulator to be filled. (Step 5.2)	The Operator has verified SI-MOV-0011A and 0012A are both open. **NOTE:** **Both valves are already open.**	___	___	___
3	VERIFY OPEN High Head Safety Injection (HHSI) "PUMP DISCH ISOL" valve for the train associated with the accumulator to be filled. (Step 5.3)	The Operator has verified SI-MOV-0004A is open. **NOTE:** **This valve is already open.**	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
4	VERIFY OPEN "RWST TO SI SUCT HDR ISOL" valve for the train associated with the accumulator to be filled. (Step 5.4)	The Operator has verified SI-MOV-0001A is open. **NOTE:** **This valve is already open.**	___	___	___
5	ENSURE associated train's Emergency Diesel Generator for the pump to be started in the next step is **NOT** being paralleled OR operated in parallel with offsite power. (Step 5.5)	The Operator has verified that ESF DG #21 is not running paralleled to offsite power. **NOTE:** **ESF DG #21 is not running.**	___	___	___
*6	START HHSI pump for the train associated with the accumulator to be filled. (Step 5.6) **CUE:** **Plant Operator in the field, if asked, reports that HHSI Pump 2A is good for a start.** **AND** **After the pump is started, if asked, reports that HHSI Pump 2A is running SAT.**	The Operator has started HHSI Pump 2A. **NOTE:** **If the Operator starts to make a PA announcement tell the Operator an announcement has been made.**	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*7	OPEN HHSI Pump Discharge to "ACC FILL ISOL" valve for the train associated with the accumulator to be filled. (Step 5.7)	The Operator has opened Accumulator 2A Fill Valve SI-FV-3973 to begin filing SI Accumulator 2A. **NOTE:** **When this valve is opened, a BYP/INOP alarm will sound. This is an expected condition for re-positioning this valve.** **ACC TK 2A LEVEL HI/LO alarm will clear when level rises above 8858 gallons.**	___	___	___
8	MONITOR level AND pressure of the accumulator being filled to ensure that 9076.0 gallons OR 643.7 psig is **NOT** exceeded. (Step 5.8)	Monitors Accumulator 2A level and pressure on the following computer points: • Plant Computer point SILA0950 / SILA0951 • Plant Computer point SIPA0960 / SIPA0961 **NOTE:** **Accumulator pressure should not exceed 643.7 psig if level is not raised above 9074 gallons.** **The Operator may pull up these ICS Computer Points prior to getting to this step because of the short amount of time it takes to fill the accumulator.**	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
NOTE: **Critical Step #9 - ACC TK 2A LEVEL HI/LO alarm will come back in if level rises above 9074 gallons. The TS limit is 9100 gallons. A note prior to procedure step 5.8 states "During fill, Use conservatism to prevent actuating the alarm OR exceeding the limit of Technical Specification 3.5.1." Because of this note critical step #9 will NOT be completed satisfactorily if ACC TK 2A LEVEL HI/LO alarm comes back in due to high level (9074 gallons) or the TS limit of 9100 gallons is exceeded.**					
*9	WHEN "ACC 2A, 2B, 2C TK HI/LO" Annunciator is reset AND the required level is obtained for the accumulator being filled, THEN CLOSE the "ACC FILL ISOL" valve for the accumulator being filled. (Step 5.9) **CUE:** **If the Operator asks the Unit Supervisor for required level, fill to within procedural requirements.**	The Operator has closed Accumulator 2A Fill Valve SI-FV-3973 to stop filing SI Accumulator 2A.	___	___	___
NOTE: Critical Step #10 - A note prior to procedure step 5.8 states "During fill, IF an Accumulator level reaches 9050 gallons on either of the control board indications, THEN the HHSI pump should be IMMEDIATELY secured to prevent overfill of the Accumulator." Because of this note the operator may stop HHSI Pump 2A prior to procedure step 5.10 if level rises above 9050 gallons.					
*10	STOP HHSI Pump that was used to fill the accumulator. (Step 5.10)	Operator has stopped HHSI Pump 2A.	___	___	___
CUE	This JPM is completed				

JPM Stop Time: _____

JPM SUMMARY

Operator's Name: _____ **Job Title**: ☐ RO ☐SRO

JPM Title: FILL AN SI ACCUMULATOR

JPM Number: NRC S2 Revision Number: 0

Task Number and Title: 29650, Fill a Safety Injection Accumulator

K/A Number and Importance: 006 A4.07 4.4/4.4

Suggested Testing Environment: ☒ Simulator ☐ Control Room ☐ In-Plant ☐ Other

Alternate Path: ☐ Yes ☒ No

Task Designed For: ☐ SRO Only ☒ RO/SRO ☐ AO/RO/SRO

Time Critical: ☐ Yes ☒ No

Level of Difficulty: 3

Reference(s): 0POP02-SI-0001, Safety Injection Accumulators, Rev. 42

Actual Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☐ Other

Testing Method: ☐ Simulate ☐ Perform

Estimated Time to Complete: 8 minutes **Actual Time Used:** _____ minutes

Critical Steps (*) 6, 7, 9, 10

Evaluation Summary:
Were all the Critical Steps performed satisfactorily? ☐ Yes ☐ No

The operator's performance was evaluated against standards contained within this JPM and has been determined to be: ☐ Satisfactory ☐ Unsatisfactory

Comments: _____

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Evaluator's Name: _____
(Print)

Evaluator's Signature: _____ **Date**: _____

Student Handout

INITIAL CONDITIONS

Unit 2 is in Mode 3. The “ACC TK 2A LEVEL HI/LO” (1M02-B3) alarm was received. A low level in the “2A” Accumulator has been verified to be valid.

The current “2A” SI Accumulator Boron Concentration is 2850 ppm.

All other accumulator pressures and levels are in their Tech Spec bands.

INITIATING CUE

The Unit Supervisor directs you to clear “ACC TK 2A LEVEL HI/LO” (1M02-B3) alarm by restoring level in the “2A” Accumulator per 0POP02-SI-0001, Safety Injection Accumulators, Section 5.0, Filling Accumulators.

Prerequisites have been verified:

- 0POP02-SI-0002, Safety Injection System Initial Lineup, is complete.
- Instrument Air is in service and available per 0POP02-IA-0001, Instrument Air.
- High Pressure N2 is in service per 0POP02-NI-0001, High Pressure N2 System, Section 7.0.
- A remote vent path is available to vent the RHR System.

Plant Operators are available locally.

NOTE: You are to respond to all control room alarms unless specifically told not to do so by the Examiner.

STPNOC

Job Performance Measure

RESPOND TO CCW LEAK AFTER SWAPPING CCW PUMPS

JPM Number: NRC S3

Revision Number: 0

Date: 07/12/2021

Developed By: _____ _____
Instructor (Print/Sign) Date

Approved By: _____ _____
Training Supervisor (Print/Sign) Date

Approved By: _____ _____
Line Management (Print/Sign) Date

NOTE: N/A signature blocks if this JPM is being used on an NRC LOT Exam.

Revision Record (Summary)

Revision 0, Modified from the Final Submittal on the LOT 16 NRC Exam

SIMULATOR SETUP INSTRUCTIONS

NOTE: The following IC setup may be modified depending on JPMs that may be performed at the same time with this one.

IC Setup

1. Select a Mode 5 IC with RHR 1B and 1C in service and low pressure letdown align to RHR Pump 1B.
2. Insert malfunction 04-07-01, 1A CCW/ECW HX Tube Leak, to be triggered after starting CCW Pump 1A with a value of 0.13. (Trigger on red light, delay 2 seconds and ramp 3 minutes 30 seconds.)
3. Insert malfunction 04-07-01, 1A CCW/ECW HX Tube Leak, to be triggered after starting CCW Pump 1A with a value of .0065. (Trigger on handswitch to start)
4. Save IC to a designated IC for LOT NRC Exam usage.

SIMULATOR SETUP INSTRUCTIONS (Cont.)

After IC is Stored and ready to perform JPM

1. For LOT 25 NRC Exam this JPM is scheduled to be performed with JPM S4.
2. Ensure “DO NOT USE” signs taped to Communications Consoles to help eliminate usage.
3. Develop a Student Handout from current revision of 0POP02-CC-0001, Component Cooling Water.
4. Ensure the following procedures in the simulator are clean:
   - 0POP04-CC-0001, Component Cooling Water System Leak
   - 0POP09-AN-02M3, Annunciator Lampbox 2M03 Response Instructions

NOTE: It is okay to use a similar IC to the IC listed below, provided the IC actually used is verified to be compatible with this and other JPMs that are scheduled to be run concurrently. {Delete this NOTE if **not** applicable.}

5. Reset the simulator to IC 192 and verify the following:
   - Red light at the end of CP-010 is out
   - ICS annunciators have stopped counting up
6. Place simulator in RUN and quickly silence/acknowledge/reset alarms, **including plant computer/ICS alarms.**
7. On an ICS monitor near CP002, pull up CCW Surge Tank level trend.
8. PLACE simulator in FREEZE.
9. When the student and the examiners are ready to proceed, place the simulator in RUN.
10. There is no simulator lesson plan for this JPM.

Booth Instructor Actions

1. Prior to starting this JPM for each student perform the following to clear ICS trends:
   - Ensure the simulator is in FREEZE
   - On the Simulator Booth ICS drop 239 pull up the ‘Simstation Test Interface’ window
     - Select Control Mode ‘STANDALONE’
     - Select Trend Data ‘RESET’
     - Select Control Mode ‘PMC’
2. When in RUN pull up Accumulator Tank 1A level and pressure trend on an ICS monitor near CP001
3. When instructed by the examiner, activate the remote function to open CC-0231 from the Summary Pending page. (JPM Step 11)

INITIAL CONDITIONS

Unit 1 is in Mode 5.

- RHR Pumps 1B and 1C are in service with low pressure letdown aligned to RHR Pump 1B.
- PZR level is being maintained between 50% to 70% Cold Cal.

INITIATING CUE

In preparation to start RHR Pump 1A, the Unit Supervisor directs you to start CCW Pump 1A in accordance with 0POP02-CC-0001, Component Cooling Water, Section 10.0, Starting a CCW Train.

NOTE the following:

- RHR Header pressure in Train 1A has been lowered to support starting CCW Pump 1A.
- Train A CCW is filled and vented.
- 0PSP03-ZG-0005, Plant Startup to 100% is NOT in progress.
- Opturator Position Verifications on any valves is NOT being performed.

Fill in the JPM Start Time when the student acknowledges the Initiating Cue.

Information For Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes critical steps.

If Time Critical, estimated time is the Time Critical time.

Number any comments in the "Comment Number" column on the following pages. Then annotate that comment in the "Comments" section. The comment section should be used to document: the reason that a step is marked as unsatisfactory, marginal performance relating to management expectations, or problems the examinee had while performing the JPM. Comments relating to procedural or equipment issues should be entered and tracked using the site's appropriate tracking system.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The timeclock starts when the candidate acknowledges the initiating cue.

Task Standard:

CCW alignment has been established to CCW/RHR Heat Exchanger on Train A, CCW Pump 1A was started and, after identifying a leak in CCW Train A, CCW Pump 1A has been secured.

JPM Steps 6, 7, 13 are completed.

JPM Start Time: _____

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
NOTE Hand out the Student copy of the Initial Conditions & Initiating Cue and the Student HO, 0POP02-CC-0001, Component Cooling Water.					
1	ENSURE CCW train to be started has been filled and vented. (Step 10.1)	The Operator has ensured CCW Train A is filled and vented.	___	___	___
2	ENSURE only one "RAD MONITOR" valve for RT-8040 is open from a running CCW train. • Train A – FV-4524 • Train B – FV-4525 • Train C – FV-4526 (Step 10.2)	The Operator has ensured that one RAD MONITOR valve is OPEN **NOTE:** **Train B – FV-4525 will already be open.**	___	___	___
3	ENSURE CCW Pump Supplementary Cooler control switch in “AUTO” for CCW pump to be started: • "PUMP 1A/RM 067 SUPP CLR 11A HM-VAH001" • "PUMP 1B/RM 067E SUPP CLR 11B HM-VAH002" • "PUMP 1C/RM 067F SUPP CLR 11C HM-VAH003" (Step 10.3)	The Operator has ensured that a CCW Pump supplementary Cooler control switch is in AUTO **NOTE:** **Train A CCW Pump supplementary Cooler control switch is already in AUTO and running.**	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
4	ENSURE ECW pump running, per 0POP02-EW-0001, Essential Cooling Water Operation, as applicable that is associated with CCW pump to be started. (Step 10.4)	The Operator has ensured that ECW Pump 1A is running. **NOTE:** **ECW Pump 1A is already running.**	___	___	___
5	ENSURE CCW/ECW mode selector switches for all trains in "OFF": • "CCW/ECW TRAIN A MODE SEL" • "CCW/ECW TRAIN B MODE SEL" • "CCW/ECW TRAIN C MODE SEL" (Step 10.5)	The Operator has ensured all CCW/ECW TRAIN MODE SEL switches in OFF. **NOTE:** **All CCW/ECW TRAIN MODE SEL switches are already in OFF.**	___	___	___
*6	OPEN RHR HX "CCW OUTL" for CCW Train to be placed in service: • Train A – FV-4531 • Train B – FV-4548 • Train C – FV-4565 (Step 10.6)	The Operator has opened CCW OUTL on Train A – FV-4531. **NOTE:** **Step 10.7 will be N/A** **The Operator will continue to Step 10.8**	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*7	IF the section is **NOT** being performed to support performance of 0PSP03-ZG-0005, Remote Shutdown System Operability Test (Cold Shutdown), THEN START desired "COMP CLG WTR PUMP": • 1A (Step 10.8) **CUE** **As a Plant Operator report that oil levels are SAT on CCW Pump 1A and it looks good for a start.** **As a Plant Operator, if asked, CCW Pump 1A start was SAT.**	The Operator has started CCW Pump 1A. **NOTE:** **When CCW Pump 1A is started a leak will slowly start to develop through the 1A CCW/ECW heat exchanger tubes.** **The Operator will probably not notice the leak right away and will continue with steps in 0POP02-CC-0001, Component Cooling Water, that check CCW status after starting a CCW pump.**	___	___	___
ALTERNATE PATH begins here. **Annunciator 2M03, F-6, CCW SURGE TK LVL LO, will alarm at about 66.7% surge tank level.** **The Operator may go directly to 0POP04-CC-0001, Component Cooling Water System Leak, at JPM Step 13.** **For the rest of this JPM the Operator is to use the procedures in the simulator.**					
8	VERIFY CCW Surge Tank level. (2M03 – F6 Step 1)	Using 0POP09-AN-02M3, Annunciator Lampbox 2M03 Response Instructions, the Operator has verified CCW Surge Tank level.	___	___	___
9	ENSURE LV-4501 Normal Demineralized Water Makeup Valve open. (2M03 – F6 Step 2)	The Operator ensures LV-4501, Normal Demineralized Water Makeup Valve, is open. **NOTE:** **LV-4501 will have automatically opened.**	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
10	DISPATCH an Operator to investigate cause of alarm. (2M03 – F6 Step 3) **CUE:** **If asked, as a plant operator, report no leaks at pump and you will start checking other areas for CCW leaks.**	The Operator has called the Plant Operator to investigate the cause of the alarm.	___	___	___
11	IF CCW Surge Tank level is NOT restored by normal makeup, THEN PERFORM the following: • ENSURE an RMW Pump is running. • DISPATCH an Operator to open 1-CC-0231 RMWST TO CCW SURGE TANK. (2M03 – F6 Step 4) **CUE** **As a Plant Operator acknowledge and then report back that 1-CC-0231 is open.**	The Operator has ensured an RMW Pump is running and has dispatched a plant operator to open 1-CC-0231 RMWST TO CCW SURGE TANK. **NOTE:** **The examiner is to signal the simulator booth operator to open CC-0231.** **Depending on the timing of getting to this step, CCW surge tank level may rise slightly but then will continue to lower after CC-0231 is opened.**	___	___	___
12	IF CCW Surge Tank level continues to decrease, THEN GO TO 0POP04-CC-0001, Component Cooling Water System Leak. (2M03 – F6 Step 5) **CUE:** **If asked, the Unit Supervisor directs you to perform 0POP04-CC-0001.**	The Operator has transitioned to 0POP04-CC-0001, Component Cooling Water System Leak.	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
NOTE: **In regard to the next JPM Step, observe the following:** • **The CCW leak is sized so that by the time the Operator transitions to 0POP04-CC-0001, level in the 1A CCW Surge Tank compartment will be <56% and from the CIP the Operator will secure CCW Pump 1A.** • **If at anytime the Operator secures CCW Pump 1A, the leak will stop, and the Critical Step will be satisfied.** • **If the Operator does not stop CCW Pump 1A using the CIP Step, then the Operator may transition through the procedure and secure the pump at Step 20.0** **OR** • **If level gets <49%(<8.3%) in 1A CCW Surge Tank compartment the Operator may transition to 0POP09-AN-02M3 – B6, CCW SRG TK COMPART A LVL LO (B5, CCW SURGE TANK COMPARTMENT A LEVEL LO LO) and secure CCW Pump 1A.** • **If level in 1A CCW Surge Tank compartment gets to 0% and CCW Pump 1A has not been secured then the Critical Step will NOT be satisfied.**					

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*13	CCW PUMP TRIP CRITERIA If CCW Surge Tank compartment level is less than 56%, then perform the following: • If RHR is required to be in service, then ENSURE RHR Pump for unaffected CCW train in service per 0POP02-RH-0001, Residual Heat Removal System Operation. • ENSURE associated RHR Train secured per 0POP02-RH-0001, Residual Heat Removal System Operation. • ENSURE the associated COMP CLG WTR PUMP is in PULL TO LOCK. (0POP04-CC-0001, CIP)	The Operator has checked RHR requirements and verified that RHR Train A is NOT is service. The Operator has secured CCW Pump 1A by taking the handswitch to stop.	___	___	___
CUE	This JPM is completed				

JPM Stop Time: _____

JPM SUMMARY

Operator's Name: _____ **Job Title**: ☐ RO ☐SRO

JPM Title: RESPOND TO CCW LEAK AFTER SWAPPING CCW PUMPS

JPM Number: NRC S3 Revision Number: 0

Task Number and Title: 73215, Respond to CCW System Alarms

K/A Number and Importance: 008 A4.01 (3.3/3.1)

Suggested Testing Environment: ☒ Simulator ☐ Control Room ☐ In-Plant ☐ Other

Alternate Path: ☒ Yes ☐ No

Task Designed For: ☐ SRO Only ☒ RO/SRO ☐ AO/RO/SRO

Time Critical: ☐ Yes ☒ No

Level of Difficulty:

Reference(s): 0POP02-CC-0001, Component Cooling Water, Rev. 54
0POP04-CC-0001, Component Cooling Water System Leak, Rev. 18
0POP09-AN-02M3, Annunciator Lampbox 2M03 Response Instructions, Rev. 33

Actual Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☐ Other

Testing Method: ☐ Simulate ☐ Perform

Estimated Time to Complete: 20 minutes **Actual Time Used:** _____ minutes

Critical Steps (*) 6, 7 combined with 11 or 14 or 16

Evaluation Summary:
Were all the Critical Steps performed satisfactorily? ☐ Yes ☐ No

The operator's performance was evaluated against standards contained within this JPM and has been determined to be: ☐ Satisfactory ☐ Unsatisfactory

Comments: _____

_____

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_____

_____

_____

Evaluator's Name: _____
(Print)

Evaluator's Signature: _____ **Date**: _____

Student Handout

INITIAL CONDITIONS

Unit 1 is in Mode 5.

- RHR Pumps 1B and 1C are in service with low pressure letdown aligned to RHR Pump 1B.
- PZR level is being maintained between 50% to 70% Cold Cal.

INITIATING CUE

In preparation to start RHR Pump 1A, the Unit Supervisor directs you to start CCW Pump 1A in accordance with 0POP02-CC-0001, Component Cooling Water, Section 10.0, Starting a CCW Train.

NOTE the following:

- RHR Header pressure in Train 1A has been lowered to support starting CCW Pump 1A.
- Train A CCW is filled and vented.
- 0PSP03-ZG-0005, Plant Startup to 100% is NOT in progress.
- Opturator Position Verifications on any valves is NOT being performed.

NOTE: You are to respond to all control room alarms unless specifically told not to do so by the Examiner.

STPNOC

Job Performance Measure

MSIV/MSIB OPERABILITY TEST

JPM Number: NRC S4

Revision Number: 0

Date: 07/12/2021

Developed By: _____ _____
Instructor (Print/Sign) Date

Approved By: _____ _____
Training Supervisor (Print/Sign) Date

Approved By: _____ _____
Line Management (Print/Sign) Date

NOTE: N/A signature blocks if this JPM is being used on an NRC LOT Exam.

Revision Record (Summary)

Revision 0, Modified from the Final Submittal on the LOT 10 NRC Exam

SIMULATOR SETUP INSTRUCTIONS

NOTE: The following IC setup may be modified depending on JPMs that may be performed at the same time with this one.

IC Setup

1. Select a Mode 5 IC with RHR in service and the secondary at NO vacuum.
2. Open all SG PORVs and ensure N2 is secured to the SGs.
3. Save IC to a designated IC for LOT NRC Exam usage.

After IC is Stored and ready to perform JPM

1. For LOT 25 NRC Exam this JPM is scheduled to be performed with JPM S3
2. Ensure “DO NOT USE” signs taped to Communications Consoles to help eliminate usage.
3. Develop a Student Handout from current revision of 0PSP03-MS-0002, Main Steam System Cold Shutdown Valve Operability Test

NOTE: It is okay to use a similar IC to the IC listed below, provided the IC actually used is verified to be compatible with this and other JPMs that are scheduled to be run concurrently. {Delete this NOTE if **not** applicable.}

5. Reset the simulator to IC 192 and verify the following:
   - Red light at the end of CP-010 is out
   - ICS annunciators have stopped counting up
6. Place simulator in RUN and quickly silence/acknowledge/reset alarms, **including plant computer/ICS alarms.**
7. PLACE simulator in FREEZE.
8. When the student and the examiners are ready to proceed, place the simulator in RUN.
9. There is no simulator lesson plan for this JPM.

Booth Instructor Actions

1. None

INITIAL CONDITIONS

Unit 1 is in Mode 5.

INITIATING CUE

The Unit Supervisor directs you to perform valve testing on SG 1A Main Steam Isolation valve, FSV-7414 and SG 1A Main Steam Isolation Bypass valve, FV-7412, per Section 5.2 of 0PSP03-MS-0002, Main Steam System Cold Shutdown Valve Operability Test.

Note the following:

- SGs are vented to atmosphere through the SG PORVs.
- Secondary vacuum is NOT established.
- Nitrogen is NOT established to the SGs.
- Prerequisites Section 4.0 and Preparations Section 5.1 are completed.
- Section 5.6, Obturator Position Verification, is NOT being performed.

Fill in the JPM Start Time when the student acknowledges the Initiating Cue.

Information For Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes critical steps.

If Time Critical, estimated time is the Time Critical time.

Number any comments in the "Comment Number" column on the following pages. Then annotate that comment in the "Comments" section. The comment section should be used to document: the reason that a step is marked as unsatisfactory, marginal performance relating to management expectations, or problems the examinee had while performing the JPM. Comments relating to procedural or equipment issues should be entered and tracked using the site's appropriate tracking system.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The timeclock starts when the candidate acknowledges the initiating cue.

Task Standard:

The student successfully completes valve stroke testing for MSIV FSV-7414 & MSIB FV-7412 using Main Steam Isolation Train B and has recorded satisfactory results for valve position & valve stroke times.
JPM steps 5, 6, 7, 8, 9, 11, 12 completed.

JPM Start Time: _____

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
NOTE Hand out the Student copy of the Initial Conditions & Initiating Cue and the Student HO, 0PSP03-MS-0002, Main Steam System Cold Shutdown Valve Operability Test. Hand the stopwatch to the student that is supplied with this JPM. The Examiner will be the extra RO to stroke time the Main Steam Isolation Bypass Valve when stroke timing both valves at the same time is required. The Examiner will have a CUE to give a stroke time in seconds.					
1	IF secondary vacuum is **NOT** established, THEN ENSURE the steam line is vented to atmosphere prior to stroking a MSIV or MSIB by performing the following: • IF SG 1A "PORV PV-7411" is available to vent the main steam line to atmosphere, THEN ENSURE OPEN PV-7411 (Step 5.2.1.1)	The Operator has initialed this step. **NOTE:** **Initiating Cue notes that the SGs are vented through the SG PORVs.** **Step 5.2.1.2 will be N/A**	___	___	___
2	RECORD the AS FOUND position of "MSIV FSV-7414" below: AS FOUND Valve Position ____ (Step 5.2.2)	The Operator has recorded the AS FOUND Position as CLOSED.	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
3	RECORD the AS FOUND position of the switches listed in Table 1, SG 1A MSIV FSV-7414 and MSIB FV-7412 Switch Positions, after Step 5.2.30 (Step 5.2.3)	The Operator has recorded the following in Table 1 after step 5.2.30: 'MSIV FSV-7414 Handswitch' AUTO 'Main Steam Isol Train A' AUTO 'Main Steam Isol Train B' AUTO 'MSIB FV-7412 Handswitch' CLOSE 'MSIB CONT FV-7412' 0% Demand	___	___	___
4	IF the AS FOUND position of "MSIV FSV-7414" is OPEN (red lamp lit and green lamp extinguished), THEN MARK Steps 5.2.5 through 5.2.8 N/A. (Step 5.2.4)	The Operator determined that MSIV FSV-7414 was closed and proceeds on to Step 5.2.5.	___	___	___
*5	ENSURE "MSIV FSV-7414" is closed with handswitch "MSIV FSV-7414" in CLOSE. (Step 5.2.5)	The Operator placed the handswitch for MSIV FSV-7414 from AUTO to CLOSE.	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*6	Momentarily PLACE Main Steam Line 1A Open Permissive handswitches to OPEN PERM, AND RETURN to AUTO: • "MAIN STEAM ISOL TRAIN A" • "MAIN STEAM ISOL TRAIN B" (Step 5.2.6)	The Operator placed both Permissive handswitches from AUTO to OPEN PERM and returned to AUTO.	___	___	___
*7	Simultaneously START the stopwatch AND OPEN FSV-7414 by momentarily placing handswitch "MSIV FSV-7414" to OPEN. (Step 5.2.7) **CUE:** **If asked, a Plant Operator will report that the area around the MSIV is clear.**	The Operator started the stopwatch and opened MSIV FSV-7414 by placing the MSIV FSV-7414 handswitch momentarily to the OPEN position and return to AUTO.	___	___	___
*8	STOP the stopwatch when FSV-7414 is full open (red lamp lit and green lamp extinguished) AND RECORD the stroke time. _____ sec (Step 5.2.8)	The Operator stopped the stopwatch and recorded the time it took for MSIV FSV-7414 to open. **NOTE:** **The valve stroke open time is for trending ONLY.** **About 30 seconds.**	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number

*9	PERFORM MSIB FV-7412 open exercise test, as follows:
	• PERFORM the following to open FV-7412:
	  • Momentarily PLACE "MSIB FV-7412" to MODUL.
	  • PLACE the controller, "MSIB CONT FV-7412", to the full OPEN (100%) position.
	• VERIFY "MSIB FV-7412" full OPEN (Red light ON, Green light OFF).
	(Step 5.2.9)
		The operator opened FV-7412 by placing the valve handswitch momentarily to MODUL & returned to NORMAL and the control handswitch to 100% demand.	___	___	___

10	ENSURE at least two (2) minutes have elapsed since MSIV FSV-7414 and MSIB FV-7412 were opened. (Step 5.2.10)	The Operator has waited 2 minutes before proceeding to the next step. **NOTE:** **If desired by the examiner, time compression can be used.**	___	___	___
*11	Simultaneously PERFORM the following: • CLOSE MSIV FSV-7414 and MSIB FV-7412 by placing handswitch “MAIN STEAM ISOL TRAIN B” to CLOSE. • START the stopwatch at MSIV FSV-7414. • START the stopwatch at MSIB FV-7412. (Step 5.2.11) **CUE:** **The Examiner will be the timer for MSIB FV-7412. (Bypass Valve)**	The Operator has placed ‘Main Steam Isol Train B’ to CLOSE and simultaneously started the stopwatch for MSIV FSV-7414.	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*12	Simultaneously PERFORM the following: WHEN MSIV FSV-7414 is fully CLOSED (green lamp lit and red lamp extinguished), THEN STOP the stopwatch AND RECORD the stroke time. _____ sec (Train B) Acceptance Criteria: Unit 1; 1.99 ≤ time ≤ 5.00 sec WHEN MSIB FV-7412 is fully CLOSED (green lamp lit and red lamp extinguished), THEN STOP the stopwatch AND RECORD the stroke time. _____ sec (Train B) Acceptance Criteria: Unit 1; 0.0 ≤ time ≤ 2.00 sec (Step 5.2.12) **CUE:** **When asked by the Operator report that MSIB FV-7412 closed in 1.5 seconds.**	The Operator stopped the stopwatch and recorded the time it took for MSIV FSV-7414 and MSIB FV-7412 to close. **NOTE:** **MSIV FSV-7414 should close in about 3.0 seconds.** **MSIB FV-7412 should close in about 1.5 seconds.**	___	___	___
13	VERIFY the MSIV FSV-7414 stroke time recorded in Step 5.2.12 satisfies the Acceptance Criteria. VERIFY the MSIB FV-7412 stroke time recorded in Step 5.2.12 satisfies the Acceptance Criteria. (Step 5.2.13 & 14)	The Operator verified that the times recorded met the acceptance criteria.	___	___	___
CUE	This JPM is completed				

JPM Stop Time: _____

JPM SUMMARY

Operator's Name: _____ **Job Title**: ☐ RO ☐SRO

JPM Title: MSIV OPERABILITY TEST

JPM Number: NRC S4 Revision Number: 0

Task Number and Title: 12900, Perform the Main Steam System Valve Operability Test in Accordance with 0PSP03-MS-0001

K/A Number and Importance: 039 K4.01 (2.9/2.8)

Suggested Testing Environment: ☒ Simulator ☐ Control Room ☐ In-Plant ☐ Other

Alternate Path: ☐ Yes ☒ No

Task Designed For: ☐ SRO Only ☒ RO/SRO ☐ AO/RO/SRO

Time Critical: ☐ Yes ☒ No

Level of Difficulty: **3**

Reference(s): 0PSP03-MS-0002, Main Steam System Cold Shutdown Valve Operability Test, Rev. 24

Actual Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☐ Other

Testing Method: ☐ Simulate ☐ Perform

Estimated Time to Complete: 15 minutes **Actual Time Used:** _____ minutes

Critical Steps (*) 5, 6, 7, 8, 9, 11, 12

Evaluation Summary:
Were all the Critical Steps performed satisfactorily? ☐ Yes ☐ No

The operator's performance was evaluated against standards contained within this JPM and has been determined to be: ☐ Satisfactory ☐ Unsatisfactory

Comments: _____

_____

_____

_____

_____

_____

_____

Evaluator's Name: _____
(Print)

Evaluator's Signature: _____ **Date**: _____

Student Handout

INITIAL CONDITIONS

Unit 1 is in Mode 5.

INITIATING CUE

The Unit Supervisor directs you to perform valve testing on SG 1A Main Steam Isolation valve, FSV-7414 and SG 1A Main Steam Isolation Bypass valve, FV-7412, per Section 5.2 of 0PSP03-MS-0002, Main Steam System Cold Shutdown Valve Operability Test.

Note the following:

- SGs are vented to atmosphere through the SG PORVs.
- Secondary vacuum is NOT established.
- Nitrogen is NOT established to the SGs.
- Prerequisites Section 4.0 and Preparations Section 5.1 are completed.
- Section 5.6, Obturator Position Verification, is NOT being performed.

NOTE: You are to respond to all control room alarms unless specifically told not to do so by the Examiner.

STPNOC

Job Performance Measure

PLACE CONTAINMENT H2 MONITORING SYSTEM IN SERVICE

JPM Number: NRC S5

Revision Number: 0

Date: 07/12/2021

Developed By: _____ _____
Instructor (Print/Sign) Date

Approved By: _____ _____
Training Supervisor (Print/Sign) Date

Approved By: _____ _____
Line Management (Print/Sign) Date

NOTE: N/A signature blocks if this JPM is being used on an NRC LOT Exam.

Revision Record (Summary)

Revision 0, Drafted from the Final Submittal on the LOT 21 NRC Exam.

SIMULATOR SETUP INSTRUCTIONS

NOTE: The following IC setup may be modified depending on JPMs that may be performed at the same time with this one.

IC Setup

1. Set up an IC that has a LBLOCA and work the IC to the step in 0POP05-EO-EO10 where the H2 Monitors are placed in service.
2. Save IC to a designated IC for LOT NRC Exam usage.

After IC is Stored and ready to perform JPM

1. For LOT 25 NRC Exam this JPM has its own IC.

2. Ensure “DO NOT USE” signs taped to Communications Consoles to help eliminate usage.
3. Check and clean the following procedures:
   - 0POP05-EO-EO10, Loss of Reactor or Secondary Coolant.

NOTE: It is okay to use a similar IC to the IC listed above, provided the IC actually used is verified to be compatible with this and other JPMs that are scheduled to be run concurrently. {Delete this NOTE if **not** applicable.}

4. Reset the simulator to IC 193 and verify the following:
   - Step counter position annunciator light is out on CP-005
   - Red light at the end of CP-010 is out
5. Check and clean the following procedures (JPM specific):
   - 0POP05-EO-EO10 and Addendum 1
6. FROM THE BOOTH, place simulator in run and quickly silence/acknowledge/reset alarms then place the simulator in Freeze again.
   - NOTE: It is OK to leave the simulator in run if the IC is stable.
7. When the student and the examiners are ready to proceed, place the simulator in RUN.
   - No further action will be needed as the malfunction is on a conditional trigger.

Booth Instructor Actions

1. None

INITIAL CONDITIONS

A Large Break LOCA has occurred. The Control Room Crew has completed 0POP05-EO-EO00, Reactor Trip or Safety Injection, and transitioned to 0POP05-EO-EO10, Loss of Reactor or Secondary Coolant. All steps of 0POP05-EO-EO10 have been completed up to Step 12.

INITIATING CUE

The Unit Supervisor directs you to perform Step 12 of 0POP05-EO-EO10, Loss of Reactor or Secondary Coolant, to monitor containment hydrogen concentration and continue with procedure.

Fill in the JPM Start Time when the student acknowledges the Initiating Cue.

Information For Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes critical steps.

If Time Critical, estimated time is the Time Critical time.

Number any comments in the "Comment Number" column on the following pages. Then annotate that comment in the "Comments" section. The comment section should be used to document: the reason that a step is marked as unsatisfactory, marginal performance relating to management expectations, or problems the examinee had while performing the JPM. Comments relating to procedural or equipment issues should be entered and tracked using the site's appropriate tracking system.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The timeclock starts when the candidate acknowledges the initiating cue.

Task Standard:

The Operator placed the H2 Monitors in service.

JPM steps 1, 4, 6, 7, 8 completed.

JPM Start Time: _____

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
NOTE A student handout is NOT provided with this JPM. Use the simulator copy of the procedure ensuring that it is clean before beginning.					
*1	Check Containment H2 concentration - greater than or equal to zero. (Step 12)	The Operator determined that Containment H2 Concentration on QDPS QUAL PAMS display is not greater than or equal to zero and transitions to Addendum 1 (per step 12 RNO) **NOTE:** **RCB H2 concentration on QDPS QUAL PAMS display should read "XXXb" or "↓ LO".**	___	___	___
2	Reset SI (Addendum 1, Step 1)	The Operator reset SI by depressing the Train A, B, and C RESET pushbuttons on CP001 **OR** verified SI has been reset. **NOTE:** **SI was reset at Step 4 of 0POP05-EO-EO10**	___	___	___
3	Reset Containment Isolation Phase A (Addendum 1, Step 2)	The Operator reset Containment Isolation Phase A by depressing the Train A, B, and C RESET pushbuttons on CP002 **OR** verifies Containment Isolation Phase A has been reset. **NOTE:** **Phase A was reset at Step 6 of 0POP05-EO-EO10**	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*4	Open H2 sample OCIVs for each train (Addendum 1, Step 3)	The Operator opened H2 sample OCIVs for each train by placing handswitches to OPEN. o Train A handswitch is FV-4101/4127 o Train B handswitch is FV-4104/4133	___	___	___
5	Place “CNTMT H2 SAMPLE SELECT” for each train to the desired position. (Addendum 1, Step 4) **Cue:** ***If asked, inform operator it is desired to sample the dome area.***	The Operator Placed or Checked the sample select switches as follows: o Train A to FV-4100 o Train B to FV-4103	___	___	___
*6	Open selected CNTMT H2 SAMPLE valve for each train. (Addendum 1, Step 5)	The Operator opened CNMTM H2 SAMPLE valves for each train by placing handswitches to OPEN. o Train A handswitch is FV-4100 o Train B handswitch is FV-4103	___	___	___
*7	Open H2 sample ICIVs for each train. (Addendum 1, Step 6)	The Operator opened H2 sample INL/DISCH ICIVs for each train by placing handswitches to OPEN. o Train A handswitch is FV-4135/4128 o Train B handswitch is FV-4136/4134	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*8	Place mode select switch to OPERATE for each train. (Addendum 1, Step 7)	The Operator placed H2 monitors in operation by placing their respective mode select switch to OPERATE. o Train A handswitch is AE-4102 o Train B handswitch is AE-4105	___	___	___
9	Verify H2 reading on each train greater than or equal to zero after 1 minute of operation (QDPS DETAIL DATA MENU PAGE 7). (Addendum 1, Step 8)	The Operator verified H2 reading on QDPS: o Calls up QDPS DETAIL DATA MENU PAGE 7 or QPDS QUAL PAMS display. o Checks that H2 on is greater than or equal to zero. **NOTE:** **It takes about 1 minute for QDPS to start reading H2 concentration. H2 should reading should change from xxxb to 0.0**	___	___	___
CUE	This JPM is completed				

JPM Stop Time: _____

JPM SUMMARY

Operator's Name: _____ **Job Title**: ☐ RO ☐SRO

JPM Title: PLACE CONTAINMENT H2 MONITORING SYSTEM IN SERVICE

JPM Number: NRC S5 Revision Number: 0

Task Number and Title: 12150, Perform lineups of the Hydrogen Recombiner

K/A Number and Importance: 028 A4.03 3.1/3.3

Suggested Testing Environment: ☒ Simulator ☐ Control Room ☐ In-Plant ☐ Other

Alternate Path: ☐ Yes ☒ No

Task Designed For: ☐ SRO Only ☒ RO/SRO ☐ AO/RO/SRO

Time Critical: ☐ Yes ☒ No

Level of Difficulty: 3

Reference(s): 0POP05-EO-EO10, Loss of Reactor or Secondary Coolant, Rev 23

Actual Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☐ Other

Testing Method: ☐ Simulate ☐ Perform

Estimated Time to Complete: 6 minutes **Actual Time Used:** _____ minutes

Critical Steps (*) 1, 4, 6, 7 & 8

Evaluation Summary:

Were all the Critical Steps performed satisfactorily? ☐ Yes ☐ No

The operator's performance was evaluated against standards contained within this JPM and has been determined to be: ☐ Satisfactory ☐ Unsatisfactory

Comments: _____

_____

_____

_____

_____

_____

_____

Evaluator's Name: _____
(Print)

Evaluator's Signature: _____ **Date**: _____

Student Handout

INITIAL CONDITIONS

A Large Break LOCA has occurred. The Control Room Crew has completed 0POP05-EO-EO00, Reactor Trip or Safety Injection, and transitioned to 0POP05-EO-EO10, Loss of Reactor or Secondary Coolant. All steps of 0POP05-EO-EO10 have been completed up to Step 12.

INITIATING CUE

The Unit Supervisor directs you to perform Step 12 of 0POP05-EO-EO10, Loss of Reactor or Secondary Coolant, to monitor containment hydrogen concentration and continue with procedure.

NOTE: You are to respond to all control room alarms unless specifically told not to do so by the Examiner.

STPNOC

Job Performance Measure

RESPOND TO FAILED SOURCE RANGE NI

JPM Number: NRC S6

Revision Number: 0

Date: 07/12/2021

Developed By: _____ _____
Instructor (Print/Sign) Date

Approved By: _____ _____
Training Supervisor (Print/Sign) Date

Approved By: _____ _____
Line Management (Print/Sign) Date

NOTE: N/A Signature blocks of this JPM is being used on an NRC LOT Exam.

Revision Record (Summary)

Revision 0, Drafted from the Final Submittal on the LOT 22 Audit exam.

SIMULATOR SETUP INSTRUCTIONS

NOTE: The following IC setup may be modified depending on JPMs that may be performed at the same time with this one.

IC Setup

1. This JPM can be performed in Modes 2 to Mode 6.
2. Insert NI-31 fails low, 01-31-01.
3. Save IC to a designated IC for LOT NRC/Audit Exam usage.

After IC is Stored and ready to perform JPM

1. For LOT 25 NRC Exam this JPM is scheduled to be performed with JPM S2.
2. Ensure “DO NOT USE” signs taped to Communications Consoles to help eliminate usage.
3. **Ensure Audio Count Rate Channel is selected to NI-31 and that the Audio Multiplier is selected to 10. Ensure Volume is at an optimal level. (About 50% of scale.)**
4. Check and clean the following procedures:
   - 0POP04-NI-0001, Nuclear Instrument Malfunction
   - POP09 procedures for panel 5

NOTE: It is okay to use a similar IC to the IC listed below, provided the IC actually used is verified to be compatible with this and other JPMs that are scheduled to be run concurrently. {Delete this NOTE if **not** applicable.}

5. Reset the simulator to IC 191 and verify the following:
6. Red light at the end of CP-010 is out
7. ICS annunciators have stopped counting up
8. FROM THE BOOTH, place simulator in run and quickly silence/acknowledge/reset alarms, including plant computer/ICS alarms. **At the start this JPM the SR Audio Count Rate will not be heard.**
9. PLACE simulator in FREEZE.
10. When the student and the examiners are ready to proceed, place the simulator in RUN.
11. There is no simulator lesson plan for this JPM.

Booth Instructor Actions

1. None

INITIAL CONDITIONS

The Unit is in Mode 3 preparing to perform a Reactor Startup.
The Crew has confirmed that Source Range Nuclear Instrument Channel NI 31 has failed low.

INITIATING CUE

You are the extra Reactor Operator and the Unit Supervisor directs you to respond to failure of Source Range Nuclear Instrument NI 31 Using 0POP04-NI-0001, Nuclear Instrument Malfunction, starting at step 1.0.

Fill in the JPM Start Time when the student acknowledges the Initiating Cue.

Information For Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes critical steps.

If Time Critical, estimated time is the Time Critical time.

Number any comments in the "Comment Number" column on the following pages. Then annotate that comment in the "Comments" section. The comment section should be used to document: the reason that a step is marked as unsatisfactory, marginal performance relating to management expectations, or problems the examinee had while performing the JPM. Comments relating to procedural or equipment issues should be entered and tracked using the site's appropriate tracking system.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The timeclock starts when the candidate acknowledges the initiating cue.

Task Standard:

Placed the failed Source Range Channel, NI-31, Level Trip switch to BYPASS, the High Flux at Shutdown switch to BLOCK and selects NI-32 for the Audible Count Rate.
JPM steps 4, 7 completed.

JPM Start Time: _____

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
NOTE A student handout is NOT provided with this JPM. Use the simulator copy of the procedure ensuring that it is clean before beginning.					
1	CHECK Power Range Nuclear Instruments – NORMAL (Step 1.0)	The Operator checked and verified that there are no failures with the power range NIs.	___	___	___
2	CHECK Source Range Nuclear Instruments – NORMAL (Step 2.0)	The Operator verified Source Range Nuclear Instrument Channel NI 31 has failed low. Goes to Addendum 1, Source Range Nuclear Instrument Malfunction. (Step 2.0 RNO)	___	___	___
3	VERIFY Plant In – MODE 2 (Add 1 Step 1.0)	The Operator verified plant is in Mode 3 and Goes to Step 3.0 (Add 1 Step 1.0 RNO)	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
The following JPM step has two (2) distinct sub-steps.					
*4	BYPASS The Malfunctioning Source Range Channel (N31 Or N32) By Performing The Following: • PLACE “LEVEL TRIP” switch in BYPASS • ENSURE “HIGH FLUX AT SHUTDOWN” switch in BLOCK (Add 1 Step 3.0)	The Operator placed “LEVEL TRIP” switch in BYPASS The Operator placed “HIGH FLUX AT SHUTDOWN” switch in BLOCK **NOTE:** **This represents 2 Critical Steps.** **When the Level Trip switch is placed in BYPASS, 5M03 C-1, SR/IR TRIP BYPASS, will annunciate.** **When the High Flux at Shutdown switch is placed in BLOCK, 5M03 B-1, SR SHUTDN FLUX HI ALM BLKD, will annunciate.**	___	___	___
5	VERIFY Plant In – MODE 6	The Operator verified plant is in Mode 3 and Goes TO Step 7.0 (Add 1 Step 4.0 RNO)	___	___	___
6	VERIFY Plant In – MODE 3, 4, OR 5 (Add 1 Step 7.0)	The Operator verified plant is in Mode 3 and continues to Add step 8.0	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*7	**ENSURE** Audible Count Rate – IN SERVICE (Add 1 Step 8.0)	The Operator selected NI-32 on the Source Range Audible Count Rate Channel. **NOTE:** **Operator may have to also optimize the Audio Multiplier and Volume.**	___	___	___
CUE	This JPM is completed				

JPM Stop Time: _____

JPM SUMMARY

Operator's Name: _____ **Job Title**: ☐ RO ☐SRO

JPM Title: RESPOND TO FAILED SOURCE RANGE NI

JPM Number: NRC S6 Revision Number: 0

Task Number and Title: 73400, Respond to Nuclear Instrumentation System Alarms

K/A Number and Importance: 015 A4.03 3.8/3.9

Suggested Testing Environment: ☒ Simulator ☐ Control Room ☐ In-Plant ☐ Other

Alternate Path: ☐ Yes ☒ No

Task Designed For: ☐ SRO Only ☒ RO/SRO ☐ AO/RO/SRO

Time Critical: ☐ Yes ☒ No

Level of Difficulty: 3

Reference(s): 0POP04-NI-0001, Nuclear Instrumentation Malfunction, Rev. 22

Actual Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☐ Other

Testing Method: ☐ Simulate ☐ Perform

Estimated Time to Complete: 5 minutes **Actual Time Used:** _____ minutes

Critical Steps (*) 4 (has 2 distinct sub-steps), 7

Evaluation Summary:
Were all the Critical Steps performed satisfactorily? ☐ Yes ☐ No

The operator's performance was evaluated against standards contained within this JPM and has been determined to be: ☐ Satisfactory ☐ Unsatisfactory

Comments: _____

_____

_____

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_____

_____

Evaluator's Name: _____
(Print)

Evaluator's Signature: _____ **Date**: _____

Student Handout

INITIAL CONDITIONS

The Unit is in Mode 3 preparing to perform a Reactor Startup.
The Crew has confirmed that Source Range Nuclear Instrument Channel NI 31 has failed low.

INITIATING CUE

You are the extra Reactor Operator and the Unit Supervisor directs you to respond to failure of Source Range Nuclear Instrument NI 31 Using 0POP04-NI-0001, Nuclear Instrument Malfunction, starting at step 1.0.

NOTE: You are to respond to all control room alarms unless specifically told not to do so by the Examiner.

STPNOC

Job Performance Measure

RESPOND TO STUCK OPEN PZR SPRAY VALVE

JPM Number: NRC S7

Revision Number: 0

Date: 07/12/2021

Developed By: _____ _____
Instructor (Print/Sign) Date

Approved By: _____ _____
Training Supervisor (Print/Sign) Date

Approved By: _____ _____
Line Management (Print/Sign) Date

NOTE: N/A Signature blocks of this JPM is being used on an NRC LOT Exam.

Revision Record (Summary)

Revision 0, This is a New JPM for LOT 25.

SIMULATOR SETUP INSTRUCTIONS

NOTE: The following IC setup may be modified depending on JPMs that may be performed at the same time with this one.

IC Setup

1. Select a 100% power IC.
2. Insert as Pending Malfunction, 02-16-02, for PZR Spray valve, RC-PCV-0655C, and set to 0.5.
3. Insert malfunction for PZR Heaters to NOT Auto energize on PZR Pressure Deviation Low.
4. Save IC to a designated IC for LOT NRC/Audit Exam usage.

After IC is Stored and ready to perform JPM

1. For LOT 25 NRC Exam this JPM is performed using its own IC.
2. Ensure “DO NOT USE” signs taped to Communications Consoles to help eliminate usage.
3. Check and clean the following procedures:
   - 0POP09-AN-04M8, D-7, PRZR PRESS DEV LO B/U HTRS ON
   - 0POP04-RP-0001, Loss of Automatic Pressurizer Pressure Control

NOTE: It is okay to use a similar IC to the IC listed below, provided the IC actually used is verified to be compatible with this and other JPMs that are scheduled to be run concurrently. {Delete this NOTE if **not** applicable.}

5. Reset the simulator to IC 194 and verify the following:
6. Red light at the end of CP-010 is out
7. ICS annunciators have stopped counting up
8. When the student and the examiners are ready to proceed, place the simulator in RUN.
9. There is no simulator lesson plan for this JPM.

Booth Instructor Actions

1. None.

INITIAL CONDITIONS

The Unit is at 100% power.

INITIATING CUE

You are the Primary Reactor Operator and you are to respond to alarms on CP001 to CP005.

Fill in the JPM Start Time when the student acknowledges the Initiating Cue.

Information For Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes critical steps.

If Time Critical, estimated time is the Time Critical time.

Number any comments in the "Comment Number" column on the following pages. Then annotate that comment in the "Comments" section. The comment section should be used to document: the reason that a step is marked as unsatisfactory, marginal performance relating to management expectations, or problems the examinee had while performing the JPM. Comments relating to procedural or equipment issues should be entered and tracked using the site's appropriate tracking system.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The timeclock starts when the candidate acknowledges the initiating cue.

Task Standard:

The Operator attempted to manually close RC-PCV-0655C, energized Pressurizer backup heaters 1A, 1B & 1E, tripped the reactor and then secured RCPs 1A and 1D.
JPM steps 1 or 9, 2 or 10, 11, 12 completed.

JPM Start Time: _____

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
NOTE A student handout is NOT provided with this JPM. Use the simulator copy of the procedure ensuring that it is clean before beginning. 04M8, D-7 and 0POP04-RP-0001 **When the Operator is ready the booth instructor will insert the malfunction for the stuck open PZR Spray valve. (02-16-01)** The Operator may enter 0POP04-RP-0001, Loss of Automatic Pressurizer Pressure Control, as soon as the alarm PZR PRESS DEV LO B/U HTRS ON, 04M8, D-7, comes in. If so, the examiner will go to JPM Step 4. **If the Operator trips the Reactor prior to entering any procedure, then CUE that another operator will perform immediate actions for the Reactor trip, and they are to respond to the lowering Pressurizer pressure using appropriate procedures.**					
*1	ENSURE Pressurizer spray valves are closed. (Annunciator Step 1)	The Operator notices PZR Spray, RC-PCV-0655C, indicates open and ATTEMPTS to close the valve by taking RC-PCV-0655C controller to manual and lowering the demand signal. **NOTE:** **ENSURE means the Operator should try to manually close RC-PCV-0655C, however, the action will be unsuccessful.**	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*2	ENSURE Pressurizer Backup Heaters are ON. (Annunciator Step 2)	The Operator ENSURED the PZR Backup Heaters are ON by manually taking the handswitch for backup heaters 1A, 1B, & 1E from AUTO to the ON position. **NOTE:** **PZR Backup Heater 1D energizes automatically.** **Step 2.a & 2.b do not have to be performed because all backup heaters should now be energized.**	___	___	___
3	IF Pressurizer spray valve(s) can NOT be closed, THEN **GO TO** 0POP04-RP-0001, Loss of Automatic Pressurizer Pressure Control. (Annunciator Step 3) **CUE:** **If asked, instruct Operator as the Unit Supervisor to perform all associated procedures and procedure steps.**	The Operator tried to close PZR Spray valve RC-PCV-0655C, but it would not close and transitions to 0POP04-RP-0001.	___	___	___
4	CHECK Pressurizer Pressure Channels – ALL OPERABLE (Procedure Step 1.0)	The Operator checked all PZR pressure channels OPERABLE.	___	___	___
5	CHECK Pressurizer Pressure Controller RC-PK-0655A – OPERABLE (Procedure Step 2.0)	The Operator checked Pressurizer Pressure Controller RC-PK-0655A OPERABLE.	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
6	CHECK Pressurizer PORVs – CLOSED • PCV-0655A • PCV-0656A (Procedure Step 3.0)	The Operator checked Pressurizer PORVs PCV-0655A and PCV-0656A CLOSED.	___	___	___

7	CHECK Normal Pressurizer Spray Valves:
	• Normal Pressurizer Spray Valves – CLOSED
	  • PRZR SPR PCV-0655B
	  • PRZR SPR PCV-0655C
	• Pressurizer Spray Line Temperature - NORMAL
	(Procedure Step 4.0 A/ER)
		The Operator determines pressurizer spray valve PCV-0655C is NOT closed.
		NOTE:
		Operator will perform RNO steps of procedure.
			___	___	___

The next JPM Steps are an Alternate Path Steps. **The steps are also in the CIP steps of the procedure except for energizing pressurizer backup heaters.**					
8	IF spray valves open for normal pressure control, THEN GO TO Step 5.0. (Procedure Step 4.a RNO)	The Operator determined that RC-PCV-0655C is NOT open for normal pressure control and continues to Step 4.b RNO.	___	___	___
*9	Manually Close normal Pressurizer spray valve. (Procedure Step 4.b RNO or CIP)	The Operator ATTEMPTS to close RC-PCV-0655C by taking RC-PCV-0655C controller to manual and lowering the demand signal. **NOTE:** **The Operator should try to manually close RC-PCV-0655C, however, the action will be unsuccessful.**	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*10	IF spray valve will NOT close, THEN: • ENSURE all Pressurizer heaters energized. • MONITOR Pressurizer pressure. (Procedure Step 4.c RNO)	The Operator ENSURED the PZR Backup Heaters are ON by manually taking the handswitch for backup heaters 1A, 1B & 1E from AUTO to the ON position and then Monitors Pressurizer pressure. **NOTE:** **The Control Group C heaters are already ON and PZR Backup Heater 1D energized automatically.**	___	___	___
*11	IF pressurizer pressure continues to lower, THEN: • ENSURE Reactor tripped • ENSURE Turbine tripped (Procedure Step 4.d.1 and 2 or CIP)	The Operator has tripped the reactor and ensured the main turbine tripped. **NOTE:** **The Reactor is ensured tripped by:** • **Rod bottom lights lit** • **RX trip & RX trip bypass breakers OPEN** • **Neutron flux lowering** **The Main Turbine will automatically trip.**	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*12	STOP RCP 1A **AND** STOP RCP 1D (Procedure Step 4.d.3 and 4 or CIP)	The Operator secured RCPs 1A and 1D. **NOTE:** **The next step is to secure a 3rd RCP, however, it is determined on the status of pressurizer pressure and is a subjective determination.** **This step is satisfied as long as both RCPs 1A and 1D are secured.**	___	___	___

IMPORTANT EXAMINER CUE IF NEEDED

JPM Step 10 (Procedure Step 4.c RNO) is not performed with the CIP of 0POP04-RP-0001, Loss of Automatic Pressurizer Pressure Control.

If the Operator first entered 0POP04-RP-0001 without going to the annunciator response procedure and used the CIP steps to trip the Reactor, then inform the Operator that another operator will perform the immediate actions for the Reactor trip and instruct the Operator to continue with 0POP04-RP-0001 at JPM Step 4 (Procedure Step 1.0).

This will give the Operator a chance to perform JPM Step 10 (Procedure Step 4.c RNO).

CUE	This JPM is completed

JPM Stop Time: _____

JPM SUMMARY

Operator's Name: _____ **Job Title**: ☐ RO ☐SRO

JPM Title: RESPOND TO STUCK OPEN PZR SPRAY VALVE

JPM Number: NRC S7 Revision Number: 0

Task Number and Title: 73100, Respond to Pressurizer Pressure Control System Alarms

K/A Number and Importance: 010 A4.01 3.7/3.5

Suggested Testing Environment: ☒ Simulator ☐ Control Room ☐ In-Plant ☐ Other

Alternate Path: ☒ Yes ☐ No

Task Designed For: ☐ SRO Only ☒ RO/SRO ☐ AO/RO/SRO

Time Critical: ☐ Yes ☒ No

Level of Difficulty: 3

Reference(s): 0POP09-AN-04M8, D-7, PRZR PRESS DEV LO B/U HTRS ON, Rev. 44
0POP04-RP-0001, Loss of Automatic Pressurizer Pressure Control, Rev. 17

Actual Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☐ Other

Testing Method: ☐ Simulate ☐ Perform

Estimated Time to Complete: 8 minutes **Actual Time Used:** _____ minutes

Critical Steps (*) 1 or 9, 2 or 10, 11, 12

Evaluation Summary:
Were all the Critical Steps performed satisfactorily? ☐ Yes ☐ No

The operator's performance was evaluated against standards contained within this JPM and has been determined to be: ☐ Satisfactory ☐ Unsatisfactory

Comments: _____

_____

_____

_____

_____

_____

_____

Evaluator's Name: _____
(Print)

Evaluator's Signature: _____ **Date**: _____

Student Handout

INITIAL CONDITIONS

The Unit is at 100% power.

INITIATING CUE

You are the Primary Reactor Operator and you are to respond to alarms on CP001 to CP005.

STPNOC

Job Performance Measure

PERFORM IMMEDIATE ACTIONS FOR A RX TRIP WITH LOOP

JPM Number: NRC S8

Revision Number: 0

Date: 07/12/2021

Developed By: _____ _____
Instructor (Print/Sign) Date

Approved By: _____ _____
Training Supervisor (Print/Sign) Date

Approved By: _____ _____
Line Management (Print/Sign) Date

NOTE: N/A Signature blocks of this JPM is being used on an NRC LOT Exam.

Revision Record (Summary)

Revision 0, This is a New JPM for LOT 25.

SIMULATOR SETUP INSTRUCTIONS

NOTE: The following IC setup may be modified depending on JPMs that may be performed at the same time with this one.

IC Setup

1. Select a 100% power IC that has Train A and C in service.
2. Insert Remote Function, L2-59, to de-energize the Sequencer for Train B.
3. Insert Remote Function to control indicating lights for Main Steam to DA valves so that they indicate open and will indicate closed when the handswitch is placed in CLOSED.
4. Ensure ECW Pump 1B is running.
5. Insert LOOP Malfunction, 10-08-01, which will trip the RX, wait for the lights to come back on (about 15 to 20 seconds) and then go to FREEZE on the simulator.
6. Save IC to a designated IC for LOT NRC/Audit Exam usage.

After IC is Stored and ready to perform JPM

1. For LOT 25 NRC Exam this JPM is performed using its own IC.
2. Ensure “DO NOT USE” signs taped to Communications Consoles to help eliminate usage.
3. Check and clean the following procedures:
   - 0POP05-EO-EO00, Reactor Trip or Safety Injection

NOTE: It is okay to use a similar IC to the IC listed below, provided the IC actually used is verified to be compatible with this and other JPMs that are scheduled to be run concurrently. {Delete this NOTE if **not** applicable.}

5. Reset the simulator to IC 189 and verify the following:
6. Red light at the end of CP-010 is out
7. ICS annunciators have stopped counting up
8. When the student and the examiners are ready to proceed, place the simulator in RUN.
9. There is no simulator lesson plan for this JPM.

Booth Instructor Actions

1. As the Secondary RO, Silence alarms as which would occur on a Reactor Trip.

INITIAL CONDITIONS

The Unit has just tripped from 100% power due to a Loss of Offsite Power. (LOOP)

INITIATING CUE

You are the Primary Reactor Operator and the Unit Supervisor directs you to perform your immediate actions from memory per 0POP05-EO-EO00, Reactor Trip or Safety Injection.

NOTE: A simulated Secondary RO will silence alarms and make a plant announcement as with any Reactor Trip.

Fill in the JPM Start Time when the student acknowledges the Initiating Cue.

Information For Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes critical steps.

If Time Critical, estimated time is the Time Critical time.

Number any comments in the "Comment Number" column on the following pages. Then annotate that comment in the "Comments" section. The comment section should be used to document: the reason that a step is marked as unsatisfactory, marginal performance relating to management expectations, or problems the examinee had while performing the JPM. Comments relating to procedural or equipment issues should be entered and tracked using the site's appropriate tracking system.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The timeclock starts when the candidate acknowledges the initiating cue.

Task Standard:

The Operator placed the STM TO DEAER SPLY VLV PV-7174 and PV-7174A handswitch in the CLOSE position, emergency started ESF/DG #12, turned on the Sync Switch & closed the DG OUTP BKR energizing 4.16 KV BUS E1B and did NOT actuate Safety Injection.
JPM steps 2, 4, 5, 7 completed.

JPM Start Time: _____

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
NOTE A student handout is NOT provided with this JPM. Use the simulator copy of the procedure ensuring that it is clean before beginning. The booth operator will act as the Secondary RO and silence alarms and simulate a PA announcement.					
1	VERIFY Reactor Trip: • Rod bottom lights – LIT • Reactor trip and bypass breakers – OPEN • Neutron flux – LOWERING (Step 1.0)	The Operator verified the Reactor is tripped.	___	___	___
The next JPM Step is an Alternate Path Step.					
*2	VERIFY Turbine Trip: • VERIFY all turbine throttle valves – CLOSED • Main generator output breaker – OPEN • Main steam to Deaerator valves – CLOSED **RNO** • ***Manually CLOSE valves.** (Step 2.0 and RNO 2.c)	The Operator verified the Main Turbine tripped and manually closed the Main Steam to DA Pressure Valves, PV-7174 and PV-7174A by using the handswitch. **NOTE:** **PV-7174 and PV-7174A are open and must be manually closed.**	___	___	___

3	VERIFY Power to AC ESF Busses:
	• AC ESF busses – AT LEAST ONE ENERGIZED
	  • 4.16KV ESF bus
	  • 480V ESF LCs
	  • 480V ESF MCCs
	(Step 3.a)
		The Operator verified at least one AC ESF buss is energized.
		NOTE:
		ESF Busses Train A and C are energized via the respective ESF/DG.
			___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
The next two JPM Steps, 4 and 5, are Alternate Path Steps.					

*4	VERIFY Power to AC ESF Busses:
	• AC ESF busses – ALL ENERGIZED
	  • 4.16KV ESF bus
	  • 480V ESF LCs
	  • 480V ESF MCCs
	RNO
	• TRY to restore power to deenrgized AC ESF busses.
	  • PERFORM the following:
	  • ***RESTORE power to 4.16KV ESF bus by Emergency Starting STBY DG.**
	(Step 3.b and RNO 3.b.2.1st bullet)
		The Operator has verified power to ALL AC ESF Busses by first pushing the red Emergency Start push button for ESF/DG #12 to start the DG.	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number

*5	VERIFY Power to AC ESF Busses:
	• AC ESF busses – ALL ENERGIZED
	  • 4.16KV ESF bus
	  • 480V ESF LCs
	  • 480V ESF MCCs
	RNO
	• TRY to restore power to deenrgized AC ESF busses.
	  • PERFORM the following:
	  • ***WHEN STBY DG is running, THEN ENSURE STBY DG Output Breaker CLOSED.**
	(Step 3.b and RNO 3.b.2.2nd bullet)
		The Operator has verified power to ALL AC ESF Busses by turning ESF/DG #12 to ON and closing the associated DG Output breaker.
		NOTE:
		The Operator will have to turn on the SYNC Switch to close the DG Output breaker even though it is not expressly stated in the procedure step.
			___	___	___

6	VERIFY Power to AC ESF Busses:
	• AC ESF busses – ALL ENERGIZED
	  • 4.16KV ESF bus
	  • 480V ESF LCs
	  • 480V ESF MCCs
	RNO
	• TRY to restore power to deenrgized AC ESF busses.
	  • PERFORM the following:
	  • ENSURE SPLY and OUTP breakers for 4.16KV/480V XFMR(s) – CLOSED.
	(Step 3.b and RNO 3.b.2.3rd bullet)
		The Operator has ENSURED supply and output 4.16KV/480V XFMR breakers for Train B are closed.
		NOTE:
		The 4.16KV/480V transformer breakers will be already closed.
			___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number

*7	CHECK SI Status:
	• CHECK if SI is actuated:
	  • SI reactor trip first out annunciator – LIT
	  • ESF status monitoring red SI status lights – LIT
	RNO
	• PERFORM the following:
	CHECK if SI is required:
	  • Pressurizer pressure – LESS THAN OR EQUAL TO 1857 PSIG AND NOT BLOCKED.
	OR
	  • Containment pressure – GREATER THAN OR EQUAL TO 3 PSIG.
	OR
	  • Any SG pressure – LESS THAN OR EQUAL TO 735 PSIG AND NOT BLOCKED.
	OR
	  • As directed by US/SM
	• If SI is required THEN manually Actuate.
	• **IF SI is NOT required, THEN GO TO 0POP05-EO-ES01, REACTOR TRIP RESPONSE, Step 1 AND MONITOR Critical Safety Functions.**
	(Step 4.0 and RNO)
		The Operator checked that SI is NOT actuated or required and did NOT actuate SI.
		NOTE:
		After completing the immediate actions from memory the JPM is complete.
		A read through of the steps from the procedure will not be performed for this JPM.
			___	___	___

CUE	This JPM is completed				

JPM Stop Time: _____

JPM SUMMARY

Operator's Name: _____ **Job Title**: ☐ RO ☐SRO

JPM Title: PERFORM IMMEDIATE ACTIONS FOR A RX TRIP WITH LOOP

JPM Number: NRC S8 Revision Number: 0

Task Number and Title: 75050, Respond to Emergency Standby Diesel Generator Alarms

K/A Number and Importance: 064 A4.06 3.9/3.9

Suggested Testing Environment: ☒ Simulator ☐ Control Room ☐ In-Plant ☐ Other

Alternate Path: ☒ Yes ☐ No

Task Designed For: ☐ SRO Only ☒ RO/SRO ☐ AO/RO/SRO

Time Critical: ☐ Yes ☒ No

Level of Difficulty: 3

Reference(s): 0POP05-EO-EO00, Reactor Trip or Safety Injection, Rev. 27

Actual Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☐ Other

Testing Method: ☐ Simulate ☐ Perform

Estimated Time to Complete: 8 minutes **Actual Time Used:** _____ minutes

Critical Steps (*) 2, 4, 5, 7

Evaluation Summary:
Were all the Critical Steps performed satisfactorily? ☐ Yes ☐ No

The operator's performance was evaluated against standards contained within this JPM and has been determined to be: ☐ Satisfactory ☐ Unsatisfactory

Comments: _____

_____

_____

_____

_____

_____

_____

Evaluator's Name: _____
(Print)

Evaluator's Signature: _____ **Date**: _____

Student Handout

INITIAL CONDITIONS

The Unit has just tripped from 100% power due to a Loss of Offsite Power. (LOOP)

INITIATING CUE

You are the Primary Reactor Operator and the Unit Supervisor directs you to perform your immediate actions from memory per 0POP05-EO-EO00, Reactor Trip or Safety Injection.

NOTE: A simulated Secondary RO will silence alarms and make a plant announcement as with any Reactor Trip.

STPNOC

Job Performance Measure

LOCALLY TRIP THE REACTOR

JPM Number: NRC P1

Revision Number: 0

Date: 07/12/2021

Developed By: _____ _____
Instructor (Print/Sign) Date

Approved By: _____ _____
Training Supervisor (Print/Sign) Date

Approved By: _____ _____
Line Management (Print/Sign) Date

NOTE: N/A signature blocks if this JPM is being used on an NRC LOT Exam.

Revision Record (Summary)

Revision 0, Updated from the Final Submittal on the LOT 18 NRC exam.

SIMULATOR SETUP INSTRUCTIONS

IC Setup

- No setup required. This is an In-Plant JPM.

INITIAL CONDITIONS

The Operating Crew was performing 0PSP03-SP-0005R, SSPS Logic Train R Functional Test, when an issue forced the Crew to trip the reactor. The reactor would not trip from the control room.

INITIATING CUE

The Unit Supervisor directs you to perform 0POP05-EO-EO00, Reactor Trip or Safety Injection, RNO Step 1.b.3.

Fill in the JPM Start Time when the student acknowledges the Initiating Cue.

Information For Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes critical steps.

If Time Critical, estimated time is the Time Critical time.

Number any comments in the "Comment Number" column on the following pages. Then annotate that comment in the "Comments" section. The comment section should be used to document: the reason that a step is marked as unsatisfactory, marginal performance relating to management expectations, or problems the examinee had while performing the JPM. Comments relating to procedural or equipment issues should be entered and tracked using the site's appropriate tracking system.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The timeclock starts when the candidate acknowledges the initiating cue.

Task Standard:

The Operator manually OPENED Reactor Trip Breaker S and Reactor Trip Bypass Breaker R. JPM Steps 2 and 3 completed.

JPM Start Time: _____

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
NOTE Hand out the Student Initiating Cue Sheet along with the Student HO of 0POP05-EO-EO00, Reactor Trip or Safety Injection. **DO NOT open the reactor trip breaker and reactor trip bypass breaker doors.**					

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
1	IF reactor trip and bypass breakers DO NOT OPEN, THEN DISPATCH an operator to OPEN reactor trip and bypass breakers: (60' EAB RM 323) • "Reactor Trip Breaker R" (RNO Step 1.b.3 1st Bullet) **CUE:** **When the student SIMULATES pushing the red TRIP push button on the breaker door, state that there is NO noises heard from the breaker.** **(This breaker is already open.)** ********** **The examiner can ask the following:** **"How would you know the Reactor Trip Breaker is OPEN or CLOSED?"** **The operator should respond by stating that they would open the enclosure and observe the position indicator.** **It would also be acceptable for the operator to call the Control Room and obtain the breaker positions from the Reactor Operator.**	The Operator has verified that Reactor Trip Breaker R is OPEN by **simulating** pushing the red TRIP push button on the breaker door. **NOTE:** **Because of the performance of 0PSP03-SP-0005R, Reactor Trip Breaker R was already OPEN.** **NOTE:** **There is no position indication visible for the Reactor Trip and Bypass Breakers with the enclosure door closed. Inside the breaker enclosure is a position indicator in the upper right hand corner of the breaker.** **The student should demonstrate the ability to determine breaker position at least once during the performance of this JPM.** **A picture is provided on Page 10 of 12 for the examiner that shows a reactor trip breaker as seen with the door open.**	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*2	IF reactor trip and bypass breakers DO NOT OPEN, THEN DISPATCH an operator to OPEN reactor trip and bypass breakers: (60' EAB RM 323) • "Reactor Trip Breaker S" (RNO Step 1.b.3 2nd Bullet) **CUE:** **When the student SIMULATES pushing the red TRIP push button on the breaker door, state that you hear breaker springs discharge.** **(This breaker is initially closed and opens when the red TRIP push button is depressed.)**	The Operator **(simulated)** opened Reactor Trip Breaker S. **NOTE:** **Because of the performance of 0PSP03-SP-0005R, Reactor Trip Breaker S was CLOSED and must be OPENED.**	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*3	IF reactor trip and bypass breakers DO NOT OPEN, THEN DISPATCH an operator to OPEN reactor trip and bypass breakers: (60' EAB RM 323) • "Bypass Breaker R" (RNO Step 1.b.3 3rd Bullet) **CUE:** **When the student SIMULATES pushing the red TRIP push button on the breaker door, state that you hear breaker springs discharge.** **(This breaker is initially closed and opens when the red TRIP push button is depressed.)**	The Operator **(simulated)** opened Reactor Trip Bypass Breaker R. **NOTE:** **Because of the performance of 0PSP03-SP-0005R, Reactor Trip Bypass Breaker R was CLOSED and must be OPENED.**	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
4	IF reactor trip and bypass breakers DO NOT OPEN, THEN DISPATCH an operator to OPEN reactor trip and bypass breakers: (60' EAB RM 323) • "Bypass Breaker S" (RNO Step 1.b.3 4th Bullet) **CUE:** **When the student SIMULATES pushing the red TRIP push button on the breaker door, state that there is NO noises heard from the breaker.** **(This breaker is already open.)**	The Operator has verified that Reactor Trip Bypass Breaker S is OPEN **NOTE:** **Because of the performance of 0PSP03-SP-0005R, Reactor Trip Bypass Breaker S was already OPEN and the breaker is racked out.**	___	___	___
CUE	This JPM is completed				

JPM Stop Time: _____


WARNING
EXCESSIVE LEVERING IN TORQUE.
Can cause severe personal injury,
damage breaker or switchgear.
Do not apply torque in excess of 25 foot-pounds.
CAUTION
Conn
Test
Disc
Remove
To use Levering Mech:
Hold in Trip Button
Pull down shutter
Insert crank
Breaker
Open
READ INSTRUCTION BOOK BEFORE
INSTALLING, OPERATING, OR
MAINTAINING THIS DEVICE.
Trip
Push
To
Close
Spring
Discharged

JPM SUMMARY

Operator's Name: _____ **Job Title**: ☐ RO ☐SRO

JPM Title: LOCALLY TRIP THE REACTOR

JPM Number: NRC P1 Revision Number: 0

Task Number and Title: 27000 – Perform Reactor Trip Breaker TADOT

K/A Number and Importance: 001 A4.06 2.9/3.2

Suggested Testing Environment: ☐ Simulator ☐ Control Room ☒ In-Plant ☐ Other

Alternate Path: ☐ Yes ☒ No

Task Designed For: ☐ SRO Only ☐ RO/SRO ☒ AO/RO/SRO

Time Critical: ☐ Yes ☒ No

Level of Difficulty:

Reference(s): 0POP05-EO-EO00, Reactor Trip or Safety Injection, Rev. 26

Actual Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☐ Other

Testing Method: ☐ Simulate ☐ Perform

Estimated Time to Complete: 10 minutes **Actual Time Used:** _____ minutes

Critical Steps (*) 2, 3

Evaluation Summary:
Were all the Critical Steps performed satisfactorily? ☐ Yes ☐ No

The operator's performance was evaluated against standards contained within this JPM and has been determined to be: ☐ Satisfactory ☐ Unsatisfactory

Comments: _____

_____

_____

_____

_____

_____

_____

Evaluator's Name: _____
(Print)

Evaluator's Signature: _____ **Date**: _____

Student Handout

INITIAL CONDITIONS

The Operating Crew was performing 0PSP03-SP-0005R, SSPS Logic Train R Functional Test, when an issue forced the Crew to trip the reactor. The reactor would not trip from the control room.

INITIATING CUE

The Unit Supervisor directs you to perform 0POP05-EO-EO00, Reactor Trip or Safety Injection, RNO Step 1.b.3.

STPNOC

Job Performance Measure

PERFORM EDG POST RUN CHECKLIST WITH
OVERSPEED BUTTERFLY VALVE NOT LATCHED

JPM Number: NRC P2

Revision Number: 0

Date: 07/12/2021

Developed By: _____ _____
Instructor (Print/Sign) Date

Approved By: _____ _____
Training Supervisor (Print/Sign) Date

Approved By: _____ _____
Line Management (Print/Sign) Date

NOTE: N/A signature blocks if this JPM is being used on an NRC LOT Exam.

Revision Record (Summary)

Revision 0, New JPM

SIMULATOR SETUP INSTRUCTIONS

IC Setup

- No setup required. This is an In-Plant JPM.

INITIAL CONDITIONS

The Operating Crew locally started and stopped EDG 11(21) per 0POP02-DG-0001, Emergency Diesel Generator 11(21), Section 8.0.

INITIATING CUE

The Unit Supervisor directs you to perform 0POP02-DG-0001, Emergency Diesel Generator 11(21), Checklist 2, DG Post Run Checklist, beginning at Step 5.0.

Fill in the JPM Start Time when the student acknowledges the Initiating Cue.

Information For Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes critical steps.

If Time Critical, estimated time is the Time Critical time.

Number any comments in the "Comment Number" column on the following pages. Then annotate that comment in the "Comments" section. The comment section should be used to document: the reason that a step is marked as unsatisfactory, marginal performance relating to management expectations, or problems the examinee had while performing the JPM. Comments relating to procedural or equipment issues should be entered and tracked using the site's appropriate tracking system.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local Operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The timeclock starts when the candidate acknowledges the initiating cue.

Task Standard:

The Operator has placed the 'Engine Start Mode' switch in RATED, reset the red flag for 'FIELD GROUND DEV 64F' and reset the DIESEL AIR INTAKE BUTTERFLY VALVE. JPM Steps 1, 4, and 6 are completed.

JPM Start Time: _____

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
NOTE Hand out the Student Initiating Cue Sheet along with the Student HO of 0POP02-DG-0001, Section 5.0 and Addendum 1.					
*1	ENSURE "ENGINE START MODE" switch is in "RATED." (ZLP 102) (Checklist 2, Step 5.0) **CUE:** **If asked, using a pen, point to the IDLE position and state "The ENGINE START MODE switch is in this position."** **After the Operator simulates positioning the switch to the RATED position, state "An IV has been performed."**	The Operator has simulated placing the ENGINE START MODE switch in the RATED position.	___	___	___
2	VERIFY Annunciator Lampbox 102 Windows are either extinguished, or the alarm condition evaluated. (Checklist 2, Step 6.0) **CUE:** **Window F-3, DG BYPASSED OR INOPERABLE, is LIT. All other annunciators are extinguished.**	The Operator determined that all annunciators are extinguished except for window F-3. **NOTE:** **Because MDA-0134, DIESEL AIR INTAKE BUTTERFLY VALVE, is tripped, Window F-3 would be LIT.**	___	___	___

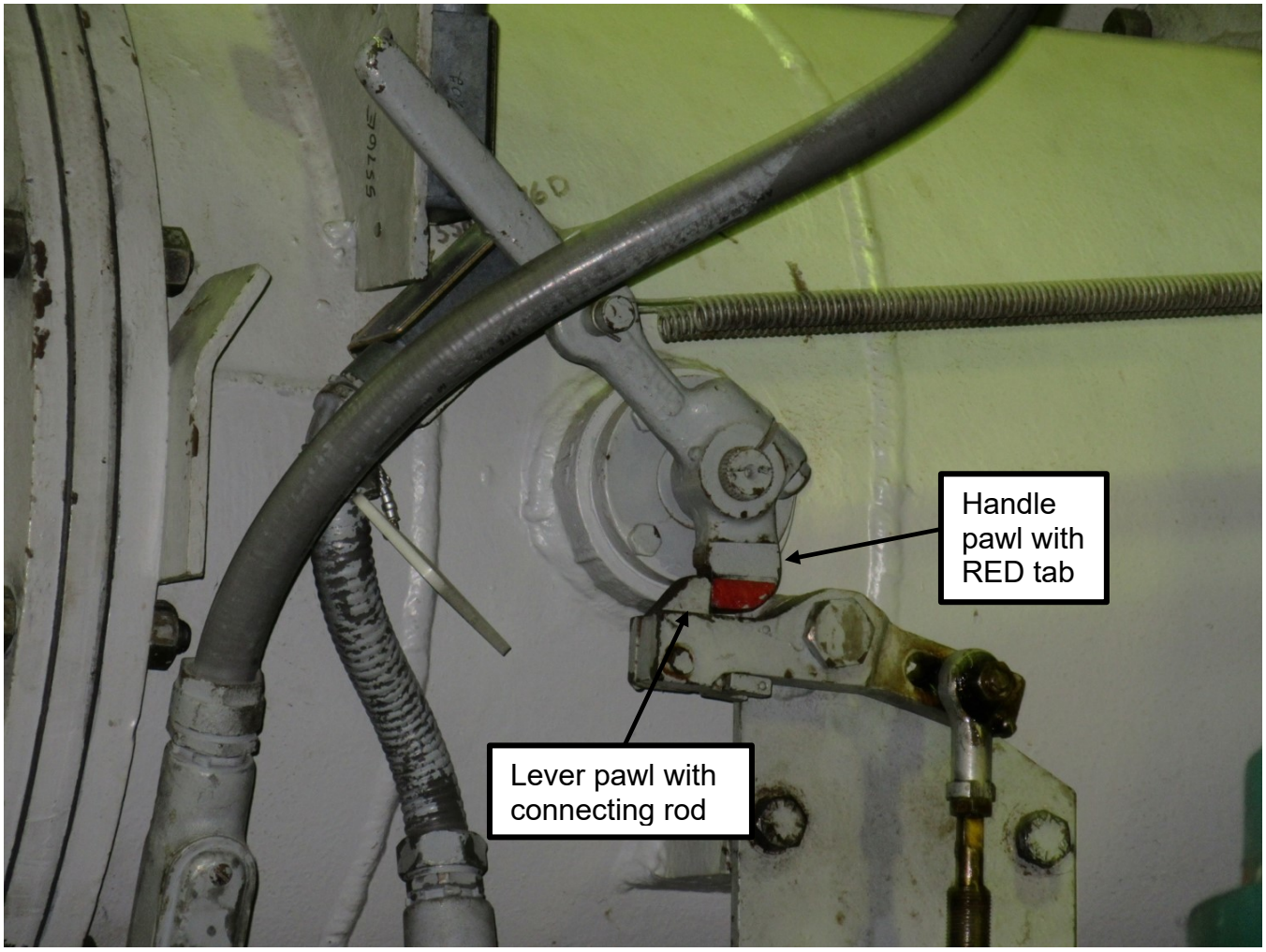
STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
3	VERIFY the following indications exist on ZLP 102, or the condition evaluated. • MASTER TRIP CIRCUIT "RESET" amber light - ON • MASTER TRIP CIRCUIT "TRIPPED" green light - OFF • "EMERGENCY MODE" white light - OFF • "DG AVAILABLE FOR EMERGENCY" white light - ON • "SHUTDOWN BYPASS" red light - ON • "LOCAL MODE " white light - OFF • "OFF MODE " white light - OFF • "REMOTE MODE " white light - ON (Checklist 2, Step 7.0) **CUE:** **When the Operator asks for the status of "DG AVAILABLE FOR EMERGENCY," state that "The WHITE light is OFF."** **CUE:** **When the Operator asks for the status of ALL other lights, state "The light is in the correct state."** **CUE:** **When the Operator acknowledges the status of the DG AVAILABLE FOR EMERGENCY light, then state "The US directs you to continue with Checklist 2.0, the crew will investigate this light and the alarm.**	The Operator determined that the DG AVAILABLE FOR EMERGENCY white light would NOT be on. All other indications are NORMAL. **NOTE:** **Because MDA-0134, DIESEL AIR INTAKE BUTTERFLY VALVE, is tripped, the DG AVAILABLE FOR EMERGENCY white light would be OFF.** **This group of lights are together on the panel.**	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
3, cont.	VERIFY the following indications exist on ZLP 102, or the condition evaluated. • SEQUENCE INDICATION "STOP" green light - ON • SEQUENCE INDICATION "CRANK" amber light - OFF • SEQUENCE INDICATION "READY TO LOAD" red light - OFF • SEQUENCE INDICATION "RUNNING LOADED" red light - OFF • "DC POWER ON CIRCUIT 1" white light - ON • "DC POWER ON CIRCUIT 2" white light - ON (Checklist 2, Step 7.0, cont.) **CUE: As the Operator identifies each indicator, state "The light is in the correct state."**	**NOTE:** **This group of lights are together on the panel.**	___	___	___
*4	ENSURE any existing flags on ZLP101 reset. (Checklist 2, Step 8.0) **CUE:** **When the Operator identifies the flags on ZLP101, state "The FIELD GROUND DEV 64F" device has a RED flag indication.** **CUE:** **When the Operator acknowledges the RED flag indication, state "The US directs you to reset the "FIELD GROUND DEV 64F."**	The Operator determined "FIELD GROUND DEV 64F" flag has a RED indication. The Operator reset the "FIELD GROUND DEV 64F" by **simulating** pushing up on the reset toggle on the lower left side of the relay. **NOTE:** **There are many protective devices on ZLP101. Inside the window in various locations, a RED flag (3 thin red stripes) would be seen if any device had actuated.**	___	___	___

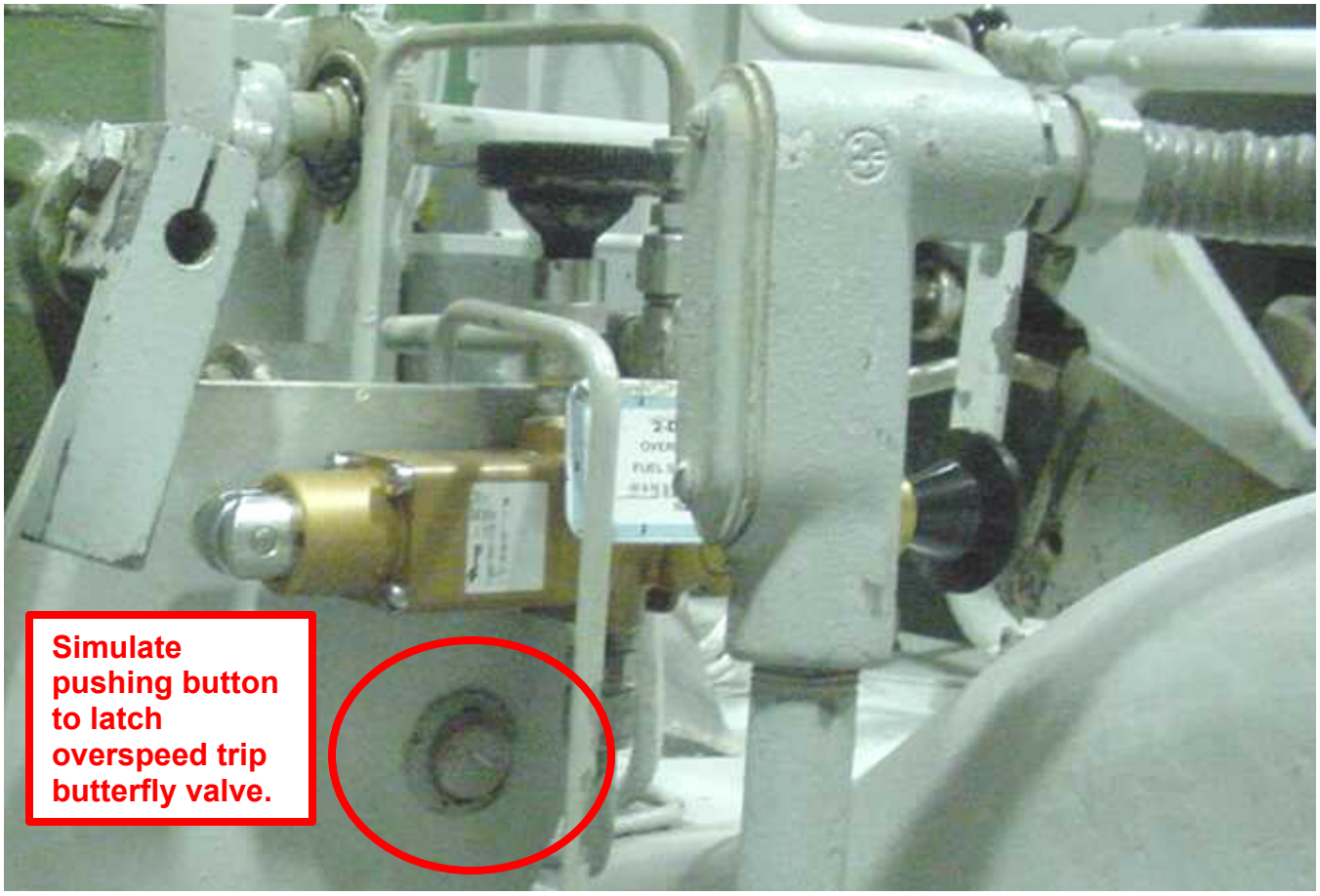
STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
5	IF Annunciator Lampbox 102, Window C-1, "D.G. LOW AIR PRESSURE" is illuminated due to previous securing of the air receivers AND it is desired to reset this alarm, THEN PERFORM Lineup 7, Repressurizing Instrument Header Lineup. (Checklist 2, Step 9.0) **CUE:** **When the Operator locates Lampbox 102, Window C-1, state "Window C-1 is extinguished."** **CUE:** **Inform the Operator to proceed to Step 12.0, as another Operator will perform steps 10.0 and 11.0.**	The Operator determined that Lampbox 102, Window C-1, is NOT lit.	___	___	___
ALTERNATE PATH BEGINS HERE					

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*6	ENSURE DG 11(21) "1(2)-DG-MDA-0134, DIESEL AIR INTAKE BUTTERFLY VALVE" is RESET and FULLY LATCHED at the Turbocharger. (Reference 2.20.5) (Checklist 2, Step 12.0) **CUE:** **When the Operator identifies the DIESEL AIR INTAKE BUTTERFLY VALVE and describes the operation of the Trip Linkage, state that "The Handle Pawl with the RED tab is disengaged from the Lever Pawl and connecting rod."** **CUE:** **When the Operator states that they would reset the valve by pulling the Handle COUNTERCLOCKWISE, state "MDA-0134, DIESEL AIR INTAKE BUTTERFLY VALVE, is LATCHED."** **CUE:** **If the Operator proceeds to reset 1-DG-MDA-0134 at the Overspeed Trip Governor:** • **When asked, state "The "BLACK PLUNGER" is as you see it.** • **When the operator depresses the 1-DG-HV-5476F pushbutton, state that "The butterfly valve is LATCHED."**	The Operator determined that MDA-0134, DIESEL AIR INTAKE BUTTERFLY VALVE" is UNLATCHED. The Operator simulates resetting the valve by either: • Manually reset locally at the turbocharger, or • Remotely reset by depressing "1(2)-DG-HV-5476F ENGINE OVERSPEED SHUTDOWN AIR RESET VALVE" at the overspeed trip governor. **NOTE:** **The DIESEL AIR INTAKE BUTTERFLY VALVE can be seen from the walkway on the Northwest corner. There is a picture of the linkage LATCHED on Page 10 of 13. If UNLATCHED, the handle pawl (RED tab) would be separated from the lever pawl.** **The Operator can reset the valve locally by pulling the Handle in the COUNTERCLOCKWISE direction.** **The Operator can also reset the butterfly valve by depressing the pushbutton, 1-DG-HV-5476F, ENGINE OVERSPEED SHUTDOWN AIR RESET VALVE, located at the Overspeed Governor. There is a picture on Page 11 of 13.**	___	___	___
CUE	This JPM is complete.				

JPM Stop Time_____



When disengaged, the handle pawl with the RED tab would be rotated CLOCKWISE away from the lever pawl. The lever pawl would be rotated COUNTER CLOCKWISE with the connecting rod motion upward.



"1(2)-DG-HV-5476F ENGINE OVERSPEED SHUTDOWN AIR RESET VALVE" at the overspeed trip governor. Located at south end of engine.

JPM SUMMARY

Operator's Name: _____ **Job Title**: ☐ RO ☐SRO

JPM Title: PERFORM EDG POST RUN CHECKLIST WITH OVERSPEED BUTTERFLY VALVE NOT LATCHED

JPM Number: NRC P2 Revision Number: 0

Task Number and Title: 44850 – Shutdown the Emergency Diesel Generator

K/A Number and Importance: 064 A4.06 3.9/3.9

Suggested Testing Environment: ☐ Simulator ☐ Control Room ☒ In-Plant ☐ Other

Alternate Path: ☒ Yes ☐ No

Task Designed For: ☐ SRO Only ☐ RO/SRO ☒ AO/RO/SRO

Time Critical: ☐ Yes ☒ No

Level of Difficulty:

Reference(s): 0POP02-DG-0001, Emergency Diesel Generator 11(21), Rev. 70

Actual Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☐ Other

Testing Method: ☐ Simulate ☐ Perform

Estimated Time to Complete: 15 minutes **Actual Time Used:** _____ minutes

Critical Steps (*) 1, 4, 6

Evaluation Summary:
Were all the Critical Steps performed satisfactorily? ☐ Yes ☐ No

The Operator's performance was evaluated against standards contained within this JPM and has been determined to be: ☐ Satisfactory ☐ Unsatisfactory

Comments: _____

_____

_____

_____

_____

_____

Evaluator's Name: _____
(Print)

Evaluator's Signature: _____ **Date**: _____

Student Handout

INITIAL CONDITIONS

The Operating Crew locally started and stopped EDG 11(21) per 0POP02-DG-0001, Emergency Diesel Generator 11(21), Section 8.0.

INITIATING CUE

The Unit Supervisor directs you to perform 0POP02-DG-0001, Emergency Diesel Generator 11(21), Checklist 2, DG Post Run Checklist, beginning at Step 5.0.

STPNOC

Job Performance Measure

PLACE A SECOND SPENT FUEL POOL COOLING TRAIN IN SERVICE

JPM Number: NRC P3

Revision Number: 0

Date: 07/12/2021

Developed By: _____ _____
Instructor (Print/Sign) Date

Approved By: _____ _____
Training Supervisor (Print/Sign) Date

Approved By: _____ _____
Line Management (Print/Sign) Date

NOTE: N/A signature blocks if this JPM is being used on an NRC LOT Exam.

Revision Record (Summary)

Revision 0, Newly developed JPM for use on LOT 25 NRC exam.

SIMULATOR SETUP INSTRUCTIONS

IC Setup

- No setup required. This is an In-Plant JPM.

INITIAL CONDITIONS

The Unit has just returned to 100% Power after a scheduled outage. SFP temperature has slowly risen to 115°F. Operations Management has decided to start the second train of SFP Cooling. In preparation for this evolution, SFP Cooling Pump A has been secured.

INITIATING CUE

The Unit Supervisor directs you to perform the field actions of 0POP02-FC-0001, Spent Fuel Pool Cooling and Cleanup System, Section 6.1, SFP Cooling Pumps Operation, to start SFP Cooling Pumps A and B.

NOTE:

- Prerequisites Section 3.0 has been completed.
- Step 6.1.1 has been completed. Start at Step 6.1.2.
- There are NO Temporary Configuration Changes (TCC) associated with Spent Fuel Pool Cooling.
- SFP Purification is secured and will be placed in service during the next shift.

Fill in the JPM Start Time when the student acknowledges the Initiating Cue.

Information For Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes critical steps.

If Time Critical, estimated time is the Time Critical time.

Number any comments in the "Comment Number" column on the following pages. Then annotate that comment in the "Comments" section. The comment section should be used to document: the reason that a step is marked as unsatisfactory, marginal performance relating to management expectations, or problems the examinee had while performing the JPM. Comments relating to procedural or equipment issues should be entered and tracked using the site's appropriate tracking system.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The timeclock starts when the candidate acknowledges the initiating cue.

Task Standard:

The Operator has aligned SFP Cooling Pumps for TWO Train operation and after both pumps have been started, adjusted SFP Flow for Train B to between 2500 and 3000 gpm.
JPM Steps 2, 4, 5 completed.

JPM Start Time: _____

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
NOTE Hand out the Student Initiating Cue Sheet along with the Student HO of 0POP02-FC-0001, Spent Fuel Pool Cooling and Cleanup System.					
1	ENSURE the "SFP COOLING PUMP DISCHARGE VALVE"(s) for the train(s) being placed in service is OPEN. • SFPCP A – FC-0010A (Step 6.1.2, 1st valve) **CUE:** **When identified by the operator provide indication that FC-0010A is open.**	The Operator has ensured the discharge valve for SFP Cooling Pump B – FC-0010B is open by moving the valve handwheel in the counter-clockwise direction. **NOTE:** **SFP Cooling Pump A was secured using Section 6.2 and its discharge valve was left open because the pump will be restarted.**	___	___	___
*2	ENSURE the "SFP COOLING PUMP DISCHARGE VALVE"(s) for the train(s) being placed in service is OPEN. • SFPCP B – FC-0010B (Step 6.1.2, 2nd valve) **Initially FC-0010B is closed because SFPCP B has been idle.** **When the operator simulates moving the handwheel for FC-0010B in the counter-clockwise direction then provide indication that the valve is open.**	The Operator has opened the discharge valve for SFP Cooling Pump B – FC-0010B by moving the valve handwheel in the counter-clockwise direction. **NOTE:** **Step 6.1.3 is N/A because both pumps will be simultaneously started.**	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
3	VERIFY the pump shaft has stopped rotating for the SFPC Pump that will be started. • SFPCP A • SFPCP B (Step 6.1.4) **CUE:** **Indicate that the shafts on SFP Cooling Pumps A & B have stopped rotating.**	The Operator has verified that SFP Cooling Pumps A & B shafts have stopped rotating. **NOTE:** **Both Pumps will be started.** **Step 6.1.5 is N/A because both pumps will be simultaneously started.**	___	___	___

*4	IF **TWO** train operation is desired, THEN SIMULTANEOUSLY START "SFPCP A" AND "SFPCP B" by performing the following:
	• IF **NO** Temporary Configuration Change (TCC) is installed to provide temporary power to the SFPCP(s), THEN SIMULTANEOUSLY START the desired SFPCP's:
	  • SFPCP A
	  • SFPCP B
	(Step 6.1.6.3)
	CUE:
	When asked as a Unit 1 RO to start both SFP Cooling Pumps simultaneously, state "Both SFP Cooling Pump handswitches have been placed in START and returned to NORMAL."
	State "The shafts are rotating, and pump noise is heard." For each SFP Cooling Pump.
		The Operator has called the control room and asked them to start both SFP Cooling Pumps simultaneously.
		NOTE:
		Step 6.1.6.3 is performed as TWO Train Operation is desired and there are no TCCs installed.
			___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*5	THROTTLE the applicable "SFP HEAT EXCHANGER OUTLET THROTTLE VALVE" as necessary to maintain SFPCP discharge flow between 2500 AND 3000 gpm. • SFP HX A – Valve FC-0011A on Flow Indicator FC-FI-1406 • SFP HX B – Valve FC-0011B on Flow Indicator FC-FI-1408 (Step 6.1.7) **CUE:** **Ensure the Operator locates FC-FI-1406 and then provide an indication on the scale that would represent between 2500 and 3000 gpm.** **Ensure the Operator locates FC-FI-1408 and then Point to 7 on the gauge which represents about 2100 gpm.** **After the Operator simulates having another operator throttle open on FC-0011B then point to 9 on the gauge which represents about 2700 gpm.** **One simulated adjustment open on FC-0011B will satisfy this step.**	The Operator verifies that SFP HX A flow is between 2500 and 3000 gpm. The Operator has **simulated** throttling open using the valve handwheel in the counter-clockwise direction on FC-0011B so that SFP HX B flow is between 2500 and 3000 gpm. **NOTE:** **The valve and flow indicator are in different rooms.** **Have the operator locate both valves first and explain how the valves would be throttled if needed to adjust flow.** **Then, when the operator has located the associated flow indicators say another operator will perform necessary throttling while the student operator reads the associated gauge.** **Flow indicator FI-1406 does NOT require a multiplier to read the flow rate.** **Flow indicator FI-1408 requires the Operator to multiply the reading times 300 to get the flow rate.** **There are pictures of these 2 gauges on Page 11 of 13.**	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
6	VERIFY the applicable SFP HX outlet temperature(s) less than 110°F. • SFP HX A - FC-TI-1409 • SFP HX B - FC-TI-1410 (Step 6.1.8) **CUE** **Gauges are in the SFP Heat Exchanger room.** **Point to a temperature on the gauges that would represent about 115°F.**	The Operator has verified that SFP HX A & B outlet temperatures are NOT less than 110°F and reports this to the Control Room. **NOTE:** **The Initiating Cue had SFP temperature at 115°F. It would be expected that SFP HX outlet temperature would start to lower after about 15 minutes of TWO Train operation.**	___	___	___
7	IF a Temporary Configuration Change (TCC) is NOT installed to provide temporary power to the SFPCP(s), THEN ENSURE the applicable plant computer point(s) are on scan for running SFPCP(s) AND off scan for secured pump(s), as applicable. • SFPCP A – FCUD1406A • SFPCP B – FCUD1408A (Step 6.1.8) **CUE:** **As a control room RO state that the ICS points are on scan.**	The Operator called the control room to have the on shift RO place the listed ICS computer points ON SCAN.	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
8	PERFORM Lineup 3, Restoration of SFPC Pumps. (Step 6.1.10) **CUE** **Another Operator will perform this lineup.**	The Operator has informed the examiner that the task is complete.	___	___	___
CUE	This JPM is completed				

JPM Stop Time: _____

SFP Cooling Pump A FI-1406 – Reads directly in gpm

SFP Cooling Pump B FI-1408 – Multiply reading by 300 to obtain flow in gpm.

JPM SUMMARY

Operator's Name: _____ **Job Title**: ☐ RO ☐SRO

JPM Title: PLACE A SECOND SPENT FUEL POOL COOLING TRAIN IN SERVICE

JPM Number: NRC P3 Revision Number: 0

Task Number and Title: 64950 – Respond to a Loss of SFP Level or Cooling

K/A Number and Importance: 033 A4.02 2.4/2.8

Suggested Testing Environment: ☐ Simulator ☐ Control Room ☒ In-Plant ☐ Other

Alternate Path: ☐ Yes ☒ No

Task Designed For: ☐ SRO Only ☐ RO/SRO ☒ AO/RO/SRO

Time Critical: ☐ Yes ☒ No

Level of Difficulty: **3**

Reference(s): 0POP02-FC-0001, Spent Fuel Pool Cooling and Cleanup System, Rev. 95

Actual Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☐ Other

Testing Method: ☐ Simulate ☐ Perform

Estimated Time to Complete: 10 minutes **Actual Time Used:** _____ minutes

Critical Steps (*) 2, 4, 5

Evaluation Summary:

Were all the Critical Steps performed satisfactorily? ☐ Yes ☐ No

The operator's performance was evaluated against standards contained within this JPM and has been determined to be: ☐ Satisfactory ☐ Unsatisfactory

Comments: The KA rating for this task is 2.4. Given the industry emphasis on SFP Cooling after the Fukushima accident the regulator agrees that SFP Cooling is of sufficient importance to be evaluated on an NRC Initial Exam.

Evaluator's Name: _____
(Print)

Evaluator's Signature: _____ **Date**: _____

Student Handout

INITIAL CONDITIONS

The Unit has just returned to 100% Power after a scheduled outage. SFP temperature has slowly risen to 115°F. Operations Management has decided to start the second train of SFP Cooling. In preparation for this evolution, SFP Cooling Pump A has been secured.

INITIATING CUE

The Unit Supervisor directs you to perform the field actions of 0POP02-FC-0001, Spent Fuel Pool Cooling and Cleanup System, Section 6.1, SFP Cooling Pumps Operation, to start SFP Cooling Pumps A and B.

NOTE:

- Prerequisites Section 3.0 has been completed.
- Step 6.1.1 has been completed. Start at Step 6.1.2.
- There are NO Temporary Configuration Changes (TCC) associated with Spent Fuel Pool Cooling.
- SFP Purification is secured and will be placed in service during the next shift.

LOT 25 NRC EXAM

SIMULATOR OPERATING TEST

SCENARIO #1

Revision 0

Week of 07/12/2021

SCENARIO OUTLINE

Facility: South Texas Project **Scenario No.: 1** **Op-Test No.: LOT 25 NRC**

Examiners: _____ **Operators:** _____

_____ _____

_____ _____

Initial Conditions:
- **Reactor is at 100%. BOL. IC #196**

Turnover:
- **Orders have been given to lower reactor power to 98%.**

Critical Tasks:
- **CT-3: Manually initiate CS**
- **CT-11: Close Phase A CIV.**
- **CT-32: Isolate the LOCA outside containment**

Event No.	Malf. No.	Event Type*	Event Description
1 (0 min)	N/A	R (All)	Lower Reactor power to 98%
2 (10 min)	02-25-01 & 01A 1.0	I (RO, SRO) TS (SRO)	Loop A 410A T-hot instrument fails HI
3 (20 min)	Multiple	C (BOP, SRO) TS (SRO)	EAB Battery Rm Exh Fan 11A shaft shears. Battery Room Exh Fan 11B fan trips when attempted to start.
4 (30 min)	11-04-02 0.8	C (ALL)	Instrument Air Leak. In TGB – Reactor Trip.
5 (40 min)	02-01-04 0.7	M(ALL)	LBLOCA.
6 (N/A)	04-16-04, 05, 06 True	C (BOP, SRO)	Containment Spray Pumps fail to start. **(CT-3)**
7 (N/A)	Multiple	C (BOP, SRO)	Phase A containment isolation valves for CVCS Letdown (OCIV MOV-0024, ICIV MOV-0023 and FV-0011) fail to close. **(CT-11)**
8 (N/A)	Multiple	C (RO, SRO)	HHSI B pump seal failure following swap over to Containment Emergency Sump. **(CT-32)**

Lot* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor, (TS) Technical Specification

Total Estimated Time: 1 hour, 20 minutes

Target Quantitative Attributes (Per Scenario; See Section D.5.d)	Actual Attributes
1. Malfunctions after EOP entry (1–2)	3
2. Abnormal events (2–4)	3
3. Major transients (1–2)	1
4. EOPs entered/requiring substantive actions (1–2)	2
5. Entry into a contingency EOP with substantive actions (≥1 per scenario set)	0
6. Preidentified critical tasks (≥2)	3

SCENARIO MISCELLANEOUS INFORMATION

INSTRUCTOR NOTES:

- Critical Tasks are indicated by "**CT-##**" in the position column and indicated in bold type. In some instances, an "*" will indicate that only a portion of the task listed is considered critical.
- Shaded cells indicate procedural entry points.

RECORDED PARAMETERS:

The parameters identified for recording may be of value in evaluating crew performance. Once the scenario is complete for each crew, printout the recorded parameters and label the printout with date, time, crew number and scenario number. See Scenario Instructions section for further details on how to save the Recorded Parameters.

- Core Exit T/C
- Pressurizer Level
- SG 1D Narrow Range Level

SCENARIO OBJECTIVES

Event 1 Objective

- Adjust Reactor Power using boration/dilution and/or turbine load per 0POP03-ZG-0005, Plant Startup to 100% or 0POP03-ZG-0006, Plant Shutdown from 100% to Hot Standby.

Event 2 Objective

- Respond to a failure of an RCS Loop RTD per 0POP04-RP-0004, Failure of RCS Loop RTD Protection Channel.

Event 3 Objective

- Respond to CRE and EAB HVAC alarms per Annunciator Response procedure 0POP09-AN-22M3.

Event 4 Objective

- Respond to an instrument air leak per 0POP04-IA-0001, Loss of Instrument Air.

Event 5 Objective

- Respond to a Large Break LOCA per 0POP05-EO-EO00, Reactor Trip or Safety Injection, and 0POP05-EO-EO10, Loss of Primary or Secondary Coolant.

Event 6 and 7 Objective

- Respond to equipment failures after a Reactor Trip and Safety Injection per 0POP05-EO-EO00, Reactor Trip or Safety Injection.

Event 8 Objective

- Respond to a LOCA outside containment per 0POP05-EO-ES13, Transfer to Cold Leg Recirculation or 0POP05-EO-EC12, LOCA Outside Containment.

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 1

Event Description: Lower Reactor Power to 98%.

Time	Position	Required Operator Actions	Notes
	All	Crew will note the Unit, Date and Time. *(0POP03-ZG-0008, Step 6.1)*	
	All	REVIEW 0PGP03-ZO-0042, Reactivity Management Program. *(Step 6.2)* *(This briefing and review will be conducted by crew prior to entering the simulator.)*	
	All	Review and Implement Forms associated with the reducing power. *(Step 6.3)* *(This briefing and review will be conducted by crew prior to entering the simulator.)*	
	RO	IF directed by the Shift Manager/Unit Supervisor and Plant conditions can support it, THEN the Backup Heaters may be energized as necessary to aid in PZR turnover flow. *(Step 6.4)*	
	BOP	MAINTAIN Main Generator cold gas temperature greater than or equal to 90ºF during the Main Generator load reduction. *(Step 6.5)*	
	BOP	ENSURE the Main Turbine Exhaust Pressure is within the limits of Addendum 2, Main Turbine Operating Guidelines. *(Step 6.6)*	
	RO	COMMENCE RCS boration to establish the desired Tavg ramp rate to the desired Reactor Power level. *(Step 6.7)*	
	BOP	COMMENCE Main Turbine load reduction at the desired ramp rate to the desired Reactor Power level. *(Step 6.8)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 1

Event Description: Lower Reactor Power to 98%.

Time	Position	Required Operator Actions	Notes
	RO/BOP	ADJUST Main Turbine load reduction or RCS boron concentration, as necessary, to maintain Tavg within 1.5ºF of Program RCS Tavg (Refer to Addendum 7, Percent Power vs Program RCS Tavg). *(Step 6.9)*	

	RO	WHEN Reactor Power less than or equal to 98%, THEN PERFORM the following:
		• ARM the Modulate Signal for the Main Steam to DA valves by performing the following: (A single handswitch controls both valves)
		  • PLACE 1(2)-MS-PV-7174 and 1(2)-MS-PV-7174A handswitch to the “MOD” position and return to “AUTO”.
		  • IF directed by the Shift Manager/Unit Supervisor, THEN PLACE Main Turbine in the INLET-IN (IMP-IN) mode by depressing the INLET (IMP) PRESS FEEDBACK "IN" push-button.
		(Step 6.10)
		*(**Event 2** can triggered on request from the lead examiner.)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 2 **(Examiner Trigger)** **Event Description:** Loop A 410A T-hot Instrument Fails High.			
Time	**Position**	**Required Operator Actions**	**Notes**
	RO	Acknowledges and announces the following annunciators from 05M2: • OPDT RX PRETRIP (A-6) • T AVG/AUCT T AVG DEV (C-6) • DT/AUCT DT DEV (D-6)	
	SRO/RO	Determines LOOP A T-HOT RTD T-410A failed high. *(The crew may put FK-0205 in manual due to the failure of LOOP A T-HOT RTD T-410A which causes PZR Program Level to read high but there is NOT a specific step for this.)*	
	SRO	Directs actions of 0POP04-RP-0004, Failure of RCS Loop RTD Protection Channel.	
	RO	ENSURE "ROD BANK SEL" Switch In MANUAL *(Step 1)*	
	RO	CHECK The Following Indications - NORMAL • RCS loop temperature indicators (Tavg, Th, Tc, and ΔT) {CP005} • QDPS DETAIL DATA Page 2 for RCS Loop Th • Plant Computer **(RNO)** IF any RCS loop RTD channel is **NOT** operable, THEN PERFORM the following: {CP005} • SELECT The Failed Loop On "BYP SEL ΔT" Switch. • SELECT The Failed Loop On "BYP SEL T AVG" Switch. *(Step 2 and Step 2 RNO)*	
	RO	CHECK Tavg - WITHIN 1.5°F OF Tref (REFER TO Addendum 1) *(Step 3)* *(Tavg will probably be within 1.5°F of Tref.)*	
	RO	CHECK Pressurizer Level - • AT PRESSURIZER PROGRAM LEVEL OR • TRENDING TO PRESSURIZER PROGRAM LEVEL *(Step 4)* *(The crew may have put FK-0205 in manual due to the failure of LOOP A T-HOT RTD T-410A)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 2 **(Examiner Trigger)**

Event Description: Loop A 410A T-hot Instrument Fails High.

Time	Position	Required Operator Actions	Notes

	RO	Establish Automatic Rod Control:
		• DETERMINE if it is desired to place Rod Control System in Automatic
		(RNO)
		PERFORM the following:
		• *MAINTAIN* Tavg within 1.5ºF of Tref by any of the following methods:
		  • Manually ADJUST Control Rod position
		  • ADJUST Turbine Load
		  • ADJUST RCS boron concentration
		• GO TO Step 6.0
		(Step 5)
		(The crew will probably NOT place control rods in Auto due to lowering power earlier.)	

	BOP	CHECK "ΔT AND ΔT SETPTS TR-0412" Recorder - SELECTED TO OPERABLE CHANNEL **(CP-018)** • SELECT an operable channel on "ΔT AND ΔT SETPTS TR-0412" Recorder. *(Step 6)* *(Will select an operable channel for the recorder.)*	
	SRO	TAKE Appropriate Actions Per Technical Specifications. TS 3.3.1.8 & 9 OT & OPDT Action 6 TS 3.3.2.5.f LOW Tavg P4 Action 20 **Most Limiting Condition:** Place the failed channel in the tripped condition within 72 hours. *(Step 7)* *(See next page for TS details.)* *(**Event 3** can be triggered after SRO has checked Tech Specs.)*	

TS 3.3.1.8 & 9 Action 6 and TS 3.3.2.5.f Action 20
NOTE: Action 6 and Action 20 are the same.
With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided the following conditions are satisfied:
a. For Functional Units with installed bypass test capability, the inoperable channel may be placed in bypass, and must be placed in the tripped condition within 72 hours.
Note: A channel may be bypassed for up to 12 hours for surveillance testing per Specification 4.3.1.1, provided no more than one channel is in bypass at any time.
NOTE: TS 3.3.2.9.b Action 21 does NOT apply for this event.

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 2 **(Examiner Trigger)**			
Event Description: Loop A 410A T-hot Instrument Fails High.			
Time	**Position**	**Required Operator Actions**	**Notes**
	SRO	NOTIFY I&C To Place The Affected Channel In Trip Or Bypass. REFER TO Addendum 2, Procedure List For The Appropriate Procedure *(Step 8)*	
	SRO	INITIATE A Condition Report To Repair Failed Component *(Step 9)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 3 **(Examiner Trigger)**

Event Description: EAB Battery Rm Exh Fan 11A shaft shears. Battery Room Exh Fan 11B fan trips when attempted to start.

Time	Position	Required Operator Actions	Notes
	RO	Acknowledges and announces the following annunciators on 22M3: • **BATT ROOM EXH FAN TRBL (C-3)** • BATT RM EXH FLOW LO (D-3) • NON 1E BATT RM EXH FLOW LO (D-4) • *(Battery Room exhaust fan trouble will have the operator start the standby fan.)*	
	RO	Operator uses 0POP09-AN-22M3, C-3, BATT ROOM EXH FAN TRBL.	
	RO	Determines affected EAB battery room exhaust fan using Plant Computer points. • HEPD9576 {Train A, EAB "BATTERY ROOM EXH FAN 11A"} *(Window C-3, Step 1)*	
	RO AO	Dispatches an operator to the affected EAB battery room exhaust fan to check local fan DP indication. • 1-HE-PDIS-9576 {21 ft EAB Rm 104B} *(Window C-3, Step 2)* *(Plant Operator reports back that fan DP is low {almost 0} and EAB Battery Room Exhaust Fan 11A motor is running but is vibrating and making a loud noise. {if fan has not been turned off yet})*	
	RO	Initiates a Condition Report to investigate the cause of fan trouble. *(Window C-3, Step 3)*	
	RO	May transition to 0POP02-HE-0001, Electrical Auxiliary Building HVAC System, to start a backup train and secure the affected train. *(Window C-3, Step 4)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 3 **(Examiner Trigger)**

Event Description: EAB Battery Rm Exh Fan 11A shaft shears. Battery Room Exh Fan 11B fan trips when attempted to start.

Time	Position	Required Operator Actions	Notes
	RO	**Starts BATTERY ROOM EXH FAN 11B** *(Window C-3, Step 4.a* *OR* *0POP02-HE-0001, Step 7.2.1)* *(Fan will trip shortly after starting)*	
	AO	*(If asked to check EAB Battery Room Exhaust Fan 11B after it has tripped, EAB Watch reports that they don't see any reason why the fan is not running locally, however, the breaker is in the tripped position.)*	
	RO	**Stops BATTERY ROOM EXH FAN 11C and, after determining that 11B tripped, places both Handswitches in PTL.** *(Window C-3, Step 4.b* *OR* *0POP02-HE-0001, Step 7.2.2 and 7.3.2)* *(Bypass-INOP alarm windows will illuminate when handswitches are placed in PTL)*	
	SRO	Refers to TS 3.3.3.5 for required actions. *(Window C-3, Step 5)* **TS 3.3.3.5 (5.e. for EAB HVAC Fans, including Electrical Penetration Space Fans and Battery Room Fans)** **The Remote Shutdown System Functions shall be OPERABLE.** **ACTION** **With one or more required channels of one or more Remote Shutdown System Functions inoperable, restore the inoperable Function(s) to OPERABLE status within 30 days, or be in HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.** *(Per Table B 3.3.5-1, located in the Bases section of TSs, 2 Battery Room Fans are required.)* ***(Event 4** can be triggered after SRO has checked TS or at the discretion of the lead examiner.)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 4 **(Examiner Trigger)**			
Event Description: Instrument Air Leak. In TGB – Reactor Trip.			
Time	**Position**	**Required Operator Actions**	**Notes**
	BOP	Acknowledges and announces the following annunciators on 08M3: SAS ISOL VLV CLOSE (F3) IAS HDR PRESS LO (D3) *(NOTE: Other alarms will come in in numerous systems as instrument air pressure continues to lower.)*	
	SRO BOP	Determines that there is an instrument air leak.	
	SRO	Enters 0POP04-IA-0001, Loss of Instrument Air.	
	BOP	MONITOR IA Pressure – GREATER THAN 60 PSIG *(Step 1.0)*	
	BOP AO	DISPATCH Operator To Verify All Available IA Compressors Running *(Step 2.0)* *(After about 1 minute, TGB watch will report back that all instrument air compressors are running. In addition an instrument air leak has been found in the TGB just downstream of 1-IA-0036.)* *(1-IA-0036 is the main TGB Instrument Air Header Isolation Valve. IA header pressure will lower to about 70 psig due to this leak. IA pressure at the Main Feed Reg Valves will be low enough that the valves will drift closed and SG levels will start to lower.)*	
	BOP	ANNOUNCE The Following Twice Over The Public Address (PA) System: • "Attention all Personnel, Secure Activities Requiring the Use of Service or Instrument Air" *(Step 3.0)*	
	BOP	ENSURE Unaffected Unit Supplying Yard IA Per 0POP02-IA-0001, Instrument Air *(Step 4.0)*	
	BOP	CHECK IA Pressure - LESS THAN 100 PSIG *(Step 5.0)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 4 **(Examiner Trigger)**

Event Description: Instrument Air Leak. In TGB – Reactor Trip.

Time	Position	Required Operator Actions	Notes
	BOP	CHECK IA Pressure - LESS THAN 90 PSIG *(Step 6.0)*	
	BOP	CHECK IA Pressure - LESS THAN 80 PSIG *(Step 7.0)*	
	BOP	DISPATCH An Operator To Perform The Following: • VERIFY "SERVICE AIR ISOLATION VALVE N1(2)IA-PV-9785"- CLOSED • VERIFY "INSTRUMENT AIR TO YARD ISOL. VALVE N1(2)IA-PV-8568" CLOSED • VERIFY "INST AIR DRYER BYPASS VLV N1(2)IA-PV-9983" OPEN • CHECK All Available IA Compressors Running *(Step 8.0)*	
	BOP	CHECK ICS Display IA-001 To Locate The IA Leak: • DGB Flow {CFM} • MEAB Flow {CFM} • RCB Flow {CFM} • FHB Flow {CFM} • IVC Flow {CFM} • TGB Flow {CFM} *(Step 9.0)* *(TGB flow will be high.)*	
	BOP	DISPATCH Operator To PERFORM The Following For The Area(s) Indicating High Flow On ICS OR ZLP-134: • DISPATCH Operator to CLOSE "1(2)-IA-0036 TGB INSTRUMENT AIR HEADER ISOLATION VALVE" *(Step 10.p)* *(If the crew has not manually tripped the RX yet they will have to at this step because it will isolate air to the MFRVs.)* *(The crew should isolate air to the TGB so that instrument air will be available to the rest of the plant.)* *(**Event 5** will occur when the RX trips.)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 5 & 6

Event Description: Event 5 - LB-LOCA
Event 6 - Containment Spray Pumps fail to start. **(CT-3)**

Time	Position	Required Operator Actions	Notes
	SRO	Enters 0POP05-EO-EO00, Reactor Trip or Safety Injection, and ensures immediate actions are performed.	
	RO BOP	Completes immediate actions of 0POP05-EO-EO00 and determines: • Reactor is tripped (Step 1) • Turbine is tripped (Step 2) • AC ESF Busses are energized (Step 3) • Check SI status (Step 4) *(RO will complete immediate actions. BOP Operator will monitor the plant and make an announcement of the Reactor trip.)*	
	SRO	Directs/ensures the immediate actions of EO00, Reactor Trip/SI have been completed by performing a procedure read through of them. A Safety Injection has actuated. The SRO will continue with 0POP05-EO-EO00.	
	BOP	VERIFY Proper SI Equipment Operation Per ADDENDUM 5, VERIFICATION OF SI EQUIPMENT OPERATION *(Step 5)* *(See Actions on pages 27 - 30)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 5 & 6

Event Description: Event 5 - LB-LOCA
Event 6 - Containment Spray Pumps fail to start. **(CT-3)**

Time	Position	Required Operator Actions	Notes

	RO CT-3	MONITOR If Containment Spray Is Required:
		• Containment pressure - GREATER THAN 9.5 PSIG (QDPS)
		• VERIFY containment spray – INITIATED
		RNO
		• **Manually INITIATE containment spray.**
		A/ER
		• VERIFY containment isolation Phase B valves - CLOSED
		  • "INL OCIV MOV-0318"
		  • "INL OCIV MOV-0291"
		  • "OUTL ICIV MOV-0542"
		  • "OUTL ICIV MOV-0403"
		  • "OUTL OCIV MOV-0404"
		  • "OUTL OCIV FV-4493"
		• STOP ALL RCPs
		(Step 6)
		(The crew will start 2 CS Pumps. Per the CIP one CS Pump is secured for RWST conservation. ***For the CT ONLY ONE CS Pump has to be started and injecting to containment.)***	

	RO	VERIFY Total AFW Flow – GREATER THAN 576 GPM **RNO** PERFORM the following: • IF SG NR Level GREATER THAN 14% [34%] in any SG, THEN Control feed flow to maintain SG NR level. *(Step 7)* *(The SRO will have the BOP throttle AFW flow.)*	
	RO	CHECK RCP Seal Cooling: • ENSURE seal injection flow between 6 and 13 gpm *(Step 8)* *(RO may have to adjust seal injection.)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 5 & 6

Event Description: Event 5 - LB-LOCA
Event 6 - Containment Spray Pumps fail to start. **(CT-3)**

Time	Position	Required Operator Actions	Notes
	RO	MONITOR RCS Temperatures - • WITH ANY RCP RUNNING, RCS TAVG STABLE AT OR TRENDING TO 567°F OR • **WITHOUT ANY RCP RUNNING, RCS TCOLD STABLE AT OR TRENDING TO 567°F** *(Step 9)* *(RCS Tavg will be trending down but MSIVs are closed.)*	
	RO	CHECK Pressurizer Status: • PORVs - CLOSED • Normal pressurizer spray valves - CLOSED • Auxiliary spray valve - CLOSED • Excess letdown isolation valves - CLOSED *(Step 10)*	
	RO	MONITOR If RCPs Should Be Stopped: • HHSI pump - AT LEAST ONE RUNNING • RCS pressure - LESS THAN 1430 PSIG • STOP all RCPs *(Step 11)* *(RCPs will have already been secured.)*	
	RO	VERIFY The Following Containment Isolation Valve – CLOSED • Seal return isolation valves • Containment atmosphere radiation monitor isolation valves *(Step 12)*	

	RO	CHECK If SG Secondary Pressure Boundary Intact:
		• CHECK pressures in all SGs –
		  • CONTROLLED OR RISING
		  • GREATER THAN CONTAINMENT PRESSURE
		(Step 13)	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 5 & 6

Event Description: Event 5 - LB-LOCA
Event 6 - Containment Spray Pumps fail to start. **(CT-3)**

Time	Position	Required Operator Actions	Notes
	RO	CHECK If SG Tubes Are Intact: • Main steamline radiation – NORMAL • IF SG blowdown in service, Then SG blowdown radiation - NORMAL • Cars pump radiation – NORMAL • NO SG level rising in an uncontrolled manner *(Step 14)*	
	RO	**CHECK If RCS Is Intact:** • Containment radiation – NORMAL • Containment pressure – NORMAL • Containment wide range water level - NORMAL **RNO** GO TO 0POP05-EO-EO10, LOSS OF REACTOR OR SECONDARY COOLANT, Step 1 MONITOR Critical Safety Functions WHEN Addendum 5 of this procedure is complete, THEN Functional Restoration Procedures may be IMPLEMENTED. *(Step 15)* *(Critical Safety Functions for Integrity and Containment are expected and will be implemented once 0POP05-EO-EO00, Addendum 5 is completed.)*	
	SRO	Enters 0POP05-EO-FRP1, RESPONSE TO IMMINENT PRESSURIZED THERMAL SHOCK CONDITION.	
	RO	CHECK RCS pressure - GREATER THAN 415 PSIG **RNO** IF LHSI pump flow GREATER THAN 500 GPM, THEN RETURN TO procedure step in effect *(Step 1)*	
	SRO	Enters 0POP05-EO-FRZ1, RESPONSE TO HIGH CONTAINMENT PRESSURE.	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 5 & 6

Event Description: Event 5 - LB-LOCA
Event 6 - Containment Spray Pumps fail to start. **(CT-3)**

Time	Position	Required Operator Actions	Notes

	RO	VERIFY Containment Spray - ESTABLISHED
		• Containment Pressure LESS THAN 56.5 PSIG.
		• At least one Containment Spray pump – RUNNING
		  • Discharge valve OPEN
		  • FLOW indication
		• RETURN TO procedure step in effect and PERFORM this procedure as time permits.
		(Step 1)	

	SRO	Enters 0POP05-EO-EO10, LOSS OF REACTOR OR SECONDARY COOLANT.	
	RO	MONITOR If RCPs Should Be Stopped: • HHSI pump - AT LEAST ONE RUNNING • RCS pressure - LESS THAN 1430 PSIG • STOP all RCPs *(Step 1)* *(RCPs are already stopped.)*	
	BOP	DEPRESSURIZE Intact SGs To 1000 PSIG • CHECK RCS pressure - GREATER THAN 415 PSIG **RNO** • GO TO Step 3. *(Step 2)*	

	BOP	MONITOR If SG Secondary Pressure Boundary Intact:
		• CHECK pressures in all SGs
		  • CONTROLLED OR RISING
		  • GREATER THAN CONTAINMENT PRESSURE
		(Step 3)	

	RO	RESET SI *(Step 4)*	
	RO	RESET ESF Load Sequencers *(Step 5)*	
	RO	RESET Containment Isolation Phase A *(Step 6)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 5 & 6

Event Description: Event 5 - LB-LOCA
Event 6 - Containment Spray Pumps fail to start. **(CT-3)**

Time	Position	Required Operator Actions	Notes
	RO	RESET Containment Isolation Phase B *(Step 7)*	
	BOP	MONITOR INTACT SG Levels: • NR levels - GREATER THAN 14% [34%] • CONTROL AFW flow to maintain NR levels BETWEEN 25% [34%] and 50% *(Step 8)*	

	BOP	CHECK Secondary Radiation:
		• PERFORM the following:
		  • RESET SG LO-LO level AFW actuations
		  • RESET SG blowdown and sample isolations
		  • NOTIFY Chemistry to sample all SGs for activity
		• PERFORM the following:
		  • MONITOR secondary systems listed below radiation levels - NORMAL
		  • Main steamline radiation NORMAL
		  • SG blowdown radiation NORMAL
		  • CARS pump(s) radiation NORMAL
		• MONITOR SG sample results NORMAL
		(Step 9)	

	RO	MONITOR Pressurizer PORVs And Isolation Valves: • Power to isolation valves AVAILABLE • PORVs – CLOSED • Isolation valves - AT LEAST ONE OPEN *(Step 10)*	
	RO	ESTABLISH IA To Containment: • IA pressure - GREATER THAN 95 PSIG • OPEN IA OCIV *(Step 11)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 5 & 6

Event Description: Event 5 - LB-LOCA
Event 6 - Containment Spray Pumps fail to start. **(CT-3)**

Time	Position	Required Operator Actions	Notes
	RO	MONITOR Containment H2 Concentration: • Containment H2 - GREATER THAN OR EQUAL TO ZERO (QDPS QUAL PAMS) **RNO** • PLACE containment H2 monitoring system in service per ADDENDUM 1, ESTABLISHING CONTAINMENT H2 MONITORING. *(Step 12a)* ***(RO will try to place containment H2 monitoring in service but the Sample OCIVs will NOT open. SRO will continue with 0POP05-EO-EO10.)***	
	RO	RESET SI RESET Containment Isolation Phase A *(Add 1, Step 1 & 2)* *(SI and Phase A have already been reset.)*	
	RO	OPEN H2 sample OCIVs for each train *(Add 1, Step 3)* *(Both trains of H2 Sample OCIVs are failed close and will not open. SRO will continue with step 13 of procedure.)*	
	RO	ENSURE SFPC In Service Within 2.5 HOURS Of Loss Of SFPC: • CHECK CCW pumps - AT LEAST TWO RUNNING • ALIGN CCW flow to SFPC heat exchanger(s) • Check SFPC Pump - RUNNING *(Step 13)* *(SRO may flag this step because the allowance of 2.5 hours to complete.)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 5 & 6

Event Description: Event 5 - LB-LOCA
Event 6 - Containment Spray Pumps fail to start. **(CT-3)**

Time	Position	Required Operator Actions	Notes

	RO	CHECK If Charging Flow Has Been Established:
		• CCPs - AT LEAST ONE RUNNING
		• Charging flow – ESTABLISHED
		RNO
		• PERFORM the following:
		  • CLOSE charging flow control valve.
		  • ENSURE CCP discharge valves open.
		  • ENSURE normal or alternate charging isolation valve open.
		  • ENSURE charging OCIV open.
		A/ER
		• CONTROL charging flow control valve to restore pressurizer level.
		(Step 14)	

	RO	CHECK If SI Flow Should Be Terminated: • RCS subcooling based on core exit T/Cs - GREATER THAN 35°F [45°F] **RNO** • GO TO Step 16, OBSERVE NOTE prior to Step 16. *(Step 15)*	

	RO	MONITOR If Containment Spray Should Be Stopped:
		• Spray pumps – RUNNING
		• Containment pressure - LESS THAN 6.5 PSIG
		RNO
		• PERFORM the following:
		  • WHEN containment pressure LESS THAN 6.5 PSIG, THEN PERFORM Step 16.
		  • GO TO Step 17.
		(Step 16)	

	RO	MONITOR If LHSI Pumps Should Be Stopped: • CHECK RCS pressure: • Pressure - GREATER THAN 415 PSIG **RNO** • GO TO Step 19. *(Step 17)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 5 & 6

Event Description: Event 5 - LB-LOCA
Event 6 - Containment Spray Pumps fail to start. **(CT-3)**

Time	Position	Required Operator Actions	Notes
	RO	CHECK RCS And SG Pressures: • CHECK pressures in all SGs CONTROLLED OR RISING • CHECK RCS pressure - STABLE OR LOWERING *(Step 18)*	

	RO	MONITOR If STBY DGs Should Be Stopped:
		• VERIFY AC ESF busses - ENERGIZED BY OFFSITE POWER
		  • 4.16KV ESF bus
		  • 480V ESF LCs
		  • 480V ESF MCCs
		• RESET any unloaded DG(s) non-emergency trips
		• RELEASE any unloaded DG(s) from EMERGENCY mode
		• STOP any unloaded DG(s)
		(Step 19)	

	RO	INITIATE Evaluation Of Plant Status:
		• VERIFY cold leg recirculation capability:
		  • Power to LHSI pumps – AVAILABLE
		  • Power to HHSI pumps – AVAILABLE
		  • Power to emergency sump suction valves – AVAILABLE
		  • Power to HHSI pump mini flow valves – AVAILABLE
		  • Power to LHSI pump mini flow valves – AVAILABLE
		  • Power to RWST suction isolation valves – AVAILABLE
		• CHECK MAB and FHB radiation NORMAL
		• NOTIFY Chemistry to collect post-event samples in accordance with the following procedures, as necessary:
		  • 0PCP07-ZS-0001, SAMPLING AT PRIMARY SAMPLE PANEL ZLP-131
		  • 0PCP08-AP-0003, POST-ACCIDENT SAMPLING OF LIQUIDS AND RCB ATMOSPHERE AT PASS
		(Step 20)	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 5 & 6

Event Description: Event 5 - LB-LOCA
Event 6 - Containment Spray Pumps fail to start. **(CT-3)**

Time	Position	Required Operator Actions	Notes
		CHECK If RCS Cooldown And Depressurization Is Required: • RCS pressure - GREATER THAN 415 PSIG **RNO** • IF LHSI pump flow GREATER THAN 500 GPM, THEN GO TO Step 22. *(Step 21)*	
	RO	CHECK If Transfer To Cold Leg Recirculation Is Required: • RWST level - LESS THAN 75,000 GALLONS (14%) • GO TO 0POP05-EO-ES13, TRANSFER TO COLD LEG RECIRCULATION, Step 1 *(Step 22)* ***(Anytime RWST level lowers to < 75,000 gallons then the crew must transfer to 0POP05-EO-ES13, TRANSFER TO COLD LEG RECIRCULATION, because this procedure takes priority over the other EOPs and FRPs.)***	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 2 **Event No.:** 8

Event Description: HHSI B pump seal failure following swap over to Containment Emergency Sump. **(CT-32)**

Time	Position	Required Operator Actions	Notes
	SRO	Enters 0POP05-EO-ES13, TRANSFER TO COLD LEG RECIRCULATION. *(Steps 1 to 6 should be performed without delay.)* *(IF RWST level LESS THAN 32,500 GALLONS (6%), "RWST EMPTY" alarm, THEN any pumps taking suction from the RWST SHALL be stopped.)*	
	RO	RESET SI RESET ESF Load Sequencers *(Step 1 & 2)* *(SI and ESF Load Sequencers have already been reset.)*	
	RO	VERIFY CCW Flow To RHR Heat Exchangers *(Step 3)*	
	RO	STOP any running CCP(s) *(Step 4)*	

	RO	VERIFY SI And Containment Spray Systems - ALIGNED FOR RECIRCULATION:
		• HHSI cold leg injection valves OPEN
		• LHSI cold leg injection valves OPEN
		• *ENSURE SI pump mini flow valves CLOSED
		  • HHSI pumps
		  • LHSI pumps
		• Containment sump to SI suction header valves – OPEN
		• ENSURE RWST to SI suction header valves CLOSED
		• CHECK SI and Containment Spray Systems - AT LEAST ONE TRAIN ALIGNED FOR RECIRCULATION
		(Step 5)	

	RO	CHECK SI And Containment Spray Pump Status: • HHSI Pumps – RUNNING • LHSI Pumps – RUNNING • Containment Spray Pumps – RUNNING *(Step 6)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 2 **Event No.:** 8

Event Description: HHSI B pump seal failure following swap over to Containment Emergency Sump. **(CT-32)**

Time	Position	Required Operator Actions	Notes
	RO	MONITOR HHSI and LHSI Pump Indications – NORMAL • Discharge Pressure – STABLE • SI Flow – STABLE *(Step 7)*	
	RO	MONITOR Running LHSI Pump Flow - EACH PUMP GREATER THAN 800 GPM *(Step 8)*	
	RO	MONITOR For ECCS Leakage – NORMAL • FHB SI/CS pump sump level alarms - CLEAR (1M02-A-1) • FHB area radiation monitors – NORMAL • FHB ventilation radiation monitors - NORMAL *(Step 9)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 2 **Event No.:** 8

Event Description: HHSI B pump seal failure following swap over to Containment Emergency Sump. **(CT-32)**

Time	Position	Required Operator Actions	Notes

	RO
	CT-33
		PERFORM the following:
		• IDENTIFY affected ECCS train(s).
		• RESET SI AUTO RECIRC.
		• IF AT LEAST one other ECCS train is capable of providing core cooling, THEN PERFORM the following to isolate the affected train(s):
		  • **PLACE pumps on affected ECCS train in PULL-TO-LOCK:**
		  • **HHSI Pump 1B**
		  • **LHSI Pump 1B**
		  • **CS Pump 1B**
		  • **ENSURE affected containment sump to SI suction header isolation - CLOSED. SI-MOV-0016B**
		  • **ENSURE affected RWST to SI suction header isolation - CLOSED. SI-MOV-0001B**
		  • **RESET CNTMT SPRAY AUTO ACT for Train B.**
		  • **ENSURE CS Pump 1B discharge valve - CLOSED. CS-MOV-0001.**
		  • **ENSURE affected HHSI pump discharge isolation valve - CLOSED. SI-MOV-0004B.**
		  • **ENSURE affected LHSI pump discharge isolation valve - CLOSED. SI-MOV-0018B.**
		• CHECK CET temperatures – STABLE OR LOWERING.
		• IF CET temperatures rising, THEN RESTORE affected train.
		• IF the ONLY available ECCS train providing core cooling is affected, THEN CONSULT TSC Staff to determine contingency actions.
		(Step 9 RNO)
		(Terminate Scenario)	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 2 **Event No.:** Addendum 5 & Event 7

Event Description: 0POP05-EO-EO00, Addendum 5, Actions for SI actuation.
Event 7 - Phase A containment isolation valves for CVCS Letdown (OCIV **MOV-0024**, ICIV MOV-0023 and FV-0011) fail to close. **(CT-11)**

Time	Position	Required Operator Actions	Notes
	BOP	VERIFY FW isolation: • SGFPTs – TRIPPED • SU SGFP – TRIPPED • VERIFY the following valves –CLOSED o FWIVs o FWIBs o FW preheater bypass valves o FW regulating valves o Low power FW regulating valves o SG blowdown isolation valves o SG sample isolation valves *(EO00 Addendum 5, Step 1)* *(0POP05-EO-EO00, Reactor Trip or Safety Injection, Addendum 5, Verification of Equipment Operation.)* *(This addendum is performed in parallel with Steps 6 to 15 of 0POP05-EO-EO00, Reactor Trip or Safety Injection.)*	
	BOP	CHECK if main steamline should be isolated: • CHECK for any of the following conditions: o Containment pressure – GREATER THAN OR EQUAL TO 3 PSIG OR o SG pressure (without low steamline pressure SI blocked) - LESS THAN OR EQUAL TO 735 PSIG OR o SG pressure (with low steamline pressure SI blocked) - LOWERING AT A RATE GREATER THAN OR EQUAL TO 100 PSI/SEC, BY OBSERVANCE OF THE STEAMLINE PRESSURE RATE BISTABLES • VERIFY main steamline isolation: • MSIVs – CLOSED • MSIVs - CLOSED *(Step 2)*	
	BOP	VERIFY AFW system status: • Motor-driven pump – RUNNING • Turbine-driven pump – RUNNING *(Step 3)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 2 **Event No.:** Addendum 5 & Event 7

Event Description: 0POP05-EO-EO00, Addendum 5, Actions for SI actuation.
Event 7 - Phase A containment isolation valves for CVCS Letdown (OCIV **MOV-0024**, ICIV MOV-0023 and FV-0011) fail to close. **(CT-11)**

Time	Position	Required Operator Actions	Notes
	BOP	VERIFY AFW valve alignment - PROPER EMERGENCY ALIGNMENT *(Step 4)*	
	BOP	VERIFY total AFW Flow - GREATER THAN 576 GPM *(Step 5)*	
	BOP CT-11	VERIFY containment isolation phase A: • Phase A – ACTUATED **RNO** • Manually ACTUATE phase A. **A/ER** • Phase A valves - CLOSED, REFER b. Manually CLOSE valves. TO ADDENDUM 1, PHASE A ISOLATION VERIFICATION **RNO** • **Manually CLOSE valves. (CV-MOV-0024)** *(Step 6)* *(The operator will attempt to close CV-MOV-0023 and CV-FV-0011 but they will not close.)*	
	BOP	VERIFY ECW status: • ECW pumps – RUNNING • ECW pump discharge isolation valves – OPEN *(Step 7)*	
	BOP	VERIFY CCW pumps – RUNNING *(Step 8)*	
	BOP	VERIFY RCFC status: • RCFCs – RUNNING • Cooling water - TRANSFERRED TO CCW *(Step 9)*	
	BOP	VERIFY SI pump status: • HHSI pumps – RUNNING • LHSI pumps – RUNNING *(Step 10)*	
	BOP	VERIFY SI valve alignment – PROPER EMERGENCY ALIGNMENT *(Step 11)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 2 **Event No.:** Addendum 5 & Event 7

Event Description: 0POP05-EO-EO00, Addendum 5, Actions for SI actuation.
Event 7 - Phase A containment isolation valves for CVCS Letdown (OCIV **MOV-0024**, ICIV MOV-0023 and FV-0011) fail to close. **(CT-11)**

Time	Position	Required Operator Actions	Notes
	BOP	VERIFY SI flow: • RCS pressure - LESS THAN 1745 PSIG **(RNO)** • GO TO Step 13 of this Addendum. *(Step 12)*	
	BOP	VERIFY containment ventilation isolation: • Containment atmosphere radiation monitor isolation valves – CLOSED • Normal purge supply and exhaust fans – STOPPED • Supplemental purge supply and exhaust fans – STOPPED • Purge Dampers – CLOSED *(Step 13)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 2 **Event No.:** Addendum 5 & Event 7

Event Description: 0POP05-EO-EO00, Addendum 5, Actions for SI actuation.
Event 7 - Phase A containment isolation valves for CVCS Letdown (OCIV **MOV-0024**, ICIV MOV-0023 and FV-0011) fail to close. **(CT-11)**

Time	Position	Required Operator Actions	Notes

	BOP	VERIFY ventilation actuation:
		• Control room HVAC – OPERATING IN EMERGENCY RECIRC
		• EAB HVAC - OPERATING IN EMERGENCY RECIRC
		• FHB HVAC - OPERATING IN EMERGENCY MODE
		• FHB Exhaust Fans - ONLY TWO TRAINS OPERATING
		  ○ Exhaust booster fans
		  ○ Main exhaust fans
		(RNO)
		• PERFORM the following:
		  ○ IF three trains FHB exhaust fans running, THEN PLACE one train FHB exhaust fans in PULL TO LOCK.
		(Back to A/ER)
		• SECURE one FHB filter train by PERFORMING the following:
		  ○ PLACE the outlet damper Controller in manual
		  ○ Manually close the outlet damper
		  ○ VERIFY proper operation of filter train in service
		• Essential chilled water pumps – RUNNING
		• Essential chillers – RUNNING
		• ECCS pump room fan coolers – RUNNING
		• AFW pump cubicle fans – RUNNING
		• FHB truck bay doors – CLOSED
		(Step 14)	

	BOP	NOTIFY Unit Supervisor that Addendum 5 is COMPLETE *(Step 15)*	
	SRO	IMPLEMENT Functional Restoration Procedures as required *(Step 16)*	
	SRO	RETURN TO procedure step in effect. *(Step 17)*	

CRITICAL TASK SUMMARY

Critical Task #3 for Event #6 – Manually Initiate Containment Spray	**Circle One** **SAT UNSAT**
Critical Task Bounding Criteria	Acceptance Criteria: Manually Initiate Containment Spray prior to completing Step 6 of 0POP05-EO-EO00, Reactor Trip or Safety Injection. • START AT LEAST ONE CONTAINMENT SPRAY PUMP. NOTE: The CIP of 0POP05-EO-EO00, Reactor Trip or Safety Injection, secures one CS Pump for RWST conservation.
Safety Significance	Failure to manually actuate one train of containment spray under the postulated conditions demonstrates the inability of the crew to "recognize a failure or an incorrect automatic actuation of an ESF system or component." In this case, one train of containment spray can be manually actuated from the control room. Therefore, failure to manually actuate one train of containment spray also represents a failure by the crew to demonstrate the ability to "effectively direct or manipulate engineered safety feature (ESF) controls that would prevent (degraded emergency core cooling system (ECCS) … capacity)." Additionally, under the postulated plant conditions, failure to manually actuate one train of containment spray (when it is possible to do so) results in a failure to prevent "a significant reduction of safety margin beyond that irreparably introduced by the scenario. The acceptable results obtained in the FSAR analyses of containment response to high-energy line breaks are predicated on the assumption that, at the very least, one train of safeguards actuates, including containment cooling. Failure to manually actuate at least one train of containment spray (under the postulated conditions and when it is possible to do so) constitutes a violation of the license condition.
Cueing	Indication and/or annunciation of Containment Spray • Indication and/or annunciation that one train of containment spray is required • Indication and/or annunciation that one train of containment spray is not entirely actuated
Performance Indicator	Manipulation of controls as required to actuate at least one train of containment spray
Performance Feedback	Indication and/or annunciation that at least one train of containment spray is actuated: • Spray pump indicates running • Spray flow is indicated • Containment pressure decreasing.
Justification for the chosen performance limit	Failure to manually actuate one train of containment spray under the postulated conditions demonstrates the inability of the crew to "recognize a failure or an incorrect automatic actuation of an ESF system or component."

CRITICAL TASK SUMMARY

Critical Task #3 for Event #6 – Manually Initiate Containment Spray	**Circle One** **SAT UNSAT**
PWR Owners Group Appendix	CT-3 Manually Initiate Containment Spray
NOTE: (Per NUREG-1021, Appendix D) **If an operator or the Crew significantly deviates from or fails to follow procedures that affect the maintenance of basic safety functions, those actions may form the basis of a CT identified in the post-scenario review.**	

CRITICAL TASK SUMMARY

Critical Task #11 for Event #7 – Close containment isolation valves such that at least one valve is closed on each Phase-A penetration.	**Circle One** **SAT UNSAT**
Critical Task Bounding Criteria	Acceptance Criteria: Close containment isolation valves such that at least one valve is closed on each Phase-A penetration, prior to completion of E0, Addendum 5. • Close CV-MOV-0024, Letdown OCIV. NOTE: Operators will attempt to close CV-MOV-0023 and CV-FV-0011 but they will not close.
Safety Significance	Actuation of Phase A containment isolation is required in order to ensure that the degree of containment integrity assumed in the accident analysis is actually established. Primary containment integrity ensures that the release of radioactive materials from the containment atmosphere will be restricted to those leakage paths and associated leakage rates assumed in the safety analyses. This restriction, in conjunction with the leakage rate limitation imposed by the plant technical specifications, will limit the site boundary radiation doses to [within the dose guideline values of 10 CFR 100 during accident conditions]. The operability of the containment isolation valves ensures that the containment atmosphere will be isolated from the outside environment in the event of a release of radioactive material to the containment atmosphere or pressurization of the containment. Containment isolation within the time limits specified for those isolation valves designed to close automatically ensures that the release of radioactive materials to the environment will be consistent with the assumptions used in the analyses for a LOCA. In summary, the containment is a fission-product barrier. Under the plant conditions postulated, failure to close at least one containment isolation valve on each Phase A penetration results in unnecessary degradation of a fission-product barrier that is relied upon in the safety analysis for the specific accident in progress, that is, for a LOCA. For the containment barrier to possess the degree of integrity assumed in the FSAR analysis of the radiological consequences of a LOCA, at least one isolation valve on each Phase A penetration must be closed. Aside from the issue of containment integrity, failure to close containment isolation valves such that at least one valve on each critical Phase A penetration is closed represents a failure by the crew to “demonstrate the (ability to) recognize a failure or an incorrect automatic actuation of an ESF system or component.”

CRITICAL TASK SUMMARY

Critical Task #11 for Event #7 – Close containment isolation valves such that at least one valve is closed on each Phase-A penetration.	**Circle One** **SAT UNSAT**
Cueing	Indication and/or annunciation that SI is actuated AND One or more of the following: • Absence of closed valve position indication on all (both) containment isolation valves on one or more Phase A penetrations • Open valve position indication on all (both) containment isolation valves on one or more Phase A penetrations ESF system status lamps show that all (both) containment isolation valves on one or more Phase A penetrations are not closed
Performance Indicator	Manipulation of controls as required to close at least one containment isolation valve on each Phase A penetration • Closed valve position indication for at least one containment isolation valve on each Phase A penetration
Performance Feedback	ESF system status lamps show that at least one containment isolation valve is closed on each Phase A penetration
Justification for the chosen performance limit	Failure to ensure full containment isolation when it is possible to do so, upon completion of EO00 Addendum 5, represents an unacceptable delay in positioning ESF components which failed to reposition automatically, and which are required to satisfy the plant's licensing basis.
PWR Owners Group Appendix	CT-11 Close containment isolation valves such that at least one valve is closed on each Phase-A penetration.
NOTE: (Per NUREG-1021, Appendix D) **If an operator or the Crew significantly deviates from or fails to follow procedures that affect the maintenance of basic safety functions, those actions may form the basis of a CT identified in the post-scenario review.**	

CRITICAL TASK SUMMARY

Critical Task #32 for Event #8 – Isolate LOCA Outside Containment	**Circle One** **SAT UNSAT**
Critical Task Bounding Criteria	Acceptance Criteria: Isolate the LOCA outside containment before transitioning out of 0POP05-EO-EC12, LOCA Outside Containment, or 0POP05-EO-ES13, Transfer to Cold Leg Recirculation, whichever procedure applies.
Safety Significance	Failure to isolate a LOCA outside containment (that can be isolated) degrades containment integrity beyond the level of degradation irreparably introduced by the postulated conditions. It also constitutes misoperation or incorrect crew performance that fails to prevent "degradation of any barrier to fission product release" and eventually leads to "…degraded emergency core cooling (ECCS)...capacity." Thus, failure to perform the critical task under the postulated plant conditions leads to a "significant reduction of safety margin beyond that irreparably introduced by the scenario." It also represents a "significant degradation in the mitigative capability of the plant." Containment integrity is degraded because the containment fission-product barrier is bypassed via a pathway that leads from the RCS to the auxiliary building. Although the degraded status of the containment fission-product barrier is not due to the crew's action (was not initiated by operator error), continuation in the degraded status is a result of the crew's failure to perform the critical task. Failure to perform the critical task eventually leads to degraded ECCS capacity because the LOCA outside containment depletes the RWST inventory without causing a corresponding increase in the containment sump inventory. Thus, failure to isolate the LOCA can result in a situation in which all ECCS pumps taking suction on the RWST must be stopped because the RWST is empty and emergency coolant recirculation is unavailable.
Cueing	Indication and/or annunciation that SI is actuated and is required • RCS pressure AND Indication and/or annunciation of abnormally high radiation in the auxiliary building • Area radiation monitoring system • Process and effluent radiation monitoring system
Performance Indicator	Manipulation of controls as required to isolate the LOCA; either of the following indicators, depending upon the location of the break: • All normally closed containment isolation valves indicate closed • Normally open containment isolation valve(s) upstream of the break indicate closed
Performance Feedback	Indication of increasing RCS pressure.
Justification for the chosen performance limit	Completion of 0POP05-EO-EC12, LOCA Outside Containment, or 0POP05-EO-ES13, Transfer to Cold Leg Recirculation, is the minimum acceptable time by which a LOCA bypassing containment should be secured, when it is possible to do so.

CRITICAL TASK SUMMARY

Critical Task #32 for Event #8 – Isolate LOCA Outside Containment	**Circle One** **SAT UNSAT**
PWR Owners Group Appendix	CT-32 Isolate LOCA Outside Containment.
NOTE: (Per NUREG-1021, Appendix D) **If an operator or the Crew significantly deviates from or fails to follow procedures that affect the maintenance of basic safety functions, those actions may form the basis of a CT identified in the post-scenario review.**	

EXPECTED BOOTH COMMUNICATIONS

EVENT 1:

- There are no Booth Communications expected for Event 1.

EVENT 2:

- As I&C Maintenance or the Duty Maintenance Supervisor, if notified of the failure of Loop A Thot 0410A, report that an I&C maintenance crew is being assembled for support. No further action is necessary.
- As Operations Manager, acknowledge the failure of Loop A Thot 0410A. No further action is necessary.

EVENT 3:

- As Electrical Maintenance or the Duty Maintenance Supervisor, if notified of the issues with EAB Battery Room fans 11A and 11B, report that an Electrical maintenance crew is being assembled for support. No further action is necessary.
- As Operations Manager, acknowledge the condition of EAB Battery Room fans 11A and 11B. No further action is necessary.
- As a Plant Operator, if asked report that EAB Battery Room Fan 11A has a low DP, almost 0, and the fan is vibrating and making a loud noise.
- As a Plant Operator, if asked report that EAB Battery Room Fan 11B breaker is in the tripped position. (After the fan has tripped.)

EVENT 4:

- As a Plant Operator, if asked to check IA Compressors running, then after about one minute, report that all 4 IA compressors are running. In addition report that an IA leak can be heard in The TGB and it is coming from the piping just downstream of 1-IA-0036.
- As a Plant Operator, if asked to close 1-IA-0036, then trigger the lesson plan step for closing IA-0036 and then report back that 1-IA-0036, TGB IA Header Isolation valve, is closed.
- As Operations Manager, acknowledge the IA leak in the TGB. No further action is necessary.

EVENT 5:

- There are no Booth Communications expected for Event 5.

EVENT 6:

- There are no Booth Communications expected for Event 6.

EVENT 7:

- There are no Booth Communications expected for Event 7.

EVENT 8:

- As a Plant Operator, if asked to check the SI Pump rooms in FHB, report that you will get with HP to see if they will allow entry.

EXPECTED BOOTH ACTIONS

1. If asked to open the Deaerator High Level Dump Bypass Valves, then trigger the step for ‘DA HLD Bypass Valves FW-486 & FW-487’.
2. If asked to fill the AFWST, then trigger the step for ‘AFWST Makeup’.
3. If asked to close 1-IA-0036, then trigger step ‘Close IA-0036.

SIMULATOR SETUP

NOTE

ALL Annunciator Response Procedures (ARP's) must be checked if this scenario is the first to be run on this day. Setup for subsequent runs of this scenario only requires those ARP's that were actually marked in to be checked.

Instructors running the scenario must keep track of which ARP's these are, otherwise, all will have to be checked for subsequent scenarios as well.

Each time before running the scenario check and/or clean the following:									
Specific Scenario Procedures	**1st √**	**Peer √**	**2nd √**	**Peer √**	**3rd √**	**Peer √**	**4th √**	**Peer √**	**After Last Scenario**
0POP04-RP-0004, Failure Of RCS Loop RTD Protection Channel									
0POP09-AN-22M3,BATT ROOM EXH FAN TRBL, C3									
0POP04-IA-0001, Loss of Instrument Air									
0POP05-EO-EO00, Reactor Trip or Safety Injection									
0POP05-EO-EO10, Loss of RX or Secondary Coolant									
0POP05-EO-ES13, Transfer to Cold Leg Recirculation									
Other Procedures Used By Students During Scenario Including POP09s.	**1st √**	**Peer √**	**2nd √**	**Peer √**	**3rd √**	**Peer √**	**4th √**	**Peer √**	**After Last Scenario**
Miscellaneous Items to Restore	**1st √**	**Peer √**	**2nd √**	**Peer √**	**3rd √**	**Peer √**	**4th √**	**Peer √**	**After Last Scenario**
STA ICS Screens to PD Menu									
***Clear ICS Trend Groups**									
Student Selected ICS Points changed to U1118									
Control Panel ICS Screens to Normal									
RM 11 History and Screens									
RM 23 – No Alarm Indications									

* On ICS Drop 239 in simulator booth open up 'Simstation Test Interface'
With Simulator in FREEZE - Change 'Control Mode' to 'STANDALONE'
Toggle 'RESET' on 'Trend Data', then change 'Control Mode' back to 'PMC'

SIMULATOR SETUP (cont'd.)

NOTE

The Scenario Lesson Plan MUST be run from the left most Instructor Station in Simulator Booth.

For the LOT 25 NRC Exam the Simulator Configuration must be set to:
'wsTrain_Oct2021/Train_Oct2021'

- Log into Instructor Workstation as 'lotnrc' user, open Orchid (nstps server), then 'Unlock' Initial Conditions Group 'lotnrc'.
- Reset to IC #196 and perform the following:
  - Switch Check
  - Ensure red light on end of CP-010 off
  - Ensure ICS Annunciators have stopped counting up
- Go to RUN and perform the following:
  - Ensure Simulator is ready by performing applicable checkoffs from 0PNT01-ZT-0304, LOR Conduct of Simulator Training, Addendum 5, Simulator Readiness Checklist.
  - Ensure VCT Makeup Integrators are set as follows:
    - Momentarily place RC M/U CONT to STOP and then START to reset BA BATCH/GALLONS and TOT M/U BATCH/GALLONS counters to zero.
    - Reset BA BATCH/GALLONS setpoint to 0 gallons and reset TOT M/U BATCH/GALLONS setpoint to 10 gallons.
    - Verify BA Controller Pot setting is 2.50
- Open lesson plan for 'Scenario 1' in 'lotnrc' directory for LOT 25, then EXECUTE lesson plan. These actions will set up any initial conditions for the scenario.
- If this scenario IC has changing conditions (i.e. Xenon is changing, etc.), then place the simulator in FREEZE, otherwise it is OK to leave in RUN.
- Run the scenario in accordance with the next section, 'Scenario Instructions'.

SCENARIO INSTRUCTIONS

NOTE
Steps 1 to 4 below can be performed in the LOR Debrief Room prior to the crew coming into the Simulator provided exam security measures are taken.

1. Provide Shift Turnover sheets to the crew and review the information.
2. Allow crew to brief lowering RX power to 98%.
3. Ensure the Beacon book from the simulator is available to the crew if they are in the LOR Debrief Room.
4. Review the Simulator Differences list with the crew if needed.
5. When signaled by Simulator Staff, have the crew perform their board walkdown and inform the floor instructor when ready to take the watch.
6. Ensure the simulator is in RUN and verify simulator clock is set correctly. Note the time that the Crew takes the watch. _____ Start Time.

NOTE

Malfunction Step and/or Lesson Plan Steps (Events) are triggered upon the Lead Examiners signal during the scenario unless an agreed upon time is discussed with the examiner prior to the start of the scenario.

Always 'TRIGGER' events in the Simulator Scenario Lesson Plans. This way delays associated with events will take place as intended.

Refer to 'EXPECTED BOOTH COMMUNCATIONS' and 'EXPECTED BOOTH ACTIONS' Sections for instructions for Instructor actions during the scenario.

7. Trigger the step titled 'Start Chart' and ensure specified Recorded Parameters for the scenario begin recording as the scenario runs. If the chart speed is NOT set to 5400 seconds (90 minutes) then perform the following:
   - Under 'CHARTS' click on 'SET TIME'
   - In the dialog box enter 5400 seconds (90 minutes)
   - Click OK.
8. For Event #1 the crew will lower RX power to 98%
9. When signaled by Lead Examiner, trigger **MALFUNCTION STEP –** This will insert Step #1, Event #2.
10. When signaled by Lead Examiner, trigger **STEP 2 –** Event #3
11. When signaled by Lead Examiner, trigger **STEP 3 –** Event #4
12. Place simulator in FREEZE when cued by the Lead Examiner to terminate scenario.
13. DO NOT RESET simulator until the steps on the next page are completed and all Examiners have completed Follow-Up Questioning.

SCENARIO INSTRUCTIONS (cont'd.)

NOTE
Some scenarios will have more than one chart. For these, each chart file must be separately saved with a unique filename.

14. Saving Recorded Parameters Data
    - — Click on the 'Charts' icon on the left side of the screen
    - — Select 'Pause' icon, then select 'All'
    - — Click on the 'Print Chart' icon, then select 'All'
    - — This will bring up a window in the TASK BAR called PRIMOPDF.
    - — Click on 'Create PDF'
    - — This will bring up a File Save As window.
    - — Save to folder **c:\Users\lotnrc\Desktop\LOT25 Charts**. The file name will be 'LOT25 Scenario 1' followed by a name that identifies the crew (e.g. 'Crew A).
    - — Save the new file. It will be saved in a folder already on the desktop. LOT25 Charts.
15. Saving Scenario SAM (Simulator Action Monitor)
    - — Under 'TOOLS' click on 'SAM'
    - — In the dialog box that comes up click on 'SAVE TO'
    - — Save as a 'TEXT FILE' to folder **c:\Users\lotnrc\Desktop\LOT25 Charts.** The file name will be 'LOT25 SAM INFO Scenario 1' followed by a name that identifies the crew (e.g. 'Crew A).

SCENARIO – 01

	0POP01-ZQ-0022		
Plant Operations Shift Routines			
For Training Only	Shift Turnover Checklist{ TC "Form 6, Reactor Operator Shift Turnover Checklist" \f C \l "2" }		Page 1 of 1

PART I - To be completed prior to shift turnover.

Unit: **1** Off- Going Shift: **Days / Nights** Date: **Today** Mode: **1**

Dilution			Boration			Control Rods		
Current Setpoint	1% Pwr Change	1° F Change	Current Setpoint	1% Pwr Change	1° F Change	Current Position	1% Pwr Change	1° F Change
10	**240**	**263**	**6** flushing with **15**	**36**	**39**	**227**	**9**	**9**
As Required			As Required			As Required		

ΔI Target	Channel	RCS Boron
-3.73%	**U1144**	**880**

Unit 1 Status

- Mode 1, 100% Power
- Core burnup is 150 MWD / MTU, BOL

Load Reduction:

- 100-90%/1hr = **173**
- 100-80%/10min = **408**
- 100-75%/30min = **471**
- 100-60%/1hr = **454**
- 100-50%/10min = **727**

Information:

- The Crew is directed to lower Reactor Power to 98% at ½% per minute to perform an Engineering Evaluation on the MS to DA valves. The crew is to use 0POP03-ZG-0008, Power Operations, Section 6.0, Power Reduction.
- BAT 1A & 1B Concentrations are 7300 ppm
- Fuel Handling Building truck bay doors are closed
- No personnel are in containment
- Ron Gibbs has the duty
- The NLO compliment is 5 watch standers and a head operator

ECO/LCO/RAsCAL:

None.

Simulator Differences

- Axial Flux Difference Target is per ICS. It may not match the curve book, but the turnover sheets should be accurate.
- Various recorders in the simulator are different model than in the plant and have a slightly different display. QDPS Displays on CP-001 and ASP are different than the plant.
- The Vibration Monitoring HMI panel located on CP-014 and FP Systems are not modeled in the simulator.
- The Desk Top Computer generated Fire Alarm in the Simulator sounds different than the actual Fire Alarm in the plant.
- The Control Rod Step Counters in the Simulator are LCD instead of thumbwheels.
- Simulator ICS Health Screens are different than in the plant and 'Redefined Reports' are not available.
- The plant has some ICS calculated points for RCS inventories that are not in the simulator. (U0112, U0113, U0114, U0116, U0118 and U0120)
- CRE HVAC noise is not simulated.
- Various miscellaneous items such as book carts, cameras, etc. are located in the simulator and are either not in the unit control rooms or in different locations.
- Raising or Lowering Main Generator MVARs does NOT affect Grid Voltage.
- RM-23 FILT, PURGE and Check Source features DO NOT function.
- SI Accumulator control bands for pressure, level and low pressure alarm setpoints do not match the Temporary Modifications change in Unit 1 (TI-20-4780-30). Simulator uses the Unit 2 control bands and low pressure alarm setpoint.
- During a Unit 1 transient event, 'C' Steam Generator (C-S/G) demonstrated a flow and level trend that deviated from the other three S/Gs where C-S/G exhibited a more rapid lowering in level compared to the other three S/Gs prior to the reactor trip. The simulator does not exhibit the same deviation shown by C-S/G. (Ref. Cold weather transient, Unit 1, 2/15/2021; CR 21-2894.)

LOT 25 NRC EXAM

SIMULATOR OPERATING TEST

SCENARIO #3

Revision 0

Week of 07/12/2021

SCENARIO OUTLINE

Facility: South Texas Project **Scenario No.: 3** **Op-Test No.: LOT 25 NRC**

Examiners: _____ **Operators:** _____

_____ _____

_____ _____

Initial Conditions:
- **Reactor is at 98% Power. BOL. IC #198**
- **Both LEFM are OOS.**

Turnover:
- **Orders have been given to raise reactor power to 99.6% per Step 7.68 of 0POP03-ZG-0005, Plant Startup to 100%.**

Critical Tasks:
- **CT-13: Manually trip the Main Turbine**
- **CT-52: Insert negative reactivity via emergency boration.**

Event No.	Malf. No.	Event Type*	Event Description
1 (0 min)	N/A	R (ALL)	Raise reactor power to 99.6%
2 (10 min)	08-15-01 True	I (BOP, SRO),	SG 1A controlling feedwater flow channel, FT-0510, fails low
3 (25 min)	03-11-01 0.02	C (RO, SRO) TS (SRO)	30 GPM RCS leak (isolable) on the letdown line in containment.
4 (40 min)	50-R3-05 True	I (ALL), TS (SRO)	Power Range Nuclear Instrument Channel 41 fails HIGH
5 (55 min)	50-R3-02 True	M (ALL)	A second PR NI channel fails but RX does NOT trip – ATWS – local action to open RTBs required.
6 (N/A)	Multiple	C (BOP, SRO)	Main Turbine fails to trip. **(CT-13)**
7 (N/A)	Multiple	C (BOP, SRO)	Main Generator output breaker fails to open.
8 (N/A)	51-LI-91 & 96	C (RO, SRO)	2 Control Rods stuck partially withdrawn > 18 steps following reactor trip and cannot be inserted. (F14 & H14) **(CT-52)**

Lot* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor, (TS) Technical Specification

Total Estimated Time: 1 hour, 10 minutes

Target Quantitative Attributes (Per Scenario; See Section D.5.d)	Actual Attributes
1. Malfunctions after EOP entry (1–2)	2
2. Abnormal events (2–4)	3
3. Major transients (1–2)	1
4. EOPs entered/requiring substantive actions (1–2)	1
5. Entry into a contingency EOP with substantive actions (≥1 per scenario set)	1
6. Preidentified critical tasks (≥2)	2

SCENARIO MISCELLANEOUS INFORMATION

INSTRUCTOR NOTES:

- Critical Tasks are indicated by "**CT-##**" in the position column and indicated in bold type. In some instances, an "*" will indicate that only a portion of the task listed is considered critical.
- Shaded cells indicate procedural entry points.

RECORDED PARAMETERS:

The parameters identified for recording may be of value in evaluating crew performance. Once the scenario is complete for each crew, printout the recorded parameters and label the printout with date, time, crew number and scenario number. See Scenario Instructions section for further details on how to save the Recorded Parameters.

- Core Exit T/C
- Pressurizer Level
- SG 1D Narrow Range Level

SCENARIO OBJECTIVES

Event 1 Objective

- Adjust Reactor Power using boration/dilution and/or turbine load per 0POP03-ZG-0005, Plant Startup to 100% or 0POP03-ZG-0006, Plant Shutdown from 100% to Hot Standby.

Event 2 Objective

- Respond to Steam Generator Level Control failure per 0POP04-FW-0001, Loss of Steam Generator Water Level Control.

Event 3 Objective

- Respond to a RCS leakage per 0POP04-RC-0003, Excessive RCS Leakage.

Event 4 Objective

- Respond to a Power Range NI failure per 0POP04-NI-0001, Nuclear Instrument Malfunction.

Event 5 Objective

- Respond to a failure of the Reactor to trip when required per 0POP05-EO-FRS1, Response to Nuclear Power Generation – ATWS.

Event 6 and 7 Objective

- Respond to equipment failures after a Reactor Trip and Safety Injection per 0POP05-EO-EO00, Reactor Trip or Safety Injection, and/or 0POP05-EO-FRS1, Response to Nuclear Power Generation – ATWS.

Event 8 Objective

- Respond to a failure of all Control Rods to fully insert after a Reactor trip per 0POP05-EO-ES01, Reactor Trip Response.

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 3 **Event No.:** 1 **Event Description:** Raise reactor power to 99.6%			
Time	**Position**	**Required Operator Actions**	**Notes**
	RO BOP	RAISE Reactor Power until one (1) of the following limits are reached while monitoring critical parameters associated with OTDT and OPDT: • 99.6% RTP (3838 MWt) if both channels of LEFM are failed. • 100% Rated Thermal Power • Less than 5% margin to trip on associated OTDT setpoints • Less than 5% margin to trip on associated OPDT setpoints *(0POP03-ZG-0005 Step7.68)*	
	RO	Start a dilution per 0POP02-CV-0001, Makeup to the Reactor Coolant System. *(NOTE: Operator normally uses Form 2, Dilution Checklist, or Form 3, Alt. Dilution Checklist, to perform a dilution to the RCS. The methods are similar. Form 2 is given.)*	
	RO	DETERMINE amount of dilution water to be added. *(0POP02-CV-0001, Form 2, Step 1.0)* *(RO will confer with SRO to determine the amount of water to add to the RCS to start raising reactor power.)*	
	RO	ENSURE VCT will accept the volume increase without initiating an auto diversion to the RHT at 68%. *(0POP02-CV-0001, Form 2, Step 2.0)*	
	RO	TURN "RC M/U CONT SYS ON" switch to "STOP" *(0POP02-CV-0001, Form 2, Step 3.0)*	
	RO	TURN "RC M/U CONT" to "DILUTE" *(0POP02-CV-0001, Form 2, Step 4.0)*	
	RO	ENSURE "TOT M/U BATCH GALLONS FY-0111B" flow integrator is set for required gallons of dilution water. *(0POP02-CV-0001, Form 2, Step 5.0)*	

OPERATOR ACTIONS

Op-Test No.: 1	**Scenario No.:** 3	**Event No.:** 1	
Event Description: Raise reactor power to 99.6%			
Time	**Position**	**Required Operator Actions**	**Notes**
	RO	ENSURE “RMW FLOW CONT FK-0111” is set for desired flowrate. *(0POP02-CV-0001, Form 2, Step 6.0)* *(Normal dilution flow rate is set for 100 gpm [3.3 pot setting])*	
	RO	TURN "RC M/U CONT SYS ON" switch to "START". *(0POP02-CV-0001, Form 2, Step 7.0)* *(This starts the dilution sequence.)*	
	RO	VERIFY "RMW PUMP 1A" OR "RMW PUMP 1B" is running. *(0POP02-CV-0001, Form 2, Step 8.0)*	
	RO	WHEN the required gallons of dilution water are added, THEN ENSURE makeup is stopped. *(0POP02-CV-0001, Form 2, Step 9.0)* ***(Dilution will auto stop after set amount of water added. The RO may request to leave Reactor Makeup line up as is and just return to Form 2, Step 7.0 for additional dilutions.)***	
	RO	ENSURE Reactor Makeup Water System is returned to Automatic Operation per Form 4, Modes 1-2 Automatic Operation Checklist. *(0POP02-CV-0001, Form 2, Step 10.0)*	
	RO	ENSURE the following in “AUTO” positon: • BA FLOW CONT FK-0110 • BA FLOW CONT VLV FCV-0110A • Makeup Stop to Charging Pumps “TO VCT OUTL FCV-011B” valve • RMW FLOW CONT FK-0111 • RMW FLOW CONT VLV FCV-0111A • Makeup Stop to VCT “FILL FCV-0111B” *(0POP02-CV-0001, Form 4, Step 1.0)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 3 **Event No.:** 1 **Event Description:** Raise reactor power to 99.6%			
Time	**Position**	**Required Operator Actions**	**Notes**
	RO	IF desired, THEN STOP the running RMW OR BAT pump(s) by placing the handswitch in "STOP", THEN return to "AUTO" (√ the desired Standby pump(s) ONLY) • RMW PUMP 1A _____ • RMW PUMP 1B _____ • BA XFER PUMP 1A _____ • BA XFER PUMP 1B _____ *(0POP02-CV-0001, Form 4, Step 2.0)*	
	RO	ENSURE the **STANDBY** RMW and BAT pumps are in "AUTO" (√ the desired Standby pumps ONLY) • RMW PUMP 1A _____ • RMW PUMP 1B _____ • BA XFER PUMP 1A _____ • BA XFER PUMP 1B _____ *(0POP02-CV-0001, Form 4, Step 3.0)*	
	RO	ENSURE the pumps **NOT** selected for **STANDBY** are in "PULL TO LOCK" (normal Lineup) or as directed by the Unit Supervisor/Shift Manager. (√ the desired **Non-Standby** pump(s) ONLY) • RMW PUMP 1A _____ • RMW PUMP 1B _____ • BA XFER PUMP 1A _____ • BA XFER PUMP 1B _____ *(0POP02-CV-0001, Form 4, Step 4.0)*	
	RO	PLACE "RC M/U CONT" switch in "AUTO" *(0POP02-CV-0001, Form 4, Step 5.0)*	
	RO	ENSURE "BA FLOW CONT FK-0110 setpoint for flowrate, is at the desired value. (Refer to Section 8.0 for setpoint formula) *(0POP02-CV-0001, Form 4, Step 6.0)* ***Setpoint Formula:*** $$\textbf{Setpoint} = \frac{\textbf{20 x Boron Concentration of RCS}}{\textbf{Born Concentration of BAT}}$$	
	RO	TURN "RC M/U CONT SYS ON" switch to "START" *(0POP02-CV-0001, Form 4, Step 7.0)*	

OPERATOR ACTIONS

Op-Test No.: 1	**Scenario No.:** 3	**Event No.:** 1	
Event Description: Raise reactor power to 99.6%			
Time	**Position**	**Required Operator Actions**	**Notes**
	RO	IF all boration evolutions have been completed, THEN STOP Boric Acid Transfer Pump Fan AND PLACE its handswitch in "AUTO" • Pump 1B SUPP CLR 11A HM-VAH008 • Pump 1A SUPP CLR 11B HM-VAH009 *(0POP02-CV-0001, Form 4, Step 8.0)*	
	BOP	Crew will make Turbine Load Changes using Form 1 of 0POP03-ZG-0005, Plant Startup to 100%. *(NOTE: There are other Plant Operating Procedures that have these same steps that the Operator can use.)*	
	BOP	ENSURE the LOAD RATE - PRCT MW/MIN" Thumbwheel is set to the ".25" position OR as authorized by the Shift Manager/Unit Supervisor. *(0POP03-ZG-0005, Form 1, Step 1.0)* *(BOP will confer with SRO to determine the Thumbwheel setpoint.)*	
	BOP	RAISE/LOWER (ADJUST) "SETPOINT" to the desired value. *(0POP03-ZG-0005, Form 1, Step 2.0)*	
	BOP	DEPRESS the SETPOINT CONTROL **"GO"** pushbutton and **MONITOR** for the proper load changes. *(0POP03-ZG-0005, Form 1, Step 3.0)*	
	RO	ENSURE "ROD BANK SEL" switch is in "MAN" position. *(0POP03-ZG-0005, Form 2 Step 1)* *(This and the next two steps are used if control rods are used for delta-I control)*	
	RO	WITHDRAW/INSERT Control Banks by holding Rod Control Switch in OUT/IN position. *(0POP03-ZG-0005, Form 2 Step 2)*	
	SRO	PLACE the "ROD BANK SEL" switch in the "AUTO" or "MAN" position as deemed necessary by Shift Manager/Unit Supervisor. *(0POP03-ZG-0005, Form 2 Step 3)* *(**Event 2** can be triggered when the lead examiner is satisfied with crew performance for reactivity.)*	

OPERATOR ACTIONS

Op-Test No.: 1	**Scenario No.:** 3	**Event No.:** 2 **(Examiner Trigger)**	
Event Description: SG 1A controlling feedwater flow channel, FT-0510, fails low.			
Time	**Position**	**Required Operator Actions**	**Notes**
	BOP	Acknowledges and announces the following annunciators on 06M3: SG 1A STM/FW FLOW MSMTCH (E3) *NOTE: If the crew is slow to diagnose this condition, then other alarms will come in on SG 1A.*	
	SRO BOP	Determines SG 1A Controlling Feedwater Flow Transmitter FT-0510 is failed low. Performs immediate actions of 0POP04-FW-0001, Loss of Steam Generator Level Control: PLACE any SG Feedwater Regulating Valve(s) not properly responding in MANUAL AND ADJUST as necessary to restore affected SG NR level(s) to between 68% and 74%.	
	SRO	Enters 0POP04-FW-0001, Loss of Steam Generator Level Control.	
	BOP	CHECK SG Feedwater Regulating Valve(s) - RESPONDING IN AUTOMATIC (See previous immediate action step) *(Step 1, an immediate action step.)*	
	BOP	CHECK SGFP Speed Controllers - RESPONDING IN AUTOMATIC *(Step 2, an immediate action step, however, SGFP speed control in automatic is not affected.)*	

	BOP	CHECK Main Feedwater Regulating Valves:
		• CHECK Main Feedwater Regulating Valve(s) - IN SERVICE
		  • SG 1A "NORM FCV-0551"
		  • SG 1B "NORM FCV-0552"
		  • SG 1C "NORM FCV-0553"
		  • SG 1D "NORM FCV-0554"
		• CHECK Main Feedwater Regulating Valve(s) - ANY IN MANUAL
		• CHECK Affected Main Feedwater Regulating Valve(s) - RESPONDING IN MANUAL
		(Step 3)	

OPERATOR ACTIONS

Op-Test No.: 1	**Scenario No.:** 3	**Event No.:** 2 **(Examiner Trigger)**	
Event Description: SG 1A controlling feedwater flow channel, FT-0510, fails low.			
Time	**Position**	**Required Operator Actions**	**Notes**
	BOP	CHECK Low Power Feedwater Regulating Valves: • CHECK Low Power Feedwater Regulating Valve(s) - IN SERVICE **RNO** GO TO Step 5.0. *(Step 4)*	
	BOP	CHECK SGFP Master Speed Controller - IN MANUAL **RNO** GO TO Step 7.0. *(Step 5)*	
	BOP	CHECK Individual SGFP Speed Controllers - ANY IN MANUAL **RNO** GO TO Step 9.0. *(Step 7)*	
	BOP	MONITOR Feedwater/Steam Header DP – • GREATER THAN OR EQUAL TO DP REQUIRED BY Addendum 1 OR • SGFP Master Speed Controller At 100% Demand In Auto *(Step 9)*	
	BOP	RESTORE Affected SG NR Level(s) To Between 68% And 74% *(Step 10)*	
	BOP	MONITOR SG NR Levels - GREATER THAN 20% *(Step 11)*	
	BOP	MONITOR SG NR Levels - LESS THAN 87.5% *(Step 12)*	
	BOP	CHECK SG NR Level Indicators - ALL OPERABLE *(Step 13)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 3 **Event No.:** 2 **(Examiner Trigger)**

Event Description: SG 1A controlling feedwater flow channel, FT-0510, fails low.

Time	Position	Required Operator Actions	Notes

	BOP	CHECK Feedwater Flow Transmitters - ALL OPERABLE
		RNO
		PERFORM the following:
		• Select the operable feedwater flow channel for the affected SG level control.
		• IF DA Storage Tank level in NOT responding in AUTO, THEN PERFORM the following:
		  • ENSURE DA Storage Tank Level Control LK-7406 in Manual
		  • MAINTAIN DA Storage Tank level between 65% and 80%.
		(Step 14)
		(With FT-0510 failed low the crew will place DA level control in manual.)	

	BOP	CHECK Steam Flow Transmitters - ALL OPERABLE *(Step 15)*	
	BOP	CHECK Steam Pressure Transmitters - ALL OPERABLE *(Step 16)*	
	BOP	CHECK SG NR Levels - BETWEEN 68% And 74% *(Step 17)*	
	BOP	CHECK Main Feedwater Regulating And Low Power Feedwater Regulating Valves Automatic Control – OPERABLE *(Step 18)* *NOTE: Automatic control has not been affected.*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 3 **Event No.:** 2 **(Examiner Trigger)**			
Event Description: SG 1A controlling feedwater flow channel, FT-0510, fails low.			
Time	**Position**	**Required Operator Actions**	**Notes**
	BOP	CHECK Main Feedwater Regulating OR Low Power Feedwater Regulating Valve(s) - IN AUTO • SG 1A "NORM FCV-0551" **RNO** WHEN SG levels return to between 68% and 74%, THEN PERFORM the following: • PLACE in-service Feedwater Regulating Valve(s) with operable Automatic Control in Auto. • MONITOR proper operation of Feedwater Regulating Valve(s) in Auto. *(Step 19)*	
	BOP	CHECK SGFP Master Speed Controller - IN AUTO *(Step 20)*	
	SRO	TAKE Appropriate Actions Per Technical Specifications 3.3.1, 3.3.2, 3.3.3.6 and TRM 3.7.1.7 *(Step 21)* *(TSs do not apply for the feedwater flow channel.)*	
	SRO	NOTIFY I&C To Place The Affected Channel In Trip Or Bypass. REFER TO Addendum 2, Procedure List For The Appropriate Procedure *(Step 22)*	
	SRO	INITIATE Corrective Actions For Failed Component *(Step 23)* *(**Event 3** can be triggered on request from the lead examiner.)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 3 **Event No.:** 3 **(Examiner Trigger)**

Event Description: 30 GPM RCS leak (isolable) on the letdown line in containment.

Time	Position	Required Operator Actions	Notes
	ALL	The crew notices a rise in RCS leakage and lowering VCT level accompanied by RM11 alarms on area radiation monitors in containment. • *(Other associated alarms will start to come in depending on the length of time to diagnose the event)*	
	SRO	Directs actions of 0POP04-RC-0003, Excessive RCS Leakage.	
	SRO	From Conditional Information Page (CIP): IF the location of the RCS leakage is identified, THEN the steps within this procedure necessary to isolate the leakage may be performed out of order provided that the remainder of the procedure is completed to identify any additional leakage that may exist. • Addendum 8, RCS Leakage Walkdown Plan, can be used to help identify and isolate leakage. *(The Crew will have indication from Radiation Monitor Alarms inside containment that the RCS leak is in the RCB.)* *(The SRO will use Addendum 3, RCS Leakage to Containment, to isolate the RCS leakage.)*	
	RO	NOTIFY Health Physics Of The Problem AND REQUEST Assistance. *(Add. 3 Step 1)*	
	RO	DISPATCH An Operator To The RCB To Attempt To IDENTIFY The Source Of The RCS Leakage *(Add. 3 Step 2)* *(Realistically this would take some time for the Plant Operator to coordinate with HP to make a Containment entry.)*	
	RO	CHECK RCP Seal Parameters – NORMAL: • Individual RCP injection flow • Seal inlet Temperature • Seal Injection Filter differential pressure *(Add. 3 Step 3)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 3 **Event No.:** 3 **(Examiner Trigger)**

Event Description: 30 GPM RCS leak (isolable) on the letdown line in containment.

Time	Position	Required Operator Actions	Notes

	RO	REMOVE Normal Letdown And Charging From Service:
		• CLOSE FV-0011 "LTDN ORIF HDR ISOL" valve
		• CLOSE FCV-0205, "CHG FLOW CONT VLV"
		• OPEN Centrifugal Charging Pump miniflow valve for operating pump:
		  • CCP 1A "RECIRC FCV-0201"
		  • CCP 1B "RECIRC FCV-0202"
		• ADJUST HCV-0218, to maintain RCP seal injection flow – BETWEEN 6 AND 13 GPM
		• CLOSE orifice isolation valves
		  • CV-FV-0012 (120-150 gpm)
		  • CV-FV-0013 (85-100 gpm)
		  • CV-MOV-0014 (25-30 gpm)
		• **CLOSE LCV-0465 and LCV-0468 "LETDN ISOL" valves**
		• CLOSE MOV-0025 "OCIV" Charging valve
		(Add. 3 Step 4)
		(The leak is downstream of CV-MOV-0465 and will stop when the valve is closed.)	

	RO	PLACE Excess Letdown In Service, If Desired, Per 0POP02-CV-0004, Chemical And Volume Control System Subsystem *(Add. 3 Step 5)* *(Scenario timing will dictate that the next event will be triggered prior to putting in excess letdown.)*	
	RO SRO	**DETERMINE If The RCS Leakage Has Been Isolated:** • MONITOR RCB Parameters • MONITOR RCS Inventory, REFER TO 0PSP03-RC-0006, Reactor Coolant Inventory • DETERMINE the RCS leak rate using pressurizer level, VCT level, and comparing charging and letdown flows *(Add. 3 Step 6)* *(Leak will have now been isolated)*	
	RO	NOTIFY RCB Operator Of The Suspected Leak Location AND That The Leak Has Been Isolated *(Add. 3 Step 7)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 3 **Event No.:** 3 **(Examiner Trigger)**			
Event Description: 30 GPM RCS leak (isolable) on the letdown line in containment.			
Time	**Position**	**Required Operator Actions**	**Notes**
	SRO	CONSULT System Engineering AND Plant Management To Determine A Plan Of Action *(Add. 3 Step 8)*	
	SRO	VERIFY RCS Leakage – WITHIN THE TECHNICAL SPECIFICATION LIMIT *(Add. 3 Step 9)* *(There will be no leakage at this time because the leak was isolated. However, the TS that was in effect prior to the isolation is listed below for lead examiner to use as a follow up.)*	
TS 3.4.6.2 Action b *With Reactor Coolant System operational UNIDENTIFIED or IDENTIFIED LEAKAGE greater than the above limits, reduce leakage 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.*			
	SRO	GO TO The Appropriate Plant Procedure As Directed By The Unit Supervisor/Shift Manager *(Add. 3 Step 10)* *(**Event 4** can be triggered on a signal from the lead examiner.)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 3 **Event No.:** 4 **(Examiner Trigger)**			
Event Description: Power Range Nuclear Instrument Channel 41 fails HIGH			
Time	**Position**	**Required Operator Actions**	**Notes**
	RO	Acknowledges and announces annunciators: • "PR HI SET PT FLUX HI RX TRIP ALERT" (A-2) • "PR CHANNEL DEV" (C-3) *(Other alarms will come in and clear as the event progresses.)*	
	SRO RO	Determines that PR Channel NI-41 has failed high. • Places Control Rods in MANUAL if not in manual from raising power. *(This is an immediate action of 0POP04-NI-0001, Nuclear Instrument Malfunction, Step 1.)*	
	SRO	Enters and directs the actions of 0POP04-NI-0001, Nuclear Instrument Malfunction	
	RO BOP	CHECK Power Range Nuclear Instruments – NORMAL **RNO** PERFORM the following: • ENSURE "ROD BANK SELECTOR SW" in MAN. • PLACE any Low Power Feed Regulating Valves, being used to feed Steam Generators, in Manual. • CONTROL Steam Generator Levels Between 68% and 74% NR Level Indication. • GO TO Addendum 3, Power Range Nuclear Instrumentation Malfunction. *(Step 1, RNO a. b. c. d.)* *(LPFRVs are not in service.)*	
	BOP	STOP Any Main Turbine Load Changes *(Addendum 3, Step 1)*	
	RO	MAINTAIN RCS Tavg Within 1.5°F Of Tref Using Manual Control Rod Motion *(Addendum 3, Step 2)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 3 **Event No.:** 4 **(Examiner Trigger)**			
Event Description: Power Range Nuclear Instrument Channel 41 fails HIGH			
Time	**Position**	**Required Operator Actions**	**Notes**
	BOP	BYPASS The Malfunctioning Power Range Channel By Selecting The Affected Channel On The Following Switches: • "COMPARATOR CHANNEL DEFEAT" • "POWER MISMATCH BYPASS" • "ROD STOP BYPASS" • "DETECTOR CURRENT COMPARATOR" "UPPER SECTION" • "DETECTOR CURRENT COMPARATOR" "LOWER SECTION" *(Addendum 3, Step 3)* *(Performed at the NI Panel, CP-011)*	
	RO	ENSURE The Following Permissives Are In The Correct State Within One Hour Of The Power Range Channel Failure: • "P-7 POWER OPER RX TRIPS BLKD" Lampbox 5M24 Window B-2 • "P-8 THREE LOOP OPERATION PERMITTED" Lampbox 5M24 Window B-3 • "P-9 RX/TURB TRIP BLOCKED" Lampbox 5M24 Window B-4 • "P-10 MAN BLOCK INT/LO PR RX TRP PERM" Lampbox 5M24 Window A-2 *(Addendum 3, Step 4)* *(Permissives will be in the correct state)*	
	RO	CHECK Reactor Power Meets One Of the Following: • GREATER THAN 75% OR • WILL BE GREATER THAN 75% *(Addendum 3, Step 5)* *(Reactor Power is 1-3%. Performs RNO Steps)*	
	BOP	VERIFY Within One Hour That Beacon Power Distribution Monitoring System (PDMS) Is Available With Reactor Engineering *(Addendum 3 Step 6)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 3 **Event No.:** 4 **(Examiner Trigger)**

Event Description: Power Range Nuclear Instrument Channel 41 fails HIGH

Time	Position	Required Operator Actions	Notes
	SRO	DIRECT Reactor Engineering To Commence 0PSP10-II-0004, Determination Of QPTR Using A Core Power Distribution Measurement, No Later Than 10 Hours After The Channel Inoperability Time To ENSURE An Adequate Amount Of Time To Complete The Beacon PDMS QPTR Surveillance Within The 12 Hour Technical Specifications Action Statement. *(Addendum 3 Step 7)*	
	RE	*(Reactor Engineering will check Beacon and report back and will prepare to commence 0PSP10-II-0004.)*	
	BOP	VERIFY Steam Generator Level Being - CONTROLLED BY LOW POWER FEED REGULATING VALVES • PLACE any Low Power Feed Regulating valves being used to feed steam generators in AUTO at discretion of the Shift Manager/Unit Supervisor • CONTROL Steam Generator levels between 68 and 74% NR level indication *(Addendum 3, Step 8)* *(LPFRVs are not in service.)*	
	RO	PLACE “ROD BANK SELECTOR SW” In AUTO At Discretion Of The Shift Manager/Unit Supervisor *(Addendum 3, Step 9)* *(The Crew will leave ROD BANK SELECTOR SW in MANUAL during low power operations.)*	
	SRO	INITIATE A Condition Report To Repair The Inoperable Channel *(Addendum 3, Step 10)*	
	SRO	REVIEW Applicable Technical Specifications. REFER TO Addendum 8 *(Addendum 3, Step 11)* *(See applicable Tech Specs on next page.)* *(**Event 5** can be triggered after SRO has checked TS.)*	

OPERATOR ACTIONS

Op-Test No.: 1	**Scenario No.:** 3	**Event No.:** 4 **(Examiner Trigger)**	
Event Description: Power Range Nuclear Instrument Channel 41 fails HIGH			
Time	**Position**	**Required Operator Actions**	**Notes**
TS 3.3.1 Function 2 & 3 for Power Range Neutron Flux; Action 2a (Action 2b is NA) *With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided the following conditions are satisfied:* *For Functional Units with installed bypass test capability,* *NOTE: A channel may be bypassed for up to 12 hours for surveillance testing per Specification 4.3.1.1. provided no more than one channel is in bypass at any time.* • *The inoperable channel may he placed in bypass, and must be placed in the tripped condition within 72 hours, and* • *Either, THERMAL POWER is restricted to less than or equal to 75% of RATED THERMAL POWER and the Power Range Neutron Flux Trip Setpoint is reduced to less than or equal to 85% of RATED THERMAL POWER within 4 hours, or the QUADRANT POWER TILT RATIO is monitored at least once per 12 hours per Specification 4.2.4.2.* ***TS 3.3.1 Function 8 for Power Range Neutron Flux associated with OTDT; Action 6a (Action 6b is NA) (Similar to Action 2a above)*** *With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided the following conditions are satisfied:* *a. For Functional Units with installed bypass test capability, the inoperable channel may be placed in bypass, and must be placed in the tripped condition within 72 hours.* *Note: A channel may be bypassed for up to 12 hours for surveillance testing per Specification 4.3.1.1 (4.3.2.1), provided no more than one channel is in bypass at any time.* ***NOTE:*** *Power Range Neutron Flux Inoperability associated with* ***TS 3.3.1 Function 19 Action 8*** *is not applicable because only 1 channel out of 4 is inoperable. Permissives will be in the correct state.* ***TS 3.2.4*** *is not applicable for QPTR if Reactor Engineering completes Surveillance as directed in Addendum 3 Step 7.*			

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 3 **Event No.: 5, 6 & 7 (Examiner Trigger)**

Event Description: Event 5 – A second PR NI channel fails but RX does NOT trip – ATWS – local action to open RTBs required.
Event 6 – Main Turbine fails to trip. **(CT-13)**
Event 7 – Main Generator output breaker fails to open.

Time	Position	Required Operator Actions	Notes
	ALL	Acknowledges and announces 'REACTOR TRIP FIRST OUT' annunciator.	
	ALL	Determines a 2nd Power Range NI channel has failed giving a Reactor Trip signal but the Reactor did NOT trip.	

	RO	Performs immediate actions for a Reactor Trip:
		• VERIFY Reactor Trip:
		  • Rod bottom lights – LIT
		  • Reactor trip and bypass breakers – OPEN
		  • Neutron flux – LOWERING
		RNO
		PERFORM the following:
		• Manually TRIP reactor using both reactor trip switches.
		• IF reactor will NOT trip, THEN:
		  • OPEN 480V LC 1K1 and 1L1 feeder breakers.
		  • IF reactor will NOT trip, THEN GO TO 0POP05-EO-FRS1, RESONSE TO NUCLEAR POWER GENERATION – ATWS, Step 1 AND MONITOR Critical Safety Functions.
		  • IF reactor trip and bypass breakers DO NOT OPEN, THEN DISPATCH an operator to OPEN reactor trip and bypass breakers.
		  • Reactor Trip BKR R
		  • Reactor Trip BKR S
		  • Bypass BKR R
		  • Bypass BKR S
		  • WHEN the reactor is verified tripped, THEN CLOSE 480V LC 1K1 and 1L1 feeder breakers.
		(0POP05-EO-EO00 Step 1 and RNO)	

	SRO	Enters 0POP05-EO-FRS1, RESONSE TO NUCLEAR POWER GENERATION – ATWS, Step 1, and ensures immediate actions are performed.	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 3 **Event No.: 5, 6 & 7 (Examiner Trigger)**

Event Description: Event 5 – A second PR NI channel fails but RX does NOT trip – ATWS – local action to open RTBs required.
Event 6 – Main Turbine fails to trip. **(CT-13)**
Event 7 – Main Generator output breaker fails to open.

Time	Position	Required Operator Actions	Notes

	RO	Performs immediate actions for a Reactor Trip in accordance with 0POP05-EO-FRS1 Step 1:
		• VERIFY Reactor Trip:
		  • Rod bottom lights – LIT
		  • Reactor trip and bypass breakers – OPEN
		  • Neutron flux – LOWERING
		RNO
		PERFORM the following:
		• ENSURE manual reactor trip has been attempted using both reactor trip switches.
		• IF reactor trip and bypass breakers will NOT OPEN, THEN:
		  • ENSURE control rods are being inserted.
		  • OPEN 480V LC 1K1 and 1L1 feeder breakers.
		  • IF reactor trip and bypass breakers DO NOT OPEN, THEN DISPATCH an operator to OPEN reactor trip and bypass breakers.
		  • Reactor Trip BKR R
		  • Reactor Trip BKR S
		  • Bypass BKR R
		  • Bypass BKR S
		• WHEN the reactor is verified tripped, THEN CLOSE 480V LC 1K1 and 1L1 feeder breakers.
		(0POP05-EO-FRS1 Step 1 and RNO)
		(The RO will announce completion of the immediate actions since they are the same as 0POP05-EO-EO00 except the RO will ENSURE control rods are being inserted.)	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 3 **Event No.: 5, 6 & 7 (Examiner Trigger)**

Event Description: Event 5 – A second PR NI channel fails but RX does NOT trip – ATWS – local action to open RTBs required.
Event 6 – Main Turbine fails to trip. **(CT-13)**
Event 7 – Main Generator output breaker fails to open.

Time	Position	Required Operator Actions	Notes
	BOP CT-13	Performs immediate actions for a Reactor Trip in accordance with 0POP05-EO-FRS1 Step 2: VERIFY Turbine Trip: • VERIFY all turbine throttle valves – CLOSED **RNO** PERFORM the following: • **Manually TRIP turbine. CT-13** **A/ER** • Main generator output breaker - OPEN. **RNO** • Manually OPEN breaker. **A/ER** • Main steam to deaerator valves - CLOSED *(0POP05-EO-FRS1 Step 2 and RNO)* *(When the Main Turbine is tripped, the reactor trip breakers OPEN and the reactor trips.)*	
	SRO	Performs a read through of the immediate actions of 0POP05-EO-FRS1, RESONSE TO NUCLEAR POWER GENERATION – ATWS, to ensure all actions completed.	
	RO SRO	IF BOTH conditions listed below occur, THEN GO TO step 18: • Extended Range NI's indicate LESS THAN 5% power. • Extended Range NI's indicate negative start-up rate. *(FRS1 CIP)*	
	RO	VERIFY Adequate Shutdown Margin: • CHECK emergency boration – IN SERVICE **RNO** • GO TO Step 20. *(Step 18)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 3 **Event No.: 5, 6 & 7 (Examiner Trigger)**

Event Description: Event 5 – A second PR NI channel fails but RX does NOT trip – ATWS – local action to open RTBs required.
Event 6 – Main Turbine fails to trip. **(CT-13)**
Event 7 – Main Generator output breaker fails to open.

Time	Position	Required Operator Actions	Notes
	SRO	RETURN TO Procedure And Step In Effect • CONTINUE to monitor Critical Safety Functions *(Step 20)* *(SRO will return to 0POP05-EO-EO00)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 3 **Event No.: 8**

Event Description: 2 Control Rods stuck partially withdrawn > 18 steps following reactor trip and cannot be inserted. (F14 & H14) **(CT-52)**

Time	Position	Required Operator Actions	Notes
	SRO	Re-enters 0POP05-EO-EO00, Reactor Trip or Safety Injection.	
	BOP	IF AFW flow must be reduced to limit RCS cooldown, THEN THROTTLE AFW flow as necessary while maintaining total AFW flow GREATER THAN 576 GPM until NR level in at least one SG is GREATER THAN 14% [34%]. *(EO00 CIP)* *(AFW will actuate after the Reactor Trip.)*	
	RO	Directs/ensures the immediate actions of EO00, Reactor Trip/SI have been completed by performing a procedure read through of them. • Reactor is tripped (Step 1) • Turbine is tripped (Step 2) • AC ESF Busses are energized (Step 3) • Check SI status (Step 4) **RNO** • IF SI is NOT required, THEN GO TO 0POP05-EO-ES01, REACTOR TRIP RESPONSE, Step 1 AND MONITOR Critical Safety Functions. *(Step 1 - 4)* *(SI will NOT be required*	
	SRO	Enters 0POP05-EO-ES01, Reactor Trip Response.	
	RO	CHECK RCS Temperature Control: • CHECK RCPs - ANY RUNNING *(Step 1.a)*	
	RO	MONITOR RCS Temperatures: • WITH ANY RCP RUNNING, RCS TAVG STABLE AT OR TRENDING TO 567°F *(Step 1.b)* *(As long as AFW is properly throttled to limit cooldown, RCS temperature should be at or trending to 567°F)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 3 **Event No.: 8**

Event Description: 2 Control Rods stuck partially withdrawn > 18 steps following reactor trip and cannot be inserted. (F14 & H14) **(CT-52)**

Time	Position	Required Operator Actions	Notes

	BOP	CHECK FW Status:
		• CHECK RCS TAVG - LESS THAN 574°F
		• VERIFY FW isolation:
		  • FWIVs – CLOSED
		  • FWIBs – CLOSED
		  • FW preheater bypass valves – CLOSED
		  • FW regulating valves – CLOSED
		  • Low Power FW regulating valves – CLOSED
		• TRIP all SGFPTs
		(Step 2)	

	BOP	VERIFY Feedwater Flow Established To GREATER THAN OR EQUAL TO Three (3) SGs: • Main Feedwater flow OR • AFW flow *(Step 3)* *(AFW will be in service.)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 3 **Event No.: 8**

Event Description: 2 Control Rods stuck partially withdrawn > 18 steps following reactor trip and cannot be inserted. (F14 & H14) **(CT-52)**

Time	Position	Required Operator Actions	Notes

	RO
	CT-52
		VERIFY Control Rods Fully Inserted:
		• All rod bottom lights – LIT
		RNO
		PERFORM the following:
		• IF two OR more control rod bottom lights NOT lit, THEN:
		  • Emergency BORATE 940 GALLONS of boric acid (60 ppm) for each control rod 18 steps OR LESS.
		# of rods ____ X 940 gals = _____ gals
		  • **Emergency BORATE 4460 GALLONS of boric acid (280 ppm) for each control rod GREATER THAN 18 steps.**
		# of rods **_2_** X 4460 gals = **8920 gals**
		OR
		  • **Emergency BORATE until RCS Cb GREATER THAN 2800 PPM.**
		(Step 4)
		Emergency Borate:
		• ***Charging should already be in service***
		• ***OPEN CV-MOV-0218***
		• ***START a Boric Acid Pump***
		• ***ENSURE > 50 gpm charging flow***
		(Terminate Scenario.)	

CRITICAL TASK SUMMARY

Critical Task #13 for Event #6 – Manually Trip the Main Turbine	**Circle One** **SAT UNSAT**
Critical Task Bounding Criteria	Acceptance Criteria: Manually trip the Main Turbine prior to transition out of 0POP05-EO-FRS1, Response to Nuclear Power Generation – ATWS. • Manually trip the Main Turbine by manually pushing the red trip push button.
Safety Significance	Failure to trip the Main Turbine under the postulated plant conditions can cause challenges to CSFs beyond those irreparably introduced by postulated conditions. Additionally, such an omission constitutes a demonstrated inability by the crew to "take an action" that would prevent a challenge to the plant.
Cueing	Indication of open Main Turbine throttle valves. • Bistable indication for Main Turbine throttle valves. • Valve position indication for Main Turbine throttle valves.
Performance Indicator	Manipulation of controls as required to manually trip the Main Turbine.
Performance Feedback	Indication of closed Main Turbine throttle valves and red trip light lit on Main Turbine controls.
Justification for the chosen performance limit	Failure to to trip the Main Turbine prior to transition out of 0POP05-EO-FRS1, Response to Nuclear Power Generation – ATWS, represents an unacceptable delay in taking actions avert a challenge to CSFs.
PWR Owners Group Appendix	CT-13 Manually trip the Main Turbine.
NOTE: (Per NUREG-1021, Appendix D) **If an operator or the Crew significantly deviates from or fails to follow procedures that affect the maintenance of basic safety functions, those actions may form the basis of a CT identified in the post-scenario review.**	

CRITICAL TASK SUMMARY

Critical Task #52 for Event #8 – Insert negative reactivity via emergency boration.	**Circle One** **SAT UNSAT**
Critical Task Bounding Criteria	Acceptance Criteria: Insert negative reactivity prior to completion of 0POP05-EO-ES01, Reactor Trip Response. • Open CV-MOV-0218, ALT BORATION ISOLATION. • START at least one Boric Acid Transfer Pump. • Establish ≥ 50 gpm CVCS Charging flow. NOTE: The amount of boric acid can be calculated per step 4 of 0POP05-EO-ES01 or can be aligned to RCS until RCS boron concentration is > 2800 ppm.
Safety Significance	A subcritical core is verified if all rods are at the bottom according to the rod bottom lights and the rod position indicators. If these indications reveal that one rod is not inserted, no immediate action is required since the core is designed for adequate shutdown margin with one rod stuck out. However, if more than one rod fails to insert fully, the shutdown reactivity margin must be made up through emergency boration to account for the reactivity worth of the stuck rods. Failure to insert negative reactivity, under the postulated plant conditions, results in an unnecessary situation in which the reactor remains critical or returns to a critical condition. Performance of the critical task would make the reactor subcritical and provide sufficient shutdown margin to prevent (or at least minimize the power excursion associated with) any subsequent return to criticality. Failure to insert negative reactivity constitutes misoperation or incorrect crew performance which fails to prevent "incorrect reactivity control (such as failure to initiate emergency boration… or manually insert control rods)."
Cueing	Indication that 2 or more rods are not fully inserted
Performance Indicator	Manipulation of controls in the control room as required to initiate the insertion of negative reactivity into the core via emergency boration.
Performance Feedback	Indication of borated water being injected into the core at greater than or equal to 50 GPM. • CV-MOV-0218, ALT BORATION ISOLATION, open indication red light lit. • A boric acid pump running with red indication light lit.
Justification for the chosen performance limit	Subcriticality is the highest critical safety function. Failure to take immediate action to satisfy this safety function when procedurally directed to do so constitutes a "significant reduction of safety margin beyond that irreparably introduced by the scenario."

CRITICAL TASK SUMMARY

Critical Task #52 for Event #8 – Insert negative reactivity via emergency boration.	**Circle One** **SAT UNSAT**
PWR Owners Group Appendix	CT-52 Insert negative reactivity via emergency boration.
NOTE: (Per NUREG-1021, Appendix D) **If an operator or the Crew significantly deviates from or fails to follow procedures that affect the maintenance of basic safety functions, those actions may form the basis of a CT identified in the post-scenario review.**	

EXPECTED BOOTH COMMUNICATIONS

EVENT 1:

- There are no Booth Communications expected for Event 1.

EVENT 2:

- As I&C Maintenance or the Duty Maintenance Supervisor, if notified of the failure of feedwater flow channel FT-0510, report that an I&C maintenance crew is being assembled for support. No further action is necessary.
- As Operations Manager, acknowledge the condition of feedwater flow channel FT-0510. No further action is necessary.

EVENT 3:

- As Mechanical Maintenance or the Duty Maintenance Supervisor, if notified of the 30 gpm RCS leak in containment, report that a maintenance crew is being assembled for support. No further action is necessary.
- As Operations Manager, acknowledge the 30 gpm RCS leak in containment. No further action is necessary.
- As a plant Operator, if asked to look for an RCS leak in containment, report that you will check with Health Physics to plan an entry to containment.

EVENT 4:

- As I&C Maintenance or the Duty Maintenance Supervisor, if notified of the failure Power Range Channel N-41, report that an I&C maintenance crew is being assembled for support. No further action is necessary.
- As Operations Manager, acknowledge the condition Power Range Channel N-41. No further action is necessary.
- As Reactor Engineering, if called about the failure of Power Range Channel N-41. Reactor Engineering will check Beacon and report back and will prepare to commence 0PSP10-II-0004.

EVENT 5:

- As a plant Operator, if asked to open the Reactor Trip Breakers, report that you will head to the 60’ EAB. **NOTE: The Reactor will trip when the crew manually trips the Main Turbine.**

EVENT 6:

- There are no Booth Communications expected for Event 6.

EVENT 7:

- There are no Booth Communications expected for Event 7.

EVENT 8:

- There are no Booth Communications expected for Event 8.

EXPECTED BOOTH ACTIONS

1. If asked to open the Deaerator High Level Dump Bypass Valves, then trigger the step for ‘DA HLD Bypass Valves FW-486 & FW-487’.
2. If asked to fill the AFWST, then trigger the step for ‘AFWST Makeup’.
3. If asked to open the Reactor Trip Breakers **AND the crew did NOT manually trip the Main Turbine**, then trigger the step to ‘Open RX Trip Breakers’ ONLY when the crew has completed the read through of 0POP05-EO-FRS1.

SIMULATOR SETUP

NOTE

ALL Annunciator Response Procedures (ARP's) must be checked if this scenario is the first to be run on this day. Setup for subsequent runs of this scenario only requires those ARP's that were actually marked in to be checked.

Instructors running the scenario must keep track of which ARP's these are, otherwise, all will have to be checked for subsequent scenarios as well.

Each time before running the scenario check and/or clean the following:									
Specific Scenario Procedures	**1st √**	**Peer √**	**2nd √**	**Peer √**	**3rd √**	**Peer √**	**4th √**	**Peer √**	**After Last Scenario**
0POP04-FW-0001, Loss of Steam Generator Water Level Control									
0POP04-RC-0003, Excessive RCS Leakage									
0POP04-NI-0001, Nuclear Instrument Malfunction									
0POP05-EO-FRS1, Response to Nuclear Power Generation – ATWS									
0POP05-EO-EO00, Reactor Trip or Safety Injection									
0POP05-EO-ES01, Reactor Trip Response									
Other Procedures Used By Students During Scenario Including POP09s.	**1st √**	**Peer √**	**2nd √**	**Peer √**	**3rd √**	**Peer √**	**4th √**	**Peer √**	**After Last Scenario**
Miscellaneous Items to Restore	**1st √**	**Peer √**	**2nd √**	**Peer √**	**3rd √**	**Peer √**	**4th √**	**Peer √**	**After Last Scenario**
STA ICS Screens to PD Menu									
***Clear ICS Trend Groups**									
Student Selected ICS Points changed to U1118									
Control Panel ICS Screens to Normal									
RM 11 History and Screens									
RM 23 – No Alarm Indications									

* On ICS Drop 239 in simulator booth open up 'Simstation Test Interface'
With Simulator in FREEZE - Change 'Control Mode' to 'STANDALONE'
Toggle 'RESET' on 'Trend Data', then change 'Control Mode' back to 'PMC'

SIMULATOR SETUP (cont'd.)

NOTE

The Scenario Lesson Plan MUST be run from the left most Instructor Station in Simulator Booth.

For the LOT 25 NRC Exam the Simulator Configuration must be set to:
'wsTrain_Oct2021/Train_Oct2021'

- Log into Instructor Workstation as 'lotnrc' user, open Orchid (nstps server), then 'Unlock' Initial Conditions Group 'lotnrc'.
- Reset to IC #198 and perform the following:
  - Switch Check
  - Ensure red light on end of CP-010 off
  - Ensure ICS Annunciators have stopped counting up
- Go to RUN and perform the following:
  - Ensure Simulator is ready by performing applicable checkoffs from 0PNT01-ZT-0304, LOR Conduct of Simulator Training, Addendum 5, Simulator Readiness Checklist.
  - Ensure VCT Makeup Integrators are set as follows:
    - Momentarily place RC M/U CONT to STOP and then START to reset BA BATCH/GALLONS and TOT M/U BATCH/GALLONS counters to zero.
    - Reset BA BATCH/GALLONS setpoint to 0 gallons and reset TOT M/U BATCH/GALLONS setpoint to 10 gallons.
    - Verify BA Controller Pot setting is 2.50
- Open lesson plan for 'Scenario 3' in 'lotnrc' directory for LOT 25, then EXECUTE lesson plan. These actions will set up any initial conditions for the scenario.
- If this scenario IC has changing conditions (i.e. Xenon is changing, etc.), then place the simulator in FREEZE, otherwise it is OK to leave in RUN.
- Run the scenario in accordance with the next section, 'Scenario Instructions'.

SCENARIO INSTRUCTIONS

NOTE
Steps 1 to 4 below can be performed in the LOR Debrief Room prior to the crew coming into the Simulator provided exam security measures are taken.

1. Provide Shift Turnover sheets to the crew and review the information.
2. Ensure the Beacon book from the simulator is available to the crew if they are in the LOR Debrief Room.
3. Review the Simulator Differences list with the crew if needed.
4. When signaled by Simulator Staff, have the crew perform their board walkdown and inform the floor instructor when ready to take the watch.
5. Ensure the simulator is in RUN and verify simulator clock is set correctly. Note the time that the Crew takes the watch. _____ Start Time.

NOTE

Malfunction Step and/or Lesson Plan Steps (Events) are triggered upon the Lead Examiners signal during the scenario unless an agreed upon time is discussed with the examiner prior to the start of the scenario.

Always 'TRIGGER' events in the Simulator Scenario Lesson Plans. This way delays associated with events will take place as intended.

Refer to 'EXPECTED BOOTH COMMUNCATIONS' and 'EXPECTED BOOTH ACTIONS' Sections for instructions for Instructor actions during the scenario.

6. Trigger the step titled 'Start Chart' and ensure specified Recorded Parameters for the scenario begin recording as the scenario runs. If the chart speed is NOT set to 5400 seconds (90 minutes) then perform the following:
   - Under 'CHARTS' click on 'SET TIME'
   - In the dialog box enter 5400 seconds (90 minutes)
   - Click OK.
7. For Event #1, the crew will raise power to 99.6%
8. When signaled by Lead Examiner, trigger **MALFUNCTION STEP –** This will insert Step #1, Event #2.
9. When signaled by Lead Examiner, trigger **STEP 2 –** Event #3
10. When signaled by Lead Examiner, trigger **STEP 3 –** Event #4
11. When signaled by Lead Examiner, trigger **STEP 4 –** Event #5
12. Place simulator in FREEZE when cued by the Lead Examiner to terminate scenario.
13. DO NOT RESET simulator until the steps on the next page are completed and all Examiners have completed Follow-Up Questioning.

SCENARIO INSTRUCTIONS (cont'd.)

NOTE
Some scenarios will have more than one chart. For these, each chart file must be separately saved with a unique filename.

14. Saving Recorded Parameters Data
    - Click on the 'Charts' icon on the left side of the screen
    - Select 'Pause' icon, then select 'All'
    - Click on the 'Print Chart' icon, then select 'All'
    - This will bring up a window in the TASK BAR called PRIMOPDF.
    - Click on 'Create PDF'
    - This will bring up a File Save As window.
    - Save to folder **c:\Users\lotnrc\Desktop\LOT25 Charts**. The file name will be 'LOT25 Scenario 3' followed by a name that identifies the crew (e.g. 'Crew A).
    - Save the new file. It will be saved in a folder already on the desktop. LOT25 Charts.
15. Saving Scenario SAM (Simulator Action Monitor)
    - Under 'TOOLS' click on 'SAM'
    - In the dialog box that comes up click on 'SAVE TO'
    - Save as a 'TEXT FILE' to folder **c:\Users\lotnrc\Desktop\LOT25 Charts.** The file name will be 'LOT25 SAM INFO Scenario 3' followed by a name that identifies the crew (e.g. 'Crew A).

SCENARIO – 03

	0POP01-ZQ-0022		
Plant Operations Shift Routines			
For Training Only	Shift Turnover Checklist{ TC "Form 6, Reactor Operator Shift Turnover Checklist" \f C \l "2" }		Page 1 of 1

PART I - To be completed prior to shift turnover.

Unit: **1** Off- Going Shift: **Days / Nights** Date: **Today** Mode: **1**

Dilution			Boration			Control Rods		
Current Setpoint	1% Pwr Change	1° F Change	Current Setpoint	1% Pwr Change	1° F Change	Current Position	1% Pwr Change	1° F Change
10	**240**	**263**	**6** flushing with **15**	**36**	**39**	**227**	**9**	**9**
As Required			As Required			As Required		

ΔI Target	Channel	RCS Boron
-3.73%	**U1144**	**880**

Unit 1 Status

- Mode 1, 98% Power
- Core burnup is 150 MWD / MTU, BOL
- Both LEFM are OOS.

Load Reduction:

- 100-90%/1hr = **173**
- 100-80%/10min = **408**
- 100-75%/30min = **471**
- 100-60%/1hr = **454**
- 100-50%/10min = **727**

Information:

- The Crew will raise reactor power to 99.6% per Step 7.68 of 0POP03-ZG-0005, Plant Startup to 100%. Both LEFM should be back in service within 3 hours.
- BAT 1A & 1B Concentrations are 7300 ppm
- Fuel Handling Building truck bay doors are closed
- No personnel are in containment
- Ron Gibbs has the duty
- The NLO compliment is 5 watch standers and a head operator

ECO/LCO/RAsCAL:

None.

Simulator Differences

- Axial Flux Difference Target is per ICS. It may not match the curve book, but the turnover sheets should be accurate.
- Various recorders in the simulator are different model than in the plant and have a slightly different display. QDPS Displays on CP-001 and ASP are different than the plant.
- The Vibration Monitoring HMI panel located on CP-014 and FP Systems are not modeled in the simulator.
- The Desk Top Computer generated Fire Alarm in the Simulator sounds different than the actual Fire Alarm in the plant.
- The Control Rod Step Counters in the Simulator are LCD instead of thumbwheels.
- Simulator ICS Health Screens are different than in the plant and 'Redefined Reports' are not available.
- The plant has some ICS calculated points for RCS inventories that are not in the simulator. (U0112, U0113, U0114, U0116, U0118 and U0120)
- CRE HVAC noise is not simulated.
- Various miscellaneous items such as book carts, cameras, etc. are located in the simulator and are either not in the unit control rooms or in different locations.
- Raising or Lowering Main Generator MVARs does NOT affect Grid Voltage.
- RM-23 FILT, PURGE and Check Source features DO NOT function.
- SI Accumulator control bands for pressure, level and low pressure alarm setpoints do not match the Temporary Modifications change in Unit 1 (TI-20-4780-30). Simulator uses the Unit 2 control bands and low pressure alarm setpoint.
- During a Unit 1 transient event, 'C' Steam Generator (C-S/G) demonstrated a flow and level trend that deviated from the other three S/Gs where C-S/G exhibited a more rapid lowering in level compared to the other three S/Gs prior to the reactor trip. The simulator does not exhibit the same deviation shown by C-S/G. (Ref. Cold weather transient, Unit 1, 2/15/2021; CR 21-2894.)

LOT 25 NRC EXAM

SIMULATOR OPERATING TEST

SCENARIO #4

Revision 0

Week of 07/12/2021

SCENARIO OUTLINE

Facility: South Texas Project **Scenario No.: 4** **Op-Test No.: LOT 25 NRC**

Examiners: _____ **Operators:** _____

_____ _____

_____ _____

Initial Conditions:
- **Mode 2 at 10E-8 AMPS Power. MOL**

Turnover:
- **Raise power to 1-3% (NIs)**

Critical Tasks:
- **CT-11: E7: Close Phase A CIV**
- **CT-6: E8: Start at least 1 HHSI pump**
- **CT-EO10-D-STP: E6: Depressurize SGs to 1000 psig.**

Event No.	Malf. No.	Event Type*	Event Description
1 (0 min)	N/A	R (RO, SRO)	Withdraw control rods to raise power to 3%
2 (10 min)	52-LI-73 88	I (RO, SRO) TS (SRO)	Once power is at 2%, Control Rod M4 in control bank D will drop >12 steps in.
3 (25 min)	03-05-01 1	I (RO, SRO)	VCT Level transmitter LT-0112 fails high.
4 (35 min)	Multiple	C (BOP, SRO) TS (SRO)	Inadvertent start of AFW Pump #13
5 (45 min)	11-02-01 11-02-06	C (BOP, SRO)	Running Closed Loop ACW Pump trips. Standby pump fails to start automatically.
6 (55 min)	02-12-01 0.05-0.02	M (ALL)	PZR Vapor Space SBLOCA. **(CT-EO10-D-STP)**
7 (N/A)	Multiple	C (BOP, SRO)	Seal Return Isolation valves, MOV-0077 and MOV-0079 fail to automatically close. **(CT-11)**
8 (N/A)	50-BF-07, 08, 09	C (BOP, SRO)	ALL HHSI pumps fails to start on SI signal. **(CT-6)**

Lot* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor, (TS) Technical Specification

Total Estimated Time: 1 hour, 20 minutes

Target Quantitative Attributes (Per Scenario; See Section D.5.d)	Actual Attributes
1. Malfunctions after EOP entry (1–2)	2
2. Abnormal events (2–4)	4
3. Major transients (1–2)	1
4. EOPs entered/requiring substantive actions (1–2)	1
5. Entry into a contingency EOP with substantive actions (≥1 per scenario set)	0
6. Preidentified critical tasks (≥2)	3

SCENARIO MISCELLANEOUS INFORMATION

INSTRUCTOR NOTES:

- Critical Tasks are indicated by "**CT-##**" in the position column and indicated in bold type. In some instances, an "*" will indicate that only a portion of the task listed is considered critical.
- Shaded cells indicate procedural entry points.

RECORDED PARAMETERS:

The parameters identified for recording may be of value in evaluating crew performance. Once the scenario is complete for each crew, printout the recorded parameters and label the printout with date, time, crew number and scenario number. See Scenario Instructions section for further details on how to save the Recorded Parameters.

- Core Exit T/C
- Pressurizer Level
- SG 1D Narrow Range Level

SCENARIO OBJECTIVES

Event 1 Objective

- Perform a Reactor Startup per 0POP03-ZG-0004, Reactor Startup.

Event 2 Objective

- Respond to Control Rod Misalignment per 0POP04-RS-0001, Control Rod Malfunction.

Event 3 Objective

- Respond to abnormal conditions associated with the VCT per using Annunciator Response procedure, 0POP09-AN-04M8.

Event 4 Objective

- Respond to an inadvertent start of an AFW Pump per 0POP02-AF-0001, Auxiliary Feedwater.

Event 5 Objective

- Respond to a Closed Loop Auxiliary Cooling Water Pump trip per 0POP04-AC-0003, Loss of Closed Loop Auxiliary Cooling Water.

Event 6 Objective

- Respond to a PZR Vapor Space LOCA per 0POP05-EO-EO00, Reactor Trip or Safety Injection, and 0POP05-EO-EO10, Loss of Reactor or Secondary Coolant.

Event 7 and 8 Objective

- Respond to equipment failures after a Safety Injection per 0POP05-EO-EO00, Reactor Trip or Safety Injection, Addendum 5, Verification of SI Equipment Operation.

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 4 **Event No.:** 1

Event Description: Withdraw control rids to raise Reactor Power to 1-3%

Time	Position	Required Operator Actions	Notes
	RO	Raise Reactor Power to approximately 1 to 3%. *(Step 6.33)*	
	SRO	Attach all ECPs to the completed procedure. *(Step 6.34)*	
	SRO	Continue plant startup per 0POP03-ZG-0005, Plant Startup to 100%. *(Step 6.35)* *(**Event 2** can be triggered when power is about 2% by NIs and on request from the lead examiner.)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 4 **Event No.:** 2 **(Examiner Trigger)**

Event Description: Once power is at 2%, Control Rod M4 in control bank D will drop >12 steps in.

Time	Position	Required Operator Actions	Notes
	RO	Acknowledges and announces the following Annunciators on: 05M2: • T AVG/AUCT T AVG DEV (C-6) • DT/AUCT DT DEV (D-6) 05M3: • PR UPPER DET FLUX DEV HI/AUTO DEF (A-3) • RPI TROUBLE (A-5) • PR LOWER DET FLUX DEV HI/AUTO DEF (B-3) • PR CHANNEL DEV (C-3) • ROD SUPV MNTR ROD POSITION TRBL (D-5) • ROD BOTTOM (F-4)	
	RO	Diagnoses Rod M4 has dropped into the core, informs the SRO. *(Rod M4 is in Control Bank 'D' Group 2)*	
	RO	Performs immediate actions of 0POP04-RS-0001, Control Rod Malfunction. • Ensures Rod Control in Manual. • Ensures no rod motion. • Checks NO rods dropped. *(Step 1.0, 2.0 & 3.0)*	
	SRO	Directs the actions of 0POP04-RS-0001, Control Rod Malfunction.	
	RO SRO	Verify Immediate Actions complete and GOES TO Step 4.0 *(Steps 1-3)*	
	RO SRO	Addresses DNBR TS if alarm comes in. (Annunciator 4M08 – B5) *(Lowering RCS pressure to 2200 psig may cause the DNBR alarm to come in but it will clear as soon as PZR Heaters energize to start restoring RCS pressure.)* *(TS 3.2.5.b Raise PZR pressure above 2200 psig within 2 hours or reduce THERMAL POWER to less than 5% of RATED THERMAL POWER within the next 4 hours.)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 4 **Event No.:** 2 **(Examiner Trigger)**

Event Description: Once power is at 2%, Control Rod M4 in control bank D will drop >12 steps in.

Time	Position	Required Operator Actions	Notes
	RO	CHECK For Misaligned Rods: • CHECK All Rods – ANY RODS MISALIGNED by GREATER THAN 12 INDICATED steps • CHECK All Rods – ONLY ONE ROD MISALIGNED by GREATER THAN 12 INDICATED steps • GO TO Addendum 2, Recovery of Misaligned Rods *(Step 4.0)*	
	RO	Check Tavg Within 1.5°F Of Tref **RNO** *MAINTAIN* Tavg Within 1.5°F Of Tref By Adjusting The Following As Necessary While Maintaining Reactor Power Stable: • ADJUST Turbine load • ADJUST RCS boron concentration • **IF Turbine is offline, THEN ADJUST demand on the Steam Generator PORVs OR Steam Dumps.** *(Addendum 2, Step 1)* *(Due to the position of Control Rod M4 in the core, Tavg may not be within 1.5°F of Tref.)*	
	ALL	NOTIFY The Following Of The Rod Malfunction: • Reactor Engineering Supervisor • Plant Operations Manager • I&C Maintenance *(Addendum 2, Step 2)* *(I&C will report that it will take 2 hours to get a qualified technician for the Rod Control System onsite.)* *(Reactor Engineering will report that they can provide support as needed.)*	
	SRO	DOCUMENT Appropriate Entry Into Technical Specification Action Statement 3.1.3.1.b.3 In The Control Room Log As Applicable *(Addendum 2, Step 3)* *(**Event 3** can be triggered after SRO has checked Tech Specs.)* *(Consider timing on triggering **Event 3** because it takes about 4-5 minutes to build in.)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 4 **Event No.:** 2 **(Examiner Trigger)**

Event Description: Once power is at 2%, Control Rod M4 in control bank D will drop >12 steps in.

Time	Position	Required Operator Actions	Notes

TS 3.1.3.1 All full-length shutdown and control rods shall be OPERABLE and positioned within ± 12 steps (indicated position) of their group step counter demand position:
Action b

b. *With one full-length rod trippable but inoperable due to causes other than addressed by ACTION a) above, or misaligned from its group step counter demand height by more than ± 12 steps (indicated position), POWER OPERATION may continue provided that within 1 hour:*

1*. The rod is restored to OPERABLE status within the above alignment requirements, OR*

2*. The rod is declared inoperable and the remainder of the rods in the group with the inoperable rod are aligned to within ± 12 steps of the inoperable rod while maintaining the rod sequence and insertion limits as specified in the Core Operating Limits Report (COLR). The THERMAL POWER level shall be restricted pursuant to Specification 3.1.3.6 during subsequent operation, OR*

3. *The rod is declared inoperable and the SHUTDOWN MARGIN requirement of Specification 3.1.1.1 is satisfied. POWER OPERATION may then continue provided that:*

a) A reevaluation of each accident analysis of Table 3.1-1 is performed within 5 days; this reevaluation shall confirm that the previously analyzed results of these accidents remain valid for the duration of operation under these conditions;

b) The SHUTDOWN MARGIN requirement of Specification 3.1.1.1 is determined at least once per 12 hours;

c) A core power distribution measurement is obtained and Fa (Z) and F1:r are verified to be within their limits within 72 hours; and

d) The THERMAL POWER level is reduced to less than or equal to 75% of RATED THERMAL POWER within the next hour and within the following 4 hours the High Neutron Flux Trip Setpoint is reduced to less than or equal to 85% of RATED THERMAL POWER.

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 4 **Event No.:** 3 **(Examiner Trigger)**			
Event Description: VCT Level transmitter LT-0112 fails high.			
Time	**Position**	**Required Operator Actions**	**Notes**
	RO	Acknowledges and announces the following annunciators from 04M8: • VCT LEVEL HI/LO (E-2) *(The RO may be able to diagnose this event prior to the alarm coming in by observing VCT trends.)* • *(VCT level of 15% and lowering brings in alarm.)*	
	SRO RO	Determines VCT Level Transmitter LT-0112 has failed high.	
	SRO	Directs actions of 0POP09-AN-04M8, Window E-2, VCT LEVEL HI/LO.	
	RO	CHECK VCT level. *(Step 1 of annunciator response.)*	
	RO	VERIFY VCT level by checking the following Plant Computer Points: • CVLA0112 • CVLA0113 *(Step 2)* *(CVLA0112 will be indicating HI. CVLA0113 will be lowering due to Divert Valve LCV-0112A being fully diverted to the RHT.)*	
	RO	IF a VCT level transmitter is failed, THEN CONTROL VCT level by closely monitoring Plant Computer Points. *(Step 3)*	
	RO	IF annunciator window "VCT LEVEL LO-LO" F-2 is alarming, THEN RESPOND to that annunciator. *(Step 4)* *(If VCT level lowers to 3% or less then the crew will respond to this alarm.)*	
	RO	IF VCT level is greater than 95%, THEN ENSURE the following: • Divert valve LCV-0112A fully diverted to RHT. • Reactor Coolant Makeup stopped. *(Step 5)* (*Actual VCT level will be lowering.)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 4 **Event No.:** 3 **(Examiner Trigger)**			
Event Description: VCT Level transmitter LT-0112 fails high.			
Time	**Position**	**Required Operator Actions**	**Notes**
	RO	IF VCT level is less than 28%, THEN PERFORM the following: • **ENSURE Divert valve LCV-0112A is aligned to the VCT.** • ENSURE Reactor Water Makeup System started in AUTO. • IF makeup can NOT be started in AUTO, THEN Manually INITIATE makeup to the RCS per 0POP02-CV-0001, Makeup to the Reactor System. • IF VCT level decreases to 3%, THEN ENSURE charging pump suction aligns to the RWST. *(Step 6)* *(The crew will align LCV-0112A to the VCT due to the failure of LT-0112.)* *(The VCT level may not get below 28% prior to diverting flow back to the VCT.* *However, if level does go below 28% the crew should perform a manual make up to the VCT. See next page.)*	
	RO	IF a VCT level transmitter (LT-0112 or LT-0113) is failing low, THEN PERFORM the following: *(Step 7)* *(LT-0112 failed high so this step is N/A, however, the SRO may still contact I&C.)*	
	RO	IF VCT low level is due to excessive RCS leakage, THEN GO TO the leakage procedure appropriate for plant conditions: *(Step 8)* *(This step is N/A.)* *(**Event 4** can be triggered on a signal from the Lead Examiner.)*	
	SRO	REFER TO TRM 3.1.2.1 and 3.1.2.2. *(Step 9)* *(These requirements are not applicable for this event.)* *(The next JPM steps are included if the crew has to perform a manual makeup to the RCS.)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 4 **Event No.:** 3 **(Examiner Trigger)**			
Event Description: VCT Level transmitter LT-0112 fails high.			
Time	**Position**	**Required Operator Actions**	**Notes**
	RO	VERIFY the following switches in "AUTO": • "BA FLOW CONT VLV FCV-0110A" valve • "RMW FLOW CONT VLV FCV-0111A" valve *(Step 12.1 of 0POP02-CV-0001)*	
	RO	ENSURE the following switches in "CLOSE": • Makeup stop to Charging Pumps "TO VCT OUTL FCV-0110B" Valve • Makeup stop to VCT "FILL FCV-0111B" valve *(Step 12.2 of 0POP02-CV-0001)*	
	RO	TURN "RC M/U CONT SYS ON" switch to "STOP". *(Step 12.3 of 0POP02-CV-0001)*	
	RO	PLACE the "RC M/U CONT" in "MAN". *(Step 12.4 of 0POP02-CV-0001)*	

	RO	SET "BA BATCH/GALLONS FY-0110B" flow integrator as follows:
		• IF this is the first Manual Makeup for this evolution, THEN PERFORM the following:
		  • SET "BA BATCH/GALLONS FY-0110B" flow integrator using formula is step 12.5.2.
		  • GO TO step 12.6.
		(Step 12.5 of 0POP02-CV-0001)
		(Formula for step 12.5.2 - BA batch/gallons =
		$\frac{\text{Tot M/U batch gallons x RCS Concentration}}{\text{BAT Concentration}}$	

	RO	SET "TOT M/U BATCH GALLONS FY-0111B" flow integrator for desired gallons. *(Step 12.6 of 0POP02-CV-0001)*	
	RO	SET “BA FLOW CONT FK-0110” setpoint, using the following formula: *Setpoint =* $\frac{\{K\} \text{ x Boron Concentration of RCS}}{\text{Boron Concentration of BAT}}$ *(Step 12.7 of 0POP02-CV-0001)* *(For Mode 1, 2, 3 & 4 K=20)*	
	RO	TURN "RC M/U CONT SYS ON" switch to "START". *(Step 12.8 of 0POP02-CV-0001)*	
	RO	VERIFY "BA XFER PUMP 1A" OR "BA XFER PUMP 1B" starts. *(Step 12.9 of 0POP02-CV-0001)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 4 **Event No.:** 3 **(Examiner Trigger)**

Event Description: VCT Level transmitter LT-0112 fails high.

Time	Position	Required Operator Actions	Notes
	RO	VERIFY "RMW PUMP 1A" OR "RMW PUMP 1B" starts. *(Step 12.10 of 0POP02-CV-0001)*	
	RO	OPEN makeup stop to charging pumps "TO VCT OUTL FCV-0110B" or makeup stop to VCT "FILL FCV-0111B" as desired. *(Step 12.11 of 0POP02-CV-0001)*	
	RO	IF additional makeup required ENSURE makeup is stopped and go back to Step 12.5. IF NOT THEN ENSURE the following: • Makeup has stopped. • “TO VCT OUTL FCV-011B” valve CLOSED. • “FILL FCV-0111B valve CLOSED • Return makeup to Automatic using Form 4 OR Section 8.0. *(Step 12.12 & 12.13 of 0POP02-CV-0001)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 4 **Event No.:** 4 **(Examiner Trigger)**

Event Description: Inadvertent start of AFW Pump #13.

Time	Position	Required Operator Actions	Notes
	BOP	Acknowledges and announces the following annunciators from 06M4: AFWP 13 DISCH Press LO – C3 *(NOTE: This alarm clears after a few seconds.)*	
	SRO BOP	Determines that AFWP #13 has inadvertently started and is discharging flow to SG 1C through the inadvertent opening of AFW OCIV, AF-MOV-0085, for AFW Train C.	
	SRO	Directs actions of 0POP02-AF-0001, Auxiliary Feedwater, Section 12, Stopping a Motor Driven Pump after an Inadvertent Start.	
	BOP	STOP the selected AFW Pump by taking handswitch to STOP: • "AFW PUMP 13(23)" *(Step 12.1)*	
	BOP	IF the selected AFW Pump DOES NOT STOP or RESTARTS after the handswitch is returned to AUTO; THEN take the handswitch to PULL TO LOCK: • "AFW PUMP 13(23)" *(Step 12.2)* *(AFW Pump #13 will stop when placed in PTL)* *(If the crew attempts to close AF-FV-7523, AFW Pump #13 Reg valve, OR AF-MOV-0085, AFW Pump #13 OCIV, they will not close.)*	
	BOP	ENSURE the applicable AFW to SG regulating valve is fully open: • "AFW to SG 1C AFW REG FV-7523" *(Step 12.3)* *(If the crew has NOT attempted to close AF-FV-7523, AFW Pump #13 Reg valve, then the valve will still be open and indicate open.)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 4 **Event No.:** 4 **(Examiner Trigger)**

Event Description: Inadvertent start of AFW Pump #13.

Time	Position	Required Operator Actions	Notes
	BOP	ENSURE the pump supply fan for the AFW train that started is in AUTO after STOP: • Train C – "Pump 13 SPLY FAN 11C HC-VFN003" *(Step 12.4)*	
	SRO	Investigate the cause of inadvertent AFW PUMP start. *(Step 12.5)* *(**Event 5** can be triggered after SRO has checked TSs and/or on request from the lead examiner.)*	

TS 3.7.1.2.a for AFW Pump #13, Action a.
With one motor-driven auxiliary feedwater pump inoperable, within 28 days restore the pump to OPERABLE status or apply the requirements of the CRMP or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 4 **Event No.:** 5 **(Examiner Trigger)**

Event Description: Running Closed Loop ACW Pump trips. Standby pump fails to start automatically.

Time	Position	Required Operator Actions	Notes
	BOP	Acknowledges and announces the following annunciators from 09M1: ACW CLOSE LOOP PUMP TRIP – D4	
	SRO BOP	Determines that Closed Loop ACW Pump #11 tripped and Closed Loop ACW Pump #13 failed to AUTO start.	
	SRO	Directs actions of 0POP04-AC-0003, Loss of Closed Loop Auxiliary Cooling Water. *(Steps to start the Standby Closed Loop ACW Pump are also in the Annunciator Response procedure.)*	
	BOP	CHECK CL-ACW Pump Status – ANY RUNNING *(Step 1.0)*	
	BOP	CHECK CL-ACW Header Pressure - GREATER THAN 67 PSIG RNO ENSURE standby CL-ACW pump running. *(Step 2.0)* *(Crew will start CL-ACW Pump #13.)* *(**Event 6** can be triggered on request from the lead examiner.)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 6 & 7

Event Description: Event 6 - PZR Vapor Space SBLOCA. **(CT-EO10-D-STP)**
Event 7 - Seal Return Isolation valves, MOV-0077 and MOV-0079 fail to automatically close. **(CT-11)**

Time	Position	Required Operator Actions	Notes
	ALL	Respond rising RCS leak rate, lowering PZR pressure and RM11 alarms on Area Monitors in containment.	
	SRO	Directs a Reactor Trip & Safety Injection and enters 0POP05-EO-EO00, Reactor Trip or Safety Injection.	
	RO BOP	Completes immediate actions of 0POP05-EO-EO00 and determines: • Reactor is tripped (Step 1) • Turbine is tripped (Step 2) • AC ESF Busses are energized (Step 3) • Check SI status (Step 4) *(RO will complete immediate actions.* *BOP Operator will monitor the plant and make an announcement of the Reactor trip.)*	***Time to Start 45 minute requirement associated with CT-EO10-D-STP*** _____
	SRO	Directs/ensures the immediate actions of EO00, Reactor Trip/SI have been completed by performing a procedure read through of them. A Safety Injection has actuated. The SRO will continue with 0POP05-EO-EO00. During this pause the SRO may direct the BOP to throttle AFW flow to limit the RCS cooldown.	
	BOP	VERIFY Proper SI Equipment Operation Per ADDENDUM 5, VERIFICATION OF SI EQUIPMENT OPERATION *(Step 5)* *(See Actions on pages 22- 25)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 6 & 7

Event Description: Event 6 - PZR Vapor Space SBLOCA. **(CT-EO10-D-STP)**
Event 7 - Seal Return Isolation valves, MOV-0077 and MOV-0079 fail to automatically close. **(CT-11)**

Time	Position	Required Operator Actions	Notes

	RO	MONITOR If Containment Spray Is Required:
		• Containment pressure - GREATER THAN 9.5 PSIG (QDPS)
		(RNO)
		• PERFORM the following:
		  • CHECK Containment pressure - HAS EXCEEDED 9.5 PSIG
		  • "PRESS PR-0934"
		  • "EXTD RNG PRESS PR-9759"
		  • IF containment pressure HAS EXCEEDED 9.5 PSIG, THEN GO TO Step 6.b.
		  • IF containment pressure HAS REMAINED LESS THAN 9.5 PSIG, THEN GO TO Step 7.
		(Step 6)
		(Containment pressure will be less than 9.5 psig and the crew will GO TO Step 7)	

	RO	VERIFY Total AFW Flow – GREATER THAN 576 GPM **RNO** PERFORM the following: • IF SG NR Level GREATER THAN 14% [34%] in any SG, THEN Control feed flow to maintain SG NR level. *(Step 7)* *(The SRO will have the BOP throttle AFW flow.)*	
	RO	CHECK RCP Seal Cooling: • ENSURE seal injection flow between 6 and 13 gpm *(Step 8)* *(RO may have to adjust seal injection.)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 6 & 7

Event Description: Event 6 - PZR Vapor Space SBLOCA. **(CT-EO10-D-STP)**
Event 7 - Seal Return Isolation valves, MOV-0077 and MOV-0079 fail to automatically close. **(CT-11)**

Time	Position	Required Operator Actions	Notes
	RO	MONITOR RCS Temperatures - • **WITH ANY RCP RUNNING, RCS TAVG STABLE AT OR TRENDING TO 567°F** OR • WITHOUT ANY RCP RUNNING, RCS TCOLD STABLE AT OR TRENDING TO 567°F *(Step 9)*	
	RO	CHECK Pressurizer Status: • PORVs - CLOSED • Normal pressurizer spray valves - CLOSED • Auxiliary spray valve - CLOSED • Excess letdown isolation valves - CLOSED *(Step 10)*	
	RO	MONITOR If RCPs Should Be Stopped: • HHSI pump - AT LEAST ONE RUNNING • RCS pressure - LESS THAN 1430 PSIG **(RNO)** • GO TO Step 12. *(Step 11)* *(Crew should not have to stop RCPs.)*	
	RO **CT-11**	**VERIFY The Following Containment Isolation Valve – CLOSED** • **Seal return isolation valves** • **Containment atmosphere radiation monitor isolation valves** ***(Step 12)*** ***(Seal Return Isolation Valves CV-MOV-0077 and CV-MOV-0079 failed to automatically close on the SI/Phase A. The RO will attempt to manually close these two valves. ONLY CV-MOV-0079 will close. Event 7)*** *(This CT can also be performed with Addendum 5. See Actions on page 23)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 6 & 7

Event Description: Event 6 - PZR Vapor Space SBLOCA. **(CT-EO10-D-STP)**
Event 7 - Seal Return Isolation valves, MOV-0077 and MOV-0079 fail to automatically close. **(CT-11)**

Time	Position	Required Operator Actions	Notes

	RO	CHECK If SG Secondary Pressure Boundary Intact:
		• CHECK pressures in all SGs –
		  • CONTROLLED OR RISING
		  • GREATER THAN CONTAINMENT PRESSURE
		(Step 13)	

	RO	CHECK If SG Tubes Are Intact: • Main steamline radiation – NORMAL • IF SG blowdown in service, Then SG blowdown radiation - NORMAL • Cars pump radiation – NORMAL • NO SG level rising in an uncontrolled manner *(Step 14)*	
	RO	**CHECK If RCS Is Intact:** • Containment radiation – NORMAL • Containment pressure – NORMAL • Containment wide range water level - NORMAL **RNO** GO TO 0POP05-EO-EO10, LOSS OF REACTOR OR SECONDARY COOLANT, Step 1 MONITOR Critical Safety Functions WHEN Addendum 5 of this procedure is complete, THEN Functional Restoration Procedures may be IMPLEMENTED. *(Step 15)* *(No Critical Safety Functions are expected to be present with this scenario.)*	
	SRO	Enters 0POP05-EO-EO10, LOSS OF REACTOR OR SECONDARY COOLANT.	
	RO	MONITOR If RCPs Should Be Stopped: • HHSI pump - AT LEAST ONE RUNNING • RCS pressure - LESS THAN 1430 PSIG **(RNO)** • GO TO Step 2. *(Step 1)* *(Crew should not have to stop RCPs.)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 6 & 7 **Event Description: Event 6 -** PZR Vapor Space SBLOCA. **(CT-EO10-D-STP)** **Event 7 -** Seal Return Isolation valves, MOV-0077 and MOV-0079 fail to automatically close. **(CT-11)**			
Time	**Position**	**Required Operator Actions**	**Notes**
	BOP	DEPRESSURIZE Intact SGs To 1000 PSIG • CHECK RCS pressure - GREATER THAN 415 PSIG **RNO** • GO TO Step 3. *(Step 2)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 1 **Event No.:** 6 & 7

Event Description: Event 6 - PZR Vapor Space SBLOCA. **(CT-EO10-D-STP)**
Event 7 - Seal Return Isolation valves, MOV-0077 and MOV-0079 fail to automatically close. **(CT-11)**

Time	Position	Required Operator Actions	Notes
	BOP CT-EO10-D-STP	**DEPRESSURIZE Intact SGs To 1000 PSIG** • CHECK RCS pressure - GREATER THAN 415 PSIG • CHECK pressurizer pressure LESS THAN 1985 PSIG • BLOCK Low Steamline Pressure SI • CHECK condenser – AVAILABLE • CHECK steam dump in steam pressure mode **RNO** • Place steam dump controller in MANUAL with zero demand. • ***ADJUST 'HDR PRESS CONT PK-0557' setpoint to BETWEEN 7.0 (980 psig) and 7.1 (994 psig)** • PLACE steam dump 'MODE SEL' switch in the STEAM PRESS position. • ***DEPRESSURIZE intact SGs to BETWEEN 980 psig and 994 psig using steam dumps in MANUAL.** • GO TO Step 2.i. **A/ER** • CHECK RCS TAVG - LESS THAN 563°F • PLACE steam dump "INTLK SEL" switches to BYPASS INTERLCK. • ***ENSURE 'HDR PRESS CONT PK-0557' in AUTO** • VERIFY steam dumps controlling SG pressures LESS THAN OR EQUAL TO 994 psig. • ***ADJUST intact SG PORV controller setpoints to BETWEEN 990 PSIG and 1000 PSIG (QDPS PRI/SEC).** • ***ENSURE SG PORV controllers in AUTO.** *(Step 2)* ***(Terminate Scenario)***	***Time to Stop 45 minute requirement associated with CT-EO10-D-STP*** _____

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 2 **Event No.: Addendum 5 & Event 8**

Event Description: 0POP05-EO-EO00, Addendum 5, Actions for SI actuation.
Event 8 - ALL HPSI pumps fails to start on SI signal. **(CT-6)**

Time	Position	Required Operator Actions	Notes
	BOP	VERIFY FW isolation: • SGFPTs – TRIPPED • SU SGFP – TRIPPED • VERIFY the following valves –CLOSED o FWIVs o FWIBs o FW preheater bypass valves o FW regulating valves o Low power FW regulating valves o SG blowdown isolation valves o SG sample isolation valves *(EO00 Addendum 5, Step 1)* *(0POP05-EO-EO00, Reactor Trip or Safety Injection, Addendum 5, Verification of Equipment Operation.)* *(This addendum is performed in parallel with Steps 6 to 15 of 0POP05-EO-EO00, Reactor Trip or Safety Injection.)*	
	BOP	CHECK if main steamline should be isolated: • CHECK for any of the following conditions: o Containment pressure – GREATER THAN OR EQUAL TO 3 PSIG OR o SG pressure (without low steamline pressure SI blocked) - LESS THAN OR EQUAL TO 735 PSIG OR o SG pressure (with low steamline pressure SI blocked) - LOWERING AT A RATE GREATER THAN OR EQUAL TO 100 PSI/SEC, BY OBSERVANCE OF THE STEAMLINE PRESSURE RATE BISTABLES • VERIFY main steamline isolation: • MSIVs – CLOSED • MSIVs - CLOSED *(Step 2)*	
	BOP	VERIFY AFW system status: • Motor-driven pump – RUNNING • Turbine-driven pump – RUNNING *(Step 3)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 2 **Event No.: Addendum 5 & Event 8**

Event Description: 0POP05-EO-EO00, Addendum 5, Actions for SI actuation.
Event 8 - ALL HPSI pumps fails to start on SI signal. **(CT-6)**

Time	Position	Required Operator Actions	Notes
	BOP	VERIFY AFW valve alignment - PROPER EMERGENCY ALIGNMENT *(Step 4)*	
	BOP	VERIFY total AFW Flow - GREATER THAN 576 GPM *(Step 5)*	
	BOP **CT-11**	VERIFY containment isolation phase A: • Phase A – ACTUATED **RNO** • Manually ACTUATE phase A. **A/ER** • Phase A valves - CLOSED, REFER b. Manually CLOSE valves. TO ADDENDUM 1, PHASE A ISOLATION VERIFICATION **RNO** • **Manually CLOSE valves. (CV-MOV-0077)** *(Step 6)* *(The operator will attempt to close CV-MOV-0079 but it will not close.)*	
	BOP	VERIFY ECW status: • ECW pumps – RUNNING • ECW pump discharge isolation valves – OPEN *(Step 7)*	
	BOP	VERIFY CCW pumps – RUNNING *(Step 8)*	
	BOP	VERIFY RCFC status: • RCFCs – RUNNING • Cooling water - TRANSFERRED TO CCW *(Step 9)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 2 **Event No.: Addendum 5 & Event 8**

Event Description: 0POP05-EO-EO00, Addendum 5, Actions for SI actuation.
Event 8 - ALL HPSI pumps fails to start on SI signal. **(CT-6)**

Time	Position	Required Operator Actions	Notes
	BOP CT-6	VERIFY SI pump status: • HHSI pumps – RUNNING • LHSI pumps – RUNNING **RNO** • **WHEN the respective ESF Load Sequencer has completed its automatic sequence OR it is determined that the respective ESF Load Sequencer had failed, THEN manually START pump(s).** *(Step 10)* *(All 3 HHSI Pumps failed to Auto start. The crew will manually start all three HHSI Pumps.)*	
	BOP	VERIFY SI valve alignment – PROPER EMERGENCY ALIGNMENT *(Step 11)*	
	BOP	VERIFY SI flow: • RCS pressure - LESS THAN 1745 PSIG **(RNO)** • GO TO Step 13 of this Addendum. *(Step 12)*	
	BOP	VERIFY containment ventilation isolation: • Containment atmosphere radiation monitor isolation valves – CLOSED • Normal purge supply and exhaust fans – STOPPED • Supplemental purge supply and exhaust fans – STOPPED • Purge Dampers – CLOSED *(Step 13)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 2 **Event No.: Addendum 5 & Event 8**

Event Description: 0POP05-EO-EO00, Addendum 5, Actions for SI actuation.
Event 8 - ALL HPSI pumps fails to start on SI signal. **(CT-6)**

Time	Position	Required Operator Actions	Notes

	BOP	VERIFY ventilation actuation:
		• Control room HVAC – OPERATING IN EMERGENCY RECIRC
		• EAB HVAC - OPERATING IN EMERGENCY RECIRC
		• FHB HVAC - OPERATING IN EMERGENCY MODE
		• FHB Exhaust Fans - ONLY TWO TRAINS OPERATING
		  ○ Exhaust booster fans
		  ○ Main exhaust fans
		(RNO)
		• PERFORM the following:
		  ○ IF three trains FHB exhaust fans running, THEN PLACE one train FHB exhaust fans in PULL TO LOCK.
		(Back to A/ER)
		• SECURE one FHB filter train by PERFORMING the following:
		  ○ PLACE the outlet damper Controller in manual
		  ○ Manually close the outlet damper
		  ○ VERIFY proper operation of filter train in service
		• Essential chilled water pumps – RUNNING
		• Essential chillers – RUNNING
		• ECCS pump room fan coolers – RUNNING
		• AFW pump cubicle fans – RUNNING
		• FHB truck bay doors – CLOSED
		(Step 14)	

	BOP	NOTIFY Unit Supervisor that Addendum 5 is COMPLETE *(Step 15)*	
	SRO	IMPLEMENT Functional Restoration Procedures as required *(Step 16)*	
	SRO	RETURN TO procedure step in effect. *(Step 17)*	

CRITICAL TASK SUMMARY

Critical Task #11 for Event #7 – Close containment isolation valves such that at least one valve is closed on each Phase-A penetration.	**Circle One** **SAT UNSAT**
Critical Task Bounding Criteria	Acceptance Criteria: Close containment isolation valves such that at least one valve is closed on each Phase-A penetration, prior to completion of E0, Addendum 5. • Close CV-MOV-0077, Seal Return Isolation OCIV. NOTE: Operators will attempt to close CV-MOV-0077 but it will not close.
Safety Significance	Actuation of Phase A containment isolation is required in order to ensure that the degree of containment integrity assumed in the accident analysis is actually established. Primary containment integrity ensures that the release of radioactive materials from the containment atmosphere will be restricted to those leakage paths and associated leakage rates assumed in the safety analyses. This restriction, in conjunction with the leakage rate limitation imposed by the plant technical specifications, will limit the site boundary radiation doses to [within the dose guideline values of 10 CFR 100 during accident conditions]. The operability of the containment isolation valves ensures that the containment atmosphere will be isolated from the outside environment in the event of a release of radioactive material to the containment atmosphere or pressurization of the containment. Containment isolation within the time limits specified for those isolation valves designed to close automatically ensures that the release of radioactive materials to the environment will be consistent with the assumptions used in the analyses for a LOCA. In summary, the containment is a fission-product barrier. Under the plant conditions postulated, failure to close at least one containment isolation valve on each Phase A penetration results in unnecessary degradation of a fission-product barrier that is relied upon in the safety analysis for the specific accident in progress, that is, for a LOCA. For the containment barrier to possess the degree of integrity assumed in the FSAR analysis of the radiological consequences of a LOCA, at least one isolation valve on each Phase A penetration must be closed. Aside from the issue of containment integrity, failure to close containment isolation valves such that at least one valve on each critical Phase A penetration is closed represents a failure by the crew to “demonstrate the (ability to) recognize a failure or an incorrect automatic actuation of an ESF system or component.”

CRITICAL TASK SUMMARY

Critical Task #11 for Event #7 – Close containment isolation valves such that at least one valve is closed on each Phase-A penetration.	**Circle One** **SAT UNSAT**
Cueing	Indication and/or annunciation that SI is actuated AND One or more of the following: • Absence of closed valve position indication on all (both) containment isolation valves on one or more Phase A penetrations • Open valve position indication on all (both) containment isolation valves on one or more Phase A penetrations • ESF system status lamps show that all (both) containment isolation valves on one or more Phase A penetrations are not closed
Performance Indicator	Manipulation of controls as required to close at least one containment isolation valve on each Phase A penetration Closed valve position indication for at least one containment isolation valve on each Phase A penetration
Performance Feedback	• ESF system status lamps show that at least one containment isolation valve is closed on each Phase A penetration
Justification for the chosen performance limit	Failure to ensure full containment isolation when it is possible to do so, upon completion of EO00 Addendum 5, represents an unacceptable delay in positioning ESF components which failed to reposition automatically, and which are required to satisfy the plant's licensing basis.
PWR Owners Group Appendix	CT-11 Close containment isolation valves such that at least one valve is closed on each Phase-A penetration.
NOTE: (Per NUREG-1021, Appendix D) **If an operator or the Crew significantly deviates from or fails to follow procedures that affect the maintenance of basic safety functions, those actions may form the basis of a CT identified in the post-scenario review.**	

CRITICAL TASK SUMMARY

Critical Task #6 for Event #8 – Start at least 1 HPSI pump.	**Circle One** **SAT UNSAT**
Critical Task Bounding Criteria	Acceptance Criteria: Establish flow from at least one HHSI Pump before transitioning out of EO00 during a Small Break LOCA where RCS pressure remains between 400 psig and 1680 psig, AND before tripping RCPs. • Start at least one HHSI Pump NOTE: At least one HHSI Pump needs to be running in preparation for lowering SG pressures to 1000 psig.
Safety Significance	Failure to manually start at least one HHSI pump constitutes misoperation or incorrect crew performance in which the crew does not prevent "degraded emergency core cooling system (ECCS) … capacity." In this case, at least one HHSI pump can be manually started from the control room. Therefore, failure to manually start a HHSI pump also represents a failure by the crew to "demonstrate the following abilities: • Effectively direct or manipulate engineered safety feature (ESF) controls that would prevent a significant reduction of safety margin beyond that irreparably introduced by the scenario • Recognize a failure or an incorrect automatic actuation of an ESF system or component" Additionally, under the postulated plant conditions, failure to manually start a HHSI pump (when it is possible to do so) is a "violation of the facility license condition." The acceptable results obtained in the FSAR analysis of a small-break LOCA are predicated on the assumption of minimum ECCS pumped injection. The analysis assumes that a minimum pumped ECCS flow rate, which varies with RCS pressure, is injected into the core. The flow rate values assumed for minimum pumped injection are based on operation of one each of the following ECCS pumps: high-head SI pump, and low-head SI pump. Operation of this minimum required complement of ECCS injection pumps is consistent with the FSAR assumption that only minimum safeguards are actuated. Failure to perform the critical task means that the plant is needlessly left in an unanalyzed condition. Performance of the critical task would return the plant to a condition for which analysis shows acceptable results. Because compliance with the assumptions of the FSAR is part of the facility license condition, failure to perform the critical task (under the postulated plant conditions) constitutes a violation of the license condition.

CRITICAL TASK SUMMARY

Critical Task #6 for Event #8 – Start at least 1 HPSI pump.	**Circle One** **SAT UNSAT**
Cueing	Indication and/or annunciation that high-head SI pump injection is required: • SI actuation • RCS pressure below the shutoff head of the high-head SI pump AND Indication and/or annunciation that no HHSI pump is injecting into the core: • Control switch indication that the circuit breakers or contactors for all HHSI pumps are open • All HHSI pump discharge pressure indicators read zero • All flow rate indicators for HHSI pump injection read zero
Performance Indicator	Manipulation of controls as required to establish flow from at least one HHSI pump: • Control switch indication that the circuit breaker or contractor for at least one Charging/SI pump is closed.
Performance Feedback	• Indication and/or annunciation that at least one charging/SI pump is injecting • Flow rate indication of injection from at least one SI pump
Justification for the chosen performance limit	Completion of EO00 represents the minimally acceptable timeframe by which a minimally competent crew should be expected to start ECCS components which failed to start automatically, and which are required to satisfy the plant's licensing basis.
PWR Owners Group Appendix	CT-6 Start at least one HHSI Pump
NOTE: (Per NUREG-1021, Appendix D) **If an operator or the Crew significantly deviates from or fails to follow procedures that affect the maintenance of basic safety functions, those actions may form the basis of a CT identified in the post-scenario review.**	

CRITICAL TASK SUMMARY

Critical Task # EO10-D-STP for Event #6 – Depressurize SGs to 1000 psig	**Circle One SAT UNSAT**
Critical Task Bounding Criteria	Acceptance Criteria: Reduce Steam Generator PORV OR Steam Dump setpoints to between 990 and 1000 psig within 45 minutes of initiation of the SBLOCA.
Safety Significance	Small Break LOCA flow is inadequate to provide core cooling. Additional heat removal from the Steam Generators is required. If at least two Steam Generators PORV setpoints or the Steam Dump setpoints are not reduced to 1000 psig within 45 minutes of initiation of the SBLOCA the peak clad temperature can or will exceed the 10CFR50.46 criteria.
Cueing	Indication and/or annunciation that SI is actuated due to a small break LOCA and RCS pressure is at or above HHSI Pump shutoff head.
Performance Indicator	Manipulation of controls as required to lower SG pressures below 1000 psig.
Performance Feedback	Indication of HHSI flow to the RCS.
Justification for the chosen performance limit	Completion of depressurization under the postulated conditions ensures peak clad temperature will not exceed the 10CFR50.46 criteria.
PWR Owners Group Appendix	CT-EO10-D-STP Depressurize SGs to 1000 psig.
NOTE: (Per NUREG-1021, Appendix D) **If an operator or the Crew significantly deviates from or fails to follow procedures that affect the maintenance of basic safety functions, those actions may form the basis of a CT identified in the post-scenario review.**	

EXPECTED BOOTH COMMUNICATIONS

EVENT 1:

- There are no Booth Communications expected for Event 1.

EVENT 2:

- As I&C Maintenance or the Duty Maintenance Supervisor, if notified misaligned control rod M4, report that it will be 2 hours before a qualified I&C technician on Rod Control is available. No further action is necessary.
- As Reactor Engineering, acknowledge misaligned control rod M4 and that Reactor Engineering will provide support. No further action is necessary.
- As Operations Manager, acknowledge misaligned control rod M4. No further action is necessary.

EVENT 3:

- As I&C Maintenance or the Duty Maintenance Supervisor, if notified of the VCT level transmitter, LT-0112, report that I&C will assemble a team to support. No further action is necessary.
- As Operations Manager, acknowledge the failure of VCT level transmitter, LT-0112. No further action is necessary.

EVENT 4:

- As the Duty Maintenance Supervisor, if notified of the inadvertent start of AFW Pump #13, report that a maintenance team will be assembled to support. No further action is necessary.
- As a Plant Operator, if asked to check the breaker for AFW Pump #13, AFW Reg Valve, AF-FV-7523, report that the breaker is in the tripped free position.
- As a Plant Operator, if asked to close the AFW Pump #13, AFW OCIV, AF-MOV-0085, report that the handwheel is broken and the valve will not close.
- As Operations Manager, acknowledge the inadvertent start of AFW Pump #13. No further action is necessary.

EVENT 5:

- As the M/M or Duty Maintenance Supervisor, if notified of CL-ACW Pump #11, report that a maintenance team will be assembled to support. No further action is necessary.
- As Operations Manager, acknowledge the trip of CL-ACW Pump #11. No further action is necessary.
- As a Plant Operator, if asked to check CL ACW Pump #11, report that the breaker has an over current indicated and the pump motor has an acrid smell.

EVENT 6, 7 & 8:

- There are no Booth Communications expected for Events 6, 7 & 8.

EXPECTED BOOTH ACTIONS

1. If asked to open the Deaerator High Level Dump Bypass Valves, then trigger the step for ‘DA HLD Bypass Valves FW-486 & FW-487’.
2. If asked to fill the AFWST, then trigger the step for ‘AFWST Makeup’.

SIMULATOR SETUP

NOTE

ALL Annunciator Response Procedures (ARP's) must be checked if this scenario is the first to be run on this day. Setup for subsequent runs of this scenario only requires those ARP's that were actually marked in to be checked.

Instructors running the scenario must keep track of which ARP's these are, otherwise, all will have to be checked for subsequent scenarios as well.

Each time before running the scenario check and/or clean the following:									
Specific Scenario Procedures	**1st √**	**Peer √**	**2nd √**	**Peer √**	**3rd √**	**Peer √**	**4th √**	**Peer √**	**After Last Scenario**
0POP04-RP-0004, Failure Of RCS Loop RTD Protection Channel									
0POP04-RS-0001, Control Rod Malfunction									
0POP09 AN-04M8, E2, VCT Level HI/LO									
0POP02-AF-0001, Auxiliary Feedwater									
0POP04-AC-0003, Loss of Closed Loop ACW									
0POP05-EO-EO00, Reactor Trip or Safety Injection									
0POP05-EO-EO10, Loss of RX or Secondary Coolant									
Other Procedures Used By Students During Scenario Including POP09s.	**1st √**	**Peer √**	**2nd √**	**Peer √**	**3rd √**	**Peer √**	**4th √**	**Peer √**	**After Last Scenario**
Miscellaneous Items to Restore	**1st √**	**Peer √**	**2nd √**	**Peer √**	**3rd √**	**Peer √**	**4th √**	**Peer √**	**After Last Scenario**
STA ICS Screens to PD Menu									
***Clear ICS Trend Groups**									
Student Selected ICS Points changed to U1118									
Control Panel ICS Screens to Normal									
RM 11 History and Screens									
RM 23 – No Alarm Indications									

* On ICS Drop 239 in simulator booth open up 'Simstation Test Interface'
With Simulator in FREEZE - Change 'Control Mode' to 'STANDALONE'
Toggle 'RESET' on 'Trend Data', then change 'Control Mode' back to 'PMC'

SIMULATOR SETUP (cont'd.)

NOTE

The Scenario Lesson Plan MUST be run from the left most Instructor Station in Simulator Booth.

For the LOT 25 NRC Exam the Simulator Configuration must be set to:
'wsTrain_Oct2021/Train_Oct2021'

- Log into Instructor Workstation as 'lotnrc' user, open Orchid (nstps server), then 'Unlock' Initial Conditions Group 'lotnrc'.
- Reset to IC #196 and perform the following:
  - Switch Check
  - Ensure red light on end of CP-010 off
  - Ensure ICS Annunciators have stopped counting up
  - **ENSURE Steam Dump controller setpoint exactly at 8.3.**
- Go to RUN and perform the following:
  - Ensure Simulator is ready by performing applicable checkoffs from 0PNT01-ZT-0304, LOR Conduct of Simulator Training, Addendum 5, Simulator Readiness Checklist.
  - Ensure VCT Makeup Integrators are set as follows:
    - Momentarily place RC M/U CONT to STOP and then START to reset BA BATCH/GALLONS and TOT M/U BATCH/GALLONS counters to zero.
    - Reset BA BATCH/GALLONS setpoint to 0 gallons and reset TOT M/U BATCH/GALLONS setpoint to 10 gallons.
    - Verify BA Controller Pot setting is 2.50
- Open lesson plan for 'Scenario 4' in 'lotnrc' directory for LOT 25, then EXECUTE lesson plan. These actions will set up any initial conditions for the scenario.
- If this scenario IC has changing conditions (i.e. Xenon is changing, etc.), then place the simulator in FREEZE, otherwise it is OK to leave in RUN.
- Run the scenario in accordance with the next section, 'Scenario Instructions'.

SCENARIO INSTRUCTIONS

NOTE
Steps 1 to 4 below can be performed in the LOR Debrief Room prior to the crew coming into the Simulator provided exam security measures are taken.

1. Provide Shift Turnover sheets to the crew and review the information.
2. Allow crew to brief raising RX power to 1-3%.
3. Ensure the Beacon book from the simulator is available to the crew if they are in the LOR Debrief Room.
4. Review the Simulator Differences list with the crew if needed.
5. When signaled by Simulator Staff, have the crew perform their board walkdown and inform the floor instructor when ready to take the watch.
6. Ensure the simulator is in RUN and verify simulator clock is set correctly. Note the time that the Crew takes the watch. _____ Start Time.

NOTE

Malfunction Step and/or Lesson Plan Steps (Events) are triggered upon the Lead Examiners signal during the scenario unless an agreed upon time is discussed with the examiner prior to the start of the scenario.

Always 'TRIGGER' events in the Simulator Scenario Lesson Plans. This way delays associated with events will take place as intended.

Refer to 'EXPECTED BOOTH COMMUNCATIONS' and 'EXPECTED BOOTH ACTIONS' Sections for instructions for Instructor actions during the scenario.

7. Trigger the step titled 'Start Chart' and ensure specified Recorded Parameters for the scenario begin recording as the scenario runs. If the chart speed is NOT set to 5400 seconds (90 minutes) then perform the following:
   - Under 'CHARTS' click on 'SET TIME'
   - In the dialog box enter 5400 seconds (90 minutes)
   - Click OK.
8. For Event #1 the crew will raise RX power to 1-3%
9. When signaled by Lead Examiner, trigger **MALFUNCTION STEP –** This will insert Step #1, Event #2.
10. When signaled by Lead Examiner, trigger **STEP 2 –** Event #3
11. When signaled by Lead Examiner, trigger **STEP 3 –** Event #4
12. When signaled by Lead Examiner, trigger **STEP 4 –** Event #5
13. Place simulator in FREEZE when cued by the Lead Examiner to terminate scenario.
14. DO NOT RESET simulator until the steps on the next page are completed and all Examiners have completed Follow-Up Questioning.

SCENARIO INSTRUCTIONS (cont'd.)

NOTE
Some scenarios will have more than one chart. For these, each chart file must be separately saved with a unique filename.

15. Saving Recorded Parameters Data
    - — Click on the 'Charts' icon on the left side of the screen
    - — Select 'Pause' icon, then select 'All'
    - — Click on the 'Print Chart' icon, then select 'All'
    - — This will bring up a window in the TASK BAR called PRIMOPDF.
    - — Click on 'Create PDF'
    - — This will bring up a File Save As window.
    - — Save to folder **c:\Users\lotnrc\Desktop\LOT25 Charts**. The file name will be 'LOT25 Scenario 4' followed by a name that identifies the crew (e.g. 'Crew A).
    - — Save the new file. It will be saved in a folder already on the desktop. LOT25 Charts.
16. Saving Scenario SAM (Simulator Action Monitor)
    - — Under 'TOOLS' click on 'SAM'
    - — In the dialog box that comes up click on 'SAVE TO'
    - — Save as a 'TEXT FILE' to folder **c:\Users\lotnrc\Desktop\LOT25 Charts.** The file name will be 'LOT25 SAM INFO Scenario 4' followed by a name that identifies the crew (e.g. 'Crew A).

SCENARIO – 04

	0POP01-ZQ-0022		
Plant Operations Shift Routines			
For Training Only	Shift Turnover Checklist{ TC "Form 6, Reactor Operator Shift Turnover Checklist" \f C \l "2" }		Page 1 of 1

PART I - To be completed prior to shift turnover.

Unit: **1** Off- Going Shift: **Days / (Nights)** Date: **Today** Mode: **1**

Dilution			**Boration**			**Control Rods**		
Current Setpoint	1% Pwr Change	1° F Change	Current Setpoint	1% Pwr Change	1° F Change	Current Position	1% Pwr Change	1° F Change
10	**240**	**263**	**6** flushing with **15**	**36**	**39**	**227**	**9**	**9**
As Required			As Required			As Required		

ΔI Target **-3.73%** Channel **U1144** RCS Boron **880**

Unit 1 Status

- Mode 2, 10E-8 AMPS Power.r
- Core burnup is 8500 MWD / MTU, MOL

Load Reduction:

- 100-90%/1hr = **173**
- 100-80%/10min = **408**
- 100-75%/30min = **471**
- 100-60%/1hr = **454**
- 100-50%/10min = **727**

Information:

- The Crew is directed to raise Reactor Power to 1-3% at ½ dpm per 0POP03-ZG-0004, Reactor Startup, Step 6.33. The Shift Manager is reviewing the ECPs from the startup.
- BAT 1A & 1B Concentrations are 7300 ppm
- Fuel Handling Building truck bay doors are closed
- No personnel are in containment
- Ron Gibbs has the duty
- The NLO compliment is 5 watch standers and a head operator

ECO/LCO/RAsCAL:

None.

Simulator Differences

- Axial Flux Difference Target is per ICS. It may not match the curve book, but the turnover sheets should be accurate.
- Various recorders in the simulator are different model than in the plant and have a slightly different display. QDPS Displays on CP-001 and ASP are different than the plant.
- The Vibration Monitoring HMI panel located on CP-014 and FP Systems are not modeled in the simulator.
- The Desk Top Computer generated Fire Alarm in the Simulator sounds different than the actual Fire Alarm in the plant.
- The Control Rod Step Counters in the Simulator are LCD instead of thumbwheels.
- Simulator ICS Health Screens are different than in the plant and 'Redefined Reports' are not available.
- The plant has some ICS calculated points for RCS inventories that are not in the simulator. (U0112, U0113, U0114, U0116, U0118 and U0120)
- CRE HVAC noise is not simulated.
- Various miscellaneous items such as book carts, cameras, etc. are located in the simulator and are either not in the unit control rooms or in different locations.
- Raising or Lowering Main Generator MVARs does NOT affect Grid Voltage.
- RM-23 FILT, PURGE and Check Source features DO NOT function.
- SI Accumulator control bands for pressure, level and low pressure alarm setpoints do not match the Temporary Modifications change in Unit 1 (TI-20-4780-30). Simulator uses the Unit 2 control bands and low pressure alarm setpoint.
- During a Unit 1 transient event, 'C' Steam Generator (C-S/G) demonstrated a flow and level trend that deviated from the other three S/Gs where C-S/G exhibited a more rapid lowering in level compared to the other three S/Gs prior to the reactor trip. The simulator does not exhibit the same deviation shown by C-S/G. (Ref. Cold weather transient, Unit 1, 2/15/2021; CR 21-2894.)

LOT 25 NRC EXAM

SIMULATOR OPERATING TEST

SCENARIO #5

Revision 0

Week of 07/12/2021

SCENARIO OUTLINE

Facility: South Texas Project **Scenario No.: 5** **Op-Test No.: LOT 25 NRC**

Examiners: _____ **Operators:** _____

_____ _____

_____ _____

Initial Conditions:
- **Mode 1 is at 85% Power. BOL. IC 195**

Turnover:
- **Raise power to 90%**

Critical Tasks:
- **CT – 17: Isolate a Faulted Steam Generator**
- **CT – 12: Adequate response to failure of MSIV 1B to close.**

Event No.	Malf. No.	Event Type*	Event Description
1 (0 min)	N/A	R(ALL)	Raise power to 90%
2 (20 min)	02-20-01 1.0	C (RO, SRO) TS (SRO)	PZR level channel LT-0465 fails high
3 (35 min)	04-09-03 True	C (BOP, SRO) TS (SRO)	ECW Pump #1C trips
4 (50 min)	05-11-01 1.0	I (BOP, SRO)	SG 1A controlling steam flow channel FT-0512 fails high
5 (65 min)	02-25-02 0.0	I(RO, SRO) TS (SRO)	Loop A Cold Leg RTD TI-0410B Fails Low
6 (80 min)	05-02-02 0.3	M (ALL)	Main Steam Line Break SG 1B Inside Containment **(CT-17)**
7 (N/A)	05-07-02 True	C (BOP, SRO)	1B MSIV fails to close **(CT-12)**
8 (N/A)	Multiple	C (BOP, SRO)	Train B EAB HVAC fails to actuate

Lot* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor, (TS) Technical Specification

Total Estimated Time: 1 hour, 45 minutes

Target Quantitative Attributes (Per Scenario; See Section D.5.d)	Actual Attributes
1. Malfunctions after EOP entry (1–2)	2
2. Abnormal events (2–4)	4
3. Major transients (1–2)	1
4. EOPs entered/requiring substantive actions (1–2)	1
5. Entry into a contingency EOP with substantive actions (≥1 per scenario set)	0
6. Preidentified critical tasks (≥2)	2

SCENARIO MISCELLANEOUS INFORMATION

INSTRUCTOR NOTES:

- Critical Tasks are indicated by "**CT-##**" in the position column and indicated in bold type. In some instances, an "*" will indicate that only a portion of the task listed is considered critical.
- Shaded cells indicate procedural entry points.

RECORDED PARAMETERS:

The parameters identified for recording may be of value in evaluating crew performance. Once the scenario is complete for each crew, printout the recorded parameters and label the printout with date, time, crew number and scenario number. See Scenario Instructions section for further details on how to save the Recorded Parameters.

- Core Exit T/C
- Pressurizer Level
- SG 1D Narrow Range Level

SCENARIO OBJECTIVES

Event 1 Objective

- Adjust Reactor Power using boration/dilution and/or turbine load per 0POP03-ZG-0005, Plant Startup to 100% or 0POP03-ZG-0006, Plant Shutdown from 100% to Hot Standby.

Event 2 Objective

- Respond to a PZR Level Channel failure per 0POP04-RP-0002, Loss of Automatic Pressurizer Level Control.

Event 3 Objective

- Respond to alarms associated to an ECW Pump trip per 0POP09-AN-02M4.

Event 4 Objective

- Respond to a loss of steam generator level control per 0POP04-FW-0001, Loss of Steam Generator Level Control.

Event 5 Objective

- Respond to a failure of an RCS Loop RTD per 0POP04-RP-0004, Failure of RCS Loop RTD Protection Channel.

Event 6 Objective

- Respond to a Main Steam line break in containment per 0POP05-EO-EO00, Reactor Trip or Safety Injection and 0POP05-EO-EO20, Faulted Steam Generator Isolation.

Event 7 and 8 Objective

- Respond to equipment failures after a Reactor Trip and Safety Injection per 0POP05-EO-EO00, Reactor Trip or Safety Injection.

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 5 **Event No.:** 1

Event Description: Raise Reactor Power to 90%.

Time	Position	Required Operator Actions	Notes
	RO BOP	COMMENCE raising Reactor Power and Main Turbine to between 88% to 90% Rx Pwr. *(0POP03-ZG-0005 Step 7.58)*	
	RO	Start a dilution per 0POP02-CV-0001, Makeup to the Reactor Coolant System. *(NOTE: Operator normally uses Form 2, Dilution Checklist, or Form 3, Alt. Dilution Checklist, to perform a dilution to the RCS. The methods are similar. Form 2 is given.)*	
	RO	DETERMINE amount of dilution water to be added. *(0POP02-CV-0001, Form 2, Step 1.0)* *(RO will confer with SRO to determine the amount of water to add to the RCS to start raising reactor power.)*	
	RO	ENSURE VCT will accept the volume increase without initiating an auto diversion to the RHT at 68%. *(0POP02-CV-0001, Form 2, Step 2.0)*	
	RO	TURN "RC M/U CONT SYS ON" switch to "STOP" *(0POP02-CV-0001, Form 2, Step 3.0)*	
	RO	TURN "RC M/U CONT" to "DILUTE" *(0POP02-CV-0001, Form 2, Step 4.0)*	
	RO	ENSURE "TOT M/U BATCH GALLONS FY-0111B" flow integrator is set for required gallons of dilution water. *(0POP02-CV-0001, Form 2, Step 5.0)*	
	RO	ENSURE “RMW FLOW CONT FK-0111” is set for desired flowrate. *(0POP02-CV-0001, Form 2, Step 6.0)* *(Normal dilution flow rate is set for 100 gpm [3.3 pot setting])*	
	RO	TURN "RC M/U CONT SYS ON" switch to "START". *(0POP02-CV-0001, Form 2, Step 7.0)* *(This starts the dilution sequence.)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 5 **Event No.:** 1 **Event Description:** Raise Reactor Power to 90%.			
Time	**Position**	**Required Operator Actions**	**Notes**
	RO	VERIFY "RMW PUMP 1A" OR "RMW PUMP 1B" is running. *(0POP02-CV-0001, Form 2, Step 8.0)*	
	RO	WHEN the required gallons of dilution water are added, THEN ENSURE makeup is stopped. *(0POP02-CV-0001, Form 2, Step 9.0)* ***(Dilution will auto stop after set amount of water added. The RO may request to leave Reactor Makeup line up as is and just return to Form 2, Step 7.0 for additional dilutions.)***	
	RO	ENSURE Reactor Makeup Water System is returned to Automatic Operation per Form 4, Modes 1-2 Automatic Operation Checklist. *(0POP02-CV-0001, Form 2, Step 10.0)*	
	RO	ENSURE the following in "AUTO" positon: • BA FLOW CONT FK-0110 • BA FLOW CONT VLV FCV-0110A • Makeup Stop to Charging Pumps "TO VCT OUTL FCV-011B" valve • RMW FLOW CONT FK-0111 • RMW FLOW CONT VLV FCV-0111A • Makeup Stop to VCT "FILL FCV-0111B" *(0POP02-CV-0001, Form 4, Step 1.0)*	
	RO	IF desired, THEN STOP the running RMW OR BAT pump(s) by placing the handswitch in "STOP", THEN return to "AUTO" (√ the desired Standby pump(s) ONLY) • RMW PUMP 1A _____ • RMW PUMP 1B _____ • BA XFER PUMP 1A _____ • BA XFER PUMP 1B _____ *(0POP02-CV-0001, Form 4, Step 2.0)*	
	RO	ENSURE the **STANDBY** RMW and BAT pumps are in "AUTO" (√ the desired Standby pumps ONLY) • RMW PUMP 1A _____ • RMW PUMP 1B _____ • BA XFER PUMP 1A _____ • BA XFER PUMP 1B _____ *(0POP02-CV-0001, Form 4, Step 3.0)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 5 **Event No.:** 1 **Event Description:** Raise Reactor Power to 90%.			
Time	**Position**	**Required Operator Actions**	**Notes**
	RO	ENSURE the pumps **NOT** selected for **STANDBY** are in "PULL TO LOCK" (normal Lineup) or as directed by the Unit Supervisor/Shift Manager. (√ the desired **Non-Standby** pump(s) ONLY) • RMW PUMP 1A _____ • RMW PUMP 1B _____ • BA XFER PUMP 1A _____ • BA XFER PUMP 1B _____ *(0POP02-CV-0001, Form 4, Step 4.0)*	
	RO	PLACE "RC M/U CONT" switch in "AUTO" *(0POP02-CV-0001, Form 4, Step 5.0)*	
	RO	ENSURE "BA FLOW CONT FK-0110 setpoint for flowrate, is at the desired value. (Refer to Section 8.0 for setpoint formula) *(0POP02-CV-0001, Form 4, Step 6.0)* ***Setpoint Formula:*** $$\textbf{\textit{Setpoint} = } \frac{\textbf{\textit{20 x Boron Concentration of RCS}}}{\textbf{\textit{Born Concentration of BAT}}}$$	
	RO	TURN "RC M/U CONT SYS ON" switch to "START" *(0POP02-CV-0001, Form 4, Step 7.0)*	
	RO	IF all boration evolutions have been completed, THEN STOP Boric Acid Transfer Pump Fan AND PLACE its handswitch in "AUTO" • Pump 1B SUPP CLR 11A HM-VAH008 • Pump 1A SUPP CLR 11B HM-VAH009 *(0POP02-CV-0001, Form 4, Step 8.0)*	
	BOP	Crew will make Turbine Load Changes using Form 1 of 0POP03-ZG-0005, Plant Startup to 100%. *(NOTE: There are other Plant Operating Procedures that have these same steps that the Operator can use.)*	
	BOP	ENSURE the LOAD RATE - PRCT MW/MIN" Thumbwheel is set to the ".25" position OR as authorized by the Shift Manager/Unit Supervisor. *(0POP03-ZG-0005, Form 1, Step 1.0)* *(BOP will confer with SRO to determine the Thumbwheel setpoint.)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 5 **Event No.:** 1 **Event Description:** Raise Reactor Power to 90%.			
Time	**Position**	**Required Operator Actions**	**Notes**
	BOP	RAISE/LOWER (ADJUST) "SETPOINT" to the desired value. *(0POP03-ZG-0005, Form 1, Step 2.0)*	
	BOP	DEPRESS the SETPOINT CONTROL **"GO"** pushbutton and **MONITOR** for the proper load changes. *(0POP03-ZG-0005, Form 1, Step 3.0)*	
	RO	ENSURE "ROD BANK SEL" switch is in "MAN" position. *(0POP03-ZG-0005, Form 2 Step 1)* *(This and the next two steps are used if control rods are used for delta-I control)*	
	RO	WITHDRAW/INSERT Control Banks by holding Rod Control Switch in OUT/IN position. *(0POP03-ZG-0005, Form 2 Step 2)*	
	SRO	PLACE the "ROD BANK SEL" switch in the "AUTO" or "MAN" position as deemed necessary by Shift Manager/Unit Supervisor. *(0POP03-ZG-0005, Form 2 Step 3)* *(**Event 2** can be triggered when the lead examiner is satisfied with crew performance for reactivity.)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 5 **Event No.:** 2 **(Examiner Trigger)** **Event Description:** PZR level channel LT-0465 fails high.			
Time	**Position**	**Required Operator Actions**	**Notes**
	RO	Acknowledges and announces the following annunciators on 04M8: • PRZR LEVEL HI RX TRIP ALERT (A-6) • PRZR LEVEL DEV HI B/U HTRS ON (C-6) • CHG FLOW HI/LO (F-3) *(NOTE: Other alarms may come in as the event progresses.)*	
	SRO/RO	Determines that Pressurizer Level Channel LT-0465 failed high. Performs immediate actions of 0POP04-RP-0002: • PLACES “CHG FLOW CONT FK-0205” in Manual and controls PZR Level on Program. *(Immediate Action of 0POP04-RP-0002, Loss of Automatic Pressurizer Level Control.)*	
	SRO	Directs action of 0POP04-RP-0002, Loss of Automatic Pressurizer Level Control.	
	RO	PLACE "CHG FLOW CONT FK-0205" Controller In MANUAL *(Step 1 immediate action)*	
	RO	ADJUST "CHG FLOW CONT FK-0205" To Maintain Pressurizer Program Level *(Step 2 immediate action)*	
	RO	VERIFY Letdown – IN SERVICE *(Step 3)* *(Letdown will still be in service.)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 5 **Event No.:** 2 **(Examiner Trigger)**

Event Description: PZR level channel LT-0465 fails high.

Time	Position	Required Operator Actions	Notes
	RO	CHECK All Pressurizer Level Channels - OPERABLE **(RNO)** PERFORM the following: • POSITION Pressurizer level control selector switch to remove failed channel from service: Failed Channel Select **RC-LT-0465 L467/466** RC-LT-0466 L465/467 RC-LT-0467 L465/466 • POSITION Pressurizer level recorder selector switch to an operable channel. • PLACE Pressurizer “HTR CONT GRP 1C” to ON. • IF normal letdown has isolated, THEN PLACE excess letdown in service as necessary per Addendum 3 to maintain Pressurizer level on Pressurizer Program Level. • NOTIFY I&C to bypass or trip the Pressurizer low level for the failed channel, using plant surveillance procedure listed in Addendum 4. *(Step 4)* *(Selects channel L467/466)*	
	RO	CHECK All Tavg Channels – OPERABLE *(Step 5)*	
	RO	CHECK Tavg – WITHIN 1.5°F OF Tref *(Step 6)*	
	RO	CHECK Pressurizer Level - GREATER THAN 17% *(Step 7)*	
	RO	CHECK Normal Letdown – IN SERVICE *(Step 8)*	
	RO	CHECK "CHG FLOW CONT FK-0205" - OPERABLE *(Step 9)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 5 **Event No.:** 2 **(Examiner Trigger)**			
Event Description: PZR level channel LT-0465 fails high.			
Time	**Position**	**Required Operator Actions**	**Notes**
	RO	CHECK PZR Level Controller: • CHECK PZR Level Controller LK- 0665 "LEVEL CONT." – OPERABLE • PLACE PZR Level Controller LK- 0665 "LEVEL CONT." in MANUAL AND ADJUST output to match "CHG FLOW CONT FK-0205" output • PLACE PZR Level Controller LK- 0665 "LEVEL CONT." in AUTO *(Step 10)* *(**Event 2** can be triggered after SRO has announce TSs or on request from the lead examiner.)*	
	RO	CHECK PZR Level Controller LK- 0665 "LEVEL CONT." Output Is Stable *(Step 11)*	
	RO	PLACE "CHG FLOW CONT FK-0205" In Automatic *(Step 12)*	
	RO	CHECK Pressurizer Level – MAINTAINED ON PRESSURIZER PROGRAM LEVEL *(Step 13)*	
	RO	CHECK Excess Letdown – ISOLATED *(Step 14)*	
	RO	REFER TO Addendum 7 For Applicable Technical Specifications *(Step 15)* *(TS 3.3.1, Function 12, Action 6 - Place the failed channel in the tripped condition within 72 hours. See below for details.)*	
TS 3.3.1, Function 12, Action 6 *With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided the following conditions are satisfied:* *a. For Functional Units with installed bypass test capability, the inoperable channel may be placed in bypass, and must be placed in the tripped condition within 72 hours.* *Note: A channel may be bypassed for up to 12 hours for surveillance testing per Specification 4.3.1.1, provided no more than one channel is in bypass at any time.*			
	RO	INITIATE Corrective Action for Failed Component *(Step 16)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 5 **Event No.:** 3 **(Examiner Trigger)** **Event Description:** ECW Pump #1C trips.			
Time	**Position**	**Required Operator Actions**	**Notes**
	BOP	Acknowledges and announces the following annunciators from 02M4: • ECW PUMP 1C TRIP (C-7)	
	SRO BOP	Determines Essential Cooling water Pump 1C tripped.	
	SRO	Directs actions of 0POP09-AN-02M4 C-7.	
	RO	IF standby ECW train is required, THEN ENSURE standby train has started. • CHECK for proper operation and alignment per 0POP02-EW-0001, Essential Cooling Water. *(Window C-7, Step 1)* *(The crew should start ECW Pump 1B but if it does not get started it will not affect the rest of the scenario.)*	
	RO	IF standby CCW train is required, THEN ENSURE standby train has started.. • CHECK for proper operation and alignment per 0POP02-CC-0001, Component Cooling Water. *(Window C-7, Step 2)* *(With CCW Pump 1A running, another CCW train is NOT required.)*	
	BOP	PLACE Standby DG 13 "EMER STOP" plunger in the PULL TO STOP position to prevent diesel operation without cooling water. *(Window C-7, Step 3)*	
	BOP	PLACE the following handswitches in PULL TO LOCK: • ECW Pump ‘1C’ • ECW Screenwash Booster Pump ‘1C’ • ECW Traveling Screen ‘1C’ *(Window C-7 Step 4)*	
	BOP	IF ECW Train 1C is being used for ECP Blowdown, THEN ENSURE "ECW TRAIN C BLWDN ISOL FV-6937" closed. *(Window C-7 Step 5)* *(The Blowdown Valve should have automatically closed when the ECW Pump tripped.)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 5 **Event No.:** 3 **(Examiner Trigger)** **Event Description:** ECW Pump #1C trips.			
Time	**Position**	**Required Operator Actions**	**Notes**
	BOP	SECURE the affected CCW train (IF running) per 0POP02-CC-0001, Component Cooling Water. *(Window C-7 Step 6)* *(NA - CCW Pump 1A was running.)*	
	BOP	SECURE the affected ECW train per 0POP02-EW-0001, Essential Cooling Water Operations. *(Window C-7 Step 7)* *(Places Train C Mode Select Switch in OFF)*	
	BOP	PLACE the remaining ECW train in standby per 0POP02-EW-0001, Essential Cooling Water Operations. *(Window C-7 Step 8)* *(Places Train B Mode Select Switch in STANDBY)*	
	BOP	PLACE the remaining CCW train in standby per 0POP02-CC-0001, Component Cooling Water Operations. *(Window C-7 Step 9)* *(See previous step)*	
	BOP	IF adequate CCW pumps are NOT available to provide flow for current plant conditions, THEN adjust loads as needed per 0POP02-CC-0001, Component Cooling Water. *(Window C-7 Step 10)* *(CCW Pump 1A is providing adequate flow.)*	
	BOP	PERFORM the following: • ENSURE Essential Chiller 12C in standby per 0POP02-CH-0005, Essential Chiller Operation. • SECURE Train C EAB HVAC per 0POP02-HE-0001, Electrical Auxiliary Building HVAC Operation. • PLACE Essential Chiller 12C handswitch in PTL. • START Essential Chiller(s) as needed per 0POP02-CH-0005, Essential Chiller Operation. *(Window C-7 Step 11)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 5 **Event No.:** 3 **(Examiner Trigger)**			
Event Description: ECW Pump #1C trips.			
Time	**Position**	**Required Operator Actions**	**Notes**
	BOP	PLACE Essential Chilled Water Train C Pump 11C to PTL. *(Window C-7 Step 12)* ***(<u>Event 4</u> needs to be triggered prior to the crew starting Train B HVAC so that <u>Event 8</u> is NOT affected.)***	
	BOP	START additional trains of CRE and EAB HVAC, as necessary, per 0POP02-HE-0001, Electrical Auxiliary Building HVAC System. *(Window C-7 Step 13)*	
	BOP	IF RHR Train C was in service, THEN PERFORM the following: • PLACE an alternate RHR train in service per 0POP02-RH-0001, Residual Heat Removal System Operation. • SECURE RHR Train C per 0POP02-RH-0001, Residual Heat Removal System Operation. • PLACE the pump handswitch in PTL. *(Window C-7 Step 14)* *(This step is NA as RHR is not in service.)*	
	BOP	PERFORM the following: • ENSURE CCW Train C secured per 0POP02-CC-0001, Component Cooling Water • PLACE “COMP CLG WTR PUMP 1C” handswitch in PTL *(Window C-7 Step 15)*	
	SRO	TAKE appropriate action per Technical Specifications 3.5.2, 3.6.2.1, 3.6.2.3, 3.7.3, 3.7.4, 3.7.7, 3.7.14, 3.8.1.1, 3.8.1.2 and 3.8.1.3 *(Window C-7 Step 16)* *(See next page for TS details.)*	
	BOP	INVESTIGATE cause of ECW Pump 1C trip. *(Window C-7 Step 17)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 5 **Event No.:** 3 **(Examiner Trigger)**

Event Description: ECW Pump #1C trips.

Time	Position	Required Operator Actions	Notes

Tech Specs Information:

TS 3.7.4, Action a) applies. ECW

- With only two essential cooling water loops OPERABLE, within 7 days restore at least three loops to OPERABLE status or apply the requirements of the CRMP, or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

TS 3.8.1.1, Action b) & d) applies. ESF DG

- With a standby diesel generator inoperable, demonstrate the OPERABILITY of the above-required A.C. offsite sources by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter. If the standby diesel generator became inoperable due to any cause other than an inoperable support system, an independently testable component, or preplanned preventive maintenance or testing, demonstrate the OPERABILITY of the remaining OPERABLE standby diesel generators by performing Surveillance Requirement 4.8.1.1.2.a.2) for each such standby diesel generator separately within 8 hours1 unless it can be demonstrated there is no common mode failure for the remaining diesel generator(s). Within 14 days restore the inoperable standby diesel generator to OPERABLE status or apply the requirements of the CAMP, or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

NOTE: TS 3.5.2 SI, 3.5.6 RHR, 3.6.2.1 CS, 3.6.2.3 RCFCs, 3.7.3, CCW, TS 3.7.7 CRE HVAC, 3.7.14 Ess. Chill Water cascade in inoperability due to this event. All have an Action a) that is similar to Action a) in TS 3.7.4.

NOTE: TS 3.8.1.2 and 3.8.1.3 Do NOT Apply.

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 5 **Event No.:** 4 **(Examiner Trigger)**			
Event Description: SG 1A controlling steam flow channel FT-0512 fails high.			
Time	**Position**	**Required Operator Actions**	**Notes**
	BOP	Acknowledges and announces the following annunciators on 06M3: SG 1A STM/FW FLOW MSMTCH (E3) *NOTE: If the crew is slow to diagnose this condition, then other alarms will come in on SG 1A.*	
	SRO BOP	Determines SG 1A Controlling Steam Flow Transmitter FT-0512 is failed high. Performs immediate actions of 0POP04-FW-0001, Loss of Steam Generator Level Control: PLACE any SG Feedwater Regulating Valve(s) not properly responding in MANUAL AND ADJUST as necessary to restore affected SG NR level(s) to between 68% and 74%.	
	SRO	Enters 0POP04-FW-0001, Loss of Steam Generator Level Control.	
	BOP	CHECK SG Feedwater Regulating Valve(s) - RESPONDING IN AUTOMATIC (See previous immediate action step) *(Step 1, an immediate action step.)*	
	BOP	CHECK SGFP Speed Controllers - RESPONDING IN AUTOMATIC *(Step 2, an immediate action step.)* *(Controlling steam flow channel does affect SGFP speed by affecting the steam pressure/ feed pressure DP setpoint, however in this case, DP remains greater than required DP so the crew may not place the controller in manual.)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 5 **Event No.:** 4 **(Examiner Trigger)**

Event Description: SG 1A controlling steam flow channel FT-0512 fails high.

Time	Position	Required Operator Actions	Notes

	BOP	CHECK Main Feedwater Regulating Valves:
		• CHECK Main Feedwater Regulating Valve(s) - IN SERVICE
		  • **SG 1A "NORM FCV-0551"**
		  • SG 1B "NORM FCV-0552"
		  • SG 1C "NORM FCV-0553"
		  • SG 1D "NORM FCV-0554"
		• CHECK Main Feedwater Regulating Valve(s) - ANY IN MANUAL
		• CHECK Affected Main Feedwater Regulating Valve(s) - RESPONDING IN MANUAL
		(Step 3)	

	BOP	CHECK Low Power Feedwater Regulating Valves: • CHECK Low Power Feedwater Regulating Valve(s) - IN SERVICE **RNO** GO TO Step 5.0. *(Step 4)*	
	BOP	CHECK SGFP Master Speed Controller - IN MANUAL **RNO** GO TO Step 7.0. *(Step 5)* *(If SGFP Master Speed Controller was placed in Manual in step 2.0, then crew will check to controller is responding in manual.)*	
	BOP	CHECK Individual SGFP Speed Controllers - ANY IN MANUAL **RNO** GO TO Step 9.0. *(Step 7)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 5 **Event No.:** 4 **(Examiner Trigger)** **Event Description:** SG 1A controlling steam flow channel FT-0512 fails high.			
Time	**Position**	**Required Operator Actions**	**Notes**
	BOP	MONITOR Feedwater/Steam Header DP – • GREATER THAN OR EQUAL TO DP REQUIRED BY Addendum 1 OR • SGFP Master Speed Controller At 100% Demand In Auto *(Step 9)* *(Controlling steam flow channel does affect SGFP speed by affecting the steam pressure/ feed pressure DP setpoint, however in this case, DP remains greater than required DP so the crew may not place the controller in manual.)*	
	BOP	RESTORE Affected SG NR Level(s) To Between 68% And 74% *(Step 10)*	
	BOP	MONITOR SG NR Levels - GREATER THAN 20% *(Step 11)*	
	BOP	MONITOR SG NR Levels - LESS THAN 87.5% *(Step 12)*	
	BOP	CHECK SG NR Level Indicators - ALL OPERABLE *(Step 13)*	
	BOP	CHECK Feedwater Flow Transmitters - ALL OPERABLE *(Step 14)*	
	BOP	CHECK Steam Flow Transmitters - ALL OPERABLE RNO PERFORM the following: • Select the operable feedwater flow channel for the affected SG level control. *(Step 15)* *(Steam Flow Channel FT-0512 is failed high.)*	
	BOP	CHECK Steam Pressure Transmitters - ALL OPERABLE *(Step 16)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 5 **Event No.:** 4 **(Examiner Trigger)**			
Event Description: SG 1A controlling steam flow channel FT-0512 fails high.			
Time	**Position**	**Required Operator Actions**	**Notes**
	BOP	CHECK SG NR Levels - BETWEEN 68% And 74% *(Step 17)*	
	BOP	CHECK Main Feedwater Regulating And Low Power Feedwater Regulating Valves Automatic Control – OPERABLE *(Step 18)* *NOTE: Automatic control has not been affected.*	
	BOP	CHECK Main Feedwater Regulating OR Low Power Feedwater Regulating Valve(s) - IN AUTO • SG 1A "NORM FCV-0551" **RNO** WHEN SG levels return to between 68% and 74%, THEN PERFORM the following: • PLACE in-service Feedwater Regulating Valve(s) with operable Automatic Control in Auto. • MONITOR proper operation of Feedwater Regulating Valve(s) in Auto. *(Step 19)*	
	BOP	CHECK SGFP Master Speed Controller - IN AUTO *(Step 20)* *(The crew will place the SGFP Master Speed Controller in Auto at this step if it was placed in manual earlier.)*	
	SRO	TAKE Appropriate Actions Per Technical Specifications 3.3.1, 3.3.2, 3.3.3.6 and TRM 3.7.1.7 *(Step 21)* *(TSs do not apply for the steam flow channel.)*	
	SRO	NOTIFY I&C To Place The Affected Channel In Trip Or Bypass. REFER TO Addendum 2, Procedure List For The Appropriate Procedure *(Step 22)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 5 **Event No.:** 4 **(Examiner Trigger)**			
Event Description: SG 1A controlling steam flow channel FT-0512 fails high.			
Time	**Position**	**Required Operator Actions**	**Notes**
	SRO	INITIATE Corrective Actions For Failed Component *(Step 23)* *(**Event 3** can be triggered on request from the lead examiner.)*	

OPERATOR ACTIONS

Op-Test No.: 1	**Scenario No.:** 5	**Event No.:** 5 **(Examiner Trigger)**	
Event Description: Loop A Cold Leg RTD TI-0410B Fails Low.			
Time	**Position**	**Required Operator Actions**	**Notes**
	RO	Acknowledges and announces the following annunciators from 05M2: • T AVG/AUCT T AVG DEV (C-6) • DT/AUCT DT DEV (D-6) *(Other alarms will come in as event progresses.)*	
	SRO RO	Determines LOOP A Cold Leg RTD T-410B failed low. *(The crew may put FK-0205 in manual due to the failure of LOOP A Cold Leg RTD TI-410B which causes PZR Program Level to read low but there is NOT a specific step for this.)*	
	SRO	Directs actions of 0POP04-RP-0004, Failure of RCS Loop RTD Protection Channel.	
	RO	ENSURE "ROD BANK SEL" Switch In MANUAL *(Step 1)* *(Control Rods may or may not have already been selected to manual in Event 1.)*	
	RO	CHECK The Following Indications - NORMAL • RCS loop temperature indicators (Tavg, Th, Tc, and ΔT) {CP005} • QDPS DETAIL DATA Page 2 for RCS Loop Th • Plant Computer **RNO** IF any RCS loop RTD channel is **NOT** operable, THEN PERFORM the following: {CP005} • SELECT The Failed Loop On "BYP SEL ΔT" Switch. • SELECT The Failed Loop On "BYP SEL T AVG" Switch. *(Step 2 and Step 2 RNO)*	
	RO	CHECK Tavg - WITHIN 1.5°F OF Tref (REFER TO Addendum 1) *(Step 3)* *(Tavg will probably be within 1.5°F of Tref.)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 5 **Event No.:** 5 **(Examiner Trigger)** **Event Description:** Loop A Cold Leg RTD TI-0410B Fails Low.			
Time	**Position**	**Required Operator Actions**	**Notes**
	RO	CHECK Pressurizer Level - • AT PRESSURIZER PROGRAM LEVEL OR • TRENDING TO PRESSURIZER PROGRAM LEVEL *(Step 4)* *(The crew may have put FK-0205 in manual due to the failure of LOOP A Cold Leg RTD T-410B)*	

	RO	Establish Automatic Rod Control:
		• DETERMINE if it is desired to place Rod Control System in Automatic
		RNO
		PERFORM the following:
		• *MAINTAIN* Tavg within 1.5ºF of Tref by any of the following methods:
		  • Manually ADJUST Control Rod position
		  • ADJUST Turbine Load
		  • ADJUST RCS boron concentration
		• GO TO Step 6.0
		(Step 5)
		(Crew can elect to keep rods in manual.)	

	BOP	CHECK "ΔT AND ΔT SETPTS TR-0412" Recorder - SELECTED TO OPERABLE CHANNEL **(CP-018)** • SELECT an operable channel on "ΔT AND ΔT SETPTS TR-0412" Recorder. *(Step 6)* *(Will select an operable channel for the recorder.)*	
	SRO	TAKE Appropriate Actions Per Technical Specifications. TS 3.3.1.8 & 9 OT & OPDT Action 6 TS 3.3.2.5.f LOW Tavg P4 Action 20 **Most Limiting Condition:** Place the failed channel in the tripped condition within 72 hours. *(Step 7)* *(See next page for TS details.)* *(**Event 6** can be triggered after SRO has checked Tech Specs.)*	

OPERATOR ACTIONS

Op-Test No.: 1	**Scenario No.:** 5	**Event No.:** 5 **(Examiner Trigger)**	
Event Description: Loop A Cold Leg RTD TI-0410B Fails Low.			
Time	**Position**	**Required Operator Actions**	**Notes**
TS 3.3.1 Function 8 & 9 Action 6 and TS 3.3.2 Function 5.f Action 20 *NOTE: Action 6 and Action 20 are the same.* *With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided the following conditions are satisfied:* *a. For Functional Units with installed bypass test capability, the inoperable channel may be placed in bypass, and must be placed in the tripped condition within 72 hours.* *Note: A channel may be bypassed for up to 12 hours for surveillance testing per Specification 4.3.1.1, provided no more than one channel is in bypass at any time.* ***NOTE: TS 3.3.2.9.b Action 21 does NOT apply for this event.***			
	SRO	NOTIFY I&C To Place The Affected Channel In Trip Or Bypass. REFER TO Addendum 2, Procedure List For The Appropriate Procedure *(Step 8)*	
	SRO	INITIATE A Condition Report To Repair Failed Component *(Step 9)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 5 **Event No.:** 6

Event Description: Event 6 – Main Steam Line Break on SG 1B Inside Containment. **(CT-17)**

Time	Position	Required Operator Actions	Notes
	ALL	The crew notices a rise in total steam flow in conjunction with rising containment pressure and lowering RCS temperature & pressure.	
	SRO	Determines that a Main Steam Line rupture has occurred in containment. Directs a Reactor Trip, Safety Injection and Main Steam Line Isolation if they have not already actuated.	
	SRO	Enters 0POP05-EO-EO00, Reactor Trip or Safety Injection, and ensures immediate actions are performed.	
	RO BOP	Completes immediate actions of 0POP05-EO-EO00 and determines: • Reactor is tripped (Step 1) • Turbine is tripped (Step 2) • AC ESF Busses are energized (Step 3) • Check SI status (Step 4) *(RO will complete immediate actions.* *BOP Operator will monitor the plant and make an announcement of the Reactor trip.)*	
	SRO	Directs/ensures the immediate actions of EO00, Reactor Trip/SI have been completed by performing a procedure read through of them. Will direct the BOP to throttle AFW flow to limit the RCS cooldown. A Safety Injection has actuated. The SRO will continue with 0POP05-EO-EO00.	
	BOP	VERIFY Proper SI Equipment Operation Per ADDENDUM 5, VERIFICATION OF SI EQUIPMENT OPERATION *(Step 5)* *(See Actions on pages 31 - 35)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 5 **Event No.:** 6 **Event Description: Event 6 –** Main Steam Line Break on SG 1B Inside Containment. **(CT-17)**			
Time	**Position**	**Required Operator Actions**	**Notes**

	RO	MONITOR If Containment Spray Is Required:
		• Containment pressure - GREATER THAN 9.5 PSIG (QDPS)
		• VERIFY containment spray – INITIATED
		• VERIFY containment isolation Phase B valves - CLOSED
		  • "INL OCIV MOV-0318"
		  • "INL OCIV MOV-0291"
		  • "OUTL ICIV MOV-0542"
		  • "OUTL ICIV MOV-0403"
		  • "OUTL OCIV MOV-0404"
		  • "OUTL OCIV FV-4493"
		• STOP ALL RCPs
		(Step 6)
		(PER the CIP, The SRO will secure one of the three Containment Spray pumps for RWST inventory control.)	

	RO	VERIFY Total AFW Flow – GREATER THAN 576 GPM **RNO** **(if AFW has been throttled below 576 gpm)** PERFORM the following: • IF SG NR Level GREATER THAN 14% [34%] in any SG, THEN Control feed flow to maintain SG NR level. *(Step 7)* *(The SRO will have the BOP throttle AFW flow.)*	
	RO	CHECK RCP Seal Cooling: • ENSURE seal injection flow between 6 and 13 gpm *(Step 8)* *(RO may have to adjust seal injection.)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 5 **Event No.:** 6			
Event Description: Event 6 – Main Steam Line Break on SG 1B Inside Containment. **(CT-17)**			
Time	**Position**	**Required Operator Actions**	**Notes**
	RO	MONITOR RCS Temperatures - • WITH ANY RCP RUNNING, RCS TAVG STABLE AT OR TRENDING TO 567°F OR • **WITHOUT ANY RCP RUNNING, RCS TCOLD STABLE AT OR TRENDING TO 567°F** *(Step 9)* *(RCS Tavg will be trending down but MSIVs are closed.)* ***(With SG 1B MSIV failed to close, the SRO may direct a plant operator to close the valve locally using Addendum 6 of EO00 or Addendum 1 of EO20. See EO20 Step 1 on page 28 and see EO00 Addendum 5 Step 2 on page 32 for details. CT-12)***	
	RO	CHECK Pressurizer Status: • PORVs - CLOSED • Normal pressurizer spray valves - CLOSED • Auxiliary spray valve - CLOSED • Excess letdown isolation valves - CLOSED *(Step 10)*	
	RO	MONITOR If RCPs Should Be Stopped: • HHSI pump - AT LEAST ONE RUNNING • RCS pressure - LESS THAN 1430 PSIG • STOP all RCPs *(Step 11)* *(RCPs will have already been secured.)*	
	RO	VERIFY The Following Containment Isolation Valve – CLOSED • Seal return isolation valves • Containment atmosphere radiation monitor isolation valves *(Step 12)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 5 **Event No.:** 6 **Event Description: Event 6 –** Main Steam Line Break on SG 1B Inside Containment. **(CT-17)**			
Time	**Position**	**Required Operator Actions**	**Notes**

	RO	CHECK If SG Secondary Pressure Boundary Intact:
		• CHECK pressures in all SGs –
		  • CONTROLLED OR RISING
		  • GREATER THAN CONTAINMENT PRESSURE
		RNO
		If any faulted SG is NOT isolated AND is NOT needed for RCS cooldown, THEN PERFORM the following:
		• GO TO 0POP05-EO-EO20, FAULTED STEAM GENERATOR ISOLATION, Step 1
		• MONITOR Critical Safety Functions
		• WHEN Addendum 5 of this procedure is complete, THEN Functional Restoration Procedures may be IMPLEMENTED.
		(Step 13)
		(Critical Safety Functions for Containment are expected and will be implemented once 0POP05-EO-EO00, Addendum 5 is completed.)	

	SRO	Enters 0POP05-EO-FRZ1, RESPONSE TO HIGH CONTAINMENT PRESSURE.	

	RO	VERIFY Containment Spray - ESTABLISHED
		• Containment Pressure LESS THAN 56.5 PSIG.
		• At least one Containment Spray pump – RUNNING
		  • Discharge valve OPEN
		  • FLOW indication
		• RETURN TO procedure step in effect and PERFORM this procedure as time permits.
		(Step 1)	

	SRO	Enters 0POP05-EO-EO20, Faulted Steam Generator Isolation.	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 5 **Event No.:** 6 **Event Description: Event 6 –** Main Steam Line Break on SG 1B Inside Containment. **(CT-17)**			
Time	**Position**	**Required Operator Actions**	**Notes**
	BOP (CT-12)	Checks MSIV's and MSIB's closed. RNO PERFORM the following: • Manually Close MSIV(s) and MSIB(s) • **IF MSIV(s) and MSIB(s) can NOT be closed, THEN DISPATCH operator to close MSIV(s) and MSIB(s) per Addendum 1, FAILING AIR TO MSIV(s) and MSIB(s). To close SG 1B MSIV.** *(Step 1, 0POP05-EO-EO20, Faulted SG Isolation)* *(This step may already be performed. See page 32, performing EO00 Add 5)*	
	BOP	CHECK If Any SG Secondary Pressure Boundary Intact: • CHECK pressures in all SGs – ANY SG PRESSURE CONTROLLED OR RISING *(Step 2)* *(SG's 'A', 'C' and 'D' pressures are 'controlled'. SG 'B' pressure is NOT controlled.)*	
	SRO BOP	IDENTIFY Faulted SG(s): • CHECK pressure in all SGs – ○ ANY SG PRESSURE LOWERING IN AN UNCONTROLLED MANNER OR ○ ANY SG COMPLETELY DEPRESSURIZED *(Step 3)* *(SG 1B is faulted)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 5 **Event No.:** 6

Event Description: Event 6 – Main Steam Line Break on SG 1B Inside Containment. **(CT-17)**

Time	Position	Required Operator Actions	Notes

	SRO BOP (CT-17) * denotes critical steps of CT	Isolates the faulted SG (1B)
		• Verifies all FWIV's closed.
		• Verifies all FWIB's closed.
		• Verifies all FW Preheater bypass valves closed.
		• Verifies all FW Regulating and Low Power FW Regulating Valves closed.
		• Isolates AFW flow to 'B' SG
		  • **Resets SI***
		  • **Resets ESF load sequencers***
		  • **Resets SG LO-LO level AFW actuations***
		  • Checks SG 1D intact
		  • **Closes 'B' SG AFW OCIV, AF-MOV-0065***
		• Verifies SG 'B' PORV closed
		• Verifies SG 'B' Blowdown and sample isolation valves closed
		(Step 4)
		(All valves listed get an automatic closed signal. No malfunctions are inserted on these valves. AF-MOV-0065 is the only one that requires action by the operator to close.)	

	BOP
	
	Chem Tech
		Check Secondary Radiation:
		• Resets SI
		• Resets SG LO-LO level AFW actuations
		• Resets SG Blowdown and Sampling Isolations
		• Notifies Chemistry to sample all SG's hourly for activity.
		• Checks the following Rad Monitors:
		  o Main Steamline
		  o SG Blowdown
		  o CARS Pump
		• WHEN SG sample results are received, THEN VERIFY SG sample activity – NORMAL
		(Step 5)
		(The first 2 resets have already been done so the operator will just check that they are still reset.)
		(Chemistry acknowledges the request to sample all SGs for activity.)	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 5 **Event No.:** 6

Event Description: Event 6 – Main Steam Line Break on SG 1B Inside Containment. **(CT-17)**

Time	Position	Required Operator Actions	Notes
	SRO	Check if SI flow should be terminated • RCS subcooling - >35°F [45°F] • Secondary heat sink – NR level in one SG > 14% [34%] OR total AFW Flow > 576 gpm. • RCS pressure > 1745 psig and stable or rising • Pressurizer level > 8% [44%] *(Step 6)* *(If conditions are met, a transition to 0POP05-EO-ES11, SI Termination, will be made.)* *(Conditions will likely NOT be met for transition at this time.)* *(If not met [expected], the crew will transition to 0POP05-EO-EO10, Loss of Reactor or Secondary Coolant.)*	
	SRO	Announces transition from 0POP05-EO-EO20 to 0POP05-EO-ES11 or 0POP05-EO-E010, as appropriate. ***Terminate the scenario.***	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 2 **Event No.:** Addendum 5 and Event 7 & 8

Event Description: 0POP05-EO-EO00, Addendum 5, Actions for SI actuation.
Event 7 – SG 1B MSIV fails to close. **(CT-12)**
Event 8 – Train B EAB HVAC fails to actuate.

Time	Position	Required Operator Actions	Notes

	BOP	VERIFY FW isolation:
		• SGFPTs – TRIPPED
		• SU SGFP – TRIPPED
		• VERIFY the following valves –CLOSED
		  ○ FWIVs
		  ○ FWIBs
		  ○ FW preheater bypass valves
		  ○ FW regulating valves
		  ○ Low power FW regulating valves
		  ○ SG blowdown isolation valves
		  ○ SG sample isolation valves
		(EO00 Addendum 5, Step 1)
		
		(0POP05-EO-EO00, Reactor Trip or Safety Injection, Addendum 5, Verification of Equipment Operation.)
		(This addendum is performed in parallel with Steps 6 to 15 of 0POP05-EO-EO00, Reactor Trip or Safety Injection.)	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 2 **Event No.:** Addendum 5 and Event 7 & 8

Event Description: 0POP05-EO-EO00, Addendum 5, Actions for SI actuation.
Event 7 – SG 1B MSIV fails to close. **(CT-12)**
Event 8 – Train B EAB HVAC fails to actuate.

Time	Position	Required Operator Actions	Notes
	BOP CT-12	CHECK if main steamline should be isolated: • CHECK for any of the following conditions: • Containment pressure – GREATER THAN OR EQUAL TO 3 PSIG OR • SG pressure (without low steamline pressure SI blocked) - LESS THAN OR EQUAL TO 735 PSIG OR • SG pressure (with low steamline pressure SI blocked) - LOWERING AT A RATE GREATER THAN OR EQUAL TO 100 PSI/SEC, BY OBSERVANCE OF THE STEAMLINE PRESSURE RATE BISTABLES • VERIFY main steamline isolation: • MSIVs – CLOSED • MSIVs – CLOSED **RNO** PERFORM the following: • Manually CLOSE valves. • **IF MSIV(s) and MSIB(s) can NOT be closed, THEN DISPATCH operator to close MSIV(s) and MSIB(s) per Addendum 6, FAILING AIR TO MSIV(s) and MSIB(s). To close SG 1B MSIV.** *(Step 2)*	
	BOP	VERIFY AFW system status: • Motor-driven pump – RUNNING • Turbine-driven pump – RUNNING *(Step 3)*	
	BOP	VERIFY AFW valve alignment - PROPER EMERGENCY ALIGNMENT *(Step 4)*	
	BOP	VERIFY total AFW Flow - GREATER THAN 576 GPM *(Step 5)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 2 **Event No.:** Addendum 5 and Event 7 & 8

Event Description: 0POP05-EO-EO00, Addendum 5, Actions for SI actuation.
Event 7 – SG 1B MSIV fails to close. **(CT-12)**
Event 8 – Train B EAB HVAC fails to actuate.

Time	Position	Required Operator Actions	Notes
	BOP	VERIFY containment isolation phase A: • Phase A – ACTUATED • Phase A valves - CLOSED, REFER b. Manually CLOSE valves. TO ADDENDUM 1, PHASE A ISOLATION VERIFICATION *(Step 6)*	
	BOP	VERIFY ECW status: • ECW pumps – RUNNING • ECW pump discharge isolation valves – OPEN *(Step 7)*	
	BOP	VERIFY CCW pumps – RUNNING *(Step 8)*	
	BOP	VERIFY RCFC status: • RCFCs – RUNNING • Cooling water - TRANSFERRED TO CCW *(Step 9)*	
	BOP	VERIFY SI pump status: • HHSI pumps – RUNNING • LHSI pumps – RUNNING *(Step 10)*	
	BOP	VERIFY SI valve alignment – PROPER EMERGENCY ALIGNMENT *(Step 11)*	
	BOP	VERIFY SI flow: • RCS pressure - LESS THAN 1745 PSIG **RNO** • GO TO Step 13 of this Addendum. *(Step 12)*	
	BOP	VERIFY containment ventilation isolation: • Containment atmosphere radiation monitor isolation valves – CLOSED • Normal purge supply and exhaust fans – STOPPED • Supplemental purge supply and exhaust fans – STOPPED • Purge Dampers – CLOSED *(Step 13)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 2 **Event No.:** Addendum 5 and Event 7 & 8

Event Description: 0POP05-EO-EO00, Addendum 5, Actions for SI actuation.
Event 7 – SG 1B MSIV fails to close. **(CT-12)**
Event 8 – Train B EAB HVAC fails to actuate.

Time	Position	Required Operator Actions	Notes
	BOP	VERIFY ventilation actuation: • Control room HVAC – OPERATING IN EMERGENCY RECIRC • EAB HVAC - OPERATING IN EMERGENCY RECIRC **RNO** • **ACTUATE or MANUALLY PLACE EAB HVAC in EMERGENCY RECIRC. (Train B did not automatically start.)** **A/ER** • FHB HVAC - OPERATING IN EMERGENCY MODE • FHB Exhaust Fans - ONLY TWO TRAINS OPERATING o Exhaust booster fans o Main exhaust fans **RNO** • PERFORM the following: o IF three trains FHB exhaust fans running, THEN PLACE one train FHB exhaust fans in PULL TO LOCK. **A/ER** • SECURE one FHB filter train by PERFORMING the following: o PLACE the outlet damper Controller in manual o Manually close the outlet damper o VERIFY proper operation of filter train in service • Essential chilled water pumps – RUNNING • Essential chillers – RUNNING **RNO** • **IF an Essential Chiller fails to start, THEN SECURE the corresponding train of EAB HVAC. (Ess Chiller 12C will not run due to failed of ECW Pump 1C.)** • ECCS pump room fan coolers – RUNNING • AFW pump cubicle fans – RUNNING • FHB truck bay doors – CLOSED *(Step 14)*	
	BOP	NOTIFY Unit Supervisor that Addendum 5 is COMPLETE *(Step 15)*	

OPERATOR ACTIONS

Op-Test No.: 1 **Scenario No.:** 2 **Event No.:** Addendum 5 and Event 7 & 8

Event Description: 0POP05-EO-EO00, Addendum 5, Actions for SI actuation.
Event 7 – SG 1B MSIV fails to close. **(CT-12)**
Event 8 – Train B EAB HVAC fails to actuate.

Time	Position	Required Operator Actions	Notes
	SRO	IMPLEMENT Functional Restoration Procedures as required *(Step 16)*	
	SRO	RETURN TO procedure step in effect. *(Step 17)*	

CRITICAL TASK SUMMARY

Critical Task #12 for Event #7 – Manually complete Main Steam isolation for SG MSIV.	**Circle One** **SAT UNSAT**
Critical Task Bounding Criteria	Acceptance Criteria: Close MSIV 1B before a severe (orange path) challenge develops to either the subcriticality or the integrity CSF or before transition to EC21, whichever happens first.
Safety Significance	Failure to close the MSIVs under the postulated plant conditions causes challenges to CSFs beyond those irreparably introduced by the postulated conditions. Additionally, such an omission constitutes a failure by the crew to "demonstrate (the ability to) recognize a failure or an incorrect automatic actuation of an ESF system or component," and to "take one or more actions that would prevent a challenge to plant safety." In the typical FSAR, the analysis for a large steamline break assumes steamline isolation within a short time frame, on the order of seconds. The analysis typically assumes a steam system piping failure in which a single SG blows down completely. That is, the analysis assumes a fault that can be isolated from all but one SG. However, in the plant conditions postulated for this critical task, the break is located downstream of the MSIVs. Thus, closure of all MSIVs would terminate all uncontrolled blowdown. In this case, there is no reason for even a single SG to completely depressurize. If the crew allows all MSIVs to remain open, then all SGs depressurize uncontrollably and unnecessarily. Uncontrolled depressurization of all SGs causes an excessive rate of RCS cooldown, well beyond the conditions typically analyzed in the FSAR. The excessive cooldown rate creates large thermal stresses in the reactor pressure vessel and causes rapid insertion of a large amount of positive reactivity. Thus, failure to close the MSIVs under the postulated conditions can result in challenges to the following CSFs: • Integrity • Subcriticality Additionally, the ERG Background Document for ECA-2.1 specifically states the following: It should be noted that this event (with an extensive cooldown and subsequent repressurization) may result in a challenge to the Integrity Critical Safety Function. In this case the Integrity Critical Safety Function Status Tree may direct the operator to FR-P.1, RESPONSE TO IMMINENT PRESSURIZED THERMAL SHOCK CONDITION, for further actions. For some plants, the analysis for a large steamline break shows a return to reactor criticality caused by the large and rapid RCS cooldown, even though only a single SG is assumed to blowdown completely. Failure to isolate the SGs from the steamline break such that all SGs are allowed to blow down uncontrollably significantly worsens the power excursion. This worsening of the power excursion is unnecessary; it could be prevented simply by closing the MSIVs.

CRITICAL TASK SUMMARY

Critical Task #12 for Event #7 – Manually complete Main Steam isolation for SG MSIV.	**Circle One** **SAT UNSAT**
Cueing	Indication that main steamline isolation is required AND Indication that main steamline isolation has not actuated automatically • MSIVs indicate open • Indication of uncontrolled depressurization of SG 1B
Performance Indicator	Manipulation of controls as required to manually actuate steamline isolation Directing plant operator to locally close MSIV 1B by securing air per Addendum 6 of EO00 OR Addendum 1 of EO20.
Performance Feedback	MSIVs indicate closed Steam flow indication from all SGs decreases to zero All SGs stop depressurizing RCS cooldown stops
Justification for the chosen performance limit	Failure to manually close an MSIV under the postulated conditions demonstrates the inability of the crew to “recognize a failure or an incorrect automatic actuation of an ESF system or component.”
PWR Owners Group Appendix	CT-12 Manually complete Main Steam isolation for SG MSIV.
NOTE: (Per NUREG-1021, Appendix D) **If an operator or the Crew significantly deviates from or fails to follow procedures that affect the maintenance of basic safety functions, those actions may form the basis of a CT identified in the post-scenario review.**	

CRITICAL TASK SUMMARY

Critical Task #17 for Event #6 – Isolate a Faulted Steam Generator.	**Circle One** **SAT UNSAT**
Critical Task Bounding Criteria	Acceptance Criteria: Isolate faulted SG 1B, prior to exiting EO20.
Safety Significance	Failure to isolate a faulted SG that can be isolated causes challenges to CSFs beyond those irreparably introduced by the postulated conditions. Also, depending upon the plant conditions, it could constitute a failure by the crew to "demonstrate the ability to recognize a failure or an incorrect automatic actuation of an ESF system or component."Failure to isolate a faulted SG can result in challenges to the following CSFs: • Integrity • Subcriticality • Containment (if the break is inside containment) The plant-specific FSAR typically presents an analysis for a steam system piping failure in which only a single SG blows down completely. Typically, the transient is analyzed for the case in which offsite power is available (and RCPs are running) and for the case in which offsite power is lost simultaneously with accident initiation (and RCPs trip). The analyses for some plants show that, at about 5 minutes into the transient, reactor vessel inlet temperature has dropped from its hot zero power value by the following amounts: • About 150°F, when all RCPs are running • About 250°F, when no RCP is running The reactor vessel inlet temperature cooldown transient is worse for the case in which no RCP is running, for the following reasons. Natural circulation produces much lower RCS loop flow rates than does forced circulation. Natural circulation provides a lower mass flow rate of RCS fluid to mix with and heat the subcooled SI fluid injected into the cold leg before that fluid reaches the reactor vessel inlet. For some plants, neither of these transients (blowdown of a single SG with or without RCPs running) constitutes an ORANGE path challenge to the integrity CSF. However, if the faulted SG is not isolated, the cooldown transient for reactor vessel inlet temperature could result in an ORANGE path challenge to the integrity CSF, especially if RCPs are not running. The break may be located inside containment. In such a case, the uncontrolled depressurization of multiple SGs typically exceeds the conditions assumed in the safety analysis of the containment response to a faulted SG. The resulting containment pressure transient is a more serious challenge to the containment CSF than is the transient resulting from blowdown of only a single SG. RCP operation tends to worsen the challenge to the containment CSF because of the higher rate of heat transfer through the faulted SG to the containment atmosphere.

CRITICAL TASK SUMMARY

Critical Task #17 for Event #6 – Isolate a Faulted Steam Generator.	**Circle One** **SAT UNSAT**
Cueing	Both of the following: • Steam pressure and flow rate indications that make it possible to identify a single SG as faulted AND • Valve position and flow rate indication that AFW continues to be delivered to the faulted SG • Main steamline isolation has not actuated

Performance Indicator	Manipulation of controls as required to isolate the faulted SG
	• MSIVs indicate closed
	• Indication of feedline isolation
	• Feedwater control valves indicate closed
	• Feedline isolation valves indicate closed
	• Main feed pumps indicate tripped
	• Verifies all FWIV's closed.
	• Verifies all FWIB's closed.
	• Verifies all FW Preheater bypass valves closed.
	• Verifies all FW Regulating and Low Power FW Regulating Valves closed.
	• Isolates AFW flow to 'B' SG
	  • **Resets SI**
	  • **Resets ESF load sequencers**
	  • **Resets SG LO-LO level AFW actuations**
	  • Checks SG 1D intact
	  • **Closes 'B' SG AFW OCIV (AF-MOV-0065)**
	• Verifies SG "B" PORV closed
	• Verifies SG 'B' Blowdown and sample isolation valves closed *****

Performance Feedback	All MSIVs indicate closed Any depressurization of intact SGs stops Steam flow indication from faulted SG decreases to zero RCS cooldown stops Main feedwater flow rate indication of zero AFW flow rate indication to faulted SG of zero
Justification for the chosen performance limit	Failure to isolate a faulted steam generator under the postulated conditions demonstrates the inability of the crew to "recognize a failure or an incorrect automatic actuation of an ESF system or component."
PWR Owners Group Appendix	CT-17 Isolate a Faulted Steam Generator.
NOTE: (Per NUREG-1021, Appendix D) **If an operator or the Crew significantly deviates from or fails to follow procedures that affect the maintenance of basic safety functions, those actions may form the basis of a CT identified in the post-scenario review.**	

EXPECTED BOOTH COMMUNICATIONS

EVENT 1:

- There are no Booth Communications expected for Event 1.

EVENT 2:

- As I&C Maintenance or the Duty Maintenance Supervisor, if notified of the failure of PZR Level Transmitter, LT-0465, report that an I&C maintenance crew is being assembled for support. No further action is necessary.
- As Operations Manager, acknowledge the failure of PZR Level Transmitter, LT-0465. No further action is necessary.

EVENT 3:

- As Electrical Maintenance or the Duty Maintenance Supervisor, if notified of the trip of ECW Pump 1C, report that an Electrical maintenance crew is being assembled for support. No further action is necessary.
- As Operations Manager, acknowledge the trip of ECW Pump 1C. No further action is necessary.
- As a Plant Operator, if asked to check ECW Pump 1C, report that the breaker has indication of an overcurrent. The Pump motor has an acrid smell.

EVENT 4:

- As I&C Maintenance or the Duty Maintenance Supervisor, if notified of the failure of SG 1A steam flow channel, FT-0512, report that an I&C maintenance crew is being assembled for support. No further action is necessary.
- As Operations Manager, acknowledge the failure of SG 1A steam flow channel, FT-0512. No further action is necessary.

EVENT 5:

- As I&C Maintenance or the Duty Maintenance Supervisor, if notified of the failure of Loop A Cold Leg RTD TI-0410B, report that an I&C maintenance crew is being assembled for support. No further action is necessary.
- As Operations Manager, acknowledge the failure of Loop A Cold Leg RTD TI-0410B. No further action is necessary.

EVENT 6:

- There are no Booth Communications expected for Event 6.

EVENT 7:

- As a Plant Operator, if asked to close MSIV on SG 1B, report back that failing air to the MSIV successfully closed the valve.

EVENT 8:

- There are no Booth Communications expected for Event 8.

EXPECTED BOOTH ACTIONS

1. **NOTE: Trigger Event 4 prior to crew swapping HVAC Trains during Event 3. This is to ensure Event 8 will NOT be affected.**
2. If asked to open the Deaerator High Level Dump Bypass Valves, then trigger the step for ‘DA HLD Bypass Valves FW-486 & FW-487’.
3. If asked to fill the AFWST, then trigger the step for ‘AFWST Makeup’.
4. If asked to close SG 1B MSIV, trigger the step for ‘Close MSIV’

SIMULATOR SETUP

NOTE

ALL Annunciator Response Procedures (ARP's) must be checked if this scenario is the first to be run on this day. Setup for subsequent runs of this scenario only requires those ARP's that were actually marked in to be checked.

Instructors running the scenario must keep track of which ARP's these are, otherwise, all will have to be checked for subsequent scenarios as well.

Each time before running the scenario check and/or clean the following:									
Specific Scenario Procedures	**1st √**	**Peer √**	**2nd √**	**Peer √**	**3rd √**	**Peer √**	**4th √**	**Peer √**	**After Last Scenario**
0POP04-RP-0002, Loss of Auto PZR Level Control									
0POP09-AN-02M4, C7 ECW Pump 1C Trip									
0POP04-FW-0001, Loss of SG Level Control									
0POP04-RP-0004, Failure of RCS Loop RTD Protection Channel									
0POP05-EO-EO00, Reactor Trip or Safety Injection									
0POP05-EO-EO20, Faulted SG Isolation									
Other Procedures Used By Students During Scenario Including POP09s.	**1st √**	**Peer √**	**2nd √**	**Peer √**	**3rd √**	**Peer √**	**4th √**	**Peer √**	**After Last Scenario**
Miscellaneous Items to Restore	**1st √**	**Peer √**	**2nd √**	**Peer √**	**3rd √**	**Peer √**	**4th √**	**Peer √**	**After Last Scenario**
STA ICS Screens to PD Menu									
***Clear ICS Trend Groups**									
Student Selected ICS Points changed to U1118									
Control Panel ICS Screens to Normal									
RM 11 History and Screens									
RM 23 – No Alarm Indications									

* On ICS Drop 239 in simulator booth open up 'Simstation Test Interface'
With Simulator in FREEZE - Change 'Control Mode' to 'STANDALONE'
Toggle 'RESET' on 'Trend Data', then change 'Control Mode' back to 'PMC'

SIMULATOR SETUP (cont'd.)

NOTE

The Scenario Lesson Plan MUST be run from the left most Instructor Station in Simulator Booth.

For the LOT 25 NRC Exam the Simulator Configuration must be set to:
'wsTrain_Oct2021/Train_Oct2021'

- Log into Instructor Workstation as 'lotnrc' user, open Orchid (nstps server), then 'Unlock' Initial Conditions Group 'lotnrc'.
- Reset to IC #195 and perform the following:
  - Switch Check
  - Ensure red light on end of CP-010 off
  - Ensure ICS Annunciators have stopped counting up
- Go to RUN and perform the following:
  - Ensure Simulator is ready by performing applicable checkoffs from 0PNT01-ZT-0304, LOR Conduct of Simulator Training, Addendum 5, Simulator Readiness Checklist.
  - Ensure VCT Makeup Integrators are set as follows:
    - Momentarily place RC M/U CONT to STOP and then START to reset BA BATCH/GALLONS and TOT M/U BATCH/GALLONS counters to zero.
    - Reset BA BATCH/GALLONS setpoint to 0 gallons and reset TOT M/U BATCH/GALLONS setpoint to 10 gallons.
    - Verify BA Controller Pot setting is 2.50
- Open lesson plan for 'Scenario 5' in 'lotnrc' directory for LOT 25, then EXECUTE lesson plan. These actions will set up any initial conditions for the scenario.
- If this scenario IC has changing conditions (i.e. Xenon is changing, etc.), then place the simulator in FREEZE, otherwise it is OK to leave in RUN.
- Run the scenario in accordance with the next section, 'Scenario Instructions'.

SCENARIO INSTRUCTIONS

NOTE
Steps 1 to 4 below can be performed in the LOR Debrief Room prior to the crew coming into the Simulator provided exam security measures are taken.

1. Provide Shift Turnover sheets to the crew and review the information.
2. Allow crew to brief lowering RX power to 85-90%.
3. Ensure the Beacon book from the simulator is available to the crew if they are in the LOR Debrief Room.
4. Review the Simulator Differences list with the crew if needed.
5. When signaled by Simulator Staff, have the crew perform their board walkdown and inform the floor instructor when ready to take the watch.
6. Ensure the simulator is in RUN and verify simulator clock is set correctly. Note the time that the Crew takes the watch. _____ Start Time.

NOTE

Malfunction Step and/or Lesson Plan Steps (Events) are triggered upon the Lead Examiners signal during the scenario unless an agreed upon time is discussed with the examiner prior to the start of the scenario.

Always 'TRIGGER' events in the Simulator Scenario Lesson Plans. This way delays associated with events will take place as intended.

Refer to 'EXPECTED BOOTH COMMUNCATIONS' and 'EXPECTED BOOTH ACTIONS' Sections for instructions for Instructor actions during the scenario.

7. Trigger the step titled 'Start Chart' and ensure specified Recorded Parameters for the scenario begin recording as the scenario runs. If the chart speed is NOT set to 5400 seconds (90 minutes) then perform the following:
   - Under 'CHARTS' click on 'SET TIME'
   - In the dialog box enter 5400 seconds (90 minutes)
   - Click OK.
8. For Event #1 the crew will lower RX power to 85-90%
9. When signaled by Lead Examiner, trigger **MALFUNCTION STEP –** This will insert Step #1, Event #2.
10. When signaled by Lead Examiner, trigger **STEP 2 –** Event #3
11. When signaled by Lead Examiner, trigger **STEP 3 –** Event #4
12. Place simulator in FREEZE when cued by the Lead Examiner to terminate scenario.
13. DO NOT RESET simulator until the steps on the next page are completed and all Examiners have completed Follow-Up Questioning.

SCENARIO INSTRUCTIONS (cont'd.)

NOTE
Some scenarios will have more than one chart. For these, each chart file must be separately saved with a unique filename.

14. Saving Recorded Parameters Data
    - Click on the 'Charts' icon on the left side of the screen
    - Select 'Pause' icon, then select 'All'
    - Click on the 'Print Chart' icon, then select 'All'
    - This will bring up a window in the TASK BAR called PRIMOPDF.
    - Click on 'Create PDF'
    - This will bring up a File Save As window.
    - Save to folder **c:\Users\lotnrc\Desktop\LOT25 Charts**. The file name will be 'LOT25 Scenario 5' followed by a name that identifies the crew (e.g. 'Crew A).
    - Save the new file. It will be saved in a folder already on the desktop. LOT25 Charts.
15. Saving Scenario SAM (Simulator Action Monitor)
    - Under 'TOOLS' click on 'SAM'
    - In the dialog box that comes up click on 'SAVE TO'
    - Save as a 'TEXT FILE' to folder **c:\Users\lotnrc\Desktop\LOT25 Charts.** The file name will be 'LOT25 SAM INFO Scenario 5' followed by a name that identifies the crew (e.g. 'Crew A).

SCENARIO – 05

	0POP01-ZQ-0022		
Plant Operations Shift Routines			
For Training Only	Shift Turnover Checklist{ TC "Form 6, Reactor Operator Shift Turnover Checklist" \f C \l "2" }		Page 1 of 1

PART I - To be completed prior to shift turnover.

Unit: **1** Off- Going Shift: **Days / Nights** Date: **Today** Mode: **1**

Dilution			Boration			Control Rods		
Current Setpoint	1% Pwr Change	1° F Change	Current Setpoint	1% Pwr Change	1° F Change	Current Position	1% Pwr Change	1° F Change
10	**240**	**263**	**6** flushing with **15**	**36**	**39**	**227**	**9**	**9**
As Required			As Required			As Required		

ΔI Target	Channel	RCS Boron
-3.73%	**U1144**	**880**

Unit 1 Status

- Mode 1, 85% Power
- Core burnup is 150 MWD / MTU, BOL

Load Reduction:

- 100-90%/1hr = **173**
- 100-80%/10min = **408**
- 100-75%/30min = **471**
- 100-60%/1hr = **454**
- 100-50%/10min = **727**

Information:

- The Crew is directed to raise power to 90%. The previous crew was at Step 7.58 of 0POP03-ZG-0005, Reactor Startup to 100% following an inadvertent reactor trip. The previous crew was diluting 75 gallons every 5 minutes when at .25% per minute on the Main Turbine. Fuel conditioning requirements have been met.
- BAT 1A & 1B Concentrations are 7300 ppm
- Fuel Handling Building truck bay doors are closed
- No personnel are in containment
- Ron Gibbs has the duty
- The NLO compliment is 5 watch standers and a head operator

ECO/LCO/RAsCAL:

None.

Simulator Differences

- Axial Flux Difference Target is per ICS. It may not match the curve book, but the turnover sheets should be accurate.
- Various recorders in the simulator are different model than in the plant and have a slightly different display. QDPS Displays on CP-001 and ASP are different than the plant.
- The Vibration Monitoring HMI panel located on CP-014 and FP Systems are not modeled in the simulator.
- The Desk Top Computer generated Fire Alarm in the Simulator sounds different than the actual Fire Alarm in the plant.
- The Control Rod Step Counters in the Simulator are LCD instead of thumbwheels.
- Simulator ICS Health Screens are different than in the plant and 'Redefined Reports' are not available.
- The plant has some ICS calculated points for RCS inventories that are not in the simulator. (U0112, U0113, U0114, U0116, U0118 and U0120)
- CRE HVAC noise is not simulated.
- Various miscellaneous items such as book carts, cameras, etc. are located in the simulator and are either not in the unit control rooms or in different locations.
- Raising or Lowering Main Generator MVARs does NOT affect Grid Voltage.
- RM-23 FILT, PURGE and Check Source features DO NOT function.
- SI Accumulator control bands for pressure, level and low pressure alarm setpoints do not match the Temporary Modifications change in Unit 1 (TI-20-4780-30). Simulator uses the Unit 2 control bands and low pressure alarm setpoint.
- During a Unit 1 transient event, 'C' Steam Generator (C-S/G) demonstrated a flow and level trend that deviated from the other three S/Gs where C-S/G exhibited a more rapid lowering in level compared to the other three S/Gs prior to the reactor trip. The simulator does not exhibit the same deviation shown by C-S/G. (Ref. Cold weather transient, Unit 1, 2/15/2021; CR 21-2894.)

Facility: South Texas Project Date of Exam: 7-12-21 Operating Test No.: LOT 25

APPLICANT Crew A	EVENT TYPE	Scenarios 1 CREW POSITION SRO	1 ATC	1 BOP	3 SRO	3 ATC	3 BOP	4 SRO	4 ATC	4 BOP	CREW POSITION SRO	CREW POSITION ATC	CREW POSITION BOP	TOTAL	MINIMUM(*) R	I	U
RO ☐ SRO-I8 ■ SRO-U ☐	RX	1					1		**1**					**3**	1	**1**	0
	NOR													**0**	1	**1**	1
	I/C	2,3, 4,6, 7,8					2,4, 6,7		**2,3**					**12**	4	**4**	2
	MAJ	5					5		**6**					**3**	2	**2**	1
	TS	2,3												**2**	0	**2**	2
RO ☐ SRO-I9 ■ SRO-U ☐	RX			1		1		**1**						**3**	1	**1**	0
	NOR													**0**	1	**1**	1
	I/C			3,4, 6,7		3,4, 8		**2,3, 4,5, 7,8**						**13**	4	**4**	2
	MAJ			5		5		**6**						**3**	2	**2**	1
	TS							**2,4**						**2**	0	**2**	2
RO ☐ SRO-I11 ■ SRO-U ☐	RX		1		1									**2**	1	**1**	0
	NOR													**0**	1	**1**	1
	I/C		2,4, 8		2,3, 4,5, 7,8					**4,5, 7,8**				**13**	4	**4**	2
	MAJ		5		5					**6**				**3**	2	**2**	1
	TS				3,4									**2**	0	**2**	2

Instructions:

1. Check the applicant level and enter the operating test number and Form ES-D-1 event numbers for each event type; TS are not applicable for RO applicants. ROs must serve in both the "at-the-controls" (ATC) and "balance-of-plant" (BOP) positions. Instant SROs (SRO-I) must serve in both the SRO and the ATC positions, including at least two instrument or component (I/C) malfunctions and one major transient, in the ATC position. If an SRO-I *additionally* serves in the BOP position, one I/C malfunction can be credited toward the two I/C malfunctions required for the ATC position.
2. Reactivity manipulations may be conducted under normal or *controlled* abnormal conditions (refer to Section D.5.d) but must be significant per Section C.2.a of Appendix D. (*) Reactivity and normal evolutions may be replaced with additional instrument or component malfunctions on a one-for-one basis.
3. Whenever practical, both instrument and component malfunctions should be included; only those that require verifiable actions that provide insight to the applicant's competence count toward the minimum requirements specified for the applicant's license level in the right-hand columns.
4. For licensees that use the ATC operator primarily for monitoring plant parameters, the chief examiner may place SRO-I applicants in either the ATC or BOP position to best evaluate the SRO-I in manipulating plant controls.

Facility: South Texas Project		Date of Exam: 7-12-21												Operating Test No.: LOT 25			
APPLICANT	EVENT TYPE	Scenarios												TOTAL	MINIMUM(*)		
		1			4			5									
		CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION						
Crew B		SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP		R	I	U
RO ☐ SRO-I7 ■ SRO-U ☐	RX			1		**1**		1						**3**	1	**1**	0
	NOR													**0**	1	**1**	1
	I/C			**3,4, 6,7**		**2,3**		2,3, 4,5, 7,8						**12**	4	**4**	2
	MAJ			5		**6**		6						**3**	2	**2**	1
	TS							2,3, 5						**3**	0	**2**	2
RO ☐ SRO-I12 ■ SRO-U ☐	RX	1							1					**2**	1	**1**	0
	NOR													**0**	1	**1**	1
	I/C	**2,3, 4,6, 7,8**					**4,5, 7,8**		2,5					**12**	4	**4**	2
	MAJ	5					**6**		6					**3**	2	**2**	1
	TS	2,3												**2**	0	**2**	2
RO ☐ SRO-I3 ■ SRO ☐	RX		1		**1**					1				**3**	1	**1**	0
	NOR													**0**	1	**1**	1
	I/C		**2,4, 8**		**2,3, 4,5, 7,8**					3,4, 7,8				**13**	4	**4**	2
	MAJ		5		**6**					6				**3**	2	**2**	1
	TS				**2,4**									**2**	0	**2**	2

Instructions:

1. Check the applicant level and enter the operating test number and Form ES-D-1 event numbers for each event type; TS are not applicable for RO applicants. ROs must serve in both the "at-the-controls" (ATC) and "balance-of-plant" (BOP) positions. Instant SROs (SRO-I) must serve in both the SRO and the ATC positions, including at least two instrument or component (I/C) malfunctions and one major transient, in the ATC position. If an SRO-I *additionally* serves in the BOP position, one I/C malfunction can be credited toward the two I/C malfunctions required for the ATC position.
2. Reactivity manipulations may be conducted under normal or *controlled* abnormal conditions (refer to Section D.5.d) but must be significant per Section C.2.a of Appendix D. (*) Reactivity and normal evolutions may be replaced with additional instrument or component malfunctions on a one-for-one basis.
3. Whenever practical, both instrument and component malfunctions should be included; only those that require verifiable actions that provide insight to the applicant's competence count toward the minimum requirements specified for the applicant's license level in the right-hand columns.
4. For licensees that use the ATC operator primarily for monitoring plant parameters, the chief examiner may place SRO-I applicants in either the ATC or BOP position to best evaluate the SRO-I in manipulating plant controls.

Rev. 1

Facility: South Texas Project		Date of Exam: 7-12-21												Operating Test No.: LOT 25			
APPLICANT	EVENT TYPE	Scenarios												TOTAL	MINIMUM(*)		
		1			3			5									
		CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION						
Crew C		SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP		R	I	U
RO-1 ■ SRO-I ☐ SRO-U ☐	RX		1				1			1				3	1	1	0
	NOR													0	1	1	1
	I/C		2,4, 8				2,4, 6,7			3,4 ,7, 8				11	4	4	2
	MAJ		5				5			6				3	2	2	1
	TS													0	0	2	2
RO-2 ■ SRO-I ☐ SRO-U ☐	RX			1		1								2	1	1	0
	NOR													0	1	1	1
	I/C			3,4, 6,7		3,4, 8								7	4	4	2
	MAJ			5		5								2	2	2	1
	TS													0	0	2	2
RO ☐ SRO-I3 ■ SRO-U ☐	RX	1			1				1					3	1	1	0
	NOR													0	1	1	1
	I/C	2,3, 4,6, 7,8			2,3,4 ,5,7, 8				2,5					14	4	4	2
	MAJ	5			5				6					3	2	2	1
	TS	2,3			3,4									4	0	2	2
RO ☐ SRO-I ☐ SRO-U1 ■	RX							1						1	1	1	0
	NOR													0	1	1	1
	I/C							2,3, 4,5, 7,8						6	4	4	2
	MAJ							6						1	2	2	1
	TS							2,3, 5						3	0	2	2

Instructions:

1. Check the applicant level and enter the operating test number and Form ES-D-1 event numbers for each event type; TS are not applicable for RO applicants. ROs must serve in both the "at-the-controls" (ATC) and "balance-of-plant" (BOP) positions. Instant SROs (SRO-I) must serve in both the SRO and the ATC positions, including at least two instrument or component (I/C) malfunctions and one major transient, in the ATC position. If an SRO-I *additionally* serves in the BOP position, one I/C malfunction can be credited toward the two I/C malfunctions required for the ATC position.
2. Reactivity manipulations may be conducted under normal or *controlled* abnormal conditions (refer to Section D.5.d) but must be significant per Section C.2.a of Appendix D. (*) Reactivity and normal evolutions may be replaced with additional instrument or component malfunctions on a one-for-one basis.
3. Whenever practical, both instrument and component malfunctions should be included; only those that require verifiable actions that provide insight to the applicant's competence count toward the minimum requirements specified for the applicant's license level in the right-hand columns.
4. For licensees that use the ATC operator primarily for monitoring plant parameters, the chief examiner may place SRO-I applicants in either the ATC or BOP position to best evaluate the SRO-I in manipulating plant controls.

Facility: South Texas Project	Date of Exam: 7-12-21	Operating Test No.: LOT 25

APPLICANT / Crew D	EVENT TYPE	Scenarios 3 — CREW POSITION SRO	ATC	BOP	4 — CREW POSITION SRO	ATC	BOP	5 — CREW POSITION SRO	ATC	BOP	CREW POSITION SRO	ATC	BOP	TOTAL	MINIMUM(*) R	I	U
RO ☐ SRO-I1 ■ SRO-U ☐	RX			1		**1**		1						**3**	1	**1**	0
	NOR													**0**	1	**1**	1
	I/C			**2,4, 6,7**		**2,3**		2,3, 4,5, 7,8						**12**	4	**4**	2
	MAJ			5		**6**		6						**3**	2	**2**	1
	TS							2,3, 5						**3**	0	**2**	2
RO ☐ SRO-I5 ■ SRO-U ☐	RX	1							1					**2**	1	**1**	0
	NOR													**0**	1	**1**	1
	I/C	**2,3,4 ,5,7, 8**					**4,5, 7,8**		2,5					**12**	4	**4**	2
	MAJ	5					**6**		6					**3**	2	**2**	1
	TS	3,4												**2**	0	**2**	2
RO ☐ SRO-I10 ■ SRO ☐	RX		1		**1**					1				**3**	1	**1**	0
	NOR													**0**	1	**1**	1
	I/C		3,4, 8		**2,3, 4,5, 7,8**					3,4 ,7, 8				**13**	4	**4**	2
	MAJ		5		**6**					6				**3**	2	**2**	1
	TS				**2,4**									**2**	0	**2**	2

Instructions:

1. Check the applicant level and enter the operating test number and Form ES-D-1 event numbers for each event type; TS are not applicable for RO applicants. ROs must serve in both the "at-the-controls" (ATC) and "balance-of-plant" (BOP) positions. Instant SROs (SRO-I) must serve in both the SRO and the ATC positions, including at least two instrument or component (I/C) malfunctions and one major transient, in the ATC position. If an SRO-I *additionally* serves in the BOP position, one I/C malfunction can be credited toward the two I/C malfunctions required for the ATC position.
2. Reactivity manipulations may be conducted under normal or *controlled* abnormal conditions (refer to Section D.5.d) but must be significant per Section C.2.a of Appendix D. (*) Reactivity and normal evolutions may be replaced with additional instrument or component malfunctions on a one-for-one basis.
3. Whenever practical, both instrument and component malfunctions should be included; only those that require verifiable actions that provide insight to the applicant's competence count toward the minimum requirements specified for the applicant's license level in the right-hand columns.
4. For licensees that use the ATC operator primarily for monitoring plant parameters, the chief examiner may place SRO-I applicants in either the ATC or BOP position to best evaluate the SRO-I in manipulating plant controls.

Facility: South Texas Project		Date of Exam: 7-12-21												Operating Test No.: LOT 25			
APPLICANT	EVENT TYPE	Scenarios												TOTAL	MINIMUM(*)		
		1			3			4									
		CREW POSITION			CREW POSITION			CREW POSITION			CREW POSITION						
Crew E		SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP	SRO	ATC	BOP		R	I	U
RO ☐ SRO-I2 ■ SRO-U ☐	RX	1					1		**1**					3	1	**1**	0
	NOR													0	1	**1**	1
	I/C	2,3, 4,6, 7,8					2,4, 6,7		**2,3**					12	4	**4**	2
	MAJ	5					5		**6**					3	2	**2**	1
	TS	2,3												2	0	**2**	2
RO ☐ SRO-I4 ■ SRO-U ☐	RX		1		1									2	1	**1**	0
	NOR													0	1	**1**	1
	I/C		**2,4, 8**		**2,3,4 ,5,7, 8**					**4,5 ,7, 8**				13	4	**4**	2
	MAJ		5		5					**6**				3	2	**2**	1
	TS				3,4									2	0	**2**	2
RO ☐ SRO-I6 ■ SRO ☐	RX			1		1		**1**						3	1	**1**	0
	NOR													0	1	**1**	1
	I/C			3,4, 6,7		3,4, 8		**2,3, 4,5, 7,8**						13	4	**4**	2
	MAJ			5		5		**6**						3	2	**2**	1
	TS							**2,4**						2	0	**2**	2

Instructions:

1. Check the applicant level and enter the operating test number and Form ES-D-1 event numbers for each event type; TS are not applicable for RO applicants. ROs must serve in both the "at-the-controls" (ATC) and "balance-of-plant" (BOP) positions. Instant SROs (SRO-I) must serve in both the SRO and the ATC positions, including at least two instrument or component (I/C) malfunctions and one major transient, in the ATC position. If an SRO-I *additionally* serves in the BOP position, one I/C malfunction can be credited toward the two I/C malfunctions required for the ATC position.
2. Reactivity manipulations may be conducted under normal or *controlled* abnormal conditions (refer to Section D.5.d) but must be significant per Section C.2.a of Appendix D. (*) Reactivity and normal evolutions may be replaced with additional instrument or component malfunctions on a one-for-one basis.
3. Whenever practical, both instrument and component malfunctions should be included; only those that require verifiable actions that provide insight to the applicant's competence count toward the minimum requirements specified for the applicant's license level in the right-hand columns.
4. For licensees that use the ATC operator primarily for monitoring plant parameters, the chief examiner may place SRO-I applicants in either the ATC or BOP position to best evaluate the SRO-I in manipulating plant controls.

Facility: South Texas Project	Date of Examination: 7-12-21				Operating Test No.: LOT 25											
Competencies	APPLICANTS – Crew A															
	RO ☐ SRO-I8 ■ SRO-U ☐				RO ☐ SRO-I9 ■ SRO-U ☐				RO ☐ SRO-I11 ■ SRO-U ☐							
	SCENARIO				SCENARIO				SCENARIO							
	1u	3b	4a		1b	3a	4u		1a	3u	4b					
Interpret/Diagnose Events and Conditions	2,3, 4,6, 7,8	2,4	2,3		1,4, 6	3,4	2,3, 4,5, 7,8		2,3, 4,6	2,3, 4,6, 7,8	4,5					
Comply With and Use Procedures (1)	All	2,4, 6,7	2,3, 6		1,4, 6,7	3,4, 8	All		2,3, 4,6	All	4,5, 7,8					
Operate Control Boards (2)	N/A	2,4, 5,6, 7	2,3, 6		1,4, 5,6, 7	3,4, 5,8	N/A		2,3, 4,6, 8	N/A	4,5, 6,7, 8					
Communicate and Interact	All	All	All		All	All	All		All	All	All					
Demonstrate Supervisory Ability (3)	All	N/A	N/A		N/A	N/A	All		N/A	All	N/A					
Comply With and Use Tech. Specs. (3)	2,3	N/A	N/A		N/A	N/A	2,4		N/A	3,4	N/A					

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

Instructions:

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

Facility: South Texas Project	Date of Examination: 7-12-21				Operating Test No.: LOT 25											
Competencies	**APPLICANTS – Crew B**															
	RO ☐ SRO-I7 ■ SRO-U ☐				RO ☐ SRO-I12 ■ SRO-U ☐				RO ☐ SRO-I13 ■ SRO-U ☐							
	SCENARIO				SCENARIO				SCENARIO							
	1b	4a	5u		1u	4b	5a		1a	4u	5b					
Interpret/Diagnose Events and Conditions	1,4, 6	2,3	2,3, 4,5, 6,7, 8		2,3, 4,6, 7,8	4,5	2,5		2,3, 4,6	2,3, 4,5, 7,8	3,4					
Comply With and Use Procedures (1)	1,4, 6,7	2,3, 6	All		All	4,5, 7,8	2,5		2,3, 4,6	All	3,4, 7,8					
Operate Control Boards (2)	1,4, 5,6, 7	2,3, 6	N/A		N/A	4,5, 6,7, 8	2,5, 6		2,3, 4,6, 8	N/A	3,4, 6,7, 8					
Communicate and Interact	All	All	All		All	All	All		All	All	All					
Demonstrate Supervisory Ability (3)	N/A	N/A	All		All	N/A	N/A		N/A	All	N/A					
Comply With and Use Tech. Specs. (3)	N/A	N/A	2,3, 5		2,3	N/A	N/A		N/A	2,4	N/A					

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

Instructions:

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

Facility: South Texas Project	Date of Examination: 7-12-21				Operating Test No.: LOT 25											
Competencies	**APPLICANTS – Crew C**															
	RO ☐ SRO-I3 ■ SRO-U ☐				**RO-1 ■ SRO-I ☐ SRO-U ☐**				**RO-2 ■ SRO-I ☐ SRO-U ☐**				**RO ☐ SRO-I ☐ SRO-U1 ■**			
	SCENARIO				**SCENARIO**				**SCENARIO**							
	1u	**3u**	**5a**		**1a**	**3b**	**5b**		**1b**	**3a**					**5u**	
Interpret/Diagnose Events and Conditions	2,3, 4,6, 7,8	2,3, 4,6, 7,8	2,5		2,3, 4,6	2,4	3,4		1,4, 6	3,4					2,3, 4,5, 6,7, 8	
Comply With and Use Procedures (1)	All	All	2,5		2,3, 4,6	2,4, 6,7	3,4, 7,8		1,4, 6,7	3,4, 8					All	
Operate Control Boards (2)	N/A	N/A	2,5, 6		2,3, 4,6, 8	2,4, 5,6, 7	3,4, 6,7, 8		1,4, 5,6, 7	3,4, 5,8					N/A	
Communicate and Interact	All	All	All		All	All	All		All	All					All	
Demonstrate Supervisory Ability (3)	All	All	N/A		N/A	N/A	N/A		N/A	N/A					All	
Comply With and Use Tech. Specs. (3)	2,3	3,4	N/A		N/A	N/A	N/A		N/A	N/A					2,3, 5	

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

Instructions:

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

Facility: South Texas Project	Date of Examination: 7-12-21	Operating Test No.: LOT 25

Competencies	APPLICANTS – Crew D															
	RO ☐ SRO-I1 ■ SRO-U ☐				RO ☐ SRO-I5 ■ SRO-U ☐				RO ☐ SRO-I10 ■ SRO-U ☐							
	SCENARIO				SCENARIO				SCENARIO							
	3b	4a	5u		3u	4b	5a		3a	4u	5b					
Interpret/Diagnose Events and Conditions	2,4	2,3	2,3, 4,5, 6,7, 8		2,3, 4,6, 7,8	4,5	2,5		3,4	2,3, 4,5, 7,8	3,4					
Comply With and Use Procedures (1)	2,4, 6,7	2,3, 6	All		All	4,5, 7,8	2,5		3,4, 8	All	3,4, 7,8					
Operate Control Boards (2)	2,4, 5,6, 7	2,3, 6	N/A		N/A	4,5, 6,7, 8	2,5, 6		3,4, 5,8	N/A	3,4, 6,7, 8					
Communicate and Interact	All	All	All		All	All	All		All	All	All					
Demonstrate Supervisory Ability (3)	N/A	N/A	All		All	N/A	N/A		N/A	All	N/A					
Comply With and Use Tech. Specs. (3)	N/A	N/A	2,3, 5		3,4	N/A	N/A		N/A	2,4	N/A					

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

Instructions:

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

Facility: South Texas Project	Date of Examination: 7-12-21	Operating Test No.: LOT 25

Competencies	APPLICANTS – Crew E															
	RO ☐ SRO-I2 ■ SRO-U ☐				RO ☐ SRO-I4 ■ SRO-U ☐				RO ☐ SRO-I6 ■ SRO-U ☐							
	SCENARIO				SCENARIO				SCENARIO							
	1u	3b	4a		1a	3u	4b		1b	3a	4u					
Interpret/Diagnose Events and Conditions	2,3, 4,6, 7,8	2,4	2,3		2,3, 4,6	2,3, 4,6, 7,8	4,5		1,4, 6	3,4	2,3, 4,5, 7,8					
Comply With and Use Procedures (1)	All	2,4, 6,7	2,3, 6		2,3, 4,6	All	4,5, 7,8		1,4, 6,7	3,4, 8	All					
Operate Control Boards (2)	N/A	2,4, 5,6, 7	2,3, 6		2,3, 4,6, 8	N/A	4,5, 6,7, 8		1,4, 5,6, 7	3,4, 5,8	N/A					
Communicate and Interact	All	All	All		All	All	All		All	All	All					
Demonstrate Supervisory Ability (3)	All	N/A	N/A		N/A	All	N/A		N/A	N/A	All					
Comply With and Use Tech. Specs. (3)	2,3	N/A	N/A		N/A	3,4	N/A		N/A	N/A	2,4					

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

Instructions:

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