

Facility: <u>South Texas Project</u>		Date of Examination: <u>7-17-2023</u>
Examination Level: RO ☒ SRO ☐		Operating Test Number: <u>LOT 27 NRC Exam</u>
Administrative Topic (Step 1)	Activity and Associated K/A (Step 2)	Type Code (Step 3)
Conduct of Operations A1	Determine H2 Recombiner Power Setting KA: 2.1.23 IMPORTANCE: 4.3 Ability to perform general and/or normal operation procedures during any plant condition.	M,R
Conduct of Operations A2	Calculate Time to Boil in the RCS KA: 2.1.25 IMPORTANCE: 3.9 Ability to interpret reference materials, such as graphs, curves, and tables.	M, R
Equipment Control A3	Determine the Isolation Boundaries for a Leak in the RHR System KA: 2.2.15 IMPORTANCE: 3.9 Ability to determine the expected plant configuration using design and configuration control documentation, such as drawings, lineups, or tagouts.	D, R
Radiation Control A4	Estimate Discharge Flow for WMT Discharge with Flow Instrument Inoperable KA: 2.3.11 IMPORTANCE: 3.8 Ability to control radiation releases.	N, R

Facility: <u>South Texas Project</u>			Date of Examination: <u>7-17-2023</u>		
Examination Level: RO ☐ SRO ☒			Operating Test Number: <u>LOT 27 NRC Exam</u>		
Administrative Topic (Step 1)		Activity and Associated K/A (Step 2)		Type Code (Step 3)	
Conduct of Operations A5		Review a Shutdown Margin Calculation KA: 2.1.37 IMPORTANCE: 4.6 Knowledge of procedures, guidelines, or limitations associated with reactivity management.		M, R	
Conduct of Operations A6		Review Control Room Logs KA: 2.1.18 IMPORTANCE: 3.8 Ability to make accurate, clear, and concise logs, records status boards, and reports.		M, R	
Equipment Control A7		Review an ECO for a LHSI Pump KA: 2.2.13 IMPORTANCE: 4.3 Knowledge of tagging and clearance procedures.		N, R	
Radiation Control A8		Determine Personnel Exposure Limits KA: 2.3.14 IMPORTANCE: 3.8 Knowledge of radiation or contamination hazards that may arise during normal, abnormal, or emergency conditions or activities, such as analysis and interpretation of radiation and activity readings as they pertain to administrative, normal, abnormal, and emergency procedures or to analysis and interpretation of coolant activity, including comparison to emergency plan or regulatory limits.		M, R	
Emergency Plan A9		Determine EAL Classification KA: 2.4.41 IMPORTANCE: 4.6 Knowledge of the emergency actions level thresholds and classifications.		M, R	

Instructions for completing Form 3.2-1, "Administrative Topics Outline"

1. For each license level, determine the number of administrative job performance measures (JPMs) and topic areas as follows:

Topic	Number of JPMs		* Reactor operator (RO) applicants do not need to be evaluated on every topic (i.e., "Equipment Control," "Radiation Control," or "Emergency Plan" can be omitted by doubling up on "Conduct of Operations"), unless the applicant is taking only the administrative topics portion of the operating test (with a waiver or excusal of the other portions).
	RO*	SRO and RO Retakes	
Conduct of Operations	1 (or 2)	2	
Equipment Control	1 (or 0)	1	
Radiation Control	1 (or 0)	1	
Emergency Plan	1 (or 0)	1	
Total	4	5	

2. Enter the associated knowledge and abilities (K/A) statement and summarize the administrative activities for each JPM.

3. For each JPM, specify the type codes for location and source as follows:

Location:

(C)ontrol room, (S)imulator, or Class(R)oom

Source and Source Criteria:

(P)revious two NRC exams (no more than one JPM that is **randomly selected** from last two NRC exams)

(D)irect from bank (no more than three for ROs, no more than four for SROs and RO retakes)

(N)ew or Significantly (M)odified from bank (no fewer than one)

STP LOT-26
NRC Admin JPM Description

RO

- (A1) Determine H2 Recombiner Power Setting
Demonstrate the ability to determine the H2 Recombiner Power setting given plant conditions IAW 0POP02-CG-0001, Electric Hydrogen Recombiners.
Modified from LOT 23
- (A2) Calculate Time to Boil in the RCS
Demonstrate the ability, using a procedure graph, to calculate time to boil in the RCS during a loss of all RHR at mid-loop per Addendum 6 of 0POP04-RH-0001, Loss of Residual Heat Removal.
Modified from LOT 24
- (A3) Determine the Isolation Boundaries for a Leak in the RHR System
Demonstrate the ability to determine the isolation boundaries need to isolate a leak in the RHR system using the associated reference drawings.
Last Used LOT 20
- (A4) Estimate Discharge Flow for WMT Discharge with Flow Instrument Inoperable
Demonstrate the ability to calculate the estimated discharge flow rate for a WMT discharge when the normal flow instrument is inoperable per 0POP02-WL-0100, Liquid Waste Release.
Last Used: New

SRO**(A5) Review a Shutdown Margin Calculation**

Demonstrate the ability to review and determine the accuracy of a Shutdown Margin Calculation per 0PSP10-ZG-0003, Shutdown Margin Verification – MODES 3, 4 and 5 and state any TS Action Statements (including action verbiage) that apply.

Modified from LOT-18

(A6) Review Control Room Logs

Demonstrate the ability to properly review Operator Logs and determine necessary actions for out of specification readings IAW 0PSP03-ZQ-0028, Operator Logs, and 0POP01-ZQ-0022, Plant Operator Shift Routines.

Modified from LOT-19

(A7) Review an ECO for a LHSI Pump

Demonstrate the ability to perform a proper review of an Equipment Clearance Order per 0PGP03-ZO-ECO1A, Equipment Clearance Order Instructions.

New

(A8) Determine Personnel Exposure Limits

Demonstrate the ability to determine the correct exposure limits in accordance with 0EPR01-IP-0004, Emergency Exposure Controls and based on plant conditions the number of personnel needed to complete the job.

Modified from LOT-24

(A9) Determine Emergency Action Level Classification

Demonstrate the ability to correctly determine an Emergency Action Level given a set of conditions and using 0EPR04-UA-0001, EAL Wall Charts and EP-0003.000, EAL Technical Basis Manual.

Modified from LOT-25

STPNOC

Job Performance Measure

DETERMINE H2 RECOMBINER POWER SETTINGS

JPM Number: NRC A1

Revision Number: 1

Date: 07/17/2023

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

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

Approved By:	N/A	N/A
	_____ 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 LOT 23 NRC JPM for use on the LOT 27 NRC exam.

Revision 1; Incorporated ChE comments from draft review.

SIMULATOR SETUP INSTRUCTIONS

IC Setup

- No setup required. This is an Admin JPM.

INITIAL CONDITIONS

Unit 1 was operating at 100% power when it experienced a loss of coolant accident. The Control Room crew is currently in 0POP05-EO-EO10, Loss of Reactor or Secondary Coolant at the step to monitor Containment Hydrogen levels. Containment Hydrogen concentration is reported to be 2.0%.

Another operator has completed steps 5.1 through 5.7 of 0POP02-CG-0001, Electric Hydrogen Recombiners to place the Hydrogen Recombiners in service.

INITIATING CUE

You have been given 0POP02-CG-0001 and the Unit Supervisor directs you to continue in the procedure and determine the appropriate Hydrogen Recombiner power setting for BOTH Recombiners 1A **AND** 1B by starting with step 5.8.

NOTE:

- **Perform your determination as accurately as possible.**

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

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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.

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Task Standard:

Determines Hydrogen Recombiner power setting per the key as follows: Recombiner 1A: 65.28 (64.77-65.79) kW and Recombiner 1B: 60.8 (60.32-61.28) kW.

JPM Start Time: _____

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
<u>NOTE</u> Provide Initial Cue Sheet and Student HO of 0POP02-CG-0001, Electric Hydrogen Recombiners. When the student has reviewed the Initial Cue <u>and</u> 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	Determine Pressure Factor Cp from "Recombiner Power Correction Factor versus Containment Pressure Curve". (Refer to Addendum 1)	Determines Pressure Factor Cp is 1.28 based on post-LOCA containment pressure and pre-LOCA containment temperatures provided on the student handout copy of the procedure. NOTE: The operator may review the Prerequisites and/or the Notes and Precautions of the procedure. An acceptable range of Cp will be 1.27 -1.29. These values will be used to calculate the range of correct power settings.	—	—	—
*2	Calculate required power settings for the desired Recombiner by multiplying the Pressure Factor (Cp) times the reference power.	Determines Recombiner 1A power setting should be 65.28 64.77-65.79) kW Determines Recombiner 1B power setting should be 60.8 (60.32-61.28) kW NOTE: Refer to KEY provided with this JPM for details of calculations.	—	—	—
CUE	<u>This JPM is complete</u>				

JPM Stop Time: _____

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JPM SUMMARYOperator's Name: _____ Job Title: ☐ RO ☐ SROJPM Title: DETERMINE H2 RECOMBINER POWER SETTINGSJPM Number: NRC A1 Revision Number: 1Task Number and Title: 12150, PERFORM LINEUPS OF THE HYDROGEN RECOMBINERK/A Number and Importance: 2.1.23 4.3/4.4Suggested Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☒ OtherAlternate Path: ☐ Yes ☒ NoTask Designed For: ☐ SRO Only ☒ RO/SRO ☐ AO/RO/SROTime Critical: ☐ Yes ☒ NoLevel of Difficulty: 3

Reference(s): 0POP02-CG-0001, Electric Hydrogen Recombiners, Rev 11

Actual Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☐ OtherTesting Method: ☐ Simulate ☐ PerformEstimated Time to Complete: 15 minutes Actual Time Used: _____ minutesCritical Steps (*) 2**Evaluation Summary:**Were all the Critical Steps performed satisfactorily? ☐ Yes ☐ NoThe 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 – NRC A1

INITIAL CONDITIONS

Unit 1 was operating at 100% power when it experienced a loss of coolant accident. The Control Room crew is currently in 0POP05-EO-EO10, Loss of Reactor or Secondary Coolant at the step to monitor Containment Hydrogen levels. Hydrogen concentration is reported to be at 2.0%.

Another operator has completed steps 5.1 through 5.7 of 0POP02-CG-0001, Electric Hydrogen Recombiners to place the Hydrogen Recombiners in service.

INITIATING CUE

You have been given 0POP02-CG-0001 and the Unit Supervisor directs you to continue in the procedure and determine the appropriate Hydrogen Recombiner power setting for BOTH Recombiners 1A **AND** 1B by starting with step 5.8.

NOTE:

- **Perform your determination as accurately as possible.**

Electric Hydrogen Recombiners

4.13.4 Slide the chassis in approximately three and one-half inches and turn the case lock screw to latch the chassis to the case.

4.14 The Operations Record Retention Cover Sheet of 0POP01-ZA-0001 (Plant Operations Department Administrative Guidelines) may be utilized for the transmittal of any completed pages required to be retained.

NOTE

Operation of the Hydrogen Recombiners is done manually from the Main Control Room on CP002.

5.0 Post-LOCA Hydrogen Recombiner Start-up

5.1 VERIFY Hydrogen Recombiners potentiometers labeled "PWR ADJ" are set at zero (000).

1A(2A) BH

1B(2B) BH

5.2 SELECT which of the Hydrogen Recombiners is to be placed in service.

1A(2A) BH

1B(2B) BH

5.3 VERIFY white lamp labeled "PWR AVAIL" is lit.

1A(2A) BH

1B(2B) BH

5.4 TURN the switch labeled "PWR" to the ON position.

1A(2A) BH

1B(2B) BH

5.5 VERIFY red "PWR" indicator lamp is lit.

1A(2A) BH

1B(2B) BH

NOTE

The Post LOCA Containment Pressure and the Pre-LOCA Containment Temperature recorded in Steps 5.6 and 5.7 are the parameters used in Step 5.8 to determine the pressure factor.

5.6 DETERMINE Containment pressure prior to Recorder for "CONTAINMENT PRESS 1(2)-HC-PR-0934" **OR** "WR PRESS 1(2)-HC-PR-9759". (CP018)

Containment Pressure Prior to LOCA 0.1 psig

Post LOCA Containment Pressure 5.0 psig

This procedure, when complete, SHALL be retained for five years.

Electric Hydrogen Recombiners

- 5.7 DETERMINE the Pre-LOCA Containment Temperature from one of the RCFC inlet temperatures recorded on the Operator Log for a RCFC in operation prior to the LOCA.

Provided on the handout copy

1A(2A): (TI-9661, TI-9664 or TI-9670) Temp 90 °F

1B(2B): (TI-9667, TI-9673 or TI-9676) Temp 90 °F

- 5.8 DETERMINE Pressure Factor Cp from "Hydrogen Recombiner Power Correction Factor versus Containment Pressure Curve". (Refer To Addendum 1)

Cp 1.28 (Acceptable Range 1.27-1.29)

- 5.9 (UNIT 1 ONLY) CALCULATE required power setting for the desired Hydrogen Recombiner by multiplying the Pressure Factor (Cp) times the Reference Power:

Hydrogen Recombiner 1A Power Setting

$$\frac{1.28 (1.27-1.29)}{\text{Pressure Factor (Cp)}} \times \frac{51 \text{ KW}}{\text{Ref Pwr}} = \frac{65.28 (Acceptable Range 64.77-65.79) \text{ KW}}{(\text{Required PWR Setting})}$$

Hydrogen Recombiner 1B Power Setting

$$\frac{1.28 (1.27-1.29)}{\text{Pressure Factor (Cp)}} \times \frac{47.5 \text{ KW}}{\text{Ref Pwr}} = \frac{60.8 (Acceptable Range 60.32-61.28) \text{ KW}}{(\text{Required PWR Setting})}$$

This range of values is based on the given information of post-LOCA pressure of 5.0 psig and pre-LOCA temperature of 90 deg. F. See Addendum 1 on next page.

CALCULATE required power setting for the desired Hydrogen Recombiner by multiplying the Pressure Factor (Cp) times the Reference Power:

These are the correct ranges of power settings for the Recombiners.

Hydrogen Recombiner 2A Power Setting

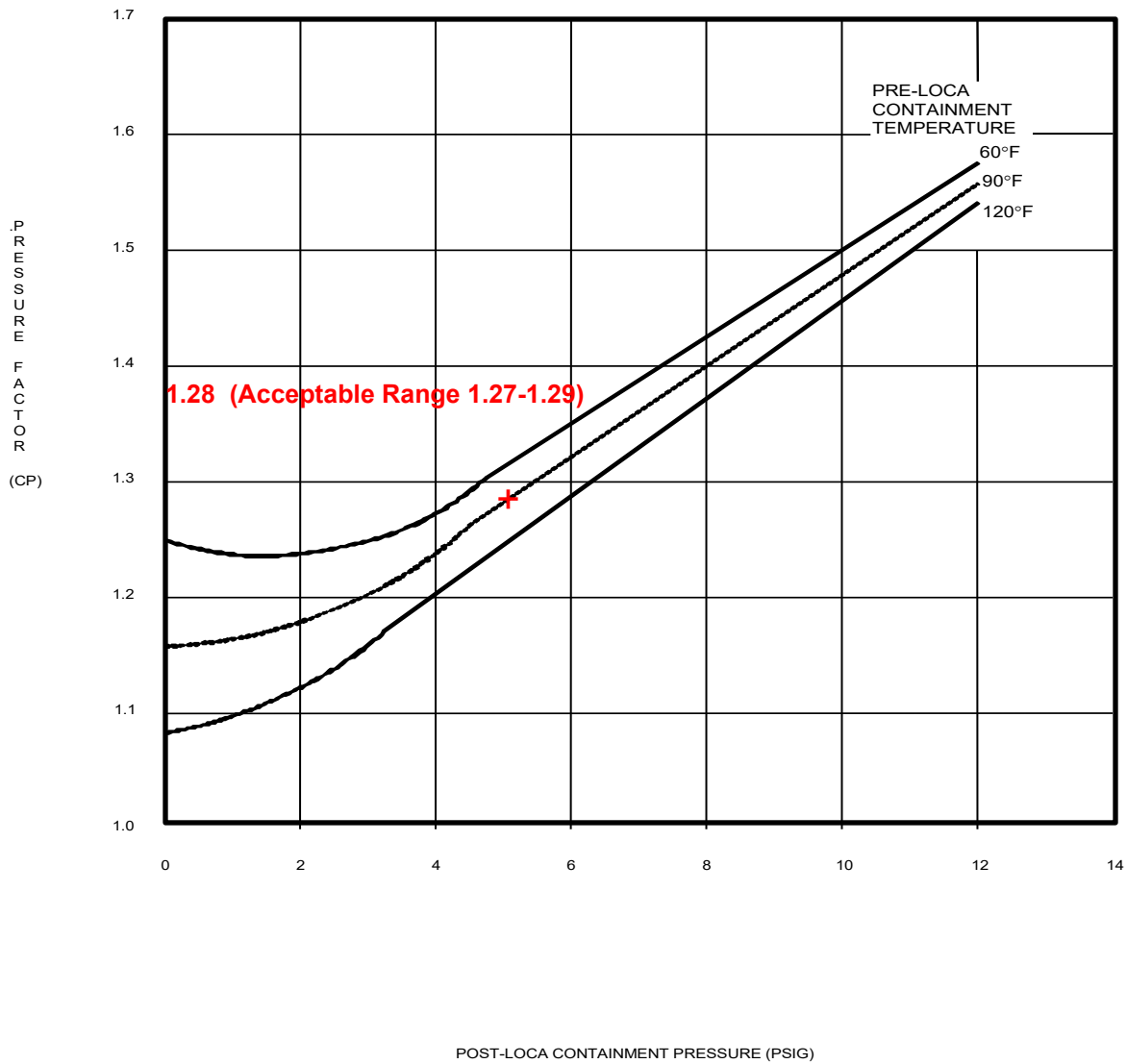
$$\frac{\text{Pressure Factor (Cp)}}{\text{Pressure Factor (Cp)}} \times \frac{43.5 \text{ KW}}{\text{Ref Pwr}} = \frac{\text{KW}}{(\text{Required PWR Setting})}$$

Hydrogen Recombiner 2B Power Setting

$$\frac{\text{Pressure Factor (Cp)}}{\text{Pressure Factor (Cp)}} \times \frac{43.5 \text{ KW}}{\text{Ref Pwr}} = \frac{\text{KW}}{(\text{Required PWR Setting})}$$

This procedure, when complete, SHALL be retained for five years.

	0POP02-CG-0001	Rev. 11	Page 12 of 15
Electric Hydrogen Recombiners			
Addendum 1	Dry Containment Hydrogen Recombiner Power Correction Factor Versus Containment Pressure		Page 1 of 1



KEY

STPNOC

Job Performance Measure

CALCULATE TIME TO BOIL IN THE RCS

JPM Number: NRC A2

Revision Number: 1

Date: 07/17/2023

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

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

Revision Record (Summary)

Revision 0; Drafted from LOT 24 NRC JPM for use on the LOT 27 NRC exam.

Revision 1; Incorporated ChE comments from draft submittal.

SIMULATOR SETUP INSTRUCTIONS

IC Setup

- No setup required. This is an Admin JPM.

INITIAL CONDITIONS:

Unit 1 is in a Refueling Outage.

- The unit entered MODE 3 at 0200 on 10/18
- It is now 0200 on 11/12
- The Operating Crew is in 0POP03-ZG-0009, Mid-Loop Operation.
- Current RCS level is 33'.
- Current RCS temperature is 110°F.

INITIATING CUE:

The Unit Supervisor directs you to calculate the time it will take for saturated conditions to occur in the RCS if all RHR is lost per 0POP03-ZG-0009, Mid-Loop Operation. **(Use interpolation between the applicable curves to get the most accurate time.)**

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

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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.

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Task Standard:

Using Addendum 4 of 0POP03-ZG-0009, Mid-Loop Operation, correctly calculates the time that saturated conditions would occur in the RCS is 30.3 to 32.3 minutes. (31.3 + or – 1 minute).

JPM Start Time: _____

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
<u>NOTE</u> Provide Initial Cue Sheet and Student HO of 0POP03-ZG-0009, Mid-Loop Operation. When the student has reviewed the Initial Cue <u>and</u> they have indicated they are ready to begin the JPM, then record the start time for the JPM. A KEY is provided showing the correct time on Addendum 4 of 0POP03-ZG-0009, Mid-Loop Operation.					
*1	With the shutdown and current dates and times, the operator calculates the number of days shutdown.	Calculates the reactor has been shutdown 25 days.	_____	_____	_____
*2	With the given information from the Initiating Cue, the operator calculates the amount of time for the RCS to boil from a loss of all RHR using the chart in Addendum 4 of 0POP03-ZG-0009, Mid-Loop Operation. (0POP03-ZG-0009, Addendum 4)	Calculates the amount of time for the RCS to boil on a loss of all RHR to be 31.3 minutes. NOTE: The Addendum 4 graph does not give an RCS initial temperature of 110°F. The Operator will need to interpolate. To allow for interpolation of 110°F an answer of 30.3 to 32.3 minutes will be allowed.	_____	_____	_____
CUE	<u>This JPM is completed</u>				

JPM Stop Time: _____

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JPM SUMMARYOperator's Name: _____ Job Title: ☐ RO ☐ SROJPM Title: CALCULATE TIME TO BOIL IN THE RCSJPM Number: NRC A2 Revision Number: 1Task Number and Title: 32350, Monitor the RCSK/A Number and Importance: 2.1.25 3.9/4.2Suggested Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☒ OtherAlternate Path: ☐ Yes ☒ NoTask Designed For: ☐ SRO Only ☒ RO/SRO ☐ AO/RO/SROTime Critical: ☐ Yes ☒ NoLevel of Difficulty: 3

Reference(s): 0POP03-ZG-0009, Mid-Loop Operation, Rev 69

Actual Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☐ OtherTesting Method: ☐ Simulate ☐ PerformEstimated Time to Complete: 10 minutes Actual Time Used: _____ minutes

Critical Steps (*) 1

Evaluation Summary:Were all the Critical Steps performed satisfactorily? ☐ Yes ☐ NoThe 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 – NRC A2

INITIAL CONDITIONS:

Unit 1 is in a Refueling Outage.

- The unit entered MODE 3 at 0200 on 10/18
- It is now 0200 on 11/12
- The Operating Crew is in 0POP03-ZG-0009, Mid-Loop Operation.
- Current RCS level is 33'.
- Current RCS temperature is 110°F.

INITIATING CUE:

The Unit Supervisor directs you to calculate the time it will take for saturated conditions to occur in the RCS if all RHR is lost per 0POP03-ZG-0009, Mid-Loop Operation. **(Use interpolation between the applicable curves to get the most accurate time.)**

Provide Answers Below:

Time Shutdown in days = _____

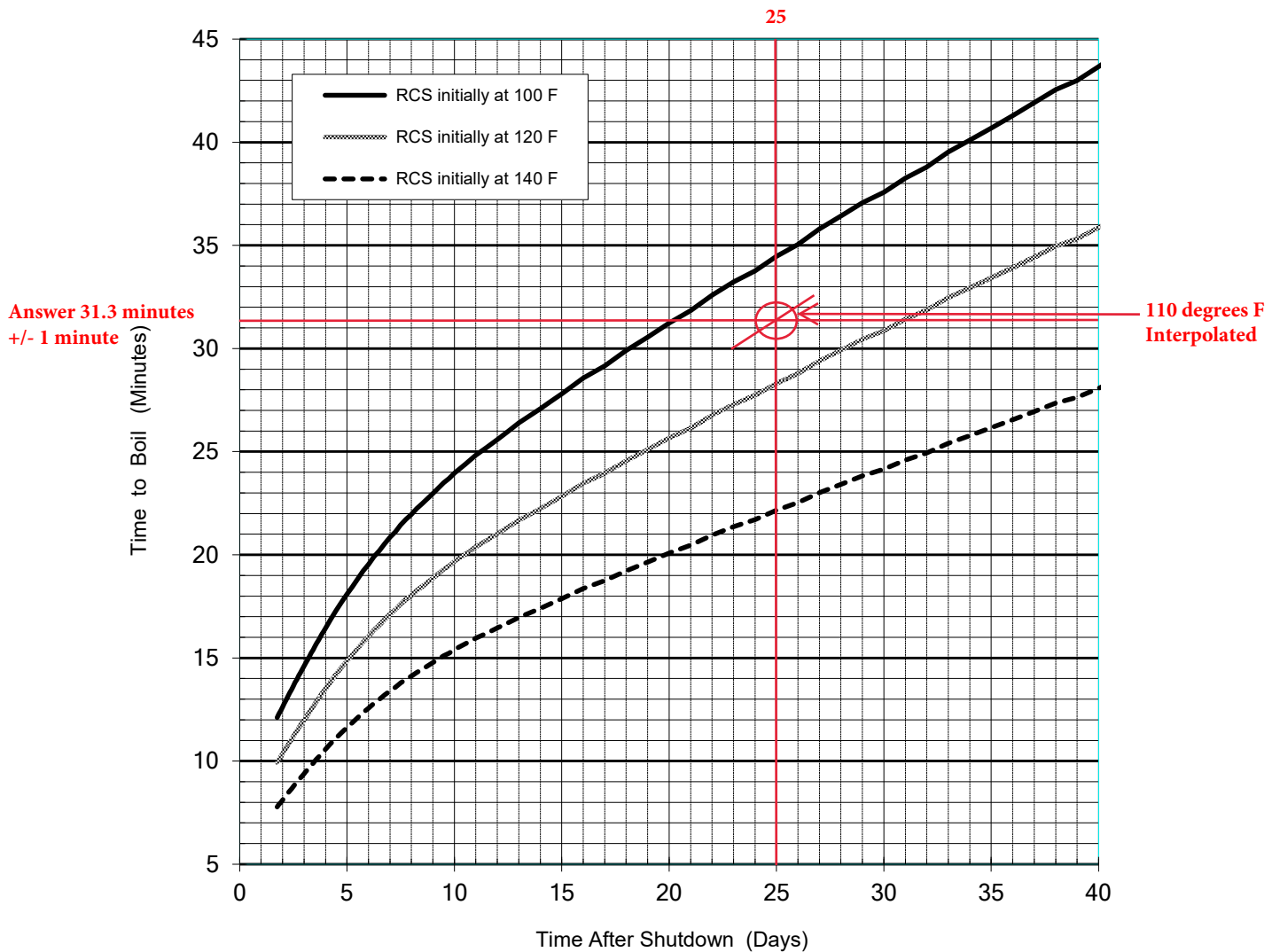
Calculated time in minutes = _____

	0POP03-ZG-0009	Rev. 69	Page 68 of 118
Mid-Loop Operation			
Addendum 4	Reactor Vessel Time to Boil Following Loss of RHR During Mid-Loop Operation		Page 1 of 1

Ref 2.20

REACTOR VESSEL TIME-TO-BOIL
FOLLOWING LOSS OF RHR COOLING DURING MID-LOOP OPERATION

Chart **NOT** Cycle Specific. Chart **NOT** applicable to vacuum fill conditions.



KEY

STPNOC

Job Performance Measure

DETERMINE THE ISOLATION BOUNDARIES FOR A LEAK IN THE RHR SYSTEM

JPM Number: NRC A3

Revision Number: 1

Date: 07/17/2023

Developed By: N/A N/A
Instructor (Print/Sign) Date

Approved By: N/A N/A
Training Supervisor (Print/Sign) Date

Approved By: N/A N/A
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 LOT 20 NRC JPM for use on LOT 27 NRC exam.

Revision 1, Incorporated changes from NRC validation week.

SIMULATOR SETUP INSTRUCTIONS

IC Setup

- No setup required. This is an Admin JPM.

INITIAL CONDITIONS

Unit 1 is in Mode 6 with the following conditions:

- Core reload in progress.
- RHR Pump 1B in service.
- RHR Pump 1A is Operable but secured.
- RHR Pump 1C is OOS for Maintenance.

Subsequently Control Room personnel notice that Reactor Cavity level is slowly lowering. A Plant Operator sent to investigate reports back that Flow Element FE-0852 for RHR Train 1B is leaking. The Unit Supervisor directs the Primary RO to start RHR Pump 1A and secure RHR Pump 1B.

INITIATING CUE

You are the Extra Reactor Operator.

The Unit Supervisor directs you to determine the necessary valves that need to be ensured closed to isolate the RHR leak without isolating pressure relief protection to the PRT.

NOTE: The Unit Supervisor specifies that Check Valves and Air Operated Valves are NOT to be used to isolate the leak.

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

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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.

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Task Standard:

Determines that the following valves will need to be ensured closed:

- *RH-MOV-0019B, LOOP Th INJ*
- *RH-MOV-0031B, LOOP Tc INJ*
- *RH-MOV-0066B, RHR CVCS ISOL*
- *RH-MOV-0067B, MINI FLOW ISOL*
- *RH-0086B, PRIMARY SAMPLING ISOL*
- *SI-0207B, LHSI PUMP 1B DISCHARGE ISOLATION*
- *RH-0062B, B PUMP DISCH*

IF RH-MOV-0067B or RH-0062B are NOT used then the following must be used:

- *RH-MOV-0061B or RH-MOV-0060B, B PUMP SUCT ISOL*
- *RH-0063B or RH-0064B, RWST RTN ISOL*
-

JPM Start Time: _____

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
<u>NOTE</u> Provide a copy of 5R169F20000, RHR System P&ID. A KEY is provided for the Evaluator.					
1	Review RHR System P&ID.	The Operator reviewed the RHR System P&ID. NOTE: While there is no time limit associated with this JPM, the Operator is expected to make reasonable progress during the determination process.	_____	_____	_____

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
*2	<i>Determine the necessary valves that need to be ensured closed to isolate the RHR leak.</i> <i>The Unit Supervisor specifies that Check Valves and Air Operated Valves are NOT to be used to isolate the leak.</i>	<i>The Operator determined that the following valves will need to be ensured closed:</i> <i>RH-MOV-0019B, LOOP Th INJ</i> <i>RH-MOV-0031B, LOOP Tc INJ</i> <i>RH-MOV-0066B, RHR CVCS ISOL</i> <i>RH-MOV-0067B, MINI FLOW ISOL</i> <i>RH-0086B, PRIMARY SAMPLING ISOL</i> <i>SI-0207B, LHSI PUMP 1B DISCHARGE ISOLATION</i> <i>RH-0062B, B PUMP DISCH</i> <i>IF RH-MOV-0067B or RH-0062B are NOT used then the following must be used:</i> <i>RH-MOV-0061B or RH-MOV-0060B, B PUMP SUCT ISOL</i> <i>RH-0063B or RH-0064B, RWST RTN ISOL</i> NOTE: The Operator may also identify that RH-0172, RCP Seal Standpipe Fill, needs to be closed, however, with the specified initial conditions (Mode 6), this valve would already be closed and locked.	—	—	—
CUE	<u>This JPM is completed</u>				

JPM Stop Time: _____

JPM SUMMARY**Operator's Name:** _____ **Job Title:** ☐ RO ☐ SRO**JPM Title:** Determine the Isolation Boundaries for a Leak in the RHR System**JPM Number:** NRC A3 **Revision Number:** 0**Task Number and Title:** N0025 – Interpret and use the symbols and acronyms used in One-Line Diagrams**K/A Number and Importance:** 2.2.15 3.9 / 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:** 3**Reference(s):** 5R169F20000, RHR System P&ID, Rev 27**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 (*):** 2**Evaluation Summary:**Were all the Critical Steps performed satisfactorily? ☐ Yes ☐ NoThe 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 – NRC A3

INITIAL CONDITIONS

Unit 1 is in Mode 6 with the following conditions:

- Core reload in progress.
- RHR Pump 1B in service.
- RHR Pump 1A is Operable but secured.
- RHR Pump 1C is OOS for Maintenance.

Subsequently Control Room personnel notice that Reactor Cavity level is slowly lowering. A Plant Operator sent to investigate reports back that Flow Element FE-0852 for RHR Train 1B is leaking. The Unit Supervisor directs the Primary RO to start RHR Pump 1A and secure RHR Pump 1B.

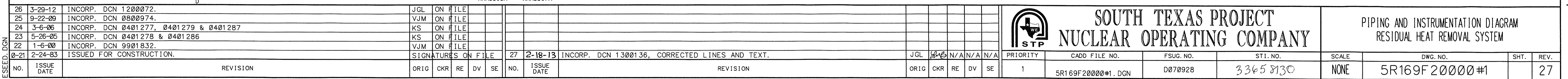
INITIATING CUE

You are the Extra Reactor Operator.

The Unit Supervisor directs you to determine the necessary valves that need to be ensured closed to isolate the RHR leak without isolating pressure relief protection to the PRT.

NOTE: The Unit Supervisor specifies that Check Valves and Air Operated Valves are NOT to be used to isolate the leak.

LIST IDENTIFIED VALVES BY NUMBER BELOW:



STPNOC

Job Performance Measure

ESTIMATE DISCHARGE FLOW FOR WMT DISCHARGE WITH FLOW INSTRUMENT INOPERABLE

JPM Number: NRC A4

Revision Number: 0

Date: 07/17/2023

Developed By: N/A N/A
Instructor (Print/Sign) Date

Approved By: N/A N/A
Training Supervisor (Print/Sign) Date

Approved By: N/A N/A
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 LOT 27 NRC exam.

SIMULATOR SETUP INSTRUCTIONS

IC Setup

- No setup required. This is an Admin JPM.

INITIAL CONDITIONS

- WMT 1D is being discharged to the reservoir.
- 1WL-FR-4078, LWPS Discharge Flow Recorder is not operable.
- The discharge commenced at 1200.
- Initial level in WMT 1D was 94%.
- At 1205 level in WMT 1D was 86%
- At 1230 WMT 1D level was 52%

INITIATING CUE

The Unit Supervisor requests you to perform 0POP02-WL-0100, Addendum 1, Estimating Liquid Waste Discharge Flow for the WMT 1D Discharge at time 1205 and 1230.

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 time clock starts when the candidate acknowledges the initiating cue.

Task Standard:

Calculates: elapsed time (5 minutes & 30 minutes), tank level change (8% & 42%), volume released (1352 gallons & 7098 gallons), and release flowrate (270.4 gpm (270 is acceptable) & 236.6 gpm (236-237 is acceptable). JPM Steps () 2, 4, 5, 6 complete.*

JPM Start Time: _____

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
1	RECORD an Initial Level from the applicable indicator and Time: (Addendum 1 Step 1.1)	Records 94% and 1200 for initial level and time.	—	—	—
*2	<u>WHEN</u> a sufficient time has elapsed to get an adequate change in level, <u>THEN</u> CALCULATE the elapsed time: Time of Second Reading – Time of Initial Reading = Elapsed Time. Time of Third Reading – Time of Initial Reading = Elapsed Time (Step 1.2)	Enters 1205 for time of second reading and 1200 for time of Initial reading and calculates elapsed time of 5 minutes. Enters 1230 for time of third reading and 1200 for time of initial reading and calculates elapsed time of 30 minutes.	—	—	—
3	<u>IF</u> Tank 1A(2A), 1B(2B) or 1C(2C) is being released, <u>THEN</u> CALCULATE volume released: (Step 1.3)	Determines that the step is N/A.	—	—	—

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
*4	<u>IF</u> Tank 1D(2D), 1E(2E) or 1F(2F) is being released, <u>THEN</u> perform the following: CALCULATE Change in level in % using applicable instrument: Tank Level at time of Initial Reading % - Tank level at time of Second Reading % = Second Reading Change in Level % Tank Level at time of Initial Reading % - Tank level at time of Third Reading % = Third Reading Change in Level % <u>(Step 1.4 and 1.4.1)</u>	Calculates change in level of 8%. Calculates change in level of 42%.	—	—	—
*5	CALCULATE gallons released: Second Reading Change in Level % X 169 gallons = Volume Released (gallons) Third Reading Change in Level % X 169 gallons = Volume Released (gallons) <u>(Step 1.4.2)</u>	Calculates 1352 gallons. Calculates 7098 gallons.	—	—	—

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
*6	CALCULATE Flowrate of the release: Second Reading Gallons Released / Elapsed Time (min.) = Flow (gpm) Third Reading Gallons Released / Elapsed Time (min.) = Flow (gpm) (Step 1.5)	Calculates 270.4 gpm (may round to 270 gpm) Calculates 236.6 gpm (236-237 gpm)	—	—	—
CUE	<u>This JPM is completed</u>				

JPM Stop Time: _____

JPM SUMMARY**Operator's Name:** _____ **Job Title:** ☐ RO ☐ SRO**JPM Title:** Estimate Discharge Flow for WMT Discharge with Flow Instrument Inoperable**JPM Number:** NRC A4 **Revision Number:** 0**Task Number and Title:** 030165, Initiate a WMT Release**K/A Number and Importance:** 2.3.11 3.8/4.3**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:** 3**Reference(s):** 0POP02-WL-0100, Liquid Waste Release 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, 4, 5, 6**Evaluation Summary:**Were all the Critical Steps performed satisfactorily? ☐ Yes ☐ NoThe 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 NRC A4

INITIAL CONDITIONS

- WMT 1D is being discharged to the reservoir.
- 1WL-FR-4078, LWPS Discharge Flow Recorder is not operable.
- The discharge commenced at 1200.
- Initial level in WMT 1D was 94%.
- At 1205 level in WMT 1D was 86%
- At 1230 WMT 1D level was 52%

INITIATING CUE

The Unit Supervisor requests you to perform OPOP02-WL-0100, Addendum 1, Estimating Liquid Waste Discharge Flow for the WMT 1D discharge at time 1205 and 1230.

	0POP02-WL-0100	Rev. 26	Page 52 of 54
Liquid Waste Release			
Addendum 1	Estimating Liquid Waste Discharge Flow		Page 1 of 3

NOTE

- Discharges may proceed for up to 30 days from the time the flow transmitter was determined inoperable, provided flowrate is estimated and recorded every four hours during actual release.
- Per ODCM 3.3.3.10 action statement, discharges may continue past the 30 day time limit with flow transmitter inoperable provided the NRC is notified of the inoperability and the recovery plan.
- Mark any spaces not used N/A.

1.0 Flowrate Estimate:

- 1.1 RECORD an Initial Level from the applicable indicator and Time:
(gallons for 1A(2A), 1B(2B), or 1C(2C)) (% level for 1D(2D), 1E(2E) or 1F(2F))

Initial Level: 94% (gallons or %) Time: 1200

- | | |
|----------------------------------|----------------------------------|
| • WMT 1A(2A) - LI-4070 (ZLP-189) | • WMT 1D(2D) - LI-5052 (ZLP-722) |
| • WMT 1B(2B) - LI-4062 (ZLP-189) | • WMT 1E(2E) - LI-5054 (ZLP-722) |
| • WMT 1C(2C) - LI-4066 (ZLP-189) | • WMT 1F(2F) - LI-5057 (ZLP-722) |

- 1.2 WHEN a sufficient time has elapsed to get an adequate change in level,
THEN CALCULATE the elapsed time:

Time of Second Reading: 1205 – Time of Initial Reading: 1200 = Elapsed Time: 5 minutes

Time of Third Reading: 1230 – Time of Initial Reading: 1200 = Elapsed Time: 30 minutes

- 1.3 IF Tank 1A(2A), 1B(2B) or 1C(2C) is being released, THEN CALCULATE volume released:

Initial level: N/A gallons – Second level: N/A gallons = Volume Released: N/A gallons

Initial level: N/A gallons – Third level: N/A gallons = Volume Released: N/A gallons

KEY

This procedure, when completed, shall be retained for the life of the plant.

	0POP02-WL-0100	Rev. 26	Page 53 of 54
Liquid Waste Release			
Addendum 1	Estimating Liquid Waste Discharge Flow		Page 2 of 3

1.4 IF Tank 1D(2D), 1E(2E) or 1F(2F) is being released, THEN perform the following:

1.4.1 CALCULATE Change in level in % using applicable instrument:

Tank		Tank level		Second Reading
Level at time of	–	at time of	=	Change
Initial Reading: <u>94</u> %		Second Reading: <u>86</u> %		in level: <u>8</u> %
Tank		Tank level		Third Reading
Level at time of	–	at time of	=	Change
Initial Reading: <u>94</u> %		Third Reading: <u>52</u> %		in level: <u>42</u> %

1.4.2 CALCULATE gallons released:

Second Reading		Volume
Change in level: <u>8</u> % X 169 gallons/% =		Released: <u>1352</u> gallons

Third Reading		Volume
Change in level: <u>42</u> % X 169 gallons/% =		Released: <u>7098</u> gallons

1.5 CALCULATE Flowrate of the release:

Second Reading		Elapsed		
Gallons Released: <u>1352</u> /		Time (min.): <u>5</u>	=	Flow: <u>270.4</u> gpm

Third Reading		Elapsed		
Gallons Released: <u>7098</u> /		Time (min.): <u>30</u>	=	Flow: <u>236.6</u> gpm

KEY

This procedure, when completed, shall be retained for the life of the plant.

STPNOC

Job Performance Measure

REVIEW SDM CALCULATION

JPM Number: NRC A5

Revision Number: 1

Date: 07/17/2023

Developed By: N/A N/A
Instructor (Print/Sign) Date

Approved By: N/A N/A
Training Supervisor (Print/Sign) Date

Approved By: N/A N/A
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 LOT 18 NRC JPM for use on LOT 27 NRC Exam.

Revision1, Revised per conversation with the ChE to raise boron concentration to 1110 ppm such that some errors would still result in an acceptable SDM.

SIMULATOR SETUP INSTRUCTIONS

IC Setup

- No setup required. This is an Admin JPM.

INITIAL CONDITIONS:

Today at 1600, Unit 2 entered Mode 3 following a Steam Generator Tube Leak during Cycle 23. During the shutdown, two RCCAs failed to fully insert.

NOTE the following additional information:

- Core Burn up is 10,000 MWD/MTU per BEACON Monitor.
- The most recent RCS Boron concentration from a sample taken today at 1500 is 1110 ppm.
- Minimum loop RCS T_{AVG} is 563°F.
- Rod L-11 indicates 24 steps.
- Rod M-14 indicates 12 steps.
- All other rod bottom lights are lit.
- A Control Room Logbook entry has been made.

Following the shutdown, a Short Form Shutdown Margin Calculation was performed in accordance with 0PSP10-ZG-0003, Shutdown Margin Verification - Modes 3, 4 and 5, to verify compliance with Technical Specifications at current plant conditions.

INITIATING CUE:

You are the Shift Manager. Perform a second review of the test data per step 5.23 of 0PSP10-ZG-0003, Shutdown Margin Verification - Modes 3, 4 and 5, to determine if the Test Results are ACCEPTABLE or UNACCEPTABLE.

For the purposes of this JPM, use the following instructions:

- 1. Interpolation is to be used where allowed and you are to use table data where possible, instead of curve data, to minimize interpolation errors from reading curve data.**

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

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

.....

The following CUE is handed out ONLY if the Student turns in answer of UNACCEPTABLE. Initiating CUE #2 will be printed on green bordered paper.

INITIATING CUE #2:

In your initial second review of the test data as Shift Manager per step 5.23 of 0PSP10-ZG-0003, Shutdown Margin Verification - Modes 3, 4 and 5, you determined that the Test Results acceptability were UNACCEPTABLE.

You are instructed to determine any applicable LCO(s) from Technical Specifications or the Technical Requirement Manual and required actions. Write any LCO numbers applicable and any actions on this Cue Sheet.

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 time clock starts when the candidate acknowledges the initiating cue.

.....

Task Standard:

Reviews the SDM calculation and finds errors in filling out Form 5, incorrectly calculated C_B Effective, C_B SDM Limit is incorrect and that the SDM is unacceptable (in accordance with KEY provided). Determines TS 3.1.1.1, Boration Control, applies and correctly states the action. JPM Steps () 1, 2, 3, 5, and 6, completed satisfactory.*

JPM Start Time: _____

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	<u>SAT</u>	<u>UNSAT</u>	<u>Comment Number</u>
<u>NOTE</u> Provide the Student the Initial Conditions and Initiating Cue Sheet. Provide the Student HO copies of the following: • 0PSP10-ZG-0003, Shutdown Margin Verification – Modes 3, 4 and 5 (HO1) • 0PSP10-ZG-0003, Form 1, Form 2, and Form 5 (HO2) • Plant Curve Book Figure 5.5, Modes 3, 4, and 5 Shutdown Margin Limit Curve (HO3) Technical Specifications and the Technical Requirements Manual 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.					
<u>NOTE</u> Only the steps affected by the error(s) are included.					
*1	Review number of inoperable rods entered on Form 5 & Form 2. (Step 5.5.2)	The Operator determined that the number of inoperable rods was incorrectly recorded on Form 5 (should be 1 rod > 18 steps and 1 rod ≤ 18 steps vice two rods ≤ 18 steps) then the incorrect value was used on Form 2 step 5.5.2(should be 340 vice 120).	_____	_____	_____
*2	Determine the effective boron concentration. (Step 5.5.4)	The Operator determined that that the value entered on Form 2 for step 5.5.4 is incorrect and should be 770.	_____	_____	_____
*3	Review C _B SDM Limit calculation. (Step 5.5.5.1)	The Operator determined that C _B SDM Limit was not identified correctly (should be 980 vice 911).	_____	_____	_____
4	Review RCS Average Temperature. (Step 5.5.5.2)	The Operator determined that the incorrect RCS Average Temperature was used to determine C _B SDM Limit (should be 550 vice 567).	_____	_____	_____

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
*5	Review comparison of C _B Effective to C _B SDM Limit. (Step 5.8)	The Operator determined C _B Effective is < C _B SDM Limit and determines that SDM is unacceptable. NOTE for Examiner: <u>IF</u> the JPM is turned in as unacceptable, <u>THEN</u> hand out Initiating CUE #2. (green bordered paper)	—	—	—
*6	Per Cue Sheet #2 the student reviews Technical Specifications and TRM.	Determines that TS 3.1.1.1 is applicable and the action is: With the SHUTDOWN MARGIN not within the limit initiate boration within 15 minutes and continue boration until the required SHUTDOWN MARGIN is restored. (Accept words to this effect)	—	—	—
7	The Shift Manager, or designee, SHALL indicate acceptability of the test results <u>AND</u> sign Form 1. (Step 5.23)	Indicates results are unacceptable on Form 1 and Signs Form 1.	—	—	—
CUE	<u>This JPM is complete</u>				

JPM Stop Time: _____

JPM SUMMARY**Operator's Name:** _____ **Job Title:** ☐ RO ☐ SRO**JPM Title:** REVIEW SDM CALCULATION**JPM Number:** NRC A5 **Revision Number:** 1**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-0003, Shutdown Margin Verification – Modes 3, 4 and 5, Rev. 14
Unit 2 Plant Curve Book Figure 5.5, Rev. 33**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, 2, 3, 5, 6**Evaluation Summary:**Were all the Critical Steps performed satisfactorily? ☐ Yes ☐ NoThe 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 – NRC A5

INITIAL CONDITIONS:

Today at 1600, Unit 2 entered Mode 3 following a Steam Generator Tube Leak during Cycle 23. During the shutdown, two RCCAs failed to fully insert.

NOTE the following additional information:

- Core Burn up is 10,000 MWD/MTU per BEACON Monitor.
- The most recent RCS Boron concentration from a sample taken today at 1500 is 1110 ppm.
- Minimum loop RCS T_{AVG} is 563°F.
- Rod L-11 indicates 24 steps.
- Rod M-14 indicates 12 steps.
- All other rod bottom lights are lit.
- A Control Room Logbook entry has been made.

Following the shutdown, a Short Form Shutdown Margin Calculation was performed in accordance with 0PSP10-ZG-0003, Shutdown Margin Verification - Modes 3, 4 and 5, to verify compliance with Technical Specifications at current plant conditions.

INITIATING CUE:

You are the Shift Manager. Perform a second review of the test data per step 5.23 of 0PSP10-ZG-0003, Shutdown Margin Verification - Modes 3, 4 and 5, to determine if the Test Results are ACCEPTABLE or UNACCEPTABLE.

For the purposes of this JPM, use the following instructions:

- 1. Interpolation is to be used where allowed and you are to use table data where possible, instead of curve data, to minimize interpolation errors from reading curve data.**

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

Student Handout – NRC A5

INITIATING CUE #2:

In your initial second review of the test data as Shift Manager per step 5.23 of 0PSP10-ZG-0003, Shutdown Margin Verification - Modes 3, 4 and 5, you determined that the Test Results acceptability were UNACCEPTABLE.

You are instructed to determine any applicable LCO(s) from Technical Specifications or the Technical Requirement Manual and required actions. Write any LCO numbers applicable and any actions on this Cue Sheet.

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

	0PSP10-ZG-0003	Rev. 14	Page 14 of 20
Shutdown Margin Verification - Modes 3, 4 and 5			
Form 1	Data Package Cover Sheet		Page 1 of 2

Unit <u>2</u> Cycle <u>23</u>			
Tech Spec Reference: 4.1.1.1.1.d 4.1.1.1.1.a	Test Interval: 24 Hour (Periodic) 12 Hour (Conditional)	Modes Required: Mode 3, 4 or 5	Test Performance Mode: 3, 4, 5, or 6
Reason for Test: ☒ For Surveillance Credit ☐ Periodic Surveillance Test ☐ Not for Surveillance Credit ☐ Other _____			
Test Results: <i>Based on errors found in the test, should be marked as Unacceptable.</i> ☒ Acceptable (All Acceptance Criteria met) ☐ Unacceptable (Any Acceptance Criteria <u>NOT</u> met)			
Test Completed By: <u>Thaddeus Bik</u>		<u>Today</u>	<u>10 min ago</u>
Test Coordinator		Date	Time
Second Review of Test Results: ☐ Acceptable (All Acceptance Criteria met) ☐ Unacceptable (Any Acceptance Criteria <u>NOT</u> met) <i>Based on errors found in the test, should be marked as Unacceptable.</i>			
Test Reviewed By: _____		_____	_____
Shift Manager or Unit Supervisor		Date	Time
Plant Operations Review of Test Results (if required): IF test results are unacceptable, IMMEDIATELY inform the Shift Manager who SHALL complete the following: Potential Reportable Occurrence ☐ Yes ☐ No LCO Action Statement Entered ☐ Yes ☐ No Corrective Action Taken: _____ Reviewed By: _____ Shift Manager Date Time			
All pages of this form and Form 2, Form 3, or Form 4 SHALL be included in the data package. The data package SHALL also include Form 5 or Form 6 if completed.			

This Form, when complete, SHALL be retained for the life of the plant.

	0PSP10-ZG-0003	Rev. 14	Page 15 of 20
Shutdown Margin Verification - Modes 3, 4 and 5			
Form 1	Data Package Cover Sheet		Page 2 of 2

Performers and Verifiers			
Name (Printed)	Signature	Initials	Sections Performed
Thaddeus Bik	<i>Thaddeus Bik</i>	<i>TB</i>	various
Stephen Hawking, Jr	<i>Stephen Hawking, Jr</i>	<i>SHJ</i>	various

- 4.5 Verbal permission from the Shift Manager obtained to commence testing: *Thaddeus Bik*
Test Coordinator
- 5.1 Applicable prerequisites have been met and Precautions and Notes have been read: *Thaddeus Bik*
Test Coordinator
- 5.3 Cycle Burnup: 10,000 MWD/MTU
- Minimum Loop RCS T_{AVG}: 563 °F
- # of Inoperable Rods 1 Rods with incomplete insertion at > 18 Steps on DRPI
- 1 Rods with incomplete insertion at ≤ 18 Steps on DRPI
- C_B RCS 1110 ppm Today 1500
Sample Date Sample Time
- 5.20 Shift Manager notified of test completion: *TB*
Test Coordinator

Remarks:
KEY

	0PSP10-ZG-0003	Rev. 14	Page 16 of 20
Shutdown Margin Verification - Modes 3, 4 and 5			
Form 2	Short Form SDM Limit Curve Method		Page 1 of 1

Unit 2 Cycle 23

5.5.1 Plant is in Mode 3, 4 or 5: JB
Initial

5.5.2 C_B Rod = (+) 120 ppm
5.5.3

Miscalculated on Form 5. Should be 340.

5.5.4 C_B Effective = $\frac{1110 \text{ ppm}}{C_B \text{ RCS}} - \frac{120 \text{ ppm}}{C_B \text{ Rod}}$

C_B Effective = 990 ppm
Error carried forward. Should be 770.

Used wrong temperature to read from the table. Should be 980 based on temp of 550F & 10,000 MWD/MTU.

5.5.5.1 C_B SDM Limit = 911 ppm

Procedure requires more conservative value. Should be 550F.

5.5.5.2 RCS Average Temperature 567 °F

Cycle Burnup 10,000 MWD/MTU

Should be marked NO.

5.8 Is C_B Effective ≥ C_B SDM Limit? X Yes No

KEY

Completed By: Thaddeus Bik

Date: Today

Verified By: Stephen Hawking, Jr

Date: Today

This Form, when complete, SHALL be retained for the life of the plant.

	0PSP10-ZG-0003	Rev. 14	Page 19 of 20
Shutdown Margin Verification - Modes 3, 4 and 5			
Form 5	RCS Boron Concentration Inoperable Rod Correction		Page 1 of 1

Unit 2 Cycle 23

Should be 280 based on 1 inoperable rod

Should be 1 as identified on Form 1	Number of Inoperable Rods [1]	Equivalent Boron per Rod (ppm/rod) [2]	Equivalent Boron (ppm) [3]
Inoperable rods with incomplete insertion at > 18 Steps on DRPI	0	280	0
Inoperable rods with incomplete insertion at ≤ 18 Steps on DRPI	2	60	120
Should be 1 as identified on Form 1		Should be 60 based on 1 inoperable rod	
RCS Boron Concentration Inoperable Rod Correction (ppm)		C _B Rod [4]	120

- [1] # of inoperable rods from Form 1 Should be 340 based on 1 inoperable rod > 18 steps and 1 inoperable rod ≤ 18 steps.
- [2] Values are from References 7.4 and 7.5
- [3] Equivalent Boron is equal the Number of Inoperable Rods times the Equivalent Boron per Rod.
[3] = [1] × [2]
- [4] RCS Boron Concentration Inoperable Rod Correction (C_B Rod) is the sum of the Equivalent Boron for Inoperable rods with incomplete insertion at > 18 Steps on DRPI and Equivalent Boron for Inoperable rods with incomplete insertion at ≤ 18 Steps on DRPI.
(Sum of column [3])

Remarks: _____

KEY

Completed By: Thaddeus Bih

Date: Today

Verified By: Stephen Hawking, Jr

Date: Today

This Form, when complete, SHALL be retained for the life of the plant.

STPNOC

Job Performance Measure

REVIEW CONTROL ROOM LOGS

JPM Number: NRC A6

Revision Number: 1

Date: 07/17/2023

Developed By: N/A N/A
Instructor (Print/Sign) Date

Approved By: N/A N/A
Training Supervisor (Print/Sign) Date

Approved By: N/A N/A
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 LOT 19 NRC JPM for LOT 27 NRC exam

Revision 1: Addressed ChE comments – added an additional out-of-specification parameter to require the application of Technical Specification 3.5.1.a.

SIMULATOR SETUP INSTRUCTIONS

IC Setup

- No setup required. This is an Admin JPM.

INITIAL CONDITIONS

The plant is in MODE 1, 100% steady state conditions. You are the on-shift Unit Supervisor. The Reactor Operator has completed pages 1-16 and 30-32 of 45 pages of the Operator Logs and has given them to you for your review.

Accumulator level from Control Room Log after last sample or fill from RWST:

- A – 8875 Gallons
- B – 8850 Gallons
- C – 8900 Gallons

INITIATING CUE

Review the enclosed partial log package for Shift 1 (0000 – 0200) for completeness/accuracy and Technical Specification/Technical Requirements Manual (TS/TRM) compliance. Document any problems noted and any actions that need to be taken per the Logs and/or any applicable TS/TRM actions.

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 time clock starts when the candidate acknowledges the initiating cue.

Task Standard:

Correctly locates the errors which have been inserted into the Control Room Log Package and documents any required actions including Technical Specification 3.5.1.a. JPM Task () 1 completed.*

JPM Start Time: _____

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
<u>NOTE</u> 1) The Control Room log package will consist of pages 1-16 of 45 and pages 30-32 of 45 of the Operator Logs for Modes 1, 2, 3, and 4. Three out-of-specification conditions have been inserted into the Log Package. The applicant must locate each of the out-of-specification conditions and identify any actions, including Technical Specification 3.5.1.a, for successful completion of the task. 2) The Evaluator is provided with an ANSWER KEY which is appropriately marked ("KEY"). The location of out-of-specification parameters is also mentioned in the body of this JPM. The evaluator shall not hand out any page(s) marked as "KEY" to the student.					
*1	<i>Review Control Room operating logs and identify errors and/or omissions within the Control Room Logsheet Package.</i> NOTE: While there is no time limit associated with this JPM, the Operator is expected to make reasonable progress during the review process.	The Operator correctly identified the following errors: 1) <u>Log page 3 of 45</u> TI-9674, 1 X RCFC Outlet Temp, is below the 50°F limit for accumulators pressurized. Action is to take local metal temperature readings of Accumulators w/a pyrometer. 2) <u>Log page 8 of 45</u> There is a greater than 92 gallon difference between level indicators LI-0954 & LI-0955, ACC C WTR LEVEL. Action is RO submit a CR for calibration. 3) <u>Log page 32 of 45</u> SILA-0955 is below its Technical Specification limit. Action is to enter 3.5.1. action a.	_____	_____	_____
CUE	<u>This JPM is completed</u>				

JPM Stop Time: _____

JPM SUMMARYOperator's Name: _____ Job Title: ☐ RO ☐ SROJPM Title: Review Control Room LogsJPM Number: NRC A6 Revision Number: 1Task Number and Title: 30200, Review Operations LogsK/A Number and Importance: 2.1.18 3.6 / 3.8Suggested Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☒ OtherAlternate Path: ☐ Yes ☒ NoTask Designed For: ☐ SRO Only ☒ RO/SRO ☐ AO/RO/SROTime Critical: ☐ Yes ☒ No

Level of Difficulty:

Reference(s): 0POP01-ZQ-0022, Plant Operations Shift Routines, Rev 88

0PSP03-ZQ-0028, Operator Logs, Rev 163

Technical Specifications

Actual Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☐ OtherTesting Method: ☐ Simulate ☐ PerformEstimated Time to Complete: 30 minutes Actual Time Used: _____ minutesCritical Steps (*): 1**Evaluation Summary:**Were all the Critical Steps performed satisfactorily? ☐ Yes ☐ NoThe 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 – NRC A6

INITIAL CONDITIONS

The plant is in MODE 1, 100% steady state conditions. You are the on-shift Unit Supervisor. The Reactor Operator has completed pages 1-16 and 30-32 of 45 pages of the Operator Logs and has given them to you for your review.

Accumulator level from Control Room Log after last sample or fill from RWST:

A – 8875 Gallons

B – 8850 Gallons

C – 8900 Gallons

INITIATING CUE

Review the enclosed partial log package for Shift 1 (0000 – 0200) for completeness/accuracy and Technical Specification/Technical Requirements Manual (TS/TRM) compliance. Document any problems noted and any actions that need to be taken per the Logs and/or any applicable TS/TRM actions.

**WRITE DOWN IDENTIFIED ERRORS AND/OR OMISSIONS BELOW INCLUDING
REQUIRED ACTIONS AND ANY APPLICABLE TS/TRM ACTIONS (IF 'NONE', SO STATE):**

Operator Logs

Logsheet 1

Modes 1, 2, 3 and 4 Control Room Logsheet

Page 3 of 45

UNIT: 1 DATE: Today

PARAMETER	LOCATION	INSTR	00-02	12-14	LIMIT	TECHNICAL SPECIFICATION	MODE	NOTE
RCFC INLET TEMPS	CP-002 (1)	TI-9664	95		°F (2)	N/A	N/A	(1) RECORD ALL INSTRUMENTS. (2) IF RCFC INLET TEMP IS COLDER THAN RCFC OUTLET TEMP BY MORE THAN 5°F ON AN IDLE RCFC FAN <u>OR</u> AN RCFC INLET TEMP IS LESS THAN 50°F ON AN IDLE RCFC, <u>THEN</u> VERIFY OPERABILITY BY VISUAL INSPECTION OF THE BACKDRAFT DAMPER. (Reference 6.17.7)
		TI-9673	85					
		TI-9661	80					
		TI-9667	90					
		TI-9670	64					
		TI-9676	85					
RCB AVG AIR TEMP	N/A	CALC (1)	SAT		≤ 110°F	3.6.1.5	1,2,3,4	(1) AVG THE FOUR HIGHEST OPERATING INLET TEMPS. ON RUNNING RCFCs. IF THE HIGHEST IS ≤ 110°F, THEN RECORD SAT.
RCFC OUTLET TEMPS	CP-002 (1)	TI-9665	55		≥ 50°F WITH ACCUMS PRESSURIZED (2) (Reference 6.17.15 and 6.17.19)	N/A	N/A	(1) RECORD ALL INSTRUMENTS. (2) IF < 50°F, THEN VERIFY LOCAL ACCUM METAL TEMP WITH HAND HELD PYROMETER <u>AND</u> DOCUMENT THE TOP AND BOTTOM METAL TEMPS ON A TEMPORARY LOG. (Reference 6.17.15 and 6.17.19)
		TI-9674	45					
		TI-9662	55					
		TI-9668	50					
		TI-9671	60					
		TI-9677	65					

TI-9674 temp is < 50F.

Required action is to verify local accumulator metal temperature with handheld pyrometer and document the top and bottom metal temperatures on a temporary log.

Operator Logs

Logsheet 1

Modes 1, 2, 3 and 4 Control Room Logsheet

Page 8 of 45

UNIT: 1 DATE: Today

PARAMETER	LOCATION	INSTR	00-02	12-14	LIMIT	TECHNICAL SPECIFICATION	MODE	NOTE
ACC C DISCH VLV	CP-001	MOV-0039C	SAT		OPEN/ PWR OFF	3.5.1	1,2,3 (1)	(1) MODE 3 WITH PZR PRESS > 1000 PSIG. (2) IF > 92 GAL DIFFERENCE BETWEEN CHANNELS, THEN SUBMIT CR FOR CALIBRATION. (3) INSTRUMENT ERROR REQUIRES OPERABILITY TO BE DETERMINED BY PLANT COMPUTER. (4) MODE 4 WITH RCS TCOLD < 350°F. (5) IF > 20 PSI DIFFERENCE BETWEEN CHANNELS, THEN SUBMIT CR FOR CALIBRATION
					CLOSED	3.4.9.3	4 (4)	
ACC C N2 PRESSURE		PI-0964	630		CHNL CHECK ≤ 20 PSI (5)	3.5.1 (3)	1,2,3 (1)	
		PI-0965	620					
ACC C WTR LEVEL		LI-0954	8850		CHNL CHECK ≤ 92 GAL (2)			
		LI-0955	8750					

LI-0954 & LI-0955 have > 92 Gallon difference.

Required action is to submit a CR for channel calibration.

Operator Logs

Logsheet 1

Modes 1, 2, 3 and 4 Control Room Logsheet

Page 32 of 45

UNIT: 1 DATE: Today

PARAMETER	LOCATION	INSTR	00-02	12-14	LIMIT	TECHNICAL SPECIFICATION	MODE	NOTE
ACC TK C LEVEL	PLANT COMPUTER	SILA0954	8850.2		8822.8 - 9076.0 GALS (3)	3.5.1	1, 2, 3 (1)	(1) MODE 3 WITH PZR PRESS > 1000 PSIG.
			SAT		RECORDED LEVEL LESS THAN 88 GALLONS HIGHER THAN (3) (4)			(2) LEVEL IS MAINTAINED 8822.8-9076.0; TECHNICAL SPECIFICATION LIMIT OF 8800-9100 GAL IS ANALYTICAL AND DOES NOT INCLUDE INSTRUMENT ERROR.
		SILA0955	8749.9		8822.8 - 9076.0 GALS (3)			(3) LEVEL AFTER LAST SAMPLE OR FILL FROM RWST OBTAINED FROM CONTROL ROOM NARRATIVE LOG
			SAT		RECORDED LEVEL LESS THAN 88 GALLONS HIGHER THAN (3) (4)			(4) RECORD SAT IF LIMIT IS MET <u>IF</u> LEVEL INCREASES ≥ 88 GAL OF THE ABOVE LEVEL (3) <u>AND</u> NOT FROM THE RWST, <u>THEN</u> ENSURE ACCUMULATOR HAS BEEN SAMPLED PER TECHNICAL SPECIFICATION 4.5.1.1.B WITHIN 6 HOURS <u>IF</u> APPLICABLE, <u>THEN</u> RECORD THE FOLLOWING: * _____ / _____ DATE / TIME OF NEXT CONDITIONAL SURVEILLANCE

*“N/A” may **NOT** be written in the space for conditional surveillances until the normal Dayshift log reading is required to be performed.
(Reference 6.17.22)

SILA-0955 is below the Technical Specification Limit of 8822.8 Gallons.

Required action is to apply Technical Specification 3.5.1, Action a.

STPNOC

Job Performance Measure

REVIEW AN EQUIPMENT CLEARANCE ORDER FOR LOW HEAD SI PUMP 1A

JPM Number: NRC A7

Revision Number: 1

Date: 07/17/2023

Developed By: N/A N/A
Instructor (Print/Sign) Date

Approved By: N/A N/A
Training Supervisor (Print/Sign) Date

Approved By: N/A N/A
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 for use on LOT 27 NRC Exam.

Revision 1, Added requirement to document TS/TRM actions that apply if any per the
ChE's request in Draft exam comments.

SIMULATOR SETUP INSTRUCTIONS

IC Setup

- No setup required. This is an Admin JPM.

INITIAL CONDITIONS:

Unit 1 is at 100% power.

Electrical Maintenance has requested an ECO to replace oil in Low Head Safety Injection pump 1A motor.

Low Head Safety Injection Pump 1A (WAN 987789).

ORACLE is unavailable.

INITIATING CUE:

You are the Unit Supervisor working a weekend shift.

A Reactor Operator has prepared an equipment clearance for Low Head SI Pump 1A.

You are to perform the Technical Review of the equipment clearance in accordance with OPGP03-ZO-EC01A, Equipment Clearance Order Instructions.

The Reactor Operator was given the following directions while preparing the ECO:

- De-energize the pump motor.
- Provide rotational protection.
- Restoration positions and components listed solely for restoration purposes are NOT required.
- The next ECO number will be A876678.

Review the equipment clearance order in its entirety.

- **If no errors are found then sign for the 'Tech Review By' and turn in to the examiner.**
- **If errors are found then document all errors prior to turning into the examiner.**
- **If any apply, document Technical Specifications/Technical Requirements Manual actions.**

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

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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 time clock starts when the candidate acknowledges the initiating cue.

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Task Standard:

Reviews an ECO which de-energizes and provides rotational protection for Low Head Safety Injection Pump 1A in accordance with OPGP03-ZO-EC01A, Equipment Clearance Order Instructions. Identifies three errors.

- Determines ECO line item 4 has incorrect breaker. Cubicle 5 is for HHSI 1A, should be Cubicle 6 for LHSI 1A.
- Determines ECO line item 5 required position is ON should be OFF.
- Determines ECO line item 7 does not have a "B" for Boundary protection
- Determines TS 3.5.2 Action a is applicable.

See Task Standard and KEY provided.

JPM Start Time: _____

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
NOTE: Use binder, if available, for Student Handouts for this JPM. Provide the following Student Handouts: • HO1 – 0PGP03-ZO-ECO1A, Equipment Clearance Order Instructions. This procedure will have the manual ECO forms. • HO2 – Completed Form 2, Equipment Clearance Order Request Form • HO2 – Completed Form 3, Equipment Clearance Order Form • HO2 – Completed Form 9, ECO Preparation Checklist • HO2 – Uncompleted Form 10, ECO Technical Review Checklist • HO3 – 9-F-05013 #1 Rev 33 • HO4 – 9-E-PMAB #1 Rev 25 • HO5 – 9-E-PKAA #1 Rev 12 • HO6 – Work Instructions for WAN 987789					
NOTE: The student should also use Form 10, ECO Technical Reviewer Checklist but it is not required for this JPM.					
1	Reviews Page 1 of Form 3:	Reviews the form: • ECO Number (1-2023-A876678) • Unit 1 • Hazardous System – NO • Notify Fire Protection – NO • Notify Security – NO • What is being tagged? – Low Head Safety Injection Pump 1A • TPNS - #2N121NPA102A	_____	_____	_____
2	Reviews Page 2 of Form 3:	Reviews the form: • ECO Number (1-2023-A876678) • Job Number – 1 • WAN – 987789 • Work Group – EM	_____	_____	_____

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
3	Reviews Page 3 of Form 3:	Determines Line Items 1, 2, 3, 6, 8 and 9 are CORRECT.	—	—	—
*4	Review page 3 of Form 3:	Determines ECO line item 4 has incorrect breaker. Cubicle 5 is for HHSI 1A, should be Cubicle 6 for LHSI 1A. Determines ECO line item 5 required position is ON should be OFF. Determines ECO line item 7 does not have a “B” for Boundary protection. NOTE: See Task Standard and KEY provided.	—	—	—
5*	Determine any Technical Specification/Technical Requirement Manual actions that apply	Student determines that TS 3.5.2 action a applies.	—	—	—
CUE	<u>This JPM is complete</u>				

JPM Stop Time: _____

JPM SUMMARY**Operator's Name:** _____ **Job Title:** ☐ RO ☒ SRO**JPM Title:** REVIEW AN EQUIPMENT CLEARANCE ORDER FOR LOW HEAD SI PUMP 1A**JPM Number:** NRC A7 **Revision Number:** 1**Task Number and Title:** 148210 (SRO), Authorize 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. 35,
9-F-05013 #1, 9-E-PMAB-01#1, 9-E-PKAA #1**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 (*)** 4**Evaluation Summary:**Were all the Critical Steps performed satisfactorily? ☐ Yes ☐ NoThe 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 – NRC A7

INITIAL CONDITIONS:

Unit 1 is at 100% power.

Electrical Maintenance has requested an ECO to replace oil in Low Head Safety Injection pump 1A motor.

Low Head Safety Injection Pump 1A (WAN 987789).

ORACLE is unavailable.

INITIATING CUE:

You are the Unit Supervisor working a weekend shift.

A Reactor Operator has prepared an equipment clearance for Low Head SI Pump 1A.

You are to perform the Technical Review of the equipment clearance in accordance with OPGP03-ZO-EC01A, Equipment Clearance Order Instructions.

The Reactor Operator was given the following directions while preparing the ECO:

- De-energize the pump motor.
- Provide rotational protection.
- Restoration positions and components listed solely for restoration purposes are NOT required.
- The next ECO number will be A876678.

Review the equipment clearance order in its entirety.

- **If no errors are found then sign for the ‘Tech Review By’ and turn in to the examiner.**
- **If errors are found then document all errors prior to turning into the examiner.**
- **If any apply, document Technical Specifications/Technical Requirements Manual actions.**

		0PGP03-ZO-ECO1A		Rev. 35	Page 95 of 119
Equipment Clearance Order Instructions					
Form 3 (Rev. 1)		Equipment Clearance Order Form (Line Items)			Page 3 of 3

ECO Number: 1 - 2023 - A876678
Unit Year Number

Page 3 of 3

Line Number	Type	BOUNDARY	Component ID Or Instructions	Verification Required?	Action	Exe. Seq	Required Position	Performed By	Verified By
1	C		A1SIHS0967 - LHSI PUMP 1A CRHS	Y	HANG	1	PTL		
2	C		A1SIHS0013A MINI FLOW ISOL MOV-0013A CRHS	Y	HANG	2	AUTO/CLOSE		
3	C		AISIHS0018A DISCH ISOL MOV-0018A CRHS	Y	HANG	2	AUTO/CLOSE		
4	D	B	2N121NPA102A SWGR E1A CUB 5 LHSI PUMP 1A	Y	HANG	3	RACKED OUT		
5	D	B	MCC E1A2 CUB P1 LHSI PUMP 1A MINIFLOW SI-MOV-0013A	Y	HANG	3	ON		
6	D	B	MCC E1A2 CUB R2 LHSI PUMP 1A DISCHARGE SI-MOV-0018A	Y	HANG	3	OFF		
7	D		A1SIMOV0013A LHSI PUMP 1A MINIFLOW HANDWHEEL	Y	HANG	4	DO NOT OPERATE		
8	D	B	A1SIMOV0018A LHSI PUMP 1A DISCH MOV HANDWHEEL	Y	HANG	4	DO NOT OPERATE		
9	D	B	2N121SI0240 LHSI PUMP 1A FLUSHING LINE 2ND ISOL VLV	Y	HANG	4	CLOSED		

Critical Steps:

- 1) The student identifies that the LHSI 1A Breaker should be Cubicle **6**, not 5 as listed.
- 2) The student identifies that the Line 5 component required position should be **OFF**, not ON as listed.
- 3) The student identifies that the Line 7 component should be identified as a boundary **(B)**.

NOTE:

The student should also use Form 10, ECO Technical Review Checklist, but it is not required for this JPM.

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STPNOC

Job Performance Measure

DETERMINE EMERGENCY EXPOSURE LIMITS

JPM Number: NRC A8

Revision Number: 1

Date: 07/17/2023

Developed By: N/A N/A
Instructor (Print/Sign) Date

Approved By: N/A N/A
Training Supervisor (Print/Sign) Date

Approved By: N/A N/A
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 LOT 24 NRC JPM for use on LOT 27 NRC exam.

Revision 1: Addressed ChE comments – Revised stem to specify what level of exposure is required (protecting safety-related equipment). Included that all ERO facilities are activated. Deleted references to current occupational exposure (not required to be accounted for by procedure) as well as Student Handouts 2 & 3.

SIMULATOR SETUP INSTRUCTIONS

IC Setup

- No setup required. This is an Admin JPM.

INITIAL CONDITIONS

Unit 2 is in a General Emergency (GE) due to an RCS Loss of Coolant Accident (LOCA) and Loss of Containment Integrity.

A Plant Operator will be required to go into an area with high radiation to close a valve to stop flooding in the AFW Pump 14 Room.

All Emergency Response facilities have been activated.

INITIATING CUE

Determine the MAXIMUM amount of exposure the Plant Operator can be authorized and the Approval Authority in accordance with 0EPR01-IP-0004, Emergency Exposure Controls, for the situation given in the INITIAL CONDITIONS.

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

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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 time clock starts when the candidate acknowledges the initiating cue.

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Task Standard:

The Operator determines the following:

- *MAXIMUM Exposure Limit for the situation given in the INITIAL CONDITIONS.*

 10 REM TEDE

- *Approval Authority:*

 TSC Manager

JPM Steps () 1, 2 completed.*

JPM Start Time: _____

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	<u>SAT</u>	<u>UNSAT</u>	<u>Comment Number</u>
<u>Note</u> Provide Student Handout of Initiating Cue and Student Handout HO1. A KEY is not needed with this JPM. See STEP STANDARDS below.					
*1	Determines Emergency Exposure in accordance with 0EPR01-IP-0004, Emergency Exposure Controls.	Determines the following based on the Initiating Cue: • MAXIMUM Exposure Limit for the situation given in the INITIAL CONDITIONS. (See 0EPR01-IP-0004) <u>10</u> REM TEDE	_____	_____	_____
*2	Determines Approval Authority	• Approval Authority: <u>TSC Manager.</u>	_____	_____	_____
CUE	<u>This JPM is complete</u>				

JPM Stop Time: _____

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JPM SUMMARY**Operator's Name:** _____ **Job Title:** ☐ RO ☐ SRO**JPM Title:** DETERMINE PERSONNEL EXPOSURE LIMITS**JPM Number:** NRC A8 **Revision Number:** 1**Task Number and Title:** SRO-12800, Activate the Emergency Plan**K/A Number and Importance:** 2.3.14 N/A / 3.8**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):** 0EPR01-IP-0004, Emergency Exposure Controls, Rev 0**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 ☐ NoThe 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 – NRC A8

INITIAL CONDITIONS

Unit 2 is in a General Emergency (GE) due to an RCS Loss of Coolant Accident (LOCA) and Loss of Containment Integrity.

A Plant Operator will be required to go into an area with high radiation to close a valve to stop flooding in the AFW Pump 14 Room.

All Emergency Response facilities have been activated.

INITIATING CUE

Determine the MAXIMUM amount of exposure the Plant Operator can be authorized and the Approval Authority in accordance with 0EPR01-IP-0004, Emergency Exposure Controls, for the situation given in the INITIAL CONDITIONS.

Provide the following data below to complete the JPM:

- MAXIMUM Exposure Limit for the situation given in the INITIAL CONDITIONS.

_____ **REM TEDE**

- Approval Authority for the exposure:

STPNOC

Job Performance Measure

DECLARE EMERGENCY ACTION LEVELS

JPM Number: NRC A9

Revision Number: 1

Date: 07/17/2023

Developed By: N/A N/A
Instructor (Print/Sign) Date

Approved By: N/A N/A
Training Supervisor (Print/Sign) Date

Approved By: N/A N/A
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 LOT 25 NRC JPM for use on LOT 27 NRC exam.

Revision 1: Addressed ChE comments – Revised “minimum” to “highest applicable”,
added condition to make restoration possible prior to exceeded General
Emergency criteria.

SIMULATOR SETUP INSTRUCTIONS

IC Setup

- No setup required. This is an Admin JPM.

INITIAL CONDITIONS

At 1000 both Units are at 100% power.

- SDG #11 is under ECO for bearing replacement.
- SDG #13 is running in parallel with off-site power for surveillance testing.

At 1005 the following occurs:

- The site loses all off-site power.
- SDG #13 emergency shutdown butterfly valve trips closed.
- SDG #12 fails to start.

At 1010:

- The operator at SDG #13 reports that the emergency shutdown butterfly valve cannot be reset.
- Attempts to start SDG #12 from the control room have been unsuccessful.

At 1015:

- The operator sent to locally start SDG #12 reports light smoke but no fire and an acrid odor in the room.
- Mechanical maintenance reports that it will take approximately 2.5 hours to repair the SDG#13 emergency shutdown butterfly valve.
- The STP Coordinator estimates that at least one source of offsite power will be available to the Units in approximately 3 hours.

INITIATING CUE

You are the Emergency Director and you are to classify the event at its **HIGHEST** applicable 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.

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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 time clock starts when the candidate acknowledges the initiating cue.

.....
Task Standard:

Operator declares the following in accordance with 0EPR04-UA-0001, EAL Wall Charts and EP-0003.000, EAL Technical Bases Manual.

Emergency Classification – SITE AREA EMERGENCY, **Initiating Condition** – “EAL-1” or words similar to “Loss of All Offsite and All Onsite Power to Emergency Buses for 15 Minutes or Longer”, **Specific EAL** – “SS1” or words similar to “Loss of All Offsite and All Onsite AC Power to All Three 4160V AC ESF Buses for 15 Minutes or Longer”. Also see KEY provided.

JPM Start Time: _____

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
<u>NOTE</u> Provide a copy of EP-0003.000, EAL Technical Basis Manual (Student HO1) and laminated copies of the EAL Wall Charts from 0EPR04-UA-0001 (Student HO2). Use a binder, if available, for the Student Handouts for this JPM. The SITE AREA EMERGENCY classification is based on IC EAL-1 of EAL SS1 (Loss of all offsite and all onsite AC power to – all three 4160V AC ESF/emergency – buses for 15 minutes or longer.) A KEY is provided for the Evaluator.					
*1	Classify the event in accordance with 0EPR04-UA-0001 and EP-0003.000.	Time Critical Start Time _____ Classifies the event at the HIGHEST applicable Emergency Classification Level including the corresponding Initiating Condition and specific Emergency Action Level (EAL). ECL: SITE AREA EMERGENCY IC: EAL-1 or description of EAL EAL:SS1 Time Critical Stop Time _____	_____	_____	_____
CUE	<u>This JPM is complete</u> (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:** NRC A9 **Revision Number:** 1**Task Number and Title:** SRO-12800, Activate the Emergency Plan**K/A Number and Importance:** 2.4.41 N/A / 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):** 0EPR04-UA-0001, EAL Wall Charts, Rev 0.
EP-0003.000, EAL Technical Basis Manual, Rev. 0**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 ☐ NoThe 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 – NRC A9

INITIAL CONDITIONS

At 1000 both Units are at 100% power.

- SDG #11 is under ECO for bearing replacement.
- SDG #13 is running in parallel with off-site power for surveillance testing.

At 1005 the following occurs:

- The site loses all off-site power.
- SDG #13 emergency shutdown butterfly valve trips closed.
- SDG #12 fails to start.

At 1010:

- The operator at SDG #13 reports that the emergency shutdown butterfly valve cannot be reset.
- Attempts to start SDG #12 from the control room have been unsuccessful.

At 1015:

- The operator sent to locally start SDG #12 reports smoke but no fire and an acrid odor in the room.
- Mechanical maintenance reports that it will take approximately 2.5 hours to repair the SDG#13 emergency shutdown butterfly valve.
- The STP Coordinator estimates that at least one source of offsite power will be available to the Units in approximately 3 hours.

INITIATING CUE

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

THIS JPM IS TIME CRITICAL.

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

Emergency Classification Level _____

Initiating Condition _____

Specific EAL _____

Student Handout – NRC A9 KEY

INITIAL CONDITIONS

At 1000 both Units are at 100% power.

- SDG #11 is under ECO for bearing replacement.
- SDG #13 is running in parallel with off-site power for surveillance testing.

At 1005 the following occurs:

- The site loses all off-site power.
- SDG #13 trips on overspeed.
- SDG #12 fails to start.

At 1010:

- The operator at SDG #13 reports that the overspeed device is mechanically bound and cannot be reset.
- Attempts to start SDG #12 from the control room have been unsuccessful.

At 1015 the following occurs:

- The operator sent to locally start SDG #12 reports smoke and an acrid odor in the room.

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: SITE AREA EMERGENCY

Initiating Condition: "1" or words similar to "LOSS OF ALL OFFSITE AND ALL ONSITE POWER TO EMERGENCY BUSES FOR 15 MINUTES OR LONGER"

Specific EAL: "SS1" or words similar to "LOSS OF ALL OFFSITE AND ALL ONSITE AC POWER TO ALL THREE 4160V AC ESF BUSES FOR 15 MINUTES OR LONGER"

EAL Technical Basis Manual

SS1**ECL: SITE AREA EMERGENCY**

Initiating Condition: Loss of **ALL** offsite and **ALL** onsite AC power to emergency buses for 15 minutes or longer.

Operating Mode Applicability: 1, 2, 3, 4

Emergency Action Level:**NOTE:**

The Emergency Director should declare the SITE AREA EMERGENCY promptly upon determining that 15 minutes has been exceeded, or will likely be exceeded.

- (1) Loss of **ALL** offsite and **ALL** onsite AC power to **ALL** three 4160V AC ESF Buses for 15 minutes or longer.

Basis:

This IC addresses a total loss of AC power that compromises the performance of all SAFETY SYSTEMS requiring electric power including those necessary for emergency core cooling, containment heat removal/pressure control, spent fuel heat removal and the ultimate heat sink. In addition, fission product barrier monitoring capabilities may be degraded under these conditions.

This IC represents a condition that involves actual or likely major failures of plant functions needed for the protection of the public.

Fifteen minutes was selected as a threshold to exclude transient or momentary power losses.

Escalation of the EMERGENCY CLASSIFICATION LEVEL would be via ICs RG1, FG1 or SG1.

SS1: EAL-1 Selection Criteria

Not Applicable

References:

1. OPOP04-AE-0001, Rev. 44, First Response to Loss of Any or All 13.8 KV or 4.16 KV Bus
2. OPOP04-AE-0004, Rev. 15, Loss of Power to One or More 4.16 KV ESF Bus
3. OPSP03-EA-0002, Rev. 32, ESF Power Availability
4. Drawing 00000E0AAAA, Rev. 24, Single Line Diagram, Main One Line Diagram, Unit No. 1 & 2

NOTES	
1	CUI, CUIZ, CUI, CIA, CAI, CAZ, H56, SUI, SUIZ, SUIA, SAI, SAZ, ISI, ISZ, ISH, ISH
2	CS1, CS1
3	RU1, R22
4	PO1
5	RA1, RS1, RI1, RQ2, RIH4, CA3
6	RA1, RS1, RI1
7	RU2
8	RU1, RA1, RS1, RI1
9	RA1, RI1, RI1
10	RA3, HAS
11	HU3
12	SUS

Facility: <u>South Texas Project</u>	Date of Examination: <u>7-17-2023</u>
Exam Level: RO ☒ SRO-I ☐ SRO-U ☐	Operating Test No.: <u>LOT 27 NRC</u>

System / JPM Title	Type Code*	Safety Function
Control Room Systems		
a. (S1) Monthly Control Rod Operability Two Rods Drop (Alt Path) KA: 001 A2.24 (3.5/4.1)	A,M,S	1
b. (S2) Lower Safety Injection Tank Level KA: 006 A1.13 (3.5)	EN,D,S	2
c. (S3) Respond to a SR NI Failure KA: 015 A4.03 (3.7)	D,L,P,S	7
d. (S4) Transfer to Cold Leg Recirc (Alt Path) Train C Containment Sump Isol fails to auto open KA: EPE 011 EA1.13 (4.3)	A,EN,L,M,S	4P
e. (S5) Secure a Steam Generator Feed Pump KA: 059 A4.14 (3.1)	N,S	4S
f. (S6) Place H2 Monitoring in Service (Alt Path) KA: 028 A4.03 (2.7)	A,L,M,S	5
g. (S7) Energize a Class 1E 4.16 KV Bus from the Emergency Transformer KA: 062 A2.20 (3.8/4.1)	D,S	6
h. (S8) Respond to a CRE Rad Monitor Alarm RT-8033 & RT-8034 (Alt Path) KA: 050 A2.03 (3.5/3.8)	A,D,L,S	9
In-Plant Systems		
i. (P1) Locally Re-align Critical Motor Operated Valves during a Loss of all AC Power KA: EPE 055 EA1.10 (3.6)	D,E,L,R	2
j. (P2) Transfer a 1E 120 VAC Distribution Panel to the Associated VRT and Shutdown the Inverter KA: 062 A1.03 (3.5)	N	6
k. (P3) Perform Local Actions for Loss of Instrument Air per OPOP04-IA-0001 KA: 078 A2.02 (3.9/3.8)	A,N,E	8

Facility: <u>South Texas Project</u>	Date of Examination: <u>7-17-2023</u>
Exam Level: RO ☐ SRO-I ☒ SRO-U ☐	Operating Test No.: <u>LOT 27 NRC</u>

System / JPM Title	Type Code*	Safety Function
Control Room Systems		
a. (S1) Monthly Control Rod Operability Two Rods Drop (Alt Path) KA: 001 A2.24 (3.5/4.1)	A,M,S	1
b. (S2) Lower Safety Injection Tank Level KA: 006 A1.13 (3.5)	EN,D,S	2
c.		
d. (S4) Transfer to Cold Leg Recirc (Alt Path) Train C Containment Sump Isol fails to auto open KA: EPE 011 EA1.13 (4.3)	A,EN,L,M,S	4P
e. (S5) Secure a Steam Generator Feed Pump KA: 059 A4.14 (3.1)	N,S	4S
f. (S6) Place H2 Monitoring in Service (Alt Path) KA: 028 A4.03 (2.7)	A,L,M,S	5
g. (S7) Energize a Class 1E 4.16 KV Bus from the Emergency Transformer KA: 062 A2.20 (3.8/4.1)	D,S	6
h. (S8) Respond to a CRE Rad Monitor Alarm RT-8033 & RT-8034 (Alt Path) KA: 050 A2.04 (3.5/3.8)	A,D,L,S	9
In-Plant Systems		
i. (P1) Locally Re-align Critical Motor Operated Valves during a Loss of all AC Power KA: EPE 055 EA1.10 (3.6)	D,E,L,R	2
j. (P2) Transfer a 1E 120 VAC Distribution Panel to the Associated VRT and Shutdown the Inverter KA: 062 A1.03 (3.5)	N	6
k. (P3) Perform Local Actions for Loss of Instrument Air per OPOP04-IA-0001 KA: 078 A2.02 (3.9/3.8)	A,N,E	8

Facility: <u>South Texas Project</u>	Date of Examination: <u>7-17-2023</u>
Exam Level: RO ☐ SRO-I ☐ SRO-U ☒	Operating Test No.: <u>LOT 27 NRC</u>

System / JPM Title	Type Code*	Safety Function
Control Room Systems		
a.		
b.		
c.		
d. (S4) Transfer to Cold Leg Recirc (Alt Path) Train C Containment Sump Isol fails to auto open KA: EPE 011 EA1.13 (4.3)	A,EN,L,M,S	4P
e. (S5) Secure a Steam Generator Feed Pump KA: 059 A4.14 (3.1)	N,S	4S
f.		
g.		
h. (S8) Respond to a CRE Rad Monitor Alarm RT-8033 & RT-8034 (Alt Path) KA: 050 A2.04 (3.5/3.8)	A,D,L,S	9
In-Plant Systems		
i. (P1) Locally Re-align Critical Motor Operated Valves during a Loss of all AC Power KA: EPE 055 EA1.10 (3.6)	D,E,L,R	2
j.		
k. (P3) Perform Local Actions for Loss of Instrument Air per 0POP04-IA-0001(Alt Path) KA: 078 A2.02 (3.9/3.8)	A,N,E	8

Form 3.2-2 Instructions for Control Room/In-Plant Systems Outline

1. Determine the number of control room system and in-plant system job performance measures (JPMs) to develop using the following table:

License Level	Control Room	In-Plant	Total
Reactor Operator (RO)	8	3	11
Senior Reactor Operator-Instant (SRO-I)	7	3	10
Senior Reactor Operator-Upgrade (SRO-U)	2 or 3	3 or 2	5

2. Select safety functions and systems for each JPM as follows:

Refer to Section 1.9 of the applicable knowledge and abilities (K/A) catalog for the plant systems organized by safety function. For pressurized-water reactor operating tests, the primary and secondary systems listed under Safety Function 4, "Heat Removal from Reactor Core," in Section 1.9 of the applicable K/A catalog, may be treated as separate safety functions (i.e., two systems, one primary and one secondary, may be selected from Safety Function 4). From the safety function groupings identified in the K/A catalog, select the appropriate number of plant systems by safety functions to be evaluated based on the applicant's license level (see the table in step 1).

For RO/SRO-I applicants: Each of the control room system JPMs and, separately, each of the in-plant system JPMs must evaluate a different safety function, and the same system or evolution cannot be used to evaluate more than one safety function in each location. One of the control room system JPMs must be an engineered safety feature.

For SRO-U applicants: Evaluate SRO-U applicants on five different safety functions. One of the control room system JPMs must be an engineered safety feature, and the same system or evolution cannot be used to evaluate more than one safety function.

3. Select a task for each JPM that supports, either directly or indirectly and in a meaningful way, the successful fulfillment of the associated safety function. Select the task from the applicable K/A catalog (K/As for plant systems or emergency and abnormal plant evolutions) or the facility licensee's site-specific task list. If this task has an associated K/A, the K/A should have an importance rating of at least 2.5 in the RO column. K/As that have importance ratings of less than 2.5 may be used if justified based on plant priorities; inform the NRC chief examiner if selecting K/As with an importance rating less than 2.5. The selected tasks must be different from the events and evolutions conducted during the simulator operating test and tasks tested on the written examination. A task that is similar to a simulator scenario event may be acceptable if the actions required to complete the task are significantly different from those required in response to the scenario event.

Apply the following specific task selection criteria:

Form 3.2-2 Instructions for Control Room/In-Plant Systems Outline (continued)

- At least one of the tasks shall be related to a shutdown or low-power condition.
- Four to six of the tasks for RO and SRO-I applicants shall require execution of alternative paths within the facility licensee's operating procedures. Two to three of the tasks for SRO-U applicants shall require execution of alternative paths within the facility licensee's operating procedures.
- At least one alternate path JPM must be new or modified from the bank.
- At least one of the tasks conducted in the plant shall evaluate the applicant's ability to implement actions required during an emergency or abnormal condition.
- At least one of the tasks conducted in the plant shall require the applicant to enter the radiologically controlled area. This provides an excellent opportunity for the applicant to discuss or demonstrate radiation control administrative subjects.

If it is not possible to develop or locate a suitable task for a selected system, return to step 2 and select a different system.

4. For each JPM, specify the codes for type, source, and location:

	Code	License Level Criteria		
		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 feature (for control room system)		≥ 1	≥ 1	≥ 1
(L)ow power/shutdown		≥ 1	≥ 1	≥ 1
(N)ew or (M)odified from bank (must apply to at least one alternate path JPM)		≥ 2	≥ 2	≥ 1
(P)revious two exams (randomly selected)		≤ 3	≤ 3	≤ 2
(R)adiologically controlled area		≥ 1	≥ 1	≥ 1
(S)imulator				

Control Room Systems JPMs

- (S1) **Monthly Control Rod Operability Two Rods Drop**
Demonstrate the ability to perform the Monthly Control Rod Operability Surveillance per 0PSP03-RS-0001, Control Rod Operability and Immediate Actions of 0POP04-RS-0001, Control Rod Malfunction for two dropped rods. This is an Alternate Path JPM.
Modified from LOT-18
- (S2) **Lower Safety Injection Accumulator Level**
Demonstrate the ability to drain a Safety Injection Accumulator in accordance with 0POP02-SI-0001, Safety Injection Accumulators.
Last used on LOT-24
- (S3) **Respond to a SR NI Failure**
Demonstrate the ability respond to a failed low Source Range Instrument per 0POP04-NI-0001, Nuclear Instrument Malfunction. (ROs only)
Last used on LOT-25
- (S4) **Transfer to Cold Leg Recirc. Train C Containment Sump Isol fails to auto open**
Demonstrate the ability to align ECCS Hot Leg Recirculation in accordance with 0POP05-EO-ES13, Transfer to Cold Leg Recirculation. This is an Alternate Path JPM.
Last used on LOT-14 Audit
- (S5) **Secure a Steam Generator Feed Pump**
Demonstrate the ability to shutdown a Steam Generator Feed Pump per 0POP02-FW-0002, S.G.F.P Turbine.
New
- (S6) **Place H2 Monitoring in Service**
Demonstrate the ability to place Hydrogen Analyzers in service Post LOCA in accordance with 0POP05-EO-EO10, Loss of Reactor or Secondary Coolant. This is an Alternate Path JPM.
Modified from LOT-25
- (S7) **Energize a Class 1E 4.16 KV Bus from the Emergency Transformer**
Demonstrate the ability to re-energize a Class 1E 4.16 KV Bus from the Emergency Transformer in accordance with 0POP04-AE-0004, Loss of Power to One or More 4.16 KV ESF Bus.
From LOR Bank
- (S8) **Respond to a CRE Rad Monitor Alarm RT-8033 & RT-8034**
Demonstrate the ability to investigate radiation alarms and ensure CRE HVAC is aligned as required for the alarm condition per 0POP04-RA-0001, Radiation Monitoring System Alarm Response. This is an Alternate Path JPM.
Last used on LOT-23

In Plant Systems JPMs**(P1) Locally Re-align Critical Motor Operated Valves during a Loss of all AC Power**

Demonstrate the ability to locate and align Charging Pump suction sources in accordance with 0POP05-EO-EC00, Loss of All AC Power.

Last used on LOT-21

(P2) Transfer a 1E 120 VAC Distribution Panel to the Associated VRT and Shutdown the Inverter

Demonstrate the ability to transfer power from a Class 1E 120 VAC Inverter to the Associated VRT and shutdown the Inverter per 0POP02-AE-0004, 120 VAC ESF Vital Distribution Power Supplies.

New

(P3) Perform Local Actions for Loss of Instrument Air per 0POP04-IA-0001

Demonstrate ability to perform local actions in the TGB per 0POP04-IA-0001, Loss of Instrument Air. This is an Alternate Path JPM.

New

Scheduling

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

- S1 will be performed independently. All ROs and SROIs.
- S2 and S5 will be performed together with S5 starting first. S2 All ROs and SROIs. S5 All Students.
- S3 will be performed independently. All ROs Only.
- S4 will be performed independently. All Students.
- S6 will be performed independently. All ROs and SROIs.
- S7 will be performed independently. All ROs and SROIs.
- S8 will be performed independently. All Students.
- P1 – All Students. RCA
- P2 – All ROs and SROIs
- P3 – All Students.

STPNOC

Job Performance Measure

Perform Monthly Control Rod Operability

JPM Number: NRC S1

Revision Number: 1

Date: 07/17/23

Developed By: N/A N/A
Instructor (Print/Sign) Date

Approved By: N/A N/A
Training Supervisor (Print/Sign) Date

Approved By: N/A N/A
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 LOT 18 NRC JPM S1 for LOT 27 with new Alternate Path.
- Revision 1,** Addressed ChE comments, from free review by selecting Perform as the testing method. Addressed ChE comments from Prep week by changing validation time to 6 minutes.

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 an IC for 78% power.
2. Establish all control rods fully withdrawn except Bank D at 215 steps.
3. Insert trigger for malfunction to drop Control Bank C Control Rods K10 and P8 when the IN-HOLD-OUT switch is placed in the OUT position.
4. Freeze and save IC to a designated IC for LOT NRC Exam usage.

After IC is Stored and ready to perform JPM

1. For LOT 27 NRC Exam this JPM is scheduled to be performed Independently.
2. Ensure "DO NOT USE" signs taped to Communications Consoles to help eliminate usage.
3. Check and clean the following procedures:
 - 0PSP03-RS-0001, Control Rod Operability - provided to the candidate as part of JPM
 - 0POP04-RS-0001, Control Rod Malfunction
 - 0POP05-EO-EO00, Reactor Trip or Safety Injection
 - 0POP09-AN-05M3, Annunciator Lampbox 5M03 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.

5. Reset the simulator to IC 191 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 at 78% power
- All control rods are fully withdrawn with the exception of Control Bank D which is at 215 steps.
- Corrective maintenance has been performed in the 2AC power cabinet.
- Surveillance test 0PSP03-RS-0001, Monthly Control Rod Operability, is required as a retest for Control Bank "C" following the corrective maintenance.
- Section 4.0, Prerequisites and 5.1, Preparation of 0PSP03-RS-0001, Monthly Control Rod Operability are complete.

INITIATING CUE

The Unit Supervisor directs you to perform the required portion of 0PSP03-RS-0001, Control Rod Operability for Control Bank "C" only. Performance of the following are not required:

- Moving rods 8 steps in and 8 steps out prior to moving at least 10 steps in any one direction (0PSP03-RS-0004, Control Rod Operability Test (Eight and Ten Steps))
- 0PSP03-RS-0003, Control Rod Operability (Single Rod)
- 0POP07-RI-0001, Digital Rod Position Indication Operability Test

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

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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.

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Task Standard:

Control Bank "C" inserted at least 10 steps but not more than 20 steps in accordance with 0PSP03-RS-0001, Monthly Control Rod Operability, determines that control rods K10 and P8 have dropped, trips the reactor and performs Step 1 of 0POP05-EO-EO00, Reactor Trip or Safety Injection. JPM steps () 5, 7, 13 complete.*

Applicant's actions did not degrade the condition of the plant beyond that introduced by the JPM as developed.

JPM Start Time: _____

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
<u>NOTE</u> The required portion of 0PSP03-RS-0001, Control Rod Operability for Control Bank "C" only and Table 1 will need to be provided to the applicant.					
1	Select the Computer display of rod position (Step 5.2.1)	RS-001, Control Rod Bank Positions displayed on ICS.	—	—	—
2	<u>IF</u> moving rods individually instead of rod banks, Then GO TO 0PSP03-RS-0003, Control Rod Operability (Single Rod). (Step 5.2.2)	The Operator determined from initial conditions that the step is N/A and continued to Step 5.2.3.	—	—	—
3	<u>IF</u> moving rod banks in 8 steps and out 8 steps prior to moving at least 10 steps in any one direction for operability, THEN GO TO 0PSP03-RS-0004, Control Rod Operability Test (Eight and Ten Steps). (Step 5.2.3)	Operator determined from initial conditions that the step is N/A and continued to Step 5.2.4.	—	—	—
4	COMPLETE Table 1, Rod Movement concurrently while performing Steps 5.2.5 through 5.2.12. (Step 5.2.4)	The Operator filled-in Table1 as required during performance of steps 5.2.5 through 5.2.12 for Control Bank C.	—	—	—
*5	SELECT rod bank to be moved with "ROD BANK SEL" handswitch (CP005). (Step 5.2.5)	Control Bank "C" selected on "ROD BANK SEL" handswitch.	—	—	—

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
6	RECORD As found demand position of selected rod bank on Table 1, Rod Movement Verification (Step 5.2.6)	The As-Found Position of Control Bank C Groups 1 and 2 is recorded in Table 1.	—	—	—
*7	Perform the following to demonstrate control rod movement: INSERT selected rod at least 10 steps, but not more than 20 steps. (Step 5.2.7)	Control Bank C inserted until Step Demand Counters for Control Bank C changed by at least 10 steps but before changing 20 steps. NOTE: 5M03, D-5, ROD SUPV MNTR ROD POSITION TRBL is an expected annunciator.	—	—	—
8	VERIFY DRPI indicates each rod within selected bank moved. (Step 5.2.8)	DRPI indication for each rod in Control Bank C verified changed to next lower light position (CP005).	—	—	—
9	VERIFY the DRPI and “STEP DEMAND” indications on the Plant Computer display agree with the actual DRPI and Group Demand indications on CP005 for each rod within the selected bank. (Step 5.2.9)	ICS indications verified consistent with DRPI and Step Demand counters.	—	—	—

ALTERNATE PATH begins here. <i>When the operator performs the next step, Two rods will drop into the core.</i>					
10	Move the selected rod bank back to As Found position on Table 1. (Step 5.2.10)	The Rod Control Switch placed to OUT, then returned to NEUTRAL when rods drop.	—	—	—
0POP04-RS-0001, Control Rod Malfunction					
11	ENSURE "ROD BANK SEL" switch in "MAN" (CP005) (Step 1.0)	The Operator placed "ROD BANK SEL" in "MAN". (CP005)	—	—	—
12	VERIFY All Rods – NO ROD MOTION (Step 2.0)	The Operator verified no rod motion by observing NO IN or OUT Demand Lights lit, and NO changes in Step Demand or DRPI indications. (CP005)	—	—	—
*13	CHECK for Dropped Rod: a. CHECK All Rods – Any Rod Dropped b. CHECK All Rods – ONLY ONE ROD DROPPED RNO: <u>IF</u> in MODES 1 or 2, <u>THEN</u> PERFORM the following: 1) TRIP the Reactor. 2) GO TO 0POP05-EO-EO00, reactor Trip or Safety Injection (Step 3.0 and RNO 3.b)	The Operator identified TWO rods dropped. *The Manual Reactor Trip Switch momentarily placed to "TRIP".(CP005 or CP007) The Operator performed Step 1 of 0POP05-EO-EO00, Reactor Trip or Safety Injection: ○ Verified both Reactor Trip and both Reactor Trip Bypass breakers are open (CP005). ○ Verified all DRPI Rod Bottom Lights are lit (CP005). ○ Verified Reactor Power is lowering (PR or IR indicators and IR SUR on CP005 or QDPS).	—	—	—
CUE	<u>This JPM is completed</u>				

JPM Stop Time: _____

JPM SUMMARY**Operator's Name:** _____ **Job Title:** ☐ RO ☐ SRO**JPM Title:** Perform Monthly Control Rod Operability Test**JPM Number:** NRC S1 **Revision Number:** 1**Task Number and Title:** 2850, Perform Monthly Control Rod Operability Test**K/A Number and Importance:** 001 A2.24, 3.5/4.1**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:** 3**Reference(s):** 0PSP03-RS-0001, Control Rod Operability Test, Rev 39; 0POP04-RS-0001, Control Rod Malfunction, Rev 37; 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:** 6 minutes **Actual Time Used:** _____ minutes**Critical Steps (*)** 5,7,13**Evaluation Summary:**Were all the Critical Steps performed satisfactorily? ☐ Yes ☐ NoThe 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 – NRC S1

INITIAL CONDITIONS

- Unit 1 is at 78% power
- All control rods are fully withdrawn with the exception of Control Bank D which is at 215 steps.
- Corrective maintenance has been performed in the 2AC power cabinet.
- Surveillance test 0PSP03-RS-0001, Monthly Control Rod Operability, is required as a retest for Control Bank “C” following the corrective maintenance.
- Section 4.0, Prerequisites and 5.1, Preparation of 0PSP03-RS-0001, Monthly Control Rod Operability are complete.

INITIATING CUE

The Unit Supervisor directs you to perform the required portion of 0PSP03-RS-0001, Control Rod Operability for Control Bank “C” only. Performance of the following are not required:

- Moving rods 8 steps in and 8 steps out prior to moving at least 10 steps in any one direction (0PSP03-RS-0004, Control Rod Operability Test (Eight and Ten Steps))
- 0PSP03-RS-0003, Control Rod Operability (Single Rod)
- 0POP07-RI-0001, Digital Rod Position Indication Operability Test

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

STPNOC

Job Performance Measure

LOWER SAFETY INJECTION ACCUMULATOR LEVEL

JPM Number: NRC S2

Revision Number: 1

Date: 07/17/2023

Developed By:	<u>N/A</u>	<u>N/A</u>
	Instructor (Print/Sign)	Date

Approved By:	<u>N/A</u>	<u>N/A</u>
	Training Supervisor (Print/Sign)	Date

Approved By:	<u>N/A</u>	<u>N/A</u>
	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 LOT 24 NRC JPM S8 for LOT 27 NRC exam.
- Revision 1,** Addressed ChE comments, from free review by selecting Perform as the testing method. Addressed additional ChE comment to remove JPM Step 8 as a critical step. Addressed ChE comments from Prep week by changing validation time to 10 minutes, editing JPM Step 3 by moving examiner cue to the student initial condition/cue sheet, pre-placing N/A in Student HO Step 6.3, and revising the step Standard to indicate that the step is N/A due to information provided in the initiating cue.

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 to a 78% power IC.
2. Using 0POP02-SI-0001, Safety Injection Accumulators, raise level in the selected accumulator until the annunciator window for the selected accumulator comes in. "ACC TK 1B LEVEL HI/LO"
3. Save IC to a designated IC for LOT NRC Exam usage.

After IC is Stored and ready to perform JPM

1. For LOT 27 NRC Exam this JPM is scheduled to be performed with JPM S5. JPMs S2 & S5 are to be performed concurrently with S5 starting before S2.
2. Ensure Radio volume for both stations are set to a reasonable level.
3. Ensure "DO NOT USE" signs taped to Communication Console to help eliminate usage.
4. Check and clean the following procedures:
 - 0POP02-SI-0001, Safety Injection Accumulators.
 - 0POP09-AN-01M2 – B5, ACC TK 1B LEVEL HI/LO

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.

5. Reset the simulator to IC 191 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

The plant is at 78% power. Annunciator Window 1M02 Window B-5, ACC TK 1B LEVEL HI/LO, is lit. It has been determined that level is high.

INITIATING CUE

You have been given the procedure and the Unit Supervisor directs you to lower SI Accumulator tank 1B level to 9050 gallons in accordance with OPOP02-SI-0001, Safety Injection Accumulators, Section 6.0, Lowering Accumulator Level.

NOTE: OPOP02-SI-0001, Safety Injection Accumulators, Section 3.0, Prerequisites, has been completed SAT. All valves listed in Addendum 1 that are in the required flowpath are known to be OPEN, Step 6.3 is N/A.

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:

Safety Injection Accumulator 1B level is adjusted to between 8822.8 and 9076.0 gallons and alarm ACC TK 1B LEVEL HI/LO is NOT lit. JPM steps () 5, 6, 7 completed. Applicant's actions did not degrade the condition of the plant beyond that introduced by the JPM as developed.*

JPM Start Time: _____

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
<u>NOTE</u> Hand out the Student Initiating Cue Sheet along with the Student HO of 0POP02-SI-0001, Safety Injection Accumulators.					
1	RECORD the level of the accumulator in which level is to be lowered: ACC 1B Plant Computer point SILA0952/SILA0953. (Step 6.1) Cue: If asked, this is the first time the alarm has come in since the last boron sample which was within TS limits.	The operator recorded the current level of accumulator tank 1B. NOTE Have the operator use the Initiating Cue Sheet to record level.	_____	_____	_____
2	IF accumulator level needs minor adjustment, THEN level may be adjusted using accumulator sample lineup. (Step 6.2) Cue: As the Unit Supervisor, direct the Operator that accumulator sample lines are NOT to be used to lower level.	The operator determined that accumulator sample lines will not be used to lower accumulator level by conferring with the Unit Supervisor.	_____	_____	_____
3	PERFORM the following for applicable Train valves listed on Addendum 1, Manual SI Test Valves: - Record as found position. - Align to test position. (Step 6.3)	Step is "N/A" as the status of Addendum 1 valves is given in the initiating cue.			

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
4	VERIFY the accumulator that is to be drained is in service with the "ACC DISCH ISOL" valve open: • ACC "1B(2B)" "MOV-0039B" (Step 6.4)	The operator verified that SI-MOV-0039B is OPEN. NOTE SI-MOV-0039B will already be open.	—	—	—
*5	OPEN "TEST LN ICIV FV-3970 and 3971". (Step 6.5 and 6.6)	The operator opened SI-FV-3970 and 3971.	—	—	—
*6	OPEN the Upstream SIS Test Valve for accumulator to be drained: "FV-3968 ACC 1B UP STREAM" (Step 6.7)	The operator opened SI-FV-3968 to begin lowering level. NOTE It will take about 45 to 60 seconds to clear the alarm.	—	—	—
*7	WHEN ACC TK 1B HI/LO Annunciator is extinguished AND required level is attained, THEN CLOSE the Upstream SIS Test Valve for the accumulator being drained: "FV-3968 ACC 1B UP STREAM" (Step 6.8)	The operator closed SI-FV-3968 when the alarm cleared, level within the desired band. NOTE Per the Initiating CUE the operator will stop lowering level when level reaches 9050 gallons. The annunciator will have cleared.	—	—	—
8	CLOSE "TEST LN ICIV FV-3970 and 3971". (Step 6.9 and 6.10)	The operator closed SI-FV-3970 and 3971.	—	—	—

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
9	VERIFY level between 8822.8 and 9076.0 gallons in the accumulator that was drained: ACC 1B Plant Computer point SILA0952/SILA0953 (Step 6.11)	The operator verified accumulator 1B level between 8822.8 and 9076.0 gallons.	—	—	—
10	VERIFY pressure between 616.3 and 643.7 psig for the accumulator that was drained: ACC 1B Plant Computer point SIPA0962/SIPA0963 (Step 6.12)	The operator verified accumulator 1B pressure between 616.3 and 643.7 psig. NOTE Pressure may come down some during the drain process but should stay within band.	—	—	—
11	RECORD the final level of the accumulator that was drained in the Control Room narrative log and the amount that was drained by subtracting the final level from the level recorded in Step 6.1. The Plant Computer is the preferred source: ACC 1B Plant Computer point SILA0952/SILA0953 (Step 6.13)	The operator recorded final accumulator level and the amount, in gallons, drained. NOTE Have the operator use the Initiating Cue Sheet to record level.	—	—	—
CUE	<u>This JPM is complete</u>				

JPM Stop Time: _____

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JPM SUMMARYOperator's Name: _____ Job Title: ☐ RO ☐ SROJPM Title: LOWER SAFETY INJECTION ACCUMULATOR LEVELJPM Number: NRC S2 Revision Number: 1Task Number and Title: T29400 – Lower level in an in-service accumulatorK/A Number and Importance: 006 A1.13 3.5Suggested Testing Environment: ☒ Simulator ☐ Control Room ☐ In-Plant ☐ OtherAlternate Path: ☐ Yes ☒ NoTask Designed For: ☐ SRO Only ☒ RO/SRO ☐ AO/RO/SROTime Critical: ☐ Yes ☒ NoLevel of Difficulty: 3

Reference(s): 0POP02-SI-0001, Safety Injection Accumulators, Rev 43

0POP09-AN-01M2 – B5, ACC TK 1B LEVEL HI/LO, Rev 37

Actual Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☐ OtherTesting Method: ☐ Simulate ☒ PerformEstimated Time to Complete: 10 minutes Actual Time Used: _____ minutesCritical Steps (*) 5, 6, 7**Evaluation Summary:**Were all the Critical Steps performed satisfactorily? ☐ Yes ☐ NoThe 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 – NRC S2

INITIAL CONDITIONS

The plant is at 78% power. Annunciator Window 1M02 Window B-5, ACC TK 1B LEVEL HI/LO, is lit. It has been determined that level is high.

INITIATING CUE

You have been given the procedure and the Unit Supervisor directs you to lower SI Accumulator tank 1B level to 9050 gallons in accordance with OPOP02-SI-0001, Safety Injection Accumulators, Section 6.0, Lowering Accumulator Level.

NOTE: OPOP02-SI-0001, Safety Injection Accumulators, Section 3.0, Prerequisites, has been completed SAT. All valves listed in Addendum 1 that are in the required flowpath are known to be OPEN.

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 S3

Revision Number: 1

Date: 07/17/2023

Developed By: N/A N/A
Instructor (Print/Sign) Date

Approved By: N/A N/A
Training Supervisor (Print/Sign) Date

Approved By: N/A N/A
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 LOT 25 NRC JPM S6 for LOT 27 NRC exam.
- Revision 1,** Addressed ChE comments, from free review by selecting Perform as the testing method. Added the relevant procedure as a student handout.
Addressed ChE comments from Prep week by creating two separate Student Handouts – HO1 covers the initial actions of POP04-NI-0001, Nuclear Instrument Malfunction including which addendums apply to which nuclear instruments and HO2 is the addendum (Addendum 1) that contains the actions applicable to the failed instrument in the JPM. Revised the NOTE section prior to the JPM Step 1 to provide the examiner details of when Student Handouts are to be provided to the operator.

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 Exam usage.

After IC is Stored and ready to perform JPM

1. For LOT 27 NRC Exam this JPM is scheduled to be performed independently (i.e. not concurrent with another JPM).
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. Set Steam Dump controller for 8.32.
5. Check and clean the following procedures:
 - 0POP04-NI-0001, Nuclear Instrument Malfunction
 - POP09-AN-05M3, Annunciator Lampbox 5M03 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.

6. Reset the simulator to IC 194 and verify the following:
 - Red light at the end of CP-010 is out
 - ICS annunciators have stopped counting up
7. FROM THE BOOTH, place simulator in run and quickly silence/acknowledge/reset alarms, including plant computer/ICS alarms. **At the start of this JPM the SR Audio Count Rate will not be heard.**
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. 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 time clock 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. Applicant's actions did not degrade the condition of the plant beyond that introduced by the JPM as developed.*

JPM Start Time: _____

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
<u>NOTE</u> Handout the Student Initiating Cue Sheet and Student HO1 to the student. WHEN the student identifies the correct addendum to use for the malfunctioning instrument (Addendum 1), THEN provide Student HO2.					
1	CHECK Power Range Nuclear Instruments – NORMAL (Step 1.0)	The Operator checked no Power Range NI failures and continued to Step 2.0.	—	—	—
2	CHECK Source Range Nuclear Instruments – NORMAL RNO GO TO Addendum 1, Source Range Nuclear Instrument Failure. (Step 2.0 and RNO)	The Operator identified Source Range NI Channel NI 31 failed low and goes to Addendum 1, Source Range Nuclear Instrument Malfunction, Step 1.	—	—	—
3	VERIFY Plant In – MODE 2 RNO GO TO Addendum 1 Step 3.0 (Add 1 Step 1.0 and RNO)	The Operator verified plant is in Mode 3 and goes to Step 3.0.	—	—	—

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	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 (Addendum 1 Step 3.0)	The Operator placed “LEVEL TRIP” switch in BYPASS The Operator placed “HIGH FLUX AT SHUTDOWN” switch in BLOCK After operating both switches, the Operator continued to Add 1, Step 4.0. NOTE: These switch operations represent 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 RNO GO TO Addendum 1 Step 9.0. (Add 1 Step 4.0 and RNO)	The Operator verified plant in Mode 3 and goes to Add 1, Step 9.0.	—	—	—
6	VERIFY Plant In – MODE 3, 4, OR 5 (Addendum 1 Step 9.0)	The Operator verified plant in Mode 3 and continued to Add 1, Step 10.0.	—	—	—
*7	ENSURE Operable SR SELECTED • SR-31 or SR-32 (Addendum 1 Step 10)	The Operator ensured that SR-32 selected and continued to Add 1, Step 11.0.	—	—	—

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
8	ENSURE Scaler Timer Power Toggle Switch – ON (Up Position) (Addendum 1 Step 11.0)	The Operator ensured the Scaler Timer Power Toggle Switch ON (Up Position) and continued to Add 1, Step 12.0.	—	—	—
9	CHECK Audible Count Rate – IN SERVICE (Addendum 1 Step 12.0)	The Operator checked the Source Range Audible Count Rate Channel in service on SR-32. NOTE: Operator may have to also optimize the Audio Multiplier and Volume.	—	—	—
CUE	<u>This JPM is completed</u>				

JPM Stop Time:

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JPM SUMMARY**Operator's Name:** _____ **Job Title:** ☐ RO ☐ SRO**JPM Title:** RESPOND TO FAILED SOURCE RANGE NI**JPM Number:** NRC S3 **Revision Number:** 1**Task Number and Title:** 73400, Respond to Nuclear Instrumentation System Alarms**K/A Number and Importance:** 015 A4.03 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):** 0POP04-NI-0001, Nuclear Instrumentation Malfunction, Rev. 23**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 ☐ NoThe 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 – NRC S3

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

TRANSFER TO COLD LEG RECIRCULATION

JPM Number: NRC S4

Revision Number: 1

Date: 07/17/2023

Developed By: N/A N/A
Instructor (Print/Sign) Date

Approved By: N/A N/A
Training Supervisor (Print/Sign) Date

Approved By: N/A N/A
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 LOT 14 Audit JPM S2 for LOT 27 NRC exam.
- Revision 1,** Addressed ChE comments, from free review by selecting Perform as the testing method. Addressed ChE comments – revised to begin JPM at Procedure Step 1; removed Step 6 as the end step in the Initiating Cue; added JPM Steps 1 & 2 and renumbered remaining steps to accommodate beginning the JPM at Procedure Step 1; added examiner cue that the JPM can be stopped at the completion of Procedure Step 6. Addressed ChE comments from Prep week by deleting the malfunction for the Train A HHSI Pump mini-flow recirc valves, deselected JPM Step 7 as a Critical Step, editing JPM Step 7 Element & Standard to indicate that the operator will verify that all HHSI & LHSI Pump mini-flow recirc valves are closed, and deselected JPM Steps 16 as a Critical Steps as no actions are performed in these steps.

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. Insert a 'fail-to-automatically open' malfunction for the C Train containment sump to SI suction header isolation valve (MOV-0016C).
2. Establish plant conditions where a LB LOCA and the swapover to the containment sump has occurred, and RWST level is approximately 73,000 gallons then freeze the simulator.
3. Save IC to a designated IC for LOT NRC Exam usage.

After IC is Stored and ready to perform JPM

1. For LOT 27 NRC Exam, this JPM is to be performed independently (i.e. not concurrent with any other simulator JPM).
2. Ensure "DO NOT USE" signs taped to Communications Consoles to help eliminate usage.
3. Check and clean the following procedures:
 - OPOP05-EO-ES13, Transfer to Cold Leg Recirculation

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.

5. Reset the simulator to IC 192 and:
 - When the only out-of-position switch listed in the switch check dialog window is MOV-0016C, then terminate Switch Check 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

A Large Break LOCA has occurred. The crew is currently performing 0POP05-EO-EO10, Loss of Reactor or Secondary Coolant. Safety Injection (SI) and the ESF Load Sequencers have been reset. RWST level is approximately 73,000 gallons.

INITIATING CUE

You have been given the procedure and the Unit Supervisor directs you to complete alignment to Cold Leg Recirculation by performing 0POP05-EO-ES13, Transfer to Cold Leg Recirculation, beginning at Step 1.

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:

All three trains of HHSL, LHSL, and at least two Containment Spray Pumps aligned for Cold Leg Recirculation. JPM steps () 4, 9, 10, 12-15, 17 completed satisfactory. Applicant's actions did not degrade the condition of the plant beyond that introduced by the JPM as developed.*

JPM Start Time: _____

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
<u>NOTE</u> Handout the Student Initiating Cue Sheet along with the Student HO of 0POP05-EO-ES13, Transfer to Cold Leg Recirculation.					
1	RESET SI	The Operator verified SI reset as given in the initial conditions.	—	—	—
2	RESET ESF Load Sequencers	The Operator verified ESF Load Sequencers reset as given in the initial conditions.	—	—	—
3	VERIFY CCW Flow to RHR Heat Exchangers (Step 3)	The Operator verified CCW flow to the RHR Heat Exchangers.	—	—	—
*4	STOP any running CCP(s) (Step 4)	Both CCPs are secured. NOTE: CCP 1B is running in this IC setup so it must be secured, 1A is not running.	—	—	—
5	VERIFY SI and Containment Spray System – ALIGNED FOR RECIRCULATION HHSI cold leg injection valves – OPEN (Step 5a)	The Operator verified HHSI cold leg injection valves open.	—	—	—
6	LHSI cold leg injection valves – OPEN (Step 5b)	The Operator verified cold leg injection valves open.	—	—	—

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
7	ENSURE SI pump mini flow valves – CLOSED ○ HHSI pumps ○ LHSI pumps (Step 5c)	The Operator verified all HHSI and LHSI Pump mini flow valves are closed.	—	—	—
ALTERNATE PATH begins here.					
8	Containment sump to SI suction header valves – OPEN (Step 5d)	The Operator verified Train A & B Containment to SI suction header valves open. The Operator identified that 'C' Containment sump to SI suction header isolation valve failed to open and goes to Step 5d RNO.	—	—	—
*9	IF any train(s) containment sump valve did NOT open, THEN perform the following for the affected trains, one train at time: • STOP HHSI pump. (Step 5d RNO d.1)	1C HHSI Pump stopped.	—	—	—
*10	STOP LHSI pump. (Step 5d RNO d.2)	1C LHSI pump stopped.	—	—	—
11	STOP containment spray pump. (Step 5d RNO d.3)	The Operator verified 1C Containment Spray pump is stopped. Note: 1C Containment Spray pump will already be stopped in the Pull-To-Lock position.	—	—	—
*12	CLOSE the RWST to SI suction header valve. (Step 5d RNO d.4)	Train C RWST to SI suction header is closed.	—	—	—

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
*13	OPEN the containment sump to SI suction header valve. (Step 5d RNO d.5)	The Train C containment sump to SI suction header valve is open.	—	—	—
*14	START HHSI pump. (Step 5d RNO d.6)	1C HHSI pump is running.	—	—	—
*15	START LHSI pump. (Step 5d RNO d.7)	1C LHSI pump is running.	—	—	—
16	IF containment spray was running, THEN START containment spray pump. (Step 5d RNO d.8)	1C Containment Spray pump was not running, therefore the Operator should continue to Step 5e.	—	—	—
*17	ENSURE RWST to SI suction header valves CLOSED (Step 5e)	Train A & B RWST to SI suction header valves are closed. The C train valves were aligned (closed) in substep 5.d RNO above.	—	—	—
18	CHECK SI and Containment Spray Systems – AT LEAST ONE TRAIN ALIGNED FOR RECIRCULATION (Step 5f)	The Operator determines all three trains are aligned for Cold Leg Recirculation.	—	—	—

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
19	CHECK SI and Containment Spray Pump Status: HHSI Pumps – RUNNING LHSI Pumps – RUNNING Containment Spray Pumps – RUNNING (Step 6) CUE: the examiner may stop the JPM at the completion of Procedure Step 6.	The Operator verified all HHSI and LHSI Pumps and two Containment Spray Pumps running.	—	—	—
CUE	<u>This JPM is completed</u>				

JPM Stop Time: _____

JPM SUMMARY**Operator's Name:** _____ **Job Title:** ☐ RO ☐ SRO**JPM Title:** TRANSFER TO COLD LEG RECIRCULATION**JPM Number:** NRC S4 **Revision Number:** 1**Task Number and Title:** 81579, Transfer to Cold Leg Recirculation**K/A Number and Importance:** EPE 011 EA1.13 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):** 0POP05-EO-ES13, Transfer to Cold Leg Recirculation.**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 (*)** 4, 9, 10, 12-15, 17**Evaluation Summary:**Were all the Critical Steps performed satisfactorily? ☐ Yes ☐ NoThe 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 – NRC S4

INITIAL CONDITIONS

A Large Break LOCA has occurred. The crew is currently performing 0POP05-EO-EO10, Loss of Reactor or Secondary Coolant. Safety Injection (SI) and the ESF Load Sequencers have been reset. RWST level is approximately 73,000 gallons.

INITIATING CUE

You have been given the procedure and the Unit Supervisor directs you to complete alignment to Cold Leg Recirculation by performing 0POP05-EO-ES13, Transfer to Cold Leg Recirculation, beginning at Step 1.

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

STPNOC

Job Performance Measure

SECURE A STEAM GENERATOR FEED PUMP

JPM Number: NRC S5

Revision Number: 1

Date: 07/17/2023

Developed By: N/A N/A
Instructor (Print/Sign) Date

Approved By: N/A N/A
Training Supervisor (Print/Sign) Date

Approved By: N/A N/A
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 LOT 27 NRC exam.
- Revision 1,** Addressed ChE comments, from free review by selecting Perform as the testing method, changed standard for steps 18 and 19 from “ensured” to “verified” as requested. Addressed ChE comments from Prep week by changing validation time to 10 minutes, and deleting JPM Step 21.

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 is performed in Mode 1.
2. Example: Save IC to a designated IC for LOT NRC Exam usage.

After IC is Stored and ready to perform JPM

1. For LOT 27 NRC Exam this JPM is scheduled to be performed with JPM S2. JPMs S2 & S5 are to be performed concurrently with S5 starting before S2.
2. Ensure "DO NOT USE" signs taped to Communications Consoles to help eliminate usage.
3. Check and clean the following procedures:
 - 0POP02-FW-0002, Steam Generator Feed Pump Turbine

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.

5. Reset the simulator to IC 191 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. Example: There is no simulator lesson plan for this JPM.

Booth Instructor Actions

1. None.

INITIAL CONDITIONS

Unit 1 is at 78% power.

The crew is performing 0POP03-ZG-0006, Plant Shutdown From 100% to Hot Standby.

All steam driven Steam Generator Feed Pumps (SGFP) and the Start-Up SGFP are in service.

INITIATING CUE

You have been given the procedure and the Unit Supervisor directs you to shutdown SGFP #11 per 0POP02-FW-0002, SGFP Turbine.

NOTE: SGFP #11 will not remain at 3300 RPM. Mechanical Overspeed, SGFP Turbine Stop Valve, and Main Oil Pump Swap testing will not be performed. These steps have been marked N/A.

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.

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Task Standard:

SGFPT #11 is shutdown and on the turning gear. JPM steps () 3, 7, 9, 11, 13, and 16 completed satisfactory. The Applicant's actions did not degrade the condition of the plant beyond that introduced by the JPM as developed.*

JPM Start Time: _____

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
<u>NOTE</u> Handout the Student Initiating Cue Sheet along with the Student HO of 0POP02-FW-0002 SGFP Turbine.					
1	PERFORM the following for the applicable SGFP Turbine: (located on CP006 unless otherwise noted) (Step 17.1)				
2	CHECK the "STM LN DRAIN" switch in "AUTO": SGFP 11 "LV-7954/7955/7973" (Step 17.1.1)	The Operator checked the "STM LN DRAIN" switch in "AUTO" for LV-7954/7955/7973 for SGFP 11.	—	—	—
*3	ENSURE the "SPEED" controller in the "MAN" position. (SGFPT Controller) (Step 17.1.2)	The Operator places the SGFP 11 "SPEED" controller in the "MAN" position. NOTE: the speed controller will be in "AUTO" and the operator will place it in "MAN" by depressing the pushbutton.	—	—	—
4	IF the S/U SGFP 14 is NOT running, THEN ENSURE the S/U SGFP 14 is in "PULL TO LOCK" (Step 17.1.3)	SGFP 14 is running as specified in the initial conditions. The Operator 'N/A's this step.	—	—	—
5	IF SGFP Turbine is being shutdown for maintenance outage, THEN PERFORM Mechanical Overspeed Test. (Step 17.1.4)	This step is not applicable as specified in the initiating cue and is marked N/A.			

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
6	IF only one SGFP will remain in service (with or without the SUFP in service) THEN PLACE the SGFPT MASTER speed controller in "MANUAL" AND RAISE speed to 5200 rpm. (Step 17.1.5)	Two SGFPs will still be in service. The Operator 'N/A's this step.	—	—	—
*7	Slowly REDUCE Turbine speed to 3300 rpm by repeatedly depressing the SPEED controller "LOWER" Pushbutton. (SGFPT Controller) (Step 17.1.6)	The Operator reduces SGFP 11 Turbine speed to 3300 rpm.	—	—	—
8	IF the SGFPT will remain at 3300 rpm, THEN PERFORM the following: (Step 17.1.6.1)	This step is not applicable as specified in the initiating cue and is marked N/A.			
*9	CLOSE the "FW DISCH" Valve SGFP 11 "MOV-0119" (Step 17.1.7)	The SGFP 11 "FW DISCH" valve MOV-0119 is CLOSED.	—	—	—
10	IF SGFP Turbine is being shutdown for maintenance outage, THEN PERFORM OPOP07-FW-0001, SGFP Turbine Stop Valves. (Step 17.1.8)	This step is not applicable as specified in the initiating cue and is marked N/A.			
*11	DEPRESS the SGFP "TRIP" pushbutton. (Step 17.1.9)	SGFP 11 is tripped by depressing the "TRIP" pushbutton and pump speed is lowering.	—	—	—

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
12	VERIFY THE FOLLOWING: • “TRIP” light lit • “LATCH/ALM RST” light extinguished • SGFPT HP stop valves CLOSED • SGFPT LP stop valves CLOSED (Step 17.1.10)	The Operator verified listed indications.	—	—	—
*13	Momentarily DEPRESS the SGFP “LATCH/ALM RST” pushbutton. (Step 17.1.11)	Operator depresses the SGFP “LATCH/ALM RST” pushbutton. • “LATCH/ALM RST” lit • “TRIP” light extinguished • VERIFY the SGFP “RECIRC” valve OPEN: ◦ SGFP 11 “FV-7104” NOTE: The Operator needs to depress the pushbutton long enough to allow control oil pressure to build up to latch the turbine.	—	—	—
14	VERIFY the following: • “LATCH/ALM RST” lit • “TRIP” light extinguished • VERIFY the SGFP “RECIRC” valve OPEN: ◦ SGFP 11 “FV-7104” (Step 17.1.12)	The Operator verifies listed indications.	—	—	—
15	PERFORM Main Oil Pump Swap Test. (Step 17.1.13)	This step is not applicable as specified in the initiating cue and is marked N/A.			

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
*16	DEPRESS the SGFP "TRIP" pushbutton. (Step 17.1.14)	SGFP "TRIP pushbutton depressed: • HP GOV VLV" CLOSED • "LP GOV VLV" CLOSED • "HP STOP VALVE" CLOSED • "LP STOP VALVE" CLOSED • "TRIP" light lit	—	—	—
17	VERIFY the following: • "HP GOV VLV" CLOSED • "LP GOV VLV" CLOSED • "HP STOP VALVE" CLOSED • "LP STOP VALVE" CLOSED • "TRIP" light lit (Step 17.1.15)	The Operator verified listed indications.	—	—	—
18	ENSURE the S/U SGFP Hand Switch in "AUTO" (Step 17.1.16)	The Operator verified the S/U SGFP Hand Switch in "AUTO". NOTE: the switch will be in "AUTO" since the S/U SGFP is already running as given in the initial conditions.	—	—	—

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
19	ENSURE the following “STM LN DRAIN” valves are OPEN for SGFPT 11: (ZCP006) • “FV-7954 SGFPT 11 DRIP LEG DRAIN FLOW CONTROL VALVE” • “FV-7955 SGFPT 11 DRIP LEG DRAIN FLOW CONTROL VALVE” • “FV-7973 SGFPT 11 HP STOP VALVE DRAIN FLOW CONTROL VALVE” (Step 17.1.17)	The Operator verified the listed “STM LN DRAIN” valves are OPEN. NOTE: the valves will already be open as they receive an open signal when the SGFP is tripped.	—	—	—
20	MONITOR SGFPT 11 rotor coast down. (Step 17.1.18)	The Operator monitors SGFP 11 coast down.	—	—	—
CUE	<u>This JPM is completed</u>				

JPM Stop Time: _____

.....

JPM SUMMARYOperator's Name: _____ Job Title: ☐ RO ☐ SROJPM Title: Secure a Steam Generator Feed PumpJPM Number: NRC S5Revision Number: 1Task Number and Title: 62270: Shutdown a Main Feedwater PumpK/A Number and Importance: 059 A4.14 3.1Suggested Testing Environment: ☒ Simulator ☐ Control Room ☐ In-Plant ☐ OtherAlternate Path: ☐ Yes ☒ NoTask Designed For: ☐ SRO Only ☒ RO/SRO ☐ AO/RO/SROTime Critical: ☐ Yes ☒ NoLevel of Difficulty: 4

Reference(s): 0POP02-FW-0002, SGFP Turbine, Rev 91

Actual Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☐ OtherTesting Method: ☐ Simulate ☒ PerformEstimated Time to Complete: 10 minutes

Actual Time Used: _____ minutes

Critical Steps (*) 3, 7, 9, 11, 13, 16**Evaluation Summary:**Were all the Critical Steps performed satisfactorily? ☐ Yes ☐ NoThe 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 NRC S5

INITIAL CONDITIONS

Unit 1 is at 78% power.

The crew is performing OPOP03-ZG-0006, Plant Shutdown From 100% to Hot Standby.

All steam driven Steam Generator Feed Pumps (SGFP) and the Start-Up SGFP are in service.

INITIATING CUE

You have been given the procedure and the Unit Supervisor directs you to shutdown SGFP #11 per OPOP02-FW-0002, SGFP Turbine.

NOTE: SGFP #11 will not remain at 3300 RPM. Mechanical Overspeed, SGFP Turbine Stop Valve, and Main Oil Pump Swap testing will not be performed. These steps have been marked N/A.

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 S6

Revision Number: 1

Date: 07/17/2023

Developed By: N/A N/A
Instructor (Print/Sign) Date

Approved By: N/A N/A
Training Supervisor (Print/Sign) Date

Approved By: N/A N/A
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 LOT 25 NRC Exam Final Submittal for LOT 27 NRC Exam.
- Revision 1,** Addressed ChE comments, from free review by selecting Perform as the testing method. Added relevant procedure as student handout. Addressed ChE comments from Prep week by inserting an override for FV-4100 to extinguish the green 'closed' light, adding direction to place a "Maintenance in Progress" Caution Tag on FV-4100 during simulator setup for JPM performance, editing direction that this JPM is to be performed independently, editing the JPM step sequence, critical steps, and starting the Alternate Path at JPM Step 5. The operator will now implement the Procedure Step 4 RNO while at Step 4 and not after returning from Step 5 as was previously written – no STP procedure guidance exists for performing steps in the previously written sequence.

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 – Step 12.
2. Insert override to extinguish the green ‘closed’ light for FV-4100.
3. Save IC to a designated IC for LOT NRC Exam usage.

After IC is Stored and ready to perform JPM

1. For LOT 27 NRC Exam this JPM is scheduled to be performed independently (i.e. not concurrently with another JPM).
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 and Addendum 1

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.

4. Reset the simulator to IC 195 and:
 - When the only out-of-position switch listed in the switch check dialog window is FV-4100, then terminate Switch Check and verify the following:
 - Red light at the end of CP-010 is out
 - ICS annunciators have stopped counting up
5. Place a “Maintenance in Progress” Caution Tag on FV-4100.
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.

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 () 4 – 9 completed satisfactory. Applicant's actions did not degrade the condition of the plant beyond that introduced by the JPM as developed.*

JPM Start Time: _____

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
<u>NOTE</u> Hand the Student Initiating Cue Sheet to the student along with the Student HO of 0POP05EO-EO10, Loss of Reactor or Secondary Coolant.					
1	MONITOR Containment H2 Concentration: Containment H2 concentration - 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 12)	The Operator determined that Containment H2 Concentration on QDPS QUAL PAMS display is not greater than or equal to zero and transitioned to Addendum 1, Step 1. (Step 12.a RNO a.) NOTE: RCB H2 concentration on QDPS QUAL PAMS display should read “XXXb” or “↓LO”.	_____	_____	_____
2	RESET SI (Addendum 1, Step 1)	The Operator depressed the Train A, B, and C RESET pushbuttons on CP001 to reset SI OR verified SI has been reset and continued to Add 1, Step 2. NOTE: SI was reset at Step 4 of 0POP05-EO-EO10	_____	_____	_____

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
3	RESET Containment Isolation Phase A (Addendum 1, Step 2)	The Operator depressed the Train A, B, and C RESET pushbuttons on CP002 to reset Containment Isolation Phase A OR verified Containment Isolation Phase A has been reset and continued to Add 1, Step 3. NOTE: Phase A was reset at Step 6 of 0POP05-EO-EO10	—	—	—
*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: ○ Train A handswitch is FV-4101/4127 ○ Train C handswitch is FV-4104/4133	—	—	—
ALTERNATE PATH begins here.					
*5	PLACE "CNTMT H2 SAMPLE SELECT" for each train to the desired position. ○ Train A: FV-4100 ○ Train C: FV-4103 (Addendum 1, Step 4)	The Operator checked Train C sample select switch to FV-4103. Since FV-4100 is not available, the Operator proceeded to the Step 4 RNO for Train A.	—	—	—

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number								
*6	IF FV-4100/4103 <u>NOT</u> available OR other area besides top of dome is desired to be monitored, THEN SELECT the desired sample point: <table><tr><td>TRAIN A</td><td>LOCATION</td></tr><tr><td>FV-4124</td><td>Above SG</td></tr><tr><td>FV-4125</td><td>SG Compartment</td></tr><tr><td>FV-4126</td><td>Inside Primary Shield</td></tr></table> Cue: <i>If asked, inform operator the desired sample point is now Above SG (i.e. FV-4124).</i> (Addendum 1, Step 4 RNO)	TRAIN A	LOCATION	FV-4124	Above SG	FV-4125	SG Compartment	FV-4126	Inside Primary Shield	The Operator selected one of the following Train A sample valves: FV-4124, or FV-4125, or FV-4126	—	—	—
TRAIN A	LOCATION												
FV-4124	Above SG												
FV-4125	SG Compartment												
FV-4126	Inside Primary Shield												
*7	OPEN selected CNTMT H2 SAMPLE valve for each train. (Addendum 1, Step 5)	The Operator opened CNMTM H2 SAMPLE valve for each train by placing handswitch to OPEN: ○ Train A handswitch is FV-4124 (or 4125 or 4126) as chosen in Add 1, Step 4 RNO (JPM Step 6) ○ Train C handswitch is FV-4103	—	—	—								
*8	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: ○ Train A handswitch is FV-4135/4128 ○ Train C handswitch is FV-4136/4134	—	—	—								

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
*9	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: ○ Train A handswitch is AE-4102 ○ Train C handswitch is AE-4105	—	—	—
10	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) CUE: 1 minute has elapsed.	The Operator verified H2 reading on QDPS: ○ Called up QDPS DETAIL DATA MENU PAGE 7 or QPDS QUAL PAMS display. ○ Checked that H2 is greater than or equal to zero.	—	—	—
CUE	<u>This JPM is completed</u>				

JPM Stop Time: _____

JPM SUMMARYOperator's Name: _____ Job Title: ☐ RO ☐ SROJPM Title: PLACE CONTAINMENT H2 MONITORING SYSTEM IN SERVICEJPM Number: NRC S6Revision Number: 1Task Number and Title: 12150, Perform lineups of the Hydrogen RecombinerK/A Number and Importance: 028 A4.03 2.7Suggested Testing Environment: ☒ Simulator ☐ Control Room ☐ In-Plant ☐ OtherAlternate Path: ☒ Yes ☐ NoTask Designed For: ☐ SRO Only ☒ RO/SRO ☐ AO/RO/SROTime Critical: ☐ Yes ☒ NoLevel of Difficulty: 3

Reference(s): 0POP05-EO-EO10, Loss of Reactor or Secondary Coolant, Rev 24

Actual Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☐ OtherTesting Method: ☐ Simulate ☒ PerformEstimated Time to Complete: 5 minutes

Actual Time Used: _____ minutes

Critical Steps (*) 4 – 9

Evaluation Summary:Were all the Critical Steps performed satisfactorily? ☐ Yes ☐ NoThe 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 – NRC S6

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

ENERGIZE ESF BUS FROM EMERGENCY TRANSFORMER

JPM Number: NRC S7

Revision Number: 1

Date: 07/17/2023

Developed By: N/A N/A
Instructor (Print/Sign) Date

Approved By: N/A N/A
Training Supervisor (Print/Sign) Date

Approved By: N/A N/A
Line Management (Print/Sign) Date

Revision Record (Summary)

Revision 0, Drafted from LOR JPM 045.01 for LOT 27 NRC Exam.

Revision 1, Addressed ChE comments, from free review by selecting Perform as the testing method. Added the relevant procedure as a student handout.

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 any mode.
2. Disable SDG 12 (Pull-To-Stop).
3. Insert malfunction to cause loss of loss of 13.8 KV Standby Bus 1G (10-09-02).
4. Perform Addendum 11 of 0POP04-AE-0004, Loss of Power to One or More 4.16 KV ESF Bus.
5. Freeze and save to an IC designated for LOT NRC Exam usage.

After IC is Stored and ready to perform JPM

1. For LOT 27 NRC Exam this JPM is scheduled to be performed independently (i.e. not concurrently with another JPM).
2. Ensure "DO NOT USE" signs taped to Communications Consoles to help eliminate usage.
3. Check and clean the following procedures:
 - 0POP04-AE-0001, First Response To Loss Of Any Or All 13.8 KV or 4.16 KV Bus
 - 0POP04-AE-0004, Loss Of Power To One Or More 4.16 KV ESF Bus
 - 0POP09-AN-03M3, Lampbox Annunciator Response Instructions
 - 1POP09-AN-10M1, Lampbox Annunciator 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.

4. Reset the simulator to IC 193 and verify the following:
 - Red light at the end of CP-010 is out
 - ICS annunciators have stopped counting up
5. Place simulator in RUN and quickly silence/acknowledge/reset alarms, **including plant computer/ICS alarms.**
6. PLACE simulator in FREEZE.
7. Place a yellow ECO tag on SDG 12.
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. If called to verify power available from the emergency transformer, report that voltage is 13.8 KV locally at the emergency transformer.

INITIAL CONDITIONS

SDG 12 is OOS for corrective maintenance. Unit 1 has suffered a loss of Standby Bus 1G and it cannot be restored. The crew is performing OPOP04-AE-0004, Loss of Power to One or More 4.16 KV ESF Bus.

INITIATING CUE

The Unit Supervisor directs you to energize 4.16 KV ESF bus E1B from the Emergency Transformer using Addendum 2 of OPOP04-AE-0004, Loss of Power to One or More 4.16 KV ESF Bus. Addendum 11 of OPOP04-AE-0004 has been completed.

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:

ESF Bus E1B is energized from the 1L Emergency Transformer. JPM Steps () 3, 5, 6, 8, 9, completed satisfactory. Applicant's actions did not degrade the condition of the plant beyond that introduced by the JPM as developed.*

JPM Start Time: _____

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
<u>NOTE</u> Handout the Student Initiating Cue Sheet to the student along with the Student HO of Addendum 2, 0POP04-AE-0004, Loss of Power to One or More 4.16 KV ESF Bus.					
1	Open feeder breaker from STBY Bus To one Selected De-energized bus: E1B – “STBY BUS 1G TO XFMR E1B BKR SW – NORM” (Addendum 2, Step 1)	The Operator opened the following breaker (CP010): ○ "STBY BUS 1G TO XFMR E1B BKR SW - NORM" NOTE: Breaker is already open due to loss of 13.8 KV 1G Standby Bus.	_____	_____	_____
2	Ensure Supply Breaker from ESF Transformer to the Selected De-energized ESF bus - Open: * "SPLY BKR" {E1B/1} (Addendum 2, Step 2)	The Operator opened the following breaker (CP003): ○ "SPLY BKR" {E1B/1} NOTE: Breaker is already open due to loss of 13.8 KV 1G Standby Bus.	_____	_____	_____
*3	Open motor operated disconnects from STBY bus to Selected De-energized ESF bus: E1B - “STBY BUS 1G TO XFMR E1B DISC SW – NORM” (Addendum 2, Step 3)	The Operator opened the following disconnect (CP010): * "STBY BUS 1G TO XFMR E1B DISC SW - NORM" NOTE: Disconnect switches do not display dual indication while operating	_____	_____	_____
4	Ensure “EMER XFMR TO BUS 1K/1L SPLY” breaker – closed (CP010) (Addendum 2, Step 4)	The Operator ensured the following breaker closed (CP010): ○ "EMER XFMR TO BUS 1K/1L SPLY" NOTE: Breaker is normally closed.	_____	_____	_____

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
*5	CLOSE motor operated disconnects from emergency bus 1L to selected de-energized ESF bus: (CP010) ○ E1B – “EMER BUS 1L TO XFMR E1B DISC SW – EMER” (Addendum 2, Step 5)	The Operator closed disconnect (CP010): * "EMER BUS 1L TO XFMR E1B DISC SW - EMER" NOTE: Disconnect switches do not display dual indication while operating	—	—	—
*6	Close feeder breaker from EMERG Bus 1 L to the selected de-energized ESF bus: (CP010) “EMER BUS 1L TO XFMR E1B BKR SW – EMER” (Addendum 2, Step 6)	The Operator closed feeder breaker (CP010): * "EMER BUS 1L TO XFMR E1B BKR SW - EMER"	—	—	—
7	Check Addendum 11 completed for the selected ESF bus {E1B} (Addendum 2, Step 7)	The Operator checked Addendum 11 completed – given in initiating cue.	—	—	—
*8	Close supply breaker from ESF transformer to selected de-energized ESF bus: (CP003) “SPLY BKR” {E1B/1} (Addendum 2, Step 8)	The Operator closed breaker (CP003): ○ ESF transformer E1B to E1B ESF bus "SPLY BKR E1B/1"	—	—	—
*9	Ensure the 480V ESF LC Supply Breakers “OUTP BKR” for the Selected ESF Bus – Closed. (Addendum 2, Step 9)	The Operator closed the following breakers (CP003): ○ OUTP BKR E1B/2A ○ OUTP BKR E1B/2F	—	—	—
CUE	<u>This JPM is completed.</u>				

JPM Stop Time: _____

JPM SUMMARY**Operator's Name:** _____ **Job Title:** ☐ RO ☐ SRO**JPM Title:** ENERGIZE ESF BUS FROM EMERGENCY TRANSFORMER**JPM Number:** NRC S7 **Revision Number:** 1**Task Number and Title:** 62850, Lineup an ESF 4.16 KV Switchgear to the Emergency Transformer**K/A Number and Importance:** 062 A2.20 3.8/4.1**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**Reference(s):** 0POP04-AE-0004, Loss Of Power To One Or More 4.16 KV ESF Bus, Rev20**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 (*)** 3, 5, 6, 8, 9**Evaluation Summary:**Were all the Critical Steps performed satisfactorily? ☐ Yes ☐ NoThe 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 – NRC S7

INITIAL CONDITIONS

SDG 12 is OOS for corrective maintenance. Unit 1 has suffered a loss of Standby Bus 1G and it cannot be restored. The crew is performing OPOP04-AE-0004, Loss of Power to One or More 4.16 KV ESF Bus.

INITIATING CUE

The Unit Supervisor directs you to energize 4.16 KV ESF bus E1B from the Emergency Transformer using Addendum 2 of OPOP04-AE-0004, Loss of Power to One or More 4.16 KV ESF Bus. Addendum 11 of OPOP04-AE-0004 has been completed.

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 HIGH ALARM ON RT-8033 OR RT-8034

JPM Number: NRC S8

Revision Number: 1

Date: 07/17/2023

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

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

Revision Record (Summary)

- Revision 0;** Drafted from LOT 23 NRC exam JPM S4 for LOT 27 NRC exam.
- Revision 1,** Addressed ChE comments, from free review by selecting Perform as the testing method. Added relevant procedure as student handout. Addressed ChE comments from Prep week by creating two separate Student Handouts – HO1 covers the initial actions of POP04-RA-0001, Radiation Monitoring Alarm Response including which addendums apply to which radiation monitors and HO2 is the addendum (Addendum 9) that contains the actions applicable to the alarming radiation monitors in the JPM. Edited specific JPM steps to correctly identify the specific dampers which will require RNO action on the part of the operator. Revised the NOTE section prior to the JPM Step 1 to provide the examiner details of when Student Handouts are to be provided to the operator. Edited direction that this JPM is to be performed independently.

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 Post large break LOCA
2. Insert a value for RT-8033 and RT-8034 that creates a High (Red) Alarm.
3. Reset CRE HVAC and align for normal operation
4. Freeze and save IC in one designated for LOT NRC exam JPMs.

After IC is Stored and ready to perform JPM

1. For LOT 27 NRC Exam this JPM is scheduled to be performed independently (i.e. not concurrent with another JPM).
2. Ensure Radio volume for both stations are set to a reasonable level.
3. Ensure “DO NOT USE” signs taped to Communications Consoles to help eliminate usage.
4. Check and clean the following procedures:
 - 0POP04-RA-0001, Radiation Monitoring System Alarm Response, Rev. 43

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.

5. Reset the simulator to IC 195 and:
 - When the only out-of-position switch listed in the switch check dialog window is FV-4100, then terminate Switch Check 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 RM – 11 DO NOT acknowledge alarms on Grid 1. Acknowledge all other Grid alarms and silence audible alarm. Select Grid 1. This will leave RT-8033 and RT-8034 flashing red.
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. None

INITIAL CONDITIONS

The unit has experienced a Large Break LOCA.

INITIATING CUE

A new alarm has come in on Rad Monitor Panel RM-11. The Unit Supervisor directs you to investigate the Rad Monitor that is in an alarm condition in accordance with OPOP04-RA-0001, Radiation Monitoring System Alarm Response, and take appropriate action.

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

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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.

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Task Standard:

After determining that CRE HVAC Train A is not in the emergency mode of operation, the Operator manually aligns CRE HVAC Train A to the emergency mode. JPM steps () 1, 3, 4, 7, 9 completed satisfactory. Applicant's actions did not degrade the condition of the plant beyond that introduced by the JPM as developed.*

JPM Start Time: _____

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
<u>NOTE</u> Handout the Student Initiating Cue Sheet and Student Handout 1 to the student. Per procedure NOTE, the initial actions of POP04-RA-0001, Radiation Monitoring System Alarm Response, before going to Addendum 9 are considered skill of the craft and may be performed before entering the procedure. WHEN the student identifies the correct addendum to use for the alarming radiation monitors (Addendum 9), THEN provide Student HO2.					
*1	Investigates the alarm on the RM-11. (Steps 1-4) CUE: If the Operator starts to evaluate E-Plan classification, inform the student that another SRO will evaluate E-Plan status.	The Operator: – Determined RT-8033 and RT-8034 are in Alarm (Red). – Called up a Histories or Channel Status display for RT-8033 or RT-8034. – *Continued to Addendum 9, Step 1 of the procedure.	_____	_____	_____
2	Check High Alarm Exists on Radiation Monitor RT-8033 or RT-8034 (Addendum 9, Step 1)	The Operator determined a High Alarm exists on RT-8033 & RT-8034.	_____	_____	_____
Alternate Path Starts Here					

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number															
*3	CHECK Train A, B And C Of Control Room Ventilation System In Emergency Recirculation And Makeup Filtration Mode The following fans – RUNNING (CP022) <table><tr><td><u>Train A</u></td><td><u>Train B</u></td><td><u>Train C</u></td></tr><tr><td>"SPLY AHU 11A"</td><td>"SPLY AHU 11B"</td><td>"SPLY AHU 11C"</td></tr><tr><td>"RET FAN 11A"</td><td>"RET FAN 11B"</td><td>"RET FAN 11C"</td></tr><tr><td>"C/U FAN 11A"</td><td>"C/U FAN 11B"</td><td>"C/U FAN 11C"</td></tr><tr><td>"M/U FAN 11A"</td><td>"M/U FAN 11B"</td><td>"M/U FAN 11C"</td></tr></table> (Addendum 9, Step 2.a)	<u>Train A</u>	<u>Train B</u>	<u>Train C</u>	"SPLY AHU 11A"	"SPLY AHU 11B"	"SPLY AHU 11C"	"RET FAN 11A"	"RET FAN 11B"	"RET FAN 11C"	"C/U FAN 11A"	"C/U FAN 11B"	"C/U FAN 11C"	"M/U FAN 11A"	"M/U FAN 11B"	"M/U FAN 11C"	The Operator identified Trains B & C as running and Train A as not running (CP022) (Add 9, Step 2.a). *The Operator manually started the following Train A fans (CP022): ○ "SPLY AHU 11A" ○ "RET FAN 11A" ○ "C/U FAN 11A" ○ "M/U FAN 11A" (Add 9, Step 2.a, RNO)	—	—	—
<u>Train A</u>	<u>Train B</u>	<u>Train C</u>																		
"SPLY AHU 11A"	"SPLY AHU 11B"	"SPLY AHU 11C"																		
"RET FAN 11A"	"RET FAN 11B"	"RET FAN 11C"																		
"C/U FAN 11A"	"C/U FAN 11B"	"C/U FAN 11C"																		
"M/U FAN 11A"	"M/U FAN 11B"	"M/U FAN 11C"																		
*4	The following CR HVAC Inlet Isolation Dampers – CLOSED (CP022): <table><tr><td><u>Train A</u></td><td><u>Train B</u></td><td><u>Train C</u></td></tr><tr><td>FV-9670</td><td>FV-9667</td><td>FV-9664</td></tr><tr><td>FV-9671</td><td>FV-9668</td><td>FV-9665</td></tr></table> (Addendum 9, Step 2.b)	<u>Train A</u>	<u>Train B</u>	<u>Train C</u>	FV-9670	FV-9667	FV-9664	FV-9671	FV-9668	FV-9665	The Operator identified Train A Dampers closed and one damper in each of Trains B & C not closed.(CP022) (Add 9, Step 2.b) *The Operator manually closed Train B & C Inlet Dampers (CP022). Train B: FV-9667 Train C: FV-9665 (Add 9, Step 2.b, RNO)	—	—	—						
<u>Train A</u>	<u>Train B</u>	<u>Train C</u>																		
FV-9670	FV-9667	FV-9664																		
FV-9671	FV-9668	FV-9665																		
5	The following CR HVAC Return Isolation Dampers – CLOSED (CP022): <table><tr><td><u>Train A</u></td><td><u>Train B</u></td><td><u>Train C</u></td></tr><tr><td>FV-9698</td><td>FV-9697</td><td>FV-9696</td></tr></table> (Addendum 9, Step 2.c)	<u>Train A</u>	<u>Train B</u>	<u>Train C</u>	FV-9698	FV-9697	FV-9696	The Operator identified all return isolation dampers closed (CP022).	—	—	—									
<u>Train A</u>	<u>Train B</u>	<u>Train C</u>																		
FV-9698	FV-9697	FV-9696																		

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	<u>SAT</u>	<u>UNSAT</u>	<u>Comment Number</u>
6	The following CR HVAC Intake Dampers – OPEN: (CP022) <u>Train A</u> <u>Train B</u> <u>Train C</u> FV-9339 FV-9365 FV-9391 (Addendum 9, Step 2.d)	The Operator identified all CR HVAC intake dampers open (CP022).	—	—	—
*7	The following CR HVAC Return Dampers – OPEN: (CP022) <u>Train A</u> <u>Train B</u> <u>Train C</u> FV-9677 FV-9676 FV-9675 (Addendum 9, Step 2.e)	The Operator identified Train B & C CR HVAC return dampers open and Train A damper closed. (CP022) *The Operator manually opened Train A CR HVAC return damper (FV-9677) (CP022). (Add 9, Step 2.e, RNO)	—	—	—
8	The Kitchen/Toilet Exhaust fan – STOPPED (CP022) (Addendum 9, Step 2.f)	The Operator identified Kitchen/Toilet Exhaust fan stopped (CP022).	—	—	—
*9	The Kitchen/Toilet Exhaust fan Isolation Dampers – CLOSED: (CP022) ○ FV-9673 ○ FV-9674 (Addendum 9, Step 2.g)	The Operator identified kitchen/toilet exhaust fan isolation damper FV-9674 closed and FV-9673 not closed. (CP022) *The Operator manually closed damper FV-9673.(CP022) (Add 9, Step 2.g, RNO)	—	—	—
CUE	<u>This JPM is completed</u>				

JPM Stop Time: _____

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JPM SUMMARYOperator's Name: _____ Job Title: ☐ RO ☐ SROJPM Title: RESPOND TO HIGH ALARM ON RT-8033 OR RT-8034JPM Number: NRC S8 Revision Number: 1Task Number and Title: 86200, Respond to Radiation Monitoring System AlarmsK/A Number and Importance: 050 A2.03 3.5 / 3.8Suggested Testing Environment: ☒ Simulator ☐ Control Room ☐ In-Plant ☐ OtherAlternate Path: ☒ Yes ☐ NoTask Designed For: ☐ SRO Only ☒ RO/SRO ☐ AO/RO/SROTime Critical: ☐ Yes ☒ NoLevel of Difficulty: 3

Reference(s): 0POP04-RA-0001, Radiation Monitoring System Alarm Response, Rev 43.

Actual Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☐ OtherTesting Method: ☐ Simulate ☒ PerformEstimated Time to Complete: 10 minutes Actual Time Used: _____ minutesCritical Steps (*) 1, 3, 4, 7, 9**Evaluation Summary:**Were all the Critical Steps performed satisfactorily? ☐ Yes ☐ NoThe 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 – NRC S8

INITIAL CONDITIONS

The unit has experienced a Large Break LOCA.

INITIATING CUE

A new alarm has come in on Rad Monitor Panel RM-11. The Unit Supervisor directs you to investigate the Rad Monitor that is in an alarm condition in accordance with OPOP04-RA-0001, Radiation Monitoring System Alarm Response, and take appropriate action.

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

STPNOC

Job Performance Measure

LOCALLY RE-ALIGN CRITICAL MOTOR OPERATED VALVES DURING A LOSS OF ALL AC POWER

JPM Number: NRC P1

Revision Number: 1

Date: 07/17/2023

Developed By: N/A N/A
Instructor (Print/Sign) Date

Approved By: N/A N/A
Training Supervisor (Print/Sign) Date

Approved By: N/A N/A
Line Management (Print/Sign) Date

Revision Record (Summary)

- Revision 0,** Drafted from LOT 21 NRC exam for LOT 27 NRC exam.
- Revision 1,** Addressed ChE comments, from free review by selecting Simulate as the testing method. Added examiner cue in JPM step 1 to, if asked, inform candidate that all applicable MOV breakers are open.

SIMULATOR SETUP INSTRUCTIONS

IC Setup

1. No IC set up required. This is an in-plant JPM

INITIAL CONDITIONS

A loss of all offsite power has occurred. All 4.16 KV ESF busses are de-energized. The Positive Displacement Charging Pump (PDP) has been started and is supplying seal injection.

INITIATING CUE

You have been handed the procedure and the Unit Supervisor directs you to re-align the Charging Pump suction from the Volume Control Tank (VCT) to the Refueling Water Storage Tank (RWST) in accordance with Step 3.h and 3.i of 0POP05-EO-EC00, Loss of All AC 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:

Suction flow path to the charging pumps is aligned from the RWST by locally manually opening CV-MOV-0112C, CVCS Charging Pumps Suction from the RWST, and locally manually closing CV-MOV-0112B or CV-MOV-0112A, CVCS Volume Control Tank Outlet. JPM steps () 1, 2 completed. Applicant's actions did not degrade the condition of the plant beyond that introduced by the JPM as developed.*

JPM Start Time: _____

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
<u>NOTE</u> This JPM assumes a loss of all AC power, however, the student may ask if power is removed from the motor operated valves due to past OE. The as found position for this valve in the plant will be CLOSED. CV-MOV-0112C is located on the 10' MAB Room 44. (May need flashlight)					
*1	OPEN 1(2)-CV-MOV-0112C, CVCS CHARGING PUMPS SUCTION FROM RWST MOV OPERATOR. (Step 3.h) CUE: ○ <i>Initial Position - CLOSED (as found)</i> ○ <i>Final Position – OPEN</i> <i>If asked about power being removed, inform the operator that all applicable MOV breakers have been opened.</i>	The operator located 1(2)-CV-MOV-0112C and opened the valve by performing the following: ○ Simulated depressing the declutch lever (the declutch lever may be held down, but this is not required). ○ Simulated rotating the handwheel in a counter clockwise direction. ○ Continued simulating counter clockwise rotation of the handwheel until the valve is full open (the handwheel will stop when the valve is on its open seat).	_____	_____	_____

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
<u>NOTE</u> The as found position for these valves in the plant will be OPEN. CV-MOV-0112B and CV-MOV-0113A are located on the 41' MAB Room 226.					
*2	CLOSE at least one of the VCT outlet isolation valves 1(2)-CV-MOV-0112B, CVCS VOLUME CONTROL TANK OUTLET MOV OPERATOR, OR 1(2)-CV-MOV-0113A, CVCS VOLUME CONTROL TANK OUTLET MOV OPERATOR. (Step 3.i) Cue: ○ <i>Initial Position - OPEN (as found, for either valve)</i> ○ <i>Final Position - CLOSED</i>	The operator located and CLOSED either of the following: ○ 1(2)-CV-MOV-0112B, CVCS VOLUME CONTROL TANK OUTLET MOV OPERATOR ○ 1(2)-CV-MOV-0113A, CVCS VOLUME CONTROL TANK OUTLET MOV OPERATOR By performing the following: ○ Simulated depressing the declutch lever (the declutch lever may be held down, but this is not required). ○ Simulated rotating the handwheel in a clockwise direction. ○ Continued simulating clockwise rotation of the handwheel until the valve is full closed (the handwheel will stop when the valve is on its closed seat).	—	—	—
CUE	<u>This JPM is complete</u>				

JPM Stop Time: _____

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JPM SUMMARY**Operator's Name:** _____ **Job Title:** ☐ RO ☐ SRO**JPM Title:** LOCALLY RE-ALIGN CRITICAL MOTOR OPERATED VALVES DURING A LOSS OF ALL AC POWER**JPM Number:** NRC P1 **Revision Number:** 1**Task Number and Title:** 82044, Respond to a Loss of All AC Power Condition**K/A Number and Importance:** EPE 055 EA1.10 3.6**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:** 2**Reference(s):** 0POP05-EO-EC00, Loss of All AC Power, Rev 35**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****Evaluation Summary:**Were all the Critical Steps performed satisfactorily? ☐ Yes ☐ NoThe 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 NRC P1

INITIAL CONDITIONS

A loss of all offsite power has occurred. All 4.16 KV ESF busses are de-energized. The Positive Displacement Charging Pump (PDP) has been started and is supplying seal injection.

INITIATING CUE

You have been handed the procedure and the Unit Supervisor directs you to re-align the Charging Pump suction from the Volume Control Tank (VCT) to the Refueling Water Storage Tank (RWST) in accordance with Step 3.h and 3.i of 0POP05-EO-EC00, Loss of All AC Power.

STPNOC

Job Performance Measure

DP 1201 TRANSFER TO VRT AND EIV-1201 SHUTDOWN

JPM Number: NRC P2

Revision Number: 1

Date: 07/17/2023

Developed By: N/A N/A
Instructor (Print/Sign) Date

Approved By: N/A N/A
Training Supervisor (Print/Sign) Date

Approved By: N/A N/A
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 LOT 27 NRC exam.

Revision 1, Addressed ChE comments, from free review by selecting Simulate as the testing method.

SIMULATOR SETUP INSTRUCTIONS

IC Setup

1. No IC set up required. This is an in-plant JPM.

INITIAL CONDITIONS

Inverter EIV-1201 is in service supplying DP-1201 per 0POP02-AE-0004, 120 VAC ESF Vital Distribution Power Supplies.

Inverter EIV-1201 cooling fans are not working properly.

INITIATING CUE

You have been directed by the Unit Supervisor to transfer DP-1201 to the Voltage Regulating Transformer (VRT) and shutdown inverter EIV-1201 using 0POP02-AE-0004, 120 VAC ESF Vital Distribution Power Supplies, Section 5.2.

Prerequisites of 0POP02-AE-0004 are complete.

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:

DP-1201 is aligned to receive power from the VRT and EIV-1201 is secured. JPM () steps 2, 4, 5, 6, 7, and 8 were completed satisfactory. The Applicant's actions did not degrade the condition of the plant beyond that introduced by the JPM as developed.*

JPM Start Time: _____

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
<u>NOTE</u> A student handout of the applicable section(s) of 0POP02-AE-0004 is provided with this JPM.					
1	VERIFY EIV-1201 Inverter “IN SYNC” lamp is illuminated (EIV-1201) CUE: When checked: The “IN SYNC” lamp is lit. (Step 5.2.1).	The Operator verified the “IN SYNC” lamp LIT on EIV-1201 before continuing.	_____	_____	_____
*2	PRESS “BYPASS SOURCE TO LOAD” pushbutton (EIV-1201) CUE: When simulated: The “BYPASS SOURCE TO LOAD” pushbutton moved in and returned when released. (Step 5.2.2)	The Operator simulated pressing the “BYPASS SOURCE TO LOAD” pushbutton.	_____	_____	_____
3	ENSURE “BYPASS SOURCE SUPPLYING LOAD” light illuminated (EIV-1201) (Step 5.2.3) CUE: When checked: The “BYPASS SOURCE SUPPLYING LOAD” light is lit.	The Operator ensured the “BYPASS SOURCE SUPPLYING LOAD” light LIT before continuing.	_____	_____	_____

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
*4	OPEN “INVERTER OUTPUT” breaker. (EIV-1201) CUE: When simulated: The “INVERTER OUTPUT” breaker handle is DOWN/OFF. (Step 5.2.4)	The “INVERTER OUTPUT” breaker is OPEN.	—	—	—
*5	PLACE “MANUAL BYPASS SWITCH” in “BYPASS TO LOAD” position. (EIV-1201) CUE: When simulated: Use a pen to indicate the MANUAL BYPASS SWITCH points to “BYPASS TO LOAD”. (Step 5.2.5)	The “MANUAL BYPASS SWITCH” is in the “BYPASS TO LOAD” position.	—	—	—
*6	OPEN “BATTERY INPUT” breaker. (EIV-1201) CUE: When simulated: The “BATTERY INPUT” breaker handle is DOWN/OFF. (Step 5.2.6)	The “BATTERY INPUT” breaker is OPEN.	—	—	—
*7	OPEN “RECTIFIER AC INPUT” breaker (EIV-1201) CUE: When simulated: The “RECTIFIER AC INPUT” breaker handle is DOWN/OFF. (Step 5.2.7)	The “RECTIFIER AC INPUT” breaker is OPEN.	—	—	—

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
*8	OPEN “BYPASS SOURCE AC INPUT” breaker. (EIV-1201) CUE: When simulated: The “BYPASS SOURCE SUPPLYING LOAD” breaker handle is DOWN/OFF If checked: The “BYPASS SOURCE SUPPLYING LOAD” amber lamp is extinguished. (Step 5.2.8)	The “BYPASS SOURCE AC INPUT” is OPEN.	—	—	—
CUE	<u>This JPM is completed</u>				

JPM Stop Time: _____

JPM SUMMARY**Operator's Name:** _____ **Job Title:** ☐ RO ☐ SRO**JPM Title:** DP 1201 Transfer to VRT and EIV-1201 Shutdown**JPM Number:** P2 **Revision Number:** 1**Task Number and Title:** 62350: Line Up The AC Electrical Distribution System**K/A Number and Importance:** 062 A1.03 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):** 0POP02-AE-0004, 120 VAC ESF Vital Distribution Power Supplies, Rev 68**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, 6, 7, 8**Evaluation Summary:**Were all the Critical Steps performed satisfactorily? ☐ Yes ☐ NoThe 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 NRC P2

INITIAL CONDITIONS

Inverter EIV-1201 is in service supplying DP-1201 per OPOP02-AE-0004, 120 VAC ESF Vital Distribution Power Supplies.

Inverter EIV-1201 cooling fans are not working properly.

INITIATING CUE

You have been directed by the Unit Supervisor to transfer DP-1201 to the Voltage Regulating Transformer (VRT) and shutdown inverter EIV-1201 using OPOP02-AE-0004, 120 VAC ESF Vital Distribution Power Supplies, Section 5.2.

Prerequisites of OPOP02-AE-0004 are complete.

STPNOC

Job Performance Measure

LOCAL OPERATOR ACTIONS 0POP04-IA-0001 STEP 8

JPM Number: NRC P3

Revision Number: 1

Date: 07/17/2023

Developed By: N/A N/A
Instructor (Print/Sign) Date

Approved By: N/A N/A
Training Supervisor (Print/Sign) Date

Approved By: N/A N/A
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 new JPM for LOT 27 NRC Exam
- Revision 1,** Addressed ChE comments, from free review by selecting Simulate as the testing method. Added examiner cues to JPM Steps 1 & 3 to indicate the applicable valve fails to operate if attempted; added JPM Step 6 and examiner cues to account for Procedure Step 8.0d.

SIMULATOR SETUP INSTRUCTIONS

IC Setup

1. No setup required. This is an IN-Plant JPM

INITIAL CONDITIONS

The Unit has had a loss of Instrument Air. Instrument Air pressure has lowered to less than 80 psig. The Control Room Crew is performing OPOP04-IA-0001, Loss of Instrument Air.

INITIATING CUE

The Unit Supervisor has given you the procedure and directs you to perform Step 8 of OPOP04-IA-0001, Loss of Instrument Air.

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

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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.

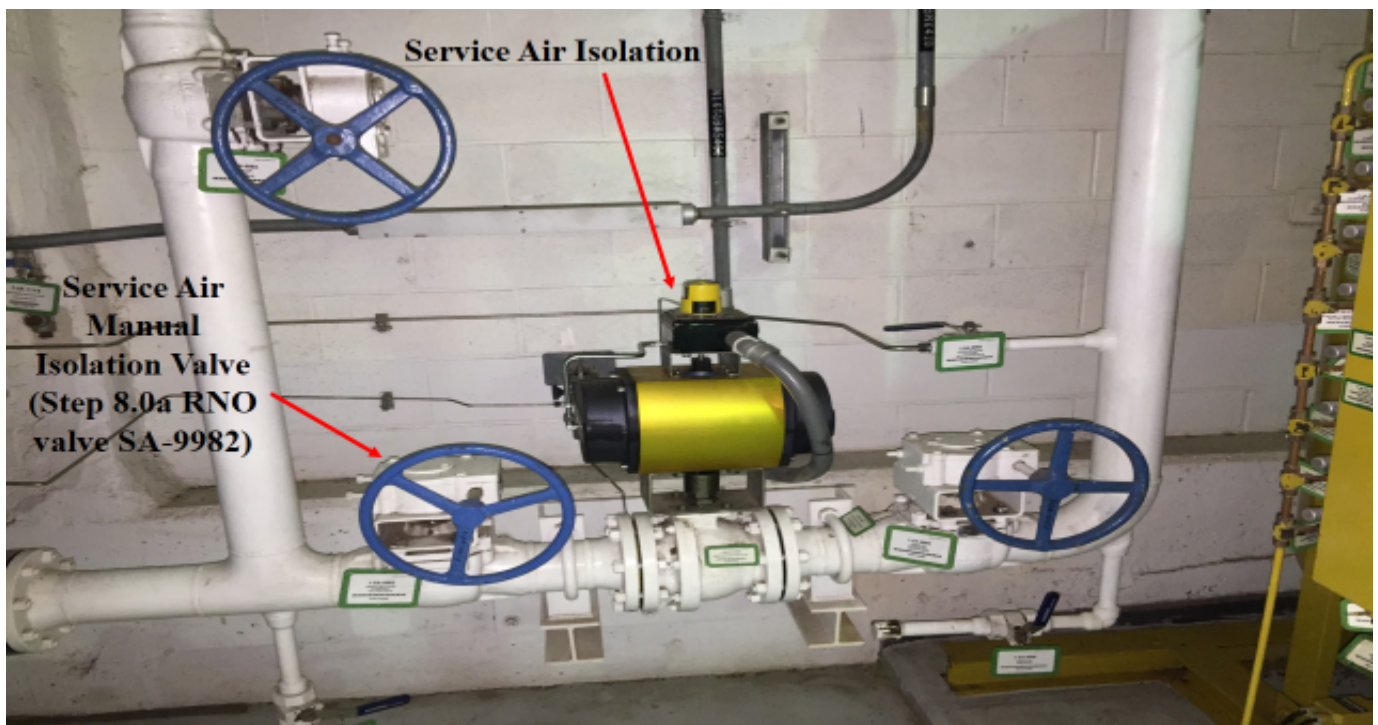
Number any comments in the "Comment Number" column on the following pages. Then annotate that comment in the "Comments" section. The comment section should be used to document: the reason that a step is marked as unsatisfactory, marginal performance relating to management expectations, or problems the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

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Location Photos for reference



Service Air Isolation valve (PV-9785) position indication and reset switch at ZLP-134



IA Yard Isolation valve (PV-8568) position indication and operating switch at ZLP-134



IA Dryer Bypass valve (PV-9983) position indication and reset switch at N1(2)IAHS9983



Task Standard:

The Operator has simulated closing 1(2)-SA-9982, Service Air System PV-9785 Inlet Isolation Valve, and 1(2)-IA-0031, Header Isolation to Yard. JPM Steps () 2, 4 complete. Applicant's actions did not degrade the condition of the plant beyond that introduced by the JPM as developed.*

JPM Start Time: _____

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
<u>NOTE</u> Hand out the Student Initiating Cue Sheet along with the Student HO of 0POP04-IA-0001, Loss of Instrument Air.					
1	DISPATCH An Operator To Perform The Following: VERIFY "SERVICE AIR ISOLATION VALVE N1(2)IA-PV-9785"- CLOSED {29 ft TGB} (Step 8.0a) CUE: <u>On ZLP-134:</u> Green Light – OFF Red Light – ON <u>At the Valve:</u> When the candidate locates the valve stem indicator tell the candidate it indicates OPEN. NOTE: Valve is normally open.	Operator determined that "SERVICE AIR ISOLATION VALVE N1(2)IA-PV-9785" is open and continued to Step 8.0 a, RNO. NOTE: Since the action is to 'VERIFY' and NOT 'ENSURE' the valve is closed, the Operator should perform the RNO.	—	—	—

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
Alternate Path					
*2	CLOSE "1(2)-SA-9982 SERVICE AIR SYSTEM PV-9785 INLET ISOLATION VALVE". {29 ft TGB Between IA Dryer 11(21) and Dry Receiver 12(22)} (RNO Step 8.0a) CUE: Point to open indication on this manual valve or just say 'AS YOU SEE IT' if valve is already open.	Operator closed "1(2)-SA-9982 SERVICE AIR SYSTEM PV-9785 INLET ISOLATION VALVE" by simulating turning the handwheel in the clockwise direction until the valve position indicator points to CLOSED and continued to Step 8.0b..	—	—	—
3	VERIFY "INSTRUMENT AIR TO YARD ISOL. VALVE N1(2)IA-PV-8568" CLOSED {29 ft TGB ZLP-134} (Step 8.0b) CUE: <u>On ZLP-134:</u> Green Light – OFF Red Light – ON If the Operator simulates attempts to close the valve from ZLP-134 by placing HS-8568 to "CLOSE", then continue to cue the valve as open. <u>At the Valve:</u> When the candidate locates the valve stem indicator tell the candidate it indicates OPEN. NOTE: Valve is normally open.	Operator determined that "INSTRUMENT AIR TO YARD ISOL. VALVE N1(2)IA-PV-8568" open and continued to Step 8.0b, RNO. NOTE: Since the action is to 'VERIFY' and NOT 'ENSURE' the valve is closed, the Operator should perform the RNO.	—	—	—

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
*4	CLOSE "1(2)-IA-0031 HEADER ISOL TO YARD". {TGB 29' South of IA Filter Skid} (RNO Step 8.0b) CUE: Initially: When the candidate locates the valve, point to the valve handle and indicate that it is in a position that is parallel to the pipe. Final: After the candidate simulates turning the handle 90 degrees, point to the valve handle and indicate that it is perpendicular to the pipe.	Operator closed "1(2)-IA-0031 HEADER ISOL TO YARD" by simulating turning the handle in the clockwise direction until the valve handle is perpendicular to the pipe and continued to Step 8.0c. NOTE: Unit 2 may require the use of a ladder depending on the height of the operator.	—	—	—
5	VERIFY "INST AIR DRYER BYPASS VLV N1(2)IA-PV-9983" OPEN {29 ft TGB NE, Near IA Dryers} (Step 8.0c) CUE: <u>On N1(2)IAHS9983:</u> Green Light – OFF Red Light – ON <u>At the Valve:</u> When the candidate locates the valve stem indicator tell the candidate it indicates OPEN. NOTE: Valve is normally closed	Operator determined that "INST AIR DRYER BYPASS VLV N1(2)IA-PV-9983" is open. NOTE: In UNIT 1, N1IAHS9983 is mounted on the wall behind the valve. In UNIT 2, N2IAHS9983 is mounted on a small stanchion a few feet behind the valve.	—	—	—

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
6	CHECK All Available IA Compressors Running {29 ft TGB North End} (Step 8.0d) CUE: All available compressors are running. This cue may be given verbally.	Operator verified running (or started per the RNO) all available IA Compressors 11(21), 12(22), 13(23), & 14(24).			
JPM is complete					

JPM Stop Time: _____

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JPM SUMMARYOperator's Name: _____ Job Title: ☐ RO ☐ SROJPM Title: LOCAL OPERATOR ACTIONS 0POP04-IA-0001 STEP 8JPM Number: NRC P3 Revision Number: 1Task Number and Title: 75350 MONITOR INSTRUMENT AIR SYSTEMK/A Number and Importance: 078 A2.02 3.9/3.8Suggested Testing Environment: ☐ Simulator ☐ Control Room ☒ In-Plant ☐ OtherAlternate Path: ☒ Yes ☐ NoTask Designed For: ☐ SRO Only ☐ RO/SRO ☒ AO/RO/SROTime Critical: ☐ Yes ☒ NoLevel of Difficulty: 3

Reference(s): 0POP04-IA-0001, Loss of Instrument Air, Rev 17

Actual Testing Environment: ☐ Simulator ☐ Control Room ☐ In-Plant ☐ OtherTesting Method: ☒ Simulate ☐ PerformEstimated Time to Complete: 10 minutes Actual Time Used: _____ minutesCritical Steps (*) 2, 4**Evaluation Summary:**Were all the Critical Steps performed satisfactorily? ☐ Yes ☐ NoThe 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 NRC P3

INITIAL CONDITIONS

The Unit has had a loss of Instrument Air. Instrument Air pressure has lowered to less than 80 psig. The Control Room Crew is performing OPOP04-IA-0001, Loss of Instrument Air.

INITIATING CUE

The Unit Supervisor has given you the procedure and directs you to perform Step 8 of OPOP04-IA-0001, Loss of Instrument Air.

LOT 27 NRC EXAM
SIMULATOR OPERATING TEST
SCENARIO 1

REVISION 1

Week of 07/17/2023

SCENARIO OUTLINE

Facility: South Texas Project		Scenario No.: 1		Op-Test No.: LOT 27 NRC	
Examiners: _____		Operators: _____			
_____		_____			
_____		_____			

Initial Conditions: - Reactor is at 100%. BOL. IC-196 Turnover: - Swap Charging Pumps from 1B to 1A - HHSI Pump 1A, LHSI Pump 1A OOS	Critical Tasks: - CT-52, Insert Negative Reactivity into the Core - CT-11 – Close Containment Isolation Phase A Valves - CT-16 – Manually Trip RCPs
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Event No.	Malf. No.	Event Type*	Event Description
1 (0 min)	N/A	RO (N) SRO (N)	Swap Charging Pumps from CCP 1B to CCP 1A to equalize run times.
2 (10 min)	05-17-01 1.0 05-SA-02 1.0	BOP (C, MC) SRO (C, TS)	SG 1A PORV opens due to PT-7411 failing high and then sticks open at 100% requiring entry into 0POP04-MS-0001 and local isolation of the SG PORV.
3 (25 min)	03-09-01 TRUE	RO (C, MC) SRO (C, TS)	CCP 1A trips on overcurrent requiring start of CCP 1B per 0POP09-AN-04M8 Window F1 or F3.
4 (35 min)	05-11-02 1.0	BOP (I, MC) SRO (I)	SG 1B Steam Flow Channel FT-522 Fails High requiring manual control of 1B Feed Reg Valve to restore level per 0POP04-FW-0001.
5 (45min)	02-19-03 1.0	RO (I, MC) SRO (I, TS)	Pressurizer Pressure Transmitter PT 457 fails high
6 (55 min)	02-08-02, 01-12-02, A8_A1_S66_4 TRUE	All (M)	1B RCP trips due to a locked rotor and the reactor fails to trip from the Control Room. (CRITICAL TASK – CT-52)
7 (65 min)	02-14-3v 1.0	All (M)	PZR Safety Valve PSV-3450 fails open. (CRITICAL TASK – CT-16)
8 (65 min)	50-BF-08 True	BOP (C, MC) SRO (C)	HHSI Pump 1B fails to auto start when Safety Injection is actuated.
9 (65 min)	A4_A1_S33_2 A4_A1_S32_2 FALSE	RO (C, MC) SRO (C)	RCP Seal Return Inside and Outside Containment Isolation Valves fail to auto close on Phase A. (CRITICAL TASK (CT-11))

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor, (TS) Tech. Spec. (MC)Manual Control

Total Estimated Time: 1 hour, 20 minutes

Target Quantitative Attributes (Per Scenario; See ES 3.3.B.2 and Table 3.4-1)	Actual Attributes
1. Events after EOP entry (1–2)	2
2. Abnormal events (2–4)	4
3. Major transients (1–2)	2
4. EOPs entered/requiring substantive actions (1–2)	2
5. Entry into a contingency EOP with substantive actions (1 per scenario set)	1
6. Pre-identified critical tasks (≥2)	3

STP LOT-27 NRC Scenario #1 Description

Initial Conditions: Unit 1 is in Mode 1 at 100% power. HHSI Pump 1A and LHSI Pump 1A are OOS.

Event 1: After taking the shift the RO will start CCP 1A and secure CCP 1B using 0POP02-CV-0004 Steps 5.1 and 5.2.

Event 2: After the RO completes the swap of the Centrifugal Charging Pumps, SG 1A PORV opens due to a high failure of PT-7411 and then sticks open mechanically at 100% and cannot be closed from the Control Room. The crew should perform the immediate operator action of 0POP04-MS-0001 and manually restore reactor power to $\leq$ 100% using the Turbine Governor Valve Limiter. The crew should use 0POP04-MS-0001 and dispatch an operator to manually isolate SG 1A PORV. The SRO should enter TS 3.7.1.6 action a, and 3.3.5.1 action 2.

Event 3: After the SG PORV is manually isolated CCP 1A trips on overcurrent and the crew should start CCP 1B per 0POP09-AN-04M8 window F1 or F3. The SRO should enter TRM 3.1.2.2 action b.

Event 4: After CV-FCV-0205 is restored to auto control and the SRO has assessed TS/TRM, SG 1B Steam Flow Channel FT-522 fails high. The crew should enter 0POP04-FW-0001 and take manual control of SG 1B Feed Reg Valve to restore 1B S/G NR level.

Event 5: After Technical Specifications have been evaluated, Pressurizer Pressure transmitter PT-457 fails High. The crew should respond using 0POP04-RP-0001 and deselect the failed channel. When RCS pressure lowers below 2200 psig, the SRO should enter TS 3.2.5.b. for DNBR and TS 3.3.1 function 10 and 11 action 6 and 3.3.2 function 1e action 20 for the failed channel. TS 3.2.5.b can be exited when RCS pressure returns to $>$ 2200 psig.

Event 6: After Pressurizer pressure is restored $>$ 2200 psig and the SRO has evaluated Tech Specs RCP 1B trips due to a locked rotor. The reactor fails to trip from the Control Room and the crew should enter 0POP05-EO-FRS1, Response to Nuclear Power Generation - ATWS. The reactor trip will be successful locally. After the reactor is tripped and conditions are met to exit 0POP05-EO-FRS1 the crew transitions to back to 0POP05-EO-EO00, Reactor Trip or Safety Injection.

Event 7/8/9: After the crew re-enters 0POP05-EO-EO00, PZR Safety Valve PSV-3450 fails open. When Safety Injection actuates HHSI Pump 1B fails to auto start. RCP Seal Return Inside and Outside Containment Isolation Valves fail to close automatically on Phase A. When RCS pressure drops below 1430 psig, the crew should stop all RCPs. The crew should transition to 0POP05-EO-EO10, Loss of Reactor or Secondary Coolant.

Termination: Scenario may be terminated after all critical tasks have been addressed and the crew is implementing 0POP05-EO-EO10 or at the lead examiner's discretion.

SCENARIO OBJECTIVES

Event 1 Objective

- Align the CVCS for operation as per procedure 0POP02-CV-0004. (Swap Charging Pumps)

Event 2 Objective

- Respond to excessive steam demand per 0POP04-MS-0001.
- Given that a condition exists requiring entry into a Technical Specification, interpret Technical Specifications accurately.

Event 3 Objective

- Respond to CVCS alarms per the associated Annunciator Response Procedure (ARP).
- Given that a condition exists requiring entry into a Technical Specification, interpret Technical Specifications accurately.

Event 4 Objective

- Respond to a loss of Steam Generator level control per 0POP04-FW-0001.

Event 5 Objective

- Respond to a pressurizer pressure control malfunction per 0POP04-RP-0001.
- Given that a condition exists requiring entry into a Technical Specification, interpret Technical Specifications accurately.

Event 6 Objective

- Respond to a Nuclear Power Generation – ATWS in accordance with 0POP05-EO-FRS1.

Event 7 and 8 Objectives

- Respond to a loss of Reactor Coolant system involving a break size in which Reactor Coolant pressure drops below HHSI pump shutoff head per 0POP05-EO-EO10.
- Respond to equipment failures after a Reactor Trip and Safety Injection per 0POP05-EO-EO00, Reactor Trip or Safety Injection.

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:

Recorded parameters will be maintained until exam results are complete.

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.

OPERATOR ACTIONS

Op-Test No.: 1 Scenario No.: 1 Event No.: 1			
Event Description: Swap Charging Pumps from 1B to 1A			
Time	Position	Required Operator Actions	Notes
	RO	NOTIFY Health Physics of pending changes in the letdown or charging flow paths to ensure they can survey the area that has changed. (Step 5.1)	
NOTE Instrumentation and controls in this section are located on CP004 unless otherwise noted.			
	RO	ENSURE CCP 1A "RECIRC FCV-0201" is OPEN: (Step 5.2.1)	
	RO	ENSURE CCP 1A "DISCH ISOL MOV-8377A is CLOSED. (Step 5.2.2)	
	RO	VERIFY Centrifugal Charging Pump 1A Aux Lube Oil Pump running by observing the white "L. O. AVAILABLE" light illuminated (Step 5.2.3)	
	RO	START CCP 1A by momentarily turning its handswitch to the "START" position (Step 5.2.4)	
CAUTION Centrifugal Charging Pump Aux Lube Oil Pump SHALL NOT be turned OFF while the associated CCP is running. Failure for the Aux Lube Oil Pump to Auto Stop is an indication the Main Oil Pump may NOT be developing pressure.			
	RO	VERIFY the Aux Lube Oil Pump for CCP 1A secured. (White light out) (CP004) (Step 5.2.5)	
	RO	ENSURE cooling fan "PUMP 1A SUPP CLR 11A" STARTS. (CP022) (Step 5.2.6)	

OPERATOR ACTIONS

Op-Test No.: 1 Scenario No.: 1 Event No.: 1			
Event Description: Swap Charging Pumps from 1B to 1A			
Time	Position	Required Operator Actions	Notes
	RO	IF CCP was started for PMT/breaker continuity and will NOT be supplying Seal Injection OR charging to RCS, THEN GO TO Step 5.2.14. (Step 5.2.7) (RO should go to step 5.2.8)	
	RO	IF directed by Unit Supervisor/Shift Manager to minimize RCP Seal Injection temperature fluctuation, THEN RUN the Charging Pump for approximately 20 minutes to allow temperatures to stabilize. (Step 5.2.8)	
	RO	PLACE "CHG FLOW CONT FK 0205" in "MAN" and MAINTAIN charging flow constant. (Step 5.2.9)	
	RO	OPEN CCP 1A "DISCH ISOL MOV 8377A". (Step 5.2.10)	
	RO	IF plant conditions require two CCPs to be in operation, THEN GO TO Step 5.2.16. (Step 5.2.11) (RO should continue to Step 5.2.12)	
	RO	OPEN CCP 1B "RECIRC FCV 0202". (Step 5.2.12)	
	RO	CLOSE CCP 1B "DISCH ISOL MOV 8377B". (Step 5.2.13)	
	RO	STOP CCP 1B by momentarily turning its handswitch to the STOP position. (Step 5.2.14)	
	RO	POSITION CCP 1B "DISCH ISOL MOV 8377B" as required for plant conditions. (Step 5.2.15) (Valve should be left open)	

OPERATOR ACTIONS

Op-Test No.: 1 Scenario No.: 1 Event No.: 1			
Event Description: Swap Charging Pumps from 1B to 1A			
Time	Position	Required Operator Actions	Notes
	RO	CLOSE CCP 1A "RECIRC FCV 0201". (Step 5.2.16)	
	RO	ENSURE "CHG FLOW CONT FK 0205" in "AUTO". (Step 5.2.17)	
	RO	ENSURE charging flow and pressurizer level stabilize. (Step 5.2.18)	
	RO	IF necessary, THEN ADJUST seal injection "FLOW CONT HCV 0218" valve to maintain between 6 and 13 gpm flow to each RCP. (Step 5.2.19)	
	RO	STOP PUMP 1B SUPP CLR 11B. (CP022) (Step 5.2.20) <i>(Event 2 can be triggered at lead examiner request)</i>	

Op-Test No.: 1 Scenario No.: 1 Event No.: 2 (Examiner Trigger)			
Event Description: SG 1A PORV fails open.			
Time	Position	Required Operator Actions	Notes
	BOP	Acknowledges and announces the following annunciator on 6M03 • SG PORV NOT CLOSE (A-1).	
	BOP	Diagnoses that PT-7411 has failed high causing 1A SG PORV to open. <i>(The crew may elect to use Conduct of Operations guidance for failure of an automatic control system and attempt to manually close the SG PORV from the Control Room at this time, but will be unsuccessful because the valve is mechanically bound in the open position)</i>	
	BOP	Lowens reactor power to less than or equal to 100% using the Main Turbine Governor Valve Limiter. <i>(This is an immediate action step of OPOP04-MS-0001.)</i>	
	SRO	Directs performance of OPOP04-MS-0001, Excessive Steam Demand.	
	RO	CHECK Reactor Power – LESS THAN OR EQUAL TO 100%	
	BOP	(RNO) LOWER Reactor Power to LESS THAN OR EQUAL TO 100% Using Main Turbine Governor Valve Limiter. <i>(Step 1)</i> <i>(This is an immediate action step of OPOP04-MS-0001.)</i>	

Op-Test No.: 1 Scenario No.: 1 Event No.: 2 (Examiner Trigger)			
Event Description: SG 1A PORV fails open.			
Time	Position	Required Operator Actions	Notes
	BOP SRO	IDENTIFY And ISOLATE Steam Leak: - CHECK Condenser Steam Dump Valves - CLOSED - CHECK Steam Generator PORVs – CLOSED (RNO) - ENSURE SG PORVs are responding to control SG pressures to LESS THAN OR EQUAL to 1225 psig. - IF Steam Generator pressures are LESS THAN 1225 psig, THEN PERFORM the following: - PLACE affected Steam Generator PORV(s) IN “MAN” AND CLOSE on MCB controller “PORV PV-7411” - IF affected Steam Generator PORV(s) will not close, THEN DISPATCH operator to close affected Steam Generator PORV(s) isolation valve(s). - MS-0021 SG 1A PORV ISOL - REFER TO Technical Specifications 3.3.5.1, 3.7.1.6. - GO TO Step 3.0 <i>(Step 2a, 2b, and 2b RNO)</i> <i>(Step 2 checks many sources of possible excess steam demand. Step 2b is applicable for this event. The valve is stuck open so an operator must be dispatched to close MS-0021, SG 1A PORV ISOL)</i>	
	PO	When contacted to close MS-0021, acknowledge the request, see Expected Booth Actions, Scenario Page 43.	
<i>(TS 3.3.5.1 Action 2 [Auto control of SG PORV in Modes 1 or 2] – With one less the required number of OPERABLE channels, within 7 days restore the inoperable channel to OPERABLE status or apply the requirements of the CRMP, or be is at least HOT STANDBY within the next 6 hours.</i> <i>TS 3.7.1.6 Action a – With one less than the required atmospheric relief valves OPERABLE, within 7 days restore the required atmospheric steam relief valves to OPERABLE status or apply the requirements of the CRMP, or be is at least HOT STANDBY within the next 6 hours.</i>			

Op-Test No.: 1 Scenario No.: 1 Event No.: 2 (Examiner Trigger)			
Event Description: SG 1A PORV fails open.			
Time	Position	Required Operator Actions	Notes
	SRO	EVALUATE Unit Shutdown As Follows: • DETERMINE if unit shutdown or load reduction is warranted based on the following criteria: • Size of leak • Location of leak • Rate of depletion of secondary inventory • Will a Turbine Trip isolate Steam Leak OR will MSIVs need to be closed to isolate leak • CHECK Unit Shutdown or Load Reduction - REQUIRED (RNO) PERFORM the following: • MAINTAIN present plant conditions until leak can be isolated or repaired. • GO TO the appropriate plant procedure as directed by the Shift Manager/Unit Supervisor. <i>(Step 3 and Step 3 RNO)</i> <i>(There are no other steam leaks and the SRO will determine that the plant can remain at the current power level.)</i> <i>(Event 3 can be triggered after SRO has checked TS.)</i>	

OPERATOR ACTIONS

Op-Test No.: 1 Scenario No.: 1 Event No.: 3 (Examiner Trigger)			
Event Description: Charging Pump 1A Trips on Overcurrent			
Time	Position	Required Operator Actions	Notes
	RO	Acknowledges and announces the following annunciators on 04M8: • LETDN HX OUTL TEMP HI (C-3) • CHG PMP HEADER PRESSURE LO (F-1) • CHG FLOW HI/LO (F-3) • <i>(NOTE: Other alarms may come in depending on how long there is a reduced charging flow condition.)</i>	
	SRO/RO	Determines that CCP 1A has tripped causing low charging flow.	
	SRO	Directs the RO to respond to the failure of CCP 1A by using the steps in the annunciator response for 04M8 F-1, CHG PMP HEADER PRESS LO or F-3, CHG FLOW HI/LO. <i>(Directing these steps is the quickest way to get charging flow reestablished.)</i>	
NOTE Centrifugal Charging Pump Aux Lube Oil Pump <u>NOT</u> required for EMERGENCY starts.			
	RO	IF Centrifugal Charging Pump (CCP) START is required, THEN PERFORM the following: • IF NO CCP is running, THEN ENSURE "CHG FLOW CONT VLV FCV-0205" is CLOSED. • ENSURE the miniflow is OPEN for CCP 1B • VERIFY the white "L.O. AVAILABLE" light is lit for CCP 1B. • START CCP 1B • ADJUST Charging flow AND Seal Injection flows as necessary. • CLOSE the miniflow for CCP 1B. • WHEN charging flow has stabilized, THEN PLACE "CHG FLOW CONT FK-0205" in Automatic. <i>(Step 1 of the annunciator response procedure)</i>	
	PO	<i>If asked to check the Charging Pumps, acknowledge the request, see Expected Booth Communications, Event 3, Scenario Page 42.</i>	

OPERATOR ACTIONS

Op-Test No.: 1 Scenario No.: 1 Event No.: 3 (Examiner Trigger)			
Event Description: Charging Pump 1A Trips on Overcurrent			
Time	Position	Required Operator Actions	Notes
	SRO	TAKE Appropriate Actions Per TRM 3.1.2.2.a <i>See TRM details below.</i> <i>(Event 4 can be triggered after SRO has checked the TRM.)</i>	
TRM 3.1.2.2. <i>a. At least two charging pumps shall be OPERABLE.</i> ACTION: <i>b. With only one required charging pump OPERABLE, restore at least two charging pumps to OPERABLE status within 7 days or initiate action in accordance with the Corrective Action Program to restore the item to OPERABLE status as soon as practical.</i>			

OPERATOR ACTIONS

Op-Test No.: 1 Scenario No.: 1 Event No.: 4 (Examiner Trigger)			
Event Description: SG 1B Steam Flow Channel FT-522 Fails High			
Time	Position	Required Operator Actions	Notes
	BOP	Acknowledges and announces the following annunciators on 06M3: SG 1B STM/FW FLOW MSMTCH (E7) <i>NOTE: If the crew is slow to diagnose this condition, then other alarms will come in on SG 1A.</i>	
	SRO BOP	Determines SG 1B Controlling Steam Flow Transmitter FT-0522 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.)	
	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.: 1 Event No.: 4 (Examiner Trigger)			
Event Description: SG 1B Steam Flow Channel FT-522 Fails High			
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. <i>(Step 4)</i>	
	BOP	CHECK SGFP Master Speed Controller - IN MANUAL RNO GO TO Step 7.0. <i>(Step 5)</i> <i>(If SGFP Master Speed Controller was placed in Manual in step 2.0, then crew will check to controller is responding in manual.)</i>	
	BOP	CHECK Individual SGFP Speed Controllers - ANY IN MANUAL RNO GO TO Step 9.0. <i>(Step 7)</i>	
	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 <i>(Step 9)</i> <i>(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.)</i>	
	BOP	RESTORE Affected SG NR Level(s) To Between 68% And 74% <i>(Step 10)</i>	
	BOP	MONITOR SG NR Levels - GREATER THAN 20% <i>(Step 11)</i>	
	BOP	MONITOR SG NR Levels - LESS THAN 87.5% <i>(Step 12)</i>	

OPERATOR ACTIONS

Op-Test No.: 1 Scenario No.: 1 Event No.: 4 (Examiner Trigger)			
Event Description: SG 1B Steam Flow Channel FT-522 Fails High			
Time	Position	Required Operator Actions	Notes
	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 steam flow channel for the affected SG level control. (Step 15) (Steam Flow Channel FT-0522 is failed high.)	
	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.	
	BOP	CHECK Main Feedwater Regulating OR Low Power Feedwater Regulating Valve(s) - IN AUTO - SG 1B "NORM FCV-0552" 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)	

OPERATOR ACTIONS

Op-Test No.: 1 Scenario No.: 1 Event No.: 4 (Examiner Trigger)			
Event Description: SG 1B Steam Flow Channel FT-522 Fails High			
Time	Position	Required Operator Actions	Notes
	BOP	CHECK SGFP Master Speed Controller - IN AUTO <i>(Step 20)</i> <i>(The crew will place the SGFP Master Speed Controller in Auto at this step if it was placed in manual earlier.)</i>	
	SRO	TAKE Appropriate Actions Per Technical Specifications 3.3.1, 3.3.2, 3.3.3.6 and TRM 3.7.1.7 <i>(Step 21)</i> <i>(TSs do not apply for the steam flow channel.)</i>	
	SRO	NOTIFY I&C To Place The Affected Channel In Trip Or Bypass. REFER TO Addendum 2, Procedure List For The Appropriate Procedure <i>(Step 22)</i>	
	SRO	INITIATE Corrective Actions For Failed Component <i>(Step 23)</i> <i>(Event 5 can be triggered on request from the lead examiner.)</i>	

OPERATOR ACTIONS

Op-Test No.: 1 Scenario No.: 1 Event No.: 5 (Examiner Trigger)													
Event Description: Pressurizer pressure transmitter PT-0457 fails high.													
Time	Position	Required Operator Actions	Notes										
	RO	Acknowledges and announces the following annunciators on 04M8: - PRZR PRESS HI RX TRIP ALERT (A-7) - PRZR PRES DEV HI (C-7) - PRZR PRESS LO PORV BLKD (F-8)											
	SRO/RO	Determines PZR Pressure Channel PT-0457 failed high. Performs immediate actions of 0POP04-RP-0001: IF any channel has failed HIGH, THEN POSITION Pressurizer Pressure Control Selector Switch to remove failed channel from control.											
	SRO	Directs actions of 0POP04-RP-0001, Loss of Automatic Pressurizer Pressure Control.											
	RO	CHECK Pressurizer Pressure Channels - ALL OPERABLE (RNO) IF any channel has failed HIGH, THEN POSITION Pressurizer Pressure Control Selector Switch to remove failed channel from control: {CP004} <table><tr><td>Failed Channel</td><td>Select</td></tr><tr><td>RC-PI-0455</td><td>P457/456</td></tr><tr><td>RC-PI-0456</td><td>P455/458</td></tr><tr><td>RC-PI-0457</td><td>P455/456 OR P455/458</td></tr><tr><td>RC-PI-0458</td><td>P455/456 OR P457/456</td></tr></table> (Step 1) (Immediate Action Step)	Failed Channel	Select	RC-PI-0455	P457/456	RC-PI-0456	P455/458	RC-PI-0457	P455/456 OR P455/458	RC-PI-0458	P455/456 OR P457/456	
Failed Channel	Select												
RC-PI-0455	P457/456												
RC-PI-0456	P455/458												
RC-PI-0457	P455/456 OR P455/458												
RC-PI-0458	P455/456 OR P457/456												
	RO	CHECK Pressurizer Pressure Controller RC-PK-0655A - OPERABLE (Step 2)											
	RO	CHECK Pressurizer PORVs - CLOSED {CP004} - PCV-0655A - PCV-0656A (Step 3)											

OPERATOR ACTIONS

Op-Test No.: 1 Scenario No.: 1 Event No.: 5 (Examiner Trigger)			
Event Description: Pressurizer pressure transmitter PT-0457 fails high.			
Time	Position	Required Operator Actions	Notes
	RO	CHECK Normal Pressurizer Spray Valves: {CP004} • Normal Pressurizer Spray Valves – CLOSED • “PRZR SPR PCV-0655B” • “PRZR SPR PCV-0655C” • Pressurizer Spray Line temperature - NORMAL <i>(Step 4)</i>	
	RO	CHECK Pressurizer Auxiliary Spray Valve LV-3119 CLOSED. <i>(Step 5)</i>	
	RO	CHECK Pressurizer Pressure - GREATER THAN 2210 PSIG. <i>(Step 6)</i> <i>(If no then ensure PZR Backup Heaters energized and go to step 11.0.)</i>	
	RO	CHECK Pressurizer Pressure - GREATER THAN 2250 PSIG. <i>(Step 7)</i> <i>(PZR Pressure will probably be less than 2250 and SRO/RO will go to step 11.0.)</i>	
	RO	ENSURE An Operable Pressurizer Pressure Channel Is Selected On The Pressurizer Pressure Recorder Selector Switch <i>(Step 11)</i>	
	RO	CHECK Pressurizer Pressure Controller RC-PK-0655A – OPERABLE. <i>(Step 12)</i>	
	RO	CHECK Pressurizer Pressure - BETWEEN 2220 AND 2250 PSIG. <i>(Step 13)</i>	

OPERATOR ACTIONS

Op-Test No.: 1 Scenario No.: 1 Event No.: 5 (Examiner Trigger)			
Event Description: Pressurizer pressure transmitter PT-0457 fails high.			
Time	Position	Required Operator Actions	Notes
	RO	CHECK The Following: - Pressurizer Pressure Controller RC-PK-0655A demand signal - INDICATING NORMAL FOR EXISTING PLANT CONDITIONS - Pressurizer spray valves - IN AUTO "PRZR SPR PCV-0655B" "PRZR SPR PCV-0655C" - Pressurizer heater controls - IN AUTO - HTR CONT GRP 1C(2C) - HTR B/U GRP 1A(2A) - HTR B/U GRP 1B(2B) - HTR B/U GRP 1D(2D) - HTR B/U GRP 1E(2E) - Pressurizer PORVs - IN AUTO - PCV-0655A - PCV-0656A - Pressurizer PORV Isolation Valves - OPEN "ISOL MOV-0001A" for PCV-0655A "ISOL MOV-0001B" for PCV-0656A - Pressurizer Pressure Controller RC-PK-0655A - IN AUTO - Pressurizer pressure being maintained - BETWEEN 2220 AND 2250 PSIG (Step 14)	
	RO	CHECK Pressurizer Pressure Channels - ALL OPERABLE. (RNO) - NOTIFY I&C to place the affected Channel in trip or bypass. REFER TO Addendum 1, Procedure List for the appropriate procedure. - CHECK P-11 permissive in proper state for plant conditions per Technical Specification Table 3.3-3, Item 9.a. (Step 15)	
	SRO	REFER TO Addendum #3 For Applicable Technical Specifications. (Step 16) (See TS details on next page.)	

OPERATOR ACTIONS

Op-Test No.: 1		Scenario No.: 1	Event No.: 5 (Examiner Trigger)
Event Description: Pressurizer pressure transmitter PT-0457 fails high.			
Time	Position	Required Operator Actions	Notes
TS 3.2.5.b Action <i>With any of the above parameters [Pressurizer Pressure] exceeding its limit [≤ 2200 psig] restore the parameter to within its limit [> 2200 psig] within 2 hours or reduce THERMAL POWER to less than 5% of RATED THERMAL POWER within the next 4 hours.</i> TS 3.3.1.8 10 & 11 Action 6 and TS 3.3.2.1.e Action 20 <i>NOTE: Action 6 and Action 20 are the same.</i> <i>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:</i> <i>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.</i> <i>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.</i> NOTE: TS 3.4.1.1 and 3.4.1.2 do NOT apply for this event.			
	SRO	CHECK Reactor Coolant Pumps - ALL OPERATING (Step 17)	
	SRO	INITIATE Corrective Action For Failed Component (Step 18)	

OPERATOR ACTIONS

Op-Test No.: 1 Scenario No.: 1 Event No.: 6 (Examiner Trigger) Event Description: 1B RCP Trips Due To A Locked Rotor And the Reactor Fails To Trip From The Control Room			
Time	Position	Required Operator Actions	Notes
	RO	Recognizes that RCP 1B has tripped and the Reactor failed to trip automatically.	
	SRO	Directs performance of 0POP05-EO-EO00 Immediate Operator Actions.	
	RO RO/BOP BOP SRO	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 <u>THEN</u>: - OPEN 480V LC 1K1 and 1L1 feeder breakers open - IF Reactor will NOT trip, <u>THEN</u> GO TO 0POP05-EO-FRS1, RESPONSE TO NUCLEAR POWER GENERATION ATWS, Step 1 <u>AND</u> MONITOR Critical Safety Functions.: <i>(Step 1 and Step 1 RNO Immediate Action Step)</i>	
	SRO	Directs performance of 0POP05-EO-FRS1, Response to Nuclear Power Generation – ATWS.	

OPERATOR ACTIONS

Op-Test No.: 1 Scenario No.: 1 Event No.: 6 (Examiner Trigger) Event Description: 1B RCP Trips Due To A Locked Rotor And the Reactor Fails To Trip From The Control Room			
Time	Position	Required Operator Actions	Notes
	RO	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. - ENSURE 480V LC 1K1 and 1L1 feeder breakers open - IF reactor trip and bypass breakers DO NOT open, THEN DISPATCH and operator to open the reactor trip and bypass breakers: - REACTOR TRIP BREAKER 'R' - REACTOR TRIP BREAKER 'S' - BYPASS BREAKER 'R' - BYPASS BREAKER 'S' - WHEN the reactor is verified tripped, THEN CLOSE 480V LC 1K1 and 1L1 feeder breakers.	
	AO	<i>(Step 1 and Step 1 RNO Immediate Action Step)</i> <i>(The reactor trip breakers will not open so the crew dispatches and operator to locally manually open the reactor trip breakers.)</i>	
	BOP	VERIFY Turbine Trip: - VERIFY all turbine throttle valves – CLOSED - Main generator output breaker – OPEN - Main steam to deaerator valves – CLOSED <i>(Step 2 Immediate Action Step)</i>	

OPERATOR ACTIONS

Op-Test No.: 1 Scenario No.: 1 Event No.: 6 (Examiner Trigger) Event Description: 1B RCP Trips Due To A Locked Rotor And the Reactor Fails To Trip From The Control Room			
Time	Position	Required Operator Actions	Notes
	BOP	VERIFY AFW Status: • Motor- driven pumps – RUNNING • Turbine – driven pump – RUNNING (RNO) • Manually START pumps • Manually OPEN steam supply valves <i>(Step 3)</i>	
	RO CT-52	INITIATE Emergency Boration of RCS: • OPEN alternate Boration isolation valve. (MOV-0218) • CCPs – AT LEAST ONE RUNNING. • Charging flow – ESTABLISHED • CHECK Boration source aligned to the Boric Acid Tanks. • Emergency Boration flowpath OR • Normal Boration flowpath • CONTROL charging to MAINTAIN GREATER THAN 50 GPM charging flow on 'CHG FLOW FI-0205A' • ENSURE at least one boric acid pump – RUNNING • CHECK emergency boration flowpath in service: • MAINTAIN emergency boration flowpath – GREATER THAN 50 GPM 'ALT BORATE FLOW FI-0120A' • CONTINUE boration to obtain RCS Cb GREATER THAN OR EQUAL TO shutdown margin limit per PLANT CURVE BOOK, FIGURE 5.5, 68°F CURVE. • ENSURE normal letdown established • CONTROL pressurizer level between – 22% and 85% • MAINTAIN boration flowrate as directed by this procedure. • CHECK Pressurizer Pressure – LESS THAN 2335 PSIG. <i>(Step 4)</i>	

OPERATOR ACTIONS

[illegible]

OPERATOR ACTIONS

Op-Test No.: 1 Scenario No.: 1 Event No.: 6 (Examiner Trigger) Event Description: 1B RCP Trips Due To A Locked Rotor And the Reactor Fails To Trip From The Control Room			
Time	Position	Required Operator Actions	Notes
	SRO	RETURN TO Procedure and Step in Effect: CONTINUE to monitor Critical Safety Functions <i>(Step 20)</i> <i>(The crew will transition to 0POP05-EO-EO00, Reactor Trip or Safety Injection, Step 1.)</i> <i>(Event 7 can be triggered as soon as transition to 0POP05-EO-EO00 is made.)</i>	

OPERATOR ACTIONS

Op-Test No.: 1		Scenario No.: 1	Event No.: 7, 8, and 9 (Examiner Trigger)
Event Description:		Event 7 – PZR Safety Valve PSV-3450 fails open, (CT-16) Event 8 – HHSI Pump 1B fails to auto start when Safety Injection is actuated Event 9 – RCP Seal Return Inside and Outside Containment Isolation Valves fail to close automatically (CT-11)	
Time	Position	Required Operator Actions	Notes
	SRO	Re-enters 0POP05-EO-EO00, Reactor Trip or Safety Injection.	
	SRO	Directs/ensures the immediate actions of EO00, Reactor Trip/SI have been completed by performing a procedure read through of them.	
	RO	VERIFY Reactor Trip: - Rod bottom lights – LIT - Reactor trip and bypass breakers – OPEN - Neutron flux – LOWERING (Step 1)	
	RO	VERIFY Turbine Trip: - VERIFY all turbine throttle valves – CLOSED - Main generator output breaker – OPEN - Main steam to deaerator valves - CLOSED (Step 2)	
	RO	VERIFY Power To AC ESF Busses: - AC ESF busses – AT LEAST ONE ENERGIZED 4.16KV ESF bus 480V ESF LCs 480V ESF MCCs - AC ESF busses – ALL ENERGIZED 4.16KV ESF busses 480V ESF LCs 480V ESF MCCs (Step 3)	
	RO	CHECK SI Status: - CHECK if SI is actuated - SI reactor trip first out annunciator – LIT - ESF status monitoring red SI status lights - LIT (Step 4)	

OPERATOR ACTIONS

Op-Test No.: 1		Scenario No.: 1	Event No.: 7, 8, and 9 (Examiner Trigger)
Event Description:		Event 7 – PZR Safety Valve PSV-3450 fails open, (CT-16) Event 8 – HHSI Pump 1B fails to auto start when Safety Injection is actuated Event 9 – RCP Seal Return Inside and Outside Containment Isolation Valves fail to close automatically (CT-11)	
Time	Position	Required Operator Actions	Notes
	BOP	VERIFY Proper SI Equipment Operation Per ADDENDUM 5, VERIFICATION OF SI EQUIPMENT OPERATION <i>(Step 5)</i> <i>(See Actions on pages 34 - 37)</i>	
	RO CT-16	MONITOR If RCPs Should Be Stopped: • HHSI pump - AT LEAST ONE RUNNING • RCS pressure - LESS THAN 1430 PSIG • *STOP ALL RCPs (From CIP)	
	RO	MONITOR If Containment Spray Is Required: • Containment pressure - GREATER THAN 9.5 PSIG (QDPS) RNO • Check Containment Pressure Has EXCEEDED 9.5 PSIG (CP-018) • Go to Step 7 <i>(Step 6)</i>	
	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. <i>(Step 7)</i> <i>(The SRO will have the BOP throttle AFW flow while maintaining 576 gpm with level less than 14%[34%])</i>	
	RO	CHECK RCP Seal Cooling: • ENSURE seal injection flow between 6 and 13 gpm <i>(Step 8)</i> <i>(RO may have to adjust seal injection)</i>	

OPERATOR ACTIONS

Op-Test No.: 1		Scenario No.: 1	Event No.: 7, 8, and 9 (Examiner Trigger)
Event Description:		Event 7 – PZR Safety Valve PSV-3450 fails open, (CT-16) Event 8 – HHSI Pump 1B fails to auto start when Safety Injection is actuated Event 9 – RCP Seal Return Inside and Outside Containment Isolation Valves fail to close automatically (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 (RNO) IF temperature LESS THAN 567°F AND lowering, THEN: - MAINTAIN total AFW flow GREATER THAN 576 GPM until NR level is GREATER THAN 14% [34%] in at least one SG. - IF MSIVs OR MSIBs are OPEN, THEN ISOLATE steam loads as follows: - ISOLATE steam dump drains. - ISOLATE steam chest drains. - ISOLATE steam to MSR and steam line drains to MSRs. - TRIP all SGFPTs. - STOP dumping steam. - ISOLATE SGBD. - IF cooldown continues, THEN ENSURE CLOSED MSIVs and MSIBs. <i>(Step 9)</i> <i>(This RNO may have to be performed if Containment Pressure hasn't yet reached 3.0 psig)</i>	
	RO	CHECK Pressurizer Status: - PORVs - CLOSED - Normal pressurizer spray valves - CLOSED - Auxiliary spray valve - CLOSED - Excess letdown isolation valves - CLOSED <i>(Step 10)</i>	
	RO CT-16	MONITOR If RCPs Should Be Stopped: - HHSI pump - AT LEAST ONE RUNNING - RCS pressure - LESS THAN 1430 PSIG STOP all RCPs <i>(Step 11)</i> <i>(RCPs may have already been secured by the CIP)</i>	

OPERATOR ACTIONS

Op-Test No.: 1		Scenario No.: 1	Event No.: 7, 8, and 9 (Examiner Trigger)
Event Description:		Event 7 – PZR Safety Valve PSV-3450 fails open, (CT-16) Event 8 – HHSI Pump 1B fails to auto start when Safety Injection is actuated Event 9 – RCP Seal Return Inside and Outside Containment Isolation Valves fail to close automatically (CT-11)	
Time	Position	Required Operator Actions	Notes
	RO CT-11	VERIFY The Following Containment Isolation Valve – CLOSED - Seal return isolation valves - Containment atmosphere radiation monitor isolation valves (Step 12) At least one RCP Seal Return Containment Isolation Valve must be closed to satisfy CT-11	
	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)	
	SRO	Enters 0POP05-EO-EO10, LOSS OF REACTOR OR SECONDARY COOLANT.	

OPERATOR ACTIONS

Op-Test No.: 1		Scenario No.: 1	Event No.: 7, 8, and 9 (Examiner Trigger)
Event Description:		Event 7 – PZR Safety Valve PSV-3450 fails open, (CT-16) Event 8 – HHSI Pump 1B fails to auto start when Safety Injection is actuated Event 9 – RCP Seal Return Inside and Outside Containment Isolation Valves fail to close automatically (CT-11)	
Time	Position	Required Operator Actions	Notes
	RO CT-16	MONITOR If RCPs Should Be Stopped: - HHSI pump - AT LEAST ONE RUNNING - RCS pressure - LESS THAN 1430 PSIG - STOP all RCPs <i>(Step 1)</i> <i>(RCPs should already be stopped in 0POP05-EO-EO00)</i>	
		Termination - Once addendum 5 is complete and E10 entered the scenario may be terminated if RCPs are stopped.	
	BOP	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 RNO - USE SG PORVs to depressurize intact SGs to BETWEEN 990 PSIG and 1000 PSIG. - ADJUST intact SG PORV controller setpoints to BETWEEN 990 PSIG and 1000 PSIG - ENSURE SG PORV controllers in AUTO. - VERIFY SG PORVs controlling SG pressure LESS THAN OR EQUAL TO 1000 PSIG <i>(Step 2)</i>	
	BOP	MONITOR If SG Secondary Pressure Boundary Intact: - CHECK pressures in all SGs - CONTROLLED OR RISING - GREATER THAN CONTAINMENT PRESSURE <i>(Step 3)</i>	
	RO	RESET SI <i>(Step 4)</i>	

OPERATOR ACTIONS

Op-Test No.: 1		Scenario No.: 1	Event No.: 7, 8, and 9 (Examiner Trigger)
Event Description:		Event 7 – PZR Safety Valve PSV-3450 fails open, (CT-16) Event 8 – HHSI Pump 1B fails to auto start when Safety Injection is actuated Event 9 – RCP Seal Return Inside and Outside Containment Isolation Valves fail to close automatically (CT-11)	
Time	Position	Required Operator Actions	Notes
	RO	RESET ESF Load Sequencers (Step 5)	
	RO	RESET Containment Isolation Phase A (Step 6)	
	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.: 7, 8, and 9 (Examiner Trigger) Event Description: Event 7 – PZR Safety Valve PSV-3450 fails open, (CT-16) Event 8 – HHSI Pump 1B fails to auto start when Safety Injection is actuated Event 9 – RCP Seal Return Inside and Outside Containment Isolation Valves fail to close automatically (CT-11)			
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. <i>(Step 12a)</i> NOTE: When the crew reaches this step and RCPs are NOT secured then consider CT-16 not met. Scenario shall be terminated at this point.	

OPERATOR ACTIONS

Op-Test No.: 1 Scenario No.: 1 Event No.: Addendum 5 & Event 8 & 9 Event Description: 0POP05-EO-EO00, Addendum 5, Actions for SI actuation. Event 8 – HHSI Pump 1B fails to automatically start when Safety Injection is Actuated Event 9 – RCP Seal Return Inside and Outside Containment Isolation Valves Fail to close automatically (CT-11)			
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 <i>(EO00 Addendum 5, Step 1)</i> <i>(0POP05-EO-EO00, Reactor Trip or Safety Injection, Addendum 5, Verification of Equipment Operation.)</i> <i>(This addendum is performed in parallel with Steps 6 to 15 of 0POP05-EO-EO00, Reactor Trip or Safety Injection)</i>	
	BOP	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 <i>(Step 2)</i>	
	BOP	VERIFY AFW system status: • Motor-driven pumps – RUNNING • Turbine-driven pump – RUNNING <i>(Step 3)</i>	

OPERATOR ACTIONS

Op-Test No.: 1 Scenario No.: 1 Event No.: Addendum 5 & Event 8 & 9 Event Description: 0POP05-EO-EO00, Addendum 5, Actions for SI actuation. Event 8 – HHSI Pump 1B fails to automatically start when Safety Injection is Actuated Event 9 – RCP Seal Return Inside and Outside Containment Isolation Valves Fail to close automatically (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 - Phase A valves- -CLOSED, REFER TO ADDENDUM 1, PHASE A ISOLATION VERIFICATION RNO Manually CLOSE valves. (RCP Seal Return ICIV and/or OCIV) (Step 6) Must close at least one RCP Seal Return Containment Isolation Valve to satisfy CT-11 if not already closed by RO previously.	
	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 RNO <u>WHEN</u> the respective ESF Load Sequencer has completed its automatic sequence <u>OR</u> it is determined the respective ESF Load Sequencer has failed, <u>THEN</u> manually START pumps. (Step 10) (The RO may start HHSI Pump 1B, if not it should be started here)	

OPERATOR ACTIONS

Op-Test No.: 1 Scenario No.: 1 Event No.: Addendum 5 & Event 8 & 9 Event Description: 0POP05-EO-EO00, Addendum 5, Actions for SI actuation. Event 8 – HHSI Pump 1B fails to automatically start when Safety Injection is Actuated Event 9 – RCP Seal Return Inside and Outside Containment Isolation Valves Fail to close automatically (CT-11)			
Time	Position	Required Operator Actions	Notes
	BOP	VERIFY SI valve alignment – PROPER EMERGENCY ALIGNMENT <i>(Step 11)</i>	
	BOP	VERIFY SI flow: RCS pressure - LESS THAN 1745 PSIG <i>(Step 12)</i>	
	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 <i>(Step 13)</i>	

OPERATOR ACTIONS

Op-Test No.: 1 Scenario No.: 1 Event No.: Addendum 5 & Event 8 & 9 Event Description: 0POP05-EO-EO00, Addendum 5, Actions for SI actuation. Event 8 – HHSI Pump 1B fails to automatically start when Safety Injection is Actuated Event 9 – RCP Seal Return Inside and Outside Containment Isolation Valves Fail to close automatically (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 <i>(Step 14)</i>	
	BOP	NOTIFY Unit Supervisor that Addendum 5 is COMPLETE <i>(Step 15)</i>	
	SRO	IMPLEMENT Functional Restoration Procedures as required <i>(Step 16)</i>	
	SRO	RETURN TO procedure step in effect. <i>(Step 17)</i>	

CRITICAL TASK SUMMARY

Critical Task #52 for Event #6 – 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-FRS1, Response to Nuclear Power Generation - ATWS. • Open CV-MOV-0025, Charging OCIV • Open CV-MOV-0218, ALT BORATION ISOLATION. • START at least one Boric Acid Transfer Pump. • Establish ≥ 50 gpm CVCS Charging flow by throttling CV-FCV-0205, Charging Flow Control Valve.	
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	Reactor trip signal present and Reactor trip breakers fail to open automatically or manually and either 1K1 or 1K2 breaker fails to open.	
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.	

CRITICAL TASK SUMMARY

Critical Task #52 for Event #6 – Insert negative reactivity via emergency boration.		Circle One SAT UNSAT
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.”	
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.		

CRITICAL TASK SUMMARY

Critical Task #16 for Event #7 – Trip RCPs prior to placing Hydrogen Analyzers in service		Circle One SAT UNSAT
Critical Task Bounding Criteria	Acceptance Criteria: Trip RCPs prior to placing Hydrogen Analyzers in service.	
Safety Significance	Failure to trip the RCPs under the postulated plant conditions leads to core uncover and to fuel cladding temperatures in excess of 2200°F, which is the limit specified in the ECCS acceptance criteria. Thus, failure to perform the task represents misoperation or incorrect crew performance in which the crew has failed to prevent “degradation of the fuel cladding barrier to fission product release” and which leads to “violation of the facility license condition.” The analysis presented in the FSAR for a SBLOCA typically assumes that the RCPs trip because of a loss of offsite power that coincides with the reactor trip. However, during a SBLOCA, offsite power might remain available and RCPs might continue to run for some period of time.	
Cueing	Indication of RCP Trip Criteria • Indication of SBLOCA • Indication of RCS Pressure <1430 psig • Indication of a HHSI pump running • Indication of HHSI Pump Injection Flow	
Performance Indicator	Manipulation of controls as required to secure all RCPs	
Performance Feedback	Indication that all RCPs are secured: • RCP green lights lit • Forced RCS flow is no longer indicated	
Justification for the chosen performance limit	Failure to manually secure RCPs under the postulated conditions demonstrates the inability of the crew to “recognize safety significant conditions requiring manual operator action.”	
PWR Owners Group Appendix	CT-16 Trip all RCPs so that an Orange Path on Core Cooling (CET temperatures > 707°F) does not occur when forced circulation in the RCS stops	
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 #9 – Close Containment Isolation Phase A Valves		Circle One SAT UNSAT
Critical Task Bounding Criteria	Acceptance Criteria: Close Containment Isolation valves such that at least one valve is closed on RCP Seal return line Phase A penetration after both 0POP05-EO-EO00, step 12 and 0POP05-EO-EO00, Addendum 5, are complete.	
Safety Significance	Closing at least one containment isolation valve on each Phase A penetration, under the postulated plant conditions and when it is possible to do so, constitutes a task that “is essential to safety,” because “its improper performance or omission by an operator will result in direct adverse consequences or significant degradation in the mitigative capability of the plant.” In particular, the crew has failed to prevent “degradation of any barrier to fission product release.” In this case, the containment barrier is needlessly left in a degraded condition. Failure to perform the critical task leads to an unnecessary release of fission products to the auxiliary building, increasing the potential for release to the environment and reducing accessibility to vital equipment within the auxiliary building. High radiation in the auxiliary building can lead to increased doses to personnel. Failure to perform the critical task also 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.”	
Cueing	• Indication and/or annunciation that SI is actuated. • Absence of closed valve position indication on all (both) containment isolation RCP Seal Return Phase A penetration. • 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 RCP Seal Return Phase A penetration. • Closed valve position indication for at least one containment isolation valve on each RCP Seal Return Phase A Phase A penetration	
Performance Feedback	ESF system status lamps show that at least one containment isolation valve is closed on RCP Seal Return Phase A penetration.	
Justification for the chosen performance limit	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.	
PWR Owners Group Appendix	B.11, CT-11, CLOSE CONTAINMENT ISOLATION PHASE A VALVES	
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:

- As Health Physics, if notified acknowledge that OPS is changing Charging flowpaths and state that new surveys will be initiated as needed.
- As a Plant Operator, if asked, report that CCP 1A is ready for a start. After start, report a good start on CCP 1A.

EVENT 2:

- As I&C Maintenance or the Duty Maintenance Supervisor, if notified of the failure of PT-7411 SG 1A outlet pressure channel report that an I&C maintenance crew is being assembled for support. No further action is necessary.
- As Operations Manager, acknowledge the failure of PT-7411 SG 1A outlet pressure channel. No further action is necessary.

EVENT 3:

- As a Plant Operator, if asked, report the CCP 1A Breaker indicates the pump tripped on overcurrent.
- As a Plant Operator, if asked, report an acrid odor in CCP 1A room like overheated windings (no fire if asked).
- As a Plant Operator, if asked, report CCP 1B is ready for a start. After start, report a good start on CCP 1B.
- As Electrical or Mechanical Maintenance or the Duty Maintenance Supervisor, if notified of the failure of CCP 1A report that a crew is being assembled for support. No further action is necessary.

EVENT 4:

- As I&C Maintenance or the Duty Maintenance Supervisor, if notified of the failed SG 1B Steam Flow Channel FT-0522 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 1B Steam Flow Channel FT-0522. No further action is necessary.

EVENT 5:

- As I&C Maintenance or the Duty Maintenance Supervisor, if notified of the failed Pressurizer Pressure Channel PT-0457 report that an I&C maintenance crew is being assembled for support. No further action is necessary.
- As Operations Manager, acknowledge the failure of Pressurizer Pressure Channel PT-0457. No further action is necessary.

EVENT 6:

- As a Plant Operator, if asked, acknowledge request to open the reactor trip and bypass breakers locally, after performing the local actions report completion to the Control Room
- As Chemistry, if requested by Lead Examiner or the Control Room Staff, report RCS Cb of 1830 ppb.

EVENT 7/8/9:

- There are no Booth Communications expected for Event 7/8/9.

EXPECTED BOOTH ACTIONS

1. When asked to close the isolation valve for the SG 1A PORV, wait approximately two (2) minutes then inform the Control Room that you are in position to close MS-0021. When given direction to close MS-0021, report that you are beginning to close MS-0021 and wait approximately 15 seconds then trigger the 'ISOLATE SG 1A PORV' step in the lesson plan.
2. When asked to locally open the reactor trip and bypass breakers, wait until emergency boration is established, verify reactor trips or GO TO Summary and set MALF # 01-12-02 to FALSE (0). This action is expected to occur automatically after opening CV-MOV-0218.
3. If asked to open the Deaerator High Level Dump Bypass Valves, then trigger the step for 'DA HLD Bypass Valves FW-486 & FW-487'.
4. 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:

[illegible]

SIMULATOR SETUP (cont'd.)

NOTE

The Scenario Lesson Plan MUST be run from the left most Instructor Station in Simulator Booth.

For the LOT 27 NRC Exam the Simulator Configuration must be set to:
'ws_Simx\Rev01CoreUpdate'

Log into Instructor Workstation as 'lotnrc' user, open Orchid (nstps server), then 'Unlock' Initial Conditions Group 'lotnrc'.

- Log into Instructor Workstation, open Orchid (nstps server), then 'Unlock' Initial Conditions Group 'lotnrc'.
- Reset to IC #196 and perform SWITCH CHECK.
 - On ICS Drop 239 in simulator booth open up 'Simstation Test Interface'
 - Change 'Control Mode' from 'PMC' to 'STANDALONE'
 - Toggle 'RESET' on 'Trend Data'
 - Change 'Control Mode' back to 'PMC'
- Go to RUN on simulator and perform the following:
 - Ensure Simulator is ready by performing applicable check offs from 0PNT01-ZT-0304, LOR Conduct of Simulator Training, Addendum 5, Simulator Readiness Checklist.
 - With Simulator in RUN, re-establish normal ICS Group Trends for Primary and Secondary (If an ICS Group Trend did not reset, then re-perform the steps above to reset ICS Group Trends.)
 - Ensure VCT Makeup Integrators are set as follows:
 - ENSURE BA BATCH/GALLONS and TOT M/U BATCH/GALLONS counters reset to zero.
 - ENSURE BA BATCH/GALLONS setpoint set to 6 gallons and TOT M/U BATCH/GALLONS setpoint set to 10 gallons.
 - Verify BA Controller Pot setting is 3.56
- Hang Caution Tags on HHSI Pump 1A and LHSI Pump 1A.
- Open lesson plan for 'Scenario 1' in 'lotnrc' directory for LOT 27.
- EXECUTE the 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 review procedure for swapping Charging Pumps.
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 COMMUNICATIONS' and 'EXPECTED BOOTH ACTIONS' Sections for instructions for Instructor actions during the scenario.

7. IF Recorded Parameters were identified for charts, then 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 swap Charging Pumps from 1B to 1A.
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. When signaled by Lead Examiner, trigger **STEP 5** – Event #6
14. When signaled by Lead Examiner, trigger **STEP 6** – Event #7
15. Place simulator in FREEZE when cued by the Lead Examiner to terminate scenario.
16. 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.

17. IF Chart was started in Step 7, then save Recorded Parameters Data as follows:

- 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\LOT27 Charts**. The file name will be 'LOT27 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. LOT27 Charts.

18. Save Scenario SAM (Simulator Action Monitor) as follows:

- 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\LOT27 Charts**. The file name will be 'LOT27 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		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	32	39	240	8	8
			flushing with 15					
As Required			As Required			As Required		

ΔI Target
2.48%

Channel
U1146

RCS Boron
1300

Unit 1 Status

- Mode 1, 100% Power
- Core burnup is 150 MWD / MTU, BOL

Load Reduction:

- 100-90%/1hr = **170**
- 100-80%/10min = **380**
- 100-75%/30min = **420**
- 100-60%/1hr = **620**
- 100-50%/10min = **900**

Information:

- Shift Centrifugal Charging Pumps from 1B to 1A, 20 minute run to stabilize RCP seal injection temperatures is not required.
- HHSI and LHSI Pumps 1A OOS for maintenance.
- 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 complement is 5 watch standers and a head operator

ECO/LCO/RAsCAL:

TS 3.5.2 for HHSI and LHSI Pumps 1A, Action a. Within 7 days restore the inoperable subsystem(s) 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. Verify 2 HHSI Pumps, 2 LHSI Pumps and 2 RHR Heat Exchangers and associated flowpaths every 48 hours.

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 'Predefined 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.
- 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.
- The current core loaded on the simulator is C24. FOP position will remain at 257 steps until C25 is loaded into the simulator (scheduled for late December 2023)

LOT 27 NRC EXAM
SIMULATOR OPERATING TEST
SCENARIO 3

REVISION 1

Week of 07/17/2023

SCENARIO OUTLINE

Facility: South Texas Project	Scenario No.: 3	Op-Test No.: LOT 27 NRC
Examiners: _____ _____ _____		
Operators: _____ _____ _____		

Initial Conditions: - Reactor is at 100%. BOL. IC-198 Turnover: - HHSI Pump 1A, LHSI Pump 1A OOS, - Steam Generator 1A Tube leakage is being monitored per OPGP03-ZO-0041. - Start SGFPT 13 and secure SUFP 14.	Critical Tasks: - CT – 17, Isolate Faulted SG - CT-2 – Manually actuate Safety Injection
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Event No.	Malf. No.	Event Type*	Event Description
1 (0 min)	N/A	BOP (N) SRO (N)	Start SGFPT 13 after emergent maintenance.
2 (15 min)	08-12-04 TRUE	BOP (C, MC) SRO (C)	SUFP 14 trips when SGFPT 13 discharge valve is opened requiring entry into 0POP04-FW-0002, Steam Generator Feed Pump Trip.
3 (25 min)	02-25-02 1.0	RO (I, MC) SRO (I, TS)	Cold Leg 1A RTD RC-TT-0410B fails high requiring entry into 0POP04-RP-0004.
4 (35 min)	05-22-01 0.0	BOP (I MC), SRO (I, TS)	Main Steam Line 1A Steam Pressure Channel PT-514 Fails low requiring manual control of the 1A Main Feed Reg Valve and entry into 0POP04-FW-0001, Loss of Steam Generator Level Control.
5 (45 min)	05-03-01 .0016	All (R) SRO (TS)	Steam Generator Tube Leak in 1A Steam Generator requiring a down power to 50% in one hour per 0POP04-TM-0005.
6 (60 min)	07-02-01 0.8 (5 min ramp)	RO (C) SRO (C)	Condenser Vacuum degrades requiring a Reactor Trip/Turbine Trip.
7 (65 min)	05-02-03 0.2 (20 S Ramp)	All (M)	A steam line break occurs on the 1C steam line inside containment. (CRITICAL TASK (CT-17))
8 (65 min)	05-07-02, 05-07-03 TRUE	BOP (C, MC) SRO (C)	MSIVs 1B and 1C fail to close automatically (CRITICAL TASK – Part of CT-17)
9 (65 min)	01-12-03A,B,&C TRUE	RO (C) SRO (C)	SI fails to actuate automatically (CRITICAL TASK - CT-2)

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor, (TS) Tech. Spec. (MC)Manual Control

Total Estimated Time: 1 hour, 20 minutes

Target Quantitative Attributes (Per Scenario; See ES 3.3.B.2 and Table 3.4-1)	Actual Attributes
1. Events after EOP entry (1–2)	2
2. Abnormal events (2–4)	5
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. Pre-identified critical tasks (≥2)	2

STP LOT-27

NRC Scenario #3 Description

Initial Conditions: 100% Power, HHSI Pump 1A and LHSI Pump 1A are OOS, SG 1A Primary to Secondary leakage is 8 gpd and being monitored per 0PGP03-ZO-0041, Action for Monitoring Primary to Secondary Leakage. SGFPT 13 is ready for restoration following emergent maintenance.

Event 1: After the crew takes the shift, they will start SGFPT 13 following maintenance to repair an oil leak in accordance with 0POP02-FW-0002, SGFP Turbine.

Event 2: When SGFPT 13 discharge valve is opened, SUFP 14 trips on overcurrent. The crew should enter 0POP04-FW-0002, Steam Generator Feed Pump Trip and raise SGFPT 13 speed to feed forward to the Steam Generators to restore Steam Generator levels.

Event 3: After SGFPT 13 is restored to service, Cold Leg 1A RTD RC-TT-0410B fails high requiring entry into 0POP04-RP-0004, Failure of RCS Loop RTD Protection Channel and manual control of control rods. The crew should place rods in Manual, deselect the failed channel and restore Rods to Auto when Tavg-Tref mismatch allows. The SRO should Enter TS 3.3.1 function 8, action 6 and 3.3.2 function 5f, action 20.

Event 4: After the SRO evaluates Technical Specifications, Main Steam Line 1A Steam Pressure Channel PT-514 Fails low requiring manual control of the 1A Main Feed Reg Valve and entry into 0POP04-FW-0001, Loss of Steam Generator Level Control. The crew should deselect the failed channel, restore SG 1A NR level and return the 1A Main Feed Reg Valve to Auto. The SRO should Enter TS 3.3.2 functions 1f and 4e, action 20.

Event 5: After the SRO evaluates Technical Specifications the Steam Generator Tube Leak in 1A Steam Generator increases to greater than 150 GPD exceeding the Tech Spec value for Steam generator primary to secondary leakage and requiring entry into 0POP04-RC-0004, Steam Generator Tube Leak and the crew should perform a down power to 50% in one hour per 0POP04-TM-0005, Fast Load Reduction. The SRO should enter Tech Spec 3.4.6.2 action a.

Event 6: After the reactivity manipulation is satisfied, Condenser Vacuum will start to degrade. The crew should enter 0POP04-CR-0001, Loss of Condenser Vacuum. The vacuum will continue to lower to the turbine trip setpoint. The crew should recognize this and trip the reactor. On the reactor trip the turbine fails to trip automatically, the crew should manually trip the turbine and implement 0POP05-EO-EO00, Reactor Trip or Safety Injection.

Event 7/8/9: On the reactor trip, a Steam Line Break occurs on SG 1C steam line inside containment. SI fails to automatically actuate and must be manually actuated. When MSI is initiated, MSIVs 1B and 1C fail to auto close and the crew should manually close the MSIVs and isolate AFW to the faulted SG. The crew will transition to 0POP05-EO-EO20, Faulted Steam Generator Isolation to complete isolation of the faulted SG. An intermediate transition to 0POP05-EO-FRZ1, Response to High Containment Pressure will occur due to an Orange Path on the Containment Safety Function after 0POP05-EO-EO00, Addendum 5 is completed.

Termination: Scenario can be terminated after SG 1C has been isolated and all critical tasks are completed or at examiner's discretion.

SCENARIO OBJECTIVES

Event 1 Objective

- Startup a Main Feedwater Pump in accordance with 0POP02-FW-0002.

Event 2 Objective

- Respond to Main Feedwater System alarms per 0POP04-FW-0002, Steam Generator Feed Pump Trip.

Event 3 Objective

- Respond to a failure of an RCS Loop RTD per 0POP04-RP-0004, Failure of RCS Loop RTD Protection Channel.
- Given that a condition exists requiring entry into a Technical Specification, interpret Technical Specifications accurately.

Event 4 Objective

- Respond to a loss of Steam Generator level control per 0POP04-FW-0001.
- Given that a condition exists requiring entry into a Technical Specification, interpret Technical Specifications accurately.

Event 5 Objective

- Respond to a steam generator tube leak in accordance with 0POP04-RC-0004.
- With the plant operating in MODE 1 and the SM or US determines that a load reduction is required, perform fast load reduction in accordance with 0POP04-TM-0005.
- Given that a condition exists requiring entry into a Technical Specification, interpret Technical Specifications accurately.

Event 6 Objective

- Respond to a loss of condenser vacuum in accordance with 0POP04-CR-0001.

Event 7, 8, and 9 Objectives

- 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.
- During all modes and/or plant conditions, operate the Safety Injection System per the applicable operating procedure.

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:

Recorded parameters will be maintained until exam results are complete.

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.

OPERATOR ACTIONS

Op-Test No.: 1 Scenario No.: 3 Event No.: 1			
Event Description: Start SGFPT 13 following emergent maintenance			
Time	Position	Required Operator Actions	Notes
	BOP	PERFORM the following for the SGFP turbine to be placed on line: (located on CP 006 unless otherwise noted) <i>(Step 14.1)</i> <i>(Per Turnover steps 14.1.1-14.1.6 have been completed as applicable)</i>	
	BOP	Momentarily DEPRESS the SGFP "LATCH/ALM RST" pushbutton. <i>(Step 14.1.7)</i>	
	BOP	Momentarily DEPRESS the SGFP "LATCH/ALM RST" pushbutton. VERIFY the following: • "LATCH/ALM RST" lit • "TRIP" light off <i>(Step 14.1.8)</i>	
	BOP	VERIFY the SGFP "RECIRC" valve OPEN: • SGFP 13 "FV-7114" <i>(Step 14.1.9)</i>	
	BOP	ENSURE OPEN the low pressure stop valve • DEPRESS the LP ST VLV "OPEN" as needed. <i>(Step 14.1.10 and 14.1.10.1)</i>	
	BOP	OPEN the high pressure stop valve by depressing the HP ST VLV "OPEN" pushbutton. <i>(Step 14.1.11)</i>	
	BOP	VERIFY the Turning Gear stopped by "TGM OFF" light lit. (TGB 83', SGFPT Control Panel) <i>(Step 14.1.12)</i>	
	PO	<i>(When asked, the Plant Operator reports the Turning Gear Motor OFF light is LIT.)</i>	

OPERATOR ACTIONS

Op-Test No.: 1 Scenario No.: 3 Event No.: 1 Event Description: Start SGFPT 13 following emergent maintenance			
Time	Position	Required Operator Actions	Notes
	BOP	VERIFY the "SPEED" controller is in "MANUAL at 0% Output". (SGFPT Controller) <i>(Step 14.1.13)</i>	
<u>NOTE</u> <i>IF speed is raised above 450 to 500 rpm and then lowered below 500 rpm, THEN a turbine trip will occur. DO NOT halt the speed rise near 500 rpm.</i> <i>The Feed Pumps automatically ramp at 100 rpm/sec from 1500 to 3300 rpm with the "Δ SPEED" pushbutton depressed. IF the "Δ SPEED" pushbutton is released between 1500 RPM and 3300 RPM, THEN the system will receive a signal to run back the SGFPT to 1500 RPM at the rate of 100 rpm/sec.</i>			
	BOP	VERIFY "MAN SPD CONTROL" light is lit. (SGFPT Controller) <i>(Step 14.1.14)</i>	
	BOP	Slowly INITIATE steam using the "Δ SPEED" pushbutton to roll the turbine. (SGFPT Controller) <i>(Step 14.1.15)</i>	
	BOP	RAISE SGFP turbine speed to 3300 RPM, using the "Δ SPEED" button. (SGFPT Controller) <i>(Step 14.1.16)</i>	
	BOP	VERIFY the "SG LVL CONTROL" light is lit, indicating the "SPEED" controller has shifted to "SG LVL CONTROL". (SGFPT Controller) <i>(Step 14.1.17)</i>	
	BOP	IF the S/U SGFP 14(24) was placed in "PULL TO LOCK" for a SGFP start, THEN PLACE S/U SGFP 14(24) handswitch to AUTO. <i>(Step 14.1.18)</i> <i>(This step is N/A because the SUFP is already running)</i>	
	BOP	DEPRESS the "Δ SPEED" pushbutton until it becomes continuously lit. (SGFPT Controller) <i>(Step 14.1.19)</i>	

OPERATOR ACTIONS

Op-Test No.: 1 Scenario No.: 3 Event No.: 1			
Event Description: Start SGFPT 13 following emergent maintenance			
Time	Position	Required Operator Actions	Notes
Examiner NOTE			
<i>When the SGFP 13 Discharge Valve is full open EVENT 2 will be automatically triggered.</i>			
	BOP	OPEN the applicable SGFP “FW DISCH” valve: • SGFP 13 “MOV-0061” (Step 14.1.20) (EVENT 2 will automatically trigger when MOV-0061 is OPEN}	
	BOP	IF SGFP was started per OPOP03-ZG-0005 Plant Startup to 100%, <u>THEN</u> return to applicable step of OPOP03-ZG-0005 Plant Startup to 100%. (Step 14.1.21) (This step is N/A)	
	BOP	IF this is the first SGFP started, <u>THEN</u> PERFORM the following: (Step 14.1.22) (This step and substeps are N/A since other SGFPs are running)	
	BOP	ENSURE the SGFP “SPEED” controller is in the “MAN” position at minimum output. (SGFPT Controller) (Step 14.1.23)	
	BOP	RAISE SGFPT speed to approximately match the discharge pressure of the operating SGFPs using the “RAISE” pushbutton on the SGFP turbine “SPEED” controller. (SGFPT Controller) (Step 14.1.24)	
	BOP	<u>WHEN</u> the SGFP speed matches the “SGFP MASTER SPEED” controller OR any operating SGFP speed, <u>THEN</u> PLACE the “SPEED” controller in “AUTO”. (SGFPT Controller) (Step 14.1.25)	

OPERATOR ACTIONS

Op-Test No.: 1		Scenario No.: 3		Event No.: 1			
Event Description: Start SGFPT 13 following emergent maintenance							
Time		Position		Required Operator Actions		Notes	
		BOP		MONITOR SGFP “SPEED” controller for proper operation. (SGFPT Controller) <i>(Step 14.1.26)</i>			
		BOP		ENSURE any previously operating SGFP turbine “SPEED” controller in “AUTO”. (SGFPT Controller) <i>(Step 14.1.27)</i>			
		BOP		Closely MONITOR “OIL COOLER DISCHARGE”: (TGB 83’, SGFP Turbine Control Panel) • SGFP 13 “TIS 7465C” <i>(Step 14.1.28)</i>			
		PO		<i>(If asked, the Plant Operator will report that they are monitoring SGFP Oil Cooler Discharge Temperature and it is currently 113°F.)</i>			

Op-Test No.: 1 Scenario No.: 3 Event No.: 2 (Automatic Trigger when SGFPT 13 Discharge Valve is OPEN)			
Event Description: SUFP 14 Trips			
Time	Position	Required Operator Actions	Notes
	BOP	Acknowledges and announces the following annunciators: • SG 1A STM/FW FLOW MSMTCH 6M03, Window E-3 • SG 1B STM/FW FLOW MSMTCH" 6M03, Window E-7 • SG 1C STM/FW FLOW MSMTCH" 6M04, Window E-3 • SG 1D STM/FW FLOW MSMTCH" 6M04, Window E-7 • S/U SGFP L.O. SYS TRBL 07M3, Window F-6 <i>(NOTE: Other alarms will come in as event progresses.)</i>	
	SRO	Ensures immediate actions and directs actions of 0POP04-FW-0002, Steam Generator Feed Pump. <i>(NOTE: A SUFP 14 Trip is a direct entry condition for 0POP04-FW-0002.)</i>	
	BOP	CHECK SGFPTs - REQUIRED NUMBER RUNNING (RNO) PERFORM the following: • ENSURE SU SGFP is running. • START a Standby FW Booster Pump. • IF a SU SGFP trips with an idle SGFPT (3300 RPM) available, THEN PERFORM the following: ○ Raise the idle (3300 RPM) SGFPT speed using its individual speed controller to provide adequate Feedwater flow.	
	PO	<i>(Step 1, is an immediate action step.)</i> <i>(If dispatched a Plant Operator will report the following:</i> • SU SGFP locally looks OK • SU SGFP breaker has an overcurrent indicated	

Op-Test No.: 1 Scenario No.: 3 Event No.: 2 (Automatic Trigger when SGFPT 13 Discharge Valve is OPEN) Event Description: SUFP 14 Trips			
Time	Position	Required Operator Actions	Notes
	BOP	CHECK SGFP Master Speed Controller • Controller – OPERABLE In Automatic • Steam Header Pressure PT-557 status - OPERABLE • Feedwater Pump Discharge Pressure PT-558 status - OPERABLE • Controlling Steam Flow Channels - OPERABLE <i>(Step 2, is an immediate action step but should just be a verification)</i>	
	BOP	CHECK Feedwater Flow - ADEQUATE FOR CURRENT STEAM DEMAND <i>(Step 3)</i>	
	BOP	Check SGFP Recirculation Valve Status: • CHECK SGFP Recirculation Valve on Running SGFP(s) – STABLE AND RESPONDING IN AUTOMATIC • CHECK SGFP Recirculation Valve on Tripped SGFP – CLOSED <i>(Step 4)</i>	
	RO	MONITOR Reactor Power - GREATER THAN OR EQUAL TO 5% <i>(Step 5)</i>	
	BOP	MONITOR SG NR Levels - TRENDING TO PROGRAM LEVEL <i>(Step 6)</i>	
	BOP	CHECK Feedwater/Steam Header DP - • GREATER THAN OR EQUAL TO DP REQUIRED PER ADDENDUM 3 <u>OR</u> • SGFP Master Speed Controller at 100% demand in Auto <i>(Step 7)</i>	
	RO	CHECK DELTA I Within the Required Band For Current Reactor Power (CP005) <i>(Step 8)</i>	

Op-Test No.: 1 Scenario No.: 3 Event No.: 2 (Automatic Trigger when SGFPT 13 Discharge Valve is OPEN) Event Description: SUFP 14 Trips			
Time	Position	Required Operator Actions	Notes
	BOP/RO	CHECK Steam Dump Status: - CHECK Steam Dumps – IN TAVG MODE - MONITOR the following: - UI-0555 - AT MINIMUM DEMAND - Steam Dumps – CLOSED - RESET Steam Dump Controller (C-7) by momentarily placing the Steam Dump "MODE SEL" Switch to the "RESET" position (CP007) - CHECK PERM Lampbox 5M24 Window D2 (CP005) "C7 TURB INLET PRESS STM DUMP PERMISSIVE" extinguished - CHECK the "STEAM DUMP UNBLOCK AVAILABLE" light extinguished (CP007) <i>(Step 9)</i>	
	BOP	CHECK SGFP Speed - LESS THAN OR EQUAL TO 5,400 RPM OR 5,500 RPM With A Flow Greater Than 8250 GPM <i>(Step 10)</i>	
	SRO	INITIATE Corrective Action For Failed Component <i>(Step 11)</i> <i>(Event 3 can be triggered at examiner's request)</i>	

OPERATOR ACTIONS

Op-Test No.: 1 Scenario No.: 3 Event No.: 3 (Examiner Trigger)			
Event Description: Cold Leg 1A RTD RC-TT-0410B 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 Cold Leg RTD T-410B failed high. <i>(The crew may put FK-0205 in manual due to the failure of LOOP A Cold Leg RTD T-420B which causes PZR Program Level to read high but there is NOT a specific step for this.)</i>	
	SRO	Directs actions of 0POP04-RP-0004, Failure of RCS Loop RTD Protection Channel.	
	RO	ENSURE "ROD BANK SEL" Switch In MANUAL <i>(Step 1)</i>	
	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. <i>(Step 2 and Step 2 RNO)</i>	
	RO	CHECK Tavg - WITHIN 1.5°F OF Tref (REFER TO Addendum 1) <i>(Step 3)</i> <i>(Tavg will probably be within 1.5°F of Tref.)</i>	
	RO	CHECK Pressurizer Level - • AT PRESSURIZER PROGRAM LEVEL - OR • TRENDING TO PRESSURIZER PROGRAM LEVEL <i>(Step 4)</i> <i>(The crew may have put FK-0205 in manual due to the failure of LOOP A Cold Leg RTD T-410B)</i>	

OPERATOR ACTIONS

Op-Test No.: 1 Scenario No.: 3 Event No.: 3 (Examiner Trigger)			
Event Description: Cold Leg 1A RTD RC-TT-0410B 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 • CHECK Tavg – Within 0.5°F of Tref (RNO) • Adjust Tavg to within 0.5°F of Tref by any of the following methods ○ Manually ADJUST Control Rod position ○ ADJUST Turbine load ○ ADJUST RCS boron concentration (Back to A/ER) • PLACE "Rod Bank Sel" Switch in AUTO (CP005) • VERIFY Rod Control System – PROPER RESPONSE IN AUTOMATIC (Step 5)	
	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 3.3.1 and 3.3.2. Most Limiting Condition: Place the failed channel in the tripped condition within 72 hours. (Step 7) (See below for TS details.) (Event 4 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.: 3 Event No.: 3 (Examiner Trigger)			
Event Description: Cold Leg 1A RTD RC-TT-0410B 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) (EVENT 4 can be triggered after SRO TS review or at examiner's request)	

OPERATOR ACTIONS

Op-Test No.: 1 Scenario No.: 3 Event No.: 4 (Examiner Trigger) Event Description: Main Steam Line 1A Steam Pressure Channel PT-514 Fails low			
Time	Position	Required Operator Actions	Notes
	BOP	Acknowledges and announces the following annunciators on 06M3: SG 1A STM/FW FLOW MSMTCH (E3) <i>NOTE: If the crew is slow to diagnose this condition, then other alarms will come in on SG 1A.</i>	
	SRO BOP	Determines Main Steam Line A PT-0514 and SG 1A Controlling Steam Flow Transmitter FT-0522 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) <i>(Step 1, an immediate action step.)</i>	
	BOP	CHECK SGFP Speed Controllers - RESPONDING IN AUTOMATIC <i>(Step 2, an immediate action step.)</i> <i>(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.)</i>	
	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 <i>(Step 3)</i>	

OPERATOR ACTIONS

Op-Test No.: 1 Scenario No.: 3 Event No.: 4 (Examiner Trigger) Event Description: Main Steam Line 1A Steam Pressure Channel PT-514 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. <i>(Step 4)</i>	
	BOP	CHECK SGFP Master Speed Controller - IN MANUAL RNO GO TO Step 7.0. <i>(Step 5)</i> <i>(If SGFP Master Speed Controller was placed in Manual in step 2.0, then crew will check to controller is responding in manual.)</i>	
	BOP	CHECK Individual SGFP Speed Controllers - ANY IN MANUAL RNO GO TO Step 9.0. <i>(Step 7)</i>	
	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 <i>(Step 9)</i> <i>(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.)</i>	
	BOP	RESTORE Affected SG NR Level(s) To Between 68% And 74% <i>(Step 10)</i>	
	BOP	MONITOR SG NR Levels - GREATER THAN 20% <i>(Step 11)</i>	
	BOP	MONITOR SG NR Levels - LESS THAN 87.5% <i>(Step 12)</i>	

OPERATOR ACTIONS

Op-Test No.: 1 Scenario No.: 3 Event No.: 4 (Examiner Trigger) Event Description: Main Steam Line 1A Steam Pressure Channel PT-514 Fails low			
Time	Position	Required Operator Actions	Notes
	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 steam flow channel for the affected SG level control. (Step 15) (Steam Flow Channel FT-0512 is failed low.)	
	BOP	CHECK Steam Pressure Transmitters - ALL OPERABLE (RNO) Select the unaffected steam flow channel for affected SG(s) level control. (Step 16) (This step RNO should already have been performed)	
	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.: 4 (Examiner Trigger) Event Description: Main Steam Line 1A Steam Pressure Channel PT-514 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. <i>(Step 19)</i>	
	BOP	CHECK SGFP Master Speed Controller - IN AUTO <i>(Step 20)</i> <i>(The crew will place the SGFP Master Speed Controller in Auto at this step if it was placed in manual earlier.)</i>	
	SRO	TAKE Appropriate Actions Per Technical Specifications 3.3.1, 3.3.2, 3.3.3.6 and TRM 3.7.1.7 <i>(Step 21)</i>	
TS 3.3.2.1.f, 3.3.2.4.e Action 20 <i>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:</i> <i>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.</i>			
	SRO	NOTIFY I&C To Place The Affected Channel In Trip Or Bypass. REFER TO Addendum 2, Procedure List For The Appropriate Procedure <i>(Step 22)</i>	
	SRO	INITIATE Corrective Actions For Failed Component <i>(Step 23)</i> <i>(Event 5 can be triggered on request from the lead examiner.)</i>	

OPERATOR ACTIONS

Op-Test No.: 1 Scenario No.: 3 Event No.: 5 (Examiner Trigger)			
Event Description: Steam Generator Tube Leak in 1A Steam Generator requiring a down power			
Time	Position	Required Operator Actions	Notes
	BOP	Acknowledges and announces the following annunciators on RM-11 and ICS: •	
	BOP	• Checks ICS	
	SRO	Directs actions of OPOP04-RC-0004, Steam Generator Tube Leakage.	
	RO	MAINTAIN Pressurizer Level On Program Level: • LOWER letdown flow OR • RAISE charging flow OR • START additional charging pump (Step 1)	
	ALL	MONITOR the Following Indications To – IDENTIFY AFFECTED SG(s): • Feed flow/Steam flow mismatch • High radiation levels in SG samples • High radiation levels on the Main Steam line monitors [RT-8046, RT-8047, RT-8048, RT-8049] • High radiation levels on the SG blowdown radiation monitors [RT-8022, RT-8023, RT-8024, RT-8025] • High leak rate indication on N-16 SG Primary to Secondary Leak monitors [RT-8130A, RT-8131A, RT-8132A, RT-8133A] (Step 2) (Crew should identify SG 1A based on N-16 SG Primary to Secondary Leak monitors on RM-11 and ICS)	
	SRO	MAINTAIN Contact With Health Physics To Evaluate Radiological Conditions In The Secondary Plant Prior To Performing Local Operator Actions (Step 3)	

OPERATOR ACTIONS

[illegible]

OPERATOR ACTIONS

Op-Test No.: 1				Scenario No.: 3				Event No.: 5 (Examiner Trigger)									
Event Description: Steam Generator Tube Leak in 1A Steam Generator requiring a down power																	
Time		Position		Required Operator Actions				Notes									
		SRO		CHECK For One Of The Following: - Leakage From Any One SG Is GREATER THAN OR EQUAL TO 75 gpd <u>AND</u> Continues To Increase At GREATER THAN OR EQUAL TO 30 gpd/hr - OR - Leakage From Any One SG Is GREATER THAN OR EQUAL TO 75 gpd <u>AND</u> Loss of Continuous Radiation Monitoring (Step 8)													
Examiner Note <i>The crew may want confirmation of the Primary-Secondary Leak Rate prior to starting a shutdown. Time compression will be used to report that the leak rate has risen from 8 gpd to 160 gpd since the sample analyzed two hours ago.</i>																	
		SRO		PERFORM The Following: COMMENCE Plant Shutdown Per 0POP04-TM-0005, Fast Load Reduction Per The Response Time Requirements Of Addendum 6 CONTINUE performance of 0POP04-TM-0005, Fast Load Reduction until TURBINE TRIPPED (Step 9)													
NOTE The crew may use the applicable boron addition numbers from their turnover sheet or the numbers from the table below from 0POP04-TM-0005 <table><tr><td>POWER LEVEL</td><td>BOL (1000 MWD/MTU or 1378 ppm RCS boron concentration)</td></tr><tr><td>From 100% to 50%</td><td>117 gals per 10% power reduction</td></tr><tr><td>From 49% to 10%</td><td>2 gals per 10% power reduction</td></tr></table>												POWER LEVEL	BOL (1000 MWD/MTU or 1378 ppm RCS boron concentration)	From 100% to 50%	117 gals per 10% power reduction	From 49% to 10%	2 gals per 10% power reduction
POWER LEVEL	BOL (1000 MWD/MTU or 1378 ppm RCS boron concentration)																
From 100% to 50%	117 gals per 10% power reduction																
From 49% to 10%	2 gals per 10% power reduction																

OPERATOR ACTIONS

Op-Test No.: 1 Scenario No.: 3 Event No.: 5 (Examiner Trigger)			
Event Description: Steam Generator Tube Leak in 1A Steam Generator requiring a down power			
Time	Position	Required Operator Actions	Notes
	ALL SRO RO RO RO BOP	PERFORM The Following To Reduce Turbine Load: - NOTIFY STP Co-Owners Using The EMS Website That Load Reduction Is Commencing (<i>Requests the SM to update the EMS Website</i>) - DETERMINE Amount Of Boric Acid To Add To Reduce Reactor Power To Desired Level AND COMMENCE RCS Boration - CHECK Rod Control System - IN AUTOMATIC - ENERGIZE Pressurizer Heaters For Boron Equalization - PERFORM The Following To Lower Turbine Load: - CHECK Main Turbine IN THE INLET PRESSURE FEEDBACK MODE INLET IN (CP007) - REDUCE Turbine Load At A Rate Of Less Than Or Equal To 5% Per Minute Using Operator Auto - PLACE Main Steam to DA valves in "MOD" position and return to "AUTO" (CP008) "STM TO DEAER SPLY VLV" "PV-7174 and PV-7174A" (A single handswitch controls both valves) (0POP04-TM-0005 Step 1) (EVENT 6 will automatically trigger when power lowers to $\leq 95\%$)	
	BOP	Maintain Main Generator Reactive Load (VARs) Within The Following: - Less than 450 MVARs - Guidelines of The Plant Curve Book, Figure 7.1 (Step 2)	

OPERATOR ACTIONS

Op-Test No.: 1 Scenario No.: 3 Event No.: 5 (Examiner Trigger)			
Event Description: Steam Generator Tube Leak in 1A Steam Generator requiring a down power			
Time	Position	Required Operator Actions	Notes
	RO	MONITOR Rod Control System Responding To RCS TAVG/TREF Deviation By Ensuring The Following: - Control Rods Are Responding <u>AND</u> RCS Tavg trending to within 3°F of Tref <u>OR</u> - RCS Tavg within 3°F of Tref (RNO) PERFORM the following: - PLACE Rod Control in manual. - INSERT/WITHDRAW control rods to maintain RCS Tavg within 3°F of Tref. (Step 3) (The RNO may or may not be needed)	
	SRO	As time permits the SRO should review TS 3.4.6.2 RCS Leakage and determine the Primary-Secondary leakage to any one S/G is not met. (TS Details are below) (Based on the number of evolutions in progress this may need to be Discussed at the end of the scenario)	
TS 3.4.6.2.c action b (Primary to Secondary Leakage is defined in Section 1 of Technical Specifications as IDENTIFIED LEAKAGE) 3.4.6.2 Reactor Coolant System operational leakage shall be limited to: c. 150 gallons per day of primary-to-secondary leakage through any one steam generator 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.			
EVENT 6 will be Automatically Triggered at 95%.			

OPERATOR ACTIONS

Op-Test No.: 1 Scenario No.: 3 Event No.: 6 (Examiner Trigger)			
Event Description: Loss of Condenser Vacuum			
Time	Position	Required Operator Actions	Notes
	BOP	Notes and reports the following indications and annunciators: - MAIN COND VACUUM LO, Lampbox 07M3 E-7 - Vacuum lowering on CP009 - All three Condenser Air Removal Vacuum Pumps indicate running on CP009	
	SRO	Directs Performance of 0POP04-CR-0001, Loss of Condenser Vacuum	
	SRO	DIRECT Performance Of Local Actions Per Addendum 1, Local Actions (Step 1)	
		CHECK Circulating Water System Status: (ICS Display CW-001, CW-010) - CHECK Circulating Water Pumps – PROPER NUMBER OPERATING - CHECK both of the following: - Condenser Differential Temperature – LESS THAN 25°F BETWEEN INLET AND OUTLET - Applicable Condenser Waterbox Inlet And Outlet Valves – OPEN (Step 2)	
		CHECK Condenser Air Removal (CARs) Pumps – ALL AVAILABLE OPERATING (Step 3)	
		CHECK Deaerator Level GREATER THAN 60% (Step 4)	
		MONITOR Gland Steam Header Pressure – 120 TO 140 PSIG (Step 5)	
		MONITOR Main Condenser Vacuum - GREATER THAN 21.0 Inches Hg - Plant Computer Points - P7460, P7461, P7462 - OR - Pressure Indicators (CP009) - PI-7485A, PI-7486A, PI-7488 (RNO) PERFORM the following: - ENSURE Reactor is tripped. - ENSURE Main Turbine tripped. - GO TO 0POP05-EO-EO00, Reactor Trip or Safety Injection. (Step 6)	

OPERATOR ACTIONS

Op-Test No.: 1 Scenario No.: 3 Event No.: 6 (Examiner Trigger)			
Event Description: Loss of Condenser Vacuum			
Time	Position	Required Operator Actions	Notes
	BOP/SRO	MONITOR Main Condenser Vacuum Within “Permissible Without Limit” Zone of Addendum 3, Main Turbine Exhaust Pressure Limitations. - Plant Computer Points - P7460, P7461, P7462 OR - Pressure Indicators (CP009) - PI-7485A, PI-7486A, PI-7488 (RNO) IF Condenser Vacuum is within the “Restrictive Zone” of Addendum 3, Main Turbine Exhaust Pressure Limitations, THEN PERFORM the following: - WITHIN 5 MINUTES RESTORE vacuum to exit the Restrictive Zone. OR - PERFORM the following: - TRIP the Reactor. - ENSURE Turbine Trip. - GO TO 0POP05-EO-EO00, Reactor Trip or Safety Injection. <i>(Step 7)</i> <i>The SRO may order load reduction stopped to prevent entering the Restrictive Zone</i>	
	SRO	Recognizes that Condenser Vacuum is approaching/less than Turbine Trip Setpoint and orders a manual reactor trip. (EVENT 7) will be triggered when the reactor is tripped	

OPERATOR ACTIONS

Op-Test No.: 1 Scenario No.: 3 Event No.: 7, 8, and 9 (Examiner Trigger) Event Description: Event 7 – A steam line break occurs on the 1C steam line inside containment. (CT-17) Event 8 – MSIVs 1B and 1C fail to close automatically (Part of CT-17) Event 9 – SI fails to Automatically Actuate (CT-2)			
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 CT-2	Determines that a Main Steam Line rupture has occurred in containment. Directs a manual Safety Injection and Main Steam Line Isolation if it has not already actuated.	
	BOP CT-17	If a Main Steam Isolation has been initiated MSIVs for S/G 1B and 1C should be closed using the safety Switches for each valve on CP006.	
	SRO	Directs RO to perform Immediate Operator Actions of 0POP05-EO-EO00, Reactor Trip or Safety Injection and performs a read through of Immediate Operator Actions.	
		VERIFY Reactor Trip: • Rod bottom lights – LIT • Reactor trip and bypass breakers – OPEN • Neutron flux – LOWERING <i>(Step 1)</i>	
		VERIFY Turbine Trip: • VERIFY all turbine throttle valves – CLOSED • Main generator output breaker – OPEN • Main steam to deaerator valves – CLOSED (RNO) Perform the following: • Manually TRIP turbine. <i>(Step 2)</i>	
		VERIFY Power To AC ESF Busses: • AC ESF busses – AT LEAST ONE ENERGIZED ○ 4.16KV ESF bus ○ 480V ESF LCs ○ 480V ESF MCCs • AC ESF busses – ALL ENERGIZED ○ 4.16KV ESF busses ○ 480V ESF LCs ○ 480V ESF MCCs <i>(Step 3)</i>	

OPERATOR ACTIONS

Op-Test No.: 1 Scenario No.: 3 Event No.: 7, 8, and 9 (Examiner Trigger) Event Description: Event 7 – A steam line break occurs on the 1C steam line inside containment. (CT-17) Event 8 – MSIVs 1B and 1C fail to close automatically (Part of CT-17) Event 9 - SI fails to Automatically Actuate (CT-2)			
Time	Position	Required Operator Actions	Notes
	RO CT-2	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. (Back to A/ER) - VERIFY all trains of SI – ACTUATED - Train A ESF status monitoring red SI status lights – LIT - Train B ESF status monitoring red SI status lights – LIT - Train C ESF status monitoring red SI status lights – LIT <i>(Step 4)</i>	
	SRO	During pause the SRO directs the BOP to stop AFW Pump 13 and throttle AFW to the remaining S/Gs. Then performs a read through of the first 4 steps of 0POP05-EO-EO00.	
	BOP	VERIFY Proper SI Equipment Operation Per ADDENDUM 5, VERIFICATION OF SI EQUIPMENT OPERATION <i>(Step 5)</i> <i>(See Actions on pages 35 - 38)</i>	

OPERATOR ACTIONS

Op-Test No.: 1 Scenario No.: 3 Event No.: 7, 8, and 9 (Examiner Trigger) Event Description: Event 7 – A steam line break occurs on the 1C steam line inside containment. (CT-17) Event 8 – MSIVs 1B and 1C fail to close automatically (Part of CT-17) Event 9 - SI fails to Automatically Actuate (CT-2)			
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 <i>(Step 6)</i> <i>(PER the CIP, The SRO will secure one of the three Containment Spray pumps for RWST inventory control.)</i>	
	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. <i>(Step 7)</i> <i>(The SRO will have the BOP throttle AFW flow if criteria is met.)</i>	
	RO	CHECK RCP Seal Cooling: ENSURE seal injection flow between 6 and 13 gpm <i>(Step 8)</i> <i>(RO may have to adjust seal injection.)</i>	

OPERATOR ACTIONS

Op-Test No.: 1 Scenario No.: 3 Event No.: 7, 8, and 9 (Examiner Trigger) Event Description: Event 7 – A steam line break occurs on the 1C steam line inside containment. (CT-17) Event 8 – MSIVs 1B and 1C fail to close automatically (Part of CT-17) Event 9 - SI fails to Automatically Actuate (CT-2)			
Time	Position	Required Operator Actions	Notes
	RO CT-17	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 RNO • PERFORM Substep a. OR Substep b. based on RCS Temperature • MAINTAIN total AFW flow GREATER THAN 576 GPM until NR level is GREATER THAN 14% [34%] in at least one SG. • IF MSIVs OR MSIBs are OPEN, THEN ISOLATE steam loads as follows: ○ ISOLATE steam dump drains. ○ ISOLATE steam chest drains. ○ ISOLATE steam to MSR and steam line drains to MSRs. ○ TRIP all SGFPTs. ○ STOP dumping steam. ○ ISOLATE SGBD. • IF cooldown continues, THEN ENSURE CLOSED MSIVs and MSIBs. <i>(Step 9)</i> <i>(This is another opportunity to close the MSIVs to SG 1B and 1C)</i>	
	RO	CHECK Pressurizer Status: • PORVs - CLOSED • Normal pressurizer spray valves - CLOSED • Auxiliary spray valve - CLOSED • Excess letdown isolation valves - CLOSED <i>(Step 10)</i>	
	RO	MONITOR If RCPs Should Be Stopped: • HHSI pump - AT LEAST ONE RUNNING • RCS pressure - LESS THAN 1430 PSIG • STOP all RCPs <i>(Step 11)</i> <i>(RCPs will have already been secured.)</i>	

OPERATOR ACTIONS

Op-Test No.: 1 Scenario No.: 3 Event No.: 7, 8, and 9 (Examiner Trigger) Event Description: Event 7 – A steam line break occurs on the 1C steam line inside containment. (CT-17) Event 8 – MSIVs 1B and 1C fail to close automatically (Part of CT-17) Event 9 - SI fails to Automatically Actuate (CT-2)			
Time	Position	Required Operator Actions	Notes
	RO	VERIFY The Following Containment Isolation Valve – CLOSED - Seal return isolation valves - Containment atmosphere radiation monitor isolation valves <i>(Step 12)</i>	
	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. <i>(Step 13)</i> <i>(Critical Safety Functions for Containment are expected and will be implemented once 0POP05-EO-EO00, Addendum 5 is completed.)</i>	
	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. <i>(Step 1)</i>	

OPERATOR ACTIONS

Op-Test No.: 1 Scenario No.: 3 Event No.: 7, 8, and 9 (Examiner Trigger) Event Description: Event 7 – A steam line break occurs on the 1C steam line inside containment. (CT-17) Event 8 – MSIVs 1B and 1C fail to close automatically (Part of CT-17) Event 9 - SI fails to Automatically Actuate (CT-2)			
Time	Position	Required Operator Actions	Notes
	SRO	Enters 0POP05-EO-EO20, Faulted Steam Generator Isolation.	
	BOP (CT-17)	Checks MSIV's and MSIB's closed. RNO PERFORM the following: Manually Close MSIV(s) and MSIB(s) (1B and 1C) <i>(Step 1)</i> <i>(This step may have already been performed by SRO order or while performing EO00 step 9 or Add 5)</i>	
	BOP	CHECK If Any SG Secondary Pressure Boundary Intact: CHECK pressures in all SGs – ANY SG PRESSURE CONTROLLED OR RISING <i>(Step 2)</i> <i>(SG's 'A', 'B' and 'D' pressures are 'controlled'. SG 'C' pressure is NOT controlled.)</i>	
	SRO BOP	IDENTIFY Faulted SG(s): - CHECK pressure in all SGs – - ANY SG PRESSURE LOWERING IN AN UNCONTROLLED MANNER - OR - ANY SG COMPLETELY DEPRESSURIZED <i>(Step 3)</i> <i>(SG 1C is faulted)</i>	

OPERATOR ACTIONS

Op-Test No.: 1 Scenario No.: 3 Event No.: 7, 8, and 9 (Examiner Trigger) Event Description: Event 7 – A steam line break occurs on the 1C steam line inside containment. (CT-17) Event 8 – MSIVs 1B and 1C fail to close automatically (Part of CT-17) Event 9 - SI fails to Automatically Actuate (CT-2)			
Time	Position	Required Operator Actions	Notes
	SRO BOP (CT-17) * denotes critical steps of CT	Isolates the faulted SG (1C) • 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 '1C' SG • Resets SI* • Resets ESF load sequencers* • Resets SG LO-LO level AFW actuations* • Checks SG 1D intact • Closes 'C' SG AFW OCIV, AF-MOV-0065* • Verifies SG 'C' PORV closed • Verifies SG 'C' Blowdown and sample isolation valves closed <i>(Step 4)</i> <i>(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.)</i> (Terminate the scenario.)	

OPERATOR ACTIONS

Op-Test No.: 1 Scenario No.: 3 Event No.: Addendum 5 & Event 8 Event Description: 0POP05-EO-EO00, Addendum 5, Actions for SI actuation. Event 8 – MSIVs 1B and 1C fail to close automatically			
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 <i>(EO00 Addendum 5, Step 1)</i> <i>(0POP05-EO-EO00, Reactor Trip or Safety Injection, Addendum 5, Verification of Equipment Operation.)</i> <i>(This addendum is performed in parallel with Steps 6 to 15 of 0POP05-EO-EO00, Reactor Trip or Safety Injection)</i>	
	BOP CT-17	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 • MSIBs - CLOSED RNO • PERFORM the following: • Manually CLOSE valves. <i>(Step 2)</i> <i>(This may have done earlier, if not this satisfies a portion of CT-17)</i>	

OPERATOR ACTIONS

Op-Test No.: 1 Scenario No.: 3 Event No.: Addendum 5 & Event 8 Event Description: OPOP05-EO-EO00, Addendum 5, Actions for SI actuation. Event 8 – MSIVs 1B and 1C fail to close automatically			
Time	Position	Required Operator Actions	Notes
	BOP	VERIFY AFW system status: • Motor-driven pumps – RUNNING • Turbine-driven pump – RUNNING <i>(Step 3)</i> <i>(Motor Driven AFW Pump 13 should have been secured earlier and won't be restarted)</i>	
	BOP	VERIFY AFW valve alignment - PROPER EMERGENCY ALIGNMENT <i>(Step 4)</i>	
	BOP	VERIFY total AFW Flow - GREATER THAN 576 GPM <i>(Step 5)</i>	
	BOP	VERIFY containment isolation phase A: • Phase A – ACTUATED • Phase A Valves – CLOSED, REFER TO ADDENDUM 1, PHASE A ISOLATION VERIFICATION <i>(Step 6)</i> <i>(This may have already been done previously by the RO)</i>	
	BOP	VERIFY ECW status: • ECW pumps – RUNNING • ECW pump discharge isolation valves – OPEN <i>(Step 7)</i>	
	BOP	VERIFY CCW pumps – RUNNING <i>(Step 8)</i>	
	BOP	VERIFY RCFC status: • RCFCs – RUNNING • Cooling water - TRANSFERRED TO CCW <i>(Step 9)</i>	
	BOP	VERIFY SI pump status: • HHSI pumps – RUNNING • LHSI pumps – RUNNING <i>(Step 10)</i>	
	BOP	VERIFY SI valve alignment – PROPER EMERGENCY ALIGNMENT <i>(Step 11)</i>	

OPERATOR ACTIONS

Op-Test No.: 1 Scenario No.: 3 Event No.: Addendum 5 & Event 8 Event Description: OPOP05-EO-EO00, Addendum 5, Actions for SI actuation. Event 8 – MSIVs 1B and 1C fail to close automatically			
Time	Position	Required Operator Actions	Notes
	BOP	VERIFY SI flow: RCS pressure - LESS THAN 1745 PSIG <i>(Step 12)</i>	
	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 <i>(Step 13)</i>	
	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 <i>(Step 14)</i>	
	BOP	NOTIFY Unit Supervisor that Addendum 5 is COMPLETE <i>(Step 15)</i>	

OPERATOR ACTIONS

Op-Test No.: 1 Scenario No.: 3 Event No.: Addendum 5 & Event 8 Event Description: OPOP05-EO-EO00, Addendum 5, Actions for SI actuation. Event 8 – MSIVs 1B and 1C fail to close automatically			
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 #17 for Event #7 & #8 – Isolate a Faulted Steam Generator.		Circle One SAT UNSAT
Critical Task Bounding Criteria	Acceptance Criteria: Isolate faulted SG 1C, 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.	
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	

CRITICAL TASK SUMMARY

Critical Task #17 for Event #7 & #8 – Isolate a Faulted Steam Generator.		Circle One SAT UNSAT
Performance Indicator	Manipulation of controls as required to isolate the faulted SG • MSIVs indicate closed (MSIV 1B and 1C manually 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 '1C' SG ○ Resets SI ○ Resets ESF load sequencers ○ Resets SG LO-LO level AFW actuations ○ Checks SG 1D intact ○ Closes '1C' SG AFW OCIV (AF-MOV-0065) • Verifies SG "1C" PORV closed • Verifies SG '1C' Blowdown and sample isolation valves closed *	
Performance Feedback	All MSIVs indicate closed Any depressurization of intact SGs 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.		

CRITICAL TASK SUMMARY

Critical Task #2 for Event #9 – Manually Initiate Safety Injection		Circle One SAT UNSAT
Critical Task Bounding Criteria	Acceptance Criteria: Manually actuate at least one train of SI-actuated safeguards before transitioning past Step 4 of OPOP05-EO-EO00, Reactor Trip of Safety Injection. Note: Step 4 is considered completed after performing the immediate actions AND the read through of the step.	
Safety Significance	Failure to manually actuate SI under the postulated conditions constitutes “mis-operation or incorrect crew performance that leads to degraded ECCS capacity.” In this case, SI can be manually actuated from the control room. Therefore, failure to manually actuate SI also represents a “demonstrated inability by the crew to: • Take an action or combination of actions that would prevent a challenge to plant safety • Effectively direct/manipulate ESF controls • Recognize a failure/incorrect auto actuation of an ESF system or component” Additionally, under the postulated plant conditions, failure to manually actuate SI (when it is possible to do so) results in a “significant reduction of safety margin beyond that irreparably introduced by the scenario.” Finally, failure to manually actuate SI under the postulated conditions is a “violation of the facility license condition.”	
Cueing	Indication and/or annunciation that SI is required • PRZR pressure or SG pressure less than SI actuation setpoint • Containment pressure greater than SI actuation setpoint • No indication or annunciation that SI is actuated	
Performance Indicator	Manipulation of controls as required to actuate at least one train of SI. Indication and/or annunciation that at least one train of SI is actuated • Train A ESF status monitoring red SI status lights – LIT - OR • Train B ESF status monitoring red SI status lights – LIT - OR • Train C ESF status monitoring red SI status lights – LIT	
Performance Feedback	Indication and/or annunciation that at least one train of SI is actuated • Train A ESF status monitoring red SI status lights – LIT - OR • Train B ESF status monitoring red SI status lights – LIT • OR • Train C ESF status monitoring red SI status lights – LIT	
Justification for the chosen performance limit	This performance standard was imposed for the following reasons: • The crew has had ample opportunity to recognize the need for SI and the fact that SI has not automatically actuated. Given the postulated plant conditions, transition from E-0 to ES-0.1 constitutes an error in using the E-0 procedure.	

CRITICAL TASK SUMMARY

Critical Task #2 for Event #9 – Manually Initiate Safety Injection		Circle One SAT UNSAT
PWR Owners Group Appendix	B.2, CT-2 Manually actuate SI	
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:

- As a Plant Operator, if asked, report the Turning Gear Motor OFF light is LIT.
- As a Plant Operator, if asked, report that SGFP Oil Cooler Discharge Temperature is currently 113°F.

EVENT 2:

- As a Plant Operator, if asked, report the SU SGFP looks OK locally.
- As a Plant Operator, if asked, local check of #13 SGFPT looks OK locally.
- As a Plant Operator, if asked, report the SU SGFP breaker has an overcurrent trip indicated. If asked about other abnormalities with the SU SGFP, report none noted.

EVENT 3:

- As I&C Maintenance or the Duty Maintenance Supervisor, if notified of failed Cold Leg RTD RC-TT-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 Cold Leg RTD RC-TT-0410B. No further action is necessary.

EVENT 4:

- As I&C Maintenance or the Duty Maintenance Supervisor, if notified of failed Steam Pressure Transmitter PT-0514 and/or Steam Flow Transmitter 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 Steam Pressure Transmitter PT-0514 and/or Steam Flow Transmitter FT-0512. No further action is necessary.

EVENT 5:

- As Chemistry, when OPS request Steam Generator samples taken request that the sample containment isolation valves (OCIVs) for Steam Generators ('D' S/G: FV-4186; 'C' S/G: FV-4187; 'B' S/G: FV-4188; 'A' S/G: FV-4189) be opened. Procedure Reference: 0PCP07-ZS-0001, Sampling at Primary Sample Panel ZLP-131, Form 17, Steam Generator Bulk Water.
- As Chemistry, report that SG 1A leakage has increased from 8 gpd for the sample taken 2 hrs ago to 160 gpd. *(Any requested samples will be time compressed)*.
- As a Plant Operator acknowledge request to place SGBD demins in service per 0POP02-SB-0001.
- As a Plant Operator, if asked, report that 1-SB-0232, S/G BLOWDOWN MIXED BED DEMINS TO NEUTRALIZATION BASIN FV-5019 INLET ISOLATION VALVE is closed.

EVENT 6:

- As a Plant Operator acknowledge request to perform 0POP04-CR-0001 Addendum 1, Local Actions.

EVENT 7/8/9:

- As a Plant Operator, if asked to open the Deaerator High Level Dump Bypass Valves, then acknowledge the request and see next page.
- As a Plant Operator, if asked to fill the AFWST, then acknowledge request and see next page.

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:

[illegible]

SIMULATOR SETUP (cont'd.)

NOTE

The Scenario Lesson Plan MUST be run from the left most Instructor Station in Simulator Booth.

For the LOT 27 NRC Exam the Simulator Configuration must be set to:
'ws_Simx\Rev01CoreUpdate'

Log into Instructor Workstation as 'lotnrc' user, open Orchid (nstps server), then 'Unlock' Initial Conditions Group 'lotnrc'.

- Log into Instructor Workstation, open Orchid (nstps server), then 'Unlock' Initial Conditions Group 'lotnrc'.
- Reset to IC #198 and perform SWITCH CHECK.
 - On ICS Drop 239 in simulator booth open up 'Simstation Test Interface'
 - Change 'Control Mode' from 'PMC' to 'STANDALONE'
 - Toggle 'RESET' on 'Trend Data'
 - Change 'Control Mode' back to 'PMC'
- Go to RUN on simulator and perform the following:
 - Ensure Simulator is ready by performing applicable check offs from 0PNT01-ZT-0304, LOR Conduct of Simulator Training, Addendum 5, Simulator Readiness Checklist.
 - With Simulator in RUN, re-establish normal ICS Group Trends for Primary and Secondary (If an ICS Group Trend did not reset, then re-perform the steps above to reset ICS Group Trends.)
 - Ensure VCT Makeup Integrators are set as follows:
 - ENSURE BA BATCH/GALLONS and TOT M/U BATCH/GALLONS counters reset to zero.
 - ENSURE BA BATCH/GALLONS setpoint set to 6 gallons and TOT M/U BATCH/GALLONS setpoint set to 10 gallons.
 - Verify BA Controller Pot setting is 3.56
- Hang Caution Tags on HHSI Pump 1A and LHSI Pump 1A.
- Open lesson plan for 'Scenario 3' in 'lotnrc' directory for LOT 27.
- EXECUTE the 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 review procedure for swapping Charging Pumps.
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 COMMUNICATIONS' and 'EXPECTED BOOTH ACTIONS' Sections for instructions for Instructor actions during the scenario.

7. IF Recorded Parameters were identified for charts, then 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 start SGFPT 13 per 0POP02-FW-0002.
9. When signaled by Lead Examiner, trigger **MALFUNCTION STEP – 1**. 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. When Reactor Power is at 95% **ENSURE STEP 5 - Event #6** automatically triggers.
14. When the reactor trips **ENSURE STEP 6 – Event #7** automatically triggers.
15. Place simulator in FREEZE when cued by the Lead Examiner to terminate scenario.
16. 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.

17. IF Chart was started in Step 7, then save Recorded Parameters Data as follows:

- 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\LOT27 Charts**. The file name will be 'LOT27 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. LOT27 Charts.

18. Save Scenario SAM (Simulator Action Monitor) as follows:

- 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\LOT27 Charts**. The file name will be 'LOT27 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		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	32	39	240	8	8
			flushing with 15					
As Required			As Required			As Required		

ΔI Target
2.48%

Channel
U1146

RCS Boron
1300

Unit 1 Status

- Mode 1, 100% Power
- Core burnup is 150 MWD / MTU, BOL

Load Reduction:

- 100-90%/1hr = **170**
- 100-80%/10min = **380**
- 100-75%/30min = **420**
- 100-60%/1hr = **620**
- 100-50%/10min = **900**

Information:

- Steam Generator 1A has a verified 8 gpd primary-secondary leak and is being monitored per 0PGP03-ZO-0041, Action for Monitoring Primary to Secondary Leakage. All actions are current. (Any requested samples will be time compressed.)
- Start SGFPT 13 per 0POP02-FW-0002, Section 14. Steps 14.1.1-14.1.6 have been completed as applicable, a Plant Operator is stationed at the pump.
- HHSI and LHSI Pumps 1A OOS for maintenance.
- 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 complement is 5 watch standers and a head operator.

ECO/LCO/RAsCAL:

TS 3.5.2 for HHSI and LHSI Pumps 1A, Action a. Within 7 days restore the inoperable subsystem(s) 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. Verify 2 HHSI Pumps, 2 LHSI Pumps and 2 RHR Heat Exchangers and associated flowpaths every 48 hours.

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 'Predefined 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.
- 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.
- The current core loaded on the simulator is C24. FOP position will remain at 257 steps until C25 is loaded into the simulator (scheduled for late December 2023)

Form 3.4-1 Events and Evolutions Checklist

Facility: South Texas Project			Date of Exam: 07/17/2023			Operating Test No.: 1											
Crew A A P P L I C A N T	E V E N T T Y P E	Scenarios															
		1			Spare 2			3			N/A 4			T O T A L	M I N I M U M* R O I U		
		POSITION			POSITION			POSITION			POSITION						
		S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P				
		RO ☐	RX									5					
SRO-I ☐	NOR	1								1				2	1	1	1
☒	I/C	2-5,8,9								2,4,8				9	4	4	2
SRO-U ☐	MAJ	6,7								7				3	2	2	1
	Man. Ctrl									2,4,8				3	1	1	0
	TS	2,3,5												3	0	2	2
RO ☐	RX							5						1	1	1	0
SRO-I ☐	NOR		1					1						2	1	1	1
☒	I/C		3,5,9					2-4,6,8,9						9	4	4	2
SRO-U ☐	MAJ		6,7					7						3	2	2	1
	Man. Ctrl		3,5,9											3	1	1	0
	TS							3,4,5						3	0	2	2
RO ☒	RX								5					1	1	1	0
SRO-I ☐	NOR													0	1	1	1
☐	I/C			2,4,8					3,6,9					6	4	4	2
SRO-U ☐	MAJ			6,7					7					3	2	2	1
	Man. Ctrl			2,4,8					3,9					5	1	1	0
	TS													0	0	2	2
RO ☐	RX														1	1	0
SRO-I ☐	NOR														1	1	1
☐	I/C														4	4	2
SRO-U ☐	MAJ														2	2	1
	Man. Ctrl														1	1	0
	TS														0	2	2
RO ☐	RX														1	1	0
SRO-I ☐	NOR														1	1	1
☐	I/C														4	4	2
SRO-U ☐	MAJ														2	2	1
	Man. Ctrl														1	1	0
	TS														0	2	2

Form 3.4-1 Events and Evolutions Checklist

Facility: South Texas Project			Date of Exam: 07/17/2023			Operating Test No.: 1											
Crew B A P P L I C A N T	E V E N T T Y P E	Scenarios															
		1			Spare 2			3			N/A 4			T O T A L	M I N I M U M* R O I U		
		POSITION			POSITION			POSITION			POSITION						
		S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P				
		RO ☐	RX							5							
SRO-I ☐	NOR	1						1						2	1	1	1
	I/C	2-5,8,9						2-4,6,8,9						12	4	4	2
SRO-U ☐	MAJ	6,7						7						3	2	2	1
☒	Man. Ctrl													0	1	1	0
	TS	2,3,5						3,4,5						6	0	2	2
RO ☒	RX								5					1	1	1	0
SRO-I ☐	NOR		1						1					2	1	1	1
	I/C		3,5,9						2,4,8					6	4	4	2
SRO-U ☐	MAJ		6,7						7					3	2	2	1
	Man. Ctrl		3,5,9						2,4,8					6	1	1	0
	TS													0	0	2	2
RO ☒	RX							5						1	1	1	0
SRO-I ☐	NOR													0	1	1	1
	I/C			2,4,8				2,6,9						6	4	4	2
SRO-U ☐	MAJ			6,7				7						3	2	2	1
	Man. Ctrl			2,4,8				3,9						5	1	1	0
	TS													0	0	2	2
RO ☐	RX														1	1	0
SRO-I ☐	NOR														1	1	1
	I/C														4	4	2
SRO-U ☐	MAJ														2	2	1
	Man. Ctrl														1	1	0
	TS														0	2	2
RO ☐	RX														1	1	0
SRO-I ☐	NOR														1	1	1
	I/C														4	4	2
SRO-U ☐	MAJ														2	2	1
	Man. Ctrl														1	1	0
	TS														0	2	2

Form 3.4-1 Events and Evolutions Checklist

Facility: South Texas Project			Date of Exam: 07/17/2023			Operating Test No.: 1											
Crew C A P P L I C A N T	E V E N T T Y P E	Scenarios															
		1			Spare 2			3			N/A 4			T O T A L	M I N I M U M* R O I U		
		POSITION			POSITION			POSITION			POSITION						
		S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P				
		RO ☐	RX							5							
SRO-I ☐	NOR	1						1						2	1	1	1
	I/C	2-5,8,9						2-4,6,8,9						12	4	4	2
SRO-U ☐	MAJ	6,7						7						3	2	2	1
☒	Man. Ctrl													0	1	1	0
	TS	2,3,5						3,4,5						6	0	2	2
RO ☒	RX								5					1	1	1	0
SRO-I ☐	NOR		1						1					2	1	1	1
	I/C		3,5,9						2,4,8					6	4	4	2
SRO-U ☐	MAJ		6,7						7					3	2	2	1
	Man. Ctrl		3,5,9						2,4,8					6	1	1	0
	TS													0	0	2	2
RO ☒	RX							5						1	1	1	0
SRO-I ☐	NOR													0	1	1	1
	I/C			2,4,8				2,6,9						6	4	4	2
SRO-U ☐	MAJ			6,7				7						3	2	2	1
	Man. Ctrl			2,4,8				3,9						5	1	1	0
	TS													0	0	2	2
RO ☐	RX														1	1	0
SRO-I ☐	NOR														1	1	1
	I/C														4	4	2
SRO-U ☐	MAJ														2	2	1
	Man. Ctrl														1	1	0
	TS														0	2	2
RO ☐	RX														1	1	0
SRO-I ☐	NOR														1	1	1
	I/C														4	4	2
SRO-U ☐	MAJ														2	2	1
	Man. Ctrl														1	1	0
	TS														0	2	2

Form 3.4-1 Events and Evolutions Checklist

Facility: South Texas Project			Date of Exam: 07/17/2023			Operating Test No.: 1											
Crew D A P P L I C A N T	E V E N T T Y P E	Scenarios															
		1			Spare 2			3			N/A 4			T O T A L	M I N I M U M* R O I U		
		POSITION			POSITION			POSITION			POSITION						
		S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P				
		RO ☐	RX									5					
SRO-I ☐	NOR	1								1				2	1	1	1
☒	I/C	2-5,8,9								2,4,8				9	4	4	2
SRO-U ☐	MAJ	6,7								7				3	2	2	1
	Man. Ctrl									2,4,8				3	1	1	0
	TS	2,3,5												3	0	2	2
RO ☐	RX							5						1	1	1	0
SRO-I ☐	NOR		1					1						2	1	1	1
☒	I/C		3,5,9					2-4,6,8,9						9	4	4	2
SRO-U ☐	MAJ		6,7					7						3	2	2	1
	Man. Ctrl		3,5,9											3	1	1	0
	TS							3,4,5						3	0	2	2
RO ☒	RX								5					1	1	1	0
SRO-I ☐	NOR													0	1	1	1
☐	I/C			2,4,8					2,6,9					6	4	4	2
SRO-U ☐	MAJ			6,7					7					3	2	2	1
	Man. Ctrl			2,4,8					3,9					5	1	1	0
	TS													0	0	2	2
RO ☐	RX														1	1	0
SRO-I ☐	NOR														1	1	1
☐	I/C														4	4	2
SRO-U ☐	MAJ														2	2	1
	Man. Ctrl														1	1	0
	TS														0	2	2
RO ☐	RX														1	1	0
SRO-I ☐	NOR														1	1	1
☐	I/C														4	4	2
SRO-U ☐	MAJ														2	2	1
	Man. Ctrl														1	1	0
	TS														0	2	2

Form 3.4-1 Events and Evolutions Checklist

Facility: South Texas Project			Date of Exam: 07/17/2023			Operating Test No.: 1												
Crew A A P P L I C A N T	E V E N T T Y P E	Scenarios													T O T A L	M I N I M U M* R O I U		
		1			2			Spare 3			N/A 4							
		POSITION			POSITION			POSITION			POSITION							
		S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P					
		RO ☐	RX														0	1
SRO-I ☐	NOR	1					1							2	1	1	1	
☒	I/C	2-5,8,9					2,3,7							9	4	4	2	
SRO-U ☐	MAJ	6,7					5							3	2	2	1	
	Man. Ctrl						2,3,7							3	1	1	0	
	TS	2,3,5												3	0	2	2	
RO ☐	RX													0	1	1	0	
SRO-I ☐	NOR		1			1								2	1	1	1	
☒	I/C		3,5,9			2-4,6,7								8	4	4	2	
SRO-U ☐	MAJ		6,7			5								3	2	2	1	
	Man. Ctrl		3,5,9											3	1	1	0	
	TS					3,4								2	0	2	2	
RO ☒	RX													0	1	1	0	
SRO-I ☐	NOR													0	1	1	1	
☐	I/C			2,4,8		3,4,6								6	4	4	2	
SRO-U ☐	MAJ			6,7		5								3	2	2	1	
	Man. Ctrl			2,4,8		4,6								5	1	1	0	
	TS													0	0	2	2	
RO ☐	RX														1	1	0	
SRO-I ☐	NOR														1	1	1	
☐	I/C														4	4	2	
SRO-U ☐	MAJ														2	2	1	
	Man. Ctrl														1	1	0	
	TS														0	2	2	
RO ☐	RX														1	1	0	
SRO-I ☐	NOR														1	1	1	
☐	I/C														4	4	2	
SRO-U ☐	MAJ														2	2	1	
	Man. Ctrl														1	1	0	
	TS														0	2	2	

Form 3.4-1 Events and Evolutions Checklist

Facility: South Texas Project			Date of Exam: 07/17/2023			Operating Test No.: 1											
Crew B A P P L I C A N T	E V E N T T Y P E	Scenarios															
		1			2			Spare 3			N/A 4			T O T A L	M I N I M U M* R O I U		
		POSITION			POSITION			POSITION			POSITION						
		S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P				
		RO ☐	RX														
SRO-I ☐	NOR	1			1									2	1	1	1
	I/C	2-5,8,9			2-4,6,7									11	4	4	2
SRO-U ☐	MAJ	6,7			5									3	2	2	1
☒	Man. Ctrl													0	1	1	0
	TS	2,3,5			3,4									5	0	2	2
RO ☒	RX													0	1	1	0
SRO-I ☐	NOR		1				1							2	1	1	1
	I/C		3,5,9				2,3,7							6	4	4	2
SRO-U ☐	MAJ		6,7				5							3	2	2	1
	Man. Ctrl		3,5,9				2,3,7							6	1	1	0
	TS													0	0	2	2
RO ☒	RX													0	1	1	0
SRO-I ☐	NOR													0	1	1	1
	I/C			2,4,8		3,4,6								6	4	4	2
SRO-U ☐	MAJ			6,7		5								3	2	2	1
	Man. Ctrl			2,4,8		4,6								5	1	1	0
	TS													0	0	2	2
RO ☐	RX														1	1	0
SRO-I ☐	NOR														1	1	1
	I/C														4	4	2
SRO-U ☐	MAJ														2	2	1
	Man. Ctrl														1	1	0
	TS														0	2	2
RO ☐	RX														1	1	0
SRO-I ☐	NOR														1	1	1
	I/C														4	4	2
SRO-U ☐	MAJ														2	2	1
	Man. Ctrl														1	1	0
	TS														0	2	2

Form 3.4-1 Events and Evolutions Checklist

Facility: South Texas Project			Date of Exam: 07/17/2023			Operating Test No.: 1											
Crew C A P P L I C A N T	E V E N T T Y P E	Scenarios															
		1			2			Spare 3			N/A 4			T O T A L	M I N I M U M* R O I U		
		POSITION			POSITION			POSITION			POSITION						
		S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P				
		RO ☐	RX														
SRO-I ☐	NOR	1			1									2	1	1	1
	I/C	2-5,8,9			2-4,6,7									11	4	4	2
SRO-U ☐	MAJ	6,7			5									3	2	2	1
☒	Man. Ctrl													0	1	1	0
	TS	2,3,5			3,4									5	0	2	2
RO ☒	RX													0	1	1	0
SRO-I ☐	NOR		1				1							2	1	1	1
	I/C		3,5,9				2,3,7							6	4	4	2
SRO-U ☐	MAJ		6,7				5							3	2	2	1
☐	Man. Ctrl		3,5,9				2,3,7							6	1	1	0
	TS													0	0	2	2
RO ☒	RX													0	1	1	0
SRO-I ☐	NOR													0	1	1	1
	I/C			2,4,8		3,4,6								6	4	4	2
SRO-U ☐	MAJ			6,7		5								3	2	2	1
☐	Man. Ctrl			2,4,8		4,6								5	1	1	0
	TS													0	0	2	2
RO ☐	RX														1	1	0
SRO-I ☐	NOR														1	1	1
	I/C														4	4	2
SRO-U ☐	MAJ														2	2	1
☐	Man. Ctrl														1	1	0
	TS														0	2	2
RO ☐	RX														1	1	0
SRO-I ☐	NOR														1	1	1
	I/C														4	4	2
SRO-U ☐	MAJ														2	2	1
☐	Man. Ctrl														1	1	0
	TS														0	2	2

Form 3.4-1 Events and Evolutions Checklist

Facility: South Texas Project			Date of Exam: 07/17/2023			Operating Test No.: 1												
Crew D A P P L I C A N T	E V E N T T Y P E	Scenarios													T O T A L	M I N I M U M* R O I U		
		1			2			Spare 3			N/A 4							
		POSITION			POSITION			POSITION			POSITION							
		S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P	S R O	A T C	B O P					
		RO ☐	RX														0	1
SRO-I ☐	NOR	1					1							2	1	1	1	
☒	I/C	2-5,8,9					2,3,7							9	4	4	2	
SRO-U ☐	MAJ	6,7					5							3	2	2	1	
	Man. Ctrl						2,3,7							3	1	1	0	
	TS	2,3,5												3	0	2	2	
RO ☐	RX													0	1	1	0	
SRO-I ☐	NOR		1		1									2	1	1	1	
☒	I/C		3,5,9		2-4,6,7									8	4	4	2	
SRO-U ☐	MAJ		6,7		5									3	2	2	1	
	Man. Ctrl		3,5,9											3	1	1	0	
	TS				3,4									2	0	2	2	
RO ☒	RX													0	1	1	0	
SRO-I ☐	NOR													0	1	1	1	
☐	I/C			2,4,8		3,4,6								6	4	4	2	
SRO-U ☐	MAJ			6,7		5								3	2	2	1	
	Man. Ctrl			2,4,8		4,6								5	1	1	0	
	TS													0	0	2	2	
RO ☐	RX														1	1	0	
SRO-I ☐	NOR														1	1	1	
☐	I/C														4	4	2	
SRO-U ☐	MAJ														2	2	1	
	Man. Ctrl														1	1	0	
	TS														0	2	2	
RO ☐	RX														1	1	0	
SRO-I ☐	NOR														1	1	1	
☐	I/C														4	4	2	
SRO-U ☐	MAJ														2	2	1	
	Man. Ctrl														1	1	0	
	TS														0	2	2	

Form 3.4-1 Instructions for the Events and Evolutions Checklist

1. Mark the applicant license level for each simulator operating test number.
2. For the set of scenario columns, fill in the associated event number from Form 3.3-1, "Scenario Outline," to show the specific event types being used for the applicant while in the assigned crew position for that scenario.

* Minimums are subject to the instructions in Section C.2, "License Level Criteria."

KEY: RX = Reactivity Manipulation; NOR = Normal Evolution; I/C = Instrument/Component Failure; MAJ = Major Transient; Man. Ctrl = Manual Control of Automatic Function; TS = Technical Specification Evaluation; RO = Reactor Operator; SRO-I or I = Instant Senior Reactor Operator; SRO-U or U = Upgrade Senior Reactor Operator; SRO = Senior Reactor Operator; ATC = At the Controls; and BOP = Balance of Plan