

NRC EXAM
Admin JPM A1a
SRO

Job Performance Measure Template

Facility: Ginna JPM No.: 2024 NRC Admin – JPM A1a SRO

Task Title: Determine Reportability Requirements Task No.:

System: N/A K/A Reference: 2.1.18 (3.8)

Time-Critical Task: NO Alternate Path: NO

Validated Time: 11 Minutes

Method of Testing: Simulated Performance: _____ Actual Performance: X

Location: Classroom X Simulator _____ Plant _____

Task Standard: The task is satisfactorily met when the Applicant has identified that this event requires an 8-hour notification to the NRC in accordance with LS-AA-1020 (Reportability Tables and Decision Trees) and completes NRC Form 361 (Reactor Plant Event Notification Worksheet) in accordance with the provided Key.

Required Materials: Handout 1: Blank copy of LS-AA-1020
Handout 2: Blank copy of LS-AA-1110
Handout 3: Blank copy of NRC Form 361

General References: LS-AA-1010, TABLE OF CONTENTS CONSTELLATION
REPORTABILITY REFERENCE MANUAL, Rev 37
LS-AA-1020, REPORTABILITY TABLES AND DECISION TREES, Rev 35
LS-AA-1110, SAFETY (SAF), Rev 34
LS-AA-1400, EVENT REPORTING GUIDELINES 10CFR50.72 and 50.73 (NUREG-1022, Rev 3), Rev 7
LS-CE-1255, NORTHEAST SITE SPECIFIC – CE (NEW YORK), Rev 5
NRC FORM 361, REACTOR PLANT EVENT NOTIFICATION WORKSHEET (07-28-2023)

Job Performance Measure Template

<u>Critical Step Justification</u>	
Step 3	This step is critical because determining that Event Number SAF 1.7 is applicable and that this event must be reported via the ENS within 8 hours of the occurrence is necessary to complete the assigned task.
Step 4	This step is critical because identifying the facility is necessary to complete NRC Form 361 (Reactor Plant Event Notification Worksheet) in accordance with the provided Key.
Step 5	This step is critical because identifying the notifier is necessary to complete NRC Form 361 (Reactor Plant Event Notification Worksheet) in accordance with the provided Key.
Step 6	This step is critical because identifying the callback number for the NRC is necessary to complete NRC Form 361 (Reactor Plant Event Notification Worksheet) in accordance with the provided Key.
Step 7	This step is critical because identifying the event time & zone is necessary to complete NRC Form 361 (Reactor Plant Event Notification Worksheet) in accordance with the provided Key.
Step 8	This step is critical because identifying the current date is necessary to complete NRC Form 361 (Reactor Plant Event Notification Worksheet) in accordance with the provided Key.
Step 9	This step is critical because identifying the power and mode of operation at the start of the event is necessary to complete NRC Form 361 (Reactor Plant Event Notification Worksheet) in accordance with the provided Key.
Step 10	This step is critical because identifying the power and mode of operation at the time of the notification is necessary to complete NRC Form 361 (Reactor Plant Event Notification Worksheet) in accordance with the provided Key.
Step 11	This step is critical because identifying the correct reporting threshold is necessary to complete NRC Form 361 (Reactor Plant Event Notification Worksheet) in accordance with the provided Key.
Step 12	This step is critical because adequately describing the reported event is necessary to complete NRC Form 361 (Reactor Plant Event Notification Worksheet) in accordance with the provided Key.

Job Performance Measure Template

Notes to Examiner:**READ TO THE EXAMINEE**

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Provide Applicant with Initial Conditions/Cue (Last Page of this JPM) and Handouts 1-3.**Initial Conditions:**

- With the plant at 100% power, the following event occurred at 1300 today:
 - Circuit 767 de-energized resulting in a loss of power to bus 12B, Bus 16 and Bus 17.
 - Emergency Diesel Generator B automatically started and repowered Bus 16 and 17.
 - The crew entered AP-ELEC.1, LOSS OF 12A AND/OR 12B BUSES, and is working through the procedure.
- The SM has verified that this event has NOT exceeded an Emergency Action Level (EAL).
- The SM and the STA believe that this event is reportable to the NRC.
- No external persons and/or agencies have been notified of this event, nor have any actions other than those identified been taken.

Initiating Cue:

The SM directs you to determine reportability requirements, including completion of any necessary paperwork (Provide to Examiner when ready to Transmit).

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

Information For Evaluator's Use:

UNSAT requires written comments on respective step.

✓ Denotes critical steps.

The timeclock starts when the Applicant acknowledges the Initiating Cue.

Steps and Performance Standards

Start Time: _____

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	<u>CRITICAL</u>	<u>GRADE (S/U)</u>
CUE	Provide Applicant with Initial Conditions/Cue (Last Page of this JPM) and Handouts 1-3.			
1	(Directed Action) The SM directs you to determine reportability requirements.	The operator reviews LS-AA-1020, Decision Trees – Operations and determines that SAF 1.7 should be evaluated.		___
2	(Directed Action) The SM directs you to determine reportability requirements.	The operator reviews LS-AA-1020, Reportability Reference Manual, Volume 1 – Table SAF.		___
Examiner NOTE: The operator may use LS-AA-1110 (Handout 2) Reportable Event SAF 1.7 (p23 of 159) to determine that the Emergency Diesel Generators is a system listed in 10CFR50.72(b)(3)(iv)(B).				
3	(Directed Action) The SM directs you to determine reportability requirements.	The operator determines that Event Number SAF 1.7 is applicable and that this event must be reported via the ENS within 8 hours of the occurrence. See Provided Key	✓	___
Examiner NOTE: SAF 1.7 is “Any event or condition that results in valid actuation of any of the systems listed in 10CFR50.72(b)(3)(iv)(B), except when the actuation results from and is part of a pre-planned sequence during testing or reactor operation,” per 10CFR50.72(b)(3)(iv).				
4	(Directed Action) Complete any necessary paperwork for reportability.	The operator enters “Ginna” in the Facility or Organization Block of Handout 3. See Provided Key	✓	___
5	(Directed Action) Complete any necessary paperwork for reportability.	The operator enters their name in the Name of Caller/Title Block of Handout 2. See Provided Key	✓	___

Steps and Performance Standards

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	CRITICAL	GRADE (S/U)
6	(Directed Action) Complete any necessary paperwork for reportability.	The operator enters the Control Room # in the Call Back # Block of Handout 3. See Provided Key	✓	___
7	(Directed Action) Complete any necessary paperwork for reportability.	The operator enters "1300 EST" in the Event Time & Zone Block of Handout 3. See Provided Key	✓	___
8	(Directed Action) Complete any necessary paperwork for reportability.	The operator enters the current date in the Event Date Block of Handout 3. See Provided Key	✓	___
9	(Directed Action) Complete any necessary paperwork for reportability.	The operator enters "100%/Mode 1" in the Power/Mode (At Time of Event) Block of Handout 3. See Provided Key	✓	___
10	(Directed Action) Complete any necessary paperwork for reportability.	The operator enters "100%/Mode 1" in the Power/Mode (At Time of Notification) Block of Handout 3. See Provided Key	✓	___
11	(Directed Action) Complete any necessary paperwork for reportability.	The operator places a checkmark or X in the box associated with 8-HR.NON-EMERGENCY 10CFR 50.72(b)(3), (iv)(A) Specified System Actuation, AESF Block of Handout 3. See Provided Key	✓	___

Steps and Performance Standards

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	CRITICAL	GRADE (S/U)
12	(Directed Action) Complete any necessary paperwork for reportability.	The operator enters "Circuit 767 de-energized resulting in a loss of power to bus 12B, and ESF Busses 16 and 17. Emergency Diesel Generator B automatically started and repowered Bus 16 and 17" or an equivalent description in the Event Description (Include: Systems affected, actuations and their initiating signals, causes, effect of event on plant, actions taken or planned etc.) Block on Page 1 of Handout 3. See Provided Key	✓	___
13	(Directed Action) Complete any necessary paperwork for reportability.	The operator places a checkmark or X in the WILL BE or NO box associated with Notification of the State(s) Block of Handout 3. See Provided Key		___
14	(Directed Action) Complete any necessary paperwork for reportability.	The operator places a checkmark or X in the WILL BE or NO box associated with Notification of the State(s) Block of Handout 3. See Provided Key		___
15	(Directed Action) Complete any necessary paperwork for reportability.	The operator places a checkmark or X in the WILL BE or NO box associated with Notification of the Local Block of Handout 3. See Provided Key		___
16	(Directed Action) Complete any necessary paperwork for reportability.	The operator places a checkmark or X in the WILL BE or NO box associated with Notification of the Other Gov Agencies Block of Handout 3. See Provided Key		___

Steps and Performance Standards

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	CRITICAL	GRADE (S/U)
17	(Directed Action) Complete any necessary paperwork for reportability.	The operator places a checkmark or X in the WILL BE or NO box associated with Notification of the Media/Press Release Block of Handout 3. See Provided Key		___
18	(Directed Action) Complete any necessary paperwork for reportability.	The operator places a checkmark or X in the NO box associated with Anything Unusual or not understood? Block of Handout 3. See Provided Key		___
19	(Directed Action) Complete any necessary paperwork for reportability.	The operator places a checkmark or X in the YES box associated with Did all systems function as required? Block of Handout 3. See Provided Key		___
20	(Directed Action) Complete any necessary paperwork for reportability.	The operator enters "MODE 1" in the Mode of operations until corrected (if applicable) Block of Handout 3. See Provided Key		___

Steps and Performance Standards

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	CRITICAL	GRADE (S/U)
21	(Directed Action) Complete any necessary paperwork for reportability.	The operator places a checkmark or X in the NO box associated with Additional Information continued on the next page Block of Handout 3, or YES box if additional information is documented in the Event Description (Include: Systems affected, actuations and their initiating signals, causes, effect of event on plant, actions taken or planned etc.) Block on Page 2 of Handout 3. See Provided Key		

Termination Criteria: JPM is terminated when Applicant states the task is complete.

CUE: This terminates the JPM.

End Time: _____

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VERIFICATION OF COMPLETION

Job Performance Measure No.: 2024 NRC Admin – JPM A1a SRO

Date Performed:

Examinee:

Evaluator:

Time to Complete:

Question Documentation:

Result: SAT _____ UNSAT _____

Evaluator's Signature: _____ Date: _____

JPM CUE SHEET

INITIAL CONDITIONS:

- With the plant at 100% power, the following event occurred at 1300 today:
 - Circuit 767 de-energized resulting in a loss of power to bus 12B, Bus 16 and Bus 17.
 - Emergency Diesel Generator B automatically started and repowered Bus 16 and 17.
 - The crew entered AP-ELEC.1, LOSS OF 12A AND/OR 12B BUSES, and is working through the procedure.
- The SM has verified that this event has NOT exceeded an Emergency Action Level (EAL).
- The SM and the STA believe that this event is reportable to the NRC.
- No external persons and/or agencies have been notified of this event, nor have any actions other than those identified been taken.

INITIATING CUE:

The SM directs you to determine reportability requirements, including completion of any necessary paperwork (Provide to Examiner when ready to Transmit).

NRC FORM 361
(07-28-2023)U.S. NUCLEAR REGULATORY COMMISSION
OPERATIONS CENTER

APPROVED BY OMB: NO. 3150-0238

EXPIRES: 07/31/2026

REACTOR PLANT EVENT
NOTIFICATION WORKSHEET

Estimated burden per response to comply with this voluntary collection request: 30 minutes. The information provided will be used for evaluation of licensee event description, facility status and for input to the public website. Send comments regarding burden estimate to the FOIA, Library, and Information Collections Branch (T-6 A10M), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by email to InfoCollects.Resource@nrc.gov, and the OMB reviewer at: OMB Office of Information and Regulatory Affairs, (3150-0238), Attn: Desk Officer for the Nuclear Regulatory Commission, 725 17th Street NW, Washington, DC 20503; email: oir_submission@omb.eop.gov. The NRC may not conduct or sponsor, and a person is not required to respond to, a collection of information unless the document requesting or requiring the collection displays a currently valid OMB control number.

EN # _____

NRC OPERATIONS TELEPHONE NUMBERS: PRIMARY - 301-816-5100 or 800-532-3469*, BACKUPS - [1st] 301-951-0550 or 800-449-3694*, [2nd] 301-415-0550 and [3rd] 301-415-0553. *Licensees who maintain their own ETS are provided these telephone numbers.
FAX - 301-816-5151, EMAIL - hoo.hoc@nrc.gov

Notification Time	Facility or Organization	Unit	Name of Caller/Title	Call Back #	
	GINNA		Operator's Name	Control Room #	
Event Time & Zone	Event Date	Power/Mode (At Time of Event)	Power/Mode (At Time of Notification)		
1300 EST	Today's Date	100%/Mode 1	100%/Mode 1		
EVENT CLASSIFICATION		1-HR. NON-EMERGENCY 10 CFR 50.72(b)(1)	☐ (v)(A) Safe S/D Capability	AINA	
☐ GENERAL EMERGENCY	GEN/AAEC	☐ TS Deviation	ADEV	☐ (v)(B) RHR Capability	AINB
☐ SITE AREA EMERGENCY	SIT/AAEC	4-HR. NON-EMERGENCY 10 CFR 50.72(b)(2)	☐ (v)(C) Control of Rad Release	AINC	
☐ ALERT	ALE/AAEC	☐ (i) TS Required S/D	ASHU	☐ (v)(D) Accident Mitigation	AIND
☐ UNUSUAL EVENT	UNU/AAEC	☐ (iv)(A) ECCS Discharge to RCS	ACCS	☐ (xii) Offsite Medical	AMED
☐ 50.72 NON-EMERGENCY	(see next columns)	☐ (iv)(B) RPS Actuation (scram)	ARPS	☐ (xiii) Loss Comm/Asmt/Response	ACOM
☐ PHYSICAL SECURITY (73.71)	DDDD	☐ (xi) Offsite Notification	APRE	60-DAY OPTIONAL 10 CFR 50.73(a)(1)	
☐ MATERIAL/EXPOSURE	B????	8-HR. NON-EMERGENCY 10 CFR 50.72(b)(3)	☐ Invalid Specified System Actuation	AINV	
☐ FITNESS FOR DUTY	HFIT	☐ (ii)(A) Degraded Condition	ADEG	OTHER UNSPECIFIED REQUIREMENT (IDENTIFY)	
☐ OTHER UNSPECIFIED REQMT.	(see last column)	☐ (ii)(B) Unanalyzed Condition	AUNA	☐	NONR
☐ INFORMATION ONLY	NNF	☒ (iv)(A) Specified System Actuation	AESF	☐	NONR

Event Description (Include: Systems affected, actuations and their initiating signals, causes, effect of event on plant, actions taken or planned, etc.) (Continue on Page 2)

Circuit 767 de-energized resulting in a loss of power to bus 12B, and ESF Busses 16 and 17. Emergency Diesel Generator B automatically started and repowered Bus 16 and 17 (Or Equivalent).

NOTIFICATIONS	YES	NO	WILL BE	
NRC RESIDENT	☐	☒	X	Anything Unusual or not understood? ☐ Yes (Explain above) ☒ No
STATE(s)	☐	X	X	Did all systems function as required? ☒ Yes ☐ No (Explain above)
LOCAL	☐	X	X	
OTHER GOV AGENCIES	☐	X	X	Mode of operations until corrected (if applicable) MODE 1
MEDIA/PRESS RELEASE	☐	X	X	Additional Information continued on next page? ☐ Yes ☒ No

NRC FORM 361
(07-28-2023)U.S. NUCLEAR REGULATORY COMMISSION
OPERATIONS CENTER

REACTOR PLANT EVENT NOTIFICATION WORKSHEET (Continued)

EN # _____

RADIOLOGICAL RELEASES: CHECK OR FILL IN APPLICABLE ITEMS (specific details/explanations should be covered in event description)

☐ Liquid Release	☐ Gaseous Release	☐ Unplanned Release	☐ Planned Release	☐ Ongoing	☐ Terminated
☐ Monitored	☐ Unmonitored	☐ Offsite Release	☐ T.S. Exceeded	☐ RM Alarms	☐ Areas Evacuated
☐ Personnel Exposed or Contaminated		☐ Offsite Protection Actions Recommended		*State release path in description	

	Release Rate (Ci/sec)	% T.S. Limit	HOO Guide	Total Activity (Ci)	% T.S. Limit	HOO Guide
Noble Gas			0.1 Ci/sec			1000 Ci
Iodine			10 µCi/sec			0.01 Ci
Particulate			1 µCi/sec			1 mCi
Liquid (excluding tritium and dissolved noble gas)			10 µCi/min			0.1 Ci
Liquid (tritium)			0.2 Ci/min			5 Ci
TOTAL						

	Plant Stack	Condenser/Air Ejector	Main Steam Line	SG Blowdown	Other
RAD Monitor Readings					
Alarm Setpoints					
% T.S. Limit (If applicable)					

RCS OR SG TUBE LEAKS: CHECK OR FILL IN APPLICABLE ITEMS: (specific details/explanations should be covered in event description)

Location of the Leak (e.g., SG #, valve, pipe, etc.)

Leak Rate	Units: gpm/gpd	T. S. Limits	Sudden or Long-Term Development
Leak Start Date	Time	Coolant Activity and Units:	Primary Secondary

List of Safety Related Equipment not Operational

Event Description (Include: Systems affected, actuations and their initiating signals, causes, effect of event on plant, actions taken or planned, etc.) (Continued from Page 1)

NRC EXAM

Admin JPM A1b

SRO

Job Performance Measure Template

Facility: Ginna JPM No.: 2024 NRC Admin – JPM A1b SRO

Task Title: Manually Calculate QPTR Task No.:

System: N/A K/A Reference: 2.1.37 (4.6)

Time-Critical Task: NO Alternate Path: NO

Validated Time: 42 Minutes

Method of Testing: Simulated Performance: _____ Actual Performance: X

Location: Classroom X Simulator _____ Plant _____

Task Standard: The task is satisfactorily met when the Applicant has determined QPTR to be 1.028 ± 0.001 and identified that a power reduction is needed in accordance with the provided and attached KEYS.

Required Materials: Calculator
Handout 1: Blank copy of O-6.4.
Handout 2: O-6.4 Core Quadrant Power Tilt Calculation Constants #02-002 marked up for this JPM
Handout 3: Power Range Detector Currents
Handout 4: Technical Specification LCO 3.2.4, QUADRANT POWER TILT RATIO (QPTR)

General References: AP-RCC.3, DROPPED ROD RECOVERY, Rev 011
O-6.4, QUADRANT POWER TILT RATIO CALCULATION, Rev 027
Technical Specification LCO 3.2.4, QUADRANT POWER TILT RATIO (QPTR), Amendment 94/122
Technical Specification Bases for the R.E. Ginna Nuclear Power Plant, Rev 114
Technical Requirement 3.2.4, QUADRANT POWER TILT RATIO (QPTR) Monitor, Rev 31

Job Performance Measure Template

<u>Critical Step Justification</u>	
Step 1	This step is critical because using Curve Book #02-002, O-6.4 Core Quadrant Power Tilt Calculation Constants, is necessary to determine QPTR to be 1.028 ± 0.001 in accordance with the provided and attached Keys.
Step 2	This step is critical because determining the N41 total volt contribution to the QPTR calculation is necessary to determine QPTR to be 1.028 ± 0.001 in accordance with the provided and attached Keys.
Step 3	This step is critical because determining the N42 total volt contribution to the QPTR calculation is necessary to determine QPTR to be 1.028 ± 0.001 in accordance with the provided and attached Keys.
Step 4	This step is critical because determining the N43 total volt contribution to the QPTR calculation is necessary to determine QPTR to be 1.028 ± 0.001 in accordance with the provided and attached Keys.
Step 5	This step is critical because determining the N44 total volt contribution to the QPTR calculation is necessary to determine QPTR to be 1.028 ± 0.001 in accordance with the provided and attached Keys.
Step 6	This step is critical because determining the highest reading Power Range detector is necessary to determine QPTR to be 1.028 ± 0.001 in accordance with the provided and attached Keys.
Step 8	This step is critical because adjusting the use of the QPTR equation for the failed instrument is necessary to determine QPTR to be 1.028 ± 0.001 in accordance with the provided Key.
Step 12	This step is critical because recognizing that the current power level is 96% which is above the maximum allowable power level, determines that a power reduction is needed, and circles YES on the JPM Cue Sheet <u>AND</u> recording a MAXIMUM allowable power level of $91.6 \pm 0.3\%$ and a time frame to achieve MAXIMUM allowable power level of 2 hours from the QPTR determination on the JPM Cue Sheet is necessary to identify that a power reduction is needed in accordance with the attached KEY.

Notes to Examiner:**READ TO THE EXAMINEE**

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Provide Applicant with Initial Conditions/Cue (Last Page of this JPM) and Handouts 1-4.**Initial Conditions:**

- Power Range Channel N-43 is INOPERABLE and is expected to be returned to service within the next four hours.
- The QPTR Monitor Alarm has been declared NONFUNCTIONAL.
- The plant was at 98.5% power when Control Rod G-9 dropped.
- The crew entered AP-RCC.3, DROPPED ROD RECOVERY.
- The plant is now at 96% power and stable.
- You are the Unit Supervisor.
- You have directed the HCO to calculate QPTR per Section 5 of O-6.4, QUADRANT POWER TILT RATIO CALCULATION, to satisfy TSR 3.2.4.2.
- If any reports or notifications must be made assume that they have been made by the HCO.

Initiating Cue:

Calculate QPTR to function as the Independent Verifier required by Step 5.13 of O-6.4, QUADRANT POWER TILT RATIO CALCULATION, by performing Steps 5.5 through 5.12.

- Take individual Instrument calculations to four (4) decimal places and the final QPTR calculation to three (3) decimal places.
- Assuming the HCO confirms your calculations complete the Table below:

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

Information For Evaluator's Use:

UNSAT requires written comments on respective step.

✓ Denotes critical steps.

The timeclock starts when the Applicant acknowledges the Initiating Cue.

Steps and Performance Standards

Start Time: _____

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	CRITICAL	GRADE (S/U)
CUE	Provide Applicant with Initial Conditions/Cue (Last Page of this JPM) and Handouts 1-4.			
NOTE Volts/Micro amp value for each upper and lower detector are obtained from the Curve Book. Curve Book values that are greater than 3 months old require the Reactor Engineer to be notified so curve book values can be updated.				
1	(O-6.4, Step 5.5) RECORD Curve Book data: • (N41 Upper Volts/Micro amp) • (N41 Lower Volts/Micro amp) • (N42 Upper Volts/Micro amp) • (N42 Lower Volts/Micro amp) • (N43 Upper Volts/Micro amp) • (N43 Lower Volts/Micro amp) • (N44 Upper Volts/Micro amp) • (N44 Lower Volts/Micro amp)	The operator reads the Note, initials it and proceeds.		_____
		The operator uses Curve Book #02-002 O-6.4 Core Quadrant Power Tilt Calculation Constants (Handout 2) and records the required data per the provided KEY. See Provided KEY	✓	_____
		The operator initials Step 5.5 and proceeds.		_____
Examine NOTE: The JPM has two KEYS. The Provided KEY is a document separate from the JPM and provides the standard for the QPTR Calculation. The Attached KEY is on Page 13 and is the standard for the information required to be recorded on the JPM Cue Page.				

Steps and Performance Standards

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	CRITICAL	GRADE (S/U)
2	(O-6.4, Step 5.6) RECORD N41 data: (enter values of zero if channel is INOPERABLE) _____ (N41 Upper Micro Amps) _____ (N41 Lower Micro Amps) $(A \times B) + (C \times D) = (\text{N41 Total})$ Where: - A = N41 Upper Micro Amps on Step 5.6. - B = N41 Upper Volts/Micro amp on Step 5.5. - C = N41 Lower Micro Amps on Step 5.6. - D = N41 Lower Volts/Micro amp on Step 5.5.	The operator records N41 Upper Micro Amps (212.5) obtained using Handout 3.		___
		The operator records N41 Lower Micro Amps (321.1) obtained using Handout 3.		___
		The operator performs the calculation and records the N41 Detector Volts as 19.7730 ± 0.0001 volts. $(212.5 \times 0.0453) + (321.1 \times 0.0316) = 19.7730$ See Provided KEY	✓	___
		The operator initials Step 5.6 and proceeds.		___
3	(O-6.4, Step 5.7) RECORD N42 data: (enter values of zero if channel is INOPERABLE) _____ (N42 Upper Micro Amps) _____ (N42 Lower Micro Amps) $(A \times B) + (C \times D) = (\text{N42 Total})$ Where: - A = N42 Upper Micro Amps on Step 5.7. - B = N42 Upper Volts/Micro amp on Step 5.5. - C = N42 Lower Micro Amps on Step 5.7. - D = N42 Lower Volts/Micro amp on Step 5.5.	The operator records N42 Upper Micro Amps (208.2) obtained using Handout 3.		___
		The operator records N42 Lower Micro Amps (348.2) obtained using Handout 3.		___
		The operator performs the calculation and records the N42 Detector Volts as 18.2783 ± 0.0001 volts. $(208.2 \times 0.0418) + (348.2 \times 0.0275) = 18.2783$ See Provided KEY	✓	___
		The operator initials Step 5.7 and proceeds.		___

Steps and Performance Standards

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	<u>CRITICAL</u>	<u>GRADE (S/U)</u>
4	(O-6.4, Step 5.8) RECORD N43 data: (enter values of zero if channel is INOPERABLE) _____ (N43 Upper Micro Amps) _____ (N43 Lower Micro Amps) $(A \times B) + (C \times D) = (\text{N43 Total})$ Where: - A = N43 Upper Micro Amps on Step 5.8. - B = N43 Upper Volts/Micro amp on Step 5.5. - C = N43 Lower Micro Amps on Step 5.8. - D = N43 Lower Volts/Micro amp on Step 5.5.	The operator recognizes that N43 is INOPERABLE and enters "0" for N43 Upper Micro Amps, N43 Lower Micro Amps and N43 Total. See Provided KEY	✓	_____
		The operator initials Step 5.8 and proceeds.		_____
5	(O-6.4, Step 5.9) RECORD N44 data: (enter values of zero if channel is INOPERABLE) _____ (N44 Upper Micro Amps) _____ (N44 Lower Micro Amps) $(A \times B) + (C \times D) = (\text{N44 Total})$ Where: - A = N44 Upper Micro Amps on Step 5.9. - B = N44 Upper Volts/Micro amp on Step 5.5. - C = N44 Lower Micro Amps on Step 5.9. - D = N44 Lower Volts/Micro amp on Step 5.5.	The operator records N44 Upper Micro Amps (217.9) obtained using Handout 3.		_____
		The operator records N44 Lower Micro Amps (323.3) obtained using Handout 3.		_____
		The operator performs the calculation and records the N44 Detector Volts as 19.6303 ± 0.0001 volts. $(217.9 \times 0.0435) + (323.3 \times 0.0314) = 19.6303$ See Provided KEY	✓	_____
		The operator initials Step 5.9 and proceeds.		_____

Steps and Performance Standards

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	<u>CRITICAL</u>	<u>GRADE (S/U)</u>
6	(O-6.4, Step 5.9.1) Enter Highest total from below. _____ (Highest Total) _____ (N41 Total on Step 5.6.) _____ (N42 Total on Step 5.7.) _____ (N43 Total on Step 5.8.) _____ (N44 Total on Step 5.9.)	The operator enters the result in Step 5.6 for N41.		___
		The operator enters the result in Step 5.7 for N42.		___
		The operator enters the result in Step 5.8 for N43.		___
		The operator enters the result in Step 5.9 for N44.		___
		The operator recognizes that N41 is the highest total from the four channels and enters 19.7730±0.0001 as the Highest Total. See Provided KEY	✓	___
		The operator initials Step 5.9.1 and proceeds.		___
		NOTE If one power range channel INOPERABLE, then the Highest (Total) in numerator of the equation below must be multiplied by 3 instead of 4 AND only 3 operable channels are to be summed in the denominator.		
7	(O-6.4, Step 5.10) Calculate QPTR (ALL 4 Channels Operable)	The operator reads the Note, initials it and proceeds.		___
		The operator marks Step 5.10 (or recognizes that it has been previously marked) as N/A and proceeds.		___

Steps and Performance Standards

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	<u>CRITICAL</u>	<u>GRADE (S/U)</u>
8	(O-6.4, Step 5.11) Calculate QPTR (3 Channels Operable) $3 \times X/a+b+c+d =$ Calculated QPTR Where: x = Highest Total on Step 5.9.1. a = N41 Total on Step 5.6. b = N42 Total on Step 5.7. c = N43 Total on Step 5.8. d = N44 Total on Step 5.9.	The operator performs the calculation and records QPTR as 1.028 ± 0.001 . $(3 \times 19.7730)/19.7730 + 18.2783 + 0 + 19.6303 = 1.028 \pm 0.001$ See Provided KEY	✓	—
		The operator initials Step 5.11 and proceeds.		—
9	(O-6.4, Step 5.12) IS QPTR is greater than OR equal to 1.01?	The operator recognizes that QPTR is > 1.01 and checks YES.		—
		The operator initials Step 5.12 and proceeds.		—
10	(O-6.4, Step 5.12.1) IF QPTR is greater than OR equal to 1.01, THEN NOTIFY Reactor Engineer. OTHERWISE, MARK this Step N/A.	The operator recognizes that QPTR is > 1.01 and notifies the Reactor Engineer (assumed to be made per Initial Cue).		—
		The operator initials Step 5.12.1 and proceeds.		—
11	(O-6.4, Step 5.12.2) IF QPTR is greater than OR equal to 1.02, THEN REFER to TS 3.2.4. OTHERWISE, MARK this Step N/A.	The operator recognizes that QPTR is > 1.02 and refers to Technical Specification LCO 3.2.4 (Handout 4).		—

Steps and Performance Standards

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	<u>CRITICAL</u>	<u>GRADE (S/U)</u>
12	(Directed Action) Assuming the HCO confirms your calculations complete the Table below:	The operator records QPTR on the JPM Cue Sheet as 1.028 ± 0.001 in Block #1.		
	1. QPTR = _____	See Attached KEY	✓	_____
	2. Is a power reduction required? YES / NO (Circle One)	The operator addresses Technical Specification LCO 3.2.4 (Handout 4) and determines that Condition A is required.		_____
	3. IF answer to Question 2 is "YES" IDENTIFY the MAXIMUM allowable power level and the time frame within which that power level must be achieved to comply with Technical Specification LCO 3.2.4. - MAXIMUM allowable power level: _____ (Mark N/A if the answer to Question 2 is NO) - Time frame to achieve MAXIMUM allowable power level: _____ (Mark N/A if the answer to Question 2 is NO)	The operator recognizes that ACTION A.1 limits the maximum Reactor power under the current conditions and determines that the maximum allowable power level for the current conditions is $91.6 \pm 0.3\%$. <i>A.1 Reduce THERMAL POWER $\geq 3\%$ from RTP for each 1% of QPTR > 1.00.</i> <i>Current QPTR is $2.8\% > 1$.</i> <i>Power must be reduced a minimum of 3% for each 1% of QPTR > 1.00.</i> <i>$2.8\% \times 3\% \text{ Power}/1\% \text{ QPTR} = 8.4\%$</i> <i>RTP = 100%</i> <i>Maximum Allowable Power = $100\% - 8.4\% = 91.6\%$</i>		_____
		The operator recognizes that the current power level is 96% which is above the maximum allowable power level, determines that a power reduction is needed, and circles YES on the JPM Cue Sheet in Block #2. See Attached KEY	✓	_____

Steps and Performance Standards

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	CRITICAL	GRADE (S/U)
12 (Cont'd)		The operator records a MAXIMUM allowable power level of $91.6 \pm 0.3\%$ and a time frame to achieve MAXIMUM allowable power level of 2 hours from the QPTR determination on the JPM Cue Sheet in Block #3. See Attached KEY	✓	_____

Termination Criteria: JPM is terminated when Applicant states the task is complete.

CUE: This terminates the JPM.

End Time: _____

.....

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2024 NRC Admin – JPM A1b SRO

Date Performed:

Examinee:

Evaluator:

Time to Complete:

Question Documentation:

Result: SAT _____ UNSAT _____

Evaluator's Signature: _____ Date: _____

VERIFICATION OF COMPLETION

KEY:

RED = Critical

1. QPTR = 1.028±0.001

2. Is a power reduction required? YES / NO (Circle One)

3. IF answer to Question 2 is "YES" IDENTIFY the MAXIMUM allowable power level and the time frame within which that power level must be achieved to comply with Technical Specification LCO 3.2.4.

- MAXIMUM allowable power level: 91.6±0.3%
(Mark N/A if the answer to Question 2 is NO)
- Time frame to achieve MAXIMUM allowable power level: 2 hours from the QPTR determination
(Mark N/A if the answer to Question 2 is NO)

JPM CUE SHEET

INITIAL CONDITIONS:

- Power Range Channel N-43 is INOPERABLE and is expected to be returned to service within the next four hours.
- The QPTR Monitor Alarm has been declared NONFUNCTIONAL.
- The plant was at 98.5% power when Control Rod G-9 dropped.
- The crew entered AP-RCC.3, DROPPED ROD RECOVERY.
- The plant is now at 96% power and stable.
- You are the Unit Supervisor.
- You have directed the HCO to calculate QPTR per Section 5 of O-6.4, QUADRANT POWER TILT RATIO CALCULATION, to satisfy TSR 3.2.4.2.
- If any reports or notifications must be made assume that they have been made by the HCO.

INITIATING CUE:

Calculate QPTR to function as the Independent Verifier required by Step 5.13 of O-6.4, QUADRANT POWER TILT RATIO CALCULATION, by performing Steps 5.5 through 5.12.

- Take individual Instrument calculations to four (4) decimal places and the final QPTR calculation to three (3) decimal places.
- Assuming the HCO confirms your calculations complete the Table below:

1. QPTR = _____

2. Is a power reduction required? YES / NO (Circle One)

3. IF answer to Question 2 is "YES" IDENTIFY the MAXIMUM allowable power level and the time frame within which that power level must be achieved to comply with Technical Specification LCO 3.2.4.

- MAXIMUM allowable power level: _____
(Mark N/A if the answer to Question 2 is NO)
- Time frame to achieve MAXIMUM allowable power level: _____
(Mark N/A if the answer to Question 2 is NO)

Section Page 2

NOTE

Volts/Micro amp value for each upper and lower detector are obtained from the Curve Book. Curve Book values that are greater than 3 months old require the Reactor Engineer to be notified so curve book values can be updated.

*US*5.5. **RECORD** Curve Book data:*US*

0.0453 (N41 Upper Volts/Micro amp)

0.0316 (N41 Lower Volts/Micro amp)

0.0418 (N42 Upper Volts/Micro amp)

0.0275 (N42 Lower Volts/Micro amp)

0.0393 (N43 Upper Volts/Micro amp)

0.0285 (N43 Lower Volts/Micro amp)

0.0435 (N44 Upper Volts/Micro amp)

0.0314 (N44 Lower Volts/Micro amp)

5.6. **RECORD** N41 data: (enter values of zero if channel is INOPERABLE)*US*

212.5 (N41 Upper Micro Amps)

321.1 (N41 Lower Micro Amps)

$$(A \times B) + (C \times D) = \underline{19.7730 \pm 0.0001} \text{ (N41 Total)}$$

Where:

A = N41 Upper Micro Amps on Step 5.6.

B = N41 Upper Volts/Micro amp on Step 5.5.

C = N41 Lower Micro Amps on Step 5.6.

D = N41 Lower Volts/Micro amp on Step 5.5.

- 5.7. **RECORD** N42 data: (enter values of zero if channel is INOPERABLE)

US

208.2 (N42 Upper Micro Amps)

348.2 (N42 Lower Micro Amps)

$$(A \times B) + (C \times D) = \underline{18.2783 \pm 0.0001} \text{ (N42 Total)}$$

Where:

A = N42 Upper Micro Amps on Step 5.7.

B = N42 Upper Volts/Micro amp on Step 5.5.

C = N42 Lower Micro Amps on Step 5.7.

D = N42 Lower Volts/Micro amp on Step 5.5.

- 5.8. **RECORD** N43 data: (enter values of zero if channel is INOPERABLE)

US

0 (N43 Upper Micro Amps)

0 (N43 Lower Micro Amps)

$$(A \times B) + (C \times D) = \underline{0} \text{ (N43 Total)}$$

Where:

A = N43 Upper Micro Amps on Step 5.8.

B = N43 Upper Volts/Micro amp on Step 5.5.

C = N43 Lower Micro Amps on Step 5.8.

D = N43 Lower Volts/Micro amp on Step 5.5.

 Section Page 4

5.9. **RECORD** N44 data: (enter values of zero if channel is INOPERABLE)

US

217.9 (N44 Upper Micro Amps)

323.3 (N44 Lower Micro Amps)

$$(A \times B) + (C \times D) = \underline{19.6303 \pm 0.0001} \text{ (N44 Total)}$$

Where:

A = N44 Upper Micro Amps on Step 5.9.

B = N44 Upper Volts/Micro amp on Step 5.5.

C = N44 Lower Micro Amps on Step 5.9.

D = N44 Lower Volts/Micro amp on Step 5.5.

5.9.1. Enter Highest total from below.
19.7730 ± 0.0001 (Highest Total)

US

19.7730 ± 0.0001 (N41 Total on Step 5.6.)

18.2783 ± 0.0001 (N42 Total on Step 5.7.)

0 (N43 Total on Step 5.8.)

19.6303 ± 0.0001 (N44 Total on Step 5.9.)

NOTE

If one power range channel INOPERABLE, then the Highest (Total) in numerator of the equation below must be multiplied by 3 instead of 4 AND only 3 operable channels are to be summed in the denominator.

US

5.10. Calculate QPTR (**ALL** 4 Channels Operable)

N/A

$$\frac{4 \times x}{a + b + c + d} = \text{_____} \text{ (Calculated QPTR)}$$

Where:

x = Highest Total on Step 5.9.1.

a = N41 Total on Step 5.6.

b = N42 Total on Step 5.7.

c = N43 Total on Step 5.8.

d = N44 Total on Step 5.9.

5.11. Calculate QPTR (3 Channels Operable)

US

$$\frac{3 \times x}{a + b + c + d} = \underline{1.028 \pm 0.001} \text{ (Calculated QPTR)}$$

Where:

x = Highest Total on Step 5.9.1.

a = N41 Total on Step 5.6.

b = N42 Total on Step 5.7.

c = N43 Total on Step 5.8.

d = N44 Total on Step 5.9.

5.12. **IS** QPTR is greater than **OR** equal to 1.01?

US

☒ Yes ☐ No (QPTR ≥ 1.01)

IF

THEN

QPTR ≥ 1.01 on Step 5.12. Equals No

Go to Step 5.13. (NA steps in between)

Section Page 6

5.12.1. IF QPTR is greater than **OR** equal to 1.01,
THEN NOTIFY Reactor Engineer.

US

OTHERWISE, MARK this Step N/A.

5.12.2. IF QPTR is greater than **OR** equal to 1.02,
THEN REFER to TS 3.2.4.

US

OTHERWISE, MARK this Step N/A.

5.13. INDEPENDENTLY VERIFY the following:

IV

5.13.1. Curve Book data in 5.5 .

IV

5.13.2. N41 data recorded in 5.6 .

IV

5.13.3. N42 data recorded in 5.7 .

IV

5.13.4. N43 data recorded in 5.8 .

IV

5.13.5. N44 data recorded in 5.9 .

IV

5.13.6. VERIFY Calculations.

IV

NRC EXAM

Admin JPM A2 SRO

Job Performance Measure Template

Facility: Ginna

JPM No.: 2024 NRC Admin –
JPM A2 SROTask Title: Verify Required Service Water to
Emergency Diesel Generators

Task No.:

System: N/A

K/A Reference: 2.2.37 (4.6)

Time-Critical Task: NO

Alternate Path: NO

Validated Time: 6 Minutes

Method of Testing: Simulated Performance: _____ Actual Performance: XLocation: Classroom X Simulator _____ Plant _____

Task Standard: The task is satisfactorily met when the Applicant has identified that the A EDG is OPERABLE, the B EDG is INOPERABLE and the required action in accordance with the attached KEY.

Required Materials: Handout 1: Blank copy of O-6.13

General References: AP-ELEC.2, SAFEGUARD BUSES LOW VOLTAGE OR SYSTEM
ABNORMAL FREQUENCY, Rev 017
O-6.13, DAILY SURVEILLANCE LOG, Rev 219

Job Performance Measure Template

<u>Critical Step Justification</u>	
Step 4	This step is critical because applying the limits of Attachment 12 and determining that all limits are met except the SW ΔP limit for B EDG Jacket Water Cooler is necessary to identify that the A EDG is OPERABLE, the B EDG is INOPERABLE and the required action in accordance with the attached KEY.
Step 5	This step is critical because recognizing that the A EDG Jacket Water Cooler D/P is less than 8.0 PSID and identifies that a PRI 2 Work Order for the A EDG to flush the cooler is NOT required is necessary to identify that the A EDG is OPERABLE and identify the required action in accordance with the attached KEY.
Step 6	This step is critical because recognizing that the A EDG Lube Oil Cooler D/P is greater than 6.0 PSID and identifies that an Issue Report requesting a PRI 2 Work Order for the A EDG to flush the cooler must be initiated is necessary to identify that the A EDG is OPERABLE and identify the required action in accordance with the attached KEY.

Notes to Examiner:**READ TO THE EXAMINEE**

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Provide Applicant with Initial Conditions/Cue (Last Page of this JPM) and Handout 1.**Initial Conditions:**

- The plant is operating at 100% power.
- The crew has entered AP-ELEC.2, SAFEGUARD BUSES LOW VOLTAGE OR SYSTEM ABNORMAL FREQUENCY, due to low voltage on the Safeguards Buses.
- Both Emergency Diesel Generators are running supplying their respective Safeguards Buses.
- RG&E ECC reports that the Electrical Grid voltage will be stabilized in approximately 30 minutes.
- O-6.13, DAILY SURVEILLANCE LOG, is in progress.
- The SW Controlotron flow instrumentation is unavailable.
- The A, B and C Service Water Pumps are operating.
- Lake Temperature is 60°F.
- The following Service Water readings are recorded for the Emergency Diesel Generators:
 - SW Δ P for A EDG Lube Oil Cooler is 8.2 PSID
 - SW Δ P for A EDG Jacket Water Heat Exchanger is 7.7 PSID
 - SW Δ P for B EDG Lube Oil Cooler is 8.5 PSID
 - SW Δ P for B EDG Jacket Water Heat Exchanger is 8.3 PSID
- You are the US.

Initiating Cue:

Verify that the EDG Service Water Differential Pressures (Δ Ps) are within required limits by performing Step 6.4.4.1 of O-6.13, DAILY SURVEILLANCE LOG, and identify all, if any, required action.

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

Information For Evaluator's Use:

UNSAT requires written comments on respective step.

✓ Denotes critical steps.

The timeclock starts when the Applicant acknowledges the Initiating Cue.

Steps and Performance Standards

Start Time: _____

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	CRITICAL	GRADE (S/U)
CUE	Provide Applicant with Initial Conditions/Cue (Last Page of this JPM) and Handout 1.			
NOTE The limits specified for SW ΔPs are only applicable during Modes 1, 2, 3, and 4. System Engineering should be consulted for limits during Modes 5, 6 AND Defueled conditions when lineups differ significantly from normal operations.				
CAUTION - Additional monitoring of heat exchanger D/Ps should be performed during silting conditions. [G0231] - The typical order of heat exchanger fouling during silting conditions are as follows: - Circulating Water Seal Water Strainers - Auxiliary Feedwater Service Water Strainers - EDG Heat Exchangers [G0231]				
1	(O-6.13, Step 6.4.4/6.4.4.1) PERFORM the following D/G checks: IF normally closed EDG SW AOVs are bypassed OR EDG is operating, THEN VERIFY Emergency D/G Service Water (SW) D/Ps within limits as follows:	The operator reads the Note and proceeds.		___
		The operator reads the Cautions and proceeds.		___
		The operator recognizes that both EDGs are operating, and that verification of Emergency D/G Service Water (SW) D/Ps are within limits is required, and proceeds.		___

Steps and Performance Standards

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	CRITICAL	GRADE (S/U)
NOTE - Controlotron accuracy and uncertainties are included in values provided in Attachment 13, EDG SW D/P Limits – SW Flowrate Known [G0007], tables. - To determine actual ΔP limits, lake temperature and SW flows may be interpolated. DO NOT extrapolate limits past 500 GPM SW flow.				
2	(O-6.13, Step 6.4.4.1.a) IF current Emergency D/G SW inlet flowrates are known as measured by Controlotron, THEN USE Attachment 13, for SW D/P limits for Lube Oil and Jacket Water Coolers. [G0007]	The operator reads the Note and proceeds.		___
		The operator recognizes that the Controlotron flow instrumentation is unavailable (Initial Conditions), and that the use of Attachment 13 is unwarranted, and proceeds.		___
3	(O-6.13, Step 6.4.4.1.b) IF current Emergency D/G SW inlet flowrates are unknown, THEN USE Attachment 12, EDG SW D/P Limits – SW Flowrate Not Known [G0007] , for SW D/P limits for Lube Oil and Jacket Water Coolers. [G0007]	The operator addresses Attachment 12.		___
4	(O-6.13, Step 6.4.4.1.c) IF ΔP across any Emergency D/G cooler is within 1.0 psi of, OR exceeds limits specified above, THEN ENSURE affected Emergency D/G is declared INOPERABLE AND PERFORM sequential backflush PER T-27.9 or T-27.10.	Using Attachment 12, the operator determines that the EDG SW D/P Limit for the EDG Lube Oil Cooler is 9.6 PSID and for the EDG Jacket Water Cooler is 9.1 PSID (Intersection of SW Temperature > 55°F and ≤ 60°F and 3 Pump Operation). See Attached KEY	✓	___

Steps and Performance Standards

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	CRITICAL	GRADE (S/U)
4 (Cont'd)		The operator compares the current ΔP for A EDG Lube Oil Cooler of 8.2 PSID to the 9.6 PSID limit and recognizes that the A EDG is OPERABLE (Not within 1 PSID) and proceeds. See Attached KEY	✓	—
		The operator compares the current ΔP for B EDG Lube Oil Cooler of 8.5 PSID to the 9.6 PSID limit and recognizes that the B EDG is OPERABLE (Not within 1 PSID) and proceeds. See Attached KEY	✓	—
		The operator compares the current ΔP for A EDG Jacket Water Cooler of 7.7 PSID to the 9.1 PSID limit and recognizes that the A EDG is OPERABLE (Not within 1 PSID) and proceeds. See Attached KEY	✓	—
		The operator compares the current ΔP for B EDG Jacket Water Cooler of 8.3 PSID to the 9.1 PSID limit and recognizes that the B EDG is INOPERABLE (Within 1.0 PSID) and that a sequential backflush needs to be performed to restore operability. See Attached KEY	✓	—

Steps and Performance Standards

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	<u>CRITICAL</u>	<u>GRADE (S/U)</u>
NOTE Requesting a PRI 2 Work Order in Steps 6.4.4.1.d and 6.4.4.1.e allows IWM to prepare a scheduled LCO window, in the event, that other TS equipment may be inoperable.				
5	(O-6.13, Step 6.4.4.1.d) IF Jacket Water Cooler SW D/P is greater than 8.0 PSID, THEN INITIATE an Issue Report requesting a PRI 2 Work Order for a planned LCO entry to backflush the cooler.	The operator reads the Note and proceeds.		___
		The operator recognizes that the A EDG Jacket Water Cooler D/P is less than 8.0 PSID and identifies that a PRI 2 Work Order for the A EDG to flush the cooler is NOT required. See Attached KEY	✓	___
Examiner NOTE: The operator may identify that the B EDG Jacket Water Cooler D/P is greater than 8.0 PSID and that based on this step an Issue Report requesting a PRI 2 Work Order for the B EDG to flush the cooler must be initiated. However, the B EDG is INOPERABLE which will require T-27.10, DIESEL GENERATOR B LUBE OIL AND JACKET COOLERS BACKFLUSHING, to be performed and this is the higher priority procedure.				
6	(O-6.13, Step 6.4.4.1.e) IF Lube Oil Cooler SW D/P is greater than 6.0 PSID, THEN INITIATE an Issue Report requesting a PRI 2 Work Order for a planned LCO entry to backflush the cooler.	The operator recognizes that the A EDG Lube Oil Cooler D/P is greater than 6.0 PSID and identifies that an Issue Report requesting a PRI 2 Work Order for the A EDG to flush the cooler must be initiated.		___
		See Attached KEY	✓	___
Examiner NOTE: The operator may identify that the B EDG Lube Oil Cooler D/P is greater than 6.0 PSID and that based on this step an Issue Report requesting a PRI 2 Work Order for the B EDG to flush the cooler must be initiated. However, the B EDG is INOPERABLE which will require T-27.10, DIESEL GENERATOR B LUBE OIL AND JACKET COOLERS BACKFLUSHING, to be performed and this is the higher priority procedure.				

Termination Criteria: JPM is terminated when Applicant states the task is complete.

CUE: This terminates the JPM.

End Time: _____

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VERIFICATION OF COMPLETION

Job Performance Measure No.: 2024 NRC Admin – JPM A2 SRO

Date Performed:

Examinee:

Evaluator:

Time to Complete:

Question Documentation:

Result: SAT _____ UNSAT _____

Evaluator's Signature: _____ Date: _____

VERIFICATION OF COMPLETION

KEY:

A EDG OPERABLE: YES / NO (Circle One)**B EDG OPERABLE:** YES / NO (Circle One)**All Required Action (If Any):**

Declare the B EDG is INOPERABLE and schedule a sequential backflush performed to restore operability.

Prepare an Issue Report requesting a PRI 2 Work Order for the A EDG to flush the Jacket Water cooler. (Or Equivalent).

JPM CUE SHEET

INITIAL CONDITIONS:

- The plant is operating at 100% power.
- The crew has entered AP-ELEC.2, SAFEGUARD BUSES LOW VOLTAGE OR SYSTEM ABNORMAL FREQUENCY, due to low voltage on the Safeguards Buses.
- Both Emergency Diesel Generators are running supplying their respective Safeguards Buses.
- RG&E ECC reports that the Electrical Grid voltage will be stabilized in approximately 30 minutes.
- O-6.13, DAILY SURVEILLANCE LOG, is in progress.
- The SW Controlotron flow instrumentation is unavailable.
- The A, B and C Service Water Pumps are operating.
- Lake Temperature is 60°F.
- The following Service Water readings are recorded for the Emergency Diesel Generators:
 - SW Δ P for A EDG Lube Oil Cooler is 8.2 PSID
 - SW Δ P for A EDG Jacket Water Heat Exchanger is 7.7 PSID
 - SW Δ P for B EDG Lube Oil Cooler is 8.5 PSID
 - SW Δ P for B EDG Jacket Water Heat Exchanger is 8.3 PSID
- You are the US.

INITIATING CUE:

Verify that the EDG Service Water Differential Pressures (Δ Ps) are within required limits by performing Step 6.4.4.1 of O-6.13, DAILY SURVEILLANCE LOG, and identify all, if any, required action.

Identify:**A EDG OPERABLE:****YES / NO (Circle One)****B EDG OPERABLE:****YES / NO (Circle One)****All Required Action (If Any):**

NRC EXAM

Admin JPM A3 SRO

Job Performance Measure Template

Facility: Ginna JPM No.: 2024 NRC Admin – JPM A3 SRO

Task Title: Determine if a Radioactive Release is in Progress Task No.:

System: N/A K/A Reference: 2.3.11 (4.3)

Time-Critical Task: NO Alternate Path: NO

Validated Time: 13 Minutes

Method of Testing: Simulated Performance: _____ Actual Performance: X

Location: Classroom X Simulator _____ Plant _____

Task Standard: The task is satisfactorily met when the Applicant has identified that an unmonitored radioactive liquid release is in progress per the attached KEY.

Required Materials: Handout 1: Blank copy of EP-AA-114-F-01
Handout 2: Blank copy of EP-AA-114-F-15

General References: EP-AA-114-F-01, PWR RELEASE IN PROGRESS DETERMINATION GUIDANCE, Rev E
EP-AA-114-F-15, GINNA RELEASE IN PROGRESS DETERMINATION GUIDANCE TECHNICAL BASIS DOCUMENT, Rev B
EP-AA-112-100-F-01, SHIFT EMERGENCY DIRECTOR CHECKLIST, Rev AD
EP-CE-114-100, EMERGENCY NOTIFICATIONS, Rev 10
EP-CE-114-100-F-07, GNP NY STATE RADIOLOGICAL EMERGENCY DATA FORM (PART 1), Rev F

Job Performance Measure Template

<u>Critical Step Justification</u>	
Step 4	This step is critical because for the given conditions, using EP-AA-114-F-01 to conclude that “No Release is in Progress” with respect to an Airborne release is necessary to identify that an unmonitored liquid release is in progress per the attached KEY.
Step 6	This step is critical because for the given conditions, using EP-AA-114-F-01 to conclude that an unmonitored release exists is necessary to identify that an unmonitored liquid release is in progress per the attached KEY.
Step 7	This step is critical because for the given conditions, using EP-AA-114-F-01 to conclude that “a release is in progress” with respect to a liquid release is necessary to identify that an unmonitored liquid release is in progress per the attached KEY.

Notes to Examiner:**READ TO THE EXAMINEE**

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Provide Applicant with Initial Conditions/Cue (Last Page of this JPM) and Handouts 1-2.**Initial Conditions:**

- The plant is operating at 100% power.
- A Tornado struck the Site.
- The Shift Manager has declared an **Unusual Event** under **HU6 Hazardous Event**.
- An initial report from the field indicates that the Tanker Truck carrying resin fines from the Spent Resin Tanks and Chem Nuclear System has been overturned and is currently located in the roadway/corner by the Engineering Building.
- Two of the top covers have broken off and the contents (resin/sludge slurry) have spilled onto the roadway and entered the storm drains by the Screen House.
- Initial responders including Radiation Protection personnel (RP) have responded to the scene.
- Within 10 minutes, RP reports the following:
 - The resin/sludge slurry spill has a reading of 2.5 R/hr on contact.
 - A roped off area surrounding the spill has maximum general area readings of 25 mr/hr at the boundary.
 - Multiple air samples at the scene reveal less than minimum detectable for beta-gamma and alpha radiation.
 - The spill has been contained within a temporary berm erected by responders.
 - No other radiological assessments have been made at this time.

Initiating Cue:

Using EP-AA-114-F-01, PWR RELEASE IN PROGRESS DETERMINATION GUIDANCE, determine whether a radioactive release is in progress, and IF SO, whether the release is liquid, airborne or both; and monitored or unmonitored.

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

.....
Information For Evaluator's Use:

UNSAT requires written comments on respective step.

✓ Denotes critical steps.

The timeclock starts when the Applicant acknowledges the Initiating Cue.

.....

Steps and Performance Standards

Start Time: _____

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	<u>CRITICAL</u>	<u>GRADE (S/U)</u>
CUE	Provide Applicant with Initial Conditions/Cue (Last Page of this JPM) and Handouts 1-2.			
1	(Directed Action) Using EP-AA-114-F-01, PWR RELEASE IN PROGRESS DETERMINATION GUIDANCE, determine whether a radioactive release is in progress, and IF SO, whether the release is liquid, airborne or both; and monitored or unmonitored.	Using EP-AA-114-F-15, the operator recognizes that there are no indications of an RCS leak provided.		
	<u>PWR Airborne</u> Is there a leak of coolant from the Reactor Coolant System? ⁽¹⁾ 1. For release determination, a loss or leak from a barrier is <u>NOT</u> equivalent to the Potential Loss or Loss as determined by the EAL Fission Product Barrier matrix.	The operator addresses the PWR Airborne flow chart on EP-AA-114-F-01 and answers “ NO ” to the entry question.		
Examiner NOTE: An “Airborne” release due to the event is defined as “Any airborne radioactive release (Particulate, Iodine or Noble Gas) that is a result of, or caused by, the emergency event. Since an emergency event has been declared (UE), and the radioactive resin/sludge slurry can become airborne, the existence of an airborne release should be evaluated.				
Examiner NOTE: The Airborne Release Bases of EP-AA-114-F-15 provides a listing of seven indications of an RCS leak, none of which currently exist.				

Steps and Performance Standards

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	CRITICAL	GRADE (S/U)
2	(Directed Action) Using EP-AA-114-F-01, PWR RELEASE IN PROGRESS DETERMINATION GUIDANCE, determine whether a radioactive release is in progress, and IF SO, whether the release is liquid, airborne or both; and monitored or unmonitored.	Using EP-AA-114-F-15, the operator reviews Figure 1 and Table 1 and recognizes that there is no indication of a rise in an effluent radiation monitor to the environment.		___
	<u>PWR Airborne</u> Is there a rise in an effluent radiation monitor to the environment?	The operator addresses the PWR Airborne flow chart on EP-AA-114-F-01 and answers “ NO ” to the first subsequent question.		___
Examiner NOTE: Figure 1 of EP-AA-114-F-15 provides a visual aid of plant Airborne Effluent Radiation Monitors, none of which will detect airborne radionuclides from the given event.				
Examiner NOTE: Table 1 of EP-AA-114-F-15 provides a listing of Airborne Effluent Radiation Monitors, none of which will detect airborne radionuclides from the given event.				
3	(Directed Action) Using EP-AA-114-F-01, PWR RELEASE IN PROGRESS DETERMINATION GUIDANCE, determine whether a radioactive release is in progress, and IF SO, whether the release is liquid, airborne or both; and monitored or unmonitored.	The operator recognizes that the RP has reported that “multiple air samples at the scene reveal less than minimum detectable for beta-gamma and alpha radiation,” and that “No other radiological assessments have been made at this time,” including assessments within buildings or ventilations systems.		___
	<u>PWR Airborne</u> Has any airborne radioactivity (other than naturally occurring) been detected by survey or sampling in site ventilation or building with an unmonitored pathway to the environment?	The operator addresses the PWR Airborne flow chart on EP-AA-114-F-01 and answers “ NO ” to the second subsequent question.		___

Steps and Performance Standards

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	CRITICAL	GRADE (S/U)
4	(Directed Action) Using EP-AA-114-F-01, PWR RELEASE IN PROGRESS DETERMINATION GUIDANCE, determine whether a radioactive release is in progress, and IF SO, whether the release is liquid, airborne or both; and monitored or unmonitored. <u>PWR Airborne</u> Has any radioactivity (other than naturally occurring) been detected by survey or sampling in the environment?	The operator recognizes that RP has reported that “multiple air samples at the scene reveal less than minimum detectable for beta-gamma and alpha radiation.”		___
		The operator addresses the PWR Airborne flow chart on EP-AA-114-F-01 and answers “ NO ” to the third subsequent question.		___
		The operator is led to conclude that “No Release is in Progress” with respect to an Airborne release. See Attached KEY	✓	___
5	(Directed Action) Using EP-AA-114-F-01, PWR RELEASE IN PROGRESS DETERMINATION GUIDANCE, determine whether a radioactive release is in progress, and IF SO, whether the release is liquid, airborne or both; and monitored or unmonitored. <u>PWR Liquid</u> Is the liquid leak within the protected area boundary?	Using EP-AA-114-F-15, the operator recognizes that the radioactive spill described in the Initial Conditions is within the Protected Area.		___
		The operator addresses the PWR Liquid flow chart on EP-AA-114-F-01 and answers “ YES ” to the entry question.		___
Examiner NOTE: While it should be noted that the Liquid Bases section of EP-AA-114-F-15 states that the “Protected Area Boundary” is defined as consistent with station drawings, the term “Protected Area” is common knowledge to the plant worker as these drawings will not need to be consulted.				

Steps and Performance Standards

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	CRITICAL	GRADE (S/U)
6	(Directed Action) Using EP-AA-114-F-01, PWR RELEASE IN PROGRESS DETERMINATION GUIDANCE, determine whether a radioactive release is in progress, and IF SO, whether the release is liquid, airborne or both; and monitored or unmonitored. <u>PWR Liquid</u> Does the resulting radioactive material have an <u>unmonitored</u> pathway to the environment? AND Is any unmonitored radioactive liquid expected to be transported beyond the protected area boundary (for example, entering storm sewers)?	The operator recognizes from the INITIAL CONDITIONS that “the contents (resin/sludge slurry) have spilled onto the roadway and entered the storm drains by the Screen House.”	✓	—
		Using EP-AA-114-F-15, the operator recognizes that an unmonitored release pathway is any pathway to the environment that is not monitored by a liquid effluent radiation monitor and that any liquid effluent release that enters a storm drain within the Protected Area Boundary is expected to be transported beyond the Protected Area Boundary; and concludes that an unmonitored release exists. See Attached KEY		—
		The operator addresses the PWR Liquid flow chart on EP-AA-114-F-01 and answers “ YES ” to the first subsequent question.		—

Examiner NOTE: A “Liquid” release due to the event is defined as “The movement of radioactive liquid beyond the protected area boundary or beyond a spill berm for liquid storage outside of the protected area, that is a result of, or caused by, the emergency event. Since an emergency event has been declared (UE), and the radioactive resin/sludge slurry is liquid-based, the existence of a liquid release should be evaluated.

Steps and Performance Standards

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	CRITICAL	GRADE (S/U)
7	(Directed Action) Using EP-AA-114-F-01, PWR RELEASE IN PROGRESS DETERMINATION GUIDANCE, determine whether a radioactive release is in progress, and IF SO, whether the release is liquid, airborne or both; and monitored or unmonitored.	Using EP-AA-114-F-15, the operator recognizes that the release of radioactive liquid is caused by the emergency event (i.e., tornado).		_____
	<u>PWR Liquid</u> Is the release a direct result of or caused by the Emergency Event? ⁽¹⁾	The operator addresses the PWR Liquid flow chart on EP-AA-114-F-01 and answers “YES” to the second subsequent question.		_____
	1. If a release of radioactivity is identified, then it must be a direct result of, or caused by, the classified or a concurrent emergency event and not attributed to the normal operation or shutdown of plant systems to be considered a “Release in Progress.”	The operator is led to conclude that “a release is in progress” with respect to a liquid release. See Attached KEY	✓	_____

Termination Criteria: JPM is terminated when Applicant states the task is complete.

CUE: This terminates the JPM.

End Time: _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2024 NRC Admin – JPM A3 SRO

Date Performed:

Examinee:

Evaluator:

Time to Complete:

Question Documentation:

Result: SAT _____ UNSAT _____

Evaluator's Signature: _____ Date: _____

VERIFICATION OF COMPLETION

KEY:

Answers:

IS a Release in progress?	☒ YES ☐ NO
<u>If applicable (Circle ONE):</u> The radioactive release is:	Airborne ONLY ☒ Liquid ONLY ☐ Airborne and Liquid
<u>If applicable (Circle ONE):</u> The radioactive release is:	Monitored / ☒ Unmonitored

JPM CUE SHEET

INITIAL CONDITIONS:

- The plant is operating at 100% power.
- A Tornado struck the Site.
- The Shift Manager has declared an **Unusual Event** under **HU6 Hazardous Event**.
- An initial report from the field indicates that the Tanker Truck carrying resin fines from the Spent Resin Tanks and Chem Nuclear System has been overturned and is currently located in the roadway/corner by the Engineering Building.
- Two of the top covers have broken off and the contents (resin/sludge slurry) have spilled onto the roadway and entered the storm drains by the Screen House.
- Initial responders including Radiation Protection personnel (RP) have responded to the scene.
- Within 10 minutes, RP reports the following:
 - The resin/sludge slurry spill has a reading of 2.5 R/hr on contact.
 - A roped off area surrounding the spill has maximum general area readings of 25 mr/hr at the boundary.
 - Multiple air samples at the scene reveal less than minimum detectable for beta-gamma and alpha radiation.
 - The spill has been contained within a temporary berm erected by responders.
 - No other radiological assessments have been made at this time.

INITIATING CUE:

Using EP-AA-114-F-01, PWR RELEASE IN PROGRESS DETERMINATION GUIDANCE, determine whether a radioactive release is in progress, and IF SO, whether the release is liquid, airborne or both; and monitored or unmonitored.

Answers:

IS a Release in progress?	YES / NO
<u>If applicable (Circle ONE):</u> The radioactive release is:	Airborne ONLY / Liquid ONLY / Airborne and Liquid
<u>If applicable (Circle ONE):</u> The radioactive release is:	Monitored / Unmonitored

NRC EXAM

Admin JPM A4 SRO

Job Performance Measure Template

Facility: Ginna JPM No.: 2024 NRC Admin – JPM A4 SRO

Task Title: Update Protective Action Recommendation Task No.:

System: N/A K/A Reference: 2.4.44 (4.4)

Time-Critical Task: YES Alternate Path: NO

Validated Time: 5 Minutes

Method of Testing: Simulated Performance: _____ Actual Performance: X

Location: Classroom X Simulator _____ Plant _____

Task Standard: The task is satisfactorily met when the Applicant has determined the Protective Action Recommendation due to the changed meteorological condition and prepared EP-CE-114-100-F-07, GNP NY STATE RADIOLOGICAL EMERGENCY DATA FORM (PART 1) per the provided KEY within 15 minutes.

Required Materials: Handout 1: EP-AA-111-F-13 marked up through Page 1
Handout 2: EP-AA-111 marked up through Step 4.2.9
Handout 3: EP-CE-114-100-F-07, completed and approved 30 minutes ago
Handout 4: Blank Copy of EP-CE-114-100-F-07

General References: EP-AA-111, EMERGENCY CLASSIFICATION AND PROTECTIVE ACTION RECOMMENDATIONS, Rev 24
EP-AA-111-F-13, GINNA PAR FLOWCHART, Rev B
EP-CE-114-100-F-07, GNP NY STATE RADIOLOGICAL EMERGENCY DATA FORM (PART 1), Rev F
EP-AA-112-100-F-01, SHIFT EMERGENCY DIRECTOR CHECKLIST, Rev AD
EP-AA-114, NOTIFICATIONS, Rev 17

Job Performance Measure Template

<u>Critical Step Justification</u>	
Step 5	This step is critical because using TABLE A and a Wind Direction of 120 degrees to determine that M-1 needs to Evacuate is necessary to determine Protective Action Recommendation.
Step 6	This step is critical because entering the necessary data on EP-CE-114-100-F-07, GNP NY STATE RADIOLOGICAL EMERGENCY DATA FORM (PART 1) is necessary to prepare EP-CE-114-100-F-07, GNP NY STATE RADIOLOGICAL EMERGENCY DATA FORM (PART 1) per the provided KEY within 15 minutes.

Job Performance Measure Template

Notes to Examiner:**READ TO THE EXAMINEE**

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Provide Applicant with Initial Conditions/Cue (Last Page of this JPM) and Handouts 1-4.**Initial Conditions:**

- The Emergency Director has declared a General Emergency based upon EAL FG1.
- The Initial EP-CE-114-100-F-7, GNP NY STATE RADIOLOGICAL EMERGENCY DATA FORM (PART 1), was prepared, approved and transmitted 30 minutes ago.
- The Emergency Response Organization has been activated but is still responding.
- You have been assigned to continue to evaluate the Ginna Protective Action Recommendation (PAR) Flowchart per Step 4.2.9 of EP-AA-111, EMERGENCY CLASSIFICATIONS AND PROTECTIVE ACTION RECOMMENDATIONS.
- The plant conditions reported 30 minutes ago have NOT changed.
- The following changes in Meteorological Data is now observed:
 - Wind Speed at 33 feet - 18 mph
 - Wind Temperature at 33 feet – 74.9°
 - Wind Temperature at 150 feet – 73.8°
 - Wind Direction at 33 feet – 120 degrees

Initiating Cue:

Evaluate the changed conditions and prepare an update to the PAR by completing and updating EP-CE-114-100-F-7, GNP NY STATE RADIOLOGICAL EMERGENCY DATA FORM (PART 1).

This is a Time Critical JPM

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

Information For Evaluator's Use:

UNSAT requires written comments on respective step.

✓ Denotes critical steps.

The timeclock starts when the Applicant acknowledges the Initiating Cue.

Steps and Performance Standards

Start Time: _____

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	<u>CRITICAL</u>	<u>GRADE (S/U)</u>
CUE	Provide Applicant with Initial Conditions/Cue (Last Page of this JPM) and Handouts 1-4.			
1	Directed Action: Evaluate the changed conditions. (EP-AA-111, Step 4.2.9) CONTINUE to evaluate applicable Flowchart entry points for PAR upgrades.	The operator recognizes that after completion of the Initial Protective Action, the operator must continue to evaluate Entry Points on Page 2 of EP-AA-111-F-13.		___
2	(Ginna PAR Flowchart Page 2 of 4 Entry Points (Gray Boxes at Top) Changes in wind direction affecting new downwind areas. (Table A) Conditions exist which would require the classification of a General Emergency per the EAL's. (See Notes 1 and 2) Dose Assessment Results for Actual Release Exceed PAGs. OR Field Team Exposure Rates >1R/hr in any ERPA Notes 1. Any area > 1R/hr is considered to have exceeded PAGs 2. For assessment results > 10 miles, see EP-AA-111	The operator recognizes that the changes involve changes in wind direction affecting new downwind areas and enters the Flowchart to the next question.		___
		The operator recognizes that plant conditions reported 30 minutes ago have NOT changed (Initial Conditions), that a General Emergency has previously existed, and that the flowchart is NOT entered at this point.		___
		The operator reads Notes 1 and 2 and proceeds		___
		The operator recognizes that plant conditions reported 30 minutes ago have NOT changed (Initial Conditions), that no radiation release is in progress, and that the flowchart is NOT entered at this point.		___

Steps and Performance Standards

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	CRITICAL	GRADE (S/U)
3	(Ginna PAR Flowchart Page 2, 1 st Question After "Changes in Wind Direction Affecting New Downwind Areas" Entry Point) Do conditions exist which would require the classification of a General Emergency per the EAL's?	The operator recognizes that a General Emergency has been previously declared, that plant conditions reported 30 minutes ago have NOT changed (Initial Conditions), and answers YES and proceeds to the next question.		—
4	(Ginna PAR Flowchart Page 2, 2 nd Question After "Changes in Wind Direction Affecting New Downwind Areas" Entry Point) Is this PAR from the Control Room?	The operator recognizes that this PAR is from the Control Room and answers YES , and proceeds.		—
5	(Ginna PAR Flowchart Page 2) 1.Evacuate downwind areas. (Table A) AND 2.Evacuate all areas where PAGs were exceeded	The operator using TABLE A and a Wind Direction of 120 degrees, determines that M-1 needs to Evacuate in addition to the ERPAs that have previously been evacuated.	✓	—
		The operator recognizes that plant conditions reported 30 minutes ago have NOT changed (Initial Conditions), that no radiation release is in progress, and that there has been no report of any PAGs that were exceeded, and proceeds.		—

Steps and Performance Standards

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	CRITICAL	GRADE (S/U)
6	Directed Action: Prepare an update to the PAR by completing and updating EP-CE-114-100-F-7, GNP NY STATE RADIOLOGICAL EMERGENCY DATA FORM (PART 1).	The operator enters the necessary data on EP-CE-114-100-F-7, GNP NY STATE RADIOLOGICAL EMERGENCY DATA FORM (PART 1) (Handout #4). See Provided KEY	✓	—

Termination Criteria: JPM is terminated when Applicant states the task is complete.

CUE: This terminates the JPM.

End Time: _____

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VERIFICATION OF COMPLETION

Job Performance Measure No.: 2024 NRC Admin – JPM A4 SRO

Date Performed:

Examinee:

Evaluator:

Time to Complete:

Question Documentation:

Result: SAT _____ UNSAT _____

Evaluator's Signature: _____ Date: _____

JPM CUE SHEET

INITIAL CONDITIONS:

- The Emergency Director has declared a General Emergency based upon EAL FG1.
- The Initial EP-CE-114-100-F-7, GNP NY STATE RADIOLOGICAL EMERGENCY DATA FORM (PART 1), was prepared, approved and transmitted 30 minutes ago.
- The Emergency Response Organization has been activated but is still responding.
- You have been assigned to continue to evaluate the Ginna Protective Action Recommendation (PAR) Flowchart per Step 4.2.9 of EP-AA-111, EMERGENCY CLASSIFICATIONS AND PROTECTIVE ACTION RECOMMENDATIONS.
- The plant conditions reported 30 minutes ago have NOT changed.
- The following changes in Meteorological Data is now observed:
 - Wind Speed at 33 feet - 18 mph
 - Wind Temperature at 33 feet – 74.9°
 - Wind Temperature at 150 feet – 73.8°
 - Wind Direction at 33 feet – 120 degrees

INITIATING CUE:

Evaluate the changed conditions and prepare an update to the PAR by completing and updating EP-CE-114-100-F-7, GNP NY STATE RADIOLOGICAL EMERGENCY DATA FORM (PART 1).

This is a Time Critical JPM

**GNP NY STATE RADIOLOGICAL EMERGENCY DATA FORM (PART 1)**

RECS Message Number: _____

"This is Ginna Station. Please stand by for roll call. "New York State" ☐ "Monroe County" ☐ "Wayne County" ☐

1. Message transmitted at: Date _____ Time: _____ Via: A. RECS B. Other		2. This is: A. An Actual Emergency B. An Exercise	
3. Classification / Condition: A. UNUSUAL EVENT C. SITE AREA EMERGENCY E. RECOVERY B. ALERT D. GENERAL EMERGENCY F. TERMINATION			
4. Classification / Condition Time: This Emergency Classification declared at: Date Current Time T=30			
5. Release of radioactive materials due to the classified event: A. No radiological release in progress B. AIRBORNE radiological release in progress C. LIQUID radiological release in progress D. Radiological release TERMINATED			
6. Protective Actions Recommendations: A. No need for Protective Actions outside the site boundary B. Evacuate and implement the KI plan for the following ERPA's (all remaining ERPA's to monitor and prepare) W1 W2 W3 W4 W5 W6 W7 W-Lake M1 M2 M3 M4 M5 M6 M7 M8 M9 M-Lake C. Shelter and implement the KI plan for the following ERPA's (all remaining ERPA's to monitor and prepare) W1 W2 W3 W4 W5 W6 W7 M1 M2 M3 M4 M5 M6 M7 M8 M9			
7. EAL Number: EAL Number FG1		Brief Event Description and other significant information Loss of ANY two barriers AND Loss or Potential Loss of the third barrier.	
8. Reactor Status: A. Operational B. Shutdown Date: Current Time: T=0 (subcritical)			
9. Wind Speed: A. 18 Miles/hour at elevation 33 feet			
10. Wind Direction: From: 120 degrees at elevation: 33 feet			
11. Stability Class: UNSTABLE NEUTRAL STABLE Alpha Bravo Charlie Delta Echo Foxtrot Golf ΔT 73.8 - 74.9 = -1.1 150 ft temp 33 ft temp -1.17 -1.05 -0.94 -0.35 +0.94 +2.57			
12. Reported by: Name: _____ Area Code: _____ Number: _____ Time: _____			

* check box if information has changed since last form was transmitted.

"Please stand by for roll call: New York State copy?" ☐ "Monroe County copy?" ☐ "Wayne County copy?" ☐**FOR GINNA USE ONLY:**

Time Prepared:

Time Approved:

Completed form sent to EP Director

Prepared By:

Approved By:

WAYNE COUNTY USE ONLY:Routing: ☐ ALL ☐ Dose Assess Calculator ☐ RDO ☐ Ginna Tech Rep ☐ Field Team Coord. ☐ Plotter☐ NYS Rad Health ☐ Ops Officer ☐ NYS Health (Ops room) ☐ Director ☐ PIO**MONROE COUNTY USE ONLY:**

Distribution: 1. Command Room (OEP Administrator) 2. EOC (Operations Desk)

3. Assessment Area (Rad Officer, Health, Field Team Coordinator, Computer Operations, Tech Rep) 4. Evaluator 5. File

NRC EXAM

SIM JPM A

Job Performance Measure Template

Facility: Ginna JPM No.: 2024 NRC Systems - Control Room JPM A

Task Title: Synchronize Generator On-Line with Improper Load Pickup Task No.:

System: Main Turbine Generator System K/A Reference: 045 A2.17 (3.5/3.4)

Time-Critical Task: NO Alternate Path: YES

Validated Time: 16 Minutes

Method of Testing: Simulated Performance: _____ Actual Performance: X

Location: Classroom _____ Simulator X Plant _____

Task Standard: The task is satisfactorily met when the applicant has synchronized the Main Generator to the Electrical Grid, and when it is recognized that the Automatic Load Pickup has failed to function, has manually loaded the Turbine to 40 to 60 MWe, without reverse powering the Main Generator.

Required Materials: Handout 1: O-1.2 (Pages 1-14, 58-59, and 63-81)
Handout 2: Attachment 2 of O-1.2 (No Load Excitation Limits for #1 and #11 Transformers)

General References: O-1.2, PLANT STARTUP FROM HOT SHUTDOWN TO FULL LOAD, Rev 237
FIG-13.0, FIGURE BACK PRESSURE, Rev 0

Job Performance Measure Template

<u>Critical Step Justification</u>	
Step 2	This step is critical because rotating CIRCUIT BKR 1G 13A72 SYNCHROSCOPE control switch to the ON position is necessary to synchronize the Main Generator to the Electrical Grid.
Step 3	This step is critical because adjusting Turbine Control setter up or down 1 rpm and depressing the GO pushbutton until the synchroscope is rotating slowly in the FAST direction is necessary to synchronize the Main Generator to the Electrical Grid.
Step 5	This step is critical because placing the BASE ADJUSTER to RAISE until INCOMING VOLTMETER (GENERATOR) voltage is slightly higher than RUNNING VOLTMETER (SYSTEM) voltage is necessary to synchronize the Main Generator to the Electrical Grid.
Step 16	This step is critical because rotating the 1G13A72 breaker pistol-grip switch clockwise to the CLOSE position when the synchroscope is approaching 12 o'clock is necessary to synchronize the Main Generator to the Electrical Grid.
<u>Alternate Path Critical Step Justification</u>	
Step 18	This step is critical because depressing the TURB MANUAL pushbutton and then intermittently depressing the MANUAL CONTROL VALVE RAISE pushbutton to adjust generator gross load is necessary to manually load the Turbine to 40 to 60 MWe, without reverse powering the Main Generator.

**SIMULATOR OPERATIONAL GUIDELINES
SIMULATOR REQUIREMENTS**

1. Reset to **IC-003** (BOL GEN Sync 19% Pwr).
2. Withdraw control rods to ensure reactor power > 15% but < 20%.
3. Ensure FRVs in AUTO.
4. Ensure Generator output voltage at 19 KV.
5. Insert **MALF TUR18, 1 MW** (Failure of Turbine Auto Load Pickup).
6. Adjust Grid frequency [**Remote E-MIS11=59.8**].
7. Ensure Grid voltage [**Remote E-MIS10 = 114.2 (to prevent exceeding O-1.2, Attachment 2 limit when matching voltages)**] is low enough to allow the Examinee to adjust incoming voltage to slightly greater than system voltage, while maintaining Generator voltage < 19.3 KV (Step 6.13.4).
8. Set **REM EDS015** to **Closed** (Sta 13A Man Disconnect 1G13A73).
9. Set **REM EDS014** to **Closed** (Sta 13A Man Disconnect 9X13A71).
10. Set **REM EDS046=RESET** (Voltage Regulator reset) to clear J-27 alarm.
11. Select PBACK on the PPCS Screen in front of the Turbine Control Station.
12. Complete Steps 6.13.1 & 2 of O-1.2.
13. Place Simulator in FREEZE.
14. Save to IC-159 (January, 2024).
15. Reset to IC-159.
16. Place Simulator in RUN when directed by Examiner.

The SIM DRIVER must control the primary plant (HCO) during the performance of the JPM.

Notes to Examiner:

This JPM will be pre-briefed in the Briefing Room. A full copy of O-1.2, PLANT STARTUP FROM HOT SHUTDOWN TO FULL LOAD, should be available to the Applicant.

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Provide Applicant with Initial Conditions/Cue (Last Page of this JPM), and Handouts 1&2.

- Initial Conditions:
- The Generator is being started following a refueling outage.
 - The Generator is at 1800 rpm and the turbine is fully warmed up.
 - The Generator output voltage is 19KV.
 - MTC is negative for this Startup.
 - You are the CO.

- Initiating Cue:
- The US has directed you to synchronize the Generator on-line in accordance with O-1.2, PLANT STARTUP FROM HOT SHUTDOWN TO FULL LOAD, Section 6.13 starting at step 6.13.3.
 - The HCO will control the primary plant.

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

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Information For Evaluator's Use:

UNSAT requires written comments on respective step.

✓ Denotes critical steps.

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 Applicant 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 Applicant acknowledges the Initiating Cue.

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Steps and Performance Standards

Start Time: _____

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	CRITICAL	GRADE (S/U)
CUE	Provide Applicant with Initial Conditions/Cue (Last Page of this JPM), and Handouts 1&2.			
1	(O-1.2 Step 6.13.3) PLACE synchroscope switch handle in CIRCUIT BKR 1G 13A72 SYNCHROSCOPE.	The operator places synchroscope switch handle in CIRCUIT BKR 1G 13A72 SYNCHROSCOPE.		_____
Examiner NOTE: There is a single switch handle that may be placed in either CIRCUIT BKR 1G 13A72 SYNCHROSCOPE, or CIRCUIT BKR 9X 13A72 SYNCHROSCOPE.				
NOTE WHEN next step is performed, THEN MCB Alarm J-5, #11 OR #12 TRANSFORMER OUT OF SYNCH, will cycle in and out of alarm as the Generator phases in and out of sync with the grid.				
2	(O-1.2 Step 6.13.4) PLACE CIRCUIT BKR 1G 13A72 SYNCHROSCOPE control switch to ON .	The operator reads the NOTE and proceeds.		_____
		The operator rotates CIRCUIT BKR 1G 13A72 SYNCHROSCOPE control switch clockwise to the ON position.	✓	_____
Examiner NOTE: Alarm J-5 may cycle in and out of alarm per the NOTE.				
CUE	(If Alarm J-5 is cycling in and out of alarm): “The US gives you permission to allow alarm J-5 to flash.”			
NOTE - Synchroscope SHOULD be rotating <u>slow</u> in the FAST (clockwise) direction in the next step. IF Turbine Generator frequency is slightly higher than system frequency, THEN synchroscope SHOULD be rotating in the FAST (clockwise) direction. IF rotating counterclockwise, THEN a raise in speed will be required. - Maximum synchroscope rotation rate is 4 RPM for proper output breaker closure.				

Steps and Performance Standards

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	CRITICAL	GRADE (S/U)
3	(O-1.2 Step 6.13.5) IF Turbine Generator speed adjustment must be made, THEN PERFORM the following: OTHERWISE, MARK this Step N/A. 1. ADJUST SETTER up OR down 1 rpm. (Turbine EH Control Panel) 2. DEPRESS GO pushbutton. (Turbine EH Control Panel) 3. REPEAT Steps 6.13.5.1 AND 6.13.5.2 UNTIL synchroscope is rotating <u>slow</u> in the FAST (clockwise) direction. 4. VERIFY synchroscope is rotating at 4 RPM or less.	The operator reads the NOTE and proceeds.		___
		The operator observes the SYNCHROSCOPE (MCB right section) moving slowly in the SLOW direction.		___
		The operator adjusts the Turbine Control setter up or down 1 rpm and depresses the GO pushbutton until synchroscope is rotating slow in the FAST direction (Repeated as needed).	✓	___
		The operator verifies that the synchroscope is rotating at less than 4 RPM.		___
Examiner NOTES: - Up, down, and GO pushbuttons are located on EH control panel. - Digital REFERENCE and SETTER indication is located above the EH control panel. - It is likely that the operator will need to perform this action 2-3 times.				
4	(O-1.2 Step 6.13.6/6.1) WHEN Turbine is at synchronous speed, THEN REPEAT the following as necessary to ensure generator INCOMING VOLTMETER (GENERATOR) voltage is slightly higher than system RUNNING VOLTMETER (SYSTEM) voltage: 1. CHECK voltage on <u>all three</u> phases.	The operator rotates the GENERATOR VOLTMETER switch to each phase position and compares: INCOMING VOLTMETER (GENERATOR) voltage to the RUNNING VOLTMETER (SYSTEM) voltage A-B phase B-C phase C-A phase		___
Examiner NOTES: - INCOMING VOLTMETER (GENERATOR) is located to the left of the SYNCHROSCOPE. - RUNNING VOLTMETER (SYSTEM) is located to the right of the SYNCHROSCOPE.				

Steps and Performance Standards

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	CRITICAL	GRADE (S/U)
5	(O-1.2 Step 6.13.6/6.2) WHEN Turbine is at synchronous speed, THEN REPEAT the following as necessary to ensure generator INCOMING VOLTMETER (GENERATOR) voltage is slightly higher than system RUNNING VOLTMETER (SYSTEM) voltage: 2. WHILE maintaining voltage within the acceptable operating region of Attachment 2, No Load Excitation Limits for #1 and #11 Transformers, ADJUST BASE ADJUSTER to make INCOMING VOLTMETER (GENERATOR) voltage slightly higher than RUNNING VOLTMETER (SYSTEM) voltage.	The operator refers to Attachment 2.		___
		The operator observes the INCOMING VOLTMETER (GENERATOR) voltage and RUNNING VOLTMETER (SYSTEM) voltage.		___
		The operator places the BASE ADJUSTER to RAISE until INCOMING VOLTMETER (GENERATOR) voltage is slightly higher than RUNNING VOLTMETER (SYSTEM) voltage.	✓	___
		The operator does NOT allow GENERATOR voltage to exceed approximately 19.3 KV (per Attachment 2).		___
Examiner NOTE: Voltage will remain within the acceptable operating region of Attachment 2 if the operator keeps the GENERATOR voltage < approximately 19.3 KV.				
6	(O-1.2 Step 6.13.6/6.3) WHEN Turbine is at synchronous speed, THEN REPEAT the following as necessary to ensure generator INCOMING VOLTMETER (GENERATOR) voltage is slightly higher than system RUNNING VOLTMETER (SYSTEM) voltage: 3. IF INCOMING VOLTMETER (GENERATOR) voltage CANNOT be made slightly higher than RUNNING VOLTMETER (SYSTEM) voltage, THEN PERFORM the following: OTHERWISE , MARK this Step N/A.	The operator marks this step NA, and proceeds.		___

Steps and Performance Standards

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	CRITICAL	GRADE (S/U)
7	(O-1.2 Step 6.13.7) IF either GENERATOR DISCONNECT 1G13A71 OR GENERATOR DISCONNECT 9X13A73 (green) OPEN light is ILLUMINATED , THEN PLACE CIRCUIT BKR 1G 13A72 SYNCHROSCOPE control switch to OFF . OTHERWISE , MARK this step N/A.	The operator marks this Step N/A, and proceeds.		___
NOTE Disconnects are operated per GME-13-02-HVDISC, Operation Of High Voltage Disconnects.				
8	(O-1.2 Step 6.13.8) WHEN disconnects are closed at 13A, THEN OBSERVE the following (red) CLOSED lights ILLUMINATED : - GENERATOR DISCONNECT 1G13A71 - GENERATOR DISCONNECT 9X13A73	The operator reads the NOTE and proceeds.		___
		The operator observes the 1G13A71 Red status light is LIT and the Green status light is OFF.		___
		The operator observes the 9X13A73 Red status light is LIT and the Green status light is OFF.		___
9	(O-1.2 Step 6.13.9) ENSURE Reactor power is between 15% to 20%.	The operator observes Power Range channels NI-41C, NI-42C, NI-43C, and NI-44C between 15% and 20% (Or equivalent).		___
CUE	(If asked to report power level): As the HCO, "Power level is 19% (current power level)".			
10	(O-1.2 Step 6.13.10) REVIEW CAUTION at beginning of Subsection 6.9.	The operator reads CAUTIONs prior to Step 6.9.1, and proceeds.		___
11	(O-1.2 Step 6.13.11) WHILE maintaining RCS TAVG with control rods during Steps 6.13.12 through 6.13.14 to sync the generator, ENSURE PRZR Pressure is maintained $\geq$ 2205 PSIG. <CP>	The operator discusses the step with the HCO, and proceeds.		___
CUE	As the HCO, acknowledge.			

Steps and Performance Standards

STEP	PERFORMANCE	STANDARD	CRITICAL	GRADE (S/U)
12	(O-1.2 Step 6.13.12) ENSURE CIRCUIT BKR 1G 13A72 SYNCHROSCOPE control switch in ON .	The operator observes that the CIRCUIT BKR 1G 13A72 SYNCHROSCOPE control switch is in ON.		
CUE	(If Alarm J-5 is cycling in and out of alarm): "The US gives you permission to allow alarm J-5 to flash."			
CAUTION At low MWe output, Turbine loading requirements SHALL be observed PER EOP, FIG-13.0, Figure Back Pressure. - Operation in the Avoid Region SHOULD be minimized. - Operation in the DO NOT OPERATE region SHALL be limited to 5 minutes.				
13	(O-1.2 Step 6.13.13/13.1) PERFORM the following to CLOSE CIRCUIT BKR 1G 13A72 BUS 1 115KV: 1. WITH RG&E Energy Control Center concurrence, ADJUST BASE ADJUSTER so generator INCOMING VOLTMETER (GENERATOR) voltage is slightly higher than system RUNNING VOLTMETER (SYSTEM) voltage as indicated on <u>all three</u> phases.	The operator reads the CAUTIONs and proceeds.		
		The operator refers to FIG-13.0 or calls up PBACK on the PPCS.		
		The operator observes the INCOMING VOLTMETER (GENERATOR) voltage and RUNNING VOLTMETER (SYSTEM) voltage and determines that no adjustment is needed.		
Examiner NOTE: This action was completed previously. Further adjustment should not be required.				
14	(O-1.2 Step 6.13.13/13.2) PERFORM the following to CLOSE CIRCUIT BKR 1G 13A72 BUS 1 115KV: 2. IF INCOMING VOLTMETER (GENERATOR) voltage CANNOT be adjusted slightly higher than system RUNNING VOLTMETER (SYSTEM) voltage, THEN PERFORM the following: OTHERWISE , MARK this Step N/A.	The operator marks Step 6.13.13.2.a and b N/A, and proceeds.		

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	<u>CRITICAL</u>	<u>GRADE (S/U)</u>
15	(O-1.2 Step 6.13.13/13.3) PERFORM the following to CLOSE CIRCUIT BKR 1G 13A72 BUS 1 115KV: 3. REVIEW Steps 6.13.13.4 thru 6.13.13.6 prior to closing CIRCUIT BKR 1G 13A72 BUS 1 115KV to ensure timely actions are taken for automatic load pickup to preclude a generator trip from reverse power.	The operator reviews Steps 6.13.13.4 thru 6.13.13.6.		___
Examiner NOTE: The operator may place a CCV identifier on the MCB below the Turbine MANUAL pushbutton.				
NOTE MCB Alarm J-5, #11 or #12 TRANSFORMER OUT OF SYNCH, will stay EXTINGUISHED during performance of next step.				
16	(O-1.2 Step 6.13.13/13.4/4.a) PERFORM the following to CLOSE CIRCUIT BKR 1G 13A72 BUS 1 115KV: 4. WHEN synchroscope rotating <u>slow</u> in the FAST (clockwise) direction at 4 rpm OR less AND approaching 12 o'clock position, THEN CLOSE CIRCUIT BKR 1G 13A72 BUS 1 115KV so breaker closes at the approximate point of synchronism (12 o'clock). IF CIRCUIT BKR 1G 13A72 BUS 1 115KV does NOT CLOSE , THEN N/A the remainder of Step 6.13.13 AND PERFORM Step 6.13.14. a. RECORD time of closure Time _____ Hours	The operator reads the NOTE and proceeds.		___
		The operator observes the synchroscope rotating slowly in the FAST direction at ≤ 4 rpm.		___
		The operator rotates the 1G 13A72 breaker pistol-grip switch clockwise to the CLOSE position when the synchroscope is approaching 12 o'clock.	✓	___
		The operator observes the 1G 13A72 Red status light LIT and Green status light OFF.		___
		The operator records time of closure.		___
Examiner NOTE: Operator may not record breaker closure time until after automatic load pickup is verified. This is acceptable to ensure timely actions are taken for automatic load pickup to preclude a generator trip from reverse power.				

Steps and Performance Standards

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	<u>CRITICAL</u>	<u>GRADE (S/U)</u>
CUE	IF the Operator communicates actions to the US, as US, acknowledge.			
EXAMINER NOTE: ALTERNATE PATH DECISION POINT OCCURS IN THE NEXT STEP				
NOTE Load is to be maintained between 40 to 60 MW UNTIL hold time in Step 6.14.6.2 is completed.				
17	(O-1.2 Step 6.13.13/13.5) PERFORM the following to CLOSE CIRCUIT BKR 1G 13A72 BUS 1 115KV: 5. VERIFY Automatic load pickup occurs within approximately 10 seconds.	The operator reads the NOTE and proceeds.		___
		The operator observes Generator load and determines that automatic load pickup is NOT raising load to the expected range.		___
18	(O-1.2 Step 6.13.13/13.6.a-b) PERFORM the following to CLOSE CIRCUIT BKR 1G 13A72 BUS 1 115KV: 6. IF automatic load pickup does NOT occur within approximately 10 seconds, THEN PERFORM the following: OTHERWISE, MARK this Step N/A. a. DEPRESS TURB. MANUAL pushbutton. (Turbine EH Control Panel) b. INTERMITTENTLY DEPRESS the following pushbuttons as necessary to adjust generator gross load between 40 to 60 MW: - MANUAL CONTROL VALVE LOWER - MANUAL CONTROL VALVE RAISE	The operator depresses TURB MANUAL pushbutton.	✓	___
		The operator observes OPER PAN light off and TURB MANUAL light is LIT.		___
		The operator observes digital Generator Gross MW indication.		___
		The operator intermittently depresses the MANUAL CONTROL VALVE RAISE pushbutton to adjust Generator gross load to between 40 to 60 MW before the Main Generator trips on Reverse Power.		✓
CUE	IF the Operator communicates actions to the US, as US, acknowledge.			
Examiner NOTE: The Main Generator will Reverse Power in about 55-60 seconds if the Operator does NOT take this action (i.e., JPM Failure).				

Steps and Performance Standards

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	CRITICAL	GRADE (S/U)
19	(O-1.2 Step 6.13.13/13.7) PERFORM the following to CLOSE CIRCUIT BKR 1G 13A72 BUS 1 115KV: 7. PLACE CIRCUIT BKR 1G 13A72 SYNCHROSCOPE control switch to OFF .	The operator rotates CIRCUIT BKR 1G 13A72 SYNCHROSCOPE control switch counterclockwise to the OFF position.		

Termination Criteria: The operator has synchronized the Main Generator to the Electrical Grid.

CUE: This terminates the JPM.

End Time: _____

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VERIFICATION OF COMPLETION

Job Performance Measure No.: 2024 NRC Systems - Control Room JPM A

Date Performed:

Examinee:

Evaluator:

Time to Complete:

Question Documentation:

Result: SAT _____ UNSAT _____

Evaluator's Signature: _____ Date: _____

JPM CUE SHEET

INITIAL CONDITIONS:

- The Generator is being started following a refueling outage.
- The Generator is at 1800 rpm and the turbine is fully warmed up.
- The Generator output voltage is 19KV.
- MTC is negative for this Startup.
- You are the CO.

INITIATING CUE:

- The US has directed you to synchronize the Generator on-line in accordance with O-1.2, PLANT STARTUP FROM HOT SHUTDOWN TO FULL LOAD, Section 6.13 starting at step 6.13.3.
- The HCO will control the primary plant.

NRC EXAM

SIM JPM B

Job Performance Measure Template

Facility: Ginna JPM No.: 2024 NRC Systems - Control Room JPM B

Task Title: Verify Containment Isolation and Heat Removal – Alternate Path Task No.:

System: Containment System K/A Reference: W EPE E14 EA1.05 (3.4)

Time-Critical Task: NO Alternate Path: YES

Validated Time: 10 Minutes

Method of Testing: Simulated Performance: _____ Actual Performance: X

Location: Classroom _____ Simulator X Plant _____

Task Standard: The task is satisfactorily met when the applicant has established Containment Spray flow including flow from the Sodium Hydroxide Tank from the B Train of the Containment Spray System and Containment Isolation, including alternate actions which require manually closing MOV-817 and stopping the Reactor Coolant Pumps.

Required Materials: Handout 1: Blank copy of FR-Z.1, RESPONSE TO HIGH CONTAINMENT PRESSURE
Handout 2: Blank copy of ATT-3.0, ATTACHMENT CI/CVI.

General References: AR-A-27, CONTAINMENT SPRAY 2/3 + 2/3 > 28 PSI, Rev 009
AR-A-28, CONTAINMENT SPRAY CHANNEL ALERT 2/3 > 28 PSI, Rev 008
F-0.5, CONTAINMENT CSFST, Rev 00200
FR-Z.1, RESPONSE TO HIGH CONTAINMENT PRESSURE, Rev 013
ATT-3.0, ATTACHMENT CI/CVI, Rev 014
A-503.1, EMERGENCY AND ABNORMAL OPERATING PROCEDURES USER'S GUIDE, Rev 062

Job Performance Measure Template

<u>Critical Step Justification</u>	
Step 3	This step is critical because contacting an EO and direct that V-815A be locally closed is necessary to establish Containment Isolation.
Step 6	This step is critical because placing the 'B' Containment Spray Pump Control Switch to START is necessary to establish Containment Spray flow including flow from the Sodium Hydroxide Tank from the B Train of the Containment Spray System.
Step 8	This step is critical because placing the Control Switch for AOV-836B in OPEN is necessary to establish Containment Spray flow including flow from the Sodium Hydroxide Tank from the B Train of the Containment Spray System.
Step 10	This step is critical because placing the MOV-860D Control Switch in OPEN is necessary to establish Containment Spray flow including flow from the Sodium Hydroxide Tank from the B Train of the Containment Spray System.
<u>Alternate Path Critical Step Justification</u>	
Step 11	This step is critical because contacting and directing that the EO unlock and close the breaker for MOV-817, placing the 'A' RCP Control Switch to STOP, and placing the MOV-817 Control Switch to CLOSE is necessary to establish Containment Isolation, including alternate actions which require manually closing MOV-817 and stopping the Reactor Coolant Pumps.

**SIMULATOR OPERATIONAL GUIDELINES
SIMULATOR REQUIREMENTS**

1. Initiate to **any 100% IC (IC-19)**.
2. Insert **Malfunctions RPS08A and RPS08B, No Manual** (Failure of CS Automatic Actuation/No Manual, Both Trains).
3. Insert **Malfunction RPS11-A5A and RPS11-A5B, Fail As-Is** (MOV-813 and 814 fail as-is on T-Signal, cannot be operated).
4. Insert **Malfunction RPS03A** (Containment Spray Pump 1A Fails to START).
5. Insert OVR-SIS 14D = False (MOV-860C Fails to OPEN on demand)
6. Insert **REM-EDS054, Closed, (Breaker for MOV-817)**.
7. Place Simulator in RUN.
8. Insert **Malfunction STM11A, 1.7e+05** (Steam Line Break Inside Containment, 'A' S/G).
9. Carry out actions of E-0 and transition to E-2.
10. Upon transition to E-2, **raise** malfunction **STM11A to 1.7e+07** (Steam Rupture Inside Containment, 'A' S/G).
11. Ensure Annunciator A-28 is LIT, that Containment Pressure is > 28 psig, and that CS has NOT automatically actuated.
12. Ensure BOTH RCPs are RUNNING.
13. Place Simulator in FREEZE.
14. Reset to IC-160 (January, 2024)
15. Place Simulator in RUN when directed by examiner.

Notes to Examiner:**READ TO THE EXAMINEE**

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Provide Applicant with Initial Conditions/Cue (Last Page of this JPM), and Handout 1.

Initial Conditions:	• The plant tripped from 100% power and Safety Injection has actuated. • The crew entered E-0, REACTOR TRIP OR SAFETY INJECTION, and then transitioned to E-2, FAULTED STEAM GENERATOR ISOLATION. • Due to a degrading transient, an Orange Path now exists on the Containment Critical Safety Function Status Tree. • You are the HCO.

Initiating Cue:	The US has directed you to verify Containment Isolation and Heat Removal systems are operating as expected by performing FR-Z.1, RESPONSE TO HIGH CONTAINMENT PRESSURE, starting at Step 1.

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

.....

Information For Evaluator's Use:

UNSAT requires written comments on respective step.

✓ Denotes critical steps.

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 Applicant 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 Applicant acknowledges the Initiating Cue.

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Steps and Performance Standards

Start Time: _____

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	CRITICAL	GRADE (S/U)
CUE	Provide Applicant with Initial Conditions/Cue (Last Page of this JPM), and Handout 1.			
NOTE: FOLDOUT Page should be open and monitored periodically.				
1	(FR-Z.1 Step 1) Verify All CI And CVI Valve Status Lights - BRIGHT	The operator reads the NOTE and proceeds.		___
		The operator observes all CI And CVI Valve Status Lights are BRIGHT <u>except</u> MOV-813 and MOV-814.		___
		The operator proceeds to the Step 1 RNO.		___
Examiner NOTE: At any time during this JPM, the operator may recognize that automatic actions have failed, and take manual action as needed to operate equipment as needed (See A-503.1, Step 5.3.D, Manual Backup). While the operator <i>may</i> take this action, and it is permitted by procedures; if the action is not taken the operator will still be successful by adherence to the procedure assigned.				
Examiner NOTE: Any attempt by the operator to actuate CS by depressing two MCB pushbuttons simultaneously will not be successful (pushbutton operation has failed).				
2	(FR-Z.1 Step 1 RNO) <u>IF</u> flow path <u>NOT</u> required, <u>THEN</u> manually close affected CI and CVI valves. <u>IF</u> valves can <u>NOT</u> be verified closed by MCB indication, <u>THEN</u> close alternate isolation valves. (Refer to ATT-3.0, ATTACHMENT CI/CVI).	The operator recognizes that the Rx Support Cooler CCW flowpaths are NOT required under the current conditions.		___
		The operator observes the MOV-813 Red status light is LIT, and the Green status light is OFF.		___
		The operator places the MOV-813 Control Switch to CLOSE, and observes Red status light is LIT, and the Green status light is OFF.		___
		The operator observes the MOV-814 Red status light is LIT, and the Green status light is OFF.		___

Steps and Performance Standards

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	CRITICAL	GRADE (S/U)
2 (cont'd)		The operator places the MOV-814 Control Switch to CLOSE, and observes Red status light is LIT, and the Green status light is OFF.		___
		The operator refers to ATT-3.0.		___
CUE	When the operator states that ATT-3.0 must be entered, PROVIDE <u>Handout 2 (ATT-3.0)</u> .			
NOTE: 1. Locked valve key may be required for local operations. 2. For each of the following AUTO ISOL VALVES that will not close, take the ALL actions directed in the ALTERNATE ISOLATION column. 3. Valves to be isolated when directed from ER-FIRE.1, ALTERNATE SHUTDOWN FOR CONTROL ROOM ABANDONMENT will be annotated with (ER-FIRE.1).				
3	(ATT-3.0, MOV-813 (CCW)) Locally close MOV-813 (AB Int Level).	The operator reads the Notes and proceeds.		___
		The operator will contact an EO and direct that MOV-813 be locally closed.		___
CUE	IF the operator waits for the EO response on local operation of MOV-813, prior to proceeding to the check of MOV-814, THEN report as the EO that MOV-813 will NOT close manually. FOLLOW the action of JPM Step 11; THEN return to JPM Step 3 below and continue.			
3 (Cont'd)	(ATT-3.0 MOV-814 (CCW)) Close V-815A (AB INT LEVEL)	The operator will contact an EO and direct that V-815A be locally closed.	✓	___
		The operator will proceed to Step 2 of FR-Z.1 while the local action is taking place.		___
CUE	IF the operator waits for the EO response on local operation of V-815A, prior to proceeding to FR-Z.1 Step 2/2.a below, THEN report as the EO that V-815A has been CLOSED, and continue.			

Steps and Performance Standards

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	<u>CRITICAL</u>	<u>GRADE (S/U)</u>
SIM DRIVER NOTE: The EO response will depend on the action of the operator. If the operator provides the EO direction and continues while waiting for a response (As expected), the EO response will be delayed until Performance Step 10. At that time provide the following: As the EO, report that V-815A has been locally closed, and report that MOV-813 will NOT operate manually. There is NO Remote for V-815A (Not Modeled). IF the operator waits for an EO response prior to continuing with the procedure, the Examiner will provide the EO cues; and PERFORM the local EO Actions listed in Step 11 as required.				
<u>CAUTION</u> IF ECA-1.1, LOSS OF EMERGENCY COOLANT RECIRCULATION, IS IN EFFECT, <u>THEN</u> CNMT SPRAY SHOULD BE OPERATED AS DIRECTED IN ECA-1.1, RATHER THAN STEP 2 BELOW. IF E-1, LOSS OF REACTOR OR SECONDARY COOLANT, IS IN EFFECT, <u>THEN</u> CNMT SPRAY SHOULD BE OPERATED AS DIRECTED IN E-1, LOSS OF REACTOR OR SECONDARY COOLANT, RATHER THAN STEP 2 BELOW.				
4	(FR-Z.1 Step 2/2.a) Verify CNMT Spray Actuated: Verify RWST outlet to SI and CNMT spray pumps – OPEN • MOV-896A • MOV-896B	The operator reads the Cautions and proceeds.		
		The operator observes the MOV-896A Red status light is LIT and the Green status light is OFF.		
		The operator observes the MOV-896B Red status light is LIT and the Green status light is OFF.		

Steps and Performance Standards

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	CRITICAL	GRADE (S/U)
5	(FR-Z.1 Step 2.b) Verify CNMT spray pumps - RUNNING	The operator observes the 'A' Containment Spray Pump Green status light is LIT, and the Red status light is OFF.		___
		The operator observes the 'B' Containment Spray Pump Green status light is LIT, and the Red status light is OFF.		___
		The operator observes Containment pressure to be $\approx$ 40-50 psig.		___
		The operator proceeds to the Step 2.b RNO.		___
6	(FR-Z.1 Step 2.b RNO) Manually start pumps.	The operator places the 'A' Containment Spray Pump Control Switch to START.		___
		The operator observes the 'A' Containment Spray Pump Green and White status lights are LIT, and the Red status light is OFF.		___
		The operator places the 'B' Containment Spray Pump Control Switch to START.	✓	___
		The operator observes the 'B' Containment Spray Pump Red status light is LIT, and the Green status light is OFF.		___
7	(FR-Z.1 Step 2.c) Verify NaOH flow (FI-930)	The operator observes FI-930 and notes flow at "0."		___
		The operator proceeds to Step 2.c RNO.		___

Steps and Performance Standards

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	CRITICAL	GRADE (S/U)
8	(FR-Z.1 Step 2.c RNO) <u>IF</u> NaOH flow <u>NOT</u> indicated, <u>THEN</u> place switches for NaOH tank outlet valves to OPEN. • AOV-836A • AOV-836B	The operator places the Control Switch for AOV-836A in OPEN.		___
		The operator places the Control Switch for AOV-836B in OPEN.	✓	___
Examiner NOTE: Containment Spray Pump B is the ONLY CS Pump that will operate. Consequently, ONLY the opening of AOV-836B is critical.				
Examiner NOTE: Flow on FI-930 will NOT be observed until Performance Step 10, when Containment Spray Pump B Discharge Valve MOV-860D is OPEN.				
9	(FR-Z.1 Step 2.d) Verify CNMT spray pump discharge valves – OPEN • MOV-860A • MOV-860B • MOV-860C • MOV-860D	The operator observes the MOV-860A Green status light is LIT, and the Red status light is OFF.		___
		The operator observes the MOV-860B Green status light is LIT, and the Red status light is OFF.		___
		The operator observes the MOV-860C Green status light is LIT, and the Red status light is OFF.		___
		The operator observes the MOV-860D Green status light is LIT, and the Red status light is OFF.		___
		The operator proceeds to the Step 2.d RNO.		___

Steps and Performance Standards

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	CRITICAL	GRADE (S/U)
10	(FR-Z.1 Step 2.d RNO) Ensure at least one in each set open. • MOV-860A or MOV-860B • MOV-860C or MOV-860D	The operator places the MOV-860A Control Switch in OPEN and observes the Red status light is LIT, and the Green status light is OFF.		___
		The operator places the MOV-860B Control Switch in OPEN and observes the Red status light is LIT, and the Green status light is OFF.		___
		The operator places the MOV-860C Control Switch in OPEN and observes the Green status light is LIT, and the Red status light is OFF.		___
		The operator places the MOV-860D Control Switch in OPEN.	✓	___
		The operator observes the MOV-860D Red status light is LIT and the Green status light is OFF.		___
		The operator will observe flow on FI-930.		___

Examiner NOTE: The operator may attempt to open all four valves; however, only the opening of MOV-860D is critical because it is the only valve that will open associated with an operating Containment Spray Pump.

SIM DRIVER NOTE: Call the Control Room as the EO and report "V-815A has been locally closed; however, MOV-813 will NOT operate manually."

Steps and Performance Standards

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	CRITICAL	GRADE (S/U)
EXAMINER NOTE: ALTERNATE PATH DECISION POINT OCCURS IN THE NEXT STEP				
<u>NOTE:</u> 1. Locked valve key may be required for local operations. 2. For each of the following AUTO ISOL VALVES that will not close, take the ALL actions directed in the ALTERNATE ISOLATION column. 3. Valves to be isolated when directed from ER-FIRE.1, ALTERNATE SHUTDOWN FOR CONTROL ROOM ABANDONMENT will be annotated with (ER-FIRE.1).				
11	(ATT-3.0, MOV-813 (CCW)) <u>IF</u> MOV-813 can <u>not</u> be closed, <u>THEN</u> perform the following: a. Direct EO with locked valve key to unlock and close breaker for MOV-817 (MCC D POS 10C) b. Stop both RCPs c. Manually close MOV-817 (MCB). <u>IF</u> MOV-817 will not close, <u>THEN</u> direct EO to locally close MOV-817 (AB INT LEVEL behind RWST).	The operator refers to ATT-3.0.		___
		The operator reads the NOTES and proceeds.		___
		The operator contacts and direct that the EO unlock and close the breaker for MOV-817.	✓	___
		The operator places the 'A' RCP Control Switch to STOP.	✓	___
		The operator observes the 'A' RCP Green status light is LIT, and the Red status light is OFF.		___
		The operator places the 'B' RCP Control Switch to STOP.	✓	___
		The operator observes the 'B' RCP Green status light is LIT, and the Red status light is OFF.		___
		The operator places the MOV-817 Control Switch to CLOSE.	✓	___
		The operator observes the MOV-817 Green status light is LIT, and the Red status light is OFF.		___
		The operator returns to FR-Z.1.		___

Steps and Performance Standards

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	CRITICAL	GRADE (S/U)
SIM DRIVER NOTE: Closed in Initial Setup (REM-EDS054 (MOV-817 Breaker Closed).				
Call as EO and report that you have unlocked and closed the MOV-817 breaker.				
12	(FR-Z.1 Step 3/3.a) Verify CNMT RECIRC Fans Running: a. All fans - RUNNING	The operator observes the 'A' CNMT RECIRC Fan Red status light is LIT, and the Green status light is OFF.		___
		The operator observes the 'B' CNMT RECIRC Fan Red status light is LIT, and the Green status light is OFF.		___
		The operator observes the 'C' CNMT RECIRC Fan Red status light is LIT, and the Green status light is OFF.		___
		The operator observes the 'D' CNMT RECIRC Fan Red status light is LIT, and the Green status light is OFF.		___
13	(FR-Z.1 Step 3.b) Charcoal filter dampers green status lights - EXTINGUISHED	The operator observes the 'A' CNMT RECIRC Fan Charcoal Filter Damper Green status light is OFF.		___
		The operator observes the 'C' CNMT RECIRC Fan Charcoal Filter Damper Green status light is OFF.		___

Termination Criteria: Steps 1-3 of FR-Z.1 have been completed.

CUE: This terminates the JPM.

End Time: _____

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VERIFICATION OF COMPLETION

Job Performance Measure No.: 2024 NRC Systems - Control Room JPM B

Date Performed:

Examinee:

Evaluator:

Time to Complete:

Question Documentation:

Result: SAT _____ UNSAT _____

Evaluator's Signature: _____ Date: _____

JPM CUE SHEET

INITIAL CONDITIONS:

- The plant tripped from 100% power and Safety Injection has actuated.
- The crew entered E-0, REACTOR TRIP OR SAFETY INJECTION, and then transitioned to E-2, FAULTED STEAM GENERATOR ISOLATION.
- Due to a degrading transient, an Orange Path now exists on the Containment Critical Safety Function Status Tree.
- You are the HCO.

INITIATING CUE:

The US has directed you to verify Containment Isolation and Heat Removal systems are operating as expected by performing FR-Z.1, RESPONSE TO HIGH CONTAINMENT PRESSURE, starting at Step 1.

NRC EXAM

SIM JPM C

Job Performance Measure Template

Facility: Ginna JPM No.: 2024 NRC Systems - Control Room JPM C

Task Title: Swap CCW Pumps/Loss of All CCW at Power Task No.:

System: Component Cooling Water System K/A Reference: 008 A4.08 (3.4)

Time-Critical Task: NO Alternate Path: YES

Validated Time: 5 Minutes

Method of Testing: Simulated Performance: _____ Actual Performance: X

Location: Classroom _____ Simulator X Plant _____

Task Standard: The task is satisfactorily met when the applicant has started Component Cooling Water Pump A and placed Component Cooling Water Pump B in STANDBY; and then tripped the reactor, and tripped RCPs and isolated letdown by closing AOV-427, when it is recognized that a complete loss of CCW at power has occurred.

Required Materials: Handout 1: Blank copy of P-17.14
Handout 2: Blank copy of AP-CCW.2

General References: P-17.14, SWAPPING CCW PUMPS, Rev 001
AR-A-22, CCW PUMP DISCHARGE LO PRESS 60 PSI, Rev 12
AP-CCW.2, LOSS OF CCW DURING POWER OPERATION, Rev 024
E-0, REACTOR TRIP OR SAFETY INJECTION, Rev 050
A-503.1, EMERGENCY AND ABNORMAL OPERATING PROCEDURES USERS GUIDE, Rev 062

Job Performance Measure Template

<u>Critical Step Justification</u>	
Step 1	This step is critical because placing the A CCW Pump Control Switch to START is necessary to start Component Cooling Water Pump A.
Step 3	This step is critical because placing the B CCW Pump Control Switch to STOP and allowing it to spring-return to AUTO is necessary to place Component Cooling Water Pump B in STANDBY.
<u>Alternate Path Critical Step Justification</u>	
Step 7	This step is critical because depressing the Reactor Trip Pushbutton is necessary to trip the reactor, and trip RCPs and isolate letdown by closing AOV-427, when it is recognized that a complete loss of CCW at power has occurred.
Step 8	This step is critical because placing the 'A' RCP Control Switch and the 'B' RCP Control Switch to STOP is necessary to trip the reactor, and trip RCPs and isolate letdown by closing AOV-427, when it is recognized that a complete loss of CCW at power has occurred.
Step 9	This step is critical because placing the AOV-427 control switch to CLOSE is necessary to trip the reactor, and trip RCPs and isolate letdown by closing AOV-427, when it is recognized that a complete loss of CCW at power has occurred.

SIMULATOR OPERATIONAL GUIDELINES

1. Initiate to **any 100% IC (IC-19)**.
2. Place simulator in RUN.
3. Ensure the following conditions exist:
 - Plant power is approximately 100%
 - The Electrical Plant is in a 50/50 Alignment
 - The B CCW Pump is RUNNING
 - The A CCW Pump is in Standby
4. Place simulator in FREEZE.
5. Insert MALF CLG02A on **Trigger 1** (T1=x07I217A, Conditional to CCW Pump B Control Switch in STOP – 15 seconds DELAYED).
6. Insert MALF CLG02B on **Trigger 2** (T1=x07I217A, Conditional to CCW Pump B Control Switch in STOP – 15 seconds DELAYED).
7. Reset to IC-161 (January, 2024)
8. Place simulator in RUN when directed by examiner.
9. When the above steps are completed for this and other JPMs to be run concurrently then validate, if not previously validated, the concurrently run JPMs using the JPM Validation Checklist.
10. This completes the setup for this JPM.

Notes to Examiner:

This JPM will be pre-briefed in the Briefing Room. Handout 1, a blank copy of P-17.14, SWAPPING CCW PUMPS, should be available to the Applicant.

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Provide Applicant with Initial Conditions/Cue (Last Page of this JPM), and Handout 1.

- Initial Conditions:
- The plant is at 100% power in a normal 50/50 electric plant lineup.
 - The CO and the SM are in the Relay Room investigating an issue.
 - You are the HCO.

- Initiating Cue:
- The US has directed you to start the A CCW Pump and stop the B CCW Pump in accordance with P-17.14, SWAPPING CCW PUMPS.
 - An Equipment Operator is standing by at the Pumps to assist in the Pump Swap.

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

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Information For Evaluator's Use:

UNSAT requires written comments on respective step.

✓ Denotes critical steps.

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 Applicant 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 Applicant acknowledges the Initiating Cue.

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Steps and Performance Standards

Start Time: _____

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	<u>CRITICAL</u>	<u>GRADE (S/U)</u>
CUE	Provide Applicant with Initial Conditions/Cue (Last Page of this JPM) and Handout 1.			
1	(P-17.14, Step 5.1/5.1.1) Placing CCW Pump A in service and securing CCW Pump B: 1. START CCW Pump A.	The operator places the A CCW Pump Control Switch to START.	✓	___
		The operator observes the A CCW Pump Red status light is LIT, and the Green status light is OFF.		___
2	(P-17.14, Step 5.1.2) VERIFY conditions normal on CCW A Pump start.	The operator contacts the Equipment Operator and directs that the A CCW Pump be verified to be operating normally.		___
CUE	SIM DRIVER as Equipment Operator, report back that the A CCW Pump is operating normally.			
3	(P-17.14, Step 5.1.3) STOP CCW Pump B.	The operator places the B CCW Pump Control Switch to STOP and allows it to spring-return to AUTO.	✓	___
		The operator observes the B CCW Pump Green status light is LIT, and the Red status light is OFF.		___
Examiner NOTE: When the B CCW Pump Control Switch is placed in STOP, the A CCW Pump will trip and the B CCW will NOT Auto Restart or start manually. This will cause MCB Annunciator A-22.				
4	(P-17.14, Step 5.1.4) VERIFY conditions normal on CCW Pump B stop.	The operator contacts the Equipment Operator and directs that the B CCW Pump be verified to be shutdown normally.		___
CUE	SIM DRIVER, AFTER the A CCW Pump trips, as Equipment Operator, report back that the B CCW Pump is shutdown normally.			
EXAMINER NOTE: ALTERNATE PATH DECISION POINT OCCURS IN THE NEXT STEP				
5	(P-17.14, Step 5.1.5) ENSURE MCB annunciator A-22, CCW PUMP DISCHARGE LO PRESS is EXTINGUISHED .	The operator recognizes that A-22, PUMP DISCHARGE LO PRESS is LIT, and addresses AR-A-22.		___
Examiner NOTE: The operator may attempt to restart the A and/or B CCW Pump.				

Steps and Performance Standards

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	CRITICAL	GRADE (S/U)
6	(AR-A-22, Step 1) GO TO the applicable AP-CCW procedure: ○ AP-CCW.2, LOSS OF CCW DURING POWER OPERATION ○ AP-CCW.3, LOSS OF CCW – PLAN SHUTDOWN	The operator proceeds to AP-CCW.2, LOSS OF CCW DURING POWER OPERATION.		—
CUE	When the operator states that AP-CCW.2 must be entered, PROVIDE the operator with Handout 2.			
<u>CAUTION</u> ○ IF CCW FLOW TO A RCP IS INTERRUPTED FOR GREATER THAN 2 MINUTES OR IF EITHER RCP MOTOR BEARING TEMPERATURE EXCEEDS 200°F, THEN TRIP THE AFFECTED ○ IF CCW IS LOST, <u>THEN</u> SEAL INJECTION SHOULD BE MAINTAINED TO THE RCP(S) UNTIL RCS TEMPERATURE IS LESS THAN 150°F, <u>OR</u> UNTIL CCW IS RESTORED.				
6	(AP-CCW.2, Step 1) Check CCW Pump Status: ○ Both CCW pump breaker white lights – EXTINGUISHED ○ Annunciator A-17, MOTOR OFF RCP CCWP - EXTINGUISHED	The operator reads the CAUTIONs and proceeds.		—
		The operator observes the A CCW Pump White status light is LIT.		—
		The operator observes the B CCW Pump White status light is LIT.		—
		The operator observes MCB Annunciator A-17 is LIT.		—
		The operator proceeds to the Step 1 RNO.		—

Steps and Performance Standards

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	<u>CRITICAL</u>	<u>GRADE (S/U)</u>
7	(AP-CCW.2, Step 1 RNO 1.a/1.a.1)) Perform the following: a. Ensure standby CCW pump running. <u>IF</u> no CCW pump can be operated, <u>THEN</u> perform the following: 1) Trip the reactor.	The operator observes the B CCW Pump Green and White status lights are LIT and determines that the Standby CCW Pump is not running.		___
		The operator observes the A CCW Pump Green and White status lights are LIT and determines that no CCW Pump is running.		___
		The operator depresses the Reactor Trip Pushbutton.	✓	___
		The operator observes that the Rx Trip Breaker Green status lights are LIT and the Red status lights are OFF (Breakers OPEN).		___
Examiner NOTE: The operator may attempt to restart the A and/or B CCW Pump.				
8	(AP-CCW.2, Step 1 RNO 1.a/1.a.2)) 2) <u>WHEN</u> all E-0 Immediate Actions done, <u>THEN</u> trip BOTH RCPs.	The operator observes neutron flux lowering.		___
		The operator observes that all control rod on the bottom lights on MRPI are LIT.		___
		The operator observes that the Turbine Stop Valve (SVL and SVR) Green Status lights are LIT.		___
		The operator observes that Bus 14, 16, 17 and 18 voltage is approximately 440 volts.		___
		The operator observes that SI annunciators are OFF.		___
		The operator observes that PRZR pressure is greater than 1750 psig.		___
		The operator observes that steamline pressure is greater than 514 psig.		___
		The operator observes that CNMT pressure is less than 4 psig.		___
		The operator observes that SI has not started sequencing.		___

Steps and Performance Standards

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	<u>CRITICAL</u>	<u>GRADE (S/U)</u>
8 (Cont'd)		The operator determines that SI is NOT required.		___
		The operator places the 'A' RCP Control Switch to STOP.	✓	___
		The operator observes the 'A' RCP Green status light is LIT, and the Red status light is OFF.		___
		The operator places the 'B' RCP Control Switch to STOP.	✓	___
		The operator observes the 'B' RCP Green status light is LIT, and the Red status light is OFF.		___
9	(AP-CCW.2, Step 1 RNO 1.a/1.a.3)) 3) Close letdown isol, AOV-427.	The operator places the AOV-427 control switch to CLOSE.	✓	___
		The operator observes that the AOV-427 Green status light is LIT and the Red status light is OFF.		___
10	(AP-CCW.2, Step 1 RNO 1.a/1.a.4)) 4) Close excess letdown, HCV-123.	The operator observes HCV-123 output at 0%.		___
11	(AP-CCW.2, Step 1 RNO 1.a/1.a.5)) 5) Go to E-0, REACTOR TRIP OR SAFETY INJECTION.	The operator reports that the E-0 Immediate Actions are complete.		___

Termination Criteria: The operator has tripped the RCPs, closed AOV-427 and reports that the Immediate Actions of E-0 are complete.

CUE: This terminates the JPM.

End Time: _____

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VERIFICATION OF COMPLETION

Job Performance Measure No.: 2024 NRC Systems - Control Room JPM C

Date Performed:

Examinee:

Evaluator:

Time to Complete:

Question Documentation:

Result: SAT _____ UNSAT _____

Evaluator's Signature: _____ Date: _____

JPM CUE SHEET

INITIAL CONDITIONS:

- The plant is at 100% power in a normal 50/50 electric plant lineup.
- The CO and the SM are in the Relay Room investigating an issue.
- You are the HCO.

INITIATING CUE:

- The US has directed you to start the A CCW Pump and stop the B CCW Pump in accordance with P-17.14, SWAPPING CCW PUMPS.
- An Equipment Operator is standing by at the Pumps to assist in the Pump Swap.

NRC EXAM

SIM JPM D

Job Performance Measure Template

Facility: Ginna JPM No.: 2024 NRC Systems -
Control Room JPM D

Task Title: Manually Energize the Source
Range Instruments Task No.:

System: Nuclear Instrumentation System K/A Reference: APE 032 AA1.01 (2.9)

Time-Critical Task: NO Alternate Path: YES

Validated Time: 10 Minutes

Method of Testing: Simulated Performance: _____ Actual Performance: X

Location: Classroom _____ Simulator X Plant _____

Task Standard: The task is satisfactorily met when the applicant has attempted to manually energize the Source Range instruments by depressing 2 of 2 P-6 Permissive Defeat Pushbuttons, recognized that this was unsuccessful and manually energizes the Source Range instruments by pulling and reinserting the instrument fuses, while maintaining instrument switch position configuration control.

Required Materials: Handout 1: ES-0.1 marked up through Step 12
Handout 2: Blank copy of ER-NIS.1

General References: E-0, REACTOR TRIP OR SAFETY INJECTION, Rev 050
ES-0.1, REACTOR TRIP RESPONSE, Rev 035
ER-NIS.1, SR MALFUNCTION, Rev 032
A-503.1, EMERGENCY AND ABNORMAL OPERATING
PROCEDURES USERS GUIDE, Rev 062

Job Performance Measure Template

<u>Critical Step Justification</u>	
Step 5	This step is critical because depressing the P-6 Permissive Defeat 1 Pushbutton and the P-6 Permissive Defeat 2 Pushbutton is necessary to attempt to manually energize the Source Range instruments.
<u>Alternate Path Critical Step Justification</u>	
Step 8	This step is critical because removing BOTH 118V, 5A, AC, Instrument Power Fuses from N31 and N32 is necessary to manually energize the Source Range instruments.
Step 9	This step is critical because reinserting BOTH 118V, 5A, AC, Instrument Power Fuses into N31 and N32 is necessary to manually energize the Source Range instruments.
Step 10	This step is critical because placing the N31 and N32 LEVEL TRIP switch in the NORMAL position is necessary to manually energize the Source Range instruments (Maintains Configuration Control of Switch).

SIMULATOR OPERATIONAL GUIDELINES

1. Initiate to **any 100% power IC**
2. Place simulator in RUN
3. Insert **MALF- NIS09A, 300, 10 second ramp** (SR N31 High Voltage Failure)
4. Insert **MALF- NIS09B, 300, 10 second ramp** (SR N32 High Voltage Failure) [The goal is to prevent automatic re-energization of the Source Range Instruments upon the IR instruments going below P-6 {< 5×10^{-11} amps}]
5. Open Event 2 in the Events box:
6. Enter XNAO003A==0 (N31 Instrument Power Fuses Removed) in the Event Code box (T-2)
7. Open Event 3 in the Events box:
8. Enter XNEO003A==0 (N32 Instrument Power Fuses Removed) in the Event Code box (T-3)
9. Build Schedule LC 23-1 NRC JPM D.sch:
10. Enter the following in the Schedule box:

Insert	Pause	@Time	Event	Action (type <u>exactly</u>)	Description
☐	☐		2	remove malfunction NIS09A	
☐	☐		3	remove malfunction NIS09B	

11. Manually Trip the Reactor and Enter E-0, REACTOR TRIP OR SAFETY INJECTION.
12. Transition to ES-0.1, REACTOR TRIP RESPONSE, at Step 4 of E-0.
13. Complete actions through Step 12 of ES-0.1
14. Ensure the following:
 - Both RCPs are running
 - Tavg is stable at 547°F
 - PRZR level is ≈20%
 - PRZR proportional and Backup Heaters are energized
 - Both Main Feed Pumps are in PULL STOP
 - FRVs and FRV Bypass Valves are CLOSED
 - MRPI Indicates all Rods are on the Bottom
 - PRZR Pressure is ≈2235 psig
 - BOTH S/G Narrow Range levels are between 17-52%
 - The TDAFW Pump is in PULL STOP
 - Steam Dump Mode Selector Switch is in MANUAL with HC-484 set at 1005 psig in AUTO
 - BOTH Intermediate Ranges are less than 5×10^{-11} amps
 - Both Source Range Instruments are De-energized.
15. Reset to **IC-162 (January, 2024)**
16. Open Schedule LC 23-1 NRC JPM D.sch and RUN.
17. Place simulator in FREEZE
18. Place simulator in RUN when directed by examiner

The Sim Driver will need to control plant parameters and answer alarms unrelated to the task.

Notes to Examiner:**READ TO THE EXAMINEE**

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Provide Applicant with Initial Conditions/Cue (Last Page of this JPM), and Handout 1.**Initial Conditions:**

- The plant was manually tripped 25 minutes ago from 100% power and the crew entered E-0, REACTOR TRIP OR SAFETY INJECTION.
- The crew has completed Step 12 of ES-0.1, REACTOR TRIP RESPONSE.

Initiating Cue:

- The US has directed you to perform Step 13 of ES-0.1, Check if Source Range Detectors Should be Energized.
- Another operator will control plant parameters and answer all alarms unrelated to the task.

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

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Information For Evaluator's Use:

UNSAT requires written comments on respective step.

✓ Denotes critical steps.

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 Applicant 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 Applicant acknowledges the Initiating Cue.

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Steps and Performance Standards

Start Time: _____

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	<u>CRITICAL</u>	<u>GRADE (S/U)</u>
CUE	Provide Applicant with Initial Conditions/Cue (Last Page of this JPM) and Handout 1.			
NOTE: Loss of forced air cooling may result in failure of NIS detectors.				
1	(ES-0.1, Step 13/13.a) Check If Source Range Detectors Should Be Energized: Source range channels - DEENERGIZED	The operator reads the NOTE and proceeds.		___
		The operator observes NI-31B to be LOW on scale (10 ⁰ cps), or equivalent, and concludes the instrument is de-energized.		___
		The operator observes NI-32B to be LOW on scale (10 ⁰ cps), or equivalent, and concludes the instrument is de-energized.		___
2	(ES-0.1, Step 13.b) Check intermediate range flux - EITHER CHANNEL LESS THAN 10-10 AMPS	The operator observes NI-35B, or equivalent, to be < 10 ⁻¹⁰ amps.		___
		The operator observes NI-36B, or equivalent, to be < 10 ⁻¹⁰ amps.		___
3	(ES-0.1, Step 13.c) Check the following: - Both intermediate range channels - LESS THAN 10-10 AMPS OR - Greater than 20 minutes since reactor trip	The operator observes NI-35B, or equivalent, to be < 10 ⁻¹⁰ amps.		___
		The operator observes NI-36B, or equivalent, to be < 10 ⁻¹⁰ amps.		___
		The operator recognizes that it has been 25 minutes since the Reactor trip.		___
4	(ES-0.1, Step 13.d) Verify source range detectors - ENERGIZED	The operator observes NI-31B to be LOW on scale (10 ⁰ cps), or equivalent, and concludes the instrument is de-energized.		___
		The operator observes NI-32B to be LOW on scale (10 ⁰ cps), or equivalent, and concludes the instrument is de-energized.		___

Steps and Performance Standards

STEP	PERFORMANCE	STANDARD	CRITICAL	GRADE (S/U)
EXAMINER NOTE: ALTERNATE PATH DECISION POINT OCCURS IN THE NEXT STEP				
5	(ES-0.1, Step 13.d RNO) Manually energize source range detectors by depressing P-6 permissive defeat pushbuttons (2 of 2). IF source ranges can NOT be restored, THEN refer to ER-NIS.1, SR MALFUNCTION, and go to Step 14.	The operator depresses the P-6 Permissive Defeat 1 Pushbutton.	✓	___
		The operator depresses the P-6 Permissive Defeat 2 Pushbutton.	✓	___
		The operator observes NI-31B to be LOW on scale (10 ⁰ cps), or equivalent, and concludes the instrument is de-energized.		___
		The operator observes NI-32B to be LOW on scale (10 ⁰ cps), or equivalent, and concludes the instrument is de-energized.		___
		The operator directs the US to continue to Step 14 and goes to ER-NIS.1		___
CUE	As US acknowledge			
CUE	When the operator states that ER-NIS.1 must be entered, provide Handout 2.			
NOTE Refer to Tech Spec section 3.3, table 3.3.1-1, Function #4 and section 3.9.2 for source range operability requirements.				
6	(ER-NIS.1, Step 6.1) IF any source range is inoperable as a result of failure to energize, THEN MANUALLY ENERGIZE source range detectors by depressing P-6 PERMISSIVE DEFEAT pushbuttons (2 of 2).	The operator reads the NOTE and proceeds.		___
		The operator depresses the P-6 Permissive Defeat 1 Pushbutton.		___
		The operator depresses the P-6 Permissive Defeat 2 Pushbutton.		___

Steps and Performance Standards

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	CRITICAL	GRADE (S/U)
6 (Cont'd)		The operator observes NI-31B to be LOW on scale (10^0 cps), or equivalent, and concludes the instrument is de-energized.		___
		The operator observes NI-32B to be LOW on scale (10^0 cps), or equivalent, and concludes the instrument is de-energized.		___
Examiner NOTE: Step 6.1 of ER-NIS.1 directs the operator to depress the P-6 Permissive Defeat 1 and Defeat 2 Pushbuttons. Since this action was taken in ES-0.1, the operator may not perform this action. Regardless, depressing these pushbuttons will NOT result in re-energizing the Source Range Instruments.				
7	(ER-NIS.1, Step 6.2/6.2.1) IF source range does not energize during Plant Shutdown when power is LESS THAN P-6, THEN PERFORM the following to reset the crow bar circuit: PLACE LEVEL TRIP switch in the BYPASS position.	The operator places the N31 LEVEL TRIP switch in the BYPASS position.		___
		The operator observes that the N31 LEVEL TRIP BYPASS light is LIT.		___
		The operator places the N32 LEVEL TRIP switch in the BYPASS position.		___
		The operator observes that the N32 LEVEL TRIP BYPASS light is LIT.		___
Examiner NOTE: The operator may elect to perform the ER-NIS.1 steps to energize the Source Range Instruments on one instrument followed by the other or perform the individual procedure steps on both Source Range Instruments before moving on to the next step. If performing individually, complete JPM Steps 7-10 for one instrument, and then repeat JPM Steps 7-10 for the other. Otherwise, evaluate steps as written.				

Steps and Performance Standards

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	<u>CRITICAL</u>	<u>GRADE (S/U)</u>
8	(ER-NIS.1, Step 6.2.2) REMOVE instrument power fuses.	The operator removes BOTH 118V, 5A, AC, Instrument Power Fuses from N31.	✓	___
		The operator observes that the N31 INSTRUMENT POWER ON light is OFF.		___
		The operator removes BOTH 118V, 5A, AC, Instrument Power Fuses from N32.	✓	___
		The operator observes that the N32 INSTRUMENT POWER ON light is OFF.		___
Examiner NOTE: The Instrument Fuses can be removed from their respective Instruments in any order.				
9	(ER-NIS.1, Step 6.2.3) REINSTALL instrument power fuses.	The operator reinserts BOTH 118V, 5A, AC, Instrument Power Fuses into N31.	✓	___
		The operator observes that the N31 INSTRUMENT POWER ON light is LIT.		___
		The operator observes NI-31 to be on scale (320 cps), or equivalent, and concludes the instrument is energized.		___
		The operator reinserts BOTH 118V, 5A, AC, Instrument Power Fuses into N32.	✓	___
		The operator observes that the N32 INSTRUMENT POWER ON light is LIT.		___
		The operator observes NI-32 to be on scale (320 cps), or equivalent, and concludes the instrument is energized.		___
Examiner NOTE: The Instrument Fuses can be reinstalled in their respective Instruments in any order.				

Steps and Performance Standards

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	CRITICAL	GRADE (S/U)
10	(ER-NIS.1, Step 6.2.4) PLACE LEVEL TRIP switch in the NORMAL position.	The operator places the N31 LEVEL TRIP switch in the NORMAL position.	✓	___
		The operator observes that the N31 LEVEL TRIP BYPASS light is OFF.		___
		The operator places the N32 LEVEL TRIP switch in the NORMAL position.	✓	___
		The operator observes that the N32 LEVEL TRIP BYPASS light is OFF.		___

Termination Criteria: The operator energizes both Source Range Instruments.

CUE: This terminates the JPM.

End Time: _____

.....

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2024 NRC Systems - Control Room JPM D

Date Performed:

Examinee:

Evaluator:

Time to Complete:

Question Documentation:

Result: SAT _____ UNSAT _____

Evaluator's Signature: _____ Date: _____

JPM CUE SHEET

INITIAL CONDITIONS:

- The plant was manually tripped 25 minutes ago from 100% power and the crew entered E-0, REACTOR TRIP OR SAFETY INJECTION.
- The crew has completed Step 12 of ES-0.1, REACTOR TRIP RESPONSE.

INITIATING CUE:

- The US has directed you to perform Step 13 of ES-0.1, Check if Source Range Detectors Should be Energized.
- Another operator will control plant parameters and answer all alarms unrelated to the task.

NRC EXAM

SIM JPM E

Job Performance Measure Template

Facility: Ginna JPM No.: 2024 NRC Systems - Control Room JPM E

Task Title: Establish 100/0 Electric Lineup on Circuit 767 Task No.:

System: AC Electrical Distribution System K/A Reference: 062 A4.01 (3.5)

Time-Critical Task: NO Alternate Path: YES

Validated Time: 15 Minutes

Method of Testing: Simulated Performance: _____ Actual Performance: X

Location: Classroom _____ Simulator X Plant _____

Task Standard: The task is satisfactorily met when the applicant has started to transfer 4160V buses from a 50/50 NORMAL Lineup to 100/0 Lineup on Circuit 767, recognized a failure of breaker 52/12AY to auto trip, and implemented a required Circulating Current Contingency action that otherwise would have NOT been performed to realign the electric plant back to a 50/50 lineup.

Required Materials: Handout 1: O-6.9.2, ESTABLISHING AND/OR TRANSFERRING OFFSITE POWER TO BUS 12A/12B marked for this JPM

General References: O-6.9.2, ESTABLISHING AND/OR TRANSFERRING OFFSITE POWER TO BUS 12A/12B, Rev 037

Job Performance Measure Template

<u>Critical Step Justification</u>	
Step 4	This step is critical because placing the synchroscope switch for Bus 12A ALT Feed from 767 to ON is necessary to start to transfer 4160V buses from a 50/50 NORMAL Lineup to 100/0 Lineup on Circuit 767.
Step 5	This step is critical because placing the 52/12BY control switch in the CLOSE position is necessary to start to transfer 4160V buses from a 50/50 NORMAL Lineup to 100/0 Lineup on Circuit 767.
Step 8	This step is critical because placing the 52/12AY control switch to TRIP and then to AUTO is necessary to start to transfer 4160V buses from a 50/50 NORMAL Lineup to 100/0 Lineup on Circuit 767.
<u>Alternate Path Critical Step Justification</u>	
Step 15	This step is critical because placing the synch switch for Bus 12A ALT Feed from 767 to OFF is necessary to implement a required Circulating Current Contingency action that otherwise would have NOT been performed to realign the electric plant back to a 50/50 lineup.
Step 17	This step is critical because placing the 52/12BY control switch to TRIP and then to AUTO is necessary to implement a required Circulating Current Contingency action that otherwise would have NOT been performed to realign the electric plant back to a 50/50 lineup.
Step 19	This step is critical because placing the 52/12AY control switch to CLOSE and then to AUTO is necessary to implement a required Circulating Current Contingency action that otherwise would have NOT been performed to realign the electric plant back to a 50/50 lineup.

SIMULATOR OPERATIONAL GUIDELINES

1. Reset to **IC-19** (Or any appropriate 100% power IC)
2. Ensure the electric plant is in a Normal 50/50 electric plant lineup
3. Insert override **OVR-EDS69D = FALSE** (12AY Trip signal)
4. Insert override **OVR-EDS69G = FALSE** (12AY Pull-to-stop signal)
5. Insert override **OVR-EDS69F = FALSE** (12AY Norm Aft Trip signal)
6. Insert override **OVR-EDS29 = TRUE** on **Trigger 1** (Conditional x05i115a [12A ALT Synch Switch taken to ON position])
7. Create an Event and Schedule File as follows:

The Simulator electrical model does not have the capability to fail the auto trip feature of 52/12AY when 52/12BY is closed in. Having the 52/12AY synchroscope also ON; however, defeats this interlock and would prevent the breaker from opening. Since there is only one (1) synchroscope handle; however, and is being used to close the 52/12BY breaker, a "software work around" must be accomplished by opening an Event and Schedule file:

- Open Event 2 in the Events box:
- Enter jbk 12by & ! x05i115a in the Event Code box (Trigger 2)
- Type "Remove Override EDS29 when" in the Description box (optional)
- Build Schedule LC 23-1 NRC JPM E.schedule:
- Enter the following in the Schedule box:

Insert	Pause	@Time	Event	Action (type <u>exactly</u>)	Description
☐	☐		2	remove override OVR-EDS29	

- SAVE the schedule LC 23-1 NRC JPM E.schedule
 - Open and RUN the schedule file.
8. Place Simulator in FREEZE.
 9. Reset to IC-163 (January 2024)
 10. Place Simulator in RUN when directed by Examiner.

Notes to Examiner:

This JPM will be pre-briefed in the Briefing Room. Handout 1, O-6.9.2, ESTABLISHING AND/OR TRANSFERRING OFFSITE POWER TO BUS 12A/12B marked for this JPM, should be available to the Applicant.

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Provide Applicant with Initial Conditions/Cue (Last Page of this JPM), and Handout 1.

Initial Conditions:

- The plant is operating at 100% power.
- The Electric Plant is currently in a 50/50 NORMAL lineup.
- RG&E ECC has requested that the plant be placed in a 100/0 lineup on Circuit 767 for scheduled maintenance on offsite Circuit 7T later today.
- An A-52.12 for removal of Circuit 7T is being prepared.
- You are the CO.

Initiating Cue:

- The US has directed you to establish a 100/0 Electric Plant alignment per O-6.9.2, ESTABLISHING AND/OR TRANSFERRING OFFSITE POWER TO BUS 12A / BUS 12B, Section 5.3.
- The SM and RG&E ECC have approved performance of this bus re-alignment.

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

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Information For Evaluator's Use:

UNSAT requires written comments on respective step.

✓ Denotes critical steps.

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 Applicant 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 Applicant acknowledges the Initiating Cue.

Steps and Performance Standards

Start Time: _____

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	CRITICAL	GRADE (S/U)
CUE	Provide Applicant with Initial Conditions/Cue (Last Page of this JPM) and Handout 1.			
1	(O-6.9.2, Step 5.3.1/5.3.1.1) ESTABLISH Offsite Power to 12A Bus using Circuit 767 as follows: SELECT BUS 12A NORMAL FEED FROM 7T, 52/12AY, breaker initial position: (52/12AY Position) ○OPEN ○CLOSED IF 52/12AY Position on Step 5.3.1.1. Equals OPEN THEN Mark Step 5.3.1.7. as N/A AND Mark Step 5.3.1.8. as N/A OTHERWISE Mark Step 5.3.1.6. as N/A	The operator observes the 52/12AY Red status light is LIT and the Green status light is OFF.		___
		The operator checks the CLOSED circle.		___
		The operator marks Step 5.3.1.6. as N/A and proceeds.		___
2	(O-6.9.2, Step 5.3.1.2) VERIFY CLOSED CIRCUIT BKR 76702 34 KV BUS.	The operator observes the Breaker 76702 Red status light is LIT and the Green status light is OFF.		___
3	(O-6.9.2, Step 5.3.1.3/3.A-F) PERFORM the following from the Operations Menu display: A. CLICK the Sub/Del/Restore Value button to go to the Sub/Delete/Restore display. B. SELECT C7TMW, CIRCUIT 7T TOTAL WATTS C. TYPE a value of 0 in the Substitute Value window. D. PRESS <ENTER> E. CLICK CHANGE button to activate the Substitute Value of 0. F. ANSWER Prompts.	The operator navigates to the Sub/Delete/Restore display.		___
		The operator selects C7TMW, CIRCUIT 7T TOTAL WATTS.		___
		The operator enters 0 in the Value window.		___
		The operator presses ENTER.		___
		The operator clicks the CHANGE button.		___
		The operator answers all prompts and completes the entry.		___

Steps and Performance Standards

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	CRITICAL	GRADE (S/U)
4	(O-6.9.2, Step 5.3.1.4) TURN ON BUS 12A ALT FEED FROM 767, 52/12BY, SYNCHROSCOPE.	The operator places the synchroscope switch for Bus 12A ALT Feed from 767 to ON.	✓	___
NOTE - Next Step will cause the following MCB Alarms to ILLUMINATE: - J-6, 4KV MAIN OR TIE BREAKER TRIP - L-20, 12A XFMR OR 12A BUS TROUBLE - The next step may cause PPCS Alarm 12AOPDLL due to 7T LINE LOAD falling below the minimum load (MINLOAD) setpoint of the 46L/12A Relay. - Steps 5.3.1.6 through 5.3.1.8 SHALL be performed without delay following completion of Step 5.3.1.5.				
Examiner NOTE: The operator may inform you that J-6, 4KV MAIN OR TIE BREAKER TRIP, and L-20, 12A XFMR OR 12A BUS TROUBLE, will alarm after closing Bus 12A Normal Feed breaker.				
5	(O-6.9.2, Step 5.3.1.5) CLOSE BUS 12A ALT FEED FROM 767 52/12BY.	The operator reads the NOTES and proceeds.		___
		The operator places the 52/12BY control switch in the CLOSE position.	✓	___
		The operator observes the 52/12BY Red status light is LIT and the Green status light is OFF.		___
Examiner NOTE: MCB Annunciator L-20, 12A XFMR OR 12A BUS TROUBLE, is an expected alarm.				
Examiner NOTE: Closing this ALTERNATE feed breaker SHOULD automatically trip the Normal feed breaker and result in J-6, 4KV MAIN OR TIE BREAKER TRIP				
6	(O-6.9.2, Step 5.3.1.6) IF BUS 12A NORMAL FEED FROM 7T, 52/12AY, was initially OPEN , THEN VERIFY breaker is OPEN AND RESET (Green light ILLUMINATED , White light EXTINGUISHED). OTHERWISE, MARK this Step N/A.	The operator recognizes that this Step has been previously marked N/A and proceeds.		___

Steps and Performance Standards

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	<u>CRITICAL</u>	<u>GRADE (S/U)</u>
7	(O-6.9.2, Step 5.3.1.7/A) IF BUS 12A NORMAL FEED FROM 7T, 52/12AY, was initially CLOSED, THEN PERFORM the following: OTHERWISE, MARK this Step N/A. A. VERIFY breaker BUS 12A NORMAL FEED FROM 7T, 52/12AY OPENED (Green light ILLUMINATED , White light ILLUMINATED). IS green light EXTINGUISHED ? oYes oNo (Green Light EXTINGUISHED) IF Green Light EXTINGUISHED on Step 5.3.1.7.A. Equals Yes THEN Mark Step 5.3.1.7.A. as N/A AND Go to Step 5.3.1.7.B.	The operator observes that the 52/12AY Red status light is still LIT and both the Green and White status lights are OFF.		___
		The operator checks the YES circle.		___
		The operator marks Step 5.3.1.7.A. as N/A and proceeds to Step 5.3.1.7.B.		___
Examiner NOTE: If the operator requests procedure guidance from the Unit Supervisor, DIRECT the operator to continue with Step 5.3.1.7.B.				
8	(O-6.9.2, Step 5.3.1.7.B) PLACE BUS 12A NORMAL FEED FROM 7T, 52/12AY, control switch to TRIP AND THEN to AUTO .	The operator places the 52/12AY control switch to TRIP and then to AUTO.	✓	___
		The operator observes the 52/12AY Red status light is still LIT and both the Green and White status lights are OFF.		___

Steps and Performance Standards

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	CRITICAL	GRADE (S/U)
EXAMINER NOTE: ALTERNATE PATH DECISION POINT OCCURS IN THE NEXT STEP				
9	(O-6.9.2, Step 5.3.1.7.C) IS breaker 52/12AY OPEN AND RESET (Green light ILLUMINATED ; White light EXTINGUISHED)? ○Yes ○No (Breaker 52/12AY Verified open) IF Breaker 52/12AY Verified open on Step 5.3.1.7.C. Equals Yes THEN Go to Step 5.3.1.9. (NA steps in between)	The operator observes that the 52/12AY Red status light is still LIT and both the Green and White status lights are OFF.		___
		The operator checks the NO circle.		___
		The operator recognizes that Breaker 52/12AY is still CLOSED and continues to Step 5.3.1.8.		___
10	(O-6.9.2, Step 5.3.1.8) IF BUS 12A NORMAL FEED FROM 7T, 52/12AY, is NOT OPEN , THEN IMMEDIATELY PERFORM 7T/Bus 12A Circulating Current Contingency action as follows: OTHERWISE, MARK this Step N/A.	The operator recognizes that the contingency must be performed and continues.		___
CAUTION These steps are only performed as directed when breaker 52/12AY is NOT OPEN.				
11	(O-6.9.2, Step 5.3.1.8.A) VERIFY BUS 12A NORMAL FEED FROM 7T, 52/12AY, is NOT OPEN.	The operator reads the Caution and proceeds.		___
		The operator observes that the 52/12AY Red status light is still LIT and both the Green and White status lights are OFF and concludes that Breaker 52/12AY is CLOSED.		___
12	(O-6.9.2, Step 5.3.1.8.B) VERIFY CLOSED BUS 12A ALT FEED FROM 767, 52/12BY.	The operator observes the 52/12BY Red status light is LIT and the Green status light is OFF.		___
13	(O-6.9.2, Step 5.3.1.8.C) VERIFY BUS 12A VOLTMETER 4160 V indicates approximately 4000 VOLTS.	The operator observes that the BUS 12A VOLTMETER reads ≈4100 VOLTS.		___

Steps and Performance Standards

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	<u>CRITICAL</u>	<u>GRADE (S/U)</u>
14	(O-6.9.2, Step 5.3.1.8.D) VERIFY CLOSED CIRCUIT BKR 7T1352 34 KV BUS.	The operator observes the Breaker 7T1352 Red status light is LIT and the Green status light is OFF.		___
NOTE - Next Step SHOULD automatically trip BUS 12A ALT FEED FROM 767, 52/12BY. - Performance of next Step will cause MCB Alarm J-6, 4KV MAIN OR TIE BREAKER TRIP, to ILLUMINATE.				
15	(O-6.9.2, Step 5.3.1.8.E) TURN OFF BUS 12A ALT FEED FROM 767, 52/12BY, SYNCHROSCOPE.	The operator reads the NOTES and proceeds.		___
		The operator places the synch switch for Bus 12A ALT Feed from 767 to OFF.	✓	___
Examiner NOTE: MCB Annunciator J-6, 4KV MAIN OR TIE-BREAKER TRIP, is an expected alarm.				
16	(O-6.9.2, Step 5.3.1.8.F) VERIFY BUS 12A ALT FEED FROM 767, 52/12BY, OPENS (Green light ILLUMINATED , White light ILLUMINATED).	The operator observes the 52/12BY Green and White status lights are LIT and the Red status light is OFF.		___
17	(O-6.9.2, Step 5.3.1.8.G) PLACE BUS 12A ALT FEED FROM 767, 52/12BY, control switch to TRIP AND THEN to AUTO .	The operator places the 52/12BY control switch to TRIP and then to AUTO.	✓	___
18	(O-6.9.2, Step 5.3.1.8.H) VERIFY BUS 12A ALT FEED FROM 767, 52/12BY IS OPEN AND RESET (Green light ILLUMINATED , White light EXTINGUISHED).	The operator observes the 52/12BY Green status light is LIT and the Red and White status lights are OFF.		___

Steps and Performance Standards

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	CRITICAL	GRADE (S/U)
19	(O-6.9.2, Step 5.3.1.8.I) PLACE BUS 12A NORMAL FEED FROM 7T, 52/12AY, control switch to CLOSE AND THEN to AUTO.	The operator places the 52/12AY control switch to CLOSE and then to AUTO.	✓	___
		The operator observes that the 52/12AY Red status light is LIT and the Green and White status lights are OFF.		___
20	(O-6.9.2, Step 5.3.1.8.J) VERIFY BUS 12A NORMAL FEED FROM 7T, 52/12AY, IS CLOSED AND RESET (RED LIGHT ILLUMINATED , WHITE LIGHT EXTINGUISHED).	The operator observes the 52/12AY Red status light is LIT and the Green and White status lights are OFF.		___

Termination Criteria: The operator returns the AC Electrical Distribution System to a 50/50 Lineup.

CUE: This terminates the JPM.

End Time: _____

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VERIFICATION OF COMPLETION

Job Performance Measure No.: 2024 NRC Systems - Control Room JPM E

Date Performed:

Examinee:

Evaluator:

Time to Complete:

Question Documentation:

Result: SAT _____ UNSAT _____

Evaluator's Signature: _____ Date: _____

JPM CUE SHEET

INITIAL CONDITIONS:

- The plant is operating at 100% power.
- The Electric Plant is currently in a 50/50 NORMAL lineup.
- RG&E ECC has requested that the plant be placed in a 100/0 lineup on Circuit 767 for scheduled maintenance on offsite Circuit 7T later today.
- An A-52.12 for removal of Circuit 7T is being prepared.
- You are the CO.

INITIATING CUE:

- The US has directed you to establish a 100/0 Electric Plant alignment per O-6.9.2, ESTABLISHING AND/OR TRANSFERRING OFFSITE POWER TO BUS 12A / BUS 12B, Section 5.3.
- The SM and RG&E ECC have approved performance of this bus re-alignment.

NRC EXAM

SIM JPM F

Job Performance Measure Template

Facility: Ginna JPM No.: 2024 NRC Systems - Control Room JPM F

Task Title: Transfer ECCS to Cold Leg Recirculation w/MOV-850 Closed Task No.:

System: Emergency Core Cooling System K/A Reference: 006 A4.01 (4.3)

Time-Critical Task: NO Alternate Path: YES

Validated Time: 15 Minutes

Method of Testing: Simulated Performance: _____ Actual Performance: X

Location: Classroom _____ Simulator X Plant _____

Task Standard: The task is satisfactorily met when the Applicant has established cold leg recirculation prior to RWST level lowering to $\leq 15\%$ OR with the RWST lowered to less than 15%, the Applicant immediately stops all pumps taking suction from the RWST except one SI pump and establishes cold leg recirculation; and then started RHR Pump B after it is determined that MOV-850A will not OPEN.

Required Materials: MCB Valve Key
Handout 1: Blank copy of ES-1.3
Handout 2: Blank copy of ATT-14.3
Handout 3: Blank copy of ATT-14.5

General References: E-0, REACTOR TRIP OR SAFETY INJECTION, Rev 050
E-1, LOSS OF REACTOR OR SECONDARY COOLANT, Rev 043
ES-1.3, TRANSFER TO COLD LEG RECIRCULATION, Rev 048
ATT-14.3, ATTACHMENT RHR NPSH, Rev 3
ATT-14.5, ATTACHMENT RHR SYSTEM, Rev 3
A-503.1, EMERGENCY AND ABNORMAL OPERATING PROCEDURES USERS GUIDE, Rev 62
OP-GI-102-106, OPERATOR RESPONSE TIME PROGRAM AT GINNA STATION, Rev 016

Job Performance Measure Template

<u>Critical Step Justification</u>	
Step 5	This step is critical because placing the "C" SI Pump Bus 14 and the "C" SI Pump Bus 16 Control Switches to PULL STOP is necessary to establish cold leg recirculation.
Step 6	This step is critical because placing the "B" RHR Pump Control Switch to PULL STOP is necessary to establish cold leg recirculation.
Step 10	This step is critical because placing the AOV-836A and AOV-836B Control Switch to OPEN is necessary to establish cold leg recirculation.
Step 11	This step is critical because depressing CNMT Spray RESET pushbutton is necessary to establish cold leg recirculation.
Step 12	This step is critical because placing the MOV-860A and MOV-860B Control Switch to CLOSE is necessary to establish cold leg recirculation.
Step 23	This step is critical because obtaining an MCB Valve Key and placing the MOV-856 DC Control Power to ON and placing the MOV-856 Control Switch to CLOSE is necessary to establish cold leg recirculation.
Step 24	This step is critical because placing the MOV-850B Control Switch to OPEN is necessary to establish cold leg recirculation.
Step 29	This step is critical only if RWST level lowers to less or equal to 15%. If so, these steps are critical as necessary to ensure that all pumps taking suction from the RWST are immediately stopped except one SI pump and cold leg recirculation is established
<u>Alternate Path Critical Step Justification</u>	
Step 28	This step is critical because placing the "B" RHR Pump Control Switch to START is necessary to the "B" RHR Pump after it is determined that MOV-850A will not OPEN

**SIMULATOR OPERATIONAL GUIDELINES
SIMULATOR REQUIREMENTS**

1. Reset to **IC-012** (100% power BOL)
2. Insert MALF RCS03B (RCS DBA Break in CNMT, Loop A Cold Leg)
3. Perform E-0, REACTOR TRIP OR SAFETY INJECTION, through Step 17.
4. Transition to E-1, LOSS OF REACTOR OR SECONDARY COOLANT, and perform through Step 23.
5. Insert OVR RHR13D=False (MOV-850A fails to OPEN)
6. Place RHR Pump 'A' in PULL STOP.
7. Insert REM RHR26 = Disengaged (MOV-704A Declutch Lever); REM RHR27 = 0 (MOV-704A Closed); OVR RHR11A = Off (MOV-704A Green light OFF)
8. Place Tags on MCB Control Switches for MOV-704A indicating the valve is closed and de-energized for maintenance and RHR Pump 'A'.
9. Place Simulator in RUN
10. Ensure the following:
 - Annunciator B-8, RWST HI-LO LEVEL 95%28, is lit (RWST Level < 28%)
 - The 'A' CS Pump is PULL STOP
 - The "B" CS Pump is RUNNING
11. Place Simulator in FREEZE.
12. Reset to IC-164 (April, 2024)
13. Place Simulator in RUN when directed by Examiner.
14. This completes the setup for this JPM.

Notes to Examiner:**READ TO THE EXAMINEE**

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Provide Applicant with Initial Conditions/Cue (Last Page of this JPM), and Handout 1.

Initial Conditions:	• Reactor trip with SI occurred. • The operating crew entered E-0, REACTOR TRIP AND SAFETY INJECTION, and transitioned to E-1, LOSS OF REACTOR OR SECONDARY COOLANT. • RWST has just lowered to < 28%. • The crew is currently at Step 23 of E-1. • You are the HCO.

Initiating Cue:	The US has directed you to transfer to Cold Leg Recirculation in accordance with ES-1.3, TRANSFER TO COLD LEG RECIRCULATION.

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

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Information For Evaluator's Use:

UNSAT requires written comments on respective step.

✓ Denotes critical steps.

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 Applicant 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 Applicant acknowledges the Initiating Cue.

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Steps and Performance Standards

Start Time: _____

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	<u>CRITICAL</u>	<u>GRADE (S/U)</u>				
CUE	Provide Applicant with Initial Conditions/Cue (Last Page of this JPM), and Handout 1.							
<u>CAUTION</u> - IF OFFSITE POWER IS LOST AFTER SI RESET, THEN MANUAL ACTION MAY BE REQUIRED TO RESTART SAFEGUARDS EQUIPMENT. (REFER TO ATT-8.5, ATTACHMENT LOSS OF OFFSITE POWER). - CONSULT WITH RADIATION PROTECTION BEFORE DISPATCHING PERSONNEL TO AUXILIARY BUILDING. SWITCHOVER TO RECIRCULATION MAY CAUSE HIGH RADIATION LEVELS.								
<u>NOTE:</u> - FOLDOUT page should be open and monitored periodically. - Adverse CNMT values should be used whenever CNMT pressure is greater than 4 psig or CNMT radiation is greater than 10+5 R/hr.								
1	(ES-1.3, Step 1) Verify RWST level – GREATER THAN 15%	The operator reads the Cautions and Notes, and proceeds.		___				
		The operator observes LI-920 and 921 and verifies that RWST Level is > 15%.		___				
Examiner NOTE: Step 1 is a Continuous Action Step. Consequently, if RWST level lowers to 15% move forward to JPM Step 29.								
2	(ES-1.3, Step 2) Verify CNMT Sump B Level – AT LEAST 113 INCHES.	The operator observes Sump B Discrete Level Switch Red indicating lights and determines CNMT Sump B level is at least 113 inches.		___				
<u>NOTE:</u> Steps 3 through 12 should be performed without delay. FR procedures should not be implemented prior to completion of these steps.								
3	(ES-1.3, Step 3) Reset SI.	The operator reads the Note, and proceeds.		___				
		The operator depresses the SI Reset pushbutton.		___				
Examiner NOTE: Although the operator may depress the SI Reset pushbutton, SI was previously reset in E-1.								

Steps and Performance Standards

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	<u>CRITICAL</u>	<u>GRADE (S/U)</u>
4	(ES-1.3, Step 4/4.a) Check <u>IF</u> Unnecessary Pumps Can Be Stopped: a. Three SI Pumps - RUNNING	The operator observes the “A” SI Pump Red status light is LIT, and the Green status light is OFF.		___
		The operator observes the “B” SI Pump Red status light is LIT, and the Green status light is OFF.		___
		The operator observes the “C” SI Pump Red status light is LIT, and the Green status light is OFF.		___
5	(ES-1.3, Step 4.b) Stop SI Pump C and place both switches in PULL STOP	The operator places the “C” SI Pump Bus 14 Control Switch to PULL STOP.	✓	___
		The operator observes the “C” SI Pump Bus 14 Red and Green status lights are OFF.		___
		The operator places the “C” SI Pump Bus 16 Control Switch to PULL STOP.	✓	___
		The operator observes the “C” SI Pump Bus 16 Red and Green status lights are OFF.		___
Examiner NOTE: The Pump will actually stop when the operator places the “C” SI Pump Bus 14 Control Switch to PULL STOP.				
6	(ES-1.3, Step 4.c) Stop both RHR pumps and place in PULL STOP	The operator observes that the “A” RHR Pump Control Switch is in PULL STOP.		___
		The operator observes the “A” RHR Pump Red and Green status lights are OFF.		___
		The operator places the “B” RHR Pump Control Switch to PULL STOP.	✓	___
		The operator observes the “B” RHR Pump Red and Green status lights are OFF.		___

Steps and Performance Standards

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	<u>CRITICAL</u>	<u>GRADE (S/U)</u>
7	(ES-1.3, Step 4.d) Both CNMT spray pumps – RUNNING	The operator observes the “A” CS Pump Green and Red status lights are OFF.		___
		The operator observes the “B” CS Pump Red status light is LIT, and the Green status light is OFF.		___
		The operator proceeds to the Step 4.d RNO.		___
8	(ES-1.3, Step 4.d RNO) Pull stop any idle CNMT spray pump and go to Step 4f.	The operator observes the “A” CS Pump Control Switch is in PULL STOP.		___
		The operator observes the “A” CS Pump Red and Green status lights are OFF.		___
		The operator proceeds to Step 4.f.		___
9	(ES-1.3, Step 4.f) Check CNMT pressure – LESS THAN 28 PSIG.	The operator observes PI-945, 946, and 947 and verifies CNMT Pressure is < 28 psig.		___
10	(ES-1.3, Step 4.g) Place NaOH Tank outlet valve switches to OPEN. • AOV-836A • AOV-836B	The operator places the AOV-836A Control Switch to OPEN.	✓	___
		The operator places the AOV-836B Control Switch to OPEN.	✓	___
11	(ES-1.3, Step 4.h) Reset CNMT spray.	The operator depresses CNMT Spray RESET pushbutton.	✓	___

Steps and Performance Standards

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	<u>CRITICAL</u>	<u>GRADE (S/U)</u>
12	(ES-1.3, Step 4.i) Close discharge valves for the idle CNMT spray pumps(s) • Pump A • MOV-860A • MOV-860B • Pump B • MOV-860C • MOV-860D	The operator observes the MOV-860A Red status light is LIT and the Green status light is OFF.		___
		The operator places the MOV-860A Control Switch to CLOSE.	✓	___
		The operator observes the MOV-860A Green status light is LIT and the Red status light is OFF.		___
		The operator observes the MOV-860B Red status light is LIT and the Green status light is OFF.		___
		The operator places the MOV-860B Control Switch to CLOSE.	✓	___
		The operator observes the MOV-860B Green status light is LIT and the Red status light is OFF.		___
<u>NOTE:</u> IF D/Gs are supplying emergency AC busses, <u>THEN</u> non-essential loads may be shed as necessary to allow start of additional SW pumps.				
13	(ES-1.3, Step 5/5.a) Establish Adequate SW Flow: a. Verify at least two SW Pumps - RUNNING	The operator reads the Note, and proceeds.		___
		The operator observes that the “A” SW Pump Red status light is LIT and the Green status light is OFF.		___
		The operator observes that the “B” SW Pump Red status light is LIT and the Green status light is OFF.		___
		The operator observes that the “C” SW Pump Red status light is LIT and the Green status light is OFF.		___
		The operator observes that the “D” SW Pump Red status light is LIT and the Green status light is OFF.		___
Examiner NOTE: These conditions were established earlier in the event during the performance of E-1.				

Steps and Performance Standards

STEP	PERFORMANCE	STANDARD	CRITICAL	GRADE (S/U)															
14	(ES-1.3, Step 5.b) Verify Aux Bldg SW Isolation Valves OPEN. - MOV-4615 and MOV-4734 - MOV-4616 and MOV-4735	The operator observes that the MOV-4615 Red status light is LIT and the Green status light is OFF.		___															
		The operator observes that the MOV-4734 Red status light is LIT and the Green status light is OFF.		___															
		The operator observes that the MOV-4616 Red status light is LIT and the Green status light is OFF.		___															
		The operator observes that the MOV-4735 Red status light is LIT and the Green status light is OFF.		___															
Examiner NOTE: These conditions were established earlier in the event during the performance of E-1.																			
15	(ES-1.3, Step 5.c) Determine required SW flow to CCW HXs per table: <table><tr><td>SW DISCHARGE ALIGNMENT</td><td>CCW HXs AVAILABLE</td><td>REQUIRED SW FLOW</td></tr><tr><td>Normal</td><td>2</td><td>Total of 5000 gpm - 6000 gpm equally divided to both HXs</td></tr><tr><td>Normal</td><td>1</td><td>5000 gpm - 6000 gpm to in-service HX</td></tr><tr><td>Alternate</td><td>2</td><td>30 - 33 inches d/p across each HX</td></tr><tr><td>Alternate</td><td>1</td><td>95 - 100 inches d/p across in-service HX</td></tr></table>	SW DISCHARGE ALIGNMENT	CCW HXs AVAILABLE	REQUIRED SW FLOW	Normal	2	Total of 5000 gpm - 6000 gpm equally divided to both HXs	Normal	1	5000 gpm - 6000 gpm to in-service HX	Alternate	2	30 - 33 inches d/p across each HX	Alternate	1	95 - 100 inches d/p across in-service HX	The operator uses Table (Normal SW Discharge Alignment, Two CCW HXs Available) to determine required SW flow of 5000-6000 gpm equally divided to both Heat Exchangers.		___
SW DISCHARGE ALIGNMENT	CCW HXs AVAILABLE	REQUIRED SW FLOW																	
Normal	2	Total of 5000 gpm - 6000 gpm equally divided to both HXs																	
Normal	1	5000 gpm - 6000 gpm to in-service HX																	
Alternate	2	30 - 33 inches d/p across each HX																	
Alternate	1	95 - 100 inches d/p across in-service HX																	
Examiner NOTE: These conditions were established earlier in the event during the performance of E-1.																			
16	(ES-1.3, Step 5.d) Direct EO to adjust SW flow to required value - IF on normal SW discharge: - V-4619, CCW HX A - V-4620, CCW HX B OR - IF on alternate SW discharge: - V-4619C, CCW HX A - V-4620B, CCW HX B	The operator contacts the EO and directs that SW be adjusted to 5000-6000 gpm equally divided to both Heat Exchangers by adjusting V-4619 for CCW HX A and V-4620 for CCW HX B.		___															
CUE	Report as EO that there is 5600 gpm SW Flow equally divided to both Heat Exchangers.																		

Steps and Performance Standards

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	CRITICAL	GRADE (S/U)
Examiner NOTE: These conditions were established earlier in the event during the performance of E-1.				
17	(ES-1.3, Step 6/6.a) Establish CCW flow to RHR Hxs: a. Check both CCW Pumps – RUNNING	The operator observes that the “A” CCW Pump Red status light is LIT and the Green status light is OFF.		___
		The operator observes that the “B” CCW Pump Red status light is LIT and the Green status light is OFF.		___
Examiner NOTE: These conditions were established earlier in the event during the performance of E-1.				
18	(ES-1.3, Step 6.b) Open CCW valves to RHR Hxs • MOV-738A • MOV-738B	The operator observes that the MOV-738A Red status light is LIT and the Green status light is OFF.		___
		The operator observes that the MOV-738B Red status light is LIT and the Green status light is OFF.		___
Examiner NOTE: These conditions were established earlier in the event during the performance of E-1.				
19	(ES-1.3, Step 7/7.a) Verify RHR System Alignment: a. Verify the following valves – CLOSED ○ RHR suction valves from loop A hot leg • MOV-700 • MOV-701 ○ RHR suction valves from loop B cold leg • MOV-720 • MOV-721	The operator observes the MOV-700 Green status light is LIT and the Red status light is OFF.		___
		The operator observes the MOV-701 Green status light is LIT and the Red status light is OFF.		___
		The operator observes the MOV-720 Green status light is LIT and the Red status light is OFF.		___
		The operator observes the MOV-721 Green status light is LIT and the Red status light is OFF.		___

Steps and Performance Standards

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	<u>CRITICAL</u>	<u>GRADE (S/U)</u>
20	(ES-1.3, Step 7.b) Verify RHR pump suction crosstie valves – OPEN - MOV-704A - MOV-704B	The operator observes the MOV-704A Green and Red status lights are OFF.		___
		The operator observes the MOV-704B Red status light is LIT and the Green status light is OFF.		___
21	(ES-1.3, Step 7.c) Verify the following valves - OPEN RHR Pump discharge to Rx vessel deluges - MOV-852A - MOV-852B RHR suction from sump B (inside CNMT) - MOV-851A - MOV-851B	The operator observes the MOV-852A Red status light is LIT and the Green status light is OFF.		___
		The operator observes the MOV-852B Red status light is LIT and the Green status light is OFF.		___
		The operator observes the MOV-851A Red status light is LIT and the Green status light is OFF.		___
		The operator observes the MOV-851B Red status light is LIT and the Green status light is OFF.		___
22	(ES-1.3, Step 7.d) Verify RCDT pump suction valves from sump B – CLOSED - MOV-1813A - MOV-1813B	The operator observes the MOV-1813A Green status light is LIT and the Red status light is OFF.		___
		The operator observes the MOV-1813B Green status light is LIT and the Red status light is OFF.		___
CAUTION RHR FLOW INDICATED ON FI-626 SHOULD BE LIMITED TO 1500 GPM PER OPERATING PUMP TO ENSURE OPTIMUM PUMP PERFORMANCE				

Steps and Performance Standards

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	<u>CRITICAL</u>	<u>GRADE (S/U)</u>
23	(ES-1.3, Step 8/8.a) Initiate RHR Sump Recirculation a. Close RWST outlet valve to RHR pump suction, MOV-856. (Turn on DC power Key Switch)	The operator reads the Caution, and proceeds.		___
		The operator obtains MCB Valve Key and places the MOV-856 DC Control Power to ON.	✓	___
		The operator places the MOV-856 Control Switch to CLOSE.	✓	___
		The operator observes the MOV-856 Green status light is LIT and Red status light is OFF.		___
EXAMINER NOTE: ALTERNATE PATH DECISION POINT OCCURS IN THE NEXT STEP				
24	(ES-1.3, Step 8.b) Open both RHR suction valves from sump B (outside CNMT) ○ MOV-850A ○ MOV-850B	The operator places the MOV-850A Control Switch to OPEN and observes that the Green status light remains LIT and the Red status light remains OFF.		___
		The operator places the MOV-850B Control Switch to OPEN.	✓	___
		The operator observes that the MOV-850B Red status light is LIT and the Green status light is OFF.		___
		The operator proceeds to Step 8.b RNO.		___
25	(ES-1.3, Step 8.b RNO) If only one valve will open, THEN perform the following: Initiate only one train of RHR recirculation (Refer to ATT-14.3, ATTACHMENT RHR NPSH for further guidance)	The operator obtains ATT-14.3.		___
CUE	When the operator states that ATT-14.3 must be entered, provide the operator with Handouts 2 and 3.			

Steps and Performance Standards

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	CRITICAL	GRADE (S/U)
26	(ATT-14.3, Step 1) <u>IF</u> either RHR pump suction flowpath from sump B unavailable, <u>THEN</u> perform the following: Ensure at least one RHR pump suction flowpath from sump B is aligned. ○ MOV-850A and MOV-851A – OPEN OR ○ MOV-850B and MOV-851B – OPEN	The operator observes the MOV-850B Red status light is LIT and the Green status light is OFF.		___
		The operator observes the MOV-851B Red status light is LIT and the Green status light is OFF.		___
27	(ATT-14.3, Step 2) Ensure RHR pump suction crosstie valves open. ○ MOV-704A - OPEN ○ MOV-704B - OPEN	The operator observes the MOV-704A Red and Green status lights are OFF and observes a Tag indicating that the valve is CLOSE and de-energized for maintenance.		___
		The operator observes the MOV-704B Red status light is LIT and the Green status light is OFF.		___
<u>CAUTION</u> IF EITHER RHR PUMP SUCTION CROSSTIE IS CLOSED, THEN OPERATE ONLY THE PUMP WITH DIRECT SUMP SUCTION PATH				
28	(ATT-14.3, Step 3) Start one RHR pump with suction flowpath and heat exchanger available (Refer to ATT-14.5, Attachment RHR System).	The operator reads the Caution, and proceeds.		___
		The operator places the “B” RHR Pump Control Switch to START.	✓	___
		The operator observes the “B” RHR Pump Red status light is LIT and the Green status light is OFF.		___
CUE	Terminate the JPM.			

Steps and Performance Standards

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	CRITICAL	GRADE (S/U)
Examiner NOTE: JPM Step 29 will be performed ONLY if RWST level lowers to < 15%. Once this step (ES-1.3, Step 1 RNO) is performed, the operator will be directed to continue with ES-1.3.				
29	(ES-1.3, Step 1 RNO) IF sump recirculation NOT in progress, THEN pull-stop all pumps taking suction from RWST, EXCEPT one SI pump AND go to ECA-1.1, LOSS OF EMERGENCY COOLANT RECIRCULATION, Step 1.	The operator places the "A" SI Pump Control Switch to PULL STOP.	✓	___
		The operator observes the "A" SI Pump Red and Green status lights are OFF.		___
		OR		
		The operator places the "B" SI Pump Control Switch to PULL STOP.	✓	___
		The operator observes the "B" SI Pump Red and Green status lights are OFF.		___
		If necessary, the operator places the "C" SI Pump Bus 14 Control Switch to PULL STOP.	✓	___
		If necessary, the operator observes the "C" SI Pump Bus 14 Red and Green status lights are OFF.		___
		If necessary, the operator places the "C" SI Pump Bus 16 Control Switch to PULL STOP.	✓	___
		If necessary, the operator observes the "C" SI Pump Bus 16 Red and Green status lights are OFF.		___
		If necessary, the operator places the "A" RHR Pump Control Switch to PULL STOP.	✓	___
		If necessary, the operator observes the "A" RHR Pump Red and Green status lights are OFF.		___

Steps and Performance Standards

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	CRITICAL	GRADE (S/U)
29 (Cont'd)		If necessary, the operator places the “B” RHR Pump Control Switch to PULL STOP.	✓	___
		If necessary, the operator observes the “B” RHR Pump Red and Green status lights are OFF.		___
Examiner NOTE: The Critical nature of the step requires that only SI Pump and no RHR pumps be running at the completion of the Step.				
CUE	As the US, state, “I will implement ECA-1.1 with the CO. Continue with the establishment of the Cold Leg Recirculation establishment per ES-1.3.”			

Termination Criteria: The operator establishes Cold Leg Recirculation with the B RHR Pump running.

CUE: This terminates the JPM.

End Time: _____

.....

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2024 NRC Systems - Control Room JPM F

Date Performed:

Examinee:

Evaluator:

Time to Complete:

Question Documentation:

Result: SAT _____ UNSAT _____

Evaluator's Signature: _____ Date: _____

JPM CUE SHEET

INITIAL CONDITIONS:

- Reactor trip with SI occurred.
- The operating crew entered E-0, REACTOR TRIP AND SAFETY INJECTION, and transitioned to E-1, LOSS OF REACTOR OR SECONDARY COOLANT.
- RWST has just lowered to < 28%.
- The crew is currently at Step 23 of E-1.
- You are the HCO.

INITIATING CUE:

The US has directed you to transfer to Cold Leg Recirculation in accordance with ES-1.3, TRANSFER TO COLD LEG RECIRCULATION.

NRC EXAM

SIM JPM G

Job Performance Measure Template

Facility: Ginna JPM No.: 2024 NRC Systems - Control Room JPM G

Task Title: Restore Misaligned Control Rod Task No.:

System: Control Rod Drive System K/A Reference: 001 A4.06 (2.8)

Time-Critical Task: NO Alternate Path: NO

Validated Time: 15 Minutes

Method of Testing: Simulated Performance: _____ Actual Performance: X

Location: Classroom ____ Simulator X Plant ____

Task Standard: The task is satisfactorily met when the applicant has restored RCC G3 to the Control Bank D Rod Height as indicated on MRPI and Bank D is returned to 201 Steps.

Required Materials: Rod Control Lift Coil Cabinet Key
Handout 1: AP-RCC.2 marked up through Step 10.f.
Handout 2: ER-RCC.2 marked up through Step 6.2.

General References: O-1.2, PLANT STARTUP FROM HOT SHUTDOWN TO FULL LOAD, Rev 237
AP-RCC.2, RCC/RPI MALFUNCTION, Rev 015
ER-RCC.2, RESTORING A MISALIGNED RCC, Rev 018
A-503.1, EMERGENCY AND ABNORMAL OPERATING PROCEDURES USERS GUIDE, Rev 062

Job Performance Measure Template

<u>Critical Step Justification</u>	
Step 1	This step is critical because rotating the ROD CONTROL BANK SELECTOR Switch to the CBD position is necessary to restore RCC G3 to the Control Bank D Rod Height as indicated on MRPI and return Bank D to 201 Steps.
Step 4	This step is critical because contacting the IMD technicians and directing them to perform step 6.3.4.1-2 of ER-RCC.2 is necessary to restore RCC G3 to the Control Bank D Rod Height as indicated on MRPI and return Bank D to 201 Steps.
Step 5	This step is critical because using the Lift Coil Cabinet Key to unlock and open the Rod Control Lift Coil panel and placing the unaffected Bank D RCCs Lift Coil disconnect switch in the DOWN position is necessary to restore RCC G3 to the Control Bank D Rod Height as indicated on MRPI and return Bank D to 201 Steps.
Step 7	This step is critical because placing the ROD DRIVE switch to the OUT position until RCC G3 is at 201 steps is necessary to restore RCC G3 to the Control Bank D Rod Height as indicated on MRPI and return Bank D to 201 Steps.
Step 9	This step is critical because placing the ROD DRIVE switch to the IN position until RCC G3 is at 188 steps is necessary to restore RCC G3 to the Control Bank D Rod Height as indicated on MRPI and return Bank D to 201 Steps.
Step 10	This step is critical because placing the unaffected Bank D RCCs Lift Coil disconnect switch in the UP position is necessary to restore RCC G3 to the Control Bank D Rod Height as indicated on MRPI and return Bank D to 201 Steps.
Step 11	This step is critical because placing the RCC G3 Lift Coil disconnect switch in the DOWN position is necessary to restore RCC G3 to the Control Bank D Rod Height as indicated on MRPI and return Bank D to 201 Steps.
Step 12	This step is critical because depressing the ROD CONTROL ALARM RESET pushbutton is necessary to restore RCC G3 to the Control Bank D Rod Height as indicated on MRPI and return Bank D to 201 Steps.
Step 13	This step is critical because placing the ROD DRIVE switch to the IN position until the unaffected RCCs are at 188 steps is necessary to restore RCC G3 to the Control Bank D Rod Height as indicated on MRPI and return Bank D to 201 Steps.
Step 14	This step is critical because placing the RCC G3 Lift Coil disconnect switch in the UP position is necessary to restore RCC G3 to the Control Bank D Rod Height as indicated on MRPI and return Bank D to 201 Steps.
Step 15	This step is critical because lifting the Bank D Group 2 Step Counter window and depressing the step counter DN pushbutton until the Step Counter indicates 193 Steps is necessary to restore RCC G3 to the Control Bank D Rod Height as indicated on MRPI and return Bank D to 201 Steps.
Step 16	This step is critical because placing the ROD DRIVE switch to the OUT position until all Bank D rods are at 201 steps is necessary to restore RCC G3 to the Control Bank D Rod Height as indicated on MRPI and return Bank D to 201 Steps.

**SIMULATOR OPERATIONAL GUIDELINES
SIMULATOR REQUIREMENTS**

1. Reset to IC-13
2. Insert MALF ROD03-G3, TRIPPABLE
3. Insert Trigger 1: MALF RCS18, Ramp: 10 sec, Final Value: 1615 PPM
4. Rod Control Bank Selector Switch to MANUAL
5. Step Control Rods to 201 Steps, Bank D, both Groups
 - Annunciator C-5 will alarm
 - PPCS will indicate Control Rod Misalignment
6. Lower turbine load from 46% to 45% (Imp Out)
7. Setup the following triggers for Performance at JPM step 4:

Trigger	Parameter	Name	Value
2	REM-ROD13	P/A CONVERTER OVERRIDE	OVERRIDE MODE
3	REM-ROD12	'D' P/A CONVERTER	201
4	REM-ROD13	P/A CONVERTER OVERRIDE	MCB MODE

8. Remove MALF ROD03-G3
9. Place the Simulator in FREEZE
10. Reset to IC-165 (January, 2024)
11. This completes the setup for this JPM.
12. Place Simulator in RUN when directed by examiner.

The Sim Driver will be expected to Operate Triggers 2, 3 & 4 at Step 4 of the JPM when directed by the applicant and adjust Turbine Load at Step 13 if required.

Notes to Examiner:

This JPM will be Pre-Briefed in the Briefing Room.

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Place Handout 1 on US Desk and Provide Applicant with Initial Conditions/Cue (Last Page of this JPM), the Lift Coil Cabinet Key and Handout 2.**Initial Conditions:**

- A plant startup per O-1.2, PLANT STARTUP FROM HOT SHUTDOWN TO FULL LOAD, is in progress
- Control Rod G-3 (Bank D, Group 2) was identified as stuck.
- AP-RCC.2, RCC/RPI MALFUNCTION, was entered and is in progress.
- All necessary repairs, testing, and approvals are complete for restoring RCC Alignment.
- A-52.4 for the misaligned RCC has been completed.
- Shutdown Margin calculation was performed and is satisfactory.
- The Reactor Engineer has determined that a boration is NOT required to align the misaligned RCC.
- You are the HCO.

Initiating Cue:

- The US has directed you to restore Control Rod G3 to alignment per ER-RCC.2, RESTORING A MISALIGNED RCC, Step 6.3, RESTORING ROD MISALIGNED LOW WITH RESPECT TO BANK.
- The IMD Technician is standing by in the Relay Room to operate the P/A converter.
- The CO is available to adjust Turbine load as directed.

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

Information For Evaluator's Use:

UNSAT requires written comments on respective step.

✓ Denotes critical steps.

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 Applicant 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 Applicant acknowledges the Initiating Cue.

Steps and Performance Standards

Start Time: _____

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	<u>CRITICAL</u>	<u>GRADE (S/U)</u>
CUE	Place Handout 1 on US Desk and Provide Applicant with Initial Conditions/Cue (Last Page of this JPM), the Lift Coil Cabinet Key and Handout 2.			
1	(ER-RCC.2, Step 6.3/6.3.1) Restoring Rod Misaligned Low With Respect To Bank: 1. PLACE control rod bank selector switch to the affected bank.	The operator rotates the ROD CONTROL BANK SELECTOR Switch to the CBD position.	✓	_____
2	(ER-RCC.2, Step 6.3.2) IF affected bank group step counters not in agreement, THEN STEP rods in ½ step.	The operator observes the Control Bank D Group 1 and Group 2 step counters to be indicating 201 and determines this step is NA.		_____
3	(ER-RCC.2, Step 6.3.3) RECORD the MCB step counter position for the affected group: Bank _____ Steps _____	The operator records "D" in the "Bank" box.		_____
		The operator records "201" in the "Steps" box.		_____
4	(ER-RCC.2, Step 6.3.4/6.3.4.1-2) IF the misaligned RCC is in a Control Bank, THEN PERFORM the following: 1. PLACE the bank selector for the P/A converter (located in MRPI Rack #1) to the affected bank. 2. RECORD the local reading for the affected bank: Bank _____ Steps _____	The operator contacts the IMD technicians and directs them to perform step 6.3.4.1-2 of ER-RCC.2.	✓	_____

Steps and Performance Standards

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	CRITICAL	GRADE (S/U)
SIM DRIVER: Operate trigger 2, 3 and 4 in that order. Contact Control Room as IMD and report that Step 6.3.4.1-2 of ER-RCC.2 has been performed. Report that Bank D is at 201 Steps.				
5	(ER-RCC.2, Step 6.3.5) DISCONNECT all lift coils for the affected bank except the one for the misaligned RCC.	Using the Lift Coil Cabinet Key, the operator unlocks and opens the Rod Control Lift Coil panel.	✓	___
		The operator places the following switches to the DOWN position: • CB D GRP 1 MECH K7 • CB D GRP 1 MECH C7 • CB D GRP 2 MECH G11	✓	___
Examiner NOTE: The Lift Coil switch is ABOVE the placard. The Lift Coil is energized with the Lift Coil switch in the UP position.				
NOTE • To determine if a misaligned rod is moving, a MRPI transition should occur within 2 steps. • Alarm C-30, Rod Control Urgent Failure Rod Stop, will annunciate as withdrawal starts.				
6	(ER-RCC.2, Step 6.3.6/6.3.6.1) PERFORM the following to align the RCC with its bank position: 1. INITIATE a boration in accordance with the Reactivity Plan.	The operator reads the Note and proceeds.		___
		The operator recognizes that no boration is required and proceeds.		___
Examiner Note: The Reactor Engineer has determined that a boration is NOT required to align the misaligned RCC.				
7	(ER-RCC.2, Step 6.3.6.2) WITHDRAW the misaligned RCC to Match Tav _g and Tref until it transitions to the same MRPI position as its bank.	The operator places the ROD DRIVE switch to the OUT position and observes the DEMAND STEP COUNTER counting upwards, RCC G3 moving upward on MRPI until RCC G3 is at 200 steps.	✓	___
8	(ER-RCC.2, Step 6.3.6.3) IF rod will NOT move, THEN STOP the Boration AND GO TO Step 6.4.	The operator observes rod movement and determines that this step is NA.		___

Steps and Performance Standards

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	CRITICAL	GRADE (S/U)
9	(ER-RCC.2, Step 6.3.6.4) INSERT the misaligned RCC until it transitions to one MRPI position below its bank.	The operator places the ROD DRIVE switch to the IN position and observes the DEMAND STEP COUNTER counting downwards, RCC G3 moving inward on MRPI until RCC G3 is at 188 steps.	✓	—
10	(ER-RCC.2, Step 6.3.6.5) RECONNECT all lift coils for the affected bank.	Using the Lift Coil Cabinet Key, the operator unlocks and opens the Rod Control Lift Coil panel.		—
		The operator places the following switches to the UP position: • CB D GRP 1 MECH K7 • CB D GRP 1 MECH C7 • CB D GRP 2 MECH G11	✓	—
Examiner NOTE: The operator will likely leave the Lift Coil Cabinet unlocked until the procedure is completed.				
11	(ER-RCC.2, Step 6.3.6.6) DISCONNECT the lift coil for the misaligned rod.	The operator places the following switch to the DOWN position: • CB D GRP 2 MECH G3	✓	—
Examiner NOTE: The Lift Coil switch is ABOVE the placard. The Lift Coil is energized with the Lift Coil switch in the UP position.				
NOTE • The Rod Control alarm reset pushbutton will reset urgent failure alarms without resetting the counters. • The alarm reset pushbutton also removes the Pulser inhibits for manual and auto rod operation, and the lockups for the stationary and moveable grippers. To ensure stationary gripper engagement, resetting the urgent failure places the stationary coil on hi voltage initially, then low voltage.				

Steps and Performance Standards

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	<u>CRITICAL</u>	<u>GRADE (S/U)</u>
12	(ER-RCC.2, Step 6.3.6.7) RESET Urgent Failure alarm by pushing the ROD CONTROL ALARM RESET pushbutton.	The operator reads the Notes and proceeds.		___
		The operator depresses the ROD CONTROL ALARM RESET pushbutton.	✓	___
		The operator observes that MCB Annunciator C-30 EXTINGUISHES.		___
13	(ER-RCC.2, Step 6.3.6.8) WHILE adjusting turbine load to maintain T_{avg} at T_{ref} , move the affected bank IN to the same MRPI transition point as the misaligned rod.	The operator directs the CO to adjust turbine load to maintain T_{avg} at T_{ref} .		___
		The operator places the ROD DRIVE switch to the IN position and observes the DEMAND STEP COUNTER counting downwards, RCC C7, G11 and K7 moving inward on MRPI until these RCCs are at 188 steps.	✓	___
CUE	As CO Acknowledge. IF directed, SIM DRIVER (As CO) adjust turbine load as needed to maintain T_{avg} at T_{ref}.			
14	(ER-RCC.2, Step 6.3.7) RECONNECT the lift coil for the misaligned RCC.	The operator places the following switch to the UP position: • CB D GRP 2 MECH G3	✓	___
Examiner NOTE: The Lift Coil switch is ABOVE the placard. The Lift Coil is energized with the Lift Coil switch in the UP position.				
15	(ER-RCC.2, Step 6.3.8) RESET the MCB step counter of the affected group only by opening the counter window and resetting to match the other group position.	The operator observes the Bank D Group 1 Step Counter to be at 193 Steps.		___
		The operator lifts the Bank D Group 2 Step Counter window and depresses the step counter DN pushbutton until the Step Counter indicates 193 Steps.	✓	___

Steps and Performance Standards

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	CRITICAL	GRADE (S/U)
16	(ER-RCC.2, Step 6.3.9) WHILE BORATING to maintain T_{avg} at T_{ref} , WITHDRAW rods to the position recorded in Step 6.3.3.	The operator places the ROD DRIVE switch to the OUT position and observes the Bank D DEMAND STEP COUNTERs counting upwards until they are at 201 steps.	✓	—

Termination Criteria: The operator has restored all rods in Bank D to 201 Steps.

CUE: This terminates the JPM.

End Time: _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2024 NRC Systems - Control Room JPM G

Date Performed:

Examinee:

Evaluator:

Time to Complete:

Question Documentation:

Result: SAT _____ UNSAT _____

Evaluator's Signature: _____ Date: _____

JPM CUE SHEET

INITIAL CONDITIONS:

- A plant startup per O-1.2, PLANT STARTUP FROM HOT SHUTDOWN TO FULL LOAD, is in progress
- Control Rod G-3 (Bank D, Group 2) was identified as stuck.
- AP-RCC.2, RCC/RPI MALFUNCTION, was entered and is in progress.
- All necessary repairs, testing, and approvals are complete for restoring RCC Alignment.
- A-52.4 for the misaligned RCC has been completed.
- Shutdown Margin calculation was performed and is satisfactory.
- The Reactor Engineer has determined that a boration is NOT required to align the misaligned RCC.
- You are the HCO.

INITIATING CUE:

- The US has directed you to restore Control Rod G3 to alignment per ER-RCC.2, RESTORING A MISALIGNED RCC, Step 6.3, RESTORING ROD MISALIGNED LOW WITH RESPECT TO BANK.
- The IMD Technician is standing by in the Relay Room to operate the P/A converter.
- The CO is available to adjust Turbine load as directed.

NRC EXAM

IN-PLANT JPM I

Job Performance Measure Template

Facility: Ginna JPM No.: 2024 NRC Systems – In-Plant JPM I

Task Title: Perform Attachment RHR Pressure Reduction Task No.:

System: Residual Heat Removal System K/A Reference: 005 A2.04 (3.9/3.7)

Time-Critical Task: NO Alternate Path: NO

Validated Time: 18 Minutes

Method of Testing: Simulated Performance: X Actual Performance: _____

Location: Classroom _____ Simulator _____ Plant X

Task Standard: The task is satisfactorily met when the applicant has reset the electrical breaker Thermal Overload device for MOV-850A & B and manually overridden RHR System Relief valves and reduced RHR System pressure to less than 150 psig.

Required Materials: PPE (Hardhat, Safety Glasses, Hearing Protection, Safety Shoes etc.)
Dosimetry
Handout 1: Blank Copy of ATT-14.6.
Handout 2: Picture of MCC breaker cabinet internals

General References: ES-1.3, TRANSFER TO COLD LEG RECIRCULATION, Rev 048
ATT-14.6, ATTACHMENT RHR PRESS REDUCTION, Rev 00500
A-503.1, EMERGENCY AND ABNORMAL OPERATING PROCEDURES
USERS GUIDE, Rev 062
Drawing 33013-1247, AUXILIARY COOLANT RESIDUAL HEAT
REMOVAL, Rev 50

Job Performance Measure Template

<u>Critical Step Justification</u>	
Step 5	This step is critical because unlocking and opening breaker at MCC 1C pos 6J for MOV-850A, opening MCC 1C pos 6J breaker cubicle door, depressing the MCC 1C pos 6J electrical breaker BLUE Thermal Overload Reset Pushbutton, closing MCC 1C pos 6J breaker cubicle door and closing and locking the breaker at MCC 1C pos 6J for MOV-850A is necessary to reset the electrical breaker Thermal Overload device for MOV-850A.
Step 6	This step is critical because unlocking and opening breaker at MCC 1D pos 6J for MOV-850B, opening MCC 1D pos 6J breaker cubicle door, depressing the MCC 1D pos 6J electrical breaker BLUE Thermal Overload Reset Pushbutton, closing MCC 1D pos 6J breaker cubicle door, and closing and locking the breaker at MCC 1D pos 6J for MOV-850B is necessary to reset the electrical breaker Thermal Overload device for MOV-850B.
Step 9	This step is critical because pulling up on the V-686G and V-686I handles at the same time is necessary to manually override RHR System Relief valves and reduce RHR System pressure to less than 150 psig.
Step 10	This step is critical because pulling up on the V-686H and V-686J handles at the same time is necessary to manually override RHR System Relief valves and reduce RHR System pressure to less than 150 psig.

Job Performance Measure Template

Notes to Examiner:**READ TO THE EXAMINEE**

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Provide Applicant with Initial Conditions/Cue (Last Page of this JPM), and Handout 1.**Initial Conditions:**

- A large break LOCA has occurred.
- The Control Room is performing actions in ES-1.3, TRANSFER TO COLD LEG RECIRCULATION.
- MOV-850A and MOV-850B, RHR Suction Valves from Sump B, will not open.
- V-711A, INSTR ROOT VLV to PIC-629, is tagged in the OPEN position.
- You have Key #24.

Initiating Cue:

The Unit Supervisor directs you to perform ATT-14.6, ATTACHMENT RHR PRESS REDUCTION, to open MOV-850A and MOV-850B.

NOTE: No plant equipment should be operated during the performance of this JPM. All actions must be SIMULATED.

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

Information For Evaluator's Use:

UNSAT requires written comments on respective step.

✓ Denotes critical steps.

The timeclock starts when the Applicant acknowledges the Initiating Cue.

Steps and Performance Standards

Start Time: _____

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	CRITICAL	GRADE (S/U)				
CUE	Provide Applicant with Initial Conditions/Cue (Last Page of this JPM) and Handout 1.							
NOTE Under certain configurations of check valve leakage, the associated pressure buildup in the RHR system could prohibit the opening of MOV-850A/B or MOV-857A/B/C due to high seat DP. The following steps may be used to reduce this DP.								
1	PART A - Perform the following to determine RHR system pressure. 1. Ensure open V-711A INSTR ROOT VLV TO PIC-629 (SFP Pump area).	The operator reads the Note and proceeds.		_____				
		The operator recognizes from the Initial Conditions that V-711A is tagged in the OPEN position.		_____				
CUE	IF ASKED, "Valve 711A is tagged in the open position"							
Examiner NOTE: The Valve is normally open								
Examiner NOTE: eSOMS location: AB Basement SFP Pump area, 4' above floor								
<u>DANGER</u> PREVENT APPLICANT FROM MOVING LEAD SHIELDING TO CHECK V-711A								
2	PART A - Perform the following to determine RHR system pressure. 2. Ensure open V-786C PIC-629 ISOL (SFP Pump area).	The operator rotates the V-786C Handwheel in the clockwise direction.		_____				
CUE	Indicate valve stem is extended and valve handwheel turns in the clockwise direction if attempted.							
Examiner NOTE: The Valve is normally open								
Examiner NOTE: eSOMS location: AB Basement SFP Pump area, 4' above floor								

Steps and Performance Standards

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	CRITICAL	GRADE (S/U)
3	PART A - Perform the following to determine RHR system pressure. 3. <u>IF</u> pressure indicated on RHR Loop pressure indicator PIC-629 is greater than 150 PSIG, <u>THEN</u> perform Part B to reduce RHR system pressure. <u>IF NOT</u> , <u>THEN</u> notify Control Room pressure reduction is not necessary, <u>AND</u> exit this attachment.	The operator observes PIC-629.		—
		The operator contacts the Control Room and reports that RHR pressure is greater than 150 psig (160 psig).		—
		The operator continues to PART B.		—
CUE	WHEN OBSERVED Indicate pressure on PIC-629 reads 160 psig and stable.			
CUE	WHEN CONTROL ROOM is contacted, state, "Control Room acknowledges."			
4	PART B - Perform the following to reduce RHR system pressure.	The operator proceeds to the Note prior to Step 1.		—
NOTE Perform only the portions of this step relating to the valves being addressed by the procedure in effect.				

Steps and Performance Standards

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	<u>CRITICAL</u>	<u>GRADE (S/U)</u>
Examiner NOTE: The resetting of the electrical breakers in JPM Steps 5-6 can take place in any order.				
5	PART B - Perform the following to reduce RHR system pressure. 1. <u>IF</u> motor failed to open the valve due to high seat DP, <u>THEN</u> verify the appropriate breakers are reset by directing the AO to perform the following: - MOV-850A, MCC 1C pos 6J ○ Unlock and open breaker ○ Open breaker door ○ Depress thermal overload reset pushbutton ○ Close breaker door ○ Close and lock breaker	The operator reads the Note and proceeds.		___
		The operator proceeds to MCC 1C pos 6J		___
		The operator unlocks and opens breaker at MCC 1C pos 6J for MOV-850A.	✓	___
		The operator opens MCC 1C pos 6J breaker cubicle door.	✓	___
		The operator depresses the MCC 1C pos 6J electrical breaker BLUE Thermal Overload Reset Pushbutton.	✓	___
		The operator closes MCC 1C pos 6J breaker cubicle door.	✓	___
		The operator closes and locks the breaker at MCC 1C pos 6J for MOV-850A.	✓	___
CUE	WHEN operator discusses donning electrical safety PPE, THEN inform operator "You have the applicable electrical safety PPE on."			
	WHEN operator indicates they would unlock and OPEN MCC 1C pos 6J breaker, THEN inform operator "Breaker is unlocked and OPEN."			
	WHEN operator indicates they would open the MCC 1C pos 6J breaker cubicle door, THEN inform operator "Breaker cubicle door is open."			
	WHEN Breaker cubicle door is open PROVIDE Applicant with Handout 2 (MCC breaker Internals).			
	WHEN operator indicates they would depress the blue thermal overload reset pushbutton, THEN inform operator "Thermal overload reset pushbutton is depressed".			
	WHEN operator indicates they would close the MCC 1C pos 6J breaker cubicle door, THEN inform operator "Breaker cubicle door is closed."			
	WHEN operator indicates they would CLOSE and lock MCC 1C pos 6J breaker, THEN inform operator "Breaker is CLOSED and locked."			

Steps and Performance Standards

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	CRITICAL	GRADE (S/U)
6	PART B - Perform the following to reduce RHR system pressure. 1. <u>IF</u> motor failed to open the valve due to high seat DP, <u>THEN</u> verify the appropriate breakers are reset by directing the AO to perform the following: - MOV-850B, MCC 1D pos 6J o Unlock and open breaker o Open breaker door o Depress thermal overload reset pushbutton o Close breaker door o Close and lock breaker	The operator proceeds to MCC 1D pos 6J		___
		The operator unlocks and opens breaker at MCC 1D pos 6J for MOV-850B.	✓	___
		The operator opens MCC 1D pos 6J breaker cubicle door.	✓	___
		The operator depresses the MCC 1D pos 6J electrical breaker BLUE Thermal Overload Reset Pushbutton.	✓	___
		The operator closes MCC 1D pos 6J breaker cubicle door.	✓	___
		The operator closes and locks the breaker at MCC 1D pos 6J for MOV-850B.	✓	___
CUE	WHEN operator discusses donning electrical safety PPE, THEN inform operator "You have the applicable electrical safety PPE on."			
	WHEN operator indicates they would unlock and OPEN MCC 1D pos 6J breaker, THEN inform operator "Breaker is unlocked and OPEN."			
	WHEN operator indicates they would open the MCC 1D pos 6J breaker cubicle door, THEN inform operator "Breaker cubicle door is open."			
	WHEN Breaker cubicle door is open PROVIDE Applicant with Handout 2 (MCC breaker Internals).			
	WHEN operator indicates they would depress the blue thermal overload reset pushbutton, THEN inform operator "Thermal overload reset pushbutton is depressed".			
	WHEN operator indicates they would close the MCC 1D pos 6J breaker cubicle door, THEN inform operator "Breaker cubicle door is closed."			
	WHEN operator indicates they would CLOSE and lock MCC 1D pos 6J breaker, THEN inform operator "Breaker is CLOSED and locked."			
7	Perform one of the following options to reduce RHR system pressure (listed in order of preference):	The operator determines to use Option 1.		___
CUE	IF the Applicant contacts Control Room for direction, THEN ask "What do you Recommend?" If they choose any option other than Option 1, direct that Option 1 be used.			

Steps and Performance Standards

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	CRITICAL	GRADE (S/U)
8	<u>Option 1 –</u> a) Direct an AO in Aux Bldg to locally ENSURE OPEN the following valves: • V-686A, RHR RECIRC LINE DRAIN VALVE • V-686B, RHR RECIRC LINE DRAIN VALVE • V-686E, RHR PUMP A RECIRCULATION LINE RELIEF VALVE UPSTREAM ISOLATION VLV • V-686F, RHR PUMP B RECIRCULATION LINE RELIEF VALVE UPSTREAM ISOLATION VLV • V-686K, RHR PUMP A RECIRCULATION LINE RELIEF VALVE DOWNSTREAM ISOLATION VLV • V-686L, RHR PUMP B RECIRCULATION LINE RELIEF VALVE DOWNSTREAM ISOLATION VLV	The operator rotates the V-686A Handwheel in the clockwise direction.		___
		The operator rotates the V-686B Handwheel in the clockwise direction.		___
		The operator rotates the V-686E Handwheel in the clockwise direction.		___
		The operator rotates the V-686F Handwheel in the clockwise direction.		___
		The operator rotates the V-686K Handwheel in the clockwise direction.		___
		The operator rotates the V-686L Handwheel in the clockwise direction.		___

CUE	Indicate valve stem is extended and valve handwheel turns in the clockwise direction if attempted.			
Examiner NOTE: ALL Valves are normally open and may be checked in ANY order.				
Examiner NOTE: eSOMS location: All valves are in AB Basement RWST Recirc Pump Area, approximately 1-3’ above floor				

Steps and Performance Standards

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	CRITICAL	GRADE (S/U)
9	<u>Option 1</u> – b) Direct an AO in Aux Bldg to SIMULTANEOUSLY PULL, then RELEASE the manual override handles for the following relief valves: • V-686G, RHR PUMP A PUMP RECIRCULATION LINE UPSTREAM RELIEF VALVE • V-686I RHR PUMP A PUMP RECIRCULATION LINE DOWNSTREAM RELIEF VALVE	The operator pulls up on V-686G and V-686I handles at the same time.	✓	_____
CUE	State, “Manual override handles raise and then lower. Slight flow noise is heard.”			
Examiner NOTE: eSOMS location: Valves are in AB Basement RWST Recirc Pump Area, approximately 3’ above floor.				
10	<u>Option 1</u> – c) Direct an AO in Aux Bldg to SIMULTANEOUSLY PULL, then RELEASE the manual override handles for the following relief valves: • V-686H, RHR PUMP B PUMP RECIRCULATION LINE UPSTREAM RELIEF VALVE • V-686J, RHR PUMP B PUMP RECIRCULATION LINE DOWNSTREAM RELIEF VALVE	The operator pulls up on V-686H and V-686J handles at the same time.	✓	_____
CUE	State, “Manual override handles raise and then lower. Slight flow noise is heard.”			
Examiner NOTE: eSOMS location: Valves are in AB Basement RWST Recirc Pump Area, approximately 3’ above floor.				

Steps and Performance Standards

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	CRITICAL	GRADE (S/U)
11	<u>Option 1</u> – d) Verify PIC-629 is less than 150 PSIG. IF NOT, THEN notify the Control Room to perform an alternate RHR system pressure reduction option. IF PIC-629 is less than 150 PSIG, THEN notify the Control Room that RHR system pressure has been reduced.	The operator observes PIC-629.		
		The operator contacts the Control Room and reports that RHR pressure has been reduced (130 psig).		
CUE	WHEN OBSERVED Indicate pressure on PIC-629 reads 130 psig and stable.			
CUE	WHEN CONTROL ROOM is contacted, state, “Control Room acknowledges.”			

Termination Criteria: The operator informs the Control Room that RHR Pressure has been reduced (130 psig).

CUE: This terminates the JPM.

End Time: _____

.....

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2024 NRC Systems – In-Plant JPM I

Date Performed:

Examinee:

Evaluator:

Time to Complete:

Question Documentation:

Result: SAT _____ UNSAT _____

Evaluator's Signature: _____ Date: _____

JPM CUE SHEET

INITIAL CONDITIONS:

- A large break LOCA has occurred.
- The Control Room is performing actions in ES-1.3, TRANSFER TO COLD LEG RECIRCULATION.
- MOV-850A and MOV-850B, RHR Suction Valves from Sump B, will not open.
- V-711A, INSTR ROOT VLV to PIC-629, is tagged in the OPEN position.
- You have Key #24.

INITIATING CUE:

The Unit Supervisor directs you to perform ATT-14.6, ATTACHMENT RHR PRESS REDUCTION, to open MOV-850A and MOV-850B.

NOTE: No plant equipment should be operated during the performance of this JPM. All actions must be SIMULATED.

NRC EXAM

IN-PLANT JPM J

Job Performance Measure Template

Facility: Ginna JPM No.: 2024 NRC Systems – In-Plant JPM J

Task Title: Trip of Failed AC Emergency UV Relay Task No.:

System: AC Electrical Distribution System K/A Reference: APE 056 AA2.53 (3.2/3.3)

Time-Critical Task: NO Alternate Path: NO

Validated Time: 10 Minutes

Method of Testing: Simulated Performance: X Actual Performance: _____

Location: Classroom _____ Simulator _____ Plant X

Task Standard: The task is satisfactorily met when the applicant has tripped the Loss of Voltage 27 D/B relay for Bus 14.

Required Materials: PPE (Hardhat, Safety Glasses, Hearing Protection, Safety Shoes etc.)
Dosimetry
Undervoltage Cabinet Key #25 (Simulated)
Handout 1: ER-UV.1 marked up for this JPM.

General References: AR-L-14, BUS 14 UNDER VOLTAGE SAFEGUARDS, Rev 01201
ER-UV.1, Trip of Failed AC Emergency UV Relay, Rev 006
A-503.1, EMERGENCY AND ABNORMAL OPERATING PROCEDURES USERS GUIDE, Rev 062

Job Performance Measure Template

<u>Critical Step Justification</u>	
Step 6	This step is critical because inserting the Undervoltage Cabinet Key #25 into the TEST ENABLE key switch (S20) on Bus 14 Auxiliary Relay Rack and rotating clockwise to the TEST position is necessary to trip the Loss of Voltage 27 D/B relay for Bus 14.
Step 7	This step is critical because placing the Relay BX1/14 Toggle switch to the TRIP (Up) position is necessary to trip the Loss of Voltage 27 D/B relay for Bus 14.
Step 8	This step is critical because placing the Relay BX2/14 Toggle switch to the TRIP (Up) position is necessary to trip the Loss of Voltage 27 D/B relay for Bus 14.
Step 9	This step is critical because placing the Relay BX3/14 Toggle switch to the TRIP (Up) position is necessary to trip the Loss of Voltage 27 D/B relay for Bus 14.
Step 10	This step is critical because placing the Relay BX4/14 Toggle switch to the TRIP (Up) position is necessary to trip the Loss of Voltage 27 D/B relay for Bus 14.
Step 11	This step is critical because placing the Relay BX5/14 Toggle switch to the TRIP (Up) position is necessary to trip the Loss of Voltage 27 D/B relay for Bus 14.
Step 12	This step is critical because placing the Relay BX6/14 Toggle switch to the TRIP (Up) position is necessary to trip the Loss of Voltage 27 D/B relay for Bus 14.

Job Performance Measure Template

Notes to Examiner:**READ TO THE EXAMINEE**

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Provide Applicant with Initial Conditions/Cue (Last Page of this JPM), and Handout 1 and Undervoltage cabinet key #25 (Simulated).

Initial Conditions:

- You are an extra Licensed Operator.
- The control room has received L-14, BUS 14 UNDERVOLTAGE SAFEGUARDS annunciator.
- Procedure ER-UV.1, TRIP OF FAILED AC EMERGENCY UV RELAY is being performed and the control room staff is at step 6.2.
- It is determined that the Loss of Voltage 27 D/B relay for Bus 14 has failed.

Initiating Cue:

The Unit Supervisor directs you to continue with Step 6.2 of ER-UV.1 to complete the tripping of a failed Loss of Voltage 27 D/B relay for Bus 14.

NOTE: No plant equipment should be operated during the performance of this JPM. All actions must be SIMULATED.

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

.....

Information For Evaluator's Use:

UNSAT requires written comments on respective step.

✓ Denotes critical steps.

The timeclock starts when the Applicant acknowledges the Initiating Cue.

.....

Steps and Performance Standards

Start Time: _____

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	<u>CRITICAL</u>	<u>GRADE (S/U)</u>
CUE	Provide Applicant with Initial Conditions/Cue (Last Page of this JPM), and Handout 1 and Undervoltage cabinet key #25 (Simulated).			
1	(ER-UV.1, Step 6.2) WHEN a failed, degraded voltage or loss of voltage relay has been identified, THEN perform the following:	The operator recognizes that the Loss of Voltage 27 D/B relay for Bus 14 has failed and proceeds.		_____
NOTE - Attachment 5, Relay Affected Equipment List identifies function of each of the auxiliary relays. - Each attachment is divided into Part A for 27 or 27D relay failure OR Part B for 27/B or 27D/B relay failure. - Actuation of an X1 relay OR BX1 relay will actuate the MCB annunciator for the affected bus. All other functions require the actuation of both X relay AND BX relay. See Attachment 5 for affected equipment.				
2	(ER-UV.1, Step 6.2.1) SELECT appropriate attachment section for tripping a failed undervoltage protection channel: - Attachment 1 BUS 14 - Attachment 2 BUS 16 - Attachment 3 BUS 17 - Attachment 4 BUS 18	The operator reads the NOTES and proceeds.		_____
		The operator addresses Attachment 1, Bus 14 Auxiliary Relay Rack AR-A1 Aux Bldg Operating Floor.		_____
3	(ER-UV.1, Step 6.2.2) DISPATCH operator with undervoltage cabinet key #24 OR #25 and appropriate attachment to affected bus undervoltage auxiliary relay cabinet: - Bus 14 - Rack AR-A1 - Aux Bldg Operating Floor - Bus 16 - Rack AR-B1 - Aux Bldg Middle Level - Bus 17 - Rack AR-B2 - Screenhouse - Bus 18 - Rack AR-A2 - Screenhouse	The operator proceeds to the Bus 14 Undervoltage Auxiliary Relay Cabinet.		_____

Steps and Performance Standards

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	CRITICAL	GRADE (S/U)
4	(ER-UV.1, Attachment 1, PART A) Trip of Failed Bus 14, Degraded Voltage (27) or Loss of Voltage (27D) Relay	The operator recognizes that PART A is not applicable and proceeds to PART B.		—
5	(ER-UV.1, Attachment 1, PART B, Step 1.0) Trip of Failed Bus 14, Degraded Voltage (27/B) or Loss of Voltage (27D/B) Relay 1.0 VERIFY Part A has NOT been performed	The operator recognizes that PART A has not been completed and proceeds.		—
6	(ER-UV.1, Attachment 1, PART B, Step 2.0) 2.0 PLACE TEST ENABLE key switch (S20) on Bus 14 Auxiliary Relay Rack (bottom left hand corner) to TEST position. (Key cannot be removed when in TEST position.)	The operator inserts the Undervoltage Cabinet Key #25 into the TEST ENABLE key switch (S20) on Bus 14 Auxiliary Relay Rack and rotates clockwise to the TEST position.	✓	—
CUE	State “The switch is in the desired (TEST) position.”			
NOTE Performing the following will cause MCB Annunciator L-14, BUS 14 UNDERVOLTAGE SAFEGUARDS to Alarm.				

Steps and Performance Standards

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	CRITICAL	GRADE (S/U)
7	(ER-UV.1, Attachment 1, PART B, Step 3.0) 3.0 PLACE each individual Auxiliary Relay toggle switch to TRIP position AND VERIFY each Yellow UV light energizes or remains energized. (Located on the Auxiliary Relay Rack) - Relay BX1/14 Toggle switch to TRIP - Yellow UV Light LIT	The operator places the Relay BX1/14 Toggle switch to the TRIP (Up) position.	✓	___
		The operator observes the Relay BX1/14 Yellow UV Light is LIT and the Green NORMAL light is OFF.		___
CUE	When the switch is repositioned, state "The Switch is in the desired position."			
CUE	When the UV light is observed, state "The lights are as expected."			
8	(ER-UV.1, Attachment 1, PART B, Step 3.0) 3.0 PLACE each individual Auxiliary Relay toggle switch to TRIP position AND VERIFY each Yellow UV light energizes or remains energized. (Located on the Auxiliary Relay Rack) - Relay BX2/14 Toggle switch to TRIP - Yellow UV Light LIT	The operator places the Relay BX2/14 Toggle switch to the TRIP (Up) position.	✓	___
		The operator observes the Relay BX2/14 Yellow UV Light is LIT and the Green NORMAL light is OFF.		___
CUE	When the switch is repositioned, state "The Switch is in the desired position."			
CUE	When the UV light is observed, state "The lights are as expected."			

Steps and Performance Standards

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	CRITICAL	GRADE (S/U)
9	(ER-UV.1, Attachment 1, PART B, Step 3.0) 3.0 PLACE each individual Auxiliary Relay toggle switch to TRIP position AND VERIFY each Yellow UV light energizes or remains energized. (Located on the Auxiliary Relay Rack) - Relay BX3/14 Toggle switch to TRIP - Yellow UV Light LIT	The operator places the Relay BX3/14 Toggle switch to the TRIP (Up) position.	✓	___
		The operator observes the Relay BX3/14 Yellow UV Light is LIT and the Green NORMAL light is OFF.		___
CUE	When the switch is repositioned, state "The Switch is in the desired position."			
CUE	When the UV light is observed, state "The lights are as expected."			
10	(ER-UV.1, Attachment 1, PART B, Step 3.0) 3.0 PLACE each individual Auxiliary Relay toggle switch to TRIP position AND VERIFY each Yellow UV light energizes or remains energized. (Located on the Auxiliary Relay Rack) - Relay BX4/14 Toggle switch to TRIP - Yellow UV Light LIT	The operator places the Relay BX4/14 Toggle switch to the TRIP (Up) position.	✓	___
		The operator observes the Relay BX4/14 Yellow UV Light is LIT and the Green NORMAL light is OFF.		___
CUE	When the switch is repositioned, state "The Switch is in the desired position."			
CUE	When the UV light is observed, state "The lights are as expected."			

Steps and Performance Standards

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	CRITICAL	GRADE (S/U)
11	(ER-UV.1, Attachment 1, PART B, Step 3.0) 3.0 PLACE each individual Auxiliary Relay toggle switch to TRIP position AND VERIFY each Yellow UV light energizes or remains energized. (Located on the Auxiliary Relay Rack) - Relay BX5/14 Toggle switch to TRIP - Yellow UV Light LIT	The operator places the Relay BX5/14 Toggle switch to the TRIP (Up) position.	✓	___
		The operator observes the Relay BX5/14 Yellow UV Light is LIT and the Green NORMAL light is OFF.		___
CUE	When the switch is repositioned, state "The Switch is in the desired position."			
CUE	When the UV light is observed, state "The lights are as expected."			
12	(ER-UV.1, Attachment 1, PART B, Step 3.0) 3.0 PLACE each individual Auxiliary Relay toggle switch to TRIP position AND VERIFY each Yellow UV light energizes or remains energized. (Located on the Auxiliary Relay Rack) - Relay BX6/14 Toggle switch to TRIP - Yellow UV Light LIT	The operator places the Relay BX6/14 Toggle switch to the TRIP (Up) position.	✓	___
		The operator observes the Relay BX6/14 Yellow UV Light is LIT and the Green NORMAL light is OFF.		___
CUE	When the switch is repositioned, state "The Switch is in the desired position."			
CUE	When the UV light is observed, state "The lights are as expected."			

Steps and Performance Standards

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	CRITICAL	GRADE (S/U)
13	(ER-UV.1, Attachment 1, PART B, Step 4.0) 4.0 RETURN to step 6.2.3	The operator returns to step 6.2.3 of the main body of the procedure.		
CUE	IF Applicant informs Control Room that Loss of Voltage 27D/B Relay has been tripped, THEN acknowledge communications as the Control Room.			

Termination Criteria: The operator has tripped the failed Loss of Voltage 27 D/B relay for Bus 14 and proceeded to Step 6.2.3 of ER-UV.1.

CUE: This terminates the JPM.

End Time: _____

.....

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2024 NRC Systems – In-Plant JPM J

Date Performed:

Examinee:

Evaluator:

Time to Complete:

Question Documentation:

Result: SAT _____ UNSAT _____

Evaluator's Signature: _____ Date: _____

JPM CUE SHEET

INITIAL CONDITIONS:

- You are an extra Licensed Operator.
- The control room has received L-14, BUS 14 UNDERVOLTAGE SAFEGUARDS annunciator.
- Procedure ER-UV.1, TRIP OF FAILED AC EMERGENCY UV RELAY is being performed and the control room staff is at step 6.2.
- It is determined that the Loss of Voltage 27 D/B relay for Bus 14 has failed.

INITIATING CUE:

The Unit Supervisor directs you to continue with Step 6.2 of ER-UV.1 to complete the tripping of a failed Loss of Voltage 27 D/B relay for Bus 14.

NOTE: No plant equipment should be operated during the performance of this JPM. All actions must be SIMULATED.

NRC EXAM

IN-PLANT JPM K

Job Performance Measure Template

Facility: Ginna

JPM No.: 2024 NRC Systems –
In-Plant JPM KTask Title: Perform ATT-5.5, ATTACHMENT
SAFW WITH SUCTION FROM DI
WATER STORAGE TANK DURING
SBO

Task No.:

System: Auxiliary/Emergency Feedwater System K/A Reference: EPE 055 EA1.09 (4.4)

Time-Critical Task: NO

Alternate Path: NO

Validated Time: 35 Minutes

Method of Testing: Simulated Performance: X Actual Performance: _____Location: Classroom _____ Simulator _____ Plant X

Task Standard: The task is satisfactorily met when the Applicant has started the SAFW Diesel Generator, aligned and started the D SAFW Pump, and is providing flow from the DWST to both Steam Generators.

Required Materials: PPE (Hardhat, Safety Glasses, Hearing Protection, Safety Shoes etc.)
Handout 1: Blank copy of ATT-5.5.
Handout 2: Picture of SAFW PUMP D MANUAL TRANSFER SWITCH, 43/PSF01BGeneral References: ECA-0.0, LOSS OF ALL AC POWER, Rev 045
ATT-5.5, ATTACHMENT SAFW WITH SUCTION FROM DI WATER STORAGE TANK DURING SBO, Rev 006
A-503.1, EMERGENCY AND ABNORMAL OPERATING PROCEDURES USERS GUIDE, Rev 062

Job Performance Measure Template

<u>Critical Step Justification</u>	
Step 2	This step is critical because placing the AMS/KDG08 SAFW D/G ENGINE MODE SWITCH to MAN is necessary to start the SAFW Diesel Generator.
Step 5	This step is critical because placing the 52G1S/SAFW CONTROL SWITCH FOR 52G1/SAFW BREAKER to CLOSE is necessary to align and start the D SAFW Pump.
Step 7	This step is critical because removing the Velcro strap from the V-7034D handle and rotating it in the clockwise direction until it stops turning AND removing the Velcro strap from the V-7034F handle and rotating it in the counter-clockwise direction until it stops turning is necessary to align and start the D SAFW Pump.
Step 9	This step is critical because unlocking and opening the MANUAL TRANSFER SWITCH 43/PSF01B Cabinet AND placing the SAFW PUMP D MANUAL TRANSFER SWITCH, 43/PSF01B, to the EMERGENCY position is necessary to align and start the D SAFW Pump.
Step 11	This step is critical because simultaneously pulling the MOV-9701B clutch lever and rotating the handwheel in the clockwise direction until it no longer turns is necessary to align and start the D SAFW Pump.
Step 14	This step is critical because simultaneously pulling the MOV-9703A or MOV-9703B clutch lever and rotating the handwheel in the counter-clockwise direction until it no longer turns is necessary to provide flow from the DWST to both Steam Generators.
Step 16	This step is critical because closing the 52D3/SAFW, SAFW PUMP D EMERGENCY BREAKER is necessary to align and start the D SAFW Pump.
Step 17	This step is critical because simultaneously pulling the MOV-9701B clutch lever and rotates the handwheel in the counter-clockwise direction until flow noise is heard is necessary to provide flow from the DWST to both Steam Generators.

Job Performance Measure Template

Notes to Examiner:**READ TO THE EXAMINEE**

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Provide Applicant with Initial Conditions/Cue (Last Page of this JPM), and Handout 1.**Initial Conditions:**

- The crew is performing ECA-0.0, LOSS OF ALL AC POWER.
- The TDAFW Pump is OOS.
- 'A' and 'B' S/G water levels are 20% and slowly lowering.
- You are a spare Licensed Operator.
- You have a radio and are in possession of all required keys.
- The Primary EO is on station in the Aux Bldg to assist with valve operations.

Initiating Cue:

The US directs you to align the 'D' SAFW Pump to feed the Steam Generators using the SAFW Diesel Generator in accordance with ATT-5.5, ATTACHMENT SAFW WITH SUCTION FROM DI WATER STORAGE TANK DURING SBO.

NOTE: No plant equipment should be operated during the performance of this JPM. All actions must be SIMULATED.

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

.....

Information For Evaluator's Use:

UNSAT requires written comments on respective step.

✓ Denotes critical steps.

The timeclock starts when the Applicant acknowledges the Initiating Cue.

.....

Steps and Performance Standards

Start Time: _____

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	CRITICAL	GRADE (S/U)
CUE	Provide Applicant with Initial Conditions/Cue (Last Page of this JPM) and Handout 1.			
NOTE				
A NFPA diesel generator has been installed which may be used to power panel ACPDPAF07 if the SAFW D/G is not available.				
1	(ATT-5.5, Step A.1) Ensure either the SAFW Diesel Generator, KDG08 or the NFPA-805 DIESEL GENERATOR, KDG09 is running. IF NOT, THEN perform the following: 1. Ensure that the selected D/G ENGINE CONTROL SWITCH is in START: ○ SAFW D/G, SW2/KDG08 -OR- ○ NFPA D/G, SW2/KDG09	The operator reads the Note and proceeds.		___
		The operator observes SAFW D/G, SW2/KDG08 for operation by locally inspecting the diesel engine (e.g. engine sound) and checking the display or meters located on the switchgear and determines that the engine is NOT running.		___
		The operator observes NFPA D/G, SW2/KDG09 for operation by locally inspecting the diesel engine (e.g. engine sound) and checking the display or meters located on the switchgear and determines that the engine is NOT running.		___
		The operator observes the position of the SW2/KDG08 SAFW DG ENGINE START COOLDOWN – STOP/OFF SWITCH and determines that it is in the START position.		___
CUE	After the operator checks each diesel generator, state, “The diesel generator is NOT running.”			
CUE	If the operator checks the diesel generator output breakers, state, “The Breaker is OPEN.”			
CUE	After the operator observes SW2/KDG08 SAFW DG ENGINE START COOLDOWN – STOP/OFF SWITCH, state, “Switch is in the START position.”			

Steps and Performance Standards

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	CRITICAL	GRADE (S/U)
NOTE When performing next step, the ENGINE <u>NOT</u> IN AUTO alarm will actuate.				
2	(ATT-5.5, Step A.2) Place the selected D/G ENGINE MODE SWITCH to MANUAL: ○ SAFW D/G, AMS/KDG08 -OR- ○ NFPA D/G, AMS/KDG09	The operator reads the Note and proceeds.		___
		The operator places the AMS/KDG08 SAFW D/G ENGINE MODE SWITCH to MAN.	✓	___
CUE	After the operator manipulates the switch state, “The Switch is in the MAN position.”			
3	(ATT-5.5, Step A.3) Verify that selected Diesel Generator starts.	The operator observes SAFW D/G, SW2/KDG08 for operation by locally inspecting the diesel engine (e.g. engine sound) and checking the display or meters located on the switchgear and determines that the engine is running.		___
CUE	After the operator checks the SAFW D/G, SW2/KDG08 generator, state, “The diesel generator is running”			
CUE	If the operator checks the SAFW D/G, SW2/KDG08 output breaker, state, “The Breaker is OPEN.”			
CUE	If the operator asks about the ENGINE NOT IN AUTO alarm, state, “The ENGINE NOT IN AUTO alarm is actuated”			
4	(ATT-5.5, Step A.4) Verify running Diesel Generator electrical parameters: ○ Voltage approximately 480 volts ○ Frequency 60 Hz	The operator observes the SAFW Diesel Generator voltmeter to be at 480 volts.		___
		The operator observes the SAFW Diesel Generator frequency meter to be at 60 Hz.		___
CUE	When the operator observes the EI/KDG08, KDG08 (SAFW DG) D/G VOLTMETER, state “The meter reads 480 volts.”			
CUE	When the operator observes the HZM/KDG08, KDG08 (SAFW DG) FREQUENCY METER, state “The meter reads 60 Hertz.”			

Steps and Performance Standards

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	CRITICAL	GRADE (S/U)
5	(ATT-5.5, Step A.5) Close the selected Diesel Generator output breaker by placing the breaker control switch to CLOSE: ○ SAFW GEN 1 OUTPUT BKR CONTROL SWITCH, 52G1S/SAFW -OR- ○ NFPA GEN 2 OUTPUT BKR CONTROL SWITCH, 52G2S/NFPA	The operator places the 52G1S/SAFW CONTROL SWITCH FOR 52G1/SAFW BREAKER to CLOSE.	✓	_____
		The operator observes the GENERATOR #1 MAIN 52G1 status lights and determines that the Red status light is LIT and the Green status light is OFF.		_____
CUE	When the Control Switch is placed to CLOSED, state “The sound of the breaker closing is heard.”			
CUE	When the GENERATOR #1 MAIN 52G1 status lights are observed, state “The GREEN light is OFF, and the RED light is LIT.”			
6	(ATT-5.5, Step B.1) Ensure Diesel Generator output aligned as required: 1. Ensure selected Diesel Generator output breaker CLOSED: ○ SAFW GEN 1 OUTPUT BKR, 52G1/SAFW -OR- ○ NFPA GEN 2 OUTPUT BKR, 52G2/NFPA	The operator observes the GENERATOR #1 MAIN 52G1 breaker and determines that the Red CLOSED flag is showing.		_____
CUE	When the GENERATOR #1 MAIN 52G1 breaker is observed, state “The RED CLOSED flag is showing.”			

Steps and Performance Standards

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	CRITICAL	GRADE (S/U)
7	(ATT-5.5, Step C) The IA supply to the SAFW pump recirculation valves must be isolated and vented to ensure that the valves fail open. Perform the following for selected SAFW pump(s): ○ SAFW pump C: • Close IA supply valve, V-7034C • Open IA supply vent valve, V-7034E ○ SAFW pump D: • Close IA supply valve, V-7034D • Open IA supply vent valve, V-7034F	The operator removes the Velcro strap from the V-7034D handle and rotates it in the clockwise direction until it stops turning and determines that the valve is closed.	✓	___
		The operator removes the Velcro strap from the V-7034F handle and rotates it in the counter-clockwise direction until it stops turning and determines that the valve is open.	✓	___
CUE	After the operator rotates the V-7034D handle, state “The valve handle no longer turns in that direction.”			
CUE	After the operator rotates the V-7034F handle, state “The valve handle is parallel to the pipe and no longer turns in that direction.”			
CUE	IF the operator asks, inform the operator “The noise of air can be heard.”			
NOTE				
Feed flow should be initiated to both S/Gs if possible to prevent stagnation in the RCS loop in which the S/G is not being fed.				
8	(ATT-5.5, Step D.1) Align SAFW Pumps as follows: 1. Verify that SAFW emergency breakers are open: ○ SAFW PUMP C EMER BKR, 52D2/SAFW ○ SAFW PUMP D EMER BKR, 52D3/SAFW	The operator reads the Note and proceeds.		___
		The operator observes 52D2/SAFW, SAFW PUMP C EMERGENCY BREAKER green OPEN flag is showing and determines that 52D2/SAFW is OPEN.		___
		The operator observes 52D3, SAFW PUMP D EMERGENCY BREAKER green OPEN flag is showing and determines that 52D3/SAFW is OPEN.		___

Steps and Performance Standards

STEP	PERFORMANCE	STANDARD	CRITICAL	GRADE (S/U)
CUE	After the operator observes 52D2 and 52D3 green OPEN flag for each breaker, state, “The green OPEN flag is showing.”			
9	(ATT-5.5, Step D.2) Place selected SAFW pump Manual Transfer Switch(es) to EMERGENCY: - SAFW PUMP C MANUAL TRANSFER SWITCH, 43/PSF01A - SAFW PUMP D MANUAL TRANSFER SWITCH, 43/PSF01B	The operator unlocks and opens the MANUAL TRANSFER SWITCH 43/PSF01B Cabinet.	✓	___
		The operator places the SAFW PUMP D MANUAL TRANSFER SWITCH, 43/PSF01B, to the EMERGENCY position.	✓	___
CUE	After the operator unlocks and opens the cabinet, state “The cabinet is open,” and provide the operator with Handout 2.			
Examiner NOTE: The Manual Bus Transfer is repositioned by operating the ratchet lever (comes out to approximately 45 degrees) 3 to 4 times. The position indicator will cycle from NORM to OFF to EMERG.				
CUE	After the operator repositions transfer switch, state “The position indicator is RED EMERG.”			
10	(ATT-5.5, Step D.3) Ensure open EMG DISCH MOV FOR SAFW PUMP D, MOV-9746.	The operator observes the MOV-9746 position indicator and determines that MOV-9746 is OPEN.		___
Examiner NOTE: The valve is located on upper platform in SAFW room. Climbing installed ladder is required. MOV-9746 is normally OPEN. The position indicator is located on the valve yoke.				
CUE	After then operator observes the MOV-9746 position indicator, state “the position indicator is pointing at OPEN.”			
11	(ATT-5.5, Step D.4) Locally close SAFW pump discharge valves: - SAFW PUMP C DISCHARGE VLV, MOV-9701A - SAFW PUMP D DISCHARGE VLV, MOV-9701B	The operator simultaneously pulls the MOV-9701A clutch lever and rotates the handwheel in the clockwise direction until it no longer turns.		___
		The operator simultaneously pulls the MOV-9701B clutch lever and rotates the handwheel in the clockwise direction until it no longer turns.	✓	___
CUE	After the operator starts rotating each valve handwheel, state, “The valve handwheel stops turning.”			
CUE	IF the operator asks, inform the operator “The valve position is as found.”			

Steps and Performance Standards

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	CRITICAL	GRADE (S/U)
12	(ATT-5.5, Step D.5) Ensure open selected SAFW pump CNMT isolation valve(s)(Aux Bldg middle floor west by SFP Hx A): ○ STANDBY AUX FW PUMP C DISCHARGE CNMT ISOL VLV, V-9702A ○ STANDBY AUX FW PUMP D DISCHARGE CNMT ISOL VLV, V-9702B	The operator contacts the Primary Operator on radio and requests position of V-9702A and V-9702B.		
CUE	After the operator contacts the Primary Operator, state, “V-9702A and V-9702B are OPEN.”			
13	(ATT-5.5, Step D.6) Ensure open the following SAFW Pump Stop Check Isolation Valves (Aux Bldg middle floor west by SFP Hx A): ○ SAFW PUMP C STOP CHECK ISOLATION VLV, MOV-9704A ○ SAFW PUMP D STOP CHECK ISOLATION VLV, MOV-9704B	The operator contacts the Primary Operator on radio and requests position of V-9704A and V-9704B.		
CUE	After the operator contacts the Primary Operator, state, “V-9704A & V-9704B are OPEN.”			
NOTE <u>IF</u> a tornado event has occurred on site, <u>THEN</u> the SAFW Pump D discharge line should be assumed to be unavailable. <u>IF</u> feed to S/G B is required, <u>THEN</u> perform step D7 below to establish a flowpath to S/G B. <u>IF</u> no tornado event has occurred on site, <u>THEN</u> go to Section E.				

Steps and Performance Standards

STEP	PERFORMANCE	STANDARD	CRITICAL	GRADE (S/U)
Examiner NOTE: Based on the Note the operator is expected to proceed to Step E.1.				
14	(ATT-5.5, Step E.1) Establish SAFW flow as follows: 1. IF feeding S/Gs A & B with SAFW pump D, THEN ensure open either STANDBY AUX FW PUMP CROSSOVER VLV: ○ SAFW PUMP CROSSOVER VLV, MOV-9703A -OR- ○ SAFW PUMP CROSSOVER VLV, MOV-9703B	The operator reads the Note and proceeds to Step E.1.		___
		The operator simultaneously pulls the MOV-9703A clutch lever and rotates the handwheel in the counter-clockwise direction until it no longer turns.	✓	___
		OR		
		The operator simultaneously pulls the MOV-9703B clutch lever and rotates the handwheel in the counter-clockwise direction until it no longer turns.	✓	___
CUE	After the operator starts rotating the valve handwheel, state, “The valve handwheel stops turning.”			
Examiner NOTE: The operation of ONLY one of the two valves is CRITICAL.				
15	(ATT-5.5, Step E.2) Notify Control Room before starting SAFW pump(s).	The operator contacts the Control Room and reports that D SAFW Pump is to be started.		___
Examiner NOTE: The operator may check SAFW Pump D to ensure it is ready to start, e.g., oil levels, etc.				
CUE	As Control Room, state, “Acknowledge, starting D SAFW Pump.”			
16	(ATT-5.5, Step E.3) Close selected SAFW pump(s) Emergency Breaker: ○ SAFW PUMP C EMER BKR, 52D2/SAFW ○ SAFW PUMP D EMER BKR, 52D3/SAFW	The operator depresses the green PUSH ON pushbutton for the 52D3/SAFW, SAFW PUMP D EMERGENCY BREAKER.	✓	___
		The operator observes the 52D3/SAFW, SAFW PUMP D EMERGENCY BREAKER red CLOSED flag is showing and determines that 52D3/SAFW is closed.		___
CUE	After the operator depresses the 52D3/SAFW, SAFW PUMP D EMERGENCY BREAKER green PUSH ON pushbutton, state "the sound of the breaker closing is heard"			
CUE	After the operator observes the 52D3/SAFW breaker, state "the RED CLOSED flag is showing"			

Steps and Performance Standards

<u>STEP</u>	<u>PERFORMANCE</u>	<u>STANDARD</u>	CRITICAL	GRADE (S/U)
Examiner NOTE: The operator may check SAFW Pump D to ensure it is operating normally.				
17	(ATT-5.5, Step E.4) Locally throttle open selected SAFW pump(s) discharge valve to establish SAFW flow: - SAFW PUMP C DISCHARGE VLV, MOV-9701A - SAFW PUMP D DISCHARGE VLV, MOV-9701B	The operator simultaneously pulls the MOV-9701B clutch lever and rotates the handwheel in the counter-clockwise direction until flow noise is heard.	✓	—
		The operator observes "FI-4085A, SAFW PMP D FLOW" and determines that flow is established.		—
CUE	After the operator starts rotating the valve handwheel, state, "Flow Noise is heard."			
CUE	After the operator establishes flow, as the Control Room, state, "Both Steam Generator Levels are rising."			

Termination Criteria: Flow is established from the D SAFW Pump to both Steam Generators.

CUE: This terminates the JPM.

End Time: _____

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VERIFICATION OF COMPLETION

Job Performance Measure No.: 2024 NRC Systems – In-Plant JPM K

Date Performed:

Examinee:

Evaluator:

Time to Complete:

Question Documentation:

Result: SAT _____ UNSAT _____

Evaluator's Signature: _____ Date: _____

JPM CUE SHEET

INITIAL CONDITIONS:

- The crew is performing ECA-0.0, LOSS OF ALL AC POWER.
- The TDAFW Pump is OOS.
- 'A' and 'B' S/G water levels are 20% and slowly lowering.
- You are a spare Licensed Operator.
- You have a radio and are in possession of all required keys.
- The Primary EO is on station in the Aux Bldg to assist with valve operations.

INITIATING CUE:

The US directs you to align the 'D' SAFW Pump to feed the Steam Generators using the SAFW Diesel Generator in accordance with ATT-5.5, ATTACHMENT SAFW WITH SUCTION FROM DI WATER STORAGE TANK DURING SBO.

NOTE: No plant equipment should be operated during the performance of this JPM. All actions must be SIMULATED.

PROGRAM: Ginna Operations Training

MODULE: Initial License Operator Training Class 23-1

TOPIC: NRC Simulator Exam

Scenario N24-1-2

REFERENCES:

1. Technical Specification LCO 3.8.1, AC SOURCES - MODES 1, 2, 3, AND 4, Amendment 150
2. AR-E-24, RMS AREA MONITOR HIGH ACTIVITY, Rev 00901
3. AR-RMS-9, R9 LETDOWN LINE MONITOR, Rev 4
4. AP-RCS.3, HIGH REACTOR COOLANT ACTIVITY, Rev 014
5. S-3.2P, SWAPPING CVCS LETDOWN ORIFICE VALVES, Rev 010
6. Technical Specification LCO 3.4.16, RCS SPECIFIC ACTIVITY, Amendment 123
7. EPIP-1-13, LOCAL RADIATION EMERGENCY, Rev 009
8. AP-RCC.1, CONTINUOUS CONTROL ROD WITHDRAWAL-INSERTION, Rev 012
9. ER-NIS.3, PR MALFUNCTION, Rev 029
10. Technical Specification LCO 3.3.1, REACTOR TRIP SYSTEM (RTS) INSTRUMENTATION, Amendment 150/154
11. TR 3.2.4, QUADRANT POWER TILT RATIO (QPTR) MONITOR, Rev 31
12. A-503.1, EMERGENCY AND ABNORMAL OPERATING PROCEDURES USERS GUIDE, Rev 062
13. AR-A-12, NON-REGEN HX LETDOWN OUT HI TEMP 145°F, Rev 01001
14. AR-AA-10, COND BOOSTER PUMP TRIP, Rev 01100
15. AP-FW.1, ABNORMAL MFW PUMP FLOW OR NPSH, Rev 023
16. AP-TURB.5, RAPID LOAD REDUCTION, Rev 022
17. S-3.1, BORON CONCENTRATION CONTROL, Rev 037
18. AR-H-12, FEED PUMP DC OIL PUMP AUTO START, Rev 5
19. E-0, REACTOR TRIP OR SAFETY INJECTION, Rev 050
20. FR-S.1, RESPONSE TO REACTOR RESTART/ATWS, Rev 025
21. ATT-27.0, ATTACHMENT AUTOMATIC ACTION VERIFICATION, Rev 00400
22. E-1, LOSS OF REACTOR OR SECONDARY COOLANT, Rev 043
23. ATT-8.1, ATTACHMENT D/G STOP, Rev 6
24. ES-1.1, SI TERMINATION, Rev 037

Validation Time: 111 minutes

Author: David Lazarony, Essential Training & Consulting, LLC

Facility Review: Don Dean, Exam Author

Rev. 042924

Ginna 2024 NRC Scenario #2 Objectives:

Given the simulator at an initial condition of 100% power evaluate:

1. the US's ability to supervise the control room team during the normal, abnormal, and emergency situations that arise, including compliance with all facility procedures, Technical Specifications, and other commitments.
2. each crew member's ability to effectively communicate as part of a control room team during the normal, abnormal, and emergency situations that arise.
3. each crew member's ability to effectively diagnose and the HCO's ability to mitigate the consequences of failed fuel/High RCS Activity in accordance with AP-RCS.3, HIGH REACTOR COOLANT ACTIVITY.
4. each crew member's ability to effectively diagnose and the HCO's ability to mitigate the consequences of a Letdown Temperature Control Valve (TCV-130) Controller failure in accordance with Annunciator Response Procedures and A-503.1, EMERGENCY AND ABNORMAL OPERATING PROCEDURES USERS GUIDE.
5. each crew member's ability to effectively diagnose and the CO's ability to mitigate the consequences of a Power Range Channel N43 Lower Detector failure in accordance with Annunciator Response Procedures, AP-RCC.1, CONTINUOUS CONTROL ROD WITHDRAWAL/INSERTION, and ER-NIS.3, PR MALFUNCTION.
6. each crew member's ability to effectively diagnose and mitigate the consequences of a Condensate Booster Pump trip in accordance with AP-FW.1, ABNORMAL MFW PUMP FLOW OR NPSH.
7. each crew member's ability to conduct a rapid downpower in accordance with AP-TURB.5, RAPID LOAD REDUCTION, whenever plant conditions dictate the need to do so.
8. each crew member's ability to effectively diagnose and the CO's ability to mitigate the consequences of a Main Feedwater Pump B AC Oil Pump B2 Failure in accordance with Annunciator Response Procedures.
9. each crew member's ability to effectively diagnose an inadvertent Steam Line Isolation Signal coupled with an ATWS and Stuck OPEN Pressurizer PORV and the HCO and CO's ability to respond to such an event in accordance with E-0, REACTOR TRIP OR SAFETY INJECTION, and FR-S.1, RESPONSE TO REACTOR RESTART/ATWS, and other Emergency Operating Procedures.

Scenario Event Description
NRC Scenario 2

Facility:	Ginna	Scenario No.:	2	Op Test No.:	N24-1
Scenario Source: N20-1-5					
Examiners:		Operators:			
		(SRO)			
		(RO)			
		(BOP)			
Initial Conditions:		The plant is at 100% power (MOL). It is expected to maintain power stable at the current power level throughout the shift. Engineering is monitoring elevated vibrations on Circulating Water Pump B.			
Turnover:		The following equipment is Out-Of-Service: The A EDG (TS 3.8.1 Condition B Action B.1, B.2, B.3.1 or B.3.2 and B.4) is OOS for fuel pump replacement and is expected to be back in 90 minutes. Condensate Booster Pump A is OOS for thrust bearing replacement.			
Critical Tasks:		CT-1: Upon diagnosing an ATWS, manually insert the control rods within 1 minute, and continue insertion until the reactor is tripped or the rods are on the bottom. CT-2: Close the Block Valve of the Stuck OPEN Pressurizer PORV prior to transition out of FR-S.1 at Step 18.			
Event No.	Malfunction No.	Event Type*	Event Description		
1	MAL RCS16	C-RO C(TS)-SRO	Fuel Failure/High RCS Activity		
2	MAL CLG14A	I(MC)-RO I-SRO	Letdown Temperature Control Valve (TCV-130) Controller Failure		
3	MAL NIS06F	C-RO C-BOP C(TS)-SRO	Power Range Channel N43 Lower Detector fails HIGH		
4	MAL CND01C	R-RO C-BOP C-SRO	Condensate Booster Pump C trips/Downpower		
5	OVR FDW20F FDW20H	C-BOP C-SRO	Main Feedwater Pump B AC Oil Pump B2 Failure		
6	MAL STM05A/B A-SGN11 A-SGN12	M-RO M-BOP M-SRO	Inadvertent Steam Line Isolation Signal		
7	MAL RPS05A/B	C-RO C-BOP C-SRO	Failure of the Reactor to Trip from the Control Room/ATWS (CT-1)		
8	MAL PZR05A	C-RO C-SRO	Pressurizer PORV stuck full OPEN (CT-2)		
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor, (TS) Tech Spec, (MC) Manual Control					

Scenario Event Description
NRC Scenario 2

Ginna 2024 NRC Scenario #2

The plant is at 100% power (MOL). It is expected to maintain power stable at the current power level throughout the shift. Engineering is monitoring elevated vibrations on Circulating Water Pump B.

The following equipment is Out-Of-Service: The A EDG (TS 3.8.1 Condition B Action B.1, B.2, B.3.1 or B.3.2 and B.4) is OOS for fuel pump replacement and is expected to be back in 90 minutes. Condensate Booster Pump A is OOS for thrust bearing replacement.

Shortly after taking the watch, a fuel failure will occur. The crew will address AR-E-24, RMS AREA MONITOR HIGH ACTIVITY, and AR-RMS-9, R9 LETDOWN LINE MONITOR, and enter AP-RCS.3, HIGH REACTOR COOLANT ACTIVITY. After Chemistry reports that Dose Equivalent Iodine is 13 $\mu\text{Ci}/\text{gram}$, the operator will place the 60 GPM letdown orifice in service, in accordance with S-3.2P, SWAPPING CVCS LETDOWN ORIFICE VALVES. The operator will address Technical Specification LCO 3.4.16, RCS SPECIFIC ACTIVITY, and EPIP 1.13, LOCAL RADIATION EMERGENCY.

Following this, the Letdown Temperature Control Valve (TCV-130) Controller will fail causing the TCV-130 to close, and actual letdown temperature to rise. The operator will respond in accordance with A-503.1, EMERGENCY AND ABNORMAL OPERATING PROCEDURES USERS GUIDE, Section 5.3.A.5, and should re-open TCV-130 in manual to restore normal letdown temperature. The operator will address AR-A-12, NON-REGEN HX LETDOWN OUT HI TEMP 145°F, and the TCV-130 Controller will remain in MANUAL throughout the remainder of the scenario.

Subsequently, Power Range Channel N43 Lower Detector will fail HIGH causing control rods to insert automatically. The operator will place control rods in MANUAL and enter AP-RCC.1, CONTINUOUS CONTROL ROD WITHDRAWAL/INSERTION. Eventually, the operator will enter ER-NIS.3, PR MALFUNCTION, to defeat the channel. The operator will address Technical Specification LCO 3.3.1, REACTOR TRIP SYSTEM (RTS) INSTRUMENTATION and TR 3.2.4, QUADRANT POWER TILT RATIO (QPTR) MONITOR.

Next, Condensate Booster Pump C will trip. The operator will respond in accordance with AR-AA-10, CONDENSATE BOOSTER PUMP TRIP, and implement AP-FW.1, ABNORMAL MFW PUMP FLOW OR NPSH. Ultimately, the crew will enter AP-TURB.5, RAPID LOAD REDUCTION, and conduct a boration using S-3.1, BORON CONCENTRATION CONTROL, to lower power to less than 70% at a rate of 1%/minute. It is likely that reactor power will rise to greater than 100% when the Low-Pressure Heater Bypass Valve automatically opens requiring the crew to take immediate action to lower Turbine load with Control Rods in AUTO.

During the load reduction, the Main Feedwater Pump B AC Oil Pump B2 will trip causing the DC Oil Pump to automatically start. The operator will respond in accordance with AR-H-12, FEED PUMP DC OIL PUMP AUTO START. The operator will start the Main Feedwater Pump B AC Oil Pump B1 and stop the DC Oil Pump.

After this, an inadvertent Steam Line Isolation Signal will occur and both MSIVs will close. The reactor will fail to automatically trip, and the operator will attempt to trip the reactor manually. The crew will enter E-0, REACTOR TRIP OR SAFETY INJECTION.

Scenario Event Description
NRC Scenario 2

The reactor will fail to trip manually from the control room, and the crew will enter FR-S.1, RESPONSE TO REACTOR RESTART/ATWS. Pressurizer PORV-430 will lift and stick fully open. The operator will need to manually close the block valve.

The crew will direct that the reactor be tripped locally. Upon completion of FR-S.1, the crew will transition back to E-0, and then to E-1, LOSS OF REACTOR OR SECONDARY COOLANT and/or ES-1.1, SI TERMINATION.

The scenario will end at step 7 of ES-1.1 after the SI/RHR Pumps have been stopped.

Critical Tasks:

CT-1: Upon diagnosing an ATWS, manually insert the control rods within 1 minute, and continue insertion until the reactor is tripped or the rods are on the bottom.

Initiating Cue: Reactor fails to Trip automatically or manually (RTB Red status lights LIT, Green status lights OFF) and Bus 15 remains energized (Red status light LIT, Green status light OFF on High and Low side Breaker) (Step 1 of E-0).

Performance Feedback: Control Rod Group Step Counters and MRPI indicates Rod Insertion when the operator places the In-Hold-Out Switch to IN, Rod Insertion MAN green status light is LIT (FR-S.1 Step 1 RNO).

Success Path: Control Rods are inserted manually within 60 seconds of the start of the event and continued until MRPI indicates all Control Rods are on the bottom of the core.

Measurable Performance Standard: Expected Actions: The Rod Control Bank Selector Switch is taken to MANUAL, In-Hold-Out Switch is moved to the IN position within 60 seconds of the start of the event.

Safety Significance: failure to insert negative reactivity, under the postulated plant conditions, results in an unnecessary situation in which the reactor power remains higher than it otherwise would if the action is taken. Performance of the critical task would move the reactor power lower to prevent a subsequent and unnecessary challenge to reactor core operational limits. A failure to insert negative reactivity constitutes a mis-operation or incorrect crew performance which leads to incorrect reactivity control. According to Section 15.8.3.2 of the Ginna UFSAR it is assumed that manual rod insertion of at least one bank is initiated within the first 60 seconds of the ATWS event.

CT-2: Close the Block Valve of the Stuck OPEN Pressurizer PORV prior to transition out of FR-S.1 at Step 18.

Initiating Cue: PRZR PORV PCV-430 Red Status Light LIT, Green Status LIGHT OFF, with PRZR Pressure <2335 psig (Step 5 of FR-S.1).

Performance Feedback: PRZR PORV Block Vlv MOV-516 Green status light LIT, Red status light OFF upon moving the MOV-516 Control Switch to CLOSE (FR-S.1 Step 5 RNO), PRZR pressure stops lowering and stabilizes.

Scenario Event Description
NRC Scenario 2

Success Path: Close PRZR PORV Block Vlv MOV-516 prior to transition out of FR-S.1 at Step 18.

Measurable Performance Standard: Expected Actions: Attempt to close PRZR PORV PCV-430, Close PRZR PORV Block Vlv MOV-516 prior to transition out of FR-S.1 at Step 18.

Safety Significance: Closing the block MOV under the postulated plant conditions 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 RCS fission product barrier can be restored to full integrity simply by closing the block MOV as directed by the FR-S.1 Step 5 RNO. Therefore, failure to close the MOV by Step 18 where transition is made back to E-0, represents a failure by the crew to “take one or more actions that would prevent a challenge to plant safety.” Degradation of the RCS fission product barrier is not initiated by operator action. However, the crew’s failure to close the block MOV results in unnecessary continuation of the degraded condition of the RCS barrier.

“Per NUREG-1021, ES-3.3, if an applicant’s actions or inactions create a challenge to plant safety, those actions or inactions may form the basis for a Critical Task identified in the post scenario review.”

Scenario Event Description
NRC Scenario 2

SIMULATOR OPERATOR INSTRUCTIONS

	Bench Mark	ACTIVITY	DESCRIPTION
☐		Reset to Temp IC 156 (From IC-019)	T = 0: Dump all CNMT Recirc Fan Coolers so that MCB Annunciator E-31 doesn't alarm. Insert MALF GEN04A = TRIP All Condition, A D/G OOS Pull Stop the following A D/G Control Switches: A D/G Control A D/G Bus 14 Breaker A D/G Bus 18 Breaker Insert OVR-IND-GEN24=OFF Insert OVR-IND-GEN25=OFF Take A CB Pump Control Switch to TRIP Insert OVR-CND04A = OFF Hang INFO Tags as necessary. Insert MALF RPS05A, No Manual, Reactor Trip BKR A Failure Insert MALF RPS05B, No Manual, Reactor Trip BKR B Failure Insert OVR-EDS47D and 47G = FALSE (Bus 15 Low Side Breaker) Insert OVR-EDS34D and 34G = FALSE (Bus 15 High Side Breaker) Insert MALF RCS16 (0.7, 120 second Ramp), on T-1 Insert MALF CLG14A (0, No Ramp) on T-2 Insert MALF NIS06F = 5 (N43 Lower Detector Fails High) on T-3 Insert MALF CND01C=TRIP on T-4 Insert OVR-FDW20H=FALSE, on T-5 Insert OVR-FDW20F=ON, on T-5 Insert MALF STM05A (0%, No Ramp) on T-6 Insert MALF STM05B (0%, No Ramp) on T-6 Insert MALF A-SGN11 (ON) on T-6 Insert MALF A-SGN 12 (ON) on T-6 Insert MALF PZR05A 100% on T-30, No Ramp (Set T-30 x06O227B==1, PCV-430 Open light LIT)
☐	Prior to Crew Briefing		Hang Protected Equipment Tags per OPG- Protected Equipment (A EDG Pump P3 of 29 of Attachment 2, CBP A P19 of 29 of Attachment 2). Place Black Dots on Annunciators J-24 & 25.

Scenario Event Description
NRC Scenario 2

	Bench Mark	ACTIVITY	DESCRIPTION
☐	Crew Briefing - Assign Crew Positions based on evaluation requirements. - Review the Shift Turnover Information with the crew. - Handout Reactivity Binder (MOL) specific to this power maneuver.		
☐	T-0	Begin Familiarization Period	
☐	Immediately AFTER crew takes shift	Event 1 Trigger#1 RCS16 (0.7, 120 second Ramp)	Fuel Failure/High RCS Activity
☐	At direction of examiner	Event 2 Trigger #2 CLG14A (0, No Ramp)	Letdown Temperature Control Valve (TCV-130) Controller Failure
☐	At direction of examiner	Event 3 Trigger #3 Insert MALF NIS06F = 5	Power Range Channel N43 Lower Detector fails HIGH
☐	At direction of examiner	Event 4 Trigger#4 CND01C=TRIP	Condensate Booster Pump C trips/ Downpower
☐	At direction of examiner	Event 5 Trigger #5 Insert OVR- FDW20H=FALSE Insert OVR- FDW20F=ON	Main Feedwater Pump B AC Oil Pump B2 Failure

Scenario Event Description
NRC Scenario 2

	Bench Mark	ACTIVITY	DESCRIPTION
☐	At direction of examiner	Event 6 Trigger #6 MALF STM05A (0%, No Ramp) MALF STM05B (0%, No Ramp) MALF A-SGN11 = ON MALF A-SGN12 = ON	Inadvertent Steam Line Isolation Signal
☐	Post-Rx Trip	Event 7 RPS05A, No Manual RPS05B, No Manual	Failure of the Reactor to trip from the Control Room/ATWS Note: These malfunctions are inserted at T=0.
☐	When PCV-430 automatically opens	Event 8 PZR05A (100%, No Ramp)	Pressurizer PORV stuck full OPEN Note: This malfunction will occur when PCV-430 opens post-ATWS transient (T-30)
☐	Terminate the scenario upon direction of Lead Examiner		

Op Test No.: N24-1 Scenario # 2 Event # 1 Page 10 of 75Event Description: **Fuel Failure/High RCS Activity**

Shortly after taking the watch, a fuel failure will occur. The crew will address AR-E-24, RMS AREA MONITOR HIGH ACTIVITY, and AR-RMS-9, R9 LETDOWN LINE MONITOR, and enter AP-RCS.3, HIGH REACTOR COOLANT ACTIVITY. After Chemistry reports that Dose Equivalent Iodine is 13 $\mu\text{Ci}/\text{gram}$, the operator will place the 60 GPM letdown orifice in service, in accordance with S-3.2P, SWAPPING CVCS LETDOWN ORIFICE VALVES. The operator will address Technical Specification LCO 3.4.16, RCS SPECIFIC ACTIVITY, and EPIP 1.13, LOCAL RADIATION EMERGENCY.

SIM DRIVER Instructions: Operate Trigger #1 (RCS16 (0.7, 120 second Ramp))

NOTE: It requires approximately 1-2 minutes for this malfunction to cause PPCS Alarm for R-9.

Symptoms/Cues:

- SPDS Normal OPS Page – Containment Radiation Alarm turns RED (R-2 indication starts to rise)
- R-9, Letdown Line Monitor indication rising and in alarm
- PPCS Alarm for R-9 WRN (precedes E-24 alarm)
- MCB Annunciator E-24, RMS AREA MONITOR HIGH ACTIVITY

Time	Pos.	Expected Actions/Behavior	Comments
AR-E-24, RMS AREA MONITOR HIGH ACTIVITY			
	HCO	(Step 4.1) DETERMINE which area monitor has alarmed.	
	HCO/ CO	(Step 4.2) REFER to applicable AR-RMS PROCEDURE.	
	US	(Step 4.3) NOTIFY the following to investigate RMS Alarm:	
		• Auxiliary Operators	NOTE: The US may call an EO to address the RMS alarms. If so, SIM DRIVER acknowledge as EO.

Op Test No.: N24-1 Scenario # 2 Event # 1 Page 11 of 75Event Description: **Fuel Failure/High RCS Activity**

Time	Pos.	Expected Actions/Behavior	Comments
		Radiation Protection	NOTE: The US may call RP to address the RMS alarms. If so, SIM DRIVER acknowledge as RP, and report that radiation levels in the vicinity of the Letdown Line are consistent with R-9.
AR-RMS-9, R9 LETDOWN LINE MONITOR			
	US	(Step 1) GO TO AP-RCS.3.	NOTE: The US will transition to AP-RCS.3.
AP-RCS.3, HIGH REACTOR COOLANT ACTIVITY			
NOTE: Conditions should be evaluated for site contingency reporting (Refer to EP-AA-1012 ADDENDUM 3, R.E. GINNA NUCLEAR POWER PLANT EMERGENCY ACTION LEVELS).			
	US	(Step 1) VERIFY RCS Activity:	
		a. Direct Chemistry to sample RCS for activity	NOTE: The US will call Chemistry to address the samples. If so, SIM DRIVER acknowledge as Chemistry.
		b. RCS activity – GREATER THAN NORMAL	SIM DRIVER: Using Time Compression 2 minutes after this request, report Dose Equivalent I-131 activity 13 μci/gm. Note: Normal DEI is 1.26E-3 μci/gm.
	HCO	(Step 2) RAISE Letdown Flow To 60 GPM (Refer to S-3.2P, SWAPPING CVCS LETDOWN ORIFICE VALVES)	NOTE: The US will direct the HCO to raise Letdown Flow to 60 gpm and continue with AP-RCS.3 (Page 14).

Op Test No.: N24-1 Scenario # 2 Event # 1 Page 12 of 75Event Description: **Fuel Failure/High RCS Activity**

Time	Pos.	Expected Actions/Behavior	Comments
S-3.2P, SWAPPING CVCS LETDOWN ORIFICE VALVES			
CAUTION Changes in Letdown temperature could cause boration or dilution of Reactor Coolant System.			
	HCO	(Step 5.1.1) VERIFY DIVERT VLV CATION DEBOR DI, AOV-244 is in the BYPASS position.	NOTE: AOV-244 is in BYPASS.
NOTE PCV-135 SHOULD be adjusted to control Letdown pressure at approximately 200 psig to accommodate the pressure rise when swapping from a 40 gpm orifice to a 60 gpm orifice.			
	HCO	(Step 5.1.2) IF letdown temperature adjustment is required, THEN PERFORM the following: OTHERWISE, MARK this Step N/A.	NOTE: This step is N/A.
	HCO	(Step 5.1.3) PLACE PCV-135 to MANUAL .	
	HCO	(Step 5.1.4) ADJUST PCV-135 as necessary to control Low Pressure Letdown pressure at approximately 200 psig.	
NOTE The next step requires two actions, AOV-200A AND AOV-200B SHALL be closed prior to opening AOV-202.			

Op Test No.: N24-1 Scenario # 2 Event # 1 Page 13 of 75Event Description: **Fuel Failure/High RCS Activity**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 5.1.5) CLOSE one of the following 40 gpm orifice valves, MARK selected. - o AOV-200A - o AOV-200B THEN IMMEDIATELY OPEN LTDN ORIFICE AOV-202 - o AOV-202	NOTE: The HCO will Close AOV-200B and Open AOV-202.
	HCO	(Step 5.1.6) ADJUST PCV-135 UNTIL PI-135 indicates approximately 250 psig.	
	HCO	(Step 5.1.7) ENSURE PCV-135 controller signal is nulled/balanced AND THEN PLACE PCV-135 to AUTO .	
	HCO	(Step 5.1.8) ADJUST the Charging Pump that is in manual UNTIL the speed of the operating pumps is approximately equal.	NOTE: The C Charging Pump is in MANUAL.
	HCO	(Step 5.1.9) VERIFY Letdown temperature is at desired value, THEN ENSURE TCV-130 is in AUTO .	
	HCO	(Step 5.1.10) IF Charging/Letdown mismatch exist, THEN PLACE Charging Pumps in manual AND ADJUST as necessary to maintain Charging/Letdown mismatch at approximately 0. OTHERWISE, MARK this Step N/A.	
	HCO	(Step 5.1.11) LOCALLY ADJUST SEAL INJECTION INLET NEEDLE VLV TO RCP A, V-300A AND SEAL INJECTION INLET NEEDLE VLV TO RCP B, V-300B, as necessary to obtain 8-12 gpm seal injection flow while maintaining 20-80 inches labyrinth seal D/P.	NOTE: The HCO <u>may</u> call an EO to adjust the valves. If so, SIM DRIVER acknowledge as EO, and use REM-CVC19 for V-300A and REM-CVC20 for V-300B.

Op Test No.: N24-1 Scenario # 2 Event # 1 Page 14 of 75Event Description: **Fuel Failure/High RCS Activity**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 5.1.12) MONITOR Letdown temperature is controlling at desired value.	
	HCO	(Step 5.1.13) VERIFY local demin D/P less than 25 psid (DPI-100 or DPI-101).	NOTE: The HCO will call an EO to obtain reading. If so, SIM DRIVER acknowledge as EO, and report local reading is 18 psid.
	HCO	(Step 5.1.14) NOTIFY Shift Chemistry Technician.	NOTE: The HCO will call Chemistry to address the rise in Letdown flow. If so, SIM DRIVER acknowledge as Chemistry.
AP-RCS.3, HIGH REACTOR COOLANT ACTIVITY			
	HCO/ CO	(Step 3) Check Letdown Line Monitor, R-9 – LESS THAN 200 MR/HR ABOVE BACKGROUND	NOTE: R-9 is indicating abnormally high.
	HCO/ CO	(Step 3 RNO) Evaluate conditions to determine whether local radiation emergency exists (Refer to EPIP 1-13, LOCAL RADIATION EMERGENCY)	NOTE: The US may address EPIP 1-13.
CAUTION PLACING A NEW DI IN SERVICE MAY RESULT IN A POSITIVE <u>OR</u> NEGATIVE REACTIVITY ADDITION DUE TO A BORON CHANGE.			
	US	(Step 4) Direct Chemistry to Sample Letdown DI Efficiency – DECONTAMINATION FACTOR GREATER THAN 10	NOTE: The US will call Chemistry to address the samples. If so, SIM DRIVER acknowledge as Chemistry.
	HCO/ CO	(Step 5) Evaluate AUX BLDG Radiation Levels:	

Op Test No.: N24-1 Scenario # 2 Event # 1 Page 15 of 75Event Description: **Fuel Failure/High RCS Activity**

Time	Pos.	Expected Actions/Behavior	Comments
		a. Direct RP Tech to survey AUX BLDG	NOTE: The US will call RP to address the elevated rad levels. If so, SIM DRIVER acknowledge as RP.
		b. Check AUX BLDG radiation monitors - NORMAL	
		• R-4	
		• R-9	NOTE: R-9 is indicating abnormally high.
		• R-10B	
		• R-13	
		• R-14	
	US	(Step 5.b RNO) Perform the following:	
		1) Direct RP Tech to survey AUX BLDG areas as necessary.	NOTE: The US will call RP to address the elevated rad levels. If so, SIM DRIVER acknowledge as RP.
		2) Evaluate conditions to determine whether local radiation emergency exists (Refer to EPIP-1-13, LOCAL RADIATION EMERGENCY).	NOTE: The US may address EPIP-1-13 (Page 16).
	HCO/CO	(Step 6) Evaluate MCB Annunciator Status (Refer to AR Procedures)	
	US	(Step 7) Determine If Plant Operation Can Continue (Consult Plant staff if necessary) – OPERATION CAN CONTINUE	NOTE: The US will call Supervision to address the elevated rad levels. If so, SIM DRIVER acknowledge as appropriate.
		• RP Supervision	
		• Chemistry Supervision	
		• Reactor Engineer	

Op Test No.: N24-1 Scenario # 2 Event # 1 Page 16 of 75Event Description: **Fuel Failure/High RCS Activity**

Time	Pos.	Expected Actions/Behavior	Comments
<u>NOTE:</u> Refer to LS-AA-1020, REPORTABILITY TABLES <u>AND</u> DECISION TREES, for reporting requirements.			
	US	(Step 8) Notify Higher Supervision	NOTE: The US will call WCCS/Supervision to address the elevated rad levels. If so, SIM DRIVER acknowledge as appropriate.
			NOTE: The US may address EPIP 1-13.
EPIP-1-13, LOCAL RADIATION EMERGENCY			
	HCO	(Step 6.1.1) Upon notification that a Local Radiation Emergency exists, the following actions SHOULD be taken:	
	HCO	(Step 6.1.2) MAKE an appropriate announcement over the paging system that all personnel SHALL evacuate the affected area.	
	HCO	(Step 6.1.2.1) For evacuation of the Containment Building:	NOTE: There is no one in the CNMT.
	HCO	(Step 6.1.2.2) For a fuel handling accident in the SFP area, make the following announcement:	NOTE: There is no Fuel Handling Accident in progress.
	US	(Step 6.1.3) Take appropriate action to limit, contain or correct the condition. REFER to RMS Alarm Response and ER-RMS.1, Determining the Location of High Activity Within the Plant Utilizing the Plant Vent, as required. Consider altering the ventilation lineup to optimize filter flow and negative pressure in the Aux. Bldg.	

Op Test No.: N24-1 Scenario # 2 Event # 1 Page 17 of 75Event Description: **Fuel Failure/High RCS Activity**

Time	Pos.	Expected Actions/Behavior	Comments
	US	(Step 6.1.4) NOTIFY the Shift Manager to PERFORM Section 6.2.	NOTE: The US will call Supervision to address the elevated rad levels. <i>If so, SIM DRIVER acknowledge as appropriate.</i>
	US	(Step 6.1.5) NOTIFY Radiation Protection Section to PERFORM Section 6.3.	NOTE: The US will call RP to address the elevated rad levels. <i>If so, SIM DRIVER acknowledge as RP.</i>
TECHNICAL SPECIFICATION 3.4.16, RCS SPECIFIC ACTIVITY			
	US	(LCO 3.4.16) RCS DOSE EQUIVALENT I-131 AND DOSE EQUIVALENT XE-133 specific activity shall be within limits.	
		APPLICABILITY: Modes 1, 2, 3 and 4	
		ACTIONS:	
CONDITION		REQUIRED ACTION	COMPLETION TIME
A. DOSE EQUIVALENT I-131 specific activity not within limit.		NOTE – LCO 3.0.4.c is applicable. A.1 Verify DOSE EQUIVALENT I-131 $\leq 60\mu\text{Ci/gm}$. <u>AND</u> A.2 Restore DOSE EQUIVALENT I-131 to within limit.	Once per 8 hours 7 days
			NOTE: The US will identify that SR 3.4.16.2 is NOT being complied with making Condition A applicable.
			NOTE: The US will likely conduct a Plant Status Brief.
At the discretion of the Lead Examiner move to Event #2.			

Op Test No.: N24-1 Scenario # 2 Event # 2 Page 18 of 75Event Description: **Letdown Temperature Control Valve (TCV-130) Controller Failure**

Following this, the Letdown Temperature Control Valve (TCV-130) Controller will fail causing the TCV-130 to close, and actual letdown temperature to rise. The operator will respond in accordance with A-503.1, EMERGENCY AND ABNORMAL OPERATING PROCEDURES USERS GUIDE, Section 5.3.A.5, and should re-open TCV-130 in manual to restore normal letdown temperature. The operator will address AR-A-12, NON-REGEN HX LETDOWN OUT HI TEMP 145°F, and the TCV-130 Controller will remain in MANUAL throughout the remainder of the scenario.

SIM DRIVER Instructions: **Operate Trigger #2 (CLG14A (0, No Ramp))**

Symptoms/Cues:

- TI-130 indicates rising Letdown temperature
- Controller TCV-130 goes to full output (100%) – Fully Closed
- MCB Annunciator A-12, NON-REGEN HX LETDOWN OUT HI TEMP 145°F
- TCV-145 Red Status light LIT (Divert to VCT)
- PPCS T0145, NONREGEN HX LETDOWN OUT TEMP

Time	Pos.	Expected Actions/Behavior	Comments
A-503.1, EMERGENCY AND ABNORMAL OPERATING PROCEDURES USERS GUIDE			
	HCO	(Step 5.3.A.5) Actions are permitted to mitigate or compensate for equipment or controller failures or to isolate leaks. Permitted actions include those actions necessary to take manual control and stabilize the affected parameters, or to isolate a leak. Examples include closing or isolating a failed open PORV, taking manual control of a failed FRV controller, etc. These deviations fall under the Maintenance Rule. Therefore 50.59 is not required.	NOTE: The HCO may place the TCV-130 Controller in MANUAL based on this procedural allowance.
AR-A-12, NON-REGEN HX LETDOWN OUT HI TEMP 145°F			
NOTE			
Adjustments made to reduce NRHX LTDN Outlet Temperature will also affect letdown DI boron concentration saturation levels. Anticipate changes to RCS Tav _g and RCS reactivity when changing outlet temperature.			

Op Test No.: N24-1 Scenario # 2 Event # 2 Page 19 of 75Event Description: **Letdown Temperature Control Valve (TCV-130) Controller Failure**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 4.1) ENSURE LTDN DIVERT TO DI OR VCT, TCV-145 is diverting to VCT.	
	HCO	(Step 4.2) IF a loss of CCW has occurred,.....	NOTE: A loss of CCW has NOT occurred.
	HCO	(Step 4.3) MONITOR VCT temperature:	
NOTE IF the Charging Suction aligns to the RWST a load reduction will be required. REFER TO O-2.1 NORMAL SHUTDOWN TO HOT SHUTDOWN OR AP-TURB.5 RAPID LOAD REDUCTIONS			
		(Step 4.3.1) IF BOTH VCT temperature indicators TI-145 (PPCS point T0145) and TI-140 are GREATER THAN 190°F THEN ENSURE Charging pump suction aligns to the RWST.	NOTE: This step is N/A.
		(Step 4.3.2) IF BOTH VCT temperature indicators TI-145 (PPCS point T0145) and TI-140 are LESS THAN 187°F then ENSURE Charging pump suction is aligned to the VCT.	
		VCT OUTLET VLV LCV-112C-OPEN	
		EMERG MAKEUP RWST TO CHARGING PUMP LCV-112B-CLOSED	
CAUTION Maintaining NRHX LTDN outlet temp TCV-130 at the normal setpoint helps prevent unexpected changes in reactivity or RCP seal performance.			
	HCO	(Step 4.4) ADJUST NRHX LTDN outlet temp (TI-130) TCV-130 to MAINTAIN letdown temp at the normal value.	NOTE: It is expected that the HCO will take manual control of TCV-130 to maintain both temperatures less than 190°F. The HCO will likely establish a Critical Parameter at 100°F with a suitable range.

Op Test No.: N24-1 Scenario # 2 Event # 2 Page 20 of 75Event Description: **Letdown Temperature Control Valve (TCV-130) Controller Failure**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 4.5) CHECK for proper charging and letdown flows, and temperatures.	
		(Step 4.5.1) Charging Line Flow (FI-128B or FI-128C).	
		(Step 4.5.2) LTDN Line Flow (FI-134)	
		(Step 4.5.3) NRHX LTDN Outlet Temp (TI-130)	
		(Step 4.6) REFER TO S-8A, COMPONENT COOLING WATER SYSTEM STARTUP AND NORMAL OPERATION VALVE ALIGNMENT.	
		(Step 4.7) IF NRHX LTDN Outlet Temp (TI-130) was observed to be < 60°F or > 140°F, THEN INITIATE a Condition Report per CNG-CA-1.01-1000, CORRECTIVE ACTION PROGRAM	
			NOTE: The US may call WCC/Maintenance to address the controller. If so, SIM DRIVER acknowledge as WCC.
			NOTE: The US will likely conduct a Plant Status Brief.
At the discretion of the Lead Examiner move to Event #3.			

Op Test No.: N24-1 Scenario # 2 Event # 3 Page 21 of 75Event Description: **Power Range Channel N43 Lower Detector fails HIGH**

Subsequently, Power Range Channel N43 Lower Detector will fail HIGH causing control rods to insert automatically. The operator will place control rods in MANUAL and enter AP-RCC.1, CONTINUOUS CONTROL ROD WITHDRAWAL/INSERTION. Eventually, the operator will enter ER-NIS.3, PR MALFUNCTION, to defeat the channel. The operator will address Technical Specification LCO 3.3.1, REACTOR TRIP SYSTEM (RTS) INSTRUMENTATION and TR 3.2.4, QUADRANT POWER TILT RATIO (QPTR) MONITOR.

SIM DRIVER Instructions: **Operate Trigger #3 (MALF NIS06F = 5 (N43 Lower Detector Fails High))**

Symptoms/Cues:

- MCB Annunciator E-26, POWER RANGE CHANNEL DEV $\pm 2\%$.
- MCB Annunciator E-21, POWER RANGE OVERPOWER ROD STOP 103%.
- MCB Annunciator E-12, POWER RANGE LOWER DETECT FLUX DEV OR AUTO DEFEAT.
- MCB Annunciator E-19, POWER RANGE HI RANGE CHANNEL ALERT 108%.
- MCB Annunciator F-23, RCS OT ΔT CHANNEL ALERT.
- Green Rod Insertion status light is LIT.
- Control Rods continuously inserting.
- N43 indication off-scale high.
- N43 flux difference off-scale low.
- Bistable Status Light OT ΔT Loop B TC407C is LIT.

Time	Pos.	Expected Actions/Behavior	Comments
			NOTE: The US will likely enter AP-RCC.1 upon continuous inward rod motion.
AP-RCC.1, CONTINUOUS CONTROL ROD WITHDRAWAL/INSERTION			
	HCO	(Step 1) Evaluate Rod Control System Operability:	
		a. Check turbine load - STABLE	
		b. Place Rods to MANUAL	NOTE: The control rods will stop inserting when rods are taken to MANUAL.
		c. Verify control rod motion stops	
CAUTION IF AN INSTRUMENT CHANNEL FAILURE IS INDICATED, ENSURE VALID INDICATIONS OF TAVG AND TREF ARE UTILIZED WHEN ADJUSTING CONTROL RODS AND/OR TURBINE LOAD.			

Op Test No.: N24-1 Scenario # 2 Event # 3 Page 22 of 75Event Description: **Power Range Channel N43 Lower Detector fails HIGH**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(*Step 2) Monitor Tavg:	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
		• Tavg – GREATER THAN 545°F	
		• Tavg – LESS THAN 579°F	
	HCO	(Step 3) CHECK Tavg – TRENDING TO Tref	NOTE: The HCO may need to perform the Step 3 RNO. If NOT, proceed to step 4 below.
	HCO	(Step 3 RNO) <u>IF</u> Tavg greater than Tref, <u>THEN</u> restore Tavg to Tref by one more of the following:	
		<u>IF</u> Tavg less than Tref, <u>THEN</u> restore Tavg to Tref by one or more of the following:	
		• Withdraw control rods	
		• Reduce turbine load	
		• Dilution of RCS	
	HCO	(Step 4) Check RCS Tavg Channel Indications:	
		○ All 4 channels indicate approximately the same value	
		○ All 4 channels responding to the power change	
	CO	(Step 5) Check Turbine 1 st Stage Pressure Channel, PI-485 – APPROXIMATELY EQUAL TO PI-486	
	HCO	(Step 6) Check NIS PR Indication:	
		○ All PR total channel indicators – APPROXIMATELY EQUAL	NOTE: N41, N42 and N44 are indicating less than N43.

Op Test No.: N24-1 Scenario # 2 Event # 3 Page 23 of 75Event Description: **Power Range Channel N43 Lower Detector fails HIGH**

Time	Pos.	Expected Actions/Behavior	Comments
	US	(Step 6 RNO) <u>IF</u> a NIS PR channel malfunction is indicated, <u>THEN</u> defeat affected channel (refer to ER-NIS.3, PR MALFUNCTION).	
			NOTE: The US will transition to ER-NIS.3.
ER-NIS.3, PR MALFUNCTION			
	HCO	(Step 6.1) PLACE the Rod Control Bank Selector switch in M (MANUAL).	NOTE: The Control Rods are already in MANUAL.
	HCO	(Step 6.2) ADJUST Tavg to Tref.	
	HCO	(Step 6.3) IF hot leg streaming has been causing single channel ΔT runback signals, THEN PERFORM Step 6.3.1. IF NOT , THEN go to Step 6.4.	NOTE: Hot leg streaming has NOT been causing single channel ΔT runback signals.
NOTE - Completing the defeat attachments 1-4 or 9-12 changes the ΔT runback and the rod stop logic to 2/2 for TC405A(C), TC406A(C), TC408A(C) or 2/3 for TC407A(C), and the ΔT reactor trip logics to 1/3. - Completing BYPASS attachments 5-8 changes the ΔT runback and the rod stop logic to 2/2 for TC405A(C), TC406A(C), TC408A(C) or 2/3 for TC407A(C), and the ΔT reactor trip logic to 2/3. - AFD monitor is operable provided PPCS is receiving valid inputs from the upper and lower detectors of three or more operable power range channels. (TR 3.2.3 Basis) - AFD shall be considered outside limits when two or more operable excore channels indicate AFD to be outside limits. (LCO 3.2.3 Note) - QPTR monitor is inoperable for any PR failure, even after the channel is defeated. (TRM TR-3.2.4)			

Op Test No.: N24-1 Scenario # 2 Event # 3 Page 24 of 75Event Description: **Power Range Channel N43 Lower Detector fails HIGH**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 6.4) DEFEAT or BYPASS the inoperable Power Range per appropriate attachment:	NOTE: The appropriate Attachment is Attachment 3.
		Attachment 3, N-43 Defeat from Normal Configuration	NOTE: The US may call WCCS/Supervision to address defeat of the Power Range Failure. If so, SIM DRIVER acknowledge as appropriate and if asked direct that the Defeat of the failed channel be performed .
			NOTE: The US will hand off the Attachment to the CO.
ER-NIS.3, PR MALFUNCTION ATTACHMENT 3, N-43 DEFEAT FROM NORMAL CONFIGURATION			
			NOTE: The CO will conduct an Instrument Defeat Brief.
NOTE AFD monitor is operable provided PPCS is receiving valid inputs from the upper and lower detectors of three or more operable power range channels. (TR 3.2.3 Basis)			
	CO	(Step 1.0) IF PPCS is operational, THEN DELETE NIS Channel 43 from processing by PERFORMING the following:	
		(Step 1.1) SELECT "Group Update" display	
		(Step 1.2) SELECT "List Server Groups"	
		(Step 1.3) SELECT NIS3 from the pick list	
		(Step 1.4) TURN "OFF" scan processing, THEN CLICK the "Set Scan Processing" button	
		(Step 1.5) ANSWER prompts	
	CO	(Step 2.0) VERIFY ROD CONTROL BANK SELECTOR switch (MCB) is in the M (MANUAL) position.	

Op Test No.: N24-1 Scenario # 2 Event # 3 Page 25 of 75Event Description: **Power Range Channel N43 Lower Detector fails HIGH**

Time	Pos.	Expected Actions/Behavior	Comments
	CO	(Step 3.0) PLACE DROPPED ROD MODE switch (Power Range N43A drawer) to BYPASS AND VERIFY the following:	
		DROPPED ROD BYPASS (local light) is ILLUMINATED.	
		POWER RANGE-3 ROD DROP BYPASS (MCB bypass status light) is ILLUMINATED.	
		Annunciator (MCB) E-7, NIS TRIP BYPASS, is ILLUMINATED.	
	CO	(Step 4.0) PLACE T/405F DELTA T DEFEAT switch (RIL Insertion Limit Rack) to LOOP B UNIT 1 (removes the associated ΔT input from the RIL computer).	NOTE: The CO will unlock and open the RIL Insertion Limit Rack Cabinet, take the required action, and then close and lock the cabinet door.
NOTE Bistable proving light status has no bearing on the tripped condition of the channel.			
	CO/ HCO	(Step 5.0) PLACE OVERTEMP TRIP bistable (Blue B1 Protection Channel 3 rack) proving switch to DEFEAT (UP) AND VERIFY the following:	NOTE: The CO will unlock and open the Blue B-1 Protection Channel 3 Rack Cabinet, take the required action, and then close and lock the cabinet door.
		Annunciator F-23, RCS OTΔT CHANNEL ALERT, is ILLUMINATED.	
		Proving light OFF if TI-407B $\geq$ TI-407A	NOTE: Light is OFF.
		IF proving light status is NOT correct, THEN SUBMIT an Issue Report on the discrepancy and continue with the channel defeat steps.	NOTE: The Proving Light status is Correct.
		Bistable TC407C OTΔT Loop B status light is ILLUMINATED.	
		IF bistable is NOT lit, THEN the ΔT channel(s) may not be in the tripped condition. Further investigation is necessary to ensure ITS requirements are met.	NOTE: This step is N/A.

Op Test No.: N24-1 Scenario # 2 Event # 3 Page 26 of 75Event Description: **Power Range Channel N43 Lower Detector fails HIGH**

Time	Pos.	Expected Actions/Behavior	Comments
	CO/ HCO	(Step 6.0) PLACE UPPER SECTION DEFEAT switch (Detector Current Comparator- Miscellaneous Control & Indications drawer) to the PRN43 position AND VERIFY the following:	
		Local light for CHANNEL DEFEAT upper section is ILLUMINATED	
	CO	(Step 7.0) PLACE LOWER SECTION DEFEAT switch (Detector Current Comparator- Miscellaneous Controls & Indications drawer) to the PRN43 position AND VERIFY the following:	
		Local light for CHANNEL DEFEAT lower section is ILLUMINATED.	
	CO	(Step 8.0) PLACE POWER MISMATCH BYPASS switch (Detector Current Comparator- Miscellaneous Controls & Indications drawer) to BYPASS PR N43.	
	CO	(Step 9.0) PLACE ROD STOP BYPASS switch (Detector Current Comparator- Miscellaneous Controls & Indications drawer) to BYPASS PR N43.	
	CO	(Step 10.0) PLACE COMPARATOR CHANNEL DEFEAT switch (Comparator and Rate drawer) to N43 AND VERIFY the following:	
		Local light for COMPARATOR DEFEAT is ILLUMINATED.	
CAUTION			
DO NOT remove control power fuses. IF control power has been lost, THEN the Dropped Rod signal can NOT be bypassed.			
NOTE			
Performing the next step will remove the ΔI signal to the ΔT channel AND place the 108% bistable in the tripped condition.			

Op Test No.: N24-1 Scenario # 2 Event # 3 Page 27 of 75Event Description: **Power Range Channel N43 Lower Detector fails HIGH**

Time	Pos.	Expected Actions/Behavior	Comments
	CO	(Step 11.0) REMOVE 118V 5A AC INSTR POWER fuses (Power Range N43B drawer) AND VERIFY the following alarms (MCB) are ILLUMINATED:	
		E-18, POWER RANGE LOSS OF DETECTOR VOLTAGE	
		E-19, POWER RANGE HI RANGE CHANNEL ALERT 108%	
		E-21, POWER RANGE OVERPOWER ROD STOP 103%	
		E-27, POWER RANGE LO RANGE CHANNEL ALERT 24%	NOTE: Normally LIT above 24% power.
		E-28, POWER RANGE ROD DROP - 5%/5 SEC	
	CO/HCO	(Step 11.1) VERIFY the following BLUE bistable lights (MCB) are ILLUMINATED:	
		HI POW RANGE P-10 NC43M	
		HI POW RANGE P-8 NC43N	
		LO POW RANGE TRIP NC43P	
		HI POW RANGE TRIP NC43R	
		HI POW RANGE P-9 NC43S	
		IF any bistable above is NOT lit, THEN the channel may not be in the tripped condition. FURTHER investigation is necessary to ensure ITS requirements are met.	NOTE: This step is N/A.
	CO	(Step 11.2) VERIFY the following status lights (Power Range N43B drawer) are ILLUMINATED:	
		CONTROL POWER ON	
		LOSS OF DETECTOR VOLT	
		OVERPOWER TRIP HIGH RANGE	
		OVERPOWER ROD STOP	
		OVERPOWER TRIP LOW RANGE	

Op Test No.: N24-1 Scenario # 2 Event # 3 Page 28 of 75Event Description: **Power Range Channel N43 Lower Detector fails HIGH**

Time	Pos.	Expected Actions/Behavior	Comments
		POWER ABOVE PERMISSIVE P10	
		POWER ABOVE PERMISSIVE P8	
		POWER ABOVE PERMISSIVE P9	
		ROD DROP	
		DROPPED ROD BYPASS	
	CO	(Step 11.3) VERIFY the following status lights (Power Range N43B drawer) are extinguished:	
		INSTRUMENT POWER ON	
		CHANNEL ON TEST	
	CO	(Step 12.0) PERFORM the following to bypass P-10 permissive at N-43/BTI bypass panel:	Examiner NOTE: the N-43/BTI Panel is NOT simulated. DIRECT the applicant to contact the SIM DRIVER to complete these actions.
		(Step 12.1) TURN "ON" the following to Energize the N-43/BTI bypass panel:	SIM DRIVER: - Open ThunderView - Click on LOCAL PANEL INDEX - Click on N-43
		Non-Safety breaker	SIM DRIVER: Click on NON-SAFETY "ON I". This will energize both power supplies.
		Safety Breaker	
		(Step 12.2) INSERT key into keylock switch AND TURN key to the right.	SIM DRIVER: Click on NORMAL-BYPASS ENABLE switch. Switch will move to the right and red arrow will point at BYPASS ENABLE. Red BYPASS ENABLE LED light will illuminate and MCB annunciator E-1 will alarm.
		(Step 12.3) VERIFY the following:	
		Bypass Enable LED on the bypass panel is illuminated	

Op Test No.: N24-1 Scenario # 2 Event # 3 Page 29 of 75Event Description: **Power Range Channel N43 Lower Detector fails HIGH**

Time	Pos.	Expected Actions/Behavior	Comments
		Annunciator E-1, NIS CHANNEL IN TEST is in ALARM	
		(Step 12.4) PLACE Power Range - P-10 Permissive bypass switch to BYPASS position.	SIM DRIVER: Click on P10 PERMISS. BYPASS switch. Switch will toggle to the up position and the red LED BYPASS light will illuminate. Inform US/CO that P-10 permissive for N-43 is bypassed.
		(Step 12.5) VERIFY the P-10 Permissive LED on the bypass panel is illuminated.	
	CO	(Step 13.0) INITIATE an A-52.4 on N-43.	
	CO	(Step 14.0) Go to step 6.5.	NOTE: The CO will notify the US that Attachment N-43, Defeat from Normal configuration, is complete.
ER-NIS.3, PR MALFUNCTION			
	CRS	(Step 6.5) WHEN the appropriate channel defeat attachment is complete, THEN RESTORE the following systems to AUTOMATIC as desired:	
	CO	STEAM DUMP	
	HCO	ROD CONTROL	NOTE: The HCO will adjust Control Rod position to match Tav _g -T _{ref} and then place the Rods in AUTO.
	CO	EH	
	CRS	(Step 6.6) CHECK the following for required actions:	
		(Step 6.6.1) Tech Specs Sections	
		Section 3.3.1 TABLE 3.3.1-1 Functions 2a & b, 5, 16b, 16c, 16d and 16e.	

Op Test No.: N24-1 Scenario # 2 Event # 3 Page 30 of 75Event Description: **Power Range Channel N43 Lower Detector fails HIGH**

Time	Pos.	Expected Actions/Behavior	Comments
		Section 3.2.1 (SR 3.2.1.2)	
		Section 3.2.2 (SR 3.2.2.2)	
		Section 3.2.3	
		Section 3.2.4	
		(Step 6.6.2) TRM Sections	
		Section 3.2.3	
		Section 3.2.4	NOTE: The US will address Tech Specs (Below).
	US	(Step 6.7) REFER to LS-AA-1010, TABLE OF CONTENTS EXELON REPORTABILITY REFERENCE MANUAL and LS-AA-1400, EVENT REPORTING GUIDELINES 10CFR50.72 AND 50.73, for reporting requirements.	
	US	(Step 6.8) NOTIFY the following people:	
		Operations Supervision	
		I&C Supervision	
		Reactor Engineer - for performance of required surveillances	
			NOTE: The US will call WCCS/Supervision to address the Power Range Failure. If so, SIM DRIVER acknowledge as appropriate.
TECHNICAL SPECIFICATION 3.3.1, REACTOR TRIP SYSTEM (RTS) INSTRUMENTATION			
	US	LCO 3.3.1 The RTS instrumentation for each Function in Table 3.3.1-1 shall be OPERABLE.	
	US	APPLICABILITY According to Table 3.3.1-1.	NOTE: Functions 2a, 2b, 5, 16b, 16c, 16d, and 16e are affected.

Op Test No.: N24-1 Scenario # 2 Event # 3 Page 31 of 75Event Description: **Power Range Channel N43 Lower Detector fails HIGH**

Time	Pos.	Expected Actions/Behavior	Comments
		ACTION	
CONDITION		REQUIRED ACTION	COMPLETION TIME
A.	One or more Functions with one channel inoperable. <u>OR</u> Two source range channels inoperable.	A.1 Enter the Condition reference in Table 3.3.1-1 for the channel(s).	Immediately
D.	As required by Required Action A.1 and referenced by Table 3.3.1-1.	D.1 NOTE 1. For Functions 2a, 2b, 5, 6, 7b, 8, and 13, one channel may be bypassed for up to 12 hours for surveillance testing. 2. The inoperable channel may be bypassed for up to 12 hours for surveillance testing of other channels. Place channel in trip.	72 hours <u>OR</u> -----NOTE----- Not applicable if there is a loss of function. ----- In accordance with the Risk Informed Completion Time Program
S.	As required by Required Action A.1 and referenced by Table 3.3.1-1.	S.1 ----- -NOTE For Functions 16c, 16d, and 16e, one channel may be bypassed for up to 12 hours for surveillance testing. ----- Verify interlock is in required state for existing plant conditions. <u>OR</u> S.2 Declare associated RTS Function channel(s) inoperable.	1 hour 1 hour
			NOTE: The US will determine that Conditions A, D and S are required.
TECHNICAL REQUIREMENT 3.2.4, QUADRANT POWER TILT RATIO (QPTR) MONITOR			

Op Test No.: N24-1 Scenario # 2 Event # 3 Page 32 of 75Event Description: **Power Range Channel N43 Lower Detector fails HIGH**

Time	Pos.	Expected Actions/Behavior	Comments
	US	TR 3.2.4: The QPTR monitor alarm shall be OPERABLE.	
	US	APPLICABILITY: MODE 1 with THERMAL POWER $\geq$ 50% RTP	
		ACTIONS:	
CONDITION		REQUIRED ACTION	COMPLETION TIME
A. QPTR monitor alarm inoperable.		A.1 Perform TSR 3.2.4.2.	Once within 24 hours and every 24 hours thereafter.
		OR A.2 Perform SR 3.2.1.1, SR 3.2.1.2 and SR 3.2.2.2.	Once within 24 hours and every 24 hours thereafter.
			The US will recognize that Condition A is applicable.
			NOTE: The US will likely conduct a Plant Status Brief.
At the discretion of the Lead Examiner move to Event #4.			

Op Test No.: N24-1 Scenario # 2 Event # 4 Page 33 of 75Event Description: **Condensate Booster Pump C trips/Downpower**

Next, Condensate Booster Pump C will trip. The operator will respond in accordance with AR-AA-10, CONDENSATE BOOSTER PUMP TRIP, and implement AP-FW.1, ABNORMAL MFW PUMP FLOW OR NPSH. Ultimately, the crew will enter AP-TURB.5, RAPID LOAD REDUCTION, and conduct a boration using S-3.1, BORON CONCENTRATION CONTROL, to lower power to less than 70% at a rate of 1%/minute. It is likely that reactor power will rise to greater than 100% when the Low-Pressure Heater Bypass Valve automatically opens requiring the crew to take immediate action to lower Turbine load with Control Rods in AUTO.

SIM DRIVER Instructions: **Operate Trigger #4 (CND01C=TRIP)**

Symptoms/Cues:

- MCB Annunciator AA-10, CONDENSATE BOOSTER PUMP TRIP
- MCB Annunciator G-8, 4 KV MOTOR OVERLOAD
- MCB Annunciator AA-25, COND SYS LO PRESS
- MCB Annunciator H-17, FEED PUMP NET POSITIVE SUCTION HEAD
- MCB Annunciator H-30, CONDENSATE BYPASS VALVE OPEN
- Condensate Bypass Valve AOV-3959 indicates open
- Feed Pump 1A and 1B Suction Pressure indicators lower and then partially recover after Condensate Bypass Valve opens

Time	Pos.	Expected Actions/Behavior	Comments
			NOTE: The US may enter AP-FW.1 directly.
AR-AA-10, COND BOOSTER PUMP TRIP			
			Examiner NOTE: The US is immediately faced with two limits in AR-AA-10: • DO NOT run a single pump when greater than 92% power to prevent pump runout. • DO NOT run a single pump for longer than 30 minutes when greater than 90% power, to prevent overheating. Consequently, the US will immediately attempt to reduce power to less than 92% and continue to less than 90% within 30 minutes.

Op Test No.: N24-1 Scenario # 2 Event # 4 Page 34 of 75Event Description: **Condensate Booster Pump C trips/Downpower**

Time	Pos.	Expected Actions/Behavior	Comments
NOTE			
IF RESET pushbutton light is illuminated, THEN the pumps will NOT start			
CAUTION			
DO NOT run a single pump when greater than 92% power to prevent pump runout. DO NOT run a single pump for longer than 30 minutes when greater than 90% power, to prevent overheating.			
	CO	(Step 4.1) VERIFY automatic start of the standby Condensate Booster Pump.	NOTE: Because CBP A is OOS, there is no Standby Booster Pump.
	US	(Step 4.2) IF the standby pump did NOT start, THEN GO TO AP-FW.1, ABNORMAL MFW PUMP FLOW OR NPSH.	
			NOTE: The US will go to AP-FW.1.
AP-FW.1, ABNORMAL MFW PUMP FLOW OR NPSH			
			Examiner NOTE: On low Feedwater pump suction pressure, the Low-Pressure Feedwater heater bypass valve (V3959) will automatically open to bypass the heaters and restore Feedwater suction pressure. This will result in reactor power rising possibly greater than 100%. If so, the US will enter AP-TURB.5 and lower Main Turbine load while maintaining Control Rods in AUTO (See Page 39). Once power is less than 100% the operator will conduct an Operations Rapid Load Reduction Briefing per A-503.1, Attachment 1, and THEN initiate a load reduction to less than 70%.
NOTE			
IF power reduction is required, OPG-REACTIVITY-CALC provides the amount and rate of Boric Acid Addition.			

Op Test No.: N24-1 Scenario # 2 Event # 4 Page 35 of 75Event Description: **Condensate Booster Pump C trips/Downpower**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO/ CO	(Step 1) Check MFW Requirements:	
		a. Power – GREATER THAN 50%	
		b. Both MFW pumps - RUNNING	
		c. Go to Step 3.	
	HCO/ CO	(Step 3) Check S/G Status	
		o MFW flows – GREATER THAN STEAM FLOWS	
		o S/G levels stabilizing or returning to program	
	CO	(Step 4) Verify At Least 2 Condensate Pumps - RUNNING	
	CO	(Step 5) Verify Both HDT Pumps - RUNNING	
	CO	(Step 6) Check Condensate Booster Pumps – 2 RUNNING	NOTE: The B Condensate Booster Pump is the only pump running.
	US	(Step 6 RNO) <u>IF</u> no condensate booster pump is running, <u>THEN</u> perform the following:	NOTE: The B Condensate Booster Pump is running.
		<u>IF</u> a running condensate booster pump has tripped <u>AND</u> the standby pump has <u>NOT</u> started, <u>THEN</u> reduce power to less than 70%. (Refer to AP-TURB.5, RAPID LOAD REDUCTION)	

Op Test No.: N24-1 Scenario # 2 Event # 4 Page 36 of 75Event Description: **Condensate Booster Pump C trips/Downpower**

Time	Pos.	Expected Actions/Behavior	Comments
			NOTE: The US will conduct a Power Reduction Brief. Examiner NOTE: The US may continue in AP-FW.1 (Not Scripted) simultaneous with the downpower. However, these steps are verification steps.
AP-TURB.5, RAPID LOAD REDUCTION			
<u>CAUTION</u> <u>IF</u> MAIN FEEDWATER FLOW SHOULD LOWER TO 25% OF FULL POWER FLOW (1x10⁶ LB/HR) PRIOR TO THE AMSAC SYSTEM AUTOMATICALLY BLOCKING AT 40% POWER, <u>THEN</u> A TURBINE TRIP <u>AND</u> AUX FEED PUMPS START COULD RESULT.			
<u>NOTE:</u> <u>IF</u> the turbine is to be taken offline, <u>THEN</u> transfer of 4160V loads may be performed at any time. Refer to ATT-23.0, ATTACHMENT TRANSFER 4160V LOADS. - A maximum continuous load reduction rate of greater than 5%/min should not be used unless directed by the Shift Manager.			
	HCO	(Step 1) Initiate Load Reduction	
		a. Verify rods in AUTO	
		b. Initiate boration at the rate determined in OPG-REACTIVITY-CALC.	NOTE: The HCO will initiate a boration.
S-3.1, BORON CONCENTRATION CONTROL			
ATTACHMENT 1, MAKEUP DETERMINATIONS			
NOTE - The use of approximately 4-6 gallons of Boric Acid PER percent load reduction is normal for transient load reduction, based on reactivity calculations. IF frequent dilutions are required during a shift, THEN total volume added may be tallied at end of shift. - Requirements for minimum volume of boric acid in BAST specified in TRM Table TR 3.1.1-1 for current BAST concentration.			

Op Test No.: N24-1 Scenario # 2 Event # 4 Page 37 of 75Event Description: **Condensate Booster Pump C trips/Downpower**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 1.0) IF Boration is required, THEN PERFORM the following OTHERWISE, MARK this Step N/A:	
	HCO	(Step 1.1) DETERMINE total volume of boric acid required AND desired boric acid flow rate using one of the following AND MARK method NOT used N/A.	
		1.1.1 USE PPCS Variable Boration/Dilution display.	
		OR	
		1.1.2 USE applicable Boration/Dilution table from Boration Tables book.	NOTE: The HCO will use the PPCS to determine that ≈90-100 gallons of Boric Acid must be added.
	HCO	(Step 1.2) GO TO applicable Attachment to perform boration.	NOTE: The HCO will go to Attachment 2 of S-3.1.
S-3.1, BORON CONCENTRATION CONTROL ATTACHMENT 2, NORMAL BORATION			
	HCO	(Step 1.0) ENSURE Attachment 1, Makeup Determinations, is complete.	
	HCO	(Step 2.0) Board operator SHALL inform US of intent to change core reactivity.	
		2.1 US SHALL acknowledge reactivity manipulation and provide input and oversight. [G0092] .	
	HCO	(Step 3.0) PLACE RMW MODE SELECTOR control switch to BORATE position.	
	HCO	(Step 4.0) SET BA TO BA BLENDER FLOW CONTROL VALVE, HCV-110A, controller to flow rate determined in Attachment 1, Makeup Determinations, Step 1.1.	

Op Test No.: N24-1 Scenario # 2 Event # 4 Page 38 of 75Event Description: **Condensate Booster Pump C trips/Downpower**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 5.0) SET BA COUNTER, YIC-110, to quantity determined in Attachment 1.	
NOTE Key parameters including Reactor Coolant Tavg AND control rod position indication, OR subcritical count rate SHALL be observed as boric acid is injected to ensure proper response. [G0092] [G0132]			
	HCO	(Step 6.0) PLACE RMW CONTROL switch to START position.	
	HCO	(Step 7.0) VERIFY the following:	
		BORIC ACID TRANSFER PUMP A OR B starts.	
		BA TO BA BLENDER FLOW CONTROL VLV, HCV-110A, THROTTLES OPEN to preset flow position.	
		REACTOR MAKEUP TO CHG PUMP, AOV-110B, OPENS.	
	HCO	(Step 8.0) WHEN boration is complete, THEN PERFORM the following:	
		8.1 PLACE RMW MODE SELECTOR control switch to AUTO position.	
		8.2 PLACE RMW CONTROL switch to START position and VERIFY RMW control red light ILLUMINATED .	
		8.3 SET BA TO BA BLENDER FLOW CONTROL VLV, HCV-110A, for current RCS boron concentration PER Boration/Dilution tables OR PPCS Engineering Menu Boration/Dilution display.	

Op Test No.: N24-1 Scenario # 2 Event # 4 Page 39 of 75Event Description: **Condensate Booster Pump C trips/Downpower**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 9.0) PLACE "BORATE" Human Performance Label next to RMW Mode Selector switch on MCB.	
	HCO	(Step 10.0) Board operator SHALL inform US that reactivity manipulation is complete. [G0092]	
	HCO	(Step 11.0) RECORD amount of boric acid added on S-12.4, RCS Leakage Surveillance Record Instructions, Attachment RCS Leakage Surveillance Record.	
AP-TURB.5, RAPID LOAD REDUCTION			
	CO	(Step 1.c) Reduce turbine load in Auto as follows:	
		1) Place Turbine EH Control in OPER PAN., IMP PRESS IN, if desired.	
		2) Select desired rate on thumbwheel	NOTE: The CO will select 1%/Minute.
		3) Reduce the setter to the desired load	Examiner NOTE: The US must be less than 90% power within 30 Minutes and has been directed by AP-FW.1 to reduce power to less than 70%.
		4) Depress the GO button	NOTE: The CO will start the load reduction.
	HCO	d. Place PRZR backup heaters switch to ON	
<u>CAUTION</u> EXTREME AND RAPID ROD MOTION TO MITIGATE TAVG SWINGS MAY RESULT IN LARGE POWER EXCURSIONS AND SHOULD BE AVOIDED.			

Op Test No.: N24-1 Scenario # 2 Event # 4 Page 40 of 75Event Description: **Condensate Booster Pump C trips/Downpower**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(*Step 2) Monitor RCS Tavg	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
		○ Tavg – GREATER THAN 545°F	
		○ Tavg – LESS THAN 579°F	
	HCO	(Step 3) Adjust Boric Acid Addition Rate As Necessary To (refer to OPG-REACTIVITY-CALC):	
		○ Maintain rods above the insertion limit	
		○ Match Tavg and Tref	
		○ Compensate for Xenon	
NOTE: With PRZR pressure controller in manual, PORV-431C will not operate in the automatic mode. (Refer to TR 3.4.3)			
	HCO	(*Step 4) Monitor PRZR Pressure – TRENDING TO 2235 PSIG IN AUTO	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
	CO	(*Step 5) Monitor MFW Regulating Valves – RESTORING S/G LEVEL TO 52% IN AUTO	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
	HCO	(*Step 6) Monitor PRZR Level – TRENDING TO PROGRAM IN AUTO CONTROL	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
NOTE: It is permissible to operate RCPs for limited periods without seal injection, provided CCW is being supplied to the thermal barriers.			

Op Test No.: N24-1 Scenario # 2 Event # 4 Page 41 of 75Event Description: **Condensate Booster Pump C trips/Downpower**

Time	Pos.	Expected Actions/Behavior	Comments
	CO	(Step 7) Check IA Available to CNMT	
		o IA pressure – GREATER THAN 60 PSIG	
		o Instr Air to CNMT Isol Valve, AOV-5392 - OPEN	
	HCO/ CO	(*Step 8) Check Steam Dump Status:	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
		o Annunciator G-15, STEAM DUMP ARMED - LIT	
		o Steam dump operating properly in AUTO	
	HCO/ CO	(Step 8 RNO) <u>IF</u> steam dump required but <u>NOT</u> operating, <u>THEN</u> perform the following:	NOTE: Steam Dump is NOT required.
CAUTION			
MANUAL REJECT MAY BE REQUIRED TO PREVENT SIGNIFICANT AFFECT ON CONDENSATE PRESSURE			
	CO	(Step 9) Check Hotwell Level:	
		o Hotwell level controller in AUTO	
		o Controller demand LESS THAN 60%	
		o Hotwell level at setpoint	
NOTE:			
The load reduction should not be delayed to perform the remaining steps.			
	US/ CO	(*Step 10) Check If Condensate Booster Pumps Should Be Secured	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
		a. Condensate booster pumps – 2 PUMPS RUNNING	NOTE: The B Condensate Booster Pump is the only pump running.

Op Test No.: N24-1 Scenario # 2 Event # 4 Page 42 of 75Event Description: **Condensate Booster Pump C trips/Downpower**

Time	Pos.	Expected Actions/Behavior	Comments
	US	(Step 10.a RNO) <u>IF</u> only 1 Condensate Booster Pump running, <u>THEN</u> go to step 10e. <u>IF</u> no pumps running <u>THEN</u> go to step 11.	
	CO	(Step 10.e) Verify the following:	
		o Condensate pressure – STABLE <u>OR</u> RISING	
		o Verify Trim valves AOV-9508D/9508G – CLOSED <u>OR</u> STABILIZED at new position	
		o Verify HDT level (L2013A) greater than 50% and STABLE <u>OR</u> RISING	
	US	(Step 10.e RNO) Go to step 11, <u>WHEN</u> conditions met to stop remaining booster pump <u>THEN</u> perform Step 10f.	NOTE: The US may wait until lower in power to stop the CBP and return to AP-FW.1 (Not Scripted).
	CO	(Step 10.f) Stop the remaining condensate booster pump	NOTE: The B Condensate Booster Pump will be stopped when the Step 10.e conditions are met.
			Examiner NOTE: Once there are no CBPs operating the Lead Examiner may move to Event 5.
	CO	(Step 11) Check If One MFW Pump Should Be Secured	
		a. Power LESS THAN 50%	NOTE: The US will lower power to less than 70%.
	US	(Step 11a RNO) Go to Step 18.	
	US	(Step 18) Evaluate Plant Status	

Op Test No.: N24-1 Scenario # 2 Event # 4 Page 43 of 75Event Description: **Condensate Booster Pump C trips/Downpower**

Time	Pos.	Expected Actions/Behavior	Comments
		a. <u>IF</u> load was reduced more than 15% RTP in one hour, <u>THEN</u> notify RP to obtain primary samples required by ITS LCO 3.4.16	NOTE: The US will contact RP. SIM DRIVER: as Chemistry , acknowledge
		b. Power stable at desired level	
	US	(Step 18b RNO) <u>IF</u> power greater than 20% and further reduction is required, <u>THEN</u> continue load reduction and return to Step 2.	
At the discretion of the Lead Examiner move to Event #5.			

Op Test No.: N24-1 Scenario # 2 Event # 5 Page 44 of 75Event Description: **Main Feedwater Pump B AC Oil Pump B2 Failure**

During the load reduction, the Main Feedwater Pump B AC Oil Pump B2 will trip causing the DC Oil Pump to automatically start. The operator will respond in accordance with AR-H-12, FEED PUMP DC OIL PUMP AUTO START. The operator will start the Main Feedwater Pump B AC Oil Pump B1 and stop the DC Oil Pump.

SIM DRIVER Instructions: **Operate Trigger #5 (Insert OVR-FDW20H=FALSE and OVR-FDW20F=ON)**

Symptoms/Cues:

- 1B2 AC Oil Pump Red light OFF, Green & White lights are LIT
- H-12, FEED PUMP DC OIL PUMP AUTO START

Time	Pos.	Expected Actions/Behavior	Comments
AR-H-12, FEED PUMP DC OIL PUMP AUTO START			
	CO	(Step 1) VERIFY DC Oil Pump started.	
	CO	(Step 2) NOTIFY AO to perform the following:	
		• VERIFY Oil in the sump by LG-2764(2773) OR dipstick.	NOTE: The CO will contact Secondary EO and direct these actions for MFWP B. SIM DRIVER: As Secondary EO , acknowledge. After 1 minute report that Oil Level is NORMAL and that MFWP B DC Oil Pump is operating normally .
		• CHECK DC Oil Pump.	
	CO	(Step 3) IF required, THEN START the other AC Oil Pump.	NOTE: The CO will start MFWP B AC Oil Pump B1.
	CO	(Step 4) NOTIFY AO to check the running AC Oil Pump.	NOTE: The CO will contact Secondary EO and direct that MFWP B AC Oil Pump B1 be checked for normal operation. SIM DRIVER: As Secondary EO , acknowledge and report that MFWP B AC Oil Pump B1 is operating normally .

Op Test No.: N24-1 Scenario # 2 Event # 5 Page 45 of 75Event Description: **Main Feedwater Pump B AC Oil Pump B2 Failure**

Time	Pos.	Expected Actions/Behavior	Comments
	CO	(Step 5) WHEN AO reports the AC Pump is operating, THEN STOP the DC Oil Pump, AND PLACE in AUTO.	SIM DRIVER: As Secondary EO , report that DC Oil Pump is stopped .
			NOTE: The US may notify the WCC. SIM DRIVER: as WCCS , acknowledge.
At the discretion of the Lead Examiner move to Events #6-8.			

Op Test No.: N24-1 Scenario # 2 Event # 6-8 Page 46 of 75Event Description: **Inadvertent Steam Line Isolation Signal / Failure of the Reactor to trip from the Control Room/ATWS / Pressurizer PORV stuck full OPEN**

After this, an inadvertent Steam Line Isolation Signal will occur and both MSIVs will close. The reactor will fail to automatically trip, and the operator will attempt to trip the reactor manually. The crew will enter E-0, REACTOR TRIP OR SAFETY INJECTION. The reactor will fail to trip manually from the control room, and the crew will enter FR-S.1, RESPONSE TO REACTOR RESTART/ATWS. Pressurizer PORV-430 will lift and stick fully open. The operator will need to manually close the block valve. The crew will direct that the reactor be tripped locally. Upon completion of FR-S.1, the crew will transition back to E-0, and then to E-1, LOSS OF REACTOR OR SECONDARY COOLANT and/or ES-1.1, SI TERMINATION. The scenario will end at step 7 of ES-1.1 after the SI/RHR Pumps have been stopped.

SIM DRIVER Instructions: Operate Trigger #6 (STM05A (0%, No Ramp) and STM05B (0%, No Ramp), A-SGN11 (ON), A-SGN12 (ON)

NOTE: PCV-430 will stick fully open when the valve automatically opens.

Symptoms/Cues:

- Both MSIVs Closed (Green status lights are LIT; Red status lights are DARK)
- MCB Annunciator G-18, S/G A ISOLATION
- MCB Annunciator G-23, S/G B ISOLATION
- All Steam Dump Valves are full Open (Red status lights are LIT)
- RCS Pressure is increased to greater than 2335 psig
- Both PRZR Spray valves full Open
- PRZR PORV full Open
- RTBs are CLOSED

Time	Pos.	Expected Actions/Behavior	Comments
E-0, REACTOR TRIP OR SAFETY INJECTION			
	HCO	(Step 1) Verify Reactor Trip:	Immediate Action
		○ At least one train of reactor trip breakers – OPEN	
		○ Neutron flux – LOWERING	
		○ MRPI indicates – ALL CONTROL AND SHUTDOWN RODS ON BOTTOM with no instrument fluctuations concurrent with fire.	

Op Test No.: N24-1 Scenario # 2 Event # 6-8 Page 47 of 75Event Description: **Inadvertent Steam Line Isolation Signal / Failure of the Reactor to trip from the Control Room/ATWS / Pressurizer PORV stuck full OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO/ CO	(Step 1 RNO) Manually trip reactor.	Immediate Action
		<u>IF</u> reactor trip breakers <u>NOT</u> open, <u>OR</u> there is a fire in the power block, <u>THEN</u> perform the following:	
		a. Open Bus 13 and Bus15 normal feed breakers.	NOTE: The BUS 15 normal feeder breaker did NOT open.
		<u>IF</u> Bus 13 or Bus 15 indicating lights are extinguished or flickering, <u>THEN</u> go to FR-S.1, RESPONSE TO REACTOR RESTART/ATWS. Step 1.	
		b. Verify rod drive MG sets tripped.	
		c. Close Bus 13 and Bus 15 normal feed breakers.	NOTE: The HCO/CO may re-close breaker for Bus 13.
		d. Reset lighting breakers.	
		<u>IF</u> the reactor will <u>NOT</u> trip <u>OR</u> <u>IF</u> power range NIS indicates greater than 5%, <u>THEN</u> go to FR-S.1, RESPONSE TO REACTOR RESTART/ATWS, Step1.	NOTE: The US will transition to FR-S.1.
			NOTE: The US may direct the EO to open BOTH Control Rod Drive MG Set Breakers locally. If so, SIM DRIVER acknowledge as EO, WAIT three Minutes and Insert MALF-ROD06B. THEN report that the MG Set breakers have been opened.
FR-S.1, RESPONSE TO REACTOR RESTART/ATWS			
CAUTION			
RCPS SHOULD <u>NOT</u> BE TRIPPED WITH REACTOR POWER GREATER THAN 5%			
NOTE:			
Adverse CNMT values should be used whenever CNMT pressure is greater than 4 psig or CNMT radiation is greater than 10+05 R/hr.			
	HCO	(Step 1) Verify Reactor Trip:	Immediate Action

Op Test No.: N24-1 Scenario # 2 Event # 6-8 Page 48 of 75Event Description: **Inadvertent Steam Line Isolation Signal / Failure of the Reactor to trip from the Control Room/ATWS / Pressurizer PORV stuck full OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
		o At least one train of reactor trip breakers – OPEN	
		o Neutron flux – LOWERING	
		o MRPI indicates – ALL CONTROL AND SHUTDOWN RODS ON BOTTOM with no instrument fluctuations concurrent with fire.	
	HCO	(Step 1 RNO) Manually trip reactor.	Immediate Action
		<u>IF</u> reactor trip breakers <u>NOT</u> open, <u>THEN</u> manually insert control rods.	

Critical Task #1:

Upon diagnosing an ATWS, manually insert the control rods within 1 minute, and continue insertion until the reactor is tripped or the rods are on the bottom.

Expected Actions: The Rod Control Bank Selector Switch is taken to MANUAL, In-Hold-Out Switch is moved to the IN position within 60 seconds of the start of the event.

	US/ CO	Dispatch EO to locally DEPRESS trip button for BOTH Control Rod Drive Motor Generator Set breakers at CRDM Control Panel: • 52-1/MG1A, CRD MG SET A BKR • 52-2/MG1B, CRD MG SET B BKR	NOTE: The US may direct the EO to open BOTH Control Rod Drive MG Set Breakers locally. If so, SIM DRIVER acknowledge as EO, WAIT three Minutes and Insert MALF-ROD06B . THEN report that the MG Set breakers have been opened .
	CO	(Step 2) Verify Turbine Stop Valves - CLOSED	Immediate Action
	CO	(Step 2 RNO) Manually trip turbine.	Immediate Action
		<u>IF</u> turbine trip can <u>NOT</u> be verified, <u>THEN</u> close both MSIVs	NOTE: This step is N/A.

Op Test No.: N24-1 Scenario # 2 Event # 6-8 Page 49 of 75Event Description: **Inadvertent Steam Line Isolation Signal / Failure of the Reactor to trip from the Control Room/ATWS / Pressurizer PORV stuck full OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
	CO	(Step 3) Check AFW Pumps Running:	Immediate Action
		(Step 3.a) MDAFW pumps - RUNNING	Immediate Action
	CO	(Step 3.a RNO) Manually start MDAFW pumps.	Immediate Action
	CO	(Step 3.b) TDAFW pump – RUNNING <u>IF</u> NECESSARY	Immediate Action
	CO	(Step 3.b RNO) Manually open steam supply valves.	Immediate Action
		• MOV-3505A	
		• MOV-3504A	
<u>CAUTION</u> - ACTIONS TAKEN TO INITIATE RCS BORATION SHALL <u>NOT</u> BE REVERSED <u>WHEN</u> PERFORMING STEPS 3 through 7 of E-0, REACTOR TRIP OR SAFETY INJECTION <u>IF</u> OFFSITE POWER IS LOST AFTER SI RESET, <u>THEN</u> MANUAL ACTION MAY BE REQUIRED TO RESTART SAFEGUARDS EQUIPMENT. (REFER TO ATT-8.5, ATTACHMENT LOSS OF OFFSITE POWER)			
<u>NOTE:</u> - If offsite power is lost coincident with SI, then MCC C and MCC D lockout relays must be reset to restore BA and RMW pumps. - Foldout page should be open and monitored periodically.			
	HCO/ CO	Foldout Page	NOTE: The crew will monitor these conditions throughout the performance of FR-S.1.
		LOSS OF SW CRITERIA	
	HCO/ CO	(Step 4) Initiate Emergency Boration of RCS:	
		a. Check SI status:	

Op Test No.: N24-1 Scenario # 2 Event # 6-8 Page 50 of 75Event Description: **Inadvertent Steam Line Isolation Signal / Failure of the Reactor to trip from the Control Room/ATWS / Pressurizer PORV stuck full OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
		○ All SI annunciators – EXTINGUISHED ○ All SI pumps – OFF IN AUTO	Examiner NOTE: It is likely that SI will be actuated. If SO , the crew will perform the RNO requiring E-0 Actions BELOW. If SI is NOT actuated , MOVE forward to FR-S.1 Step 4.b actions on Page 54 .
	HCO/ CO	(Step 4.a RNO) Perform the following:	
		1) Complete steps 3 through 7 of E-0, REACTOR TRIP OR SAFETY INJECTION, while continuing with this procedure.	
		2) <u>IF</u> SI flow indicated, <u>THEN</u> go to Step 5. <u>IF NOT</u> , <u>THEN</u> go to Step 4b.	
			Examiner NOTE: The US may hand off the E-0 Steps to either the HCO or the CO and continue with the other operator in FR-S.1. Examiner following operator performing the E-0 steps continue below. Examiner following operator NOT performing the E-0 Steps MOVE forward to FR-S.1 Step 4.b actions if no SI flow or Step 5 on Page 54 if SI flow is indicated.
E-0, REACTOR TRIP OR SAFETY INJECTION			
	HCO/ CO	(Step 3) Verify sufficient AC Emergency buses Energized To At Least 440 VOLTS:	
		○ Bus 14 <u>OR</u> Bus 16	
		AND	

Op Test No.: N24-1 Scenario # 2 Event # 6-8 Page 51 of 75Event Description: **Inadvertent Steam Line Isolation Signal / Failure of the Reactor to trip from the Control Room/ATWS / Pressurizer PORV stuck full OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
		o Bus 17 <u>OR</u> Bus 18	
	HCO/ CO	(Step 4) Check if SI is Actuated:	
		a. Any SI Annunciator – LIT	
		b. SI sequencing – BOTH TRAINS STARTED.	
NOTE: - FOLDOUT page should be open and monitored periodically. - Adverse CNMT values should be used whenever CNMT pressure is greater than 4 psig or CNMT radiation is greater than 10+05 R/hr.			
	HCO/ CO	Foldout Page	NOTE: The HCO/CO will monitor these conditions throughout the performance of E-0.
		RCP TRIP CRITERIA	NOTE: RCP Trip Criteria may be met.
		1. <u>IF BOTH</u> conditions listed below occur, <u>THEN</u> trip both RCPs:	
		a. SI pumps - AT LEAST TWO RUNNING	
		b. RCS pressure minus maximum S/G pressure - LESS THAN 210 psi [240 psi adverse CNMT]	
		LOSS OF SW CRITERIA	
		AFW SUPPLY SWITCHOVER CRITERION	
		SFP COOLING CRITERIA	
		MULTIPLE FUNCTION LOSS CRITERIA	
	HCO/ CO	(*Step 5) Verify CNMT Spray Not Required:	NOTE: This is a Continuous Action.
		o Annunciator A-27, CNMT SPRAY – EXTINGUISHED	
		o CNMT pressure – LESS THAN 28 PSIG	

Op Test No.: N24-1 Scenario # 2 Event # 6-8 Page 52 of 75Event Description: **Inadvertent Steam Line Isolation Signal / Failure of the Reactor to trip from the Control Room/ATWS / Pressurizer PORV stuck full OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO/ CO	(Step 6) Direct Operator to Perform ATT-27.0, ATTACHMENT AUTOMATIC ACTION VERIFICATION	
E-0, REACTOR TRIP OR SAFETY INJECTION ATTACHMENT 27.0, ATTACHMENT AUTOMATIC ACTION VERIFICATION			
	HCO/ CO	(Step 1) Verify SI and RHR Pumps Running:	
		a. All SI pumps – RUNNING	
		b. Both RHR pumps – RUNNING	
	HCO/ CO	(Step 2) Verify CNMT RECIRC Fans Running:	
		a. All fans – RUNNING	
		b. Charcoal filter dampers green status lights – EXTINGUISHED	
	HCO/ CO	(Step 3) Check If Main Steamlines Should Be Isolated:	
		a. Any MSIV – OPEN	NOTE: Both MSIVs are Closed.
	HCO/ CO	(Step 3a RNO) Go to Step 4.	
	HCO/ CO	(Step 4) Verify MFW Isolation:	
		a. MFW pumps – TRIPPED	
		b. MFW Isolation valves – CLOSED	
		• S/G A, AOV-3995	
		• S/G B, AOV-3994	

Op Test No.: N24-1 Scenario # 2 Event # 6-8 Page 53 of 75Event Description: **Inadvertent Steam Line Isolation Signal / Failure of the Reactor to trip from the Control Room/ATWS / Pressurizer PORV stuck full OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
		c. S/G Blowdown and sample valves - CLOSED	
	HCO/ CO	(Step 5) Verify At Least Two SW Pumps - RUNNING	
	HCO/ CO	(Step 6) Verify CI and CVI:	
		a. CI and CVI annunciators - LIT	
		• Annunciator A-26, CNMT ISOLATION	
		• Annunciator A-25, CNMT VENTILATION ISOLATION	
		b. Verify CI and CVI valve status lights – BRIGHT	
		c. CNMT RECIRC fan coolers SW outlet valve status lights - BRIGHT	
		• FCV-4561	
		• FCV-4562	
		• Letdown orifice valves - CLOSED	
		• AOV-200A	
		• AOV-200B	
		• AOV-202	
NOTE: <u>IF</u> performing E-0 per direction of FR-S.1, FR-S.2, or FR-H.1 <u>THEN</u> stop here and return to E-0, REACTOR TRIP OR SAFETY INJECTION			
E-0, REACTOR TRIP OR SAFETY INJECTION			
	HCO/ CO	(Step 7) Verify Both MDAFW Pumps Running	NOTE: Both MDAFW Pumps should have already been manually started.

Op Test No.: N24-1 Scenario # 2 Event # 6-8 Page 54 of 75Event Description: **Inadvertent Steam Line Isolation Signal / Failure of the Reactor to trip from the Control Room/ATWS / Pressurizer PORV stuck full OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
			NOTE: The operator performing E-0 actions will report that Steps 3-7 of E-0 are complete.
FR-S.1, RESPONSE TO REACTOR RESTART/ATWS			
	CO	(Step 4.b) Verify at least one charging pump - RUNNING	Examiner NOTE: If SI flow is NOT indicated or SI has NOT actuated, continue HERE .
	CO	(Step 4.c) Align boration path:	
		1) Start two BA transfer pumps	
		2) Open MOV-350	
		3) Verify BA flow	
		4) <u>IF</u> at least one Charging pump running, <u>THEN</u> close CCW outlet valves from RCP Thermal Barriers:	
		• RCP A, AOV-754A	
		• RCP B, AOV-754B	
		5) <u>WHEN</u> Boration complete, <u>THEN</u> open CCW Outlet valves from RCP Thermal Barriers:	
		• RCP A, AOV-754A	
		• RCP B, AOV-754B	
	CO	(Step 4.d) Verify charging flow path:	
		○ Charging valve to loop B cold leg (AOV-294) - OPEN	
		○ Charging flow control valve (HCV-142) - DEMAND AT 0%	
			Examiner following operator NOT performing E-0 Steps 3-7 continue HERE if SI has actuated and SI flow is indicated.
	CO/ HCO	(Step 5) Check PRZR PORV Status:	

Op Test No.: N24-1 Scenario # 2 Event # 6-8 Page 55 of 75Event Description: **Inadvertent Steam Line Isolation Signal / Failure of the Reactor to trip from the Control Room/ATWS / Pressurizer PORV stuck full OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
		a. RCS pressure – LESS THAN 2335 PSIG	
		b. Check PORVs – BOTH CLOSED	
	CO/ HCO	(Step 5.b RNO) <u>IF</u> PRZR pressure less than 2335 psig, <u>THEN</u> manually close PORVs.	NOTE: The HCO will place the PCV-430 Control Switch to CLOSE, however, the valve will remain OPEN.
		<u>IF</u> any PORV can NOT be closed, <u>THEN</u> manually close its block valve. <u>IF</u> block valve can NOT be closed, <u>THEN</u> dispatch EO to locally check breaker.	
		MOV-515, MCC D position 6C	
		MOV-516, MCC C position 6C	NOTE: The HCO will CLOSE the PCV-430 Block Valve.

Critical Task #2:**Close the Block Valve of the Stuck OPEN Pressurizer PORV prior to transition out of FR-S.1 at Step 18.****Expected Actions:** Attempt to close PRZR PORV PCV-430, Close PRZR PORV Block Vlv MOV-516 prior to transition out of FR-S.1 at Step 18.

	CO/ HCO	(Step 6) Verify CNMT Ventilation Isolation	
		a. CVI Annunciator - LIT	
		Annunciator A-25, CNMT VENTILATION ISOLATION	
		b. Verify CVI valve status lights - BRIGHT	
	CO/ HCO	(Step 7) Check If The Following Trips Have Occurred:	NOTE: If the Rx has NOT been locally tripped the RNO will be performed, otherwise proceed to Step 7.b.
		a. Reactor trip	

Op Test No.: N24-1 Scenario # 2 Event # 6-8 Page 56 of 75Event Description: **Inadvertent Steam Line Isolation Signal / Failure of the Reactor to trip from the Control Room/ATWS / Pressurizer PORV stuck full OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
	CO/ HCO	(Step 7.a RNO) Dispatch EO to locally DEPRESS trip button for BOTH Control Rod Drive Motor Generator Set breakers at CRDM Control Panel:	NOTE: The US may direct the EO to open BOTH Control Rod Drive MG Set Breakers locally. If so, SIM DRIVER acknowledge as EO, WAIT three Minutes and Insert MALF-ROD06B. THEN report that the MG Set breakers have been opened.
		52-1/MG1A, CRD MG SET A BKR	
		52-2/MG1B, CRD MG SET B BKR	
	CO/ HCO	(Step 7.b) Turbine trip	
	CO/ HCO	(*Step 8) Check If Reactor Is Subcritical:	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
		a. Energize MCC A <u>AND</u> B	
		b. Check power range channels – LESS THAN 5%	
		c. Check Intermediate range channels	
		o Startup rate - NEGATIVE	
		OR	
		o Intermediate range channels - LOWERING	
	US	d. Go to Step 18.	
CAUTION BORATION SHOULD CONTINUE TO OBTAIN ADEQUATE SHUTDOWN MARGIN DURING SUBSEQUENT ACTIONS.			
	US	(Step 18) Return to Procedure And Step In Effect	

Op Test No.: N24-1 Scenario # 2 Event # 6-8 Page 57 of 75Event Description: **Inadvertent Steam Line Isolation Signal / Failure of the Reactor to trip from the Control Room/ATWS / Pressurizer PORV stuck full OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
<u>Critical Task #2:</u>			
Close the Block Valve of the Stuck OPEN Pressurizer PORV prior to transition out of FR-S.1 at Step 18.			
<u>Expected Actions:</u> Attempt to close PRZR PORV PCV-430, Close PRZR PORV Block Vlv MOV-516 prior to transition out of FR-S.1 at Step 18.			
			Examiner NOTE: The US will transition back to E-0 and start at Step 8.
E-0, REACTOR TRIP OR SAFETY INJECTION			
<u>NOTE:</u> IF MDAFW Pumps crosstie alignment is desired, <u>THEN</u> refer to ATT-5.3, ATTACHMENT MDAFW PUMPS CROSSTIE.			
	CO/ HCO	(Step 8) Verify AFW Valve Alignment:	
		a. AFW flow – INDICATED TO BOTH S/G(s)	
		b. AFW flow from each MDAFW pump – LESS THAN 230 GPM	
	CO/ HCO	(*Step 9) Monitor Heat Sink:	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
		a. Check S/G narrow range level – GREATER THAN 7% [25% ADVERSE CNMT] in any S/G	
	CO/ HCO	(Step 9.a RNO) Perform the following:	
		1) Verify total AFW flow - GREATER THAN 200 GPM	

Op Test No.: N24-1 Scenario # 2 Event # 6-8 Page 58 of 75Event Description: **Inadvertent Steam Line Isolation Signal / Failure of the Reactor to trip from the Control Room/ATWS / Pressurizer PORV stuck full OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
		<u>IF</u> total AFW is less than 200 gpm, <u>THEN</u> manually start pumps and align valves to establish greater than 200 gpm AFW flow. <u>IF</u> AFW flow greater than 200 gpm can <u>NOT</u> be established, <u>THEN</u> go to FR-H.1, RESPONSE TO LOSS OF SECONDARY HEAT SINK, Step 1.	
	US	2) Go to Step 10.	
	CO	(Step 10) Check If TDAFW Pump Can Be Stopped:	
		a. Both MDAFW pumps – RUNNING	
		b. PULL STOP TDAFW pump steam supply valves	
		• MOV-3504A	
		• MOV-3505A	
CAUTION <u>IF</u> OFFSITE POWER IS LOST AFTER SI RESET, <u>THEN</u> MANUAL ACTION MAY BE REQUIRED TO RESTART SAFEGUARDS EQUIPMENT. (REFER TO ATT-8.5, ATTACHMENT LOSS OF OFFSITE POWER)			
NOTE: <u>IF</u> starting non-safeguards equipment will result in exceeding 278 amps (yellow line) on Buses 14 or 16, <u>THEN DO NOT</u> start non-safeguards equipment.			
	CO/ HCO	(Step 11) Check CCW Flow to RCP Thermal Barriers:	
		○ Annunciator A-7, RCP 1A CCW RETURN HI TEMP <u>OR</u> LO FLOW - EXTINGUISHED	
		○ Annunciator A-15, RCP 1B CCW RETURN HI TEMP <u>OR</u> LO FLOW - EXTINGUISHED	
	CO/ HCO	(*Step 12) Monitor RCS Tavg – STABLE AT <u>OR</u> TRENDING TO 547°F	NOTE: This is a Continuous Action. The US will make one or more board operators aware.

Op Test No.: N24-1 Scenario # 2 Event # 6-8 Page 59 of 75Event Description: **Inadvertent Steam Line Isolation Signal / Failure of the Reactor to trip from the Control Room/ATWS / Pressurizer PORV stuck full OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
	CO/ HCO	(Step 12 RNO) <u>IF</u> temperature less than 547°F and lowering, <u>THEN</u> perform the following:	
		a. Stop dumping steam.	
		b. Ensure reheater steam supply valves are closed.	
		c. <u>IF</u> cooldown continues, <u>THEN</u> control total feed flow between 200 gpm to 230 gpm until narrow range level greater than 7% [25% adverse CNMT] in at least one S/G.	
		d. <u>WHEN</u> S/G level greater than 7% [25% adverse CNMT] in one S/G, <u>THEN</u> limit feed flow to that required to maintain level in at least one S/G.	
		e. <u>IF</u> cooldown continues, <u>THEN</u> close both MSIVs.	NOTE: Both MSIVs are Closed.
		<u>IF</u> temperature greater than 547°F and rising, <u>THEN</u> dump steam to stabilize and slowly lower temperature to 547°F.	
	CO/ HCO	(Step 13) Check PRZR PORVs AND Spray Valves:	
		a. PORVs – CLOSED	NOTE: PCV-430 is Stuck OPEN.
	CO/ HCO	(Step 13.a RNO) <u>IF</u> PRZR pressure less than 2335 psig, <u>THEN</u> manually close PORVs.	
		<u>IF</u> any valve can <u>NOT</u> be closed, <u>THEN</u> manually close its block valve.	NOTE: MOV-516 (PCV-430 Block Valve) is already CLOSED.
		• MOV-516 for PCV-430	
		• MOV-515 for PCV-431C	
		(Step 13.b) Auxiliary spray valve (AOV-296) - CLOSED	

Op Test No.: N24-1 Scenario # 2 Event # 6-8 Page 60 of 75Event Description: **Inadvertent Steam Line Isolation Signal / Failure of the Reactor to trip from the Control Room/ATWS / Pressurizer PORV stuck full OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
		c. Check PRZR pressure - LESS THAN 2260 PSIG	
		d. Normal PRZR spray valves - CLOSED	
		• PCV-431A	
		• PCV-431B	
	CO/ HCO	(Step 14) Monitor RCP Trip Criteria:	
		a. RCP status - ANY RCP RUNNING	NOTE: RCPs are likely OFF (Trip Criteria previously met). If so, RNO will direct Go to Step 15.
		b. SI pumps - AT LEAST TWO RUNNING	
		c. RCS pressure minus maximum S/G pressure - LESS THAN 210 psi [240 psi adverse CNMT]	
	US	(Step 14.c RNO) Go to Step 15.	
	HCO/ CO	(Step 15) Check If S/G Secondary Side Is Intact:	
		o Pressure in both S/Gs – STABLE <u>OR</u> RISING	
		o Pressure in both S/Gs – GREATER THAN 110 PSIG	
	CO/ HCO	(Step 16) Check If S/G Tubes Are Intact:	
		o SG levels - <u>NOT</u> RISING IN AN UNCONTROLLED MANNER	
		o Air ejector radiation monitors (R-15, R-47, R-48) - NORMAL	
		o S/G blowdown radiation monitor (R-19) - NORMAL	
		o Steamline radiation monitors (R-31 and R-32) - NORMAL	

Op Test No.: N24-1 Scenario # 2 Event # 6-8 Page 61 of 75Event Description: **Inadvertent Steam Line Isolation Signal / Failure of the Reactor to trip from the Control Room/ATWS / Pressurizer PORV stuck full OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO/ CO	(Step 17) Check if RCS is intact:	
		a. CNMT area radiation monitors - NORMAL	
		• R-2	NOTE: R-2 & R-7 radiation levels are rising.
		• R-7	
		• R-29	
		• R-30	
	US	(Step 17 RNO) Go to E-1, LOSS OF REACTOR OR SECONDARY COOLANT, Step 1.	
E-1, LOSS OF REACTOR OR SECONDARY COOLANT			
<u>CAUTION</u> <u>IF</u> TRANSITIONING TO ES-1.2, POST LOCA COOLDOWN AND DEPRESSURIZATION, <u>THEN</u> PROCEDURE SHOULD BE INITIATED WITHOUT DELAY TO ENSURE RCS COOLDOWN CAN BE STARTED WITHIN 1 HOUR OF LOCA INITIATION.			
<u>NOTE:</u> ○ FOLDOUT page should be open <u>AND</u> monitored periodically. ○ Critical Safety Function Status Trees should be monitored. (Refer to Appendix 1 for Red Path Summary.) ○ Conditions should be evaluated for Site Contingency Reporting (Refer to EP-AA-1012 ADDENDUM 3, R.E. GINNA NUCLEAR POWER PLANT EMERGENCY ACTION LEVELS). ○ Adverse CNMT values should be used whenever CNMT pressure is greater than 4 psig or CNMT radiation is greater than 10+05 R/hr.			
	HCO/ CO	Foldout Page	NOTE: The crew will monitor these conditions throughout the performance of E-1.

Op Test No.: N24-1 Scenario # 2 Event # 6-8 Page 62 of 75Event Description: **Inadvertent Steam Line Isolation Signal / Failure of the Reactor to trip from the Control Room/ATWS / Pressurizer PORV stuck full OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
		RCP TRIP CRITERIA	
		LOSS OF SW CRITERIA	
		SI REINITIATION CRITERIA	
		SI TERMINATION CRITERIA	Examiner NOTE: This criteria is expected to be met at some time during the performance of E-1. When it is, immediate transition to ES-1.1 is required. Proceed forward to Page 70 .
		<u>IF ALL</u> conditions listed below occur, <u>THEN</u> go to ES-1.1, SI TERMINATION, Step 1:	
		a. RCS subcooling based on core exit T/Cs - GREATER THAN 0°F USING FIGURE MIN SUBCOOLING	
		b. Total feed flow to intact S/Gs - GREATER THAN 200 gpm	
		-OR-	
		Narrow range level in at least one intact S/G - GREATER THAN 7% [25% adverse CNMT]	
		c. RCS pressure:	
		o GREATER THAN 1650 psig [1650 psig adverse CNMT]	
		o STABLE OR RISING	
		d. PRZR level - GREATER THAN 10% [30% adverse CNMT]	
		SECONDARY INTEGRITY CRITERIA	
		E-3 TRANSITION CRITERIA	
		COLD LEG RECIRCULATION SWITCHOVER CRITERION	
		AFW SUPPLY SWITCHOVER CRITERION	
		MULTIPLE FUNCTION LOSS CRITERIA	
	HCO	(Step 1) Monitor RCP Trip Criteria:	

Op Test No.: N24-1 Scenario # 2 Event # 6-8 Page 63 of 75Event Description: **Inadvertent Steam Line Isolation Signal / Failure of the Reactor to trip from the Control Room/ATWS / Pressurizer PORV stuck full OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
		a. RCP status – ANY RCP RUNNING	NOTE: RCPs are likely OFF (Trip Criteria previously met). If so, RNO will direct Go to Step 2.
		b. SI pumps – AT LEAST TWO RUNNING	
		c. RCS pressure minus maximum S/G pressure – LESS THAN 210 psi [240 psi adverse CNMT]	
	US	(Step 1.c RNO) Go to Step 2.	
	CO	(Step 2) Check If S/G Secondary Side Is Intact:	
		o Pressure in both S/Gs – STABLE <u>OR</u> RISING	
		o Pressure in both S/Gs – GREATER THAN 110 PSIG	
NOTE: TDAFW pump flow control AOVs may drift open on loss of IA.			
		(*Step 3) Monitor Intact S/G Levels:	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
	CO	a. Narrow range level – GREATER THAN 7% [25% adverse CNMT]	
	CO	(Step 3.a RNO) Maintain total feed flow greater than 200 gpm until narrow range level greater than 7% [25% adverse CNMT] in at least one S/G.	

Op Test No.: N24-1 Scenario # 2 Event # 6-8 Page 64 of 75Event Description: **Inadvertent Steam Line Isolation Signal / Failure of the Reactor to trip from the Control Room/ATWS / Pressurizer PORV stuck full OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
	CO	(Step 3.b) Control feed flow to maintain narrow range level between 17% [25% adverse CNMT] and 50%	
	HCO/ CO	(Step 4) Monitor If Secondary Radiation Levels Are Normal	
		Steamline radiation monitor (R-31 and R-32)	
	US	Request Chem Tech sample S/Gs for activity	NOTE: The US will call Chemistry to address the samples. If so, SIM DRIVER acknowledge as Chemistry.
CAUTION			
IF ANY PRZR PORV OPENS BECAUSE OF HIGH PRZR PRESSURE, IT SHOULD BE CLOSED AFTER PRESSURE LOWERS TO LESS THAN 2335 psig (REFER TO STEP 5b).			
	HCO	(*Step 5) Monitor PRZR PORV Status:	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
		a. Power to PORV block valves – AVAILABLE	
	HCO	b. PORVs – CLOSED	
	HCO	(Step 5.b RNO) <u>IF</u> PRZR pressure less than 2335 psig, <u>THEN</u> manually close PORVs.	NOTE: PCV-430 is Stuck OPEN.
		<u>IF</u> any PORV can <u>NOT</u> be closed, <u>THEN</u> manually close its block valve. <u>IF</u> block valve can <u>NOT</u> be closed, <u>THEN</u> dispatch EO to locally check breaker.	
		MOV-515, MCC D position 6C	
		MOV-516, MCC C position 6C	NOTE: MOV-516 (PCV-430 Block Valve) is already CLOSED.

Op Test No.: N24-1 Scenario # 2 Event # 6-8 Page 65 of 75Event Description: **Inadvertent Steam Line Isolation Signal / Failure of the Reactor to trip from the Control Room/ATWS / Pressurizer PORV stuck full OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 5.c) Block valves – AT LEAST ONE OPEN.	
CAUTION IF OFFSITE POWER IS LOST AFTER SI RESET, THEN MANUAL ACTION MAY BE REQUIRED TO RESTART SAFEGUARDS EQUIPMENT. (REFER TO ATT-8.5, ATTACHMENT LOSS OF OFFSITE POWER)			
	HCO	(Step 6) Reset SI.	
	HCO	(Step 7) Reset CI:	
		a. Depress CI reset pushbutton	
		b. Verify annunciator A-26, CNMT ISOLATION – EXTINGUISHED	
	CO	(Step 8) Verify Adequate SW Flow:	
		a. Check at least two SW pumps - RUNNING	
	US	b. Dispatch EO to establish normal shutdown alignment (Refer to ATT-17.0, ATTACHMENT SD-1)	NOTE: The US will contact EO to establish normal shutdown alignment. If so, SIM DRIVER acknowledge as EO and RUN schedule SD-1.sch.
NOTE: IF starting non-safeguards equipment will result in exceeding 278 amps (yellow line) on Buses 14 or 16, THEN DO NOT start non-safeguards equipment.			
	CO	(Step 9) Establish IA to CNMT:	
		a. Verify non-safeguards buses energized from offsite power	

Op Test No.: N24-1 Scenario # 2 Event # 6-8 Page 66 of 75Event Description: **Inadvertent Steam Line Isolation Signal / Failure of the Reactor to trip from the Control Room/ATWS / Pressurizer PORV stuck full OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
		○ Bus 13 normal feed breaker – CLOSED	
		-OR-	
		○ Bus 15 normal feed breaker – CLOSED	
	CO	b. Verify SW isolation valves to turbine building - OPEN	
		• MOV-4613 and MOV-4670	
		• MOV-4614 and MOV-4664	
	CO	c. Verify adequate air compressor(s) – RUNNING	
	CO	d. Check IA supply:	
		○ Pressure – GREATER THAN 60 PSIG	
		○ Pressure – STABLE <u>OR</u> RISING	
	HCO	e. Reset both trains of XY relays for IA to CNMT AOV-5392	
	HCO	f. Verify IA to CNMT AOV-5392 – OPEN	
	CO	(Step 10) Check Power Availability to Charging Pumps:	
		a. Check Normal Power Available To Charging Pumps:	
		• Bus 14 normal feed breaker - CLOSED	
		• Bus 16 normal feed breaker - CLOSED	
	CO	b. Verify adequate Safeguard Bus capacity to run charging pumps (6 amps each)	
		• Station Service transformer 14 ammeter	
		• Station Service transformer 16 ammeter	

Op Test No.: N24-1 Scenario # 2 Event # 6-8 Page 67 of 75Event Description: **Inadvertent Steam Line Isolation Signal / Failure of the Reactor to trip from the Control Room/ATWS / Pressurizer PORV stuck full OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 11) Check If Charging Flow Has Been Established:	
		a. Charging pumps – ANY RUNNING	
	HCO	(Step 11.a RNO) Perform the following:	
		1) <u>IF</u> CCW flow is lost to any RCP thermal barrier <u>OR</u> any RCP #1 seal outlet temperature greater than 235°F, <u>THEN</u> dispatch EO to close seal injection needle valve(s) to affected RCP:	NOTE: This step is N/A.
		• V-300A for RCP A	
		• V-300B for RCP B	
		2) Ensure HCV-142 open, demand at 0%.	
	HCO	b. Charging pump suction aligned to RWST:	
		○ LCV-112B – OPEN	
		○ LCV-112C - CLOSED	
	HCO	c. Start charging pumps and adjust charging flow as necessary to restore PRZR level	
	HCO	(Step 12) Check If SI Should Be Terminated:	
		a. RCS pressure:	
		○ Pressure – GREATER THAN 1650 psig [1650 psig adverse CNMT]	
		○ Pressure – STABLE <u>OR</u> RISING	
	US	(Step 12.a RNO) Do <u>NOT</u> stop SI pumps. Go to Step 13.	
	HCO	(*Step 13) Monitor If CNMT Spray Should Be Stopped:	NOTE: This is a Continuous Action. The US will make one or more board operators aware.

Op Test No.: N24-1 Scenario # 2 Event # 6-8 Page 68 of 75Event Description: **Inadvertent Steam Line Isolation Signal / Failure of the Reactor to trip from the Control Room/ATWS / Pressurizer PORV stuck full OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
		a. CNMT spray pumps – ANY RUNNING	
	HCO	(Step 13 RNO) <u>IF</u> at least one spray pump has been stopped by operator action, <u>THEN</u> go to Step 13b.	
	US	<u>IF NOT</u> , <u>THEN</u> go to Step 14. OBSERVE CAUTIONS PRIOR TO STEP 14.	
CAUTION - RCS PRESSURE SHOULD BE MONITORED. <u>IF</u> RCS PRESSURE LOWERS IN AN UNCONTROLLED MANNER TO LESS THAN 300 PSIG [350 PSIG ADVERSE CNMT], <u>THEN</u> THE RHR PUMPS MUST BE MANUALLY RESTARTED TO SUPPLY WATER TO THE RCS. - RCS PRESSURE MAY BE CONSIDERED STABLE EVEN THOUGH PRESSURE IS LOWERING DUE TO SAFETY INJECTION FLOW, DECAY HEAT REDUCTION <u>OR</u> BREAK FLOW.			
	HCO	(*Step 14) Monitor IF RHR Pumps Should Be Stopped:	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
		a. Check RCS pressure:	
		1) Pressure – GREATER THAN 300 psig [350 psig adverse CNMT]	
		2) RCS pressure - STABLE <u>OR</u> RISING	
		b. RHR pumps - ANY RUNNING IN INJECTION MODE	
		c. Stop RHR pumps and place in AUTO	
	US	d. Dispatch EO to perform ATT-14.6, ATTACHMENT RHR PRESS REDUCTION, Part A.	NOTE: The US will dispatch an EO. SIM DRIVER: as EO, acknowledge.
	HCO/ CO	(Step 15) Check RCS And S/G Pressures	
		a. Check pressures in both S/Gs - STABLE <u>OR</u> RISING	

Op Test No.: N24-1 Scenario # 2 Event # 6-8 Page 69 of 75Event Description: **Inadvertent Steam Line Isolation Signal / Failure of the Reactor to trip from the Control Room/ATWS / Pressurizer PORV stuck full OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
		b. Check pressures in both S/Gs - GREATER THAN 110 PSIG	
		c. Check RCS pressure - STABLE <u>OR</u> LOWERING	
	CO	(Step 16) CHECK IF Emergency D/Gs Should Be Stopped:	
		a. Verify Safeguards busses 14, 16, 17, and 18 voltage – GREATER THAN 440 VOLTS	
		b. Verify Safeguards busses 14, 16, 17, and 18 voltage energized by offsite power:	NOTE: The A EDG is OOS. The B EDG is running unloaded and may be stopped.
		o Emergency D/G output breakers - OPEN	
		o AC emergency bus normal feed breakers - CLOSED	
		c. Stop any unloaded emergency D/G and place in standby (Refer to ATT-8.1, ATTACHMENT D/G STOP)	
			Examiner NOTE: The US will hand this off to the HCO/CO. Other Examiners continue on Page 70.
ATT-8.1, ATTACHMENT D/G STOP			
NOTE			
One D/G must be stopped <u>AND</u> reset prior to stopping the second D/G.			
			NOTE: The A EDG is OOS.
	CO	(Step B) Perform the following to STOP D/G B and restore to AUTO:	
		1) Verify D/G B Bus 16 supply breaker is OPEN.	
		2) Verify D/G B Bus 17 supply breaker is OPEN.	
		3) Using D/G B GOVERNOR, adjust D/G B speed to return frequency to 60Hz.	

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Time	Pos.	Expected Actions/Behavior	Comments
		4) Using D/G B AUTO VOLTAGE CONTROL rheostat adjust D/G B voltage to 480 volts.	
		5) Place D/G B CONTROL switch to STOP <u>AND</u> immediately depress D/G B VOLTAGE SHUTDOWN button until voltage decays to zero.	
		6) After ~60 seconds, perform the following:	
		○ Depress D/G B FIELD RESET	
		○ Depress D/G B RESET	
		○ Verify D/G B AIR START SOLENOID lights - LIT	
		○ Verify D/G B START RELAY lights - LIT	
		7) <u>IF</u> alternate cooling is being supplied to the D/G B.....	NOTE: Alternate Cooling is NOT being supplied.
			Examiner NOTE: It is expected that the SI Termination criteria of E-1 Foldout Page Criteria #4 will be met and transition to ES-1.1 will occur. If NOT, the US will continue in E-1 (Not Scripted) until SI Termination is met.
ES-1.1, SI TERMINATION			
CAUTION			
<u>IF</u> OFFSITE POWER IS LOST AFTER SI RESET, <u>THEN</u> MANUAL ACTION MAY BE REQUIRED TO RESTART SAFEGUARDS EQUIPMENT. (REFER TO ATT-8.5, ATTACHMENT LOSS OF OFFSITE POWER)			
<u>NOTE:</u>			
○ FOLDOUT page should be open <u>AND</u> monitored periodically. ○ Critical Safety Function Status Trees should be monitored (Refer to Appendix I for Red Path Summary). ○ Adverse CNMT values should be used whenever CNMT pressure is greater than 4 psig or CNMT radiation is greater than 10+05 R/hr.			

Op Test No.: N24-1 Scenario # 2 Event # 6-8 Page 71 of 75Event Description: **Inadvertent Steam Line Isolation Signal / Failure of the Reactor to trip from the Control Room/ATWS / Pressurizer PORV stuck full OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO/ CO	Foldout Page	NOTE: The crew will monitor these conditions throughout the performance of ES-1.1.
		LOSS OF SW CRITERIA	
		SI REINITIATION CRITERIA	
		SECONDARY INTEGRITY CRITERIA	
		AFW SUPPLY SWITCHOVER CRITERION	
	HCO	(Step 1) Reset SI	NOTE: SI is likely reset. If not, it will be reset here.
	HCO	(Step 2) Reset CI:	NOTE: CI is likely reset. If not, it will be reset here.
		a. Depress CI reset pushbutton	
		b. Verify annunciator A-26, CNMT ISOLATION - EXTINGUISHED	
	CO	(Step 3) Verify Adequate SW Flow:	
		a. Check at least two SW pumps – RUNNING	
	US	b. Dispatch EO to establish normal shutdown alignment (Refer to ATT-17.0, ATTACHMENT SD-1)	NOTE: If not already done, the US will contact EO to establish normal shutdown alignment. If so, SIM DRIVER acknowledge as EO and RUN schedule SD-1.sch.
	CO	(Step 4) Establish IA to CNMT:	NOTE: IA is likely restored to CNMT. If not, it will be restored here.
		a. Verify non-safeguards busses energized from offsite power	
		o Bus 13 normal feed - CLOSED	

Op Test No.: N24-1 Scenario # 2 Event # 6-8 Page 72 of 75Event Description: **Inadvertent Steam Line Isolation Signal / Failure of the Reactor to trip from the Control Room/ATWS / Pressurizer PORV stuck full OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
		-OR-	
		o Bus 15 normal feed - CLOSED	
	CO	b. Verify SW isolation valves to turbine building - OPEN	
		• MOV-4613 and MOV-4670	
		• MOV-4614 and MOV-4664	
	CO	c. Verify adequate air compressor(s) - RUNNING	
	CO	d. Check IA supply:	
		o Pressure – GREATER THAN 60 PSIG	
		o PRESSURE – STABLE <u>OR</u> RISING	
	HCO/ CO	e. Reset both trains of XY relays for IA to CNMT AOV-5392	
	HCO/ CO	f. Verify IA to CNMT AOV-5392 - OPEN	
	HCO	(Step 5) Check If Charging Flow Has Been Established:	NOTE: Charging flow is likely established. If not, it will be restored here.
		a. Charging pumps – ANY RUNNING	
	HCO	b. Charging pump suction aligned to RWST:	
		o LCV-112B - OPEN	
		o LCV-112C - CLOSED	
	HCO	c. Start charging pumps and adjust charging flow as necessary to restore PRZR level	
	HCO	(Step 6) Maintain PRZR Pressure Between 1800 PSIG And 2235 PSIG	
		o Reset PRZR heaters	

Op Test No.: N24-1 Scenario # 2 Event # 6-8 Page 73 of 75Event Description: **Inadvertent Steam Line Isolation Signal / Failure of the Reactor to trip from the Control Room/ATWS / Pressurizer PORV stuck full OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
		o Use normal PRZR spray when available	NOTE: PRZR Spray is NOT available (RCPs OFF).
	HCO	(Step 7) Stop SI And RHR Pumps And Place In STANDBY	
		a. Stop SI pumps and place in AUTO	
		b. RHR pumps – ANY RUNNING IN INJECTION MODE	
		c. Stop RHR pumps and place in AUTO	
At the discretion of the Lead Examiner terminate the exam.			

TURNOVER SHEET for NRC Exam Scenario #2

SHIFT TURNOVER CHECKLIST

Page 1 of 1

Off-Going Shift: Nights

Off-Going SM: S. Manager

INPO 19-003 Staying on Top Advancing a Culture of Continuous Improvement: Excellence Standards

PLANT STATUS							Today	
Days Online	MOL	Station Risk	CDF	LERF	SFP Time to 200°F (Hours)	Days to Next Refuel/Planned Outage		
290	Current	Green	Green	Green	81.0	250		
	Planned	Green	Green	Green				
RCS Boron: 993 ppm BAST: 17,500 ppm			GSU GROSS MW (PPCS 'GROSSH')	608	Cond. Vacuum Avg. ("Hg)	28.5		
Reactor		100%	Service Water Temp (°F)	45				
MODE 1				Protected Equipment				
Reactor Coolant Pressure Boundary Identified Leakage (GPM) (Goal <0.25)			0.005	OPG-PROTECTED-EQUIPMENT, Attachment 2				
Reactor Coolant Pressure Boundary Unidentified Leakage (GPM) (Goal <0.10)			0.019	A EDG				
Non-RCPB Leakage (A/C Charging Pumps) (CPLR) (GPM) (Goal <0.060)			0.031	• MCB Control Switch & Push Button for D/G B • MCB Control Switch for Bus 16 & 17 D/G Supply, SST & Normal Supply Breakers • MCB Control Switch for RHR, SI, CS, and CCW Pump B, and SI Pump C (Bus 16) • MCB Control Switch for MCC D • MCB Control Switch for TDAFW Steam Supply MOV-3505A, MOV-3504A and the DC Oil Pump				
Containment Depressurizations (Goal <8 in Last 7 Days)			6					
Sump A Pump Down Frequency (Hours) (Goal >48)			Today 490 hours					
Condenser Air Inleakage (SCFM)(Goal<10SCFM)			7.7	• Bus 12B, Bus 16 & Bus 17 area, MCC 'D' area & D/G B Room • Bus 12B Position 17 & Position 18 • SI Pump B, SI Pump C and CS Pump B area • RHR Pump B area (Both RHR sub basement gates by SFP pumps and basement CVCS HUT entrance if protection not provided in the Sub-Basement at the pump)				
				CBP A • MCB Control Switch for Condensate Booster Pump B & C • Bus 11A Position 2 & Bus 11B Position 29 • Condensate Booster Pump B & C areas, Bus 11A & Bus 11B areas				
LCO Activities – A-52.4's (P) Planned (U) Unplanned								
#	Equipment	LCO	Date/Time Out of Service	Expiration Date/Time	Owner	Estimated RTS Date		
1	A EDG	3.8.1	7/22/24 0900	7/29/24 0900	EMD	7/24/24 0900		
Non-LCO Activities - A-52.12's (P) Planned (U) Unplanned								
#	Equipment	LCO	Date/Time Out of Service	Expiration Date/Time	Owner	Estimated RTS Date		
PRIORITY 1 AND 2 ISSUE REPORTS AND WORK ORDERS								
#	Pri	Description	IR / WO	WO Grade	Owner	SDM	Completion Date	Consequence/Desired Outcome
1	1	CBP A Thrust Bearing Replace						

TURNOVER SHEET for NRC Exam Scenario #2

ACTIONS/NOTES:

- The plant is at 100% power (MOL).
- Engineering is monitoring high vibrations on Circulating Water Pump B.
- The A EDG (TS 3.8.1 Condition B Action B.1, B.2, B.3.1 or B.3.2 and B.4) is OOS for fuel pump replacement and is expected to be back in 90 minutes.
- Condensate Booster Pump A is OOS for thrust bearing replacement.
- The following MCB annunciators are illuminated:
 - J-24, EMERGENCY DIESEL GEN 1A PANEL
 - J-25, SAFEGUARDS EQUIPMENT LOCKED OFF (EDG A OOS)

PROGRAM: Ginna Operations Training

MODULE: Initial License Operator Training Class 23-1

TOPIC: NRC Simulator Exam

Scenario N24-1-3

REFERENCES:

1. Technical Specification LCO 3.7.5, AUXILIARY FEEDWATER (AFW) SYSTEM, Amendment 150
2. O-5.2, LOAD ASCENSION, Rev 090
3. S-3.1, BORON CONCENTRATION CONTROL, Rev 037
4. AR-C-5, PPCS ROD SEQUENCE OR ROD DEVIATION/PPCS LTOP HI-LOW TEMPERATURE, Rev 00901
5. AR-C-14, ROD BOTTOM, Rev 00900
6. AP-RCC.2, RCC/RPI MALFUNCTION, Rev 015
7. Technical Specification LCO 3.1.7, ROD POSITION INDICATION, Amendment 131
8. A-503.1, EMERGENCY AND ABNORMAL OPERATING PROCEDURES USERS GUIDE, Rev 062
9. AR-J-10, GENERATOR VOLTAGE REGULATOR MANUAL, Rev 00901
10. AR-J-27, GENERATOR VOLTAGE REGULATOR ALARM, Rev 007
11. AR-B-11, RCP 1A STAND PIPE LO LEVEL -4 FT, Rev 008
12. AP-RCP.1, RCP SEAL MALFUNCTION, Rev 021
13. AR-PPCS-7TOPD, 7T OPEN PHASE DETECTION, Rev 006
14. AP-ELEC.1, LOSS OF 12A AND/OR 12B BUSSES, Rev 033
15. HC-1.0, LOSS OF LETDOWN, Rev 000
16. ATT-9.0, ATTACHMENT LETDOWN, Rev 011
17. Technical Specification LCO 3.8.1, AC SOURCES - MODES 1, 2, 3, AND 4, Amendment 150
18. Technical Requirement 3.8.1, OFFSITE POWER SOURCES, Rev 70*
19. E-0, REACTOR TRIP OR SAFETY INJECTION, Rev 050
20. ES-0.1, REACTOR TRIP RESPONSE, Rev 035
21. ATT-27.0, ATTACHMENT AUTOMATIC ACTUATION VERIFICATION, Rev 00400
22. E-2, FAULTED STEAM GENERATOR ISOLATION, Rev 014
23. ECA-2.1, UNCONTROLLED DEPRESSURIZATION OF BOTH STEAM GENERATORS, Rev 038
24. HC-4.0, AFW CONTROL GUIDANCE, Rev 000

Validation Time: 100 minutes

Author: David Lazarony, Essential Training & Consulting, LLC

Facility Review: Don Dean, Exam Author

Rev. 042924

Ginna 2024 NRC Scenario #3 Objectives:

Given the simulator at an initial condition of 75% power evaluate:

1. the US's ability to supervise the control room team during the normal, abnormal, and emergency situations that arise, including compliance with all facility procedures, Technical Specifications, and other commitments.
2. each crew member's ability to effectively communicate as part of a control room team during the normal, abnormal, and emergency situations that arise.
3. each crew member's ability to conduct a load ascension in accordance with O-5.2, LOAD ASCENSION, and S-3.1, BORON CONCENTRATION CONTROL.
4. each crew member's ability to effectively diagnose and the US's ability to mitigate the consequences of a MRPI failure in accordance with Annunciator Response Procedures and AP-RCC.2, RCC/RPI MALFUNCTION.
5. each crew member's ability to effectively diagnose and the CO's ability to mitigate the consequences of a Main Generator Voltage Regulator failure in accordance with Annunciator Response Procedures.
6. each crew member's ability to effectively diagnose and the HCO's ability to mitigate the consequences of a RCP #3 Seal failure in accordance with Annunciator Response Procedures and AP-RCP.1, RCP SEAL MALFUNCTION.
7. each crew member's ability to effectively diagnose and the HCO and CO's ability to mitigate the consequences of an Open Phase on the 7T line in accordance with AR-PPCS-7TOPD, 7T OPEN PHASE DETECTION, and AP-ELEC.1, LOSS OF 12A AND/OR 12B BUSSES.
8. each crew member's ability to effectively diagnose and the HCO and CO's ability to mitigate the consequences of a Main Turbine Trip/Rx Trip in accordance with E-0, REACTOR TRIP OR SAFETY INJECTION.
9. each crew member's ability to mitigate the effects of two faulted Steam Generators in accordance with E-2, FAULTED STEAM GENERATOR ISOLATION, and ECA-2.1, UNCONTROLLED DEPRESSURIZATION OF BOTH STEAM GENERATORS.
10. the HCO's ability to manually actuate Safety Injection when required.

Scenario Event Description
NRC Scenario 3

Facility:	Ginna	Scenario No.:	3	Op Test No.:	N24-1
Scenario Source: Modified from N20-1-3					
Examiners:		Operators:			
		(SRO)			
		(RO)			
		(BOP)			
Initial Conditions:		The plant is at 75% power (BOL). It is expected to raise power to 100% throughout the shift. Engineering is monitoring elevated vibrations on Circulating Water Pump B.			
Turnover:		The following equipment is Out-Of-Service: The TD AFW Pump (TS 3.7.5 Condition C Action C.1) is OOS for oil cooler replacement.			
Critical Tasks:		CT-1: Manually actuate Safety Injection/Containment Isolation before transitioning out of E-0 to E-2, or if the transition out of E-0 into ES-0.1 is made, before completion of Step 5.a <u>and</u> an automatic SI actuation setpoint is reached. CT-2: Control the AFW flowrate to 50 gpm per SG in order to minimize the RCS Cooldown rate before a severe challenge (Orange Path) develops to the RCS Integrity Critical Safety Function.			
Event No.	Malf. No.	Event Type*	Event Description		
1	NA	R-RO N-BOP N-SRO	Load Ascension		
2	MAL ROD11-K7	I(TS)-SRO	MRPI Failure on Control Rod K-7		
3	MAL GEN03	C(MC)-BOP C-SRO	Main Generator Voltage Regulator Fails HIGH		
4	MAL RCS14A	C-RO C-SRO	RCP A #3 Seal Failure		
5	MAL EDS14A	C-RO C-BOP C(TS)-SRO	Open Phase 7T Line		
6	MAL TUR01 MAL STM10A-H	M-ALL	Turbine Trip/Steam Dump to Condenser fails to function		
7	MAL SIS02A SIS02B	C(MC)-RO C-SRO	Safety Injection fails to Actuate Automatically (CT-1)		
8	MAL STM09A/B	C-BOP C-SRO	One S/G Safety Valve on each S/G Lifts and sticks partially OPEN (CT-2)		
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor, (TS) Tech Spec, (MC) Manual Control					

Scenario Event Description
NRC Scenario 3

Ginna 2024 NRC Scenario #3

The plant is at 75% power (BOL). It is expected to raise power to 100% throughout the shift. Engineering is monitoring elevated vibrations on Circulating Water Pump B.

The following equipment is Out-Of-Service: The TD AFW Pump (TS 3.7.5 Condition C Action C.1) is OOS for oil cooler replacement.

Shortly after taking the shift, the operator will raise power in accordance with O-5.2, LOAD ASCENSION. The operator will manually manipulate control rods, Main Turbine controls and address S-3.1, BORON CONCENTRATION CONTROL, to start the load ascension using Alternate Dilute.

During the load ascension, a MRPI Failure on Control Rod K-7 will occur. The operator will address AR-C-5, PPCS ROD SEQUENCE OR ROD DEVIATION, AR-C-14, ROD BOTTOM, and enter AP-RCC.2, RCC/RPI MALFUNCTION. The operator will address Technical Specification LCO 3.1.7, ROD POSITION INDICATION.

Following this, the Main Generator Voltage Regulator will fail HIGH. The operator will reduce generator output voltage using the Base Adjuster, turn the Main Generator Voltage Regulator off and notify RG&E ECC within 30 minutes in accordance with A-503.1, EMERGENCY AND ABNORMAL OPERATING PROCEDURES USERS GUIDE, AR-J-10, GENERATOR VOLTAGE REGULATOR MANUAL, and AR-J-27, GENERATOR VOLTAGE REGULATOR ALARM. The Main Generator voltage control will remain in MANUAL throughout the remainder of the scenario.

Subsequently, the #3 Seal on Reactor Coolant Pump 1A will start to leak. The operator will respond per AR-B-11, RCP 1A STAND PIPE LO LEVEL -4FT and refill the RCP 1A Standpipe at least twice. The operator will enter AP-RCP.1, RCP SEAL MALFUNCTION. During the implementation of AP-RCP.1 and after multiple refills of the Standpipe, the leakage will slow substantially.

Shortly afterwards, an Open Phase will be detected on the 7T line. The crew will respond in accordance with AR-PPCS-7TOPD, 7T OPEN PHASE DETECTION, trip the 52/7T1352 Breaker and enter AP-ELEC.1, LOSS OF 12A AND/OR 12B BUSES. This will result in de-energizing Bus 14/18, Diesel Generator A automatically starting and repowering these buses and a loss of normal letdown. The crew will use HC-1.0, LOSS OF LETDOWN, to control RCS inventory and restore Normal Letdown using ATT-9.0, ATTACHMENT LETDOWN. The operator will address Technical Specification LCO 3.8.1, AC SOURCES - MODES 1, 2, 3, AND 4, and Technical Requirement TR 3.8.1, OFFSITE POWER SOURCES.

After this, the Main Turbine will trip causing a Reactor Trip. Simultaneously, a Steam Dump System failure will result in no steam dump to the condenser. Both SG ARVs and the lower setpoint SG Safety Valves will open. One Safety Valve on each SG will partially stick open. The crew will enter E-0, REACTOR TRIP OR SAFETY INJECTION. As PRZR pressure lowers the automatic actuation of the Safety Injection will fail and the crew will be required to manually actuate Safety Injection.

The crew will transition to E-2, FAULTED STEAM GENERATOR ISOLATION, and then to ECA-2.1, UNCONTROLLED DEPRESSURIZATION OF BOTH STEAM GENERATORS. The crew may take a pre-emptive action of throttling AFW flow to both S/Gs per A-503.1, EMERGENCY AND ABNORMAL OPERATING PROCEDURES USERS GUIDE, and HC-4.0, AFW CONTROL GUIDANCE.

Scenario Event Description
NRC Scenario 3

The scenario will terminate at Step 7 of ECA-2.1, after the crew has stopped the RHR Pumps.

Critical Tasks:

CT-1: Manually actuate Safety Injection/Containment Isolation before transitioning out of E-0 to E-2, or if the transition out of E-0 into ES-0.1 is made, before completion of Step 5.a and an automatic SI actuation setpoint is reached.

Initiating Cue:

Any SI Annunciator is LIT (Step 4.a of E-0); in E-0 and PRZR pressure is less than 1750 psig (E-0 Step 4.a RNO) or Steamline pressure is less than 514 psig (E-0 Step 4.a RNO); or in ES-0.1 and PRZR pressure is less than 1750 psig (ES-0.1 Step 5.a) or Steamline pressure is less than 514 psig (ES-0.1 Foldout Page Criteria #2, Bullet 3) or PRZR level is less than 5% AND RCS Subcooling based on core exit T/Cs is less than 20°F using FIG-1.0 (ES-0.1 Foldout Page Criteria #2, Bullet 2)

Performance Feedback:

When the operator actuates SI/CI, MCB Annunciators D-31, MANUAL SAFETY INJECTION, A-25, CONTAINMENT VENTILATION ISOLATION, and A-26, CONTAINMENT ISOLATION are LIT, SI and RHR Pump Red Status Lights are LIT, Green status lights OFF, Containment Isolation Valve position indication lights turn BRIGHT.

Success Path:

While in E-0, the operator manually actuates Safety Injection/Containment Isolation before transitioning out of E-0 to E-2 (Step 15); or if the transition is made from E-0 to ES-0.1 at Step 4.a RNO, before completion of Step 5.a of ES-0.1 and an automatic SI actuation setpoint is reached.

Measurable Performance Standard:

Expected Actions: depress the MANUAL SAFETY INJECTION pushbutton and the MANUAL CNMT ISOLATION pushbutton before transitioning out of E-0 to E-2, or if the transition out of E-0 into ES-0.1 is made, before completion of Step 5.a and an automatic SI actuation setpoint is reached.

Safety Significance: Failure to manually actuate SI under the postulated conditions constitutes misoperation or incorrect crew performance in which the crew does not prevent “degraded emergency core cooling system (ECCS)...capacity.” In this case, SI can be manually actuated from the control room. Therefore, failure to manually actuate SI also represents a failure by the crew to “demonstrate the following abilities: (1) Effectively direct or manipulate engineered safety feature (ESF) controls that would prevent (degraded emergency core cooling system (ECCS)...capacity), (2) Recognize a failure or an incorrect automatic actuation of an ESF system or component,” or (3) Take one or more actions that would prevent a challenge to plant safety.” 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.” The Containment Isolation (CI) signal is included in this action because CI will not occur on a manual actuation of SI.

Scenario Event Description
NRC Scenario 3

CT-2: Control the AFW flowrate to 50 gpm per SG in order to minimize the RCS Cooldown rate before a severe challenge (Orange Path) develops to the RCS Integrity Critical Safety Function.

Initiating Cue: Steam Noise heard in the control room, Both A & B S/G pressures lowering in an uncontrolled manner, Tcolds lowering, AFW flow to each S/G greater than 50 gpm.

Performance Feedback: After the operator adjusts AFW flow to 50 gpm to each S/G, RCS Tcold cooldown rate lowers.

Success Path: The operator adjusts total AFW flow to each S/G to 50 gpm before a severe challenge (Orange Path) develops to the integrity CSF.

Measurable Performance Standard: Expected Actions: Position of MOV-4007 and MOV-4008 is adjusted to establish 50 gpm AFW flow to each S/G before a severe challenge (Orange Path) develops to the RCS Integrity Critical Safety Function.

Safety Significance: Failure to control the AFW flow rate to the SGs leads to an unnecessary and avoidable extreme challenge to the integrity CSF. Also, failure to perform the Critical Task increases challenges to the SUBCRITICALITY Critical Safety Function which otherwise would not occur. If the action is not taken an unnecessary Orange Path could develop on the RCS Integrity Critical Safety Function requiring a substantial change in the mitigation strategy.

"Per NUREG-1021, ES-3.3, if an applicant's actions or inactions create a challenge to plant safety, those actions or inactions may form the basis for a Critical Task identified in the post scenario review."

Scenario Event Description
NRC Scenario 3

SIMULATOR OPERATOR INSTRUCTIONS

	Bench Mark	ACTIVITY	DESCRIPTION
☐		Reset to Temp IC 157 IC-013	T = 0: Dump all CNMT Recirc Fan Coolers so that MCB Annunciator E-31 doesn't alarm. Insert MALF FDW12 = 0, TDAFW Pump OOS Place the MOV-3505A Control Switch in PULL STOP Place the MOV-3504A Control Switch in PULL STOP Insert these Remotes on the TDAFW Pump: • STM35=disengaged • STM36=0 • STM37=disengaged • STM38=0 Insert these OVRs on the TDAFW Pump: • FDW11A=OFF • FDW09A=OFF • FDW02A=OFF • FDW02B=OFF • FDW05A=OFF • FDW05B=OFF Insert these INDs on the TDAFW Pump: • FDW20A=OFF • FDW20B=OFF • FDW25A=OFF • FDW25B=OFF Place the TDAFW Pump DC Oil Pump Control Switch in PULL STOP Place the TDAFW Pump AC Oil Pump Control Switch in PULL STOP Hang INFO Tags as necessary Insert MALF SIS02A, MAN AVAIL (Train A SI fails to AUTO Actuate) Insert MALF SIS02B, MAN AVAIL (Train B SI fails to AUTO Actuate) Insert MALF STM09A, 30%, 0 ramp, 15 Seconds Delayed; (Safety valve 3508 on B SG opens after Rx trip) on T-5 Insert MALF STM09B, 30%, 0 ramp, 15 Seconds Delayed; (Safety valve 3509 on A SG opens after Rx trip) on T-5 Insert MALF ROD11-K7=0 on T-1 Insert MALF GEN03 (120%, No Ramp) on T-2 Insert MALF RCS14A (40 over 10 second Ramp) on T-3 Insert MALF EDS14A=Phase B on T-4 Insert MALF TUR01 on T-5 (Turbine Trip)

Scenario Event Description
NRC Scenario 3

	Bench Mark	ACTIVITY	DESCRIPTION
			Insert MALF STM10A-H = 0 on T-5 (Steam Dump Failure)
☐	Prior to Crew Briefing		- Hang Protected Equipment Tags per OPG-Protected Equipment (TDAFW Pump P8 of 29 of Attachment 2). - Place Black Dot on all required MCB Annunciators (H-15, H-20 and J-17)
☐	Crew Briefing - Assign Crew Positions based on evaluation requirements. - Review the Shift Turnover Information with the crew. - Provide the crew with a copy of O-5.2 (With place-holding stickers at Precaution 4.8/4.9 on Page 7 of 81, at Step 6.3.4/6.3.5 on Page 22 of 81, at Step 6.7.2 on Page 40 of 81, and at Step 6.9.2 on Page 48 of 81) and a blank copy of S-3.1. - Handout Reactivity Binder (BOL) and Reactivity Plan specific to this power maneuver.		
☐	T-0	Begin Familiarization Period	
☐	At direction of examiner	Event 1	Load Ascension
☐	At direction of examiner	Event 2 Trigger #1 MALF ROD11-K7=0	MRPI Failure on Control Rod K-7
☐	At direction of examiner	Event 3 Trigger #2 MALF GEN03 (120%, No Ramp)	Main Generator Voltage Regulator Fails HIGH
☐	At direction of examiner	Event 4 Trigger #3 RCS14A (40 over 10 second Ramp)	RCP A #3 Seal Failure Note: Throttle to 1 gpm just prior to moving to Event 5.
☐	At direction of examiner	Event 5 Trigger #4 MALF EDS14A=Phase B	Open Phase 7T Line

Scenario Event Description
NRC Scenario 3

	Bench Mark	ACTIVITY	DESCRIPTION
☐	At direction of examiner	Event 6 Trigger #5 TUR01 STM10A-H = 0	Turbine Trip/Steam Dump to Condenser fails to function
☐	Post-Rx Trip	Event 7 SIS02A SIS02B	Safety Injection fails to Actuate Automatically Note: These malfunctions are inserted at T=0.
☐	Post-Rx Trip	Event 8 STM09A, 30%, 0 ramp STM09B, 30%, 0 ramp	One S/G Safety Valve on each S/G Lifts and sticks partially OPEN Note: These malfunctions are inserted at T=0 conditional on Turbine Trip 15 seconds delayed.
☐	Terminate the scenario upon direction of Lead Examiner		

Op Test No.: N24-1 Scenario # 3 Event # 1 Page 10 of 61Event Description: **Load Ascension**

Shortly after taking the shift, the operator will raise power in accordance with O-5.2, LOAD ASCENSION. The operator will manually manipulate control rods, Main Turbine controls and address S-3.1, BORON CONCENTRATION CONTROL, to start the load ascension using Alternate Dilute.

SIM DRIVER Instructions: **NA**Symptoms/Cues: **NA**

Time	Pos.	Expected Actions/Behavior	Comments
			NOTE: The US will perform Steps 6.3.4 and 6.3.5 of O-5.2.
O-5.2, LOAD ASCENSION			
NOTE IF Rod Control System does NOT respond as expected (example: rods move out when demand is for in), THEN Rods should NOT be moved until troubleshooting can be performed. [G0073] [G0092] - Auto Rods Out feature has been removed therefore Manual Rod control must be used when raising power.			
	HCO	(Step 6.3.4) IF Rod Control System does NOT respond as expected, THEN PERFORM the following: OTHERWISE, MARK this Step N/A. [G0073]	
		1. STOP rod motion.	
		2. NOTIFY supervision.	
	HCO	(Step 6.3.5) ENSURE ROD CONTROL BANK SELECTOR switch is in Manual position.	NOTE: The HCO will likely perform this step after dilution has been initiated and will establish a Critical parameter of Tavg-Tref $\pm 1.5^{\circ}\text{F}$.
			NOTE: The US will proceed to Step 6.7.2 of O-5.2.
	CO	(Step 6.7.2) WHEN ready to raise load to greater than or equal to 50%, THEN PERFORM the following:	

Op Test No.: N24-1 Scenario # 3 Event # 1 Page 11 of 61Event Description: **Load Ascension**

Time	Pos.	Expected Actions/Behavior	Comments
CAUTION • IF VALVE POS LIMIT light is ILLUMINATED, THEN EH control REFERENCE AND SETTER adjustment will be required until VALVE POS LIMIT light is EXTINGUISHED. • Raising Valve Position Limit with Valve Position Limit light ILLUMINATED will raise Turbine load at 200%/minute. • WHEN raising turbine load, THEN VLV POSITION LIMIT SHALL be continuously monitored to ensure it is maintained approximately 10% above SETTER Value.			
	CO	1. VERIFY VALVE POS LIMIT light is EXTINGUISHED	
		2. IF VALVE POS LIMIT light is ILLUMINATED, THEN LOWER EH Control UNTIL VALVE POS LIMIT light is EXTINGUISHED as follows; OTHERWISE, MARK this Step N/A	NOTE: This step is NA.
CAUTION CV TRACKING not indicating approximately zero with SETTER AND REFERENCE matched and VALVE POS LIMIT light EXTINGUISHED indicates a system malfunction.			
		3. VERIFY CV TRACKING Meter is indicating approximately zero.	
		4. RAISE VPL POSITION LIMIT as desired using VVE POS LIMIT (GREEN) Δ pushbutton.	
	US/ CO		NOTE: In accordance with Precaution 4.8 of O-5.2 it is likely that the US will direct the CO to place EHC control in IMP IN.
	CO	(Step 6.7.3) CONTINUE with load ascension as follows:	NOTE: The CO will initiate a Load Ascension.
		1. RAISE SETTER setpoint to desired value using (ORANGE) Δ pushbutton.	
		2. DEPRESS GO pushbutton.	
		3. ENSURE VLV POSITION LIMIT setpoint is adjusted as required.	
		4. OBSERVE turbine load rises at desired rate.	

Op Test No.: N24-1 Scenario # 3 Event # 1 Page 12 of 61Event Description: **Load Ascension**

Time	Pos.	Expected Actions/Behavior	Comments
S-3.1, BORON CONCENTRATION CONTROL ATTACHMENT 1, MAKEUP DETERMINATIONS			
NOTE - The use of approximately 4-6 gallons of Boric Acid PER percent load reduction is normal for transient load reduction, based on reactivity calculations. IF frequent dilutions are required during a shift, THEN total volume added may be tallied at end of shift. - Requirements for minimum volume of boric acid in BAST specified in TRM Table TR 3.1.1-1 for current BAST concentration.			
	HCO	(Step 1.0) IF Boration is required, THEN PERFORM the following OTHERWISE , MARK this Step N/A:	NOTE: This step is NA.
	HCO	(Step 2.0) IF Dilution is required, THEN PERFORM the following OTHERWISE , MARK this Step N/A:	
NOTE Small dilutions used to compensate for temperature reduction due to fuel burn up may be estimated using temperature response from previous dilution amounts.			
		(Step 2.1) DETERMINE total volume of Reactor Makeup Water required PER one of the following: MARK method not used N/A.	
		2.1.1 USE PPCS Variable Boration/Dilution display.	
		OR	
		2.1.2 USE applicable Boration/Dilution table from "Boration Tables" book.	NOTE: This will be performed per the reactivity plan.
	HCO	(Step 2.2) GO TO applicable Attachment to perform dilution.	NOTE: The HCO will go to Attachment 4 of S-3.1.

Op Test No.: N24-1 Scenario # 3 Event # 1 Page 13 of 61Event Description: **Load Ascension**

**S-3.1, BORON CONCENTRATION CONTROL
ATTACHMENT 4, ALTERNATE DILUTION**

			NOTE: The crew will perform dilutions based upon the Reactivity Plan provided.
NOTE Dilute and Alternate Dilute both accomplish the same purpose of lowering RCS boron concentration. The effect of Alternate Dilute is observed sooner, and tends to lower RCS hydrogen concentration, because part of dilution flow goes directly to Charging Pumps suction, whereas in Dilute mode, all flow goes to Volume Control Tank.			
	HCO	(Step 1.0) ENSURE Attachment 1, Makeup Determinations, is complete.	
	HCO	(Step 2.0) Board Operator SHALL inform US of intent to change core reactivity.	
	HCO	(Step 3.0) US SHALL acknowledge reactivity manipulation and provide input and oversight. [G0092]	
	HCO	(Step 4.0) PLACE RMW MODE SELECTOR switch to ALT DIL position.	
	HCO	(Step 5.0) SET RMW TO BA BLENDER FLOW CONTROL VLV, HCV-111, controller to desired flowrate.	
	HCO	(Step 6.0) IF desired, PLACE RMW TO BA BLENDER FLOW CONTROL VLV, HCV-111, controller to MANUAL and ENSURE CLOSED. OTHERWISE, MARK this Step N/A	NOTE: This step is N/A.
	HCO	(Step 7.0) SET RMW COUNTER, YIC-111, to the quantity determined in Attachment 1.	

Op Test No.: N24-1 Scenario # 3 Event # 1 Page 14 of 61Event Description: **Load Ascension****NOTE**

- Key parameters including Reactor Coolant Tavg **AND** control rod position indication **OR** subcritical count rate **SHALL** be observed as reactor makeup water is injected. **[G0092] [G0132]**.
- **IF** rod motion is blocked or movement is in wrong direction, **OR IF** subcritical count rate increases by a factor of two, **THEN** dilution operation **SHALL** be immediately stopped. **[G0092] [G0132]**
- The first Dilution/Alternate Dilution following an Automatic **OR** Manual Makeup depending on time in core life, will contain approximately 8 gallons of borated water. Desired Temperature and Power response may not be obtained until Blender Piping has been flushed.

	HCO	(Step 8.0) PLACE RMW Control Switch to START position.	
	HCO	(Step 9.0) VERIFY the following:	
		• RMW Pump 1A OR 1B STARTS	
		• REACTOR MAKEUP TO VCT, AOV-110C, OPENS.	
		• REACTOR MAKEUP TO CHG PUMP, AOV-110B, OPENS	
		• IF HCV-111 is in AUTO, THEN VERIFY RMW TO BA BLENDER FLOW CONTROL VLV, HCV-111 THROTTLES OPEN to preset position. OTHERWISE, MARK this Substep N/A	
	HCO	(Step 10.0) IF RMW TO BA BLENDER FLOW CONTROL VLV, HCV-111, is in MANUAL , THEN PERFORM the following: OTHERWISE, MARK the following Substeps N/A:	NOTE: This step is N/A.
	HCO	(Step 11.0) WHEN dilution is complete, THEN PERFORM the following:	
	HCO	(Step 11.1) PLACE RMW MODE SELECTOR control switch to AUTO position.	

Op Test No.: N24-1 Scenario # 3 Event # 1 Page 15 of 61Event Description: **Load Ascension**

	HCO	(Step 11.2) SET RMW TO BA BLENDER FLOW CONTROL VLV, HCV-111, controller to desired setpoint, normally 40 GPM.	
	HCO	(Step 11.3) PLACE RMW CONTROL switch to START position, AND VERIFY RMW control red light ILLUMINATED .	
	HCO	(Step 11.4) PLACE "ALTERNATE DILUTE" Human Performance Label next to RMW Mode Selector switch on MCB.	
	HCO	(Step 11.5) Board operator SHALL INFORM US reactivity manipulation is complete. [G0092]	
	HCO	(Step 11.6) RECORD amount of reactor makeup water added on S-12.4, RCS Leakage Surveillance Record Instructions, Attachment RCS Leakage Surveillance Record.	

O-5.2, LOAD ASCENSION

			NOTE: The US will perform Step 6.9.2 of O-5.2 as needed during the Load Ascension.

NOTE

- Cycling of the Condensate Trim Valves from a partially open to fully closed condition can result in Feedwater Regulating Valve oscillations. To avoid this, TRIM VLV CONTROL, AOV-9508D/AOV-9508G **SHOULD** be adjusted during power ascension to prevent trim valve cycling. As power level rises, the trim valves will tend to close. Raising OR lowering the TRIM VLV CONTROL setpoint **SHOULD** be performed to prevent cyclic opening/closing of the trim valves.
- While adjusting condensate pressure, Feedwater Pump Suction **AND** NPSH **SHALL** be monitored to ensure sufficient operating margin is maintained above 250 psig.
- Setting controller for AOV-9508D/AOV-9508G, Trim Valve Control too low may cause trim valves to OPEN enough to lower condensate header pressure (PPCS Point P2043), **AND** auto start the standby condensate pump. (235 psig)
- **REFER** to Attachment 7, Feed Reg Valve Oscillations **IF** Feed Regulating Valve oscillations are observed during power ascension.

Op Test No.: N24-1 Scenario # 3 Event # 1 Page 16 of 61Event Description: **Load Ascension**

	CO	(Step 6.9.2) ADJUST TRIM VLV CONTROL, AOV-9508D/AOV-9508G, as necessary during power ascension to avoid cycling the trim valves. Do NOT lower Condensate Booster Discharge Pressure, PI-4017 to less than 375 psig, Feed Water Suction pressure to less than 250 psig, OR condensate header pressure (PPCS Point P2043) below 270 psig. Do NOT exceed 410 psig on the trim valve controller.	
At the discretion of the Lead Examiner move to Event #2.			

Op Test No.: N24-1 Scenario # 3 Event # 2 Page 17 of 61Event Description: **MRPI Failure on Control Rod K-7**

During the load ascension, a MRPI Failure on Control Rod K-7 will occur. The operator will address AR-C-5, PPCS ROD SEQUENCE OR ROD DEVIATION, AR-C-14, ROD BOTTOM, and enter AP-RCC.2, RCC/RPI MALFUNCTION. The operator will address Technical Specification LCO 3.1.7, ROD POSITION INDICATION.

SIM DRIVER Instructions:**Operate Trigger 1 (MALF ROD11-K7).****Symptoms/Cues:**

- MCB Annunciator C-5, PPCS ROD SEQUENCE OR ROD DEVIATION
- MCB Annunciator C-14, ROD BOTTOM
- PPCS ALARM RPIK07L
- PPCS ALARM RPIK07
- PPCS ALARM RODDROP2
- MRPI SCREEN ROD K-7 indicates on the bottom and is red.
- MRPI Screen rod deviation alarm on Control D
- MRPI Screen rod bottom alarm for Control D

Time	Pos.	Expected Actions/Behavior	Comments
			NOTE: The US/CO may take the Turbine to HOLD.
AR-C-5, PPCS ROD SEQUENCE OR ROD DEVIATION/PPCS LTOP HI-LOW TEMPERATURE			
	HCO	<u>PPCS ROD SEQUENCE OR ROD DEVIATION</u>	
	HCO	<u>IF</u> rods are out of sequence, <u>THEN</u>	
	HCO	<u>IF</u> rod position deviation, <u>THEN</u>	
	US	○ GO TO AP-RCC.2, RCC/RPI MALFUNCTION	NOTE: The US will enter AP-RCC.2.
		○ Check PPCS for operability (S-26.1, COMPUTER PROGRAM CHECK)	
		○ Check PPCS for Fail Over	
		○ Refer to ITS 3.1.4 and ITS 3.1.6.	
AR-C-14, ROD BOTTOM			

Op Test No.: N24-1 Scenario # 3 Event # 2 Page 18 of 61Event Description: **MRPI Failure on Control Rod K-7**

Time	Pos.	Expected Actions/Behavior	Comments
NOTE			
This is a normal alarm when the Reactor is shutdown. The alarm will clear during a startup when the Shutdown Bank is withdrawn and all Control Bank A Rods are ≥ 32 steps			
	HCO	(Step 4.1) IF Reactor is critical, THEN PERFORM the following	
		(Step 4.1.1) VERIFY Rod on the bottom	NOTE: The HCO will determine that Control Rod K-7 has NOT dropped.
		(Step 4.1.2) GO TO AP-RCC.3, Dropped Rod Recovery	
AP-RCC.2, RCC/RPI MALFUNCTION			
CAUTION			
BANK ROD WITHDRAWAL SHOULD <u>NOT</u> BE PERFORMED UNTIL DIRECTED PER APPLICABLE RECOVERY PROCEDURE.			
	HCO	(Step 1) Place Rods To Manual	NOTE: The control rods are already in MANUAL.
	HCO	(Step 2) Check Dropped Rod Indication:	
		○ Annunciator E-28, POWER RANGE ROD DROP 5%/5 SECONDS - EXTINGUISHED	NOTE: E-28 is extinguished.
		○ Annunciator C-14, ROD BOTTOM - EXTINGUISHED	NOTE: C-14 is LIT.
	HCO	(Step 2 RNO) <u>IF</u> a Rod has dropped, <u>THEN</u> go to AP-RCC.3, DROPPED ROD RECOVERY.	NOTE: The HCO will determine that Control Rod K-7 has NOT dropped.
	US	<u>IF NOT</u> , <u>THEN</u> go to Step 3.	

Op Test No.: N24-1 Scenario # 3 Event # 2 Page 19 of 61Event Description: **MRPI Failure on Control Rod K-7**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(*Step 3) Check Tav _g – STABLE AT PROGRAM	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
	CO	(Step 3 RNO) IF Tav _g is Low, THEN perform the following:	NOTE: Because of the Load Ascension, it is possible that Tav _g is NOT matched to Tref requiring implementation of the Step 3 RNO. If NOT, move to Step 4 below.
		a. Place EH control in MANUAL.	
		b. Manually lower turbine load to match Tav _g and Tref.	
	HCO	IF Tav _g is High, THEN perform the following:	
		a. Initiate a Boration to lower Tav _g to Tref	
	HCO	(Step 4) Check Steam Dump Status:	
		o Annunciator G-15, STEAM DUMP ARMED - LIT	
		o Steam dump operating properly in AUTO	
	US	(Step 4 RNO) IF steam dump required but NOT operating, THEN perform the following:	NOTE: The Steam Dumps are NOT required.
	CO	(Step 5) Check Main Generator Load – GREATER THAN 15 MW.	
NOTE: With PRZR pressure controller 431K in manual, PORV 431C will not operate in the automatic mode. (Refer to TR 3.4.3)			
			NOTE: The US may notify the WCC/IMD/RE. SIM DRIVER: as WCCS/IMD/RE, acknowledge.
	HCO	(Step 6) Establish Stable Plant Conditions:	
		a. Tav _g – TRENDING TO TREF	

Op Test No.: N24-1 Scenario # 3 Event # 2 Page 20 of 61Event Description: **MRPI Failure on Control Rod K-7**

Time	Pos.	Expected Actions/Behavior	Comments
		b. PRZR pressure – TRENDING TO 2235 PSIG IN AUTO	
		c. PRZR level – TRENDING TO PROGRAM IN AUTO CONTROL	
		d. MFW Regulation Valves – RESTORING S/G LEVEL TO 52% IN AUTO	
	HCO	(Step 7) Check Control Rod Alignment:	
		a. Verify all rods in affected group – WITHIN $\pm$ 12 STEPS OF ASSOCIATED GROUP STEP COUNTER	
	US	(Step 7.a RNO) Refer to ITS Section 3.1.4.	
NOTE: Step 8 is an attempt to determine whether a rod is misaligned or whether the MRPI System is malfunctioning.			
	HCO	(Step 8) Check QPTR – LESS THAN 1.02	NOTE: Since a Rod has NOT dropped, QPTR will NOT be > 1.02.
NOTE: <u>IF</u> the MRPI Screen fails, <u>THEN</u> the PPCS can be used for rod position indication until the MRPI Screen is made operable. Rod position indication can be retrieved from the PPCS by selecting the “CBAW” display button.			
	HCO	(Step 9) Verify All Individual Rod Position Indication Per Bank Operable:	
		o MRPI system – NO MRPI SYSTEM ALARMS	
		o MRPI system – NOT KNOWN PROBLEMS WITH MRPI SYSTEM THAT COULD RENDER ROD POSITION INDICATION INOPERABLE	

Op Test No.: N24-1 Scenario # 3 Event # 2 Page 21 of 61Event Description: **MRPI Failure on Control Rod K-7**

Time	Pos.	Expected Actions/Behavior	Comments
	US	(Step 9 RNO) Perform the following:	Examiner NOTE: Once the Technical Specifications are evaluated, the Lead Examiner may MOVE to Event 3.
		a. Refer to ITS section 3.1.7 for required action.	
		b. Consult Reactor Engineer and plant staff to evaluate MRPI.	NOTE: The US may notify the WCC/IMD/RE. SIM DRIVER: as WCCS/IMD/RE, acknowledge.
	US	c. Go to Step 11	
	HCO	(Step 11) Verify Affected Group Step Counters Operable:	
		a. Affected bank group step counter movement – CONSISTENT WITH MRPI TRANSITIONS	
		b. Group step counters for affected bank – WITHIN 1 STEP OF EACH OTHER	
	HCO	(Step 12) Check Reactor Conditions:	
		a. Rod insertion limit alarms - EXTINGUISHED	
		b. NIS PR ΔI – WITHIN DESIRED OPERATING BAND	
	US	(Step 13) Evaluated Plant Conditions:	
		a. Rod/MRPI malfunction - REPAIRED	NOTE: The MRPI problem will NOT be repaired.
	US	(Step 13.a RNO) Return to Step 8	
TECHNICAL SPECIFICATION 3.1.7, ROD POSITION INDICATION			

Op Test No.: N24-1 Scenario # 3 Event # 2 Page 22 of 61Event Description: **MRPI Failure on Control Rod K-7**

Time	Pos.	Expected Actions/Behavior	Comments
	US	LCO 3.1.7 The Microprocessor Rod Position Indication (MRPI) System and the Demand Position Indication System shall be OPERABLE.	
	US	APPLICABILITY: MODES 1 and 2.	
		ACTIONS:	
CONDITION		REQUIRED ACTION	COMPLETION TIME
A. One MRPI per group inoperable in one or more groups.		A.1 Verify the position of the rod with inoperable MRPI indirectly by using movable incore detectors	Once per 8 hours
		<u>OR</u>	
		A.2 Verify the position of the rods with inoperable MRPI indirectly by using the movable incore detectors.	8 hours <u>AND</u> Once per 31 EFPD Thereafter <u>AND</u> 8 hours after discovery of each unintended rod movement <u>AND</u> 8 hours after each movement of rod with inoperable MRPI > 12 steps <u>AND</u> Prior to THERMAL POWER exceeding 50% RTP <u>AND</u> 8 hours after reaching RTP
		<u>OR</u> A.3 Reduce THERMAL POWER to $\leq$ 50% RTP	8 hours
			NOTE: The US will determine that Condition A is applicable.
			NOTE: The US will likely conduct a Plant Status Brief.

Op Test No.: N24-1 Scenario # 3 Event # 2 Page 23 of 61Event Description: **MRPI Failure on Control Rod K-7**

Time	Pos.	Expected Actions/Behavior	Comments
			NOTE: The US may continue the Load Ascension. The US may call WCCS/ Operations Supervision to request direction. If so, SIM DRIVER acknowledge as WCC/Operations Supervision and direct that the Load Ascension be stopped.
At the discretion of the Lead Examiner move to Event #3.			

Op Test No.: N24-1 Scenario # 3 Event # 3 Page 24 of 61Event Description: **Main Generator Voltage Regulator Fails HIGH**

Following this, the Main Generator Voltage Regulator will fail HIGH. The operator will reduce generator output voltage using the Base Adjuster, turn the Main Generator Voltage Regulator off and notify RG&E ECC within 30 minutes in accordance with A-503.1, EMERGENCY AND ABNORMAL OPERATING PROCEDURES USERS GUIDE, AR-J-10, GENERATOR VOLTAGE REGULATOR MANUAL, and AR-J-27, GENERATOR VOLTAGE REGULATOR ALARM. The Main Generator voltage control will remain in MANUAL throughout the remainder of the scenario.

SIM DRIVER Instructions: **Operate Trigger #2 (GEN03 (120%, No Ramp))**

Symptoms/Cues:

- Main Generator VAR Loading goes from 50 IN to 300 OUT
- MCB Annunciator J-18, GENERATOR VOLTAGE REGULATOR FIELD FORCING
- MCB Annunciator J-20, GENERATOR TRANSFORMER OVEREXCITE
- MCB Annunciator J-27, GENERATOR VOLTAGE REGULATOR ALARM
- MCB Annunciator J-10, GENERATOR VOLTAGE REGULATOR MANUAL (After 40 seconds)
- Generator Regulator Red Status light goes DARK (After 40 seconds)
- Generator Regulator Green Status light is LIT (After 40 seconds)

Time	Pos.	Expected Actions/Behavior	Comments
			NOTE: The US/CO may take the Turbine to HOLD if necessary.
A-503.1, EMERGENCY AND ABNORMAL OPERATING PROCEDURES USERS GUIDE			
	HCO	(Step 5.3.A.5) Actions are permitted to mitigate or compensate for equipment or controller failures or to isolate leaks. Permitted actions include those actions necessary to take manual control and stabilize the affected parameters, or to isolate a leak. Examples include closing or isolating a failed open PORV, taking manual control of a failed FRV controller, etc. These deviations fall under the Maintenance Rule. Therefore 50.59 is not required.	NOTE: The CO may adjust VARs using the Base Adjuster based on this procedural allowance.
AR-J-10, GENERATOR VOLTAGE REGULATOR MANUAL			

Op Test No.: N24-1 Scenario # 3 Event # 3 Page 25 of 61Event Description: **Main Generator Voltage Regulator Fails HIGH**

Time	Pos.	Expected Actions/Behavior	Comments
	CO	(Step 1) Regulate voltage with BASE ADJUSTER.	NOTE: The CO will adjust the Base Adjuster as needed to restore Main Generator VARs to the pre-failure level.
NOTE: There is a North American Electric Reliability Corporation (NERC) requirement to notify RG&E Energy Control Center within 30 minutes anytime there is a change of status or capability of the Voltage Regulator. [G0001]			
	US	(Step 2) Notify the following:	
		Electricians	NOTE: The US may notify the WCC/Electricians. SIM DRIVER: as WCCS , acknowledge.
		Electrical Planner	
		RG&E Energy Control Center that the voltage regulator is in manual.	NOTE: The US/CO may notify RG&E ECC. SIM DRIVER: as RG&E ECC , acknowledge, and report that an adjustment was noticed in the Ginna output voltage. As RG&E ECC , acknowledge, and report that Ginna should maintain an output voltage as necessary to maintain MVARs at 0-50 Positive .
	CO	(Step 3) Place Voltage Regulator in "OFF"	
NOTE: If the Regulator tripped to Manual on a "Loss of Sensing" condition, <u>THEN</u> once the potential transformer deficiencies are corrected, the "Loss of Sensing" relays must be reset by operating the reset pushbutton on the "Loss of Sensing" module prior to going to Auto.			

Op Test No.: N24-1 Scenario # 3 Event # 3 Page 26 of 61Event Description: **Main Generator Voltage Regulator Fails HIGH**

Time	Pos.	Expected Actions/Behavior	Comments
	US	(Step 4) <u>WHEN</u> condition requiring manual operation is corrected, <u>THEN</u> refer to O-6.9.3, PLACING THE VOLTAGE REGULATOR TO EITHER AUTO OR MANUAL.	
AR-J-27, GENERATOR VOLTAGE REGULATOR ALARM			
	CO	(Step 4.1) VERIFY main generator voltage stable at desired value.	
	CO	(Step 4.2) NOTIFY an EO to investigate alarm at the Generator Excitation Equipment Panel.	NOTE: The US will dispatch an EO. SIM DRIVER: as EO , acknowledge. After 2 Minutes report that following Annunciators are locked in: • (#4) REGULATOR TRIP TO MANUAL • (#5) MXL LIMITING • (#13) OXP INVERSE TIMER IS TIMING • (#15) OXP UNIT TRIP • (#23) ON LINE FORCING
	CO	(Step 4.3) NOTIFY Electricians.	NOTE: The US may notify the WCC/Electricians. SIM DRIVER: as WCCS , acknowledge.
	CO	(Step 4.4) REFER to applicable "AR-VOLT-REG " alarm response procedure.	
			NOTE: The US will likely conduct a Plant Status Brief.
At the discretion of the Lead Examiner move to Event #4.			

Op Test No.: N24-1 Scenario # 3 Event # 4 Page 27 of 61Event Description: **RCP A #3 Seal Failure**

Subsequently, the #3 Seal on Reactor Coolant Pump 1A will start to leak. The operator will respond per AR-B-11, RCP 1A STAND PIPE LO LEVEL -4FT and refill the RCP 1A Standpipe at least twice. The operator will enter AP-RCP.1, RCP SEAL MALFUNCTION. During the implementation of AP-RCP.1 and after multiple refills of the Standpipe, the leakage will slow substantially.

SIM DRIVER Instructions: **Operate Trigger #3 (RCS14A (40 over 10 second Ramp))**

Symptoms/Cues:

- MCB Annunciator B-11, RCP 1A Standpipe Lo Level -4 FT

Time	Pos.	Expected Actions/Behavior	Comments
AR-B-11, RCP 1A STAND PIPE LO LEVEL -4FT			
NOTE Frequent Low Standpipe level alarms could indicate the following; • Excessive flow through #3 seal • Minimal flow through the #2 seal • Inadvertent activation of the Shutdown Seal (SDS) while the RCP is shutdown. The SDS will activate at a temperature between 260°F and 320 ° F and limits flow to < 1 GPM from #1 seal when activated.			
	HCO	(Step 4.1) REFILL RCP A Stand Pipe, perform the following:	NOTE: The HCO repeat this throughout the event.
		(Step 4.1.1) OPEN RMW TO CNMT ISOL VLV, AOV-508	
		(Step 4.1.2) OPEN RMW TO RCP A STAND PIPE, AOV-550A	
		(Step 4.1.3) START a RMW Pump.	
	HCO	(Step 4.2) WHEN Annunciator B-3 RCP A STAND PIPE HI LEVEL + 1 FT. alarms, THEN perform the following:	
		(Step 4.2.1) CLOSE RMW TO CNMT ISOL VLV, AOV-508	
		(Step 4.2.2) CLOSE RMW TO RCP A STAND PIPE, AOV-550A,	
		(Step 4.2.3) STOP the RMW Pump.	

Op Test No.: N24-1 Scenario # 3 Event # 4 Page 28 of 61Event Description: **RCP A #3 Seal Failure**

Time	Pos.	Expected Actions/Behavior	Comments
NOTE			
IF this alarm occurs at a higher frequency than normal a RCP #2 or #3 seal malfunction may be indicated.			
	US	(Step 4.2.4) IF an RCP Seal Malfunction is indicated THEN REFER to AP-RCP.1, RCP SEAL MALFUNCTION.	NOTE: The US will enter AP-RCP.1.
AP-RCP.1, RCP SEAL MALFUNCTION			
CAUTION			
IF ANY RCP IS SECURED BECAUSE OF A SEAL MALFUNCTION, IT SHOULD NOT BE RESTARTED UNTIL THE CAUSE OF THE MALFUNCTION HAS BEEN DETERMINED AND CORRECTED.			
NOTE:			
○ If a Reactor trip is initiated while performing this procedure, transition to E-0 should occur while completing subsequent actions of the step. ○ #2 Seal leak rate is total RCDT leak rate minus any known in-leakage to RCDT from another source. ○ <u>Total</u> #1 Seal Flow is defined for each RCP as the sum of indicated #1 Seal Leakoff Flow and #2 seal leak rate to RCDT (PPCS Point ID L1003, 3.2 gal/% in the normal operating range).			
	HCO	(*Step 1) Monitor RCP #1 seal outlet temperatures:	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
		a. RCP #1 seal outlet temperature LESS THAN 215°F FOR EACH RCP	
	HCO	(Step 2) Check <u>Total</u> #1 Seal Flow – LESS THAN 8.0 GPM FOR EACH RCP	
	HCO	(Step 3) Check RCP Seal Return Valve Alignment:	
		a. RCP seal return isolation valve, MOV-313 - OPEN	

Op Test No.: N24-1 Scenario # 3 Event # 4 Page 29 of 61Event Description: **RCP A #3 Seal Failure**

Time	Pos.	Expected Actions/Behavior	Comments
		b. Verify RCP seal disch valves – OPEN	
		• RCP A, AOV-270A	
		• RCP B, AOV-270B	
NOTE: ○ If a Reactor trip is initiated while performing Step 4, transition to E-0 should occur while completing subsequent actions of the step. ○ The lower limit of 0.8 GPM limit for <u>total</u> #1 seal flow applies when the RCS is at normal operating pressure. Refer to FIG-4.0, FIGURE RCP SEAL LEAKOFF and consult plant staff for guidance if the RCS is at reduced pressure.			
	HCO	(Step 4) Check RCP Seal Return Flow:	
		a. Total #1 Seal Flow – BETWEEN 0.8 GPM <u>AND</u> 6.0 GPM FOR EACH RCP	
	US	b. Go to Step 6.	
NOTE: ATT-15.1, ATTACHMENT RCP DIAGNOSTICS may be used to aid in diagnosis.			
			NOTE: The HCO/CO may use ATT-15.1 to determine that the most likely problem for the given conditions is a failed #3 Seal on RCP 1A, while it is possible that it is a failure of the #2 Seal on RCP 1A.
	HCO	(Step 6) Check RCP Cooling:	
		○ Annunciator A-7, RCP A CCW RETURN HIGH TEMP <u>OR</u> LOW FLOW - EXTINGUISHED	
		○ Annunciator A-15, RCP B CCW RETURN HIGH TEMP <u>OR</u> LOW FLOW - EXTINGUISHED	
	HCO	(Step 7) Check RCP #2 Seal Indications:	

Op Test No.: N24-1 Scenario # 3 Event # 4 Page 30 of 61Event Description: **RCP A #3 Seal Failure**

Time	Pos.	Expected Actions/Behavior	Comments
		○ Annunciator B-3, RCP A STANDPIPE HI LEVEL +1 FT - EXTINGUISHED	
		○ Annunciator B-4, RCP B STANDPIPE HI LEVEL +1 FT - EXTINGUISHED	
CAUTION REDUCING CHARGING FLOW WILL RESULT IN RISING REGEN HX OUTLET TEMPERATURE.			
	HCO	(Step 8) Check RCP Labyrinth Seal D/Ps – GREATER THAN 15 INCHES OF WATER	
	HCO	(Step 9) Check RCP #3 Seal Indications:	
		○ Annunciator B-11, RCP A STAND PIPE LO LEVEL -4 FT - EXTINGUISHED	
		○ Annunciator B-12, RCP B STAND PIPE LO LEVEL -4 FT - EXTINGUISHED	
	HCO	(Step 9 RNO) Check CNMT radiation monitors normal.	
		• R-11	NOTE: R-11 will likely rise slowly.
		• R-12	
	HCO/ US	IF RCP standpipe level low and CNMT radiation rising, THEN #3 seal leakage rise is probable. Continue plant operation while closely monitoring RCP seal indications.	
NOTE: In the absence of other seal failure indications, an elevated #1 seal outlet temperature may indicate pump bearing damage.			

Op Test No.: N24-1 Scenario # 3 Event # 4 Page 31 of 61Event Description: **RCP A #3 Seal Failure**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(*Step 10) Monitor RCP Seal Conditions:	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
		a. RCP <u>total</u> #1 seal flow for each RCP	
		o <u>Total</u> #1 seal flow – LESS THAN 6.0 GPM	
		o <u>Total</u> #1 seal flow – GREATER THAN 0.8 GPM	
		b. RCP #1 Seal Leakoff Flow – WITHIN THE NORMAL OPERATING RANGE OF FIG-4.0, FIGURE RCP SEAL LEAKOFF	
	HCO	c. Check RCP #1 seal outlet temperature – LESS THAN 215°F <u>AND STABLE</u>	
	HCO	d. RCS leakage – NORMAL (Refer to leakage surveillance sheet)	
	HCO/ CO	(Step 11) Evaluate MCB Annunciator Status (Refer to AR Procedures)	
NOTE: Refer to LS-AA-1020, REPORTABILITY TABLES <u>AND</u> DECISION TREES for reporting requirements.			
	US	(Step 12) Notify Higher Supervision	
			NOTE: The US may notify the WCC/Operations Supervision. SIM DRIVER: as WCCS/Operations Supervision , acknowledge.
			NOTE: The US will likely conduct a Plant Status Brief.
			SIM DRIVER: Change severity level of MALF RCS14A from 40 gpm to 1 gpm.
At the discretion of the Lead Examiner move to Event #5.			

Op Test No.: N24-1 Scenario # 3 Event # 5 Page 32 of 61Event Description: **Open Phase 7T Line**

Shortly afterwards, an Open Phase will be detected on the 7T line. The crew will respond in accordance with AR-PPCS-7TOPD, 7T OPEN PHASE DETECTION, trip the 52/7T1352 Breaker and enter AP-ELEC.1, LOSS OF 12A AND/OR 12B BUSSES. This will result in de-energizing Bus 14/18, Diesel Generator A automatically starting and repowering these buses and a loss of normal letdown. The crew will use HC-1.0, LOSS OF LETDOWN, to control RCS inventory and restore Normal Letdown using ATT-9.0, ATTACHMENT LETDOWN. The operator will address Technical Specification LCO 3.8.1, AC SOURCES - MODES 1, 2, 3, AND 4, and Technical Requirement TR 3.8.1, OFFSITE POWER SOURCES.

SIM DRIVER Instructions: **Operate Trigger #4 (MALF EDS14A=Phase B)**

Symptoms/Cues:

- PPCS Alarm 7TOPD, 7T OPEN PHASE DETECTED

Time	Pos.	Expected Actions/Behavior	Comments
AR-PPCS-7TOPD, 7T OPEN PHASE DETECTION			
NOTE			
- This alarm may be erroneously received when Transformer 7 is first energized. - IF any CCW pump white light is LIT it is acceptable to perform one reset and start attempt for that pump when powered from associated EDG.			
	CO	(Step 4.1) VERIFY all three phases of Ckt 7T voltage are 34 to 37 kV on MCB.	
		4.1.1 IF any phase of Ckt 7T less than 34 kV, THEN PERFORM the following:	
		1. TRIP the 52/7T1352 breaker.	NOTE: This action will cause D/G A to auto start and re-power Busses 14 & 18. Also, Normal Letdown will isolate and the HCO will use HC-1.0
		2. ENSURE at least one Emergency Diesel Generator STARTS AND LOADS its associated Safeguard Buses as needed.	
		3. ENSURE a CCW pump is running with CCW flow indicated.	NOTE: The B CCW Pump is running.

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Time	Pos.	Expected Actions/Behavior	Comments
		4. ENTER AP-ELEC.1, LOSS OF 12A AND/OR 12B BUSES OR AP-ELEC.3, LOSS OF 12A AND/OR 12B TRANSFORMER (BELOW 350 F).	NOTE: The US will enter AP-ELEC.1.
			NOTE: When Normal Letdown isolates, the HCO will address HC-1.0.
HC-1.0, LOSS OF LETDOWN			
	HCO	(Step 1) Entry Conditions:	
		a. PRZR Level rising due to letdown isolation	
	HCO	(Step 2) Performance:	
		a. <u>IF</u> PRZR Level is rising due to letdown isolation, <u>THEN</u> perform the following to minimize Pressurizer Level rate of rise:	
		1) Ensure ISOL VLV TO RHX, AOV-427 control switch in CLOSE.	NOTE: The HCO will take the AOV-427 Control Switch to CLOSE.
		2) Ensure EXCESS LTDN LOOP A COLD, AOV-310 control switch in CLOSE.	
		3) Place running charging pumps in MANUAL.	
		4) Ensure only one charging pump is running at minimum speed to minimize Pressurizer Level rate of rise.	NOTE: The HCO will place Charging Pump C to minimum speed.
		5) Adjust CHARGING FLOW TO REGEN HX, HCV-142 to maintain RCP labyrinth seal D/P between 15 and 80 inches H ₂ O.	NOTE: The HCO will close HCV-142.
AP-ELEC.1, LOSS OF 12A AND/OR 12B BUSES			

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Time	Pos.	Expected Actions/Behavior	Comments
<u>CAUTION</u> ○ <u>IF</u> ANY RADIOACTIVE RELEASE IN PROGRESS, <u>THEN</u> IT SHOULD BE TERMINATED UNTIL SUPPORT CONDITIONS ARE EVALUATED. ○ OBSERVE D/G LOADING LIMITS OF 2300 KW FOR 1/2 HOUR, 2250 KW FOR 2 HOURS, <u>AND</u> 1950 KW FOR CONTINUOUS SERVICE.			
<u>NOTE:</u> Conditions should be evaluated for site contingency reporting (Refer to EP-AA-1012 ADDENDUM 3, R.E. GINNA NUCLEAR POWER PLANT EMERGENCY ACTION LEVELS).			
	HCO	(Step 1) Check RCS Temperature – GREATER THAN 350°F	
	HCO	(*Step 2) Monitor Tav _g	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
		a. Place Rods in MANUAL	
		b. Manually move control rods to control Tav _g	NOTE: Control Rods cannot be withdrawn due to a previous malfunction.
	HCO	(Step 3) Verify RCPs – BOTH RUNNING	
	HCO/ CO	(Step 4) Verify Emergency D/G Associated With Deenergized Bus (es) - RUNNING	NOTE: D/G A is running supplying power to Busses 14 & 18.
		○ Bus 12A – D/G A	
		○ Bus 12B – D/G B	
	CO	(Step 5) Verify Both Trains Of AC Emergency Busses Energized To At Least 440 VOLTS on all phases:	
		○ Bus 14 and bus 18	
		○ Bus 16 and bus 17	

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Time	Pos.	Expected Actions/Behavior	Comments
	CO	(Step 6) Verify Service Water System Operation:	
	CO	a. Check at least one SW pump running in each loop	NOTE: SWP A&B are running.
		• A or B Pump in Loop A	
		• C or D Pump in Loop B	
		(Step 6.a RNO) Perform the following:	
	CO	1) Manually start pumps as necessary (257 kw each).	NOTE: The CO will start either SWP C or D.
		2) <u>IF</u> adequate cooling can <u>NOT</u> be supplied to a running D/G, <u>THEN</u> perform the following:	NOTE: Adequate cooling has been supplied to D/G A.
		3) <u>IF</u> no SW pumps can be operated, <u>THEN</u> perform the following:	NOTE: This Step is NOT applicable.
		4) <u>IF</u> only one SW pump can be operated, <u>THEN</u> refer to AP-SW.2, LOSS OF SERVICE WATER.	NOTE: This Step is NOT applicable.
	CO	b. SW header pressure – GREATER THAN 40 PSIG IN EACH LOOP	
		(Step 7) Check CCW Pump Status:	
	HCO	a. At least one CCW pump - RUNNING	
	HCO	b. Annunciator A-22, CCW PUMP DISCHARGE LO PRESS 60 PSIG - EXTINGUISHED	
	HCO	(Step 8) Verify charging pump status – AT LEAST ONE RUNNING	NOTE: Charging Pump C is running.
	CO	(Step 9) Verify Annunciator H-16, INSTRUMENT AIR COMP - EXTINGUISHED	

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Time	Pos.	Expected Actions/Behavior	Comments
	CO	(Step 10) Verify Bus 11A And 11B Normal Feed Breakers - CLOSED	
	CO	(Step 11) Check MFW Regulating Valves – RESTORING S/G LEVEL TO 52% IN AUTO	
NOTE: IF VCT level lowers to 5%, charging pump suction will swap to the RWST. This may require a load reduction.			
		(Step 12) Check VCT Makeup System:	
		a. Ensure the following:	
	HCO	1) RMW mode selector switch in AUTO	NOTE: RMW Mode Selector may NOT be in AUTO due to load ascension.
		2) RMW control armed – RED LIGHT LIT	
	HCO	b. Check VCT level:	
		o Level GREATER THAN 20%	
		-OR-	
		o Level – STABLE <u>OR</u> RISING	
	HCO	(Step 13) Check Charging Pump Suction Aligned to VCT:	
		a. VCT level – GREATER THAN 20%	
		b. Align charging pumps to VCT	
		o LCV-112C open	
		o LCV-112B closed	
NOTE: When restarting equipment for recovery, it is preferable to start equipment on busses being supplied from offsite power.			
	HCO	(Step 14) Check CVCS Operation:	

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Time	Pos.	Expected Actions/Behavior	Comments
		a. Charging pumps – AT LEAST ONE RUNNING	
		b. Check letdown indications:	
		o Check PRZR level – GREATER THAN 13%	
		o Letdown flow – APPROXIMATELY 40 gpm (60 gpm if AOV-202 OPEN)	NOTE: There is NO letdown flow.
		o Letdown flow - STABLE	
		(Step 14.b RNO) Perform the following:	
	HCO	1) Close letdown isolation, AOV-427.	
	HCO	2) Close letdown orifice valves (AOV-200A, AOV-200B, and AOV-202)	NOTE: The HCO closes AOV-202.
	HCO	3) Close letdown isolation, AOV-371	
	HCO	4) <u>IF</u> seal injection in service, <u>THEN</u> close charging flow control valve, HCV-142 <u>WHILE</u> adjusting charging pump speed to maintain:	
		• RCP labyrinth seal D/P between 15 inches and 80 inches	
		• PRZR level at program	
	HCO/ US	5) <u>IF</u> PRZR level greater than 13%, <u>THEN</u> go to Step 15. <u>IF NOT</u> , <u>THEN</u> continue with Step 17. <u>WHEN</u> PRZR level greater than 13%, <u>THEN</u> do Steps 15 and 16.	
	HCO/ US	(Step 15) Establish Normal Letdown: (Refer to ATT-9.0, ATTACHMENT LETDOWN)	
			NOTE: The US will assign either the HCO or the CO to restore Normal Letdown per ATT-9.0.
ATT-9.0, ATTACHMENT LETDOWN			
	HCO/ CO	(Step A) The following conditions must be met to place normal letdown in service:	

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Time	Pos.	Expected Actions/Behavior	Comments
		IA to CNMT - ESTABLISHED	
		CCW - IN SERVICE	
		PRZR level - GREATER THAN 13%	
	HCO/ CO	(Step B) Establish Normal Letdown:	
	HCO/ CO	1. Establish charging line flow to REGEN Hx - GREATER THAN 22 gpm, start additional charging pump if desired.	NOTE: An additional Charging may be started.
	HCO/ CO	2. Place the following switches to CLOSE:	
		Letdown orifice valves (AOV-200A, AOV-200B, and AOV-202)	
		Letdown isolation, AOV-427	
	HCO/ CO	3. Place the following letdown controllers in MANUAL at 40% open (60% open if 60 gpm orifice to be selected):	
		Temperature control valve, TCV-130	
		Pressure control valve, PCV-135	
	HCO/ CO	4. Ensure AOV-371, letdown isolation valve - OPEN.	
	HCO/ CO	5. Place letdown isolation, AOV-427 to OPEN, <u>THEN</u> place to AUTO.	
	HCO/ CO	6. Open letdown orifice valve(s) to obtain desired flow.	
		40 gpm letdown orifice valve, AOV-200A or AOV-200B	
		60 gpm letdown orifice valve, AOV-202	NOTE: The HCO will re-open AOV-202.
<u>CAUTION</u> MAINTAINING TCV-130 AT THE NORMAL SETPOINT HELPS PREVENT UNEXPECTED CHANGES IN REACTIVITY <u>OR</u> RCP SEAL PERFORMANCE.			
	HCO/ CO	7. Place PCV-135 in AUTO at 250 psig.	
	HCO/ CO	8. Place TCV-130 in AUTO at the normal setpoint.	

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Time	Pos.	Expected Actions/Behavior	Comments
	HCO/ CO	9. Adjust charging pump speed and HCV-142 to control PRZR level and RCP labyrinth seal D/P.	
			NOTE: PPCS Alarm 12AOPDLL, 12A OPC LOW LOAD , will alarm. The US may address as time permits.
AP-ELEC.1, LOSS OF 12A AND/OR 12B BUSES			
	HCO	(Step 16) Verify PRZR Heaters Restored:	
		o PRZR proportional heater breaker - CLOSED	
		o PRZR backup heater breaker – RESET/IN AUTO	
		(Step 16 RNO) <u>IF</u> adequate D/G capacity available for PRZR heaters (400 kw each bank), <u>THEN</u> perform the following:	NOTE: Adequate Capacity will be available on D/G A.
	HCO	a. Reset and close PRZR proportional heater breaker if necessary.	
	HCO	b. Reset PRZR backup heater breaker and return to AUTO if necessary.	
	HCO/ US	<u>IF</u> adequate D/G capacity <u>NOT</u> available, <u>THEN</u> refer to ER-PRZR.1, RESTORATION OF PRZR HEATERS DURING BLACKOUT.	NOTE: This step is NOT applicable.
	HCO	(Step 17) Verify Normal Rod Control Restored:	
		a. Annunciator C-5, PPCS ROD SEQUENCE <u>OR</u> ROD DEVIATION - EXTINGUISHED	NOTE: Annunciator C-5 is LIT due to a previous malfunction.
		(Step 17.a RNO) <u>IF</u> alarm is due to a loss of power to MRPI, <u>THEN</u> maintain rods in manual <u>AND</u> minimize rod motion.	NOTE: This step is NOT applicable.
		<u>IF</u> alarm is due to actual rod misalignment, <u>THEN</u> refer to AP-RCC.2, RCC/RPI MALFUNCTION, while continuing with this procedure.	

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Time	Pos.	Expected Actions/Behavior	Comments
	HCO	b. Annunciator E-28, POWER RANGE ROD DROP ROD STOP -5%/5 SEC - EXTINGUISHED	
		c. Annunciator F-15, RCS TAVG DEV 4°F - EXTINGUISHED	
	HCO	d. Place rods in AUTO if desired	
			Examiner NOTE: Since the electric plant is still being recovered, the US may NOT evaluate the Technical Specifications until AP-ELEC.1 is complete. IF it is apparent that the US will not evaluate TS, THEN move to next event and check TS evaluation after the scenario.
TECHNICAL SPECIFICATION LCO 3.8.1, AC SOURCES – MODES 1, 2, 3 AND 4			
	US	LCO 3.8.1 The following AC electrical sources shall be OPERABLE: - One qualified independent offsite power circuit connected between the offsite transmission network and each of the onsite 480 V safeguards buses required by LCO 3.8.9, "Distribution Subsystems - MODES 1, 2, 3, and 4"; and - Two emergency diesel generators (DGs) capable of supplying their respective onsite 480 V safeguards buses required by LCO 3.8.9.	
		MODES 1, 2, 3, and 4.	
		ACTIONS:	
CONDITION		REQUIRED ACTION	COMPLETION TIME
A. Offsite power to one or more 480 V safeguards bus(es) inoperable.		A.1 Declare required feature(s) inoperable when its	12 hours from discovery of Condition A concurrent with

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Time	Pos.	Expected Actions/Behavior		Comments
			redundant required feature(s) is inoperable. <u>AND</u> A.2 Restore offsite circuit to OPERABLE status.	inoperability of redundant required feature(s) 72 hours OR -----NOTE----- Not applicable if there is a loss of function. ----- In accordance with the Risk Informed Completion Time Program
				NOTE: The US will determine that Condition A must be entered.
TECHNICAL REQUIREMENT 3.8.1, OFFSITE POWER SOURCES				
	US	TR 3.8.1 Two qualified independent offsite power circuits shall be OPERABLE		
		APPLICABILITY: MODES 1, 2, 3, 4.		
		ACTIONS:		
CONDITION		REQUIRED ACTION		COMPLETION TIME
A. One offsite power circuit inoperable.		A.1 Initiate action to verify reliability of OPERABLE offsite power circuit.		Immediately
		<u>AND</u> A.2.1 Establish pre-conditions necessary to complete backfeed procedure in 8 hours or less		72 hours
		<u>OR</u> A.2.2 Restore Offsite Power Circuit to OPERABLE status		72 hours

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Time	Pos.	Expected Actions/Behavior	Comments
			NOTE: The US will determine that Condition A must be entered based on circuit 7T being inoperable.
At the discretion of the Lead Examiner move to Events #6-8.			

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Event Description: **Turbine Trip/Steam Dump to Condenser fails to function/ Safety Injection fails to Actuate Automatically/ One S/G Safety Valve on each S/G Lifts and sticks partially OPEN**

After this, the Main Turbine will trip causing a Reactor Trip. Simultaneously, a Steam Dump System failure will result in no steam dump to the condenser. Both SG ARVs and the lower setpoint SG Safety Valves will open. One Safety Valve on each SG will partially stick open. The crew will enter E-0, REACTOR TRIP OR SAFETY INJECTION. As PRZR pressure lowers the automatic actuation of the Safety Injection will fail and the crew will be required to manually actuate Safety Injection. The crew will transition to E-2, FAULTED STEAM GENERATOR ISOLATION, and then to ECA-2.1, UNCONTROLLED DEPRESSURIZATION OF BOTH STEAM GENERATORS. The crew may take a pre-emptive action of throttling AFW flow to both S/Gs per A-503.1, EMERGENCY AND ABNORMAL OPERATING PROCEDURES USERS GUIDE, and HC-4.0, AFW CONTROL GUIDANCE. The scenario will terminate at Step 7 of ECA-2.1, after the crew has stopped the RHR Pumps.

SIM DRIVER Instructions: **Operate Trigger #5 (TUR01, STM10A-H = 0, STM09A/B (Conditional on Rx Trip, 15 seconds delayed))**

Symptoms/Cues:

- MCB Annunciator D-24, AUTO STOP OIL
- Reactor Trip
- Turbine Stop Valves close
- All Steam Dump Valves Close
- PPCS indicates ARVs and SG Safety Valves OPEN
- Steam Noise can be heard in Control Room

Time	Pos.	Expected Actions/Behavior	Comments
E-0, REACTOR TRIP OR SAFETY INJECTION			
	HCO	(Step 1) Verify Reactor Trip:	Immediate Action
		○ At least one train of reactor trip breakers – OPEN	
		○ Neutron flux – LOWERING	
		○ MRPI indicates - ALL CONTROL AND SHUTDOWN RODS ON BOTTOM with no instrument fluctuations concurrent with fire.	
	CO	(Step 2) Verify Turbine Stop Valves - CLOSED	Immediate Action

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Time	Pos.	Expected Actions/Behavior	Comments
	HCO/ CO	(Step 3) Verify sufficient AC Emergency buses Energized To At Least 440 VOLTS:	Immediate Action
		o Bus 14 <u>OR</u> Bus 16	
		AND	
		o Bus 17 <u>OR</u> Bus 18	
	HCO/ CO	(Step 4) Check if SI is Actuated:	Immediate Action
		a. Any SI Annunciator – LIT	
	HCO/ CO	(Step 4.a RNO) <u>IF</u> any of the following conditions are met, <u>THEN</u> manually actuate SI and CI:	NOTE: The HCO will manually actuate SI and CI.
		o PRZR pressure less than 1750 psig	
		-OR-	
		o Steamline pressure less than 514 psig	
		-OR-	
		o CNMT pressure greater than 4 psig	
		-OR-	
		o SI sequencing started	
		-OR-	
		o Operator determines SI required	
		<u>IF</u> SI is <u>NOT</u> required, <u>THEN</u> go to ES-0.1, REACTOR TRIP RESPONSE, Step 1.	Examiner NOTE: The US may transition to ES-0.1, however, because of the transient that is occurring, SI will be required. IF transition is made to ES-0.1, WAIT until SI is Manually actuated and THEN continue below.

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Event Description: **Turbine Trip/Steam Dump to Condenser fails to function/ Safety Injection fails to Actuate Automatically/ One S/G Safety Valve on each S/G Lifts and sticks partially OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	b. SI Sequencing –BOTH TRAINS STARTED	
<u>Critical Task #1:</u> Manually actuate Safety Injection/Containment Isolation before transitioning out of E-0 to E-2, or if the transition out of E-0 into ES-0.1 is made, before completion of Step 5.a <u>and</u> an automatic SI actuation setpoint is reached. <u>Expected Actions:</u> depress the MANUAL SAFETY INJECTION pushbutton and the MANUAL CNMT ISOLATION pushbutton before transitioning out of E-0 to E-2, or if the transition out of E-0 into ES-0.1 is made, before completion of Step 5.a <u>and</u> an automatic SI actuation setpoint is reached.			
<u>NOTE:</u> ○ FOLDOUT page should be open and monitored periodically. ○ Adverse CNMT values should be used whenever CNMT pressure is greater than 4 psig or CNMT radiation is greater than 10+05 R/hr.			
	HCO/ CO	Foldout Page	NOTE: The crew will monitor these conditions throughout the performance of E-0.
		1. RCP TRIP CRITERIA	NOTE: A SW Isolation will occur due to D/G A supplying Bus 14 and 18 and an SI signal, RCP B (RCP A OFF [no power]) will be stopped due to rising RCP bearing temps.
		2. LOSS OF SW CRITERIA	
		3. AFW SUPPLY SWITCHOVER CRITERION	
		4. SFP COOLING CRITERIA	
		5. MULTIPLE FUNCTION LOSS CRITERIA	

Op Test No.: N24-1 Scenario # 3 Event # 6-8 Page 46 of 61Event Description: **Turbine Trip/Steam Dump to Condenser fails to function/ Safety Injection fails to Actuate Automatically/ One S/G Safety Valve on each S/G Lifts and sticks partially OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(*Step 5) Verify CNMT Spray Not Required: - Annunciator A-27, CNMT SPRAY-EXTINGUISHED - CNMT pressure-LESS THAN 28 PSIG	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
	US	(Step 6) Direct Operator to Perform ATT-27.0, ATTACHMENT AUTOMATIC ACTION VERIFICATION	
			NOTE: The US will hand off ATT-27.0 to either the HCO or the CO and continue with the other operator in E-0. Examiner following operator performing ATT-27.0 continue below. Examiner following operator NOT performing ATT-27.0 continue at Page 49 .
E-0, REACTOR TRIP OR SAFETY INJECTION			
ATTACHMENT 27.0, ATTACHMENT AUTOMATIC ACTION VERIFICATION			
	HCO/CO	(Step 1) Verify SI and RHR Pumps Running:	
		a. All SI pumps – RUNNING	
		b. Both RHR pumps – RUNNING	
	HCO/CO	(Step 2) Verify CNMT RECIRC Fans Running:	
		a. All fans – RUNNING	
		b. Charcoal filter dampers green status lights – EXTINGUISHED	
	HCO/CO	(Step 3) Check If Main Steamlines Should Be Isolated:	
		a. Any MSIV – OPEN	NOTE: Both MSIVs are Closed.

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Event Description: **Turbine Trip/Steam Dump to Condenser fails to function/ Safety Injection fails to Actuate Automatically/ One S/G Safety Valve on each S/G Lifts and sticks partially OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO/ CO	(Step 3a RNO) Go to Step 4.	
	HCO/ CO	(Step 4) Verify MFW Isolation:	
		a. MFW pumps – TRIPPED	
		b. MFW Isolation valves – CLOSED	
		• S/G A, AOV-3995	
		• S/G B, AOV-3994	
		c. S/G blowdown and sample valves - CLOSED	
	HCO/ CO	(Step 5) Verify At Least Two SW Pumps - RUNNING	
	HCO/ CO	(Step 6) Verify CI and CVI:	
		a. CI and CVI annunciators - LIT	
		• Annunciator A-26, CNMT ISOLATION	
		• Annunciator A-25, CNMT VENTILATION ISOLATION	
		b. Verify CI and CVI valve status lights – BRIGHT	
		c. CNMT RECIRC fan coolers SW outlet valve status lights - BRIGHT	
		• FCV-4561	
		• FCV-4562	
		c. Letdown orifice valves - CLOSED	
		• AOV-200A	
		• AOV-200B	
		• AOV-202	

Op Test No.: N24-1 Scenario # 3 Event # 6-8 Page 48 of 61Event Description: **Turbine Trip/Steam Dump to Condenser fails to function/ Safety Injection fails to Actuate Automatically/ One S/G Safety Valve on each S/G Lifts and sticks partially OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
NOTE: <u>IF</u> performing E-0 per direction of FR-S.1, FR-S.2, or FR-H.1 <u>THEN</u> stop here and return to E-0, REACTOR TRIP OR SAFETY INJECTION			
	HCO/ CO	(Step 7) Check CCW System Status:	
		a. Verify CCW pump – AT LEAST ONE RUNNING	
	HCO/ CO	(Step 8) Verify SI And RHR Pump Flow:	
		a. SI flow indicators – CHECK FOR FLOW	
		b. RHR flow indicator – CHECK FOR FLOW	
	HCO/ CO	(Step 8b RNO) <u>IF</u> RCS pressure less than 150 psig manually start pumps and align valves. <u>IF NOT, THEN</u> go to Step 9.	
	HCO/ CO	(Step 9) Verify SI Pump And RHR Pump Emergency Alignment:	
	HCO/ CO	a. RHR pump discharge to Rx vessel deluge - OPEN	
		• MOV-852A	
		• MOV-852B	
		b. Verify SI pump C – RUNNING	
		c. Verify SI pump A - RUNNING	
		d. Verify SI pump B - RUNNING	
		e. Verify SI pump C discharge valves - OPEN	
		• MOV-871A	
		• MOV-871B	

Op Test No.: N24-1 Scenario # 3 Event # 6-8 Page 49 of 61Event Description: **Turbine Trip/Steam Dump to Condenser fails to function/ Safety Injection fails to Actuate Automatically/ One S/G Safety Valve on each S/G Lifts and sticks partially OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO/ CO	(Step 10) Verify CREATS Actuation:	
		a. At least one damper in each flowpath - CLOSED	
		• Normal Supply Air	
		• Normal Return Air	
		• Lavatory Exhaust Air	
		b. CREATS fans – BOTH RUNNING	
<u>NOTE:</u> The hand switches for these valves should be placed in the closed position even if the valve status light is bright.			
	HCO/ CO	(Step 11) Verify CI and CVI During a Fire Event	
		a. A confirmed fire has occurred in the control complex or cable tunnel (fire systems S05, S06, S08, Z05, Z18, or Z19).	
	HCO/ CO	(Step 11.a RNO) Go to END	
			NOTE: The HCO/CO reports that ATT-27.0 is complete.
E-0, REACTOR TRIP OR SAFETY INJECTION			
			Examiner following operator NOT performing ATT-27.0 continue at HERE .
	HCO/ CO	(Step 7) Verify Both MDAFW Pumps Running	

Op Test No.: N24-1 Scenario # 3 Event # 6-8 Page 50 of 61Event Description: **Turbine Trip/Steam Dump to Condenser fails to function/ Safety Injection fails to Actuate Automatically/ One S/G Safety Valve on each S/G Lifts and sticks partially OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
NOTE: IF MDAFW Pumps crosstie alignment is desired, <u>THEN</u> refer to ATT-5.3, ATTACHMENT MDAFW PUMPS CROSSTIE.			
	CO/ HCO	(Step 8) Verify AFW Valve Alignment:	
		a. AFW flow – INDICATED TO BOTH S/G(s)	
		b. AFW flow from each MDAFW pump – LESS THAN 230 GPM	
	CO/ HCO	(*Step 9) Monitor Heat Sink:	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
		a. Check S/G narrow range level – GREATER THAN 7% [25% adverse CNMT] in any S/G	NOTE: Since both S/Gs are faulted, the CO may use A-503.1 Step 5.3.B.1.d(5) criteria OR HC-4.0 Step 2.a Bullet 1 criteria and limit AFW flow to each S/G to 50 gpm.
	CO/ HCO	(Step 9.a RNO) Perform the following:	
		1) Verify total AFW flow - GREATER THAN 200 GPM	
		<u>IF</u> total AFW is less than 200 gpm, <u>THEN</u> manually start pumps and align valves to establish greater than 200 gpm AFW flow. <u>IF</u> AFW flow greater than 200 gpm can <u>NOT</u> be established, <u>THEN</u> go to FR-H.1, RESPONSE TO LOSS OF SECONDARY HEAT SINK, Step 1.	NOTE: The US will address FR-H.1 and immediately exit based on the Red Path occurring due to operator action.
	US	2) Go to Step 10.	
	CO	(Step 10) Check If TDAFW Pump Can Be Stopped:	NOTE: The TDAFW Pump is OOS.

Op Test No.: N24-1 Scenario # 3 Event # 6-8 Page 51 of 61Event Description: **Turbine Trip/Steam Dump to Condenser fails to function/ Safety Injection fails to Actuate Automatically/ One S/G Safety Valve on each S/G Lifts and sticks partially OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
		a. Both MDAFW pumps – RUNNING	
		b. PULL STOP TDAFW pump steam supply valves	
		• MOV-3504A	
		• MOV-3505A	
CAUTION IF OFFSITE POWER IS LOST AFTER SI RESET, THEN MANUAL ACTION MAY BE REQUIRED TO RESTART SAFEGUARDS EQUIPMENT. (REFER TO ATT-8.5, ATTACHMENT LOSS OF OFFSITE POWER)			
NOTE: IF starting non-safeguards equipment will result in exceeding 278 amps (yellow line) on Buses 14 or 16, THEN DO NOT start non-safeguards equipment.			
	CO/ HCO	(Step 11) Check CCW Flow to RCP Thermal Barriers:	
		○ Annunciator A-7, RCP 1A CCW RETURN HI TEMP <u>OR</u> LO FLOW - EXTINGUISHED	
		○ Annunciator A-15, RCP 1B CCW RETURN HI TEMP <u>OR</u> LOW FLOW - EXTINGUISHED	
	CO/ HCO	(*Step 12) Monitor RCS Tavg – STABLE AT <u>OR</u> TRENDING TO 547°F	NOTE: Because of the failed open SG Safety Valves, the RCS will be cooling down rapidly. NOTE: This is a Continuous Action. The US will make one or more board operators aware.
	CO/ HCO	(Step 12 RNO) IF temperature less than 547°F and lowering, THEN perform the following:	
		a. Stop dumping steam.	
		b. Ensure reheater steam supply valves are closed.	

Op Test No.: N24-1 Scenario # 3 Event # 6-8 Page 52 of 61Event Description: **Turbine Trip/Steam Dump to Condenser fails to function/ Safety Injection fails to Actuate Automatically/ One S/G Safety Valve on each S/G Lifts and sticks partially OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
		c. <u>IF</u> cooldown continues, <u>THEN</u> control total feed flow between 200 gpm to 230 gpm until narrow range level greater than 7% [25% adverse CNMT] in at least one S/G.	
		d. <u>WHEN</u> S/G level greater than 7% [25% adverse CNMT] in one S/G, <u>THEN</u> limit feed flow to that required to maintain level in at least one S/G.	NOTE: Since both S/Gs are faulted, the CO may use A-503.1 Step 5.3.B.1.d(5) criteria OR HC-4.0 Step 2.a Bullet 1 criteria and limit AFW flow to each S/G to 50 gpm.
		e. <u>IF</u> cooldown continues, <u>THEN</u> close both MSIVs.	NOTE: Both MSIVs are Closed.
		<u>IF</u> temperature greater than 547°F and rising, <u>THEN</u> dump steam to stabilize and slowly lower temperature to 547°F.	
	CO/ HCO	(Step 13) Check PRZR PORVs And Spray Valves:	
		a. PORVs – CLOSED	
		b. Auxiliary spray valve (AOV-296) - CLOSED	
		c. Check PRZR pressure - LESS THAN 2260 PSIG	
		d. Normal PRZR spray valves - CLOSED	
		• PCV-431A	
		• PCV-431B	
	CO/ HCO	(Step 14) Monitor RCP Trip Criteria:	
		a. RCP status - ANY RCP RUNNING	NOTE: A SW Isolation has occurred due to D/G A supplying Bus 14 and 18 and an SI signal, RCP B (RCP A OFF [no power]) will be stopped due to rising RCP bearing temps.
		b. SI pumps - AT LEAST TWO RUNNING	

Op Test No.: N24-1 Scenario # 3 Event # 6-8 Page 53 of 61Event Description: **Turbine Trip/Steam Dump to Condenser fails to function/ Safety Injection fails to Actuate Automatically/ One S/G Safety Valve on each S/G Lifts and sticks partially OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
		c. RCS pressure minus maximum S/G pressure - LESS THAN 210 psi [240 psi adverse CNMT]	
	US	(Step 14.c RNO) Go to Step 15.	
	HCO/ CO	(Step 15) Check If S/G Secondary Side Is Intact:	
		o Pressure in both S/Gs – STABLE <u>OR</u> RISING	
		o Pressure in both S/Gs – GREATER THAN 110 PSIG	
	US	(Step 15 RNO) <u>IF</u> any S/G pressure lowering in an uncontrolled manner <u>OR</u> completely depressurized, <u>THEN</u> go to E-2, FAULTED STEAM GENERATOR ISOLATION, Step 1.	
			NOTE: The US will go to E-2.
E-2, FAULTED STEAM GENERATOR ISOLATION			
<u>CAUTION</u> • AT LEAST ONE S/G SHALL BE MAINTAINED AVAILABLE FOR RCS COOLDOWN. • ANY FAULTED S/G <u>OR</u> SECONDARY BREAK SHOULD REMAIN ISOLATED DURING SUBSEQUENT RECOVERY ACTIONS UNLESS NEEDED FOR RCS COOLDOWN.			
<u>NOTE:</u> - o Critical Safety Function Status Trees should be monitored. - o Adverse CNMT values should be used whenever CNMT pressure is greater than 4 psig or CNMT radiation is greater than 10+05 R/hr. - o Foldout page should be open and monitored periodically.			
	HCO/ CO	Foldout Page	NOTE: The crew will monitor these conditions throughout the performance of E-2.
		1. LOSS OF SW CRITERIA	
		2. MULTIPLE FUNCTION LOSS CRITERIA	

Op Test No.: N24-1 Scenario # 3 Event # 6-8 Page 54 of 61Event Description: **Turbine Trip/Steam Dump to Condenser fails to function/ Safety Injection fails to Actuate Automatically/ One S/G Safety Valve on each S/G Lifts and sticks partially OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
	CO	(Step 1) Check MSIV of Faulted S/G(s) - CLOSED	NOTE: Both MSIVs are Closed.
	CO	(Step 2) Check If Any S/G Secondary Side Is Intact:	
		o Check pressure in S/G A- STABLE <u>OR</u> RISING	NOTE: Both SG Pressures are lowering uncontrollably.
		OR	
		o Check pressure in S/G B – STABLE <u>OR</u> RISING	
	US	(Step 2 RNO) <u>IF</u> both S/G pressures lowering in an uncontrolled manner, <u>THEN</u> go to ECA-2.1, UNCONTROLLED DEPRESSURIZATION OF BOTH STEAM GENERATORS, Step 1	
			NOTE: The US will go to ECA-2.1.
ECA-2.1, UNCONTROLLED DEPRESSURIZATION OF BOTH STEAM GENERATORS			
CAUTION <u>IF</u> THE TDAFW PUMP IS THE ONLY AVAILABLE SOURCE OF FEED FLOW, <u>THEN</u> STEAM SUPPLY TO THE TDAFW PUMP MUST BE MAINTAINED FROM ONE S/G.			
NOTE: - o FOLDOUT page should be open <u>AND</u> monitored periodically. - o Conditions should be evaluated for Site Contingency Reporting (Refer to EP-AA-1012 ADDENDUM 3, R.E. GINNA NUCLEAR POWER PLANT EMERGENCY ACTION LEVELS). - o Adverse CNMT values should be used whenever CNMT pressure is greater than 4 psig or CNMT radiation is greater than 10+05 R/hr.			
	HCO/CO	Foldout Page	NOTE: The crew will monitor these conditions throughout the performance of ECA-2.1.
		1. LOSS OF SW CRITERIA	

Op Test No.: N24-1 Scenario # 3 Event # 6-8 Page 55 of 61Event Description: **Turbine Trip/Steam Dump to Condenser fails to function/ Safety Injection fails to Actuate Automatically/ One S/G Safety Valve on each S/G Lifts and sticks partially OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
		2. SI REINITIATION CRITERIA	
		3. E-2 TRANSITION CRITERIA	
		4. COLD LEG RECIRCULATION SWITCHOVER CRITERION	
		5. AFW SUPPLY SWITCHOVER CRITERION	
		6. E-3 TRANSITION CRITERIA	
	CO	(Step 1) Check Secondary Pressure Boundary:	
		a. Verify all of the following:	
		o MSIVs - CLOSED	NOTE: Both MSIVs are Closed.
		o MFW flow control valves - CLOSED	
		• MFW regulating valves	
		• MFW bypass valves	
		o MFW pump discharge valves - CLOSED	NOTE: MFW Pump A Discharge valve has no power. The US/CO may dispatch an EO to locally isolate MFW Pump A. If So, SIM DRIVER use FDW 048=disengaged, FDW049=0. Then report completed actions.
		o S/G blowdown and sample valves - CLOSED	
		o TDAFW pump steam supply valves – PULL STOP	
		o TDAFW pump flow control valves - CLOSED	
		o S/G ARVs - CLOSED	
		b. Dispatch EO to locally isolate S/Gs (Refer to ATT-10.0, ATTACHMENT FAULTED S/G)	NOTE: The US will dispatch an EO. SIM DRIVER: as EO, acknowledge, and perform Schedule ATT-10 for BOTH SGs.

Op Test No.: N24-1 Scenario # 3 Event # 6-8 Page 56 of 61Event Description: **Turbine Trip/Steam Dump to Condenser fails to function/ Safety Injection fails to Actuate Automatically/ One S/G Safety Valve on each S/G Lifts and sticks partially OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
CAUTION A MINIMUM FEED FLOW OF 50 GPM MUST BE MAINTAINED TO EACH S/G WITH A NARROW RANGE LEVEL LESS THAN 7% [25% ADVERSE CNMT].			
NOTE: Shutdown margin should be monitored during RCS cooldown (Refer to FIG-2.0, FIGURE SDM).			
	CO	(Step 2) Control Feed Flow to Minimize RCS Cooldown:	
		a. Check cooldown rate in RCS cold legs – LESS THAN 100°F/HR	NOTE: The cooldown rate is likely to be higher than 100°F/HR.
	CO	(Step 2a RNO) Lower feed flow to 50 gpm to each S/G and go to Step 2c.	NOTE: The CO will lower the AFW flow rate to each SG to 50 gpm in an effort to control the cooldown rate.
			NOTE: A Red Path will likely occur on the Heat Sink Critical Safety Function Status Tree, and the US will address this procedure. The procedure will NOT be implemented however, since operator action has caused the Red Path.
<u>Critical Task #2:</u> Control the AFW flowrate to 50 gpm per SG in order to minimize the RCS Cooldown rate before a severe challenge (Orange Path) develops to the RCS Integrity Critical Safety Function. <u>Expected Actions:</u> Position of MOV-4007 and MOV-4008 is adjusted to establish 50 gpm AFW flow to each S/G before a severe challenge (Orange Path) develops to the RCS Integrity Critical Safety Function.			
	HCO	(Step 2c) Check RCS hot leg temperatures – STABLE <u>OR</u> LOWERING.	

Op Test No.: N24-1 Scenario # 3 Event # 6-8 Page 57 of 61

Event Description: **Turbine Trip/Steam Dump to Condenser fails to function/ Safety Injection fails to Actuate Automatically/ One S/G Safety Valve on each S/G Lifts and sticks partially OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO/ CO	(*Step 3) Monitor RCP Trip Criteria:	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
		a. RCP status – ANY RCP RUNNING	NOTE: A SW Isolation has occurred due to D/G A supplying Bus 14 and 18 and an SI signal, RCP B (RCP A OFF [no power]) will be stopped due to rising RCP bearing temps.
		b. SI pumps – AT LEAST TWO RUNNING	
		c. RCS pressure minus maximum S/G pressure – LESS THAN 210 psi [240 psi adverse CNMT]	
	US	(Step 3.c RNO) Go to Step 4	
CAUTION IF ANY PRZR PORV OPENS BECAUSE OF HIGH PRZR PRESSURE, IT SHOULD BE CLOSED AFTER PRESSURE LOWERS TO LESS THAN 2335 psig (REFER TO STEP 4b).			
	HCO	(*Step 4) Monitor PRZR PORVs And Block Valves:	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
		a. Power to PORV block valves - AVAILABLE	
		b. PORVs - CLOSED	
		c. Block valves – AT LEAST ONE OPEN	
	HCO/ CO	(Step 5) Check Secondary Radiation Levels - NORMAL	
		o Steamline radiation monitor (R-31 and R-32)	

Op Test No.: N24-1 Scenario # 3 Event # 6-8 Page 58 of 61

Event Description: **Turbine Trip/Steam Dump to Condenser fails to function/ Safety Injection fails to Actuate Automatically/ One S/G Safety Valve on each S/G Lifts and sticks partially OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
		Dispatch EO to locally check steamline radiation	NOTE: The US will dispatch an EO. SIM DRIVER: as EO, acknowledge.
		Request Chem Tech sample S/Gs for activity.	NOTE: The US may call WCC/Chemistry to address the samples. If so, SIM DRIVER acknowledge as WCC/Chemistry.
CAUTION <u>IF</u> OFFSITE POWER IS LOST AFTER SI RESET, <u>THEN</u> MANUAL ACTION MAY BE REQUIRED TO RESTART SAFEGUARDS EQUIPMENT. (REFER TO ATT-8.5, ATTACHMENT LOSS OF OFFSITE POWER)			
	HCO	(Step 6) Reset SI	
CAUTION RCS PRESSURE SHOULD BE MONITORED. <u>IF</u> RCS PRESSURE LOWERS IN AN UNCONTROLLED MANNER TO LESS THAN 300 PSIG [350 PSIG ADVERSE CNMT], <u>THEN</u> THE RHR PUMPS MUST BE MANUALLY RESTARTED TO SUPPLY WATER TO THE RCS.			
	HCO	(*Step 7) Monitor If RHR Pumps Should Be Stopped:	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
		a. RHR pumps –ANY RUNNING IN INJECTION MODE	
		b. Check RCS Pressure:	
		1) Pressure – GREATER THAN 300 psig [350 psig adverse CNMT]	
		2) Pressure – STABLE <u>OR</u> RISING	
		c. Stop RHR pumps and place in AUTO	NOTE: The HCO will STOP the RHR Pumps.

Op Test No.: N24-1 Scenario # 3 Event # 6-8 Page 59 of 61

Event Description: **Turbine Trip/Steam Dump to Condenser fails to function/ Safety Injection fails to Actuate Automatically/ One S/G Safety Valve on each S/G Lifts and sticks partially OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
		d. Dispatch EO to perform ATT-14.6, ATTACHMENT RHR PRESS REDUCTION, Part A.	NOTE: The US will dispatch an EO. SIM DRIVER: as EO, acknowledge.
At the discretion of the Lead Examiner terminate the exam.			

TURNOVER SHEET for NRC Exam Scenario #3

SHIFT TURNOVER CHECKLIST

Page 1 of 1

Off-Going Shift: Nights

Off-Going SM: S. Manager

INPO 19-003 Staying on Top Advancing a Culture of Continuous Improvement: Excellence Standards

[illegible]

TURNOVER SHEET for NRC Exam Scenario #3

ACTIONS/NOTES:

- The plant is at 75% power (BOL).
- Plant power was reduced 3 days ago to 70% to take CBP A off-line for corrective maintenance. Power was subsequently raised to the current power level and the plant has been on a Chemistry hold for 48 hours and is now complete.
- It is expected to raise power to 100% throughout the shift.
- Engineering is monitoring elevated vibrations on Circulating Water Pump B.
- The TD AFW Pump (TS 3.7.5 Condition C Action C.1) is OOS for oil cooler replacement.
- The following MCB annunciators are illuminated:
 - H-15, STEAM VALVE AFW TURBINE PULL STOP (TDAFW Pump OOS)
 - H-20, TURBINE DRVN FEED PUMP LO OIL PRESS 4.8 PSI (TDAFW Pump OOS)
 - J-17, NON-SAFEGUARD EQUIPMENT LOCKED OFF (TDAFW Pump OOS)

PROGRAM: Ginna Operations Training

MODULE: Initial License Operator Training Class 23-1

TOPIC: NRC Simulator Exam

Scenario N24-1-4

REFERENCES:

1. A-503.1, EMERGENCY AND ABNORMAL OPERATING PROCEDURES USERS GUIDE, Rev 062
2. AR-F-10, PRESSURIZER LO PRESS 2205 PSI, Rev 10
3. AP-PRZR.1, ABNORMAL PRESSURIZER PRESSURE, Rev 019
4. Technical Specification LCO 3.4.1, RCS PRESSURE, TEMPERATURE, AND FLOW DEPARTURE FROM NUCLEATE BOILING LIMITS (DNB), Amendment 122
5. AR-L-7, BUS 16 UNDER VOLTAGE SAFEGUARDS, Rev 01101
6. AP-ELEC.14/16, LOSS OF SAFEGUARDS BUS 14/16, Rev 013
7. AR-L-5, SAFEGUARD BUS MAIN BREAKER OVERCURRENT TRIP, Rev 013
8. ER-ELEC.1, RESTORATION OF OFFSITE POWER, Rev 020
9. ATT-8.1, ATTACHMENT D/G STOP, Rev 6
10. Technical Specification LCO 3.8.1, AC SOURCES - MODES 1, 2, 3, AND 4, Amendment 150
11. Technical Specification LCO 3.8.9, DISTRIBUTION SYSTEMS - MODES 1, 2, 3, AND 4, Amendment 150
12. Technical Requirement 3.8.1, OFFSITE POWER SOURCES, Rev 70*
13. AR-PPCS-R47AR, SGTL INDICATED, Rev 001
14. AP-SG.1, STEAM GENERATOR TUBE LEAK, Rev 023
15. ATT-16.1, ATTACHMENT SGTL, Rev 012
16. HC-2.0, RCS LEAKRATE DETERMINATION, Rev 001
17. S-3.1, BORON CONCENTRATION CONTROL, Rev 037
18. ATT-23.0, ATTACHMENT TRANSFER 4160V LOADS, Rev 0
19. Technical Specification LCO 3.4.13, RCS OPERATIONAL LEAKAGE, Amendment 122/146
20. Technical Specification LCO 3.4.17, STEAM GENERATOR (SG) TUBE INTEGRITY, Amendment 155
21. E-0, REACTOR TRIP OR SAFETY INJECTION, Rev 050
22. HC-4.0, AFW CONTROL GUIDANCE, Rev 000
23. ATT-27.0, ATTACHMENT AUTOMATIC ACTION VERIFICATION, Rev 00400
24. E-2, FAULTED STEAM GENERATOR ISOLATION, Rev 014
25. E-3, STEAM GENERATOR TUBE RUPTURE, Rev 053
26. ECA-3.1, SGTR WITH LOSS OF REACTOR COOLANT-SUBCOOLED RECOVERY DESIRED, Rev 036

Validation Time: 97 minutes

Author: David Lazarony, Essential Training & Consulting, LLC

Facility Review: Don Dean, Exam Author

Rev. 042524

Ginna 2024 NRC Scenario #4 Objectives:

Given the simulator at an initial condition of 48% power evaluate:

1. the US's ability to supervise the control room team during the normal, abnormal, and emergency situations that arise, including compliance with all facility procedures, Technical Specifications, and other commitments.
2. each crew member's ability to effectively communicate as part of a control room team during the normal, abnormal, and emergency situations that arise.
3. the HCO's ability to effectively diagnose and to mitigate the consequences of a Pressurizer Spray valve PCV-431B Controller output failing to 100% in accordance with the Annunciator Procedures, AP-PRZR.1, ABNORMAL PRESSURIZER PRESSURE and A-503.1, EMERGENCY AND ABNORMAL OPERATING PROCEDURES USERS GUIDE.
4. each crew member's ability to effectively diagnose and mitigate the consequences of an overcurrent condition on Bus 16 in accordance with Annunciator Procedures, AP-ELEC.14/16, LOSS OF SAFEGUARDS BUS 14/16, and ER-ELEC.1, RESTORATION OF OFFSITE POWER.
5. each crew member's ability to effectively diagnose and mitigate the consequences of a Steam Generator Tube Leak in accordance with Annunciator Procedures and AP-SG.1, STEAM GENERATOR TUBE LEAK.
6. each crew member's ability to conduct a rapid downpower in accordance with AP-SG.1, STEAM GENERATOR TUBE LEAK, including with Turbine Control in MANUAL whenever plant conditions dictate the need to do so in accordance with A-503.1, EMERGENCY AND ABNORMAL OPERATING PROCEDURES USERS GUIDE.
7. each crew member's ability to effectively diagnose a Steam Generator Tube Rupture and the HCO and CO's ability to respond to such an event in accordance with E-0, REACTOR TRIP OR SAFETY INJECTION and E-3, STEAM GENERATOR TUBE RUPTURE.
8. each crew member's ability to effectively diagnose a failure of the Main Turbine to trip on Reactor trip and the CO's ability to respond to such an event in accordance with E-0, REACTOR TRIP OR SAFETY INJECTION
9. each crew member's ability to effectively diagnose a Ruptured Faulted Steam Generator and the HCO and CO's ability to respond to such an event in accordance with E-2, FAULTED STEAM GENERATOR ISOLATION, E-3, STEAM GENERATOR TUBE RUPTURE and ECA-3.1, SGTR WITH LOSS OF REACTOR COOLANT-SUBCOOLED RECOVERY DESIRED.

Scenario Event Description
NRC Scenario 4

Facility:	Ginna	Scenario No.:	4	Op Test No.:	N24-1
Scenario Source: Modified from N22-1-3					
Examiners:		Operators:		(SRO)	
				(RO)	
				(BOP)	
Initial Conditions:		The plant is at 48% power (BOL). It is expected to maintain power stable at the current power level throughout the shift. Engineering is monitoring elevated vibrations on Circulating Water Pump B.			
Turnover:		The following equipment is Out-Of-Service: The A MFWP is OOS for thrust bearing replacement. Condensate Booster Pump A is OOS for impeller replacement.			
Critical Tasks:		CT-1: Manually trip the Main Turbine before a severe (ORANGE path) challenge develops to the RCS integrity Critical Safety Function. CT-2: Isolate Faulted-Ruptured Steam Generator B before a severe (ORANGE path) challenge develops to the RCS integrity Critical Safety Function AND direct performance of ATT-16.0 (Attachment Ruptured S/G) before transitioning out of E-3.			
Event No.	Malf. No.	Event Type*	Event Description		
1	MAL PZR01C	C(MC)-RO C-SRO	PRZR Spray Valve PCV-431B Controller fails to valve FULL OPEN in AUTO		
2	MAL EDS04B	C-RO C-BOP C(TS)-SRO	Spurious overcurrent condition on Bus 16/Recovery		
3	MAL SGN06B	R-RO C-BOP C(TS)-SRO	SG Tube Leak occurs in B S/G/Downpower		
4	MAL TUR09D OVR TUR05O/P	C(MC)-BOP C-SRO	Failure of Turbine Control/EHC		
5	MAL SGN06B	M-ALL	Steam Generator Tube Rupture in S/G B (CT-2)		
6	MAL TUR02 STM05A	C(MC)-BOP C-SRO	Main Turbine fails to Trip on Reactor Trip/A MSIV fails to CLOSE (CT-1)		
7	MAL STM09A	C-BOP C-SRO	Safety Valve on B SG Lifts and sticks partially OPEN (CT-2)		
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor, (TS) Tech Spec, (MC) Manual Control					

Scenario Event Description
NRC Scenario 4

Ginna 2024 NRC Scenario #4

The plant is at 48% power (BOL). It is expected to maintain power stable at the current power level throughout the shift. Engineering is monitoring elevated vibrations on Circulating Water Pump B.

The following equipment is Out-Of-Service: The A MFWP is OOS for thrust bearing replacement. Condensate Booster Pump A is OOS for impeller replacement.

Shortly after taking the watch Pressurizer Spray valve PCV-431B Controller will fail such that the output in AUTO goes to 100%, causing PCV-431B to OPEN, and PRZR pressure to LOWER. The operator will respond by placing controller in MANUAL to stabilize and restore PRZR pressure to the normal band using the guidance of A-503.1, EMERGENCY AND ABNORMAL OPERATING PROCEDURES USERS GUIDE, AR-F-10, PRESSURIZER LO PRESS 2205 PSI, and AP-PRZR.1, ABNORMAL PRESSURIZER PRESSURE. The controller will remain in MANUAL throughout the remainder of the scenario.

Next, the Normal Feeder Breaker to Safeguards Bus 16 will trip on overcurrent causing the B D/G to start but NOT repower the bus. The operator will respond in accordance with AR-L-7, BUS 16 UNDER VOLTAGE SAFEGUARDS, and enter AP-ELEC.14/16, LOSS OF SAFEGUARDS BUS 14/16. The operator will stabilize the plant by taking manual control of control rods and charging flow, starting Charging and CCW Pumps, and various ventilation systems. During the recovery, the WCC Supervisor will call and indicate that the Electricians believe that the loss of power to the Bus was due to a spurious overcurrent signal, and direct that the overcurrent condition be reset (Time Compression). The operator will reset the overcurrent condition on Bus 16 using AR-L-5, SAFEGUARD BUS MAIN BREAKER OVERCURRENT TRIP, and ER-ELEC.1, RESTORATION OF OFFSITE POWER. The operator will also stop the B D/G using ATT-8.1, ATTACHMENT DG STOP. The operator will address Technical Specification LCO 3.8.1, AC SOURCES – MODES 1, 2, 3 AND 4, LCO 3.8.9, DISTRIBUTION SYSTEMS – MODES 1, 2, 3 AND 4, AND TR-3.8.1, OFFSITE POWER SOURCES.

Subsequently, a 5 gpm Steam Generator Tube Leak (SGTL) will develop on the B Steam Generator. The operator will respond in accordance with AR-PPCS-R47AR, SGTL INDICATED, and enter AP-SG.1, STEAM GENERATOR TUBE LEAK. The operator will determine the leakrate using the PPCS and/or HC-2.0, RCS LEAKRATE DETERMINATION, and will commence a load reduction at 3%/minute using AP-SG.1 and S-3.1, BORON CONCENTRATION CONTROL. Additionally, the operator will perform ATT-23.0, ATTACHMENT TRANSFER 4160V LOADS, in preparation for plant shutdown and ATT-16.1, ATTACHMENT SGTL. The operator will address Technical Specification LCO 3.4.13, RCS OPERATIONAL LEAKAGE, and LCO 3.4.17, STEAM GENERATOR (SG) TUBE INTEGRITY.

During the load reduction, the Main Turbine will fail in automatic control. The operator will diagnose the failure and use manual control of the turbine to conduct the downpower using the guidance of AP-SG.1, STEAM GENERATOR TUBE LEAK, and A-503.1, EMERGENCY AND ABNORMAL OPERATING PROCEDURES USERS GUIDE.

Following this, a 250 gpm Steam Generator Tube Rupture will occur in S/G B. The crew will manually trip the reactor however, the Main Turbine will not trip. Simultaneously the A MSIV will fail to close either manually or automatically. The operator will be required to manually trip the Main Turbine. On the Turbine trip, one Steam Generator Safety Valve on S/G B will lift and stick partially open. The crew will implement E-0, REACTOR TRIP OR SAFETY INJECTION, and then transition to E-2, FAULTED STEAM GENERATOR ISOLATION, to isolate S/G B.

Scenario Event Description
NRC Scenario 4

Following completion of E-2, the crew will transition to E-3, STEAM GENERATOR TUBE RUPTURE, to address the ruptured Steam Generator tube and then transition to ECA-3.1, SGTR WITH LOSS OF REACTOR COOLANT - SUBCOOLED RECOVERY DESIRED, due to the Rupture-Faulted condition in the B Steam Generator.

The scenario will terminate at Step 15.a of ECA-3.1 after the crew has determined RCS Cooldown rate OR if an Orange Path occurs on the RCS Integrity Critical Safety Function.

Critical Tasks:

CT-1: Manually trip the Main Turbine before a severe (ORANGE path) challenge develops to the RCS integrity Critical Safety Function.

Initiating Cue: MRPI indicates that the Control Rods are on the bottom of the core, Reactor trip Breaker Green status lights are LIT, Red status lights are OFF, NIS Instruments indicate that reactor power is lowering through the intermediate range, AND the Turbine Stop Valves, Intercept and Control Valves indicate OPEN (Step 2 of E-0).

Performance Feedback: Turbine Stop Valves indicate closed.

Success Path: The Turbine stops valves are closed before an ORANGE path develops on RCS Integrity Critical Safety Function.

Measurable Performance Standard: Expected Actions: The operator depresses the manual Turbine Trip Pushbutton before an ORANGE path develops on RCS Integrity Critical Safety Function.

Safety Significance: Failure to trip the main turbine under the postulated plant conditions causes a challenge to the RCS Integrity Critical Safety Function beyond those irreparably introduced by the postulated conditions. Additionally, such an omission constitutes a failure by the crew to “demonstrate the ability to take one or more actions that would prevent a challenge to plant safety.” The situation described in the plant conditions is effectively a large steamline break downstream of the A MSIV that cannot be closed in this case. This “effective steamline break” is also located downstream of the main turbine stop valves, which can be closed by manually tripping the turbine. Failure to perform the critical task results in uncontrolled depressurization of Steam Generator A and an uncontrolled cooldown of the RCS, both of which are unnecessary.

CT-2: Isolate Faulted-Ruptured Steam Generator B before a severe (ORANGE path) challenge develops to the RCS integrity Critical Safety Function AND direct performance of ATT-16.0 (Attachment Ruptured S/G) before transitioning out of E-3.

Initiating Cue: Indication of high radiation and rising narrow range level in S/G ‘B’ prior to the reactor trip, coupled with a lowering PRZR pressure and level **AND** steam noise is heard in the Control Room, Steam pressure in S/G ‘B’ lowers, AFW flow continues to be delivered to S/G ‘B’, coupled with a lowering PRZR pressure and level.

Performance Feedback: Indication that AFW flow to and steam flow (with the exception of the stuck open safety valve) from S/G ‘B’ has stopped, required valves indicate CLOSED, required control switches are in the

Scenario Event Description
NRC Scenario 4

procedurally required positions as indicated by switch status lights and field directions have been acknowledged for Faulted Steam Generator Isolation **AND** Indication that field directions have been acknowledged for Ruptured Steam Generator Isolation

Success Path:

Stop AFW flow to S/G 'B' by closing MOV-4008 (B S/G MDAFW pump discharge valve) per Step 4.a of E-2, Step 6.b of E-3 or Step 8.b of ECA-3.1 **OR** placing the control switch for B MDAFW Pump to PULL STOP per Step 4.b of E-2, Step 6.c of E-3 or Step 8.c of ECA-3.1, **AND** closing AOV-4298 (B S/G TDAFW flow control valve) per Step 4.a of E-2, Step 6.d of E-3 or Step 8.d of ECA-3.1; **AND** stop steam flow from S/G 'B' to the TDAFW Pump by placing the MOV-3504A control switch to PULL STOP per Step 10.b of E-0, Step 5 of E-2, or Step 4.a of E-3; **AND** dispatch an EO to perform ATT-10.0 (Attachment Faulted S/G) per Step 2 of E-2; **AND** Dispatch an EO to perform ATT-16.0 (Attachment Ruptured S/G) per Step 5.b of E-3.

Measurable Performance Standard:

Expected Actions: (1a) Stop AFW flow to S/G 'B' by closing MOV-4008 (B S/G MDAFW pump discharge valve) **OR** (1b) placing the control switch for B MDAFW Pump to PULL STOP, **AND** (2) closing AOV-4298 (B S/G TDAFW flow control valve); **AND** stop steam flow from S/G 'B' to the TDAFW Pump by placing the MOV-3504A control switch to PULL STOP **AND** dispatch an EO to perform ATT-10.0 (Attachment Faulted S/G) before a severe (ORANGE path) challenge develops to the RCS integrity Critical Safety Function, Dispatch an EO to perform ATT-16.0 (Attachment Ruptured S/G) before transitioning out of E-3.

Safety Significance: Failure to isolate a Faulted S/G causes challenges to the Critical Safety Functions that would occur later in the event if required action was taken to isolate feed flow into and steam flow out of the faulted S/G. Failure to isolate flow into and out of the S/G could result in an unwarranted Orange or Red Path condition on RCS Integrity, Subcriticality (if cooldown is allowed to continue uncontrollably) earlier than expected for the plant conditions. Failure to isolate the Faulted S/G under the postulated plant conditions constitutes a failure by the crew to "demonstrate the ability to take one or more actions that would prevent a challenge to plant safety." Failure to isolate a Ruptured S/G will result in further spread of radioactivity and/or increased release to the environment, more than that which would have been had the isolation been completed. Failure to isolate the Ruptured S/G under the postulated plant conditions constitutes a failure by the crew to "demonstrate the ability to take one or more actions that would prevent a challenge to plant safety" and potentially result in a higher emergency classification than otherwise required.

"Per NUREG-1021, ES-3.3, if an applicant's actions or inactions create a challenge to plant safety, those actions or inactions may form the basis for a Critical Task identified in the post scenario review."

Scenario Event Description
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SIMULATOR OPERATOR INSTRUCTIONS

	Bench Mark	ACTIVITY	DESCRIPTION
☐		Reset to Temp IC 158 IC-015	T = 0: Dump all CNMT Recirc Fan Coolers so that MCB Annunciator E-31 doesn't alarm. Insert MALF FDW02A, MFWP A OOS Insert OVR-CND04A=OFF, CBP A OOS Hang INFO Tags as necessary. Set T-30 = x05I098D==1 (Manual Turbine Trip Pushbutton) Insert MALF STM09A, 15%, 0 ramp, on T-30 (Safety valve 3509 on B SG opens on Turbine Trip) Insert MALF TUR02 (Failure of Auto Turbine Trip) Insert STM05A=100 (A MSIV Fails OPEN) Insert MALF PZR01C (100, 20 second Ramp), on T-1 Insert MALF EDS04B, on T-2 Insert MALF SGN06B, 5, 60 second Ramp, on T-3 Insert MALF TUR09D on T-4 OVR-TUR05O=OFF on T-4 OVR-TUR05P=OFF on T-4 Insert MALF SGN06B (250, 30 Second Ramp) on T-5
☐	Prior to Crew Briefing		Hang Protected Equipment Tags per OPG-Protected Equipment (MFWP A Pump P18 of 29 of Attachment 2). Place Black Dot on H-4
☐	Crew Briefing - Assign Crew Positions based on evaluation requirements. - Review the Shift Turnover Information with the crew. - Handout Reactivity Binder (BOL).		
☐	T-0	Begin Familiarization Period	

Scenario Event Description
NRC Scenario 4

	Bench Mark	ACTIVITY	DESCRIPTION
☐	Immediately AFTER crew takes shift	Event 1 Trigger#1 PZR01C (100, 20 second Ramp)	PRZR Spray Valve PCV-431B Controller fails to valve FULL OPEN in AUTO
☐	At direction of examiner	Event 2 Trigger #2 EDS04B	Spurious overcurrent condition on Bus 16/Recovery NOTE: EDS04B will need to be cleared after the event has occurred.
☐	At direction of examiner	Event 3 Trigger#3 SGN06B (5 gpm, 60 second ramp)	SG Tube Leak occurs in B S/G/Downpower
☐	At direction of examiner (After CO performs ATT- 23.0 but before ATT- 16.1)	Event 4 Trigger #4 TUR09D OVR-TUR05O=OFF OVR-TUR05P=OFF	Failure of Turbine Control/EHC
☐	At direction of examiner	Event Trigger #5 SGN06B (250, 30 Second Ramp)	Steam Generator Tube Rupture in S/G B
☐	Post-Reactor Trip	Event 6 MALF TUR02 (Failure of Auto Turbine Trip) STM05A=100 (A MSIV Fails OPEN)	Main Turbine fails to Trip on Reactor Trip/A MSIV fails to CLOSE NOTE: These malfunctions are inserted at Time = 0.
☐	Turbine Trip PB is pushed	Event 7 MALF STM09A, 15%, 0 ramp (Safety valve 3509 on B SG opens on Turbine Trip)	Safety Valve on B SG Lifts and sticks partially OPEN NOTE: This malfunction is inserted on Manual Turbine Trip.
☐	Terminate the scenario upon direction of Lead Examiner		

Op Test No.: N24-1 Scenario # 4 Event # 1 Page 9 of 83Event Description: **PRZR Spray Valve PCV-431B Controller fails to valve FULL OPEN in AUTO**

Shortly after taking the watch Pressurizer Spray valve PCV-431B Controller will fail such that the output in AUTO goes to 100%, causing PCV-431B to OPEN, and PRZR pressure to LOWER. The operator will respond by placing controller in MANUAL to stabilize and restore PRZR pressure to the normal band using the guidance of A-503.1, EMERGENCY AND ABNORMAL OPERATING PROCEDURES USERS GUIDE, AR-F-10, PRESSURIZER LO PRESS 2205 PSI, and AP-PRZR.1, ABNORMAL PRESSURIZER PRESSURE. The controller will remain in MANUAL throughout the remainder of the scenario.

SIM DRIVER Instructions: **Operate Trigger #1 (PZR01C (100, 20 second Ramp))**

Symptoms/Cues:

- Annunciator F-10, PRESSURIZER LO PRESS 2205 PSI
- AOV-431B goes to full OPEN
- PCV-431B Controller at 100%
- 431K Output moves to 0%
- All four PRZR Pressure channels are lowering

Time	Pos.	Expected Actions/Behavior	Comments
			NOTE: The crew may enter AP-PRZR.1 directly.
AR-F-10, PRESSURIZER LO PRESS 2205 PSI			
	HCO	(Step 1) Perform a channel check.	NOTE: The crew may take early action per the guidance of A-503.1 (Step 5.3.A.5) and/or go to AP-PRZR.1.
	HCO	(Step 2) Go to the applicable procedure:	
	US	○ AP-PRZR.1, if pressure is abnormal for plant condition	NOTE: The US will go to AP-PRZR.1.
	US	(Step 3) Refer to ITS LCO 3.4.1.	
A-503.1, EMERGENCY AND ABNORMAL OPERATING PROCEDURES USERS GUIDE			

Op Test No.: N24-1 Scenario # 4 Event # 1 Page 10 of 83Event Description: **PRZR Spray Valve PCV-431B Controller fails to valve FULL OPEN in AUTO**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 5.3.A.5) Actions are permitted to mitigate or compensate for equipment or controller failures or to isolate leaks. Permitted actions include those actions necessary to take manual control and stabilize the affected parameters, or to isolate a leak. Examples include closing or isolating a failed open PORV, taking manual control of a failed FRV controller, etc. These deviations fall under the Maintenance Rule. Therefore, 50.59 is not required.	NOTE: It is expected that the HCO will take manual control of PCV-431B Controller.
AP-PRZR.1, ABNORMAL PRESSURIZER PRESSURE			
<u>NOTE:</u> ○ Actual PRZR pressure should be verified by more than 1 indicator. ○ Refer to ITS section 3.4.1.			
	HCO	(Step 1) Check PRZR Pressure:	
		○ All 4 narrow range channels – APPROXIMATELY EQUAL	
		○ All 4 narrow range channels – TRENDING TOGETHER	
	HCO	(Step 2) Check Reactor Power - STABLE	
	HCO	(Step 3) Check PRZR Pressure:	
		a. Pressure – LESS THAN 2235 PSIG	
		b. Pressure – GREATER THAN 2000 PSIG	
	HCO	(Step 4) Check PRZR Heater Status:	
		a. PRZR proportional heater breaker – CLOSED	
		b. PRZR heater backup group – ON	

Op Test No.: N24-1 Scenario # 4 Event # 1 Page 11 of 83Event Description: **PRZR Spray Valve PCV-431B Controller fails to valve FULL OPEN in AUTO**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 4.b RNO) <u>IF</u> PRZR pressure less than 2220 psig, <u>THEN</u> energize PRZR backup heaters.	NOTE: It is expected that the Backup Heaters will energize in AUTO.
	HCO	(Step 5) Verify Normal PRZR Spray Valves – CLOSED	
		• AOV-431A	
		• AOV-431B	NOTE: AOV-431B is FULL OPEN.
	HCO	(Step 5 RNO) Place controllers in MANUAL at 0% demand. <u>IF</u> valves can <u>NOT</u> be closed, <u>THEN</u> perform the following:	NOTE: The HCO will place AOV-431B in MANUAL and close the valve.
NOTE: With PRZR pressure controller 431K in manual, PORV-431C will not operate in the automatic mode (refer to TR 3.4.3).			
	HCO	(Step 6) Check PRZR Pressure Controller, 431K, Demand – LESS THAN 50%	
	HCO	(Step 7) Check PRZR PORVs:	
		a. PORVs – CLOSED	
		b. Verify PORVs – NO LEAKAGE INDICATED	
		○ Annunciator F-19, PRZR PORV OUTLET HI TEMP 145°F - EXTINGUISHED	
		○ PRT level (L0442) - STABLE	
	US	c. Go to Step 9.	
	HCO	(Step 9) Check PRZR Safety Valves:	
		○ Position indicator – LESS THAN 0.1 INCH	

Op Test No.: N24-1 Scenario # 4 Event # 1 Page 12 of 83Event Description: **PRZR Spray Valve PCV-431B Controller fails to valve FULL OPEN in AUTO**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	Annunciator F-18, PRZR SAFETY VLV OUTLET HI TEMP 145°F - EXTINGUISHED	
		Annunciator AA-13, PRESSURIZER SAFETY VALVE POSITION - EXTINGUISHED	
	HCO	(Step 10) Check AUX Spray Valve, AOV-296 - CLOSED	
	HCO	(Step 11) Check PRZR Pressure Control Restored	
		a. Pressure – TRENDING TO 2235 PSIG	
	US	b. Go to Step 16.	
	HCO	(Step 16) Check PRT Indications:	
		a. Level – BETWEEN 61% AND 86%	
		b. Pressure – APPROXIMATELY 1.5 PSIG <u>AND STABLE</u>	
		c. Temperature – AT CNMT AMBIENT TEMPERATURE <u>AND STABLE</u>	
	HCO	(Step 17) Establish PRZR Pressure Control In Auto:	
		a. Verify 431K in AUTO	
		b. Verify PRZR spray valves in AUTO.	
	HCO	(Step 17.b RNO) Place PRZR spray valve in AUTO, if desired.	NOTE: The HCO will leave AOV-431B in MANUAL until repair has been made.
	HCO	c. Verify PRZR heaters restored:	
		PRZR proportional heaters breaker – CLOSED	

Op Test No.: N24-1 Scenario # 4 Event # 1 Page 13 of 83Event Description: **PRZR Spray Valve PCV-431B Controller fails to valve FULL OPEN in AUTO**

Time	Pos.	Expected Actions/Behavior	Comments
		○ PRZR backup heaters breaker – RESET, IN AUTO.	
	HCO/ CO	(Step 18) Evaluate MCB Annunciator Status (Refer to AR Procedures)	
NOTE: Refer to LS-AA-1020, REPORTABILITY TABLES <u>AND</u> DECISION TREES, for reporting requirements.			
	US	(Step 19) Notify Higher Supervision	NOTE: The US may call WCC/Maintenance to address the failed controller. If so, SIM DRIVER acknowledge as WCC.
	US	(Step 20) Notify Reactor Engineer for Transient Monitoring Program	NOTE: The US may call RE. If so, SIM DRIVER acknowledge as RE.
			NOTE: The US will check that PRZR pressure remained greater than 2175 psig during this event. If NOT, TS LCO will be addressed.
TECHNICAL SPECIFICATION 3.4.1, RCS PRESSURE, TEMPERATURE, AND FLOW DEPARTURE FROM NUCLEATE BOILING (DNB) LIMITS			
	US	(LCO 3.4.1) RCS DNB parameters for pressurizer pressure, RCS average temperature, and RCS total flow rate shall be within the limits specified in the COLR.	NOTE: According to Section 2.10.1 of the COLR, the PRZR Pressure shall be ≥ 2175 psig.
		APPLICABILITY MODE 1.	
		ACTION	
CONDITION		REQUIRED ACTION	COMPLETION TIME

Op Test No.: N24-1 Scenario # 4 Event # 1 Page 14 of 83
Event Description: **PRZR Spray Valve PCV-431B Controller fails to valve FULL OPEN in AUTO**

Time	Pos.	Expected Actions/Behavior		Comments
A.	One or more RCS DNB parameters not within limits.	A.1	Restore RCS DNB parameters(s) to within limit.	2 hours
				NOTE: The US will identify that Condition A is applicable ONLY IF Pressurizer Pressure lowers to <2175 psig (NOT expected).
				NOTE: The US will likely conduct a Plant Status Brief.
At the discretion of the Lead Examiner move to Event #2.				

Op Test No.: N24-1 Scenario # 4 Event # 2 Page 15 of 83Event Description: **Spurious overcurrent condition on Bus 16/Recovery**

Next, the Normal Feeder Breaker to Safeguards Bus 16 will trip on overcurrent causing the B D/G to start but NOT repower the bus. The operator will respond in accordance with AR-L-7, BUS 16 UNDER VOLTAGE SAFEGUARDS, and enter AP-ELEC.14/16, LOSS OF SAFEGUARDS BUS 14/16. The operator will stabilize the plant by taking manual control of control rods and charging flow, starting Charging and CCW Pumps, and various ventilation systems. During the recovery, the WCC Supervisor will call and indicate that the Electricians believe that the loss of power to the Bus was due to a spurious overcurrent signal, and direct that the overcurrent condition be reset (Time Compression). The operator will reset the overcurrent condition on Bus 16 using AR-L-5, SAFEGUARD BUS MAIN BREAKER OVERCURRENT TRIP, and ER-ELEC.1, RESTORATION OF OFFSITE POWER. The operator will also stop the B D/G using ATT-8.1, ATTACHMENT DG STOP. The operator will address Technical Specification LCO 3.8.1, AC SOURCES – MODES 1, 2, 3 AND 4, LCO 3.8.9, DISTRIBUTION SYSTEMS – MODES 1, 2, 3 AND 4, AND TR-3.8.1, OFFSITE POWER SOURCES.

SIM DRIVER Instructions: **Operate Trigger #2 (EDS04B)****Symptoms/Cues:**

- MCB Annunciator L-7, BUS 16 UNDER VOLTAGE SAFEGUARDS
- MCB Annunciator L-5, SAFEGUARD BUS MAIN BREAKER OVERCURRENT TRIP
- Bus 16 Normal Feeder Breaker OPEN
- Bus 16 Volts at 0
- B EDG Auto Starts and indicates 480VAC
- Multiple MCB Alarms
- The A Charging Pump is the only Charging Pump running
- The A CCW Pump auto started

Time	Pos.	Expected Actions/Behavior	Comments
			NOTE: The crew may enter AP-ELEC.14/16 directly.
AR-L-7, BUS 16 UNDER VOLTAGE SAFEGUARDS			
NOTE This alarm is expected during the performance of STP-I-9.1.16, UNDERVOLTAGE PROTECTION - 480 VOLT SAFEGUARD BUS 16. If this alarm is due to testing DO NOT PERFORM this procedure.			
	CO	(Step 4.1) IF either L-20, 12A XFMR OR 12A BUS TROUBLE OR L-28, 12B XFMR OR 12B BUS TROUBLE- IS LIT, THEN GO TO AP-ELEC.1, LOSS OF 12A AND/OR 12B BUSSES	NOTE: L-20 and L-28 are both EXTINGUISHED.

Op Test No.: N24-1 Scenario # 4 Event # 2 Page 16 of 83Event Description: **Spurious overcurrent condition on Bus 16/Recovery**

Time	Pos.	Expected Actions/Behavior	Comments
NOTE Bus 17 Phase voltages are checked to ensure that an issue with offsite power is not affecting both Train B safeguards buses.			
	CO	(Step 4.2) IF D/G B ties onto Bus 16, THEN PERFORM the following:	NOTE: The B D/G does NOT tie onto Bus 16.
	CO	(Step 4.3) IF D/G does not start THEN PERFORM the following:	NOTE: The B D/G has auto started.
			Examiner NOTE: The HCO/CO will likely address AR-L-5 at the same time as AR-L-7. This procedure will have actions that will be performed AFTER the cause of the overcurrent condition is determined. Consequently, Steps 4.1-4.4 are scripted here and steps 4.5 and following are scripted starting on Page 24 .
AR-L-5, SAFEGUARD BUS MAIN BREAKER OVERCURRENT TRIP			
NOTE - Safeguard bus normal feed breaker overcurrent (Relay 74-1) reset pushbuttons are located inside MCB center section right side. - It is possible to Close the affected Safeguards bus normal supply breaker by placing the switch to AFTER TRIP and THEN to CLOSE. However, IF the Overcurrent reset pushbutton is NOT depressed before reclosing the normal supply breaker, THEN MCB annunciator L-5 will remain lit and the affected Safeguards bus WILL NOT load onto the D/G in the event of a subsequent undervoltage condition. DO NOT attempt to reset affected Safeguards bus normal feed breaker until overcurrent condition has been identified and isolated.			
	CO	(Step 4.1) To prevent the D/G from loading on the affected Safeguards bus while troubleshooting is in progress, PULL STOP the D/G supply breaker to ONLY the AFFECTED Safeguards bus.	NOTE: The CO will place the B D/G supply breaker to Bus 16 in PULL STOP.

Op Test No.: N24-1 Scenario # 4 Event # 2 Page 17 of 83Event Description: **Spurious overcurrent condition on Bus 16/Recovery**

Time	Pos.	Expected Actions/Behavior	Comments
	CO	(Step 4.2) NOTIFY the following:	NOTE: The US may notify the WCCS. SIM DRIVER: as WCCS , acknowledge.
		• Electricians	
		• Scheduling	
		• Operations Supervision	
	CO	(Step 4.3) REFER to ITS LCO 3.8.1 OR 3.8.2.	NOTE: The US may address Technical Specifications (See Page 31).
NOTE IF Electricians are NOT available, THEN Operations personnel SHOULD attempt to identify and isolate faulted component.			
	CO	(Step 4.4) DIRECT Electricians to investigate cause of overcurrent condition.	NOTE: The US may notify the WCC/Electrical Maintenance. IF so, SIM DRIVER: as WCC/Electrical Maintenance , acknowledge.
AP-ELEC.14/16, LOSS OF SAFEGUARDS BUS 14/16			
CAUTION ○ <u>IF</u> A LOSS OF BUS 12A <u>OR</u> 12B HAS OCCURRED, <u>THEN</u> AP-ELEC.1, LOSS OF 12A AND/OR 12B BUSES, SHOULD BE PERFORMED. ○ OBSERVE D/G LOADING LIMITS OF 2300 KW FOR 1/2 HOUR, 2250 KW FOR 2 HOURS, <u>AND</u> 1950 KW FOR CONTINUOUS SERVICE.			
NOTE: Conditions should be evaluated for site contingency reporting (Refer to EP-AA-1012 ADDENDUM 3, R.E. GINNA NUCLEAR POWER PLANT EMERGENCY ACTION LEVELS).			
	HCO	(*Step 1) Monitor Tavg	NOTE: This is a Continuous Action. The US will make one or more board operators aware.

Op Test No.: N24-1 Scenario # 4 Event # 2 Page 18 of 83Event Description: **Spurious overcurrent condition on Bus 16/Recovery**

Time	Pos.	Expected Actions/Behavior	Comments
		a. Place Rods in MANUAL	NOTE: The HCO will place the Control Rods in MANUAL.
		b. Manually move control rods to control Tavg	
	HCO	(Step 2) Verify Emergency D/G Associated With Affected Bus - RUNNING	
		o Bus 16 – D/G B	NOTE: The B D/G is running.
	CO	(Step 3) Verify Both Trains Of AC Emergency Busses Energized To At Least 440 VOLTS:	
		o Bus 14 and Bus 18	
		o Bus 16 and Bus 17	NOTE: Bus 16 is NOT energized.
	CO	(Step 3 RNO) <u>IF</u> Bus 14 <u>AND</u> Bus 16 are deenergized,....	NOTE: Both busses are NOT de-energized.
	CO	<u>IF</u> one train deenergized, <u>THEN</u> perform the following:	
		a. Ensure D/G aligned for unit operation	
		o Mode switch in UNIT	
		o Voltage control selector in AUTO	
		b. Check D/G running.	
		<u>IF NOT, THEN</u>	NOTE: The B D/G has auto started.
		c. Adjust D/G voltage to approximately 480 volts.	
		d. Adjust D/G frequency to approximately 60 Hz.	
CAUTION			
<u>IF</u> CCW FLOW TO A RCP IS INTERRUPTED FOR GREATER THAN 2 MINUTES OR <u>IF</u> EITHER RCP MOTOR BEARING TEMPERATURE EXCEEDS 200°F, THEN TRIP THE AFFECTED RCP.			

Op Test No.: N24-1 Scenario # 4 Event # 2 Page 19 of 83Event Description: **Spurious overcurrent condition on Bus 16/Recovery**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 4) Verify CCW Pump Status	
		a. At least one CCW Pump – RUNNING	NOTE: Both CCW Pump Breakers are CLOSED, but only A CCW Pump is running.
		b. Annunciator A-22, CCW PUMP DISCHARGE LO PRESS 60 PSIG - EXTINGUISHED	
	HCO	(Step 5) Verify Charging Pump Status – AT LEAST ONE RUNNING	NOTE: The C Charging Pump has tripped.
	CO	(Step 6) Check MFW Regulating Valves – RESTORING S/G LEVEL TO 52% IN AUTO	
	CO	(Step 7) Verify Bus 14 – ENERGIZED TO AT LEAST 440 VOLTS	
	CO	(Step 8) Verify Bus 16 – ENERGIZED TO AT LEAST 440 VOLTS	NOTE: Bus 16 is NOT energized.
	HCO/ CO	(Step 8 RNO) Perform the following:	
		a. Ensure the following equipment operating as necessary:	
		• CCW Pump A	
	CO/ HCO	• Charging Pump A	
		• PRZR Proportional Heaters	
		• CNMT Recirc Fans A and D	NOTE: The HCO will start the A CNMT Recirc Fan.
		• Boric Acid Pump A	
		• RMW Pump A	
		• Reactor Compartment Cooling Fan A	
		• Penetration Cooling Fan A	NOTE: The HCO/CO will swap CNMT Penetration Cooling Fans.

Op Test No.: N24-1 Scenario # 4 Event # 2 Page 20 of 83Event Description: **Spurious overcurrent condition on Bus 16/Recovery**

Time	Pos.	Expected Actions/Behavior	Comments
		SFP cooling	NOTE: The US may direct the EO to report status of Spent Fuel Pool Cooling. If so, SIM DRIVER acknowledge as EO, and report IN Service.
		b. Direct AO to swap Aux Bldg lighting to MCC C (switch at MCC C, locked valve key required)	NOTE: The US will dispatch an EO. SIM DRIVER: as EO, acknowledge.
		c. <u>IF</u> Bus 16 can <u>NOT</u> be energized <u>THEN</u> :	
		Provide alternate room cooling for D/G B.	NOTE: The US will dispatch an EO. SIM DRIVER: as EO, acknowledge.
		Cross-connect D/G A fuel oil transfer pump to D/G B (Refer to ER-D/G.1, RESTORING D/Gs	NOTE: The US will dispatch an EO. SIM DRIVER: as EO, acknowledge, and use REM-GEN18 = OPEN.
NOTE: <u>IF</u> VCT level lowers to 5%, charging pump suction will swap to the RWST. This may required a load reduction.			
	HCO	(Step 9) Check VCT Makeup System:	
		a. Ensure the following:	
		1) RMW mode selector switch in AUTO	
		2) RMW control armed – RED LIGHT LIT	
		b. Check VCT level:	
		Level GREATER THAN 20%	
		-OR-	
		Level - STABLE <u>OR</u> RISING	

Op Test No.: N24-1 Scenario # 4 Event # 2 Page 21 of 83Event Description: **Spurious overcurrent condition on Bus 16/Recovery**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 10) Check Charging Pump Suction Aligned To VCT:	
	HCO	a. VCT level – GREATER THAN 20%	
		b. Align charging pumps to VCT	
		o LCV-112C open	
		o LCV-112B closed	
NOTE: When restarting equipment for recovery, it is preferable to start equipment on busses being supplied from offsite power.			
	HCO	(Step 11) Check CVCS Operation:	
		a. Charging pumps – AT LEAST ONE RUNNING	NOTE: The A Charging Pump is the ONLY Charging Pump available, and it is running.
		b. Charging line flow – GREATER THAN 22 GPM	
		c. Check letdown indications:	
		o Check PRZR level – GREATER THAN 13%	
		o Letdown flow – APPROXIMATELY 40 GPM (60 GPM IF AOV-202 OPEN)	
		o Letdown flow - STABLE	
		d. Adjust charging pump speed and HCV-142 to restore PRZR level and labyrinth seal D/P	
	US	e. Go to Step 13	
	HCO	(Step 13) Verify PRZR Heaters Restored:	
		o PRZR proportional heater breaker – CLOSED	
		o PRZR backup heater breaker – RESET, IN AUTO	NOTE: There is no power to the PRZR Backup Heaters.

Op Test No.: N24-1 Scenario # 4 Event # 2 Page 22 of 83Event Description: **Spurious overcurrent condition on Bus 16/Recovery**

Time	Pos.	Expected Actions/Behavior	Comments
	US/ HCO	(Step 13 RNO) <u>IF</u> adequate D/G capacity available for PRZR heaters (400 kw each bank). <u>THEN</u> perform the following:	NOTE: The Pressurizer Heaters cannot be powered from the D/G.
		a. Reset and close PRZR proportional heater breaker if necessary.	
		b. Reset PRZR backup heater breaker and return to AUTO if necessary.	
		<u>IF</u> adequate D/G capacity <u>NOT</u> available, <u>THEN</u> refer to ER-PRZR.1, RESTORATION OF PRZR HEATERS DURING BLACKOUT.	
	HCO	(Step 14) Verify Normal Rod Control Restored:	
		a. Annunciator C-5, PPCS ROD SEQUENCE <u>OR</u> ROD DEVIATION – EXTINGUISHED	
		b. Annunciator E-28, POWER RANGE ROD DROP ROD STOP - EXTINGUISHED	
		c. Annunciator F-15, RCS TAVG DEV 4°F – EXTINGUISHED	
		d. Place rods in AUTO, if desired	NOTE: The HCO may place the control rods in AUTO.
NOTE: With PRZR pressure controller 431K in manual, PORV-431C will not operate in the automatic mode. (Refer to TR 3.4.3)			
	HCO	(Step 15) Establish Stable Plant Conditions:	
		a. Check Tavg – TRENDING TO TREF	
		b. Check PRZR pressure – TRENDING TO 2235 PSIG IN AUTO	
		c. Check PRZR level – TRENDING TO PROGRAM IN AUTO CONTROL	
	HCO	(Step 15.c RNO) Perform the following:	
		1) Place affected charging pumps in MANUAL	

Op Test No.: N24-1 Scenario # 4 Event # 2 Page 23 of 83Event Description: **Spurious overcurrent condition on Bus 16/Recovery**

Time	Pos.	Expected Actions/Behavior	Comments
		2) Adjust charging pump speed to restore PRZR level to program.	
		IF PRZR level can <u>NOT</u> be controlled manually, <u>THEN</u> refer to AP-RCS.1, REACTOR COOLANT LEAK.	
			SIM DRIVER: Remove MALF EDS04B As WCCS , using <u>Time Compression</u> call and indicate that the Electricians have completed an inspection of Bus 16 and its normal feeder breaker; and have concluded that the loss was due to a spurious overcurrent signal. Station Management & SM have been informed and concur with the decision to reset the overcurrent condition.
	CO	(Step 16) Restore Normal Electric System Alignment:	
		a. Verify all AC bus normal feed breakers - CLOSED	
		• Bus 13	
		• Bus 14	
		• Bus 15	
		• Bus 16	
		• Bus 17	
		• Bus 18	
	CO	(Step 16 RNO) Perform the following:	
		1) Refer to AR-L-5 to reset a safeguards bus over current condition.	
		2) Restore non-faulted AC busses and MCCs to normal power supply (Refer to ER-ELEC.1, RESTORATION OF OFFSITE POWER)	

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Time	Pos.	Expected Actions/Behavior	Comments
			NOTE: The US will continue with step 4.5 of AR-L-5.
AR-L-5, SAFEGUARD BUS MAIN BREAKER OVERCURRENT TRIP			
	CO	(Step 4.5) WHEN the faulted component is identified AND its supply breaker verified OPEN, THEN RESTORE the affected Safeguards bus by performing the following:	
		(Step 4.5.1) ENSURE associated D/G supply breaker is in PULL STOP .	
		(Step 4.5.2) RESET the affected Safeguards bus normal feed breaker by taking the control switch to the AFTER TRIP position.	
		(Step 4.5.3) DEPRESS Overcurrent RESET pushbutton for the affected Safeguards bus normal feed breaker (See Note prior to step 4.0).	NOTE: The CO will enter the MCB for this action.
		(Step 4.5.4) IF Offsite power is available, THEN PERFORM the following:	
		1. RESTORE power to the affected bus via the normal feed breaker. (Refer to ER-ELEC.1, RESTORATION OF OFFSITE POWER).	NOTE: The US will go to ER-ELEC.1 before continuing.
		2. PLACE associated D/G supply breaker in AUTO .	
	US	(Step 4.5.5) IF Offsite power is NOT available AND it is desired to energize the affected Safeguards bus using the D/G, THEN PLACE affected D/G supply bkr in AUTO .	NOTE: Offsite power is available.
ER-ELEC.1, RESTORATION OF OFFSITE POWER			
WARNING			
DO NOT attempt to restore a Bus which has an Overcurrent condition until the Bus has been verified to be free of faults. REFER TO AR-L-5, SAFEGUARD BUS MAIN BREAKER OVERCURRENT TRIP for instructions on restoring a Bus that has experienced an Overcurrent condition.			

Op Test No.: N24-1 Scenario # 4 Event # 2 Page 25 of 83Event Description: **Spurious overcurrent condition on Bus 16/Recovery**

Time	Pos.	Expected Actions/Behavior	Comments
	US	(Step 6.2.1) IF any Non-Faulted Safeguard Bus is deenergized THEN PERFORM the sub-step for the affected Bus IF NOT, THEN GO TO section 6.3.	NOTE: Bus 16 is de-energized and the US will perform sub-step 6.2.1.2.
	HCO	(Step 6.2.1.2.a) ENSURE SI is reset.	
	CO	(Step 6.2.1.2.b) ENSURE 480V bus tie breakers are open:	
		• Bus 15 – Bus 16	
		• Bus 16 – Bus 14	
	CO	(Step 6.2.1.2.c) ENSURE OPEN AND RESET BUS 16 NORMAL FEED 480V breaker.	
	CO	(Step 6.2.1.2.d) CLOSE STATION SERVICE TRANSFORMER 16 SUPPLY breaker.	NOTE: This breaker is already closed.
	CO	(Step 6.2.1.2.e) CLOSE BUS 16 NORMAL FEED 480V breaker AND VERIFY approximately 480 volts on the bus.	
	CO	(Step 6.2.1.2.f) PLACE IN AUTO D/G B Bus 16 SUPPLY BREAKER switch	
			NOTE: The US will go to AP-ELEC.14/16, Step 16.a RNO a.3.
AP-ELEC.14/16, LOSS OF SAFEGUARDS BUS 14/16			
		3) <u>IF</u> normal power is restored to all AC emergency buses, <u>THEN</u> return to step 9. <u>IF NOT</u> , ...	NOTE: The US will go back to Step 9.
NOTE: <u>IF</u> VCT level lowers to 5%, charging pump suction will swap to the RWST. This may required a load reduction.			

Op Test No.: N24-1 Scenario # 4 Event # 2 Page 26 of 83Event Description: **Spurious overcurrent condition on Bus 16/Recovery**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 9) Check VCT Makeup System:	
		a. Ensure the following:	
		1) RMW mode selector switch in AUTO	
		2) RMW control armed – RED LIGHT LIT	
		b. Check VCT level:	
		o Level GREATER THAN 20%	
		-OR-	
		o Level - STABLE <u>OR</u> RISING	
	HCO	(Step 10) Check Charging Pump Suction Aligned To VCT:	
		a. VCT level – GREATER THAN 20%	
		b. Align charging pumps to VCT	
		o LCV-112C open	
		o LCV-112B closed	
NOTE: When restarting equipment for recovery, it is preferable to start equipment on busses being supplied from offsite power.			
	HCO	(Step 11) Check CVCS Operation:	
		a. Charging pumps – AT LEAST ONE RUNNING	NOTE: The A Charging Pump is the ONLY Charging Pump running.
		b. Charging line flow – GREATER THAN 22 GPM	
		c. Check letdown indications:	
		o Check PRZR level – GREATER THAN 13%	

Op Test No.: N24-1 Scenario # 4 Event # 2 Page 27 of 83Event Description: **Spurious overcurrent condition on Bus 16/Recovery**

Time	Pos.	Expected Actions/Behavior	Comments
		Letdown flow – APPROXIMATELY 40 GPM (60 GPM IF AOV-202 OPEN)	
		Letdown flow - STABLE	
		d. Adjust charging pump speed and HCV-142 to restore PRZR level and labyrinth seal D/P	
	US	e. Go to Step 13	
	HCO	(Step 13) Verify PRZR Heaters Restored:	
		PRZR proportional heater breaker – CLOSED	
		PRZR backup heater breaker – RESET, IN AUTO	
	HCO	(Step 14) Verify Normal Rod Control Restored:	
		a. Annunciator C-5, PPCS ROD SEQUENCE OR ROD DEVIATION – EXTINGUISHED	
		b. Annunciator E-28, POWER RANGE ROD DROP ROD STOP - EXTINGUISHED	
		c. Annunciator F-15, RCS TAVG DEV 4°F – EXTINGUISHED	
		d. Place rods in AUTO, if desired	NOTE: The HCO will place the Control Rods in AUTO.
NOTE: With PRZR pressure controller 431K in manual, PORV-431C will not operate in the automatic mode. (Refer to TR 3.4.3)			
	HCO	(Step 15) Establish Stable Plant Conditions:	
		a. Check Tavg – TRENDING TO TREF	
		b. Check PRZR pressure – TRENDING TO 2235 PSIG IN AUTO	

Op Test No.: N24-1 Scenario # 4 Event # 2 Page 28 of 83Event Description: **Spurious overcurrent condition on Bus 16/Recovery**

Time	Pos.	Expected Actions/Behavior	Comments
		c. Check PRZR level – TRENDING TO PROGRAM IN AUTO CONTROL	
	CO	(Step 16) Restore Normal Electric System Alignment:	
		a. Verify all AC bus normal feed breakers - CLOSED	
		• Bus 13	
		• Bus 14	
		• Bus 15	
		• Bus 16	
		• Bus 17	
		• Bus 18	
		b. Stop any unloaded emergency D/G and place in standby (Refer to ATT-8.1, ATTACHMENT D/G STOP)	
		c. Restore D/G Fuel Oil Transfer System to normal alignment (Refer to ER-D/G.1, RESTORING D/Gs.	NOTE: The US will dispatch an EO. SIM DRIVER: as EO, acknowledge, and use REM-GEN18 = CLOSED.
			NOTE: The US will hand this off to the CO. Examiner NOTE: If the US addresses the Technical Specification while the B D/G is being stopped, allow time for both actions. OR the US may continue in the procedure. If so, US/HCO Examiners follow Step 17 on Page 30 . If the US does not address the Tech Specs during the D/G shutdown, When D/G B is stopped Move forward to Event 3 and address the Technical Specifications after the Scenario.

Op Test No.: N24-1 Scenario # 4 Event # 2 Page 29 of 83Event Description: **Spurious overcurrent condition on Bus 16/Recovery**

Time	Pos.	Expected Actions/Behavior	Comments
ATT-8.1, ATTACHMENT D/G STOP			
NOTE: One D/G must be stopped <u>AND</u> reset prior to stopping the second D/G.			
	CO	(Step A) Perform the following to STOP D/G A	NOTE: The A D/G is NOT running.
	CO	(Step B) Perform the following to STOP D/G B and restore to AUTO:	
		1) Verify D/G B Bus 16 supply breaker is OPEN.	
		2) Verify D/G B Bus 17 supply breaker is OPEN.	
		3) Using D/G B GOVERNOR, adjust D/G B speed to return frequency to 60Hz.	
		4) Using D/G B AUTO VOLTAGE CONTROL rheostat adjust D/G B voltage to 480 volts.	
	CO	5) Place D/G B CONTROL switch to STOP <u>AND</u> immediately depress D/G B VOLTAGE SHUTDOWN button until voltage decays to zero.	
		6) After ~60 seconds, perform the following:	
		o Depress D/G B FIELD RESET	
		o Depress D/G B RESET	
		o Verify D/G B AIR START SOLENOID lights - LIT	
		o Verify D/G B START RELAY lights - LIT	
		• <u>IF</u> alternate cooling is being supplied to the D/G B.....	NOTE: Alternate Cooling is NOT being supplied.
AP-ELEC.14/16, LOSS OF SAFEGUARDS BUS 14/16			

Op Test No.: N24-1 Scenario # 4 Event # 2 Page 30 of 83Event Description: **Spurious overcurrent condition on Bus 16/Recovery**

Time	Pos.	Expected Actions/Behavior	Comments
			Examiner NOTE: US/HCO Examiners continue HERE. If the US does not address the Tech Specs during the D/G shutdown, When D/G B is stopped Move forward to Event 3 and address the Technical Specifications after the Scenario.
	HCO	(Step 17) Establish Normal Plant Conditions:	
		a. Verify 2 charging pumps - RUNNING	
	HCO	(Step 17.a RNO) Perform the following:	
		1) Manually start charging pumps as necessary.	NOTE: The HCO will start the C Charging Pump.
		2) Place one charging pump in AUTO, if desired.	
	HCO	b. Verify at least 2 CNMT recirc fans - RUNNING	
	HCO	c. Check CCW pumps – ONLY ONE RUNNING	NOTE: It is likely that both CCW Pumps are running.
	HCO/ US	(Step 17.c RNO) Locally verify two CCW pumps running, <u>THEN</u> manually stop one pump.	NOTE: The US will dispatch an EO. SIM DRIVER: as EO, acknowledge, and report both CCW Pumps are running.
	HCO	d. Check radiation monitoring systems:	
		o CNMT vent sample pump - RUNNING	
		o Plant vent sample pump - RUNNING	
		o All area and process monitors operating as required	

Op Test No.: N24-1 Scenario # 4 Event # 2 Page 31 of 83Event Description: **Spurious overcurrent condition on Bus 16/Recovery**

Time	Pos.	Expected Actions/Behavior	Comments
			Examiner NOTE: The US may continue in AP-ELEC.14/16 (Not Scripted). When D/G B stopped Move to Event 3.
TECHNICAL SPECIFICATION 3.8.1, AC SOURCES – MODES 1, 2, 3 and 4			
	US	LCO 3.8.1 The following AC electrical sources shall be OPERABLE:	
		a. One qualified independent offsite power circuit connected between the offsite transmission network and each of the onsite 480V safeguards buses required by LCO 3.8.9, "Distribution Subsystems – MODES 1, 2, 3, and 4"; and	
		b. Two emergency diesel generators (DGs) capable of supplying their respective onsite 480V safeguards buses required by LCO 3.8.9.	
		APPLICABILITY MODES 1, 2, 3, and 4.	
	US	ACTIONS	
CONDITION		REQUIRED ACTION	COMPLETION TIME
A.	Offsite power to one or more 480 V safeguards bus(es) inoperable.	A.1 Declare required feature(s) inoperable when its redundant required feature(s) is inoperable. <u>AND</u> A.2 Restore offsite circuit to OPERABLE status.	12 hours from discovery of Condition A concurrent with inoperability of redundant required feature(s) 72 hours <u>OR</u> NOTE: Not applicable if there is a loss of function. In accordance with the Risk Informed Completion Time Program.
B.	One DG inoperable.	B.1 Perform SR 3.8.1.1 for the offsite circuit.	1 hour <u>AND</u>

Op Test No.: N24-1 Scenario # 4 Event # 2 Page 32 of 83Event Description: **Spurious overcurrent condition on Bus 16/Recovery**

Time	Pos.	Expected Actions/Behavior	Comments
		<u>AND</u> B.2 Declare required feature(s) supported by the inoperable DG inoperable when its required redundant feature(s) is inoperable. <u>AND</u> B.3.1 Determine OPERABLE DG is not inoperable due to common cause failure. <u>OR</u> B.3.2 Perform SR 3.8.1.2 for OPERABLE DG. <u>AND</u> B.4 Restore DG to OPERABLE status.	Once per 8 hours thereafter 4 hours from discovery of Condition B concurrent with inoperability of redundant required feature(s) 24 hours 24 hours 7 days <u>OR</u> In accordance with the Risk Informed Completion Time Program
	C. Offsite power to one or more 480 V safeguards bus(es) inoperable. <u>AND</u> One DG inoperable.	NOTE: Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems - MODES 1, 2, 3, and 4," when Condition C is entered with no AC power source to one distribution train. C.1 Restore required offsite circuit to OPERABLE status. <u>OR</u> C.2 Restore DG to OPERABLE status.	12 hours <u>OR</u> NOTE: Not applicable if there is a loss of function. In accordance with the Risk Informed Completion Time Program. 12 hours <u>OR</u>

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Time	Pos.	Expected Actions/Behavior	Comments
			NOTE: Not applicable if there is a loss of function. In accordance with the Risk Informed Completion Time Program.
			The US will identify that with Offsite Power disconnected from Bus 16, Condition A, B and C of LCO 3.8.1 are applicable.
TECHNICAL SPECIFICATION 3.8.9, DISTRIBUTION SYSTEMS – MODES 1, 2, 3 and 4			
	US	LCO 3.8.9 Train A and Train B of the following electrical power distribution subsystems shall be OPERABLE:	
		a. AC power;	
		b. AC instrument bus power; and	
		c. DC power.	
	US	APPLICABILITY MODES 1, 2, 3, and 4.	
	US	ACTIONS	
CONDITION		REQUIRED ACTION	COMPLETION TIME
A.	One AC electrical power distribution train inoperable.	A.1 Restore AC electrical power distribution train to OPERABLE status.	8 hours <u>OR</u> In accordance with the Risk Informed Completion Time Program.
			The US will identify that with Bus 16 de-energized, Condition A of LCO 3.8.9 is applicable.
TECHNICAL REQUIREMENT 3.8.1, OFFSITE POWER SOURCES			

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Time	Pos.	Expected Actions/Behavior	Comments
	US	TR 3.8.1 Two qualified independent offsite power circuits shall be OPERABLE	
		APPLICABILITY: MODES 1, 2, 3, 4.	
		ACTIONS:	
CONDITION		REQUIRED ACTION	COMPLETION TIME
A. One offsite power circuit inoperable.		A.1 Initiate action to verify reliability of OPERABLE offsite power circuit.	Immediately
		<u>AND</u>	
		A.2.1 Establish pre-conditions necessary to complete backfeed procedure in 8 hours or less	72 hours
		<u>OR</u>	
		A.2.2 Restore Offsite Power Circuit to OPERABLE status	72 hours
			NOTE: The US will determine that Condition A must be entered based on circuit 7T being inoperable.
At the discretion of the Lead Examiner move to Event #3.			

Op Test No.: N24-1 Scenario # 4 Event # 3 Page 35 of 83Event Description: **SG Tube Leak occurs in B S/G/Downpower**

Subsequently, a 5 gpm Steam Generator Tube Leak (SGTL) will develop on the B Steam Generator. The operator will respond in accordance with AR-PPCS-R47AR, SGTL INDICATED, and enter AP-SG.1, STEAM GENERATOR TUBE LEAK. The operator will determine the leakrate using the PPCS and/or HC-2.0, RCS LEAKRATE DETERMINATION, and will commence a load reduction at 3%/minute using AP-SG.1 and S-3.1, BORON CONCENTRATION CONTROL. Additionally, the operator will perform ATT-23.0, ATTACHMENT TRANSFER 4160V LOADS, in preparation for plant shutdown and ATT-16.1, ATTACHMENT SGTL. The operator will address Technical Specification LCO 3.4.13, RCS OPERATIONAL LEAKAGE, and LCO 3.4.17, STEAM GENERATOR (SG) TUBE INTEGRITY.

SIM DRIVER Instructions: **Operate Trigger #3 (SGN06B, 5 GPM, 60s Ramp)**

Symptoms/Cues:

- PPCS Alarm; R47AR SGTL Indicated
- Charging Flow (FI-128C) starts to rise
- MCB Annunciator E-16; RMS PROCESS MONITOR HIGH ACTIVITY (After Several Minutes)
- R-19 (Blowdown)/R-31(Steamlines) indication starts to rise
- R-15 (Air Ejector) indication starts to rise

Time	Pos.	Expected Actions/Behavior	Comments
			NOTE: The crew may enter AP-SG.1 directly.
AR-PPCS-R47AR, SGTL INDICATED			
	US	(Step 4.1) IF SG Tube Rupture is evident, THEN go to E-0, REACTOR TRIP OR SAFETY INJECTION.	NOTE: a SGTR is NOT evident.
	HCO/CO	(Step 4.2) TREND PPCS point R-47G.	
	HCO/CO	(Step 4.3) NOTIFY Chemistry to IMMEDIATELY obtain and analyze an air ejector grab sample PER CY-AP-120-3402, PRIMARY TO SECONDARY LEAK DETERMINATION FOR RECIRCULATING STEAM GENERATORS.	NOTE: The HCO/CO may notify the WCC/Chemistry. SIM DRIVER: as WCCS/Chemistry , acknowledge.

Op Test No.: N24-1 Scenario # 4 Event # 3 Page 36 of 83Event Description: **SG Tube Leak occurs in B S/G/Downpower**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO/ CO	(Step 4.4) DETERMINE the estimated leak rate using PPCS point R47G or the R-47 Local Reading and the Conversion Table (Curve Book #06-004).	NOTE: The HCO will determine the leakrate to be >5 gpd.
	US	(Step 4.5) IF any condition below is met, THEN go to AP-SG.1, STEAM GENERATOR TUBE LEAK:	
		R47G (PPCS) greater than 5 gpd	NOTE: The US will address AP-SG.1.
		R-47 greater than or equal to 5 gpd (per conversion table),	
		Air ejector grab sample indicates SG tube leakage $\geq$ 5 gpd	
		SM discretion	
	US	(Step 4.6) IF air ejector grab samples do NOT indicate the presence of RCS radiogases, THEN EVALUATE the cause of the alarm.	NOTE: This condition will NOT be known for some time.
AP-SG.1, STEAM GENERATOR TUBE LEAK			
<u>NOTE:</u> Conditions should be evaluated for site contingency reporting (Refer to EP-AA-1012 ADDENDUM 3, R.E. GINNA NUCLEAR POWER PLANT EMERGENCY ACTION LEVELS).			
	HCO	(*Step 1) Monitor PRZR Level – STABLE AT PROGRAM LEVEL	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
	HCO	(*Step 1 RNO) <u>IF</u> PRZR level lowering, <u>THEN</u> start additional charging pumps and raise speed as necessary to stabilize PRZR level.	NOTE: The crew may start an additional Charging Pump.
		<u>IF</u> PRZR level continues to lower, <u>THEN</u> close letdown isolation, AOV-427 and excess letdown AOV-310.	NOTE: Based on RCS inventory control, the crew <u>may</u> isolate Letdown.

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Time	Pos.	Expected Actions/Behavior	Comments
		IF available charging pumps are running at maximum speed with letdown isolated, <u>AND</u> PRZR level is lowering, <u>THEN</u>	NOTE: The leak will NOT be large enough to require a Rx Trip.
	CO	(*Step 2) Monitor S/G Tube Leak Rate:	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
		a. Estimate S/G tube leak rate:	
		o Charging/Letdown mismatch	
		o Δ VCT	
		o PPCS Point R47G	
		o R-47 drawer indication (using conversion table, Curve Book #06-004)	
		b. Check total RCS to secondary leak rate – LESS THAN 1 GALLON PER MINUTE (1440 GPD)	NOTE: the operator may use HC-2.0 OR use the previously determined leakrate in AR-PPCS-R47 and determine the leak rate is $\approx$ 5 gpm.
HC-2.0, RCS LEAKRATE DETERMINATION			
	HCO	(Step 1) ENTRY CONDITIONS	
		a. RCS indicated or suspected leakage outside of TS 3.4.13 RCS Leakage (1 gpm unidentified leakage, 10 gpm identified leakage and 150 gpd Primary to Secondary leakage).	
	HCO	(Step 2) PERFORMANCE:	
<u>CAUTION</u> Maintain Tav_g <u>AND</u> Pressurizer Level stable throughout the duration of the leak rate calculation, <u>OR</u> the calculated leak rate <u>WILL NOT</u> be accurate.			

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Time	Pos.	Expected Actions/Behavior	Comments
<u>NOTE:</u> EAL Thresholds for RCS Leakage are as follows: - RCS unidentified or pressure boundary leakage > 10 gpm. (UE) - RCS identified leakage > 25 gpm. (UE) - Leakage from RCS to a location outside containment > 25 gpm. (UE) - RCS leak rate > 50 gpm with letdown isolated. (Potential Loss of RCS)(ALERT)			
	HCO	a. Stabilize Plant Parameters as follows:	
		1) Secure any load reduction in progress by placing Turbine to HOLD.	
		2) IF no MCB Insertion Limit Bank Lo-Lo alarms LIT, THEN Secure reactivity changes by taking RMW Control Switch to STOP.	
		3) Establish stable Tavg (+/- 0.1F) by performing the following:	
		a) Place Rods in MANUAL.	
		b) Adjust Rods to stabilize Tavg.	
		4) Establish stable Pressurizer Level (+/- 0.1%) by performing the following:	
		a) Place all running Charging Pumps in MANUAL.	
		b) Adjust Charging Pump(s) speed to stabilize Pressurizer Level.	
	HCO	b. Calculate Reactor Coolant System Leak Rate by ONE of the following methods WHEN RCS parameters are stable for 1 minute:	
		• Calculate a Charging-Letdown Mismatch (PPCS point FCHGLTDN)	
		• Calculate a change in VCT Level (12 Gallons per percent).	NOTE: The HCO will determine that the RCS leakrate is ≈5 gpm.
	HCO	c. System Restoration:	NOTE: Restoration actions may or may not be taken during this event.
		1) Place Charging to AUTO, IF desired.	

Op Test No.: N24-1 Scenario # 4 Event # 3 Page 39 of 83Event Description: **SG Tube Leak occurs in B S/G/Downpower**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	2) Place Rods to AUTO, IF desired.	
		3) Restore plant load reduction AND reactivity changes, IF desired.	
AP-SG.1, STEAM GENERATOR TUBE LEAK			
	US	(Step 2b RNO) Go to Step 8.	
	US	(Step 8) Initiate Load Reduction	NOTE: The US will perform a load reduction brief per A-503.1 Emergency and Abnormal Procedures Users Guide Attachment 1.
		a. Notify higher supervision.	
	HCO	b. Verify rods in AUTOMATIC	
		c. Initiate boration at the rate determined in OPG-REACTIVITY-CALC.	NOTE: The HCO will initiate a boration.
S-3.1, BORON CONCENTRATION CONTROL ATTACHMENT 1, MAKEUP DETERMINATIONS			
NOTE - The use of approximately 4-6 gallons of Boric Acid PER percent load reduction is normal for transient load reduction, based on reactivity calculations. IF frequent dilutions are required during a shift, THEN total volume added may be tallied at end of shift. - Requirements for minimum volume of boric acid in BAST specified in TRM Table TR 3.1.1-1 for current BAST concentration.			
	HCO	(Step 1.0) IF Boration is required, THEN PERFORM the following OTHERWISE, MARK this Step N/A:	
	HCO	(Step 1.1) DETERMINE total volume of boric acid required AND desired boric acid flow rate using one of the following AND MARK method NOT used N/A.	

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Time	Pos.	Expected Actions/Behavior	Comments
		1.1.1 USE PPCS Variable Boration/Dilution display.	
		OR	
		1.1.2 USE applicable Boration/Dilution table from Boration Tables book.	NOTE: The HCO will use approximately 4 gallons per percent Reactor power (Approx. 185 gallons) based on NOTE prior to Step 1.0.
	HCO	(Step 1.2) GO TO applicable Attachment to perform boration.	NOTE: The HCO will go to Attachment 2 of S-3.1.
S-3.1, BORON CONCENTRATION CONTROL ATTACHMENT 2, NORMAL BORATION			
	HCO	(Step 1.0) ENSURE Attachment 1, Makeup Determinations, is complete.	
	HCO	(Step 2.0) Board operator SHALL inform US of intent to change core reactivity.	
		2.1 US SHALL acknowledge reactivity manipulation and provide input and oversight. [G0092] .	
	HCO	(Step 3.0) PLACE RMW MODE SELECTOR control switch to BORATE position.	
	HCO	(Step 4.0) SET BA TO BA BLENDER FLOW CONTROL VALVE, HCV-110A, controller to flow rate determined in Attachment 1, Makeup Determinations, Step 1.1.	NOTE: The HCO will establish maximum flowrate.
	HCO	(Step 5.0) SET BA COUNTER, YIC-110, to quantity determined in Attachment 1.	

Op Test No.: N24-1 Scenario # 4 Event # 3 Page 41 of 83Event Description: **SG Tube Leak occurs in B S/G/Downpower**

Time	Pos.	Expected Actions/Behavior	Comments
NOTE Key parameters including Reactor Coolant Tavg AND control rod position indication, OR subcritical count rate SHALL be observed as boric acid is injected to ensure proper response. [G0092] [G0132]			
	HCO	(Step 6.0) PLACE RMW CONTROL switch to START position.	
	HCO	(Step 7.0) VERIFY the following:	
		BORIC ACID TRANSFER PUMP A OR B starts.	
		BA TO BA BLENDER FLOW CONTROL VLV, HCV-110A, THROTTLES OPEN to preset flow position.	
		REACTOR MAKEUP TO CHG PUMP, AOV-110B, OPENS.	
	HCO	(Step 8.0) WHEN boration is complete, THEN PERFORM the following:	
		8.1 PLACE RMW MODE SELECTOR control switch to AUTO position.	
		8.2 PLACE RMW CONTROL switch to START position and VERIFY RMW control red light ILLUMINATED .	
		8.3 SET BA TO BA BLENDER FLOW CONTROL VLV, HCV-110A, for current RCS boron concentration PER Boration/Dilution tables OR PPCS Engineering Menu Boration/Dilution display.	
	HCO	(Step 9.0) PLACE "BORATE" Human Performance Label next to RMW Mode Selector switch on MCB.	

Op Test No.: N24-1 Scenario # 4 Event # 3 Page 42 of 83Event Description: **SG Tube Leak occurs in B S/G/Downpower**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 10.0) Board operator SHALL inform US that reactivity manipulation is complete. [G0092]	
	HCO	(Step 11.0) RECORD amount of boric acid added on S-12.4, RCS Leakage Surveillance Record Instructions, Attachment RCS Leakage Surveillance Record.	
AP-SG.1, STEAM GENERATOR TUBE LEAK			
	CO	d. Reduce turbine load in Auto as follows:	
		1) Place Turbine EH Control in OPER PAN, IMP PRESS IN, if desired.	
		2) Select rate of 3%/min on thumbwheel.	
		3) Reduce the setter to zero.	
		4) Depress the GO button.	NOTE: The CO will start the load reduction.
	HCO	e. Place PRZR backup heaters switch to ON.	
	CO	f. Transfer 4160V Auxiliary load from #11 Transformer. (Refer to ATT-23.0, ATTACHMENT TRANSFER 4160V LOADS)	NOTE: The US will hand this off to the CO and continue in the AP with the HCO. US/HCO Examiner move to Page 44.
ATT-23.0, ATTACHMENT TRANSFER 4160V LOADS			
	CO	Transfer 4160 Volt Auxiliary load from #11 Transformer as follows:	
	CO	(Step 1) Place Bus 12A – BUS 11A TIE SYNCHROSCOPE to ON.	

Op Test No.: N24-1 Scenario # 4 Event # 3 Page 43 of 83Event Description: **SG Tube Leak occurs in B S/G/Downpower**

Time	Pos.	Expected Actions/Behavior	Comments
<u>NOTE:</u> <u>WHEN</u> the next step is performed, <u>THEN</u> Annunciator J-13 AND L-20 will light.			
	CO	(Step 2) Close BUS 12A – BUS 11A TIE 4160V.	
	CO	(Step 3) Place BUS 12A – BUS 11A TIE SYNCHROSCOPE to OFF.	
<u>NOTE:</u> <u>WHEN</u> the next step is performed, <u>THEN</u> Annunciator J-13 will extinguish.			
	CO	(Step 4) Open BUS 11A NORMAL FEED 4160V.	
	CO	(Step 5) Place BUS 11B – BUS 12B TIE SYNCHROSCOPE to ON.	
<u>NOTE:</u> <u>WHEN</u> the next step is performed, <u>THEN</u> Annunciator J-13 AND L-28 will light.			
	CO	(Step 6) Close BUS 11B – BUS 12B TIE 4160V.	
	CO	(Step 7) Place BUS 11B – BUS 12B TIE SYNCHROSCOPE to OFF.	
<u>NOTE:</u> <u>WHEN</u> the next step is performed, <u>THEN</u> Annunciator J-13 will extinguish.			
	CO	(Step 8) Open BUS 11B NORMAL FEED 4160V.	

Op Test No.: N24-1 Scenario # 4 Event # 3 Page 44 of 83Event Description: **SG Tube Leak occurs in B S/G/Downpower**

Time	Pos.	Expected Actions/Behavior	Comments
	CO	(Step 9) Reset alarms L-20 <u>AND</u> L-28, locally in the Relay Room Addition.	NOTE: The CO will contact the EO to perform this action. SIM DRIVER: as EO, acknowledge and will need to insert: REM-EDS49=RESET REM-EDS50=RESET
			Examiner NOTE: Move to Event 4 when ATT-23.0 is complete. Due to the transient nature of this evaluation, the Examiner may need to evaluate the Tech Specs at the end of the scenario.
AP-SG.1, STEAM GENERATOR TUBE LEAK			
			US/HCO Examiner continue with procedure HERE .
CAUTION EXTREME <u>AND</u> RAPID ROD MOTION TO MITIGATE TAVG SWINGS MAY RESULT IN LARGE POWER EXCURSIONS <u>AND</u> SHOULD BE AVOIDED.			
	HCO	(*Step 9) Monitor RCS Tavg	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
		○ Tavg – GREATER THAN 545°F	
		○ Tavg – LESS THAN 579°F	
	HCO	(Step 10) Adjust Boric Acid Addition Rate As Necessary To: (Refer to OPG-REACTIVITY-CALC)	
		○ Maintain control rods above insertion limits	
		○ Match Tavg and Tref	
		○ Compensate for Xenon	
	US	(Step 11) <u>While Continuing With This Procedure</u> , Perform The Following:	

Op Test No.: N24-1 Scenario # 4 Event # 3 Page 45 of 83Event Description: **SG Tube Leak occurs in B S/G/Downpower**

Time	Pos.	Expected Actions/Behavior	Comments
		a. Perform Parts 1 <u>AND</u> 2 of ATT-16.1, ATTACHMENT SGT L	NOTE: The US will hand off ATT-16.1 to the CO (Not Scripted). SIM DRIVER: as ALL NON-Control Room Personnel acknowledge.
		b. Dispatch an EO to perform T-35H, NUCLEAR HOUSE HEATING STEAM TO BOILER STEAM SUPPLY CHANGE OVER	NOTE: The US will dispatch an EO. SIM DRIVER: as EO , acknowledge, and report that house steam loads are being supplied by the Boiler.
	US	(Step 12) Request Chemistry to obtain the following samples:	NOTE: The US will contact Chemistry. SIM DRIVER: as CHEMISTRY , acknowledge.
		• RCS boron	
		• RCS activity (ITS 3.4.16)	
NOTE: With PRZR pressure controller 431K in manual, PORV-431C will not operate in the automatic mode. (Refer to TR 3.4.3)			
	HCO	(*Step 13) Monitor PRZR Pressure – TRENDING TO 2235 PSIG IN AUTO	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
	CO	(*Step 14) Monitor MFW Regulating Valves – RESTORING S/G LEVEL TO 52% IN AUTO	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
	HCO	(*Step 15) Monitor PRZR Level – TRENDING TO PROGRAM IN AUTO CONTROL	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
NOTE: It is permissible to operate RCPs for limited periods without seal injection, provided CCW is being supplied to the thermal barriers.			

Op Test No.: N24-1 Scenario # 4 Event # 3 Page 46 of 83Event Description: **SG Tube Leak occurs in B S/G/Downpower**

Time	Pos.	Expected Actions/Behavior	Comments
	CO	(Step 16) Check IA Available To CNMT	
		o IA pressure - GREATER THAN 60 PSIG	
	CO	o Instr Air to CNMT Isol Valve, AOV-5392 - OPEN	
	CO	(*Step 17) Check Steam Dump Status:	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
		o Annunciator G-15, STEAM DUMP ARMED - LIT	
		o Steam dump operating properly in AUTO	
	CO	(Step 17 RNO) <u>IF</u> steam dump required but <u>NOT</u> operating, <u>THEN</u> perform the following:	NOTE: This step is likely not applicable.
		a. Place STEAM DUMP MODE SELECTOR Switch to MANUAL.	
		b. Place steam dump controller, HC-484, to MANUAL.	
		c. Operate steam dump valves manually as necessary.	
NOTE: The load reduction should not be delayed to perform the remaining steps.			
	CO	(*Step 18) Check If Condensate Booster Pumps Should Be Secured	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
		a. Condensate booster pumps – 2 PUMPS RUNNING	NOTE: The Condensate Booster Pumps are stopped.
	US	(Step 18.a RNO) <u>IF</u> only one condensate booster pump running, <u>THEN</u> go to step 18e. <u>IF</u> no condensate booster pumps running, <u>THEN</u> go to step 19.	

Op Test No.: N24-1 Scenario # 4 Event # 3 Page 47 of 83Event Description: **SG Tube Leak occurs in B S/G/Downpower**

Time	Pos.	Expected Actions/Behavior	Comments
			Examiner NOTE: Due to the transient nature of this evaluation, the Examiner may need to evaluate the Tech Specs at the end of the scenario.
TECHNICAL SPECIFICATION 3.4.13, RCS OPERATIONAL LEAKAGE			
	US	LCO 3.4.13 RCS operational LEAKAGE shall be limited to:	
		a. No pressure boundary LEAKAGE;	
		b. 1 gpm unidentified LEAKAGE;	
		c. 10 gpm identified LEAKAGE; and	
		d. 150 gallons per day primary to secondary LEAKAGE through any one steam generator (SG).	
		APPLICABILITY MODES 1, 2, 3, and 4.	
		ACTION	
CONDITION		REQUIRED ACTION	COMPLETION TIME
C. Required Action and associated Completion Time not met.		C.1 Be in MODE 3.	6 hours
<u>OR</u>		<u>AND</u>	
Primary to secondary LEAKAGE not within limit.		C.2 Be in MODE 5.	36 hours
			NOTE: The US will identify that Condition C is applicable based on Primary-To-Secondary Leakage.
TECHNICAL SPECIFICATION 3.4.17, STEAM GENERATOR (SG) TUBE INTEGRITY			

Op Test No.: N24-1 Scenario # 4 Event # 3 Page 48 of 83Event Description: **SG Tube Leak occurs in B S/G/Downpower**

Time	Pos.	Expected Actions/Behavior	Comments
	US	LCO 3.4.17 SG tube integrity shall be maintained. <u>AND</u> All SG tubes satisfying the tube plugging criteria shall be plugged in accordance with the Steam Generator Program.	
		APPLICABILITY MODES 1, 2, 3, and 4.	
CONDITION		REQUIRED ACTION	COMPLETION TIME
B. Required Action and associated Completion Time of Condition A not met. <u>OR</u> SG tube integrity not maintained.		B.1 Be in MODE 3	6 hours
		<u>AND</u> B.2 Be in MODE 5	36 hours
			NOTE: The US will identify that Condition B is applicable based on Primary-To-Secondary Leakage.
At the discretion of the Lead Examiner move to Event #4.			

Op Test No.: N24-1 Scenario # 4 Event # 4 Page 49 of 83Event Description: **Failure of Turbine Control/EHC**

During the load reduction, the Main Turbine will fail in automatic control. The operator will diagnose the failure and use manual control of the turbine to conduct the downpower using the guidance of AP-SG.1, STEAM GENERATOR TUBE LEAK, and A-503.1, EMERGENCY AND ABNORMAL OPERATING PROCEDURES USERS GUIDE.

SIM DRIVER Instructions: Operate Trigger #4 (TUR09D, OVR-TUR05O = OFF, OVR-TUR05P = OFF)

Symptoms/Cues:

- Turbine Load does NOT lower as expected
- EH valve control status lights:
 - OPER PAN – DARK
 - IMP PRESS IN – DARK
 - TURB MANUAL – LIT
 - MANUAL CONTROL VALVE LOWER – LIT
 - MANUAL CONTROL VALVE FAST – LIT
 - MANUAL CONTROL VALVE RAISE – LIT
- Reference and Setter Control Valve Position are equalized

Time	Pos.	Expected Actions/Behavior	Comments
			Examiner NOTE: The US will use A-503.1 guidance of Step 5.3.B.1.e(2) for Performing Steps Out of Order and Backing Up in the Procedure or Procedural Deviations of 5.3.A.5, Actions are permitted to mitigate or compensate for equipment or controller failures.
			NOTE: The US will return to Step 8.d of AP-SG.1.
AP-SG.1, STEAM GENERATOR TUBE LEAK			
		(Step 8.d) Reduce turbine load in Auto as follows:	NOTE: The US will recognize that the Turbine cannot be unloaded in AUTO.
		1) Place Turbine EH Control in OPER PAN., IMP PRESS IN, if desired.	
	CO	(Step 8.d RNO) IF Auto Control is inoperable, <u>THEN</u> reduce turbine load in manual at 3%/min.	NOTE: The CO will lower Turbine Load in MANUAL.

Op Test No.: N24-1 Scenario # 4 Event # 4 Page 50 of 83Event Description: **Failure of Turbine Control/EHC**

Time	Pos.	Expected Actions/Behavior	Comments
			Examiner NOTE: Once the CO has diagnosed the EHC Failure, and is lowering Turbine Load in Manual, MOVE to Events 5-7 at the discretion of the Lead Examiner.
<u>CAUTION</u> EXTREME <u>AND</u> RAPID ROD MOTION TO MITIGATE TAVG SWINGS MAY RESULT IN LARGE POWER EXCURSIONS <u>AND</u> SHOULD BE AVOIDED.			
	HCO	(*Step 9) Monitor RCS Tavg	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
		o Tavg – GREATER THAN 545°F	
		o Tavg – LESS THAN 579°F	
	HCO	(Step 10) Adjust Boric Acid Addition Rate As Necessary To: (Refer to OPG-REACTIVITY-CALC)	
		o Maintain control rods above insertion limits	
		o Match Tavg and Tref	
		o Compensate for Xenon	
	US	(Step 11) <u>While Continuing With This Procedure</u> , Perform The Following:	
		a. Perform Parts 1 <u>AND</u> 2 of ATT-16.1, ATTACHMENT SGT L	NOTE: The US will hand off ATT-16.1 to the CO (Not Scripted) to complete as time permits. SIM DRIVER: as ALL NON-Control Room Personnel acknowledge.

Op Test No.: N24-1 Scenario # 4 Event # 4 Page 51 of 83Event Description: **Failure of Turbine Control/EHC**

Time	Pos.	Expected Actions/Behavior	Comments
		b. Dispatch an EO to perform T-35H, NUCLEAR HOUSE HEATING STEAM TO BOILER STEAM SUPPLY CHANGE OVER	NOTE: The US will dispatch an EO. SIM DRIVER: as EO , acknowledge, and report that house steam loads are being supplied by the Boiler.
	US	(Step 12) Request Chemistry to obtain the following samples:	NOTE: The US will contact Chemistry. SIM DRIVER: as CHEMISTRY , acknowledge.
		• RCS boron	
		• RCS activity (ITS 3.4.16)	
NOTE: With PRZR pressure controller 431K in manual, PORV-431C will not operate in the automatic mode. (Refer to TR 3.4.3)			
	HCO	(*Step 13) Monitor PRZR Pressure – TRENDING TO 2235 PSIG IN AUTO	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
	CO	(*Step 14) Monitor MFW Regulating Valves – RESTORING S/G LEVEL TO 52% IN AUTO	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
	HCO	(*Step 15) Monitor PRZR Level – TRENDING TO PROGRAM IN AUTO CONTROL	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
NOTE: It is permissible to operate RCPs for limited periods without seal injection, provided CCW is being supplied to the thermal barriers.			
	CO	(Step 16) Check IA Available To CNMT	
		○ IA pressure - GREATER THAN 60 PSIG	
		○ Instr Air to CNMT Isol Valve, AOV-5392 - OPEN	

Op Test No.: N24-1 Scenario # 4 Event # 4 Page 52 of 83Event Description: **Failure of Turbine Control/EHC**

Time	Pos.	Expected Actions/Behavior	Comments
	CO	(*Step 17) Check Steam Dump Status:	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
	CO	- Annunciator G-15, STEAM DUMP ARMED - LIT - Steam dump operating properly in AUTO	
	CO	(Step 17 RNO) <u>IF</u> steam dump required but <u>NOT</u> operating, <u>THEN</u> perform the following:	NOTE: This step is likely not applicable.
		a. Place STEAM DUMP MODE SELECTOR Switch to MANUAL.	
		b. Place steam dump controller, HC-484, to MANUAL.	
		c. Operate steam dump valves manually as necessary.	
NOTE: The load reduction should not be delayed to perform the remaining steps.			
	CO	(*Step 18) Check If Condensate Booster Pumps Should Be Secured	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
		a. Condensate booster pumps – 2 PUMPS RUNNING	NOTE: The Condensate Booster Pumps are stopped.
	US	(Step 18.a RNO) <u>IF</u> only one condensate booster pump running, <u>THEN</u> go to step 18e. <u>IF</u> no condensate booster pumps running, <u>THEN</u> go to step 19.	
At the discretion of the Lead Examiner move to Events #5-7.			

Op Test No.: N24-1 Scenario # 4 Event # 5-7 Page 53 of 83

Event Description: **Steam Generator Tube Rupture in S/G B/Main Turbine fails to Trip on Reactor Trip/A MSIV fails to CLOSE/Safety Valve on B SG Lifts and sticks partially OPEN**

Following this, a 250 gpm Steam Generator Tube Rupture will occur in S/G B. The crew will manually trip the reactor however, the Main Turbine will not trip. Simultaneously the A MSIV will fail to close either manually or automatically. The operator will be required to manually trip the Main Turbine. On the Turbine trip, one Steam Generator Safety Valve on S/G B will lift and stick partially open. The crew will implement E-0, REACTOR TRIP OR SAFETY INJECTION, and then transition to E-2, FAULTED STEAM GENERATOR ISOLATION, to isolate S/G B. Following completion of E-2, the crew will transition to E-3, STEAM GENERATOR TUBE RUPTURE, to address the ruptured Steam Generator tube and then transition to ECA-3.1, SGTR WITH LOSS OF REACTOR COOLANT - SUBCOOLED RECOVERY DESIRED, due to the Rupture-Faulted condition in the B Steam Generator. The scenario will terminate at Step 15.a of ECA-3.1 after the crew has determined RCS Cooldown rate OR if an Orange Path occurs on the RCS Integrity Critical Safety Function.

SIM DRIVER Instructions:

Operate Trigger #5 (SGN06B (250, 30 Second Ramp))

MALF TUR02 (Failure of Auto Turbine Trip)
STM05A=100 (A MSIV Fails OPEN)

MALF STM09A, 15%, 0 ramp (When Turbine is Manually Tripped)

Symptoms/Cues:

- MCB Annunciator F-10, PRESSURIZER LO PRESS 2205 PSI
- Pressurizer level starts to lower
- Pressurizer pressure starts to lower
- Charging flow starts to rise
- B Steam Line Monitor R-32 step change

Time	Pos.	Expected Actions/Behavior	Comments
			NOTE: The US will return to Step 1 of AP-SG.1.
AP-SG.1, STEAM GENERATOR TUBE LEAK			
NOTE: Conditions should be evaluated for site contingency reporting (Refer to EP-AA-1012 ADDENDUM 3, R.E. GINNA NUCLEAR POWER PLANT EMERGENCY ACTION LEVELS).			

Op Test No.: N24-1 Scenario # 4 Event # 5-7 Page 54 of 83Event Description: **Steam Generator Tube Rupture in S/G B/Main Turbine fails to Trip on Reactor Trip/A MSIV fails to CLOSE/Safety Valve on B SG Lifts and sticks partially OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(*Step 1) Monitor PRZR Level – STABLE AT PROGRAM LEVEL	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
	HCO	(*Step 1 RNO) <u>IF</u> PRZR level lowering, <u>THEN</u> start additional charging pumps and raise speed as necessary to stabilize PRZR level.	NOTE: The HCO will raise Charging flow to maximum.
		<u>IF</u> PRZR level continues to lower, <u>THEN</u> close letdown isolation, AOV-427 and excess letdown AOV-310.	NOTE: Based on RCS inventory control, the crew <u>will</u> isolate Letdown.
		<u>IF</u> available charging pumps are running at maximum speed with letdown isolated, <u>AND</u> PRZR level is lowering, <u>THEN</u> trip the reactor and go to E-0, REACTOR TRIP OR SAFETY INJECTION.	NOTE: The leak will be large enough to require a Rx Trip.
E-0, REACTOR TRIP OR SAFETY INJECTION			
	HCO	(Step 1) Verify Reactor Trip:	Immediate Action
		o At least one train of reactor trip breakers – OPEN	
		o Neutron flux - LOWERING	
		o MRPI indicates – ALL CONTROL <u>AND</u> SHUTDOWN RODS ON BOTTOM with no instrument fluctuations concurrent with fire.	
	CO	(Step 2) Verify Turbine Stop Valves – CLOSED	Immediate Action
	CO	(Step 2 RNO) Manually trip turbine.	Immediate Action
		<u>IF</u> turbine trip can <u>NOT</u> be verified, <u>THEN</u> close both MSIVs.	NOTE: The turbine will trip manually.

Op Test No.: N24-1 Scenario # 4 Event # 5-7 Page 55 of 83Event Description: **Steam Generator Tube Rupture in S/G B/Main Turbine fails to Trip on Reactor Trip/A MSIV fails to CLOSE/Safety Valve on B SG Lifts and sticks partially OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
		<u>IF</u> the turbine CANNOT be tripped <u>AND</u> either MSIV CANNOT be closed from the Control Room <u>THEN</u> DISPATCH personnel to trip the Turbine locally.	
<u>Critical Task #1:</u>			
CT-1: Manually trip the Main Turbine before a severe (ORANGE path) challenge develops to the RCS integrity Critical Safety Function.			
<u>Expected Actions:</u> The operator depresses the manual Turbine Trip Pushbutton before an ORANGE path develops on RCS Integrity Critical Safety Function.			
	CO	(Step 3) Verify sufficient AC Emergency busses Energized To At Least 440 VOLTS:	Immediate Action
		o Bus 14 <u>OR</u> Bus 16	
		-AND-	
		o Bus 17 <u>OR</u> Bus 18	
	HCO	(Step 4) Check if SI is Actuated:	Immediate Action
		a. Any SI Annunciator – LIT	
		b. SI sequencing – BOTH TRAINS STARTED.	
			NOTE: The crew may secure feeding the B SGTR here based on the criteria established in section 5.3.B.1.d.(3)/(3).(a) of A-503.1 per HC.4.0, AFW Control Guidance.
HC-4.0, AFW CONTROL GUIDANCE			
	CO/ HCO	(Step 1) Entry Conditions:	

Op Test No.: N24-1 Scenario # 4 Event # 5-7 Page 56 of 83Event Description: **Steam Generator Tube Rupture in S/G B/Main Turbine fails to Trip on Reactor Trip/A MSIV fails to CLOSE/Safety Valve on B SG Lifts and sticks partially OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
		a. Auxiliary Feedwater flow is required to be adjusted in accordance with A-503.1, EMERGENCY AND ABNORMAL OPERATING PROCEDURES USERS GUIDE.	
	CO/ HCO	(Step 2) Performance.	
NOTE: Heat Sink is defined as greater than 200 gpm total AFW flow <u>OR</u> Steam Generator narrow range level in at least one Steam Generator greater than 7% (25% adverse).			
	CO/ HCO	a. Adjust total Auxiliary Feedwater flow as necessary if any of the following criteria applies:	
		IF Pressure in BOTH S/Gs is lowering UNCONTROLLABLY, THEN.....	NOTE: This condition does not exist.
		IF Pressure in one S/G is lowering UNCONTROLLABLY. THEN perform the following:	NOTE: This condition may exist.
		1) IF Heat Sink has been verified in the intact S/G, THEN secure AFW flow to FAULTED S/G.	
	CO/ HCO	IF one S/G is RISING in an uncontrolled manner due to a S/G tube rupture, THEN perform the following:	NOTE: This condition may exist.
		1) IF Heat Sink has been verified in ANY S/G, THEN secure AFW flow to RUPTURED S/G.	
		IF RCS Tavg is lowering due to excessive feedwater flow AND Subcriticality or RCS Integrity is challenged, THEN.....	NOTE: This condition does not exist.
		IF intact S/G levels are rising rapidly AND S/G narrow range levels are greater than 7%(25% adverse), THEN....	NOTE: This condition does not exist.
E-0, REACTOR TRIP OR SAFETY INJECTION			

Op Test No.: N24-1 Scenario # 4 Event # 5-7 Page 57 of 83Event Description: **Steam Generator Tube Rupture in S/G B/Main Turbine fails to Trip on Reactor Trip/A MSIV fails to CLOSE/Safety Valve on B SG Lifts and sticks partially OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
NOTE: ○ FOLDOUT page should be open and monitored periodically. ○ Adverse CNMT values should be used whenever CNMT pressure is greater than 4 psig or CNMT radiation is greater than 10+05 R/hr.			
	HCO /CO	Foldout Page	NOTE: The crew will monitor these conditions throughout the performance of E-0.
		RCP TRIP CRITERIA	NOTE: Because of the faulted-ruptured condition of S/G B the RCP Trip Criteria may be met.
		<u>IF BOTH</u> conditions listed below occur, <u>THEN</u> trip both RCPs:	
		a. SI pumps - AT LEAST TWO RUNNING	
		b. RCS pressure minus maximum S/G pressure - LESS THAN 210 psi [240 psi adverse CNMT]	
		LOSS OF SW CRITERIA	
		AFW SUPPLY SWITCHOVER CRITERION	
		SFP COOLING CRITERIA	
		MULTIPLE FUNCTION LOSS CRITERIA	
	HCO	(*Step 5) Verify CNMT Spray Not Required:	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
		○ Annunciator A-27, CNMT SPRAY – EXTINGUISHED	
		○ CNMT pressure – LESS THAN 28 PSIG	
	US	(Step 6) Direct Operator to Perform ATT-27.0, ATTACHMENT AUTOMATIC ACTION VERIFICATION.	

Op Test No.: N24-1 Scenario # 4 Event # 5-7 Page 58 of 83Event Description: **Steam Generator Tube Rupture in S/G B/Main Turbine fails to Trip on Reactor Trip/A MSIV fails to CLOSE/Safety Valve on B SG Lifts and sticks partially OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
			NOTE: The US will hand off ATT-27.0 to either the HCO or the CO and continue with the other operator in E-0. Examiner following operator performing ATT-27.0 continue below. Examiner following operator NOT performing ATT-27.0 continue at Page 61 .
ATTACHMENT 27.0, ATTACHMENT AUTOMATIC ACTION VERIFICATION			
	HCO /CO	(Step 1) Verify SI and RHR Pumps Running:	
		a. All SI pumps – RUNNING	
		b. Both RHR pumps – RUNNING	
	HCO /CO	(Step 2) Verify CNMT RECIRC Fans Running:	
		a. All fans – RUNNING	
		b. Charcoal filter dampers green status lights – EXTINGUISHED	
	HCO /CO	(Step 3) Check If Main Steamlines Should Be Isolated:	
		a. Any MSIV – OPEN	
		b. Check CNMT pressure - LESS THAN 18 PSIG	
		c. Check if ANY main steamlines should be isolated:	
		o Low Tavg (545°F) AND high steam flow (0.5x10 ⁶ lb/hr) from either S/G	
		-OR-	
		o High-High steam flow (4.4x10 ⁶ lb/hr) from either S/G	
		d. Verify MSIV closed on the affected S/G(s)	

Op Test No.: N24-1 Scenario # 4 Event # 5-7 Page 59 of 83Event Description: **Steam Generator Tube Rupture in S/G B/Main Turbine fails to Trip on Reactor Trip/A MSIV fails to CLOSE/Safety Valve on B SG Lifts and sticks partially OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO /CO	(Step 4) Verify MFW Isolation:	
		a. MFW pumps – TRIPPED	
		b. MFW Isolation valves – CLOSED	
		• S/G A, AOV-3995	
		• S/G B, AOV-3994	
		c. S/G blowdown and sample valves - CLOSED	
	HCO /CO	(Step 5) Verify At Least Two SW Pumps - RUNNING	
	HCO /CO	(Step 6) Verify CI And CVI:	
		a. CI and CVI annunciators - LIT	
		• Annunciator A-26, CNMT ISOLATION	
		• Annunciator A-25, CNMT VENTILATION ISOLATION	
		b. Verify CI and CVI valve status lights – BRIGHT	
		c. CNMT RECIRC fan coolers SW outlet valve status lights - BRIGHT	
		• FCV-4561	
		• FCV-4562	
		d. Letdown orifice valves - CLOSED	
		• AOV-200A	
		• AOV-200B	
		• AOV-202	

Op Test No.: N24-1 Scenario # 4 Event # 5-7 Page 60 of 83Event Description: **Steam Generator Tube Rupture in S/G B/Main Turbine fails to Trip on Reactor Trip/A MSIV fails to CLOSE/Safety Valve on B SG Lifts and sticks partially OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
NOTE: <u>IF</u> performing E-0 per direction of FR-S.1, FR-S.2, or FR-H.1 <u>THEN</u> stop here and return to E-0, REACTOR TRIP OR SAFETY INJECTION			
	HCO /CO	(Step 7) Check CCW System Status:	
		a. Verify CCW pump – AT LEAST ONE RUNNING	
	HCO /CO	(Step 8) Verify SI And RHR Pump Flow:	
		a. SI flow indicators – CHECK FOR FLOW	NOTE: it is expected that there will be a small amount of SI flow. If not the Step 8.a RNO will be addressed.
		b. RHR flow indicator – CHECK FOR FLOW	
	HCO /CO	(Step 8b RNO) <u>IF</u> RCS pressure less than 150 psig manually start pumps and align valves. <u>IF NOT</u> , <u>THEN</u> go to Step 9.	
	HCO /CO	(Step 9) Verify SI Pump And RHR Pump Emergency Alignment:	
		a. RHR pump discharge to Rx vessel deluge - OPEN	
		• MOV-852A	
		• MOV-852B	
		b. Verify SI pump C – RUNNING	
		c. Verify SI pump A - RUNNING	
		d. Verify SI pump B - RUNNING	
		e. Verify SI pump C discharge valves - OPEN	
		• MOV-871A	
		• MOV-871B	

Op Test No.: N24-1 Scenario # 4 Event # 5-7 Page 61 of 83Event Description: **Steam Generator Tube Rupture in S/G B/Main Turbine fails to Trip on Reactor Trip/A MSIV fails to CLOSE/Safety Valve on B SG Lifts and sticks partially OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO /CO	(Step 10) Verify CREATS Actuation:	
		a. At least one damper in each flowpath - CLOSED	
		• Normal Supply Air	
		• Normal Return Air	
		• Lavatory Exhaust Air	
		b. CREATS fans – BOTH RUNNING	
<u>NOTE:</u> The hand switches for these valves should be placed in the closed position even if the valve status light is bright.			
	HCO /CO	(Step 11) Verify CI and CVI During a Fire Event	
		a. A confirmed fire has occurred in the control complex or cable tunnel (fire systems S05, S06, S08, Z05, Z18, or Z19)	
	HCO /CO	(Step 11.a RNO) Go to END.	
E-0, REACTOR TRIP OR SAFETY INJECTION			
			Examiner following operator NOT performing ATT-27.0 continue HERE.
	CO/ HCO	(Step 7) Verify Both MDAFW Pumps Running	
<u>NOTE:</u> <u>IF</u> MDAFW Pumps crosstie alignment is required, <u>THEN</u> refer to ATT-5.3, ATTACHMENT MDAFW PUMPS CROSSTIE.			

Op Test No.: N24-1 Scenario # 4 Event # 5-7 Page 62 of 83Event Description: **Steam Generator Tube Rupture in S/G B/Main Turbine fails to Trip on Reactor Trip/A MSIV fails to CLOSE/Safety Valve on B SG Lifts and sticks partially OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
	CO/ HCO	(Step 8) Verify AFW Valve Alignment:	
		a. AFW flow –INDICATED TO BOTH S/G(s)	
		b. AFW flow from each MDAFW pump- LESS THAN 230 GPM	
	CO/ HCO	(*Step 9) Monitor Heat Sink:	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
		a. Check S/G narrow range level – GREATER THAN 7% [25% adverse CNMT] in any S/G	
		b. Check S/G narrow range level - BOTH S/G LESS THAN 50%	
		c. Control feed flow to maintain S/G narrow range level between 7% [25% adverse CNMT] and 50%.	
	CO/ HCO	(Step 10) Check If TDAFW Pump Can Be Stopped:	
		a. Both MDAFW pumps – RUNNING	
		b. PULL STOP TDAFW pump steam supply valves	
		• MOV-3504A	
		• MOV-3505A	

CAUTION

IF OFFSITE POWER IS LOST AFTER SI RESET, THEN MANUAL ACTION MAY BE REQUIRED TO RESTART SAFEGUARDS EQUIPMENT. (REFER TO ATT-8.5, ATTACHMENT LOSS OF OFFSITE POWER)

Op Test No.: N24-1 Scenario # 4 Event # 5-7 Page 63 of 83Event Description: **Steam Generator Tube Rupture in S/G B/Main Turbine fails to Trip on Reactor Trip/A MSIV fails to CLOSE/Safety Valve on B SG Lifts and sticks partially OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
NOTE: <u>IF</u> starting non-safeguards equipment will result in exceeding 278 amps (yellow line) on Buses 14 or 16, <u>THEN DO NOT</u> start non-safeguards equipment.			
	CO/ HCO	(Step 11) Check CCW Flow to RCP Thermal Barriers:	
		o Annunciator A-7, RCP 1A CCW RETURN HI TEMP <u>OR</u> LO FLOW - EXTINGUISHED	
		o Annunciator A-15, RCP 1B CCW RETURN HI TEMP <u>OR</u> LO FLOW - EXTINGUISHED	
	CO/ HCO	(*Step 12) Monitor RCS Tav _g – STABLE AT <u>OR</u> TRENDING TO 547°F	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
			NOTE: Based on plant temperature, the crew may perform the RNO. If not, continue with Step 13.
	CO/ HCO	(Step 12 RNO) <u>IF</u> temperature less than 547°F and lowering, <u>THEN</u> perform the following:	
		a. Stop dumping steam.	
		b. Ensure reheater steam supply valves are closed.	
		c. <u>IF</u> cooldown continues, <u>THEN</u> control total feed flow between 200 gpm to 230 gpm until narrow range level greater than 7% [25% adverse CNMT] in at least one S/G.	
		d. <u>WHEN</u> S/G level greater than 7% [25% adverse CNMT] in one S/G, <u>THEN</u> limit feed flow to that required to maintain level in at least one S/G.	
		e. <u>IF</u> cooldown continues, <u>THEN</u> close both MSIVs.	NOTE: MSIV A is stuck OPEN.

Op Test No.: N24-1 Scenario # 4 Event # 5-7 Page 64 of 83Event Description: **Steam Generator Tube Rupture in S/G B/Main Turbine fails to Trip on Reactor Trip/A MSIV fails to CLOSE/Safety Valve on B SG Lifts and sticks partially OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
	CO/ HCO	(Step 13) Check PRZR PORVs And Spray Valves:	
		a. PORVs – CLOSED	
		b. Auxiliary spray valve (AOV-296) – CLOSED	
		c. Check PRZR pressure – LESS THAN 2260 PSIG	
		d. Normal PRZR spray valves - CLOSED	
		• PCV-431A	
		• PCV-431B	
	CO/ HCO	(Step 14) Monitor RCP Trip Criteria:	
		a. RCP status – ANY RCP RUNNING	
		b. SI pumps – AT LEAST TWO RUNNING	
		c. RCS pressure minus maximum S/G pressure – LESS THAN 210 psi [240 psi adverse CNMT]	NOTE: The RCP Trip Criteria may be met. IF NOT, the US will leave the RCPs running and use the Step 14.c RNO to go to Step 15 and continue to Monitor the Foldout Page.
		d. Stop both RCPs	
	CO	(Step 15) Check If S/G Secondary Side Is Intact:	
		o Pressure in both S/Gs – STABLE <u>OR</u> RISING	NOTE: The pressure is S/G B lowering because of a Stuck Open Safety Valve.
		o Pressure in both S/Gs – GREATER THAN 110 PSIG	

Op Test No.: N24-1 Scenario # 4 Event # 5-7 Page 65 of 83Event Description: **Steam Generator Tube Rupture in S/G B/Main Turbine fails to Trip on Reactor Trip/A MSIV fails to CLOSE/Safety Valve on B SG Lifts and sticks partially OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
	US	(Step 15 RNO) <u>IF</u> any S/G pressure lowering in an uncontrolled manner <u>OR</u> completely depressurized, <u>THEN</u> go to E-2, FAULTED STEAM GENERATOR ISOLATION, Step 1.	
			NOTE: The US will go to E-2.
E-2, FAULTED STEAM GENERATOR ISOLATION			
CAUTION - AT LEAST ONE S/G SHALL BE MAINTAINED AVAILABLE FOR RCS COOLDOWN. - ANY FAULTED S/G <u>OR</u> SECONDARY BREAK SHOULD REMAIN ISOLATED DURING SUBSEQUENT RECOVERY ACTIONS UNLESS NEEDED FOR RCS COOLDOWN.			
NOTE: - Critical Safety Function Status Trees should be monitored. - Adverse CNMT values should be used whenever CNMT pressure is greater than 4 psig or CNMT radiation is greater than 10+05 R/hr. - Foldout page should be open and monitored periodically.			
	HCO /CO	Foldout Page	NOTE: The crew will monitor these conditions throughout the performance of E-2.
		1. LOSS OF SW CRITERIA	
		2. MULTIPLE FUNCTION LOSS CRITERIA	
	CO	(Step 1) Check MSIV of Faulted S/G(s) - CLOSED	NOTE: The 'B' MSIV is closed.
	CO	(Step 2) Check If Any S/G Secondary Side Is Intact:	
		Check pressure in S/G A- STABLE <u>OR</u> RISING	NOTE: S/G A Pressure is stable.
		OR	
		Check pressure in S/G B – STABLE <u>OR</u> RISING	

Op Test No.: N24-1 Scenario # 4 Event # 5-7 Page 66 of 83Event Description: **Steam Generator Tube Rupture in S/G B/Main Turbine fails to Trip on Reactor Trip/A MSIV fails to CLOSE/Safety Valve on B SG Lifts and sticks partially OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
	CO	(Step 3) Check Faulted S/G Status:	
		Faulted S/G pressure – LOWERING IN AN UNCONTROLLED MANNER	NOTE: S/G B Pressure is lowering uncontrollably.
		-OR-	
		Faulted S/G – COMPLETELY DEPRESSURIZED	
	HCO /CO	(Step 4) Isolate Feed Flow To Faulted S/G:	
		a. Close or verify closed the following valves:	
	CO	Faulted S/G MDAFW pump discharge valve	
		S/G A, MOV-4007	
		S/G B, MOV-4008	
	CO	Faulted S/G MFW regulating valve and bypass valve - Closed	
		S/G A, HCV-466 and HCV-480	
		S/G B, HCV-476 and HCV-481	
	CO	MFW isolation valves - CLOSED	
		S/G A, AOV-3995	
		S/G B, AOV-3994	
	CO	MDAFW pump crosstie valves – BOTH CLOSED	
		MOV-4000A	
		MOV-4000B	
	HCO /CO	Faulted S/G SAFW pump discharge valve	
		S/G A, MOV-9704A	
		S/G B, MOV-9704B	

Op Test No.: N24-1 Scenario # 4 Event # 5-7 Page 67 of 83Event Description: **Steam Generator Tube Rupture in S/G B/Main Turbine fails to Trip on Reactor Trip/A MSIV fails to CLOSE/Safety Valve on B SG Lifts and sticks partially OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO /CO	b. Pull stop faulted S/G MDAPW pump	
	HCO /CO	c. Close faulted S/G TDAFW flow control valve	
		• S/G A, AOV-4297	
		• S/G B, AOV-4298	
CAUTION <u>IF THE TDAFW PUMP IS THE ONLY AVAILABLE SOURCE OF FEED FLOW, THEN STEAM SUPPLY TO THE TDAFW PUMP MUST BE MAINTAINED FROM ONE S/G.</u>			
		(Step 5) Isolate Steam Flow From Faulted S/G:	
	CO	○ Verify faulted S/G ARV - CLOSED	
		• S/G A, AOV-3411	
		• S/G B, AOV-3410	
	CO	○ Close faulted S/G TDAFW pump steam supply valve and place in PULL STOP	
		• S/G A, MOV-3505A	
		• S/G B, MOV-3504A	
	HCO	○ Verify faulted S/G blowdown and sample valves - CLOSED	
		• S/G A, AOV-5738 and AOV-5735	
		• S/G B, AOV-5737 and AOV-5736	
	US	○ Dispatch EO to complete faulted S/G isolation (Refer to ATT-10.0, ATTACHMENT FAULTED S/G)	NOTE: The US will direct the EO to perform ATT-10.0 for the B SG. SIM DRIVER: as EO, acknowledge, and RUN schedule ATT-10 for B SG.sch and after ten minutes report that ATT-10.0 is complete.

Op Test No.: N24-1 Scenario # 4 Event # 5-7 Page 68 of 83Event Description: **Steam Generator Tube Rupture in S/G B/Main Turbine fails to Trip on Reactor Trip/A MSIV fails to CLOSE/Safety Valve on B SG Lifts and sticks partially OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
<u>Critical Task #2:</u>			
CT-2: Isolate Faulted-Ruptured Steam Generator B before a severe (ORANGE path) challenge develops to the RCS integrity Critical Safety Function AND direct performance of ATT-16.0 (Attachment Ruptured S/G) before transitioning out of E-3.			
Expected Actions: (1a) Stop AFW flow to S/G 'B' by closing MOV-4008 (B S/G MDAFW pump discharge valve) OR (1b) placing the control switch for B MDAFW Pump to PULL STOP, AND (2) closing AOV-4298 (B S/G TDAFW flow control valve); AND stop steam flow from S/G 'B' to the TDAFW Pump by placing the MOV-3504A control switch to PULL STOP AND dispatch an EO to perform ATT-10.0 (Attachment Faulted S/G) before a severe (ORANGE path) challenge develops to the RCS integrity Critical Safety Function, Dispatch an EO to perform ATT-16.0 (Attachment Ruptured S/G) before transitioning out of E-3.			
<u>CAUTION</u>			
IF CST LEVEL LOWERS TO LESS THAN 5 FEET, <u>THEN</u> ALTERNATE WATER SOURCES FOR AFW PUMPS WILL BE NECESSARY (REFER TO ER-AFW.1, ALTERNATE WATER SUPPLY TO AFW PUMPS).			
<u>NOTE:</u>			
TDAFW pump flow control AOVs may drift open on loss of IA.			
		(*Step 6) Monitor Intact S/G Levels:	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
	CO	a. Narrow range level – GREATER THAN 7% [25% adverse CNMT]	
	CO	b. Control feed flow to maintain narrow range level between 17% [25% adverse CNMT] and 50%	
		(Step 7) Check Secondary Radiation Levels - NORMAL	
	HCO	o Steamline radiation monitor (R-31 and R-32)	
		o Air ejector radiation monitor (R-15)	

Op Test No.: N24-1 Scenario # 4 Event # 5-7 Page 69 of 83Event Description: **Steam Generator Tube Rupture in S/G B/Main Turbine fails to Trip on Reactor Trip/A MSIV fails to CLOSE/Safety Valve on B SG Lifts and sticks partially OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
		S/G blowdown radiation monitor (R-19)	
	US	Request Chem Tech sample S/Gs for activity	NOTE: The US may notify the WCC/Chemistry. SIM DRIVER: as WCCS/Chemistry, acknowledge.
	US	(Step 7 RNO) <u>IF</u> steamline radiation monitors <u>NOT</u> available, <u>THEN</u> dispatch EO to locally check steamline radiation.	
	US	<u>IF</u> abnormal radiation levels detected in any S/G, <u>THEN</u> go to E-3, STEAM GENERATOR TUBE RUPTURE, Step 1.	
			NOTE: The US will transition to E-3.
E-3, STEAM GENERATOR TUBE RUPTURE			
NOTE: - FOLDOUT page should be open <u>AND</u> monitored periodically. - Critical Safety Function Status Trees should be monitored (Refer to Appendix 1 for Red Path Summary). - Personnel should be available for sampling during this procedure. - Conditions should be evaluated for Site Contingency Reporting (Refer to EP-AA-1012 ADDENDUM 3, EXELON NUCLEAR EMERGENCY ACTION LEVELS FOR GINNA STATION). - Adverse CNMT values should be used whenever CNMT pressure is greater than 4 psig or CNMT radiation is greater than 10+05 R/hr.			
	HCO /CO	Foldout Page:	NOTE: The crew will monitor these conditions throughout the performance of E-3.
		LOSS OF SW CRITERIA	
		SI REINITIATION CRITERIA	
		SECONDARY INTEGRITY CRITERIA	
		COLD LEG RECIRCULATION SWITCHOVER CRITERION	

Op Test No.: N24-1 Scenario # 4 Event # 5-7 Page 70 of 83Event Description: **Steam Generator Tube Rupture in S/G B/Main Turbine fails to Trip on Reactor Trip/A MSIV fails to CLOSE/Safety Valve on B SG Lifts and sticks partially OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
		AFW SUPPLY SWITCHOVER CRITERION	
		MULTIPLE S/G TUBE RUPTURE CRITERIA	
	US	(Step 1) Dispatch an EO to stand by at door 44 in the Turbine Building.	NOTE: The US will dispatch an EO. SIM DRIVER: as EO, acknowledge.
	HCO	(*Step 2) Monitor RCP Trip Criteria:	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
		a. RCP status –ANY RCP RUNNING	NOTE: The RCP Trip Criteria may have been met previously and tripped. IF so, the US use the Step 2.a RNO to go to Step 3.
		b. SI pumps – AT LEAST TWO RUNNING	
		c. RCS pressure minus maximum S/G pressure – LESS THAN 210 psi [240 psi adverse CNMT]	NOTE: The RCP Trip Criteria may be met. If so, they will be tripped here using step 2.d.
	US	(Step 2.c RNO) Go to Step 3	
CAUTION IF OFFSITE POWER IS LOST AFTER SI RESET, THEN MANUAL ACTION MAY BE REQUIRED TO RESTART SAFEGUARDS EQUIPMENT. (REFER TO ATT-8.5, ATTACHMENT LOSS OF OFFSITE POWER)			
	CO	(Step 3) Identify Ruptured S/G(s):	
		o Unexpected rise in either S/G narrow range level	NOTE: The CO reports that there is/was an unexpected rise in B SG Level.
		OR	
		o High radiation indication on main steamline radiation monitor	

Op Test No.: N24-1 Scenario # 4 Event # 5-7 Page 71 of 83Event Description: **Steam Generator Tube Rupture in S/G B/Main Turbine fails to Trip on Reactor Trip/A MSIV fails to CLOSE/Safety Valve on B SG Lifts and sticks partially OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
		R-31 for S/G A	
		R-32 for S/G B	NOTE: There is an elevated level on R-32.
		OR	
		EO reports local indication of high steamline radiation	
		OR	
		RP reports high radiation from S/G activity sample.	
CAUTION - IF THE TDAFW PUMP IS THE ONLY AVAILABLE SOURCE OF FEED FLOW, STEAM SUPPLY TO THE TDAFW PUMP MUST BE MAINTAINED FROM ONE S/G. - AT LEAST ONE S/G SHALL BE MAINTAINED AVAILABLE FOR RCS COOLDOWN.			
	CO	(Step 4) Isolate Flow From Ruptured S/G(s):	NOTE: S/G B is ruptured
		a. Adjust ruptured S/G ARV controller to 1050 psig in AUTO	NOTE: This adjustment may have already been made.
		b. Check ruptured S/G ARV - CLOSED	
		c. Close ruptured S/G TDAFW pump steam supply valve and place in PULL STOP	NOTE: This action may have already been accomplished.
		S/G B, MOV-3504A	
		d. Verify ruptured S/G blowdown valve - CLOSED	
		S/G B, AOV-5737	
	CO	(Step 5) Complete Ruptured S/G Isolation:	
		a. Close ruptured S/G MSIV –RUPTURED S/G MSIV CLOSED	

Op Test No.: N24-1 Scenario # 4 Event # 5-7 Page 72 of 83Event Description: **Steam Generator Tube Rupture in S/G B/Main Turbine fails to Trip on Reactor Trip/A MSIV fails to CLOSE/Safety Valve on B SG Lifts and sticks partially OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
		b. Dispatch EO to complete ruptured S/G isolation (Refer to ATT-16.0, ATTACHMENT RUPTURED S/G Section 1)	NOTE: The US will dispatch an EO. SIM DRIVER: as EO , acknowledge, and perform all remotes associated with ATT-16.0 (Schedule File ATT16.0SG B Section 1.sch).
CAUTION			
IF ANY RUPTURED S/G IS FAULTED, FEED FLOW TO THAT S/G SHOULD REMAIN ISOLATED DURING SUBSEQUENT RECOVERY ACTIONS UNLESS NEEDED FOR RCS COOLDOWN.			
	CO	(Step 6) Check Ruptured S/G Level:	
		a. Narrow range level – GREATER THAN 7% [25% adverse CNMT]	
	US	(Step 6.a RNO) <u>IF</u> ruptured S/G <u>NOT</u> faulted, <u>THEN</u> perform the following:	NOTE: SG B is ruptured and faulted. No action will be taken.
		(Step 6)	
		b. Close MDAFW pump discharge valve to ruptured S/G	
		• S/G B, MOV-4008	NOTE: This action may have already been accomplished.
		c. Pull stop MDAFW pump for ruptured S/G	
		d. Close TDAFW pump flow control valve to ruptured S/G	
		• S/G B, AOV-4298	
		e. Verify MDAFW pump crosstie valves - CLOSED	
		• MOV-4000A	
		• MOV-4000B	

Op Test No.: N24-1 Scenario # 4 Event # 5-7 Page 73 of 83Event Description: **Steam Generator Tube Rupture in S/G B/Main Turbine fails to Trip on Reactor Trip/A MSIV fails to CLOSE/Safety Valve on B SG Lifts and sticks partially OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
CAUTION			
MAJOR STEAM FLOW PATHS FROM THE RUPTURED S/G SHOULD BE ISOLATED BEFORE INITIATING RCS COOLDOWN.			
	CO	(Step 7) Verify Ruptured S/G Isolated:	
		a. Check ruptured MSIV - CLOSED	NOTE: The B MSIV has been previously closed.
		b. Check TDAFW pump steam supply from ruptured S/G - ISOLATED	
		c. Ruptured S/G pressure – GREATER THAN 500 PSIG	NOTE: SG B pressure is NOT greater than 500 psig.
	US	(Step 7.c RNO) Go to ECA-3.1, SGTR WITH LOSS OF REACTOR COOLANT – SUBCOOLED RECOVERY DESIRED, Step 1.	
Critical Task #2:			
CT-2: Isolate Faulted-Ruptured Steam Generator B before a severe (ORANGE path) challenge develops to the RCS integrity Critical Safety Function AND direct performance of ATT-16.0 (Attachment Ruptured S/G) before transitioning out of E-3.			
<u>Expected Actions:</u> (1a) Stop AFW flow to S/G 'B' by closing MOV-4008 (B S/G MDAFW pump discharge valve) OR (1b) placing the control switch for B MDAFW Pump to PULL STOP, AND (2) closing AOV-4298 (B S/G TDAFW flow control valve); AND stop steam flow from S/G 'B' to the TDAFW Pump by placing the MOV-3504A control switch to PULL STOP AND dispatch an EO to perform ATT-10.0 (Attachment Faulted S/G) before a severe (ORANGE path) challenge develops to the RCS integrity Critical Safety Function, Dispatch an EO to perform ATT-16.0 (Attachment Ruptured S/G) before transitioning out of E-3.			
ECA-3.1, SGTR WITH LOSS OF REACTOR COOLANT – SUBCOOLED RECOVERY DESIRED			

Op Test No.: N24-1 Scenario # 4 Event # 5-7 Page 74 of 83Event Description: **Steam Generator Tube Rupture in S/G B/Main Turbine fails to Trip on Reactor Trip/A MSIV fails to CLOSE/Safety Valve on B SG Lifts and sticks partially OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
CAUTION IF OFFSITE POWER IS LOST AFTER SI RESET, <u>THEN</u> MANUAL ACTION MAY BE REQUIRED TO RESTART SAFEGUARDS EQUIPMENT. (REFER TO ATT-8.5, ATTACHMENT LOSS OF OFFSITE POWER)			
NOTE: ○ Foldout page should be open <u>AND</u> monitored periodically. ○ Adverse CNMT values should be used whenever CNMT pressure is greater than 4 psig or CNMT radiation is greater than 10+05 R/hr.			
	HCO /CO	Foldout Page	NOTE: The crew will monitor these conditions throughout the performance of ECA-3.1.
		LOSS OF SW CRITERIA	
		SI REINITIATION CRITERIA	
		SATURATED RECOVERY CRITERIA	
		SECONDARY INTEGRITY CRITERIA	
		COLD LEG RECIRCULATION SWITCHOVER CRITERION	
		AFW SUPPLY SWITCHOVER CRITERION	
	HCO	(Step 1) Reset SI	
		(Step 2) Reset CI:	
	HCO	a. Depress CI reset pushbutton	
	HCO	b. Verify annunciator A-26, CNMT ISOLATION - EXTINGUISHED	
		(Step 3) Verify Adequate SW Flow:	
	CO	a. Check at least two SW pumps - RUNNING	
	US	b. Dispatch EO to establish normal shutdown alignment (Refer to ATT-17.0, ATTACHMENT SD-1)	NOTE: The US will dispatch an EO. SIM DRIVER: as EO, acknowledge.

Op Test No.: N24-1 Scenario # 4 Event # 5-7 Page 75 of 83Event Description: **Steam Generator Tube Rupture in S/G B/Main Turbine fails to Trip on Reactor Trip/A MSIV fails to CLOSE/Safety Valve on B SG Lifts and sticks partially OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
CAUTION IF STARTING NON-SAFEGUARDS EQUIPMENT WILL RESULT IN EXCEEDING 278 AMPS (YELLOW LINE) ON BUSES 14 OR 16 OR EMERGENCY DIESEL LOADING OF 1950 KW, THEN DO NOT START NON-SAFEGUARDS EQUIPMENT.			
		(Step 4) Establish IA to CNMT:	
	CO	a. Verify non-safeguards buses energized from offsite power	
		o Bus 13 normal feed breaker – CLOSED	
		-OR-	
		o Bus 15 normal feed breaker – CLOSED	
	CO	b. Verify SW isolation valves to turbine building - OPEN	
		• MOV-4613 and MOV-4670	
		• MOV-4614 and MOV-4664	
	CO	c. Verify adequate air compressor(s) - RUNNING	
	CO	d. Check IA supply:	
		o Pressure – GREATER THAN 60 PSIG	
		o Pressure – STABLE OR RISING	
	HCO	e. Reset both trains of XY relays for IA to CNMT AOV-5392	
	HCO	f. Verify IA to CNMT AOV-5392 - OPEN	
		(*Step 5) Monitor AC Bus Power:	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
	CO	a. Verify Safeguards Busses 14, 16, 17, and 18 – GREATER THAN 440 VOLTS	

Op Test No.: N24-1 Scenario # 4 Event # 5-7 Page 76 of 83Event Description: **Steam Generator Tube Rupture in S/G B/Main Turbine fails to Trip on Reactor Trip/A MSIV fails to CLOSE/Safety Valve on B SG Lifts and sticks partially OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
	CO	b. Verify ALL AC Busses – BUSSES ENERGIZED BY OFFSITE POWER	
		o Normal feed breakers to all 480 volt busses - CLOSED	
		o Emergency D/G output breakers - OPEN	
CAUTION PRZR HEATERS SHOULD <u>NOT</u> BE ENERGIZED UNTIL PRZR LEVEL INDICATES GREATER THAN MINIMUM RECOMMENDED BY TSC TO ENSURE HEATERS ARE COVERED.			
	HCO	(Step 6) Deenergize PRZR Heaters	
	HCO	a. Place PRZR proportional heaters in PULL STOP	
	HCO	b. Place PRZR backup heaters to OFF	
	US	c. Consult TSC for a recommended minimum indicated PRZR level that will ensure heaters are covered.	NOTE: The US will contact the TSC. SIM DRIVER: as TSC, acknowledge and indicate that the TSC will call back when they are ready to turnover.
		(*Step 7) Monitor If CNMT Spray Should Be Stopped:	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
	HCO	a. CNMT spray pumps – ANY RUNNING	
	US	(Step 7.a RNO) Go to Step 8.	
CAUTION <u>IF</u> ANY RUPTURED S/G IS FAULTED, FEED FLOW TO THAT S/G SHOULD REMAIN ISOLATED DURING SUBSEQUENT RECOVERY ACTIONS UNLESS NEEDED FOR RCS COOLDOWN.			

Op Test No.: N24-1 Scenario # 4 Event # 5-7 Page 77 of 83Event Description: **Steam Generator Tube Rupture in S/G B/Main Turbine fails to Trip on Reactor Trip/A MSIV fails to CLOSE/Safety Valve on B SG Lifts and sticks partially OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
		(Step 8) Check Ruptured S/G Level:	
	CO	a. Narrow range level – GREATER THAN 7% [25% adverse CNMT]	
	US	(Step 8.a RNO) <u>IF</u> ruptured S/G <u>NOT</u> faulted, <u>THEN</u> perform the following:	NOTE: SG B is ruptured and faulted. No action will be taken.
		(Step 8) Check Ruptured S/G Level:	
	CO	b. Close MDAFW pump discharge valve to ruptured S/G	
		• S/G A, MOV-4007	
	CO	• S/G B, MOV-4008	NOTE: This action has already been accomplished.
	CO	c. Pull stop MDAFW pump for ruptured S/G	NOTE: This action has already been accomplished.
	CO	d. Close TDAFW pump flow control valve to ruptured S/G	
		• S/G A, AOV-4297	
		• S/G B, AOV-4298	NOTE: This action has already been accomplished.
	CO	e. Verify MDAFW pump crosstie valves - CLOSED	
		• MOV-4000A	
		• MOV-4000B	
CAUTION RCS PRESSURE SHOULD BE MONITORED. <u>IF</u> RCS PRESSURE LOWERS IN AN UNCONTROLLED MANNER TO LESS THAN 300 PSIG [350 PSIG ADVERSE CNMT], <u>THEN</u> THE RHR PUMPS MUST BE MANUALLY RESTARTED TO SUPPLY WATER TO THE RCS.			

Op Test No.: N24-1 Scenario # 4 Event # 5-7 Page 78 of 83Event Description: **Steam Generator Tube Rupture in S/G B/Main Turbine fails to Trip on Reactor Trip/A MSIV fails to CLOSE/Safety Valve on B SG Lifts and sticks partially OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
		(*Step 9) Monitor If RHR Pumps Should Be Stopped:	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
	HCO	a. RHR pumps – ANY RUNNING IN INJECTION MODE	
	HCO	b. Check RCS pressure:	
		o Pressure – GREATER THAN 300 psig [350 psig adverse CNMT]	
		o Pressure – STABLE <u>OR</u> RISING	
	HCO	c. Stop RHR pumps and place in AUTO	
	US	d. Dispatch EO to perform ATT-14.6, ATTACHMENT RHR PRESS REDUCTION, Part A.	NOTE: The US will dispatch an EO. SIM DRIVER: as EO, acknowledge.
			Examiner NOTE: If an ORANGE/RED path condition develops on the RCS Integrity Critical Safety Function, Terminate the Exam.
		(Step 10) Evaluate Plant Status:	
	HCO	a. Check auxiliary building radiation - NORMAL	
		• Plant vent iodine (R-10B)	
		• Plant vent particulate (R-13)	
		• Plant vent gas (R-14)	
		• CCW liquid monitor (R-17)	
		• Letdown line monitor (R-9)	
		• CHG pump room (R-4)	
	US	b. Direct Chem Tech to obtain following samples:	NOTE: The US may notify the WCC/Chemistry. SIM DRIVER: as WCCS/Chemistry, acknowledge.
		• RCS boron	

Op Test No.: N24-1 Scenario # 4 Event # 5-7 Page 79 of 83Event Description: **Steam Generator Tube Rupture in S/G B/Main Turbine fails to Trip on Reactor Trip/A MSIV fails to CLOSE/Safety Valve on B SG Lifts and sticks partially OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
		RCS activity	
		CNMT hydrogen	
		CNMT sump boron	
		CNMT sump pH	
		c. Verify adequate Rx head cooling:	
	HCO	1) Verify at least one control rod shroud fan - RUNNING	
	HCO	2) Verify one Rx compartment cooling fan - RUNNING	
		(Step 11) Check Power Availability to Charging Pumps:	
	HCO /CO	a. Check Normal Power Available To Charging Pumps:	
		Bus 14 normal feed breaker - CLOSED	
		Bus 16 normal feed breaker - CLOSED	
	CO	b. Verify adequate Safeguard Bus capacity to run charging pumps (6 amps each)	
		Station Service transformer 14 ammeter	
		Station Service transformer 16 ammeter	
		(Step 12) Establish 75 GPM Charging Flow:	
	HCO	a. Charging pumps – ANY RUNNING	
		(Step 12.a RNO) Perform the following:	

Op Test No.: N24-1 Scenario # 4 Event # 5-7 Page 80 of 83Event Description: **Steam Generator Tube Rupture in S/G B/Main Turbine fails to Trip on Reactor Trip/A MSIV fails to CLOSE/Safety Valve on B SG Lifts and sticks partially OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	1) <u>IF</u> CCW flow is lost to any RCP thermal barrier <u>OR</u> any RCP #1 seal outlet temperature greater than 235°F, <u>THEN</u> dispatch EO to locally isolate seal injection to affected RCP.	
		• RCP A, V-300A	
		• RCP B, V-300B	
	HCO	2) Ensure HCV-142 open.	
	HCO	(Step 12) b. Align charging pump suction to RWST:	
		○ LCV-112B - OPEN	
		○ LCV-112C - CLOSED	
	HCO	c. Start charging pumps as necessary and establish 75 gpm total charging flow	
		• Charging line flow	
		• Seal injection	
	CO	(Step 13) Check If S/G Secondary Side Is Intact:	
		○ Pressure in both S/Gs – STABLE <u>OR</u> RISING	NOTE: S/G B Pressure is lowering uncontrollably.
		○ Pressure in both S/Gs – GREATER THAN 110 PSIG	
	CO	(Step 13 RNO) <u>IF</u> any S/G pressure lowering in an uncontrolled manner <u>OR</u> completely depressurized, <u>THEN</u> verify faulted S/G isolated unless needed for RCS cooldown:	
		• Steamlines	
		• Feedlines	

Op Test No.: N24-1 Scenario # 4 Event # 5-7 Page 81 of 83Event Description: **Steam Generator Tube Rupture in S/G B/Main Turbine fails to Trip on Reactor Trip/A MSIV fails to CLOSE/Safety Valve on B SG Lifts and sticks partially OPEN**

Time	Pos.	Expected Actions/Behavior	Comments
	US	<u>IF NOT, THEN</u> go to E-2, FAULTED STEAM GENERATOR ISOLATION, Step 1.	NOTE: The US will recognize that SG B has been isolated per E-2 and continue in ECA-3.1.
NOTE: TDAFW pump flow control AOVs may drift open on loss of IA.			
		(*Step 14) Monitor Intact S/G Levels:	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
	CO	a. Narrow range level – GREATER THAN 7% [25% adverse CNMT]	
	CO	b. Control feed flow to maintain narrow range level between 17% [25% adverse CNMT] and 50%	
NOTE: Shutdown margin should be monitored during RCS cooldown (Refer to FIG-2.0, FIGURE SDM).			
		(Step 15) Initiate RCS Cooldown To Cold Shutdown:	
	CO	a. Establish and maintain cooldown rate in RCS cold legs – LESS THAN 100°F/HR	NOTE: The US will determine that RCS cooldown rate is currently above 100°F /hour.
At the discretion of the Lead Examiner terminate the exam.			

TURNOVER SHEET for NRC Exam Scenario #4

SHIFT TURNOVER CHECKLIST

Page 1 of 1

Off-Going Shift: Nights

Off-Going SM: S. Manager

INPO 19-003 Staying on Top Advancing a Culture of Continuous Improvement: Excellence Standards

PLANT STATUS							Today	
Days Online	BOL	Station Risk	CDF	LERF	SFP Time to 200°F (Hours)	Days to Next Refuel/Planned Outage		
45	Current	Green	Green	Green	81.0	502		
	Planned	Green	Green	Green				
RCS Boron: 1715 ppm BAST: 17,500 ppm			GSU GROSS MW (PPCS 'GROSSH')	252	Cond. Vacuum Avg. ("Hg)	28.8		
Reactor Power		48%	Service Water Temp (°F)	45				
MODE 1				Protected Equipment				
Reactor Coolant Pressure Boundary Identified Leakage (GPM) (Goal <0.25)				0.005	OPG-PROTECTED-EQUIPMENT, Attachment 2 MFWP A MCB Cont Swtchs for MFP B, AC Oil Pumps 1B1 and 1B2 and DC oil Pump Bus 11B Position 25 MCB Control Switches for MCC A and MCC B Bus 11B, MCC A, MCC B and MFP B areas MCC A/04D MCC B/02D DCPDPCB03B/14			
Reactor Coolant Pressure Boundary Unidentified Leakage (GPM) (Goal <0.10)				0.019				
Non-RCPB Leakage (A/C Charging Pumps) (CPLR) (GPM) (Goal <0.060)				0.031				
Containment Depressurizations (Goal <8 in Last 7 Days)				6				
Sump A Pump Down Frequency (Hours) (Goal >48)				Today 490 hours				
Condenser Air Inleakage (SCFM)(Goal<10SCFM)				7.7				
LCO Activities – A-52.4's (P) Planned (U) Unplanned								
#	Equipment	LCO	Date/Time Out of Service	Expiration Date/Time	Owner	Estimated RTS Date		
1								
Non-LCO Activities - A-52.12's (P) Planned (U) Unplanned								
#	Equipment	LCO	Date/Time Out of Service	Expiration Date/Time	Owner	Estimated RTS Date		
PRIORITY 1 AND 2 ISSUE REPORTS AND WORK ORDERS								
#	Pri	Description	IR / WO	WO Grade	Owner	SDM	Completion Date	Consequence/Desired Outcome
1	4	CBP A	98234571		MMD	Yes	7/24/24	
2	4	MFWP A	98234578		MMD	Yes	7/25/24	

TURNOVER SHEET for NRC Exam Scenario #4

ACTIONS/NOTES:

- The plant is at 48% power (BOL) and stable for the last three days.
- It is expected to maintain power stable at the current power level throughout the shift until maintenance on MFWP A is completed.
- Engineering is monitoring elevated vibrations on Circulating Water Pump B.
- The A MFWP is OOS for thrust bearing replacement.
- Condensate Booster Pump A is OOS for impeller replacement.

(SPARE SCENARIO – NOT USED)

PROGRAM: Ginna Operations Training

MODULE: Initial License Operator Training Class 23-1

TOPIC: NRC Simulator Exam

Scenario N24-1-1

REFERENCES:

1. Technical Specification LCO 3.6.6, CONTAINMENT SPRAY (CS), CONTAINMENT RECIRCULATION FAN COOLER (CRFC), AND NAOH SYSTEMS, Amendment 150
2. O-5.1, LOAD REDUCTIONS, Rev 069
3. S-3.1, BORON CONCENTRATION CONTROL, Rev 037
4. A-503.1, EMERGENCY AND ABNORMAL OPERATING PROCEDURES USERS GUIDE, Rev 062
5. AR-F-10, PRESSURIZER LO PRESS 2205 PSI, Rev 10
6. AP-PRZR.1, ABNORMAL PRESSURIZER PRESSURE, Rev 019
7. Technical Specification LCO 3.4.1, RCS PRESSURE, TEMPERATURE, AND FLOW DEPARTURE FROM NUCLEATE BOILING (DNB) LIMITS, Amendment 122
8. RE Ginna Nuclear Power Plant CORE OPERATING LIMITS REPORT, COLR, Cycle 44, Rev 0
9. Technical Requirements Manual TR-3.4.3, ANTICIPATED TRANSIENTS WITHOUT SCRAM (ATWS) MITIGATION, Rev 73
10. AP-FW.2, SECONDARY COOLANT LEAK, Rev 002
11. P-17.18, PLACING CHARGING PUMP AND 431K CONTROLLERS IN AUTOMATIC, Rev 000
12. AR-F-15, RCS TAVG DEV 4°F, Rev 007
13. ER-INST.1, REACTOR PROTECTION BISTABLE DEFEAT AFTER INSTRUMENTATION LOOP FAILURE, Rev 041
14. Technical Specification LCO 3.3.1, REACTOR TRIP SYSTEM (RTS) INSTRUMENTATION, Amendment 150/154
15. Technical Specification LCO 3.3.2, ENGINEERED SAFETY FEATURE ACTUATION SYSTEM (ESFAS) INSTRUMENTATION, Amendment 150
16. E-0, REACTOR TRIP OR SAFETY INJECTION, Rev 050
17. ATT-27.0, ATTACHMENT AUTOMATIC ACTION VERIFICATION, Rev 00400
18. ATT-3.0, ATTACHMENT CI/CVI, Rev 014
19. E-1, LOSS OF REACTOR OR SECONDARY COOLANT, Rev 043
20. ECA-1.2, LOCA OUTSIDE CONTAINMENT, Rev 00800

Validation Time: 120 minutes

Author: David Lazarony, Essential Training & Consulting, LLC

Facility Review: Don Dean, Exam Author

Rev. 042924

Ginna 2024 NRC Scenario #1 Objectives:

Given the simulator at an initial condition of 100% power evaluate:

1. the US's ability to supervise the control room team during the normal, abnormal, and emergency situations that arise, including compliance with all facility procedures, Technical Specifications, and other commitments.
2. each crew member's ability to effectively communicate as part of a control room team during the normal, abnormal, and emergency situations that arise.
3. each crew member's ability to conduct a load reduction in accordance with O-5.1, LOAD REDUCTIONS, and S-3.1, BORON CONCENTRATION CONTROL.
4. the HCO's ability to effectively diagnose and to mitigate the consequences of a Master Pressure Controller (431K) output failing to 100% in accordance with A-503.1, EMERGENCY AND ABNORMAL OPERATING PROCEDURES USERS GUIDE, and AP-PRZR.1, ABNORMAL PRESSURIZER PRESSURE.
5. each crew member's ability to effectively diagnose and the CO's ability to mitigate the consequences of a failed open Atmospheric Relief Valve in accordance with A-503.1, EMERGENCY AND ABNORMAL OPERATING PROCEDURES USERS GUIDE, and/or AP-FW.2, SECONDARY COOLANT LEAK.
6. each crew member's ability to effectively diagnose and mitigate the consequences of a failed Loop Thot instrument in accordance with Annunciator Response Procedures and ER-INST.1, REACTOR PROTECTION BISTABLE DEFEAT AFTER INSTRUMENTATION LOOP FAILURE.
7. each crew member's ability to effectively diagnose an inadvertent Safety Injection actuation and intersystem LOCA and the HCO and CO's ability to respond to such an event in accordance with E-0, REACTOR TRIP OR SAFETY INJECTION, E-1, LOSS OF REACTOR OR SECONDARY COOLANT, and ECA-1.2, LOCA OUTSIDE CONTAINMENT.
8. the HCO's ability to determine that the A Emergency Diesel Generator (EDG) has failed to automatically start during a Safety Injection actuation and take action to manually start the EDG.

Scenario Event Description
NRC Scenario 1

Facility:	Ginna	Scenario No.:	1	Op Test No.:	N24-1
Scenario Source: Modified from C20-1-3					
Examiners:		Operators:			
		(SRO)			
		(RO)			
		(BOP)			
Initial Conditions:		The plant is at 100% power (EOL). The crew will conduct a normal power reduction to 48% because of concerns over excessive vibrations on Circulating Water Pump B.			
Turnover:		The following equipment is Out-Of-Service: Containment Spray Pump B (TS 3.6.6 Condition A, Action A.1) is OOS for motor bearing replacement.			
Critical Tasks:		CT-1: Energize at least one AC Emergency Bus within 15 minutes of the Total Loss of AC Power. CT-2: Isolate LOCA outside containment prior to transition out of ECA-1.2.			
Event No.	Malf. No.	Event Type*	Event Description		
1	NA	R-RO N-BOP N-SRO	Load Reduction		
2	MAL PZR04	C(MC)-RO C(TS)-SRO	Master Pressure Controller (431K) fails HIGH		
3	MAL STM04A	C(MC)-BOP C-SRO	A S/G ARV Fails OPEN (3411)		
4	MAL RCS11F	I-RO I-BOP I(TS)-SRO	Loop B T _{hot} TE-404A fails HIGH		
5	MAL SIS01 EDS01A EDS01B	M-RO M-BOP M-SRO	A Train SI inadvertently actuates/Intersystem LOCA/Loss of Off-Site Power		
6	MAL GEN08 GEN04B	C(MC)-RO C-SRO	A EDG fails to Auto START/B EDG fails to START (CT-1)		
7	MAL RCS19C	C-RO C-SRO	RHR Piping failure results in LOCA Outside CNMT (CT-2)		
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor, (TS) Tech Spec, (MC) Manual Control					

Scenario Event Description
NRC Scenario 1

Ginna 2024 NRC Scenario #1

The plant is at 100% power (EOL). The crew will conduct a normal power reduction to 48% because of concerns over excessive vibrations on Circulating Water Pump B.

The following equipment is Out-Of-Service: Containment Spray Pump B (TS LCO 3.6.6 Condition A, Action A.1) is OOS for motor bearing replacement.

Shortly after taking the watch, the operator will lower power at 10%/hour in accordance with O-5.1, LOAD REDUCTIONS. The operator will address S-3.1, BORON CONCENTRATION CONTROL, to start the load reduction.

During the load reduction, the Master Pressure Controller (431K) will fail such that the output in Automatic goes to 100%, causing both Pressurizer Spray Valves to OPEN, and RCS Pressure to LOWER. The operator will respond by placing 431K in MANUAL using the guidance of A-503.1, EMERGENCY AND ABNORMAL OPERATING PROCEDURES USERS GUIDE, and AR-F-10, PRESSURIZER LO PRESS 2205 PSI, and enter AP-PRZR.1, ABNORMAL PRESSURIZER PRESSURE. The operator will address Technical Specification LCO 3.4.1, RCS PRESSURE, TEMPERATURE, AND FLOW DEPARTURE FROM NUCLEATE BOILING (DNB) LIMITS, and Technical Requirements Manual TR-3.4.3, ANTICIPATED TRANSIENTS WITHOUT SCRAM (ATWS) MITIGATION. The Master Pressure Controller will remain in MANUAL until completion of Event 3 (A S/G ARV Fails OPEN) and then be restored to AUTO, using Time Compression, based on completed maintenance.

Following this, the controller for the A S/G ARV will fail such that the valve will travel to the fully OPEN position. The operator will take manual control of the ARV-3411 and close the valve using the guidance of A-503.1, EMERGENCY AND ABNORMAL OPERATING PROCEDURES USERS GUIDE, and/or AP-FW.2, SECONDARY COOLANT LEAK.

Subsequently, Loop B Thot instrument TE-404A will fail HIGH. The crew will respond using ER-INST.1, REACTOR PROTECTION BISTABLE DEFEAT AFTER INSTRUMENTATION LOOP FAILURE, place control rods, charging and steam dump to MANUAL control, stabilize the plant and defeat the failed channel. The operator will address Technical Specification LCO 3.3.1, REACTOR TRIP SYSTEM (RTS) INSTRUMENTATION, and Technical Specification LCO 3.3.2, ENGINEERED SAFETY FEATURE ACTUATION SYSTEM (ESFAS) INSTRUMENTATION.

After this, the A Train of Safety Injection will inadvertently actuate initiating an intersystem LOCA due to a failure of check valve 853A with backflow from the RCS to the RHR System via Core Deluge Valve MOV-852A. The crew will enter E-0, REACTOR TRIP OR SAFETY INJECTION, and manually actuate SI/CI. On the manual actuation of SI, a Loss of Off-Site Power (LOOP) will occur and both the A and B EDGs will fail to automatically start. The operator will need to manually start the A EDG. The B EDG will fail to start manually.

Eventually the RHR piping will fail in the Auxiliary Building causing a LOCA Outside Containment. The crew will transition from E-0 to E-1, LOSS OF REACTOR OR SECONDARY COOLANT, and then to ECA-1.2, LOCA OUTSIDE CONTAINMENT, to isolate the intersystem LOCA.

The scenario will terminate at Step 8 of ECA-1.2, after the crew has isolated the LOCA Outside Containment.

Scenario Event Description
NRC Scenario 1

Critical Tasks:

CT-1: Energize AC Emergency Bus 14 within 15 minutes of the Total Loss of AC Power.

Initiating Cue: Bus 14/18 and Bus 16/17 voltage meters at 0 and neither D/G A nor D/G B running (Step 3 of E-0).

Performance Feedback: D/G A Voltmeter indicating 480VAC and Wattmeter indicating between 1500-2000 AC KW, D/G A Bus 14 Supply Breaker Red status light is LIT, Green status light OFF, D/G A Bus 18 Supply Breaker Red status light is LIT, Green status light OFF. Bus 14 Voltmeter at 480 VAC, Bus 18 Voltmeter at 480 VAC.

Success Path: D/G A is started within 15 minutes of the total loss of AC Power.

Measurable Performance Standard: Expected Actions: D/G A is started by depressing the Yellow START Pushbutton within 15 minutes of the Total Loss of AC Power.

Safety Significance: Failure to energize an AC Emergency Bus when able to do so constitutes "mis-operation" or incorrect performance which leads to degraded emergency power capacity. Failure to perform the Critical Task places the plant in a Station Blackout situation and may result in a needless challenge and/or degradation of a fission product barrier at the RCP Seals coupled with the inability to add inventory through the ECCS during a subsequent small break LOCA. In this scenario, Bus 14 is the only AC Emergency Bus that can be energized. 15 minutes is chosen as the Measurable Performance Standard because if the operator fails to start Diesel Generator (D/G) A, when able to do so within 15 minutes, the required Emergency Classification will be a Site Area Emergency when it would have been limited to an Alert if the operator had started the D/G within 15 minutes.

CT-2: Isolate LOCA outside containment prior to transition out of ECA-1.2.

Initiating Cue: SI Annunciator is LIT (Step 4 of E-0), PRZR pressure ≈1200 psig (Step 13.c of E-0), CNMT Radiation Monitors R-2, R-7 in alarm; R-29/30 slowly rising (Step 17 of E-0), Auxiliary Building Radiation Monitors R-9 and R-14 in Alarm (Step 17 of E-1) requiring entry into ECA-1.2.

Performance Feedback: RCS pressure rises as indicated on the PPCS RCS Pressure screen (Or equivalent) when RHR Discharge to Reactor Vessel Deluge MOV-852A is closed as indicated by the Green status light LIT, Red status light OFF.

Success Path: RHR Discharge to Reactor Vessel Deluge MOV-852A is closed.

Measurable Performance Standard: Expected Actions: SI is reset, the MOV-852A DC Power Keyswitch is turned ON, and MOV-852A is CLOSED before transition out of ECA-1.2.

Scenario Event Description
NRC Scenario 1

Safety Significance: Failure to isolate a LOCA outside containment (that can be isolated) degrades containment integrity beyond the level of degradation irreparably introduced by the postulated conditions. It also constitutes mis-operation or incorrect crew performance that fails to prevent “degradation of any barrier to fission product release” and eventually leads to “...degraded emergency core cooling (ECCS)...capacity.” Thus, failure to perform the critical task under the postulated plant conditions leads to a “significant reduction of safety margin beyond that irreparably introduced by the scenario.” It also represents a “significant degradation in the mitigative capability of the plant.” Containment integrity is degraded because the containment fission-product barrier is bypassed via a pathway that leads from the RCS to the auxiliary building. Although the degraded status of the containment fission-product barrier is not due to the crew’s action (was not initiated by operator error), continuation in the degraded status is a result of the crew’s failure to perform the critical task. Failure to perform the critical task eventually leads to degraded ECCS capacity because the LOCA outside containment depletes the RWST inventory without causing a corresponding increase in the containment sump inventory. Thus, failure to isolate the LOCA can result in a situation in which all ECCS pumps taking suction on the RWST must be stopped because the RWST is empty and emergency coolant recirculation is unavailable.

“Per NUREG-1021, ES-3.3, if an applicant’s actions or inactions create a challenge to plant safety, those actions or inactions may form the basis for a Critical Task identified in the post scenario review.”

Scenario Event Description
NRC Scenario 1

SIMULATOR OPERATOR INSTRUCTIONS

	Bench Mark	ACTIVITY	DESCRIPTION
☐		Reset to Temp IC 155 (From IC024)	T = 0: Dump all CNMT Recirc Fan Coolers so that MCB Annunciator E-31 doesn't alarm. Ensure CST levels high enough to avoid PPCS alarms. Place CSP B Control Switch in PULL STOP Hang INFO Tags as necessary Insert MALF GEN08, [A D/G], Diesel Generator Auto Start Failure Insert MALF GEN04B, [B D/G TRIP All Conditions], Diesel Generator Start Failure (Auto/Manual) Insert MAL PZR04 (100, No Ramp) on T-1 Insert MAL STM04A (100 over 45 second Ramp) on T-2 Insert MALF RCS11F (980, No Ramp), on T-3 (RTD FAILURE: LP B HOT TE-404A (TT-404) Insert MALF SIS01, [Train A], on T-4 (Spurious SI 'A' Train) Insert MALF RCS19C, [500], on T-4 (5 second delay) (RHR Header Leak, Valve 853A) Insert MALF EDS01A, on T-5 (Loss of Off-Site Power: CKT 7T) Set T-5 = x06I139D==1 Insert MALF EDS01B, on T-5 (Loss of Off-Site Power: CKT 767) Set T-5 = x06I139D==1
☐	Prior to Crew Briefing		• Hang Protected Equipment Tags per OPG-Protected Equipment (CSP B P15 of 29 of Attachment 2). • Place Black Dot on all required MCB Annunciators (J-25)
☐	Crew Briefing • Assign Crew Positions based on evaluation requirements. • Review the Shift Turnover Information with the crew. • Provide the crew with a copy of O-5.1 (With place-holding stickers at Step 6.1.4 on Page 9 of 30 and at Step 6.2.2 on Page 12 of 30) and S-3.1 marked up for this scenario. • Handout Reactivity Binder (EOL) and Reactivity Plan specific to this power maneuver.		
☐	T-0	Begin Familiarization Period	

Scenario Event Description
NRC Scenario 1

	Bench Mark	ACTIVITY	DESCRIPTION
☐	Immediately AFTER crew takes shift	Event 1	Load Reduction
☐	At direction of examiner	Event 2 Trigger#1 PZR04 (100%, No RAMP)	Master Pressure Controller (431K) fails HIGH
☐	At direction of examiner	Event 3 Trigger #2 STM04A (100 over 45 second Ramp)	A ARV Fails OPEN (3411)
☐	At direction of examiner	Event 4 Trigger#3 RCS11F (980, No Ramp)	Loop B T _{hot} TE-404A fails HIGH
☐	At direction of examiner	Event 5 Trigger #4 SIS01 Trigger #5 EDS01A EDS01B	A Train SI inadvertently actuates/Intersystem LOCA/Loss of Off-Site Power Note: These malfunctions will occur on MANUAL SI Actuation (T-5 Conditional).
☐	Loss of Off- site Power	Event 6 GEN08 GEN04B	A EDG fails to Auto START/B EDG fails to START (CT-1) Note: These malfunctions are inserted at T=0.
☐	5 seconds after Inadvertent SI	Event 7 RCS19C (500 gpm)	RHR Piping failure results in LOCA Outside CNMT (CT-2) Note: This malfunction will occur 5 seconds after Inadvertent SI Actuation (T-4).
☐	Terminate the scenario upon direction of Lead Examiner		

Op Test No.: N24-1 Scenario # 1 Event # 1 Page 9 of 63Event Description: **Load Reduction**

Shortly after taking the watch, the operator will lower power at 10%/hour in accordance with O-5.1, LOAD REDUCTIONS. The operator will address S-3.1, BORON CONCENTRATION CONTROL, to start the load reduction.

SIM DRIVER Instructions: **NA**

Symptoms/Cues: **NA**

Time	Pos.	Expected Actions/Behavior	Comments
			NOTE: O-5.1 has been marked up for this load reduction. Step 6.1.4 is yet to be done and once complete, the crew will start at step 6.2.2.
O-5.1, LOAD REDUCTIONS			
	HCO	(Step 6.1.4) PLACE PRZR BACKUP HEATERS in the ON position.	
NOTE			
Load reduction may be performed with the ROD CONTROL BANK SELECTOR switch in M (MANUAL) WITH AUTOMATIC bank sequence OR in A (AUTOMATIC). IF A (Automatic) is used, the Auto Rods Out feature has been removed.			
	HCO	(Step 6.2.2) ENSURE the ROD CONTROL BANK SELECTOR switch is in the desired A (AUTOMATIC) OR M (MANUAL) position AND MARK the position NOT used N/A.	NOTE: The Control Rods are in AUTO.
		• AUTOMATIC (A)	
		• MANUAL (M)	

Op Test No.: N24-1 Scenario # 1 Event # 1 Page 10 of 63Event Description: **Load Reduction**

Time	Pos.	Expected Actions/Behavior	Comments
NOTE WHEN Turbine load is reduced, THEN it will be necessary to add Boric Acid to the primary system AND maneuver Control Rods in such a manner that the following are accomplished: • Tavg matches Tref • Δ Flux is maintained within limits of the operating envelope • Control rods are maintained above insertion limits • The effect of Xenon production is compensated for Boric Acid addition will take approximately 5 to 10 minutes before its effect may be seen. During Auto Make-Ups, MCB Alarm G-1, BORIC ACID FLOW DEVIATION, AND G-17, RMW FLOW DEVIATION, will annunciate. WHEN Borating, THEN MCB Alarm G-1 will annunciate.			
	HCO	(Step 6.2.3) REFER TO S-3.1, Boron Concentration Control, and OPG Reactivity Calculation, AND INITIATE Boric Acid additions to the Reactor Coolant System, as necessary.	NOTE: The HCO will initiate a boration.
S-3.1, BORON CONCENTRATION CONTROL ATTACHMENT 1, MAKEUP DETERMINATIONS			
NOTE • The use of approximately 4-6 gallons of Boric Acid PER percent load reduction is normal for transient load reduction, based on reactivity calculations. • IF frequent dilutions are required during a shift, THEN total volume added may be tallied at end of shift. • Requirements for minimum volume of boric acid in BAST specified in TRM Table TR 3.1.1-1 for current BAST concentration.			
	HCO	(Step 1.0) IF Boration is required, THEN PERFORM the following OTHERWISE, MARK this Step N/A:	

Op Test No.: N24-1 Scenario # 1 Event # 1 Page 11 of 63Event Description: **Load Reduction**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 1.1) DETERMINE total volume of boric acid required AND desired boric acid flow rate using one of the following AND MARK method NOT used N/A.	
		1.1.1 USE PPCS Variable Boration/Dilution display.	
		OR	
		1.1.2 USE applicable Boration/Dilution table from Boration Tables book.	NOTE: The HCO will use the Reactivity Plan to initiate a boration of 15.1 gallons within the first 30 minutes of the Load reduction.
	HCO	(Step 1.2) GO TO applicable Attachment to perform boration.	
S-3.1, BORON CONCENTRATION CONTROL ATTACHMENT 2, NORMAL BORATION			
			NOTE: The HCO may perform more than one batch boron addition based on the Reactivity Plan.
	HCO	(Step 1.0) ENSURE Attachment 1, Makeup Determinations, is complete.	
	HCO	(Step 2.0) Board operator SHALL inform US of intent to change core reactivity.	
		2.1 US SHALL acknowledge reactivity manipulation and provide input and oversight. [G0092] .	
	HCO	(Step 3.0) PLACE RMW MODE SELECTOR control switch to BORATE position.	
	HCO	(Step 4.0) SET BA TO BA BLENDER FLOW CONTROL VALVE, HCV-110A, controller to flow rate determined in Attachment 1, Makeup Determinations, Step 1.1.	

Op Test No.: N24-1 Scenario # 1 Event # 1 Page 12 of 63Event Description: **Load Reduction**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 5.0) SET BA COUNTER, YIC-110, to quantity determined in Attachment 1.	
NOTE Key parameters including Reactor Coolant Tavg AND control rod position indication, OR subcritical count rate SHALL be observed as boric acid is injected to ensure proper response. [G0092] [G0132]			
	HCO	(Step 6.0) PLACE RMW CONTROL switch to START position.	
	HCO	(Step 7.0) VERIFY the following:	
		BORIC ACID TRANSFER PUMP A OR B starts.	
		BA TO BA BLENDER FLOW CONTROL VLV, HCV-110A, THROTTLES OPEN to preset flow position.	
		REACTOR MAKEUP TO CHG PUMP, AOV-110B, OPENS.	
	HCO	(Step 8.0) WHEN boration is complete, THEN PERFORM the following:	
		8.1 PLACE RMW MODE SELECTOR control switch to AUTO position.	
		8.2 PLACE RMW CONTROL switch to START position and VERIFY RMW control red light ILLUMINATED .	
		8.3 SET BA TO BA BLENDER FLOW CONTROL VLV, HCV-110A, for current RCS boron concentration PER Boration/Dilution tables OR PPCS Engineering Menu Boration/Dilution display.	
	HCO	(Step 9.0) PLACE "BORATE" Human Performance Label next to RMW Mode Selector switch on MCB.	

Op Test No.: N24-1 Scenario # 1 Event # 1 Page 13 of 63Event Description: **Load Reduction**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 10.0) Board operator SHALL inform US that reactivity manipulation is complete. [G0092]	
	HCO	(Step 11.0) RECORD amount of boric acid added on S-12.4, RCS Leakage Surveillance Record Instructions, Attachment RCS Leakage Surveillance Record.	
			NOTE: The HCO may perform Control Rod insertions based on the Reactivity Plan.
O-5.1, LOAD REDUCTIONS			
NOTE • IF the lowering of power can be made at a slow enough rate, THEN the buildup of Xenon can be utilized during the load reductions and can significantly minimize the amount of Boric Acid to be added to the system. • IF 2 of 4 PR NIS Channels axial flux difference exceed the operating envelope, THEN axial tilt SHALL be restored to within limits OR power SHALL be lowered to less than or equal to 50% within 30 minutes. (ITS 3.2.3) • WHEN lowering Turbine load, THEN the Valve Position Limiter SHOULD be maintained approximately 10% greater than the Reference value. Diverse indications SHALL be utilized when lowering VPL to ensure valve limit is NOT reached.			
CAUTION • Control Rod Banks SHALL be maintained above the low insertion limit. • Turbine controls SHOULD be placed in "IMP OUT" mode when holding power levels stable to prevent load changes due to impulse pressure changes caused by reactor coolant temperature variations.			
	CO	(Step 6.2.4) START the load reduction at the EH Control Panel as follows:	NOTE: The CO will use this method until power is lowered to 98%.
	CO	(Step 6.2.4.1) IF the EH Control Panel is in OPER PAN. Control, THEN PERFORM the following: OTHERWISE, MARK this Substep N/A.	

Op Test No.: N24-1 Scenario # 1 Event # 1 Page 14 of 63Event Description: **Load Reduction**

Time	Pos.	Expected Actions/Behavior	Comments
		a. LOWER the SETTER setpoint to the desired value using the ▼pushbutton.	
	CO	b. DEPRESS the GO pushbutton.	
		c. OBSERVE the desired rate of load reduction.	
		d. MAINTAIN the VPL set point approximately 10% above the indicated REFERENCE value as load decreases.	
			Examiner NOTE: The Load reduction will require $\approx$ 30 minutes to reach 98% power. The Lead Examiner may elect to move to Event 2. The crew may continue the Load Reduction during subsequent events. If so, when the crew arrives at 98% power, the following steps will be performed to place the Turbine in IMP IN.
	CO	(Step 6.4.2.2) WHEN less than or equal to 98% power AND it is desired to place EHC Control in the IMP IN mode THEN PERFORM the following: OTHERWISE, MARK this Step N.A.	
		a. DEPRESS the HOLD pushbutton on the EHC Control panel.	
		b. DEPRESS the IMP PRESS IN pushbutton.	
		c. VERIFY the IMP PRESS IN pushbutton back light is ILLUMINATED.	
		d. DEPRESS the GO pushbutton to resume power reduction.	
At the discretion of the Lead Examiner move to Event #2.			

Op Test No.: N24-1 Scenario # 1 Event # 2 Page 15 of 63Event Description: **Master Pressure Controller (431K) fails HIGH**

During the load reduction, the Master Pressure Controller (431K) will fail such that the output in Automatic goes to 100%, causing both Pressurizer Spray Valves to OPEN, and RCS Pressure to LOWER. The operator will respond by placing 431K in MANUAL using the guidance of A-503.1, EMERGENCY AND ABNORMAL OPERATING PROCEDURES USERS GUIDE, and AR-F-10, PRESSURIZER LO PRESS 2205 PSI, and enter AP-PRZR.1, ABNORMAL PRESSURIZER PRESSURE. The operator will address Technical Specification LCO 3.4.1, RCS PRESSURE, TEMPERATURE, AND FLOW DEPARTURE FROM NUCLEATE BOILING (DNB) LIMITS, and Technical Requirements Manual TR-3.4.3, ANTICIPATED TRANSIENTS WITHOUT SCRAM (ATWS) MITIGATION. The Master Pressure Controller will remain in MANUAL until completion of Event 3 (A S/G ARV Fails OPEN) and then be restored to AUTO, using Time Compression, based on completed maintenance.

SIM DRIVER Instructions: **Operate Trigger #1 (PZR04 (100, No Ramp))**

Symptoms/Cues:

- Annunciator F-2, PRESSURIZER PRESSURE HI
- Annunciator F-10, PRESSURIZER LO PRESS 2205 PSI
- AOV-431A goes to full OPEN
- AOV-431B goes to full OPEN
- 431K Output moves to 100%
- All four PRZR Pressure channels are lowering

Time	Pos.	Expected Actions/Behavior	Comments
			NOTE: The US/CO may take the Turbine to HOLD.
			NOTE: The crew may enter AP-PRZR.1 directly.
AR-F-10, PRESSURIZER LO PRESS 2205 PSI			
	HCO	(Step 1) Perform a channel check.	NOTE: The crew may take early action per the guidance of A-503.1 (Step 5.3.A.5) and/or go to AP-PRZR.1.
	HCO	(Step 2) Go to the applicable procedure:	
	US	• AP-PRZR.1, if pressure is abnormal for plant condition	NOTE: The US will go to AP-PRZR.1.
	US	(Step 3) Refer to ITS LCO 3.4.1.	

Op Test No.: N24-1 Scenario # 1 Event # 2 Page 16 of 63Event Description: **Master Pressure Controller (431K) fails HIGH**

Time	Pos.	Expected Actions/Behavior	Comments
A-503.1, EMERGENCY AND ABNORMAL OPERATING PROCEDURES USERS GUIDE			
	CO	(Step 5.3.A.5) Actions are permitted to mitigate or compensate for equipment or controller failures or to isolate leaks. Permitted actions include those actions necessary to take manual control and stabilize the affected parameters, or to isolate a leak. Examples include closing or isolating a failed open PORV, taking manual control of a failed FRV controller, etc. These deviations fall under the Maintenance Rule. Therefore, 50.59 is not required.	NOTE: It is expected that the HCO will take manual control of controller 431K.
AP-PRZR.1, ABNORMAL PRESSURIZER PRESSURE			
NOTE			
- Actual PRZR pressure should be verified by more than 1 indicator. - Refer to ITS section 3.4.1.			
	HCO	(Step 1) Check PRZR Pressure:	
		o All 4 narrow range channels – APPROXIMATELY EQUAL	
		o All 4 narrow range channels – TRENDING TOGETHER	
	HCO	(Step 2) Check Reactor Power - STABLE	NOTE: A Load reduction is in progress.
	HCO	(Step 2 RNO) <u>IF</u> the abnormal PRZR pressure is a result of a power transient, <u>THEN</u>	NOTE: The abnormal pressure is due to a failure of 431K.
	HCO	(Step 3) Check PRZR Pressure:	
		a. Pressure – LESS THAN 2235 PSIG	
		b. Pressure – GREATER THAN 2000 PSIG	

Op Test No.: N24-1 Scenario # 1 Event # 2 Page 17 of 63Event Description: **Master Pressure Controller (431K) fails HIGH**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 4) Check PRZR Heater Status:	
		a. PRZR proportional heater breaker – CLOSED	
		b. PRZR heater backup group – ON	
	HCO	(Step 5) Verify Normal PRZR Spray Valves – CLOSED	
		• AOV-431A	
		• AOV-431B	
NOTE With PRZR pressure controller 431K in manual, PORV-431C will not operate in the automatic mode (refer to TR 3.4.3).			
	HCO	(Step 6) Check PRZR Pressure Controller, 431K, Demand – LESS THAN 50%	NOTE: The 431K Output is at 100%.
	HCO	(Step 6 RNO) Place 431K in MANUAL and lower output to restore PRZR pressure to 2235 psig.	NOTE: This may have already been accomplished, per the Guidance of A-503.1.
			NOTE: The HCO will establish a Critical Parameter for PRZR PRESS of 2235±25 psig.
	HCO	(Step 7) Check PRZR PORVs:	
		a. PORVs – CLOSED	
		b. Verify PORVs – NO LEAKAGE INDICATED	
		○ Annunciator F-19, PRZR PORV OUTLET HI TEMP 145°F - EXTINGUISHED	
		○ PRT level (L0442) - STABLE	
	US	c. Go to Step 9.	
	HCO	(Step 9) Check PRZR Safety Valves:	

Op Test No.: N24-1 Scenario # 1 Event # 2 Page 18 of 63Event Description: **Master Pressure Controller (431K) fails HIGH**

Time	Pos.	Expected Actions/Behavior	Comments
		o Position indicator – LESS THAN 0.1 INCH	
	HCO	o Annunciator F-18, PRZR SAFETY VLV OUTLET HI TEMP 145°F - EXTINGUISHED	
		o Annunciator AA-13, PRESSURIZER SAFETY VALVE POSITION - EXTINGUISHED	
	HCO	(Step 10) Check AUX Spray Valve, AOV-296 - CLOSED	
	HCO	(Step 11) Check PRZR Pressure Control restored	
		a. Pressure – TRENDING TO 2235 PSIG	
	US	b. Go to Step 16.	
	HCO	(Step 16) Check PRT Indications:	
		a. Level – BETWEEN 61% AND 86%	
		b. Pressure – APPROXIMATELY 1.5 PSIG <u>AND STABLE</u>	
		c. Temperature – AT CNMT AMBIENT TEMPERATURE <u>AND STABLE</u>	
	HCO	(Step 17) Establish PRZR Pressure Control In Auto:	
		a. Verify 431K in AUTO	Examiner NOTE: 431K will remain in MANUAL until after the completion of Event 3. (See Page 25)
	HCO	(Step 17.a RNO) Place 431K in AUTO, if desired.	NOTE: 431K must remain in MANUAL control until repaired.
		b. Verify PRZR spray valves in AUTO.	

Op Test No.: N24-1 Scenario # 1 Event # 2 Page 19 of 63Event Description: **Master Pressure Controller (431K) fails HIGH**

Time	Pos.	Expected Actions/Behavior	Comments
		c. Verify PRZR heaters restored:	
		○ PRZR proportional heaters breaker – CLOSED	
		○ PRZR backup heaters breaker – RESET, IN AUTO.	NOTE: The Backup Heaters are energized (ON) because of the downpower.
	US	(Step 18) Evaluate MCB Annunciator Status (Refer to AR Procedures)	
NOTE Refer to LS-AA-1020, REPORTABILITY TABLES <u>AND</u> DECISION TREES, for reporting requirements.			
	US	(Step 19) Notify Higher Supervision	NOTE: The US may call WCC/Maintenance to address the failed controller. If so, SIM DRIVER acknowledge as WCC.
	US	(Step 20) Notify Reactor Engineer for Transient Monitoring Program	NOTE: The US may call RE. If so, SIM DRIVER acknowledge as RE.
			NOTE: The US will address the Technical Specifications.
TECHNICAL SPECIFICATION 3.4.1, RCS TEMPERATURE, PRESSURE, AND FLOW DEPARTURE FROM NUCLEATE BOILING (DNB) LIMITS			
	US	(LCO 3.4.1) RCS DNB parameters for pressurizer pressure, RCS average temperature, and RCS total flow rate shall be within the limits specified in the COLR.	NOTE: According to Section 2.10.1 of the COLR, the PRZR Pressure shall be ≥ 2175 psig.
		APPLICABILITY MODE 1.	
		ACTION	
CONDITION		REQUIRED ACTION	COMPLETION TIME

Op Test No.: N24-1 Scenario # 1 Event # 2 Page 20 of 63Event Description: **Master Pressure Controller (431K) fails HIGH**

Time	Pos.	Expected Actions/Behavior		Comments
A.	One or more RCS DNB parameters not within limits.	A.1	Restore RCS DNB parameters(s) to within limit.	2 hours
				NOTE: The US will identify that Condition A is applicable IF Pressurizer Pressure lowers to <2175 psig.
TECHNICAL REQUIREMENT 3.4.3, ANTICIPATED TRANSIENTS WITHOUT SCRAM (ATWS) MITIGATION				
	US	(TR 3.4.3) ATWS Mitigation shall be OPERABLE as follows: a. Each PORV shall be capable of automatic actuation and each block valve shall be OPEN		
		APPLICABILITY MODE 1 > 45% RTP.		
		ACTION		
CONDITION		REQUIRED ACTION		COMPLETION TIME
A.	One or more PORV automatic flow path inoperable.	A.1	Declare ATWS mitigating capability inoperable.	Immediately
				NOTE: The US will determine that Condition A is required to be entered when 431K is in MANUAL.
				NOTE: The US will likely conduct a Plant Status Brief.
				NOTE: The US may continue the Load Reduction. The US may call WCC/Operations Supervision to address the failed controller. If so, SIM DRIVER acknowledge as WCC/Operations Supervision and direct that the Load reduction be continued.
At the discretion of the Lead Examiner move to Event #3.				

Op Test No.: N24-1 Scenario # 1 Event # 3 Page 21 of 63Event Description: **A S/G ARV Fails OPEN (3411)**

Following this, the controller for the A S/G ARV will fail such that the valve will travel to the fully OPEN position. The operator will take manual control of the ARV-3411 and close the valve using the guidance of A-503.1, EMERGENCY AND ABNORMAL OPERATING PROCEDURES USERS GUIDE, and/or AP-FW.2, SECONDARY COOLANT LEAK.

SIM DRIVER Instructions: **Operate Trigger #2 (STM04A (100% - 45 second ramp))**

Symptoms/Cues:

- Steam Noise is heard as the valve OPENS.
- AOV-3411 Controller Green Status Light goes DARK.
- AOV-3411 Red Status light on MCB Panel 6 is LIT (Vertical Section).
- AOV-3411 Controller output goes toward 100% demand.
- Tavg lowers slightly.
- PRZR Pressure lowers slightly.
- Rx power rises slightly.
- PPCS Alarm Point V3411 A ARV OPEN goes into ALARM

Time	Pos.	Expected Actions/Behavior	Comments
			NOTE: The US/CO may take the Turbine to HOLD.
			NOTE: The crew may take early action per the guidance of A-503.1 (Step 5.3.A.5) and/or go to AP-FW.2.
A-503.1, EMERGENCY AND ABNORMAL OPERATING PROCEDURES USERS GUIDE			
	CO	(Step 5.3.A.5) Actions are permitted to mitigate or compensate for equipment or controller failures or to isolate leaks. Permitted actions include those actions necessary to take manual control and stabilize the affected parameters, or to isolate a leak. Examples include closing or isolating a failed open PORV, taking manual control of a failed FRV controller, etc. These deviations fall under the Maintenance Rule. Therefore, 50.59 is not required.	NOTE: It is expected that the CO will take manual control of the valve controller.
AP-FW.2, LOSS OF SECONDARY COOLANT			

Op Test No.: N24-1 Scenario # 1 Event # 3 Page 22 of 63Event Description: **A S/G ARV Fails OPEN (3411)**

Time	Pos.	Expected Actions/Behavior	Comments
	CO	(*Step 1) Determine if Plant Operation can continue:	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
		Leak does not present an unmanageable safety threat.	
		CNMT Pressure is being maintained less than 2 psig.	
		CNMT Temperature is being maintained less than 125°F.	
		Safe Shutdown Equipment Operability is not affected.	
		Monitor S/G Level – Greater than 20%.	
	HCO/ CO	(*Step 2) Determine if a Load Reduction is required:	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
		Rx Power less than or equal to 100%.	
		S/G Level Stable at or Trending to 52%.	
		MFW Pump Suction Pressure greater than 200 psig and stable.	
		Leakage is within make-up capability (GE Betz)	
	HCO	(Step 3) Check Containment conditions NORMAL.	
		CNMT Humidity (PPCS Point: TCVDEW-S)	
		CNMT Pressure	
		CNMT Sump A Level	
		CNMT Air Temperature (PPCS Point: TCV17)	
		CNMT Recirc Fan Cooler Dump Frequency	

Op Test No.: N24-1 Scenario # 1 Event # 3 Page 23 of 63Event Description: **A S/G ARV Fails OPEN (3411)**

Time	Pos.	Expected Actions/Behavior	Comments
CAUTION WHEN PERSONNEL ARE DISPATCHED TO LOCATE THE LEAK LOCATION, EXTREME CARE MUST BE TAKEN TO PREVENT THE POTENTIAL FOR INJURY DUE TO THE LEAK.			
	CO	(Step 4) Check for Secondary Leak to Atmosphere.	NOTE: The A ARV has failed OPEN.
		a. Check S/G Safety Valves CLOSED (PPCS POINTS: VMSSVA and VMSSVB)	
		b. Check S/G ARVs CLOSED	
	CO	(Step 4.b RNO) Place the ARV controllers in Manual and Close the Valves.	NOTE: Early action may have been taken to close the A ARV.
		<u>IF</u> the Valve will not close <u>THEN</u> ...	
	CO	c. (Step 4 Continued) Verify no Steam or Feedwater Leakage in the Turbine or Intermediate Building (cleanside)	
		Dispatch EO as necessary to investigate leakage.	NOTE: An EO may not be dispatched to look for leaks because the Steam Noise has been eliminated when action was taken to close the A ARV manually.
	HCO/ CO	(Step 5) Check Condenser Steam dump valves shut if not required for RCS Temp Control	
NOTE Isolation of MSR will require load reduction less than 70% pwr.			
	HCO/ CO	(Step 6) Check MSR Tubes intact:	
		Check PPCS Server group MSR reading normal for each MSR	

Op Test No.: N24-1 Scenario # 1 Event # 3 Page 24 of 63Event Description: **A S/G ARV Fails OPEN (3411)**

Time	Pos.	Expected Actions/Behavior	Comments
		Consult with System Engineering to determine if MSR Isolation is required.	
NOTE - An HP Turbine rub could result from extended operations with 5A or 5B heater isolated. - Isolation of a #4 or #5 Heater will require a load reduction to less than 50% Power.			
	CO	(Step 7) Check Feedwater Heater intact:	
		a. Check MCB Alarm H-29 FDWTR HTR and Drain Tank Hi-Lo level Extinguished.	
		b. Dump Valves Shut: (HDT Page on PPCS)	
		V-3343 for HDT	
		V-5557 for 3A Heater	
		V-3347 for 5A Heater	
		V-5560 for 3B Heater	
		V-3348 for 5B Heater	
		V-5561 for 1A Heater	
		V-5559 for 2A Heater	
		V-5556 for 1B Heater	
		V-5558 for 2B Heater	
	US	(Step 8) Evaluate effect on continued Plant operation:	
		a. Refer to the following Technical Specifications:	NOTE: The US may refer to Technical Specification 3.7.4, however, it will be determined that LCO 3.7.4 is met.
		ITS Section 3.7 Plant System	
		ITS Section 3.7.4 ARV's	NOTE: The US will determine that the failed ARV is OPERABLE.
		ITS Section 3.7.6 CST's	

Op Test No.: N24-1 Scenario # 1 Event # 3 Page 25 of 63Event Description: **A S/G ARV Fails OPEN (3411)**

Time	Pos.	Expected Actions/Behavior	Comments
		ITS Section 3.6.4 Containment Pressure	
		ITS Section 3.6.5 Containment Temperature	
NOTE Refer to LS-AA-1020, REPORTABILITY TABLES <u>AND</u> DECISION TREES for reporting requirements.			
	US	(Step 9) Check if Plant Shutdown and Cooldown Required:	
		a. Consult with SM and Plant Management if plant shutdown and cooldown required	NOTE: The US may call WCCS/Supervision to address the ARV failure. If so, SIM DRIVER acknowledge as WCCS/Plant Supervision.
			SIM DRIVER: REMOVE MALF PZR04. WHEN the US calls the WCCS, as IMD call and report "Using Time Compression 431K has been repaired and can be placed in AUTO if desired.
	US	(Step 9.a RNO) Return to Procedure and Step in effect.	
			NOTE: The HCO may use P-17.18 to return 431K to AUTO.
P-17.18, PLACING CHARGING PUMP AND 431K CONTROLLERS IN AUTOMATIC			
	HCO	(Step 5.2.1) MOVE level from Manual to BALANCE .	
	HCO	(Step 5.2.2) ADJUST Setpoint knob to null controller.	
	HCO	(Step 5.2.3) MOVE lever from Balance to AUTO .	

Op Test No.: N24-1 Scenario # 1 Event # 3 Page 26 of 63Event Description: **A S/G ARV Fails OPEN (3411)**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 5.2.4) ADJUST Setpoint knob to desired pressure.	
			NOTE: The US will likely conduct a Plant Status Brief.
			NOTE: The US may continue the Load Reduction. The US may call WCC/Operations Supervision to address the failed controller. If so, SIM DRIVER acknowledge as WCC/Operations Supervision and direct that the Load reduction be continued.
At the discretion of the Lead Examiner move to Event #4.			

Op Test No.: N24-1 Scenario # 1 Event # 4 Page 27 of 63Event Description: **Loop B T_{hot} TE-404A fails HIGH**

Subsequently, Loop B T_{hot} instrument TE-404A will fail HIGH. The crew will respond using ER-INST.1, REACTOR PROTECTION BISTABLE DEFEAT AFTER INSTRUMENTATION LOOP FAILURE, place control rods, charging and steam dump to MANUAL control, stabilize the plant and defeat the failed channel. The operator will address Technical Specification LCO 3.3.1, REACTOR TRIP SYSTEM (RTS) INSTRUMENTATION, and Technical Specification LCO 3.3.2, ENGINEERED SAFETY FEATURE ACTUATION SYSTEM (ESFAS) INSTRUMENTATION.

SIM DRIVER Instructions: **Operate Trigger #3 (RCS11F (980, No Ramp))**

Symptoms/Cues:

- MCB Annunciator F-16, Avg Tav_g – Tref Dev +/- 5 °F
- MCB Annunciator F-15, RCS Tav_g Dev 4°F
- MCB Annunciator F-23, RCS OT ΔT CHANNEL ALERT
- MCB Annunciator F-24, RCS AVG ΔT DEVIATION 3°F
- MCB Annunciator F-32, RCS OP ΔT CHANNEL ALERT
- MCB Annunciator G-10, RCS LOOP B HI TAVG
- TI-404, Loop B Tav_g is indicating high (600°F)
- TI-408B, Loop B 1B-2 ΔT is indicating high

Time	Pos.	Expected Actions/Behavior	Comments
			NOTE: The US/CO may take the Turbine to HOLD.
			NOTE: The US may enter ER-INST.1 directly.
AR-F-15, RCS TAVG DEV 4°F			
NOTE • A failure of $\overline{TAVG}$ or a single Tav_g channel affects operation of steam dumps rod control, PRZR level control and FRVs and bypass valves (following a reactor trip). Refer to P-10, INSTRUMENT FAILURE REFERENCE MANUAL for more information. • Expect the following MCB alarms: • G-15, STEAM DUMP ARMED when Steam Dump Mode Selector Switch is taken to manual. • F-14, CHARGING PUMP SPEED when charging is taken to manual.			
	US	(Step 4.1) IF a turbine runback is occurring, THEN GO TO AP-TURB.2, TURBINE LOAD REJECTION.	NOTE: There is no Turbine Runback occurring.

Op Test No.: N24-1 Scenario # 1 Event # 4 Page 28 of 63Event Description: **Loop B T_{hot} TE-404A fails HIGH**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 4.2) PLACE Rods in Manual (Auto rod motion will be blocked).	NOTE: The HCO will place Control Rods in Manual and set a Critical Parameter for RCS Temperature (Tref at $\pm 1.5F$).
	HCO	(Step 4.3) CHECK RCS Tavg channels and Tavg chart recorder.	
	HCO/ CO	(Step 4.4) IF $\overline{TAVG}$ or a Tavg channel has failed, THEN PERFORM the following:	
NOTE HC-484 should be set to 1005 psig for Turbine Trip Response. In the event of a Turbine Runback or Load Rejection, HC-484 should be adjusted to maintain Tavg within 4°F of Tref.			
	CO	(Step 4.4.1) SET HC-484 to 1005 psig.	
	CO	(Step 4.4.2) PLACE steam dump mode selector to MANUAL.	NOTE: The CO will place the Steam Dump Controller in MANUAL.
	HCO	(Step 4.4.3) PLACE charging in MANUAL AND CONTROL PRZR level at program.	NOTE: The HCO will place Charging in Manual and set a Critical Parameter for PRZR Level (Program $\pm 5\%$).
	US	(Step 4.5) IF a Tavg channel has failed, THEN GO TO ER-INST.1, REACTOR PROTECTION BISTABLE DEFEAT AFTER INSTRUMENTATION LOOP FAILURE.	NOTE: The US will go to ER-INST.1.
ER-INST.1, REACTOR PROTECTION BISTABLE DEFEAT AFTER INSTRUMENTATION LOOP FAILURE			
	HCO	(Step 6.1.1) IDENTIFY the failed instrument channel by observation of the bistable status light board, MCB annunciators, and the MCB metering indication.	NOTE: The HCO will identify that TE-404 has failed.

Op Test No.: N24-1 Scenario # 1 Event # 4 Page 29 of 63Event Description: **Loop B T_{hot} TE-404A fails HIGH**

Time	Pos.	Expected Actions/Behavior	Comments
NOTE - Channel defeat shall be performed by a licensed operator. - Peer Checks of the channel defeat shall be performed by a Licensed Operator or a qualified STA shall provide oversight.			
	US	(Step 6.1.2) WHEN a failed instrument loop and/or channel has been identified, THEN REFER to the appropriate section of this procedure listed below:	NOTE: The US will refer to Section 6.2.
	HCO	(Step 6.2.1) IF annunciator F-15, RCS TAVG DEV 4°F, is lit, THEN AUTOMATIC Rod control will be blocked and MANUAL rod control will be required.	
NOTE - An RTD failure will affect the following: (Refer to P-10, Instrument Failure Reference Manual as necessary) — Steam Dump response if in TAVG control mode. — PRZR level setpoint. — FRV and Bypass Valves (following a Rx Trip) - MCB Ann. G-15, STEAM DUMP ARMED, will annunciate when Steam Dump Mode Selector Switch is taken to MANUAL.			
	HCO	(Step 6.2.2) IF unwarranted Steam Dump is occurring, THEN PERFORM the following:	NOTE: Unwarranted Steam Dump is NOT occurring.
NOTE MCB Annun. F-14, CHARGING PUMP SPEED, will alarm when charging is taken to manual.			
	HCO	(Step 6.2.3) PLACE charging in MANUAL to control PRZR level at program.	NOTE: It is likely that Charging is already in MANUAL. If NOT, the HCO will place it in MANUAL here.

Op Test No.: N24-1 Scenario # 1 Event # 4 Page 30 of 63Event Description: **Loop B T_{hot} TE-404A fails HIGH**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 6.2.4) MONITOR Control Rod Insertion Limits REFER TO ITS LCOs 3.1.5 and 3.1.6 to determine actual insertion limits.	
	HCO	(Step 6.2.5) IF hot leg streaming has been causing single channel ΔT runback signals, THEN....	NOTE: Hot leg streaming has NOT been causing single channel ΔT runback signals.
NOTE Completing the attachment changes ΔT runback and rod stop logic to 2/2 for TC405A(C), TC406A(C), TC408A(C) or 2/3 for TC407A(C), and changes ΔT reactor trip logic to 1/3 on the remaining channels.			
	HCO	(Step 6.2.6) REFER TO the appropriate attachment for defeat of the associated Protection and Control functions:	NOTE: The US will go to the TavG 404/ ΔT 408 YELLOW CHANNEL Attachment 4.
		Attachment 4, Yellow Channel - TAVG 404/ΔT 408	
			NOTE: The US will hand this off to the CO.
			NOTE: The US/CO may take the Turbine to HOLD.
			NOTE: The US may call WCCS/Supervision to address the TAVG failure. If so, SIM DRIVER acknowledge as WCCS/Plant Supervision.
			SIM DRIVER: WHEN the US calls the WCCS, as Operations Supervision direct the instrument be defeated per ER-INST.1.
ER-INST.1, REACTOR PROTECTION BISTABLE DEFEAT AFTER INSTRUMENTATION LOOP FAILURE, ATTACHMENT 4, YELLOW CHANNEL - TAVG 404/ΔT 408			

Op Test No.: N24-1 Scenario # 1 Event # 4 Page 31 of 63Event Description: **Loop B T_{hot} TE-404A fails HIGH**

Time	Pos.	Expected Actions/Behavior	Comments
NOTE • IF a RTD has failed, THEN BOTH annunciators F-15 AND F-24 will be lit. • IF the TAVG circuit has failed, THEN annunciator F-15 will be lit AND annunciator F-24 will be extinguished. • IF the ΔT circuit has failed, THEN annunciator F-24 will be lit AND annunciator F-15 will be extinguished.			
	CO/ HCO	(Step 1.0) ENSURE Rod Control selector switch in MANUAL.	NOTE: It is likely that Control Rods are already in MANUAL. If NOT, the HCO will place them in MANUAL here.
	CO/ HCO	(Step 2.0) ENSURE Charging Pump speed controllers in MANUAL.	NOTE: It is likely that Charging is already in MANUAL. If NOT, the HCO will place it in MANUAL here.
NOTE The following Step removes the failed ΔT input from the following functions: • ΔT Runback and Rodstop • RIL computer • Annunciators F-30 OP DELTA T TURBINE RUNBACK • Annunciator F- 31 OT DELTA T TURBINE RUNBACK			
	CO	(Step 3.0) In the RIL INSERTION LIMIT rack, PLACE T/405F DELTA T DEFEAT switch to LOOP B UNIT 2.	
NOTE The following Step removes the failed T _{AVG} input from the following functions: • Rod Control System • Steam Dump System • Pressurizer Level System			
	CO	(Step 4.0) In the STEAM DUMP rack, PLACE the TAVG DEFEAT switch T/401B to LOOP B UNIT 2.	

Op Test No.: N24-1 Scenario # 1 Event # 4 Page 32 of 63Event Description: **Loop B T_{hot} TE-404A fails HIGH**

Time	Pos.	Expected Actions/Behavior	Comments
NOTE The following bistable status lights are expected to be lit after the DEFEAT: • LOOP B LO TAVG TC404A • OPΔT LOOP B TC408A • OTΔT LOOP B TC408C The following Annunciators are expected to be lit after the DEFEAT: • G-10, RCS LOOP B HIGH TAVG 579 F • F-8, RCS LOOP B LO TAVG 545 F • F-32, RCS OP DELTA T CHANNEL ALERT • F-23, RCS OT DELTA T CHANNEL ALERT			
	CO	(Step 5.0) DETERMINE the expected Bistable proving light status for the post defeat condition as follows:	
	CO	(Step 5.1) RECORD the following Data:	
		• LOOP B-2 TAVG TI-404 ____°F	
		• LOOP 1B-2 Δ TEMP TI-408B ____°F	
		• OTΔT SP1 LOOP 1B-2 TEMP TI-408A ____°F	
		• OPΔT SP2 LOOP 1B-2 TEMP TI-408C ____°F	
	CO	(Step 5.2) DETERMINE the expected post defeat Bistable proving light status and circle the expected status in table below:	
		<u>404 LOOP B-2</u> • HIGH T'AVG Light OFF IF TI-404 ≥ 579°F • LOW T'AVG Light OFF IF TI-404 ≤ 545°F	NOTE: It is expected that the 404 LOOP B-2 HIGH T'AVG light is OFF and the 404 LOOP B-2 LOW T'AVG light is ON .
		<u>408 LOOP B-2</u> • OVERTEMP TRIP Light OFF IF T-408B ≥ TI-408A • OVERPOWER TRIP Light OFF IF TI-408B ≥ TI-408C	NOTE: It is expected that the 408 LOOP B-2 OVERTEMP TRIP light is OFF and the 408 LOOP B-2 OVERPOWER TRIP light is OFF .
	CO	(Step 6.0) PLACE the affected channel Bistables in the Trip condition by PERFORMING the following:	

Op Test No.: N24-1 Scenario # 1 Event # 4 Page 33 of 63Event Description: **Loop B T_{hot} TE-404A fails HIGH**

Time	Pos.	Expected Actions/Behavior	Comments
		(Step 6.1) In the (YELLOW) Y-1 PROTECTION CHANNEL 4 rack, PLACE the following bistable proving switches to DEFEAT (UP) AND VERIFY the proving light status is correct per the table above: <u>404 LOOP B-2</u> - HIGH T'AVG - LOW T'AVG <u>408 LOOP B-2</u> - OVERTEMP TRIP - OVERPOWER TRIP	
	CO	(Step 6.2) VERIFY Correct Bistable Status Light and Annunciator status.	
	CO	(Step 7.0) DELETE 404/408 from the PPCS by performing the following:	
		(Step 7.1) SELECT "Group Update" display.	
		(Step 7.2) SELECT "List Server Groups".	
		(Step 7.3) SELECT 404_408 from the pick list.	
		(Step 7.4) TURN "OFF" scan processing, THEN click the "Set Scan Processing" button.	
		(Step 7.5) ANSWER prompts.	
	CO	(Step 8.0) GO TO step 6.2.7.	NOTE: The CO will inform the US to continue with Step 6.2.7 of ER-INST.1.
ER-INST.1, REACTOR PROTECTION BISTABLE DEFEAT AFTER INSTRUMENTATION LOOP FAILURE			
		(Step 6.2.7) RESTORE following systems to automatic operation as necessary:	
	HCO	PRZR level control	NOTE: The HCO may use P-17.18 to return Charging Pump Controller to AUTO.

Op Test No.: N24-1 Scenario # 1 Event # 4 Page 34 of 63Event Description: **Loop B T_{hot} TE-404A fails HIGH**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	Rod control	NOTE: The HCO will restore Rod Control to AUTO.
	CO	Steam Dump	NOTE: The CO will restore Steam Dump to AUTO.
	CO	Turbine EH control	
	US	(Step 6.2.8) REFER TO the following ITS Sections for LCO's:	NOTE: The US will address Technical Specifications (See Page 35).
		Section 3.3.1, Table 3.3.1-1, Functions 5 and 6	
		Section 3.3.2, Table 3.3.2-1, Function 4d	
	US	(Step 6.2.9) GO TO step 6.16.	NOTE: The US will move to Step 6.16.
	HCO/ CO	(Step 6.16.1) IF necessary, VERIFY an operable channel is selected for the affected recorder.	
	HCO/ CO	(Step 6.16.2) VERIFY the following systems in AUTO if desired:	
		Rod control	
		Turbine EH control	
		PRZR Pressure control	
		HC 431K	
		PRZR spray valves	
		PRZR heaters	
		PRZR level control	
		Steam Dump (unless 1st stage pressure failed)	
		MFW control	
		S/G Atmos Relief Vlv Control	

Op Test No.: N24-1 Scenario # 1 Event # 4 Page 35 of 63Event Description: **Loop B T_{hot} TE-404A fails HIGH**

Time	Pos.	Expected Actions/Behavior	Comments
	US	(Step 6.16.3) NOTIFY the following people:	
		• Operations Supervision	
		• STA	
		• Work Week Manager	
	US	(Step 6.16.4) UPDATE the Temporary Configuration Change Tracking Log for the following as necessary:	
		• Jumper removal	
		• Lifted wires	
		• Slide links	
	US	(Step 6.16.5) REFER to the following for Notification Requirements:	
		• LS-AA-1020, REPORTABILITY TABLES AND DECISION TREES	
		• OPG-NOTIFICATION, REQUIRED NOTIFICATIONS TO THE PSC/PIO/CEG SENIOR MANAGEMENT/OPERATIONS MANAGEMENT	
			NOTE: The US may call WCCS/Supervision to address the notification requirements. If so, SIM DRIVER acknowledge as WCCS/Plant Supervision.
TECHNICAL SPECIFICATION 3.3.1, REACTOR TRIP SYSTEM (RTS) INSTRUMENTATION			
	US	LCO 3.3.1 The RTS instrumentation for each Function in Table 3.3.1-1 shall be OPERABLE.	
	US	APPLICABILITY According to Table 3.3.1-1.	NOTE: Functions 5 & 6 are affected.

Op Test No.: N24-1 Scenario # 1 Event # 4 Page 36 of 63Event Description: **Loop B T_{hot} TE-404A fails HIGH**

Time	Pos.	Expected Actions/Behavior	Comments
		ACTION	
		CONDITION	REQUIRED ACTION
		COMPLETION TIME	
A.	One or more Functions with one channel inoperable.	A.1 Enter the Condition reference in Table 3.3.1-1 for the channel(s).	Immediately
<u>OR</u>	Two source range channels inoperable.		
D.	As required by Required Action A.1 and referenced by Table 3.3.1-1.	D.1 NOTE 1. For Functions 2a, 2b, 5, 6, 7b, 8, and 13, one channel may be bypassed for up to 12 hours for surveillance testing. 2. The inoperable channel may be bypassed for up to 12 hours for surveillance testing of other channels. Place channel in trip.	72 hours <u>OR</u> -----NOTE----- Not applicable if there is a loss of function. ----- In accordance with the Risk Informed Completion Time Program
			NOTE: The US will determine that Conditions A and D are required.
TECHNICAL SPECIFICATION 3.3.2, ENGINEERED SAFETY FEATURES ACTUATION SYSTEM (ESFAS) INSTRUMENTATION			
	US	LCO 3.3.2 The ESFAS instrumentation for each Function in Table 3.3.2-1 shall be OPERABLE.	
	US	APPLICABILITY According to Table 3.3.2-1.	NOTE: Function 4.d is affected.
		ACTION	
		CONDITION	REQUIRED ACTION
		COMPLETION TIME	
A.	One or more Functions with one channel or train inoperable.	A.1 Enter the Condition referenced in Table 3.3.2-1 for the channel or train.	Immediately
F.	As required by Required Action A.1	F.1 NOTE	72 hours

Op Test No.: N24-1 Scenario # 1 Event # 4 Page 37 of 63Event Description: **Loop B T_{hot} TE-404A fails HIGH**

Time	Pos.	Expected Actions/Behavior	Comments
		and referenced by Table 3.3.2-1. 1. For Functions 4c, 5b, and 6c, one channel may be bypassed for up to 12 hours for surveillance testing. 2. The inoperable channel may be bypassed for up to 12 hours for surveillance testing of the other channels. Place channel in trip.	<u>OR</u> In accordance with the Risk Informed Completion Time Program
			NOTE: The US will determine that Conditions A and F are required.
			NOTE: The US will likely conduct a Plant Status Brief.
At the discretion of the Lead Examiner move to Events #5-7.			

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Event Description: **A Train SI inadvertently actuates/Intersystem LOCA/Loss of Off-Site Power/ A EDG fails to Auto START/B EDG fails to START/ RHR Piping failure results in LOCA Outside CNMT**

After this, the A Train of Safety Injection will inadvertently actuate initiating an intersystem LOCA due to a failure of check valve 853A with backflow from the RCS to the RHR System via Core Deluge Valve MOV-852A. The crew will enter E-0, REACTOR TRIP OR SAFETY INJECTION, and manually actuate SI/CI. On the manual actuation of SI, a Loss of Off-Site Power (LOOP) will occur and both the A and B EDGs will fail to automatically start. The operator will need to manually start the A EDG. The B EDG will fail to start manually. Eventually the RHR piping will fail in the Auxiliary Building causing a LOCA Outside Containment. The crew will transition from E-0 to E-1, LOSS OF REACTOR OR SECONDARY COOLANT, and then to ECA-1.2, LOCA OUTSIDE CONTAINMENT, to isolate the intersystem LOCA. The scenario will terminate at Step 8 of ECA-1.2, after the crew has isolated the LOCA Outside Containment.

SIM DRIVER Instructions: **Operate Trigger #4 (SIS01, RCS19C [500] 5 seconds DELAYED,**
T-5 (EDS01A and EDS01B) will occur on MANUAL SI

Symptoms/Cues:

- Numerous MCB Annunciators
- Train A SI Actuation occurs
- Pressurizer pressure and level lower
- MSIVs close
- Steam noise in control room

Time	Pos.	Expected Actions/Behavior	Comments
			Examiner NOTE: The potential exists for the crew to enter ECA-0.0 instead of E-0. This is NOT expected and ECA-0.0 is not scripted. IF the crew enters ECA-0.0, the crew will complete the first seven steps and return to E-0 with D/G A supplying Bus 14.
E-0, REACTOR TRIP OR SAFETY INJECTION			
	HCO	(Step 1) Verify Reactor Trip:	Immediate Action
		○ At least one train of reactor trip breakers – OPEN	
		○ Neutron flux – LOWERING	

Op Test No.: N24-1 Scenario # 1 Event # 5-7 Page 39 of 63

Event Description: **A Train SI inadvertently actuates/Intersystem LOCA/Loss of Off-Site Power/ A EDG fails to Auto START/B EDG fails to START/ RHR Piping failure results in LOCA Outside CNMT**

Time	Pos.	Expected Actions/Behavior	Comments
		MRPI indicates - ALL CONTROL <u>AND</u> SHUTDOWN RODS ON BOTTOM with no instrument fluctuations concurrent with fire.	
	CO	(Step 2) Verify Turbine Stop Valves - CLOSED	Immediate Action
	HCO/ CO	(Step 3) Verify sufficient AC Emergency buses Energized To At Least 440 VOLTS:	Immediate Action
		Bus 14 <u>OR</u> Bus 16	NOTE: No safeguards busses are energized, neither DG has Auto started.
		AND	
		Bus 17 <u>OR</u> Bus 18	
	HCO	(Step 3 RNO) Attempt to start any failed emergency D/G to restore power to ALL AC emergency buses.	NOTE: The HCO will manually start the A DG. The B DG will NOT start.
		<u>IF</u> Bus 17 <u>AND</u> Bus 18 are deenergized, <u>THEN</u>.....	NOTE: After the A DG is started Bus 18 will be energized.
		<u>IF</u> Bus 14 <u>AND</u> Bus 16 are deenergized, <u>THEN</u>.....	NOTE: After the A DG is started Bus 14 will be energized.
<u>Critical Task #1:</u>			
Energize AC Emergency Bus 14 within 15 minutes of the Total Loss of AC Power.			
<u>Expected Actions:</u> D/G A is started by depressing the Yellow START Pushbutton within 15 minutes of the Total Loss of AC Power.			
	HCO/ CO	(Step 4) Check if SI is Actuated:	Immediate Action

Op Test No.: N24-1 Scenario # 1 Event # 5-7 Page 40 of 63Event Description: **A Train SI inadvertently actuates/Intersystem LOCA/Loss of Off-Site Power/ A EDG fails to Auto START/B EDG fails to START/ RHR Piping failure results in LOCA Outside CNMT**

Time	Pos.	Expected Actions/Behavior	Comments
		a. Any SI Annunciator – LIT	NOTE: D-19, PRESSURIZER LO PRESS SI 1750 PSIG may be lit but only 'A' Train sequencing
		b. SI Sequencing –BOTH TRAINS STARTED	NOTE: The B SI Train is NOT sequencing.
	HCO	(Step 4b RNO) Manually actuate SI and CI	NOTE: The HCO will manually actuate SI and CI
NOTE - FOLDOUT page should be open and monitored periodically. - Adverse CNMT values should be used whenever CNMT pressure is greater than 4 psig or CNMT radiation is greater than 10+05 R/hr.			
	HCO/ CO	Foldout Page	NOTE: The crew will monitor these conditions throughout the performance of E-0.
		RCP TRIP CRITERIA	
		LOSS OF SW CRITERIA	
		AFW SUPPLY SWITCHOVER CRITERION	
		SFP COOLING CRITERIA	
		MULTIPLE FUNCTION LOSS CRITERIA	
	HCO	(*Step 5) Verify CNMT Spray Not Required: - Annunciator A-27, CNMT SPRAY-EXTINGUSHED - CNMT pressure-LESS THAN 28 PSIG	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
	US	(Step 6) Direct Operator to perform ATT-27.0, ATTACHMENT AUTOMATIC ACTION VERIFICATION	

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Event Description: **A Train SI inadvertently actuates/Intersystem LOCA/Loss of Off-Site Power/ A EDG fails to Auto START/B EDG fails to START/ RHR Piping failure results in LOCA Outside CNMT**

Time	Pos.	Expected Actions/Behavior	Comments
			NOTE: The US will hand off ATT-27.0 to either the HCO or the CO and continue with the other operator in E-0. Examiner following operator performing ATT-27.0 continue below. Examiner following operator NOT performing ATT-27.0 continue at Page 45 .
ATTACHMENT 27.0, ATTACHMENT AUTOMATIC ACTION VERIFICATION			
	HCO	(Step 1) Verify SI and RHR Pumps Running:	
		a. All SI pumps – RUNNING	NOTE: The B SI Pump is NOT available (No power).
		b. Both RHR pumps – RUNNING	NOTE: The B RHR Pump is NOT available (No power).
	HCO	(Step 2) Verify CNMT RECIRC Fans Running:	
		a. All fans – RUNNING	NOTE: The B Train Fans are NOT available (Fans B & C have no power).
		b. Charcoal filter dampers green status lights – EXTINGUISHED	
	HCO	(Step 3) Check If Main Steamlines Should Be Isolated:	
		a. Any MSIV – OPEN	NOTE: Both MSIVs are CLOSED
	HCO	(Step 3a RNO) Go to Step 4.	
	HCO	(Step 4) Verify MFW Isolation:	

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Event Description: **A Train SI inadvertently actuates/Intersystem LOCA/Loss of Off-Site Power/ A EDG fails to Auto START/B EDG fails to START/ RHR Piping failure results in LOCA Outside CNMT**

Time	Pos.	Expected Actions/Behavior	Comments
		a. MFW pumps – TRIPPED	
		b. MFW Isolation valves – CLOSED	
		• S/G A, AOV-3995	
		• S/G B, AOV-3994	
		c. S/G Blowdown and sample valves - CLOSED	
	HCO	(Step 5) Verify At Least Two SW Pumps - RUNNING	
	HCO	(Step 5 RNO) Perform the following:	NOTE: The C SW Pump will be started later.
		a. Ensure one SW pump running on each energized screenhouse AC emergency bus:	
		• Bus 17	
		• Bus 18	
		b. <u>IF</u> offsite power <u>NOT</u> available, <u>THEN</u> ensure SW isolation.	
	HCO	(Step 6) Verify CI and CVI:	
		a. CI and CVI annunciators - LIT	
		• Annunciator A-26, CNMT ISOLATION	
		• Annunciator A-25, CNMT VENTILATION ISOLATION	
		b. Verify CI and CVI valve status lights – BRIGHT	NOTE: MOV-814 (Loss of Power) failed to close. Refers to ATT-3.0.
ATT-3.0, ATTACHMENT CI/CVI			

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Event Description: **A Train SI inadvertently actuates/Intersystem LOCA/Loss of Off-Site Power/ A EDG fails to Auto START/B EDG fails to START/ RHR Piping failure results in LOCA Outside CNMT**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	Dispatches EO to locally close V-815A.	NOTE: The HCO/CO will dispatch an EO. SIM DRIVER: as EO , acknowledge and after 3 Minutes report that V-815A is CLOSED (Not modeled).
ATTACHMENT 27.0, ATTACHMENT AUTOMATIC ACTION VERIFICATION			
	HCO	c. CNMT RECIRC fan coolers SW outlet valve status lights - BRIGHT	
		• FCV-4561	
		• FCV-4562	
		d. Letdown orifice valves - CLOSED	
		• AOV-200A	
		• AOV-200B	
		• AOV-202	
NOTE			
IF performing E-0 per direction of FR-S.1, FR-S.2, or FR-H.1 THEN stop here and return to E-0, REACTOR TRIP OR SAFETY INJECTION			
	HCO	(Step 7) Check CCW System Status:	
		a. Verify CCW pump – AT LEAST ONE RUNNING	NOTE: No CCW Pumps are running.
	HCO	(Step 7.a RNO) IF offsite power available, THEN manually start one CCW pump.	NOTE: Off-Site Power is NOT available.
	HCO	(Step 8) Verify SI And RHR Pump Flow:	
		a. SI flow indicators – CHECK FOR FLOW	
		b. RHR flow indicator – CHECK FOR FLOW	NOTE: There is NO RHR flow.

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Event Description: **A Train SI inadvertently actuates/Intersystem LOCA/Loss of Off-Site Power/ A EDG fails to Auto START/B EDG fails to START/ RHR Piping failure results in LOCA Outside CNMT**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 8.b RNO) <u>IF</u> RCS pressure less than 150 psig manually start pumps and align valves. <u>IF NOT</u> , <u>THEN</u> go to Step 9.	NOTE: RCS pressure is > 150 psig.
	HCO	(Step 9) Verify SI Pump And RHR Pump Emergency Alignment:	
		a. RHR pump discharge to Rx vessel deluge - OPEN	
		MOV-852A	
		MOV-852B	NOTE: MOV-852B has no power and is NOT open. The Step 9.a RNO requires that one valve is OPEN.
		b. Verify SI pump C – RUNNING	
		c. Verify SI pump A - RUNNING	
		d. Verify SI pump B – RUNNING	NOTE: The B SI Pump is NOT available (No power).
		(Step 9.d RNO) Perform the following (1) Ensure SI Pumps A and C running. <u>IF</u> either pump <u>NOT</u> running, <u>THEN</u> go to step 9.e.	NOTE: BOTH the A&C SI Pumps are running.
		(2) Ensure SI pump C aligned to discharge line B: - MOV-871B open - MOV-871A closed	
		(3) Go to Step 10.	
	HCO	(Step 10) Verify CREATS Actuation:	
		a. At least one damper in each flowpath - CLOSED	
		Normal Supply Air	
		Normal Return Air	
		Lavatory Exhaust Air	

Op Test No.: N24-1 Scenario # 1 Event # 5-7 Page 45 of 63

Event Description: **A Train SI inadvertently actuates/Intersystem LOCA/Loss of Off-Site Power/ A EDG fails to Auto START/B EDG fails to START/ RHR Piping failure results in LOCA Outside CNMT**

Time	Pos.	Expected Actions/Behavior	Comments
		b. CREATS fans – BOTH RUNNING	NOTE: The B Train is NOT available (No power).
NOTE The hand switches for these valves should be placed in the closed position even if the valve status light is bright.			
	HCO/ CO	(Step 11) Verify CI and CVI During a Fire Event	
		a. A confirmed fire has occurred in the control complex or cable tunnel (fire systems S05, S06, S08, Z05, Z18, or Z19).	NOTE: There is no confirmed fire in any of these zones.
	HCO/ CO	(Step 11 RNO) Go to END	
			NOTE: The HCO/CO reports that ATT-27.0 is complete.
E-0, REACTOR TRIP OR SAFETY INJECTION			
			Examiner following operator NOT performing ATT-27.0 continue at HERE .
	CO	(Step 7) Verify Both MDAFW Pumps Running	
	CO	(RNO Step 7) Manually start both MDAFW pumps.	NOTE: The B MDAFW pump is not available (No power).
		<u>IF</u> less than 2 MDAFW pumps are running, <u>THEN</u> manually open TDAFW pump steam supply valves.	
		• MOV-3505A	
		• MOV-3504A	

Op Test No.: N24-1 Scenario # 1 Event # 5-7 Page 46 of 63Event Description: **A Train SI inadvertently actuates/Intersystem LOCA/Loss of Off-Site Power/ A EDG fails to Auto START/B EDG fails to START/ RHR Piping failure results in LOCA Outside CNMT**

Time	Pos.	Expected Actions/Behavior	Comments
NOTE			
IF MDAFW Pumps crosstie alignment is desired, THEN refer to ATT-5.3, ATTACHMENT MDAFW PUMPS CROSSTIE.			
	CO	(Step 8) Verify AFW Valve Alignment:	
		a. AFW flow – INDICATED TO BOTH S/G(s)	
		b. AFW flow from each MDAFW pump – LESS THAN 230 GPM	NOTE: There is no flow to the B S/G from the B MDAFW Pump.
	CO	(*Step 9) Monitor Heat Sink:	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
		a. Check S/G narrow range level – GREATER THAN 7% [25% ADVERSE CNMT] in any S/G	NOTE: The RNO may be needed.
	CO/ HCO	(Step 9.a RNO) Perform the following:	
		1) Verify total AFW flow - GREATER THAN 200 GPM	
	CO/ HCO	IF total AFW is less than 200 gpm, THEN manually start pumps and align valves to establish greater than 200 gpm AFW flow. IF AFW flow greater than 200 gpm can NOT be established, THEN go to FR-H.1, RESPONSE TO LOSS OF SECONDARY HEAT SINK, Step 1.	NOTE: This step is N/A.
		2) Go to Step 10.	
		b. Check S/G narrow range level BOTH S/G LESS THAN 50%	

Op Test No.: N24-1 Scenario # 1 Event # 5-7 Page 47 of 63Event Description: **A Train SI inadvertently actuates/Intersystem LOCA/Loss of Off-Site Power/ A EDG fails to Auto START/B EDG fails to START/ RHR Piping failure results in LOCA Outside CNMT**

Time	Pos.	Expected Actions/Behavior	Comments
	CO/ HCO	c. Control feed flow to maintain S/G narrow range level between 7% [25% adverse CNMT] and 50%.	
	CO	(Step 10) Check If TDAFW Pump Can Be Stopped:	
		a. Both MDAFW pumps – RUNNING	NOTE: The B MDAFW Pump is NOT running.
	US	(Step 10 RNO) Go to Step 11.	
CAUTION IF OFFSITE POWER IS LOST AFTER SI RESET, THEN MANUAL ACTION MAY BE REQUIRED TO RESTART SAFEGUARDS EQUIPMENT. (REFER TO ATT-8.5, ATTACHMENT LOSS OF OFFSITE POWER)			
NOTE: IF starting non-safeguards equipment will result in exceeding 278 amps (yellow line) on Buses 14 or 16, THEN DO NOT start non-safeguards equipment.			
	CO	(Step 11) Check CCW Flow to RCP Thermal Barriers:	
		o Annunciator A-7, RCP 1A CCW RETURN HI TEMP <u>OR</u> LO FLOW EXTINGUISHED	
		o Annunciator A-15, RCP 1B CCW RETURN HI TEMP <u>OR</u> LOW FLOW - EXTINGUISHED	
	CO	(Step 11 RNO) Perform the following:	
		a. Stop affected RCPs	NOTE: The RCP are OFF (No Power).
		b. Reset SI.	
		c. Check adequate power available to run one charging pump.	

Op Test No.: N24-1 Scenario # 1 Event # 5-7 Page 48 of 63Event Description: **A Train SI inadvertently actuates/Intersystem LOCA/Loss of Off-Site Power/ A EDG fails to Auto START/B EDG fails to START/ RHR Piping failure results in LOCA Outside CNMT**

Time	Pos.	Expected Actions/Behavior	Comments
		1) <u>IF</u> the Bus 14/16 Normal Feed Breakers are closed <u>THEN</u> verify adequate Safeguard Bus capacity to run one charging pump (6 amps)	NOTE: Normal power is NOT available.
		2) <u>IF</u> Bus 14/16 D/G breakers are closed <u>THEN</u> verify adequate emergency D/G capacity to run one charging pump. (75 kw).	NOTE: Only the A DG is running. Sufficient capacity will exist to run one Charging Pump.
		3) <u>IF</u> sufficient power is <u>NOT</u> available to operate a charging pump <u>THEN</u> go to Step 12.	NOTE: This step is N/A.
		d. Check seal outlet temperatures	
		1) <u>IF</u> seal outlet temperatures are greater than 235°F, <u>THEN</u> Go to STEP 12.	NOTE: Seal Outlet temperatures may be >235°F. If so, the crew will NOT start a Charging Pump and go to Step 12.
		2) <u>IF</u> seal outlet temperatures are less than 235°F, <u>THEN</u> start one charging pump at minimum speed for seal injection	NOTE: Seal Outlet temperatures may be <235°F. If so, the crew will continue and start a Charging Pump.
		e. Adjust HCV-142 to establish either of the following:	
		o Labyrinth seal D/P to each RCP greater than 15 inches of water.	
		OR	
		o RCP seal injection flow to each RCP greater than 6 gpm.	
		f. <u>IF</u> large imbalance in seal injection flow exists, <u>THEN</u> consider local adjustment of V-300A and V-300B.	NOTE: This step is N/A.
	CO	(*Step 12) Monitor RCS Tavg – STABLE AT <u>OR</u> TRENDING TO 547°F	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
	CO	(Step 12 RNO) <u>IF</u> temperature less than 547°F and lowering, <u>THEN</u> perform the following:	
		a. Stop dumping steam.	

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Event Description: **A Train SI inadvertently actuates/Intersystem LOCA/Loss of Off-Site Power/ A EDG fails to Auto START/B EDG fails to START/ RHR Piping failure results in LOCA Outside CNMT**

Time	Pos.	Expected Actions/Behavior	Comments
		b. Ensure reheater steam supply valves are closed.	
		c. <u>IF</u> cooldown continues, <u>THEN</u> control total feed flow between 200 gpm to 230 gpm until narrow range level greater than 7% [25% adverse CNMT] in at least one S/G.	NOTE: The CO will take this action if RCS Temperature is less than 547°F.
		d. <u>WHEN</u> S/G level greater than 7% [25% adverse CNMT] in one S/G, <u>THEN</u> limit feed flow to that required to maintain level in at least one S/G.	
		e. <u>IF</u> cooldown continues, <u>THEN</u> close both MSIVs.	NOTE: Both MSIVs are closed.
		<u>IF</u> temperature greater than 547°F and rising, <u>THEN</u> dump steam to stabilize and slowly lower temperature to 547°F.	NOTE: The CO will take this action if RCS Temperature is greater than 547°F.
	HCO/ CO	(Step 13) Check PRZR PORVs And Spray Valves:	
		a. PORVs – CLOSED	
		b. Auxiliary spray valve (AOV-296) – CLOSED	
		c. Check PRZR pressure – LESS THAN 2260 PSIG	
		d. Normal PRZR spray valves - CLOSED	
		• PCV-431A	
		• PCV-431B	
	HCO/ CO	(Step 14) Monitor RCP Trip Criteria:	
		a. RCP status – ANY RCP RUNNING	NOTE: The RCPs are OFF (No Power).
	US	(Step 14 RNO) Go to Step 15.	

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Event Description: **A Train SI inadvertently actuates/Intersystem LOCA/Loss of Off-Site Power/ A EDG fails to Auto START/B EDG fails to START/ RHR Piping failure results in LOCA Outside CNMT**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO/ CO	(Step 15) Check If S/G Secondary Side Is Intact:	
		o Pressure in both S/G's-STABLE <u>OR</u> Rising	
		o Pressure in both S/G's -GREATER THAN 110 PSIG	
	HCO/ CO	(Step 16) Check If S/G Tubes Are Intact:	
		o SG levels - <u>NOT</u> RISING IN AN UNCONTROLLED MANNER	
		o Air ejector radiation monitors (R-15, R-47, R-48) - NORMAL	NOTE: R47 and R48 only detectors with power (PPCS).
		o S/G blowdown radiation monitor (R-19) - NORMAL	
		o Steamline radiation monitors (R-31 and R-32) -NORMAL	
	HCO/ CO	(Step 17) Check If RCS Is Intact:	
		a. CNMT area radiation monitors – NORMAL	
		• R-2	NOTE: R-2 and R-7 are in alarm because relief valve 203 on the letdown line is lifting which eventually ruptures the PRT.
		• R-7	
		• R-29	
		• R-30	
	US	(Step 17 RNO) Go to E-1, LOSS OF REACTOR OR SECONDARY COOLANT, Step 1.	NOTE: The US will transition to E-1.
E-1, LOSS OF REACTOR OR SECONDARY COOLANT			

Op Test No.: N24-1 Scenario # 1 Event # 5-7 Page 51 of 63Event Description: **A Train SI inadvertently actuates/Intersystem LOCA/Loss of Off-Site Power/ A EDG fails to Auto START/B EDG fails to START/ RHR Piping failure results in LOCA Outside CNMT**

Time	Pos.	Expected Actions/Behavior	Comments
CAUTION IF TRANSITIONING TO ES-1.2, POST LOCA COOLDOWN AND DEPRESSURIZATION, <u>THEN</u> PROCEDURE SHOULD BE INITIATED WITHOUT DELAY TO ENSURE RCS COOLDOWN CAN BE STARTED WITHIN 1 HOUR OF LOCA INITIATION.			
NOTE: - FOLDOUT page should be open <u>AND</u> monitored periodically. - Critical Safety Function Status Trees should be monitored. (Refer to Appendix 1 for Red Path Summary.) - Conditions should be evaluated for Site Contingency Reporting (Refer to EP-AA-1012 ADDENDUM 3, R.E. GINNA NUCLEAR POWER PLANT EMERGENCY ACTION LEVELS). - Adverse CNMT values should be used whenever CNMT pressure is greater than 4 psig or CNMT radiation is greater than 10+05 R/hr.			
	HCO/ CO	Foldout Page	NOTE: The crew will monitor these conditions throughout the performance of E-1.
		RCP TRIP CRITERIA	NOTE: The RCPs are OFF.
		LOSS OF SW CRITERIA	
		SI REINITIATION CRITERIA	
		SI TERMINATION CRITERIA	
		SECONDARY INTEGRITY CRITERIA	
		E-3 TRANSITION CRITERIA	
		COLD LEG RECIRCULATION SWITCHOVER CRITERION	
		AFW SUPPLY SWITCHOVER CRITERION	
		MULTIPLE FUNCTION LOSS CRITERIA	
	HCO	(Step 1) Monitor RCP Trip Criteria:	
		a. RCP status – ANY RCP RUNNING	NOTE: The RCPs are OFF (No Power).
	US	(Step 1 RNO) Go to Step 2.	

Op Test No.: N24-1 Scenario # 1 Event # 5-7 Page 52 of 63Event Description: **A Train SI inadvertently actuates/Intersystem LOCA/Loss of Off-Site Power/ A EDG fails to Auto START/B EDG fails to START/ RHR Piping failure results in LOCA Outside CNMT**

Time	Pos.	Expected Actions/Behavior	Comments
	CO	(Step 2) Check If S/G Secondary Side Is Intact:	
		o Pressure in both S/Gs – STABLE <u>OR</u> RISING	
		o Pressure in both S/Gs – GREATER THAN 110 PSIG	
NOTE			
TDAFW pump flow control AOVs may drift open on loss of IA.			
	CO	(*Step 3) Monitor Intact S/G Levels:	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
		a. Narrow range level – GREATER THAN 7% [25% adverse CNMT]	
		b. Control feed flow to maintain narrow range level between 17% [25% adverse CNMT] and 50%	NOTE: The CO may address HC-4.0 and/or 5.0 when controlling feedwater flow to the S/Gs.
	CO	(Step 4) Monitor If Secondary Radiation Levels Are Normal	
		o Steamline radiation monitor (R-31 and R-32)	
		o Request Chem Tech sample S/Gs for activity	NOTE: The US may contact Chemistry. SIM DRIVER: as Chemistry, acknowledge.
CAUTION			
IF ANY PRZR PORV OPENS BECAUSE OF HIGH PRZR PRESSURE, IT SHOULD BE CLOSED AFTER PRESSURE LOWERS TO LESS THAN 2335 psig (REFER TO STEP 5b).			

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Event Description: **A Train SI inadvertently actuates/Intersystem LOCA/Loss of Off-Site Power/ A EDG fails to Auto START/B EDG fails to START/ RHR Piping failure results in LOCA Outside CNMT**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(*Step 5) Monitor PRZR PORV Status:	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
		a. Power to PORV block valves – AVAILABLE	NOTE: There is no power available to the B Train (MOV-515).
		b. PORVs – CLOSED	
		c. Block valves – AT LEAST ONE OPEN.	
CAUTION IF OFFSITE POWER IS LOST AFTER SI RESET, THEN MANUAL ACTION MAY BE REQUIRED TO RESTART SAFEGUARDS EQUIPMENT. (REFER TO ATT-8.5, ATTACHMENT LOSS OF OFFSITE POWER)			
	HCO	(Step 6) Reset SI.	
	HCO	(Step 7) Reset CI:	
		a. Depress CI reset pushbutton	
		b. Verify annunciator A-26, CNMT ISOLATION – EXTINGUISHED	
	CO	(Step 8) Verify Adequate SW Flow:	
	CO	a. Check at least two SW pumps RUNNING	
	CO	(Step 8.a RNO) Manually start SW pumps as power supply permits (257 kw each).	NOTE: The US will start the C SW Pump.
		<u>IF</u> less than two SW pumps running, <u>THEN</u>	NOTE: This step is N/A.

Op Test No.: N24-1 Scenario # 1 Event # 5-7 Page 54 of 63Event Description: **A Train SI inadvertently actuates/Intersystem LOCA/Loss of Off-Site Power/ A EDG fails to Auto START/B EDG fails to START/ RHR Piping failure results in LOCA Outside CNMT**

Time	Pos.	Expected Actions/Behavior	Comments
	US	b. Dispatch EO to establish normal shutdown alignment (Refer to ATT-17.0, ATTACHMENT SD-1)	NOTE: The US will dispatch an EO. SIM DRIVER: as EO, acknowledge and perform Schedule ATT17.0 SD-1.
NOTE: IF starting non-safeguards equipment will result in exceeding 278 amps (yellow line) on Buses 14 or 16, THEN DO NOT start non-safeguards equipment.			
	CO	(Step 9) Establish IA to CNMT:	
		a. Verify non-safeguards buses energized from offsite power	NOTE: The non-safeguards busses are NOT energized from offsite power.
		o Bus 13 normal feed breaker – CLOSED	
		OR	
		o Bus 15 normal feed breaker – CLOSED	
	CO	(Step 9.a RNO) Perform the following:	NOTE: The B Train has no power.
		1) Close non-safeguards bus tie breakers:	
		• Bus 13 to Bus 14 tie	NOTE: The US may hold a risk discussion and will likely NOT cross-tie Bus 13 and 14.
		2) Reset Control Room lighting	
	CO	(Step 9.b) Verify SW isolation valves to turbine building - OPEN	
		• MOV-4613 and MOV-4670	
		• MOV-4614 and MOV-4664	
	CO	(Step 9.b RNO) Perform the following:	

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Event Description: **A Train SI inadvertently actuates/Intersystem LOCA/Loss of Off-Site Power/ A EDG fails to Auto START/B EDG fails to START/ RHR Piping failure results in LOCA Outside CNMT**

Time	Pos.	Expected Actions/Behavior	Comments
		1) Restore IA using Service Air Compressor per step 9.c.	
	CO	(Step 9.c) Verify adequate air compressor(s) – RUNNING	
	CO	(Step 9.c RNO) Manually start electric air compressor(s) as power supply permits:	
		Buses 13/15 normal feed breakers CLOSED-no restrictions	
		Buses 14/16 normal feed breakers CLOSED 6 amps per air compressor	
		Buses 14/16 D/G breaker CLOSED 75 kw per air compressor	
		IF electric air compressors CAN NOT be started THEN start the diesel air compressor and tie in to Instrument Air (refer to ATT-11.2, ATTACHMENT DIESEL AIR COMPRESSOR)	NOTE: The US may dispatch an EO to start the Diesel IA Compressor. SIM DRIVER: as EO, acknowledge and use REM-MIS042 = OPEN. After 5 Minutes report that the compressor has been started.
		(Step 9.d) Check IA supply:	
		Pressure – GREATER THAN 60 PSIG	
		Pressure – STABLE <u>OR</u> RISING	
		e. Reset both trains of XY relays for IA to CNMT AOV-5392	
		f. Verify IA to CNMT AOV-5392 – OPEN	
	CO	(Step 10) Check Power Availability to Charging Pumps:	
		a. Check Normal Power Available To Charging Pumps:	NOTE: Normal power is NOT available to the Charging Pumps.
		Bus 14 normal feed breaker – CLOSED	

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Event Description: **A Train SI inadvertently actuates/Intersystem LOCA/Loss of Off-Site Power/ A EDG fails to Auto START/B EDG fails to START/ RHR Piping failure results in LOCA Outside CNMT**

Time	Pos.	Expected Actions/Behavior	Comments
		Bus 16 normal feed breaker - CLOSED	
	HCO	(Step 10.a RNO) Verify adequate emergency D/G capacity to run Charging Pumps (75 kw each).	
	US	IF sufficient power is available <u>THEN</u> GO TO step 11.	
	HCO	(Step 11) Check If Charging Flow Has Been Established:	
		a. Charging pumps – ANY RUNNING	NOTE: The A Charging Pump is likely running. If NOT, it will be started here using the RNO.
		b. Charging pump suction aligned to RWST:	
		LCV-112B – OPEN	
		LCV-112C – CLOSED	
	HCO	(Step 11.b RNO) Manually align valves as necessary.	NOTE: The HCO will OPEN LCV-112B and CLOSE LCV-112C.
		(Step 11.c) Start charging pumps and adjust charging flow as necessary to restore PRZR level	NOTE: The HCO will adjust charging flow to maximum.
	HCO	(Step 12) Check If SI Should Be Terminated:	
		a. RCS pressure:	
		Pressure – GREATER THAN 1650 psig [1650 psig adverse CNMT]	
	US	(Step 12a RNO) Do <u>NOT</u> stop SI pumps. Go to Step 13.	

Op Test No.: N24-1 Scenario # 1 Event # 5-7 Page 57 of 63Event Description: **A Train SI inadvertently actuates/Intersystem LOCA/Loss of Off-Site Power/ A EDG fails to Auto START/B EDG fails to START/ RHR Piping failure results in LOCA Outside CNMT**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(*Step 13) Monitor If CNMT Spray Should Be Stopped:	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
		a. CNMT spray pumps – ANY RUNNING	
	HCO	(Step 13 RNO) <u>IF</u> at least one spray pump has been stopped by operator action, <u>THEN</u> go to Step 13b.	NOTE: This step is N/A.
	US	<u>IF NOT</u> , <u>THEN</u> go to Step 14. OBSERVE CAUTIONS PRIOR TO STEP 14.	
CAUTION - RCS PRESSURE SHOULD BE MONITORED. <u>IF</u> RCS PRESSURE LOWERS IN AN UNCONTROLLED MANNER TO LESS THAN 300 PSIG [350 PSIG ADVERSE CNMT], <u>THEN</u> THE RHR PUMPS MUST BE MANUALLY RESTARTED TO SUPPLY WATER TO THE RCS. - RCS PRESSURE MAY BE CONSIDERED STABLE EVEN THOUGH PRESSURE IS LOWERING DUE TO SAFETY INJECTION FLOW, DECAY HEAT REDUCTION <u>OR</u> BREAK FLOW.			
	HCO	(*Step 14) Monitor IF RHR Pumps Should Be Stopped:	NOTE: This is a Continuous Action. The US will make one or more board operators aware.
		a. Check RCS pressure:	
		1) Pressure – GREATER THAN 300 psig [350 psig adverse CNMT]	
		2) RCS pressure - STABLE <u>OR</u> RISING	
		b. RHR pumps - ANY RUNNING IN INJECTION MODE	
		c. Stop RHR pumps and place in AUTO	
	US	d. Dispatch EO to perform ATT-14.6, ATTACHMENT RHR PRESS REDUCTION, Part A.	NOTE: The US will dispatch an EO. SIM DRIVER: as EO, acknowledge.
	HCO/CO	(Step 15) Check RCS And S/G Pressures	

Op Test No.: N24-1 Scenario # 1 Event # 5-7 Page 58 of 63Event Description: **A Train SI inadvertently actuates/Intersystem LOCA/Loss of Off-Site Power/ A EDG fails to Auto START/B EDG fails to START/ RHR Piping failure results in LOCA Outside CNMT**

Time	Pos.	Expected Actions/Behavior	Comments
		a. Check pressures in both S/Gs - STABLE <u>OR</u> RISING	
		b. Check pressures in both S/Gs - GREATER THAN 110 PSIG	
		c. Check RCS pressure - STABLE <u>OR</u> LOWERING	
	CO	(Step 16) Check If Emergency D/Gs Should Be Stopped:	
		a. Verify Safeguards busses 14, 16, 17, and 18 voltage – GREATER THAN 440 VOLTS	NOTE: The A Train is energized by the D/G. The B Train has no power.
	CO	(Step 16.a RNO) Perform the following:	
		1) Restore bus voltage (Refer to AP-ELEC.2, SAFEGUARD BUSES LOW VOLTAGE OR SYSTEM ABNORMAL FREQUENCY)	NOTE: the crew may contact RG&E regarding the loss of Offsite Power. SIM DRIVER: acknowledge and report that a crew has been sent to investigate.
	US	2) Continue with Step 17. <u>WHEN</u> bus voltage restored, <u>THEN</u> do Step 16b and 16c.	
CAUTION <u>WHEN</u> STARTING NON-SAFEGUARD EQUIPMENT ON EITHER BUSES 14/16, <u>OR</u> <u>WHEN</u> THE 13-14/15-16 BUS TIE BREAKERS ARE CLOSED, <u>THEN</u> ENSURE THAT THE SAFEGUARDS BUS 14/16 SST AMMETER IS LESS THAN 278 AMPS (YELLOW ARROW) <u>OR</u> THE EMERGENCY D/G LOAD IS LESS THAN 1950 KW. <u>IF</u> AFTER LOADING THE NON SAFEGUARDS EQUIPMENT THESE LIMITS ARE EXCEEDED <u>THEN</u> SECURE THE NON-SAFEGUARD LOAD.			
	HCO/CO	(Step 17) Evaluate Plant Status:	
		a. Check auxiliary building conditions - NORMAL	NOTE: The Aux Building Rad Monitors have elevated readings due to a LOCA outside Containment.
		1) Radiation - NORMAL	
		• Plant vent iodine (R-10B)	

Op Test No.: N24-1 Scenario # 1 Event # 5-7 Page 59 of 63Event Description: **A Train SI inadvertently actuates/Intersystem LOCA/Loss of Off-Site Power/ A EDG fails to Auto START/B EDG fails to START/ RHR Piping failure results in LOCA Outside CNMT**

Time	Pos.	Expected Actions/Behavior	Comments
		Plant vent particulate (R-13)	
		Plant vent gas (R-14)	
		CCW liquid monitor (R-17)	
		LTDN line monitor (R-9)	
		CHG pump room (R-4)	
		2) Sump Levels - NORMAL	
		Auxiliary building sump	
		WHUT level	
	HCO	(Step 17.a RNO) <u>IF</u> auxiliary building radiation abnormal, <u>THEN</u> notify RP and refer to appropriate AR-RMS procedure.	NOTE: The US will contact RP concerning the elevated radiation levels in the Aux Building. SIM DRIVER: as RP, acknowledge.
	US	<u>IF</u> the cause of abnormal conditions is a loss of RCS inventory outside CNMT, <u>THEN</u> go to ECA-1.2, LOCA OUTSIDE CONTAINMENT, Step 1.	
			NOTE: The US will transition to ECA-1.2.
ECA-1.2, LOCA OUTSIDE CONTAINMENT			
NOTE: - Adverse CNMT values should be used whenever CNMT pressure is greater than 4 psig or CNMT radiation is greater than 10+05 R/hr. - FOLDOUT page should be open and monitored periodically.			
	HCO/CO	Foldout Page	NOTE: The crew will monitor these conditions throughout the performance of ECA-1.2.
		LOSS OF SW CRITERIA	
	HCO	(Step 1) Verify Proper RHR Normal Cooling Valve Alignment:	

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Event Description: **A Train SI inadvertently actuates/Intersystem LOCA/Loss of Off-Site Power/ A EDG fails to Auto START/B EDG fails to START/ RHR Piping failure results in LOCA Outside CNMT**

Time	Pos.	Expected Actions/Behavior	Comments
		○ MOV-700 and MOV-701 RHR suction valves from A hot leg- CLOSED	
		○ MOV-720 and MOV-721 RHR discharge valves to B cold leg- CLOSED	
	HCO	(Step 2) Check CVCS Valve Alignment:	
		a. Verify the following valves CLOSED	
		• AOV-310 Excess letdown isolation valve	
		• AOV-296, Auxiliary spray valve	
		• AOV-392A, Charging line isolation valve to loop B hot leg	
		b. Verify the following CI valves CLOSED	
		• MOV-313 seal return isolation valve	
		• AOV-371, letdown isolation valve	
NOTE: Repressurization may be delayed based on break size and amount of coolant lost out of break.			
	HCO	(Step 3) Check Safeguards Valves For Backflow:	
		a. Ensure SI reset.	
		b. Close RHR pump discharge to Rx vessel deluge MOV-852A (turn on DC power keyswitch)	
		c. Check for RCS pressure rise.	NOTE: When the operator closes MOV-852A the leak will be isolated and RCS pressure will slowly rise.
	US	d. Go to Step 7.	

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Event Description: **A Train SI inadvertently actuates/Intersystem LOCA/Loss of Off-Site Power/ A EDG fails to Auto START/B EDG fails to START/ RHR Piping failure results in LOCA Outside CNMT**

Time	Pos.	Expected Actions/Behavior	Comments
<u>Critical Task #2:</u>			
Isolate LOCA outside containment prior to transition out of ECA-1.2.			
<u>Expected Actions:</u> SI is reset, the MOV-852A DC Power Keyswitch is turned ON, and MOV-852A is CLOSED before transition out of ECA-1.2.			
	HCO	(Step 7) Check If Break Is Isolated:	
		a. RCS pressure - RISING.	
	HCO	(Step 8) Check if Leakage to the Auxiliary Building has Stopped.	
		a. Monitor Auxiliary Building Leakage Stopped.	NOTE: The US will dispatch an EO. SIM DRIVER: as EO, acknowledge and report that leakage has been isolated.
		• Auxiliary Building Sump	
		• WHUT Levels	
	US	b. Go to E-1, LOSS OF REACTOR OR SECONDARY COOLANT.	Examiner NOTE: It is expected that when the leak is isolated Tcolds will lower rapidly and the RCS Integrity Critical Safety Function Status Tree will become ORANGE/RED within ≈two minutes.
At the discretion of the Lead Examiner terminate the exam.			

TURNOVER SHEET for NRC Exam Scenario #1

SHIFT TURNOVER CHECKLIST

Page 1 of 1

Off-Going Shift: Nights

Off-Going SM: S. Manager

INPO 19-003 Staying on Top Advancing a Culture of Continuous Improvement: Excellence Standards

PLANT STATUS

Today

Days Online	EOL	Station Risk	CDF	LERF	SFP Time to 200°F (Hours)	Days to Next Refuel/Planned Outage
400	Current	Green	Green	Green	81.0	125
	Planned	Green	Green	Green		
RCS Boron: 306 ppm BAST: 17,500 ppm			GSU GROSS MW (PPCS 'GROSSH')	600	Cond. Vacuum Avg. ("Hg)	28.0
Reactor		100%	Service Water Temp (°F)	55		

MODE 1

Protected Equipment

Reactor Coolant Pressure Boundary Identified Leakage (GPM) (Goal <0.25)	0.005	OPG-PROTECTED-EQUIPMENT, Attachment 2 CS Pump B OOS • MCB Control Switch & Pushbutton for D/G A • MCB Control Switch for Bus 14 D/G, SST & Normal Supply Breakers • MCB Control Switch for CS Pump A • MCB Control Switch for MCC C • MCB Control Switch for MOV-896A & B • Bus 12A & Bus 14 areas • MCC C & MCC D areas • Bus 12A Position 15 & MCC D Position 8M • D/G A Room • CS Pump A, MOV-896A & MOV-896B areas
Reactor Coolant Pressure Boundary Unidentified Leakage (GPM) (Goal <0.10)	0.019	
Non-RCPB Leakage (A/C Charging Pumps) (CPLR) (GPM) (Goal <0.060)	0.031	
Containment Depressurizations (Goal <8 in Last 7 Days)	6	
Sump A Pump Down Frequency (Hours) (Goal >48)	Today 490 hours	
Condenser Air Inleakage (SCFM)(Goal<10SCFM)	7.7	

LCO Activities – A-52.4's (P) Planned (U) Unplanned

#	Equipment	LCO	Date/Time Out of Service	Expiration Date/Time	Owner	Estimated RTS Date
1	CS Pump B	3.6.6	7/22/24 0900	7/25/24 0900	MMD	7/24/24 0900

Non-LCO Activities - A-52.12's (P) Planned (U) Unplanned

#	Equipment	LCO	Date/Time Out of Service	Expiration Date/Time	Owner	Estimated RTS Date

PRIORITY 1 AND 2 ISSUE REPORTS AND WORK ORDERS

#	Pri	Description	IR / WO	WO Grade	Owner	SDM	Completion Date	Consequence/Desired Outcome
1	1	CWP B Vibrations	98234576		MMD	Yes	7/24/24	Pump Swap

TURNOVER SHEET for NRC Exam Scenario #1

ACTIONS/NOTES:

- The plant is at 100% power (EOL).
- The crew will conduct a normal power reduction to 48% per O-5.1 because of concerns over excessive vibrations on Circulating Water Pump B.
- Containment Spray Pump B (TS LCO 3.6.6 Condition A, Action A.1) is OOS for motor bearing replacement.
- The following MCB annunciators are illuminated:
 - J-25, SAFEGUARDS EQUIPMENT LOCKED OFF (CS Pump B OOS)