

Facility: Ginna Task No.:

Task Title: Given a Set of Conditions, Perform a Critical Rod Position Calculation In Accordance With O-1.2.2, Critical Rod Position Calculation. JPM No.: 2010 GINNA NRC JPM RA-1

K/A Reference: 2.1.25 (3.9 / 4.2)

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X
Classroom X Simulator _____ Plant _____

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.

Initial Conditions:

- The plant is in MODE 3 preparing for a reactor startup.
- PPCS and PCNDR are not available
- See attached Initial Conditions and Plant History page.

Task Standard: Critical Rod Position calculation performed within specified band and all critical tasks evaluated as satisfactory.

Required Materials: Calculator

General References:

- O-1.2.2, Critical Rod Position Calculation, Rev. 06600
- Core Operating Limits Report, Cycle 35
- Boration/Dilution Tables

Handouts:

- O-1.2.2, Critical Rod Position Calculation, Rev. 06600
- Core Operating Limits Report, Cycle 35
- Boration/Dilution Tables
- Initial Conditions and Plant History page

Initiating Cue: You are an extra RO in the control room for a reactor startup. The Shift Manager directs you to calculate a Critical Rod Position per O-1.2.2 through Step 6.9.1.

Time Critical Task: No

Validation Time: 48 minutes

(Denote Critical Steps with a √)

Start Time: _____.

Performance Step: 1 **O-1.2.2, section 1.0 thru 5.0**
Reviews sections 1.0 thru 5.0.

Standard:

- Reviews sections 1.0 thru 3.0 and 5.0.
- Fills out step 4.1, signs steps 4.2 and 4.3.

EXAMINER CUE: **Provide the Plant History/Initial Conditions Handout**
EXAMINER CUE: **When the Candidate determines the need for O-1.2.2, provide them with a copy. At your discretion you may have them describe how to obtain the current revision of the procedure and then hand them a copy of O-1.2.2.**

EXAMINER NOTE: **See provided "Key" for details of all steps.**

√ **Performance Step: 2** **O-1.2.2, section 6.1**
Calculate the reactivity due to Power Defect.

Standard: Using Attachment 2, Figure 5-21 (MOL) determines Power Defect to be ≥ 1150 pcm and ≤ 1200 pcm.

Candidate: _____ PCM

EXAMINER NOTE: **The exact value from PCNDR is 1190 PCM.**

√ **Performance Step: 3** **O-1.2.2, section 6.2**
Calculate the reactivity due to Rod Worth.

Standard: Using Attachment 5, Table 6-7 (MOL) determines Control Rod Worth to be between 129 pcm and 130 pcm

Candidate: _____ PCM

EXAMINER NOTE: **The exact value from PCNDR is +129.133 PCM. It is +/- 0.5 pcm since the Candidate only has to pull the number off of a table. The error may come from rounding the number.**

O-1.2.2, section 6.3

✓ **Performance Step: 4** Calculate the reactivity due to Xenon.

Standard:

- Transposes Reactor Engineering Pre-trip Xe Worth (2100 PCM) onto Step 6.3.4
- Transposes Reactor Engineering Current Xe Worth (75 PCM) onto Step 6.3.5
- Calculates Xe Change as +2025 PCM in Step 6.3.6

Candidate: _____ PCM

Comment:**O-1.2.2, section 6.4**

✓ **Performance Step: 5** Calculate the reactivity due to Boron.

Standard:

- In Step 6.4.3, calculates the change in Boron Concentration as +366 PPM
- In Step 6.4.4, determines AVG Boron Concentration to be 1133 PPM
- Using Attachment 10, Figure 5-3, determines Boron Worth to be between -6.7 and -6.8 PCM/PPM
- Calculates the change in reactivity due to Boron as between -2452 and -2488 PCM.

Candidate: _____ PCM

EVALUATOR NOTE:

The actual boron worth is 6.75 PCM/PPM. The actual change in reactivity due to Boron is -2471 PCM. The band was derived from multiplying -6.7 x 366 for the low end and -6.8 x 366 for the high end.

O-1.2.2, section 6.5

✓ **Performance Step: 6** Calculate the reactivity due to "effective" Samarium.

Standard:

- Using Attachment 12, Figure 5-30:
 - Determines current Sm worth >940 PCM but <960 PCM.
 - Determines pre-trip Sm Worth >900 PCM but <920 PCM
- Calculates the change in reactivity due to Samarium as between -20 and -60 PCM.

Candidate: _____ PCM

EXAMINER NOTE: Actual reactivity change due to Sm is -40 PCM.

O-1.2.2, section 6.6

✓ **Performance Step: 7** Calculate total reactivity change.

Standard:

Calculates the total reactivity change between 754 and 882 pcm.

Candidate: _____ PCM

EXAMINER NOTE: The exact reactivity change is +833 PCM. The allowable band is + 49 pcm to - 79 pcm. The band is based on the addition of all of the allowable bands during the calculation of the total reactivity change.

O-1.2.2, section 6.7.1

Performance Step: 8 Estimated Critical Rod Position.

Standard:

Estimated Critical Rod Position must be within the band of Bank D 19 steps to Bank D 164 steps.

Candidate: _____ Steps

EVALUATOR NOTE: Actual Critical Rod Position for the conditions is Bank D 71 steps. The band established in the Standard (O-1.2) is ± 500 PCM around Bank D 71 steps.

O-1.2.2, section 6.7.2

Performance Step: 9 DETERMINE Control Bank Insertion Limit for 0% Power from COLR.

Standard:

- Uses COLR to determine Bank C 51 steps.

Candidate: _____ Steps

- Initials step

Comment:

O-1.2.2, section 6.7.3

Procedure Note: IF the estimated Critical Rod Position indicates the Reactor will go critical with all rods out, OR the Reactor will go critical below the Control Bank Insertion Limits, OR a different critical rod position is desired, THEN a change in the critical rod position (i.e. change in Boron concentration) SHALL be determined.

Performance Step: 10 COMPARE the estimated critical rod position (Step 6.7.1) with the Insertion Limit (Step 6.7.2)

Standard:

- Determines Step 6.7.1 (D 71) is greater than Step 6.7.2 (C 51)
- Initials step

Comment:

O-1.2.2, section 6.7.4

Performance Step: 11 IF a change in the critical rod position is needed, THEN PERFORM Step 6.8. OTHERWISE MARK this Step N/A.

Standard: Marks step N/A

EXAMINER CUE: A change in Critical Rod Position is not needed.

O-1.2.2, section 6.7.5

Performance Step: 12 IF a change in the critical rod position is NOT needed, THEN MARK Step 6.8 N/A. OTHERWISE MARK this Step N/A.

Standard:

- Marks Step 6.8 N/A.
- Initials step

EXAMINER CUE: If the Candidate did not ask during Performance Step 11, inform them "A change in Critical Rod Position is not needed."

O-1.2.2, section 6.9.1✓ **Performance Step: 13**

CALCULATE the control rod bank position corresponding to +/- 500 pcm from the estimated critical rod position using the estimated critical rod position from :

- Step 6.7.1 OR Step 6.8.1
AND
- Attachment 14, Table 6-3 OR Attachment 15, Table 6-4,
OR Attachment 16 Table 6-5

1. + 500 pcm bank position _____
2. - 500 pcm bank position _____

Standard:

- Selects Data from Step 6.7.1
- Uses Attachment 15, Table 6-4
- Adds 500 pcm to the calculated value in Step 6.6.6 to determine the + 500 pcm Integral Worth
- (✓) Determines the + 500 pcm position between D 157 and D 174

Candidate: _____ Steps

- Subtracts 500 pcm to the calculated value in Step 6.6.6 to determine the - 500 pcm Integral Worth
- (✓) Determines the - 500 pcm position between D 14 and D 28

Candidate: _____ Steps

EXAMINER NOTE:

To determine the allowable values when calculating the +/- 500 pcm positions the + 49 pcm - 79 pcm determined when calculating the Total Reactivity Change in Step 6.6.6 was used. PCNDR calculated the + 500 pcm position to be D 164 and the - 500 pcm position to be D 19

Terminating Cue:

When Step 6.9.1 is complete: Evaluation on this JPM is complete

Stop Time: _____

Job Performance Measure No.: 2010 GINNA NRC JPM RA-1

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS:

- The plant is in MODE 3, preparing for a reactor startup.
- PPCS and PCNDR are not available
- See attached Initial Conditions and Plant History page.

INITIATING CUE:

You are an extra RO in the control room for a reactor startup. The Shift Manager directs you to calculate a Critical Rod Position per O-1.2.2 through Step 6.9.1.

Facility: Ginna Task No.:
Task Title: Perform a Daily Surveillance Log JPM No.: 2010 GINNA NRC JPM RA-2
K/A Reference: 2.1.18 (3.6 / 3.8)

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X
Classroom _____ Simulator X Plant _____

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.

Initial Conditions:

- The plant is at 100% power, Middle of Life (MOL).
- Today is 6/21/2010 at 0715.

Task Standard: Takes the required actions for all four (4) parameters outside their allowable values.

Required Materials: Calculator

General References:

- O-6.13, DAILY SURVEILLANCE LOG, Revision 17500
- Technical Specifications, Amendment 109

Handouts:

- O-6.13, DAILY SURVEILLANCE LOG, Revision 17500, Attachment 1, Page 1 and 2 of 10 (Have the entire procedure available upon request.)
- Technical Specifications, Amendment 109

Initiating Cue: You are the HCO. The Control Room Supervisor directs you to perform O-6.13, Attachment 1, pages 1 and 2 of 10.

Time Critical Task: No

Validation Time: 15 Minutes

SIMULATOR SETUP

IC N-RA-2

(Denote Critical Steps with a √)

Start Time: _____.

EXAMINER CUE: Provide the handout. Acknowledge any report of a parameter out of specification. If necessary, direct the candidate to complete the entire JPM if they stop after reporting the first parameter out of specification.

EXAMINER NOTE: Only the parameters out of specification are identified in the JPM. Errors can be identified in any order.

O-6.13, Attachment 1

Performance Step: 1 Reactor Coolant System Monitor (cc)

Standard:

- Compares TI-409A and TI-410A to each other.
- Uses either PPCS or MCB indication to determine TI-410A is indicating approximately 12°F too high.
- Refers to Step 6.2.5

EXAMINER NOTE:

Performance Steps 1 and 2 are associated with the Reactor Coolant System Monitor channel check failing.

O-6.13, Step 6.2.5**Procedure Note:**

The sections which follow provide specific guidance as referenced within Attachment 1 and Attachment 3.

Power Range channels have a +/- 2% deviation from highest to lowest channel

Source Range channels are within one (1) decade of each other.

RCS Subcooling Monitors have a +/- 10% meter span channel check for operability.

✓ **Performance Step: 2**

PERFORM the following for channel deviations of the same parameter of +/- 5% or greater of meter span.

1. SUBMIT a Condition Report for channel with the deviation.
2. REFER TO ITS for channel operability requirements.

Standard:

- Submits a Condition Report
- Recommends entering LCO 3.3.3

EXAMINER CUE:

When the Candidate indicates they would submit a Condition Report, inform the Candidate "A Condition Report has been submitted."

EXAMINER CUE:

If the Candidate just informs the Control Room Supervisor, ask the Candidate "Make a recommendation on which LCO(s) must be entered."

EXAMINER CUE:

When the Candidate makes a recommendation on which LCO to enter, inform them "The Control Room Supervisor will fill out the required paperwork and take the required action for the LCO entry."

O-6.13, Attachment 1 and Step 6.2.6**Performance Step: 3**

[Attachment 1] Verify Total RCP Seal Leakoff

[Step 6.2.6] VERIFY total RCP Seal Leakoff is less than 8.0 gallons per minute by adding MCB Seal Leakoff Flow Recorder F-177 and F-178.

Standard:

Uses FI-177 and FI-178 to determine total seal leakoff is greater than 8.0 GPM.

EXAMINER NOTE:

Performance Steps 3 and 4 are associated with the total RCP seal leakoff exceeding 8.0 GPM

O-6.13, Step 6.2.7	
√ Performance Step: 4	IF RCP Seal Leakoff flow exceeds 8.0 GPM, THEN SUBMIT a Condition Report.
Standard:	Submits a Condition Report
EXAMINER CUE:	When the Candidate indicates they would submit a Condition Report, inform the Candidate "A Condition Report has been submitted."
O-6.13, Attachment 1	
Performance Step: 5	SI Accumulator (cc) Maintain $\geq 36\%$ and $\leq 76\%$ Maintain > 730 and < 760 psig
Standard:	Determines SI Accumulator pressure is less than 730 psig.
EXAMINER NOTE:	Performance Steps 5 and 6 are associated with SI Accumulator pressure less than 730 psig.
O-6.13, Step 6.2.14	
√ Performance Step: 6	MAINTAIN SI Accumulator Pressure greater than 730 PSIG and less than 760 PSIG due to instrument uncertainty. Otherwise, declare SI Accumulator inoperable PER ITS LCO 3.5.1.
Standard:	Recommends entering LCO 3.5.1
EXAMINER CUE:	When the Candidate makes a recommendation on which LCO to enter, inform them "The Control Room Supervisor will fill out the required paperwork and take the required action for the LCO entry."

O-6.13, Attachment 1**Performance Step: 7**

Power Range (cc)

2% Deviation Highest to Lowest PR

Standard:

Determines N-41 and N-44 deviate 3%.

EXAMINER NOTE:**Performance Steps 7 and 8 are associated with N-41 and N-44 deviating by 3%.****O-6.13, Step 6.2.5****Procedure Note:**

The sections which follow provide specific guidance as referenced within Attachment 1 and Attachment 3.

Power Range channels have a +/- 2% deviation from highest to lowest channel

Source Range channels are within one (1) decade of each other.

RCS Subcooling Monitors have a +/- 10% meter span channel check for operability.

√ **Performance Step: 8**

PERFORM the following for channel deviations of the same parameter of +/- 5% or greater of meter span.

1. SUBMIT a Condition Report for channel with the deviation.
2. REFER TO ITS for channel operability requirements.

Standard:

Submits a Condition Report

Recommends entering LCO 3.3.1

EXAMINER CUE:**When the Candidate indicates they would submit a Condition Report, inform the Candidate "A Condition Report has been submitted."****EXAMINER CUE:****If the Candidate just informs the Control Room Supervisor, ask the Candidate "Make a recommendation on which LCO(s) must be entered."****EXAMINER CUE:****"The Control Room Supervisor will fill out the required paperwork and take the required action for the entering LCO 3.3.1"**

Terminating Cue:**When the candidate returns Attachment 1: Evaluation on this JPM is complete.**

Stop Time: _____.

Job Performance Measure No.: 2010 GINNA NRC JPM RA-2

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS:

- The plant is at 100% power, Middle of Life (MOL).
- Today is 6/21/2010 at 0715.

INITIATING CUE:

You are the HCO. The Control Room Supervisor directs you to perform O-6.13, Attachment 1, pages 1 and 2 of 10.

Facility: Ginna Task No.:

Task Title: Perform the RO Review of a Tagout For V-3968, 4B Condensate Heater Discharge Check Valve. JPM No.: 2010 GINNA NRC JPM RA-3

K/A Reference: 2.2.13 (4.1/4.3)

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X
Classroom X Simulator _____ Plant _____

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.

- Initial Conditions:
- You are an extra RO in the Work Control Center
 - Two days ago the plant was stable at 100% power when a downpower was required due to a leak from a crack in the valve body of V-3968, the 4B Condensate Heater Discharge Check Valve.
 - The plant is stable at 47% reactor power to replace V-3968.
 - Plant Management has determined the replacement of V-3968 will be completed with reactor power stable at 47%.
 - The 4B Low Pressure Heater has been isolated and vented per T-14E, Isolation and Restoration to Service of Condensate Heater 4B
 - eSOMs is not available due to maintenance.

Task Standard: Identify two errors associated with the Hold Boundary for V-3968.

Required Materials: None

- General References:
- CNG-OP-1.01-1007, Clearance and Safety Tagging, Rev. 00400
 - PID: 33013-1233, Rev. 30
 - PID: 33013-1903, Rev. 18
 - PID: 33013-1922, Rev. 17
 - PID: 33013-1923, Rev. 25
 - T-14E, Isolation and Restoration to Service of Condensate Heater 4B, Rev. 009

- Handouts:
- CNG-OP-1.01-1007, Clearance and Safety Tagging, Rev. 00400 (if requested)
 - PID: 33013-1233, Rev. 30

- PID: 33013-1903, Rev. 18
- PID: 33013-1922, Rev. 17
- PID: 33013-1923, Rev. 25
- Marked up copies of Attachment 7 and 8, CNG-OP-1.01-1007, Clearance and Safety Tagging, Rev. 00400
- Attachment 10, CNG-OP-1.01-1007, Clearance and Safety Tagging, Rev. 00400 (if requested)
- Marked up copy of T-14E, Isolation and Restoration to Service of Condensate Heater 4B, Rev. 009 (if requested)

Initiating Cue: The Shift Manager directs you to perform the required review for block 14 of Attachment 7 of CNG-OP-1.01-1007 to ensure V-3968 is properly isolated and ready to be replaced. When the review is complete, sign block 14 if there are not any errors. If errors are found, identify each error.

Time Critical Task: No

Validation Time: 52 Minutes

(Denote Critical Steps with a √)

Start Time: _____.

CNG-OP-1.01-1007

Performance Step: 1 Review CNG-OP-1.01-1007, Attachments 7 and 8

Standard: Reviews CNG-OP-1.01-1007, Attachments 7 and 8

EXAMINER CUE: Provide the candidate with all of the handouts except CNG-OP-1.01-1007 and T-14E. If the Candidate requests the procedures, provide them with a copy.

EXAMINER CUE: If the candidate stops after the first error is identified, direct them to complete their review of the entire document.

EXAMINER NOTE: All the data is correct in the Attachments with the exception of the errors listed below. The errors may be identified in any order.

CNG-OP-1.01-1007, Attachment 7

√ **Performance Step: 2** Refers to CNG-OP-1.01-1007 as needed.

Standard: Identifies that the Remarks section of Attachment 7 should include a statement identifying that double isolation is not available for the high temperature system.

EXAMINER NOTE: Due to the elevated temperature of the Condensate System at V-3968, the Hold should have double valve protection/isolation. However, due to plant power and system configuration this cannot be achieved.

Step 5.1 (R) states "Double valve protection should be used for systems containing explosive or oxidizing gases, and systems that are operating with a temperature greater than 200°F, or pressure greater than 500 psig, if available. Approval shall be obtained from an SRO to work with single valve isolation when double valve isolation is required."

CNG-OP-1.01-1007, Attachment 8

√ **Performance Step: 3** Refers to CNG-OP-1.01-1007 as needed.

Standard: Determines that V-3997B should be OPEN vice CLOSED.

EXAMINER NOTE: Since V-3997B is a vent valve, it should be open to ensure the system is depressurized.

CNG-OP-1.01-1007, Attachment 8

√ **Performance Step: 4** Refers to CNG-OP-1.01-1007 as needed.

Standard: Determines that V-3966A was not included in the isolation boundary and should be tagged open.

EXAMINER NOTE: Without V-3966A Danger tagged OPEN Operations Department can not guarantee the Condensate side of the system will remain depressurized.

Terminating Cue: When the Attachment is handed over: Evaluation on this JPM is complete.

Stop Time: _____

Job Performance Measure No.: 2010 GINNA NRC JPM RA-3

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS:

- You are an extra RO in the Work Control Center
- Two days ago the plant was stable at 100% power when a downpower was required due to a leak from a crack in the valve body of V-3968, the 4B Condensate Heater Discharge Check Valve.
- The plant is stable at 47% reactor power to replace V-3968.
- Plant Management has determined the replacement of V-3968 will be completed with reactor power stable at 47%.
- The 4B Low Pressure Heater has been isolated and vented per T-14E, Isolation and Restoration to Service of Condensate Heater 4B
- eSOMs is not available due to maintenance.

INITIATING CUE:

The Shift Manager directs you to perform the required review for block 14 of Attachment 7 of CNG-OP-1.01-1007 to ensure V-3968 is properly isolated and ready to be replaced. When the review is complete, sign block 14 if there are not any errors. If errors are found, identify each error.

Initiating Cue: The SM has directed you to monitor the Critical Safety Function Status Trees. Using Data Sheet # 1, identify the status of each Critical Safety Function (CSF) on the CSFST card. Hand the card to the Shift Manager when complete and indicate (1) Which CSF is the highest priority and (2) What procedure is recommended, if any.

Time Critical Task: No

Validation Time: 12 Minutes

SIMULATOR SETUP

N/A

(Denote Critical Steps with a √)

Start Time: _____.

√ **Performance Step: 1** **F-0.1** Monitor Subcriticality and determine correct terminus.

Standard:

MONITOR: (F-0.1)

- Power Range
- Intermediate Range SUR
- Source Range energized
- Source Range SUR as necessary

(√) Correct terminus: Yellow – FR-S.2

Comment:

√ **Performance Step: 2** **F-0.2** Monitor Core Cooling and determine correct terminus.

Standard:

MONITOR: (F-0.2)

- Core Exit Thermocouples
- RCS Subcooling
- RCP status
- RVLIS
- Cnmt Pressure
- Cnmt Radiation as necessary

(√) Correct terminus: Orange – FR-C.2

Comment:

F-0.3

✓ **Performance Step: 3** Monitor Heat Sink and determine correct terminus.

Standard:**MONITOR: (F-0.3)**

- S/G Level
- Feedwater Flow
- S/G Pressure
- Cnmt Pressure
- Cnmt Radiation as necessary

(✓) Correct terminus: Yellow – FR-H.2

Comment:**F-0.4**

✓ **Performance Step: 4** Monitor INTEGRITY and determine correct terminus.

Standard:**MONITOR: (F-0.4)**

- RCS Cold Leg Temperature decrease over last 60 minutes
- RCS Cold Leg Temperature
- RCS Pressure, locate point on curve as necessary

(✓) Correct terminus: Red – FR-P.1

Comment:**F-0.5**

✓ **Performance Step: 5** Monitor CONTAINMENT and determine correct terminus.

Standard:**MONITOR: (F-0.5)**

- Cnmt Pressure
- Cnmt Sump B Level
- Cnmt Radiation as necessary

(✓) Correct terminus: Orange – FR-Z.1

Comment:

F-0.6

✓ **Performance Step: 6** Monitor INVENTORY and determine correct terminus.

Standard:

MONITOR: (F-0.6)

- SI Pump status
- Pressurizer Level
- RCP status
- RVLIS as necessary

(✓) Correct terminus: Green

Comment:**Report to the SM**

✓ **Performance Step: 7** Identify highest priority Critical Safety Function.
Recommend procedure.

Standard:Identify highest priority. Red terminus: Integrity
Recommend correct procedure: Enter FR-Z.1**Comment:**

Terminating Cue: After the procedure recommendation: Evaluation on this JPM is complete.

Stop Time: _____.

Job Performance Measure No.: 2010 GINNA NRC JPM RA-4

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

- Initial Conditions:
- You are an extra RO.
 - The plant has experienced a Reactor Trip and Safety Injection.
 - It has been 10 minutes since the Reactor Tripped.
 - I will be the Shift Manager.

Initiating Cue: The SM has directed you to monitor the Critical Safety Function Status Trees. Using Data Sheet # 1, identify the status of each Critical Safety Function (CSF) on the CSFST card. Hand the card to the Shift Manager when complete and indicate (1) Which CSF is the highest priority and (2) What procedure is recommended, if any.

Data Sheet # 1

Reactor Power is 0%
All Reactor Trip Breakers are Open
Intermediate Range indication is 5×10^{-7} Amps
Intermediate Range SUR is 0 DPM
Source Range instruments are deenergized.

RCS Pressure is 34 psig
"A" RCS hot Leg Temperature is 180°F
"A" RCS cold Leg Temperature is 235°F
"B" RCS hot Leg Temperature is 184°F
"B" RCS cold Leg Temperature is 237°F
Pressurizer water level is 0%
RVLIS water level is 53%
CETs are 506 °F

A SI pump is running
No RHR Pumps are running
"A" RCP Pump is tripped
"B" RCP Pump is tripped

Cnmt Pressure is 32 psig
R-29, Cnmt Radiation Monitor reads 1500 mrem/hr
R-30, Cnmt Radiation Monitor reads 1600 mrem/hr
Cnmt Sump "A" is 78 inches
Cnmt Sump "B" is 78 inches

"A" Stream Generator Wide Range Water Level is 270 inches
"B" Stream Generator Wide Range Water Level is 250 inches
"A" Stream Generator Narrow Range Water Level is 0%
"B" Stream Generator Narrow Range Water Level is 0%
"A" Stream Generator Pressure is 905 psig
"B" Stream Generator Pressure is 1150 psig
TDAFW Pump is not running
"A" MDAFW Pump is running
"B" MDAFW Pump is running
"A" MDAFW Pump flow is 100 gpm
"B" MDAFW Pump flow is 105 gpm

Facility: Ginna Task No.:
Task Title: Independently Verify a Critical Rod JPM No.: 2010 GINNA NRC JPM
Position Calculation SA-1
K/A Reference: 2.1.25 (3.9 / 4.2)

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X
Classroom X Simulator _____ Plant _____

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.

Initial Conditions:

- A plant startup is in progress following a forced outage
- PCNDR and PPCS are unavailable (It was available at the time the Critical Rod Position was calculated by the Reactor Engineer)
- See attached Plant Status and History
- The Reactor Engineer has completed O-1.2.2 up to step 6.10.2.
- I will be the Shift Manager.

Task Standard: Magnitude of errors in the Critical Rod Position calculation determined and all critical tasks evaluated as satisfactory.

Required Materials: Calculator

General References:

- O-1.2.2, Critical Rod Position Calculation, Rev. 06600
- COLR, Cycle 35
- Boration/Dilution Tables

Handouts:

- Marked up copy of O-1.2.2, Critical Rod Position Calculation, Rev. 06600.
- Clean copy of O-1.2.2, Critical Rod Position Calculation, Rev. 06600
- Boration/Dilution Tables
- COLR, Cycle 35

Initiating Cue: The Shift Manager directs you to reperform O-1.2.2 on a clean copy to obtain an independent verification of the Reactor Engineer's calculations. If there are differences between your calculations and the Reactor Engineer's calculations, identify and report them to the Shift Manager.

Time Critical Task: No

Validation Time: 45 Minutes

(Denote Critical Steps with a √)

Start Time: _____.

O-1.2.2

Performance Step: 1 Reviews O-1.2.2

Standard:

- Verifies each step has the required information and is initialed or signed
- Verifies each recorded value is within the allowable range

EXAMINER CUE:

Hand the Candidate the marked up and clean copy of O-1.2.2

EXAMINER NOTE:

Only values outside the allowable range are included in this JPM. The Candidate's calculated values may be different than the Reactor Engineer's. These differences are acceptable as long as they do not affect the Critical Steps. Values outside the allowable range can be identified in any order.

O-1.2.2, Step 6.2.2

√ **Performance Step: 2**

DETERMINE Control Rod worth from the position in Step 6.2.1 to the full out position. USE one of the following methods AND MARK the method NOT used N/A:

1. From the appropriate HFP Integral Rod Worth attachment. USE Attachment 4, Table 6-6 OR Attachment 5, Table 6-7 OR Attachment 6, Table 6-8
2. From the PCNDR.
 - + _____ pcm

Standard:

- Verifies Control Rod worth is 129 (+/- 1) pcm vice 212 pcm.
- (√) Records 129 (+/- 1 pcm) in Step 6.2.2

EXAMINER NOTE:

This error is derived from the Reactor Engineer using an EOL table vice a MOL table.

EXAMINER NOTE:

The allowable band is based just on rounding errors since the number is obtained directly from a table.

O-1.2, step 6.4**Performance Step: 3** Boron Reactivity

- √ **Standard:**
- Identifies the Pretrip/Shutdown Boron Concentration was recorded incorrectly, 910 vice 950.
 - Records 950 in Step 6.4.1
 - Recalculates and records step 6.4.3 as 366 ppm
 - Recalculates AVG Boron to be 1133 vice 1108
 - (√) Recalculates and records in step 6.4.5 reactivity worth due to boron concentration change.

Candidates Value: _____ pcm

Allowable Values: -2452 to -2489 pcm

EXAMINER NOTE: There is no error band in the first four bullets since only simple arithmetic is involved. They are not critical steps since they feed into the reactivity worth due to boron concentration change calculation; a critical step.

EXAMINER NOTE: The allowable values for step 6.4.5 are based on the Candidate recalculating Step 6.4.4, Differential Boron Worth. The acceptable band is -6.7 to -6.8. If the Candidate uses -6.7 they will get -2452 pcm and if they use -6.8 they will get -2489 pcm.

O-1.2.2, Step 6.6**Performance Step: 4** Total Reactivity Change

Standard: Recalculates and records in step 6.6.6 the total reactivity change.

Candidates Value: _____ pcm

Allowable Value: 815 pcm to 852 pcm

EXAMINER NOTE: The allowable values are based on the error associated with the calculations that feed into the total reactivity calculation.

O-1.2.2, Step 6.7.1

√ **Performance Step: 5** Estimated Critical Rod Position

Standard: Recalculates and records the Critical Rod Position in step 6.9.7.1
Candidates Value: _____ steps
Allowable Value: D – 69 steps to D – 73 steps

EXAMINER NOTE: The acceptable range is based on the allowable values in step 6.6.6 (Total Reactivity Change).

O-1.2.2, Step 6.9

√ **Performance Step: 6** 500 pcm Control Rod Bank Position

Standard:

- Recalculates and records the + 500 pcm.
Candidates Value: _____ steps
Allowable Value: D – 161 steps to D – 166 steps
- Recalculates and records the - 500 pcm.
Candidates Value: _____ steps
- Allowable Value: D – 17 steps to D – 21 steps

EXAMINER NOTE: The acceptable range is based on the allowable values in step 6.6.6 (Total Reactivity Change). The critical part of the Performance Step is to correctly identify the +/- 500 pcm positions, not identify what number is the + 500 pcm position and what number is the – 500 pcm position.

Terminating Cue: When the Candidate identifies all of the errors: Evaluation on the JPM is complete

Stop Time: _____

Job Performance Measure No.: 2010 GINNA NRC JPM SA-1

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS:

- A plant startup is in progress following a forced outage
- PCNDR and PPCS are unavailable (It was available at the time the Critical Rod Position was calculated by the Reactor Engineer)
- See attached Plant Status and History
- The Reactor Engineer has completed O-1.2.2 up to step 6.10.2.
- I will be the Shift Manager.

INITIATING CUE:

The Shift Manager directs you to reperform O-1.2.2 on a clean copy to obtain an independent verification of the Reactor Engineer's calculations. If there are differences between your calculations and the Reactor Engineer's calculations, identify and report them to the Shift Manager.

- Two consecutive RCS chemistry reports with RCS Boron concentration.
- Technical Requirements Manual, Revision 39
- Control Room Curve Book.
- P&ID 33013-1261, Revision 38
- P&ID 33013-1265, Sheet 2, Revision 23.

Initiating Cue: You are the Shift Manager on the day shift. Review O-6.13, DAILY SURVEILLANCE LOG - ATTACHMENT 1, Modes 1, 2, and 3. If any problem(s) are identified, then explain all of the problem(s) in detail **AND** any required actions. If actions of other individuals are required, describe their required actions as well.

Time Critical Task: No

Validation Time: 21 Minutes

(Denote Critical Steps with a √)

Start Time: _____.

EXAMINER NOTE: Initially hand the Candidate a copy of Attachment 1, MODES 1, 2 and 3 of O-6.13, Daily Surveillance Log. Hand out the remaining references as the Candidate requests them.

EXAMINER NOTE: Only values outside the allowable range are included in this JPM. Values outside the allowable range can be identified in any order.

Performance Step: 1 O-6.13, Daily Surveillance Log, ATTACHMENT 1, MODES 1, 2, AND 3.
Reviews O-6.13, Daily Surveillance Log, ATTACHMENT 1, MODES 1, 2, AND 3

Standard:

- Verifies each initial block is filled and initialed
- Verifies each recorded value is within the allowable range

Comment:

Performance Step: 2 O-6.13, Daily Surveillance Log, ATTACHMENT 1, MODES 1, 2, AND 3, Boric Acid Tank Levels
Per Step 6.4.2.2

Standard:

- Identifies both Boric Acid Tank Levels are less than 83%
- Refers to Step 6.4.2.2

EXAMINER NOTE: Performance Steps 2 and 5 are associated with the BAST tank found less than the minimum requirement.

O-6.13, Daily Surveillance Log, Step 6.4.2.2

- ✓ **Performance Step: 3** **VERIFY** inservice BASTs meet the Minimum Volume/Temperature concentration requirements of TRM Table 3.1.1-1 using the most current BAST samples.

Standard:

- Refers to page 7 of 10 of the O-6.13 for BAST Boron concentration or the Chemistry data handout to determine BAST Boron concentration
- (✓) Determines the number of gallons in the BAST using the curve book.

Candidate Value: _____ Gallons

Allowable Values: 4320 gallons to 5040 gallons

- (✓) Using TRM Table 3.1.1-1, Boric Acid Storage Tank Requirements determines the Minimum Volume in the BAST is 5210 gallons
- References TSR 3.1.1.2

EXAMINER CUE:

When the Candidate determines the need for the Chemistry data, provide them with a copy. At your discretion you may have them describe how to obtain the current Chemistry data and then hand them a copy.

EXAMINER NOTE:

The following explanation is the basis for the allowable values. Existing BAST volume is calculated using the following formula: $[(\% \text{ on MCB}/100) \times 3460] + 444 \times 2$. Using 60% for both BASTs, the Candidate will calculate 5040 gallons. If the Candidate uses 36 gallons per %, (since the curve book has 3600 gallons as the capacity of a BAST) then the calculation will be 4320 gallons. This calculation is a critical step to prevent the Candidate from simply guessing that the level in the BAST is less than the minimum allowable level.

EXAMINER NOTE:

The Candidate will use the BAST Boron Concentration to determine the concentration is 10000 to 11000 ppm. Then, using Table 3.1.1-1, determine that the minimum required volume is 5210 gallons.

Technical Reference Manual, Revision 39, TSR 3.1.1.2**Performance Step: 4****- NOTE-**

Only required to be performed when complying with TR 3.1.1.b.

Verify boric acid storage tank level is within limit.

Standard:

- Determines that the plant is not complying not with TR 3.1.1.a. since there is not a flowpath from the RWST to the suction of the Charging Pumps.
- Proceeds to TR 3.1.1

Comments:**Technical Reference Manual, Revision 39, TR 3.1.1**✓ **Performance Step: 5**

Two boron injection subsystems shall be OPERABLE with each subsystem containing one charging pump and either a or b below:

- a. A flowpath from the RWST; or
- b. A flowpath containing an OPERABLE boric acid transfer pump and a boric acid storage tank which meets the limits specified in Table TR 3.1.1-1.

Standard:

Enters TR 3.1.1, Condition A and E: Initiates action to restore at least one boron injection subsystem to OPERABLE status.

EXAMINER CUE:

The Candidate may either inform the Control Room Supervisor to declare the BAST inoperable or they may initiate action to complete an A-52.12. Either action is acceptable.

O-6.13, Daily Surveillance Log, ATTACHMENT 1, MODES 1, 2, AND 3, SI Accumulator	
✓ Performance Step: 6	SI Accumulator 1A/1B Maintain >730 and <760
Standard:	<ul style="list-style-type: none">• Identifies SI Accumulator pressure is less than 730 PSIG• Refers to Step 6.2.14• (✓) Enters LCO 3.5.1, Accumulators – Condition B; Restore the Accumulator to operable status within 24 hours• (✓) Enters LCO 3.5.1, Accumulators – Condition D; Enter LCO 3.0.3 immediately.• (✓) Enters LCO 3.0.3
EXAMINER CUE:	The Candidate may either inform the Control Room Supervisor to declare the SI Accumulator inoperable or they may initiate action to complete an A-52.4. Either action is acceptable.
O-6.13, Daily Surveillance Log, ATTACHMENT 1, MODES 1, 2, AND 3, RCS Boron Changes < 15 ppm	
Performance Step: 7	RCS Boron Changes < 15 ppm (CNG-OP-3.01-1000)
Standard:	<ul style="list-style-type: none">• Identifies RCS Boron Concentration has changed by greater than 15 ppm.• Refers to CNG-OP-3.01-1000
EXAMINER NOTE:	JPM Performance Steps 8 and 9 are associated with the Reactivity Anomaly (CNG-OP-3.01-1000).

CNG-OP-3.01-1000, Attachment 3, Step 7.a.**Procedure Note**

The limit for the change in boron concentration between two full power steady-state condition samples of the RCS is 15 ppm. This limit is based upon a normal sampling frequency with no more than two days between sample dates.

Procedure Note

Injection of significant amounts of boric acid from the BASTs to the RCS may lead to an apparent reactivity anomaly. This may occur due to the BAST boron having significantly higher B-10 isotopic concentration than the RCS boron. The apparent reactivity anomaly will be evident by the RCS boron concentration after the addition being lower than would be expected due to normal daily fuel depletion.

√ **Performance Step: 8**

- a. The Head Control Operator will compare each full power steady-state RCS boron sample data with the previous full power steady state condition data.
- (1) IF the difference is 15 ppm or greater, THEN the following SHALL be performed:
- Notify the SM
 - Request the analysis be repeated.

Standard:

- Compares last two RCS boron samples, determines they are 17 ppm apart.
- (√) Directs Chemistry to repeat the RCS boron analysis.

EXAMINER CUE:

If the Candidate informs you that they would have the Head Control Operator re-compare steady state RCS boron analyses, inform them the HCO is not available to perform the requested actions and to perform the required actions themselves.

If the Candidate requests the last two steady state RCS boron analyses, provide them with the 6/20 and 6/19 Chemistry Data Sheets.

EXAMINER CUE:

When the Candidate directs Chemistry to repeat the RCS boron analysis, provide a repeat back.

EXAMINER NOTE:

This step is identified as a Critical Step to ensure prompt and proper action is initiated; not just submitting a Condition Report and waiting for someone else to follow up.

CNG-OP-3.01-1000, Attachment 3, Step 7.b.**√ Performance Step: 9**

Upon notification of 15 ppm limit being exceeded the SM will perform the following:

- (1) Initiate a CR
- (2) IF there is indication of a reactivity change, THEN commence an investigation as to the cause of the reactivity change.
- (3) IF the cause is determined quickly, THEN the cause will be noted on the Daily Chemistry Report and on the CR under immediate actions taken.
- (4) IF the cause cannot be determined quickly and a second analysis confirms the condition, THEN the SM will perform the following:
 - Request the STA to evaluate information on exceeding limit and cause. STA may request additional technical assistance or information and will determine if additional actions are required.
 - Request the Reactor Engineer or alternate to report of the plant, to assist in investigation
 - Request the General Supervisor – Chemistry or alternate, to report to the plant to investigate sampling and analysis methods.
 - Inform the Manager – Nuclear Operations or alternate of the investigation. He will determine if the Plant Operations Review Committee should be called into session.

Standard:

- Specifies that a CR must be submitted
- Analyzes to determine if there is an indication of a reactivity change
- (√) Commences an investigation as to the cause of the reactivity change
- Requests the STA to evaluate information on exceeding the limit and cause
- Requests the Reactor Engineer or alternate to assist in the investigation
- Requests the General Supervisor – Chemistry or alternate to investigate
- Informs the Manager – Nuclear Operations
- (√) Request samples be taken at thirty minute intervals.

EXAMINER CUE:

If the Candidate asks, inform them “there is indication of a reactivity change and the cause can not be determined quickly.”

Terminating Cue:

After the applicant returns the log: Evaluation on this JPM is complete.

Stop Time: _____

Job Performance Measure No.: 2010 GINNA NRC JPM SA-2

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS:

- It is 6/21/2010 at 0900
- The reactor power has been stable at 100% for the past 50 days following a refueling outage.
- An A-52.4 has been submitted on CETs A-7, E-4, E-10 and H-13
- SI Header Pressure is outside the acceptable boundaries. Engineering has been informed and are investigating
- At 0600 today Maintenance has isolated AOV-112B, Emergency Makeup RWST to Charging Pump, by placing a freeze seal between V-357, RWST Suction Check Valve to Charging Pumps, and AOV-112B due to suspected leakage by AOV-112B.

INITIATING CUE:

You are the Shift Manager on the day shift. Review O-6.13, DAILY SURVEILLANCE LOG - ATTACHMENT 1, Modes 1, 2, and 3.

Task No.:

JPM No.: 2010 GINNA NRC JPM
SA-3

K/A Reference: 2.2.37 (3.6/4.6)

Examinee:

NRC Examiner:

Facility Evaluator:

Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X
Classroom X Simulator Plant

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.

- Initial Conditions:
- The Plant is stable at 100% power.
 - Date: 6/21/2010
 - Time: 1210
 - The following equipment is currently Out of Service:
 - D Service Water Pump (LCO 3.7.8, Condition A was entered today at 1000 and all necessary paperwork has been completed.)
 - B Containment Recirculation Fan (LCO 3.6.6, Condition D was entered on 6/18/2010 at 1200 and all necessary paperwork has been completed.)
 - Battery Charger B for maintenance. It is expected to be returned to service 6/22/2010 at 1200.
 - At 1200 today Battery Charger B1 was taken out of service to due a ground.
 - Condition Report CR-2010-006284 has been initiated for the B1 Battery Charger ground.
 - The crew has taken the appropriate action to stabilize the plant.

Task Standard: Properly fill out A-52.4 through Step 3.2.6

Required Materials: None

- General References:**
- A-52.4, Control of Limiting Conditions for Operating Equipment, Rev. 13900
 - A-52.3, Safety Function Determination Program, Rev. 5
 - Technical Specifications Amendment 109

Handouts:	<ul style="list-style-type: none">• Attachment 1 and 2 of A-52.4, Control of Limiting Conditions for Operating Equipment, Rev. 13900• A-52.4, Control of Limiting Conditions for Operating Equipment, Rev. 13900• A-52.3, Safety Function Determination Program, Rev. 5• Technical Specifications Amendment 109
Initiating Cue:	Fill out an A-52.4, Attachment 1, through step 3.2.6, and Attachment 2 for the given plant conditions. The EIN for Battery Charger B1 is BYCB1. A "what if" risk assessment in EOOS has been ran and it was determined the highest PRF color is yellow and the highest top level system status color is yellow.
Time Critical Task:	No
Validation Time:	12 minutes

(Denote Critical Steps with a √)

Start Time: _____.

Technical Specifications

Performance Step: 1 Reviews D Service Water Pump LCO

- Standard:**
- Determines the plant is in LCO 3.7.8, Service Water System, Condition A, with a 72 hour completion time.
 - Determines the plant has until 6/24/2010 at 1000 before having to complete Required Action A.1

EXAMINER NOTE: **It is not critical for the Candidate to complete the performance steps in the listed order. The order listed is the order the validators performed the steps.**

Technical Specifications

Performance Step: 2 Reviews B Containment Recirculation Fan LCO

- Standard:**
- Determines the plant is in LCO 3.6.6, Containment Spray (CS), Containment Recirculation Fan Cooler (CRFC), and NaOH Systems, Condition D, with a 7 day completion time.
 - Determines the plant has until 6/25/2010 at 1200 before having to complete Required Action D.1.

Technical Specifications

Performance Step: 3 Determines B1 Battery Charger LCO

- Standard:**
- Determines the plant is in LCO 3.8.4, ECCS – Distribution System – MODES 1, 2, 3, and 4.
 - Determines the plant has 2 hours (6/21/2010 at 1400) before having to complete Required Action A.1

Comment:

A-52.4, Attachment 1

Performance Step: 4 Completes Steps 3.2.1 through 3.2.3 of A-52.4, Attachment 1.

Standard:

- See attached KEY.
- Proceeds to Step 3.2.4

Comment:

A-52.4, Attachment 1, Step 3.2.4

Performance Step: 5 Perform Loss of Safety Function Determination PER Attachment 2

Standard:

- Proceeds to Attachment 2

Comments:

A-52.4, Attachment 2

Performance Step: 6 Step 1.0
Have any of the following supporting system LCOs been entered? YES/NO

Standard:

- Circles YES in Step 1.0
- Initials to the right of LCOs 3.6.6, 3.7.8 and 3.8.4
- Proceeds to Step 2.0

EXAMINER NOTE: Attachment 2 of A-52.4 is a worksheet to aid the operator in performing the Safety Function Determination. It is expected the Candidate will fill out Attachment 2 in the same manner as the key, but there may be slight differences, which is acceptable.

EXAMINER NOTE: For step one the candidate must realize three support system LCOs have been entered: B Containment Recirculation Fan (3.6.6), D Service Water Pump (3.7.8) and the B1 Battery Charger (3.8.4).

A-52.4, Attachment 2**Performance Step: 7**

Step 2.0

Has only one (1) LCO been entered (i.e., total # of LCOs in effect is only 1)? YES/NO

Standard:

- Circles NO in Step 2.0
- Determines a loss of safety function evaluation is required
- Proceeds to Step 3.0

EXAMINER NOTE:

Since there are multiple LCOs entered and three of them are supporting system LCOs, there is a potential loss of safety function.

A-52.4, Attachment 2 or A-52.3✓ **Performance Step: 8**

Step 3.0

Using the attached Loss of Safety Function Matrix, determine if any combination of LCO's has the potential to result in a loss of safety function. Only combinations which are not shaded in the box require further evaluation (i.e., "empty" boxes). Do any combination of LCOs result in a potential loss of safety function? YES/NO

Standard:

- References either Attachment 2 of A-52.4 or Table 1 of A-52.3
- Determines a potential loss of safety function exists and further evaluation is required as indicated by either the empty box in Attachment 2 of A-52.4 or Table 1 "Supported Systems LCO(s)" column of A-52.3.
- (✓) Circles NO in Step 3.0
- Proceeds to Attachment 1

EXAMINER CUE:

If the Candidate does not circle NO in step 3.0 on Attachment 2, ask the follow up question after both Attachments are submitted "Explain the flowpath through Attachment 2."

A-52.4, Attachment 2 or A-52.3**Performance Step: 9**

- If YES, a potential loss of safety function exists. Therefore, perform the following:
 - A. Verify that at least one train of the affected functions is available to mitigate the accidents listed in the Applicable Safety Analysis bases section of the LCO(s). Refer to A-52.3 for additional guidance. If loss of safety function exists, then enter all affected LCOs or LCO 3.0.3.

Standard:

- Uses Table 1 of A-52.3 and determines cascading is not allowed for LCO 3.8.4
- References LCO 3.8.4 and determines Conditions C is applicable.
- Determines the plant must enter LCO 3.8.4, Required Actions C.1
- Proceeds to Substep B.

Comment:

A-52.4, Attachment 2 and A-52.4, Attachment 1, Step 3.2.4

- ✓ **Performance Step: 10**
- If YES, a potential loss of safety function exists. Therefore, perform the following:
 - B. If a loss of safety function does not exist, ensure that multiple support system inoperabilities do not result in an inappropriate extension of the supported system's Completion Time. If the supported system inoperability would be extended beyond that allowed by its specific LCO Completion Time, enter the supported system Conditions and Required Actions immediately upon exiting of the first support system LCO that no longer applies.

Standard:

- Determines Condition A of LCO 3.8.4 Required Action statement does not extend already entered LCOs.
- (✓) Initials Step 3.2.4 of A-52.4, Attachment 1.

EXAMINER NOTE:

LCO 3.8.4 Required Action statement A requires B1 Battery Charger to be restored by 1400 on 6/21/2010, while the next Required Action statement does not require completion until 1000 on 6/24/2010, therefore no inappropriate time extension will occur.

A-52.4, Step 3.2.5

Performance Step: 11 **PERFORM** a "what if" risk assessment in EOOS for inoperable equipment IAW Step 3.2.5.

3.2.5.8 EOOS highest PRF color:

green ☐ / yellow ☐ / orange ☐ / red ☐

EOOS highest top level system status color:

green ☐ / yellow ☐ / orange ☐ / red ☐

Standard:

- Marks both "yellow" boxes in Step 3.2.5.8
- Initials Step 3.2.5
- Enters LCO 3.8.4, Required Actions A.1

EXAMINER CUE:

When the Candidate gets to Step 3.2.5, inform them the "what if" risk assessment in EOOS has been performed and the highest PRF color is YELLOW and the highest top level system status color is YELLOW.

A-52.4, Step 3.2.6

✓ **Performance Step: 12** **REQUIRED ACTIONS:**

Standard:

- Fills out the REQUIRED ACTIONS Table IAW the attached key

EXAMINER NOTE:

See the attached Key.

Terminating Cue:

After the REQUIRED ACTION Table is completed: Evaluation on this JPM is complete.

Stop Time: _____

Job Performance Measure No.: 2010 GINNA NRC JPM SA-3

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS:

- The Plant is stable at 100% power.
- Date: 6/21/2010
- Time: 1210
- The following equipment is currently Out of Service:
 - D Service Water Pump (LCO 3.7.8, Condition A was entered today at 1000 and all necessary paperwork has been completed.)
 - B Containment Recirculation Fan (LCO 3.6.6, Condition D was entered on 6/18/2010 at 1200 and all necessary paperwork has been completed.)
 - Battery Charger B for maintenance. It is expected to be returned to service 6/22/2010 at 1200.
- At 1200 today Battery Charger B1 was taken out of service to due a ground.
- Condition Report CR-2010-006284 has been initiated for the B1 Battery Charger ground.
- The crew has taken the appropriate action to stabilize the plant.

INITIATING CUE:

Fill out an A-52.4, Attachment 1, through step 3.2.6, and Attachment 2 for the given plant conditions. The EIN for Battery Charger B1 is BYCB1. A "what if" risk assessment in EOOS has been ran and it was determined the highest PRF color is yellow and the highest top level system status color is yellow.

PERFORMANCE INFORMATION

Facility: Ginna

Task No.:

Task Title: Respond to a Contaminated Injured PersonJPM No.: 2010 GINNA NRC JPM SA-4

K/A Reference: 2.3.14 (3.4/3.8)

Examinee:

NRC Examiner:

Facility Evaluator:

Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X
Classroom X Simulator _____ Plant _____

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.

- Initial Conditions:
- The Reactor is operating at 100% power, Steady-State, MOL.
 - The Shift Manager and Shift Technical Advisor are outside the control room at a meeting with Plant Management.
 - 15 minutes ago an Auxiliary Operator called the Control Room and informed them of the following:
 - A Chemist received serious steam burns while performing RCS sampling activities in the sample room.
 - The sampling system has been stabilized and no radioactive releases are in progress.
 - The Chemist is in pain.
 - The Chemist has been determined to be radioactively contaminated and is enroute to Rochester General Hospital by ambulance. Mercy Flight services are not required.

Task Standard: Correctly identifies all required onsite and offsite notifications and associated time limits.

Required Materials: None

- General References:
- A-7, Procedure for Handling Injuries/Medical Emergencies at Ginna Station, Rev. 10200
 - EPIP 1-5, Notifications, Rev. 08200

PERFORMANCE INFORMATION

	<ul style="list-style-type: none">• CNG-NL-1.01-1004, REGULATORY REPORTING, Rev. 00300• OPG-NOTIFICATION, Revision 02200
Handouts:	<ul style="list-style-type: none">• A-7, Procedure for Handling Injuries/Medical Emergencies at Ginna Station, Rev. 10200• EPIP 1-5, Notifications, Rev. 08200• CNG-NL-1.01-1004, REGULATORY REPORTING, Rev. 00300• OPG-NOTIFICATION, Revision 02200
Initiating Cue:	<p>Determine and write down on the paper provided the following information for the event described in the Initial Conditions:</p> <ol style="list-style-type: none">1. All onsite and offsite notifications required by the Control Room during and after the event. Include any time limitations associated with the notification(s), if applicable.2. All announcements that must be made and personnel that must be dispatched by the Control Room to ensure the Chemist receives prompt first aid and appropriate medical attention. For announcements that must be made, include all information required in the announcement.
Time Critical Task:	No
Validation Time:	14 Minutes

PERFORMANCE INFORMATION

(Denote Critical Steps with a ✓)

Start Time: _____.

EXAMINER CUE: When the Candidate determines the need for any procedure, provide them with a copy. At your discretion you may have them describe how to obtain the current revision of the procedure prior to handing them a copy.

A-7, Attachment 1**✓ Performance Step: 1**

Upon notification of a Medical Emergency:

If the report is for any person experiencing the following problems, immediately contact Wayne County Emergency Dispatch by calling 769-911 and request an ambulance:

- Unconscious
- Chest Pains
- Having difficulty breathing
- Having excessive bleeding

Standard:

Contacts Wayne County Emergency (Calls 769-911) to request an ambulance

Comment:**A-7, Attachment 1****✓ Performance Step: 2**

Make an announcement over the PA and have the Medical Emergency Response Team respond.

Standard:

An announcement is made to include the following:

- Intermediate Building (Hot Side)
- Medical Emergency
- Emergency medical team respond
- All others remain clear of the area

Comment:

PERFORMANCE INFORMATION

A-7, Attachment 1**Procedure Note:**

Text message to "Ginna Medical Responders" will provide notification to Emergency Medical Responders outside of the Operations Department. These personnel are an additional resource for first aid response.

√

Performance Step: 3

Text message "Ginna Medical Responders."

Standard:

Sends a text message to all Ginna Medical Responders.

Comment:**A-7, Attachment 1**

√

Performance Step: 4

The Control Room should dispatch the Fire Brigade Captain to the scene, (if within the protected area) to assist with communication, ensure plant equipment is secure, and to report to the Control Room if any additional needs arise, or conditions change.

Standard:

Contacts and dispatches Fire Brigade Captain to the scene.

Comment:

PERFORMANCE INFORMATION

A-7, Appendix "A", Step 3✓ **Performance Step: 5**

- a) Inform the Wayne County Emergency Dispatcher of the number of people injured and the extent of injuries, if known
- b) For contaminated patients or if there are multiple patients, alert the hospital to begin arrangements to receive Ginna Station patient(s). Rochester General Hospital or Newark Wayne Community Hospital.

Request to speak to the Emergency Department Triage Nurse and report the accident and any pertinent information. Give the nurse a phone number to call back to confirm the emergency. The hospital will not initiate their plan unless the can confirm there is an actual emergency.

Upon receipt of the confirming telephone call, give the number of casualties, whether they are contaminated or not and any other pertinent information request by the Triage Nurse.

Standard:

- Informs the Wayne County Emergency Dispatcher that one person is injured and contaminated.
- Calls Rochester General Hospital's Emergency Department

Comment:**A-7, Appendix "A", Step 6**✓ **Performance Step: 6**

Notify the following personnel AS SOON AS POSSIBLE, during actual or drill conditions.

- a) Notify Industrial Safety & Health

Wayne Fitzgerald ext. 5215 (Director, Safety & Health)

- b) Notify GS Radiation Protection in cases of major contamination, exposures or any injury occurring within the RCA.

Fred Mis

Standard:

- Notifies Industrial Safety & Health, Wayne Fitzgerald.
- Notifies GS Radiation Protection, Fred Mis.

Comment:

PERFORMANCE INFORMATION

EPIP 1-5, Attachment 5, Steps 2 and 3

- ✓ **Performance Step: 7**
2. When offsite assistance has been requested, activate:
 - Security
 - Ginna Management
 - Emergency Preparedness
 3. Contact the NRC resident inspector

Standard:

- Contacts Security
- Notifies Ginna Management
- Notifies Emergency Preparedness
- Notifies NRC resident inspector.

Comment:**OPG-NOTIFICATION, ATTACHMENT 1**

- ✓ **Performance Step: 8**
- Ops Management page
 - Sr. VP & CNO
 - Entry into A-7 HANDLING INJURIES/MEDICAL EMERGENCIES AT GINNA STATION procedure
 - Entry into EOP/AOP or ER procedures (not including AR proecedures)
 - Entry into S-12.2, OPERATOR ACTION IN THE EVENT OF INDICATION OF SIGNIFICANT INCREASE IN LEAKAGE

Standard:

- Notifies Ops Management
- Notifies Sr. VP & CNO (Senior Management)

Comment:

PERFORMANCE INFORMATION

CNG-NL-1.01-1004, Step 5.1**Performance Step: 9**

Any individual who has a reportability concern shall:

- Notify their supervisor
- Initiate a Condition Report (CR).
- Promptly notify the Shift Manager/Report Sponsor of the reportability concern.

Standard:

- Notifies the Shift Manager
- Submits a Condition Report

Comment:**CNG-NL-1.01-1004, Step 5.2 and Attachment 2****Procedure Note:**

This section describes the process for determining whether an event or condition meets any of the criteria specified in Attachment 2, Immediate Notification and Written Reporting Requirements.

Procedure Note:

Complete notifications of an Emergency Event from the Control Room, including updates and reclassifications, are made according to each station's Emergency Plan implementing procedures.

✓ **Performance Step: 10**

A. Upon becoming aware of a potentially reportable event or concern, the Shift Manager shall:

1. Review Attachment 2 to determine if an immediate Emergency Notification System (ENS) report to the Nuclear Regulatory Commission (NRC) is required, if a written report is required, or if a report to another agency is required.

Standard:

Determines that an 8-hour prompt report to the NRC is required.

Comment:**Terminating Cue:**

After the reporting requirement is determined: Evaluation on this JPM is complete.

Stop Time: _____.

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2010 GINNA NRC JPM SA-4

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS:

- The Reactor is operating at 100% power, Steady-State, MOL.
- The Shift Manager and Shift Technical Advisor are outside the control room at a meeting with Plant Management.
- 15 minutes ago an Auxiliary Operator called the Control Room and informed them of the following:
 - A Chemist received serious steam burns while performing RCS sampling activities in the sample room.
 - The sampling system has been stabilized and no radioactive releases are in progress.
 - The Chemist is in pain.
- The Chemist has been determined to be radioactively contaminated and is enroute to Rochester General Hospital by ambulance. Mercy Flight services are not required.

INITIATING CUE:

Determine and write down on the paper provided the following information for the event described in the Initial Conditions:

1. All onsite and offsite notifications required by the Control Room during and after the event. Include any time limitations associated with the notification(s), if applicable.
2. All announcements that must be made and personnel that must be dispatched by the Control Room to ensure the Chemist receives prompt first aid and appropriate medical attention. For announcements that must be made, include all information required in the announcement.

CANDIDATE NAME: _____

List all onsite and offsite notifications required by the Control Room during and after the event.
Include any time limitations associated with the notification(s), if applicable.

CANDIDATE NAME: _____

Describe all announcements that must be made and personnel that must be dispatched by the Control Room to ensure the Chemist receives prompt first aid and appropriate medical attention. For announcements that must be made, include all information required in the announcement.

Facility:	GINNA	Task No.:	
Task Title:	<u>Determine the EAL for an Event</u>	JPM No.:	<u>2010 GINNA NRC JPM SA-5</u>

K/A Reference: 2.4.41 (2.9/4.6)

Examinee: _____ NRC Examiner: _____

Facility Evaluator: _____ Date: _____

Method of testing:

Simulated Performance:	_____	Actual Performance:	<u>X</u>
Classroom	<u>X</u>	Simulator	_____
		Plant	_____

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.

- Initial Conditions:
- A reactor trip occurred when off-site power was lost 15 minutes ago.
 - Both diesel generators failed to start automatically and neither will start from the Main Control Board. Operators and maintenance personnel have been dispatched to attempt to start them locally.
 - The operating crew is in ECA-0.0, LOSS OF ALL AC POWER, at Step 9.
 - RG&E reports that the cause of the loss of circuits 767 and 7T is unknown at this time and approximately 2 to 3 hours will be required to perform necessary switching operations to restore the circuits.
 - The STA is monitoring the CSFST's for information only. There is no ORANGE or RED Path.
 - No SI Signal is present.
 - The TDAFW Pump is operating and feeding both SG's.
 - RCS Pressure is 2090 psig, decaying very slowly.
 - RCS Temperature and Pressurizer Level are stable near no load values.
 - There are no RMS alarms.
 - No release is in progress or anticipated.

Task Standard: Correct EAL documented within 15 minutes and EPIP 1-5, Attachment 3A completed and handed to the communicator within 15 minutes.

Required Materials: None

- General References:
- EPIP 1-0, GINNA STATION EVENT EVALUATION AND CLASSIFICATION, Revision 04500
 - EPIP 1-5, NOTIFICATIONS, Revision 08200

Handouts:	<ul style="list-style-type: none">• EPIP 1-0, GINNA STATION EVENT EVALUATION AND CLASSIFICATION, Revision 04500• EPIP 1-5, NOTIFICATIONS, Revision 08200• Meteorological Data from the Plant Processing Computer.
Initiating Cue:	<p>You are the Shift Manager.</p> <p>First, classify the event described in the initial conditions. Record the EAL Number for the classification on the sheet provided and return it to me.</p> <p>Second, fill out Attachment 3a of EPIP 1-5, NOTIFICATIONS. When you have completed the portion required to be filled out by the Shift Manager, return the form to me.</p> <p>The time critical task clock starts after you have reviewed the INITIAL CONDITIONS and indicate that you are ready to begin.</p>
Time Critical Task:	Yes
Validation Time:	12 Minutes

SIMULATOR SETUP

N/A

(Denote Critical Steps with a √)

Start Time: _____.

EPIP 1-0, Step 6.1

√ Performance Step: 1

- 6.1 In the event of an abnormal condition the Control Room Personnel will
 - 6.1.1 Perform the immediate responses defined in the appropriate plant procedures.
 - 6.1.2 Identify the initiating conditions using either the guidelines of the EAL wall chart or Attachment 1 of this procedure.
 - 6.1.3 Implement applicable Emergency Plan procedures
 - 6.1.3.1 EPIP 1-4, General Emergency
 - 6.1.3.2 EPIP 1-3, Site Area Emergency

Standard:

- Proceeds to either the EAL wall chart or Attachment 1
- (√) Selects EAL 6.1.4 (SAE) – Loss of both trains of AC busses for greater than 15 minutes (Trip from Mode 1 and/or currently in Mode 3) within 15 minutes after starting the classification.

EXAMINER NOTE:

When the candidate indicates he/she is ready to begin:

Display the JPM Start Time clearly in the room.

Log the Classification Start Time _____.

Log the Classification Stop Time _____.

Classification Stop Time _____ - Classification Start Time _____ = _____

The Classification Stop Time is also the Time Critical Task Start Time for the notification aspect.

EPIP 1-5, 6.0**Procedure NOTE:**

The Shift Manager/Emergency Coordinator/Recovery Manager may delegate these actions to any available individual, except as noted below.

√ **Performance Step: 2****6.0 Actions****6.1 Shift Manager, Emergency Coordinator, Recovery Manager**

6.1.1 When the Control Room has Command and Control, the Emergency Coordinator is responsible for filling out Part I of Attachment 3a (either manually or electronically). This action shall not be delegated

Standard:

Properly fills out EPIP-1-5, Attachment 3A – NEW YORK STATE RADIOLOGICAL EMERGENCY DATA FORM

EXAMINER NOTE:

A KEY is attached for your use.

EPIP 1-5, Attachment 3A√ **Performance Step: 3**

Notify off-site authorities.

Standard:

Hand Attachment 3A to the examiner no later than 15 minutes after the Classification Time Critical Stop Time.

EXAMINER NOTE:

**Log the Notification Time Critical Task Stop Time _____.
Notification Stop Time _____ - Classification Stop Time
_____ = _____**

Terminating Cue:

After Attachment 3A is handed to the examiner: Evaluation on this JPM is complete.

Stop Time: _____.

Job Performance Measure No.: 2010 GINNA NRC JPM SA-5

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS:

- A reactor trip occurred when off-site power was lost 15 minutes ago.
- Both diesel generators failed to start automatically and neither will start from the Main Control Board. Operators and maintenance personnel have been dispatched to attempt to start them locally.
- The operating crew is in ECA-0.0, LOSS OF ALL AC POWER, at Step 9.
- RG&E reports that the cause of the loss of circuits 767 and 7T is unknown at this time and approximately 2 to 3 hours will be required to perform necessary switching operations to restore the circuits.
- The STA is monitoring the CSFST's for information only. There is no ORANGE or RED Path.
- No SI Signal is present.
- The TDAFW Pump is operating and feeding both SG's.
- RCS Pressure is 2090 psig, decaying very slowly.
- RCS Temperature and Pressurizer Level are stable near no load values.
- There are no RMS alarms.
- No release is in progress or anticipated.

INITIATING CUE:

You are the Shift Manager.

First, classify the event described in the initial conditions. Record the EAL Number for the classification on the sheet provided and return it to me.

Second, fill out Attachment 3a of EPIP 1-5, NOTIFICATIONS. When you have completed the portion required to be filled out by the Shift Manager, return the form to me.

The time critical task clock starts after you have reviewed the INITIAL CONDITIONS and indicate that you are ready to begin.

CANDIDATE NAME: _____

EAL Number: _____

Facility: Ginna

Task No.:

Task Title: Start an Emergency Diesel
Generator During a Loss of All AC
Power.JPM No.: 2010 GINNA NRC JPM
A

K/A Reference: EPE 055 EA1.02 (4.3 / 4.4)

Alternate Path – Once to start an
SW Pump, once to energize a bus
and then once to trip the Diesel.

Examinee:

NRC Examiner:

Facility Evaluator:

Date:

Method of testing:

Simulated Performance: _____

Actual Performance: X Classroom _____ Simulator X Plant _____**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.

- Initial Conditions:
- Ginna lost all off-site power due to severe weather.
 - The 'B' EDG is unavailable due to maintenance.
 - The 'A' EDG failed to automatically start.
 - The crew is performing ECA-0.0, LOSS OF ALL AC POWER.

Task Standard: Busses 14 and 18 energized and at least one SW Pump cooling the D/G.

Required Materials: None

General References: ECA-0.0, LOSS OF ALL AC POWER, Revision 03401

Handouts: ECA-0.0, Step 7 (Pgs. 6 and 7 of 26)

Initiating Cue: The Control Room Supervisor has directed you to perform ECA-0.0, Step 7 - Try To Restore Power to Any Train Of AC Emergency Busses for the A EDG.

Time Critical Task: No

Validation Time: 6 Minutes

SIMULATOR SETUP

Reset to IC for NRC JPM N-A

Placekeep the Control Room copy of ECA-0.0 through step 6 and the Note prior to step 7.

Hang Tags on the 'B' EDG (Bus 16 and 17 Supply breakers, 'B' EDG START/STOP switch and the pushbutton on the front of the Main Control Board).

With the simulator running, go to the INSIGHT menu and set **jltgmlct** to **TRUE**. As soon as the normal lights go out and the emergency lights come on, set **jltgmlct** back to **FALSE** and freeze the simulator.

If the lights need to come back on after the JPM set **jltgmlcc** to **TRUE**. As soon as the normal lights come on and emergency lights go out, set **jltgjicc** to **FALSE**.

(Denote Critical Steps with a √)

Start Time: _____.

- ECA -0.0, Step 7.a**
- Procedure Note:**
- Conditions should be evaluated for Site Contingency Reporting (Refer to EPIP-1.0, GINNA STATION EVENT EVALUATION AND CLASSIFICATION).
 - AO should frequently monitor the TDAFW pump until AC power is restored.
- Performance Step: 1** Try To Restore Power to Any Train Of AC Emergency Busses:
- a. Verify emergency D/G aligned for unit operation
- Mode switch in UNIT
 - Voltage control selector in AUTO
- Standard:**
- Verifies D/G A Mode Switch selected to UNIT
 - Verifies D/G A MANUAL / AUTO VOLTAGE CONTROL selected to AUTO
- EXAMINER CUE:** After the Initiating Cue is read, provide the ECA-0.0, Step 7 Handout.
- EXAMINER NOTE:** Switch nomenclature is different than the procedure nomenclature for the Mode and Voltage Control switches.
- ECA-0.0, Step 7.b**
- Performance Step: 2** Check emergency D/Gs - BOTH D/G RUNNING
- Standard:**
- Observes the following indications on the A and B D/Gs
 - Frequency reads 61.2 Hz (On the green line)
 - Voltage reads 0 Volts
 - Amperage reads 0 Amps
 - Watts reads 0 Watts
 - Answers NO and proceeds to 7.b. RNO
- Comment:**

ECA-0.0, Step 7.b RNO b.1)

Performance Step: 3 WHEN non-running D/G available for starting, THEN perform the following:
1) Depress D/G FIELD RESET pushbutton

Standard: Depresses D/G A FIELD RESET pushbutton.

Comment:

ECA-0.0, Step 7.b RNO b.2)

Performance Step: 4 Depress D/G RESET pushbutton

Standard: Depresses D/G A RESET pushbutton

Comment:

ECA-0.0, Step 7.b RNO b.3)

✓ **Performance Step: 5** Start D/G

Standard:

- (✓) Rotates the A D/G CONTROL START/STOP switch to the START position.
- Verifies D/G A is running by observing:
 - Frequency reads 60 Hz (On the green line)
 - Voltage reads 480 Volts
 - Amperage reads ~ 1000 Amps
 - Watts reads 550 Watts

EXAMINER NOTE: The BLUE air start solenoid lights will extinguish.

EXAMINER NOTE: The candidate should move quickly from this point. A D/G running without cooling water will trip in approximately 5 minutes.

ECA-0.0, Step 7.b RNO b.4)

Performance Step: 6 IF D/G starts, THEN go to Step 7c.

Standard: Proceeds to Step 7.c.

Comment:

ECA-0.0, Step 7.c

Performance Step: 7 Check D/G voltage and frequency

- Voltage - APPROXIMATELY 480V
- Frequency - APPROXIMATELY 60 Hz

Standard: Verifies Voltage and Frequency for the A D/G by observing:

- Voltage - APPROXIMATELY 480V on A D/G Voltmeter
- Frequency - APPROXIMATELY 60 Hz on A D/G Frequency Meter

Comment:

ECA-0.0, Step 7.d

Performance Step: 8 Verify adequate D/G cooling

- 1) Bus 17 and/or Bus 18 - ENERGIZED

Standard:

- Determines Bus 18 is deenergized by observing:
 - Voltage – 0 Volts
 - Frequency – 0 Hz
- Proceeds to Step 7.d. RNO.

Comment:

ECA-0.0, Step 7.d RNO

√ **Performance Step: 9** Manually energize busses and start SW Pumps.

Standard:

- (√) Rotates the D/G A SYNCHROSCOPE switch to the BUSS 18 position.
- (√) Rotates the D/G A BUS 18 SUPPLY BREAKER to CLOSE.
- Determines Bus 18 is deenergized by observing:
 - Voltage – Approximately 480 Volts
 - Frequency – Approximately 60 Hz

EXAMINER NOTE:

The Candidate must use system knowledge to know you can not close the D/G supply breaker to Bus 18 without the synchroscope selected to the Bus 18 position.

ECA-0.0, Step 7.d

Performance Step: 10 One SW Pump running for each running D/G

Standard:

- Determines NO SW Pumps running by observing all SW Pump RED lights extinguished and/or SW header pressure.
- Proceeds to Step 7.d. RNO.

Comment:**ECA-0.0, Step 7.d RNO**

√ **Performance Step: 11** Manually energize busses and start SW Pumps.

Standard:

- (√) Starts "A" and/or "C" SW Pump by rotating the switch to the START position before "A" D/G trips on a cooling water-related automatic setpoint.
- Observes the pump or pumps started red light lit.

EXAMINER NOTE:

SW header pressure will rise to approximately 40 PSIG after one pump is started. The candidate may elect to start a second SW pump to get SW header pressure above 55 PSIG.

EXAMINER CUE:

15 seconds after starting the service water pumps, as an Auxiliary Operator call the Candidate and inform them "Local annunciators are indicating a Loss of Service Water to the EDG A and high Jacket Water and Lube Oil temperatures."

ECA-0.0, Step 7.d RNO√ **Performance Step: 12**

IF adequate cooling can NOT be supplied to a running D/G, THEN perform the following:

- 1) Pull stop the D/G AND immediately depress associated VOLATE SHUTDOWN pushbutton.

Standard:

- Rotates the A D/G CONTROL START/STOP switch to the STOP position and pulls the switch to the PULL STOP position.
- Depresses the VOLTAGE SHUTDOWN pushbutton for the A D/G.

Comment:**Terminating Cue:**

When the VOLTAGE SHUTDOWN pushbutton is depressed: Evaluation on this JPM is complete.

Stop Time: _____.

Job Performance Measure No.: 2010 GINNA NRC JPM A

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS:

- Ginna lost all off-site power due to severe weather.
- The 'B' EDG is unavailable due to maintenance.
- The 'A' EDG failed to automatically start.
- The crew is performing ECA-0.0, LOSS OF ALL AC POWER.

INITIATING CUE:

The Control Room Supervisor has directed you to perform ECA-0.0, Step 7 - Try To Restore Power to Any Train Of AC Emergency Busses for the A EDG.

Facility: Ginna

Task No.:

Task Title: In accordance with FR-C.1,
RESPONSE TO INADEQUATE
CORE COOLING, Isolate an SI
Accumulator That Has DischargedJPM No.: 2010 GINNA NRC
JPM B

K/A Reference: 006 A4.07 (4.4/4.4)

Alternate Path – Step 17.d RNO
compensatory action for an MOV
with no power

Examinee:

NRC Examiner:

Facility Evaluator:

Date:

Method of testing:Simulated Performance: _____ Actual Performance: X
Classroom _____ Simulator X Plant _____**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.

- Initial Conditions:
- A loss of coolant accident has occurred.
 - Bus 14 is de-energized.
 - Multiple equipment failures resulted in a RED Path on CORE COOLING.
 - The crew has completed Steps 1 through 16 of FR-C.1, RESPONSE TO INADEQUATE CORE COOLING.

Task Standard: A SI Accumulator depressurized and B SI Accumulator isolated.

Required Materials: Marked up copy of FR-C.1 available in the simulator.

General References: FR-C.1, RESPONSE TO INADEQUATE CORE COOLING, Revision 02600

Handouts: FR-C.1, Step 17

Initiating Cue: The CRS directs you to perform FR-C.1, Step 17.

Time Critical Task: No

Validation Time: 4 Minutes

SIMULATOR SETUP

Reset to IC for NRC JPM N-B

Ensure remotes EDS035 and EDS036 indicate CLOSED.

Placekeep the Control Room copy of FR-C.1 Step 16 with the procedural path reflecting the equipment failed in the initial setup.

(Denote Critical Steps with a √)

Start Time: _____.

Performance Step: 1 **FR-C.1, Step 17**
Perform Step 17 – Check if SI Accumulators should be isolated

Standard: Reviews Steps and considers conditions, as necessary.

EXAMINER CUE: **Provide copy of FR-C.1, Step 17.**

Performance Step: 2 **FR-C.1, Step 17.a**
RCS hot leg temperatures – BOTH LESS THAN 390 °F

Standard: Observes RCS hot leg temperatures indicating less than 390°F on TI-409A1, 409B1, 410A1 and 410B1 and/or PPCS.

Comment:

√ **Performance Step: 3** **FR-C.1, Step 17.b**
Dispatch AO with locked valve key to locally close breakers for SI ACCUM discharge valves

- MOV-841 MCC C position 12F
- MOV-865 MCC D position 12C

Standard: Directs Primary AO to close the following breaker:

- MOV-865 MCC D position 12C

EXAMINER NOTE: The candidate may not recognize power is not available to MOV-841 and therefore direct closure of that breaker.

EXAMINER NOTE: The simulator snap includes the breakers for MOV-841 and MOV-865 already closed. There is not any action required by the Simulator Driver.

EXAMINER CUE: Repeat back order. Wait one minute and then report that the breakers for MOV-865 and MOV-841 (if they don't realize MOV-841 doesn't have power) are closed.

FR-C.1, Step 17.c	
Performance Step: 4	Verify SI reset.
Standard:	Observes K-6, THERMAL OVERLOAD RELAY BYPASSED, extinguished.
EXAMINER NOTE:	If K-6 is extinguished then Safety Injection has been reset.
EXAMINER NOTE:	The Candidate may depress the SI Reset Pushbutton to ensure SI is reset.
FR-C.1, Step 17.d	
√ Performance Step: 5	Close SI Accumulator Discharge Valves <ul style="list-style-type: none">• ACCUM A – MOV-841• ACCUM B – MOV-865
Standard:	<ul style="list-style-type: none">• (√) Takes the MOV-865 switch to the CLOSED position and the GREEN light illuminates• Verifies the GREEN light lit for MOV-865• Proceeds to Step 17. d. RNO for no power to MOV-841
EXAMINER NOTE:	MOV-841 will not close since there is no power available with Bus 14 de-energized. The candidate may not attempt to close it based on the Initial Conditions.
FR-C.1, Step 17.RNO d.1)	
Performance Step: 6	Perform the following to vent an unisolated accumulator: <ul style="list-style-type: none">1) Reset CI
Standard:	Depresses the CI RESET PB.
EXAMINER NOTE:	Candidate may verify that A-26, CONTAINMENT ISOLATION, extinguishes.

- Performance Step: 7** **FR-C.1, Step 17.RNO d.2)**
Ensure adequate air compressor(s) running.
- Standard:**
- Observes the Red light lit for the "C" Air Compressor running. (MCB Back Panel)
 - Observes approximately 115 PSIG on Instrument Air Header Pressure.

- EXAMINER NOTE:** **The definition of adequate air compressors running is:**
- "A" and "B" IAC; or
 - "C" IAC; or
 - Service Air Compressor

- Performance Step: 8** **FR-C.1, Step 17.RNO d.3)**
Establish IA to CNMT.
- Standard:**
- Observes the Red light lit for AOV-5392.
 - Observes the AOV-5392 light dim on the CI/CVI panel.

Comment:

- √ **Performance Step: 9** **FR-C.1, Step 17.RNO d.4)**
Open vent valves for unisolated SI ACCUMs.
- ACCUM A, AOV-834A
 - ACCUM B, AOV-834B
- Standard:**
- (√) Rotates the switch for AOV-834A to the OPEN position. (MCB Back Panel)
 - Observes the Red light lit for AOV-834A.
- EXAMINER NOTE:** **PI-941, pressure indicator for the A SI Accumulator, indicates 0 because the A electrical train is deenergized. The Candidate must go to the front of the Main Control Board to determine the pressure in the A SI Accumulator.**

✓ **Performance Step: 10** **FR-C.1, Step 17.RNO d.5)**
Open HCV-945.

Standard: Opens HCV-945 by adjusting the demand controller on MCB Back Panel to a position greater than ZERO

Comment:

Terminating Cue: After the candidate has opened HCV-945: Evaluation on this JPM is complete.

Stop Time: _____.

Job Performance Measure No.: 2010 GINNA NRC JPM B

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS:

- A loss of coolant accident has occurred.
- Bus 14 is de-energized.
- Multiple equipment failures resulted in a RED Path on CORE COOLING.
- The crew has completed Steps 1 through 16 of FR-C.1, RESPONSE TO INADEQUATE CORE COOLING.

INITIATING CUE:

The CRS directs you to perform FR-C.1, Step 17.

Facility: Ginna

Task No.:

Task Title: Start a Reactor Coolant Pump during a plant startup and then respond to an alarm associated with the pump just startedJPM No.: 2010 GINNA NRC JPM C

K/A Reference: 003 2.1.23 (4.3 / 4.4)

ALTERNATE PATH: Alarm Response action to trip the RCP

Examinee:

NRC Examiner:

Facility Evaluator:

Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X
 Classroom _____ Simulator X Plant _____

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.

- Initial Conditions:
- The plant is returning to service from a refueling outage.
 - B RCP is running and the S-2.1, REACTOR COOLANT PUMP OPERATION, used to start the pump has been closed out. A new S-2.1 is being used to start the A RCP and is complete up to Step 5.1.3.
 - The Containment Sound Monitor will not be used during the RCP starts.
 - The crew is performing O-1.1, PLANT HEATUP FROM COLD SHUTDOWN TO HOT SHUTDOWN, and has reached step 6.5.10.3 – PLACE PCV 135 in MANUAL AND CONTROL RCS pressure at approximately 325 psig
 - An Auxiliary Operator is at the A RCP to monitor the start.

Task Standard: RCS Pressure controlled within required parameters and the A RCP manually tripped

Required Materials: None

- General References:
- O-1.1, PLANT HEATUP FROM COLD SHUTDOWN TO HOT SHUTDOWN, Revision 16401
 - S-2.1, REACTOR COOLANT PUMP OPERATION, Revision 04500
 - AR-A-24, RCP OIL LEVEL \pm 1.25, Revision 01601

Handouts:	<ul style="list-style-type: none">• A marked up copy of O-1.1 up to the NOTE prior to Step 6.5.10.3• A marked up copy of S-2.1, REACTOR COOLANT PUMP OPERATION, up to Step 5.1.2.• A marked up copy of Attachment 5, RCP A, to S-2.1
Initiating Cue:	The CRS has assigned you to start the A RCP in accordance with Steps 6.5.10.3 through 6.5.10.6 of O-1.1, PLANT HEATUP FROM COLD SHUTDOWN TO HOT SHUTDOWN. Another operator will respond to alarms not directly related to this task and is available for adjusting Charging Pump speed during the RCP start, but you must direct any adjustments.
Time Critical Task:	No
Validation Time:	15 Minutes

SIMULATOR SETUP

- Reset to IC for NRC JPM N-C
- Ensure MALF RCS08A, -2.5, on Trigger 1
- Place RCP Parameters on Group Display
- LTOP Display on overhead monitor
- Replace C-5 and F-29 alarm tiles
- Placekeep the Control Room copy of O-1.1 up to Step 6.5.10.3, and S-2.1 up to Step 5.0

(Denote Critical Steps with a √)

Start Time: _____.

Procedure Note:	O-1.1, Step 6.5.10.3 The Operator should be ready to open PCV-135 should a pressure spike occur when the Reactor Coolant Pump is started. IF RCS pressure goes down after RCP start, THEN closing on PCV 135 will raise RCS pressure faster than raising Charging Pump speed. IF RCS pressure rises, THEN it may be necessary to lower Charging Pump speed OR open PCV 135.
√ Performance Step: 1	PLACE PCV 135 in MANUAL AND CONTROL RCS pressure at approximately 325 psig.
Standard:	<ul style="list-style-type: none">• Reviews procedure note prior to Step 6.5.10.3• Balances the PCV 135 Automatic-to-Manual control and places the controller to Manual.• (√) Controls RCS pressure at 325 psig.
EXAMINER CUE:	Provide the Candidate with the marked up copy of O-1.1.
Performance Step: 2	O-1.1, Step 6.5.10.4 IF the containment sound monitor is to be used for the RCP being started, THEN TURN ON the containment sound monitor for the respective RCP. OTHERWISE, MARK this Step N/A.
Standard:	Based on Initial Conditions, marks the step N/A
Comment:	

O-1.1, Step 6.5.10.5

Performance Step: 3 CLOSELY MONITOR RCS heatup rate AND RCS pressure after starting of the 2nd RCP.

Standard: Monitors RCS heat up rate and pressure on PPCS.

Comment:

O-1.1, Step 6.5.10.6

Performance Step: 4 START the 2nd RCP PER S-2.1, starting instructions section AND MARK RCP NOT started N/A.

- RCP A
- RCP B

Standard:

- Marks RCP B step N/A
- Refers to S-2.1 for the A RCP

EXAMINER CUE: Provide the Candidate with a marked up copy of S-2.1 when the need is identified.

S-2.1, Section 5.1

Procedure Note: Sections that will not be performed may be marked N/A.

Performance Step: 5 STARTING RCP A

Standard: Reviews procedure

Comment:

S-2.1, Step 5.1.3

Procedure Note: Starting the Oil Lift Pump will increase RCP seal clearances and may result in a change of state for MCB Alarm B-17, RCP 1A No. 1 SEAL HI-LO FLOW.

✓ **Performance Step: 6** Start RCP A Oil Lift Pump.

Standard:

- (✓) Rotates the RCP A Oil Lift Pump handle to the START position.
- Verifies red start light is lit
- Marks the time _____.

EXAMINER NOTE: The time should be marked to ensure the Lift Oil Pump has been running for at least 2 minutes prior to starting the RCP but the RCP will not start unless the pressure interlock is satisfied.

S-2.1, Step 5.1.4

Procedure Note: A pressure interlock prevents starting of the RCP unless a minimum oil pressure is available to the Upper Thrust Shoes of the Motor Thrust Bearing.

Performance Step: 7 **AFTER 2 minutes, VERIFY** RCP A Lift Pressure WHITE light is lit.

Standard:

- Verifies RCP A Lift Pressure WHITE light is lit.
- Verifies 2 minutes has elapsed since the start of the Lift Oil Pump.

Comment:

S-2.1, Step 5.1.5

Performance Step: 8 **VERIFY** RCP A No. 1 Seal Leakoff is still in the NORMAL OPERATING RANGE of Attachment 3, RCP Seal Leakoff.

Standard:

- Refers to S-2.1, Attachment 3, and determines the combination of #1 Seal Leak Rate and #1 Seal DP are within the NORMAL OPERATING RANGE.
- Determines the #1 Seal Leak Rate using RCP A F-177 and A SEAL FLOW F-175
- Determines the #1 Seal DP using PI-173
- Using the combination of #1 Seal Leak Rate and #1 Seal DP verifies their intersection is within the NORMAL OPERATING RANGE on Attachment 3.

EXAMINER NOTE:

The normal #1 Seal leak rate is approximately 1.2 GPM at 325 psig. The maximum allowable #1 Seal leak rate is 1.25 GPM at 325 psig.

S-2.1, Step 5.1.6

Performance Step: 9 Select RCP A on the Containment Sound Monitor, N/A if Sound Monitor is not available.

Standard:

Marks the step N/A

Comment:**S-2.1, Step 5.1.7**

Performance Step: 10 Make a Plant Announcement that RCP A will be started.

Standard:

Announces starting Reactor Coolant Pump A.

Comment:

S-2.1, Step 5.1.8**Procedure Note:**

- During solid plant operations when starting an RCP, control RCS pressure such as to maintain >220 psid on the #1 seal DP indicator and below the PORV setpoint of 410 psig.
- Maintain RCS pressure at approximately 325 psig, as indicated on PI-420, by setting of the Low Pressure Letdown Controller, PCV-135.

√ **Performance Step: 11** Start RCP A.

Standard:

- May assign the second board operator to adjust Charging Pump speed, when directed.
- Starts RCP A and verifies flow.
- (√) Adjusts PCV-135 as necessary to maintain RCS Pressure such that RCP #1 Seal DP >220 PSID, as seen on PI-173, and no PORV lift (410 PSIG).

EXAMINER NOTE:

RCP A start time: _____.

S-2.1, Step 5.1.9

Performance Step: 12 Turn off the Containment Sound Monitor (mark N/A if not used).

Standard:

- Marks the step N/A

Comment:**S-2.1, Step 5.1.10**

Performance Step: 13 **WHEN** the A RCP has been operating for greater than 1 minute, **THEN STOP** the RCP A Oil Lift Pump.

Standard:

- Verifies the RCP has been running for one minute.
- Rotates the RCP A Oil Lift Pump counter-clockwise to the STOP position.

Comment:

S-2.1, Step 5.1.11

- Performance Step: 14** Monitor the following parameters for RCP A IAW Section 5.3, Normal Operation:
- RCP A Bearing Temps (PPCS or Recorder)
 - RCP A Seal Leakoff Flows
 - RCP A #1 Seal D/P
 - Seal Return Heat Exchanger Outlet Temperature (AO)
 - RCP A Oil Levels
 - RCP A Vibration Monitor

Standard: Refers to Section 5.3 and begins verifying parameters.

EXAMINER CUE: If the Candidate asks Seal Return Heat Exchanger Outlet Temperature, inform them it is 80°F.

SIMULATOR DRIVER: When this step is in progress, insert MALF RCS08A, -2.5, ramp over 30 seconds

AR-A-24

Performance Step: 15 Responds to annunciator alarm.

Standard: Acknowledges Main Control Board alarm A-24.

Comment:

AR-A-24, Step 1

Performance Step: 16 When first starting the pump, then allow 30 seconds for alarm to clear. Trip pump if alarm still does not clear.

Standard: Reads step and may trip the RCP at this time.

EXAMINER NOTE: The critical task for stopping the RCP is met if the candidate trips the RCP at any time after reading this step but before the RCP A breaker trips on overcurrent. RCP A will trip on overcurrent after approximately 3.5 minutes.

AR-A-24, Step 2

Performance Step: 17 When operating, then verify level using RCP Oil Level Indicators and Plant Process Computer System.

Standard:

- Checks RCP A Oil Level at the RMS rack side panel
- Checks Group Display RCPS on PPCS

Comment:

AR-A-24, Step 2.1

Performance Step: 18 Immediately monitor the A RCP Motor bearing temperature. This can be done by using PPCS Group Display RCPS.

Standard: Determines RCP Motor Bearing temperature is rising using PPCS

EXAMINER NOTE: RCP Motor Bearing temperature is on the computer screen behind the Candidate on the desk.

AR-A-24, Step 2.2

Performance Step: 19 IF bearing temperatures AND indicated level appear normal, THEN initiate a CNMT entry to investigate the sight glass level. IF the lower bearing oil level is greater than 1" BELOW the notch on the sight glass, THEN prepare to remove the pump from service. Otherwise, the level is acceptable to continue operation.

Standard: Determines conditions are NOT normal and proceeds to the next step.

Comment:

AR-A-24, Step 2.3√ **Performance Step: 20**

If level is 1.5" below normally indicated level and visibly lowering then:

- Trip the reactor
- When all E-0 immediate actions done, then trip affected RCP

Standard:

- Trip the reactor (N/A)
- (√) Trips RCP A before the breaker trips on overcurrent.

Comment:**Terminating Cue:**

When RCP A is stopped: Evaluation on this JPM is complete.

Stop Time: _____.

Job Performance Measure No.: 2010 GINNA NRC JPM C

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS:

- The plant is returning to service from a refueling outage.
- B RCP is running and the S-2.1, REACTOR COOLANT PUMP OPERATION, used to start the pump has been closed out. A new S-2.1 is being used to start the A RCP and is complete up to Step 5.1.3.
- The Containment Sound Monitor will not be used during the RCP starts.
- The crew is performing O-1.1, PLANT HEATUP FROM COLD SHUTDOWN TO HOT SHUTDOWN, and has reached step 6.5.10.3 – PLACE PCV 135 in MANUAL AND CONTROL RCS pressure at approximately 325 psig
- An Auxiliary Operator is at the A RCP to monitor the start.

INITIATING CUE:

The CRS has assigned you to start the A RCP in accordance with Steps 6.5.10.3 through 6.5.10.6 of O-1.1, PLANT HEATUP FROM COLD SHUTDOWN TO HOT SHUTDOWN. Another operator will respond to alarms not directly related to this task and is available for adjusting Charging Pump speed during the RCP start, but you must direct any adjustments.

Facility: Ginna

Task No.:

Task Title: Start a Reactor Coolant Pump
During a Plant StartupJPM No.: 2010 GINNA NRC JPM
C – SRO UPGRADE
ONLY

K/A Reference: 003 2.1.23 (4.3 / 4.4)

Examinee:

NRC Examiner:

Facility Evaluator:

Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X
Classroom _____ Simulator X Plant _____

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.

- Initial Conditions:
- The plant is returning to service from a refueling outage.
 - B RCP is running and the S-2.1, REACTOR COOLANT PUMP OPERATION, used to start the pump has been closed out. A new S-2.1 is being used to start the A RCP and is complete up to Step 5.1.3.
 - The Containment Sound Monitor will not be used during the RCP starts.
 - The crew is performing O-1.1, PLANT HEATUP FROM COLD SHUTDOWN TO HOT SHUTDOWN, and has reached step 6.5.10.3 – PLACE PCV 135 in MANUAL AND CONTROL RCS pressure at approximately 325 psig
 - An Auxiliary Operator is at the A RCP to monitor the start.

Task Standard: RCS Pressure controlled within required parameters and the A RCP manually tripped

Required Materials: None

- General References:
- O-1.1, PLANT HEATUP FROM COLD SHUTDOWN TO HOT SHUTDOWN, Revision 16401
 - S-2.1, REACTOR COOLANT PUMP OPERATION, Revision 04500
 - AR-A-24, RCP OIL LEVEL \pm 1.25, Revision 01601

Handouts:	<ul style="list-style-type: none">• A marked up copy of O-1.1 up to the NOTE prior to Step 6.5.10.3• A marked up copy of S-2.1, REACTOR COOLANT PUMP OPERATION, up to Step 5.1.2.• A marked up copy of Attachment 5, RCP A, to S-2.1
Initiating Cue:	The CRS has assigned you to start the A RCP in accordance with Steps 6.5.10.3 through 6.5.10.6 of O-1.1, PLANT HEATUP FROM COLD SHUTDOWN TO HOT SHUTDOWN. Another operator will respond to alarms not directly related to this task and is available for adjusting Charging Pump speed during the RCP start, but you must direct any adjustments.
Time Critical Task:	No
Validation Time:	15 Minutes

SIMULATOR SETUP

- Reset to IC for NRC JPM N-C-U
- Place RCP Parameters on Group Display
- LTOP Display on overhead monitor
- Replace C-5 and F-29 alarm tiles
- Placekeep the Control Room copy of O-1.1 up to Step 6.5.10.3, and S-2.1 up to Step 5.0

(Denote Critical Steps with a √)

Start Time: _____.

EXAMINER NOTE: This JPM only to be administered to SRO Upgrade Candidates only.

Procedure Note: **O-1.1, Step 6.5.10.3**
The Operator should be ready to open PCV-135 should a pressure spike occur when the Reactor Coolant Pump is started.

IF RCS pressure goes down after RCP start, THEN closing on PCV 135 will raise RCS pressure faster than raising Charging Pump speed.

IF RCS pressure rises, THEN it may be necessary to lower Charging Pump speed OR open PCV 135.

√ **Performance Step: 1** PLACE PCV 135 in MANUAL AND CONTROL RCS pressure at approximately 325 psig.

Standard:

- Reviews procedure note prior to Step 6.5.10.3
- Balances the PCV 135 Automatic-to-Manual control and places the controller to Manual.
- (√) Controls RCS pressure at 325 psig.

EXAMINER CUE: Provide the Candidate with the marked up copy of O-1.1.

Performance Step: 2 **O-1.1, Step 6.5.10.4**
IF the containment sound monitor is to be used for the RCP being started, THEN TURN ON the containment sound monitor for the respective RCP. OTHERWISE, MARK this Step N/A.

Standard: Based on Initial Conditions, marks the step N/A

Comment:

O-1.1, Step 6.5.10.5

Performance Step: 3 CLOSELY MONITOR RCS heatup rate AND RCS pressure after starting of the 2nd RCP.

Standard: Monitors RCS heat up rate and pressure on PPCS.

Comment:

O-1.1, Step 6.5.10.6

Performance Step: 4 START the 2nd RCP PER S-2.1, starting instructions section AND MARK RCP NOT started N/A.

- RCP A
- RCP B

Standard:

- Marks RCP B step N/A
- Refers to S-2.1 for the A RCP

EXAMINER CUE: Provide the Candidate with a marked up copy of S-2.1 when the need is identified.

S-2.1, Section 5.1

Procedure Note: Sections that will not be performed may be marked N/A.

Performance Step: 5 STARTING RCP A

Standard: Reviews procedure

Comment:

S-2.1, Step 5.1.3**Procedure Note:**

Starting the Oil Lift Pump will increase RCP seal clearances and may result in a change of state for MCB Alarm B-17, RCP 1A No. 1 SEAL HI-LO FLOW.

✓ **Performance Step: 6** Start RCP A Oil Lift Pump.

Standard:

- (✓) Rotates the RCP A Oil Lift Pump handle to the START position.
- Verifies red start light is lit
- Marks the time _____.

EXAMINER NOTE:

The time should be marked to ensure the Lift Oil Pump has been running for at least 2 minutes prior to starting the RCP but the RCP will not start unless the pressure interlock is satisfied.

S-2.1, Step 5.1.4**Procedure Note:**

A pressure interlock prevents starting of the RCP unless a minimum oil pressure is available to the Upper Thrust Shoes of the Motor Thrust Bearing.

Performance Step: 7 **AFTER 2 minutes, VERIFY RCP A Lift Pressure WHITE light is lit.**

Standard:

- Verifies RCP A Lift Pressure WHITE light is lit.
- Verifies 2 minutes has elapsed since the start of the Lift Oil Pump.

Comment:

S-2.1, Step 5.1.5

Performance Step: 8 **VERIFY** RCP A No. 1 Seal Leakoff is still in the NORMAL OPERATING RANGE of Attachment 3, RCP Seal Leakoff.

Standard:

- Refers to S-2.1, Attachment 3, and determines the combination of #1 Seal Leak Rate and #1 Seal DP are within the NORMAL OPERATING RANGE.
- Determines the #1 Seal Leak Rate using RCP A F-177 and A SEAL FLOW F-175
- Determines the #1 Seal DP using PI-173
- Using the combination of #1 Seal Leak Rate and #1 Seal DP verifies their intersection is within the NORMAL OPERATING RANGE on Attachment 3.

EXAMINER NOTE:

The normal #1 Seal leak rate is approximately 1.2 GPM at 325 psig. The maximum allowable #1 Seal leak rate is 1.25 GPM at 325 psig.

S-2.1, Step 5.1.6

Performance Step: 9 Select RCP A on the Containment Sound Monitor, N/A if Sound Monitor is not available.

Standard:

Marks the step N/A

Comment:**S-2.1, Step 5.1.7**

Performance Step: 10 Make a Plant Announcement that RCP A will be started.

Standard:

Announces starting Reactor Coolant Pump A.

Comment:

S-2.1, Step 5.1.8**Procedure Note:**

- During solid plant operations when starting an RCP, control RCS pressure such as to maintain >220 psid on the #1 seal DP indicator and below the PORV setpoint of 410 psig.
- Maintain RCS pressure at approximately 325 psig, as indicated on PI-420, by setting of the Low Pressure Letdown Controller, PCV-135.

✓ **Performance Step: 11** Start RCP A.

Standard:

- May assign the second board operator to adjust Charging Pump speed, when directed.
- Starts RCP A and verifies flow.
- (✓) Adjusts PCV-135 as necessary to maintain RCS Pressure such that RCP #1 Seal DP >220 PSID, as seen on PI-173, and no PORV lift (410 PSIG).

EXAMINER NOTE:

RCP A start time: _____.

S-2.1, Step 5.1.9

Performance Step: 12 Turn off the Containment Sound Monitor (mark N/A if not used).

Standard:

- Marks the step N/A

Comment:**S-2.1, Step 5.1.10**

Performance Step: 13 **WHEN** the A RCP has been operating for greater than 1 minute, **THEN STOP** the RCP A Oil Lift Pump.

Standard:

- Verifies the RCP has been running for one minute.
- Rotates the RCP A Oil Lift Pump counter-clockwise to the STOP position.

Comment:

Terminating Cue: **When RCP A Oil Lift Pump is stopped: Evaluation on this JPM is complete.**

Stop Time: _____.

Job Performance Measure No.: 2010 GINNA NRC JPM C – SRO UPGRADE ONLY

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS:

- The plant is returning to service from a refueling outage.
- B RCP is running and the S-2.1, REACTOR COOLANT PUMP OPERATION, used to start the pump has been closed out. A new S-2.1 is being used to start the A RCP and is complete up to Step 5.1.3.
- The Containment Sound Monitor will not be used during the RCP starts.
- The crew is performing O-1.1, PLANT HEATUP FROM COLD SHUTDOWN TO HOT SHUTDOWN, and has reached step 6.5.10.3 – PLACE PCV 135 in MANUAL AND CONTROL RCS pressure at approximately 325 psig
- An Auxiliary Operator is at the A RCP to monitor the start.

INITIATING CUE:

The CRS has assigned you to start the A RCP in accordance with Steps 6.5.10.3 through 6.5.10.6 of O-1.1, PLANT HEATUP FROM COLD SHUTDOWN TO HOT SHUTDOWN. Another operator will respond to alarms not directly related to this task and is available for adjusting Charging Pump speed during the RCP start, but you must direct any adjustments.

Facility: Ginna Task No.:

Task Title: Respond To a Control Room Evacuation JPM No.: 2010 GINNA NRC JPM D

K/A Reference: APE 068 AA1.23 (4.3 / 4.4) ALTERNATE PATH: RNO implemented for reactor and turbine trip.

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X

Classroom _____ Simulator X Plant _____

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.

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.

Task Standard: Immediate actions of AP-CR.1 completed from memory.

Required Materials: None

General References: AP-CR.1, CONTROL ROOM INACCESSIBILITY, Rev. 02402

Handouts: None

Initiating Cue: You are the HCO assigned the Control Room Monitoring function.

Time Critical Task: No

Validation Time: 1 Minute

SIMULATOR SETUP

Reset to IC for NRC JPM-N-D

TUR02
TUR17A
TUR17B
RPS05A NO MAN
RPS05B NO MAN
RPS07S
RPS07T
OVR-TUR04 FALSE
OVR-EDS47D FALSE

(Denote Critical Steps with a √)

Start Time: _____.

Performance Step: 1	AP-CR.1, step 1 Assumes the watch
Standard:	Walks down the MCB
EXAMINER CUE:	15-30 seconds after the Initiating Cue inform the Candidate "There are noxious fumes in the Main Control Room. The Control Room Supervisor and Shift Technical Advisor are incapacitated."
Performance Step: 2	AP-CR.1, step 1 Verify Reactor Trip: <ul style="list-style-type: none">• At least one train of reactor trip breakers – OPEN.• Neutron flux – LOWERING.• MRPI indicates - ALL CONTROL AND SHUTDOWN RODS ON BOTTOM.
Standard:	<ul style="list-style-type: none">• Determines no reactor trip breakers are open• Determines Neutron flux at 100% RTP• Determines MRPI indicates the reactor is not tripped• Proceeds to step 1.a RNO
EXAMINER NOTE:	No action has been taken yet to trip the reactor, therefore the candidate should enter the RNO column to manually trip the reactor.

AP-CR.1, step 1 RNO	
Performance Step: 3	Manually trip reactor.
Standard:	<ul style="list-style-type: none">• Depresses the Reactor Trip Pushbutton on MCB• Determines no reactor trip breakers are open
EXAMINER NOTE:	Candidate may also check nuclear power and MRPI for further verification that the reactor has NOT tripped.
AP-CR.1, steps 1.a thru 1.d RNO	
✓ Performance Step: 4	<p>IF reactor trip breakers NOT open, THEN perform the following:</p> <ol style="list-style-type: none">a. Open Bus 13 and Bus 15 normal feed breakers.b. Verify rod drive MG sets tripped.c. Close Bus 13 and Bus 15 normal feed breakers.d. Reset lighting breakers. <p>IF the Rx can NOT be tripped from the Control Room, THEN dispatch personnel to locally open the reactor trip breakers.</p>
Standard:	<ul style="list-style-type: none">• (✓) Opens Bus 13 normal feed breakers.• Verifies Red light OFF and Green lights ON for Bus 13• Verifies A Rod drive MG sets Red light OFF and Green light ON.• Closes Bus 13 normal feed breakers.• Red lights ON and Green lights OFF.• Resets lighting breakers by depressing Bus 13 Lighting Breaker green Pushbuttons.• (✓) Calls Secondary Auxiliary Operator to open the A and B reactor trip breakers
Simulator Driver:	Acknowledge the order and then insert MALFUNCTION ROD06B.

AP-CR.1, step 2**Performance Step: 5** Verify Turbine Stop Valves - CLOSED**Standard:**

- On EHC valve status panel observes SVL Open red light ON and SVR Open red light ON.
- Identifies Turbine stop valves are still open and goes to step 2 RNO.

EXAMINER NOTE:

Since the reactor trip signal initiates the turbine trip signal, the turbine did not receive an auto trip signal.

AP-CR.1, step 2 RNO

√ **Performance Step: 6** Manually trip turbine. IF turbine can NOT be tripped, THEN close both MSIVs.

Standard:

- Depresses Turbine Emergency Trip P/B
- Determines the Turbine did not trip
- (√) Rotates the Handswitch to the closed position for valves:
 - MSIV A, AOV-3517
 - MSIV B, AOV-3516
- Observes Red light extinguished and Green light lit for the following valves:
 - MSIV A, AOV-3517
 - MSIV B, AOV-3516

EXAMINER NOTE:

Inserted malfunction has prevented manual turbine trip button from initiating the turbine trip.

Terminating Cue:

When the verifies both MSIVs are closed: Evaluation on this JPM is complete.

Stop Time: _____.

Job Performance Measure No.: 2010 GINNA NRC JPM D

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

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.

INITIATING CUE:

You are the HCO assigned the Control Room Monitoring function.

Appendix C		Job Performance Measure Worksheet		Form ES-C-1
Facility:	GINNA	Task No.:		
Task Title:	<u>Placing LTOP on Service</u>	JPM No.:	<u>2010 GINNA NRC JPM E</u>	
K/A Reference:	010 A4.03 (4.0 / 3.8)			
Examinee:			NRC Examiner:	
Facility Evaluator:			Date:	
<u>Method of testing:</u>				
Simulated Performance: _____		Actual Performance: <u>X</u>		
Classroom	_____	Simulator	<u>X</u>	Plant _____
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.				
Initial Conditions:	<ul style="list-style-type: none"> • A unit shutdown is in progress • The control room team is performing procedure O-2.2, Plant Shutdown from Hot Shutdown to Cold Conditions, and has reached 6.4.21 – Place the Overpressure Protection System in service. • Section 1 through section 6.1 of O-7, Alignment and Operation of the Reactor Vessel Overpressure Protection System, has been completed. 			
Task Standard:	Place PCV-430 on service and all critical tasks evaluated as satisfactory.			
Required Materials:	Panel key for LTOP operations.			
General References:	<ul style="list-style-type: none"> • O-7, Alignment and Operation of the Reactor Vessel Overpressure Protection System, Rev. 04701 • O-2.2, Plant Shutdown from Hot Shutdown to Cold Conditions, Rev. 15300 			
Handouts:	Properly markup a copy of O-7, Alignment and Operation of the Reactor Vessel Overpressure Protection System, Rev. 04701 to section 6.2.			
Initiating Cue:	You are an extra RO. The Shift Manager directs you to place PCV-430 in service per O-7, Alignment and Operation of the Reactor Vessel Overpressure Protection System, Section 6.2.			
Time Critical Task:	No			
Validation Time:	4 Minutes			
2010 GINNA NRC JPM E, Revision NRC		NUREG 1021, Revision 9, Supplement 1		

SIMULATOR SETUP

Reset to IC for NRC JPM-N-E

Replace the On-Line MCB Annunciator Tiles (C-5 and F-29)

(Denote Critical Steps with a √)

Start Time: _____.

O-7, step 6.2.1**Performance Step: 1**

VERIFY the following MCB Alarms extinguished:

- AA-22, RCS OVER-PRESS PROTECTION TRAIN A HI PRESS
- AA-23, RCS OVER-PRESS PROTECTION TRAIN B HI PRESS
- AA-31, RCS OVER-PRESS PROTECTION TRAIN C HI PRESS

Standard:

Verifies the following MCB Alarms are extinguished:

- AA-22
- AA-23
- AA-31

Comment:**O-7, step 6.2.2****Performance Step: 2**

ENSURE the PRZR PORV, PCV-430 Control Switch is in the CLOSE position.

Standard:

- Rotates PCV-430 control switch to the CLOSED position.
- Verifies the Red light OFF and Green light ON for PCV-430

Comment:

✓	Performance Step: 3	O-7, step 6.2.3 OPEN ACCUM TO SURGE TANK VLV SOV-8616A. (MCB Rear)
	Standard:	<ul style="list-style-type: none">• Requests LTOP key from the Shift Manager• (✓) Rotates SOV-8616A to the OPEN position
	EXAMINER CUE:	Provide LTOP KEY when requested.
	EXAMINER NOTE:	There will not be any light indication on the MCB
✓	Performance Step: 4	O-7, step 6.2.4 ENSURE N2 ARMING VLV SOV-8619A is in the ARM position. (MCB Rear)
	Standard:	<ul style="list-style-type: none">• Uses proper key.• (✓) Rotates SOV-8619A to the ARM position
	EXAMINER NOTE:	There will not be any light indication on the MCB
	Performance Step: 5	O-7, step 6.2.5 VERIFY CLOSED PRZR PORV, PCV-430.
	Standard:	<ul style="list-style-type: none">• PCV-430 control switch is in the closed position.• Red light OFF and green light ON.
	Comment:	
	Performance Step: 6	O-7, step 6.2.6 RECORD pressure indicated on OP ACCUM A N2 PRESSURE, PI-455. (MCB Rear)
	Standard:	Pressure recorded as indicated on PI-455.
	EXAMINER NOTE:	PI-455 will read approximately 750 psig.

O-7, step 6.2.7**Performance Step: 7**

- IF Accumulator A pressure is NOT between 735 and 760 psig, THEN CHARGE the accumulator as PER S-29.2, Charging the Reactor Vessel Overpressure Protection System Accumulators with N2.
- IF Accumulator A pressure is correct, THEN MARK this Step N/A.

Standard:

Verifies Accumulator A pressure between 735 and 760 psig and marks step N/A.

Comment:

EXAMINER NOTE: At this point in the plant shutdown the operator would expect the MOV-516 breaker to be closed. However, to design JPM Step 8 as a Critical Task, when the position of the breaker is checked, it will be reported that the breaker is OPEN.

Based on this, there are two possibilities:

1. Upon discovering the breaker OPEN, the Candidate directs the Primary Auxiliary Operator to "Ensure the breaker for MOV-516 is CLOSED," (Even though the candidate may inform the CRS that the breaker has been discovered out of position).
2. Upon discovering the breaker OPEN, the Candidate informs the CRS that the breaker is out of position, and stops performing the task pending investigation.

The following step is cued for the two likely situations.

√ Performance Step: 8	O-7, step 6.2.8 ENSURE CLOSED MOV 516 breaker, MCC C position 6C, VLV-516 RCS.
Standard:	Calls the Primary Auxiliary Operator and directs that they check the position of the MOV-516 breaker.
EXAMINER CUE:	When the Primary AO is directed to check the position of the MOV-516 breaker, report that the Breaker is OPEN.
Standard:	(√) Directs the Primary Auxiliary Operator to CLOSE the MOV-516 Breaker.
Examiner provide the appropriate Cue(s):	
EXAMINER CUE:	If the Candidate directs the Primary Auxiliary Operator to "Ensure the breaker for MOV-516 is CLOSED" as the Primary AO, report that "the MOV-516 breaker has been CLOSED."
EXAMINER CUE:	If the Candidate informs the CRS that the breaker was OPEN, as the CRS, acknowledge the report and direct the candidate to continue with the task.
EXAMINER CUE:	If the Candidate requests an investigation as to why the breaker was OPEN, as the Shift Manager, report that an investigation is underway, and direct the candidate to continue with the task.

O-7, step 6.2.9	
√ Performance Step: 9	ENSURE OPEN PRZR PORV BLOCK VLV, MOV 516.
Standard:	<ul style="list-style-type: none">• (√) Rotates MOV 516, PRZR PORV BLOCK VLV to OPEN.• Red light ON and green light OFF.
EXAMINER CUE:	If the Candidate realizes the switch should be in the OPEN position at this point in the plant shutdown and requests an investigation as to why the valve was closed, inform them the Shift Manager will take the required actions for the misposition, continue with the JPM."
O-7, step 6.2.10	
Performance Step: 10	RECORD the time Train A Overpressure Protection System is operable.
Standard:	Records current time.
Comment:	
Terminating Cue:	After the time is recorded or the candidate reports PCV-430 in service: Evaluation on this JPM is complete.
Stop Time:	_____.

Job Performance Measure No.: 2010 GINNA NRC JPM E

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS:

- A unit shutdown is in progress
- The control room team is performing procedure O-2.2, Plant Shutdown from Hot Shutdown to Cold Conditions, and has reached 6.4.21 – Place the Overpressure Protection System in service.
- Section 1 through section 6.1 of O-7, Alignment and Operation of the Reactor Vessel Overpressure Protection System, has been completed.

INITIATING CUE:

You are an extra RO. The Shift Manager directs you to place PCV-430 in service per O-7, Alignment and Operation of the Reactor Vessel Overpressure Protection System, Section 6.2.

Facility: Ginna Task No.:

Task Title: Initiate rapid boration in preparation for proceeding to cold shutdown JPM No.: 2010 GINNA NRC JPM F

K/A Reference: 004 A4.18 (4.3/4.1)

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X
Classroom _____ Simulator X Plant _____

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.

Initial Conditions:

- The plant has had a reactor trip and is entering a forced outage.
- Plant Management directed the RCS boration to refueling boron concentration
- The crew has prepared to emergency borate using S-3.1, BORON CONCENTRATION CONTROL, Attachment 9 – RAPID BORATION, up to step 2.3.

Task Standard: Boration greater than 10 GPM established.

Required Materials: None

General References:

- O-2.2, PLANT SHUTDOWN FROM HOT SHUTDOWN TO COLD CONDITIONS, Revision 15300
- S-3.1, BORON CONCENTRATION CONTROL, Attachment 9 – RAPID BORATION, Revision 03101

Handouts:

- Marked up copy of S-3.1, BORON CONCENTRATION CONTROL, Attachment 9 – RAPID BORATION, Revision 03101

Initiating Cue: The CRS directs you to establish rapid boration at greater than 18 GPM in accordance with S-3.1, Attachment 9 starting at step 2.3. Assume operators are standing by at the required locations to perform the local tasks.

Time Critical Task: No

Validation Time: 9 Minutes

SIMULATOR SETUP

Reset to the IC for NRC JPM N-F.

Ensure PPCS Variable Boration Dilution screen is clear.

(Denote Critical Steps with a √)

Start Time: _____.

- | | |
|----------------------------|---|
| Performance Step: 1 | S-3.1, Attachment 9, Steps 2.3 and 2.3.1
Verify charging flow path
Verify at least one charging pump running |
| Standard: | Verifies the A and C Charging Pumps are running using the red light lit for each charging pump and flow indicated on FI-128C, FI-115A and FI-116A |
| Comment: | |
| | |
| Performance Step: 2 | S-3.1, Attachment 9, Step 2.3.2
ENSURE OPEN CHARGING VLV RHX TO LOOP B COLD, AOV-294. |
| Standard: | Verifies AOV-294, CHARGING VLV RHX TO LOOP B COLD, OPEN using the red light lit for AOV-294 |
| Comment: | |
| | |
| Performance Step: 3 | S-3.1, Attachment 9, Step 2.3.3
VERIFY CHARGING FLOW TO REGEN HX, HCV-142, demand set at 0% (Open) |
| Standard: | Verifies HCV-142 demand set at 0 (ZERO) %. |
| EXAMINER NOTE: | The valve is full open at ZERO demand. |

S-3.1, Attachment 9, Steps 2.4	
Performance Step: 4	ENSURE an Operator is stationed at the Boric Acid pumps to listen for proper pump operation.
Standard:	Determines AO standing by per Initiating Cue.
Comment:	
S-3.1, Attachment 9, Steps 2.5	
Performance Step: 5	ENSURE an Operator is stationed at Seal Injection Filter to monitor differential pressure. Pressure should be less than 20 PSID on PIC-183.
Standard:	<ul style="list-style-type: none">• Determines AO standing by per Initiating Cue.• Calls the Primary Auxiliary Operator and requests the differential pressure reading on PIC-183
SIMULATOR DRIVER:	Report a value 15 PSID when requested.
S-3.1, Attachment 9, Steps 2.6	
Procedure CAUTION	Boron precipitation in the seal water heat exchanger may occur IF seal water outlet temperature drops below the minimum soluble temperature based on boron concentration in solution.
Performance Step: 6	SLOWLY THROTTLE CLOSE Seal Water HX CCW Outlet ISOL VLV, valve 768, UNTIL Seal Water HX Outlet TEMP IND, TI-120, reads between 85°F and 95°F AND RECORD indicated temperature.
Standard:	Contacts operator standing by at Seal Water HX and records 90 °F.
SIMULATOR DRIVER:	When contacted, report Seal Water HX Outlet temperature TI-120 reading 90°F and stable.

**Procedure CAUTION
(prior to Step 2.7.1)****S-3.1, Attachment 9, Steps 2.7 and 2.7.1**

IF seal injection is lost, THEN IMMEDIATELY RESTORE CCW to RCP thermal barriers AND REFER to RCP Seal Malfunction, AP-RCP.1.

✓ **Performance Step: 7**

ALIGN Rapid Boration flow path as follows:

- CLOSE CCW from RCP Thermal Barrier, AOV-754A.

Standard:

- (✓) Rotates the handswitch for AOV-754A to the closed position.
- Verifies green indicating light lit for AOV-754A closed indication

Comment:✓ **Performance Step: 8****S-3.1, Attachment 9, Steps 2.7.2**

CLOSE CCW FROM RCP 1B THERMAL BARRIER, AOV-754B.

Standard:

- (✓) Rotates the handswitch for AOV-754B to the closed position.
- Verifies green indicating light lit for AOV-754B closed indication

Comment:**Performance Step: 9****S-3.1, Attachment 9, Steps 2.7.3**

CLOSE Emergency Borate Inlet Isolation Valve to Charging Pumps, V-348B.

Standard:

Contacts AO to close Emergency Borate Inlet Isolation Valve to Charging Pumps, V-348B.

SIMULATOR DRIVER:

Repeat back order, close V-348B (Remote CVC28), wait a few seconds and report V-348B closed.

- ✓ **Performance Step: 10** **S-3.1, Attachment 9, Steps 2.7.4**
START one BA Transfer pump.
- Standard:**
- Candidate announces start and/or contacts AO at the BA Transfer Pump.
 - (✓) Starts one BA Transfer Pump by rotating the handle to the START position.
 - Verifies red running light lit for BA transfer pump started
- SIMULATOR DRIVER:** As the AO standing by at the BA Transfer Pump: Report BA Transfer Pump just started as running with no abnormal conditions.
- EXAMINER NOTE:** Operator may go behind MCB and verify discharge pressure on PI-108, BA XFER PUMP DISCH PRESS
- EXAMINER NOTE:** Annunicator G-1 will momentarily extinguish then immediately come back in.

- ✓ **Performance Step: 11** **S-3.1, Attachment 9, Steps 2.7.5**
OPEN EMERG BA SUPPLY VLV, MOV-350.
- Standard:**
- (✓) Rotates the handswitch for MOV-350 to the OPEN position.
 - Verifies the Red light lit and the Green light extinguished for MOV-350.
- Comment:**

Procedure CAUTION	<p>S-3.1, Attachment 9, Steps 2.7.6</p> <p>DURING Rapid Boration the following SHALL be monitored for proper operation:</p> <ul style="list-style-type: none"> Seal Water HX Outlet TEMP IND, TI-120 (105 °F – 115 °F) Seal Water HX CCW Outlet ISOL VLV, V-768, may be adjusted as required to maintain temperature during rapid boration. NON REG HX LTDN OUT TEMP, TI-130, to verify proper operation of NRHX LTDN OUTLET TEMP (TI-130), TCV-130. RCP (1A/1B) Seal WTR Inlet TEMP (TI-132/ TI-125 (less than 140 °F) HI RNG RCP (1A/1B) Seal Leakoff (F-177/F-178) (1.0 to 5.0 GPM) Total Boric Acid flow: (BA EMERG FLOW FI-113) AND (Boric Acid Flow), Chart Recorder D/P Seal Injection Filter PRESS and CNTRLR (PIC-183), Locally
√ Performance Step: 12	<p>SLOWLY THROTTLE OPEN EMERGENCY BORATE INLET ISOLATION VALVE TO CHARGING PUMPS, V-348B to desired flowrate.</p>
Standard:	<ul style="list-style-type: none"> Contacts AO standing by V-348B to slowly throttle OPEN the valve. With the candidate observing FI-113, provides necessary direction to establish greater than 18 GPM.
EXAMINER CUE:	<p>If the Candidate directs Auxiliary Operator(s) to take station at V-768 and/or TI-120, provide a repeat back. If the Candidate requests the reading on TI-120, inform them "TI-120 still reads 90°F and steady."</p> <p>If the Candidate directs closing V-768 a few turns, provide repeat back and in 10-15 seconds inform them V-768 has been throttled closed and TI-120 is indicating 110°F and steady."</p>
EXAMINER NOTE:	<p>TI-130, TCV-130, TI-132, TI-125, F-177, F-178 and FI-113 are all on the Main Control Board and the Plant Processing Computer.</p>
EXAMINER CUE:	<p>If the Candidate requests the reading on PIC-183, inform them it is "15 psid and steady."</p>
SIMULATOR DRIVER:	<p>Open V-348B (Remote CVC28) in .25 increments. During JPM workup .62 = 18 GPM.</p>

S-3.1, Attachment 9, Steps 2.7.7**Performance Step: 13** VERIFY Boric Acid flow.**Standard:** Uses FI-113 to determines flow established in accordance with Initiating Cue.**Comment:****Terminating Cue:** **After BA flow is verified: Evaluation on this JPM is complete.**

Stop time: _____.

Job Performance Measure No.: 2010 GINNA NRC JPM F

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS:

- The plant has had a reactor trip and is entering a forced outage.
- Plant Management directed the RCS borated to refueling boron concentration
- The crew has prepared to emergency borate using S-3.1, BORON CONCENTRATION CONTROL, Attachment 9 – RAPID BORATION, up to step 2.3.

INITIATING CUE:

The CRS directs you to establish rapid boration at greater than 18 GPM in accordance with S-3.1, Attachment 9 starting at step 2.3. Assume operators are standing by at the required locations to perform the local tasks.

Facility: Ginna Task No.:

Task Title: Evaluate Containment Spray (CS) flow requirements and reduce flow in accordance with E-1, LOSS OF REACTOR OR SECONDARY COOLANT JPM No.: 2010 GINNA NRC JPM G

K/A Reference: 026 A4.01 (4.5/4.3) Alternate Path – Step 13.c RNO implemented to reduce the number of running CS Pumps.

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X
Classroom _____ Simulator X Plant _____

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.

Initial Conditions:

- Plant has experienced a DBA LOCA
- The crew has completed E-0 and is at Step 13 of E-1, LOSS OF REACTOR OR SECONDARY COOLANT.
- CNMT pressure is lowering slowly

Task Standard: Both CS Pumps secured with system controls and valves properly aligned.

Required Materials: A marked up copy of E-1 completed to Step 13 available in the simulator.

General References: E-1, LOSS OF REACTOR OR SECONDARY COOLANT, Revision 03900

Handouts: E-1, Step 13

Initiating Cue: Perform Step 13 of E-1. Another board operator will respond to alarms NOT associated with the task.

Time Critical Task: No

Validation Time: 4 Minutes

SIMULATOR SETUP

Reset to IC for JPM N-G

Placekeep the Control Room copy of E-0 to the transition to E-1, and E-1 through completion of Step 12.

(Denote Critical Steps with a √)

Start Time: _____.

E-1, Step 13.a**Performance Step: 1**

Monitor if CNMT Spray Should Be Stopped:

- a. CNMT spray pumps – any running

Standard:

- Observes red light lit for each of two (2) CS pumps
- Observes CS flow on FI-930

EXAMINER CUE:

Provide a copy of E-1, Step 13 (Pgs. 11 and 12 of 23), properly place-kept up to Step 13

E-1, Step 13.b**Performance Step: 2**

Determine number of CNMT spray pumps required from table:

Standard:

- Identifies that CNMT pressure is less than 4 psig on PI-945, 947, & 949 and lowering and observes D-28, CNMT PRESSURE 4 PSI, extinguished
- Determines four (4) CRF running by observing red lights lit.
- Using the values for CNMT pressure and number of Recirc Fans Running, determines 0 CNMT Spray Pumps are required.

Comment:

E-1, Step 13.c

Performance Step: 3 CNMT spray pumps running – EQUAL TO NUMBER REQUIRED

Standard:

- Observes 2 CS pumps running using the red light lit for each pump.
- Recalls no CS pumps are required per step 13.b.
- Proceeds to step 13.c. RNO

Comment:**E-1, Step 13.c RNO c.1)**

√ **Performance Step: 4** Stop CNMT spray pumps as necessary to meet table requirements:

IF CNMT spray pump is to be stopped, THEN perform the following:

- 1) Place CNMT Spray Pump in PULL STOP

Standard:

Rotates handles counter-clockwise and then pulls out to the locked position on the following pumps:

- CS Pump A
- CS Pump B

Comment:

E-1, Step 13.c RNO c.2).a

- √ **Performance Step: 5** IF CNMT pressure < 4 psig, THEN perform the following:
- a. Place NaOH Tank outlet valve switches to OPEN
 - AOV-836A
 - AOV-836B

Standard: Rotates switches clockwise to the OPEN position.

- AOV-836A
- AOV-836B

EXAMINER NOTE: Considered critical because it properly aligns the valves in the event that CS Pumps must be manually started should CNMT pressure start to rise.

E-1, Step 13.c RNO c.2).b

- √ **Performance Step: 6** Reset CNMT Spray

Standard: Depresses the CNMT Spray Reset PB and A-27, CNMT SPRAY, clears

Comment:

E-1, Step 13.c RNO c.2).c**✓ Performance Step: 7**

Close discharge valves for idle CNMT Spray Pump:

- CS pump 'A'
 - MOV-860A
 - MOV-860B
- CS pump 'B'
 - MOV-860C
 - MOV-860D

Standard:

Closes (GREEN light illuminated) each of the four (4) valves associated with the idle CNMT Spray Pumps by rotating switches counter-clockwise:

- MOV-860A
- MOV-860B
- MOV-860C
- MOV-860D

EXAMINER NOTE:**Considered critical because the intent of the step is to isolate a potential leak path out of CNMT.****Terminating Cue:****After closing the four discharge valves or when the operator proceeds to Step 14: Evaluation on this JPM is complete.**

Stop Time: _____

Job Performance Measure No.: 2010 GINNA NRC JPM G

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS:

- Plant has experienced a DBA LOCA
- The crew has completed E-0 and is at Step 13 of E-1, LOSS OF REACTOR OR SECONDARY COOLANT.
- CNMT pressure is lowering slowly

INITIATING CUE:

Perform Step 13 of E-1. Another board operator will respond to alarms NOT associated with the task.

Facility: Ginna

Task No.:

Task Title: Place Standby AFW System In
Service per FR-H.1, RESPONSE
TO LOSS OF SECONDARY HEAT
SINKJPM No.: 2010 GINNA NRC JPM
H

K/A Reference: E05 EA1.1 (4.1 / 4.0)

Alternate Path – RNO entry during
ATT-22.0

Examinee:

NRC Examiner:

Facility Evaluator:

Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X
Classroom _____ Simulator X Plant _____

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.

- Initial Conditions:
- The plant was at power when both Main Feedwater Pumps tripped.
 - Bus 16 has an overcurrent fault.
 - The A Motor Driven Auxiliary Feedwater Pump is removed for maintenance.
 - The Turbine Driven Auxiliary Feedwater Pump has steam supplied to it from both the A and B Steam Generators but is not supplying feedwater. Mechanical Maintenance is investigating the problem.
 - The crew is responding per FR-H.1 and has completed the procedure up to step 5
 - While in FR-H.1 the A S/G sustained a 120 GPM tube rupture.

Task Standard: The C SAFW Pump started with a flowpath to the B S/G established.

Required Materials: None

- General References:
- ATT-22.0, RESTORING FEED FLOW, Rev 00500
 - FR-H.1, RESPONSE TO LOSS OF SECONDARY HEAT SINK, Revision 03801

- Handouts:
- ATT-22.0, RESTORING FEED FLOW
 - FR-H.1, RESPONSE TO LOSS OF SECONDARY HEAT SINK

Initiating Cue: The CRS directs you to complete steps 5 and 6 of FR-H.1 to feed the B S/G.

Time Critical Task: No

Validation Time: 6 Minutes

SIMULATOR SETUP

Reset to IC for NRC JPM N-H

Placekeep the Control Room copy of E-0 immediate actions
Placekeep the Control Room copy of ES-0.1
Placekeep the Control Room copy of FR-H.1 through step 4.
Place tags on MOV-4007 and the A MDAFW Pump.

(Denote Critical Steps with a √)

Start Time: _____.

FR-H.1, step 5	
√ Performance Step: 1	Reset SI If Actuated
Standard:	<ul style="list-style-type: none">• (√) Depresses the SI RESET pushbutton• Verifies Annunicator K-6 extinguishes.
EXAMINER NOTE:	During a Safety Injection, MOV thermal overload relays are bypassed. The thermal overloads are put back in service by resetting Safety Injection. Therefore, if K-6 is extinguished, SI is RESET.
FR-H.1, step 6	
Performance Step: 2	Try to establish SAFW flow to at least one intact S/G: <ul style="list-style-type: none">a. Perform the following:<ul style="list-style-type: none">1) Align SAFW system for operation (Refer to ATT-5.1, ATTACHMENT SAFW)
Standard:	Refers to Attachment 5.1.
EXAMINER CUE:	Provide a copy of ATT-5.1
EXAMINER NOTE:	SAFW controls and indications are on the back of the MCB Panel.

ATT-5.1, A)**Procedure Caution:**

If selected S/G Wide Range Level less than 50 Inches (100 Inches Adverse CNMT), then refer to Attachment 22.0, Restoring Feed Flow, prior to starting SAFW Pump.

Performance Step: 3

If SW is not available to SBAFW THEN refer to ER-AFW.1 ALTERNATE WTER SUPPLY TO THE AFW PUMPS, to align city water to the SBAFW Pumps.

Standard:

- Determines S/G "A" WR level is greater than 50" by checking LI-504 and LI-505 and associated recorders.
- Verifies SW is available by verifying PI-2060 and 2061 indicate approximately 55 psig.
- Observes the Red light lit for the A, C and D Service Water pumps

Comment:**ATT-5.1, B)****Performance Step: 4**

Align SAFW Pump C to selected S/G as follows:

- 1) Ensure SI Reset

Standard:

Observes K-6, THERMAL OVERLOAD RELAY BYPASSED extinguished or indicates that SI has NOT actuated

Comment:

ATT-5.1, B) 2)**Performance Step: 5**

Ensure the following valves open:

- MOV-9701A, SAFW PUMP C DISCHARGE VLV
- MOV-4616, AUX BLDG SW ISOL VLV
- MOV-9704A, SAFW PUMP C ISOL VLV

Standard:

Verifies Red light is lit for the following valves:

- MOV-9701A, SAFW PUMP C DISCHARGE VLV
- MOV-4616, AUX BLDG SW ISOL VLV
- MOV-9704A, SAFW PUMP C ISOL VLV

Comment:**ATT-5.1, B) 3)**√ **Performance Step: 6**

Open MOV-9629A, SAFW PUMP C SUCTION VLV

Standard:

- (√) Rotates the handswitch to the OPEN position (RED light illuminated) on MOV-9629A, SAFW PUMP C SUCTION VLV.
- Observes the Red light lit for MOV-9629A, SAFW PUMP C SUCTION VLV.

Comment:**ATT-5.1, A) 4)****Performance Step: 7**

Verify at least 1 SW pump running

Standard:

- Returns to front of MCB and observes the Red light lit for the A, C and D Service Water pumps
- Observes approximately 55 psig on PI-2160 and 2161, SW Header Pressure.

Comment:

ATT-5.1, B) 5b)**Procedure Note:**

Perform step 5a to feed A S/G OR step 5b to feed B S/G.

✓ **Performance Step: 8**

To feed S/G B, perform the following:

- Ensure MOV-9746, SAFW PMP D EMERG DISCH VLV, open
- Close MOV-9704A, SAFW PUMP C ISOL VLV
- Open either SAFW CROSSOVER VLV:
 - MOV-9703A
 - OR
 - MOV-9703B
- Verify open MOV-9704B, SAFW PUMP D ISOL VLV.

Standard:

- Calls an Auxiliary Operator to determine the position of MOV-9746
- (✓) Rotates the switch for MOV-9704A to the CLOSE position and observes the Green light lit and Red light extinguished.
- (✓) Rotates the switch for MOV-9703A to the OPEN position and observes the Red light lit and Green light extinguished.
- Calls an Auxiliary Operator to determine the position of MOV-9704B

EXAMINER CUE:

When contacted as an Auxiliary Operator to check to position of MOV-9746, inform the Candidate "MOV-9746 indicates OPEN."

EXAMINER CUE:

When contacted as an Auxiliary Operator to check to position of MOV-9704B, inform the Candidate "MOV-9704B indicates OPEN."

EXAMINER NOTE:

Since only Train A has power, the Candidate will not attempt to manipulate MOV-9703B.

ATT-5.1, B) 6)**Performance Step: 9**

Restore SAFW flow as directed by procedure in effect.

Standard:

Transitions back to FR-H.1, Step 6.a.2

Comment:

Performance Step: 10	FR-H.1, step 6.a.2 Determine SAFW flow requirements per ATT-22.0, ATTACHMENT RESTORING FEED FLOW
Standard:	Refers to ATT-22.0
Comment:	
Procedure Caution:	ATT-22.0, step 1 Feed flow rates should be controlled to prevent excessive RCS cooldown and associated RCS pressure and inventory reduction.
Procedure Note:	<ul style="list-style-type: none">• The attachment provides the desired feed flow rate when restoring feed flow to a S/G during FR-H.1• If feedwater is restored via main feedwater or condensate the following may be used to indicate flow to the S/G:• S/G feedwater flow meters (MCB)• S/G feedwater flow recorders (MCB)• S/G feedwater flow (PPCS Point ID F0466, F0467, F0476, F0477)• S/G feedwater RTD temperature lowers (PPCS Point ID T2096, T2097)
Performance Step: 11	<ol style="list-style-type: none">1. Initiate Feed flow as follows:<ol style="list-style-type: none">a. Bleed and Feed initiated or required
Standard:	<ul style="list-style-type: none">• Determines Bleed and Feed has not been initiated by observing PCV-430 and 431C are CLOSED• Determines Bleed and Feed is not required by observing greater than 50 inches of water in both S/Gs and PZR pressure less than 2335 psig.• Proceeds to 1.a RNO
Comment:	

ATT-22.0, step 1.a. RNO**Performance Step: 12**

IF feedwater flow to affected S/G greater than 50 gpm OR affected SG level greater than 50 inches (100 inches adverse CNMT), THEN fill as desired to restore narrow range greater than 7% (25% adverse CNMT) and go to step 2 of this attachment.

Standard:

- Determines both S/Gs Wide Range levels are greater than 50 inches
- Determines the feedflow restoration rate is unlimited.

EXAMINER NOTE:

The Candidate may perform steps 2 and 3 of ATT-22.0. Those steps are not necessary to perform.

FR-H.1, step 6.a.3

√

Performance Step: 13

Start selected SAFW pumps

Standard:

- (√) Rotates the handle for the C SAFW Pump to the START position (RED light illuminated)
- Verifies the Red light is lit for the C SAFW Pump

Comment:**FR-H.1, step 6.a.4****Performance Step: 14**

When intact S/G level GREATER THAN 50 inches (100 inches adverse CNMT), THEN verify SAFW flow GREATER THAN 215 GPM.

Standard:

Verifies flow GREATER THAN 215 GPM but LESS THAN 280 GPM per pump on FI-4084B.

Comment:**Terminating Cue:**

After SAFW flow is verified: Evaluation on this JPM is complete.

Stop Time: _____.

Job Performance Measure No.: 2010 GINNA NRC JPM H

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS:

- The plant was at power when both Main Feedwater Pumps tripped.
- Bus 16 has an overcurrent fault.
- The A Motor Driven Auxiliary Feedwater Pump is removed for maintenance.
- The Turbine Driven Auxiliary Feedwater Pump has steam supplied to it from both the A and B Steam Generators but is not supplying feedwater. Mechanical Maintenance is investigating the problem.
- The crew is responding per FR-H.1 and has completed the procedure up to step 5
- While in FR-H.1 the A S/G sustained a 120 GPM tube rupture.

INITIATING CUE:

The CRS directs you to complete steps 5 and 6 of FR-H.1 to feed the B S/G.

Facility: Ginna

Task No.:

Task Title: Release the "D" Gas Decay TankJPM No.: 2010 GINNA NRC
JPM I

K/A Reference: 071 A4.27 (4.4/4.0)

Alternate Path – R-14 goes into
alarm and the release must be
secured.

Examinee:

NRC Examiner:

Facility Evaluator:

Date:

Method of testing:Simulated Performance: X Actual Performance: Classroom Simulator Plant X **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.

Initial Conditions:

- Today is 4/26/2010.
- The "D" GDT is full and approved for release.
- The "D" GDT does not have elevated activity.
- The previous crew has started S-4.2.5.

Task Standard:

Lineup and release the D GDT in accordance with the procedure and secure the release

Required Materials:

Hard Hat, Safety Glasses, Hearing Protection, Safety Shoes and Dosimetry.

General References:

S-4.2.5, Release of Gas Decay Tank, Rev. 19

Handouts:

Marked up copy of S-4.2.5, Release of Gas Decay Tank, Rev. 19

Initiating Cue:

The Control Room Supervisor directs you to release the "D" GDT per S-4.2.5, Release of Gas Decay Tank. The Extra Auxiliary Operator has removed the required tagout and completed the necessary paperwork.

Time Critical Task: No

Validation Time: 11 Minutes

SIMULATOR SETUP

N/A

(Denote Critical Steps with a √)

Start Time: _____.

S-4.2.5, Section 1, 2, 3 and 4	
Performance Step: 1	Reviews Sections 1, 2, 3 and 4
Standard:	Reviews sections 1, 2, 3 and 4
Evaluator's Cue:	Provide the candidate with the JPM I Handout (a copy of the procedure completed up to Section 5).
S-4.2.5, Section 5	
Performance Step: 2	INSTRUCTIONS: 5.0.1 This procedure is divided into the following sections: N/A sections for tanks not to be released. 5.1 GDT A Release 5.2 GDT B Release 5.3 GDT C Release 5.4 GDT D Release
Standard:	Marks Sections 5.1, 5.2 and 5.3 as N/A.
Comments:	

PERFORMANCE INFORMATION

S-4.2.5, Section 5.4**Performance Step: 3**

GDT D Release:

5.4.1 Close inlet AOV to D GDT PCV-1039A.

Standard:

Verifies PCV-1039A GREEN light is lit and initials the step.

EXAMINER CUE:**A Caution Tag is installed on the switch. (There may actually be a caution tag on the switch if the D GDT is being held for release.)****EXAMINER CUE:****After the switch is located: The Green light for PCV-1039A is LIT.****EXAMINER CUE:****If the Candidate calls the Control Room and requests permission to operate Caution Tagged valves, give them permission.****EXAMINER NOTE:****The switch is on the Waste Panel****S-4.2.5, step 5.4.2****Performance Step: 4**

Close GDT D Reuse Control AOV.

Standard:

Verifies the switch for AOV-1632 is in the CLOSED position (GREEN light) and initials step.

EXAMINER CUE:**After the switch is located: The Green light for AOV-1632 is LIT.****EXAMINER NOTE:****The switch is on the Waste Panel****S-4.2.5, step 5.4.3****Performance Step: 5**

Close GDT D outlet AOV to Gas Analyzer PCV-1039B.

Standard:

Verifies the GREEN light lit for PCV-1039B and initials step.

EXAMINER CUE:**After the switch is located: The Green light for AOV-1039B is LIT.****EXAMINER NOTE:****The switch is on the Waste Panel**

PERFORMANCE INFORMATION

S-4.2.5, step 5.4.4**Performance Step: 6**

Lock closed GDT manual outlet valves on all tanks.

- (GDT A) V-1617 Locked Closed _____
- (GDT B) V-1618 Locked Closed _____
- (GDT C) V-1619 Locked Closed _____
- (GDT D) V-1620 Locked Closed _____

Standard:

Verifies the following valves are locked closed and initials:

- V-1617 _____
- V-1618 _____
- V-1619 _____
- V-1620 _____

EXAMINER NOTE:

To check the valve locked close the Candidate will attempt to rotate the valve in the Clockwise direction and check to see if the locking device is locked.

EXAMINER NOTE:

The Candidate may perform Performance Steps 6 and 7 in reverse order to minimize the number of times required to walk up and down stairs.

EXAMINER CUE:

For each valve, the locks are locked and the valves do not rotate in the clockwise direction.

EXAMINER CUE:

If asked, the eSoms location for these valves are Aux BLD Intermediate level GDT alley 5' (V-1617 and 1618) and 1' (V-1619 and 1620) elevation.

S-4.2.5, step 5.4.5**Performance Step: 7**

Close GDT release AOV to Plant Vent via Charcoal Filter RCV-14.

Standard:

- Simulates rotating knob for RCV-14 Counter Clockwise direction
- Observes Green light lit.
- Observes air pressure reads 0 psig on the air pressure gauge.

EXAMINER CUE:

The knob does not rotate in the counter clockwise direction.

EXAMINER NOTE:

The switch is on the Waste Panel

PERFORMANCE INFORMATION

	S-4.2.5, step 5.4.6
Performance Step: 8	Remove Hold on V-1620.
Standard:	Verifies the hold on V-1620 is removed and step initials.
EXAMINER CUE:	The Extra Auxiliary Operator has removed the Danger Tag and completed the necessary paperwork.
	S-4.2.5, step 5.4.6.1
✓ Performance Step: 9	Unlock and open GDT D manual outlet valve.
Standard:	<ul style="list-style-type: none"> • Describes unlocking V-1620 • Simulates rotating V-1620 in the Counter Clockwise direction
EXAMINER CUE:	After the candidate describes lock removal: The Lock is removed.
EXAMINER CUE:	The valve no longer rotates in that direction.
	S-4.2.5, step 5.4.7
✓ Performance Step: 10	Throttle open GDT release AOV to Plant Vent via Charcoal Filter RCV-014 (may be full open) to desired release rate.
Standard:	<ul style="list-style-type: none"> • (✓) Simulates rotating knob for RCV-14 Clockwise • Observes both RED and GREEN light lit. • Observes air pressure rising on the air pressure gauge.
EXAMINER CUE:	Air pressure is rising.
EXAMINER CUE:	When the valve is being opened: Both the Red and Green lights are lit.
	When the valve is full open: The Red light is lit.
EXAMINER CUE:	R-14 indicates increasing counts
EXAMINER CUE:	Approximately 10 to 15 seconds after RCV-14 is opened, as the Control Room, inform the Candidate "R-14 reads 2×10^5 CPM." Also, R-14 indicates 2×10^5 CPM on the Waste Panel.

PERFORMANCE INFORMATION

S-4.2.5, Section 4.0✓ **Performance Step: 11**

4.0 Precautions:

4.2 Insure that RCV-14 closes in event of a high alarm on R-14.

Standard:

- (✓) Simulates rotating knob for RCV-14 Counter Clockwise
- Observes the GREEN light lit.
- Observes air pressure lowering on the air pressure gauge.

EXAMINER CUE:**Air pressure is lowering.****EXAMINER CUE:****When the valve is closed: The Green light is lit.****EXAMINER CUE:****R-14 indicates lowering counts****Terminating Cue:****When the Candidate closes RCV-14: This JPM is complete.**

Stop Time: _____.

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2010 GINNA NRC JPM I

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS:

- Today is 4/26/2010.
- The "D" GDT is full and approved for release.
- The "D" GDT does not have elevated activity.
- The previous crew has started S-4.2.5.

INITIATING CUE:

The Control Room Supervisor directs you to release the "D" GDT per S-4.2.5, Release of Gas Decay Tank. The Extra Auxiliary Operator has removed the required tagout and completed the necessary paperwork.

Facility: Ginna

Task No.:

Task Title: Secure Ventilation Systems During
a FireJPM No.: 2010 GINNA NRC
JPM J

K/A Reference: APE067 AA1.05 (3.0/3.1)

Examinee:

NRC Examiner:

Facility Evaluator:

Date:

Method of testing:Simulated Performance: X Actual Performance: Classroom Simulator Plant X **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.

Initial Conditions:

- A fire has occurred on the intermediate floor of the Auxiliary Building.
- The operators are responding per procedure FRP-5.0, Auxiliary Building (AB) Intermediate Floor.
- Auxiliary Building Ventilation system is in operation.
- All equipment required to enter the Auxiliary Building has been donned.

Task Standard: Secure Auxiliary Building ventilation fans specified in the procedure.

Required Materials: Hard Hat, Safety Glasses, Hearing Protection, Safety Shoes and Dosimetry.

General References: FRP-5.0, Auxiliary Building (AB) Intermediate Floor, Rev. 801

Handouts: A marked up copy of FRP-5.0, Auxiliary Building (AB) Intermediate Floor, Rev. 801

Initiating Cue: The Shift Manager has directed you to secure ventilation in accordance with FRP-5.0, Step 1.5.

Time Critical Task: No

Validation Time: 8 Minutes

SIMULATOR SETUP

N/A

PERFORMANCE INFORMATION

(Denote Critical Steps with a √)

Start Time: _____.

FRP-5.0, step 1.5

Procedure Note:

Securing AB Exh C will cause automatic shutdown of A AHU and B supply. Turning the master switch to OFF will secure other fans listed:

√ **Performance Step: 1**

Ventilation:

1.5.1 Upon confirmation of any fire in the Auxiliary Building, secure the following (***).

<u>FAN</u>	<u>SWITCH</u>	<u>BUS/MCC/LP</u>	<u>POSITION</u>
*** AB Exh C	Local	D	3M

Standard:

- (√) Simulates rotating the AB Exh C switch to STOP
- Verifies the RED light is extinguished.

EXAMINER CUE:

The as found position is the switch in the ON position and the RED light lit.

EXAMINER NOTE:

These Performance Steps may be performed in any order.

EXAMINER NOTE:

The switch is located on the AB Exh C fan housing on the Intermediate Building (Hot Side) Top Level.

EXAMINER NOTE:

When the Candidate turns off AB Exh C the AB Supply A AHU and the AB B Supply fan will deenergize. If the Candidate realizes this, they may skip Performance Step 2.

EXAMINER NOTE:

(***) Identifies the fans that must be secured to ensure ventilation is secured to the area.

EXAMINER CUE:

After the Candidate rotates the switch to STOP, inform them "The RED light is extinguished."

PERFORMANCE INFORMATION

FRP-5.0, step 1.5.1**Performance Step: 2**

Upon confirmation of any fire in the Auxiliary Building, secure the following (***).

<u>FAN</u>	<u>SWITCH</u>	<u>BUS/MCC/LP</u>	<u>POSITION</u>
*** AB Supply A AHU			
	Vent Panel	13	8C
AB B Supply	Vent Panel	C	5F

Standard:

Simulates rotating the AUX BLDG AIR HANDLING UNIT switch to STOP.

OR

Verifies GREEN lights are lit for the A and B AB Supply AHU.

EXAMINER CUE:

The as found position is the GREEN lights lit for both the 1A AUX BLDG SUPPLY AIR HANDLING UNIT AND SUPPLY FAN 1B.

EXAMINER NOTE:

The switch is located at the Auxiliary Building Ventilation Panel in the Intermediate Building (Hot Side) Middle Level.

EXAMINER NOTE:

This is a common switch for both the AB Supply A AHU and AB B Supply fans.

EXAMINER NOTE:

The Candidate may not perform this step since when they turn off AB Exh C the AB Supply A AHU and the AB B Supply fan will deenergize.

EXAMINER CUE:

After either operating the AB Exh C switch or AUX BLDG AIR HANDLING UNIT switch: The GREEN lights are lit for the AB Supply A and B AHU

PERFORMANCE INFORMATION

FRP-5.0, step 1.5.1**Performance Step: 3**

Upon conformation of any fire in the Auxiliary Building, secure the following (***).

<u>FAN</u>	<u>SWITCH</u>	<u>BUS/MCC/LP</u>	<u>POSITION</u>
IB Exh. A/B	Local	F/D	4B/3F
IP Exh. C	Local (IB cold)	F	4D
CA Exh. A/B	Vent Panel	F/D	2K/2H
AB Exh. F	Local	ACPDPA02	12

Standard:

Simulates rotating the Control Switch For Auxiliary Building Ventilation System (Master Control) switch to the OFF position.

OR

Simulates rotating the following switches to the OFF position:

- IB Exh. A/B
- IP Exh. C
- CA Exh. A/B
- AB Exh. F

EXAMINER CUE:

The as found position is in the ON position.

EXAMINER NOTE:

The Candidate may either operate the Master Control Switch or each fan's switch individually. Either choice is correct. The Master Switch controls the IB Exh. A/B, IB Exh. C, CA Exh. A/B and AB Exh. F fans.

EXAMINER NOTE:

Per 1.5.1, the Candidate may not take any action during this Performance Step.

EXAMINER NOTE:

The Master Control Switch is located at the Auxiliary Building Ventilation Panel in the Intermediate Building (Hot Side) Middle Level.

EXAMINER NOTE:

The IB Exh. A/B switch is located in the Intermediate Building (Hot Side) Top Level. The IB Exh. C switch is located in the Intermediate Building (Cold Side) Basement. The CA Exh. A/B switch is at the Auxiliary Building Ventilation Panel in the Intermediate Building Middle Level. The AB Exh. F is in the Auxiliary Building Middle Level.

EXAMINER CUE:

After the Candidate manipulates any of the listed switches, inform them "The switch is in the OFF position."

PERFORMANCE INFORMATION

FRP-5.0, step 1.5.1**Procedure Note:**

The following must be secured LOCALLY. G fan will trip with 1 fire detector signal in G HEPA, and alarm. If 4 detectors signal, S02 suppression will actuate.

√ **Performance Step: 4**

Upon confirmation of any fire in the Auxiliary Building, secure the following (***).

<u>FAN</u>	<u>SWITCH</u>	<u>BUS/MCC/LP</u>	<u>POSITION</u>
*** AB Main Exh. A			
	Vent Panel	11A	9

Standard:

Simulates rotating the AUX BLDG MAIN EXH FAN A switch to STOP.

EXAMINER CUE:

The as found position is RED light is lit.

EXAMINER NOTE:

The switch is located at the Auxiliary Building Ventilation Panel in the Intermediate Building Middle Level.

EXAMINER CUE:

After rotating the switch to the STOP position, inform the Candidate the GREEN light is lit.

FRP-5.0, step 1.5.1**Performance Step: 5**

Upon confirmation of any fire in the Auxiliary Building, secure the following (***).

<u>FAN</u>	<u>SWITCH</u>	<u>BUS/MCC/LP</u>	<u>POSITION</u>
*** AB Main Exh. B			
	Vent Panel	11B	23

Standard:

Verifies the GREEN light is lit for the AUX BLDG MAIN EXH FAN B

EXAMINER CUE:

The as found position is GREEN light is lit.

EXAMINER NOTE:

The light is located at the Auxiliary Building Ventilation Panel in the Intermediate Building Middle Level.

PERFORMANCE INFORMATION

FRP-5.0, step 1.5.1✓ **Performance Step: 6**

Upon conformation of any fire in the Auxiliary Building, secure the following (***).

<u>FAN</u>	<u>SWITCH</u>	<u>BUS/MCC/LP</u>	<u>POSITION</u>
*** G Fan	Local	14	21A

Standard:

Simulates rotating the G Fan switch to TRIP

EXAMINER NOTE:

The switch is located at the G Fan Control Panel in the Auxiliary Building Top Level.

EXAMINER CUE:

If asked, inform the Candidate conditions permit you to transit to the fan's control switch.

Terminating Cue:

When the Candidate secures the G Fan: Evaluation on this JPM is complete.

Stop Time: _____.

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2010 GINNA NRC JPM J

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS:

- A fire has occurred on the intermediate floor of the Auxiliary Building.
- The operators are responding per procedure FRP-5.0, Auxiliary Building (AB) Intermediate Floor.
- Auxiliary Building Ventilation system is in operation.
- All equipment required to enter the Auxiliary Building has been donned.

INITIATING CUE:

The Shift Manager has directed you to secure ventilation in accordance with FRP-5.0, Step 1.5.

PERFORMANCE INFORMATION

Facility: Ginna Task No.: 039-008-01-04A

Task Title: Locally Operate the ARVs JPM No.: 2010 GINNA NRC
JPM K

K/A Reference: 039 G2.1.30 (4.4/4.0)

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

Simulated Performance: X Actual Performance: _____

Classroom _____ Simulator _____ Plant X

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.

- Initial Conditions:
- You are the Head Control Operator
 - The plant has experienced an uncontrollable Control Room Complex fire.
 - The crew performed the required actions of AP-CR.1, CONTROL ROOM INACCESSIBILITY, and transitioned to ER-FIRE.1, ALTERNATE SHUTDOWN FOR CONTROL COMPLEX FIRE.
 - You have completed Attachment 3, HEAD CONTROL OPERATOR (HCO)
 - The Shift Manager is stabilizing the plant in MODE 3.
 - All the required Appendix R equipment has been retrieved from the Appendix R locker outside the Control Room.

Task Standard: Locally operate the ARV in accordance with the procedure.

Required Materials: Hard Hat, Safety Glasses, Double Hearing Protection, Safety Shoes and Dosimetry.

- General References:
- ER-FIRE.1, ALTERNATE SHUTDOWN FOR CONTROL COMPLEX FIRE, Revision 2900
 - P-15.2, DUMP STEAM THROUGH ARV'S LOCALLY, Revision 0.

PERFORMANCE INFORMATION

Handouts: P-15.2, DUMP STEAM THROUGH ARV'S LOCALLY, Revision 0.

Initiating Cue: The Shift Manager directs you to locally open the "A" Atmospheric Relief Valve, V-3411, three turns per P-15.2.

Time Critical Task: No

Validation Time: 5 Minutes

PERFORMANCE INFORMATION

(Denote Critical Steps with a √)

Start Time: _____

P-15.2, Step 2.1

Performance Step: 1 Obtain radio and establish communications with the Control Room.

Standard: Establish radio communication with Shift Manager.

EXAMINER NOTE: At this point in ER-FIRE.1 all Control Room Personnel in the plant would have obtained radios from an Appendix R locker outside the Control Room.

EXAMINER NOTE: The Candidate may not perform this step since a communications check was completed earlier in ER-FIRE.1.

P-15.2, Step 2.2

Performance Step: 2 Obtain Ladder if needed.

Standard: Verifies a ladder is in place at V-3411.

EXAMINER NOTE: A ladder is normally in place to allow access to the valve.

P-15.2, Step 2.3

√ **Performance Step: 3** Operate the handwheel on the "A" ARV (3411) to position valve as required by Control Room personnel.

Standard: Simulates turning the "A" ARV (3411) handwheel in the counter-clockwise direction to position the valve to approximately three full turns open.

EXAMINER CUE: The handwheel turned as desired.

PERFORMANCE INFORMATION

P-15.2, Step 2.1**Performance Step: 4**

Report action to Shift Manager.

Standard:

- Leaves noisy area (IB Main Steam Area) to make report.
- Reports over radio to Shift Manager that ARV-3411 is three full hand turns open.

EXAMINER NOTE:

If the radio call is made from the Main Steam Area: "I cannot hear you over the background noise".

EXAMINER CUE:

Acknowledge the report and then direct the Candidate to, "Slowly throttle closed the valve 1 full turn."

P-15.2, Step 2.3**Performance Step: 5**

Operate the handwheel on the "A" ARV (3411) to position valve to two full turns open.

Standard:

Simulates turning the handwheel in the clockwise direction on the "A" ARV (3411) to position valve to two full turns open.

EXAMINER CUE:

The handwheel will not turn.

P-15.2, Note prior to Step 2.3

✓

Performance Step: 6

If the ARV will not close, isolate the ARV with its root isolation.

Standard:

Proceeds to "A" ARV Root Isolation Valve (V3507) and simulates closing the valve fully by rotating the handwheel in the clockwise direction.

EXAMINER CUE:

The handwheel turned as desired.

PERFORMANCE INFORMATION

P-15.2, Step 2.1**Performance Step: 7**

Report action to Shift Manager.

Standard:

- Leaves noisy area (IB Main Steam Area) to make report.
- Reports over radio to Shift Manager that ARV-3411 is three full handturns open. However, because it would not close, its Root isolation valve (V3507) was closed.

EXAMINER NOTE:

If the radio call is made from the Main Steam Area: "I cannot hear you over the background noise". Otherwise, provide a repeat back.

Terminating Cue:

After the Candidate reports to the Shift Manager: Evaluation on this JPM is complete.

Stop Time: _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2010 GINNA NRC JPM K

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS:

- You are the Head Control Operator
- The plant has experienced an uncontrollable Control Room Complex fire.
- The crew performed the required actions of AP-CR.1, CONTROL ROOM INACCESSIBILITY, and transitioned to ER-FIRE.1, ALTERNATE SHUTDOWN FOR CONTROL COMPLEX FIRE.
- You have completed Attachment 3, HEAD CONTROL OPERATOR (HCO)
- The Shift Manager is stabilizing the plant in MODE 3.
- All the required Appendix R equipment has been retrieved from the Appendix R locker outside the Control Room.

INITIATING CUE:

The Shift Manager directs you to locally open the "A" Atmospheric Relief Valve, V-3411, three turns per P-15.2.

PROGRAM: Ginna Operations Training

MODULE: 2010 Initial License Operator Training Class

TOPIC: NRC Simulator Exam

Scenario N10-1-1

REFERENCES:

1. O-6.9.2, Establishing and/or Transferring Offsite Power to Bus 12A/12B
2. AR-E-14, LOSS B INSTR. BUS
3. ER-INST.3, Instrument Bus Power Restoration
4. S-3.2E, Placing In or Removing From Service Normal Letdown/Excess Letdown
5. R-E-20, CNMT OR PLANT VENT RAD MON PUMP TRIP
6. AR-F-6, PRESSURIZER HEATER BREAKER TRIP
7. Technical Specification 3.8.7, AC Instrument Bus Sources Modes 1-4
8. Technical Specification 3.8.9, Distribution Systems – Modes 1, 2, 3 and 4
9. AR-F-2, PRESSURIZER HIGH PRESS 2310 PSI
10. AR-F-10, PRESSURIZER LO PRESS 2205 PSI
11. AP-PZR.1, Abnormal PZR Pressure
12. ER-INST.1, Reactor Protection Bistable Defeat After Instrumentation Loop Failure
13. Technical Specification 3.4.1, RCS Pressure, Temperature, and Flow Departure From Nucleate Boiling (DNB) Limits
14. Technical Specification 3.3.1, Reactor Trip System (RTS) Instrumentation
15. Technical Specification 3.3.2, ESFAS Instrumentation
16. AR-I-27, ROTOR ECCENTRICITY OR VIBRATION
17. AP-TURB.3, Turbine Vibration
18. AP-TURB.5, Rapid Downpower
19. E-0, Reactor Trip and Safety Injection
20. FR-H.1, Response to a Loss of Secondary Heat Sink
21. E-2, Faulted Steam Generator

Author: David Lazarony, Western Technical Services, Inc.

Facility Review: Pat Landers, Principal Ops Training Specialist, 04/29/2010

Rev. 052610

Scenario Event Description
NRC Scenario 1

Facility:	Ginna	Scenario No.:	1	Op Test No.:	N10-1
Examiners:	_____	Operators:	_____	(SRO)	
	_____		_____	(RO)	
	_____		_____	(BOP)	
Initial Conditions:		The plant is at 49% power (BOL). The plant power was reduced several days ago due to a malfunction on the A MFW Pump. Corrective Maintenance has been completed, and the pump is ready to be restarted. RG&E Energy Control Center has requested that the electric plant be aligned to a 0/100 configuration on circuit 7T to allow the RG&E personnel to perform an insulator inspection on the 767 Line. Per Chemistry direction Normal Letdown is at 60 gpm.			
Turnover:		The following equipment is Out-Of-Service: The B AFW Pump is OOS for Bearing Replacement.			
Event No.	Malf. No.	Event Type*	Event Description		
1	NA	N-BOP N-SRO	Shift Electric Plant		
2	EDS07B	C-RO C-BOP C(TS)-SRO	Loss of B Instrument Bus		
3	PZR02D	I-RO I-BOP I(TS)-SRO	Pressurizer Pressure (PT-449) fails High		
4	TUR05E TUR09D	R-RO C-BOP C-SRO	Main Turbine High Vibration/EHC control failure		
5	FDW09A	M-RO M-BOP M-SRO	Feed Line Rupture Inside Containment		
6	TUR02	C-BOP	Main Turbine Failure to Auto Trip		
7	RPS07K	C-BOP	A AFW Pump Fails after start		
8	OVR- FDW42A FDW15B	C-RO	Standby AFW fails to function		
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor					

Scenario Event Description
NRC Scenario 1

Ginna 2010 NRC Scenario #1

The plant is at 49% power (BOL). The plant power was reduced several days ago due to a malfunction on the A MFW Pump. Corrective Maintenance has been completed, and the pump is ready to be restarted. RG&E Energy Control Center has requested that the electric plant be aligned to a 0/100 configuration on circuit 7T to allow the RG&E personnel to perform an insulator inspection on the 767 Line. Per Chemistry direction Normal Letdown is at 60 gpm.

The following equipment is Out-Of-Service: The B AFW Pump is OOS for Bearing Replacement.

Shortly after taking the watch, the operator will shift the Electric Line-up from 50/50 to 0/100 in accordance with O-6.9.2, Establishing and/or Transferring Offsite Power to Bus 12A/12B.

Shortly afterwards, a loss of the B Instrument Bus will occur. The operator will respond in accordance with AR-E-14, LOSS B INSTR. BUS. Power will be restored to the bus per guidance in ER-INST.3, Instrument Bus Power Restoration, which will include the isolation and re-establishment of Normal Letdown in accordance with S-3.2E, Placing In or Removing From Service Normal Letdown/Excess Letdown. The operator will address two additional MCB Annunciators; AR-E-20, CNMT OR PLANT VENT RAD MON PUMP TRIP, and AR-F-6, PRESSURIZER HEATER BREAKER TRIP, while restoring from the transient. The operator will address Technical Specification 3.8.7, AC Instrument Bus Sources Modes 1-4, and 3.8.9, Distribution Systems – Modes 1, 2, 3 and 4.

After this, the controlling Pressurizer Pressure Transmitter will fail High, causing the Spray Valves to open. The operator will respond in accordance with AR-F-2, PRESSURIZER HIGH PRESS 2310 PSI and AR-F-10, PRESSURIZER LO PRESS 2205 PSI, and enter AP-PZR.1, Abnormal PZR Pressure. AP-PZR.1 will refer the operator to ER-INST.1, Reactor Protection Bistable Defeat After Instrumentation Loop Failure, for the defeat of PT-449. The operator will address Technical Specification 3.4.1, RCS Pressure, Temperature, and Flow Departure From Nucleate Boiling (DNB) Limits; 3.3.1, Reactor Trip System (RTS) Instrumentation; and 3.3.2, ESFAS Instrumentation.

Following this, a turbine high vibration condition on Bearing #5 will develop within about 60 seconds, and an EHC failure will occur causing the turbine to shift to manual. The operator will respond in accordance with AR-I-27, ROTOR ECCENTRICITY OR VIBRATION; and enter AP-TURB.3, Turbine Vibration; and then AP-TURB.5, Rapid Downpower. The operator will need to lower the Turbine Load using Manual EHC control.

During the load reduction, a feed line rupture inside Containment will occur. The Reactor will trip and Safety Injection will actuate causing the operator to enter E-0, Reactor Trip or Safety Injection. Auto turbine trip will fail to occur, but manual trip will be successful. On the Reactor Trip the A AFW Pump will fail to Autostart, then trip after it is manually started, and the TDAFW Pump will trip on overspeed. The operator will transition from E-0 to FR-H.1, Response to a Loss of Secondary Heat Sink.

The operator will unsuccessfully attempt to place the Standby AFW System in service, and then attempt to restore a Secondary Heat Sink using the MFW System. Once the Secondary Heat Sink is re-established using MFW, the operator will transition back to E-0, and then transition to E-2, Faulted Steam Generator Isolation.

Scenario Event Description
NRC Scenario 1

The scenario will terminate at Step 9 of E-2, after the crew has determined that a transition to E-1, Loss of Reactor or Secondary Coolant, is required.

Critical Tasks:

FR-H.1

Establish feedwater flow into at least one Steam Generator before RCS Bleed and Feed is required.

Safety Significance: Failure to establish feedwater flow into at least one Steam Generator results in the crew having to rely upon the lower-priority action of having to initiate RCS Bleed and Feed to minimize the possibility of core uncover. Failure to perform this task, when able to do so, constitutes incorrect performance that leads to degradation of the RCS and/or fuel cladding fission product barriers.

E-2 A

Isolate the Faulted Steam Generator before transitioning out of E-2.

Safety Significance: Failure to isolate a Faulted SG that can be isolated causes challenges to the Critical Safety Functions that would not otherwise occur. Failure to isolate flow could result in an unwarranted Orange or Red Path condition on RCS Integrity, Subcriticality (if cooldown is allowed to continue uncontrollably) and/or Containment (if the break is inside Containment).

Scenario Event Description
NRC Scenario 1

SIMULATOR OPERATOR INSTRUCTIONS

	Bench Mark	ACTIVITY	DESCRIPTION
<input type="checkbox"/>		Reset to Temp I/C 176 (NRC 1).	<p>49% power BOL</p> <p>T=0, TUR02, Turbine fails to Auto trip</p> <p>To take B MDAFW pump OOS:</p> <ul style="list-style-type: none"> ▪ Pull stop the B MDAFW pump ▪ Inset OVR-DO-FDW-06A, OFF (Green light OFF) ▪ Place PROTECT tags on A MDAFW and TDAFW pumps <p>Insert MALF RPS07K (Autostart failure of A MDAFW pump)</p> <p>Insert OVR-DI-FDW42D = FALSE (MOV-9629A CLOSED, unable to OPEN)</p> <p>Insert MALF FDW15B (SAFW pump D failure)</p> <p>Set Trigger 30 = True when a reactor trip signal is received from either Train</p> <p>Set REM FDW32, Severity = 0, T-30 (Trip valve 3652 trips to simulate overspeed condition on TDAFW pump)</p> <p>Set Trigger 29 to x06i236b = 1 to activate when A MDAFW pump manually started</p> <p>Insert MALF FDW11A, 30 second delayed, T-29 (A MDAFW pump trip on manual start switch)</p> <p>MALF EDS07B, on T-1</p> <p>MALF PZR02D, 2500, 0 Ramp, on T-2</p> <p>MALF TUR05E, 8 Mils, 60 second Ramp on T-3</p> <p>MALF TUR09D, on T-3 (120 second Delay)</p> <p>MALF FDW09A, 2E+7, 120 second Ramp, on T-4</p>
<input type="checkbox"/>	Prior to Crew Briefing	RUN	<ul style="list-style-type: none"> • Hang Protective Tags on the A MDAFW Pump and the TDAFW Pump Steam Supply Valves. • Place Black Dot on MCB Annunciator J-28
<input type="checkbox"/>	<p style="text-align: center;">Crew Briefing</p> <ul style="list-style-type: none"> • Assign Crew Positions based on evaluation requirements • Review the Shift Turnover Information with the crew. • Conduct Pre-job Brief using marked up copy of O-6.9.2, Section 6.4 marked up as follows: <ul style="list-style-type: none"> ○ All steps in Sections 6.4.1 are marked NA ○ All steps in Sections 6.4.3 are marked NA 		
<input type="checkbox"/>	T-0	Begin Familiarization Period	

Scenario Event Description
NRC Scenario 1

	Bench Mark	ACTIVITY	DESCRIPTION
<input type="checkbox"/>	At direction of examiner	Event 1	Shift Electric Plant
<input type="checkbox"/>	At direction of examiner	Event 2 Trigger #1 EDS07B	Loss of B Instrument Bus
<input type="checkbox"/>	At direction of examiner	Event 3 Trigger#2 PZR02D	PT-449 fails High 2500, No Ramp
<input type="checkbox"/>	At direction of examiner	Event 4 Trigger#3 TUR05E TUR09D	Main Turbine High Vibration/EHC control failure 8 mils, 60 second Ramp 120 second delay
<input type="checkbox"/>	At direction of examiner	Event 5 Trigger #4 FDW09A	Feed Line Rupture Inside Containment 2E+7, 180 second Ramp
<input type="checkbox"/>	Continued from Event 5	Event 6 T=0 TUR02	Main Turbine Failure to Auto Trip NOTE: This Malfunction is inserted in the IC at T = 0.
<input type="checkbox"/>	Continued from Event 5	Event 7 T = 0 RPS07K	A AFW Pump Fails after start NOTE: This Malfunction is inserted in the IC at T = 0. T-29 (When pump manually started) (30 seconds delayed)
<input type="checkbox"/>	Continued from Event 5	Event 8 T = 0 OVR-FDW42A FDW15B	Standby AFW fails to function NOTE: This Malfunction is inserted in the IC at T = 0. FALSE (MOV-9629A CLOSED, unable to OPEN) (SAFW pump D failure)
<input type="checkbox"/>	Terminate the scenario upon direction of Lead Examiner		

Op Test No.: N10-1 Scenario # 1 Event # 1 Page 7 of 50Event Description: **Shift Electric Plant**

Shortly after taking the watch, the operator will shift the Electric Line-up from 50/50 to 0/100 in accordance with O-6.9.2, Establishing and/or Transferring Offsite Power to Bus 12A/12B.

Booth Operator Instructions: **NA**Indications Available: **NA**

Time	Pos.	Expected Actions/Behavior	Comments
O-6.9.2, ESTABLISHING AND/OR TRANSFERRING OFFSITE POWER TO BUS 12A/BUS 12B			
	CO	(Step 6.4.2) ESTABLISH Offsite Power to 12B Bus using Circuit 7T as follows:	
		(1.) VERIFY CLOSED CIRCUIT BKR 7T1352 34 KV BUS.	
		(2.) TURN ON BUS 12B ALT FEED FROM 7T, 52/12AX SYNCHROSCOPE	
		(3.) CLOSE BUS 12B ALT FEED FROM 7T, 52/12AX.	
		(4.) IF BUS 12B NORMAL FEED FROM 767, 52/12BX was previously closed, THEN PERFORM the following: IF NOT, THEN MARK this Substep N/A a. VERIFY BUS 12B NORMAL FEED FROM 767, 52/12BX OPENS. (Green AND White light indication is expected.) b. PLACE BUS 12B NORMAL FEED FROM 767, 52/12BX Control switch to the TRIP position AND THEN to AUTO.	
		(5.) VERIFY BUS 12B NORMAL FEED FROM 767, 52/12BX is OPEN AND RESET. (Green light illuminated AND White light extinguished.)	
		(6.) IF BUS 12B NORMAL FEED FROM 767, 52/12BX is NOT OPEN, THEN	NOTE: 52/12BX is OPEN.
		(7.) VERIFY approximately 4000 VOLTS is indicated on BUS 12B VOLTMETER 4160 V.	

Op Test No.: N10-1 Scenario # 1 Event # 1 Page 8 of 50Event Description: **Shift Electric Plant**

Time	Pos.	Expected Action/Behavior	Comments
	CO	(8.) TURN OFF BUS 12B ALT FEED FROM 7T, 52/12AX SYNCHROSCOPE AND REMOVE the handle.	
			SIM DRIVER: Use REM EDS50 to clear 12B transformer alarm L-28
At the discretion of the Lead Examiner move to Event #2.			

Op Test No.: N10-1 Scenario # 1 Event # 2 Page 9 of 50Event Description: **Loss of B Instrument Bus**

Shortly afterwards, a loss of the B Instrument Bus will occur. The operator will respond in accordance with AR-E-14, LOSS B INSTR. BUS. Power will be restored to the bus per guidance in ER-INST.3, Instrument Bus Power Restoration, which will include the isolation and re-establishment of Normal Letdown in accordance with S-3.2E, Placing In or Removing From Service Normal Letdown/Excess Letdown. The operator will address three additional MCB Annunciators; AR-E-20, CNMT OR PLANT VENT RAD MON PUMP TRIP; AR-F-6, PRESSURIZER HEATER BREAKER TRIP; and K032, SG BLOWDOWN TANK HIGH LEVEL while restoring from the transient. The operator will address Technical Specification 3.8.7, AC Instrument Bus Sources Modes 1-4, and 3.8.9, Distribution Systems – Modes 1, 2, 3 and 4.

Booth Operator Instructions: **Operate Trigger #1 (EDS07B)**

Indications Available:

- Multiple MCB Annunciators
- MCB Annunciator E-14, LOSS B INSTR. BUS
- White and Red Bistable Status lights extinguish
- VCT Level (LT-112) fails low causing continuous Auto Makeup
- Tavg-Tref is 12°F (1st Stage Pressure has failed Low), with an Auto Rod Inward green Status light, but NO Auto Rod motion
- Normal Letdown has isolated due to one PZR level channel failing low

Time	Pos.	Expected Actions/Behavior	Comments
AR-E-14, LOSS B INSTR BUS			
	CRS	1. Restore power to Instrument Bus B (Refer to ER-INST.3, INSTRUMENT BUS POWER RESTORATION)	
	CRS	2. Evaluate plant conditions to determine if additional action is required by referring to the following: <ul style="list-style-type: none"> ○ ITS LCO 3.8.7 and 3.8.8 	
	CRs	3. Notify the following: <ul style="list-style-type: none"> ○ SM ○ Electricians ○ Electrical Planner 	<p>NOTE: The CRS may notify the WCC.</p> <p>Booth Instructor: as WCCS, acknowledge.</p>
			<p>NOTE: The CRS will go to ER-INST.3.</p>

Op Test No.: N10-1 Scenario # 1 Event # 2 Page 10 of 50Event Description: **Loss of B Instrument Bus**

Time	Pos.	Expected Actions/Behavior	Comments
ER-INST.3, INSTRUMENT BUS POWER RESTORATION			
	CO	(Step 4.1.1) Verify an alternate power supply is available by checking supply voltage as follows: Maintenance- Supply voltage approximately 120 volts (EI/CVTAUX, above Instr Bus D)	
	HCO	(Step 4.1.2) Close letdown isolation valve, AOV-427.	NOTE: The HCO will isolate Normal Letdown.
			NOTE: VCT level indication is lost, and with L/D isolated, actual level is lowering, and CRS should direct AO to monitor VCT level locally (no ER-INST.3 procedure guidance)
	HCO	(Step 4.1.3) Place charging pump controllers in MANUAL	NOTE: The HCO will place Charging Pump speed control in Manual.
			NOTE: The HCO may place the Auto Makeup to the VCT in Manual to prevent overfilling the VCT.
	CO	(Step 4.1.4) Place hotwell level controller to manual, if desired.	
	HCO	(Step 4.1.5) Place PRZR PRESS CONTROLLER 431K in MANUAL, if necessary.	
	HCO	(Step 4.1.6) Place rods in MANUAL.	NOTE: The HCO will place Rods in Manual.
	CRS	(Step 4.1.7) Transfer Instrument Bus to an available power supply. (Maintenance or Normal)	NOTE: The CRS will direct the bus to be energized from the Maintenance supply

Op Test No.: N10-1 Scenario # 1 Event # 2 Page 11 of 50Event Description: **Loss of B Instrument Bus**

Time	Pos.	Expected Actions/Behavior	Comments
	CO	<ul style="list-style-type: none"> Unlocks A, C, & D cabinets to ensure no other instrument busses are on the Maintenance supply 	
		<ul style="list-style-type: none"> Unlocks B cabinet, and shifts maintenance bus supply breaker forcibly to the left 	NOTE: Instrument Bus B is now re-energized
	CO	(Step 4.1.8) Checks Instrument Bus B supply voltage within ITS limits (Refer to O-6.11, Surveillance Requirements/Routine Ops Check Sheet)	NOTE: O-6.11 requires voltage between 113-123V
	CO	(Step 4.1.9) Go to Step 4.4	
	HCO	(Step 4.4.1) Verify one Charging Pump in AUTO, IF desired.	
	HCO	(Step 4.4.2) Verify PRZR PRESS CONTROLLER 431K in AUTO	
	HCO	(step 4.4.3) IF letdown isolation valve, AOV-427 has been closed, THEN restore Letdown as follows:	
	HCO	(Step 4.4.3.1) Complete removal of normal letdown from service per S-3.2E, PLACING IN OR REMOVING FROM SERVICE NORMAL LETDOWN/EXCESS LETDOWN.	NOTE: Removed per Section 5.2 of S-3.2E
			NOTE: The CRS will hand this off to the HCO or the CO.
S-3.2E, PLACING IN OR REMOVING FROM SERVICE NORMAL LETDOWN/EXCESS LETDOWN			
	HCO/ CO	(Step 5.2.1) Place Charging Pumps in MANUAL	

Op Test No.: N10-1 Scenario # 1 Event # 2 Page 12 of 50Event Description: **Loss of B Instrument Bus**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO/ CO	(Step 5.2.2) Close Letdown Orifice isolation valves AOV-200A Closed AOV-200B Closed AOV-202 Closed	
	HCO/ CO	(Step 5.2.3) Close LTDN ISOLATION VLV RHR to NRHX AOV-427.	
	HCO/ CO	(Step 5.2.4) Reduce charging flow while throttling closed charging flow to Regenerative Heat Exchanger HCV-142 to maintain >20" RCP labyrinth seal ΔP. Shift to single Charging Pump operations if desired.	
	HCO/ CO	(Step 5.2.5) Close Letdown Isol vlv RHR to NRHX AOV-371.	
	HCO/ CO	(Step 5.2.6) Place NRHX LTDN OUTLET TEMP (TI-130) TCV-130 in MANUAL/CLOSED	
			NOTE: The CRS will continue with ER-INST.3.
ER-INST.3, INSTRUMENT BUS POWER RESTORATION			
	CRS	(Step 4.4.3.2) Restore normal letdown per S-3.2E, PLACING IN OR REMOVING FROM SERVICE NORMAL LETDOWN/EXCESS LETDOWN.	NOTE: Restored per Section 5.3 of S-3.2E
			NOTE: The CRS will hand this off to the HCO or the CO.
S-3.2E, PLACING IN OR REMOVING FROM SERVICE NORMAL LETDOWN/EXCESS LETDOWN			

Op Test No.: N10-1 Scenario # 1 Event # 2 Page 13 of 50Event Description: **Loss of B Instrument Bus**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO/ CO	(Step 5.3.1) Determine if a flush is required. If the letdown line has been isolated for less than one hour perform section 5.3.2 and N/A section 5.3.3 with permission of the Shift Manager or Control Room Foreman.	NOTE: Since letdown has been isolated ONLY a few minutes, a flush will NOT be required.
	HCO/ CO	(Step 5.3.2) <u>Restore Letdown Without a Flush</u>	
	HCO/ CO	(Step 5.3.2.1) Ensure letdown is secured per Step 5.2 prior to restoring.	
	HCO/ CO	(Step 5.3.2.2) If charging flowpath to Loop B COLD leg is desired (preferred method) perform the following:	
	HCO/ CO	(Step 5.3.2.2.1) Ensure charging valve to Loop B Hot, AOV-392A is closed.	
	HCO/ CO	(Step 5.3.2.2.2) Open charging valve to Loop B Cold, AOV-294.	
	HCO/ CO	(Step 5.3.2.3) If Charging flowpath to Loop B HOT leg is desired,.....	NOTE: Charging alignment to the Hot Leg will NOT be desired.
	HCO/ CO	(Step 5.3.2.4) Start a second Charging Pump at minimum speed.	
	HCO/ CO	(Step 5.3.2.5) Slowly open charging flow to Regenerative Heat Exchanger HCV-142 to reduce labyrinth seal ΔP to ~40".	
	HCO/ CO	(Step 5.3.2.5.1) Adjust Charging Pump speed to establish ~40" labyrinth seal ΔP with HCV-142 full open.	

Op Test No.: N10-1 Scenario # 1 Event # 2 Page 14 of 50Event Description: **Loss of B Instrument Bus**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO/ CO	(Step 5.3.2.5.2) Establish ≥ 20 gpm charging line flow.	
	HCO/ CO	(Step 5.3.2.7) Place Low PRESS LTDN PRESS PCV-135 in MANUAL at ~60% open.	
	HCO/ CO	(Step 5.3.2.7.1) Place NRHX LTDN OUTLET TEMP, TI-130, in MANUAL at ~60% open.	
	HCO/ CO	(Step 5.3.2.8) Open Letdown Isolation valve RHR to NRHX AOV-371.	
	HCO/ CO	(Step 5.3.2.9) Place LTDN LOOP B COLD LEG TO RHX AOV-427 to OPEN and THEN to AUTO.	
	HCO/ CO	(Step 5.3.2.10) Open desired Letdown orifice valve AOV-200A, 200B, or 202 (proceed to next step without delay).	
	HCO/ CO	(Step 5.3.2.11) Adjust LOW PRESS LTDN PRESS PCV-135 to achieve Letdown pressure of ~250 psig on PI-135.	
	HCO/ CO	(Step 5.3.2.12) Place LOW PRESS LTDN PRESS, PCV-135 IN AUTO.	
	HCO/ CO	(Step 5.3.2.13) Place NRHX LTDN OUTLET TEMP (TI-130) TCV-130 in AUTO at the normal setpoint.	Examiner NOTE: At the discretion of the Lead Examiner move to Event #3 .
	HCO/ CO	(Step 5.3.2.14) Place Pressurizer level control (Charging Pump) in AUTO.	
			NOTE: The CRS will continue with ER-INST.3, Step 4.4.4.

Op Test No.:	N10-1	Scenario #	1	Event #	2	Page	15	of	50
Event Description:		Loss of B Instrument Bus							

Time	Pos.	Expected Actions/Behavior	Comments
ER-INST.3, INSTRUMENT BUS POWER RESTORATION			
	CO	(Step 4.4.4) Restore EH control to AUTO/IMP IN, IF desired.	
	HCO	(Step 4.4.5) Restore ROD CONTROL BANK SELECTOR Switch to AUTO, if desired.	NOTE: The HCO will place the Rods back in Auto.
	HCO	(Step 4.4.6) Verify CNMT ventilation isolation is reset.	
	HCO	(Step 4.4.7) Verify hotwell level controller in AUTO, if desired.	
	CO	(Step 4.4.8) Restore desired SW pump alignment.	
	CO	(Step 4.4.9) Ensure motor fire pump breaker closed.	
	CO/AO	(Step 4.4.10) Dispatch an AO to verify proper operation of battery chargers if necessary.	NOTE: The CRS will dispatch an AO. Booth Instructor: as AO, acknowledge.
	HCO/CO	(Step 4.4.11) Evaluate MCB annunciator status (refer to AR procedures)	NOTE: Annunciators E-20, F-6, and K-32 need followup
			NOTE: These annunciators may be addressed in ANY order.
AR-E-20, CNMT OR PLANT VENT RAD MON PUMP TRIP			
	CO	1. Investigate problem at associated skid.	Note: The operator will recognize pump is off due to loss of Inst. Bus and restart Pump.

Op Test No.:	N10-1	Scenario #	1	Event #	2	Page	16	of	50
Event Description:		Loss of B Instrument Bus							

Time	Pos.	Expected Action/Behavior	Comments
AR-F-6, PRESSURIZER HEATER BREAKER TRIP			
	HCO	1. Monitor RCS pressure. 2. Go to AP-PRZR.1, if necessary	NOTE: Entry into AP-PRZR.1 is NOT necessary. The HCO will recognize HTR TRIP due to loss of Instr. Bus and Reset.
			NOTE: The CRS will continue with ER-INST.3.
AR-K-32, SG BLOWDOWN TANK HIGH LEVEL			
	CO	1. Direct AO to remove and then restore Blowdown per T-14.F.1, SG Blowdown System Operation	SIM DRIVER: Insert REM SGN05, RESET,
ER-INST.3, INSTRUMENT BUS POWER RESTORATION			
	CRS	(Step 4.4.12) IF Instrument Bus D was affected, THEN	NOTE: Instrument Bus D was NOT affected.
	CRS	(Step 4.4.13) IF Instrument Bus A or C is being powered from associated emergency AC Bus, then	NOTE: Instrument Bus A or C is NOT being powered from the emergency AC Bus.
	CRS	(Step 4.4.14) Return to procedure or guidance in effect.	
			NOTE: The CRS will address the Technical Specifications.
TECHNICAL SPECIFICATION 3.8.7, AC INSTRUMENT BUS SOURCES – MODES 1, 2, 3 AND 4			
	CRS	LCO 3.8.7 The following AC instrument bus power sources shall be OPERABLE: a) Inverters for Instrument Buses A and C; and b) Class 1E constant voltage transformer (CVT) for Instrument Bus B.	

Op Test No.: N10-1 Scenario # 1 Event # 2 Page 17 of 50Event Description: **Loss of B Instrument Bus**

Time	Pos.	Expected Actions/Behavior			Comments
	CRS	APPLICABILITY: MODES 1, 2, 3, AND 4.			
	CRS	CONDITION	REQUIRED ACTION	COMPLETION TIME	
		B. Class 1E CVT for AC Instrument Bus B inoperable	B.1 Power AC Instrument Bus B from its non-Class 1E CVT. <u>AND</u> B.2 Restore Class 1E CVT for AC Instrument Bus B to OPERABLE status.	2 hours 7 days	
TECHNICAL SPECIFICATION 3.8.9, DISTRIBUTION SYSTEMS – MODES 1, 2, 3 AND 4					
	CRS	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			
	CRS	APPLICABILITY: modes 1, 2, 3 and 4.			
	CRS	CONDITION	REQUIRED ACTION	COMPLETION TIME	
		B. One AC Instrument bus electrical power distribution train inoperable.	B.1 Restore AC Instrument bus electrical power distribution train to OPERABLE status.	2 hours.	
At the discretion of the Lead Examiner move to Event #3.					

Op Test No.: N10-1 Scenario # 1 Event # 3 Page 18 of 50Event Description: **Pressurizer Pressure (PT-449) fails High**

After this, the controlling Pressurizer Pressure Transmitter will fail High, causing the Spray Valves to open. The operator will respond in accordance with AR-F-2, PRESSURIZER HIGH PRESS 2310 PSI and AR-F-10, PRESSURIZER LO PRESS 2205 PSI, and enter AP-PZR.1, Abnormal PZR Pressure. AP-PZR.1 will refer the operator to ER-INST.1, Reactor Protection Bistable Defeat After Instrumentation Loop Failure, for the defeat of PT-449. The operator will address Technical Specification 3.4.1, RCS Pressure, Temperature, and Flow Departure From Nucleate Boiling (DNB) Limits; 3.3.1, Reactor Trip System (RTS) Instrumentation; and 3.3.2, ESFAS Instrumentation.

Booth Operator Instructions: Operate Trigger #2 (PZR02D (2500))

Indications Available:

- MCB Annunciator F-2, PRESSURIZER HIGH PRESS 2310
- PI-449 reading 2250 psig, all others lowering slowly
- Both Presssurizer Spray Valves fully OPEN
- Master pressure Controller 431K output at 100%
- MCB Annunciator F-10, PRESSURIZER LO PRESS 2205 (15seconds delayed)

Time	Pos.	Expected Actions/Behavior	Comments
			NOTE: The HCO may take action to place 431K in MANUAL control, or the Spray Valve Controllers in MANUAL control, before arriving at the procedurally directed step, per the Guidance of A-503.1.
			NOTE: The crew may enter AP-PRZR.1 directly.
AR-F-2, PRESSURIZER HI PRESS 2310 PSI			
	CRS	(Step 1) IF RCS pressure is high, THEN go to AP-PRZR.1.	NOTE: Pressurizer Pressure is NOT high.
	CRS	(Step 2) IF due to instrument failure, THEN refer to ER-INST.1, REACTOR PROTECTION BISTABLE DEFEAT AFTER INSTRUMENTATION LOOP FAILURE	NOTE: While an instrument has failed, the failure has created a pressure transient, and AP-PRZR.1 is the appropriate procedure.

Op Test No.: N10-1 Scenario # 1 Event # 3 Page 19 of 50Event Description: **Pressurizer Pressure (PT-449) fails High**

Time	Pos.	Expected Actions/Behavior	Comments
AR-F-10, PRESSURIZER LO PRESS 2205 PSI			
			NOTE: This alarm will occur if the Spray Valves are open ≈15 seconds.
	HCO	(Step 1) Perform a channel check.	
	CRS	(Step 2) Go to the applicable procedure: <ul style="list-style-type: none"> • AP-TURB.2, if turbine load rejection has occurred. • AP-PRZR.1, if pressure is abnormal for plant condition. • ER-INST.1, if channel failed 	
	CRS	(Step 3) Refer to ITS LCO 3.4.1	
			NOTE: The CRS will go to AP-PRZR.1.
AP-PRZR.1, ABNORMAL PRESSURIZER PRESSURE			
	HCO	(Step 1) Check PRZR Pressure: <ul style="list-style-type: none"> • All 4 narrow range channels- APPROXIMATELY EQUAL 	
		(Step 1 RNO) IF one pressure channel deviates significantly from the other 3. THEN perform the following: <ol style="list-style-type: none"> IF the controlling PRZR pressure channel has failed. THEN place controller, 431K, in MANUAL and adjust output to restore PRZR pressure Refer to ER-INST.1. REACTOR PROTECTION BISTABLE DEFEAT AFTER INSTRUMENTATION LOOP FAILURE. 	NOTE: The CRS may refer to ER-INST.1 here, or later when the pressure transient has been verified to be under control.
	HCO	(Step 2) Check Reactor Power- STABLE	

Op Test No.: N10-1 Scenario # 1 Event # 3 Page 20 of 50Event Description: **Pressurizer Pressure (PT-449) fails High**

Time	Pos.	Expected Actions/Behavior	Comments
	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	
	HCO	(Step 5) Verify Normal PRZR Spray Valves- CLOSED o AOV-431A o AOV-431B	NOTE: The HCO may take action to place 431K in MANUAL control, or the Spray Valve Controllers in MANUAL control, before arriving at THIS step, per the Guidance of A-503.1.
	HCO	(Step 5 RNO) Place Controllers in MANUAL at 0% Demand.	
	HCO	(Step 6) Check PRZR Pressure Controller, 431K, Demand- LESS THAN 50%	
	HCO	(Step 7) Check PRZR PORVs: a) PORVs- CLOSED b) Annunciator F-19. PRZR PORV OUTLET HI TEMP 145°F- EXTINGUISHED	
	CRS	c) Go to Step 9	

Op Test No.: N10-1 Scenario # 1 Event # 3 Page 21 of 50Event Description: **Pressurizer Pressure (PT-449) fails High**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 9) Check PRZR Safety Valves: <ul style="list-style-type: none"> o Position indicator- LESS THAN 0.1 INCH 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: <ul style="list-style-type: none"> a) Pressure- TRENDING TO 2235 PSIG 	
	CRS	b) Go to Step 16	
	HCO	(Step 16) Check PRT Indications: <ul style="list-style-type: none"> a) Level- BETWEEN 61% and 84% b) Pressure- APPROXIMATELY 1.5 PSIG AND STABLE c) Temperature- AT CNMT AMBIENT TEMPERATURE AND STABLE 	
	HCO	(Step 17) Establish PRZR Pressure Control In Auto: <ul style="list-style-type: none"> a) Verify 431K in AUTO 	

Op Test No.: N10-1 Scenario # 1 Event # 3 Page 22 of 50Event Description: **Pressurizer Pressure (PT-449) fails High**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 17 RNO) Place 431K in AUTO, if desired.	NOTE: 431K cannot be placed in Auto until the Instrument is defeated. IF the Instrument has NOT been defeated in accordance with ER-INST.1, the CRS may refer to this procedure here.
ER-INST.1, REACTOR PROTECTION BISTABLE DEFEAT AFTER INSTRUMENTATION LOOP FAILURE			
	HCO	(Step 4.1) Identify the failed instrument channel by observation of the bistable status light board, MCB annunciators, and the MCB metering indication.	
	CRS	(Step 4.2) WHEN a failed instrument loop and/or channel has been identified, THEN refer to the appropriate section of this procedure listed below:	NOTE: The CRS will refer to PRZR Pressure Channel Failures, Section 4.4.
	HCO	(Step 4.4.1) IF the controlling PRZR Pressure channel has failed (normally PT-449, but PT-429 may be selected as controlling channel), THEN place HC-431K in MANUAL at about 50% and control pressure manually	
	HCO	(Step 4.4.2) IF PT-430 OR PT-431 has failed, THEN	NOTE: Neither PT-430 nor PT-431 has failed.
	HCO	(Step 4.4.3) Close the associated block valve.....	NOTE: The Pressurizer PORVs have NOT been affected.
	HCO	(Step 4.4.4) IF hot leg streaming has been causing single channel ΔT runback signals, THEN.....	NOTE: hot leg streaming has NOT been causing runback signals.

Op Test No.: N10-1 Scenario # 1 Event # 3 Page 23 of 50Event Description: **Pressurizer Pressure (PT-449) fails High**

Time	Pos.	Expected Action/Behavior	Comments
	HCO	(Step 4.4.5) Refer to the appropriate attachment to defeat the associated control functions:	NOTE: The CRS will go to the PRZR PRESSURE PI-449 YELLOW CHANNEL Attachment.
			NOTE: The CRS will hand this off to the CO.
ER-INST.1, REACTOR PROTECTION BISTABLE DEFEAT AFTER INSTRUMENTATION LOOP FAILURE YELLOW CHANNEL ATTACHMENT PRZR PRESSURE PI-449			
	HCO	(Step 1) IF PRZR Pressure channel failure resulted in a runback, THEN	NOTE: The failure did NOT result in a runback.
	CO	(Step 2) In the PLP PRZR PRESS AND LEVEL rack, check the PRZR pressure DEFEAT switch P/429A position. <ul style="list-style-type: none"> IF P/429A is in NORMAL, THEN place P/429A to DEFEAT-1. 	
	CO	(Step 3) In the RIL INSERTION LIMIT rack, PLACE T/405F DELTA T DEFEAT switch to Loop B UNIT 2.	
	CO	(Step 4) 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: <u>408 LOOP B-2</u> OVER TEMP TRIP <u>449 CHANNEL 4</u> LOW PRESS TRIP	NOTE: Both B/S proving lights should be ON after defeat.
	HCO	(Step 5) PLACE the PRZR pressure recorder transfer switch (MCB) to position 1-3	
	HCO	(Step 6) Verify the bistable status lights listed above are lit.	Examiner NOTE: At the discretion of the Lead Examiner move to Event #4 .

Op Test No.: N10-1 Scenario # 1 Event # 3 Page 24 of 50Event Description: **Pressurizer Pressure (PT-449) fails High**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO/ CO	(Step 7) Delete 404/408 from processing by performing the following on the PPCS: a) Select "Group Update" display b) Select "List Server Groups" c) Select 404_408 from the pick list d) Turn "OFF" scan processing, then click the "Set Scan Processing" button e) Answer prompts f) On the "Sub/Delete/Restore" display g) Select Point ID T0404 h) Turn "ON" scan processing i) Select "Change" j) On the "Sub/Delete/Restore" display k) Select Point ID P0449 l) Turn "OFF" scan processing m) Select "Change"	
	HCO	(Step 8) GO TO step 4.4.6	NOTE: The CRS will return to the body of the procedure.
	HCO	(Step 4.4.6) Restore the following systems to automatic operation as necessary: o PRZR Pressure control <ul style="list-style-type: none"> HC 431K PRZR Spray Valves PRZR Heaters 	NOTE: The HCO will return 431K to Auto.
	HCO	o PRZR Level Control	
	HCO	o Rod Control	
	CO	o Steam Dump	
	CO	o Turbine EH control	
	HCO	(Step 4.4.7) Open associated block valve closed in step 4.4.3	NOTE: No Block Valve was Closed.

Op Test No.: N10-1 Scenario # 1 Event # 3 Page 25 of 50Event Description: **Pressurizer Pressure (PT-449) fails High**

Time	Pos	Expected Actions/Behavior	Comments
	CRS	(Step 4.4.8) Check the following ITS Sections for LCO's: a) Section 3.3.1, Table 3.3.1-1, Functions 5, 7a, and 7b (7b not required for PT-449) b) Section 3.3.2, Table 3.3.2-1, Function 1d (not required for PT-449) c) Section 3.3.3, Table 3.3.3-1, Functions 1 and 6	NOTE: The CRS will evaluate Technical Specifications.
	CRS	(Step 4.4.9) Check TRM 3.4.3, Anticipated Transients Without Scram (ATWS) mitigation	NOTE: The CRS will evaluate Technical Requirements Manual.
	CRS	(Step 4.4.10) IF turbine runback has occurred AND rods are in MANUAL,	NOTE: The failure did NOT result in a runback.
	HCO	(Step 4.4.11) Restore AUTO Rod Control, if desired.	NOTE: The HCO will place the Rods in Auto.
	CRS	(Step 4.4.12) GO TO step 4.15	
	HCO	(Step 4.15.1) IF necessary, verify an operable channel is selected for the affected recorder.	
	HCO	(Step 4.15.2) Verify the following systems in AUTO if desired: o Rod Control	
	CO	o Turbine EH control	
	HCO	o PRZR Pressure control • HC 431K • PRZR spray valves • PRZR heaters	
	HCO	o PRZR level control	

Op Test No.: N10-1 Scenario # 1 Event # 3 Page 26 of 50Event Description: **Pressurizer Pressure (PT-449) fails High**

Time	Pos	Expected Actions/Behavior	Comments
	CO	<ul style="list-style-type: none"> Steam Dump (unless 1st stage pressure failed) 	
	CO	<ul style="list-style-type: none"> MFW control 	
	CO	<ul style="list-style-type: none"> S/G Atmos Relief Vlv Control 	
	CRS	(Step 4.15.3) Notifications to the following people will be made by the Shift Manager: <ul style="list-style-type: none"> Operations Supervision STA 	NOTE: The CRS may notify the SM/STA. Booth Instructor: as SM/STA, acknowledge.
	CRS	(Step 4.15.4) During normal working hours, Maintenance personnel shall be notified immediately of the problem.	NOTE: The CRS may notify the WCC. Booth Instructor: as WCCS, acknowledge.
	CRS	(Step 4.15.5) During back shifts Maintenance personnel will be called in. HOWEVER, the Shift Manager may defer calling people in, IF repairs may be deferred to the next working day.	
AP-PRZR.1, ABNORMAL PRESSURIZER PRESSURE			
	HCO	(Step 17.b) Verify PRZR Spray Valves in Auto.	
	HCO	(Step .c) Verify PRZR Heaters restored: <ul style="list-style-type: none"> PRZR proportional heaters breaker – Closed PRZR backup heaters RESET in AUTO 	
	CRS	(Step 18) Evaluate MCB Annunciator Status (Refer to AR Procedures)	
	CRS	(Step 19) Notify Higher Supervision	

Op Test No.: N10-1 Scenario # 1 Event # 3 Page 27 of 50Event Description: **Pressurizer Pressure (PT-449) fails High**

Time	Pos.	Expected Action/Behavior			Comments
	CRS	(Step 20) Notify Reactor Engineer for Transient Monitoring Program			
					NOTE: The CRS will address the Technical Specifications.
TECHNICAL SPECIFICATION 3.4.1, RCS PRESSURE, TEMPERATURE, AND FLOW DEPARTURE FROM NUCLEATE BOILING (DNB) LIMITS					
	CRS	(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			
		APPLICABILITY: Mode 1.			
		ACTIONS:			
		CONDITION	REQUIRED ACTION	COMPLETION TIME	
		A. One or more RCS DNB parameters not within limits.	A.1 Restore RCS DNB parameter(s) to within limit.	2 hours	
TECHNICAL SPECIFICATION 3.3.1, REACTOR TRIP (RTS) INSTRUMENTATION					
	CRS	LCO 3.3.1 The RTS instrumentation for each Function in Table 3.3.1-1 shall be OPERABLE.			
		APPLICABILITY: According to Table 3.3.1-1 (Functions 5, 7a, 7b)			
		ACTIONS			

Op Test No.: N10-1 Scenario # 1 Event # 3 Page 28 of 50Event Description: **Pressurizer Pressure (PT-449) fails High**

Time	Pos.	Expected Actions/Behavior			Comments
		CONDITION	REQUIRED ACTION	COMPLETION TIME	
		A. One or more functions with one channel inoperable.	A.1 Enter the Condition referenced 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 Place channel in trip	6 hours	
		K. As required by Required Action A.1 and referenced by Table 3.3.1-1	K.1 Place channel in trip	6 hours	
TECHNICAL SPECIFICATION 3.3.2, ESFAS INSTRUMENTATION					
	CRS	LCO 3.3.2 The ESFAS instrumentation for each Function in Table 3.3.2-1 shall be OPERABLE.			
		APPLICABILITY: According to Table 3.3.2-1. (Function I.d)			
		ACTIONS			
		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	
		L. As required by Required Action A.1 and referenced by Table 3.3.2-1	L.1 Place channel in trip	6 hours.	
At the discretion of the Lead Examiner move to Event #4.					

Op Test No.: N10-1 Scenario # 1 Event # 4 Page 29 of 50Event Description: **Main Turbine High Vibration/EHC control failure**

Following this, a turbine high vibration condition on Bearing #5 will develop within about 60 seconds, an EHC failure will occur causing the turbine to shift to manual. The operator will respond in accordance with AR-I-27, ROTOR ECCENTRICITY OR VIBRATION; and enter AP-TURB.3, Turbine Vibration; and then AP-TURB.5, Rapid Downpower. The operator will need to lower the Turbine Load using Manual EHC control.

Booth Operator Instructions: Operate Trigger #3 (TUR05E (10 mils), TUR09D (120 sec delayed))

Indications Available:

- MCB Annunciator I-27, ROTOR ECCENTRICITY OR VIBRATION
- MCB Turbine Bearing Recorder Bearing 5 indicating high, bearings 4 and 6 rising at a lower rate.
- Back of MCB Turbine Bearing Vibration Panel Bearing 5 indicating high, bearings 4 and 6 rising at a lower rate.
- Turbine Controls indicate the following (60 seconds delayed)
 - OPER PAN – DARK
 - IMP PRESS OUT – DARK
 - TURB MANUAL – LIT
 - MANUAL CONTROL VALVE LOWER – LIT
 - MANUAL CONTROL VALVE FAST – LIT
 - MANUAL CONTROL VALVE RAISE – LIT

Time	Pos.	Expected Action/Behavior	Comments
			NOTE: The crew may enter AP-TURB.3 directly.
AR-I-27, ROTOR ECCENTRICITY OR VIBRATION			
	CO/ CRS	1. Go to AP-TURB.3	
			NOTE: The CRS will go to AP-TURB.3.
AP-TURB.3, TURBINE VIBRATION			
	CO	(Step 1) Verify Turbine Vibration- ALL BEARINGS LESS THAN 14MILS	
	CO	(Step 2) Check Turbine Bearings No.1 through No. 8 Vibration- LESS THAN 7 MILS	

Op Test No.: N10-1 Scenario # 1 Event # 4 Page 30 of 50Event Description: **Main Turbine High Vibration/EHC control failure**

Time	Pos.	Expected Actions/Behavior	Comments
	CO	(Step 2 RNO) Attempt to stabilize vibration as follows: IF generator on line, THEN begin reducing load to stabilize vibrations. (Refer to AP-TURB.5, RAPID LOAD REDUCTION	
			NOTE: The CRS will go to AP-TURB.5 and conduct "mini-briefing" prior to commencing load reduction
AP-TURB.5, RAPID LOAD REDUCTION			
	HCO	(Step 1) Initiate Load Reduction a) Verify rods in AUTO	
	CO	b) Reduce turbine load in Auto as follows:	
	CO	(Step 1.b RNO) IF Auto Control is inoperable, THEN reduce turbine load in manual at the desired rate.	NOTE: The CO will need to adjust Turbine Load in MANUAL.
	HCO	c) Initiate boration at the rate determined in OPG-REACTIVITY-CALC	NOTE: The HCO will initiate a boration.
	HCO	d) Place PRZR backup heaters switch to ON	
	HCO	(*Step 2) Monitor RCS Tavg • 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	Examiner NOTE: After load has been reduced in Manual ≈2%, at the discretion of the Lead Examiner move to Events #5-8.
	HCO	(*Step 4) Monitor PRZR Pressure-TRENDING TO 2235 PSIG IN AUTO	

Op Test No.: N10-1 Scenario # 1 Event # 4 Page 31 of 50Event Description: **Main Turbine High Vibration/EHC control failure**

Time	Pos.	Expected Actions/Behavior	Comments
	CO	(*Step 5) Monitor MFW Regulating Valves- RESTORING S/G LEVEL TO 52% IN AUTO	
	HCO	(*Step 6) Monitor PRZR Level- TRENDING TO PROGRAM IN AUTO CONTROL	

To ensure conditions are met for FR-H.1 entry in the next scenario, the next events should be initiated after ~ 2% load reduction has been completed. At the discretion of the Lead Examiner move to Events #5-8.

Op Test No.: N10-1 Scenario # 1 Event # 5, 6, 7, & 8 Page 32 of 50Event Description: **Feed Line Rupture Inside Containment / A AFW Pump Fails after start/ TDAFW Pump overspeed trip/ Standby AFW fails to function**

During the load reduction, a feed line rupture inside Containment will occur. The Reactor will trip and Safety Injection will actuate causing the operator to enter E-0, Reactor Trip or Safety Injection. The main turbine failure to Auto trip will require CO to initiate a manual turbine trip. On the Reactor Trip the A AFW Pump will fail to Autostart, then trip after it is manually started, and the TDAFW Pump will trip on overspeed. The operator will transition from E-0 to FR-H.1, Response to a Loss of Secondary Heat Sink. The operator will unsuccessfully attempt to place the Standby AFW System in service, and then attempt to restore a Secondary Heat Sink using the MFW System. Once the Secondary Heat Sink is re-established using MFW, the operator will transition back to E-0, and then transition to E-2, Faulted Steam Generator Isolation. The scenario will terminate at Step 9 of E-2, after the crew has determined that a transition to E-1, Loss of Reactor or Secondary Coolant, is required.

Booth Operator Instructions: Operate Trigger #4 (FDW09A, 2E+7 over 180 seconds)

Indications Available:

- Containment NR Pressure starts to rise.
- Feedflow A SG starts to rise.
- A SG NR Level starts to lower.

Time	Pos.	Expected Actions/Behavior	Comments
E-0, REACTOR TRIP OR SAFETY INJECTION			
	HCO	(Step 1) Verify Reactor Trip:	
		<ul style="list-style-type: none"> • At least one train of reactor trip breakers – OPEN 	
		<ul style="list-style-type: none"> • Neutron flux - LOWERING 	
		<ul style="list-style-type: none"> • MRPI indicates – ALL CONTROL AND SHUTDOWN RODS ON BOTTOM 	
	CO	(Step 2) Verify Turbine Stop Valves – CLOSED	NOTE: Auto turbine trip will NOT occur.
		<ul style="list-style-type: none"> • Depresses Manual Turbine Trip button 	
	CO	(Step 3) Verify Both Trains of AC Emergency Busses Energized to at Least 440 VOLTS:	
		<ul style="list-style-type: none"> • Bus 14 and Bus 18 	

Op Test No.: N10-1 Scenario # 1 Event # 5, 6, 7, & 8 Page 33 of 50Event Description: **Feed Line Rupture Inside Containment / A AFW Pump Fails after start/ TDAFW Pump overspeed trip/ Standby AFW fails to function**

Time	Pos.	Expected Action/Behavior	Comments
		<ul style="list-style-type: none"> Bus 16 and Bus 17 	
	HCO	(*Step 4) Check if SI is Actuated:	
		<ul style="list-style-type: none"> Any SI Annunciator – LIT 	NOTE: D-28, CNMT Press
		<ul style="list-style-type: none"> SI sequencing – BOTH TRAINS STARTED. 	
	HCO	(*Step 5) Verify CNMT Spray Not Required:	
		<ul style="list-style-type: none"> Annunciator A-27, CNMT SPRAY – EXTINGUISHED 	
		<ul style="list-style-type: none"> CNMT pressure- LESS THAN 28 PSIG 	NOTE: Containment Pressure will be rising, and will exceed 28 psig. This is a Continuous Action Step, and will need to be verified when the conditions are met (i.e. by performing Step 5 RNO).
	HCO	(Step 5 RNO) Verify CNMT spray initiated.	
	CRS	(Step 6) Direct Operator to Perform ATT-27.0, ATTACHMENT AUTOMATIC ACTION VERIFICATION	
			NOTE: The CRS 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 37 .
E-0, REACTOR TRIP OR SAFETY INJECTION, ATTACHMENT 27.0, ATTACHMENT AUTOMATIC ACTION VERIFICATION			

Op Test No.: N10-1 Scenario # 1 Event # 5, 6, 7, & 8 Page 34 of 50Event Description: **Feed Line Rupture Inside Containment / A AFW Pump Fails after start/ TDAFW Pump overspeed trip/ Standby AFW fails to function**

Time	Pos.	Expected Action/Behavior	Comments
	HCO/ CO	(Step 1) Verify SI and RHR Pumps Running:	
		<ul style="list-style-type: none"> All SI pumps – RUNNING Both RHR pumps – RUNNING 	
	HCO/ CO	(Step 2) Verify CNMT RECIRC Fans Running:	
		<ul style="list-style-type: none"> All fans – RUNNING Charcoal filter dampers green status lights – EXTINGUISHED 	
	HCO/ CO	(Step 3) Check If Main Steamlines Should Be Isolated:	
		<ul style="list-style-type: none"> Any MSIV – OPEN Check CNMT pressure- LESS THAN 18 PSIG Ensure BOTH MSIVs closed and go to Step 4. 	
	HCO/ CO	(Step 4) Verify MFW Isolation:	
		<ul style="list-style-type: none"> MFW pumps – TRIPPED MFW Isolation valves – CLOSED S/G A, AOV-3995 S/G B, AOV-3994 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:	
		<ul style="list-style-type: none"> CI and CVI annunciators - LIT 	

Op Test No.: N10-1 Scenario # 1 Event # 5, 6, 7, & 8 Page 35 of 50Event Description: **Feed Line Rupture Inside Containment / A AFW Pump Fails after start/ TDAFW Pump overspeed trip/ Standby AFW fails to function**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> Annunciator A-26, CNMT ISOLATION 	
		<ul style="list-style-type: none"> Annunciator A-25, CNMT VENTILATION ISOLATION 	
		<ul style="list-style-type: none"> Verify CI and CVI valve status lights – BRIGHT 	
		<ul style="list-style-type: none"> CNMT RECIRC fan coolers SW outlet valve status lights - BRIGHT 	
		<ul style="list-style-type: none"> FCV-4561 	
		<ul style="list-style-type: none"> FCV-4562 	
		<ul style="list-style-type: none"> Letdown orifice valves - CLOSED 	
		<ul style="list-style-type: none"> AOV-200A 	
		<ul style="list-style-type: none"> AOV-200B 	
		<ul style="list-style-type: none"> AOV-202 	
	HCO/ CO	(Step 7) Check CCW System Status:	
		<ul style="list-style-type: none"> Verify CCW pump – AT LEAST ONE RUNNING 	
	HCO/ CO	(Step 8) Verify SI and RHR Pump Flow:	
		<ul style="list-style-type: none"> SI flow indicators – CHECK FOR FLOW 	
		<ul style="list-style-type: none"> RHR flow indicator – CHECK FOR FLOW 	
		(Step 7b RNO) IF RCS pressure less than 150 psig.....	NOTE: RCS Pressure is > 150 psig.
	HCO/ CO	(Step 9) Verify SI Pump and RHR Pump Emergency Alignment:	
		<ul style="list-style-type: none"> RHR pump discharge to Rx vessel deluge - OPEN 	
		<ul style="list-style-type: none"> MOV-852A 	

Op Test No.: N10-1 Scenario # 1 Event # 5, 6, 7, & 8 Page 36 of 50Event Description: **Feed Line Rupture Inside Containment / A AFW Pump Fails after start/ TDAFW Pump overspeed trip/ Standby AFW fails to function**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> MOV-852B 	
		<ul style="list-style-type: none"> Verify SI pump C – RUNNING 	
		<ul style="list-style-type: none"> Verify SI pump A - RUNNING 	
		<ul style="list-style-type: none"> Verify SI pump B - RUNNING 	
		<ul style="list-style-type: none"> Verify SI pump C discharge valves - OPEN 	
		<ul style="list-style-type: none"> MOV-871A 	
		<ul style="list-style-type: none"> MOV-871B 	
	HCO/ CO	(Step 10) Verify CREATS Actuation:	
		<ul style="list-style-type: none"> At least one damper in each flowpath - CLOSED 	
		<ul style="list-style-type: none"> Normal Supply Air 	
		<ul style="list-style-type: none"> Normal Return Air 	
		<ul style="list-style-type: none"> Lavatory Exhaust Air 	
		<ul style="list-style-type: none"> CREATS fans – BOTH RUNNING 	
E-0, REACTOR TRIP OR SAFETY INJECTION			
			Examiner following operator NOT performing ATT-27.0 continue HERE .
	HCO/ CO	(Step 7) Verify Both MDAFW Pumps Running	NOTE: The B AFW Pump is OOS, and the A AFW Pump will fail to START.
	CO	(Step 7 RNO) Manually start both MDAFW pumps. IF less than 2 MDAFW pumps are running, THEN manually open TDAFW pump steam supply valves. <ul style="list-style-type: none"> MOV-3505A MOV-3504A 	NOTE: The TDAFW Pump will trip on overspeed Booth Instructor: (Delay report on governor valve reset 5 minutes).

Op Test No.: N10-1 Scenario # 1 Event # 5, 6, 7, & 8 Page 37 of 50Event Description: **Feed Line Rupture Inside Containment / A AFW Pump Fails after start/ TDAFW Pump overspeed trip/ Standby AFW fails to function**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO/ CO	(Step 8) Verify AFW Valve Alignment:	
		<ul style="list-style-type: none"> AFW flow – INDICATED TO BOTH S/G(s) 	
		<ul style="list-style-type: none"> AFW flow from each MDAFW pump – LESS THAN 230 GPM 	
	HCO/ CO	(Step 8 RNO) Manually align valves as necessary	NOTE: There will be no AFW flow, and manually alignment of valves will NOT restore flow.
	HCO/ CO	(*Step 9) Monitor Heat Sink:	
		<ul style="list-style-type: none"> Check S/G narrow range level – GREATER THAN 7% [25% ADVERSE CNMT] in any S/G 	NOTE: Adverse Containment Numbers should be used, until Containment Pressure is less than 4 psig.
	HCO/ CO	(Step 9 RNO) Perform the following: Verify total AFW flow GREATER THAN 200 GPM 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 flow can NOT be established, THEN go to FR-H.1, RESPONSE TO LOSS OF SECONDARY HEAT SINK. Step 1.	
			NOTE: The CRS will go to FR-H.1.
FR-H.1, RESPONSE TO LOSS OF SECONDARY HEAT SINK			
	HCO	(Step 1) Check If Secondary Heat Sink Is Required: <ol style="list-style-type: none"> RCS pressure- GREATER THAN ANY NON-FAULTED S/G PRESSURE Check RCS cold leg temperature GREATER THAN 350°F 	

Op Test No.: N10-1 Scenario # 1 Event # 5, 6, 7, & 8 Page 38 of 50Event Description: **Feed Line Rupture Inside Containment / A AFW Pump Fails after start/ TDAFW Pump overspeed trip/ Standby AFW fails to function**

Time	Pos.	Expected Actions/Behavior	Comments
	CO	(*Step 2) Monitor Secondary Heat Sink: <ul style="list-style-type: none"> o Verify either S/G level- WIDE RANGE GREATER THAN 50 inches [100 inches adverse CNMT] o Verify PRZR pressure- LESS THAN 2335 PSIG 	
	HCO	(Step 3.a) Try to Establish AFW Flow To At Least One Intact S/G: <ul style="list-style-type: none"> a) Check Blowdown and Sample Valves-CLOSED 	
	HCO	(Step 3.a RNO) Place Blowdown and sample valve switches to CLOSE	
	CO	(Step 3.b) Verify 2 MDAFW Pump-AVAILABLE	
		(Step 3.b RNO) Perform the following: IF the TDAFW is available THEN IF SBAFW is available THEN go to Step 4.	NOTE: The TDAFW Pump is NOT available, however, the SBAFW System is available.
	HCO	(Step 4) Stop Both RCPs	
	HCO	(Step 5) Reset SI if Actuated	
	CO	(Step 6) Try and Establish SAFW Flow To At Least One Intact S/G: <ul style="list-style-type: none"> a) Perform the following: <ol style="list-style-type: none"> 1) Align SAFW system for operation (Refer to ATT-5.1, ATTACHMENT SAFW) 	
ATTACHMENT-5.1, ATTACHMENT SAFW			

Op Test No.: N10-1 Scenario # 1 Event # 5, 6, 7, & 8 Page 39 of 50Event Description: **Feed Line Rupture Inside Containment / A AFW Pump Fails after start/ TDAFW Pump overspeed trip/ Standby AFW fails to function**

Time	Pos.	Expected Action/Behavior	Comments
			NOTE: The CO will attempt to align Train B to feed the B SG due to the fault in A SG.
	CO	(Step B) Align SAFW Pump D to selected S/G as follows: 1) Ensure SI reset 2) Ensure the following valves open: <ul style="list-style-type: none"> • MOV-9701B, SAFW PUMP D DISCHARGE • MOV-4615, AUX BLDG SW ISOL VLVS • MOV-9704B, SAFW PUMP D ISOL VLV • MOV-9746, SAFW PMP D EMERG DISCH VLV 3) Open MOV-9629B, SAFW PUMP D SUCTION VLV 4) Verify at least 1 SW pump running 5a) To feed S/G B, go to step 6. 6) Restore SAFW flow as directed by procedure in effect.	
			NOTE: The CO will report that the D SBAFW Pump is ready to be started.
FR-H.1, RESPONSE TO LOSS OF SECONDARY HEAT SINK			
	CRS/ CO	(Step 6.a.2) Determine SAFW flow requirements per ATT-22.0, ATTACHMENT RESTORING FEED FLOW	NOTE: The CRS will direct the CO to use ATT-22.0 to determine the allowable rate of feed flow to the B SG.

Op Test No.: N10-1 Scenario # 1 Event # 5, 6, 7, & 8 Page 40 of 50Event Description: **Feed Line Rupture Inside Containment / A AFW Pump Fails after start/ TDAFW Pump overspeed trip/ Standby AFW fails to function****ATT-22.0, ATTACHMENT RESTORING FEED FLOW**

CO	<ol style="list-style-type: none"> 1. Initiate Feed flow as follows: <ol style="list-style-type: none"> a) Bleed and Feed initiated or required. b) IF feedwater flow to affected S/G greater than 50 gpm OR affected SG level greater than 50 inches (100 inches adverse CNMT). THEN fill as desired to restore narrow range greater than 7% (25% adverse CNMT) and go to step 2 of this attachment. 2. Check RCS Loop Hot Legs- BOTH HOT LEG TEMPERATURES LOWERING Return to step 1 of this attachment. 	NOTE: The CO will determine that the B SG can be filled as desired to restore Narrow Range Level to > 25%, when a Feedwater flow source is restored.

FR-H.1, RESPONSE TO LOSS OF SECONDARY HEAT SINK

CO	(Step 6.a.3) Start selected SAFW pump(s) <ol style="list-style-type: none"> a. IF greater than 215 gpm total SAFW flow can NOT be established, THEN go to Step 7 	NOTE: The D SBAFW Pump will fail to start, and the CRS will direct the CO to start the C SAFW pump per Section A of ATT-5.1.

ATTACHMENT-5.1, ATTACHMENT SAFW

CO	(Step A) Align SAFW Pump C to selected S/G as follows: <ol style="list-style-type: none"> 1) Ensure SI reset 2) Ensure the following valves open: <ul style="list-style-type: none"> • MOV-9701A, SAFW PUMP C DISCHARGE • MOV-4616, AUX BLDG SW ISOL VLVS • MOV-9704A, SAFW PUMP C ISOL VLV 3) Open MOV-9629A, SAFW PUMP C SUCTION VLV 	NOTE: MOV-9629A will NOT open . HCO/CO should inform CRS that suction valve to C SAFW pump cannot be opened.
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Op Test No.: N10-1 Scenario # 1 Event # 5, 6, 7, & 8 Page 41 of 50Event Description: **Feed Line Rupture Inside Containment / A AFW Pump Fails after start/ TDAFW Pump overspeed trip/ Standby AFW fails to function****FR-H.1, RESPONSE TO LOSS OF SECONDARY HEAT SINK**

	CRS	(Step 6.a RNO) If greater than 215 gpm total SAFW flow can NOT be established, THEN go to Step 7	
	CO	(Step 7) Try to Establish MFW Flow to at Least One S/G	
		<ul style="list-style-type: none"> Check any MFW pump AVAILABLE 	
		<ul style="list-style-type: none"> Check condensate system: 	
		<ul style="list-style-type: none"> Condensate pump- ANY RUNNING 	
		<ul style="list-style-type: none"> MFW pump suction pressure GREATER THAN 200 PSIG 	
	CO	<ul style="list-style-type: none"> Establish MFW flow: 	
		<ul style="list-style-type: none"> Check MFW pump discharge valves-CLOSED 	
		<ul style="list-style-type: none"> Verify MFW regulating or bypass valves- OPERABLE 	
		<ul style="list-style-type: none"> Depress MANUAL pushbuttons for A and B MFW regulating valve and bypass valve controllers AND adjust to 0% demand. 	
	CO	<ul style="list-style-type: none"> Open MFIV's for both S/G's: <ul style="list-style-type: none"> S/G A. AOV-3995 S/G B. AOV-3994 	NOTE: This will require that the operator open a valve that had previously failed open and had been closed per Att.27.0.
	CRS	<ul style="list-style-type: none"> Dispatch AO to restore MFW pump SW cooling 	NOTE: The CRS will dispatch an AO. Booth Instructor: as AO, acknowledge, and immediately reports that SW is verified.

Op Test No.: N10-1 Scenario # 1 Event # 5, 6, 7, & 8 Page 42 of 50Event Description: **Feed Line Rupture Inside Containment / A AFW Pump Fails after start/ TDAFW Pump overspeed trip/ Standby AFW fails to function**

	HCO	<ul style="list-style-type: none"> Verify S/G blowdown key switches in NORMAL 	NOTE: The CRS will dispatch an AO. Booth Instructor: as AO, acknowledge and immediately reports that switches are in NORMAL.
		<ul style="list-style-type: none"> Ensure Annunciator H-4, MAIN FEED PUMP OIL SYSTEM- EXTINGUISHED 	
		<ul style="list-style-type: none"> Close Condensate Bypass valve, AOV-3959 	
		<ul style="list-style-type: none"> Ensure Annunciator H-11, Feed PUMP SEAL WATER LO DIFF PRESS 15 PSI- EXTINGUISHED 	
		<ul style="list-style-type: none"> Ensure one MFW pump recirc valve- OPEN 	
		<ul style="list-style-type: none"> Start Selected MFW pump 	
		<ul style="list-style-type: none"> Open MFW pump discharge valve 	
		<ul style="list-style-type: none"> Open MFW regulating or bypass valves to control MFW flow per requirements of ATT-22.0, ATTACHMENT RESTORING FEED FLOW 	NOTE: The CO will determine that the B SG can be filled as desired to restore Narrow Range Level to > 25%, when a Feedwater flow source is restored.
	CRS	<ul style="list-style-type: none"> Go to Step 11 	
	CO	Step 11. Check S/G Levels: a) Narrow range level in at least one S/G- GREATER THAN 7% [25% adverse CNMT] IF feed flow verified and level rising in at Least one S/G, THEN maintain flow to Restore narrow range level greater than 7% [25% adverse CNMT]. b) Return to procedure and step in effect.	NOTE: The CRS will determine that a Secondary Heat Sink has been restored with the MFW System, and return to E-0, Step 9.

Op Test No.: N10-1 Scenario # 1 Event # 5, 6, 7, & 8 Page 43 of 50Event Description: **Feed Line Rupture Inside Containment / A AFW Pump Fails after start/ TDAFW Pump overspeed trip/ Standby AFW fails to function****CRITICAL TASK****(FR-H.1) Establish feedwater flow into at least one Steam Generator before RCS Bleed and Feed is required.**

Safety Significance: Failure to establish feedwater flow into at least one Steam Generator results in the crew having to rely upon the lower-priority action of having to initiate RCS Bleed and Feed to minimize the possibility of core uncover. Failure to perform this task, when able to do so, constitutes incorrect performance that leads to degradation of the RCS and/or fuel cladding fission product barriers.

E-0, REACTOR TRIP OR SAFETY INJECTION

	CO	(*Step 9) Monitor Heat Sink:	
		<ul style="list-style-type: none"> Check S/G narrow range level – GREATER THAN 7% [25% ADVERSE CNMT] in any S/G 	NOTE: Adverse Containment Numbers should be used, until Containment Pressure is less than 4 psig.
		<ul style="list-style-type: none"> Check S/G narrow range level BOTH S/G LESS THAN 50% 	
		<ul style="list-style-type: none"> 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:	
		<ul style="list-style-type: none"> Both MDAFW pumps – RUNNING 	NOTE: None of the AFW Pumps are running.
	CRS	(Step 10 RNO) Go to Step 11	
	HCO	(Step 11) Check CCW Flow to RCP Thermal Barriers:	
		<ul style="list-style-type: none"> Annunciator A-7, RCP 1A CCW RETURN HI TEMP OR LO FLOW EXTINGUISHED 	
		<ul style="list-style-type: none"> Annunciator A-15, RCOP 1B CCW RETURN HI TEMP OR LOW FLOW - EXTINGUISHED 	

Op Test No.: N10-1 Scenario # 1 Event # 5, 6, 7, & 8 Page 44 of 50Event Description: **Feed Line Rupture Inside Containment / A AFW Pump Fails after start/ TDAFW Pump overspeed trip/ Standby AFW fails to function**

	HCO	(*Step 12) Monitor RCS Tavg – STABLE AT OR TRENDING TO 547°F	
	HCO	(Step 12 RNO) If temperature less than 547°F and lowering, THEN perform the following:	
		<ul style="list-style-type: none"> Stop dumping steam. 	
		<ul style="list-style-type: none"> Ensure reheater steam supply valves are closed. 	
		<ul style="list-style-type: none"> IF cooldown continues, THEN control total feed flow between 20 gpm to 230 gpm until narrow range level greater than 7% [25% adverse CNMT] in at least one S/G. 	
		<ul style="list-style-type: none"> WHEN S/G level greater than 7% [25% adverse CNMT] in one S/G, THEN limit feed flow to that required to maintain level in at least one S/G. 	
		<ul style="list-style-type: none"> IF cooldown continues, THEN close both MSIVs. 	
	HCO	(Step 13) Check PRZR PORVs and Spray Valves:	
		<ul style="list-style-type: none"> PORVs – CLOSED 	
		<ul style="list-style-type: none"> Auxiliary Spray Valve (AOV-296) – CLOSED 	
		<ul style="list-style-type: none"> Check PRZR pressure – LESS THAN 2260 PSIG 	
		<ul style="list-style-type: none"> Normal PRZR spray valves - CLOSED 	
		<ul style="list-style-type: none"> PCV-431A 	
		<ul style="list-style-type: none"> PCV-431B 	
	HCO	(Step 14) Monitor RCP Trip Criteria:	
		<ul style="list-style-type: none"> RCP status – ANY RCP RUNNING 	NOTE: The RCPs were previously stopped.
	CRS	(Step 14c RNO) Go to Step 15.	

Op Test No.: N10-1 Scenario # 1 Event # 5, 6, 7, & 8 Page 45 of 50Event Description: **Feed Line Rupture Inside Containment / A AFW Pump Fails after start/ TDAFW Pump overspeed trip/ Standby AFW fails to function**

	CO	(Step 15) Check If S/G Secondary Side Is Intact: <ul style="list-style-type: none"> Pressure in both S/Gs- STABLE OR RISING Pressure in both S/Gs- GREATER THAN 110 PSIG 	NOTE: The A SG is depressurizing in n uncontrolled manner.
	CRS	(Step 15 RNO) IF any S/G pressure lowering in an uncontrolled manner OR completely depressurized, THEN go to E-2, FAULTED STEAM GENERATOR ISOLATION, Step 1.	
			NOTE: The CRS will go to E-2.
E-2, FAULTED STEAM GENERATOR ISOLATION			
	CO	(Step 1) Check MSIV of Faulted S/G(s) - CLOSED	
	CO	(Step 2) Check If Any S/G Secondary Side Is Intact: <ul style="list-style-type: none"> Check pressure in S/G A- STABLE OR RISING 	NOTE: The A SG is depressurized.
		OR	
		<ul style="list-style-type: none"> Check pressure in S/G B – STABLE OR RISING 	
	CO	(Step 3) Check Faulted S/G Status: <ul style="list-style-type: none"> Faulted S/G pressure – LOWERING IN AN UNCONTROLLED MANNER 	NOTE: The A SG is depressurized.
		OR	
		<ul style="list-style-type: none"> Faulted S/G – COMPLETELY DEPRESSURIZED 	
	CO	(Step 4) Isolate Feed Flow to Faulted S/G:	

Op Test No.: N10-1 Scenario # 1 Event # 5, 6, 7, & 8 Page 46 of 50Event Description: **Feed Line Rupture Inside Containment / A AFW Pump Fails after start/ TDAFW Pump overspeed trip/ Standby AFW fails to function**

		<ul style="list-style-type: none"> Close or verify closed the following valves: 	
		<ul style="list-style-type: none"> Faulted S/G MDAFW pump discharge valve 	
		<ul style="list-style-type: none"> S/G A, MOV-4007 	
		<ul style="list-style-type: none"> Faulted S/G MFW regulating valve and bypass valve - CLOSED 	
		<ul style="list-style-type: none"> S/G A, HCV-466 and HCV-480 	
		<ul style="list-style-type: none"> MFW isolation valves - CLOSED 	
		<ul style="list-style-type: none"> S/G A, AOV-3995 	
		<ul style="list-style-type: none"> MDAFW pump crosstie valves – BOTH CLOSED 	
		<ul style="list-style-type: none"> MOV-4000A 	
		<ul style="list-style-type: none"> MOV-4000B 	
	CO	<ul style="list-style-type: none"> Faulted S/G SAFW pump discharge valve 	
		<ul style="list-style-type: none"> S/G A, MOV-9701A 	
		<ul style="list-style-type: none"> Pull stop faulted S/G MDAFW pump 	
		<ul style="list-style-type: none"> Close faulted S/G TDAFW flow control valve 	
		<ul style="list-style-type: none"> S/G A, AOV-4297 	
	CO	(Step 5) Isolate Steam Flow From Faulted S/G:	
		<ul style="list-style-type: none"> Verify faulted S/G ARV – CLOSED 	
		<ul style="list-style-type: none"> S/G A, AOV-3411 	
		<ul style="list-style-type: none"> Close faulted S/G TDAFW pump steam supply valve and place in PULL STOP 	Critical Task #2
		<ul style="list-style-type: none"> S/G A, MOV-3505A 	
		<ul style="list-style-type: none"> Verify faulted S/G blowdown and sample valves – CLOSED 	
		<ul style="list-style-type: none"> S/G A, AOV-5738 and AOV-5735 	

Op Test No.: N10-1 Scenario # 1 Event # 5, 6, 7, & 8 Page 47 of 50Event Description: **Feed Line Rupture Inside Containment / A AFW Pump Fails after start/ TDAFW Pump overspeed trip/ Standby AFW fails to function****CRITICAL TASK****(E-2 A) Isolate the Faulted Steam Generator before transitioning out of E-2.**

Safety Significance: Failure to isolate a Faulted SG that can be isolated causes challenges to the Critical Safety Functions that would not otherwise occur. Failure to isolate flow could result in an unwarranted Orange or Red Path condition on RCS Integrity, Subcriticality (if cooldown is allowed to continue uncontrollably) and/or Containment (if the break is inside Containment).

		<ul style="list-style-type: none"> Dispatch AO to complete faulted S/G isolation (Refer to ATT-10.0, ATTACHMENT FAULTED S/G) 	NOTE: The CRS will dispatch an AO. Booth Instructor: as AO, acknowledge.
	CO	(*Step 6) Monitor Intact S/G Levels:	Examiner NOTE: Terminate the Exam at the discretion of the Lead Examiner.
		<ul style="list-style-type: none"> Narrow range level – GREATER THAN 7% [25% adverse CNMT] 	
		<ul style="list-style-type: none"> Control feed flow to maintain narrow range level between 17% [25% adverse CNMT] and 50% 	
	HCO	(Step 7) Check Secondary Radiation Levels - NORMAL	
		<ul style="list-style-type: none"> Steamline radiation monitor (R-31 and R-32) 	
		<ul style="list-style-type: none"> Air ejector radiation monitor (R-15) 	
		<ul style="list-style-type: none"> S/G blowdown radiation monitor (R-19) 	
		<ul style="list-style-type: none"> Request Chem Tech sample S/Gs for activity 	
	CO	(Step 8) Adjust Steam Dump to Minimize RCS Heatup:	
		<ul style="list-style-type: none"> Determine allowable intact S/G pressure using maximum hot leg temperature (Refer to FIG-7.0, FIGURE INTACT S/G PRESSURE) 	
		<ul style="list-style-type: none"> Check condenser steam dump available: 	NOTE: Steam Dump to the Condenser is NOT available.

Op Test No.: N10-1 Scenario # 1 Event # 5, 6, 7, & 8 Page 48 of 50Event Description: **Feed Line Rupture Inside Containment / A AFW Pump Fails after start/ TDAFW Pump overspeed trip/ Standby AFW fails to function**

	CO	(Step 8b RNO) Perform the following:	
		<ul style="list-style-type: none">Adjust intact S/G ARV to pressure determined from FIG-7.0, FIGURE INTACT S/G PRESSURE.	
	CRS	<ul style="list-style-type: none">Go to E-1, LOSS OF REACTOR OR SECONDARY COOLANT, Step 1.	
			NOTE: The CRS will go to E-1.
Terminate the Exam at the discretion of the Lead Examiner			

UNIT STATUS:

Power Level: 49% RCS [B] 1710 ppm BAST [B]: 14000 ppm

Power History: The Plant is at 49% power (BOL), for Core Burnup: 150 MWD/MTU four days.

INFORMATION NEEDED TO ASSUME TO SHIFT:

- The plant is at 49% power (BOL), with power level above P-9
- The plant power was reduced several days ago due to a malfunction on the A Main Feedwater Pump.
- Corrective Maintenance has been completed, and the MFW pump is ready to be restarted.
- RG&E Energy Control Center has requested that the electric plant be aligned to a 0/100 configuration on circuit 7T to allow the RG&E personnel to perform an insulator inspection on the 767 Line. Evolution should occur immediately after crew assumes the watch to adhere to planned work schedule.
- Per Chemistry direction, Normal Letdown is at 60 gpm.

The following equipment is Out-Of-Service:

- The B AFW Pump is OOS for Bearing Replacement. LCO 3.7.5 was entered 24 hours ago.

A-52.4

Equipment	Date	Time	Reason	Required Actions	Required Completion Date/Time	Required Action not met
B MDAFW Pump	_/_/10	0330	Bearing Replacement	ITS 3.7.5 Enter Condition B Required Action B.1: Restore MDAFW Train to OPERABLE Status in 7 days	6 days from today's date/time	ITS 3.7.5 Enter Condition G Required Action G.1: Be in Mode 3 in 6 hours AND Required Action G.2: Be in Mode 4 in 12 hours

PROGRAM: Ginna Operations Training
MODULE: 2010 Initial License Operator Training Class
TOPIC: NRC Simulator Exam
Scenario N10-1-2

REFERENCES:

1. P-17, Operations Control Room Operating Instructions
2. R-J-9, SAFEGUARDS BREAKER TRIP
3. Technical Specification 3.7.8, Service Water (SW) System
4. AR-A-2, VCT LEVEL 14 % 86
5. ER-CVCS.1, Reactor Makeup Control Malfunction
6. AR-G-25, MOTOR OFF CTR SECT PMPS EXCEPT MAIN & AUX FEED PMPS
7. AR-G-22, ADFCS SYSTEM TROUBLE
8. ER-INST.1, Reactor Protection Bistable Defeat After Instrumentation Loop Failure
9. AR-L-21, MAIN FEEDWATER PUMP OIL SUMP HI-LO LEVEL
10. AP-TURB.5, Rapid Downpower
11. AR-C-5, PPCS ROD SEQUENCE OR ROD DEVIATION/PPCS LTOP HI-LOW TEMPERATURE
12. AP-RCC.2, RCC/RPI Malfunction
13. Technical Specification 3.1.4, RCC/RPI Malfunction
14. Technical Specification 3.2.4, Quadrant Power Tilt Ratio
15. AR-PPCS-R47AR, SGTL INDICATED
16. AP-SG.1, Steam Generator Tube Leak
17. E-0, Reactor Trip and Safety Injection
18. E-3, Steam Generator Tube Rupture

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Facility Review: Pat Landers, Principal Ops Training Specialist, 4/14/10

Rev. 052610

Scenario Event Description

NRC Scenario 2

Facility: Ginna		Scenario No.: 2		Op Test No.: N10-1	
Examiners: _____		Operators: _____		(SRO)	
_____		_____		(RO)	
_____		_____		(BOP)	
Initial Conditions:		The Plant is at 100% power (EOL). Per the daily work schedule, CROI-7, Swapping Service Water Pumps, is to be performed this shift, swapping to A and D Service Water pumps.			
Turnover:		The following equipment is Out-Of-Service: The B SI Pump is OOS for Bearing Replacement.			
Event No.	Mal. No.	Event Type*	Event Description		
1	CLG09C CLG01D	N-BOP C(TS)-SRO	Swap Service Water Pumps/D Service Water Pump Trip		
2	CVC10A	I-RO I-SRO	VCT Level 112 Fails HIGH		
3	CVC12C	C-RO C-SRO	C Charging Pump trips		
4	TUR16B	I-BOP I-SRO	Turbine Impulse Pressure (PT-486) fails High		
5	A-FDW30 ROD03-G11	R-RO C-BOP C(TS)-SRO	A MFW Pump Oil Sump HI-LO Level/Rapid Downpower/Stuck Rod		
6	SGN04B	M-RO M-BOP M-SRO	SGTR		
7	RPS07A RPS07C RPS07D	C-RO	A SI Pump fails to start in AUTO C SI Pump fails to start in AUTO		
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor					

Scenario Event Description

NRC Scenario 2

Ginna 2010 NRC Scenario #2

The Plant is at 100% power (EOL). Per the daily work schedule, CROI-7, Swapping Service Water Pumps, is to be performed this shift, swapping to A and D Service Water pumps.

The following equipment is Out-Of-Service: The B SI Pump is OOS for Bearing Replacement.

Shortly after taking the watch, the operator will start the A Service Water pump and then stop the B Service Water Pump in accordance with P-17, Operations Control Room Operating Instructions. Afterwards, the operator will start the D Service Water pump and then stop the C Service Water Pump. When the operator stops the C Service Water Pump, its Discharge Check Valve will stick Open, and the pump shaft will rotate backwards. The operator will restart the C Service Water Pump, and the D Service Water Pump will trip. The operator will respond in accordance with AR-J-9, SAFEGUARDS BREAKER TRIP. The operator will address Technical Specification 3.7.8, Service Water (SW) System.

Subsequently, VCT Level transmitter LT-112 will fail High. The operator will respond in accordance with AR-A-2, VCT LEVEL 14 % 86, and enter ER-CVCS.1, Reactor Makeup Control Malfunction.

Following this, the C Charging Pump will trip. The operator will respond in accordance with AR-G-25, MOTOR OFF CTR SECT PMPS EXCEPT MAIN & AUX FEED PMPS and start the B Charging Pump.

Then, Main Turbine 1st Stage Pressure Instrument PT-486 will fail High. The operator will respond in accordance with AR-G-22, ADFCS SYSTEM TROUBLE, and enter ER-INST.1, Reactor Protection Bistable Defeat After Instrumentation Loop Failure.

After this, the MFW pump Oil Sump HI-LO level annunciator will alarm (L-21). The operator will respond in accordance with AR-L-21, MAIN FEEDWATER PUMP OIL SUMP HI-LO LEVEL, enter AP-TURB.5, Rapid Downpower, and remove the affected MFP from service. During the downpower Control Rod G-11 will stick in its original position. The operator will respond in accordance with AR-C-5, PPCS ROD SEQUENCE OR ROD DEVIATION/PPCS LTOP HI-LOW TEMPERATURE, and enter AP-RCC.2, RCC/RPI Malfunction. The operator will address Technical Specification 3.1.4, RCC/RPI Malfunction, and 3.2.4, Quadrant Power Tilt Ratio.

Shortly afterwards, a Steam Generator Tube Rupture will occur on the B Steam Generator. The operator will respond in accordance with AR-PPCS-R47AR, SGTI INDICATED, and enter AP-SG.1, Steam Generator Tube Leak. Ultimately, the leak will be determined to be beyond the capability of the Charging Pump capacity, and the Reactor will trip and Safety Injection will actuate. The operator will enter E-0, Reactor Trip or Safety Injection. On the Safety Injection, the A and C SI Pumps will fail to start in Auto, and the operator will be required to manually start the pumps.

The operator will transition from E-0 to E-3, Steam Generator Tube Rupture, isolate the flow into and out of the B Steam Generator, and then conduct a plant cooldown and depressurization.

The scenario will terminate at Step 36 of E-3, after the crew has controlled RCS pressure and charging flow to minimize primary-to-secondary leakage.

Scenario Event Description

NRC Scenario 2

Critical Tasks:

E-0I

Establish flow from at least one high-head ECCS Pump before transition out of E-0.

Safety Significance: Failure to start at least two SI Pumps, when they are available to start, results in a violation of the Facility License Condition. The FSAR analysis results are predicted on the assumption of a minimum ECCS flowrate, which includes two SI Pumps. Failure to perform this task will leave the plant in an unanalyzed condition.

E-3A

Isolate feedwater flow into and steam flow from the ruptured SG before a transition to ECA-3.1 occurs.

Safety Significance: Failure to isolate the ruptured SG causes a loss of ΔP between the ruptured SG and the intact SGs. Upon a loss of ΔP , the crew must transition to a contingency procedure that constitutes an incorrect performance that "necessitates the crew taking compensating action which complicates the event mitigation strategy." If the crew fails to isolate steam from the SG, or feed flow into the SG the ruptured SG pressure will tend to decrease to the same pressures as the intact SGs, requiring a transition to a contingency procedure, and delaying the stopping of RCS leakage into the SG.

E-3C

Depressurize the RCS to meet SI termination criteria before ruptured SG level reaches 100% Wide Range Level.

Safety Significance: Failure to stop the reactor coolant leakage into a ruptured SG by depressurizing the RCS (when it is possible to do so) needlessly complicates the mitigation of the event. It also constitutes a "significant reduction of Safety Margin beyond that irreparably introduced by the scenario. If RCS depressurization does NOT occur, the inventory in the secondary side of the ruptured SG will occur leading to water release through the SG PORV or Safety Valve, which could cause an unisolable fault in the ruptured SG.

Scenario Event Description

NRC Scenario 2

SIMULATOR OPERATOR INSTRUCTIONS

	Bench Mark	ACTIVITY	DESCRIPTION
<input type="checkbox"/>		Reset to Temp I/C 177 (NRC 2).	100% power EOL T=0: MALF SIS03B, Trip of 'B' SI pump (OOS contingency) MALF RPS07A, Autostart failure of A SI pump MALF RPS07C, Autostart failure of C SI pump on Bus 14 MALF RPS07D, Autostart failure of C SI pump on Bus 16 Set Trigger #30 = x06i188a==1 (C SWP CS to STOP) Insert MALF CLG09C, 100%, T-30 (SWP C Discharge Check Valve fails OPEN) Set Trigger #29 = x06i188b==1 (C SWP CS to CLOSE) Insert MALF CLG01D T-29 (SWP D Trip) MALF CVC10A, 100, 5 second Ramp, on T-1 MALF CVC12C, on T-2 MALF TUR16B, 1050, 0 Ramp, on T-3 ANN A-FDW30, ON, on T-4 MALF ROD03-G11, UNTRIPPABLE, on T-4 MALF SGN04B, 250, 0 Ramp, on T-5
<input type="checkbox"/>	Prior to Crew Briefing	RUN	<ul style="list-style-type: none"> • Hang PROTECT Tags on A/C SI Pump Control Switches • Hang Black Dot on MCB Annunciator J-25
<input type="checkbox"/>	Crew Briefing 1. Assign Crew Positions based on evaluation requirements 2. Review the Shift Turnover Information with the crew. 3. Provide the crew a copy of P-17, Operations Control Room Operating Instructions, Attachment 7, CROI-7 Swapping Service Water Pumps.		
<input type="checkbox"/>	T-0	Begin Familiarization Period	
<input type="checkbox"/>	At direction of examiner	Event 1 CLG09C (T-30) CLG01D (T-29)	Swap Service Water Pumps/D Service Water Pump Trip T-30 (C SWP CS to STOP), Discharge Check Valve sticks OPEN T-29 (C SWP CS to CLOSE), D SWP Trips
<input type="checkbox"/>	At direction of examiner	Event 2 Trigger #1 CVC10A	VCT Level 112 Fails HIGH 100% ramped at 5 seconds

Scenario Event Description
NRC Scenario 2

	Bench Mark	ACTIVITY	DESCRIPTION
<input type="checkbox"/>	At direction of examiner	Event 3 Trigger#2 CVC12C	C Charging Pump trips
<input type="checkbox"/>	At the completion of the CRS Brief OR at direction of examiner	Event 4 Trigger#3 TUR16B	Turbine Impulse Pressure (PT-486) fails High 1050, No Ramp
<input type="checkbox"/>	At direction of examiner	Event 5 Trigger #4 A-FDW30 ROD03-G11	A MFW Pump Oil Sump HI-LO Level/Rapid Downpower/Stuck Rod Alarm Severity = ON ROD03 Severity = UNTRIPPABLE
<input type="checkbox"/>	At direction of examiner	Event 6 Trigger #5 SGN04B	SGTR 250 gpm, No Ramp
<input type="checkbox"/>	Continued from Event 6	Event 7 T = 0 RPS07A RPS07C RPS07D	A SI Pump fails to start in AUTO C SI Pump fails to start in AUTO NOTE: These Malfunctions are inserted in the IC at T = 0.
<input type="checkbox"/>	Terminate the scenario upon direction of Lead Examiner		

Op Test No.: N10-1 Scenario # 2 Event # 1 Page 7 of 54Event Description: **Swap Service Water Pumps/D Service Water Pump Trip**

Shortly after taking the watch, the operator will start the A Service Water pump and then stop the B Service Water Pump in accordance with P-17, Operations Control Room Operating Instructions. Afterwards, the operator will start the D Service Water pump and then stop the C Service Water Pump. When the operator stops the C Service Water Pump, its Discharge Check Valve will stick Open, and the pump shaft will rotate backwards. The operator will restart the C Service Water Pump, and the D Service Water Pump will trip. The operator will respond in accordance with AR-J-9, SAFEGUARDS BREAKER TRIP. The operator will address Technical Specification 3.7.8, Service Water (SW) System.

Booth Operator Instructions: **NA**Indications Available: **NA**

Time	Pos.	Expected Action/Behavior	Comments
P-17, OPERATIONS CONTROL OPERATING INSTRUCTIONS ATTACHMENT 7, CROI SWAPPING SERVICE WATER PUMPS			
	CO	(Step 1.1.1) START A Service Water Pump	
		(Step 1.1.2) VERIFY motor heater for A Service Water Pump de-energized.	NOTE: The CO will contact the AO. SIM DRIVER: as AO, acknowledge.
		(Step 1.1.3) VERIFY Service Water header pressure on PI-2160 and PI-2161 Rises.	
	CO	(Step 1.4.1) STOP B Service Water Pump	
		(Step 1.4.2) VERIFY motor heater for B Service Water Pump energized.	NOTE: The CO will contact the AO. SIM DRIVER: as AO, acknowledge.

Op Test No.: N10-1 Scenario # 2 Event # 1 Page 8 of 54Event Description: **Swap Service Water Pumps/D Service Water Pump Trip**

Time	Pos.	Expected Action/Behavior	Comments
		(Step 1.4.3) VERIFY B Service Water Pump in NOT rotating.	NOTE: The CO will contact the AO. SIM DRIVER: as AO, confirm that B SW pump is NOT rotating.
		(Step 1.4.4) VERIFY Service Water header pressure on PI-2160 and PI-2161 lowers.	
	CO	(Step 1.7.1) START D Service Water Pump	
		(Step 1.7.2) VERIFY motor heater for D Service Water Pump de-energized.	NOTE: The CO will contact the AO. SIM DRIVER: as AO, acknowledge.(Not simulated)
		(Step 1.7.3) VERIFY Service Water header pressure on PI-2160 and PI-2161 rises.	
	CO	(Step 1.6.1) STOP C Service Water Pump	
		(Step 1.6.2) VERIFY motor heater for C Service Water Pump energized.	NOTE: The CO will contact the AO. SIM DRIVER: as AO, acknowledge.
		(Step 1.6.3) VERIFY C Service Water Pump in NOT rotating.	NOTE: The CO will contact the AO. SIM DRIVER: as AO, acknowledge, and report that the C SW Pump Shaft is rotating backwards .

Op Test No.: N10-1 Scenario # 2 Event # 1 Page 9 of 54Event Description: **Swap Service Water Pumps/D Service Water Pump Trip**

Time	Pos.	Expected Action/Behavior	Comments
		(Step 1.6.4) VERIFY Service Water header pressure on PI-2160 and PI-2161 lowers.	NOTE: The SW Header Pressure will be lower than expected, AND the CRS will direct re-start of the C SW Pump.
	CO	(Step 1.5.1) START C Service Water Pump	
		(Step 1.5.2) VERIFY motor heater for C Service Pump de-energized.	NOTE: The CO will contact the AO. SIM DRIVER: as AO, acknowledge.
		(Step 1.5.3) VERIFY Service Water header pressure on PI-2160 and PI-2161 Rises.	
Booth Operator Instructions: NONE Trigger-29 (C SWP control switch to CLOSE causes D SWP to Trip)			
Indications Available: <ul style="list-style-type: none"> • MCB Annunciator J-9, SAFEGUARDS BREAKER TRIP • D SWP Green and White Breaker Status lights are LIT 			
AR-J-9, SAFEGUARD BREAKER TRIP			
	CRS	IF alarm is due to loss of SW pump(s), THEN....	NOTE: Although the alarm is due to the D SW Pump tripping, there are three SW Pumps running, and the CRS will NOT address AP-SW.2.
	CRS	IF alarm is due to loss of RHR pump(s), THEN...	NOTE: The alarm is NOT due to a loss of an RHR Pump.

Op Test No.: N10-1 Scenario # 2 Event # 1 Page 10 of 54Event Description: **Swap Service Water Pumps/D Service Water Pump Trip**

Time	Pos.	Expected Actions/Behavior	Comments
	CO	Notify AO to perform the following:	NOTE: The CO will contact the AO. SIM DRIVER: as AO, acknowledge, and after a short delay report that the D SW Pump has tripped and that the shaft is stopped.
		<ul style="list-style-type: none"> Investigate Report findings back to Control Room 	
	CRS	IF SI is NOT required, THEN reset or re-closure of a breaker should not be attempted.	
	CRS	IF SI is required, THEN...	NOTE: SI is NOT required.
	CO	Notify Electricians.	NOTE: The CRS may notify the WCC. SIM DRIVER: as WCCS, acknowledge.
	CRS	Refer to ITS LCO for affected equipment.	NOTE: The CRS will evaluate Technical Specifications.
	CRS	Notify higher supervision.	NOTE: The CRS may restart the B SW Pump and shutdown the A SW Pump, returning the SW Pump alignment to the original configuration, to ensure one pump per Train is operating.
TECHNICAL SPECIFICATION 3.7.8, SERVICE WATER (SW) SYSTEM			
	CRS	LCO 3.7.8 four SW pumps and the SW loop header shall be OPERABLE.	

Op Test No.: N10-1 Scenario # 2 Event # 1 Page 11 of 54Event Description: **Swap Service Water Pumps/D Service Water Pump Trip**

Time	Pos.	Expected Actions/Behavior			Comments
	CRS	APPLICABILITY: MODES 1, 2, 3, and 4.			
		ACTIONS			
		CONDITION	REQUIRED ACTION	COMPLETION TIME	
		A. One SW pump inoperable.	A.1 Restore SW pump to OPERABLE status.	14 days	
At the discretion of the Lead Examiner move to Event #2.					

Op Test No.:	<u>N10-1</u>	Scenario #	<u>2</u>	Event #	<u>2</u>	Page	<u>12</u>	of	<u>54</u>
Event Description:		VCT Level 112 Fails HIGH							

Subsequently, VCT Level transmitter LT-112 will fail High. The operator will respond in accordance with AR-A-2, VCT LEVEL 14 % 86, and enter ER-CVCS.1, Reactor Makeup Control Malfunction.

Booth Operator Instructions: **Operate Trigger #1 (CVC10A (100% - 5 second ramp))**

Indications Available:

- PPCS Alarm: LO112 VOLUME CONTROL TANK LEVEL, HALM
- VCT Level (LI-112) indicates 100%
- LCV-112A indicates full Divert to Holdup Tank (HUT)
- VCT Pressure (PI-115) slowly lowers
- MCB Annunciator A-2, VCT LEVEL 14 % 86

Time	Pos.	Expected Action/Behavior	Comments
			NOTE: The CRS may ask the HCO/CO to address this ARP based on the PPCS Alarm. If NOT, VCT Level will be at 14% when the alarm occurs.
AR-A-2, VCT LEVEL 14 % 86			
	HCO	(Step 1) IF channel failure is indicated, THEN refer to Attachment 1 and Figure 1 to respond to VCT level transmitter failure.	NOTE: The HCO will address Attachment 1 of the ARP.
	HCO	(Step1) Notify AO to monitor LI-139 in valve alley, and report reading.	NOTE: The CRS/HCO will dispatch an AO. SIM DRIVER: as AO, acknowledge.
	HCO	(Step 2) Full divert to HUT will result from solenoid energizing at 83% level. Place LCV-112A in the "VCT" position.	NOTE: Action based upon direction found in A-503.1.
	HCO	(Step 3) Auto makeup will NOT occur.	

Op Test No.: N10-1 Scenario # 2 Event # 2 Page 13 of 54Event Description: **VCT Level 112 Fails HIGH**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> Inform AO to notify Control Room for manual makeup requirement when LI-139 indicates approximately 20%. 	NOTE: The CRS/HCO will dispatch an AO. SIM DRIVER: as AO, acknowledge, and monitor T_L139 in INSIGHT to report local LI-139 reading. Report initial level 21% to prompt initiation of manual makeup.
		<ul style="list-style-type: none"> Refer to ER-CVCS.1 REACTOR MAKEUP CONTROL MALFUNCTION, for manual guidance. 	
			NOTE: The CRS will go to ER-CVCS.1 or may use S-3.1, Boron Concentration Control, Attachment 8, Manual Makeup
ER-CVCS.1, REACTOR MAKEUP CONTROL MALFUNCTION			
	HCO	(Step 4.2.1) IF the Reactor Makeup System does not respond in AUTO, THEN perform the following:	
	HCO	(Step 4.2.1.1) DETERMINE the amount of BA required to be blended with 100 gallons of RMW to produce a boron concentration to RCS boron concentration.	NOTE: The HCO will determine the BA to add to be ≈1 gallon.
	HCO	(Step 4.2.1.2) SET the BA integrator for the desired amount of BA.	
	HCO	(Step 4.2.1.3) PLACE the RMW Mode selector switch to BORATE.	
	HCO	(Step 4.2.1.4) ADJUST boric acid flow control valve HCV-110A to the maximum flowrate in AUTO.	NOTE: If using Att.8, CROI uses "desired rate."
	HCO	(Step 4.2.1.5) TURN the RMW Control switch to START and verify flow on the recorder.	

Op Test No.: N10-1 Scenario # 2 Event # 2 Page 14 of 54Event Description: **VCT Level 112 Fails HIGH**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 4.2.1.6) WHEN the desired amount of Boric Acid has been added, ENSURE the Boration stops.	
	HCO	(Step 4.2.1.7) WHEN the boration stops, PLACE the RMW Mode selector switch to DILUTE.	
	HCO	(Step 4.2.1.8) SET RMW flow control valve, CHV-111 to the desired flow rate, in AUTO.	
	HCO	(Step 4.2.1.9) SET the reactor makeup water integrator for 100 gallons.	NOTE: If using Att.8, CROI allows adding as much water as is desired.
	HCO	(Step 4.2.1.10) TURN the RMW Control switch to START and verify flow on recorder.	
	HCO	(Step 4.2.1.11) REPEAT as necessary to maintain a satisfactory water level in the Volume Control Tank until the malfunctioning equipment is repaired.	SIM DRIVER NOTE: The AO monitoring VCT will need to remain throughout the remainder of the scenario.
At the discretion of the Lead Examiner move to Event #3.			

Op Test No.: N10-1 Scenario # 2 Event # 3 Page 15 of 54Event Description: **C Charging Pump trips**

Following this, the C Charging Pump will trip. The operator will respond in accordance with AR-G-25, MOTOR OFF CTR SECT PMPS EXCEPT MAIN & AUX FEED PMPS and start the B Charging Pump.

Booth Operator Instructions: Operate Trigger #2 (CVC12C)

Indications Available:

- MCB Annunciator G-25, MOTOR OFF CENTER SECTION PUMPS/EXCEPT MAIN AND AUX FEEDPUMPS
- C Charging Pump Green and White Breaker Status Lights are LIT
- Charging Line Flow (FI-128C) reads low (12 gpm)
- RCP Seal Flow (FI-115A/116A) reads low (5 gpm)
- RCP Seal Labyrinth DPs read low (15-20 " H2O)

Time	Pos.	Expected Actions/Behavior	Comments
AR-G-25, MOTOR OFF CTR SECT PMPS EXCEPT MAIN & AUX FEED PMPS			
	HCO	(Step1) Determine which pump has tripped (white light at switch will be lit).	
	HCO	(Step 2) VERIFY standby pump Auto starts OR start standby pump, IF required.	NOTE: The HCO will start the B Charging Pump, and may take MANUAL control of Charging Pump speed.
	HCO	(Step 3) IF all charging pump(s) tripped, THEN.....	NOTE: All Charging Pumps are NOT tripped.
	CRS	(Step 4) Notify Electrician.	NOTE: The CRS may notify the WCC/Electricians. SIM DRIVER: as WCCS/Electricians, acknowledge.
	CRS	(Step 5) Refer to ITS LCO 3.7.5.	NOTE: 3.7.5 is AFW, and N/A to this event

Op Test No.:	N10-1	Scenario #	2	Event #	3	Page	16	of	54
Event Description:		C Charging Pump trips							

Time	Pos.	Expected Actions/Behavior	Comments
	CRS	(Step 6) Refer to TRM TR 3.1.1 and 3.1.2.	NOTE: With 2 charging pumps, requirements are met, but crew may submit A-52.12 for tracking
At the discretion of the Lead Examiner move to Event #4.			

Op Test No.: N10-1 Scenario # 2 Event # 4 Page 17 of 54Event Description: **Turbine Impulse Pressure (PT-486) fails High**

Then, Main Turbine 1st Stage Pressure Instrument PT-486 will fail High. The operator will respond in accordance with AR-G-22, ADFCS SYSTEM TROUBLE, and enter ER-INST.1, Reactor Protection Bistable Defeat After Instrumentation Loop Failure.

Booth Operator Instructions: Operate Trigger #3 (TUR16B (1050))

Indications Available:

- PI-486 indicates upscale high
- MCB Annunciator G-22; ADFCS SYSTEM TROUBLE
- PPCS Annunciator RP27Q – First Stage Turb Press Channel Dev

Time	Pos.	Expected Actions/Behavior	Comments
AR-G-22, ADFCS SYSTEM TROUBLE			
	CO/ AO	(Step 4.1) CHECK ADFACS EMMI monitor (Relay Room) for the cause of the failure by performing the following:	NOTE: The CRS will dispatch an AO. SIM DRIVER: as AO, acknowledge, and report that alarm is "PT486 Out of Range"
	CO/ AO	(Step 4.1.6) NOTIFY I&C of the ADFACS alarm.	
	CRS	REFER TO ER-INST.1 REACTOR PROTECTION BISTABLE DEFEAT AFTER INSTRUMENTATION LOOP FAILURE for action to defeat failed instrument(s).	
			NOTE: The CRS will go to ER-INST.1.
ER-INST.1, REACTOR PROTECTION BISTABLE DEFEAT AFTER INSTRUMENTATION LOOP FAILURE			
	HCO/ CO	(Step 4.1) IDENTIFY the failed instrument channel by observation for the bistable status light board, MCB annunciators, and the MCB metering indication.	NOTE: PT-486 indicator has failed HIGH

Op Test No.:	N10-1	Scenario #	2	Event #	4	Page	18	of	54
Event Description:		Turbine Impulse Pressure (PT-486) fails High							

Time	Pos.	Expected Action/Behavior	Comments
	CRS	(Step 4.2) WHEN a failed instrument loop and/or channel has been identified, THEN refer to the appropriate section of this procedure listed below:	NOTE: The CRS will refer to Section 4.12.
	CO	(Step 4.12.1) IF turbine first stage pressure channel PT-485 fails, THEN...	NOTE: PT-485 has NOT failed.
	CO	(Step 4.12.2) IF turbine first stage pressure channel PT-486 fails, THEN the following should be considered:	
	CO	(Step 4.12.2.1) For a PT-486 failure LOW,...	NOTE: PT-486 has NOT failed Low.
	CO	(Step 4.12.2.2) For a PT-486 failure HIGH, Steam Dump will NOT arm on load rejection. THEREFORE, the Steam Dump Mode Selector Switch should be placed in MANUAL, THEN returned to NORMAL (This will ARM Steam Dump and allow dump operation).	NOTE: The CO will arm the Steam Dumps.
			Examiner NOTE: At the discretion of the Lead Examiner move to Event #5 .
	CO	(Step 4.12.2.3) Refer to Attachment FIRST STAGE PRESSURE PI-486, BLUE, to defeat channel AND to restore AUTOMATIC control.	
			NOTE: The CRS will hand this off to the CO, and the CO will coordinate with the HCO to complete the Attachment.
ER-INST.1, REACTOR PROTECTION BISTABLE DEFEAT AFTER INSTRUMENTATION LOOP FAILURE BLUE CHANNEL ATTACHMENT FIRST STAGE PRESSURE PI-486			

Op Test No.: N10-1 Scenario # 2 Event # 4 Page 19 of 54Event Description: **Turbine Impulse Pressure (PT-486) fails High**

Time	Pos.	Expected Action/Behavior	Comments
	CO	(Step 1) In the (BLUE) B-1 PROTECTION CHANNEL 3 rack, PLACE the following bistable proving switch to DEFEAT (UP) AND verify the proving light status is correct:	
		<ul style="list-style-type: none"> 486 CHANNEL 3 	
		<ul style="list-style-type: none"> TURBINE PWR TRIP 	NOTE: Light is OFF
	HCO/ CO	(Step 2) VERIFY the AMSAC TRIPPED status light (MCB) is extinguished.	
	CO/ AO	(Step 3) VERIFY the TL 400 bistable indicating light (FOX 3-RELAY ROOM) is extinguished.	NOTE: The CO will dispatch an AO. SIM DRIVER: as AO, acknowledge.
	CO/ AO	(Step 4) IF > 35% power, THEN verify AMSAC feedwater Flow bistables are reset by observing the following: (FOX 3 RELAY ROOM)	NOTE: The CO will contact the AO. SIM DRIVER: as AO, acknowledge.
		TL/466 TRIP STATUS LIGHT EXTINGUISHED	
		TL/467 TRIP STATUS LIGHT EXTINGUISHED	
		TL/476 TRIP STATUS LIGHT EXTINGUISHED	
		TL/477 TRIP STATUS LIGHT EXTINGUISHED	
	CO/ AO	(Step 5) PLACE switch TPS/486 (FOX 3-RELAY ROOM) to the TRIP position AND verify TL/486 TRIP STATUS light is lit.	NOTE: The CO will contact the AO. SIM DRIVER: as AO, acknowledge, and use REM-TUR23 = TRIP.
	CO/ HCO	(Step 6) IF > 40% power, THEN verify the AMSAC AUTO BLOCK status light (MCB) is extinguished.	

Op Test No.: N10-1 Scenario # 2 Event # 4 Page 20 of 54Event Description: **Turbine Impulse Pressure (PT-486) fails High**

Time	Pos.	Expected Actions/Behavior	Comments
	CO	(Step 7) Delete the computer point from the PPCS by performing the following:	
		a. On the "Sub/Delete/Restore" display	
		b. Select Point ID P0486	
		c. Turn "OFF" scan processing	
		d. Select "Change"	
	HCO/ CO	GO TO step 4.15.	
	HCO	(Step 4.15.1) IF necessary, verify an operable channel is selected for the affected recorder.	N/A
		(Step 4.15.2) VERIFY the following systems in AUTO if desired:	
	HCO	• Rod control	
	CO	• Turbine EH control	
	HCO	• PRZR Pressure control	
		• HC 431K	
		• PRZR spray valves	
		• PRZR heaters	
	HCO	• PRZR level control	
	CO	• Steam Dump (unless 1 st stage pressure failed)	NOTE: The CO has previously armed the Steam Dumps.
		• MFW control	
		• S/G Atmos Relief Vlv Control	
	CRS	(Step 4.15.3) Notifications to the following people will be made by the Shift Manager:	NOTE: The CRS may notify the SM/STA. SIM DRIVER: as SM/STA, acknowledge.
		• Operations Supervision	

Op Test No.: N10-1 Scenario # 2 Event # 4 Page 21 of 54

Event Description: **Turbine Impulse Pressure (PT-486) fails High**

Time	Pos	Expected Action/Behavior	Comments
		<ul style="list-style-type: none"> STA 	
	CRS	(Step 4.15.4) During normal working hours, Maintenance personnel shall be notified immediately of the problem.	NOTE: The CRS may notify the WCC. SIM DRIVER: as WCCS, acknowledge.
	CRS	(Step 4.15.5) During back shifts Maintenance personnel will be called in. HOWEVER, the Shift Manager may defer calling people in, IF repairs may be deferred to the next working day.	
At the discretion of the Lead Examiner move to Event #5.			

Op Test No.:	N10-1	Scenario #	2	Event #	5	Page	22	of	54
Event Description: A MFW Pump Oil Sump HI-LO Level/Rapid Downpower/Stuck Rod									

After this, the MFW pump Oil Sump HI-LO level annunciator will alarm (L-21). The operator will respond in accordance with AR-L-21, MAIN FEEDWATER PUMP OIL SUMP HI-LO LEVEL, enter AP-TURB.5, Rapid Downpower, and remove the affected MFP from service. During the downpower Control Rod G-11 will stick in its original position. The operator will respond in accordance with AR-C-5, PPCS ROD SEQUENCE OR ROD DEVIATION/PPCS LTOP HI-LOW TEMPERATURE, and enter AP-RCC.2, RCC/RPI Malfunction. The operator will address Technical Specification 3.1.4, RCC/RPI Malfunction, and 3.2.4, Quadrant Power Tilt Ratio.

Booth Operator Instructions: Operate Trigger #4 (A-FDW30 (ON); ROD03-G11)

Indications Available:

- MCB Annunciator L-21, MAIN FEEDWATER PUMP OIL SUMP HI-LO LEVEL

Time	Pos.	Expected Action/Behavior	Comments
AR-L-21, MAIN FEEDWATER PUMP OIL SUMP HI-LO LEVEL			
	CO	(Step 1) Notify AO to check MFW pumps oil sumps for Hi/Low levels.	NOTE: The CRS will dispatch an AO. SIM DRIVER: as AO, acknowledge.
			SIM DRIVER: as AO, report that the sight glass level is ~1" from the top of the sight glass on B MFW pump, and higher than he observed on his last round ~4 hrs ago. The level on A MFW pump oil sump is normal.
	CO	(Step 2) AFTER Hi/Low level is determined, THEN perform the applicable substep:	
		a. IF level is low, THEN...	NOTE: The Level is NOT Low.
		b. IF level is high, THEN perform the following:	NOTE: The CRS will direct the AO to take these actions. SIM DRIVER: as AO, acknowledge, and report that during the collection of the sample for Chemistry, sample is milky in appearance, indicating the presence of water.

Op Test No.: N10-1 Scenario # 2 Event # 5 Page 23 of 54Event Description: **A MFW Pump Oil Sump HI-LO Level/Rapid Downpower/Stuck Rod**

Time	Pos.	Expected Actions/Behavior	Comments
		I. Obtain an oil sample for Chemistry.	
		II. Drain oil to clear the alarm.	
		III. Monitor for additional inleakage.	
		IV. IF inleakage is apparent, THEN reduce power to approximately 50% RTP per 0-5.1 OR AP-TURB.5 AND remove the pump from service.	
			NOTE: The CRS will go to AP-TURB.5.
AP-TURB.5, RAPID LOAD REDUCTION			
			NOTE: The CRS/CO may notify the CENG Generation Dispatch . SIM DRIVER: as CENG Generation Dispatch , acknowledge. NOTE: The CRS may notify the RG&E ECC . SIM DRIVER: as RG&E ECC , acknowledge.
	HCO	(Step 1) Initiate Load Reduction	NOTE: CRS conducts load reduction briefing
		a. Verify rods in AUTO	
	CO	b. 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.	
		3. Reduce the setter to the desired load.	
		4. Depress the Go button.	NOTE: The CO will start the load decrease.

Op Test No.: N10-1 Scenario # 2 Event # 5 Page 24 of 54Event Description: **A MFW Pump Oil Sump HI-LO Level/Rapid Downpower/Stuck Rod**

Time	Pos	Expected Actions/Behavior	Comments
	HCO	c. Initiate boration at the rate determined in OPG-REACTIVITY-CALC.	The HCO will initiate a boration.
		d. Place PRZR backup heaters switch to ON.	
	HCO	(Step 2) Monitor RCS Tavg	
		• 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)	
	HCO	(Step 4) Monitor PRZR Pressure TRENDING to 2235 PSIG IN AUTO	
	CO	(Step 5) Monitor MFW Regulating Valves – RESTORING S/G LEVEL TO 52% in AUTO	
	HCO	(Step 6) Monitor PRZR Level – TRENDING TO PROGRAM IN AUTO CONTROL	
			<p>NOTE: Stuck rod causes C-5 alarm</p> <p>NOTE: The CRS should NOT stop the load decrease, but at the same time address the Stuck Rod.</p> <p>NOTE: The crew may enter AP-RCC.2 directly.</p>
AR-C-5, PPCS ROD SEQUENCE OR ROD DEVIATION/PPCS LTOP HI-LOW TEMPERATURE			
	HCO	IF rods are out of sequence, THEN...	NOTE: The rods are NOT moving out of sequence.
	HCO	IF rod position deviation, THEN:	

Op Test No.: N10-1 Scenario # 2 Event # 5 Page 25 of 54Event Description: **A MFW Pump Oil Sump HI-LO Level/Rapid Downpower/Stuck Rod**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> GO TO AP-RCC.2, RCC/RPI MALFUNCTION 	
		<ul style="list-style-type: none"> Check PPCS for operability (S-26.1, COMPUTER PROGRAM CHECK) 	
		<ul style="list-style-type: none"> Check PPCS for Fail Over 	
		<ul style="list-style-type: none"> Refer to ITS 3.1.4 and ITS 3.1.6. 	
			NOTE: The CRS will go to AP-RCC.2.
AP-RCC.2, RCC/RPI MALFUNCTION			
	HCO	(Step 1) Place Rods to Manual	NOTE: The CRS may direct that the Rods be taken to Manual or left in Auto based on the indications of one Stuck Rod during a rapid downpower.
	HCO	(Step 2) Check Dropped Rod Indication:	
		<ul style="list-style-type: none"> Annunciator E-28, POWER RANGE ROD DROP ROD STOP 5%/5 SECONDS- EXTINGUISHED 	
		<ul style="list-style-type: none"> Annunciator C-14, ROD BOTTOM ROD STOP – EXTINGUISHED. 	
	HCO	(Step 3) Check Tavg – STABLE AT PROGRAM. Perform the following:	NOTE: The CRS may direct that the Turbine be taken to Manual or left in Auto based on the indications of one Stuck Rod during a rapid downpower.
		a. Place EH control in MANUAL.	
		b. Manually adjust turbine load to match Tavg and Tref.	
	CO	(Step 4) Verify Annunciator G-15, STEAM DUMP ARMED – EXTINGUISHED.	NOTE: G-15 is LIT due to previous action taken during PT-486 failure

Op Test No.: N10-1 Scenario # 2 Event # 5 Page 26 of 54Event Description: **A MFW Pump Oil Sump HI-LO Level/Rapid Downpower/Stuck Rod**

Time	Pos.	Expected Actions/Behavior	Comments
	CO	(Step 5) Check Main Generator Load – GREATER THAN 15 MW.	
	HCO	(Step 6) Establish Stable Plant Conditions	
		a. Tavg – TRENDING TO TREF	
		b. PRZR pressure – TRENDING TO 2235 PSIG IN AUTO	
		c. PRZR level – TRENDING TO PROGRAM IN AUTO CONTROL	
	CO	d. MFW Regulating Valves – RESTORING S/G LEVEL TO 52% IN AUTO	
	CRS	(Step 7) Check Control Rod Alignment:	
		a. Verify all rods in affected group – WITHIN ± 12 STEPS OF ASSOCIATED GROUP STEP COUNTER	NOTE: Rod G-11 is not aligned
	CRS	(Step 7 RNO) Refer to ITS Section 3.1.4.	
			Examiner NOTE: At the discretion of the Lead Examiner move to Event #6-8 .
	CRS	(Step 8) Check QPTR – LESS THAN 1.02	
	CRS	(Step 8 RNO) Refer to ITS Section 3.2.4.	
	CRS	(Step 9) Verify All Individual Rod Position Indication Per Bank Operable.	
		<ul style="list-style-type: none"> MRPI system – NO MRPI SYSTEM ALARMS 	
		<ul style="list-style-type: none"> MRPI system – NO KNOWN PROBLEMS WITH MRPI SYSTEM THAT COULD RENDER ROD POSITION INDICATION INOPERABLE. 	

Op Test No.: N10-1 Scenario # 2 Event # 5 Page 27 of 54Event Description: **A MFW Pump Oil Sump HI-LO Level/Rapid Downpower/Stuck Rod**

Time	Pos.	Expected Actions/Behavior			Comments
	CRS	(Step 9 RNO) Perform the following			
		a. Refer to ITS section 3.1.7 for required action.			
		b. Consult Reactor Engineer and plant staff to evaluated MRPI.			
		c. Go to Step 11			
					NOTE: The CRS will evaluate technical Specifications.
TECHNICAL SPECIFICATION 3.1.4, ROD GROUP ALIGNMENTS					
	CRS	LCO 3.1.4 All shutdown and control rods shall be OPERABLE, with all individual indicated rod positions within 12 steps of their group step counter demand position.			
	CRS	APPLICABILITY: MODES 1, MODE 2 with $K_{eff} \geq 1.0$.			
	CRS	ACTIONS			
		CONDITION	REQUIRED ACTION	COMPLETION TIME	

Op Test No.: N10-1 Scenario # 2 Event # 5 Page 28 of 54Event Description: **A MFW Pump Oil Sump HI-LO Level/Rapid Downpower/Stuck Rod**

Time	Pos	Expected Actions/Behavior		Comments
		B. One rod not within alignment limits.	B.1.1 Verify SDM is within the limits specified in the COLR. OR B.1.2 Initiate boration to restore SDM to within limit. AND B.2 Reduce THERMAL POWER to ≤75% RTP. AND B.3 Verify SDM is within the limits specified in the COLR AND B.4 Perform SR 3.2.1.1 AND B.5 Perform SR 3.2.2.1 AND B.6 Re-evalutate safety analyses and confirm results remain valid for duration of operation under these conditions.	1 hour 1 hour 2 hours Once per 12 hours 72 hours 72 hours 5 days
TECHNICAL SPECIFICATION 3.2.4, QUADRANT POWER TILT RATIO				
	CRS	LCO 3.2.4 QUADRANT POWER TILT RATION (QPTR)		

Op Test No.:	N10-1	Scenario #	2	Event #	5	Page	29	of	54
Event Description:		A MFW Pump Oil Sump HI-LO Level/Rapid Downpower/Stuck Rod							

Time	Pos.	Expected Actions/Behavior	Comments
	CRS	APPLICABILITY: MODES 1 with THERMAL POWER > 50% RTP	
		ACTIONS	
		<div style="display: flex; justify-content: space-between;"> <div style="width: 30%;">CONDITION</div> <div style="width: 30%;">REQUIRED ACTION</div> <div style="width: 30%;">COMPLETION TIME</div> </div>	

Op Test No.: N10-1 Scenario # 2 Event # 5 Page 30 of 54Event Description: **A MFW Pump Oil Sump HI-LO Level/Rapid Downpower/Stuck Rod**

Time	Pos.	Expected Actions/Behavior			Comments
		A. QPTR not with limit.	<p>A.1 Reduce THERMAL POWER \geq 3% from RTP for each 1% of QPTR . 1.00.</p> <p>AND</p> <p>A.2 Determine QPTR</p> <p>AND</p> <p>A.3 Perform SR 3.2.1.1, SR, 3.2.1.2 and SR 3.2.2.1</p> <p>AND</p> <p>A.4 Reevaluate safety analyses and confirm results remain valid for the duration of operation under this condition.</p> <p>AND</p> <p>A.5 Normalize excore detectors to restore QPTR to within limit.</p> <p>AND</p> <p>A.6 Perform SR 3.2.1.1, SR 3.2.1.2 and SR 3.2.2.1</p>	<p>2 hours after each QPTR determination</p> <p>Once per 12 hours</p> <p>24 hours after achieving equilibrium conditions from a THERMAL POWER reduction per Required Action A. 1</p> <p>AND</p> <p>Once per 7 days thereafter</p> <p>Prior to increasing THERMAL POWER above the limit of Required Action A.1</p> <p>Prior to increasing THERMAL POWER above the limit of Required Action A.1</p> <p>Within 24 hours after achieving equilibrium conditions at RTP not to exceed 48 hours after increasing THERMAL POWER above the limit of Required Action a.1</p>	
At the discretion of the Lead Examiner move to Events #6-8.					

Op Test No.: N10-1 Scenario # 2 Event # 6 & 7 Page 31 of 54Event Description: **SGTR/ A SI Pump fails to start in AUTO/ C SI Pump fails to start in AUTO**

Shortly afterwards, a Steam Generator Tube Rupture will occur 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. Ultimately, the leak will be determined to be beyond the capability of the Charging Pump capacity, and the Reactor will trip and Safety Injection will actuate. The operator will enter E-0, Reactor Trip or Safety Injection. On the Safety Injection, the A and C SI Pumps will fail to start in Auto, and the operator will be required to manually start the pumps. The operator will transition from E-0 to E-3, Steam Generator Tube Rupture, isolate the flow into and out of the B Steam Generator, and then conduct a plant cooldown and depressurization. The scenario will terminate at Step 36 of E-3, after the crew has controlled RCS pressure and charging flow to minimize primary-to-secondary leakage.

Booth Operator Instructions: Operate Trigger #5 (SGN04B (250 gpm))

Indications Available:

- Pri1 PPCS Alarm: R47AR, SGTL Indicated
- MCB Annunciator F-10, PRESSURIZER LO PRESS 2205RMS PROCESS MONITOR HIGH ACTIVITY
- R-15 Air Ejector Monitor reads upscale high
- Pressurizer Level starts to decrease

Time	Pos.	Expected Action/Behavior	Comments
			NOTE: The crew may enter AP-SG.1 directly.
AR-PPCS-R47AR, SGTL INDICATED			
	CRS	(Step 1) If SG Tube Rupture is evident, THEN go to E-0, REACTOR TRIP OR SAFETY INJECTION.	
	CO	(Step 2) Trend PPCS point R-47G.	
	CO	(Step 3) Notify RP/Chemistry to IMMEDIATELY obtain and analyze an air ejector grab sample per CH-360, Primary to Secondary Leakage Sampling and Measurement.	NOTE: The CRS may notify RP/Chemistry. SIM DRIVER: as RP/Chemistry, acknowledge.

Op Test No.: N10-1 Scenario # 2 Event # 6 & 7 Page 32 of 54Event Description: **SGTR/ A SI Pump fails to start in AUTO/ C SI Pump fails to start in AUTO**

Time	Pos.	Expected Action/Behavior	Comments
	CO	(Step 4) Determine the estimated leak rate using PPCS point R47G or the R-47 Local Reading and the Conversion Table (Curve Book #06-004).	
	CRS	(Step 5) IF any condition below is met, THEN go to AP-SG.1, STEAM GENERATOR TUBE LEAK:	
		• R47G (PPCS) greater than 5 gpd,	
		OR	
		• R-47 greater than or equal to 5 gpd (per conversion table),	
		OR	
		• Air ejector grab sample indicates SG tube leakage \geq 5 gpd,	
		OR	
		• SM discretion.	
			NOTE: The CRS will go to AP-SG.1.
AP-SG.1, STEAM GENERATOR TUBE LEAK			
	HCO	(Step 1) Monitor PRZR Level – STABLE AT PROGRAM LEVEL	
	HCO	(Step 1 RNO) IF PRZR level lowering, THEN start additional charging pumps and raise speed as necessary to stabilize PRZR level.	
	HCO	(Step 1 RNO) If PRZR level continues to lower, THEN close letdown isolation, A0V-427 and excess letdown A0V-310.	
	CRS	(Step 1 RNO) IF available charging pumps are running at maximum speed with letdown isolated, AND PRZR level is lowering, THEN trip the reactor and go to E-0, REACTOR TRIP OR SAFETY INJECTION.	

Op Test No.: N10-1 Scenario # 2 Event # 6 & 7 Page 33 of 54Event Description: **SGTR/ A SI Pump fails to start in AUTO/ C SI Pump fails to start in AUTO**

Time	Pos.	Expected Action/Behavior	Comments
			NOTE: The CRS will go to E-0.
E-0, REACTOR TRIP OR SAFETY INJECTION			
	HCO	(Step 1) Verify Reactor Trip:	
		<ul style="list-style-type: none"> At least one train of reactor trip breakers – OPEN 	
		<ul style="list-style-type: none"> Neutron flux - LOWERING 	
		<ul style="list-style-type: none"> MRPI indicates – ALL CONTROL AND SHUTDOWN RODS ON BOTTOM 	NOTE: G-11 rod is NOT on the bottom.
	CO	(Step 2) Verify turbine Stop Valves – CLOSED	
	CO	(Step 3) Verify Both Trains of AC Emergency Busses Energized to at Least 440 VOLTS:	
		<ul style="list-style-type: none"> Bus 14 and Bus 18 	
		<ul style="list-style-type: none"> Bus 16 and Bus 17 	
	HCO	(Step 4) Check if SI is Actuated:	NOTE: CRS will likely direct manual SI/CI if not yet auto actuated
		<ul style="list-style-type: none"> Any SI Annunciator – LIT 	
		<ul style="list-style-type: none"> SI sequencing – BOTH TRAINS STARTED. 	
	HCO	(Step 5) Verify CNMT Spray Not Required:	
		<ul style="list-style-type: none"> Annunciator A-27, CNMT SPRAY – EXTINGUISHED 	
		<ul style="list-style-type: none"> CNMT pressure – LESS THAN 28 PSIG 	
	HCO	(Step 6) Direct Operator to Perform ATT-27.0, ATTACHMENT AUTOMATIC ACTION VERIFICATION.	

Op Test No.: N10-1 Scenario # 2 Event # 6 & 7 Page 34 of 54Event Description: **SGTR/ A SI Pump fails to start in AUTO/ C SI Pump fails to start in AUTO**

Time	Phase	Expected Action/Behavior	Comments
			<p>NOTE: The CRS will hand off ATT-27.0 to either the HCO or the CO, and continue with the other operator in E-0.</p> <p>Examiner following operator performing ATT-27.0 continue below.</p> <p>Examiner following operator NOT performing ATT-27.0 continue at page 36.</p>
E-0, REACTOR TRIP OR SAFETY INJECTION, ATTACHMENT 27.0, ATTACHMENT AUTOMATIC ACTION VERIFICATION			
	HCO/ CO	(Step 1) Verify SI and RHR Pumps Running:	
		<ul style="list-style-type: none"> All SI pumps – RUNNING 	NOTE: There are NO SI Pumps running.
		(Step 1.a RNO) Manually start SI pumps	
CRITICAL TASK			
(E-0I) Establish flow from at least one high-head ECCS Pump before transition out of E-0.			
<p>Safety Significance: Failure to start at least two SI Pumps, when they are available to start, results in a violation of the Facility License Condition. The FSAR analysis results are predicted on the assumption of a minimum ECCS flowrate, which includes two SI Pumps. Failure to perform this task will leave the plant in an unanalyzed condition.</p>			
	HCO/ CO	<ul style="list-style-type: none"> Both RHR pumps – RUNNING 	
	HCO/ CO	(Step 2) Verify CNMT RECIRC Fans Running:	
		<ul style="list-style-type: none"> All fans – RUNNING 	
		<ul style="list-style-type: none"> Charcoal filter dampers green status lights – EXTINGUISHED 	

Op Test No.: N10-1 Scenario # 2 Event # 6 & 7 Page 35 of 54Event Description: **SGTR/ A SI Pump fails to start in AUTO/ C SI Pump fails to start in AUTO**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO/ CO	(Step 3) Check If Main Steamlines Should Be Isolated:	
		<ul style="list-style-type: none"> Any MSIV – OPEN 	
		<ul style="list-style-type: none"> Check CNMT pressure – LESS THAN 18 PSIG 	
		<ul style="list-style-type: none"> Check if ANY main steamlines should be isolated: 	
		<ul style="list-style-type: none"> Low Tavg (545°F) AND high steam flow (0.5×10^6 lb/hr) from either S/G 	
		<ul style="list-style-type: none"> High-High steam flow (4.4×10^6 lb/hr) from either S/G 	
	HCO/ CO	(Step 3a RNO) Go to Step 4.	
	HCO/ CO	(Step 4) Verify MFW Isolation:	
		<ul style="list-style-type: none"> MFW pumps – TRIPPED 	
		<ul style="list-style-type: none"> MFW Isolation valves – CLOSED 	
		<ul style="list-style-type: none"> S/G A, AOV-3995 	
		<ul style="list-style-type: none"> S/G B, AOV-3994 	
		<ul style="list-style-type: none"> 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:	
		<ul style="list-style-type: none"> CI and CVI annunciators 	
		<ul style="list-style-type: none"> Annunciator A-26, CNMT ISOLATION 	

Op Test No.: N10-1 Scenario # 2 Event # 6 & 7 Page 36 of 54Event Description: **SGTR/ A SI Pump fails to start in AUTO/ C SI Pump fails to start in AUTO**

Time	Pos.	Expected Action/Behavior	Comments
		<ul style="list-style-type: none"> Annunciator A-25, CNMT VENTILATION ISOLATION 	
		<ul style="list-style-type: none"> Verify CI and CVI valve status lights – BRIGHT 	
		<ul style="list-style-type: none"> CNMT RECIRC fan coolers SW outlet valve status lights - BRIGHT 	
		<ul style="list-style-type: none"> FCV-4561 	
		<ul style="list-style-type: none"> FCV-4562 	
		<ul style="list-style-type: none"> Letdown orifice valves - CLOSED 	
		<ul style="list-style-type: none"> AOV-200A 	
		<ul style="list-style-type: none"> AOV-200B 	
		<ul style="list-style-type: none"> AOV-202 	
	HCO/ CO	(Step 7) Check CCW System Status:	
		<ul style="list-style-type: none"> Verify CCW pump – AT LEAST ONE RUNNING 	
	HCO/ CO	(Step 8) Verify SI and RHR Pump Flow:	
		<ul style="list-style-type: none"> SI flow indicators – CHECK FOR FLOW 	
	HCO/ CO	(Step 8a RNO) IF RCS pressure less than 1350 psig	
		<ul style="list-style-type: none"> RHR flow indicator – CHECK FOR FLOW 	
	HCO/ CO	(Step 8b RNO) IF RCS pressure less than 150 psig	
	HCO/ CO	(Step 9) Verify SI Pump and RHR Pump Emergency Alignment:	
		<ul style="list-style-type: none"> RHR pump discharge to Rx vessel deluge - OPEN 	
		<ul style="list-style-type: none"> MOV-852A 	

Op Test No.: N10-1 Scenario # 2 Event # 6 & 7 Page 37 of 54Event Description: **SGTR/ A SI Pump fails to start in AUTO/ C SI Pump fails to start in AUTO**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> MOV-852B 	
		<ul style="list-style-type: none"> Verify SI pump C – RUNNING 	
		<ul style="list-style-type: none"> Verify SI pump A - RUNNING 	
		<ul style="list-style-type: none"> Verify SI pump B - RUNNING 	
		(Step 9d RNO) Perform the following:	
		(Step 9d.1 RNO) Ensure SI pumps A and C running. IF either pump NOT running THEN..	
		(Step 9d.2 RNO) Ensure SI pump C aligned to discharge line B:	
		<ul style="list-style-type: none"> MOV-871B open 	
		<ul style="list-style-type: none"> MOV-871A closed 	
		(Step 9d.3 RNO) Go to Step 10	
	HCO/ CO	(Step 10) Verify CREATS Actuation:	
		<ul style="list-style-type: none"> At least one damper in each flowpath - CLOSED 	
		<ul style="list-style-type: none"> Normal Supply Air 	
		<ul style="list-style-type: none"> Normal Return Air 	
		<ul style="list-style-type: none"> Lavatory Exhaust Air 	
		<ul style="list-style-type: none"> CREATS fans – BOTH RUNNING 	
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	
	CO/ HCO	(Step 8) Verify AFW Valve Alignment:	
		<ul style="list-style-type: none"> AFW flow –INDICATED TO BOTH S/G(s) 	

Op Test No.: N10-1 Scenario # 2 Event # 6 & 7 Page 38 of 54Event Description: **SGTR/ A SI Pump fails to start in AUTO/ C SI Pump fails to start in AUTO**

Time	Pos	Expected Action/Behavior	Comments
		<ul style="list-style-type: none"> AFW flow from each MDAFW pump- LESS THAN 230 GPM 	
	CO/ HCO	(Step 9) Monitor Heat Sink:	
		<ul style="list-style-type: none"> Check S/G narrow range level – GREATER THAN 7% [25% ADVERSE CNMT] in any S/G 	
		<ul style="list-style-type: none"> Check S/G narrow range level BOTH S/G LESS THAN 50% 	
		<ul style="list-style-type: none"> 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:	
		<ul style="list-style-type: none"> Both MDAFW pumps – RUNNING 	
		<ul style="list-style-type: none"> PULL STOP TDAFW pump steam supply valves 	
		<ul style="list-style-type: none"> MOV-3504A 	
		<ul style="list-style-type: none"> MOV-3505A 	
	CO/ HCO	(Step 11) Check CCW Flow to RCP Thermal Barriers:	
		<ul style="list-style-type: none"> Annunciator A-7, RCP 1A CCW RETURN HI TEMP OR LO FLOW EXTINGUISHED 	
		<ul style="list-style-type: none"> Annunciator A-15, RCP 1B CCW RETURN HI TEMP OR LOW FLOW - EXTINGUISHED 	
	CO/ HCO	(Step 12) Monitor RCS Tavg – STABLE AT OR TRENDING TO 547°F	

Op Test No.: N10-1 Scenario # 2 Event # 6 & 7 Page 39 of 54Event Description: **SGTR/ A SI Pump fails to start in AUTO/ C SI Pump fails to start in AUTO**

Time	Pos.	Expected Actions/Behavior	Comments
		(Step 12 RNO) If temperature less than 547°F and lowering, THEN perform the following:	
		<ul style="list-style-type: none"> Stop dumping steam. 	
		<ul style="list-style-type: none"> Ensure reheater steam supply valves are closed. 	
		<ul style="list-style-type: none"> IF cooldown continues, THEN 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. 	
		<ul style="list-style-type: none"> WHEN S/G level greater than 7% [25% adverse CNMT] in one S/G, THEN limit feed flow to that required to maintain level in at least one S/G. 	
		<ul style="list-style-type: none"> IF cooldown continues, THEN close both MSIVs. 	
	CO/ HCO	(Step 13) Check PRZR PORVs and Spray Valves:	
		<ul style="list-style-type: none"> PORVs – CLOSED 	
		<ul style="list-style-type: none"> Auxiliary Spray valves (AOV-296) – CLOSED 	
		<ul style="list-style-type: none"> Check PRZR pressure – LESS THAN 2260 PSIG 	
		<ul style="list-style-type: none"> Normal PRZR spray valves - CLOSED 	
		<ul style="list-style-type: none"> PCV-431A 	
		<ul style="list-style-type: none"> PCV-431B 	
	CO/ HCO	(Step 14) Monitor RCP Trip Criteria:	
		<ul style="list-style-type: none"> RCP status – ANY RCP RUNNING 	
		<ul style="list-style-type: none"> SI pumps – AT LEAST TWO RUNNING 	
		<ul style="list-style-type: none"> RCS pressure minus maximum S/G pressure – LESS THAN 210 psi [240 psi adverse CNMT] 	NOTE: Criteria should NOT be met

Op Test No.: N10-1 Scenario # 2 Event # 6 & 7 Page 40 of 54Event Description: **SGTR/ A SI Pump fails to start in AUTO/ C SI Pump fails to start in AUTO**

Time	Pos.	Expected Actions/Behavior	Comments
	CRS	(Step 14c RNO) Go to Step 15.	
	CO	(Step 15) Check If S/G Secondary Side Is Intact:	
		<ul style="list-style-type: none"> Pressure in both S/Gs – STABLE OR RISING 	
		<ul style="list-style-type: none"> Pressure in both S/Gs – GREATER THAN 110 PSIG 	
	CO	(Step 16) Check if S/G Tubes Are Intact:	
		<ul style="list-style-type: none"> Air ejector radiation monitors (R-15, R-47, R-48) - NORMAL 	
		(Step 16 RNO) Go to E-3, STEAM GENERATOR TUBE RUPTURE, Step 1.	
			NOTE: The CRS will go to E-3.
E-3, STEAM GENERATOR TUBE RUPTURE			
	HCO	(*Step 1) Monitor RCP Trip Criteria:	
		<ul style="list-style-type: none"> RCP status –ANY RCP RUNNING 	NOTE: Both RCPs are RUNNING.
		<ul style="list-style-type: none"> SI pumps –AT LEAST TWO RUNNING 	
		<ul style="list-style-type: none"> RCS pressure minus maximum S/G pressure – LESS THAN 210 psi [240 psi adverse CNMT] 	NOTE: Trip criteria is NOT met.
		(Step 1c RNO) Go to step 2	
	CO	(Step 2) Identify Ruptured S/G(s):	
		<ul style="list-style-type: none"> Unexpected rise in either S/G narrow range level 	NOTE: The CO reports that there is an unexpected increase in B SG Level.
		OR	

Op Test No.: N10-1 Scenario # 2 Event # 6 & 7 Page 41 of 54Event Description: **SGTR/ A SI Pump fails to start in AUTO/ C SI Pump fails to start in AUTO**

Time	Pos.	Expected Action/Behavior	Comments
		<ul style="list-style-type: none"> High radiation indication on main steamline radiation monitor 	
		<ul style="list-style-type: none"> R-31 for S/G A 	
		<ul style="list-style-type: none"> R-32 for S/G B 	
		OR	
		<ul style="list-style-type: none"> RP reports high radiation from S/G activity sample. 	
	CO	(Step 3) Isolate Flow From Ruptured S/G(s):	NOTE: B is ruptured
		<ul style="list-style-type: none"> Adjust ruptured S/G ARV controller to 1050 psig in AUTO 	
		<ul style="list-style-type: none"> Check ruptured S/G ARV - CLOSED 	
		<ul style="list-style-type: none"> Close ruptured S/G TDAFW pump steam supply valve and place in PULL STOP 	
		<ul style="list-style-type: none"> S/G A, M0V-3505A 	
		<ul style="list-style-type: none"> S.G B, M0V-3504A 	
		<ul style="list-style-type: none"> Verify ruptured S/G blowdown valve - CLOSED 	
		<ul style="list-style-type: none"> S/G B, A0V-5737 	
	CO	(Step 4) Complete Ruptured S/G Isolation:	
		<ul style="list-style-type: none"> Close ruptured S/G MSIV –RUPTURED S/G MSIV CLOSED 	
		<ul style="list-style-type: none"> Dispatch AO to complete ruptured S/G isolation (Refer to ATT-16.0, ATTACHMENT RUPTURED S/G part A) 	NOTE: The CRS will dispatch an AO. SIM DRIVER: as AO, acknowledge, and perform all remotes associated with ATT-16.0 (Schedule File ATT16SGBpartA.sch).
	CO	(Step 5) Check Ruptured S/G Level:	
		<ul style="list-style-type: none"> Narrow range level – GREATER THAN 7% [25% adverse CNMT] 	

Op Test No.: N10-1 Scenario # 2 Event # 6 & 7 Page 42 of 54Event Description: **SGTR/ A SI Pump fails to start in AUTO/ C SI Pump fails to start in AUTO**

Time	Pos	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> Close MDAFW pump discharge valve to ruptured S/G 	
		<ul style="list-style-type: none"> S/G B, M0V-4008 	
		<ul style="list-style-type: none"> Pull stop MDAFW pump for ruptured S/G 	
		<ul style="list-style-type: none"> Close TDAFW pump flow control valve to ruptured S/G 	
		<ul style="list-style-type: none"> S/G B, A0V-4298 	
		<ul style="list-style-type: none"> Verify MDAFW pump crosstie valves - CLOSED 	
		<ul style="list-style-type: none"> M0V-4000A 	
		<ul style="list-style-type: none"> M0V-4000B 	
	CO	(Step 6) Verify Ruptured S/G Isolated:	
		<ul style="list-style-type: none"> Check ruptured MSIV - CLOSED 	
		<ul style="list-style-type: none"> Check TDAFW pump steam supply from ruptured S/G - ISOLATED 	
		<ul style="list-style-type: none"> Ruptured S/G pressure – GREATER THAN 300 PSIG 	
CRITICAL TASK			
(E-3A) Isolate feedwater flow into and steam flow from the ruptured SG before a transition to ECA-3.1 occurs.			
<p>Safety Significance: Failure to isolate the ruptured SG causes a loss of ΔP between the ruptured SG and the intact SGs. Upon a loss of ΔP, the crew must transition to a contingency procedure that constitutes an incorrect performance that "necessitates the crew taking compensating action which complicates the event mitigation strategy." If the crew fails to isolate steam from the SG, or feed flow into the SG the ruptured SG pressure will tend to decrease to the same pressures as the intact SGs, requiring a transition to a contingency procedure, and delaying the stopping of RCS leakage into the SG.</p>			
	CO	(Step 7) Establish Condenser Steam Dump Pressure Control:	
		<ul style="list-style-type: none"> Verify condenser available 	
		<ul style="list-style-type: none"> Intact S/G MSIV - OPEN 	

Op Test No.: N10-1 Scenario # 2 Event # 6 & 7 Page 43 of 54Event Description: **SGTR/ A SI Pump fails to start in AUTO/ C SI Pump fails to start in AUTO**

Time	Pos.	Expected Action/Behavior	Comments
		<ul style="list-style-type: none"> Annunciator G-15, STEAM DUMP ARMED - LIT 	
		<ul style="list-style-type: none"> Adjust condenser steam dump controller HC-484 to maintain intact S/G pressure and verify in AUTO 	
		<ul style="list-style-type: none"> Place steam dump mode selector switch to MANUAL 	
	HCO	(Step 8) Reset SI	
	CO	(Step 9) Initiate RCS Cooldown:	
		(Step 9a) Determine required core exit temperature from below table: <ul style="list-style-type: none"> 1000-1049 psig (512°F) 1050-1099 psig (519°F) 	
	CO	(Step 9b) IF ruptured S/G MSIV closed, THEN initiate dumping steam to condenser from intact S/G at maximum rate.	
	CO	(Step 9c) Core exit T/Cs – LESS THAN REQUIRED TEMPERATURE	
	CO	(Step 9c RNO) Continue with Step 10. WHEN core exit T/Cs less than required, THEN do Step 9d.	NOTE: The CO will initiate a cooldown, and proceed on in the procedure. When the target temperature of 512°F is reached perform Step 9.d.
		(Step 9d) Stop RCS cooldown and stabilize core exit T/Cs less than required temperature	
	CO	(Step 10) Monitor Intact S/G Level:	
		<ul style="list-style-type: none"> Narrow range level – GREATER THAN 7% [25% adverse CNMT] 	

Op Test No.: N10-1 Scenario # 2 Event # 6 & 7 Page 44 of 54Event Description: **SGTR/ A SI Pump fails to start in AUTO/ C SI Pump fails to start in AUTO**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> Control feed flow to maintain narrow range level between 17% [25% adverse CNMT] and 50% 	
	HCO	(Step 11) Monitor PRZR PORVs and Block Valves:	
		<ul style="list-style-type: none"> Power to PORV block valves - AVAILABLE 	
		<ul style="list-style-type: none"> PORVs - CLOSED 	
		<ul style="list-style-type: none"> Block valves – AT LEAST ONE OPEN 	
	HCO	(Step 12) Reset CI:	
		<ul style="list-style-type: none"> Depress CI reset push button 	
		<ul style="list-style-type: none"> Verify annunciator A-26, CNMT ISOLATION - EXTINGUISHED 	
	CO	(Step 13) Monitor AC Bus Power:	
		<ul style="list-style-type: none"> Verify Safeguards Busses 14, 16, 17 and 18 – GREATER THAN 440 VOLTS 	
		<ul style="list-style-type: none"> Verify All AC Busses – BUSSES ENERGIZED BY OFFSITE POWER 	
		<ul style="list-style-type: none"> Normal feed breakers to all 480 volt busses - CLOSED 	
		<ul style="list-style-type: none"> Emergency D/G output breakers - OPEN 	NOTE: Both EDGs are running unloaded.
	CO	(Step 14) Verify Adequate SW Flow:	
		<ul style="list-style-type: none"> Check at least two SW pumps - RUNNING 	
		<ul style="list-style-type: none"> Dispatch AO to establish normal shutdown alignment (Refer to ATT-17.0, ATTACHMENT SD-1) 	NOTE: The CRS will dispatch an AO. SIM DRIVER: as AO, acknowledge. Run SCHEDULE file SD-1.sch

Op Test No.: N10-1 Scenario # 2 Event # 6 & 7 Page 45 of 54Event Description: **SGTR/ A SI Pump fails to start in AUTO/ C SI Pump fails to start in AUTO**

Time	POB	Expected Response/Action	Comments
	HCO/ CO	(Step 15) Establish IA to SNMT:	
		<ul style="list-style-type: none"> Verify non-safeguards busses energized <ul style="list-style-type: none"> Bus 13 normal feed - CLOSED 	
		OR	
		<ul style="list-style-type: none"> Bus 15 normal feed - CLOSED 	
		<ul style="list-style-type: none"> Verify turbine building SW isolation valves - OPEN <ul style="list-style-type: none"> M0V-4613 and M0V-4670 M0V-46134 and M0V-4664 	
		<ul style="list-style-type: none"> Verify adequate air compressors - RUNNING 	
		<ul style="list-style-type: none"> Check IA supply: <ul style="list-style-type: none"> Pressure – GREATER THAN 60 PSIG Pressure – STABLE OR RISING 	
		<ul style="list-style-type: none"> Reset both trains of XY relays for IA to CNMT A0V-5392 	
		<ul style="list-style-type: none"> Verify IA to CNMT A0V-5392 - OPEN 	
	HCO	(Step 16) Check if RHR pumps Should Be Stopped:	
		<ul style="list-style-type: none"> Check RCS pressure – GREATER THAN 300 psig [350 psig adverse CNMT] 	
		<ul style="list-style-type: none"> Stop RHR pumps and place both in AUTO 	NOTE: The HCO will STOP both RHR Pumps.
	HCO	(Step 17) Establish Charging Flow:	
		<ul style="list-style-type: none"> Charging pumps – ANY RUNNING 	
		(Step 17a RNO) Perform the following:	
		<ul style="list-style-type: none"> IF CCW flow is lost to any RCP thermal barrier OR any RCP #1 seal outlet temperature greater than 235°F, THEN... 	NOTE: CCW flow has NOT been lost to the Thermal Barriers, nor is any RCP #1 seal outlet temperature greater than 235°F.

Op Test No.: N10-1 Scenario # 2 Event # 6 & 7 Page 46 of 54Event Description: **SGTR/ A SI Pump fails to start in AUTO/ C SI Pump fails to start in AUTO**

Time	Pos.	Expected Action/Behavior	Comments
		<ul style="list-style-type: none"> Ensure HCV-142 demand at 0% 	
		<ul style="list-style-type: none"> Align charging pump suction to RWST: 	
		<ul style="list-style-type: none"> LCV-112B - OPEN 	
		<ul style="list-style-type: none"> LCV-112C - CLOSED 	
		<ul style="list-style-type: none"> Start charging pumps and establish 75 gpm total charging flow 	NOTE: C Charging Pump has tripped previously .
		<ul style="list-style-type: none"> Charging line flow 	
		<ul style="list-style-type: none"> Seal injection 	
	CO	(Step 18) Check if RCS Cooldown Should be Stopped:	
		<ul style="list-style-type: none"> Core exit T/Cs LESS THAN REQUIRED TEMPERATURE 	
		<ul style="list-style-type: none"> Stop RCS cooldown 	NOTE: If NOT previously done, when the target temperature of 512°F or 519°F has been reached.
		<ul style="list-style-type: none"> Stabilize core exit T/Cs – LESS THAN REQUIRED TEMPERATURE 	
	CO	(Step 19) Check Ruptured S/G Pressure – STABLE OR RISING	
	CO	(Step 20) Check RCS Subcooling based On Core Exit T/Cs – GREATER THAN 20°F USING FIG-1.0, FIGURE MIN SUBCOOLING	
	HCO	(Step 21) Depressurize RCS To Minimize Break Flow and Refill PRZR:	
		<ul style="list-style-type: none"> Check the following: 	
		<ul style="list-style-type: none"> <ul style="list-style-type: none"> Ruptured S/G level- LESS THAN 90% [80% adverse CNMT] 	
		<ul style="list-style-type: none"> <ul style="list-style-type: none"> Any RCP - RUNNING 	
		<ul style="list-style-type: none"> <ul style="list-style-type: none"> IA to CNMT - AVAILABLE 	

Op Test No.: N10-1 Scenario # 2 Event # 6 & 7 Page 47 of 54Event Description: **SGTR/ A SI Pump fails to start in AUTO/ C SI Pump fails to start in AUTO**

Time	Pos.	Expected Action/Behavior	Comments
		<ul style="list-style-type: none"> Spray PRZR with maximum available spray until ANY of the following conditions satisfied: <ul style="list-style-type: none"> PRZR level – GREATER THAN 75% [65% adverse CNMT] 	
		OR	
		<ul style="list-style-type: none"> RCS pressure – LESS THAN SATURATION USING FIG-1.0, FIGURE MIN SUBCOOLING 	
		OR	
		<ul style="list-style-type: none"> BOTH of the following: <ul style="list-style-type: none"> RCS pressure – LESS THAN RUPTURED S/G PRESSURE 	
		<ul style="list-style-type: none"> PRZR level – GREATER THAN 10% [30% adverse CNMT] 	
		<ul style="list-style-type: none"> Close normal PRZR spray valves: <ul style="list-style-type: none"> Adjust normal spray valve controller to 0% DEMAND Verify PRZR spray valves- CLOSED <ul style="list-style-type: none"> PCV-431A PCV-431B 	
		<ul style="list-style-type: none"> Verify auxiliary spray valve (A0V-296) - CLOSED 	
	CRS	<ul style="list-style-type: none"> GO to Step 24. 	
	CO	(Step 24) Check if SI Flow Should Be Terminated:	
		<ul style="list-style-type: none"> RCS subcooling based on core exit T/Cs – GREATER THAN 0°F USING FIG-1.0, FIGURE MIN SUBCOOLING 	
	CO	<ul style="list-style-type: none"> Secondary heat sink: <ul style="list-style-type: none"> Total feed flow to S/G(s) – GREATER THAN 200 GPM AVAILABLE 	

Op Test No.:	N10-1	Scenario #	2	Event #	6 & 7	Page	48	of	54
Event Description:		SGTR/ A SI Pump fails to start in AUTO/ C SI Pump fails to start in AUTO							

Time	Pos	Expected Action/Indicator	Comments
		OR	
		<ul style="list-style-type: none"> Narrow range level in at least one intact S/G – GREATER THAN 7% [25% adverse CNMT] 	
	HCO	<ul style="list-style-type: none"> RCS pressure – STABLE OR RISING 	
	HCO	<ul style="list-style-type: none"> PRZR level – GREATER THAN 10% [30% adverse CNMT] 	
CRITICAL TASK			
(E-3C) Depressurize the RCS to meet SI termination criteria before ruptured SG level reaches 100% Wide Range Level.			
<p>Safety Significance: Failure to stop the reactor coolant leakage into a ruptured SG by depressurizing the RCS (when it is possible to do so) needlessly complicates the mitigation of the event. It also constitutes a “significant reduction of Safety Margin beyond that irreparably introduced by the scenario. If RCS depressurization does NOT occur, the inventory in the secondary side of the ruptured SG will occur leading to water release through the SG PORV or Safety Valve, which could cause an unisolable fault in the ruptured SG.</p>			
	HCO	(Step 25) Stop SI Pumps and Place In AUTO	NOTE: The HCO will STOP the A & C Pumps.
	HCO	(Step 26) Establish Required Charging Line Flow:	
		<ul style="list-style-type: none"> Charging pumps – ANY RUNNING 	
		<ul style="list-style-type: none"> Establish 22 gpm charging line flow 	NOTE: The HCO will establish 22 gpm of Charging flow.
	HCO	(Step 27) Monitor SI Reinitiation Criteria	
		<ul style="list-style-type: none"> RCS subcooling based on core exit T/Cs - GREATER THAN 0°F USING FIG 1.0, FIGURE MIN SUBCOOLING 	
		<ul style="list-style-type: none"> PRZR level – GREATER THAN 10% [30% adverse CNMT] 	

Op Test No.: N10-1 Scenario # 2 Event # 6 & 7 Page 49 of 54Event Description: **SGTR/ A SI Pump fails to start in AUTO/ C SI Pump fails to start in AUTO**

Time	Pos	Expected Response/Action	Comments
	HCO	(Step 28) Check if SI ACCUMs Should Be Isolated:	
		<ul style="list-style-type: none"> Check the following: 	
		<ul style="list-style-type: none"> RCS subcooling based on core exit T/Cs – GREATER THAN 0°F USING FIG-1.0, FIGURE MIN SUBCOOLING 	
		<ul style="list-style-type: none"> PRZR level – GREATER THAN 10% 	
		<ul style="list-style-type: none"> Dispatch AO with locked valve key to locally close breakers for SI ACCUM discharge valves 	NOTE: The CRS will dispatch an AO. SIM DRIVER: as AO, acknowledge, and use REM EDS-035 and EDS-036.
		<ul style="list-style-type: none"> M0V-841, MCC C position 12F 	
		<ul style="list-style-type: none"> M0V-865, MCC D position 12C 	
		<ul style="list-style-type: none"> Close SI ACCUM discharge valves 	
		<ul style="list-style-type: none"> o M0V-841 	
		<ul style="list-style-type: none"> o M0V-865 	
		<ul style="list-style-type: none"> Locally reopen breakers for M0V-841 and M0V-865 	NOTE: The CRS will dispatch an AO. SIM DRIVER: as AO, acknowledge, and use REM EDS-035 and EDS-036.
	CO	(Step 29) Verify Adequate SW Flow to CCW Hx:	
		<ul style="list-style-type: none"> Verify at least three SW pumps - RUNNING 	
	CO	(Step 29a RNO) Manually start pumps as power supply permits (257 kw each). IF less than two SW pumps can be operated, THEN...	NOTE: Three SW Pumps are running.
		<ul style="list-style-type: none"> Verify AUX BLDG SW isolation valves – AT LEAST ONE SET OPEN 	

Op Test No.: N10-1 Scenario # 2 Event # 6 & 7 Page 50 of 54Event Description: **SGTR/ A SI Pump fails to start in AUTO/ C SI Pump fails to start in AUTO**

Time	Pos.	Expected Actions/Behavior	Comments
		o M0V-4615 and M0V-4734	
		o M0V-4616 and M0V-4735	
	HCO	• Verify CNMT RECIRC fan annunciator C-2, HIGH TEMPERATURE ALARM - EXTINGUISHED	
	HCO	(Step 30) Check if Normal CVCS Operation Can Be Established	
		• Verify IA restored:	
		o IA to CNMT (A0V-5392) - OPEN	
		o IA pressure – GREATER THAN 60 PSIG	
		• Verify instrument bus D - ENREGIZED	
		• CCW pumps – ANY RUNNING	
		• Charging pump – ANY RUNNING	
	HCO	(Step 31) Check if Seal Return Flow Should Be Established	
		• Verify RCP #1 seal outlet temperature – LESS THAN 235°F	
		• Verify RCP seal outlet valves - OPEN	
		o A0V-270A	
		o A0V-270B	
		• Reset both trains of XY relays for RCP seal return isolation valve M0V-313	
		• Open RCP seal return isolation valve M0V-313	
		• Verify RCP #1 seal leakoff flow LESS THAN 6.0 GPM	
		• Verify RCP #1 seal leakoff flow GREAT THAN 0.8 GPM	
	HCO	(Step 32) Verify PRZR Level –GREATER THAN 20 % [40% adverse CNMT]	

Op Test No.: N10-1 Scenario # 2 Event # 6 & 7 Page 51 of 54Event Description: **SGTR/ A SI Pump fails to start in AUTO/ C SI Pump fails to start in AUTO**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 33) Establish Normal Letdown:	
		<ul style="list-style-type: none"> Establish charging line flow to REGEN Hx – GREATER THAN 22 GPM 	
		<ul style="list-style-type: none"> Place the following switches to CLOSE: <ul style="list-style-type: none"> Letdown orifice valves (A0V-200A, A0V-200B, and A0V-202) Letdown isolation valve A0V-371 Loop B cold leg to REGEN Hx A0V-427 	
		<ul style="list-style-type: none"> Place letdown controllers in MANUAL at 40% open <ul style="list-style-type: none"> TCV-130 PCV-135 	
		<ul style="list-style-type: none"> Reset both trains of XY relays for A0V-371 and A0V-427 	
		<ul style="list-style-type: none"> Open A0V-371 	
		<ul style="list-style-type: none"> Place letdown isolation A0V-427 to OPEN and THEN place to AUTO 	
		<ul style="list-style-type: none"> Open letdown orifice valves as necessary 	
		<ul style="list-style-type: none"> Place PCV-135 in AUTO and 250 psig 	
		<ul style="list-style-type: none"> Place TCV-130 in AUTO at the normal setpoint 	
		<ul style="list-style-type: none"> Adjust charging pump speed and HCV-142 	
	HCO	(Step 34) Check VCT Makeup System:	
		<ul style="list-style-type: none"> Adjust boric acid flow control valve in AUTO to 9.5 gpm 	
		<ul style="list-style-type: none"> Adjust RMW flow control valve in AUTO to 40 gpm 	
		<ul style="list-style-type: none"> Verify the following: <ul style="list-style-type: none"> RMW mode selector switch in AUTO 	NOTE: Previous VCT level failure precludes Auto makeup

Op Test No.: N10-1 Scenario # 2 Event # 6 & 7 Page 52 of 54Event Description: **SGTR/ A SI Pump fails to start in AUTO/ C SI Pump fails to start in AUTO**

Time	Pos.	Expected Action/Behavior	Comments
		<ul style="list-style-type: none"> RMW control armed – RED LIGHT LIT 	NOTE: Light will be OFF
		<ul style="list-style-type: none"> Check VCT level: 	NOTE: The CRS/HCO will contact the AO. SIM DRIVER: as AO, acknowledge, and monitor T_L139 in INSIGHT to report local LI-139 reading.
		<ul style="list-style-type: none"> Level – GREATER THAN 20% 	
		OR	
		Level – STABLE OR RISING	
	HCO	(Step 35) Check Charging Pump Suction Aligned to VCT:	
		<ul style="list-style-type: none"> VCT level – GREATER THAN 20% 	SIM DRIVER: Report local VCT level reading
		<ul style="list-style-type: none"> Verify charging pumps aligned to VCT 	
		(Step 35b RNO) Manually align valves	
		<ul style="list-style-type: none"> LCV-112C - OPEN 	
		<ul style="list-style-type: none"> LCV-112B - CLOSED 	
	HCO	(*Step 36) Control RCS Pressure And Charging Flow Minimize RCS-To-Secondary Leakage:	
		<ul style="list-style-type: none"> Perform appropriate action(s) from table: 	
At the discretion of the Lead Examiner terminate the Exam.			

UNIT STATUS:

Power Level: 100% RCS [B] 310 ppm BAST [B]: 14000 ppm

Power History: The plant is at 100% power (EOL), and has been on-line for 450 days. Core Burnup: 16000 MWD/MTU

INFORMATION NEEDED TO ASSUME TO SHIFT:

- The Plant is at 100% power (EOL).
- Per the daily work schedule, CROI-7, Swapping Service Water Pumps, is to be performed immediately after assuming the watch, shifting to A and D Service Water pumps in service.

The following equipment is Out-Of-Service:

- The B SI Pump is OOS for Bearing Replacement. LCO 3.5.2 was entered 36 hours ago, and maintenance is scheduled to be completed sometime next shift.

A-52.4

Equipment	<i>Date</i>	Time	Reason	Required Actions	Required Completion Date/Time	Required Action not met
B SI Pump	_/_/10	0330	Bearing Replacement	ITS 3.5.2 Enter Condition A Required Action A.1: Restore the Train to OPERABLE Status in 72 hours	36 hrs from current date/time	ITS 3.5.2 Enter Condition B Required Action B.1: Be in Mode 3 in 6 hours AND Required Action B.2: Be in Mode 4 in 12 hours

PROGRAM: Ginna Operations Training

MODULE: 2010 Initial License Operator Training Class

TOPIC: NRC Simulator Exam

Scenario N10-1-4

REFERENCES:

1. T-5G, Swapping Condensate Pumps With At Least One MFP Running
2. AR-G-8, 4KV MOTOR OVERLOAD
3. AR-G-25, MOTOR OFF SECT PMPS EXCEPT MAIN & AUX FEED PMPS
4. STP-O-1, Rod Control System
5. AR-C-14, ROD BOTTOM ROD STOP
6. AR-C-29, MRPI SYSTEM FAILURE
7. AP-RCC.2, RCC/RPI Malfunction
8. Technical Specification 3.1.7, Rod Position Indication
9. Technical Specification 3.14, Rod Group Alignment Limits
10. AR-F-4, PRESSURIZER LEVEL DEVIATION -5 NORMAL +5
11. AR-F-28, PRESSURIZER HI LEVEL CHANNEL ALERT 87%
12. ER-INST.1, Reactor Protection Bistable Defeat After Instrumentation Loop Failure
13. Technical Specification 3.3.1, Reactor Trip System Instrumentation
14. Technical Specification 3.3.3, Post Accident Monitoring Instrumentation
15. AR-G-25, MOTOR OFF CTR SECT PMPS EXCEPT MAIN & AUX FEED PMPS
16. AR-H-17, FEED PUMP NET POSITIVE SUCTION HEAD
17. AP-FW.1, Abnormal MFW Pump Flow or NPSH
18. AP-TURB.5, Rapid Load Reduction
19. A-503.1, Emergency and Abnormal Operating Procedures Users Guide
20. E-0, Reactor Trip and Safety Injection
21. E-2, Faulted Steam Generator
22. ECA-2.1, Uncontrolled Depressurization of All Steam Generators
23. FR-H.1, Response to Loss of Secondary Heat Sink

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Facility Review: Pat Landers, Principal Ops Training Specialist, 4/29/2010

Rev. 060810

Scenario Event Description

NRC Scenario 4

Facility:	Ginna	Scenario No.:	4	Op Test No.:	N10-1
Examiners:	_____	Operators:	_____	(SRO)	
	_____		_____	(RO)	
	_____		_____	(BOP)	
Initial Conditions:	The Plant is at 100% power (MOL). It is expected that immediately after turnover the crew will swap Condensate Pumps per Maintenance Dept Work Order, and conduct routine Rod Control exercises on Control Bank D.				
Turnover:	The following equipment is Out-Of-Service: The B AFW Pump is OOS for Bearing Replacement.				
Event No.	Malf. No.	Event Type*	Event Description		
1	CND04B	N-BOP C-SRO	Swap Condensate Pumps (Start B, Secure C)/B Condensate Pump Trip		
2	ROD13C-K7	I-RO I (TS)-SRO	Rod Control Exercise/MRPI Failure		
3	PZR03C	I-RO I(TS)-SRO	Pressurizer Level (LT-428) Fails HIGH		
4	HTR02A	C-RO C-BOP C-SRO	Heater Drain Pump A trips/Rapid Downpower		
5	STM04C	C-BOP C-SRO	B SG ARV Controller (AOV-3410) fails in AUTO		
6	STM05A STM05B STM09A STM09B	M-RO M-BOP M-SRO	MSIVs Close and SG Safeties lift/fail OPEN (1 per SG)		
7	RPS07M RPS07N	C-BOP	TDAFW Pump Steam Supply Valves to Open in AUTO		
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor					

Scenario Event Description

NRC Scenario 4

Ginna 2010 NRC Scenario #4

The Plant is at 100% power (MOL). It is expected that immediately after turnover the crew will swap Condensate Pumps in preparation for taking C Condensate Pump OOS for maintenance, and conduct routine Rod Control surveillance on Control Bank D.

The following equipment is Out-Of-Service: The B AFW Pump is OOS for Bearing Replacement.

Shortly after taking the watch, the operator will swap Condensate Pumps in accordance with T-5G, Swapping Condensate Pumps With At Least One MFP Running. After the B Condensate Pump is started, the motor will trip on overload in 60 seconds. The operator will address AR-G-8, 4KV MOTOR OVERLOAD, and AR-G-25, MOTOR OFF SECT PMPS EXCEPT MAIN & AUX FEED PMPS, and secure the evolution to swap condensate pumps.

After this, the operator will conduct a routine Rod Control surveillance on Control Bank D in accordance with STP-O-1, Rod Control System. When the rods are being returned to their normal position, a MRPI detector coil stack failure will occur which will result in an indication that one of the exercised Control Rods appears to have dropped into the core. The operator will respond in accordance with AR-C-14, ROD BOTTOM ROD STOP and AR-C-29, MRPI SYSTEM FAILURE, and enter AP-RCC.2, RCC/RPI Malfunction. The operator will address Technical Specification 3.1.7, Rod Position Indication, and 3.14, Rod Group Alignment Limits.

Next, Pressurizer Level Transmitter LT-428 will fail High. The operator will respond in accordance with AR-F-4, PRESSURIZER LEVEL DEVIATION -5 NORMAL +5, and AR-F-28, PRESSURIZER HI LEVEL CHANNEL ALERT 87%, and enter ER-INST.1, Reactor Protection Bistable Defeat After Instrumentation Loop Failure. The operator will address Technical Specification 3.3.1, Reactor Trip System Instrumentation, and 3.3.3, Post Accident Monitoring Instrumentation.

After this, the A Heater Drain Pump will trip. The operator will respond in accordance with AR-G-25, MOTOR OFF CTR SECT PMPS EXCEPT MAIN & AUX FEED PMPS, and/or AR-H-17, FEED PUMP NET POSITIVE SUCTION HEAD, and enter AP-FW.1, Abnormal MFW Pump Flow or NPSH. The operator will reduce load to 70% in accordance with AP-TURB.5, Rapid Load Reduction.

During the downpower, the B Steam Generator ARV (AOV-3410) Controller will fail in Auto such that the valve goes fully Open. The operator will respond in accordance with A-503.1, Emergency and Abnormal Operating Procedures Users Guide, and close the valve manually.

At a Turbine load of about 550 MWe, both MSIVs will inadvertently fail shut. The Reactor will trip, and the operator will enter E-0, Reactor Trip or Safety Injection. On the plant trip one or more SG Safety Valves will open, and the lowest set valve will stick in the OPEN position on each SG. Additionally, the A AFW Pump will trip upon an automatic start signal, and the TDAFW Pump Steam Supply Valves will fail to open upon an automatic signal. The operator will be required to manually start the TDAFW Pump to restore Secondary Heat Sink.

The operator will transition from E-0 to E-2, Faulted Steam Generator Isolation, and then to ECA-2.1, Uncontrolled Depressurization of All Steam Generators.

The scenario will terminate at Step 16 of ECA-2.1, after the crew has correctly determined whether plant conditions meet SI Termination criteria.

Scenario Event Description
NRC Scenario 4

Critical Tasks:

E-0F

Establish 230 gpm of AFW Flow to the Steam Generators before transition out of E-0, unless the transition is made to FR-H.1, and then before the RCPs are manually tripped to limit heat input to the RCS.

Safety Significance: Failure to establish a Secondary Heat Sink through the initiation of AFW flow unnecessarily challenges both the HEAT SINK and the CORE COOLING Critical Safety Functions. Additionally, the FSAR Safety Analysis results are predicated on the assumption that at least one train of safeguards actuates and delivers a minimum amount of AFW flow to the Steam Generators. Failure to perform this task, when the ability to do so exists, results in a violation of the Facility License Condition and places the plant in an unanalyzed condition.

ECA-2.1 A

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 integrity CSF.

Safety Significance: Failure to control the AFW flow rate to the SGs leads to an unnecessary and avoidable severe challenge to the integrity CSF. Also, failure to perform the Critical Task increases challenges to the SUBCRITICALITY and CONTAINMENT Critical Safety Functions which otherwise would not occur.

Scenario Event Description

NRC Scenario 4

SIMULATOR OPERATOR INSTRUCTIONS

	Bench Mark	ACTIVITY	DESCRIPTION
<input type="checkbox"/>		Reset to Temp I/C 179 (NRC 4).	<p>100% power MOL</p> <p>T=0: PULL STOP the B MDAFW Pump Set Trigger 30 = True when a reactor trip signal occurs on either Train A or B Set Trigger 29 = x06i240b==1 (Start Switch on B Cond Pump) Insert MALF STM09A, 100%, 0 ramp, T-30 (Safety valve 3508 on B SG opens after Rx trip) Insert MALF STM09B, 100%, 0 ramp, T-30 (Safety valve 3509 on A SG opens after Rx trip) Insert MALF CND04B, 60 sec delay, T-29</p> <p>Insert MALF RPS07M, Steam Supply Valve to TDAFW pump fails to OPEN Insert MALF RPS07N, Steam Supply Valve to TDAFW pump fails to OPEN Insert MALF FDW11A, A AFW Pump Trip Insert OVR-DO-FDW06A, OFF (Green light on B MDAFW Pump Disch Valve MOV-4008)</p> <p>Insert MALF ROD13C-K7, on T-1 Insert MALF PZR03C, 100%, No Ramp, on T-2 Insert MALF HTR02A, on T-3 Insert MALF STM04C, 100%, No Ramp, on T-4 Insert MALF STM05A, 0%, No Ramp, on T-5 Insert MALF STM05B, 0%, No Ramp, on T-5</p>
<input type="checkbox"/>	Prior to Crew Briefing	RUN	<ul style="list-style-type: none"> • Hang PROTECT tags on the A MDAFW and TDAFW pumps • Hang Black Dot on MCB Annunciator J-25
<input type="checkbox"/>	<p align="center">Crew Briefing</p> <ol style="list-style-type: none"> 1. Assign Crew Positions based on evaluation requirements 2. Review the Shift Turnover Information with the crew. 3. Provide the crew with a copy of T-5G, Swapping Condensate Pumps With At Least One MFP Running. Ensure Pre-job Brief conducted on the sequence of this swapover. 4. Provide the crew with a copy of STP-O-1, Rod Control System; with Attachment 1 marked up as shown in the Turnover Information (Last Page of Simulator Guide) 		
<input type="checkbox"/>	T-0	Begin Familiarization Period	

Scenario Event Description

NRC Scenario 4

	Bench Mark	ACTIVITY	DESCRIPTION
<input type="checkbox"/>	At direction of examiner	Event 1 Trigger #29 CND04B	Swap Condensate Pumps (Start B, Secure C)/B Condensate Pump Trip NOTE: T-29 tied to B Cond Pump CS to Start (60 seconds delayed)
<input type="checkbox"/>	At direction of examiner	Event 2 Trigger #1 ROD13C-K7	Rod Control Exercise/MRPI Failure
<input type="checkbox"/>	At direction of examiner	Event 3 Trigger#2 PZR03C	Pressurizer Level (LT-428) Fails HIGH 100%, No Ramp
<input type="checkbox"/>	At direction of examiner	Event 4 Trigger#3 HTR02A	Heater Drain Pump A trips/Rapid Downpower
<input type="checkbox"/>	At direction of examiner	Event 5 Trigger #4 STM04C	B SG ARV Controller (AOV-3410) fails in AUTO 100%, No Ramp
<input type="checkbox"/>	At direction of examiner	Event 6 Trigger #5 STM05A STM05B T = 0 (T-30) STM09A STM09B	MSIVs Close, SG Safeties lift/fail OPEN (1 per SG) 0%, No Ramp 0%, No Ramp NOTE: This Malfunction is inserted in the IC at T = 0, T-30 (Rx Trip) 100%, No Ramp 100%, No Ramp
<input type="checkbox"/>	Continued from Event 6	Event 7 T = 0 RPS07M RPS07N	TDAFW Pump Steam Supply Valves to Open in AUTO NOTE: This Malfunction is inserted in the IC at T = 0.
<input type="checkbox"/>			
<input type="checkbox"/>	Terminate the scenario upon direction of Lead Examiner		

Op Test No.: N10-1 Scenario # 4 Event # 1 Page 7 of 51Event Description: **Swap Condensate Pumps (Start B, Secure C)/B Condensate Pump Trip**

Shortly after taking the watch, the operator will swap Condensate Pumps in accordance with T-5G, Swapping Condensate Pumps With At Least One MFP Running. After the B Condensate Pump is started, the motor will trip on overload in 60 seconds. The operator will address AR-G-8, 4KV MOTOR OVERLOAD, and AR-G-25, MOTOR OFF SECT PMPS EXCEPT MAIN & AUX FEED PMPS, and secure the evolution to swap condensate pumps.

SIM DRIVER Instructions: **NA**Indications Available: **NA**

Time	Pos.	Expected Actions/Behavior	Comments
T-5G, SWAPPING CONDENSATE PUMPS WITH AT LEAST ONE MAIN FEED PUMP RUNNING			
	CO	(Step 6.4.1) PLACE the MCB switch for Condensate Pump B in PULL STOP.	
	CO/ AO	(Step 6.4.2) CLOSE Condensate Pump B discharge block valve, V-3921.	NOTE: The CO will contact an AO. Booth Instructor: as AO, acknowledge, and use REM-CND14=0, then report that V-3921 is CLOSED.
	CO	(Step 6.4.3) OPEN Condensate Pump B recirc valve, V-3910.	NOTE: The CO will contact an AO. Booth Instructor: as AO, acknowledge, and then report that V-3910 is OPEN (not simulated).
	CO	(Step 6.4.4) IF desired THEN PLACE Hotwell Level Controller, LC-107, in Manual. OTHERWISE, MARK this Step N/A.	NOTE: The CO will place LC-107 in MANUAL.
	CO	(Step 6.4.5) PLACE Condensate Pump B the MCB in AUTO	

Op Test No.: N10-1 Scenario # 4 Event # 1 Page 8 of 51Event Description: **Swap Condensate Pumps (Start B, Secure C)/B Condensate Pump Trip**

Time	Pos.	Expected Actions/Behavior	Comments
	CO	(Step 6.4.6) START Condensate Pump B.	NOTE: The CO will START the B Condensate Pump.
	CO	(Step 6.4.7) WHILE SLOWLY OPENING Condensate Pump B Discharge Block Valve, V-3921, MONITOR Trim Valve position on the MCB.	NOTE: The CO will contact an AO. Booth Instructor: as AO, acknowledge, and take NO ACTION, Pump will trip 60 seconds after START.
SIM DRIVER Instructions: NA Note: Trigger-29 (CND04B) tied to B Cond Pump Control Switch to START (60 seconds delayed)			
Indications Available: <ul style="list-style-type: none"> • MCB Annunciator G-8, 4KV MOTOR OVERLOAD • MCB Annunciator G-8, MOTOR OFF CTR SECT PMPS EXCEPT MAIN & AUX FEED PMPS • B Condensate Pump Green and White Breaker Status lights are LIT 			
AR-G-8, KV MOTOR OVERLOAD			
	CO	(Step 1) DETERMINE which pump tripped:	
		<ul style="list-style-type: none"> • CHECK Bus breakers for protective relay flags and possible smoke/flames. 	
		<ul style="list-style-type: none"> • IF multiple pumps trip, THEN EVALUATE isolating bus. 	
		<ul style="list-style-type: none"> • NOTIFY electricians AND mechanics 	NOTE: The CRS may notify the WCC/Electricians. Booth Instructor: as WCCS/Electricians, acknowledge.
	CRS	<ul style="list-style-type: none"> • GO TO appropriate procedure: 	
		<ul style="list-style-type: none"> • E-0 if reactor tripped 	
		<ul style="list-style-type: none"> • AP-CW.1 if CW pump tripped 	
		<ul style="list-style-type: none"> • AP-FW.1 if MFW pump tripped 	NOTE: No identified procedures are applicable.

Op Test No.: N10-1 Scenario # 4 Event # 1 Page 9 of 51Event Description: **Swap Condensate Pumps (Start B, Secure C)/B Condensate Pump Trip**

Time	Pos.	Expected Action/Behavior	Comments
	CRS	(Step 2) IF no pump tripped, THEN...	NOTE: The B Condensate Pump tripped.
AR-G-25, MOTOR OFF CTR SECT PMPS EXCEPT MAIN & AUX FEED PMPS			
	CO	(Step 1) Determine which pump has tripped (white light at switch will be lit).	NOTE: The B Condensate Pump tripped.
	CO	(Step 2) Verify standby pump Auto starts OR start standby pump, IF required.	
	HCO	(Step 3) IF all charging pump(s) tripped, THEN go....	NOTE: The Charging Pumps did NOT trip.
	CRS	(Step 4) Notify Electrician.	NOTE: The CRS may notify the WCC/Electricians. Booth Instructor: as WCCS/Electricians , acknowledge.
	CRS	(Step 5) Refer to ITS LCO 3.7.5.	NOTE: Does not apply
	CRS	(Step 6) Refer to TRM TR 3.1.1 and 3.1.2.	NOTE: Do not apply
			NOTE: The CRS will suspend the swap of the B Condensate Pump.
			NOTE: The CO will return LC-107 to AUTO.

Op Test No.: N10-1 Scenario # 4 Event # 1 Page 10 of 51Event Description: **Swap Condensate Pumps (Start B, Secure C)/B Condensate Pump Trip**

Time	Pos.	Expected Actions/Behavior	Comments
			NOTE: The CO may contact the AO, and direct that the original configuration be restored. IF SO, SIM DRIVER: as AO, acknowledge, and use REM-CND14=100, then report that V-3921 is OPEN, and then report that V-3910 is CLOSED.
At the discretion of the Lead Examiner move to Event #2.			

Op Test No.: N10-1 Scenario # 4 Event # 2 Page 11 of 51Event Description: **Rod Control Exercise/MRPI Failure**

After this, the operator will conduct a routine Rod Control surveillance on Control Bank D in accordance with STP-O-1, Rod Control System. When the rods are being returned to their normal position, a MRPI detector coil stack failure will occur which will result in an indication that one of the exercised Control Rods appears to have dropped into the core. The operator will respond in accordance with AR-C-14, ROD BOTTOM ROD STOP and AR-C-29, MRPI SYSTEM FAILURE, and enter AP-RCC.2, RCC/RPI Malfunction. The operator will address Technical Specification 3.1.7, Rod Position Indication, and 3.14, Rod Group Alignment Limits.

SIM DRIVER Instructions: NA**Indications Available:** NA

Time	Pos.	Expected Actions/Behavior	Comments
STP-O-1, ROD CONTROL SYSTEM			
	HCO	(Step 6.6.1) PLACE ROD CONTROL SELECTOR switch to CBD position.	
	HCO	(Step 6.6.2) RECORD individual rod position indication AND group step counter values for the Control Bank D on Attachment 1, Rod Position.	NOTE: This Attachment is already in progress and was provided to the crew upon turnover.
	HCO	(Step 6.6.3) PERFORM the following substeps for all rods in the Control Bank D UNTIL all have been transitioned:	
		<ul style="list-style-type: none"> REFER TO Attachment 2, Acceptable Transition Band, to determine when a change in individual rod position should occur. 	
		<ul style="list-style-type: none"> DETERMINE direction Control Bank D will be moved AND MARK the direction NOT selected N/A. 	
		<ul style="list-style-type: none"> Rods moving IN – Group 2 should move before Group 1. 	
		OR	
		<ul style="list-style-type: none"> Rods moving OUT – Group 1 should move before Group 2. 	

Op Test No.: N10-1 Scenario # 4 Event # 2 Page 12 of 51Event Description: **Rod Control Exercise/MRPI Failure**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> MOVE Control Bank D in the desired direction. 	
	HCO	<ul style="list-style-type: none"> VERIFY groups within the bank are moving in the correct sequence. 	
		<ul style="list-style-type: none"> WHEN each rod transitions on THEN STOP AND RECORD position on Attachment 1, Rod Position. 	
	HCO	(Step 6.6.4) CHECK that individual rod MRPI transition occurred within plus or minus 2 steps of the individual detector coil locations as indicated by the step counters on Attachment 2, Acceptable Transition Band.	
	HCO	(Step 6.6.5) IF any individual rod MRPI transition checked in Step 6.6.4 did NOT occur within plus or minus 2 steps...	NOTE: All MRPI transitions will occur within plus or minus 2 steps.
	HCO	(Step 6.6.6) RETURN Control Bank D to its initial position as indicated by the Group Step Counters on Attachment 1, Rod Position.	
SIM DRIVER Instructions:			When HCO is restoring Control Bank D, after bank has been moved IN/OUT ~ 3 steps towards their normal position, operate Trigger-1 (ROD13C-K7)
Indications Available:			
<ul style="list-style-type: none"> MCB Annunciator C-29, MRPI SYSTEM FAILURE No flux prompt drop on Power Range recorder Tavg remains steady K-7 ERR on MRPI display screen 			
			NOTE: The crew may enter AP-RCC.2 directly.
AR-C-29, MRPI SYSTEM FAILURE			
	HCO	(Step 1) Verify rod indication using the MRPI CRT OR PPCS Computer.	
	CRS	(Step 2) GO TO AP-RCC.2	

Op Test No.: N10-1 Scenario # 4 Event # 2 Page 13 of 51Event Description: **Rod Control Exercise/MRPI Failure**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 3) Check SYSTEM STATUS pages	
	CRS	(Step 4) Notify the following:	NOTE: The CRS may notify the WCC/I&C/RE. Booth Instructor: as WCCS/I&C/RE, acknowledge.
		• Operations Supervision	
		• Reactor Engineer	
		• I&C (call in during off hours)	
	HCO	(Step 5) IF indications do NOT suggest a problem with Control Rods OR the Rod Control System, THEN perform PT-1 to determine MRPI System operability.	
	CRS	(Step 6) Refer to ITS LCO 3.1.7.	
	CRS	(Step 7) Refer to S-26.2.	
			NOTE: The CRS will go to AP-RCC.2.
AP-RCC.2, RCC/RPI MALFUNCTION			
	HCO	(Step 1) Place Rods to Manual	NOTE: The HCO will leave the Rods in MANUAL.
	HCO	(Step 2) Check Dropped Rod Indication:	
		• Annunciator E-28, POWER RANGE ROD DROP ROD STOP 5%/5 SECONDS - EXTINGUISHED	NOTE: E-28 extinguished
		• Annunciator C-14, ROD BOTTOM ROD STOP - EXTINGUISHED	NOTE: C-14 lit
	HCO	(Step 2 RNO) IF the following conditions exist, THEN go to AP-RCC.3, DROPPED ROD RECOVERY.	NOTE: There will be NO prompt drop in neutron flux, or Tav _g drop.

Op Test No.: N10-1 Scenario # 4 Event # 2 Page 14 of 51Event Description: **Rod Control Exercise/MRPI Failure**

Time	Pos	Expected Action/Behavior	Comments
		<ul style="list-style-type: none"> Reactor Power - lowering 	
		<ul style="list-style-type: none"> Tavg - lowering 	
	CRS	<ul style="list-style-type: none"> IF NOT, THEN go to Step 3 	
	HCO	(Step 3) Check Tavg – STABLE AT PROGRAM	
	HCO	(Step 4) Verify Annunciator G-15, STEAM DUMP ARMED - EXTINGUISHED	
	CO	(Step 5) Check Main Generator Load – GREATER THAN 15 MW.	
	HCO	(Step 6) Establish Stable Plant Conditions:	
		<ul style="list-style-type: none"> Tavg – TRENDING TO TREF 	
		<ul style="list-style-type: none"> PRZR pressure – TRENDING TO 2235 PSIG IN AUTO 	
		<ul style="list-style-type: none"> PRZR level – TRENDING TO PROGRAM IN AUTO CONTROL 	
		<ul style="list-style-type: none"> MFW Regulation Valves – RESTORING S/G LEVEL TO 52% IN AUTO 	
	HCO	(Step 7) Check Control Rod Alignment:	
		<ul style="list-style-type: none"> Verify all rods in affected group – WITHIN ± 12 STEPS OF ASSOCIATED GROUP STEP COUNTER 	NOTE: Rod K-7 position cannot be determined
	CRS	(Step 7 RNO) Refer to ITS Section 3.1.4.	NOTE: The CRS will evaluate Technical Specifications.
	HCO	(Step 8) Check QPTR – LESS THAN 1.02	NOTE: Since a Rod has NOT dropped, QPTR will NOT be > 1.02.

Op Test No.: N10-1 Scenario # 4 Event # 2 Page 15 of 51Event Description: **Rod Control Exercise/MRPI Failure**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 9) Verify All Individual Rod Position Indication Per Bank Operable:	
		<ul style="list-style-type: none"> MRPI system – NO MRPI SYSTEM ALARMS 	
		<ul style="list-style-type: none"> MRPI system – NOT KNOWN PROBLEMS WITH MRPI SYSTEM THAT COULD RENDER ROD POSITION INDICATION INOPERABLE 	
	CRS	(Step 9 RNO) Perform the following:	
		<ul style="list-style-type: none"> Refer to ITS section 3.1.7 for required action. 	
		<ul style="list-style-type: none"> Consult Reactor Engineer and plant staff to evaluate MRPI and to perform flux map per ITS. 	NOTE: The CRS may notify the WCC/I&C/RE. Booth Instructor: as WCCS/I&C/RE, acknowledge.
	CRS	<ul style="list-style-type: none"> Go to Step 11 	
	HCO	(Step 11) Verify Affected Group Step Counters Operable:	
		<ul style="list-style-type: none"> Affected bank group step counter movement – CONSISTENT WITH MRPO TRANSITIONS (Evaluate affected bank using PT-1, ROD CONTROL SYSTEM). 	
		<ul style="list-style-type: none"> Group step counters for affected bank – WITHIN 1 STEP OF EACH OTHER 	
	HCO	(Step 12) Check Reactor Conditions:	
		<ul style="list-style-type: none"> Rod insertion limit alarms - EXTINGUISHED 	NOTE: Extinguished
		<ul style="list-style-type: none"> NIS PR ΔI – WITHIN DESIRED OPERATING BAND 	NOTE: Normal ΔI values
	CRS	(Step 13) Evaluated Plant Conditions:	
		<ul style="list-style-type: none"> Rod/MRPI malfunction - REPAIRED 	NOTE: The MRPI problem will NOT be repaired.

Op Test No.: N10-1 Scenario # 4 Event # 2 Page 16 of 51Event Description: **Rod Control Exercise/MRPI Failure**

Time	Pos.	Expected Actions/Behavior			Comments
	CRS	(Step 13 RNO) Return to Step 8			
TECHNICAL SPECIFICATION 3.1.7, ROD POSITION INDICATION					
	CRS	LCO 3.1.7 The Microprocessor Rod Position Indication (MRPI) System and the Demand Position Indication System shall be OPERABLE.			
	CRS	APPLICABILITY: MODES 1, MODE 2 with $K_{eff} \geq 1.0$.			
		ACTIONS			
		CONDITION	REQUIRED ACTION	COMPLETION TIME	
		A. One MRPI per group inoperable for one or more groups.	A.1 Verify the position of the rods with inoperable position indicators by using movable incore detectors OR A.2 Reduce THERMAL POWER to $\leq 50\%$ RTP	Once per 8 hours 8 hours	
TECHNICAL SPECIFICATION 3.1.4, ROD GROUP ALIGNMENT LIMITS					
	CRS	LCO 3.1.4 All shutdown and control rods shall be OPERABLE, with all individual indicated rod positions within 12 steps of their group step counter demand position.			

Op Test No.: N10-1 Scenario # 4 Event # 2 Page 17 of 51Event Description: **Rod Control Exercise/MRPI Failure**

Time	Pos.	Expected Actions/Behavior			Comments
	CRS	APPLICABILITY: MODES 1, MODE 2 with $K_{eff} \geq 1.0$.			
		ACTIONS			
		CONDITION	REQUIRED ACTION	COMPLETION TIME	
		B. One rod not within alignment limits.	B.1.1 Verify SDM is within the limits specified in the COLR.	1 hour	
			OR		
			B.1.2 Initiate boration to restore SDM to within limit.	1 hour	
			AND		
			B.2 Reduce THERMAL POWER to $\leq 75\%$ RTP.	2 hours	
			AND		
			B.3 Verify SDM is within the limits specified in the COLR.	Once per 12 hours	
			AND		
			B.4 Perform SR 3.2.1.1.	72 hours	
			AND		
			B.5 Perform SR 3.2.2.1.	72 hours	
			AND		
			B.6 Re-evaluate safety analysis and confirm results remain valid for duration of operation under these conditions.	5 days	

Op Test No.: N10-1 Scenario # 4 Event # 2 Page 18 of 51

Event Description: **Rod Control Exercise/MRPI Failure**

Time	Pos.	Expected Actions/Behavior	Comments
At the discretion of the Lead Examiner move to Event #3.			

Op Test No.: N10-1 Scenario # 4 Event # 3 Page 19 of 51Event Description: **Pressurizer Level (LT-428) Fails HIGH**

Next, Pressurizer Level Transmitter LT-428 will fail High. The operator will respond in accordance with AR-F-4, PRESSURIZER LEVEL DEVIATION -5 NORMAL +5, and AR-F-28, PRESSURIZER HI LEVEL CHANNEL ALERT 87%, and enter ER-INST.1, Reactor Protection Bistable Defeat After Instrumentation Loop Failure. The operator will address Technical Specification 3.3.1, Reactor Trip System Instrumentation, and 3.3.3, Post Accident Monitoring Instrumentation.

SIM DRIVER Instructions: Operate Trigger #2 (PZR03C (100))

Indications Available:

- MCB Annunciator F-4, PRESSURIZER LEVEL DEVIATION -5 NORMAL +5
- MCB Annunciator F-28, PRESSURIZER HI LEVEL CHANNEL ALERT 87%
- LI-428 goes upscale high
- Backup Pzr Heaters energize
- Charging Pump A Speed Control goes to 0 Output.

Time	Pos	Expected Actions/Behavior	Comments
			<p>Booth Instructor: call as the WCCS and indicate that the Electricians have investigated the B Condensate Pump Trip. They believe that the Pump Breaker Trip was caused by spurious actuation of the Condensate Pump Motor Breaker overcurrent device. It has been reset, and the Pump can be restored to service. (NOTE: Sim Instructor ensure that REM-CND14 = 1 (Full Open).</p> <p>If the B Condensate Pump is in PULL STOP, the CRS will direct that the Pump be placed in AUTO.</p>
AR-F-4, PRESSURIZER LEVEL DEVIATION -5 NORMAL +5			
	HCO	(Step 1) Perform a channel check.	NOTE: LT-428 will indicate high compared to the others.
	HCO	(Step 2) Verify Backup Heaters on at + 5%	

Op Test No.: N10-1 Scenario # 4 Event # 3 Page 20 of 51Event Description: **Pressurizer Level (LT-428) Fails HIGH**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 3) Check charging pump speed and controls.	NOTE: Auto pump has reduced to MIN speed
	HCO	(Step 4) Check Letdown in service.	
	HCO	(Step 5) Control Charging and Letdown as necessary to control level.	
	CRS	(Step 6) Go to the appropriate procedure:	
		• AP-RCS.1 for RCS leak	
		• ER-INST.1 for failed channel	
AR-F-28, PRESSURIZER HIGH LEVEL CHANNEL 87%			
	HCO	(Step 1) Perform a channel check	NOTE: LT-428 will indicate high compared to the others.
	HCO	(Step 2) Check charging and letdown	
	CRS	(Step 3) For failed channel go to ER-INST.1	
			NOTE: The CRS will go to ER-INST.1.
ER-INST.1, REACTOR PROTECTION BISTABLE DEFEAT AFTER INSTRUMENTATION LOOP FAILURE			
	HCO/ CO	(Step 4.1) Identify the failed instrument channel by observation of the bistable status light board, MCB annunciators, and the MCB metering indication.	
	HCO/ CO	(Step 4.2) WHEN a failed instrument loop and/or channel has been identified, THEN refer to the appropriate section of this procedure list below:	NOTE: The CRS will determine that PRZR Level Channel Failures – Section 4.5, should be addressed.

Op Test No.: N10-1 Scenario # 4 Event # 3 Page 21 of 51Event Description: **Pressurizer Level (LT-428) Fails HIGH**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 4.5.1) IF PRZR low level heater cut out has occurred, THEN....	NOTE: The Instrument failed HIGH.
	HCO	(Step 4.5.2) If letdown isolation valve, AOV-427 has closed, THEN...	NOTE: Normal Letdown did NOT isolate.
	CRS	(Step 4.5.3) REFER to the appropriate attachment for defeat of the associated control functions.	NOTE: The CRS will determine that BLUE CHANNEL PRZR Level LI-428, should be addressed.
		• PRZR LEVEL LI-428 BLUE CHANNEL	
			NOTE: The CRS will hand this off to the CO, who will coordinate with the HCO.
ER-INST.1, REACTOR PROTECTION BISTABLE DEFEAT AFTER INSTRUMENTATION LOOP FAILURE BLUE CHANNEL ATTACHMENT PRZR LEVEL LI-428			
	CO	(Step 1) In the PLP PRESS AND LEVEL rack, check the PRZR level defeat switch L/428A position.	NOTE: The HCO will take MANUAL control of Charging Pump Speed.
		• IF L/428A is in NORMAL, THEN place L-428A to DEFEAT-3.	
	CO	(Step 2) In the (BLUE) B-1 PROTECTION CHANNEL 3 rack, PLACE the bistable proving switch 428, CHANNEL 3 HIGH LEVEL TRIP to DEFEAT (UP). Proving light will be OFF since the channel failed HIGH (87%).	
	HCO	(Step 3) PLACE PRZR LEVEL RECORDER transfer switch (MCB) to position 427.	
	HCO	(Step 4) Verify the bistable status light listed above is lit.	

Op Test No.: N10-1 Scenario # 4 Event # 3 Page 22 of 51Event Description: **Pressurizer Level (LT-428) Fails HIGH**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> IF the bistable status light above is NOT lit, THEN..... 	NOTE: The Bistable status light is LIT.
	HCO	(Step 5) REMOVE the PRZR level channel from the PPCS, by performing the following:	
		<ul style="list-style-type: none"> On the "Sub/Delete/Restore" display 	
		<ul style="list-style-type: none"> Select Point ID L0428 	
		<ul style="list-style-type: none"> Turn "OFF" scan processing 	
		<ul style="list-style-type: none"> Select "Change" 	
	CRS	(Step 6) GO TO Step 4.5.4	
ER-INST.1, REACTOR PROTECTION BISTABLE DEFEAT AFTER INSTRUMENTATION LOOP FAILURE			
	HCO	(Step 4.5.4) Reset PRZR heaters breakers as necessary.	NOTE: Not necessary
	HCO	(Step 4.5.5) Restore normal letdown as follows, if desired.	NOTE: Normal Letdown did NOT isolate.
	HCO	(Step 4.5.6) WHEN PRZR level is restored to normal, THEN place an operating charging pump controller in AUTO.	NOTE: The HCO will place Charging Pump Speed back in AUTO.
	CRS	(Step 4.5.7) Check the following ITS Sections for LCOs:	
		<ul style="list-style-type: none"> Section 3.3.1, Table 3.3.1-1, Function 8 	
		<ul style="list-style-type: none"> Section 3.3.3, Table 3.3.3-1, Function 2 	
		<ul style="list-style-type: none"> Section 3.4.9 	NOTE: PZR heaters unaffected
	CRS	(Step 4.5.8) GO TO Step 4.15.	

Op Test No.: N10-1 Scenario # 4 Event # 3 Page 23 of 51Event Description: **Pressurizer Level (LT-428) Fails HIGH**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 4.15.1) IF necessary, verify an operable channel is selected for the affected recorder.	
		(Step 4.15.2) Verify the following systems in AUTO if desired:	
	HCO	<ul style="list-style-type: none"> Rod Control 	NOTE: Rods may be in Manual from previous MRPI failure.
	CO	<ul style="list-style-type: none"> Turbine EH control 	
	CO	<ul style="list-style-type: none"> PRZR Pressure control <ul style="list-style-type: none"> HC 431K PRZR spray valves PRZR heaters 	
	HCO	<ul style="list-style-type: none"> PRZR level control 	NOTE: IF NOT already done, the HCO will place Charging Pump Speed back in AUTO.
	CO	<ul style="list-style-type: none"> Steam Dump (unless 1st stage pressure failed) 	
	CO	<ul style="list-style-type: none"> MFW control 	
	CO	<ul style="list-style-type: none"> S/G Atmos Relief Valve Control 	
	CRS	(Step 4.15.3) Notifications to the following people will be made by the Shift Manager	NOTE: The CRS may notify the SM/STA. Booth Instructor: as SM/STA, acknowledge.
		<ul style="list-style-type: none"> Operations Supervision 	
		<ul style="list-style-type: none"> STA 	
		<ul style="list-style-type: none"> Maintenance 	
	CRS	(Step 4.15.4) During normal working hours, Maintenance personnel shall be notified immediately of the problem.	NOTE: The CRS may notify the WCC/I&C. Booth Instructor: as WCCS/I&C, acknowledge.

Op Test No.: N10-1 Scenario # 4 Event # 3 Page 24 of 51Event Description: **Pressurizer Level (LT-428) Fails HIGH**

Time	Pos.	Expected Actions/Behavior			Comments
	CRS	(Step 4.15.5) During back shifts Maintenance personnel will be called in. HOWEVER, the Shift Manager may defer calling people in, IF repairs may be deferred to the next working day.			
TECHNICAL SPECIFICATION 3.3.1, REACTOR TRIP SYSTEM (RTS) INSTRUMENTATION					
	CRS	LCO 3.3.1 The RTS instrumentation for each Function in Table 3.3.1-1 shall be OPERABLE. (Function 8)			
	CRS	APPLICABILITY: According to Table 3.3.1-1			
		ACTIONS			
		CONDITION	REQUIRED ACTION	COMPLETION TIME	
		A. One or more Functions with one channel inoperable.	A.1 Enter the Condition referenced in Table 3.3.1-1 for the channel(s)	Immediately	
		D. As required by Required Actions A.1 and referenced by Table 3.3.1-1	D.1 Place channel in trip.	6 hours	
TECHNICAL SPECIFICATION 3.3.3, POST-ACCIDENT MONITORING (PAM) INSTRUMENTATION					
	CRS	LCO 3.3.3 The PAM instrumentation for each Function in Table 3.3.3-1 shall be OPERABLE.			

Op Test No.: N10-1 Scenario # 4 Event # 3 Page 25 of 51

Event Description: **Pressurizer Level (LT-428) Fails HIGH**

Time	Pos.	Expected Actions/Behavior			Comments
	CRS	APPLICABILITY: MODES 1, 2, and 3.			
		ACTIONS			
		CONDITION	REQUIRED ACTION	COMPLETION TIME	
		A. One or more Functions with one required channel inoperable.	A.1 Restore required channel to OPERABLE status.	30 days	
At the discretion of the Lead Examiner move to Event #4.					

Op Test No.: N10-1 Scenario # 4 Event # 4 Page 26 of 51Event Description: **Heater Drain Pump A trips/Rapid Downpower**

After this, the A Heater Drain Pump will trip. The operator will respond in accordance with AR-G-25, MOTOR OFF CTR SECT PMPS EXCEPT MAIN & AUX FEED PMPS, and/or AR-H-17, FEED PUMP NET POSITIVE SUCTION HEAD, and enter AP-FW.1, Abnormal MFW Pump Flow or NPSH. The operator will reduce load to 70% in accordance with AP-TURB.5, Rapid Load Reduction.

SIM DRIVER Instructions: Operate Trigger #3 (HTR02A)**Indications Available:**

- MCB Annunciator H-17, FEED PUMP NET POSITIVE SUCTION HEAD
- MCB Annunciator G-8, 480V MOTOR OVERLOAD
- MCB Annunciator G-25, MOTOR OFF CTR SECT PMPS EXCEPT MAIN & AUX FEED
- A Heater Drain Pump Green and White breaker status light are LIT.
- Condensate bypass valve OPEN
- PPCS Pri-1 alarm "CALPQ1" for power >100%

Time	Pos.	Expected Action/Behavior	Comments
			NOTE: The crew will probably enter AP-FW.1 directly.
AR-G-25, MOTOR OFF CTR SECT PMPS EXCEPT MAIN & AUX FEED PMPS			
	CO	(Step 1) Determine which pump has tripped (white light at switch will be lit).	NOTE: The CO will determine that the A Heater Drain Pump has tripped.
	CO	(Step 2) Verify standby pump Auto starts OR start standby pump, IF required.	NOTE: HDT pump does NOT have standby pump to start
	CRS	(Step 3) IF all charging pump(s) tripped, THEN	NOTE: The Charging Pumps have NOT tripped.
	CRS	(Step 4) Notify Electrician	
	CRS	(Step 5) Refer to ITS LCO 3.7.5.	
	CRS	(Step 6) Refer to TRM TR 3.1.1 and 3.1.2.	

Op Test No.: N10-1 Scenario # 4 Event # 4 Page 27 of 51Event Description: **Heater Drain Pump A trips/Rapid Downpower**

Time	Pos.	Expected Actions/Behavior	Comments
AR-H-17, FEED PUMP NET POSITIVE SUCTION HEAD			
	CO	(Step 1) CHECK Feedwater Pump parameters for proper parameter indication:	
		<ul style="list-style-type: none"> Suction flow (FI-2004 & FI-2005) (PPCS F2004 and F2005) 	
		<ul style="list-style-type: none"> Suction press (PI-2044 & PI-2045) (PPCS P2044 and P2045) 	
		<ul style="list-style-type: none"> Discharge press (PI-2046 & PI-2047) (PPCS P2046 and P2047) 	
		<ul style="list-style-type: none"> NPSH margin (PPCS NPMRMFDA and NPMRMFPB) 	
	CRS	(Step 2) IF Feed Pump net positive suction head is confirmed not to exist, THEN go to AP-FW.1, ABNORMAL MRW PUMP FLOW ON NPSH.	
			NOTE: The CRS will go to AP-FW.1.
AP-FW.1, ABNORMAL MFW PUMP FLOW OR NPSH			
	CO	(Step 1) Check MRW Requirements:	
		<ul style="list-style-type: none"> Power – GREATER THAN 50% 	
		<ul style="list-style-type: none"> Both MRW pumps - RUNNING 	
	CRS	<ul style="list-style-type: none"> Go to Step 3 	
	CO	(Step 3) Check S/G Status	
		<ul style="list-style-type: none"> MFW flows – GREATER THAN STEAM FLOWS 	
		<ul style="list-style-type: none"> S/G levels stabilizing or returning to program 	

Op Test No.: N10-1 Scenario # 4 Event # 4 Page 28 of 51Event Description: **Heater Drain Pump A trips/Rapid Downpower**

Time	Pos.	Expected Actions/Behavior	Comments
	CO	(Step 4) Verify At Least 2 Condensate Pumps - RUNNING	NOTE: The B Condensate Pump may automatically START.
	CO	(Step 5) Verify Both HDT Pumps - RUNNING	NOTE: The A Heater Drain Pump has tripped.
	CRS	(Step 5 RNO) IF greater than 70 % power, and one HDT Pump has tripped, THEN reduce power to less than 70%. IF both HDT pumps have tripped, THEN reduce power to less than 50%. (Refer to AP-TURB.5, RAPID LOAD REDUCTION)	
			NOTE: The CRS will go to AP-TURB.5.
AP-TURB.5, RAPID LOAD REDUCTION			
			NOTE: The CO may notify the RG&E ECC, about the intent to reduce power level. Booth Instructor: as RG&E ECC, acknowledge. NOTE: The CO may notify the CENG Generation Dispatch. Booth Instructor: as CENG Generation Dispatch, acknowledge.
	HCO	(Step 1) Initiate Load Reduction	
		<ul style="list-style-type: none"> Verify rods in AUTO 	
	HCO	(Step 1a RNO) Perform the following:	
		<ul style="list-style-type: none"> Place rods to MANUAL 	NOTE: If the Rods are NOT in AUTO, the HCO may place the Rods in AUTO, or drive rods in MANUAL.
		<ul style="list-style-type: none"> Adjust Rods to match Tavg and Tref. 	
	CO	<ul style="list-style-type: none"> Reduce turbine load in Auto as follows: 	

Op Test No.: N10-1 Scenario # 4 Event # 4 Page 29 of 51Event Description: **Heater Drain Pump A trips/Rapid Downpower**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> Place Turbine EH Control in OPER PAN., IMP PRESS IN, if desired. 	
		<ul style="list-style-type: none"> Select desired rate on thumbwheel 	
		<ul style="list-style-type: none"> Reduce the setter to the desired load 	
		<ul style="list-style-type: none"> Depress the GO button 	NOTE: The CO will start the load decrease.
	HCO	<ul style="list-style-type: none"> Initiate boration at the rate determined in OPG-REACTIVITY-CALC. 	NOTE: The HCO will initiate a boration.
		<ul style="list-style-type: none"> Place PRZR backup heaters switch to ON 	
	HCO	(Step 2) Monitor RCS Tavg	
		<ul style="list-style-type: none"> Tavg – GREATER THAN 545°F 	
		<ul style="list-style-type: none"> Tavg – LESS THAN 579°F 	
	HCO	(Step 3) Adjust Boric Acid Addition Rate As Necessary To (refer to OPG-REACTIVITY-CALC):	
		<ul style="list-style-type: none"> Maintain rods above the insertion limit 	
		<ul style="list-style-type: none"> Match Tavg and Tref 	
		<ul style="list-style-type: none"> Compensate for Xenon 	
	HCO	(*Step 4) Monitor PRZR Pressure – TRENDING TO 2235 PSIG IN AUTO	
	CO	(*Step 5) Monitor MFW Regulating Valves – RESTORING S/G LEVEL TO 52% IN AUTO	
	HCO	(*Step 6) Monitor PRZR Level – TRENDING TO PROGRAM IN AUTO CONTROL	
	HCO	(Step 7) check IA Available to CNMT	
		<ul style="list-style-type: none"> IA pressure – GREATER THAN 60 PSIG 	

Op Test No.: N10-1 Scenario # 4 Event # 4 Page 30 of 51Event Description: **Heater Drain Pump A trips/Rapid Downpower**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> Instr Air to CNMT Isol Valve, AOV-5392 - OPEN 	
	CO	(*Step 8) Check Steam Dump Status:	
		<ul style="list-style-type: none"> Annunciator G-15. STEAM DUMP ARMED - LIT 	
		<ul style="list-style-type: none"> Steam dump operating properly in AUTO 	
	CO	(Step 9) Check Hotwell Level:	
		<ul style="list-style-type: none"> Hotwell level controller in AUTO 	
		<ul style="list-style-type: none"> Controller demand LESS THAN 60% 	
		<ul style="list-style-type: none"> Hotwell level at setpoint 	
	CO	(Step 10) Check If Condensate Booster Pumps Should Be Secured	
		<ul style="list-style-type: none"> Condensate booster pumps – 2 PUMPS RUNNING 	
		<ul style="list-style-type: none"> Verify the following: 	
		<ul style="list-style-type: none"> Trim valve controller set at 375 psig 	NOTE: These conditions will NOT be met.
		<ul style="list-style-type: none"> Trim valve, AOV-9508G- GREATER THAN 80% open 	
		<ul style="list-style-type: none"> Annunciator AA-17, COND BSTR PMP DISCH HI PRESS - LIT 	
	CRS	(Step 10b RNO) Go to Step 18	
	CRS	(Step 18) Evaluate Plant Status	

Op Test No.: N10-1 Scenario # 4 Event # 4 Page 31 of 51Event Description: **Heater Drain Pump A trips/Rapid Downpower**

Time	Pos	Expected Action/Behavior	Comments
		<ul style="list-style-type: none"> IF load was reduced more than 15% RTP in one hour, THEN notify RP to obtain primary samples required by ITS LCO 3.4.16 	<p>NOTE: The Load reduction will be $\approx 30\%$.</p> <p>NOTE: The CRS may notify the RP.</p> <p>Booth Instructor: as RP, acknowledge.</p>
		<ul style="list-style-type: none"> Power stable at desired level 	
	CRS	(Step 18b RNO) IF power greater than 20% and further reduction is required, THEN continue load reduction and return to Step 2.	<p>NOTE: If NOT at the desired level, the CRS will loop back to Step 2, and THEN go to Step 19 when at 340 MWe.</p>
At the discretion of the Lead Examiner move to Event #5.			

Op Test No.: N10-1 Scenario # 4 Event # 5 Page 32 of 51Event Description: **B SG ARV Controller (AOV-3410) fails in AUTO**

During the downpower, the B Steam Generator ARV (AOV-3410) Controller will fail in Auto such that the valve goes fully Open. The operator will respond in accordance with A-503.1, Emergency and Abnormal Operating Procedures Users Guide, and close the valve manually.

SIM DRIVER Instructions: Operate Trigger #4 (STM04C (100))

Indications Available:

- AOV-3410 red status light is LIT, Green status light is DARK.
- PPCS Alarm V3410 OPEN
- B SG ARV Controller Red status light is LIT
- B SG ARV Controller output goes to 100%

Time	Pos.	Expected Actions/Behavior	Comments
A-503.1, EMERGENCY AND ABNORMAL OPERATING PROCEDURES USERS GUIDE			
	CO	(Step 5) Actions are permitted to mitigate or compensate for equipment or controller failure 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 will take Manual control of AOV-3410 and close the valve.
At the discretion of the Lead Examiner move to Events #6-9.			

Op Test No.: N10-1 Scenario # 4 Event # 6, 7, 8, & 9 Page 33 of 51Event Description: **MSIVs Close/ SG Safeties lift/fail OPEN (1 per SG)/ TDAFW Pump Steam Supply Valves Fail to Open in AUTO/ A AFW Pump trips on Start**

At a Turbine load of about 550 MWe, both MSIVs will inadvertently fail shut. The Reactor will trip, and the operator will enter E-0, Reactor Trip or Safety Injection. On the plant trip one or more SG Safety Valves will open, and the lowest set valve will stick in the OPEN position on each SG. Additionally, the A AFW Pump will trip upon an automatic start signal, and the TDAFW Pump Steam Supply Valves will fail to open upon an automatic signal. The operator will be required to manually start the TDAFW Pump to restore Secondary Heat Sink. The operator will transition from E-0 to E-2, Faulted Steam Generator Isolation, and then to ECA-2.1, Uncontrolled Depressurization of All Steam Generators. The scenario will terminate at Step 16 of ECA-2.1, after the crew has correctly determined whether plant conditions meet SI Termination criteria.

SIM DRIVER Instructions: Operate Trigger #5 (STM05A/B, 0%)**Indications Available:**

- Both MSIVs Closed (green status lights are LIT, Red status lights are DARK)
- All Steam Dump Valves are full Open (Red status lights are LIT)
- RCS Pressure is increased to greater than 2335 psig.
- Both Pzr Spray valves full Open.
- Both Pzr PORVs full Open.
- At least three of the four Steam Generator Safety Valves on each Steam Generator are Open.

Time	Pos.	Expected Response/Behavior	Comments
E-0, REACTOR TRIP OR SAFETY INJECTION			
	HCO	(Step 1) Verify Reactor Trip:	
		<ul style="list-style-type: none"> • At least one train of reactor trip breakers – OPEN 	
		<ul style="list-style-type: none"> • Neutron flux - LOWERING 	
		<ul style="list-style-type: none"> • MRPI indicates – ALL CONTROL AND SHUTDOWN RODS ON BOTTOM 	
	CO	(Step 2) Verify Turbine Stop Valves – CLOSED	
	CO	(Step 3) Verify Both Trains of AC Emergency Busses Energized to at Least 440 VOLTS:	

Op Test No.: N10-1 Scenario # 4 Event # 6, 7, 8, & 9 Page 34 of 51Event Description: **MSIVs Close/ SG Safeties lift/fail OPEN (1 per SG)/ TDAFW Pump Steam Supply Valves Fail to Open in AUTO/ A AFW Pump trips on Start**

Time	Pos.	Expected Action/Behavior	Comments
		<ul style="list-style-type: none"> Bus 14 and Bus 18 	
		<ul style="list-style-type: none"> Bus 16 and Bus 17 	
	HCO/ CO	(Step 4) Check if SI is Actuated:	NOTE: The cooldown may NOT have created the conditions necessary to automatically actuate SI yet.
		<ul style="list-style-type: none"> Any SI Annunciator – LIT 	NOTE: D-19, PZR LOW PRESS, 1750 psig
	HCO/ CO	(Step 4a RNO) IF any of the following conditions are met, THEN manually actuate SI and CI:	
		<ul style="list-style-type: none"> PRZR pressure less than 1750 psig 	
		OR	
		<ul style="list-style-type: none"> Steamline pressure less than 514 psig 	
		OR	
		<ul style="list-style-type: none"> CNMT pressure greater than 4 psig 	
		OR	
		<ul style="list-style-type: none"> SI sequencing started 	
		OR	
		<ul style="list-style-type: none"> Operator determines SI required 	NOTE: With both Steam Generators depressurizing, RCS temperature and pressure will be lowering substantially, and SI will be required.
	HCO/ CO	<ul style="list-style-type: none"> SI sequencing – BOTH TRAINS STARTED. 	
	HCO	(Step 5) Verify CNMT Spray Not Required:	
		<ul style="list-style-type: none"> Annunciator A-27, CNMT SPRAY – EXTINGUISHED 	

Op Test No.: N10-1 Scenario # 4 Event # 6, 7, 8, & 9 Page 35 of 51Event Description: **MSIVs Close/ SG Safeties lift/fail OPEN (1 per SG)/ TDAFW Pump Steam Supply Valves Fail to Open in AUTO/ A AFW Pump trips on Start**

Time	Pos.	Expected Action/Behavior	Comments
		<ul style="list-style-type: none"> CNMT pressure – LESS THAN 28 PSIG 	
	CRS	(Step 6) Direct Operator to Perform ATT-27.0, ATTACHMENT AUTOMATIC ACTION VERIFICATION	
			<p>NOTE: The CRS will hand off ATT-27.0 to either the HCO or the CO, and continue with the other operator in E-0.</p> <p>Examiner following operator performing ATT-27.0 continue below.</p> <p>Examiner following operator NOT performing ATT-27.0 continue at page 38.</p>
E-0, REACTOR TRIP OR SAFETY INJECTION ATTACHMENT 27.0, ATTACHMENT AUTOMATIC ACTION VERIFICATION			
	HCO/CO	(Step 1) Verify SI and RHR Pumps Running:	
		<ul style="list-style-type: none"> All SI pumps – RUNNING 	
		<ul style="list-style-type: none"> Both RHR pumps – RUNNING 	
	HCO/CO	(Step 2) Verify CNMT RECIRC Fans Running:	
		<ul style="list-style-type: none"> All fans – RUNNING 	
		<ul style="list-style-type: none"> Charcoal filter dampers green status lights – EXTINGUISHED 	
	HCO/CO	(Step 3) Check If Main Steamlines Should Be Isolated:	
		<ul style="list-style-type: none"> Any MSIV – OPEN 	NOTE: Both MSIVs are Closed.

Op Test No.: N10-1 Scenario # 4 Event # 6, 7, 8, & 9 Page 36 of 51

Event Description: **MSIVs Close/ SG Safeties lift/fail OPEN (1 per SG)/ TDAFW Pump Steam Supply Valves Fail to Open in AUTO/ A AFW Pump trips on Start**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO/ CO	(Step 3a RNO) Go to Step 4.	
	HCO/ CO	(Step 4) Verify MFW Isolation:	
		<ul style="list-style-type: none"> • MFW pumps – TRIPPED 	
		<ul style="list-style-type: none"> • MFW Isolation valves – CLOSED 	
		<ul style="list-style-type: none"> • S/G A, AOV-3995 	
		<ul style="list-style-type: none"> • S/G B, AOV-3994 	
		<ul style="list-style-type: none"> • 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:	
		<ul style="list-style-type: none"> • CI and CVI annunciators - LIT 	
		<ul style="list-style-type: none"> • Annunciator A-26, CNMT ISOLATION 	
		<ul style="list-style-type: none"> • Annunciator A-25, CNMT VENTILATION ISOLATION 	
		<ul style="list-style-type: none"> • Verify CI and CVI valve status lights – BRIGHT 	
		<ul style="list-style-type: none"> • CNMT RECIRC fan coolers SW outlet valve status lights - BRIGHT 	
		<ul style="list-style-type: none"> • FCV-4561 	
		<ul style="list-style-type: none"> • FCV-4562 	
		<ul style="list-style-type: none"> • Letdown orifice valves - CLOSED 	
		<ul style="list-style-type: none"> • AOV-200A 	
		<ul style="list-style-type: none"> • AOV-200B 	
		<ul style="list-style-type: none"> • AOV-202 	

Op Test No.: N10-1 Scenario # 4 Event # 6, 7, 8, & 9 Page 37 of 51Event Description: **MSIVs Close/ SG Safeties lift/fail OPEN (1 per SG)/ TDAFW Pump Steam Supply Valves Fail to Open in AUTO/ A AFW Pump trips on Start**

Time	Pos.	Expected Action/Behavior	Comments
	HCO/ CO	(Step 7) Check CCW System Status:	
		<ul style="list-style-type: none"> Verify CCW pump – AT LEAST ONE RUNNING 	
	HCO/ CO	(Step 8) Verify SI and RHR Pump Flow:	
		<ul style="list-style-type: none"> SI flow indicators – CHECK FOR FLOW 	
		<ul style="list-style-type: none"> RHR flow indicator – CHECK FOR FLOW 	
	HCO/ CO	(Step 7b RNO) IF RCS pressure less than 150 psig manually ...	NOTE: RCS Pressure will remain > 150 psig.
	HCO/ CO	(Step 9) Verify SI Pump and RHR Pump Emergency Alignment:	
		<ul style="list-style-type: none"> RHR pump discharge to Rx vessel deluge - OPEN 	
		<ul style="list-style-type: none"> MOV-852A 	
		<ul style="list-style-type: none"> MOV-852B 	
		<ul style="list-style-type: none"> Verify SI pump C – RUNNING 	
		<ul style="list-style-type: none"> Verify SI pump A - RUNNING 	
		<ul style="list-style-type: none"> Verify SI pump B - RUNNING 	
		<ul style="list-style-type: none"> Verify SI pump C discharge valves - OPEN 	
		<ul style="list-style-type: none"> MOV-871A 	
		<ul style="list-style-type: none"> MOV-871B 	
	HCO/ CO	(Step 10) Verify CREATS Actuation:	
		<ul style="list-style-type: none"> At least one damper in each flowpath - CLOSED 	
		<ul style="list-style-type: none"> Normal Supply Air 	

Op Test No.: N10-1 Scenario # 4 Event # 6, 7, 8, & 9 Page 38 of 51Event Description: **MSIVs Close/ SG Safeties lift/fail OPEN (1 per SG)/ TDAFW Pump Steam Supply Valves Fail to Open in AUTO/ A AFW Pump trips on Start**

Time	Pgs.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> Normal Return Air 	
		<ul style="list-style-type: none"> Lavatory Exhaust Air 	
		<ul style="list-style-type: none"> CREATS fans – BOTH RUNNING 	
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	NOTE: The A MDAFW Pump has failed, and the B MDAFW Pump was OOS.
	CO/ HCO	(Step 7 RNO) Manually start both MDAFW pumps.	
		<ul style="list-style-type: none"> IF less than 2 MDAFW pumps are running, THEN manually open TDAFW pump steam supply valves. 	NOTE: The CO/HCO will manually open the Steam Supply Valves to the TD AFW Pump.
		<ul style="list-style-type: none"> MOV-3505A 	
		<ul style="list-style-type: none"> MOV-3504A 	
	CO/ HCO	(Step 8) Verify AFW Valve Alignment:	
		<ul style="list-style-type: none"> AFW flow – INDICATED TO BOTH S/G(s) 	NOTE: TDAFW pump only
		<ul style="list-style-type: none"> AFW flow from each MDAFW pump – LESS THAN 230 GPM 	

Op Test No.: N10-1 Scenario # 4 Event # 6, 7, 8, & 9 Page 39 of 51Event Description: **MSIVs Close/ SG Safeties lift/fail OPEN (1 per SG)/ TDAFW Pump Steam Supply Valves Fail to Open in AUTO/ A AFW Pump trips on Start**

Time	Pos.	Expected Actions/Behavior	Comments
CRITICAL TASK			
(E-0F) Establish 230 gpm of AFW Flow to the Steam Generators before transition out of E-0, unless the transition is made to FR-H.1, and then before the RCPs are manually tripped to limit heat input to the RCS.			
Safety Significance: Failure to establish a Secondary Heat Sink through the initiation of AFW flow unnecessarily challenges both the HEAT SINK and the CORE COOLING Critical Safety Functions. Additionally, the FSAR Safety Analysis results are predicated on the assumption that at least one train of safeguards actuates and delivers a minimum amount of AFW flow to the Steam Generators. Failure to perform this task, when the ability to do so exists, results in a violation of the Facility License Condition and places the plant in an unanalyzed condition.			
	CO/ HCO	(*Step 9) Monitor Heat Sink:	
		<ul style="list-style-type: none"> Check S/G narrow range level – GREATER THAN 7% [25% ADVERSE CNMT] in any S/G 	
	CO/ HCO	(Step 9 RNO) Perform the following:	
		<ul style="list-style-type: none"> Verify total AFW flow – GREATER THAN 200 GPM 	
	CRS	<ul style="list-style-type: none"> Go to Step 10 	
	CRS	(Step 10) Check If TDAFW Pump Can Be Stopped:	
		<ul style="list-style-type: none"> Both MDAFW pumps – RUNNING 	NOTE: The TDAFW Pump is the ONLY source of AFW flow.
	CRS	(Step 10 RNO) Go to Step 11	
	CO/ HCO	(Step 11) Check CCW Flow to RCP Thermal Barriers:	

Op Test No.: N10-1 Scenario # 4 Event # 6, 7, 8, & 9 Page 40 of 51Event Description: **MSIVs Close/ SG Safeties lift/fail OPEN (1 per SG)/ TDAFW Pump Steam Supply Valves Fail to Open in AUTO/ A AFW Pump trips on Start**

Time	Pos	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> Annunciator A-7, RCP 1A CCW RETURN HI TEMP OR LO FLOW EXTINGUISHED 	
		<ul style="list-style-type: none"> Annunciator A-15, RCOP 1B CCW RETURN HI TEMP OR LOW FLOW - EXTINGUISHED 	
	CO/ HCO	(*Step 12) Monitor RCS Tavg – STABLE AT OR TRENDING TO 547°F	NOTE: Because of the failed open SG Safety Valves, the RCS will be cooling down rapidly.
	CO/ HCO	(Step 12 RNO) If temperature less than 547°F and lowering, THEN perform the following:	
		<ul style="list-style-type: none"> Stop dumping steam. 	
		<ul style="list-style-type: none"> Ensure reheater steam supply valves are closed. 	
		<ul style="list-style-type: none"> IF cooldown continues, THEN 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. 	
		<ul style="list-style-type: none"> WHEN S/G level greater than 7% in one S/G, THEN limit feed flow to that required to maintain level in at least one S/G. 	
		<ul style="list-style-type: none"> IF cooldown continues, THEN close both MSIVs. 	NOTE: Both MSIVs are Closed.
	CO/ HCO	(Step 13) Check PRZR PORVs and Spray Valves:	
		<ul style="list-style-type: none"> PORVs – CLOSED 	
		<ul style="list-style-type: none"> Auxiliary Spray valves (AOV-296) – CLOSED 	
		<ul style="list-style-type: none"> Check PRZR pressure – LESS THAN 2260 PSIG 	

Op Test No.: N10-1 Scenario # 4 Event # 6, 7, 8, & 9 Page 41 of 51Event Description: **MSIVs Close/ SG Safeties lift/fail OPEN (1 per SG)/ TDAFW Pump Steam Supply Valves Fail to Open in AUTO/ A AFW Pump trips on Start**

Time	Pos.	Expected Actions/Behavior	Comments
		<ul style="list-style-type: none"> Normal PRZR spray valves - CLOSED 	
		<ul style="list-style-type: none"> PCV-431A 	
		<ul style="list-style-type: none"> PCV-431B 	
	CO/ HCO	(Step 14) Monitor RCP Trip Criteria:	
		<ul style="list-style-type: none"> RCP status – ANY RCP RUNNING 	
		<ul style="list-style-type: none"> SI pumps – AT LEAST TWO RUNNING 	
		<ul style="list-style-type: none"> RCS pressure minus maximum S/G pressure – LESS THAN 210 psi [240 psi adverse CNMT] 	NOTE: The RCP Trip Criteria will NOT be met.
	CRS	(Step 14c RNO) Go to Step 15.	
	CO/ HCO	(Step 15) Check If S/G Secondary Side Is Intact:	
		<ul style="list-style-type: none"> Pressure in both S/Gs – STABLE OR RISING 	NOTE: Both SG Pressures are decreasing uncontrollably.
		<ul style="list-style-type: none"> Pressure in both S/Gs – GREATER THAN 110 PSIG 	
	CRS	(Step 15 RNO) IF any S/G pressure lowering in an uncontrolled manner OR completely depressurized, THEN go to E-2, FAULTED STEAM GENERATOR ISOLATION, Step 1.	
			NOTE: The CRS will go to E-2.
E-2, FAULTED STEAM GENERATOR ISOLATION			
	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:	

Op Test No.: N10-1 Scenario # 4 Event # 6, 7, 8, & 9 Page 42 of 51Event Description: **MSIVs Close/ SG Safeties lift/fail OPEN (1 per SG)/ TDAFW Pump Steam Supply Valves Fail to Open in AUTO/ A AFW Pump trips on Start**

Time	Pos.	Expected Action/Behavior	Comments
		<ul style="list-style-type: none"> Check pressure in S/G A- STABLE OR RISING 	NOTE: Both SG Pressures are decreasing uncontrollably.
		OR	
		<ul style="list-style-type: none"> Check pressure in S/G B – STABLE OR RISING 	
	CRS	(Step 2 RNO) IF both S/G pressures lowering in an uncontrolled manner, THEN go to ECA-2.1, UNCONTROLLED DEPRESSURIZATION OF BOTH STEAM GENERATORS, Step 1	
			NOTE: The CRS will go to ECA-2.1.
ECA-2.1, UNCONTROLLED DEPRESSURIZATION OF BOTH STEAM GENERATORS			
	CO	(Step 1) Check Secondary Pressure Boundary:	
		<ul style="list-style-type: none"> Verify all of the following: 	
		<ul style="list-style-type: none"> MSIVs - CLOSED 	NOTE: Both MSIVs are Closed.
		<ul style="list-style-type: none"> MFW flow control valves - CLOSED 	
		<ul style="list-style-type: none"> MFW regulating valves 	
		<ul style="list-style-type: none"> MFW bypass valves 	
		<ul style="list-style-type: none"> MFW pump discharge valves - CLOSED 	
		<ul style="list-style-type: none"> S/G blowdown and sample valves - CLOSED 	
		<ul style="list-style-type: none"> TDAFW pump steam supply valves – PULL STOP 	NOTE: This cannot be accomplished since the TD AFW Pump is the only source of AFW flow.
		<ul style="list-style-type: none"> TDAFW pump flow control valves - CLOSED 	NOTE: This cannot be accomplished since the TD AFW Pump is the only source of AFW flow.
		<ul style="list-style-type: none"> S/G ARVs - CLOSED 	

Op Test No.: N10-1 Scenario # 4 Event # 6, 7, 8, & 9 Page 43 of 51Event Description: **MSIVs Close/ SG Safeties lift/fail OPEN (1 per SG)/ TDAFW Pump Steam Supply Valves Fail to Open in AUTO/ A AFW Pump trips on Start**

Time	Pos.	Expected Action/Behavior	Comments
		Dispatch AO to locally isolate S/Gs (Refer to ATT-10.0, ATTACHMENT FAULTED S/G)	NOTE: The CRS will dispatch an AO. Booth Instructor: as AO, acknowledge.
	CO	(Step 2) Control Feed Flow to Minimize RCS Cooldown:	
		(Step 2a) 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.
CRITICAL TASK			
(ECA-2.1 A) 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 integrity CSF.			
Safety Significance: Failure to control the AFW flow rate to the SGs leads to an unnecessary and avoidable severe challenge to the integrity CSF. Also, failure to perform the Critical Task increases challenges to the SUBCRITICALITY and CONTAINMENT Critical Safety Functions which otherwise would not occur.			
	HCO	(Step 2c) Check RCS hot leg temperature – STABLE OR LOWERING.	
	STA	Actions taken in Step 2a RNO will reduce AFW flow below the minimum required 200 gpm total needed to avoid entry into FR-H.1 conditions	
FR-H.1, RESPONSE to LOSS of SECONDARY HEAT SINK			
	CRS	CAUTION before Step 1: If total feed flow is <200 gpm due to operator action, this procedure should not be performed	

Op Test No.: N10-1 Scenario # 4 Event # 6, 7, 8, & 9 Page 44 of 51Event Description: **MSIVs Close/ SG Safeties lift/fail OPEN (1 per SG)/ TDAFW Pump Steam Supply Valves Fail to Open in AUTO/ A AFW Pump trips on Start**

Time	Pos.	Expected Action/Behavior	Comments
		<ul style="list-style-type: none"> CRS returns to ECA-2.1, Step 	
ECA-2.1, UNCONTROLLED DEPRESSURIZATION OF BOTH STEAM GENERATORS			
	HCO/ CO	(Step 3) Monitor RCP Trip Criteria:	
		<ul style="list-style-type: none"> RCP status – ANY RCP RUNNING 	
		<ul style="list-style-type: none"> SI pumps – AT LEAST TWO RUNNING 	
		<ul style="list-style-type: none"> RCS pressure minus maximum S/G pressure – LESS THAN 210 psi [240 psi adverse CNMT] 	
	CRS	(Step 3c RNO) Go to Step 4	
	HCO	(*Step 4) Monitor PRZR PORVs and Block Valves:	
		<ul style="list-style-type: none"> Power to PORV block valves - AVAILABLE 	
		<ul style="list-style-type: none"> PORVs - CLOSED 	
		<ul style="list-style-type: none"> Block valves – AT LEAST ONE OPEN 	
	HCO/ CO	(Step 5) Check Secondary Radiation Levels - NORMAL	
		<ul style="list-style-type: none"> Steamline radiation monitor (R-31 and R-32) 	
		<ul style="list-style-type: none"> Dispatch AO to locally check steamline radiation 	
		<ul style="list-style-type: none"> Request Chem Tech sample S/Gs for activity. 	
	HCO	(Step 6) Reset SI	

Op Test No.: N10-1 Scenario # 4 Event # 6, 7, 8, & 9 Page 45 of 51Event Description: **MSIVs Close/ SG Safeties lift/fail OPEN (1 per SG)/ TDAFW Pump Steam Supply Valves Fail to Open in AUTO/ A AFW Pump trips on Start**

Time	Pos	Expected Actions/Behavior	Comments
	HCO	(Step 7) Monitor If RHR Pumps Should Be Stopped:	
		<ul style="list-style-type: none"> RHR pumps –ANY RUNNING IN INJECTION MODE 	
		<ul style="list-style-type: none"> Check RCS Pressure: 	
		<ul style="list-style-type: none"> Pressure – GREATER THAN 300 psig [350 psig adverse CNMT] 	
		<ul style="list-style-type: none"> Pressure – STABLE OR RISING 	
		<ul style="list-style-type: none"> Stop RHR pumps and place in AUTO 	NOTE: The HCO will STOP the RHR Pumps.
	HCO	(Step 8) Monitor If CNMT Spray Should Be Stopped:	NOTE: Containment pressure is normal.
		<ul style="list-style-type: none"> CNMT spray pumps - RUNNING 	
	CRS	(Step 8a RNO) Go to Step 9	
	HCO	(Step 9) Check RWST Level – GREATER THAN 28%	
	HCO	(Step 10) Reset CI:	
		<ul style="list-style-type: none"> Depress CI reset pushbutton 	
		<ul style="list-style-type: none"> Verify annunciator A-26, CNMT ISOLATION - EXTINGUISHED 	
	CO	(Step 11) Verify Adequate SW Flow:	
		<ul style="list-style-type: none"> Check at least two SW pumps - RUNNING 	
		<ul style="list-style-type: none"> Dispatch AO to establish normal shutdown alignment (Refer to ATT-17.0, ATTACHMENT SD-1) 	NOTE: The CRS will dispatch an AO. Booth Instructor: as AO, acknowledge, and use Schedule file SD-1.sch.

Op Test No.: N10-1 Scenario # 4 Event # 6, 7, 8, & 9 Page 46 of 51Event Description: **MSIVs Close/ SG Safeties lift/fail OPEN (1 per SG)/ TDAFW Pump Steam Supply Valves Fail to Open in AUTO/ A AFW Pump trips on Start**

Time	Pos.	Expected Action/Behavior	Comments
	HCO/ CO	(Step 12) Establish IA to CNMT:	
		<ul style="list-style-type: none"> Verify non-safeguards busses energized from offsite power 	
		<ul style="list-style-type: none"> Bus 13 normal feed - CLOSED 	
		OR	
		<ul style="list-style-type: none"> Bus 15 normal feed - CLOSED 	
		<ul style="list-style-type: none"> Verify SW isolation valves to turbine building - OPEN 	
		<ul style="list-style-type: none"> Verify adequate air compressor(s) - RUNNING 	
		<ul style="list-style-type: none"> Check IA supply: 	
		<ul style="list-style-type: none"> Pressure – GREATER THAN 60 PSIG 	
		<ul style="list-style-type: none"> Pressure – STABLE OR RISING 	
		<ul style="list-style-type: none"> Reset both trains of XY relays for IA to CNMT AOV-5392 	
		<ul style="list-style-type: none"> Verify IA to CNMT AOV-5392 - OPEN 	
	HCO/ CO	(Step 13) Check if SI ACCUMs Should Be Isolated:	
		<ul style="list-style-type: none"> Both RCS hot leg temperatures – LESS THAN 390°F 	
	CRS	(Step 13a RNO) Go to Step 14	
	CO	(Step 14) Check Normal Power Available To Charging Pumps:	
		<ul style="list-style-type: none"> Bus 14 normal feed breaker - CLOSED 	
		<ul style="list-style-type: none"> Bus 16 normal feed breaker - CLOSED 	
	HCO	(Step 15) Check If Charging Flow Has Been Established:	

Op Test No.: N10-1 Scenario # 4 Event # 6, 7, 8, & 9 Page 47 of 51Event Description: **MSIVs Close/ SG Safeties lift/fail OPEN (1 per SG)/ TDAFW Pump Steam Supply Valves Fail to Open in AUTO/ A AFW Pump trips on Start**

Time	Pos.	Expected Action/Behavior	Comments
		<ul style="list-style-type: none"> Charging pumps – ANY RUNNING 	
		<ul style="list-style-type: none"> Align charging pump suction to RWST: 	
		<ul style="list-style-type: none"> LCV-112B - OPEN 	
		<ul style="list-style-type: none"> LCV-112C - CLOSED 	
		<ul style="list-style-type: none"> Start charging pumps as necessary and adjust charging flow to restore PRZR level 	
	HCO	(*Step 16) Monitor SI Termination Criteria:	
		<ul style="list-style-type: none"> SI pumps – ANY RUNNING 	
		<ul style="list-style-type: none"> Check RCS pressure: 	
		<ul style="list-style-type: none"> Pressure – GREATER THAN 1650 psig [1650 psig adverse CNMT] 	
		(Step 16b RNO) DO NOT stop SI pumps. Perform the following:	
	HCO	<ul style="list-style-type: none"> Energize PRZR heaters and operate PRZR spray to stabilized RCS pressure greater than 1650 psig [1650 psig adverse CNMT] 	
	CRS	<ul style="list-style-type: none"> Return to Step 2 	
Terminate the Exam at the discretion of the Lead Examiner			

UNIT STATUS:

Power Level: 100% RCS [B] 1145 ppm BAST [B]: 17000 ppm

Power History: The plant has been at 100% power (MOL), for 172 days. Core Burnup: 10000 MWD/MTU

INFORMATION NEEDED TO ASSUME TO SHIFT:

- The Plant is at 100% power (MOL).
- Immediately after turnover, it is requested that the crew swap Condensate Pumps in preparation for taking C Condensate Pump OOS for scheduled maintenance.
- After the Condensate Pump swap, the crew should complete the routine Rod Control surveillance on Control Bank D.

The following equipment is Out-Of-Service:

- The B AFW Pump is OOS for Bearing Replacement. LCO 3.7.5 entered 24 hours ago.

A-52.4

Equipment	<i>Date</i>	Time	Reason	Required Actions	Required Completion Date/Time	Required Action not met
B MDAFW Pump	_/_/10	0330	Bearing Replacement	ITS 3.7.5 Enter Condition B Required Action B.1: Restore MDAFW Train to OPERABLE Status in 7 days	(Current date/time + 6 days)	ITS 3.7.5 Enter Condition G Required Action G.1: Be in Mode 3 in 6 hours AND Required Action G.2: Be in Mode 4 in 12 hours

Mark Up Attachment 1 of STP-O-1 as follows, and provide to crew on Turnover:

**Attachment 1
Rod Position**

SHUTDOWN BANK	INITIAL POSITION (Steps)		TRANSITION POSITION (Steps)			FINAL POSITION (Steps)	
	MRPI CRT	PPCS RPI	MRPI CRT	PPCS RPI	STEP CTR	MRPI CRT	PPCS RPI
E-3 (GRP 1)	224	224	212	212	216	224	224
C-9 (GRP 1)	224	224	212	212	216	224	224
I-11 (GRP 1)	224	224	212	212	216	224	224
K-5 (GRP 1)	224	224	212	212	216	224	224
I-3 (GRP 2)	224	224	212	212	215	224	224
C-5 (GRP 2)	224	224	212	212	215	224	224
E-11 (GRP 2)	224	224	212	212	215	224	224
K-9 (GRP 2)	224	224	212	212	215	224	224
	STEP COUNTER		RECORD position of EACH rod WHEN it transitions			STEP COUNTER	
	GRP 1	223				GRP 1	223
	GRP 2	223				GRP 2	223

**Attachment 1
Rod Position**

CONTROL BANK C	INITIAL POSITION (Steps)		TRANSITION POSITION (Steps)			FINAL POSITION (Steps)	
	MRPI CRT	PPCS RPI	MRPI CRT	PPCS RPI	STEP CTR	MRPI CRT	PPCS RPI
D-4 (GRP 1)	224	224	212	212	216	224	224
G-7 (GRP 1)	224	224	212	212	216	224	224
J-10 (GRP 1)	224	224	212	212	216	224	224
J-4 (GRP 2)	224	224	212	212	216	224	224
J-4 (GRP 2)	224	224	212	212	216	224	224
	STEP COUNTER		RECORD position of EACH rod WHEN it transitions			STEP COUNTER	
	GRP 1	225				GRP 1	225
	GRP 2	225				GRP 2	225

**Attachment 1
Rod Position**

CONTROL BANK A	INITIAL POSITION (Steps)		TRANSITION POSITION (Steps)			FINAL POSITION (Steps)	
	MRPI CRT	PPCS RPI	MRPI CRT	PPCS RPI	STEP CTR	MRPI CRT	PPCS RPI
F-2 (GRP 1)	224	224	200	204	216	224	224
B-8 (GRP 1)	224	224	200	204	216	224	224
H-12 (GRP 1)	224	224	200	204	216	224	224
L-6 (GRP 1)	224	224	200	204	216	224	224
H-2 (GRP 2)	224	224	200	203	215	224	224
B-6 (GRP 2)	224	224	200	203	215	224	224
F-12 (GRP 2)	224	224	200	203	215	224	224
L-8 (GRP 2)	224	224	200	203	215	224	224
	STEP COUNTER		RECORD position of EACH rod WHEN it transitions			STEP COUNTER	
	GRP 1	224				GRP 1	224
	GRP 2	224				GRP 2	224

**Attachment 1
Rod Position**

CONTROL BANK B	INITIAL POSITION (Steps)		TRANSITION POSITION (Steps)			FINAL POSITION (Steps)	
	MRPI CRT	PPCS RPI	MRPI CRT	PPCS RPI	STEP CTR	MRPI CRT	PPCS RPI
I-17 (GRP 1)	225	225	212	212	216	225	225
G-5 (GRP 2)	225	225	212	212	216	225	225
E-7 (GRP 1)	225	225	212	212	216	225	225
G-9 (GRP 2)	225	225	212	212	216	225	225
	STEP COUNTER		RECORD position of EACH rod WHEN it transitions			STEP COUNTER	
	GRP 1	225				GRP 1	225
	GRP 2	225				GRP 2	225