Facility: Ginna

Task No.: 344-001-03-01
Perform Calculations To Determine The Plant Status (e. g., Fluid Flow And Heat Balance, Quadrant Power Tilts, Shutdown Margin, Etc.)

Task Title: Perform OPG-REACTIVITY-CALC

JPM No.: 2012 ILT NRC JPM N-RA-1

K/A Reference: 2.1.37 (4.3/4.6)

Alternate Path Yes __ No _X_
Time Critical Yes __ No _X_

Knowledge of procedures, guidelines, or limitations associated with reactivity management.

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% RTP, steady state, equilibrium xenon.
- Current "BURNUP" is 13764 MWD/MTU
- Current RCS Boron Concentration is 517 ppm
- Current BASTs Boron Concentration (avg) is 16,100 ppm
- Current BAST temperature is 165°F
- Current RWST Boron Concentration is 2910 ppm
- Current RWST temperature is 65°F
- Control Rods in Auto at 215 steps on Control Bank D

Task Standard:
- Perform the weekly reactivity calculation for a 50% power change (assuming Rods are operable) from 100% power at 1% per minute.

Required Materials:
- Computer with PCNDR and PPCS
- OPG-REACTIVITY-CALC, Revision 01001
- Calculator
- Pencil

General References: OPG-REACTIVITY-CALC, Revision 01001

Handouts: OPG-REACTIVITY-CALC, Revision 01001

Initiating Cue:

- Using the data from the Initial Conditions, perform the weekly reactivity calculation for a 50% power change (assuming Rods are operable) from 100% power at 1% per minute.

Validation Time: 30 Minutes

SIMULATOR SETUP

N/A

INSTRUCTOR ACTIONS

- Have a clean copy of OPG-REACTIVITY-CALC, Revision 01001 ready to provide to the Examinee.

(Denote Critical Steps with a √)

Start Time: _____.

Step 3.1

Procedure Note: Plant should be approximately 100% RTP, steady state, equilibrium Xenon to perform this guideline.

Performance Step: 1 Determine burnup from PPCS point ID "BURNUP".

_____

Standard: Examinee enters 13764 MWD/MTU, based on Initial Conditions.

EXAMINER CUE: **Provide the Examinee with a clean copy of OPG-REACTIVITY-CALC, Revision 01001**

Comment:

Step 3.2

Performance Step: 2 Use the following burnup values to determine appropriate curve for time in Core life:

_____

BOL – 6139 MWD/MTU → Use BOL curves
6140 – 12279 MWD/MTU → Use MOL curves
12280 – EOL MWD/MTU → Use EOL curves

Standard: None

EXAMINER Note: **This step impacts the performance of the procedure if the operator will be using the Cycle Book to perform the calculation (different sets of curves). In this case the operator will be using PCNDR, so the result of this determination has no impact on the calculation.**

Comment:

Step 3.2.1

Performance Step: 3 Use PCNDR (or Cycle Book) and appropriate time in core life to determine values for Differential Boron Worth, Power Defect, and Integral Rod Worth.

Standard:
- Uses PCNDR and appropriate time in core life to determine values for Differential Boron Worth, Power Defect, and Integral Rod Worth.

EXAMINER NOTE: **The Cycle 36 PCNDR program is initialized by:**
- **Clicking on PCNDR Cycle 36 Beta icon on desktop**
- **In response to "Security Warning – Macros Have Been Disabled" message, click on "Options"**
- **When Security Alert Menu popup appears, click on the 2nd bullet "Enable This Content" and "OK" to start program**

EXAMINER NOTE: **The examinee must determine the correct values at this point; however, the values aren't documented until Attachment 3 is filled out.**

Comment:

Step 3.2.2

Performance Step: 4 Use Xenon Predict report from PPCS, if available, to determine values for initial and final Xenon and Samarium.

Standard:
- Uses Xenon Predict report from PPCS, to determine values for initial and final Xenon and Samarium.

EXAMINER NOTE: **The examinee must determine the correct values at this point; however, the values aren't documented until Attachment 3 is filled out.**

Comment:

Step 3.3

√ **Performance Step: 5** Record the following:

- Current RCS Boron Concentration
- Current BASTs Boron Concentration (avg)
- Current RWST Boron Concentration
- Current Core Burnup
- Differential Boron Worth

Standard:

- Records values from Initial Conditions, and step 3.2.1:
  - Current RCS Boron Concentration = **517 ppm**
  - Current BASTs Boron Concentration (avg) = **16,100 ppm**
  - Current RWST Boron Concentration = **2910 ppm**
  - Current Core Burnup = **13,764**
  - √ Differential Boron Worth = -6.839 pcm/ppm

Comment:

Steps 3.4, 3.5, and 3.7

Performance Step: 6 Perform Attachment 1, 2, and 4

Standard:

- Recognizes these are not required for this task.
- N/A's these three steps

Comment:

Step 3.6

Performance Step: 7 Perform Attachment 3, 50% PWR CHANGE AT 1% PER MINUTE

Standard:

- Goes to Attachment 3 (Page 6)

Comment:

Delta Power Defect (E):

Procedure Note: Values obtained for items B, C, D, F, G, G1, G2 and I are always negative.

Procedure Note: Delta Xe and Sm is calculated from the time power decrease starts until completed.

√ **Performance Step: 8**
_____

100% Total Power Defect
50% Total Power Defect
_-_____ PCM (D) - _-_____ PCM (C) =

Standard:
- √ Uses PCNDR to determine 100% and 50% values for Total Power Defect. (-2648.2) and (-1406.3)
- √ Subtracts the 100% value from the 50% value

EXAMINER NOTE: **See Exam Key for acceptable answers.**

Comment:

Delta Rod Reactivity (F): (Use 170 steps on Bk D for Final Rod Position)

√ **Performance Step: 9**
_____

Initial Integral Rod worth on Bk D
Final Integral Rod worth on Bk D

_____ PCM (F1) - _____ PCM (F2) =

Standard:
- √ Uses PCNDR to determine values for initial and final Integral Rod worth on Bk D (+17.1) and (+225.3)
- √ Subtracts the Final value from the Initial value.

EXAMINER NOTE: **See Exam Key for acceptable answers.**

Comment:

Delta Xe and Sm (G):

√ **Performance Step: 10** _____

Initial Xe and Sm
Xe and Sm 50 minutes into power change

_-_____ PCM (G2) - _-_____ PCM (G1) =

Standard:

- √ Uses Xenon Predict report from PPCS to determine values for "Initial Xe and Sm", and "Xe and Sm 50 minutes into power change" (-3459 initial) and (-3514 after 50 min)
- √ Subtracts the "Initial Xe and Sm" value from the "Xe and Sm 50 minutes into power change" value

EXAMINER NOTE: **See Exam Key for acceptable answers.**

Comment:

Total Reactivity (H):

√ **Performance Step: 11** _____

Delta Power Defect + Delta Rod Reactivity + Delta Xe and Sm = Total Reactivity Change

_____ (E) + _-_____ (F) + _-_____ (G) =

Standard:

- √ Adds Delta Power Defect, Delta Rod Reactivity, and Delta Xe and Sm to obtain Total Reactivity Change (+978.7 pcm)

EXAMINER NOTE: **See Exam Key for acceptable answers.**

Comment:

RCS Boron Offset Value (I):

√ **Performance Step: 12**

_____ PCM (H)/ - PCM/PPM (B) = - PPM (I)

Standard:

- √ Divides Total Reactivity Change by Differential Boron Worth to obtain the RCS Boron Offset Value (978.7/-6.639 = -147)

EXAMINER NOTE: See Exam Key for acceptable answers.

Comment:

Required RCS Boron Concentration (J):

√ **Performance Step: 13**

_____ Current RCS Boron Conc (A) – PPM change (I) = Required RCS Boron Conc (J)

PPM (A) - - (I) = + PPM (J)

Standard:

- √ Subtracts the RCS Boron Offset Value from the Current RCS Boron Concentration to obtain the required RCS Boron concentration. (517 ppm – (-147 ppm) = 664 ppm

EXAMINER NOTE: See Exam Key for acceptable answers.

Comment:

Gallons of Boric Acid needed:

√ **Performance Step: 14**

____ (Use PPCS or VBD Book to calculate the number of gallons required from BASTs and the RWST).

Standard:

- √ Uses PPCS to calculate the number of gallons required from BASTs and the RWST. (312 BASTs)(2093 RWST)

EXAMINER NOTE: See Exam Key for acceptable answers.

Comment:

Initial Boration Rate for Rapid shutdown

Performance Step: 15

1%/min gals BAST (K)___ / 50 minutes = __ GPM BA flow

3%/min gals BAST (K)___ / 16.67 minutes = __ GPM BA flow

5%/min gals BAST (K)___ / 10 minutes = __ GPM BA flow

Standard:

- Divides the gallons of boric acid required from the BASTs by the time required to result in the desired shutdown rate to determine the boric acid flow rate required for that particular load reduction rate.**(6.2 gpm, 18.7 gpm, 31.2 gpm)**

EXAMINER NOTE: **See Exam Key for acceptable answers.**

Comment:

Terminating Cue: **When Examinee returns the JPM to the Examiner, or at the Examiner's discretion: Evaluation on this JPM is complete.**

Stop time: _____.

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2012 ILT NRC JPM N-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 at 100% RTP, steady state, equilibrium xenon.
- Current "BURNUP" is 13,764 MWD/MTU
- Current RCS Boron Concentration is 517 ppm
- Current BASTs Boron Concentration (avg) is 16,100 ppm
- Current BAST temperature is 165°F
- Current RWST Boron Concentration is 2910 ppm
- Current RWST temperature is 65°F
- Control Rods in Auto at 215 steps on Control Bank D

INITIATING CUE:

- Using the data from the Initial Conditions, perform the weekly reactivity calculation for a 50% power change (assuming Rods are operable) from 100% power at 1% per minute.

Facility: Ginna

Task No.: 344-001-04-02
Perform Calculations To Determine The Plant Status (e. g., Fluid Flow And Heat Balance, Quadrant Power Tilts, Shutdown Margin, Etc.)

Task Title: Determine Maximum Allowable RV Head Venting Time

JPM No.: 2012 ILT NRC JPM N-RA-2

K/A Reference: 2.1.25 (3.9/4.2)

Alternate Path Yes __ No X
Time Critical Yes __ No X

Ability to interpret reference materials, such as graphs, curves, tables, etc.

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 crew is performing FR-I.3, Response to Voids in Reactor Vessel
- CNMT Hydrogen concentration is stable at 1.1%
- RCS pressure is stable at 650 psig
- Containment temperature is stable at 180°F

Task Standard:
- Correctly calculate the maximum allowable venting time.

Required Materials:
- Calculator
- Clear ruler

General References:
- FR-I.3, Response to Voids in Reactor Vessel, Revision02400
- ATT-20.0, Attachment Vent Time, Revision 4
- FIG-12.0, Figure CNMT Hydrogen, Revision 0

Handouts:	• FR-I.3, Response to Voids in Reactor Vessel, Revision02400 • ATT-20.0, Attachment Vent Time, Revision 4 • FIG-12.0, Figure CNMT Hydrogen, Revision 0
Initiating Cue:	• The Control Room Supervisor directs you to perform FR-I.3, Step 21 – Determine Maximum Allowable Venting Time.
Validation Time:	10 Minutes

SIMULATOR SETUP

N/A

INSTRUCTOR ACTIONS

Have a clean copy of the following available to provide to the Examinee:

- FR-I.3, Response to Voids in Reactor Vessel, Revision 02400
- ATT-20.0, Attachment Vent Time, Revision 4
- FIG-12.0, Figure CNMT Hydrogen, Revision 0

(Denote Critical Steps with a √)

Start Time: _____.

FR-I.3, Step 21

Performance Step: 1

_____

Determine Maximum Allowable Venting Time:

a. CNMT hydrogen concentration – LESS THAN 3%
b. Determine maximum venting time (Refer to ATT-20.0, ATTACHMENT VENT TIME)

Standard:

- Determines that CNMT hydrogen concentration is less than 3%, based on Initial Conditions
- Refers to ATT-20.0, ATTACHMENT VENT TIME

EXAMINER CUE:

Provide the Examinee with a clean copy of:

- **FR-I.3, Response to Voids in Reactor Vessel, Revision02400,**
- **ATT-20.0, Attachment Vent Time, Revision 4**

Comment:

ATT 20, Step 1

Performance Step: 2

_____

Record H2 Concentration and RCS pressure.

Standard:

Records 1.1% and 650 psig, respectively.

EXAMINER NOTE:

This information would have been recorded in FR-I.3, step 18, but, for the purpose of this JPM, the information has been provided in the Initial Conditions.

Comment:

ATT-20.0, Step 2

Performance Step: 3 Determine Containment Volume at standard conditions (V).

_____

Standard:
- Uses 180 °F in the equation 2a
- Determines that V (step 2b) = 796,875 cu ft.

EXAMINER NOTE: **Since all students are provided the same calculator, there is no defined tolerance needed for step 2b. Any minor rounding or scientific notation differences will be reflected within the readability margins of Fig. 12.0 (Performance Step 5).**

Comment:

ATT-20.0, Step 3

√ **Performance Step: 4** Determine the maximum H2 volume that can be vented (H).

_____

Standard:
- Uses 1.1% in equation 3a
- √ **Determines H (step 3b) to be ≥ 15140, but ≤ 15141 (exact value is 15140.6) cu ft.**

EXAMINER NOTE:
- **The tolerance allows for minor variation in rounding calculated value up or down to the nearest whole number.**
- **Critical step since an error has the potential to affect containment integrity.**

Comment:

ATT-20.0, Step 4

√ **Performance Step: 5** • Determine H2 flow rate (F) from curve on Figure CNMT HYDROGEN and RCS pressure recorded in step 1b.

_____

Standard: • **√ Using 650 psig on Figure-12.0, determines F (step 4a) to be ≥ 1125, but ≤ 1175 (actual value is 1150) SCFM**

EXAMINER CUE: **(When requested by Examinee)**
Provide a clean copy of Figure-12.0.

EXAMINER NOTE:
- **The tolerance allows for a minor variation in graph reading since the graph divisions are small.**
- **Critical step since an error has the potential to affect containment integrity.**

Comment:

ATT-20.0, Step 5

√ **Performance Step: 6** Calculate the maximum venting time (T).

_____

Standard:
- Divides H, from step 3, by F, from step 4
- **√ Calculates T (step 5b) to be between 12.9 and 13.5 minutes**

EXAMINER NOTE:
- **Lower end of tolerance allows for using low end of Fig 12.0 readability (1125 SCFM). Upper end of tolerance allows for using upper end of Fig 12.0 readability (1175 SCFM).**
- **Critical step since an error has the potential to affect containment integrity.**

Comment:

Terminating Cue: **When Examinee returns ATT-20.0 and Fig 12.0 to the Examiner, or at the Examiner's discretion:**
"Evaluation on this JPM is complete."

Stop time: _____.

Job Performance Measure No.: 2012 ILT NRC JPM N-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 crew is performing FR-I.3, Response to Voids in Reactor Vessel
- CNMT Hydrogen concentration is stable at 1.1%
- RCS pressure is stable at 650 psig
- Containment temperature is stable at 180°F

INITIATING CUE:

- The Control Room Supervisor directs you to perform FR-I.3, Step 21 – Determine Maximum Allowable Venting Time.

qFacility: Ginna

Task No.: 351-012-01-05
Perform 1/M Plots And Calculations

Task Title: Perform 1/M Plot per O-1.2.1

JPM No.: 2012 ILT NRC JPM N-RA-3

K/A Reference: 2.2.1 (4.5/4.4)

Alternate Path Yes __ No _X_
Time Critical Yes __ No _X_

Ability to perform pre-startup procedures for the facility, including operating those controls associated with plant equipment that could affect reactivity.

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 crew is performing a Reactor Startup per O-1.2, PLANT STARTUP FROM HOT SHUTDOWN TO FULL LOAD, step 6.2.14.
- O-1.2.2, CRITICAL ROD POSITION CALCULATION, has been performed:
  - The Estimated Critical Rod Position has been determined to be 105 steps on Control Bank D.
  - The + 500 PCM bank position is Bk D @ 52 steps
  - The – 500 PCM bank position is Bk D @ 186 steps
- The Shutdown bank is already withdrawn.
- O-1.2.1, 1/M CURVES, has been completed up to step 6.0.

Task Standard: Perform a 1/M plot and correctly interpret the plot. Determine if criticality is projected within the next pull, or if the projected critical position falls outside either the +/- 500 pcm position or below the 0% power RIL.

Required Materials:

- O-1.2, PLANT STARTUP FROM HOT SHUTDOWN TO FULL LOAD, Section 6.2
- O-1.2.1, 1/M CURVES
- Figure COLR-3, Control Bank Insertion Limits
- Calculator
- Clear ruler

General References:
- O-1.2, PLANT STARTUP FROM HOT SHUTDOWN TO FULL LOAD, Revision 19602
- O-1.2.1, 1/M CURVES, Revision 01900
- Figure COLR-3, Control Bank Insertion Limits

Handouts:
- O-1.2, PLANT STARTUP FROM HOT SHUTDOWN TO FULL LOAD, Section 6.2
- A copy of O-1.2.1, 1/M CURVES, Revision 01900 completed up to step 6.0,
- Figure COLR-3, Control Bank Insertion Limits
- A copy of the JPM Data Sheet
- Calculator
- Clear ruler

Initiating Cue:
- The Control Room Supervisor directs you to use the provided materials to perform a 1/M plot per O-1.2.1, 1/M CURVES, steps 6.0 through 6.4.8.
- Disregard any Independent Verification requirements.
- On the JPM CUE SHEET, answer the following questions based on the 1/M plot that you have constructed:
  1. Does it appear that the reactor will go critical at a rod height greater than the 0% RIL?
  2. Does it appear that the reactor will go critical at a rod height within the + and – 500 pcm bank positions?
- Hand in the JPM CUE SHEET and Attachment 1 pages 2 and 3 when you have completed the JPM.

QUESTIONS:
- Based on the 1/M plot that you have just completed:

1. Does it appear that the reactor will go critical at a rod height greater than the 0% RIL?

☐ YES ☐ NO

2. Does it appear that the reactor will go critical at a rod height within the + and – 500 pcm bank positions?

☐ YES ☐ NO

Validation Time: 30 Minutes

SIMULATOR SETUP

N/A

INSTRUCTOR ACTIONS

Have the following available to provide to the Examinee:

- O-1.2, PLANT STARTUP FROM HOT SHUTDOWN TO FULL LOAD, Section 6.2,
- A copy of O-1.2.1, 1/M CURVES, Revision 01900 completed up to step 6.0,
- Figure COLR-3, Control Bank Insertion Limits,
- A copy of the JPM Data Sheet,
- Calculator, and
- Clear ruler

JPM CUE SHEET

(Denote Critical Steps with a √)

Start Time: _____.

Step 6.1

Procedure Notes:

- Per O-1.2, 1/M is determined at 50 step intervals OR as specified by SM.
- Data is recorded on Attachment 1.

  A 1/M plot is completed each time an approach to criticality is desired.

√ **Performance Step: 1**

_____

- MARK the following rod bank positions on 1/M graph:
- + 500 PCM bank position as determined in O-1.2.2, Critical Rod Position Calculation
- - 500 PCM bank position as determined in O-1.2.2, Critical Rod Position Calculation
- Bank B Rod Insertion Limit for 0% power as determined from TS 3.1.6 (using Figure COLR-3, Control Bank Insertion Limits)

Standard:

- Identifies the +500 PCM bank position and - 500 PCM bank position from the Initial Conditions
- **√ Marks the +500 PCM bank position and - 500 PCM bank position on the 1/M graph**
- Determines that the Bank B Rod Insertion Limit for 0% power using Figure COLR-3, Control Bank Insertion Limits is 181 steps
- **√ Marks the Bank B Rod Insertion Limit on the 1/M graph**

EXAMINER CUE:

Provide the Examinee with:

- **A marked up copy of O-1.2.1, 1/M CURVES**
- **Figure COLR-3, Control Bank Insertion Limits**
- **A copy of the JPM Data Sheet**
- **A calculator**
- **A ruler**

EXAMINER NOTE:

+500 pcm position = D @ 52 steps
-500 pcm position = D @ 186 steps
Bank B RIL for 0% = B @ 181 steps

Comment:

Step 6.2 and 6.3

Procedure Note: DO NOT obtain base counts for control banks until shutdown bank is fully withdrawn and counts have stabilized.

Performance Step: 2

_____

6.2 RECORD initial baseline counts from the following:

- NI-31 Source Range meter
- NI-32 Source Range meter

6.3 RECORD initial 1/M Baseline value as 1.0 on Attachment 1, 1/M Plot.

Standard:

- Identifies baseline counts on the JPM Data Sheet
- Records initial 1/M Baseline value as 1.0 on Attachment 1, 1/M Plot (Control Bank).

Comment:

Step 6.4.1 through 6.4.4

Procedure Notes:

Control Rod withdrawal is performed as directed per O-1.2, Reactor Startup Section.

- 1/M = CR_{base} / CR_{final}

Procedure Cautions:

- WHEN either Source Range reaches 1 x 10^4 cps, THEN rate of rise should be adjusted so it is rising very slowly.
- IF either Source Range reaches 5 x 10^4 cps AND IR Power is NOT above the P-6 defeat permissive, THEN the HCO should be directed tom stabilize OR reduce power.
- DO NOT exceed 10^5 cps Source Range to prevent a Reactor Trip (1/2 10^5 cps).

Performance Step: 3

6.4 AFTER Control Rods are withdrawn AND count rate has stabilized, THEN CREATE 1/M plot as follows:

6.4.1 RECORD time AND rod position.
6.4.2 RECORD RCS loop average temperatures.
6.4.3 RECORD count rate.
6.4.4 CALCULATE 1/M values AND RECORD on Attachment 1, 1/M Plot.

Standard:

- Transfers time, rod position, RCS loop average temperatures, and count rate data from the JPM Data Sheet to the appropriate position on Attachment 1, 1/M Plot (Control Bank) [See Answer Key]
- **√ Calculate 1/M and record on Attachment 1 in the appropriate location [See Answer Key]**

Comment:

Step 6.4.5 through 6.4.7

√ **Performance Step: 4**

6.4.5 INDEPENDENTLY VERIFY calculations.

6.4.6 MARK 1/M values on graph.

6.4.7 DRAW a line connecting last point to current point AND EXTRAPOLATE to X-axis to determine a projected critical position.

Standard:

- Disregards Independent Verification Requirement per Initiating Cue.
- √ **Marks 1/M values on graph.**
- √ **Draws a line connecting last point to current point AND EXTRAPOLATE to X-axis to determine a projected critical position.**

Comment:

Step 6.4.8

√ **Performance Step: 5**

6.4.8 WHILE REVIEWING SUBSEQUENT STEPS CONCERNING CRITICALITY, repeat Steps 6.4.1 thru 6.4.7 for each rod pull.

Standard:

- Disregards Independent Verification Requirement per Initiating Cue.
- √ **Marks 1/M values on graph for each rod pull.**
- √ **Draws a line connecting last point to current point and extrapolates to X-axis to determine a projected critical position for each rod pull.**
- √ **Answers YES to Question 1 on the CUE sheet.**
- √ **Answers NO to Question 2 on the CUE sheet.**

EXAMINER NOTE: **After the examinee completes marking 1/M values and drawing lines for all data provided, he should answer the two questions asked in the Initiating Cue:**

1. **Does it appear that the reactor will go critical at a rod height greater than the 0% RIL?**

Answer: Yes

2. **Does it appear that the reactor will go critical at a rod height within the + and – 500 pcm bank positions?**

Answer: No

Comment:

Terminating Cue: **When Examinee returns the JPM to the Examiner, or at the Examiner's discretion:**
Evaluation on this JPM is complete.

Stop time: _____.

JPM CUE SHEET

Job Performance Measure No.: 2012 ILT NRC JPM N-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: _____

JPM CUE SHEET

INITIAL CONDITIONS:

- The crew is performing a Reactor Startup per O-1.2, PLANT STARTUP FROM HOT SHUTDOWN TO FULL LOAD, step 6.2.14.
- O-1.2.2, CRITICAL ROD POSITION CALCULATION, has been performed:
  - The Estimated Critical Rod Position has been determined to be 105 steps on Control Bank D.
  - The + 500 PCM bank position is Bk D @ 52 steps
  - The – 500 PCM bank position is Bk D @ 186 steps
- The Shutdown bank is already withdrawn.
- O-1.2.1, 1/M CURVES, has been completed up to step 6.0.

INITIATING CUE:

- The Control Room Supervisor directs you to use the provided materials to perform a 1/M plot per O-1.2.1, 1/M CURVES, steps 6.0 through 6.4.8.
- Disregard any Independent Verification requirements.
- Hand in the JPM CUE SHEET and Attachment 1 pages 2 and 3 when you have completed the JPM.

QUESTIONS:

- Based on the 1/M plot that you have just completed:

1. Does it appear that the reactor will go critical at a rod height greater than the 0% RIL?

   ☐ YES ☐ NO

2. Does it appear that the reactor will go critical at a rod height within the + and – 500 pcm bank positions?

   ☐ YES ☐ NO

Facility: Ginna

Task No.: 119-011-03-03
Determine stay time and exit requirements for working in a High Radiation Area.

Task Title: Determine stay time for local valve operation in the RCA.

JPM No.: 2012 ILT NRC JPM N-RA-4

K/A Reference: 2.3.4 (3.2/3.7)

Alternate Path Yes __ No X
Time Critical Yes __ No X

Knowledge of radiation exposure limits under normal or emergency conditions.

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 at 100% steady state power and a trouble shooting plan has been developed and approved to investigate possible leakage through V-358. This plan potentially requires multiple local valve operations.
- The first step in the plan is that V-358, (RWST Makeup AOV Bypass Valve to Charging Pump Suction) must be checked fully closed.

Task Standard: Determine stay time for local valve operation in the RCA.

Required Materials:
- A-1, RADIATION CONTROL MANUAL, Revision 08200
- Charging Pump Room Survey Map (modified)
- Examinee's Radiation Exposure Record
- Calculator
- Procedures Cart

General References:
- A-1, RADIATION CONTROL MANUAL, Revision 08200

Handouts:

- Charging Pump Room Survey Map
- Examinee's Radiation Exposure Record
- Calculator
- Access to procedures cart

Initiating Cue:

- Determine the maximum stay time for local valve operation of V-358 without requiring higher authorization for exceeding any limits. Stay time = _____
- Assume that no dose will be received in transit to or from the area of V-358.

Validation Time: 17 Minutes (1 RO)

SIMULATOR SETUP

N/A

INSTRUCTOR ACTIONS

Have the following available to provide to the Examinee:

- Charging Pump Room Survey Map
- Examinee's Radiation Exposure Record
- Calculator
- **Access to procedures cart containing A-procedures book (for A-1)**

(Denote Critical Steps with a √)

Start Time: _____.

	A-1 Step 3.5
Performance Step: 1 _____	Examinee determines Regulatory Occupational Dose Limits for Adults
Standard:	• Determines A-1 Procedure should be referenced, locates same on procedures cart • Determines applicable annual dose limits from Table (Regulatory/ Station Admin/Site): • 5 rem / 4 rem / 1 rem (TEDE)
EXAMINER CUE:	**Provide the Examinee with:** • **Charging Pump Room Survey Map** • **Examinee's Radiation Exposure Record** • **Calculator** • **Access to procedures cart**
Comment:	

	Determine expected dose rate
√ **Performance Step: 2** _____	Examinee refers to the Charging Pump Room Survey Map and determines his expected dose rate while operating V-358.
Standard:	• √ Reviews radiation survey map, determines V-358 is between the A and B charging pumps (80 mR/hr general area dose) • √ Determines that the radiation rate will be 80 mR/hr
Comment:	

		Determine current exposure
√	**Performance Step: 3**	Examinee reviews his exposure record and determines current TEDE.
	Standard:	√ TEDE (Ginna Admin Limit) = DDE + CEDE = 375 mrem + 130 mrem (Ginna) + 2825 mrem + 530 mrem (Calvert) = 3860 mrem √ TEDE (Site Limit) = Site DDE + Site CEDE = 375 mrem + 130 mrem = 505 mrem
	Instructor NOTE:	• **Ginna ADMIN limit applies to ALL dose received at ALL nuclear facilities (A-1, section 3.5.5.a NOTE) = 4 rem/yr TEDE** • **Ginna SITE limit is only dose received at Ginna this year = 1 rem/yr TEDE** • **He is closest to the ADMIN limit as most limiting (only 140 mRem remain to limit of 4 rem/yr.**
	Comment:	
		Determine remaining exposure available and determines most limiting
√	**Performance Step: 4**	Subtracts current exposure from applicable limit
	Standard:	√ Admin Limit: TEDE = 4000 mrem – 3860 mrem = 140 mrem √ Site Limit: TEDE = 1000 mrem – 505 mrem = 495 mrem √ Determines ADMIN limit is most limiting with 140 mrem remaining
	Comment:	
		Determines Stay Time
√	**Performance Step: 5**	Stay time = Remaining exposure available / Expected radiation rate
	Standard:	√ Stay Time = 140 mrem / 80 mrem/hr = 1.75 hr or 105 minutes
	Comment:	
	Terminating Cue:	**When Examinee returns the JPM to the Examiner, or at the Examiner's discretion:** **"Evaluation on this JPM is complete."**

Stop time: _____.

Job Performance Measure No.: 2012 ILT NRC JPM N-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:

- The plant is at 100% steady state power and a trouble shooting plan has been developed and approved to investigate possible leakage through V-358. This plan potentially requires multiple local valve operations.
- The first step in the plan is that V-358, (RWST Makeup AOV Bypass Valve to Charging Pump Suction) must be checked fully closed.

INITIATING CUE:

- Determine the maximum stay time for local valve operation of V-358 without requiring higher authorization for exceeding any limits. Stay time = _____
- Assume that no dose will be received in transit to or from the area of V-358.

N-RA-4
Your Exposure for the Current Year

	Ginna	Calvert Cliffs
Deep Dose Equivalent (DDE)	375 mrem	2825 mrem
Lens Dose Equivalent (LDE)	35 mrem	25 mrem
Committed Effective Dose Equivalent (CEDE)	130 mrem	530 mrem
Shallow Dose Equivalent (SDE)	45 mrem	10 mrem
Committed Dose Equivalent (CDE)	25 mrem	15 mrem

Facility: Ginna

Task No.: 344-001-03-03
Direct Calculations To Determine The Plant Status (e. g., Fluid Flow And Heat Balance, Quadrant Power Tilts, Shutdown Margin, Etc.)

Task Title: Verify OPG-REACTIVITY-CALC

JPM No.: 2012 ILT NRC JPM N-SA-1

K/A Reference: 2.1.37 (4.3/4.6)

Alternate Path Yes __ No X
Time Critical Yes __ No X

Knowledge of procedures, guidelines, or limitations associated with reactivity management.

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% RTP, steady state, equilibrium xenon.
- Current "BURNUP" is 13764 MWD/MTU
- Current RCS Boron Concentration is 517 ppm
- Current BASTs Boron Concentration (avg) is 16,100 ppm
- Current RWST Boron Concentration is 2910 ppm
- Control Rods in Auto at 215 steps on Control Bank D

Task Standard:
- Using PCNDR, PPCS, and the data from the Initial Conditions, perform an independent verification of the weekly reactivity calculation for a 50% power change (assuming Rods are operable) from 100% power at 1% per minute, performed by an RO, and identify any errors.

Required Materials:
- Computer with PCNDR and PPCS
- OPG-REACTIVITY-CALC, Revision 01001
- Calculator
- Pencil

General References: OPG-REACTIVITY-CALC, Revision 01001

Handouts: OPG-REACTIVITY-CALC, Revision 01001

Initiating Cue:

- Using PCNDR, PPCS, and the data from the Initial Conditions, perform an independent verification of the weekly reactivity calculation for a 50% power change (assuming Rods are operable) from 100% power at 1% per minute, performed by an RO.
- List any errors identified on the JPM CUE SHEET.

Validation Time: 34 Minutes

SIMULATOR SETUP

- Reset to IC-24, 100% steady state. EOL
- Override BURNUP value in PPCS to those in Initial Conditions of this JPM

INSTRUCTOR ACTIONS

- Have a clean copy of OPG-REACTIVITY-CALC, Revision 01001 ready to provide to the Examinee.

(Denote Critical Steps with a √)

Start Time: _____.

	Step 3.1
Procedure Note:	Plant should be approximately 100% RTP, steady state, equilibrium Xenon to perform this guideline.
Performance Step: 1	Determine burnup from PPCS point ID "BURNUP".
_____	
Standard:	Verifies that the RO entered 13764 MWD/MTU, based on Initial Conditions.
EXAMINER CUE:	**Provide the Examinee with a marked up copy of OPG-REACTIVITY-CALC, Revision 01001**
Comment:	

	Step 3.2
Performance Step: 2	Use the following burnup values to determine appropriate curve for time in Core life:
_____	BOL – 6139 MWD/MTU → Use BOL curves 6140 – 12279 MWD/MTU → Use MOL curves 12280 – EOL MWD/MTU → Use EOL curves
Standard:	None
EXAMINER NOTE:	**This step impacts the performance of the procedure if the operator will be using the Cycle Book to perform the calculation (different curve sets). In this case the operator will be using PCNDR, so the result of this determination has no impact on the calculation.**
Comment:	

Step 3.2.1

Performance Step: 3 Use PCNDR (or Cycle Book) and appropriate time in core life to determine values for Differential Boron Worth, Power Defect, and Integral Rod Worth.

_____

Standard:

- Uses PCNDR and appropriate time in core life to determine values for Differential Boron Worth, Power Defect, and Integral Rod Worth.

EXAMINER NOTE: **The Cycle 36 PCNDR program is initialized by:**

- **Clicking on PCNDR Cycle 36 Beta icon on desktop**
- **In response to "Security Warning – Macros Have Been Disabled" message, click on "Options"**
- **When Security Alert Menu popup appears, click on the 2nd bullet "Enable This Content" and "OK" to start program**

Comment:

Step 3.2.2

Performance Step: 4 Use Xenon Predict report from PPCS, if available, to determine values for initial and final Xenon and Samarium.

_____

Standard:

- Uses Xenon Predict report from PPCS, to determine values for initial and final Xenon and Samarium.

Comment:

Step 3.3

√ **Performance Step: 5** Record the following:

- Current RCS Boron Concentration
- Current BASTs Boron Concentration (avg)
- Current RWST Boron Concentration
- Current Core Burnup
- Differential Boron Worth

Standard:

- Verifies that the RO recorded the correct values from Initial Conditions, and step 3.2.1
- **√ Recognizes that the wrong value for Differential Boron Worth has been recorded.**

EXAMINER NOTE: **See Exam Key for acceptable answers.**

EXAMINER NOTE: **Incorrect values were obtained using Startup Parameters tab in PCNDR. This produces values for Hot Zero Power. Examinee would obtain the values in the marked up copy of OPG-REACTIVITY-CALC if this mistake were made.**

Comment:

Steps 3.4, 3.5, and 3.7

Performance Step: 6 Perform Attachment 1, 2, and 4

Standard:

- Recognizes these are not required for this task.

Comment:

Step 3.6

Performance Step: 7 Perform Attachment 3, 50% PWR CHANGE AT 1% PER MINUTE

_____

Standard:
- Goes to Attachment 3 (Page 6)

Comment:

Delta Power Defect (E):

Procedure Note: Values obtained for items B, C, D, F, G, G1, G2 and I are always negative.

Procedure Note: Delta Xe and Sm is calculated from the time power decrease starts until completed.

Performance Step: 8

_____

100% Total Power Defect
50% Total Power Defect
_-_____ PCM (D) - _-_____ PCM (C) =

Standard:
- Uses PCNDR to verify that the RO determined the correct values for 100% and 50% values for Total Power Defect.
- Verifies that the RO subtracted the 100% value from the 50% value correctly

EXAMINER NOTE: **See Exam Key for acceptable answers.**

Comment:

Delta Rod Reactivity (F): (Use 170 steps on Bk D for Final Rod Position)

√ **Performance Step: 9**

_____

Initial Integral Rod worth on Bk D
Final Integral Rod worth on Bk D

_____ PCM (F1) - _____ PCM (F2) =

Standard:

- Uses PCNDR to verify that the RO correctly determined values for initial and final Integral Rod worth on Bk D.
- **√ Recognizes that the wrong values were used for Initial and Final Integral Rod worth on Bk D. This results in incorrect value for "F" as well.**
- Verifies that the RO subtracted the Final value from the Initial value correctly.

EXAMINER NOTE: **See Exam Key for acceptable answers.**

Comment:

Delta Xe and Sm (G):

Performance Step: 10

_____

Initial Xe and Sm
Xe and Sm 50 minutes into power change

_-_____ PCM (G2) - _-_____ PCM (G1) =

Standard:

- Uses Xenon Predict report from PPCS to verify that the RO correctly determined values for "Initial Xe and Sm", and "Xe and Sm 50 minutes into power change"
- Verifies that the RO subtracted the "Initial Xe and Sm" value from the "Xe and Sm 50 minutes into power change" value correctly

EXAMINER NOTE: **See Exam Key for acceptable answers.**

Comment:

Total Reactivity (H):

√ **Performance Step: 11** _____

Delta Power Defect + Delta Rod Reactivity + Delta Xe and Sm = Total Reactivity Change

_____ (E) + _-_____ (F) + _-_____ (G) =

Standard:

- Verifies that the RO added Delta Power Defect, Delta Rod Reactivity, and Delta Xe and Sm to obtain Total Reactivity Change correctly.
- **√ Recognizes that the incorrect value for Delta Rod Reactivity has been used, resulting in an incorrect value for "H".**

EXAMINER NOTE: **See Exam Key for acceptable answers.**

Comment:

RCS Boron Offset Value (I):

√ **Performance Step: 12** _____

_____ PCM (H)/ _-_____ PCM/PPM (B) = _-_____ PPM (I)

Standard:

- Verifies that the RO correctly divided Total Reactivity Change by Differential Boron Worth to obtain the RCS Boron Offset Value
- **√ Recognizes that incorrect values for both H and B have been used, and therefore, value "I" is also incorrect.**

EXAMINER NOTE: **See Exam Key for acceptable answers.**

Comment:

Required RCS Boron Concentration (J):

√ **Performance Step: 13**

Current RCS Boron Conc (A) – PPM change (I) = Required RCS Boron Conc (J)

_____ PPM (A) - _-_____ (I) = _+_____ PPM (J)

Standard:

- Verifies that the RO correctly subtracted the RCS Boron Offset Value from the Current RCS Boron Concentration to obtain the required RCS Boron concentration.
- **√ Recognizes that the incorrect value for "I" is being used, and therefore, "J" is also incorrect.**

EXAMINER NOTE: **See Exam Key for acceptable answers.**

Comment:

Gallons of Boric Acid needed:

√ **Performance Step: 14**

(Use PPCS or VBD Book to calculate the number of gallons required from BASTs and the RWST).

Standard:

- Verifies that the RO correctly used PPCS to calculate the number of gallons required from BASTs and the RWST.
- **√ Recognizes that these values are incorrect. (Based on the faulty value "J".**

EXAMINER NOTE: **See Exam Key for acceptable answers.**

Comment:

Initial Boration Rate for Rapid shutdown

Performance Step: 15

1%/min gals BAST (K)___ / 50 minutes = __ GPM BA flow

3%/min gals BAST (K)___ / 16.67 minutes = __ GPM BA flow

5%/min gals BAST (K)___ / 10 minutes = __ GPM BA flow

Standard:

- Verifies that the RO correctly divided the gallons of boric acid required from the BASTs by the time required to result in the desired shutdown rate to determine the boric acid flow rate required for that particular load reduction rate.

EXAMINER NOTE: **See Exam Key for acceptable answers.**

Comment:

Terminating Cue: **When Examinee returns the JPM to the Examiner, or at the Examiner's discretion: Evaluation on this JPM is complete.**

Stop time: _____.

Job Performance Measure No.: 2012 ILT NRC JPM N-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: _____

JPM CUE SHEET

INITIAL CONDITIONS:

- The plant is at 100% RTP, steady state, equilibrium xenon.
- Current "BURNUP" is 13764 MWD/MTU
- Current RCS Boron Concentration is 517 ppm
- Current BASTs Boron Concentration (avg) is 16,100 ppm
- Current RWST Boron Concentration is 2910 ppm
- Control Rods in Auto at 215 steps on Control Bank D

INITIATING CUE:

- Using PCNDR, PPCS, and the data from the Initial Conditions, perform an independent verification of the weekly reactivity calculation for a 50% power change (assuming Rods are operable) from 100% power at 1% per minute, performed by an RO.
- List any errors identified on this JPM CUE SHEET.

Facility: Ginna

Task No. : 119-006-03-01A
Determine the Allowable Hours an Operator Can Work

Task/JPM Title: Determine The Allowable Hours An Operator Can Work

JPM No.: 2012 ILT NRC JPM N-SA-2

K/A Reference: 2.1.5 (2.9*/3.9)
Ability to use procedures related to shift staffing, such as minimum crew complement, overtime limitations, etc.

Alternate Path Yes __ No X
Time Critical Yes __ No X

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 at full power at MOL
- You are the SM
- It is Sunday of your Day shift tour (0600 Sunday – 1800 Sunday)
- The oncoming HCO has called in sick for the next shift (1800 Sunday – 0600 Monday)
- You must find a replacement HCO

Task Standard: Correctly determine if either, neither, or both of two possible replacements for the HCO satisfy the work hour limits of CNG-SE-1.01-1002, FATIGUE MANAGEMENT AND WORK HOUR CONTROLS.

Required Materials: Calculator

General References:
- CNG-SE-1.01-1002, FATIGUE MANAGEMENT AND WORK HOUR CONTROLS, Rev 00600

Handouts:
- CNG-SE-1.01-1002, FATIGUE MANAGEMENT AND WORK HOUR CONTROLS, Rev 00600
- JPM N-SA-3 Data Sheet

Initiating Cue:

- Determine if either, neither, or both of two possible replacements for the HCO satisfy the work hour limits of CNG-SE-1.01-1002, FATIGUE MANAGEMENT AND WORK HOUR CONTROLS.
- For each possible replacement, explain on the JPM CUE SHEET:
  1. If he can or cannot work as HCO
  2. What work hour limit prevents him from working, if applicable?

Validation Time: 16 Minutes

EXAMINER NOTE: Ensure the following materials are available:

- CNG-SE-1.01-1002, FATIGUE MANAGEMENT AND WORK HOUR CONTROLS, Revision 00600, the JPM N-SA-3 Data Sheet
- Calculator

START TIME: _____

√ = CRITICAL STEP

Step 5.2.A.1.a.

Performance Step: 1

The following limits apply to all Covered Workers regardless of plant status:
a. No more than 16 work hours in any 24-hour period

Standard:

- Reviews the procedure and locates the work hours limits
- Reviews the JPM N-SA-3 Data Sheet to determine if the 16 work hours in any 24-hour period limit will be exceeded for Operator #1 and/or Operator #2
- Determines that the limit will not be exceeded by either Operator

EXAMINER CUE: **Hand the examinee a copy of CNG-SE-1.01-1002, FATIGUE MANAGEMENT AND WORK HOUR CONTROLS, Revision 00600, the JPM N-SA-3 Data Sheet, and a calculator.**

Comment:

Step 5.2.A.1.b

Performance Step: 2

The following limits apply to all Covered Workers regardless of plant status:
b. No more than 26 work hours in any 48-hour period

Standard:

- Reviews the JPM N-SA-3 Data Sheet to determine if the 26 work hours in any 48-hour period limit will be exceeded for Operator #1 and/or Operator #2
- Determines that the limit will not be exceeded by either Operator

Comment:

Step 5.2.A.1.c

√ **Performance Step: 3**

The following limits apply to all Covered Workers regardless of plant status:

c. No more than 72 work hours in any 7-day period

Standard:

- Reviews the JPM N-SA-3 Data Sheet to determine if the 72 work hours in any 7-day period limit will be exceeded for Operator #1 and/or Operator #2
- √ Determines that Operator #1 will exceed the limit.
- Determines Operator #2 will NOT exceed the limit

EXAMINER NOTE: **Operator #1 will exceed the 72-hour limit**

Comment:

Step 5.2.A.2.a

Performance Step: 4

The following work hour breaks apply to all Covered Workers regardless of plant status:

a. At least a 10-hour break between successive work periods or an 8-hour break when a break of less than 10 hours is necessary to accommodate a crew's scheduled transition between work schedules or shifts.

Standard:

- Reviews the JPM N-SA-3 Data Sheet to determine if the 10-hour or 8-hour break between successive work periods limit will be exceeded for Operator #1 and/or Operator #2
- Determines that the limit will not be exceeded by either Operator

Comment:

Step 5.2.A.2.b

√ **Performance Step: 5**

The following work hour breaks apply to all Covered Workers regardless of plant status:
b. A 34-hour break in any 9-day period.

Standard:

- Reviews the JPM N-SA-3 Data Sheet to determine if the 34-hour break in any 9-day period limit will be exceeded for Operator #1 and/or Operator #2
- √ Determines that Operator #2 will exceed the limit.
- Determines Operator #1 will NOT exceed the limit

EXAMINER NOTE: **Operator #2 will exceed the 34-hour break limit**

Comment:

Step 5.2.B.1. Table 5.2-1

Performance Step: 6

In addition to the above work hour limits, individual workers shall meet the Minimum Days Off (MDO) requirements in the tables:
Table 5.2-1 Outage Minimum Days Off Requirements

Standard:

Recognizes that the outage MDO requirements are not applicable.

Comment:

Step 5.2.C

Performance Step: 7

The averaging period is the duration over which the 54-hour per week average is calculated and may be consistent with standard shift schedules but not be greater than 6 weeks.

Standard:

- Reviews the JPM N-SA-3 Data Sheet to determine if the 54-Hour Week Average will be exceeded for Operator #1 and/or Operator #2
- Determines that the limit will not be exceeded by either Operator

Comment:

Terminating Cue: **When Examinee returns the JPM CUE SHEET and the his copy of CNG-SE-1.01-1002 to the EXAMINER: Evaluation on this JPM is complete.**

STOP TIME: _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2012 ILT NRC JPM N-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: _____

JPM CUE SHEET

Initial Conditions:

- The plant is at full power at MOL
- You are the SM
- It is Sunday of your Day shift tour (0600 Sunday – 1800 Sunday)
- The oncoming HCO has called in sick for the next shift (1800 Sunday – 0600 Monday)
- You must find a replacement HCO

Initiating Cue:

- Determine if either, neither, or both of two possible replacements for the HCO satisfy the work hour limits of CNG-SE-1.01-1002, FATIGUE MANAGEMENT AND WORK HOUR CONTROLS.
- For each possible replacement, explain on the JPM CUE SHEET:
  1. If he can or cannot work as HCO
  2. What work hour limit prevents him from working, if applicable?

	(Circle ONE for each operator)	Justification for Decision
Operator #1:	CAN or CANNOT work as HCO	
Operator #2:	CAN or CANNOT work as HCO	

2012 ILT JPM N-SA-2
Data Sheet

OPERATOR #1

	M-26	T-27	W-28	T-29	F-30	S-31	S-1	M-2	T-3	W-4	T-5	F-6	S-7	S-8	M-9	T-10	W-11	T-12	F-13	S-14	S-15
SHIFT	N			D	D	D	D		T9	T9	T9	T9				N	N	N	N		
HOURS WORKED	12			12	12	12	12		9	9	9	9				12	12	12	12		

M-16	T-17	W-18	T-19	F-20	S-21	S-22	M-23	T-24	W-25	T-26	F-27	S-28	S-29	M-30
D	D	D	D	D	D		N					N	N	N
12	12	12	12	12	12		?					12	12	12

OPERATOR #2

	M-26	T-27	W-28	T-29	F-30	S-31	S-1	M-2	T-3	W-4	T-5	F-6	S-7	S-8	M-9	T-10	W-11	T-12	F-13	S-14	S-15
SHIFT	D	D	D									N	N	N	N			D	D	D	D
HOURS WORKED	12	12	12									12	12	12	12			12	12	12	12

M-16	T-17	W-18	T-19	F-20	S-21	S-22	M-23	T-24	W-25	T-26	F-27	S-28	S-29	M-30
	T9	T9	T9	T9	D		N	N	N	N	N			D
	9	9	9	9	12		?	12	12	12	12			12

Facility: Ginna

Task No.: 351-012-01-05
Perform 1/M Plots And Calculations

Task Title: Evaluate 1/M Plot per O-1.2.1and O-1.2

JPM No.: 2012 ILT NRC JPM N-SA-3

K/A Reference: 2.2.1 (4.5/4.4)

Alternate Path Yes __ No X
Time Critical Yes __ No X

Ability to perform pre-startup procedures for the facility, including operating those controls associated with plant equipment that could affect reactivity.

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 crew is performing a Reactor Startup per O-1.2, PLANT STARTUP FROM HOT SHUTDOWN TO FULL LOAD, step 6.2.14.
- O-1.2.2, CRITICAL ROD POSITION CALCULATION, has been performed:
  - The Estimated Critical Rod Position has been determined to be 105 steps on Control Bank D.
  - The + 500 PCM bank position is Bk D @ 52 steps
  - The – 500 PCM bank position is Bk D @ 186 steps
- The Shutdown bank is already withdrawn.
- O-1.2.1, 1/M CURVES, has been completed up to step 6.0.

Task Standard: Perform a 1/M plot and correctly evaluate the plot. Determine the procedure and step number for any required action(s), based on the results of the 1/M plot.

Required Materials:

- O-1.2, PLANT STARTUP FROM HOT SHUTDOWN TO FULL LOAD, Section 6.2
- O-1.2.1, 1/M CURVES
- Figure COLR-3, Control Bank Insertion Limits
- Calculator
- Clear ruler

General References:
- O-1.2, PLANT STARTUP FROM HOT SHUTDOWN TO FULL LOAD, Revision 19602
- O-1.2.1, 1/M CURVES, Revision 01900
- Figure COLR-3, Control Bank Insertion Limits

Handouts:
- O-1.2, PLANT STARTUP FROM HOT SHUTDOWN TO FULL LOAD, Section 6.2
- A copy of O-1.2.1, 1/M CURVES, Revision 01900 completed up to step 6.0,
- Figure COLR-3, Control Bank Insertion Limits
- A copy of the JPM Data Sheet
- Calculator,
- A ruler

Initiating Cue:
- The Control Room Supervisor directs you to use the provided materials to perform a 1/M plot per O-1.2.1, 1/M CURVES, starting at step 6.0.
- Disregard any Independent Verification requirements.
- Determine the procedure and step number for any required action(s), based on the results of the 1/M plot, if applicable. Document any required actions on this JPM CUE SHEET.
- Hand in the JPM CUE SHEET and Attachment 1 pages 2 and 3 when you have completed the JPM.

Validation Time: 35 Minutes

SIMULATOR SETUP

N/A

INSTRUCTOR ACTIONS

Have the following available to provide to the Examinee:

- O-1.2, PLANT STARTUP FROM HOT SHUTDOWN TO FULL LOAD, Section 6.2, marked up to Step 6.2.20
- A copy of O-1.2.1, 1/M CURVES, Revision 01900 completed up to step 6.0,
- Figure COLR-3, Control Bank Insertion Limits,
- A copy of the JPM Data Sheet,
- Calculator
- Clear-ruler

(Denote Critical Steps with a √)

Start Time: _____.

O-1.2.1, Step 6.1

Procedure Notes:

- Per O-1.2, 1/M is determined at 50 step intervals OR as specified by SM.
- Data is recorded on Attachment 1.
  A 1/M plot is completed each time an approach to criticality is desired.

√ **Performance Step: 1**

_____

- MARK the following rod bank positions on 1/M graph:
- + 500 PCM bank position as determined in O-1.2.2, Critical Rod Position Calculation
- - 500 PCM bank position as determined in O-1.2.2, Critical Rod Position Calculation
- Bank B Rod Insertion Limit for 0% power as determined from TS 3.1.6 (using Figure COLR-3, Control Bank Insertion Limits)

Standard:

- Identifies the +500 PCM bank position and - 500 PCM bank position from the Initial Conditions
- **√ Marks the +500 PCM bank position and - 500 PCM bank position on the 1/M graph**
- Determines that the Bank B Rod Insertion Limit for 0% power using Figure COLR-3, Control Bank Insertion Limits is 181 steps
- **√ Marks the Bank B Rod Insertion Limit on the 1/M graph**

EXAMINER CUE:

Provide the Examinee with:

- **A marked up copy of O-1.2.1, 1/M CURVES**
- **Figure COLR-3, Control Bank Insertion Limits**
- **A copy of the JPM Data Sheet**
- **A calculator**
- **A ruler**

EXAMINER NOTE:

+500 pcm position = D @ 52 steps
-500 pcm position = D @ 186 steps
Bank B RIL for 0% = B @ 181 steps

Comment:

Step 6.2 and 6.3

Procedure Note: DO NOT obtain base counts for control banks until shutdown bank is fully withdrawn and counts have stabilized.

Performance Step: 2

_____

6.2 RECORD initial baseline counts from the following:

- NI-31 Source Range meter
- NI-32 Source Range meter

6.3 RECORD initial 1/M Baseline value as 1.0 on Attachment 1, 1/M Plot.

Standard:

- Identifies baseline counts on the JPM Data Sheet
- Records initial 1/M Baseline value as 1.0 on Attachment 1, 1/M Plot (Control Bank).

Comment:

Step 6.4.1 through 6.4.4

Procedure Notes:

Control Rod withdrawal is performed as directed per O-1.2, Reactor Startup Section.

- 1/M = CR_{base} / CR_{final}

Procedure Cautions:

- WHEN either Source Range reaches 1 x 10^4 cps, THEN rate of rise should be adjusted so it is rising very slowly.
- IF either Source Range reaches 5 x 10^4 cps AND IR Power is NOT above the P-6 defeat permissive, THEN the HCO should be directed tom stabilize OR reduce power.
- DO NOT exceed 10^5 cps Source Range to prevent a Reactor Trip (1/2 10^5 cps).

√ **Performance Step: 3**

6.4 AFTER Control Rods are withdrawn AND count rate has stabilized, THEN CREATE 1/M plot as follows:

6.4.1 RECORD time AND rod position.
6.4.2 RECORD RCS loop average temperatures.
6.4.3 RECORD count rate.
6.4.4 CALCULATE 1/M values AND RECORD on Attachment 1, 1/M Plot.

Standard:

- Transfers time, rod position, RCS loop average temperatures, and count rate data from the JPM Data Sheet to the appropriate position on Attachment 1, 1/M Plot (Control Bank) [See Answer Key]
- **√ Calculate 1/M and record on Attachment 1 in the appropriate location [See Answer Key]**

Comment:

Step 6.4.5 through 6.4.7

√ **Performance Step: 4**

6.4.5 INDEPENDENTLY VERIFY calculations.

6.4.6 MARK 1/M values on graph.

6.4.7 DRAW a line connecting last point to current point AND EXTRAPOLATE to X-axis to determine a projected critical position.

Standard:

- Disregards Independent Verification Requirement per Initiating Cue.
- **Marks 1/M values on graph.**
- Draws a line connecting last point to current point AND EXTRAPOLATE to X-axis to determine a projected critical position.

Comment:

Step 6.4.8

√ **Performance Step: 5**

6.4.8 WHILE REVIEWING SUBSEQUENT STEPS CONCERNING CRITICALITY, repeat Steps 6.4.1 thru 6.4.7 for each rod pull.

Standard:

- Disregards Independent Verification Requirement per Initiating Cue.
- **√ Marks 1/M values on graph for each rod pull.**
- **√ Draws a line connecting last point to current point**
- and extrapolates to X-axis to determine a projected critical position for each rod pull.

Comment:

Step 6.4.9

Performance Step: 6

6.4.9 PRIOR to de-energizing Source Range Detectors, RECORD baseline counts from the following:

- NI-35 Intermediate Range meter
- NI-36 Intermediate Range meter

Standard:

- Determines step is not applicable.

Comment:

Steps 6.5 through 6.7

√ **Performance Step: 7**

6.5 IF criticality is projected by all of the following conditions being met, THEN DO NOT PULL Control Rods the full interval, PULL Control Rods to criticality:
OTHERWISE, MARK this Step N/A.

- Projected critical position falls within the +/- 500 pcm bank position
- Projected critical position falls above RIL
- Projected critical position indicates criticality within the next desired interval

6.6 IF criticality is NOT projected within the next rod pull interval, THEN CONTINUE withdrawal sequence AND 1/M evaluation.
OTHERWISE, MARK this Step N/A.

6.7 IF either of the following conditions are met (MARK conditions met) THEN STOP pulling Control Rods AND REFER to O-1.2 for further guidance:
OTHERWISE, MARK this Step N/A.

- Projected critical position falls outside the +/- 500 pcm bank position
- Projected critical position falls below the 0% power RIL

Standard:

- **√ Determines that step 6.5 was NOT applicable**
- **√ Determines that step 6.6 remained applicable for all rod pulls (implemented in step 6.4.8)**
- **√ Determines that step 6.7 is applicable after Bank B withdrawal to 220 steps (Bank C at 90 steps)**

Comment:

O-1.2, Step 6.2.31

√ **Performance Step: 8**

IF during the final approach to criticality, there are indications that ACTUAL critical rod position will differ from ESTIMATED critical rod position by an amount equal to 0.5% DELTA K/K (500 pcm) reactivity OR Reactor will go CRITICAL below Rod Insertion Limits, then perform the following:

1. Stop Control Rod withdrawal
2. Perform the following under the supervision of the SM and with Reactor Engineer assistance:
   a. Check ECP calculation for errors
   b. Check curves for errors in interpolation
   c. Request Chemistry perform another [B] sample…

Standard:

- **√ Determines O-1.2 step 6.2.31 indicates ACTUAL critical position will differ from ESTIMATED critical position by an amount > +500 pcm rod height.**
- Documents the determination on the JPM CUE SHEET.

Comment:

Terminating Cue: **When Examinee returns the JPM to the Examiner, or at the Examiner's discretion:**
Evaluation on this JPM is complete.

Stop time: _____.

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2012 ILT NRC JPM N-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: _____

JPM CUE SHEET

INITIAL CONDITIONS:

- The crew is performing a Reactor Startup per O-1.2, PLANT STARTUP FROM HOT SHUTDOWN TO FULL LOAD, step 6.2.14.
- O-1.2.2, CRITICAL ROD POSITION CALCULATION, has been performed:
  - The Estimated Critical Rod Position has been determined to be 105 steps on Control Bank D.
  - The + 500 PCM bank position is Bk D @ 52 steps
  - The – 500 PCM bank position is Bk D @ 186 steps
- The Shutdown bank is already withdrawn.
- O-1.2.1, 1/M CURVES, has been completed up to step 6.0.

INITIATING CUE:

- The Control Room Supervisor directs you to use the provided materials to perform a 1/M plot per O-1.2.1, 1/M CURVES, starting at step 6.0.
- Disregard any Independent Verification requirements.
- Determine the procedure and step number for any required action(s), based on the results of the 1/M plot, if applicable. Document any required actions on this JPM CUE SHEET.
- Hand in the JPM CUE SHEET and Attachment 1 pages 2 and 3 when you have completed the JPM.

Facility: Ginna

Task No.: 119-011-03-03
Determine stay time and exit requirements for working in a High Radiation Area.

Task Title: Determine Worker Availability Based on Radiation Exposure Limits.

JPM No.: 2012 ILT NRC JPM N-SA-4

K/A Reference: 2.3.4 (3.2/3.7)

Alternate Path Yes __ No X
Time Critical Yes __ No X

Knowledge of radiation exposure limits under normal or emergency conditions.

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 at 100% steady state power and a trouble shooting plan has been developed and approved to investigate possible leakage through V-358. This plan potentially requires multiple local valve operations.
- The repair job is expected to take 3 hours.

Task Standard: Determine stay time for local valve operation in the RCA.

Required Materials:
- A-1, RADIATION CONTROL MANUAL, Revision 08200
- Charging Pump Room Survey Map
- Worker Radiation Exposure Record
- Calculator
- Procedures Cart

General References:
- A-1, RADIATION CONTROL MANUAL, Revision 08200

Handouts:
- Charging Pump Room Survey Map
- Worker's Radiation Exposure Record
- Calculator
- Access to procedures cart

Initiating Cue:
- Determine the maximum stay time for local valve operation of V-358 without requiring higher authorization for exceeding any limits. Stay time = _____
- Determine which dose limit(s) will be most limiting for this work: _____
- Determine any permission that will be required for the worker to perform the job, if applicable.
- Assume that no dose will be received in transit to or from the area of V-358

Validation Time: 19 Minutes

SIMULATOR SETUP

N/A

INSTRUCTOR ACTIONS

- Have the following available to provide to the Examinee:
  - Charging Pump Room Survey Map
  - Examinee's Radiation Exposure Record
  - Calculator
  - **Access to procedures cart containing A-procedures book (for A-1)**

(Denote Critical Steps with a √)

Start Time: _____.

A-1 Step 3.5

Performance Step: 1

Examinee determines Regulatory Occupational Dose Limits for Adults

Standard:

- Determines A-1 Procedure should be referenced, locates same on procedures cart
- Determines applicable annual dose limits from Table (Regulatory/ Station Admin/Site):
  - **√ 5 rem / 4 rem / 1 rem (TEDE)**

EXAMINER CUE:

Provide the Examinee with:
- **Charging Pump Room Survey Map**
- **Worker's Radiation Exposure Record**
- **Calculator**
- **Access to procedures cart**

Comment:

Determine expected radiation dose rate

√ **Performance Step: 2**

Examinee refers to the Charging Pump Room Survey Map and determines the worker's expected dose rate while working on V-286.

Standard:

- **√ Reviews radiation survey map, determines V-358 is between the A and B charging pumps** (80 mR/hr general area dose)
- **√ Determines that the radiation dose rate will be 80 mR/hr**

Comment:

Determines the worker's Expected Dose for the job

√ **Performance Step: 3** Expected Dose = Expected radiation rate x 3 hours

Standard: √ Expected Dose = 80 mrem/hr x 3 hours = 240 mrem

Comment:

Determine current exposure

√ **Performance Step: 4** Examinee reviews the worker's exposure record and determines his limit(s) of concern.

Standard:

- √TEDE (Admin Limit) = DDE + CEDE = 375 mrem + 130 mrem (Ginna) + 2825 mrem + 530 mrem (CCNPP) = 3860 mrem
- √ TEDE (Site Limit) = DDE (Site) + CEDE (Site) = 375 mrem + 130 mrem = 505 mrem

Comment:

Determines Stay Time to nearest limit

√ **Performance Step: 5** Stay time = Remaining exposure available / Expected radiation rate

Standard: √ Stay Time = 140 mrem (to Admin limit) / 80 mrem/hr = 1.75 hr or 105 minutes

Comment:

Determine the worker's expected post job exposure

√ **Performance Step: 5** Add the expected dose for the job to the worker's current exposure

_____

Standard: √ TEDE (Admin Limit) = 3860 mrem + 240 mrem = 4100 mrem
√ TEDE (Site Limit) = 505 mrem + 240 mrem = 745 mrem

Comment:

Determines the worker's availability

√ **Performance Step: 6** Compare the worker's expected post job exposure to the Dose Limits for Adults

_____

Standard: √ Recognizes that the worker's TEDE will exceed the Admin Limit of 4000 mrem

Comment:

		Determines any permission that will be required for the worker to perform the job.
√	**Performance Step: 7**	Refers to A-1, step 3.5.5 a.1. Ginna Administrative (Admin) Limits Control Limits for Occupational Radiation Exposure 2. Ginna Admin limit SHALL be 4.0 rem per year TEDE. b) If an individual's Annual TEDE is expected to exceed 4.0 rem, they may submit a request to increase the limit to greater than 4.0 rem. • An individual may be authorized up to 4.5 rem TEDE with complete record dose for the current year and approvals by the GS-Radiation Protection , Plant GM and Vice President, or their designees.
	Standard:	**√ Determines that (1) the General Supervisor Radiation Protection, (2) Plant GM, and (3) Vice President or their designees will have to grant permission to raise the workers Admin limit.**
	Comment:	

Terminating Cue:	**When Examinee returns the JPM to the Examiner, or at the Examiner's discretion:** **Evaluation on this JPM is complete.**

Stop time: _____.

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2012 ILT NRC JPM N-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 plant is at 100% steady state power and a trouble shooting plan has been developed and approved to investigate possible leakage through V-358. This plan potentially requires multiple local valve operations.
- The repair job is expected to take 3 hours.

INITIATING CUE:

- Determine the maximum stay time for local valve operation of V-358 without requiring higher authorization for exceeding any limits. Stay time = _____
- Determine which dose limit(s) will be most limiting for this work: _____
- Determine any permission that will be required for the worker to perform the job, if applicable.
- Assume that no dose will be received in transit to or from the area of V-358

N-SA-4
Worker Exposure for the Current Year

	Ginna	Calvert Cliffs
Deep Dose Equivalent (DDE)	375 mrem	2825 mrem
Lens Dose Equivalent (LDE)	35 mrem	25 mrem
Committed Effective Dose Equivalent (CEDE)	130 mrem	530 mrem
Shallow Dose Equivalent (SDE)	45 mrem	10 mrem
Committed Dose Equivalent (CDE)	25 mrem	15 mrem

PERFORMANCE INFORMATION

Facility: Ginna

Task No. : 340-001-05-02
Perform Site Emergency Plan Duties

Task/JPM Title: Determine PAR and complete EPIP 1-5, Attachment 3a

JPM No.: 2012 ILT NRC JPM N-SA-5

K/A Reference: 2.4.44 (2.4/4.4)
Knowledge of Emergency Plan protective action recommendations.

Alternate Path Yes __ No X
Time Critical Yes X No __

Examinee must complete the JPM in < 15 minutes.

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:
- 30 minutes ago, the plant was operating at full power when a cold leg LOCA occurred.
- Reactor Coolant System activity is high, and R-29/30 read ~1060 R/hr
- The SM/EC has just declared a General Emergency based on EAL 2.3.3 of EPIP 1-0 (Containment Radiation Monitor R-29/30 reading > 1000 R/HR).
- Skies are partly cloudy with a light breeze and zero precipitation.
- Wind speed is 5 mph at elevation 33'
- Wind direction is from 285° at elevation 33'
- Meteorological temperatures are 71°F at elevation 250' and 69°F at elevation 33'

Task Standard: Using the information provided, complete Attachment 3a, New York State Radiological Emergency Data Form Part 1, of EPIP 1-5 NOTIFICATIONS within 15 minutes.

Required Materials: Pencil or pen

General References:
- EPIP 1-5, NOTIFICATIONS, Revision 09200
- EPIP 2-1, PROTECTIVE ACTION RECOMMMENDATIONS, Revision 02800

Handouts:	• EPIP 1-5, NOTIFICATIONS, Rev 09200 • EPIP 1-5 Attachment 3a (with Step 2 circled as an "Exercise") • EPIP 2-1, PROTECTIVE ACTION RECOMMMENDATIONS, Revision 02800 • P-9, Radiation Monitoring System, Rev 09810
Initiating Cue:	• Using the information provided, complete Attachment 3a, New York State Radiological Emergency Data Form Part 1, of EPIP 1-5 NOTIFICATIONS, beginning at Step 3 • The electronic version of Attachment 3a is not available • This is a time-critical JPM.
Validation Time:	7 Minutes (when only Step 6 was being performed, PAR)

START TIME: _____

√ = CRITICAL STEP

EPIP 1-5, Attachment 3a, Block 3

√ **Performance Step: 1**

_____

3. Classification:
   A. UNUSUAL EVENT
   B. ALERT
   C. SITE AREA EMERGENCY
   D. GENERAL EMERGENCY
   E. EMERGENCY TERMINATED
   F. RECOVERY

Standard:

- **√ Circles "D. General Emergency"**
- Does NOT check the "information changed" box

EXAMINER CUE: **Provide student with the 3 EPIP handouts as soon as he has read the Initiating Cue.**

Comment:

EPIP 1-5, Attachment 3a, Block 4

√ **Performance Step: 2**

_____

Classification Time:
Emergency Classification declared at: Date_____ Time _____

Standard:

- **√ Fills in current Date and Time**
- Does NOT check the "information changed" box

Comment:

EPIP 1-5, Attachment 3a, Block 5

√ **Performance Step: 3**

Release of Radioactive Materials due to the Classification Event:

A. No release
B. Release BELOW federal limits □ to atmosphere □ to water
C. Release BELOW federal limits □ to atmosphere □ to water
D. Unmonitored release

Standard:

- Reads Instructions (Att.3) for Block 5 on p22
- Reviews Tables in Block 5 for potential release paths
- **√ Reviews R11 and R12 in Table, recognizes that this release path only applies "During outage, when CV purge is in progress"**
- **√ Circles "A. No Release" in Block 5**
- Does NOT check the "information changed" box

EXAMINER NOTE:

- **With no cues to indicate otherwise, all CI and CVI actions have occurred as expected (must be assumed).**
- **P9 is referenced in Block 5, but provides only the warning and high alarm setpoints (have on hand if asked to provide)**

EXAMINER CUE:

If asked about the status of CNMT radiation monitors, respond:

- **R2, R5, R7, R11, and R12 are in alarm**
- **R11 and R12 read 1E6 cpm**

Comment:

EPIP 1-5 Attachment 3, Block 6 Instructions

Procedure Note: PROTECTIVE ACTION RECOMMENDATIONS ARE ONLY REQUIRED AT A GENERAL EMERGENCY CLASSIFICATION.

Performance Step: 4

Check the appropriate PAR. The Shift Manager, TSC Director, or the EOF Recovery Manager will use EPIP 2-1, Protective Action Recommendations. PARs only reflect Ginna's recommendations, NOT THE ACTIONS IMPLEMENTED BY OFFSITE COUNTY OFFICIALS.

Standard:

- Locates block 6 of EPIP 1-5, Attachment 3a
- References Instructions for Block 6 in Att.3
- Goes to EPIP 2-1

EXAMINER CUE: **Hand the examinee copies of:**

- **EPIP 2-1, PROTECTIVE ACTION RECOMMMENDATIONS, Revision 02800**

Comment:

EPIP 2-1 Steps 5.3 A & B

Performance Step: 5

A. Protective Action Recommendations shall be issued with the initial declaration of a General Emergency.
B. Any changes to the initial PAR shall be communicated within 15 minutes of the decision by the Emergency Coordinator, to change the PARs using EPIP 1-5.

Standard:

- Reads steps 5.3 A and B

Comment:

EPIP 2-1 Steps 5.3 C

√ **Performance Step: 6**

C. Use the flowchart below to determine Protective Action Recommendations

Standard: √ Implements the flowchart of Step 5.3.C

Comment:

EPIP 2-1 Flowchart

√ **Performance Step: 7**

General Emergency Declared

Standard:

- √ Determines the answer is YES based on "The SM/EC declared a General Emergency"
- Continues to the next box

Comment:

EPIP 2-1 Flowchart

√ **Performance Step: 8**

Has procedure ER-SC.1 "Adverse Weather Plan" been entered?

Standard:

- √ Determines the answer is **NO** based on "Skies are partly cloudy with a light breeze and zero precipitation."
- Follows the **NO** arrow

Comment:

EPIP 2-1 Flowchart

√ **Performance Step: 9**

Is a procedurally controlled, short duration (less than 1 hour total) release in progress or anticipated within the next 15 minutes?

Standard:

- √ Determines the answer is NO (No information provided suggests a procedurally controlled, short duration release).
- Follows the **NO** arrow

Comment:

EPIP 2-1 Flowchart

√ **Performance Step: 10**

Is an unanticipated release isolable from the main control board in less than 15 minutes?

Standard:

- √ Determines the answer is NO based on the Initial Conditions' indication that no release is in progress or anticipated.
- Follows the **NO** arrow

Comment:

EPIP 2-1 Flowchart

√ **Performance Step: 11**

Recommend Protective Actions using Attachment 1 (Evacuation) and the current wind direction.

Standard:

- Goes to Attachment 1, EVACUATION AREAS BY ERPA
- √ Determines the wind is from 285 degrees from Initial Conditions
- √ Determines recommendation of "Evacuate: W (1,2,3) and implement KI plan (all remaining ERPA's to monitor the Emergency Alert System)

Comment:

EPIP 1-5, Attachment 3a, Block 6

√ **Performance Step: 12** Protective Actions RECOMMENDATIONS: (Refer to EPIP 2-1) check box if information has changed

Standard:
- √ Circles B (Evacuate)
- √ Circles W1, W2, and W3
- Does NOT check the "information changed" box

Comment:

EPIP 1-5, Attachment 3a, Block 7

√ **Performance Step: 13** EAL Number

Standard:
- √ Fills in "2.3.3" in the EAL Number box (provided in the Initial Conditions)
- Does NOT check the "information changed" box

Comment:

EPIP 1-5, Attachment 3a, Block 8

√ **Performance Step: 14** Reactor Status

Standard:
- √ Circles 'B' Shutdown
- √ Fills in "Today" as the date and "30 minutes ago" for time of S/D from the Initial Conditions
- Does NOT check the "information changed" box

Comment:

EPIP 1-5, Attachment 3A Block 9

√ **Performance Step: 15** Wind Speed:

Standard:
- √ Fills in 5 mph at elevation 33 ft from Initial Conditions
- Does NOT check the "information changed" box

Comment:

EPIP 1-5, Attachment 3A Block 10

√ **Performance Step: 16** Wind Direction:

Standard:
- √ Fills in 286 degrees at elevation 33 ft from Initial Conditions
- Does NOT check the "information changed" box

Comment:

EPIP 1-5, Attachment 3A Block 11

√ **Performance Step: 17** Stability Class:

Standard:
- Fills in 71° and 69° values from Initial Conditions
- √ Calculates ± 2° (71-69) delta-T
- √ Determines STABLE (Foxtrot) stability class from number line
- Does NOT check the "information changed" box

Comment:

Terminating Cue: **When Examinee returns the EPIP 1-5, Attachment 3a to the EXAMINER: Evaluation on this JPM is complete.**

STOP TIME: _____ √ • √ Completes EPIP-1-5, Attachment 3a within 15 minutes from START time

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2012 ILT NRC JPM N-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: _____

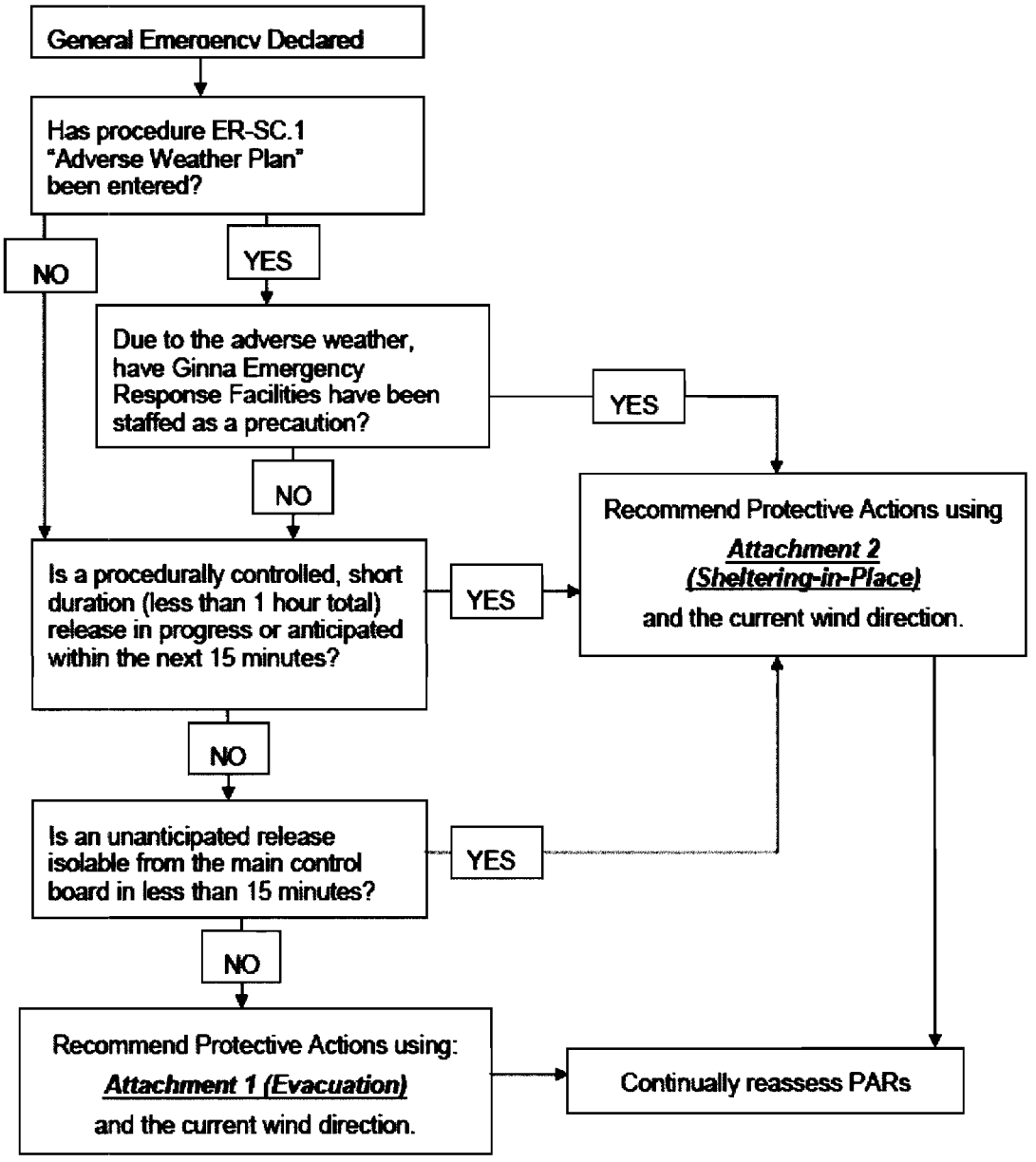
Initial Conditions:

- 30 minutes ago, the plant was operating at full power when a cold leg LOCA occurred.
- Reactor Coolant System activity is high, and R-29/30 read ~1060 R/hr
- The SM/EC has just declared a General Emergency based on EAL 2.3.3 of EPIP 1-0 (Containment Radiation Monitor R-29/30 reading > 1000 R/HR).
- Skies are partly cloudy with a light breeze and zero precipitation.
- Wind speed is 5 mph at elevation 33'
- Wind direction is from 285° at elevation 33'
- Meteorological temperatures are 71°F at elevation 250' and 69°F at elevation 33'

Initiating Cue:

- Using the information provided, complete Attachment 3a, New York State Radiological Emergency Data Form Part 1, of EPIP 1-5 NOTIFICATIONS, beginning at Step 3
- The electronic version of Attachment 3a is not available
- This is a time-critical JPM.

C. Use the flowchart below to determine Protective Action Recommendations



D. Record in EPIP 1-5, Attachment 3a (RECS form), Item 6, the Protective Actions Recommended and communicate within 15 minutes of the PAR decision.

ATTACHMENT 1, EVACUATION AREAS BY ERPA

Wind From	(Degrees)	Initial Protective Action Recommendations (Evacuation based on 2 mile radius & 5 miles downwind)
N	349 to 11	Evacuate: W (1,2,3) and implement KI plan (all remaining ERPA's to monitor the Emergency Alert System)
NNE	12 to 33	Evacuate: W (1,2) M (1) and implement KI plan (all remaining ERPA's to monitor the Emergency Alert System)
NE	34 to 56	Evacuate: W (1,2) M (1) and implement KI plan (all remaining ERPA's to monitor the Emergency Alert System)
ENE	57 to 78	Evacuate: W (1,2) M (1) and implement KI plan (all remaining ERPA's to monitor the Emergency Alert System)
E	79 to 101	Evacuate: W (1,2) M (1) and implement KI plan (all remaining ERPA's to monitor the Emergency Alert System)
ESE	102 to 124	Evacuate: W (1) M (1) and implement KI plan (all remaining ERPA's to monitor the Emergency Alert System)
SE	125 to 146	Evacuate: W (1) and implement KI plan (all remaining ERPA's to monitor the Emergency Alert System)
SSE	147 to 168	Evacuate: W (1) and implement KI plan (all remaining ERPA's to monitor the Emergency Alert System)
S	169 to 191	Evacuate: W (1) and implement KI plan (all remaining ERPA's to monitor the Emergency Alert System)
SSW	192 to 213	Evacuate: W (1) and implement KI plan (all remaining ERPA's to monitor the Emergency Alert System)
SW	214 to 236	Evacuate: W (1,3) and implement KI plan (all remaining ERPA's to monitor the Emergency Alert System)
WSW	237 to 258	Evacuate: W (1,3) and implement KI plan (all remaining ERPA's to monitor the Emergency Alert System)
W	259 to 281	Evacuate: W (1,3) and implement KI plan (all remaining ERPA's to monitor the Emergency Alert System)
WNW	282 to 303	Evacuate: W (1,2,3) and implement KI plan (all remaining ERPA's to monitor the Emergency Alert System)
NW	304 to 326	Evacuate: W (1,2,3) and implement KI plan (all remaining ERPA's to monitor the Emergency Alert System)
NNW	327 to 348	Evacuate: W (1,2,3) and implement KI plan (all remaining ERPA's to monitor the Emergency Alert System)

Attachment 3a

NEW YORK STATE RADIOLOGICAL EMERGENCY DATA FORM (PART I)

RECS message number _____

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

1. Message transmitted at:
Date _____ Time _____ Via: A. RECS B. Other

2. This is:
A. An Actual Event B. An Exercise

☐ **3. Classification:**
check box if information has changed

A. UNUSUAL EVENT
B. ALERT
C. SITE AREA EMERGENCY
D. GENERAL EMERGENCY
E. EMERGENCY TERMINATED
F. RECOVERY

☐ **4. Classification Time:**
check box if information has changed

This Emergency Classification declared at: Date TODAY Time Current

☐ **5. Release of Radioactive Materials due to the Classified Event:** (Refer to P-9.)
check box if information has changed

A. No Release
B. Release BELOW federal limits ☐ to atmosphere ☐ to water
C. Release ABOVE federal limits ☐ to atmosphere ☐ to water
D. Unmonitored release requiring evaluation

☐ **6. Protective Actions RECOMMENDATIONS:** (Refer to EPIP-2-1)
check box if information has changed

A. No need for Protective Actions outside the site boundary
B. EVACUATE and implement the KI plan for the following ERPA's
(all remaining ERPA's to monitor the Emergency Alert System)

W1 W2 W3 W4 W5 W6 W7 M1 M2 M3 M4 M5 M6 M7 M8 M9

C. SHELTER-IN-PLACE and implement the KI plan for the following ERPA's
(all remaining ERPA's to monitor the Emergency Alert System)

W1 W2 W3 W4 W5 W6 W7 M1 M2 M3 M4 M5 M6 M7 M8 M9

☐ **7. EAL Number:**
check box if information has changed

Brief Event Description and other significant information

EAL Number
2.3.3

☐ **8. Reactor Status:**
check box if information has changed A. Operational B. Shutdown Date TODAY Time T-30 (subcritical)

☐ **9. Wind Speed:**
check box if information has changed A. 5 Miles/hour at elevation 33 feet

☐ **10. Wind Direction:**
check box if information has changed From 285 degrees at elevation 33 feet

☐ **11. Stability Class:**
check box if information ____ has changed

71 ΔT − 69 = ____

250 ft temp 33 ft temp

UNSTABLE			NEUTRAL		STABLE	
Alpha	Bravo	Charlie	Delta	Echo	Foxtrot	Golf
-2.17	-1.95	-1.74	-0.65	+1.74	+2.0	+4.77

12. Reported by:
Name: _____ Area Code _____ Number _____

"Please stand by for roll call: New York State copy?"☐ "Monroe County copy?"☐ "Wayne County copy?"☐

FOR GINNA USE ONLY:
Time Prepared: Time Approved: **Completed form sent to EP Director**
Prepared By: Approved By:

WAYNE COUNTY USE ONLY:
Routing: ___ALL ___Dose Assess Calculator ___RDO ___Ginna Tech Rep ___Field Team Coord. ___Plotter ___
NYS Rad Health ___Ops Officer ___NYS Health (Ops room) ___Director ___PIO

MONROE COUNTY USE ONLY:
Distribution: 1. Command Room (OEP Administrator) 2. EOC (Operations Desk)
3. Assessment Area (Rad Officer, Health, Field Team Coordinator, Computer Operations, Tech Rep) 4. Evaluator 5. File

Facility: Ginna

Task No.: 001-004-04-01
Respond to an immovable and/or stuck control rod.

Task Title: Borate for one rod not fully inserted per ES-0.1 and ER-CVCS.1

JPM No.: 2012 ILT NRC JPM A

K/A Reference: 004 A4.07 (3.9/3.7)

Alternate Path Yes _X_ No __
Time Critical Yes __ No _X_

Ability to manually operate and/or monitor in the control room: Boration/dilution.

Use ER-CVCS.1 because normal boration flow can't be established.

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 experienced a reactor trip.
- The crew is currently at ES-0.1, REACTOR TRIP RESPONSE, Step 4.

Task Standard: RCS boration flow established.

Required Materials: None

General References:
- ES-0.1, REACTOR TRIP RESPONSE
- ER-CVCS.1, REACTOR MAKEUP CONTROL MALFUNCTION, Revision 00801

Handouts:
- Control Room copy of ES-0.1, REACTOR TRIP RESPONSE, place-kept up to Step 4.

Initiating Cue:
- The CRS directs you to perform Step 4 of ES-0.1.
- Another operator will handle all other MCB operations and alarms not associated with assigned task.

Validation Time: 8 Minutes

SIMULATOR SETUP

If NOT using an IC snapshot developed for this exam, perform the following:

- From protected IC-19 (100% MOL)

The following fails the Makeup Mode Select Switch

- Insert OVR-D.I-CVC08A, [False], Borate Signal Makeup Mode Select Switch
- Insert OVR-D.I-CVC08B, [False], Auto Signal Makeup Mode Select Switch
- Insert OVR-D.I-CVC08C, [False], Dilute Signal Makeup Mode Select Switch
- Insert OVR-D.I-CVC08D, [False], Alt Dilute Signal Makeup Mode Select Switch

- Insert MALF ROD03-D4, Untrippable (Stuck Rod D4-Control Bank C), only one rod to use step 4 RNO procedure flowpath to clearly go to ER-CVCS.1
- Insert OVR-D.I.-CVC34D, [False], MOV-350 fails to open-prevents 4 RNO being a success path if procedure use is incorrect.
- Trip the reactor
- Perform E-0 to transition to ES-0.1, and then perform ES-0.1 up to (but NOT including) step 4.
- FREEZE

If using an IC developed for this exam, reset to IC 170 .

INSTRUCTOR ACTIONS

- Ensure PPCS Variable Boration Dilution screen is clear.
- Placekeep the Control Room copy of ES-0.1 up to (but NOT including) step 4, and place it on the HCO's desk.

(Denote Critical Steps with a √)

Start Time: _____.

		ES-0.1 Step 4
√	**Performance Step: 1**	Verify MRPI Indicates – ALL CONTROL AND SHUTDOWN RODS ON BOTTOM
	Standard:	**√ Recognizes that MRPI indicates one control rod (D4 – Control Bank C) NOT fully inserted.**
	EXAMINER NOTE:	**Point out marked up copy of ES-0.1 at HCO's desk.**
	Comment:	Chooses correct RNO with only ONE rod not fully inserted.

		Step 4 RNO a
	Performance Step: 2	IF one Control Rod is NOT fully inserted, THEN perform the following: a. Place RMW mode selector switch to BORATE.
	Standard:	Place RMW mode selector switch to BORATE.
	Comment:	

		Step 4 RNO b
	Performance Step: 3	b. Adjust boric acid integrator flow control valve, FCV-110A, for desired flowrate.
	Standard:	Adjusts boric acid integrator flow control valve, FCV-110A to desired flowrate.
	EXAMINER CUE:	**If questioned "What is the desired flowrate?" respond with "SM has directed you to borate at the maximum rate."** (a setting of ">9 gpm" on the FCV-110A controller)
	Comment:	

Step 4 RNO c

Performance Step: 4

c. Set boric acid integrator to desired amount (650 gallons for each control rod not fully inserted).

Standard:

Sets boric acid integrator to 650 gallons.

To set the BA COUNTER:

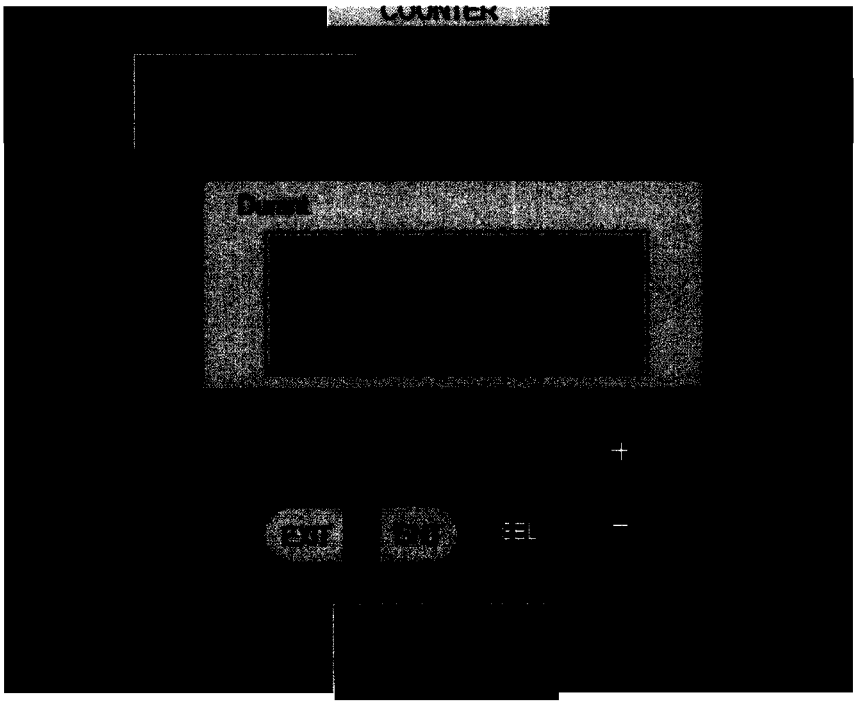
- Push 'SEL' Button to move the number column to be adjusted.
- Raise or Lower the column vaule by depressing the "+" or "-".
- Depress the 'ENT' Button to enter (Lock-in) the selected amount to be added.

NOTE:

- 'C' Line is a running total for BA additions.

-There is a decimal point between the last two (2) zeroes.

Comment:



EXAMINER NOTE: ALTERNATE PATH DECISION POINT OCCURS IN THE NEXT STEP

EXAMINER CUE: **(After the Examinee determines the need for ER-CVCS.1) Provide the Examinee a clean copy of ER-CVCS.1.**

Step 4 RNO d

Performance Step: 5

d. Place RMW control to start and verify flow. IF flow can NOT be established, THEN refer to ER-CVCS.1, REACTOR MAKEUP CONTROL MALFUNCTION.

√ **Standard:**

- Places RMW control to start (Red light lit, Green light off)
- √ **Recognizes no flow established:**
  - o No flow indicated on the BA FLOW chart recorder
  - o Boric Acid Counter, YIC-110 not counting
  - o Boric Acid Audible Device not "clicking"
- √ **Refers to ER-CVCS.1**

Comment:

ER-CVCS.1 PRECAUTIONS

Procedure PRECAUTION: The charging pump suction automatically switches to the RWST (LCV 112B Open, LCV 112C Closed) when VCT level lowers to 5%.

Procedure PRECAUTION: The use of MOV-350 for normal boration at power should be avoided as the valve must stroke fully open before it may be reclosed, making it difficult to control the amount of boric acid being added.

Procedure PRECAUTION: IF boric acid filter D/P exceeds 20 psid, THEN the filter should be bypassed and a MWR/TR should be submitted.

Performance Step: 6 Examinee reviews PRECAUTIONS.

_____

Standard: Reviews PRECAUTIONS.

EXAMINER CUE: **IF field operator is asked for boric acid filter D/P reading in response to the PRECAUTION above, respond that "Local boric acid filter D/P is __ psid." (8 if 1 BA pump running or 12 psid If 2 BA pumps are running)**

Comment:

ER-CVCS.1 Step 4.1.1.1

Performance Step: 7 INITIATE Normal Boration as follows:
4.1.1.1 PLACE RMW Mode selector switch to BORATE

_____

Standard: Places RMW mode selector switch to BORATE.

EXAMINER NOTE: **Examinee may recognize that step 4.1.1, Normal Boration, was already attempted unsuccessfully in ES-0.1, and continue with the next alternative – step 4.1.2.**

Comment: Instructor silence MCB alarms not associated with task.

Step 4.1.1.2

Performance Step: 8 ADJUST boric acid flow control valve, HCV-110A to desired flowrate in AUTO.

_____

Standard: Adjusts HCV-110A to desired flowrate.

EXAMINER NOTE: **Should have been done previously.**

Comment:

Step 4.1.1.3

Performance Step: 9 Set boric acid integrator to desired amount.

_____

Standard: Sets boric acid integrator to 650 gallons.

EXAMINER NOTE: **Should have been set to 650 gallons previously.**

Comment:

Step 4.1.1.4

Performance Step: 10 PLACE RMW Control switch to START.

_____

Standard: Places RMW Control switch to START

EXAMINER NOTE: **Should have been done previously.**

Comment:

Step 4.1.1.5

Performance Step: 11 Verify RMW control – ARMED. (Red light lit above RMW Control switch)

_____

Standard: Identifies Red light lit and Green light off.

EXAMINER NOTE:
- **Should have been verified previously**
- **May go behind the MCB to read BA Pump Discharge pressure on PI-108**

Comment:

Step 4.1.2.1

Performance Step: 12 4.1.2 IF makeup system does NOT operate properly in BORATE, THEN perform the following:
4.1.2.1 OPEN blender outlet to charging pump suction AOV-110B.

_____

Standard:
- Recognizes that the makeup system does NOT operate properly in BORATE
- [redacted]

Comment:

Step 4.1.2.2

Performance Step: 13 Start at least one boric acid pump.

_____

Standard: [redacted]
- Red light lit, Green light off

Comment:

Step 4.1.2.3

Performance Step: 14 PLACE boric acid flow control valve, HCV-110A, to MANUAL and open to establish desired flow.

_____

Standard:

- [redacted]
- [redacted]
  - Checks indicated on the BA FLOW chart recorder
  - Boric Acid Counter, YIC-110 counting
  - Boric Acid Audible Device "clicking"
- Continues to monitor flow rate and amount added till required amount added.

Comment:

Terminating Cue: **After BA flow is verified: "Evaluation on this JPM is complete. "**

Stop time: _____.

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2012 ILT 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:

- The plant has experienced a reactor trip.
- The crew is currently at ES-0.1, REACTOR TRIP RESPONSE, Step 4.

INITIATING CUE:

- The CRS directs you to perform Step 4 of ES-0.1.
- Another operator will handle all other MCB operations and alarms not associated with assigned task.

Facility: Ginna

Task No.: 344-002-05-01
Perform Emergency Operations

Task Title: Secure SI Pumps as part of Terminating RCS Bleed and Feed

JPM No.: 2012 ILT NRC JPM B

K/A Reference: 006 A2.02 (3.9/4.3)

Alternate Path Yes __ No X
Time Critical Yes __ No X

Ability to (a) predict the impact of the following operations on the RCS; and (b) based on those predictions, use procedures to control the consequences of those operations: Loss of flow path.

Requires multiple RNO actions.

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 experienced a loss of secondary heat sink.
- 'A' SI pump is unavailable.
- The crew established RCS Bleed and Feed per FR-H.1, RESPONSE TO LOSS OF SECONDARY HEAT SINK.
- AFW has been restored, and the adequacy of the Secondary Heat Sink has been verified per Step 29 of FR-H.1
- The crew is in the process of terminating RCS Bleed and Feed.
- All three charging pumps are available.

Task Standard: Secure the running SI pump per FR-H.1, beginning at Step 33

Required Materials: None

General References:
- FR-H.1, RESPONSE TO LOSS OF SECONDARY HEAT SINK, Revision 04000
- FIG-1.0, Min Subcooling, Rev 00100

Handouts:
- FR-H.1, RESPONSE TO LOSS OF SECONDARY HEAT SINK, placekept per Simulator Setup instructions up to Step 33
- FIG-1.0, Min Subcooling, Rev 00100

Initiating Cue: The CRS directs you to secure the running SI pumps per FR-H.1, beginning at Step 33.

Validation Time: 18 Minutes

SIMULATOR SETUP

If NOT using an IC snapshot developed for this exam, perform the following:

- From protected IC-19 (100% MOL)
- Pull–Stop both MDAFW pumps, and the TDAFW pump (initially)
- Pull-Stop 'A' SI pump and hang CAUTION tag
- Insert MALF STM09A, [100, on Trigger 1] (Main Steam Safety Failure: Vlv 3508)
- Insert MALF STM09B, [100, on Trigger 1] (Main Steam Safety Failure: Vlv 3509)
- Stop both MFPs and all Condensate pumps
- Insert Trigger 1
- Perform E-0 with transition to FR-H.1.
- Perform / placekeep FR-H.1 assuming that no feed sources are available.
- As soon as both SG WR levels are < 120 inches, clear the STM09A & B malfunctions, return to step 2 and continue to establish Bleed & Feed. At step 27, start both MDAFW pumps and restore level in at least one SG to >25%; and then continue FR-H.1 with step 28.
- Ensure PRZR level > 20%
- Ensure AFW flow is secured to any SG >25%
- Run simulator until RCS pressure is stable (~520 psig) and CETs are ~300°F (this will ensure 120°F subcooling exists)
- When step 32 is reached, placekeep the step and stop.
- FREEZE

If using an IC developed for this exam, reset to IC 171

INSTRUCTOR ACTIONS

- Have a place-kept copy of FR-H.1 and FIG-1.0, RCS Subcooling, ready to provide to the examinee.

(Denote Critical Steps with a √)

Start Time: _____.

EXAMINER NOTE: **Provide Examinee a marked copy of FR-H.1 and FIG-1.0**

EXAMINER NOTE: **Currently two SI pumps running and both PORVs open**

Step 33

Performance Step: 1

_____

Check If One Of Three SI Pumps Should Be Stopped:

a. Three SI pumps – RUNNING
b. Per RNO: If NOT, Go to Step 34

Standard:

- Confirms that only two SI pumps are running per initial conditions:
  - B and C SI Pump Red lights lit and Green lights off
- Goes to Step 34

Comment:

Step 34

EXAMINER NOTE: **Currently two SI pumps running and both PORVs open**

Performance Step: 2

_____

Check If One Of Two SI Pumps Should Be Stopped:

a. Two SI pumps – RUNNING
b. Determine required RCS subcooling from table:

Standard:

- Observes that two SI pumps are running
  - B and C SI Pump Red lights lit and Green lights off
  - SI flow indicated on FI-924 and FI-925
- Determines (from the table) that 120°F of subcooling required

Comment:

Step 34 c

Performance Step: 3

c. RCS subcooling based on CETs – GREATER THAN VALUE FROM TABLE ABOVE USING FIG-1.0, FIGURE MIN SUBCOOLING

Standard:

- Obtains a copy of FIG-1.0, FIGURE MIN SUBCOOLING
- Determines that subcooling IS > 120°F
- Goes to step 34d

EXAMINER NOTE: **Subcooling ~130°F, required is [120°F]**

Comment:

Step 34 d

Performance Step: 4

d. PRZR level – GREATER THAN 20% [40%]

Standard:

- Refers to MCB PRZR level indicators (LI-426 - 428), or
- Refers to PPCS PRZR level indication
- Determines that PZR level is >100%
- Goes to step 34e

EXAMINER NOTE: **PRZR level will be offscale HI due to BOTH PORV's open for bleed and feed.**

Comment:

Step 34 e

EXAMINER NOTE: **Currently two SI pumps running and both PORVs are open**

√ **Performance Step: 5** Stop one SI pump

_____

Standard:

- Observes that two SI pumps are running
  - B and C SI Pump Red lights lit and Green lights off
  - SI flow indicated on FI-924 and FI-925
- √ Secures either B or C SI pump
- Goes to Step 35

Comment:

Step 35

EXAMINER NOTE: **Currently one SI pump running and both PORVs are open**

Performance Step: 6

_____

Check If Last SI Pump Should Be Stopped:

a. One SI pump – RUNNING
b. Check the following:
   - RCS subcooling based on core exit T/Cs greater than 0°F using FIG-1.0, FIGURE MIN SUBCOOLING
   - RCS pressure greater than 1650 psig [1650 psig adverse CNMT]

Standard:

- Observes that one SI pump is running
  - Running SIP Red light lit and Green light off
  - SI flow indicated on the associated flow indicator (FI-924 or FI-925)
- Using FIG-1.0, CETs and RCS pressure, determines that greater than 0°F subcooling exists, HOWEVER -
- Using RCS pressure indicators (PI-420-2 and/or PI-420A), or PPCS RCS pressure indication, determines that RCS pressure is < 1650 psig
- Does NOT stop the running SI pump
- Goes to Step 35b RNO (Go to Step 36)

Comment:

Step 36

EXAMINER NOTE: **Currently one SI pump running and both PORVs open**

Procedure Note: NOTE: After closing a PORV, it may be necessary to wait for RCS pressure to rise to permit stopping SI pumps in SI reduction steps.

Performance Step: 7 Check PRZR PORVs And Associated Block Valves – ANY BLEED PATH OPEN

_____

Standard:
- Checks PRZR PORV indication (MCB center section)
- Identifies that PORV-430 and PORV-431C are open
- Goes to step 37

EXAMINER NOTE: **Per the WOG ERG Background document, the criteria for stopping the next SI pump is based upon steady-state conditions, and RCS pressure should be stable or rising**

Comment:

Step 37

EXAMINER NOTE: **Currently one SI pump running and both PORVs open**

Procedure CAUTION: IF RCS is solid, closure of PORVs will result in rapid RCS pressure rise unless RCS temperature and RCS inflow are carefully controlled.

Performance Step: 8 Isolate PRZR Bleed Paths:

a. PRZR PORVs – BOTH OPEN

_____

Standard:
- Identifies that PORV-430 and PORV-431C are open and goes to step 37b.

Comment:

Step 37b

EXAMINER NOTE: **Currently one SI pump running and both PORV's open**

√ **Performance Step: 9** b. Close one open PRZR PORV and place in AUTO:

Standard:

- √ **Close** one of the open PORV's. Takes either PORV-430 or PORV-431C to close, once closed verifies position indication by green light closed lit for closed PORV and takes switch to AUTO position.
- Once PORV is closed, Goes to Step 37c.

Comment:

Step 37c.

EXAMINER NOTE: **Currently one SI Pump running and one PORV open**

Performance Step: 10 c. Returns to Step 33.

Standard:

- Returns back to step 33

Comment:

Step 33

EXAMINER NOTE: **Currently one SI Pump running and one PORV open**

Performance Step: 11
_____

Check If One Of Three SI Pumps Should Be Stopped:
a. Three SI pumps – RUNNING
- Per RNO: If NOT, Go to Step 34

Standard:

- Confirms that only one SI pumps are running per initial conditions:
  - B or C SI Pump Red lights lit and Green lights off
- Goes to Step 34

Comment:

Step 34

EXAMINER NOTE: **Currently one SI Pump running and one PORV open**

Performance Step: 12
_____

Check If One Of Two SI Pumps Should Be Stopped:
a. Two SI pumps – RUNNING
Per RNO: If NOT, Go to Step 35

Standard:

- Observes that one SI pump is running
  - B or C SI Pump Red lights lit and Green lights off
  - SI flow indicated on FI-924 and FI-925
- Goes to Step 35

Comment:

Step 35

EXAMINER NOTE: **Currently one SI Pump running and one PORV open**

Performance Step: 13 Check If Last SI Pump Should Be Stopped:

_____

a. One SI pump – RUNNING
b. Check the following:
   - RCS subcooling based on core exit T/Cs greater than 0°F using FIG-1.0, FIGURE MIN SUBCOOLING
   - RCS pressure greater than 1650 psig [1650 psig adverse CNMT]

b. RNO Goes to Step 36

Standard:

- Observes that one SI pump is running
  - Running SIP Red light lit and Green light off
  - SI flow indicated on the associated flow indicator (FI-924 or FI-925)
- Using FIG-1.0, CETs and RCS pressure, determines that greater than 0°F subcooling exists
- Using RCS pressure indicators (PI-420-2 and/or PI-420A), or PPCS RCS pressure indication, determines that RCS pressure is< 1650 psig.
- Per 35b RNO goes to step 36

Comment:

Step 36

EXAMINER NOTE: **Currently one SI Pump running and one PORV open**

Procedure Note: **NOTE**: After closing a PORV, it may be necessary to wait for RCS pressure to rise to permit stopping SI pumps in SI reduction steps.

Performance Step: 14 Check PRZR PORVs And Associated Block Valves – ANY BLEED PATH OPEN

_____

Standard:

- Checks PRZR PORV indication (MCB center section)
- Identifies that PORV-430 or PORV-431C is open
- Goes to step 37

Comment:

Step 37a

EXAMINER NOTE: **Currently one SI Pump running and one PORV open**

Procedure CAUTION: IF RCS is solid, closure of PORVs will result in rapid RCS pressure rise unless RCS temperature and RCS inflow are carefully controlled.

Performance Step: 15 Isolate PRZR Bleed Paths:
a. PRZR PORVs – BOTH OPEN

_____

Standard:

- Identifies that PORV-430 or PORV-431C is open and goes to step 37a RNO

Comment:

Step 37a RNO

√ **Performance Step: 16**

a. Perform the following:

1) Stop all but one charging pump.

Standard:

- Reduces speed of the charging pump to be stopped to minimum
- √ Stops one charging pump

EXAMINER NOTE: **Step 25 has previously established maximum charging flow**

Comment:

Step 37a RNO a.2

Performance Step: 17

2) Control charging flow to maintain RCS pressure and PRZR level.

Standard:

- Observes RCS pressure and PRZR level
  - Refers to MCB RCS pressure indicators (PI-420-2 and/or PI-420A), or PPCS RCS pressure indication
  - Refers to MCB PRZR level indicators (LI-426, LI-427, and LI-428), or PPCS PRZR level indication
- If pressure and level are lowering, raises charging pump speed
- If pressure and level are rising, reduces charging pump speed
- If pressure and level are stable, makes no adjustment to charging pump speed

EXAMINER NOTE: **With a PORV open and one SI pump running it is likely that the PRZR will indicate full, and therefore, the examinee will likely reduce charging pump speed.**

Comment:

Step 37a RNO a.3

Performance Step: 18

3) Establish excess letdown as follows:
   a) Place AOV-312 to NORMAL

Standard:

- Ensures AOV-312 in NORMAL

EXAMINER NOTE: **AOV-312 should already be in NORMAL at this time.**

Comment:

Step 37 RNO a.3 b - d

√ **Performance Step: 19**

b) Reset both trains of XY relays for AOV-310 and AOV-745.
c) Manually open CCW from excess letdown Hx (AOV-745).
d) Ensure excess letdown flow control valve, HCV-123 is closed, demand at 0.

Standard:

- √ Resets Train A and Train B XY relays for AOV-310 and AOV-745 on Containment Isolation Auxiliary Relay Panel (3rd column from the right – top two)
  - Backlit white lights energize when reset
- √ Manually opens AOV-745
  - Red light on and Green light off
  - AOV-745 bright/dim status light will go dim (MCB left section)
- Ensures HCV-123 demand at zero
  - Controller (MCB left section) – 0 is fully to the left

EXAMINERS NOTE: **AOV-745 switch will already be in the open position and AOV-745 will open as soon as the XY relays are reset.**

Comment:

Step 37 RNO a.3 e & f

√ **Performance Step: 20**

e) Reset both trains of XY relays for MOV-313.
f) Open MOV-313.

Standard:

- √ Resets Train A and Train B XY relays for MOV-313 on Containment Isolation Auxiliary Relay Panel (1st column from the left – three from the top) by depressing button
  - Backlit white lights energize when reset
- √ Opens MOV-313
  - Momentarily turns the switch clock-wise and allows it to spring return to the center position
  - Verifies red light lit and green light off
  - MOV-313 bright/dim status light will go dim (MCB left section)

Comment:

Step 37 RNO a.3 g & h

√ **Performance Step: 21**

g) Open excess letdown isolation valve AOV-310.
h) Slowly open HCV-123.

Standard:

- √ Opens AOV-310
  - Places two-position switch in the OPEN position
  - Verifies red light lit and green light off
  - AOV-310 bright/dim status light will go dim
- √ Slowly opens HCV-123
  - Slowly turns controller knob counter clock-wise until demand is 100%
  - Observes Excess Letdown HX Outlet Temp (TI-122) and Excess Letdown HX Outlet Press (PI-121)

EXAMINER NOTE: **For current plant conditions, the response on TI-122 and PI-121 will be minimal.**

Comment:

Step 37 RNO a.3 i

Performance Step: 22

i) Adjust Charging Pump speed as necessary

_____

Standard:

- Observes RCS pressure and PRZR level
  - Refers to MCB RCS pressure indicators (PI-420-2 and/or PI-420A), or PPCS RCS pressure indication
  - Refers to MCB PRZR level indicators (LI-426, LI-427, and LI-428), or PPCS PRZR level indication
- If pressure and level are lowering, raises charging pump speed
- If pressure and level are rising, reduces charging pump speed
- If pressure and level are stable, makes no adjustment to charging pump speed

Comment:

Step 37 b & c

EXAMINER NOTE: **Currently one SI Pump running and one PORV open**

√ **Performance Step: 23**

b. Close one open PRZR PORV and place in AUTO
c. Return to step 33

_____

Standard:

- √ Closes the open PORV-430 or PORV-431C and places it to AUTO
  - Turns the PORV switch to the CLOSE position and then returns it to the AUTO position
  - Verifies green light lit and red light off
  - Returns back to Step 33

EXAMINER NOTE: **With both PORVs closed, injection flow from the SI pump and charging pumps will cause RCS pressure to rise. The only removal of RCS mass at this time is excess letdown flow, which ranges from a few gpm at low pressure to ~ 20 gpm at NOP. When RCS pressure rises to SI pump shutoff head, RCS pressure will continue to rise due to the mismatch between charging flow and excess letdown flow.**

Comment:

Step 33

EXAMINER NOTE: **Currently one SI pump running and both PORVs Closed**

Performance Step: 24
_____

Check If One Of Three SI Pumps Should Be Stopped:
c. Three SI pumps – RUNNING
d. Per RNO: If NOT, Go to Step 34

Standard:

- Confirms that only two SI pumps are running per initial conditions:
  - B and C SI Pump Red lights lit and Green lights off
- Goes to Step 34

Comment:

Step 34

EXAMINER NOTE: **Currently one SI pump running and both PORVs Closed**

Performance Step: 25
_____

Check If One Of Two SI Pumps Should Be Stopped:
c. Two SI pumps – RUNNING
d. Determine required RCS subcooling from table:

Standard:

- Observes that two SI pumps are running
  - B and C SI Pump Red lights lit and Green lights off
  - SI flow indicated on FI-924 and FI-925
- Determines (from the table) that 120°F of subcooling required

Comment:

Step 35

EXAMINER NOTE: **Currently one SI pump running and both PORVs are closed.**

Performance Step: 26

Check If Last SI Pump Should Be Stopped:

a. One SI pump – RUNNING

b. Check the following:

- RCS subcooling based on core exit T/Cs greater than 0°F using FIG-1.0, FIGURE MIN SUBCOOLING
- RCS pressure greater than 1650 psig [1650 psig adverse CNMT]

Standard:

- Observes that one SI pump is running
  - Running SIP Red light lit and Green light off
  - SI flow indicated on the associated flow indicator (FI-924 or FI-925)
- Using FIG-1.0, CETs and RCS pressure, determines that greater than 0°F subcooling exists, HOWEVER -
- Using RCS pressure indicators (PI-420-2 and/or PI-420A), or PPCS RCS pressure indication, determines that RCS pressure is < 1650 psig
- Does NOT stop the running SI pump
- Goes to Step 35b RNO
- When directed to go to step 36 observes Note prior to step 36.

Comment:

Step 35b (RNO)

EXAMINER NOTE: **Currently one SI pump running and both PORVs are closed.**

Performance Step: 27

Procedure Note: **NOTE**: After closing a PORV, it may be necessary to wait for RCS pressure to rise to permit stopping SI pumps in SI reduction steps.

EXAMINER NOTE: **PORV's are closed, one SI pump is running and RCS pressure is rising slowly. During validations it takes 8-10 minutes for RCS pressure >1650 psig.**

EXAMINER NOTE: **The examinee should recognize per the Note that it will take some time for RCS pressure to rise >1650 psig and wait to meet the SI termination criteria of FR-H.1**

√ **Standard:**

- √ Observes RCS pressure rise and once > 1650 psig secures last SI pump.

OR

- √ Candidate may vocalize that they understand and the need to wait for RCS pressure to rise > 1650 psig to allow for SI termination and will wait.

EXAMINER NOTE: **The following are acceptable choices to complete task:**

1. Waits for RCS pressure to rise above 1650 psig and secures the last SI pump per step 35.

2. Candidate may vocalize that they understand and the need to wait for RCS pressure to rise > 1650 psig to allow securing of the last SI pump.

Terminating Cue: **Secures the last SI pump after RCS pressure rises to greater than 1650 psig**

OR

Candidate may vocalize that they understand and the need to wait for RCS pressure to rise > 1650 psig to allow securing the last SI pump.

Stop time: _____.

Job Performance Measure No.: 2012 ILT NRC JPM B

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS:

- The plant experienced a loss of secondary heat sink.
- 'A' SI pump is unavailable.
- The crew established RCS Bleed and Feed per FR-H.1, RESPONSE TO LOSS OF SECONDARY HEAT SINK.
- AFW has been restored, and the adequacy of the Secondary Heat Sink has been verified per Step 29 of FR-H.1
- The crew is in the process of terminating RCS Bleed and Feed.
- All three charging pumps are available.

INITIATING CUE:

The CRS directs you to secure the running SI pumps per FR-H.1, beginning at Step 33.

Facility: Ginna

Task No.: 006-018-05-01
Transfer SI to High Head Recirc

Task Title: Align SI and RHR Systems For High Head Recirculation

JPM No.: 2012 ILT NRC JPM C

K/A Reference: 002 A2.04 (4.3/4.6)

Alternate Path Yes __ No X
Time Critical Yes X No __

Ability to (a) predict the impacts of the following malfunctions or operations on the RCS; and (b) based on those predictions use procedures to correct, control or mitigate the consequences of those malfunctions or operations: Loss of heat sinks.

Per A-601.10, Event 6 (LOCAs), RHR pump swap to CNMT Sump alignment required to be completed in ≤ 10 minutes

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 100% power when a LOCA occurred.
- The Crew has transitioned to ES-1.3, TRANSFER TO COLD LEG RECIRCULATION.
- RHR has been aligned to take suction from CNMT Sump B.

Task Standard: Complete the alignment of SI pump suction to the RHR pump discharge, and initiate SI flow within 10 minutes of stopping the last SI pump taking suction from the RWST.

Required Materials: None

General References:
- ES-1.3, TRANSFER TO COLD LEG RECIRCULATION, Revision 04600
- A-601.10, Time Critical Action Management Program, Rev 00003

Handouts:
- Control Room copy of ES-1.3, TRANSFER TO COLD LEG RECIRCULATION, place-kept up to step 9.
- FIG-19.0, High Head SI Required, Rev 002

Initiating Cue:	As the HCO, you have been tasked to continue with ES-1.3 starting at step 9. This is a **time-critical** JPM. An Examiner will act as a second board operator and respond to all alarms and conditions NOT related to your task.
Validation Time:	10 Minutes (for the entire JPM)(5-9 min for time critical actions)
Time Critical Basis:	Per A-601.10, TIME CRITICAL ACTION MANAGEMENT PROGRAM, If RCS pressure is above RHR pump shutoff head, High head alignment and SI pump restart must be completed within 10 minutes. Completion within this time limit will maintain core inventory.

SIMULATOR SETUP

If NOT using an IC snapshot developed for this exam, perform the following:

- From protected IC-19 (100% MOL)
- Insert MALF RCS02D, [10,000 gpm] (RCS Leak Into CNMT: Loop B Cold Leg) until RWST level <28%, then reduce leak size to 4000 gpm
- Perform E-0, E-1, and ES-1.2
- Do NOT initiate cooldown in ES-1.2
- Ensure both spray pumps are running to deplete RWST
- When 28% is reached in the RWST perform ES-1.3 up to step 9.
- FREEZE when the RWST level reaches 15%.

If using an IC developed for this exam, reset to IC _____ .

INSTRUCTOR ACTIONS

- Placekeep the Control Room copy of ES-1.3 up to (but NOT including) step 9, and place it and FIG-19.0 on the HCO's desk.
- Ensure MCB key is present and clearly visible in the Simulator key drawer.
- **Due to being a time critical JPM, do not pre-brief the student (e.g., in the classroom) with task or procedure prior to the start of the JPM.**
- Go to RUN when Operator takes watch.

(Denote Critical Steps with a √)

Start Time: _____

EXAMINER NOTE: **Point out marked up copy of ES-1.3 on HCO's desk.**

ES-1.3, Step 9

Procedure Caution: Sump recirculation flow to RCS must be maintained at all times, except during alignment for high head recirculation.

Procedure Note: The TSC should be requested to establish periodic monitoring of the Aux Bldg sub-basement, as radiological conditions permit, to monitor RHR pump operation.

Performance Step: 1 Check RWST Level – LESS THAN 15%

_____

Standard:

- Reads the Caution and Note
- Observes MCB RWST level indicators – LI-920 and LI-921 less than 15%
- Recognizes that annunciator B-16, RWST LO-LO LEVEL 15%, is lit

Comment:

Step 10 a

Procedure Note: Cold leg injection should be reinitiated within 4 hours – 5.5 hours after stopping SI pumps.

√ **Performance Step: 2** Stop All Pumps Supplied From RWST:

a. Stop operating CNMT spray pump and place in PULL STOP

Standard:

- Identifies the running spray pump
  - Red light lit and green light off
- **√ Places the running spray pump in PULL STOP**
  - Turns pistol-grip switch counter clockwise and withdraws the switch to the PULL Stop position
  - Verifies green light and red light off
  - Observes that Spray Additive flow, FI-930, (MCB left section) lowers to zero gpm

Comment:

Step 10 b & c

Performance Step: 3

_____

b. Check CNMT pressure – LESS THAN 28 PSIG
c. Reset CNMT spray if necessary

Standard:

- Determines that CNMT pressure is < 28 psig
  - PI-945, PI-947, and PI-949 indicate < 28 psig
  - Annunciator A-28, CONTAINMENT SPRAY CHANNEL ALERT 2/3 >28 PSI, extinguished
- Depresses the CNMT Spray Reset pushbutton
  - Verifies annunciator A-27, CONTAINMENT SPRAY 2/3 + 2/3 > 28 PSI, extinguished

EXAMINER NOTE:

Annunciator A-28 alarms when either 2/3 front MCB left section (PI-945, 947, or 949) OR 2/3 back MCB left section (PI-946, 948, or 950) are > 28 psig (43 psia for back of MCB).
Annunciator A-27 alarms when both 2/3 front MCB left section (PI-945, 947, or 949) AND 2/3 back MCB left section (PI-946, 948, or 950) are > 28 psig (43 psia for back of MCB).
The back of the MCB indication can also be utilized for indication, but because it is out of the way and reads out in PSIA rather than psig, it is usually not utilized for this task.

Comment:

Step 10 d

Performance Step: 4

d. Close CNMT spray pump discharge valves
- MOV-860A
- MOV-860B
- MOV-860C
- MOV-860D

_____

Standard: Closes any open CNMT spray pump discharge valves
- Turns switch counter clockwise to CLOSE and allows the switch to spring return to the AUTO position
- Verifies green light lit and red light off

EXAMINER NOTE: **At this point in the procedure one spray pump should already have been secured and its associated discharge valves closed.**

Comment:

Step 10 e

√ **Performance Step: 5**

e. Stop all charging pumps.

_____

Standard:
- Reduces charging pump speed to minimum using the controller
- √ Turns the pistol-grip switch counter clockwise to the STOP position and then allows it to spring return to the mid position
- Verifies green flag showing
- Verifies green light lit and red light off
- Verifies Charging Line Flow indication (FI-128C) lowers to zero GPM (MCB center section), after last pump stopped

EXAMINER NOTE: **Charging Line Flow indication, FI-128B (MCB left section) also provides the same indication. However, due to its location, normally FI-128C is utilized rather than FI-128B.**

A and C Charging pump are running.

Comment:

Step 10 f

√ Performance Step: 6 _____

f. Stop all SI pumps and place in PULL STOP

Standard:

- **√ Turns the pistol-grip switch counter clockwise to the STOP position and then allows it to spring return to the mid position**
- Verifies green flag showing
- Verifies red light and green light off
- Verifies SI Line Flow indication (FI-924 and FI-925) lowers to zero GPM (MCB left section), after last pump stopped.

Comment:

Start 10 Min Time Critical Clock: _____

(Starts when the last SI pump is stopped.)

Step 11 a

Procedure Caution: Cooldown and depressurization will raise cold leg injection flow which may result in an adverse condition in the F-0.4, INTEGRITY status tree. If RCS subcooling based on CETs is less than 0°F using Fig-1.0, FIGURE MIN SUBCOOLING, then cooldown to initiate RHR injection should be completed before transition to either FR-P INTEGRITY procedure.

√ **Performance Step: 7** Align SI And CNMT Spray For Sump Recirculation:

a. Close RWST outlet valves to SI and CNMT spray pumps (turn on DC power key switches)
   - MOV-896A
   - MOV-896B

Standard:

- Retrieves MCB key from Simulator Key Drawer
- √ Inserts the key into RWST OUTLET MOV-896A KEY SWITCH and turns the keyswitch clockwise to the ON position
- √ Turns MOV-896A switch counter clockwise to the CLOSE position and then allows it to spring return to the AUTO position
- Observes MOV-896A stroking closed – both red and green lights lit
- Removes the MCB key for MOV-896A key switch and √ inserts the key into RWST OUTLET MOV-896B KEY SWITCH and turns the keyswitch clockwise to the ON position
- √ Turns MOV-896B switch counter clockwise to the CLOSE position and then allows it to spring return to the AUTO position
- Observes MOV-896B stroking closed – both red and green lights lit
- Observes both MOV-896 A and B closed – green light lit and red light off

EXAMINER NOTE: **MOV-896A and MOV-896B each have a stroke time of ~ 15 seconds. Once action is initiated to close the first valve, it is NOT necessary to wait for that valve to fully close before continuing with the next action (the next valve). The valves may be done in any order.**

Comment:

√ **Performance Step: 8**

_____

Step 11 b

b. Close SI pump RECIRC valves
- MOV-898
- MOV-897

Standard:

- **√ Turns MOV-898 switch counter clockwise to the CLOSE position and then allows it to spring return to the AUTO position**
- Observes MOV-898 stroking closed – both red and green lights lit
- **√ Turns MOV-897 switch counter clockwise to the CLOSE position and then allows it to spring return to the AUTO position**
- Observes MOV-897 stroking closed – both red and green lights lit
- Observes both MOV-898 and MOV-897 closed – green light lit and red light off

EXAMINER NOTE: **MOV-898 and MOV-897 each have a stroke time of ~ 10 seconds. Once action is initiated to close the first valve, it is NOT necessary to wait for that valve to fully close before continuing with the next action (the next valve). The valves may be done in any order. After the second valve has started closing it is acceptable to continue with the next step of the procedure (step 12).**

Comment:

Step 12 a

√ Performance Step: 9

Verify Adequate RCS Makeup Flow:

a. RCS pressure – LESS THAN 250 psig [300 psig adverse CNMT]

Standard:

- Observes RCS pressure on:
  - RX CLNT LOOP LO RNG PRESS, PI-420 (MCB left section), or
  - RCS PRESSURE indicators, PI-420-2, and PI-420A (MCB center section), or
  - PPCS
- **√ Determines that pressure is < 250 psig [300 psig adverse CNMT], and goes to step 12 b**

EXAMINER NOTE: **To use PI-420, the Examinee will have to place RCS LOW RNG PRESS DEFEAT PI-420 switch to ON, if it is not already in the ON position.**

Comment:

Step 12 b

√ Performance Step: 10

b. RHR injection flow adequate:

  - CETs – LESS THAN requirements of FIG-19.0, High Head SI Required
  - Check RVLIS level (no RCPs) – GREATER THAN 52% [55% ADVERSE]

IF either condition NOT met, THEN go to Step 12d.

Standard:

- Obtains Core exit T/Cs from PPCS
- Uses the RCS pressure just observed in step 12a
- **√ Using FIG-19.0, determines that High Head Injection needs to be initiated (CETs NOT less than required)**
- **√ Goes to Step 12 d.**

Comment:

Step 12 d

√ **Performance Step: 11**

d. Align operating RHR pump flow path(s) to SI and CNMT spray
   - o IF RHR Pump A operating, THEN open MOV-857A and MOV-857C
   - o IF RHR Pump B operating, THEN open MOV-857B

Standard:

- Determines which RHR pump is running
  - o Red flag visible
  - o Red light lit and green light off
- √ **Determines RHR Pump B is operating, THEN opens MOV-857B**
  - o (For MOV-857B) Turns switch clock-wise to the OPEN position and then allows it to spring return to the center position
  - o Verifies red light lit and green light off

EXAMINER NOTE: **RHR Pump 'B' was started previously in Step 8.d**

Comment:

Step 12 e

√ **Performance Step: 12** e. Start 2 SI Pumps

_____

Standard:

- √ **Starts 2 SI Pumps**
  - o √ **Turns pistol-grip switch clockwise to the START position and then allows it to spring return to the center position**
  - o Observes that the red flag is visible
  - o Observes that the red light is lit and green light is off
  - o Observes flow on FI-924 and FI-925

Comment:

Stop 10 Min Time Critical Clock: _____.
(Stopped when the first SI pump is started.)

Terminating Cue: **When Examinee starts SI pumps : "Evaluation on this JPM is complete."**

Stop time: _____.

Time Critical Duration (TC Stop Time – TC Start Time): _____

Job Performance Measure No.: 2012 ILT 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:

VERIFICATION OF COMPLETION

INITIAL CONDITIONS:

- The plant was at 100% power when a LOCA occurred.
- The Crew has transitioned to ES-1.3, TRANSFER TO COLD LEG RECIRCULATION.
- RHR has been aligned to take suction from CNMT Sump B.

INITIATING CUE:

As the HCO, you have been tasked to continue with ES-1.3 starting at step 9.

This is a **time-critical** JPM.

An Examiner will act as a second board operator and respond to all alarms and conditions NOT related to your task.

Facility: Ginna

Task No.: 45-016-01-01

Task Title: Synchronize Generator On-Line with improper load pickup

JPM No.: 2012 ILT NRC JPM D

K/A Reference: 045 A2.17 (2.7*/2.9*)

Alternate Path Yes X No __
Time Critical Yes __ No X

Ability to (a) predict the impacts of the following malfunctions or operation on the MT/G system; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Malfunction of electrohydraulic control.

Synchronize the turbine generator with grid.

Generator load pickup is inadequate.

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 generator is being started following a refueling outage.
- The generator is at 1800 rpm and the turbine is fully warmed up.
- The generator output voltage is 19 KV.

Task Standard: Generator synchronized on-line with gross load between 40 to 60 MW.

Required Materials: None

General References:
- O-1.2, PLANT STARTUP FROM HOT SHUTDOWN TO FULL LOAD, Rev 19602

Handouts:
- O-1.2, PLANT STARTUP FROM HOT SHUTDOWN TO FULL LOAD, placekept up to step 6.13. (Pages 1-11, 55, and 66-74)
- O-1.2, ATT-2, No Load Excitation Limits for #1 and #11 Transformers, Rev 19602
- FIG-13.0, Back Pressure, Rev 0

Initiating Cue:

- The SM directs you to synchronize the generator on-line per O-1.2, PLANT STARTUP FROM HOT SHUTDOWN TO FULL LOAD, steps 6.13.1 through 6.13.10.
- The HCO will control the primary plant.

Validation Time: 15 Minutes

SIMULATOR SETUP

If NOT using an IC snapshot developed for this exam, perform the following:

- Reset to IC-8 (Turbine 1800 rpm)
- Withdraw control rods to ensure reactor power > 15% but < 20%.
- Ensure FRVs in Auto.
- Ensure generator output voltage at 19 KV.
- Insert MALF TUR18 [0] (Failure of Turbine Auto Load Pickup)
- Ensure Grid voltage [E-MIS10] is low enough to allow the examinee to adjust incoming voltage to slightly greater than system voltage, while maintaining generator voltage < 19.5 KV (Step 6.13.4)
- Set REM EDS017 to Closed (Sta 13A Man Disconnect 1G13A73)
- Set REM EDS016 to Closed (Sta 13A Man Disconnect 9X13A71)
- FREEZE

If using an IC developed for this exam, reset to IC 173 .

INSTRUCTOR ACTIONS

- Placekeep a copy of O-1.2 up to (but NOT including) step 6.13.
- Ensure page 55 is included (CAUTION at beginning of Subsection 6.9).
- Ensure Attachment 2, No Load Excitation Limits for #1 and #11 Transformers, is included with handout materials.
- Ensure FIG-13.0, Figure Back Pressure, is available.

(Denote Critical Steps with a √)

Start Time: _____.

	Step 6.13.1
Performance Step: 1 _____	PLACE synchroscope switch handle in CIRCUIT BKR 1G 13A72 SYNCHROSCOPE.
Standard:	Places synchroscope switch handle in CIRCUIT BKR 1G 13A72 SYNCHROSCOPE.
EXAMINER NOTE:	**There is a single switch handle that may be placed in either CIRCUIT BKR 1G 13A72 SYNCHROSCOPE, or CIRCUIT BKR 9X 13A72 SYNCHROSCOPE.**
EXAMINER CUE:	**Provide marked up copy of O-1.2 to Examinee.**
Comment:	

	Step 6.13.2
Procedure Note:	WHEN next step is performed, THEN MCB Alarm J-5, #11 OR #12 TRANSFORMER OUT OF SYNCH, will cycle in and out of alarm as the Generator phases in and out of sync with the grid.
Performance Step: 2 _____	a. PLACE CIRCUIT BKR 1G 13A72 SYNCHROSCOPE control switch to ON.
Standard:	Rotates CIRCUIT BKR 1G 13A72 SYNCHROSCOPE control switch clockwise to the ON position.
EXAMINER NOTE:	**Alarm J-5 may cycle in and out of alarm per the note.**
EXAMINER CUE:	**(If Alarm J-5 is cycling in and out of alarm): "The CRS gives you permission to allow alarm J-5 to flash."**
Comment:	

Step 6.13.3

Procedure Note: Synchroscope should be rotating slowly in the FAST (clockwise) direction in the next step. IF Turbine Generator frequency is slightly higher than system frequency, THEN synchroscope should be rotating in the FAST (clockwise) direction. IF rotating counter clockwise, THEN a raise in speed will be required.

√ **Performance Step: 3** IF Turbine Generator speed adjustment must be made, THEN PERFORM the following:

OTHERWISE, MARK this Step N/A.

1. ADJUST SETTER up OR down 1 rpm. (Turbine EH Control Panel)
2. DEPRESS GO pushbutton. (Turbine EH Control Panel)
3. REPEAT Steps 6.13.3.1 AND 6.13.3.2 UNTIL synchroscope is rotating slow in the FAST (clockwise) direction.

Standard:

- Observes the SYNCHROSCOPE (MCB right section)
- **√ Adjusts setter up or down 1rpm and depresses GO pushbutton until synchroscope is rotating slow in the FAST direction.**
  - Up or down arrow pushbuttons depressed to raise / lower the setter
  - GO pushbutton depressed to cause the turbine speed to change until the REFERENCE matches the SETTER

EXAMINER NOTE:

- **Up, down, and GO pushbuttons are located on EH control panel**
- **Digital REFERENCE and SETTER indication is located above the EH control panel**

Comment:

Step 6.13.4.1

Performance Step: 4

WHEN Turbine is at synchronous speed, THEN REPEAT the following as necessary to ensure generator INCOMING VOLTMETER (GENERATOR) voltage is slightly higher than system RUNNING VOLTMETER (SYSTEM) voltage:

1. CHECK voltage on all three phases.

Standard:

Rotates the GENERATOR VOLTMETER switch to each phase position and compares:

- INCOMING VOLTMETER (GENERATOR) voltage to the
- RUNNING VOLTMETER (SYSTEM) voltage
  - A-B phase
  - B-C phase
  - C-A phase

EXAMINER NOTE:

- **INCOMING VOLTMETER (GENERATOR) is located to the left of the SYNCHROSCOPE.**
- **RUNNING VOLTMETER (SYSTEM) is located to the right of the SYNCHROSCOPE.**

Comment:

Step 6.13.4.2

Performance Step: 5

_____

2. WHILE maintaining voltage within the acceptable operating region of Attachment 2, No Load Excitation Limits for #1 and #11 Transformers, TRY to adjust BASE ADJUSTER to make INCOMING VOLTMETER (GENERATOR) voltage slightly higher than RUNNING VOLTMETER (SYSTEM) voltage.

Standard:

- Refers to Attachment 2
- Adjusts BASE ADJUSTER (IF necessary) to make INCOMING VOLTMETER (GENERATOR) voltage slightly higher than RUNNING VOLTMETER (SYSTEM) voltage.
- Does NOT allow GENERATOR voltage to exceed 19.5 KV (per Attachment 2)

EXAMINER NOTE: **Initial IC setup may make the performance of this step unnecessary (removed previous CT status)**

EXAMINER NOTE: **Voltage will remain within the acceptable operating region of Attachment 2 as long as the Examinee keeps the GENERATOR voltage < 19.5 KV.**

Comment:

Step 6.13.4.3

Performance Step: 6

_____

3. IF INCOMING VOLTMETER (GENERATOR) voltage CANNOT be made slightly higher than RUNNING VOLTMETER (SYSTEM) voltage, THEN PERFORM the following:

   OTHERWISE, MARK this Step N/A.

   a. REQUEST RG&E Energy Control Center to adjust system voltage.
   b. REPEAT Steps 6.13.4.1 through 6.13.4.3 as necessary.

Standard: Marks step N/A

Comment:

Step 6.13.5

Performance Step: 7 PLACE CIRCUIT BKR 1G 13A72 SYNCHROSCOPE control switch to OFF.

_____

Standard: Rotates CIRCUIT BKR 1G 13A72 SYNCHROSCOPE control switch counter clockwise to OFF.

Comment:

Step 6.13.6

Performance Step: 8 WHEN disconnects are closed at 13A, THEN OBSERVE the following (red) CLOSED lights ILLUMINATED:

- GENERATOR DISCONNECT 1G13A71
- GENERATOR DISCONNECT 9X13A73

_____

Standard: Observes that the disconnects are closed: red lights lit

Comment:

Step 6.13.7

Performance Step: 9 ENSURE Reactor power is between 15% to 20%.

_____

Standard:

- Observes Power Range channels NI-41C, NI-42C, NI-43C, and NI-44C between 15% and 20%, or
- Observes Reactor power indication on PPCS between 15% and 20%, or
- Directs the HCO to report power level

EXAMINER CUE: (as HCO) **(If asked to report power level): "Power level is ___ *(current power level)*".**

Comment:

Step 6.13.8

Performance Step: 10 REVIEW CAUTION at beginning of Subsection 6.9.

_____

Standard: Reviews CAUTION.

Comment:

Step 6.13.9

Performance Step: 11 PLACE CIRCUIT BKR 1G 13A72 SYNCHROSCOPE control switch to ON.

_____

Standard: Rotates CIRCUIT BKR 1G 13A72 SYNCHROSCOPE control switch clockwise to ON.

EXAMINER CUE: **(If Alarm J-5 is cycling in and out of alarm): "The CRS gives you permission to allow alarm J-5 to flash."**

Comment:

Step 6.13.10.1

Procedure CAUTION: At low MWe output, Turbine loading requirements SHALL be observed PER EOP, FIG-13.0, Figure Back Pressure

- Operation in the Avoid Region SHOULD be minimized.
- Operation in the DO NOT OPERATE region SHALL be limited to 5 minutes.

Performance Step: 12 PERFORM the following to CLOSE CIRCUIT BKR 1G 13A72 BUS 1 115KV:

1. WITH RG&E Energy Control Center concurrence, TRY to adjust BASE ADJUSTER so generator INCOMING VOLTMETER (GENERATOR) voltage is slightly higher than system RUNNING VOLTMETER (SYSTEM) voltage as indicated on all three phases.

Standard:

- Contacts RG&E ECC by direct telephone line as necessary
- Rotates the GENERATOR VOLTMETER switch to each phase position and compares:
  - INCOMING VOLTMETER (GENERATOR) voltage to the
  - RUNNING VOLTMETER (SYSTEM) voltage
    - A-B phase
    - B-C phase
    - C-A phase
- Adjusts BASE ADJUSTER as necessary so INCOMING voltage is slightly higher than SYSTEM voltage on all phases

EXAMINER NOTE: **Completed previously. Further adjustment should not be required.**

Comment:

Step 6.13.10.2

Performance Step: 13 IF INCOMING VOLTMETER (GENERATOR) voltage CANNOT be adjusted slightly higher than system RUNNING VOLTMETER (SYSTEM) voltage, THEN PERFORM the following:
OTHERWISE, MARK this Step N/A.

_____

Standard: Marks 6.13.10.2. a and b N/A.

Comment:

Step 6.13.10.3

Performance Step: 14 REVIEW Steps 6.13.10.4 thru 6.13.10.6 prior to closing CIRCUIT BKR 1G 13A72 BUS 1 115KV to ensure timely actions are taken for automatic load pickup to preclude a generator trip from reverse power.

_____

Standard: Reviews Steps 6.13.10.4 thru 6.13.10.6

Comment:

Step 6.13.10.4

Procedure Note: MCB Alarm J-5, #11 or #12 TRANSFORMER OUT OF SYNCH, will stay EXTINGUISHED during performance of next step.

√ **Performance Step: 15** WHEN synchroscope rotating slow in the FAST (clockwise) direction AND approaching 12 o'clock position, THEN CLOSE CIRCUIT BKR 1G 13A72 BUS 1 115KV so breaker closes at the approximate point of synchronism (12 o'clock).

a. RECORD time of closure

Standard:

- Observes synchroscope
- √ Rotates 1G 13A72 breaker pistol-grip switch clockwise to the CLOSE position when the synchroscope is approaching 12 o'clock
- Observes 1G 13A72 red lights lit
- Records time of closure

EXAMINER NOTE: **Examinee may not record breaker closure time until after automatic load pickup is verified. This is acceptable to ensure timely actions are taken for automatic load pickup to preclude a generator trip from reverse power.**

Comment:

EXAMINER NOTE: ALTERNATE PATH DECISION POINT OCCURS IN THE NEXT STEP

Step 6.13.10.5

Procedure Note: Load is to be maintained between 40 to 60 MW UNTIL hold time in Step 6.14.5.2 is completed.

√ **Performance Step: 16** VERIFY Automatic load pickup occurs within approximately 10 seconds.

Standard: √ Determines that automatic load pickup is NOT raising turbine load to the expected range.

Comment:

Step 6.13.10.6

Performance Step: 17 √

IF automatic load pickup does NOT occur within approximately 10 seconds,

THEN PERFORM the following:

OTHERWISE, MARK this Step N/A.

a. DEPRESS TURB. MANUAL pushbutton. (Turbine EH Control Panel)

b. INTERMITTENTLY DEPRESS the following pushbuttons as necessary to adjust generator gross load between 40 to 60 MW:

- MANUAL CONTROL VALVE LOWER
- MANUAL CONTROL VALVE RAISE

Standard:

- **√ Depresses TURB. MANUAL pushbutton**
  - Observes OPER PAN light off and TURB MANUAL light lit
- Observes digital Generator Gross MW indication
- **√ Intermittently depresses the RAISE pushbutton to adjust generator gross load to between 40 to 60 MW**

Comment:

Step 6.13.10.7

Performance Step: 18

PLACE CIRCUIT BKR 1G 13A72 SYNCHROSCOPE control switch to OFF.

Standard:

Rotates CIRCUIT BKR 1G 13A72 SYNCHROSCOPE control switch counter clockwise to the OFF position.

Comment:

	Step 6.13.10.8
Performance Step: 19 _____	REMOVE synchroscope switch handle from CIRCUIT BKR 1G 13A72 SYNCHROSCOPE.
Standard:	Removes synchroscope switch handle from CIRCUIT BKR 1G 13A72 SYNCHROSCOPE.
Comment:	

Terminating Cue: **After synchroscope switch handle is removed from CIRCUIT BKR 1G 13A72 SYNCHROSCOPE: Evaluation on this JPM is complete.**

Stop time: _____.

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2012 ILT 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: _____

JPM CUE SHEET

INITIAL CONDITIONS:

- The generator is being started following a refueling outage.
- The generator is at 1800 rpm and the turbine is fully warmed up.
- The generator output voltage is 19 KV.

INITIATING CUE:

- The SM directs you to synchronize the generator on-line per O-1.2, PLANT STARTUP FROM HOT SHUTDOWN TO FULL LOAD, steps 6.13.1 through 6.13.10.
- The HCO will control the primary plant.

Facility: Ginna

Task No.: 015-001-01-01
Verify proper operation of the Nuclear Instrumentation System.

Task Title: Perform STP-O-6.1 on Source Range N-31

JPM No.: 2012 ILT NRC JPM E

K/A Reference: 015 A4.02 (3.9/3.9)

Alternate Path Yes __ No X
Time Critical Yes __ No X

Ability to manually operate and/or monitor in the control room: NIS indicators.

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 shutdown.
- Both Source Range Channels are operable.
- The HCO has declared N-31 INOPERABLE for performance of surveillance testing per A-52.4, Attachment IV.
- Containment is locked.
- Core Alterations are NOT in progress.
- STP-O-6.1 Prerequisites, step 5.0, has been completed.

Task Standard: STP-O-6.1 performed correctly for N-31 up to step 6.1.9.

Required Materials: None

General References:
- STP-O-6.1, SOURCE RANGE NUCLEAR INSTRUMENTATION SYSTEM CHANNELS N-31 AND N-32, Revision 00102

Handouts:
- STP-O-6.1, SOURCE RANGE NUCLEAR INSTRUMENTATION SYSTEM CHANNELS N-31 AND N-32, Revision 00102

Initiating Cue:

- The CRS directs you to perform STP-O-6.1, SOURCE RANGE NUCLEAR INSTRUMENTATION SYSTEM CHANNELS N-31 AND N-32, for N-31, steps 6.1 through (and including) 6.1.8.
- Wherever verification is required, place a check mark in the initial block and assume that the verification has been completed.

Validation Time: 25 Minutes

SIMULATOR SETUP

If NOT using an IC snapshot developed for this exam, perform the following:

- Reset to IC-21 (HSD – 1 hour trip from IC-12)
- Set REM NIS098 to 400
- Set REM NIS099 to 400

If using an IC developed for this exam, reset to IC 174 .

INSTRUCTOR ACTIONS

- Mark-up STP-O-6.1 up to step 6.1.
- Have a marked-up copy of STP-O-6.1 ready to provide to the Examinee.
- Ensure START UP RATE CHANNEL SELECTOR selected to N-31, on COMPARATOR AND RATE DRAWER.
- Ensure AUDIO COUNT RATE can be heard in Main Control Room:
  - Depress the STOP, then RESET, then START pushbuttons
  - Adjust the Level Adjust threshold slowly CCW until the display reads a value (divided by the number of seconds being counted) and the audio CR signal can be heard.

(Denote Critical Steps with a √)

Start Time: _____.

EXAMINER NOTE:

- **Provide marked-up copy of STP-O-6.1 to Examinee.**
- **AUDIO COUNT RATE CHANNEL is on the column of panels all the way to the right.**

Step 6.1.1.1 to 6.1.1.3

Procedure Note:

Due to electrical interlock between TRIP BYPASS switch and OPERATION SELECTOR switch the Main Control Board SR High Flux level trip annunciator cannot be checked with the test signal.

Performance Step: 1

_____

PERFORM the following to prepare for Surveillance Testing of N-31:

1. ENSURE N-32 is OPERABLE, prior to removing N-31 from service. (N/A this Step if N-32 is not required to be OPERABLE)
2. REQUEST HCO to declare N-31 INOPERABLE for performance of surveillance testing PER A-52.4, Attachment IV.
3. PLACE CHANNEL SELECTOR to N-32, on AUDIO COUNT Rate Channel.

Standard:

- Reads the note.
- Initials step 6.1.1.1 based on Initial Conditions.
- Initials step 6.1.1.2 based on Initial Conditions.
- Ensures CHANNEL SELECTOR switch is selected to N-32, on AUDIO COUNT Rate Channel.
-

Comment:

Step 6.1.1.4 to 6.1.1.7

Performance Step: 2

_____

4. IF AUDIO COUNT RATE cannot be heard in Main Control Room, CHECK AUDIO COUNT RATE panel.
5. PLACE START UP RATE CHANNEL SELECTOR to N-32, on COMPARATOR AND RATE DRAWER.
6. VERIFY HIGH FLUX AT SHUTDOWN switch for N-31 is in BLOCK position on Source Range N-31.
7. VERIFY annunciator E-5, HI FLUX AT SHUTDOWN CNMT AUDIBLE BLOCKED, is ILLUMINATED.

Standard:

- Recognizes that the AUDIO COUNT RATE can be heard in Main Control.
- Places START UP RATE CHANNEL SELECTOR to N-32, on COMPARATOR AND RATE DRAWER.
- Verifies HIGH FLUX AT SHUTDOWN switch for N-31 is in BLOCK position on Source Range N-31.
- Verifies annunciator E-5, HI FLUX AT SHUTDOWN CNMT AUDIBLE BLOCKED, is ILLUMINATED.

EXAMINER NOTE:

- **COMPARATOR AND RATE DRAWER is on the column of panels all the way to the right.**

Comment:

Step 6.1.2

Procedure Note: The PPCS SHOULD be used to monitor N-31 response, utilizing PPCS Point N31, during the performance of surveillance testing, if available.

Procedure Note: The following step will cause MCB Annunciator E-7, NIS TRIP BYPASS, to annunciate.

Performance Step: 3

_____

6.1.2 PERFORM the following to defeat the Reactor Trip input from N-31:

1. PLACE LEVEL TRIP switch for N-31 to BYPASS position.
2. VERIFY local light, LEVEL TRIP BYPASS, is ILLUMINATED.
3. VERIFY bypass status panel light, SOURCE RANGE-1 TRIP BYPASS, ILLUMINATED.
4. VERIFY annunciator E-7, NIS TRIP BYPASS, annunciates. (N/A if already in alarm from another NIS channel)

Standard:

- Rotates the N-31 LEVEL TRIP switch clockwise to the BYPASS position
- Verifies local light, LEVEL TRIP BYPASS, is ILLUMINATED.
- Verifies bypass status panel light, SOURCE RANGE-1 TRIP BYPASS, ILLUMINATED.
- Silences and acknowledges E-7 alarm.

Comment:

Step 6.1.3

Performance Step: 4 PERFORM the following to record initial data for N-31:

1. RECORD N-31 CPS on local indicator.
2. RECORD N-31 CPS to the Background Reading blank below the table on Attachment 1, for N-31.

_____

Standard:

- Records local value for N-31 in step 6.1.3.1.
- Records local value for N-31 in the Background Reading blank below the table on Attachment 1, for N-31.

EXAMINER NOTE: **Background value will be between 180-200 CPS**

Comment:

Step 6.1.4

√ **Performance Step: 5** PERFORM Attachment 1, for N-31 to verify N-31 indications respond to test signals.

_____

1. CHANGE the OPERATION SELECTOR switch sequentially through the various CPS positions and VERIFY correct response from channel indicators and recorder. The indicators and recorder will show injected test signal level plus background reading.

Standard:

- **√ Changes the OPERATION SELECTOR switch sequentially through the various CPS positions and verifies correct response from local value for N-31, Control Board indication for N-31, and RK-45 recorder value for N-31.**
- **√ Records values in Attachment 1, N-31 table**

EXAMINER NOTE:

- **For 60CPS position: 240-250 CPS (50-75 > BKGD)**
- **For 10^3 position: 800 – 1200 CPS**
- **For 10^5 position: $8x10^4$ – $1.2x10^5$ CPS**
- **NOTE: Reference values from Attachment 1**

EXAMINER CUE: **(After values have been verified and recorded for the 60CPS, 10^3 CPS, and 10^5 CPS SEL Switch Settings): "Assume the rest of the table is completed with all values satisfactory, and continue with the procedure."**

Comment:

Step 6.1.5 to 6.1.7

Performance Step: 6

6.1.5 RETURN Operation Selector Switch to 60 CPS position.

6.1.6 VERIFY local light, CHANNEL ON TEST, ILLUMINATED.

_____

6.1.7 VERIFY Annunciator E-1, NIS CHANNEL TEST, annunciates.

Standard:

- Returns Operation Selector Switch to 60 CPS position.
- Verifies local light, CHANNEL ON TEST, illuminated.
- Verifies Annunciator E-1, NIS CHANNEL TEST, annunciates.
- Acknowledges the E-1 alarm.

EXAMINER NOTE: **E-1 will already be in alarm and acknowledged from the previous step.**

Comment:

Step 6.1.8.1

Performance Step: 7

PERFORM the following, to test High Flux at Shutdown Alarm.

_____

1. TURN LEVEL ADJUST potentiometer fully COUNTER-CLOCKWISE.

Standard:

- Turns LEVEL ADJUST potentiometer fully COUNTER CLOCKWISE.

Comment:

Step 6.1.8.2

Procedure Note: The following step will cause MCB Annunciator, E-1, NIS CHANNEL TEST, to annunciate.

√ **Performance Step: 8** PLACE OPERATION SELECTOR switch to LEVEL ADJUST position.

_____

Standard:

- √ Rotates the OPERATION SELECTOR switch clockwise to the LEVEL ADJUST position.
- Verifies Annunciator E-1, NIS CHANNEL TEST, annunciates.
- Acknowledges the E-1 alarm.

Comment:

Step 6.1.8.3

Performance Step: 9 NOTIFY personnel in containment that Source Range High Flux at Shutdown Alarm will be tested by making announcement over plant page. (N/A this step if containment is locked)

_____

Standard:

- Marks step N/A

Comment:

Step 6.1.8.4

√ **Performance Step: 10** PLACE HIGH FLUX AT SHUTDOWN switch for N-31 to NORMAL position.

_____

Standard:

- √ Rotates the High Flux at Shutdown switch counter clockwise to the NORMAL position.

Comment:

Step 6.1.8.5

Procedure Note: The following step will cause MCB Annunciator, E-29, SOURCE RANGE HI FLUX AT SHUTDOWN, to annunciate.

√ **Performance Step: 11** ADJUST Level Adjust Potentiometer slowly CLOCKWISE until HI FLUX AT SHUTDOWN local light is ILLUMINATED.

_____

Standard:

- √ Rotates the Level Adjust Potentiometer slowly CLOCKWISE until HI FLUX AT SHUTDOWN local light is ILLUMINATED.

Comment:

Step 6.1.8.6

Procedure Note: Bistable trip point should be approximately 2 X counts at shutdown.

Performance Step: 12 PERFORM the following:

_____

a. RECORD local meter indication at which bistable tripped.
b. VERIFY Annunciator E-29, SOURCE RANGE HI FLUX AT SHUTDOWN, annunciates.

Standard:

- Reads the note.
- Records local value for N-31 in step 6.1.8.6a
- Silences and acknowledges E-29 alarm.

EXAMINER NOTE: **E-29 should alarm at ~400 CPS**

Comment:

Step 6.1.8.7

√ **Performance Step: 13** ADJUST LEVEL ADJUST potentiometer slowly COUNTER-CLOCKWISE until HI FLUX AT SHUTDOWN local light is NOT ILLUMINATED.

_____

Standard:

- **√ Adjusts LEVEL ADJUST potentiometer slowly COUNTER CLOCKWISE until HI FLUX AT SHUTDOWN local light is NOT ILLUMINATED.**

EXAMINER NOTE: **Bistable RESET setpoint should be ~200 CPS**

Comment:

Step 6.1.8.6

Performance Step: 14 PERFORM the following:

_____

- RECORD local meter indication at which bistable tripped.
- VERIFY Annunciator E-29, SOURCE RANGE HI FLUX AT SHUTDOWN, is NOT ILLUMINATED.
- VERIFY local light, HIGH FLUX AT SHUTDOWN, is NOT ILLUMINATED.

Standard:

- Records local value for N-31 in step 6.1.8.8a
- Verifies E-29 is not illuminated.
- Verifies local light, HIGH FLUX AT SHUTDOWN, is NOT illuminated.

Comment:

Step 6.1.8.9

Procedure Note: Bistable width should be 45% to 55%.

Performance Step: 15

_____

PERFORM the following to determine bistable loop width:

%LW = CPS at Bistable Reset (____CPS)
CPS at Bistable Trip (_____ CPS) X 100 = _____ %

Standard:

- Calculates %LW
- Determines that %LW is between 45% and 55%

EXAMINER NOTE: **Calculated loop width value should be ~50%**

Comment:

Step 6.1.8.10 – 6.1.8.12

Performance Step: 16

_____

10. PLACE HIGH FLUX AT SHUTDOWN switch for N-31 to BLOCK position.
11. VERIFY Annunciator E-5, HI FLUX AT SHUTDOWN CNMT AUDIBLE BLOCKED, is ILLUMINATED.
12. NOTIFY personnel in containment that Source Range High Flux at Shutdown Alarm test is complete by making announcement over plant page. (N/A this step if containment is locked)

Standard:

- Places HIGH FLUX AT SHUTDOWN switch for N-31 to the BLOCK position.
- Silences and acknowledges annunciator E-5
- N/As step 6.1.8.12

Comment:

Terminating Cue: **After step 6.1.8.12 is marked N/A: "Evaluation on this JPM is complete."**

Stop time: _____.

Job Performance Measure No.: 2012 ILT 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: _____

JPM CUE SHEET

INITIAL CONDITIONS:

- The plant is shutdown.
- Both Source Range Channels are operable.
- The HCO has declared N-31 INOPERABLE for performance of surveillance testing per A-52.4, Attachment IV.
- Containment is locked.
- Core Alterations are NOT in progress.
- STP-O-6.1 Prerequisites, step 5.0, has been completed.

INITIATING CUE:

- The CRS directs you to perform STP-O-6.1, SOURCE RANGE NUCLEAR INSTRUMENTATION SYSTEM CHANNELS N-31 AND N-32, for N-31, steps 6.1 through (and including) 6.1.8.
- Wherever verification is required, place a check mark in the initial block and assume that the verification has been completed.

Facility: Ginna

Task No.: 064-007-01-01
Unload the Diesel Generator.

Task Title: Shutdown the "A" Emergency Diesel Generator

JPM No.: 2012 ILT NRC JPM F

K/A Reference: 064 A4.06 (3.9/3.9)

Alternate Path Yes __ No X
Time Critical Yes __ No X

Manual start, loading, and stopping of the ED/G.

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:

- You are an extra RO.
- A plant startup is in progress with the turbine being synchronized to the grid.
- The "A" EDG is running for the monthly surveillance per STP-O-12.1 through Step 6.2.46.
- The Diesel has run for 65 minutes.
- All readings have been taken and evaluated as satisfactory.
- There is an AO available at the A D/G.
- The AO has the data sheets.
- Bi-annual selected Service Water Pump starts are NOT required.

Task Standard: "A" D/G shutdown per STP-O-12.1 steps 6.3 through 6.3.21.

Required Materials: None

General References:

- STP-O-12.1, EMERGENCY DIESEL GENERATOR A, Rev 01301

Handouts:

- Marked up copy of STP-O-12.1, EMERGENCY DIESEL GENERATOR A, Rev 01301
- Blank copies of ATT-3, As Found/As Left Voltage and Frequency, and ATT-14, Auto Voltage Control Rheostat After Start – As Left

Initiating Cue:

- The CRS directs you to shutdown the "A" D/G per STP-O-12.1, steps 6.3 through 6.3.21.

Validation Time: 18 Minutes

SIMULATOR SETUP

If NOT using an IC snapshot developed for this exam, perform the following:

- Reset to IC-19 (100% MOL or operating at power)
- "A" D/G running at between 2025 and 2050 KW per STP-O-12.1, Rev. 01301 step 6.2.42
- Ensure "A" SWP running and "C" SWP stopped.
- Ensure "A" SWP selected on Safeguard Selector Switch.
- Complete and mark up STP-O-12.1 through Step 6.2.48.
- Insert Manual Triggers 1 and 2 to reset DG1A ELCP Annunciator Panel, when requested in performance step 24.
    - Trigger 1: REM-GEN11 (Reset)
    - Trigger 2: REM-GEN23 (Acknowledge)

If using an IC developed for this exam, reset to IC 175 .

INSTRUCTOR ACTIONS

- Have a marked up copy of STP-O-12.1 ready to provide to the Examinee.
- Have clean copies of ATT-3 and ATT-14 ready to provide to the Examinee.

(Denote Critical Steps with a √)

Start Time: _____.

EXAMINER NOTE: **Provide the Examinee a marked-up copy of STP-O-12.1.**

Step 6.3.1 & 6.3.1.1

Procedure Note: IF performing Vendor Engine Analysis OR full load firing pressures, the acquisition of data may have to be aborted IF 115 minute run time limit is approached. This will prevent exceeding the two hour limit of operation with the D/G vital bus supply breaker closed.

Performance Step: 1 _____

6.3.1 WHEN Emergency Diesel Generator A has operated between 2025 and 2050 KW for a period of greater than 60 minutes, but less than or equal to 115 minutes, THEN UNLOAD Emergency Diesel Generator A as follows:

1. RECORD time unloading begins.

Standard:

- Records time unloading begins _____

Comment:

Step 6.3.1.2

Performance Step: 2

If the D/G A LOAD LIMIT on mechanical governor is NOT in the MAX FUEL position, THEN PERFORM the following:
OTHERWISE, MARK this Step N/A.

Standard:

- Calls the AO to determine if LOAD LIMIT setting is at MAX FUEL.
- Marks step N/A

EXAMINER CUE: **"Load Limit setting is at MAX FUEL position."**

EXAMINER NOTE: **Candidate should N/A this step based upon MAX FUEL position**

Comment:

Step 6.3.1.3

Procedure Note:

Step 6.3.1.3 will verify normal response for Emergency Diesel Generator A electronic governor following manipulation of LOAD LIMIT (max fuel) dial. IF 2016 KW is obtained, Emergency Diesel Generator A remains operable.

Performance Step: 3

IF the Mechanical Governor was adjusted to lock the load, THEN ADJUST Emergency Diesel Generator A load to between 2150 and 2175 KW using A D/G GOVERNOR SPEED CONTROL switch AND MAINTAIN Power Factor at approximately 0.9 (lag) using D/G A AUTO VOLTAGE CONTROL RHEOSTAT as necessary.
OTHERWISE, MARK this Step N/A.

Standard:

- Calls the AO to determine if Mechanical Governor was NOT adjusted to lock the load.
- Marks step N/A

EXAMINER CUE: **"Mechanical Governor was NOT adjusted to lock the load."**

Comment:

Step 6.3.1.4

Procedure Note: Emergency Diesel Generator A, unloading rate is approximately 500KW every 30 seconds.

√ **Performance Step: 4** UNLOAD Emergency Diesel Generator A, to 400KW by intermittently turning A D/G GOVERNOR SPEED CONTROL switch in the lower direction, AND MAINTAIN Power Factor at approximately 0.9 (lag) using D/G A AUTO VOLTAGE CONTROL RHEOSTAT as necessary.

_____

Standard:

- Reads note.
- √ Unloads D/G A, to 400 KW by intermittently turning A D/G GOVERNOR SPEED CONTROL switch in the lower direction.
- √ Maintains Power Factor at approximately 0.9 (lag) using D/G A AUTO VOLTAGE CONTROL RHEOSTAT.
- √ Unloads D/G A at a rate of approximately 500 KW every 30 seconds.

EXAMINER NOTE:

- **This has been an approved "two-handed operation."**
- **If unloading unnecessary slow, ask operator why.**

Comment:

Step 6.3.2

Performance Step: 5 IF Bi-Annual selected Service Water Pump starts are required, THEN PERFORM Attachment 13, Bi-Annual Service Water Pump Starts.
OTHERWISE, MARK this Step AND Attachment 13 N/A.

_____

Standard: Marks Step 6.3.2 AND Attachment 13 N/A.

EXAMINER CUE: **"Bi-Annual selected SW pump starts" are NOT required."**

Comment:

Step 6.3.3

√ **Performance Step: 6** WHEN Emergency Diesel Generator A load has been reduced to 400 KW, THEN TRIP one Emergency Diesel Generator A supply breaker.

Standard:
- √ When D/G A is at ~ 400 KW, trips either D/G A supply breaker for bus 14, or D/G A supply breaker for bus 18.
- Verifies associated green light lit and red light off

EXAMINER NOTE: **If the D/G trips on Reverse Power due to operator error, the step will be evaluated as UNSAT.**

Comment:

Step 6.3.4

√ **Performance Step: 7** UNLOAD Emergency Diesel Generator A, to 200 KW by intermittently turning A D/G GOVERNOR SPEED CONTROL switch in the lower direction, AND MAINTAIN Power Factor at approximately 0.9 (lag) using D/G A AUTO VOLTAGE CONTROL RHEOSTAT as necessary.

Standard:
- √ Unloads D/G A, to 200 KW by intermittently turning A D/G GOVERNOR SPEED CONTROL switch in the lower direction.
- √ Maintains Power Factor at approximately 0.9 (lag) using D/G A AUTO VOLTAGE CONTROL RHEOSTAT.

Comment:

Step 6.3.5

√ **Performance Step: 8** WHEN Emergency Diesel Generator A load has been reduced to approximately 200 KW AND Power Factor is 0.9 (lag), THEN TRIP the remaining closed Emergency Diesel Generator A supply breaker.

_____

Standard:
- √ WHEN D/G A load is at approximately 200 KW AND Power Factor is 0.9 (lag), trips the remaining D/G A supply breaker
- Verifies associated green light lit and red light off

EXAMINER NOTE: **If the D/G trips on Reverse Power due to operator error, the step will be evaluated as Unsat.**

Comment:

Step 6.3.6

Performance Step: 9 RECORD time breaker was opened.

_____

Standard:
- Records time breaker was opened.

Comment:

Step 6.3.7

Performance Step: 10 IF Attachment 13, Bi-Annual Service Water Pump Starts, was performed, THEN ENSURE Service Water Pumps AND Selector Switches are aligned to the desired configuration.
OTHERWISE, MARK this Step N/A.

_____

Standard:
- Marks step N/A

EXAMINER NOTE: **Be-annual SW Pump starts was NOT performed.**

Comment:

Step 6.3.8

Performance Step: 11 PLACE D/G A UNIT/PARALLEL OPERATION SELECTOR switch to UNIT position.

_____

Standard:

- Places D/G A UNIT/PARALLEL OPERATION SELECTOR switch to UNIT position.

Comment:

Step 6.3.9

Performance Step: 12 PLACE D/G A SYNCHROSCOPE switch in the BUS 14 or BUS 18 position.

_____

Standard:

- Places D/G A SYNCHROSCOPE switch in the BUS 14 or BUS 18 position.

Comment:

Step 6.3.10

Performance Step: 13 If Emergency Diesel Generator A frequency is high, THEN OPERATE D/G A GOVERNOR switch to return to a setting of between 60 and 60.1 Hertz (revolving slowly in the clockwise direction) AND TRANSFER frequency setting data to Attachment 3, As Found/As Left Voltage and Frequency.
OTHERWISE, MARK this Step N/A.

_____

Standard: Marks step N/A

Comment:

Step 6.3.11

Performance Step: 14 PLACE D/G A SYNCHROSCOPE switch to the OFF position.

_____

Standard:
- Places D/G A SYNCHROSCOPE switch to OFF.

Comment:

Step 6.3.12

Performance Step: 15 MEASURE the Emergency Diesel Generator A speed using a photo-tachometer, AND RECORD speed data on Attachment 3, As Found/As Left Voltage and Frequency.

_____

Standard:
- Directs AO to measure the D/G speed using a photo-tachometer.
- Records the speed data on Attachment 3.

EXAMINER CUE: **"D/G speed has been measured and recorded."**

Comment:

Step 6.3.13

Performance Step: 16 ADJUST D/G A AUTO VOLTAGE CONTROL RHEOSTAT to establish Emergency Diesel Generator A output voltage between 480 and 490 volts.

_____

Standard:
- Adjusts D/G A AUTO VOLTAGE CONTROL RHEOSTAT to establish D/G A output voltage between 480 and 490 volts.

EXAMINER NOTE: **During preparation and validation, no adjustment was required.**

Comment:

Step 6.3.14

Performance Step: 17 IF this procedure is being performed for monthly surveillance in June or December, THEN PERFORM the following:
OTHERWISE, MARK this Step N/A.

Standard:
- Marks 6.3.14.1 through 6.3.14.20 N/A.

EXAMINER CUE: **If asked, the current month is today's date (October 2012)**

Comment:

Step 6.3.15

Performance Step: 18 ADJUST D/G A AUTO VOLTAGE CONTROL RHEOSTAT to establish Emergency Diesel Generator A output voltage between 480 and 490 Volts (adjust as close to 480 volts as possible) AND RECORD voltage data on Attachment 3, As Found/As Left Voltage and Frequency.

Standard:
- Adjusts D/G A AUTO VOLTAGE CONTROL RHEOSTAT to establish D/G A output voltage between 480 and 490 volts, but as close to 480 volts as possible.
- Records voltage data on Attachment 3.

Comment:

Step 6.3.16

Performance Step: 19 RECORD the as left D/G A AUTO VOLTAGE CONTROL RHEOSTAT position on Attachment 14, Auto Voltage Control Rheostat After Start – As Left, by sketching in the dial setting.

Standard:
- Sketches in the D/G A AUTO VOLTAGE CONTROL RHEOSTAT dial setting on Attachment 14.

Comment:

Step 6.3.17

√ **Performance Step: 20** PERFORM the following to SECURE D/G A:

1. REMOVE plastic cover from D/G A Control Switch.
2. TURN D/G A CONTROL switch to the STOP position.

Standard:

- Removes plastic cover from D/G A control switch
- Rotates D/G A control switch counter-clockwise (CCW) to STOP and allows switch to spring return to the mid-position.

Comment:

Step 6.3.18

√ **Performance Step: 21** PUSH AND HOLD the D/G A VOLTAGE SHUTDOWN button (Black button) for a few seconds immediately after stopping D/G A.

Standard:

- √ Pushes and holds the D/G A VOLTAGE SHUTDOWN button for a few seconds immediately after stopping D/G A.

EXAMINER NOTE: **This action will result in J-24, Emergency Diesel Gen 1A Panel, alarm**

EXAMINER NOTE: **Failure to push and hold the Voltage Shutdown button in a timely manner could damage the voltage control circuitry as it tries to maintain voltage while the diesel's speed lowers.**

Comment:

Step 6.3.19

Performance Step: 22 REPLACE plastic cover on D/G A control switch.

Standard:

- Replaces plastic cover on D/G A control switch.

Comment:

Step 6.3.20

√ **Performance Step: 23** PERFORM the following to RESET Emergency Diesel Generator A:

1. VERIFY Emergency Diesel Generator A has stopped rolling.
2. PUSH the following buttons:
   - D/G A RESET
   - D/G A FIELD RESET

Standard:

- Asks AO to verify that D/G A has stopped rolling.
- √ Push the D/G A RESET button
- √ Push the D/G A FIELD RESET button

EXAMINER CUE: **(Ensure the Start Relay blue lights have been lit for ~ 5 seconds and then report as AO): "A D/G has stopped rolling."**

EXAMINER NOTE: **Failure to push the reset pushbuttons would disable subsequent automatic start.**

Comment:

Step 6.3.21

Performance Step: 24

_____

WHEN the Emergency Diesel Generator A is reset, THEN VERIFY the following indicating lamps are illuminated (MCB Rear):

- AIR START SOLENOID VALVE 1 POWER AVAILABLE
- AIR START SOLENOID VALVE 2 POWER AVAILABLE
- START RELAY 1 POWER AVAILABLE
- START RELAY 2 POWER AVAILABLE

Standard:

- VERIFY the following indicating lamps are illuminated:
  - AIR START SOLENOID VALVE 1 POWER AVAILABLE
  - AIR START SOLENOID VALVE 2 POWER AVAILABLE
  - START RELAY 1 POWER AVAILABLE
  - START RELAY 2 POWER AVAILABLE

EXAMINER NOTE: **The four (4) blue indicating lamps should be illuminated**

Comment:

Terminating Cue: **After step 6.3.21 is completed: "Evaluation on this JPM is complete. "**

Stop time: _____.

Job Performance Measure No.: 2012 ILT 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:

- You are an extra RO.
- A plant startup is in progress with the turbine being synchronized to the grid.
- The "A" EDG is running for the monthly surveillance per STP-O-12.1 through Step 6.2.46.
- The Diesel has run for 65 minutes.
- All readings have been taken and evaluated as satisfactory.
- There is an AO available at the A D/G.
- The AO has the data sheets.
- Bi-annual selected Service Water Pump starts are NOT required.

INITIATING CUE:

- The CRS directs you to shutdown the "A" D/G per STP-O-12.1, steps 6.3 through 6.3.21.

Facility: Ginna

Task No.: 029-006-04-01
Recover From Containment Ventilation Isolation (CVI) Signal.

Task Title: Respond to a Spurious CVI While at Full Power

JPM No.: 2012 ILT NRC JPM G

K/A Reference: 012 A2.01 (3.1/3.6)

Alternate Path Yes __ No X
Time Critical Yes __ No X

Ability to (a) predict the impacts of the following malfunctions or operation on the RPS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Faulty bistable operation.

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 steady state full power at Middle of Life.

Task Standard: Respond to a spurious CVI while at full power.

Required Materials: None

General References:
- AR-A-25, CONTAINMENT VENTILATION ISOLATION, Rev 01200
- E-20, CNMT or PLANT VENT RAD MON PUMP TRIP, Rev 00500

Handouts: None

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

Validation Time: 8 Minutes

SIMULATOR SETUP

If NOT using an IC snapshot developed for this exam, perform the following:

- Reset to IC-19 (100% MOL)
- Insert MALF RPS09 [Both], Trigger 1 (Inadvertent CVI)

If using an IC developed for this exam, reset to IC 176 .

INSTRUCTOR ACTIONS

- Approximately 15 seconds after the JPM begins, initiate Trigger 1
- Approximately 15 seconds after Trigger 1 was initiated, clear MALF RPS09

(Denote Critical Steps with a √)

Start Time: _____.

Alarm A-25, CONTAINMENT VENTILATION ISOLATION received

Performance Step: 1 Responds to alarm A-25

_____

Standard:

- Silences audible alarm by depressing SILENCE pushbutton
- Acknowledges flashing alarm by depressing ACKNOWLEDGE pushbutton
- Refers to appropriate Alarm Response procedure: AR-A-25, CONTAINMENT VENTILATION ISOLATION

EXAMINER NOTE: **The Examinee should also acknowledge alarm E-20. However, based on the indications available, he should recognize that CVI caused trip of the R-10A/11/12 CNMT Vent Sample Pump, and should give AR-A-25 a higher priority than AR-E-20.**

Comment:

AR-A-25 Step 4.1

√ **Performance Step: 2**

4.1 ENSURE CVI has occurred.

Verifies CVI has occurred properly by verifying the automatic actions of step 3.0:

- The following valves CLOSE:
  - R10A R11 R12 SUCTION, AOV-1597
  - R10A R11 R12 DISCHARGE, AOV-1598
  - R10A R11 R12 DISCHARGE, AOV-1599
  - MINI PURGE EXH, AOV-7971
  - MINI PURGE EXH, AOV-7970
  - CNMT MINI PURGE SPLY VLV OUTSIDE, AOV-7445
  - CNMT MINI PURGE SUPPLY, AOV-7478
  - CNMT PURGE EXH, AOV-5879
  - CNMT PURGE SUPPLY, AOV-5869

Standard:

- **√ Verifies all of the above AOVs closed by checking bright-dim status lights BRIGHT, and/or**
- **√ Verifies all of the above AOVs closed by checking green light lit and red light off for their switches.**

EXAMINER NOTE: **AOV-1597, 1598 AND 1599 located on MCB left section front. All of the rest are located on MCB left section back.**

Comment:

Step 4.1 (continued)

√ **Performance Step: 3**

_____

- The following fans TRIP:
  - CNMT PURGE SUPPLY FAN A
  - CNMT PURGE SUPPLY FAN B
  - CNMT PURGE EXHAUST FAN A
  - CNMT PURGE EXHAUST FAN B
- R10A/R11/R12 Pump TRIPS

Standard:

- Verifies the above fans tripped by green light lit and red light off.
- **√ Verifies R10A/R11/R12 Pump tripped by ON light de-energized.**

EXAMINER NOTE:

- **CNMT Purge Supply and Exhaust Fans are not in service when the plant is at power.**
- **Fans located on MCB left section back.**
- **R10A/R11/R12 Pump indication on Radiation Monitoring panel.**

EXAMINER NOTE: **The pump trip will be annunciated by E-20, CNMT or PLANT VENT RAD MON PUMP TRIP**

Comment:

Step 4.2

Performance Step: 4

_____

IF performing Core Alterations OR movement of irradiated fuel assemblies within containment, THEN ENSURE requirements of LCO 3.9.3 are met.

Standard:

- Determines that the step is not applicable.

EXAMINER CUE: **(If Examinee asks if core alterations or movement of irradiated fuel assemblies within containment is in progress):**
"The plant is at steady state full power at Middle of Life. You are the HCO assigned the Control Room Monitoring function."

Comment:

Step 4.3

Performance Step: 5

MONITOR the following Area Radiation Monitors:

- R-2, CONTAINMENT
- R-7, INCORE DETECTOR AREA

Standard:

- Observes that both R-2 and R-7 have normal readings.
- Observes that there has been no variation of R-2 or R-7 values on the Yokogawa Recorder.

Comment:

Step 4.4

√ **Performance Step: 6**

RESET CVI when conditions warrant.

Standard:

- Determines that conditions warrant resetting CVI.
- **√ Resets CVI by depressing the CNMT VENT ISOLATION RESET pushbutton.**
- Observes that annunciator A-25 clears.

EXAMINER CUE:

(After Examinee reads step 4.4): "Troubleshooting has been completed. The cause of the CVI has been determined and repaired. Continue with the procedure."

Comment:

Step 4.5 & 4.5.1

√ **Performance Step: 7**

PURGE R-11 and R-12 as follows:

4.5.1 RESET X-Y Relays for the following on CONTAINMENT ISOLATION AUXILIARY RELAY PANEL TRAIN A:

- RAD MON AOV1597
- RAD MON AOV1598

Standard:

- **√ Depresses X-Y relay pushbutton for AOV1597 and AOV1598.**
- Verifies associated back-lit white light energizes.

Comment:

Step 4.5.2

√ **Performance Step: 8** RESET X-Y Relays for the following on CONTAINMENT ISOLATION AUXILIARY RELAY PANEL TRAIN B:

- RAD MON AOV1597
- RAD MON AOV1599

Standard:

- √ Depresses X-Y relay pushbutton for AOV1597 and AOV1599.
- Verifies associated back-lit white light energizes.

Comment:

Step 4.5.3

Performance Step: 9 VERIFY on MCB the following valves OPEN:

- R10A R11 R12 SUCTION, AOV-1597
- R10A R11 R12 DISCHARGE, AOV-1598
- R10A R11 R12 DISCHARGE, AOV-1599

Standard:

- Verifies AOV-1597, 1598 and 1599 bright-dim status lights – dim, and/or
- Verifies lights associated with AOV-1597, 1598, and 1599 2-position switches - red light lit and green light off

Comment:

Step 4.5.4

√ **Performance Step: 10** PLACE R10A/R11/R12 PUMP control switch to START.

Standard:

- √ Rotates R10A/R11/R12 PUMP control switch momentarily to the start position and then allows the switch to spring return to the mid position.
- Verifies the "on" light is lit

EXAMINER NOTE: **E-20 alarm will CLEAR after pump is started**

Comment:

Step 4.5.5

Performance Step: 11 DEPRESS PURGE pushbutton above R10A/R11/R12 PUMP control switch.

_____

Standard:

- Depresses the PURGE pushbutton above R10A/R11/R12 PUMP control switch.

EXAMINER NOTE: **There is no change in indications available in the Control Room when the PURGE pushbutton is pushed.**

Comment:

Terminating Cue: **After step 4.5.5 is completed: Evaluation on this JPM is complete.**

Stop time: _____.

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2012 ILT 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: _____

JPM CUE SHEET

INITIAL CONDITIONS: The plant is at steady state full power at Middle of Life.

INITIATING CUE: You are the HCO assigned the Control Room Monitoring function.

Facility: Ginna

Task No.: 008-002-04-01
Respond To A Loss Of Component Cooling Water.

Task Title: Respond to a Rapidly Lowering CCW Surge Tank Level

JPM No.: 2012 ILT NRC JPM H

K/A Reference: 008 A2.02 (3.2/3.5)

Alternate Path Yes X No __
Time Critical Yes __ No X

Ability to (a) predict the impacts of the following malfunctions or operation on the CCWS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: High/low surge tank level.

Alternate path because RNO directed E-0 immediate actions will be required in addition to AP-CCW.2 actions.

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 steady state full power at Middle of Life.

Task Standard: Respond to a rapidly lowering CCW Surge Tank level during power operation.

Required Materials: None

General References:
- AR-A-13, CCW SURGE TANK LO LEVEL 41.2%, Revision 11
- AP-CCW.2, LOSS OF CCW DURING POWER OPERATION, Revision 02201
- ATT-1.0, AT-POWER CCW ALIGNMENT, Rev 3

Handouts: None

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

Validation Time: 7 Minutes

SIMULATOR SETUP

If NOT using an IC snapshot developed for this exam, perform the following:

- Reset to IC-19 (100% MOL)
- Insert MALF CLG05 [100], Trigger 1 (CCW Supply Line Break) until A-13 alarm
- Insert MALF CLG05 [10], Trigger 2 (CCW Supply Line Break) until directed by Lead Examiner at step 6b.
- Insert MALF CLG05 [300], Trigger 3 (CCW Supply Line Break)

If using an IC developed for this exam, reset to IC 177

INSTRUCTOR ACTIONS

- Approximately 15 seconds after the JPM begins, initiate Trigger 1
- NOTE that the leak rate has 3 different values during this scenario, with the intent that:
  - The initial value prompts the occurrence of A-13 alarm and entry into AP-CCW.2
  - The initial value is reduced (to ~100 gpm) immediately after A-13 is received to allow the candidate to take actions to recover surge tank level
  - After A-13 clears due to makeup flow, at Step 6 of AP-CCW.2, the value is again modified to drive the candidate back to Step 2 RNO column and the AP actions required (300 gpm)
- When the A-13 alarm is received, reduce MALF CLG05 to [10 gpm]
- When the candidate has begun the actions of Step 6 of AP-CCW.2 **AND** annunciator A-13 is clear, raise MALF CLG05 to [300 gpm]
- Ensure clean copies of ATT-1.0 are available to provide candidate

(Denote Critical Steps with a √)

Start Time: _____.

Sim Driver: Trigger 1	**As soon as the candidate takes the watch, insert Trigger 1 (100 gpm leak)**
	Alarm A-13, CCW SURGE TANK LO LEVEL 41.2% received
Performance Step: 1	Responds to alarm A-13
Standard:	• Silences audible alarm by depressing SILENCE pushbutton • Acknowledges flashing alarm by depressing ACKNOWLEDGE pushbutton • Refers to appropriate Alarm Response procedure: AR-A-13, CCW SURGE TANK LO LEVEL 41.2%
Sim Driver: Trigger 2	**As soon as the candidate picks up the AR procedure for A-13, insert Trigger 2, reduce the leak rate (10 gpm)**
EXAMINER NOTE:	**Leak rate reduction at this point will allow the candidate to take the RNO actions of Step 2 in AP-CCW.2 and begin to recover CCW surge tank level while continuing in the procedure**
Comment:	

	AR-A-13 Step 1
Performance Step: 2	For an UNEXPECTED alarm perform the following: 1. GO TO the applicable AP-CCW procedure: o AP-CCW.2 (LOSS OF CCW DURING POWER OPERATION) o AP-CCW.3 (LOSS OF CCW – PLANT SHUTDOWN)
Standard:	Goes to AP-CCW.2, LOSS OF CCW DURING POWER OPERATION
Comment:	

AP-CCW.2 Step 1

Procedure Caution: If CCW flow to a RCP is interrupted for greater than 2 minutes or if either RCP motor bearing temperature exceeds 200°F. Then trip the affected RCP.

Procedure Caution: If CCW is lost, then seal injection should be maintained to the RCP(s) until RCS temperature I less than 150 °F, or until CCW is restored.

Performance Step: 3

1. Check CCW Pump Status:
   - Both CCW pump breakers white lights – EXTINGUISHED
   - Annunciator A-17, MOTOR OFF RCP CCWP - EXTINGUISHED

Standard:
- Verifies Both CCW pump breakers white lights extinguished
- Verifies A-17, MOTOR OFF RCP CCWP extinguished

Comment:

Step 2

Procedure Note: MCB CCW surge tank level indication should be verified locally in the AUX BLDG, if possible.

Procedure Note: If it is suspected that CCW Fluid will enter the WHUT, Notify the Chemistry Technician.

√ **Performance Step: 4** * 2 Monitor CCW Surge Tank Level – APPROXIMATELY 50% AND STABLE (PPCS Point L0618)

_____

Standard:
- √ Determines that the CCW Surge Tank level is < 50% and lowering
- Directs the Primary AO to report local CCW surge tank level indication.
- √ Goes to Step 2 RNO

EXAMINER NOTE: **Step 2 is a CAS and will drive subsequent AP actions**

EXAMINER CUE: **If called for local surge tank level, "Local level indication corresponds to MCB indications."**

Comment:

Step 2 RNO a

√ **Performance Step: 5** Perform the following:

a. Open RMW to CCW surge tank, MOV-823.

_____

Standard:
- [redacted]
- Verifies associated red light lit and green light off

Comment:

Step 2 RNO b

Performance Step: 6

b. Start RMW pump(s).

Standard:

[redacted]

- Verifies associated red flag visible.
- Verifies associated red light lit and green light off

EXAMINER NOTE: **Given the initial rate of surge tank level drop, the Examinee may start <u>both</u> RMW pumps.**

Comment:

Step 2 RNO c 1

Performance Step: 7

c. IF surge tank level stable or rising, THEN control level at approximately 50% while continuing with step 3.

Standard:

- Determines that CCW surge tank level is now rising in response to initiation of RMW flow.

EXAMINER NOTE: **The reduction in leak severity will allow RMW flow to begin raising CCW surge tank level**

Comment:

Step * 3

Performance Step: 8

Monitor CCW Hx Outlet Temperature (MCB rear or PPCS point ID T0621)

a. CCW Hx Outlet temperature – LESS THAN 120°F

Standard:

- CCW Hx Outlet temperature is <120°F

Comment:

Step * 4

Performance Step: 9

Monitor RCP Indications:

- Annunciator A-7 (A-15), RCP 1A (1B) CCW Return HI temp or low flow – EXTINGUISHED
- RCP motor bearings temperature (PPCS Group Displays RCPS or RCP temperature monitor RK-30A recorder) - ≤ 200°F

Standard:

- Determines that no indications of high temperature CCW conditions exist

Comment:

Step * 5

Performance Step: 10

Monitor If Letdown Should Be Isolated:

a. Check annunciator A-12, NRHX Letdown Out HI Temp 145°F - EXTINGUISHED

Standard:

Confirms A-12 is NOT lit

Comment:

Step * 5

Performance Step: 11

Monitor If Letdown Should Be Isolated:

b. Check excess letdown temperature – LESS THAN 195°F

Standard:

- Determines Excess Letdown is NOT in service

Comment:

Step 6

Performance Step: 12 Check CCW Valve Alignment NORMAL:

a. Check MCB CCW valves (Refer to ATT-1.0, At-Power CCW Alignment)

Standard:
- Begins using ATT-1.0 to confirm proper CCW valve alignment

Sim Driver: **When the candidate begins implementing ATT-1.0 , insert Trigger 3, to, raise the leak rate (300 gpm)**

EXAMINER NOTE: **Examinee should return to Step 2, RNO Step c.1 (CAS) when alarm A-13 re-annunciates.**

Comment:

EXAMINER NOTE: ALTERNATE PATH DECISION POINT OCCURS IN THE NEXT STEP

Step 2 RNO c 1

√ **Performance Step: 13** c. IF CCW surge tank level can NOT be maintained greater than 10%, THEN perform the following:
1) Close letdown isol, AOV-427.

Standard:
- √ Determines that CCW surge tank level can NOT be maintained greater than 10%.
- √ Closes AOV-427 by rotating the switch counter-clockwise to the CLOSE position.
- Verifies associated green light lit and red light off

EXAMINER NOTE: **AOV-427 is located on MCB center section (left side)**

Comment:

Step 2 RNO c 2

Performance Step: 14 2) Close excess letdown, HCV-123.

Standard:
- Verifies HCV-123 closed – OUTPUT at 0% demand
- (If HCV-123 is NOT closed) Rotates controller knob clockwise to the 0% demand position and verifies OUTPUT at 0% demand

EXAMINER NOTE: **Normally excess letdown is NOT in service and therefore, HCV-123 is already closed.**

Comment:

Step 2 RNO c 3

√ **Performance Step: 15** 3) Trip the reactor.

Standard: √ Depresses 1 of 2 reactor trip pushbuttons

EXAMINER NOTE: **There are two reactor trip pushbuttons – one on the MCB left section, and one on the MCB center section. The Examinee may depress either pushbutton.**

Comment:

Step 2 RNO c 4 / E-0 Step 1

√ **Performance Step: 16**

a. WHEN all E-0 Immediate Actions done, THEN trip BOTH RCPs.

E-0, Step 1 Verify Reactor Trip:

- At least one train of reactor trip breakers – OPEN
- Neutron flux – LOWERING
- MRPI indicates – ALL CONTROL AND SHUTDOWN RODS ON BOTTOM

Standard:

- √ Verifies at least one REACTOR TRIP BREAKER open (TRIP A or TRIP B) green lights lit and red lights off
- √ Verifies INTER RANGE (NI-35B and NI-36B) indication lowering
- √ MRPI indicates all control and shutdown rods on bottom
- Announces "Reactor is tripped"

EXAMINER CUE: **(If Examinee attempts to refer to E-0 to perform immediate actions) "Perform the immediate actions from memory."**

EXAMINER NOTE: **Normally by the time the operator gets to verifying that neutron flux is lowering, the Power Ranges are already pegged low, therefore the operator will utilize the Intermediate Ranges.**

EXAMINER NOTE: **The Examinee may verify all control and shutdown rods on bottom by reading the message at the bottom of the ROD POSITION page, or he may look at the individual rod indications and swap pages to verify the status of the shutdown rods.**

EXAMINER NOTE: **Per A-503.1, EMERGENCY AND ABNORMAL OPERATING PROCEDURES USERS GUIDE, initial verification of EOP immediate actions from memory requires only communication of the high level action being verified. Broadcasting of these high level actions is acceptable.**

However, in a JPM setting, the Examinee may choose to verbalize more than the high level actions in order to better demonstrate his knowledge of the immediate actions.

Comment:

E-0 Step 2

√ **Performance Step: 17** E-0, Step 2 Verify Turbine Stop Valves - CLOSED

_____

Standard:
- **√ Verifies turbine stop valves (SVL and SVR) CLOSED - green lights lit and red lights off**
- Announces "turbine is tripped" or equivalent wording

EXAMINER NOTE: **Indication is on the EHC Panel right side under EH VALVE STATUS.**

Comment:

E-0 Step 3

√ **Performance Step: 18** E-0, Step 3 Verify Both Trains Of AC Emergency buses Energized To At Least 440 VOLTS:
- Bus 14 and Bus 18
- Bus 16 and Bus 17

_____

Standard:
- **√ Verifies buses 14, 16, 17, and 18 at least 440 VOLTS on MCB meters**
- Announces "Safeguard Buses are energized to at least 440 volts" or equivalent wording

EXAMINER NOTE: **480V Bus meters are on the vertical section of the MCB, right section**

Comment:

E-0 Step 4 a

√ **Performance Step: 19**

E-0 4 Check if SI is Actuated:
a. Any SI Annunciator - LIT

Standard:

- √ Observes the D Annunciator panel and determines that the following annunciators are NOT lit:
  - √ D-19, PRESSURIZER LO PRESS SI 1750 PSIG,
  - √ D-21, STEAM LINE LOOP A LO-LO PRESS 514 PSI,
  - √ D-22, STEAM LINE LOOP B LO-LO PRESS 514 PSI, and
  - √ D-28, CONTAINMENT PRESSURE 4 PSI.
- Goes to Step 4 a RNO

Comment:

E-0 Step 4 a RNO

√ **Performance Step: 20**

E-0 4 RNO IF any of the following conditions are met, THEN manually actuate SI and CI:

- PRZR pressure less than 1750 psig, OR
- Steamline pressure less than 514 psig, OR
- CNMT pressure greater than 4 psig, OR
- SI sequencing started, OR
- Operator determines SI required

IF SI is NOT required, THEN go to ES-0.1, REACTOR TRIP RESPONSE, Step 1.

Standard:

- √ Observes that PRZR pressure (PI-429, 430, 431, and 449) is > 1750 psig
- √ Observes Steamline pressure (PI- 468, 469, 482A, and PI-478, 479, and 483A) is > 514 psig
- √ Observes that CNMT pressure (PI-944) is < 4 psig
- √ Observes SI sequencing has NOT started
- √ Determines that SI is NOT required
- Announces "SI is not actuated and not required, and E-0 immediate actions are complete", or equivalent wording.
- Returns to AP-CCW.2

Comment:

AP-CCW.2 Step 2 RNO c 4 (continued)

√ **Performance Step: 21**

4) WHEN all E-0 Immediate Actions done, THEN trip BOTH RCPs.

Standard:

√ For each RCP:
- √ Rotates pistol-grip switch counter clockwise to the STOP position and allows the switch to spring return to the mid position.
- Verifies associated green flag visible
- Verifies associated green light lit and red light off

Comment:

AP-CCW.2 Step 2 RNO c 4 (continued)

√ **Performance Step: 22**

5) PLACE both CCW pumps in pull stop.

Standard:

√ For each CCW pump:
- √ Rotates pistol-grip switch counter clockwise to the STOP position and then withdraws the switch to the pull stop position.
- Verifies associated green flag visible.
- Verifies associated red and green lights off.

Comment:

Terminating Cue: **After CCW pumps are in pull stop: "Evaluation on this JPM is complete."**

Stop time: _____.

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2012 ILT 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 is at steady state full power at Middle of Life.

INITIATING CUE: You are the HCO assigned the Control Room Monitoring function.

Facility: Ginna

Task No.: 006-003-01-04
Perform Lineups For Filling The SI Accumulators.

Task Title: Makeup to "A" SI Accumulator Using the SI Accumulator Makeup Pump

JPM No.: 2012 ILT NRC JPM I

K/A Reference: 006 A1.13 (3.5/3.7)

Alternate Path Yes __ No X
Time Critical Yes __ No X

Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the ECCS controls including: Accumulator pressure (level, boron concentration).

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:
- The plant is at 100% power, MOL conditions
- The CRS has determined that it is necessary to fill "A" SI Accumulator using the SI Accumulator Makeup Pump.
- The Pre-Job Brief is complete, and S-16.13, RWST Makeup To The Accumulators, has been completed up to Step 6.1.7
- The CRS has submitted an A-52.4 for tracking on Penetration 101

Task Standard: Makeup to "A" SI Accumulator Using the SI Accumulator Makeup Pump.

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

General References: S-16.13, RWST WATER MAKEUP TO ACCUMULATORS, Revision 03600

Handouts:
S-16.13 (Marked up to Step 6.1.7)
S-16.13 Attachment 1, SI ACCUMULATOR MAKEUP PUMP OPERATION
S-16.13 Attachment 2, RESTORATION ACTIONS FOR SI OR CI
S-16.13 Attachment 3, SI ACCUMULATOR MAKEUP PUMP CONFIGURATION DRAWING

Initiating Cue:

- The plant is at 100% power, MOL conditions
- The CRS has determined that it is necessary to fill "A" SI Accumulator using the SI Accumulator Makeup Pump.
- The Pre-Job Brief is complete, and S-16.13, RWST Makeup To The Accumulators, has been completed up to Step 6.1.7
- The CRS has submitted an A-52.4 for tracking on Penetration 101

Validation Time: 19 Minutes

SIMULATOR SETUP

N/A

INSTRUCTOR ACTIONS

- Have a marked-up copy (to step 6.1.7) of S-16.3
- Have a clean copy of S-16.13, Attachments 1, 2, and 3 ready to provide to the Examinee.

(Denote Critical Steps with a √)
Start Time: _____.

Step 1.0

Procedure Note: Attachment 3 is a drawing of the SI Accumulator Makeup Pump configuration that is provided for informational purposes.

Procedure Caution:

- Containment Isolation Boundary SI ACCUM. MAKEUP PUMP DISCHARGE ISOLATION VALVE, V-2817C, AND SI Accumulator Makeup Pump suction and discharge valves are opened during this Attachment. A dedicated Operator SHALL be stationed in the vicinity of these valves, in direct communication with Control Room, to ensure prompt closure should it be required.
- Discharge pressure of the SI Accumulator Makeup Pump SHALL NOT exceed 1000 psig as indicated on calibrated test gauge, PI-928B.
- SI Accumulator level of 75% SHALL NOT be exceeded during filling.

Performance Step: 1 _____ ENSURE a dedicated Operator in direct communication with the Control Room, is stationed in the vicinity of SI ACCUM. MAKEUP PUMP DISCHARGE ISOLATION VALVE, V-2817C, AND SI Accumulator Makeup Pump suction and discharge valves, to ensure prompt closure should it be required.

Standard: Reads step and recognizes that he is the dedicated Operator.

EXAMINER CUE: **Provide Examinee a clean copy of S-16.13, Attachments 1, 2, and 3.**

Comment:

Step 2.0

Performance Step: 2 _____ PERFORM Attachment 2, Restoration Actions for SI OR CI, if SI OR CI signal occurs while performing this attachment.

Standard: Reads step.

Comment:

Step 3.0

Performance Step: 3 SUBMIT A-52.4, Control of Limiting Conditions for Operating Equipment, for tracking on Penetration 101.

Standard: Reads step, and recognizes that the CRS has already done this (based on Initial Conditions).

Comment:

Step 4.0

√ Performance Step: 4 OPEN SI ACCUM. MAKEUP PUMP SUCTION ISOLATION VALVE, V-2817.

Standard:
- Locates V-2817
- **√ Simulates turning V-2817 counter clockwise until it is fully open.**

EXAMINER CUE: **(As Examinee simulates opening V-2817) "Valve no longer moves in that direction."**

Comment:

Step 5.0

√ Performance Step: 5 OPEN SI ACCUM. MAKEUP PUMP SUCTION ISOL VALVE, V-2817A.

Standard:
- Locates V-2817A
- **√ Simulates turning V-2817A counter clockwise until it is fully open.**

EXAMINER CUE: **(As Examinee simulates opening V-2817A) "Valve no longer moves in that direction."**

Comment:

Step 6.0

√ **Performance Step: 6** OPEN SI ACCUM. MAKEUP PUMP DISCHARGE ISOL VALVE, V-2810.

Standard:
- Locates V-2810
- **√ Simulates turning V-2810 counter clockwise until it is fully open.**

Examiner NOTE: **V-2810 is inboard of SI Pump 'B'**

EXAMINER CUE: **(As Examinee simulates opening V-2810) "Valve no longer moves in that direction."**

Comment:

Step 7.0

√ **Performance Step: 7** OPEN SI ACCUM. MAKEUP PUMP DISCHARGE ISOLATION VALVE, V-2817C.

Standard:
- Locates V-2817C
- **√ Simulates turning V-2817C counter clockwise until it is fully open.**

Examiner NOTE: **V-2817C is inboard of SI Pump 'B'**

EXAMINER CUE: **(As Examinee simulates opening V-2817C) "Valve no longer moves in that direction."**

Comment:

Step 8.0

Procedure Note: The following steps will add water to the Aux Bldg Sump.

Performance Step: 8 NOTIFY Control Room of possible A. B. Sump Pump actuation.

Standard: Simulates notifying Control Room of possible A. B. Sump Pump actuation.

EXAMINER CUE: **(When Examinee simulates calling the Control Room) "Control Room Supervisor"**
(After message) ***Repeat back message***
[Expected to be similar to "Possibility of an Aux Bldg sump pump actuation."]

Comment:

Step 9.0

√ Performance Step: 9 OPEN SI ACCUM. MAKEUP PUMP DISCHARGE DUMP VALVE, V-2817E. (On Pump Skid)

Standard:
- Locates V-2817E
- **√ Simulates turning V-2817E counter clockwise until it is fully open.**

EXAMINER CUE: **(As Examinee simulates opening V-2817E) "Valve no longer moves in that direction."**

Comment:

Step 10.0

√ Performance Step: 10 OPEN SI ACCUM. MAKEUP PUMP DISCHARGE VALVE, V-2817F. (On Pump Skid)

Standard:
- Locates V-2817F
- **√ Simulates turning V-2817F counter clockwise until it is fully open.**

EXAMINER CUE: **(As Examinee simulates opening V-2817F) "Valve no longer moves in that direction."**

Comment:

Step 11.0

√ Performance Step: 11 START SI ACCUMULATOR MAKEUP PUMP, PSI01D.

Standard:
- Notifies the Control Room of impending makeup pump start.
- **√ Depresses the Makeup Pump start pushbutton**

Examiner NOTE: **The label for the pump start controller is NOT labeled – only the skid itself has a label (PSI01D) for the pump**

EXAMINER CUE: **When Examinee simulates calling the Control Room: "Control Room Supervisor"**
(After message) ***Repeat back message***
[Expected to be similar to "I'm starting SI Accumulator Makeup pump".]

EXAMINER CUE: **(After Examinee simulates starting pump) "Normal noises associated with the pump start."**

Comment:

Step 12.0

√ **Performance Step: 12**

THROTTLE SI ACCUM. MAKEUP PUMP DISCHARGE DUMP VALVE, V-2817E, as necessary to maintain pump discharge pressure greater than 800 psig and less than 1000 psig as indicated on PI-928B AND RECORD indicated pressure.

Standard:

- Locates PI-928B
- √ **Throttles V-2817E closed until PI-928B reads > 800 psig and < 1000 psig**
- Records final PI-928B indicated pressure

Examiner NOTE: **Examinee should stop throttling when he is provided a pressure reading > 800 psig and < 1000 psig (see CUES)**

EXAMINER CUE:

- **(After examinee locates PI-928B) "Indicates 400 psig"**
- **As examinee throttles V-2817E *closed*, provide higher pressure readings such as: "Indicates 500 psig", "Indicates 700 psig", "Indicates 900 psig".**
- **If examinee attempts to *OPEN* V-2817E further (it was opened fully in Step 9.0), "No change in pressure indication."**

Comment:

Terminating Cue: **After PI-928B pressure is recorded: Evaluation on this JPM is complete.**

Stop time: _____.

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2012 ILT 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: _____

JPM CUE SHEET

INITIAL CONDITIONS:

- The plant is at 100% power, MOL conditions
- The CRS has determined that it is necessary to fill "A" SI Accumulator using the SI Accumulator Makeup Pump.
- The Pre-Job Brief is complete, and S-16.13, RWST Makeup To The Accumulators, has been completed up to Step 6.1.7
- The CRS has submitted an A-52.4 for tracking on Penetration 101

INITIATING CUE:

- You will be the dedicated operator in direct communication with the Control Room, stationed in the vicinity of the SI accumulator Makeup Pump discharge isolation valve V-2817C, and the Accumulator Makeup Pump suction and discharge valves.
- Perform S-16.13 Attachment 1, SI ACCUMULATOR MAKEUP PUMP OPERATION.

Facility: Ginna

Task No.: 071-007-01-04
Conduct Gas Decay Tank Release

Task Title: Release the "A" Gas Decay Tank

JPM No.: 2012 ILT NRC JPM J

K/A Reference: 071 A4.27 (3.0*/2.7*)

Alternate Path Yes X No __
Time Critical Yes __ No X

Ability to manually operate and/or monitor in the control room: Opening and closing of the decay tank discharge control valve.

Alternate path because R-14 alarms during release and the release must be manually 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:

- The "A" GDT is full and approved for release.
- The previous crew has started S-4.2.5.
- All radiation monitors are operable.
- Gaseous Tank Release Form (CH-703) has been completed and authorized by the SM.
- The GDT does NOT contain VCT gas.
- There is an eSOMS CAUTION tag hanging on PCV-1036A, Inlet to 'A' GDT.
- The Extra Auxiliary Operator has removed the eSOMS DANGER tag from V-1617, GDT 'A' manual outlet valve.
- The Pre-Job Brief has been completed

Task Standard: Lineup and release the "A" 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, Revision 01901

Handouts:
- S-4.2.5, Release of Gas Decay Tank, Revision 01901
- Marked up copy of CH-703 Attachment 1, Gaseous Waste Release Form

Initiating Cue:
- You are the Primary AO and the Control Room Supervisor has directed you to release the "A" GDT per S-4.2.5, Release of Gas Decay Tank, starting at step 4.8.

Validation Time: 26 Minutes

SIMULATOR SETUP

N/A

INSTRUCTOR ACTIONS

- Have a copy of S-4.2.5 completed up to (but not including) step 4.8.
- Ensure S-4.2.5 steps 6.2, 6.3, and 6.4 are marked N/A (based on step 2.1).
- Have a marked up copy of CH-703 Attachment 1, Gaseous Waste Release Form ready to provide to the Examinee.

(Denote Critical Steps with a √)

Start Time: _____.

	Step 4.8
Performance Step: 1 _____	VERIFY one Auxiliary Building Main Exhaust Fan is in service.
Standard:	Verifies one Auxiliary Building Main Exhaust Fan is in service at the Aux Bldg Ventilation Panel.
EXAMINER CUE:	**Provide Examinee:** • **A copy of S-4.2.5 completed up to step 4.8,** • **A marked up copy of CH-703 Attachment 1, Gaseous Waste Release Form.**
EXAMINER NOTE:	**The Aux Bldg Ventilation Panel is located in the Intermediate Bldg Hot side (to the right just after entering the RCA).**
Comment:	

	Step 4.9
Performance Step: 2 _____	VERIFY Radioactive Effluent Monitoring Instrumentation is OPERABLE per ODCM Table 3.2-1. R-14A CANNOT be used for release if R-13 and R-14 are INOPERABLE.
Standard:	Initials step based on Initial conditions.
Examiner NOTE:	**Candidate may base operability decision on the circled monitors on the CH-703 form.**
Comment:	

Steps 5.1 through 5.5

Performance Step: 3 Precautions and Limitations

_____

Standard: Reviews precautions and limitations.

Comment:

Step 6.1.1

Procedure Caution: Only one gas decay tank may be released at one time.

Performance Step: 4 IF GDT A contains VCT gas, THEN REQUEST Shift Manager authorize removal of Operator Aid Tag.
OTHERWISE, MARK this step N/A.

_____

Standard: Observes that there is no Operator Aid Tag and marks step N/A.

EXAMINER CUE: **(If asked if GDT A contains VCT gas, or if there is an Operator Aid Tag)**
"GDT A does not contain VCT gas. There is no Operator Aid Tag for GDT A"

Comment:

Step 6.1.2

Performance Step: 5 CLOSE INLET AOV TO GAS DECAY TANK A, PCV-1036A.

_____

Standard:
- Locates PCV-1036A switch.
- Ensures PCV-1036A is closed.
  - Associated green light lit and red light off

EXAMINER CUE: **"A Caution Tag is installed on the switch."**

EXAMINER CUE: **(After the switch is located)**
"Green light is lit and red light is off."

EXAMINER CUE: **(If Examinee calls the Control Room and requests permission to operate Caution Tagged valves)**
"You have permission to operate Caution Tagged valves associated with the release."

EXAMINER NOTE: **PCV-1036A Switch is on the Waste Disposal Panel.**

Comment:

Step 6.1.3

Performance Step: 6 CLOSE GAS DECAY TANK A REUSE CONTROL AOV, AOV-1629.

_____

Standard:
- Locates AOV-1629 switch.
- Ensures AOV-1629 is closed.
  - Associated green light lit and red light off

EXAMINER CUE: **(After the switch is located)**
"Green light is lit and red light is off."

EXAMINER NOTE: **AOV-1629 Switch is on the Waste Disposal Panel.**

Comment:

Step 6.1.4

Performance Step: 7 CLOSE GAS DECAY TANK A OUTLET AOV TO GAS ANALYZER, PCV-1036B.

_____

Standard:

- Locates PCV-1036B switch.
- Ensures PCV-1036B is closed.
- Associated green light lit and red light off

EXAMINER CUE: **(After the switch is located)**
"Green light is lit and red light is off."

EXAMINER NOTE: **PCV-1036B Switch is on the Waste Disposal Panel.**

Comment:

Step 6.1.5

Performance Step: 8

_____

LOCK CLOSED GDT manual outlet valves on all tanks.

- GAS DECAY TANK A MANUAL OUTLET VLV, V-1617
- GAS DECAY TANK B MANUAL OUTLET VLV, V-1618
- GAS DECAY TANK C MANUAL OUTLET VLV, V-1619
- GAS DECAY TANK D MANUAL OUTLET VLV, V-1620

Standard:

- Locates and ensures locked closed:
  - GAS DECAY TANK A MANUAL OUTLET VLV, V-1617
  - GAS DECAY TANK B MANUAL OUTLET VLV, V-1618
  - GAS DECAY TANK C MANUAL OUTLET VLV, V-1619
  - GAS DECAY TANK D MANUAL OUTLET VLV, V-1620

EXAMINER NOTE: **To ensure a valve is locked closed, the Examinee will attempt to rotate the valve in the clockwise direction, and check that the locking device is locked.**

EXAMINER CUE: **(For each valve)**
"The valve does not move in that direction. The lock is locked."

EXAMINER CUE: **(If the Examinee contacts the Control Room to determine the eSOMS location for the valves)**
"These valves are located in the Aux Bldg Intermediate level GDT alley 5ft elevation (V-1617 and V-1618) and 1 ft elevation (V-1619 and V-1620)."

Comment:

Step 6.1.6

Performance Step: 9 CLOSE GAS DECAY TANK RELEASE AOV TO PLANT VENT VIA CHARCOAL FILTER, RCV-014.

_____

Standard:

- Locates RCV-014
- Simulates rotating the RCV-014 controller knob counter-clockwise until it won't turn any further
- Observes associated green light lit and red light off
- Observes that air pressure reads 0 psig on the RCV-014 air pressure gauge.

EXAMINER CUE: **(IF examinee simulates rotating RCV-014 knob)**
"Knob no longer moves in that direction."

EXAMINER CUE: **(If Examinee asks)**
"green light is lit and red light is off"

EXAMINER CUE: **(If Examinee asks)**
"Air pressure reads 0 psig on the RCV-014 air pressure gauge."

Comment:

Step 6.1.7

Performance Step: 10 REMOVE eSOMS Tag from V-1617.

_____

Standard: Verifies the Tag on V-1617 is removed.

EXAMINER CUE: **"The Extra AO has removed the Tag and completed the necessary paperwork."**

Comment:

Step 6.1.8

√ **Performance Step: 11** UNLOCK AND OPEN GAS DECAY TANK A MANUAL OUTLET VLV, V-1617.

Standard:
- √ Simulates unlocking V-1617.
- √ Simulates rotating V-1617 in the counter clockwise direction.

EXAMINER CUE: **(After Examinee simulates lock removal)**
"The lock is removed."
(After Examinee simulates rotating valve)
"The valve no longer moves in that direction."

Comment:

Step 6.1.9

Performance Step: 12

Procedure Caution: WHEN moving water or gas in the Waste Handling Systems with elevated activity present, THEN COORDINATE with RP to monitor local radiation levels. [G0168]

Procedure Caution: WHEN releasing gas from tanks with elevated activity, THEN INITIATE the release slowly and allow time for the Rad monitor to stabilize. Increase the release rate, if necessary, in small increments, realizing that it may take several minutes for Rad Monitor to react to the increased activity level being released. [G0168]

Procedure Caution: SECURE gas decay tank from release when approximately 5 psig, to prevent vacuum on the NSA Gas Analyzed (when the GDT is placed in service).

Standard: Reads procedural CAUTIONS prior to performing 6.1.9

Comment:

EXAMINER NOTE: ALTERNATE PATH DECISION POINT OCCURS IN THE NEXT STEP

6.1.9

Performance Step: 13 PERFORM the following to begin release:

1. RECORD the following:
   - GDT A Initial Pressure
   - Time GDT A release initiated
2. THROTTLE OPEN (may be full open) GAS DECAY TANK RELEASE AOV TO PLANT VENT VIA CHARCOAL FILTER, RCV-014, to desired release rate.
3. NOTIFY Control Room of time GDT A release was initiated and the initial pressure.

Standard:

- Records GDT "A" initial pressure from PI-1036 located on Waste Disposal Panel
- Records current time for GDT "A" release initiation.
- **√ Simulates rotating knob for RCV-014 clockwise**
  - Observes red and green lights lit
  - Observes air pressure rising on RCV-014 air pressure gauge.
  - Calls control room to confirm R-14 counts rising
- Notifies Control Room of the time GDT "A" release was initiated and the initial pressure.

EXAMINER CUE: **"Initial GDT 'A' pressure is 90 psig."**

EXAMINER CUE: As Examinee simulates opening RCV-014)
"Air pressure is rising. Both the red and green lights are lit"
(When RCV-014 I fully open)
"Red light is lit and green light is off. R-14 indicates rising counts."
"Control room confirms that R-14 counts are rising."
(Should be some delay between this report and CUE below)

EXAMINER CUE: (When Examinee notifies Control Room)
Repeat back the GDT A release initiation time and the initial pressure.
(After the initial Control Room communication is completed)

ALT PATH starts here → **"Control Room reports that R-14 indicates $2x10^5$ counts per minute."**
ONLY if asked "is R-14 in alarm?: "YES, R-14 in Alarm"

Comment:

Step 5.2

√ Performance Step: 14 ENSURE RCV-014 closes if high alarm occurs on R-14

Standard:

- Reviews step 5.2, Precautions and Limitations; or recalls from the Gaseous Waste Release Form that R-14 alarm is set at 1.2×10^5 **or** R-14 reading is much > the estimated R-13 reading on CH-703 sheet.
- **√ Simulates rotating knob for RCV-014 counter clockwise**
- Observes green light lit and red light off
- Observes air pressure lowering on the RCV-014 air pressure gauge

EXAMINER CUE: **(If Examinee asks for position of RCV-014)**
"Red light lit, green light off."

EXAMINER CUE: (As Examinee simulates rotating RCV-014 knob) :
"Knob no longer moves in that direction."
"Associated green light is lit and red light is off."
"Air pressure is lowering."
After reporting that the release has been terminated:
Control room reports that "R-14 indicates lowering counts."

EXAMINER CUE: **If asked, final GDT pressure after closing RCV-014 is "70 psig"**

EXAMINER NOTE: **Normally RCV-014 would close automatically when R-14 reaches the high alarm setpoint.**

Comment:

Terminating Cue: **After RCV-014 is closed: "Evaluation on this JPM is complete. "**

Stop time: _____.

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2012 ILT 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: _____

JPM CUE SHEET

INITIAL CONDITIONS:

- The "A" GDT is full and approved for release.
- The previous crew has started S-4.2.5.
- All radiation monitors are operable.
- Gaseous Tank Release Form (CH-703) has been completed and authorized by the SM.
- The GDT does NOT contain VCT gas.
- There is an eSOMS CAUTION tag hanging on PCV-1036A, Inlet to 'A' GDT.
- The Extra Auxiliary Operator has removed the eSOMS DANGER tag from V-1617, GDT 'A' manual outlet valve.
- The Pre-Job Brief has been completed

INITIATING CUE:

- You are the Primary AO and the Control Room Supervisor has directed you to release the "A" GDT per S-4.2.5, Release of Gas Decay Tank, starting at step 4.8.

Facility: Ginna

Task No.: 103-007-05-04
Perform Attachment CI/CVI.

Task Title: Perform Attachment CI/CVI for Valves in the Intermediate Building Clean Side

JPM No.: 2012 ILT NRC JPM K

K/A Reference: 103 A2.03 (3.5*/3.8*)

Alternate Path Yes __ No X
Time Critical Yes __ No X

Ability to (a) predict the impacts of the following malfunctions or operations on the containment system and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Phase A and B isolation.

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:
- The plant has experienced a Safety Injection.
- While performing E-0, REACTOR TRIP OR SAFETY INJECTION, it was found that some Containment Isolation Valves were not properly aligned.

Task Standard:
- Given ATT-3.0, Attachment CI/CVI, isolate AOV-5392, AOV-1597, AOV-5738, and AOV-5737 using the alternate isolation valves.

Required Materials: Hard Hat, Safety Glasses, (Double) Hearing Protection, Safety Shoes, Gloves, Locked valve key.

General References: ATT-3.0, Attachment CI/CVI, Revision 01100

Handouts: ATT-3.0, Attachment CI/CVI, Revision 01100

Initiating Cue:
- You are in the field and have been directed by the Control Room to isolate AOV-5392, AOV-1597, AOV-5738, and AOV-5737 in accordance with ATT-3.0, Attachment CI/CVI, using the alternate isolation valves

Validation Time: 17 Minutes (average of 7 + 26)

SIMULATOR SETUP

N/A

INSTRUCTOR ACTIONS

- Have a clean copy of ATT-3.0, Attachment CI/CVI, Revision 01100 ready to provide to the Examinee.

(Denote Critical Steps with a √)

Start Time: _____.

Isolate AOV-5392

√ **Performance Step: 1**

_____

Close the following valves: (IB BASEMENT CLEAN SIDE)

- V-5397
- V-5410

Standard:

- Locates V-5397 and V-5410
- **√ Simulates rotating each valve clockwise until the valve is closed**

EXAMINER CUE:

When Applicant demonstrates how to obtain an approved copy of the current procedure (preferred method is to log on to FCMS and print one out; if FCMS is down, obtain a hard copy from the Control Room):
Provide the Examinee with a clean copy of ATT-3.0, Attachment CI/CVI, Revision 01100

Examiner CUE:

If examinee points to the "Double Hearing Protection" warning sign upon entering, "Assume you have double hearing protection available."

EXAMINER NOTE:

All valves that are to be isolated may be isolated in any order.

EXAMINER CUE:

(As the Examinee simulates rotating the valve)
"The valve no longer turns in that direction."

EXAMINER CUE:

If the Examinee attempts to contact the Control Room to determine the eSOMS locations for valves 5397 and 5410f, inform him that he must demonstrate the ability to locate this information himself.

EXAMINER NOTE:

- **eSOMS location for V-5397 is IB COLD BASEMENT RC PENETRATION AREA, ELEVATION 4 FT.**
- **eSOMS location for V-5410 is IB COLD BASEMENT RC PENETRATION AREA, ELEVATION 3 FT.**

Comment:

Isolate AOV-1597

√ **Performance Step: 2** Close V-1596 (IB BASEMENT CLEAN SIDE)

Standard:
- Locates V-1596
- **√ Simulates rotating the valve clockwise until the valve is closed**

EXAMINER CUE: **(As the Examinee simulates rotating the valve)**
"The valve no longer turns in that direction."

EXAMINER NOTE: **eSOMS location for V-1596 is IB COLD BASEMENT RC PENETRATION AREA, ELEVATION 6 FT**

Comment:

Isolate AOV-5738

√ **Performance Step: 3** Close V-5701 (IB BASEMENT CLEAN SIDE)

Standard:
- Locates V-5701
- **√ Simulates rotating the valve clockwise until the valve is closed**

EXAMINER CUE: **(As the Examinee simulates rotating the valve)**
"The valve no longer turns in that direction."

EXAMINER NOTE: **eSOMS location for V-5701 is IB COLD BASEMENT RC PENETRATION AREA, ELEVATION 1 FT**

Comment:

Isolate AOV-5737

√ **Performance Step: 4** Close V-5702 (IB BASEMENT CLEAN SIDE)

_____

Standard:
- Locates V-5702
- **√ Simulates rotating the valve clockwise until the valve is closed**

EXAMINER CUE: **(As the Examinee simulates rotating the valve) "The valve no longer turns in that direction."**

EXAMINER CUE: **eSOMS location for V-5702 is IB COLD BASEMENT RC PENETRATION AREA, ELEVATION 1 FT**

Comment:

Terminating Cue: **After all valves have been isolated: "Evaluation on this JPM is complete. "**

Stop time: _____.

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2012 ILT 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: _____

JPM CUE SHEET

INITIAL CONDITIONS:

- The plant has experienced a Safety Injection.
- While performing E-0, REACTOR TRIP OR SAFETY INJECTION, it was found that some Containment Isolation Valves were not properly aligned.

INITIATING CUE:

- You are in the field and have been directed by the Control Room to isolate AOV-5392, AOV-1597, AOV-5738, and AOV-5737 in accordance with ATT-3.0, Attachment CI/CVI, using the alternate isolation valves

Facility:	**Robert E. Ginna**	Scenario No.:	**1**	Op Test No.:	**2012-N-1**
Examiners:		Operators:			(SRO)
					(RO)
					(BOP)

Initial Conditions:	The plant is at 75% power (MOL). Several days ago, the plant was taken to 50% due to a failure of the B MFW pump. Corrective maintenance was performed, and the plant is returning to full power per O-5.2, Load Ascension, Step 6.2.32, and Placing Condensate Booster Pumps In Service. The trim valves are closed and MFP suction pressure is approaching 200 psig.
Turnover:	The following equipment is Out-Of-Service: B EDG has been OOS due to mechanical issue which prevents resetting of the fuel racks. This was found yesterday at 0800. Expected return to service is tomorrow. A-52.4 submitted for ITS 3.8.1.B, 7 Day Action. SR-3.8.1.1 and 3.8.1.2 completed successfully; SR-3.8.1.1 due again in 6 hrs. Continue load ascension.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N-BOP N-SRO	Start Condensate Booster Pump per O-5.2, Step 6.2.32.
2	OVR-D.O.-SIS02A, [Off]	(TS)-SRO	Green indicating light for 'A'CS pump deenergized and the Primary AO reports that there is an acrid smell, no fire, from breaker cubicle on 'A' CS Pump. Racking out breaker to investigate renders pump inoperable. ITS-3.6.6.A impacts EDG ITS-3.8.1.B.2
3	RCS20 (630) ROD12 (A+M)	C-RO C-SRO C-BOP	Average-Tavg fails high Rod Stop Failure
4	ROD02-D4 (STA)	R-RO R-BOP R (TS)-SRO	Dropped rod D-4 and power load reduction
5	RCS05A ROD03-K7 ROD03-K9 ROD03-L8 (Untrippable)	C-RO C-BOP C-SRO	'A' RCP trip results in reactor trip, multiple (3) rods not fully inserted and FRV's remain open
6	EDS01A EDS01B GEN04A (All conditions)	M-BOP M-RO M-SRO	Loss of Offsite Circuit 7T Loss of Offsite Circuit 767 'A' EDG fails to start
7	RPS07M RPS07N	C-BOP C-SRO	3504A fails to open in Auto 3505A fails to open in Auto

8	RPS07O RPS07Q	C-BOP C-SRO	'A' SW pump Auto failure to start 'C' SW pump Auto failure to start
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor			

Ginna 2012 NRC Scenario #1

The plant is at 75% power (MOL). Several days ago, the plant was taken to 50% due to a failure of the B MFW pump. Corrective maintenance was performed, and the plant is returning to full power per O-5.2, Load Ascension, Step 6.2.32, Placing Condensate Booster Pumps In Service.

The following equipment is Out-Of-Service: B EDG is out of service B EDG has been OOS due to mechanical issue which prevents resetting of the fuel racks. ITS entry for 3.8.1.B, a 7-day LCO, has been entered, and all required surveillances are current.

Shortly after taking the watch, the operator will meet the conditions for starting the Condensate Booster Pumps (trim valves are closed and MFP suction pressure is approaching 200 psig), and will start the Condensate Booster Pumps per Step 6.32 of O-1.2.

After the Condensate Booster Pumps are started, the green indicating light for 'A' CNMT Spray Pump will go out and the Primary AO will report a strong acrid electrical odor with no fire, coming from the breaker cubicle for 'A' CNMT Spray Pump. Maintenance will request breaker be racked out to troubleshoot, rendering the 'A' CS pump inoperable. ITS-3.6.6.A for one spray train inoperable is a 72 hour action, BUT with the 'B' EDG OOS, ITS-3.8.1.B.2 requires that the SRO "Declare required feature(s) supported by the inoperable DG inoperable when its required redundant feature(s) is inoperable." This B.2 Action is a 4-hr completion time, after which LCO 3.0.3 applies. ER-FIRE.0 should NOT be entered for the report of an acrid smell.

After the field operator reports all conditions normal after the CBP start, the Average-Tavg signal will fail high, resulting in auto rod motion inward. The crew should respond per AR-F-15, RCS TAVG DEV and AP-RCC.1, Continuous Rod Withdrawal/Insertion.

After the actions of AR-F-15 are complete, Control Rod D-4 (Control Bank 'C') will drop. Crew should respond per AR-C-14, ROD BOTTOM, and AP-RCC.3, Dropped Rod Recovery. The CRS will address ITS 3.1.4 (Rod Group Alignment) and 3.2.4 (QPTR). When the crew has commenced the load reduction and the RO has commenced the boration, the 'A' RCP will trip.

The RCP trip results in a reactor trip and the crew will respond per E-0, Reactor Trip or Safety Injection. Both FRVs will fail to close due to the earlier Average-Tavg failure. Depending upon the timing of Immediate Action completion and the crew response to recognize/close the FRVs, the crew may remain in E-0 (SI due to excessive feed water cooling) or transition to ES-0.1, Reactor Trip Response. If the crew remains in E-0, the LOAAC event will occur when the HCO is directed to perform Att.27.0, Automatic Action Verification. If the crew successfully isolated MFW and transitioned to ES-0.1, the LOAAC event will occur at Step 4, after the crew has initiated emergency boration in response to the 3 control rods not inserted. In either path, transition to ECA-0.0, Loss of All AC Power will be required when the 'A' EDG failed to start following the loss of offsite power. TDAFW AFW Pump Steam Supply Valves MOV-3505A and MOV-3504A fail to automatically open.

At Step 20 of ECA-0.0 (after depressurization of S/Gs and RCS cooldown has been initiated), the AO will report the 'A' EDG is now available for start. The crew should manually start the 'A' EDG from the main control board and start 1 SW pump per step 7, then , go to Step 28 (per the CAUTION prior to Step 8), recognize that only one SW pump is required, and manually perform SW isolation per Step 29.

The scenario will end after SW lineup has been verified in Step 29 or when the correct transition to ECA-0.2 is determined in Step 31 (examiner's discretion).

Critical Tasks:

ECA-0.0--B

Establish greater than 200 GPM AFW flow before both S/G levels decrease to < 120"wide range level [160" Adverse CNMT] .

Safety Significance: Failure to establish the minimum required AFW flow rate, under the postulated accident conditions, is a violation of the basic objective of ECA-0.0 and of the assumptions of the analyses upon which ECA-0.0 is based. Both intend to mitigate deterioration of RCS conditions while AC emergency power is not available. Without AFW flow, the S/Gs could not support any significant plant cooldown. Thus, the crew would lose the ability to delay the adverse consequences of core uncover. Also, without AFW flow, decay heat would still open the safety valves and would rapidly deplete the S/G inventory, leading to a loss of secondary heat sink or S/G dryout. Decay heat would then increase RCS temperature and pressure until the pressurizer PORVs open, imposing a larger LOCA than RCP seal leakage. Both of these examples violate the basic assumptions of the analyses on which ECA-0.0 is based, complicating the mitigation actions.

Required Plant Conditions:

1. A loss of all AC condition exists
2. Less than 200 GPM of AFW flow
3. The TDAFW pump is available, but must be manually started
4. S/G NR levels are less than 5%

Scenario Conditions:

1. A loss of all AC condition exists (no offsite power, 'B' EDG OOS, 'A' EDG fails)
2. Both MDAFW pumps have no power, TDAFW pump steam admission valves have not auto opened
3. Manual opening of TDAFW pump steam admission valves is available
4. Normal post-trip S/G level shrink in conjunction with no AFW availability will result in NR levels <5%.

ECA-0.0--F

Manually start the SW pump such that the EDG does not fail because of damage caused by engine overheating.

Safety Significance: Failure to manually start the SW pump under the postulated plant conditions means that the EDG is running without SW cooling. Running without SW cooling leads to a high-temperature condition that can result in EDG failure due to damage caused by engine overheating. Under the postulated plant conditions, the running EDG is the only operable EDG. Thus, failure to perform the critical task constitutes "mis-operation or incorrect crew performance that leads to degraded emergency power capacity."

Required Plant Conditions:

1. Loss of all AC initial condition with subsequent restoration of AC power from one EDG.
2. SW pump(s) fail to start automatically when the associated emergency bus is re-energized by the EDG.
3. A SW pump aligned to provide cooling for the running EDG can be manually started from the MCR.
4. The other EDG is inoperable.

Scenario Conditions:

1. AC power will be restored by 'A' EDG.
2. Auto start of 'A' and 'C' SWPs is failed.
3. Start of either 'A' or 'C' SW pump will provide cooling for the 'A' EDG
4. 'B' EDG is OOS.

ECA-0.0--H

Isolate RCP seal injection before a charging pump is started and isolate RCP thermal barriers before a CCW pump is started.

Safety Significance: Failure to isolate RCP seal injection before starting a charging pump or the thermal barrier before starting a CCW pump, under the postulated conditions can result in unnecessary and avoidable degradation of the RCS fission product barrier – specifically at the point of the RCP seals, especially if the RCPs are subsequently started. Additionally, failure to perform the critical task results in "significant degradation in their mitigative capability of the plant" in that the RCPs are not available for subsequent recovery actions (except for the red-path condition on the Core Cooling CSF that persists despite secondary depressurization).

Required Plant Conditions:

1. Station Blackout with subsequent restoration of power to at least one AC emergency bus.
2. Blackout condition persists long enough for the crew to reach Step 8 of ECA-0.0, and RCP #1 seal outlet temperature is >235°F.

Scenario Conditions:

1. Loss of all AC existed. 'A' EDG has started and is providing power to one emergency train (buses 14 and 18).
2. The 'A' EDG will not be reported as available until Step 20 of ECA-0.0 (after S/G depressurization and RCS cooldown has been initiated). RCP seal injection and thermal barriers are isolated, if the crew correctly applies the procedure). With no seal injection flow, RCP #1 seal outlet temperatures will rise to >235°F.

Facility:	**Robert E. Ginna**	Scenario No.:	**2**	Op Test No.:	**2012-N-1**
Examiners:		Operators:			(SRO)
					(RO)
					(BOP)

Initial Conditions:	The plant is at ~2% power (BOL). Plant startup is in progress per O-1.2, Plant Startup From Hot Shutdown To Full Load. The team is currently at step 6.7 (page 39). The "A" Main Feed Pump has just been placed in-service. Based upon the current plant risk assessment, the crew is waiting for completion of B EDG repair before entering Mode 1.
Turnover:	The following equipment is Out-Of-Service: B EDG has been OOS due repairs on the governor. Expected return to service is 1 hour. A-52.4 submitted for ITS 3.8.1.B, 7 Day Action. SR-3.8.1.1 was completed successfully 1 hour ago; all other EDG surveillances are current. Until B EDG is returned to service, hold power and do not go above 5 % Reactor Power till notified.

Event	Malf. No.	Event Type*	Event Description
1	FDW14C (0)	N-BOP N (TS)-SRO	Transition from AFW to MFW per O-1.2 steps 6.7.1 through 6.7.5. MD AFW Pump 1B Discharge VLV (MOV-4008) will not re-open during the realignment.
2	RCS11F (650)	I-RO I-BOP I(TS)-SRO	Th RTD (Channel 4) fails high
3	RCS01B (5)	C-RO C-SRO	"B" RCP Thermal Barrier leak
4	SIS01 EDS1A EDS1B RCS19C (1500) OVR-D.O.-FCP01BQ, [on, 30 delay]	M-BOP M-RO M-SRO	Spurious SI ("A" Train), Concurrent w/LOOP and LOCA Outside CNMT Fire alarms in Aux Bldg Basement RHR pump area
5	RPS05A RPS05B (man avail)	C-RO C-SRO	Reactor Trip Breakers fail to open automatically (manual available)
6	GEN08 (A DG)	C-RO C-SRO	"A" DG fails to start automatically (manual start available)

7	RPS11-A-2 (Isolation signal only)	C-RO C-SRO	AOV-371 (L/D Isolation to NRHX) fails to close automatically
8	RPS07K	C-BOP C-SRO	"A" MDAFW Pump fails to start automatically
# = will be initiated by the Spurious SI event			
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor			

Ginna 2010 NRC Scenario #2

The plant is at ~2% power (BOL). Plant startup is in progress per O-1.2, Plant Startup from Hot Shutdown to Full Load. The team is currently at step 6.7 (page 39). The "A" Main Feed Pump has just been placed in-service. The plant is in a normal 50/50 electric plant lineup. Per Chemistry direction, the 60 gpm letdown orifice is in service.

The following equipment is Out-Of-Service: B EDG is out of service B EDG has been OOS due to mechanical linkage issue with the governor. ITS entry for 3.8.1.B, a 7-day LCO, has been entered, and all required surveillances are current. Work is in progress and expected return to service is 1 hour. A-52.4 submitted for ITS 3.8.1.B, 7 Day Action. SR-3.8.1.1 (offsite power availability and breaker alignment) was completed 1 hour ago. Until B EDG is returned to service, hold power and do not go above 5 % Reactor Power till notified.

After taking the watch, the team will transition from Auxiliary Feed Water (AFW) to Main Feed Water (MFW) per O-1.2 steps 6.7.1 through 6.7.5. This will involve the BOP verifying operation of the Feed Regulating Valves (FRVs) and the FRV Bypass valves, placing the FRV Bypass Valves in Auto, securing the AFW pumps, and placing the AFW pumps in safeguards alignment. During this normal alignment, AFW discharge valve on 'B' MDAFW pump will not reopen, rendering AFW Train B inoperable and entry into ITS 3.7.5, Action B.1, with a 7-day completion time.

Next a channel four Thot RTD will fail high. The team will respond per:

- AR-F-15, RCS Tavg Dev 4°F
- AR-F-16, Avg Tavg – Tref Dev +/- 5 °F
- AR-F-24, RCS AVG ΔT DEV 3°F

ER-INST.1, Reactor Protection Bistable Defeat After Instrumentation Loop Failure.
The RO will transfer the charging pump that is in automatic to manual and manually adjust its speed to control Pressurizer (PRZR) level. The BOP will defeat the failed channel per ER-INST.1. The SRO will refer to ITS 3.1.6, the COLR, and ITS 3.3.1 and 3.3.2

Next, a thermal barrier leak will occur on the "B" RCP. The team will respond per:

- AR-B-10, RCP 1B LABYR SEAL LO DIFF PRESS 15" H2O, or
- F-14, CHARGING PUMP SPEED, or
- A-5, CCW SURGE TANK HI LEVEL 58.8%

The crew may first enter AP-RCP.1, RCP SEAL MALFUNCTION, due to the AR procedural direction, but will end up in AP-CCW.1, LEAKAGE INTO THE CCW LOOP due to multiple indications of RCS in-leakage into the CCW system. Per AP-CCW.1, the RO will isolate the leak by closing AOV-754B. *Note that later in the scenario, when SI occurs, instrument air to containment will be isolated and AOV-754B will fail open.* The CCW leak will need to be re-isolated when the team restores Instrument Air to containment per EOP direction. (Due to electrical power availability, power will not be available to close MOV-749B and MOV-759B – the alternate isolation method.)

Next, a spurious "A" train SI signal will occur. At the same time there will be a loss of offsite power, the "A" DG will fail to start automatically, and a LOCA outside containment will be initiated. The team will respond per E-0, Reactor Trip or Safety Injection. At immediate action step 1, the RO will recognize that the reactor failed to trip automatically and will trip the reactor manually. At immediate action step 3 the BOP will inform the team of the status of Safeguard busses (no safeguard busses energized), and the RO will depress the "A" DG start pushbutton (front left section of the MCB) which will restore the "A"

train of safeguard buses (busses 14 and 18). When the RO performs Attachment 27.0, Attachment Automatic Action Verification, (step 6 of E-0) he will discover that AOV-371, L/D Isolation to NRHX and MOV-814, CCW From RX SUPP CLRS (loss of power), failed to isolate automatically. With the concurrent LOCA outside CNMT, the RHR-to-L/D flowpath established by AOV-371 will provide an additional pathway for RCS activity from RHR into the L/D system through the open AOV-371, thru PCV-135 (which will open further to reduce L/D system pressure), and lift L/D relief valve 209 (setpoint 200 psig) to the VCT. Closing AOV-371 manually per the guidance in ATT-27.0 will isolate this flowpath. Attachment-3.0 will be used to isolate MOV-814. At step 7 of E-0, no MDAFW pumps will be running. The BOP will manually start the "A" MDAFW pump and align the TDAFW pump as necessary.

The LOCA outside containment will be due to failure of check valve 853A. When the SI occurs RCS will flow backwards through MOV-852A (Core Deluge Valve) and cause an RHR system piping break inside the Auxiliary building (RHR system piping is designed for a maximum of 600 psi – not RCS pressure). RCS will also flow from the RHR system to the CVCS system (via a check valve around HCV-133), lift relief valve 203, and flow to the PRT. Within a few minutes (depending on the size of the RHR piping break) the PRT rupture disc will blow and cause a LOCA inside containment. Because of this, the team is expected to transition to E-1, Loss of Reactor or Secondary Coolant, at E-0 step 17, rather than transitioning to ECA-1.2, LOCA Outside Containment, at E-0 step 26. (Transition from E-0 step 26 is possible depending on break size and how fast the team progresses through E-0, but is unlikely.)

Instrument air to containment will be re-established at step 9 of E-1. This will be the team's earliest opportunity to re-isolate the CCW system leak. (Unable to close MOV-749B and 759B due to bus 16 de-energized.) The team will transition to ECA-1.2 at E-1 step 17.

At ECA-1.2 step 3 the RO will close MOV-852A and the team will check for an RCS pressure rise. With the leakpath isolated, RCS pressure will rise, indicating isolation of the LOCA outside containment. (The pressure rise may be delayed or slow depending on RCS inventory. If a sizable bubble exists in the reactor vessel head, injection flow has to refill the head to some extent before RCS pressure will rise significantly. The team should realize this.)

Terminate the scenario upon transition back to E-1.

Additional Information:

When the Aux Bldg sump reaches 15,000 gallons the RHR pumps, Aux Bldg sump pumps, and RCDT pumps will fail due to submergence (2 to 4 minute time delay after submergence).

Critical Tasks:

E-0--C

Energize at least one emergency bus before transition out of E-0.

Safety Significance:

Failure to re-energize an emergency train leads to degraded emergency power capacity, needless degradation of a fission release barrier (RCS through RCP Seals), and results in a continuing loss of RCS inventory.

Required Plant Conditions:

1. Reactor trip.
2. No emergency bus energized.
3. At least one EDG can be connected to an emergency bus.

Scenario Conditions:

1. Spurious SI will require reactor trip.
2. Offsite power is lost, "B" DG is OOS, and "A" DG fails to start automatically.
3. "A" DG can be started manually.

ECA-1.2--A

Isolate LOCA outside containment prior to transition out of ECA-1.2.

Safety Significance:
Failure to isolate this leak degrades containment integrity resulting in continuing radioactive release.

Required Plant Conditions:

1. Isolable LOCA outside containment.

Scenario Conditions:

1. The LOCA outside containment may be isolated by closing MOV-852A.

Facility:	**Robert E. Ginna**	Scenario No.:	**3**	Op Test No.:	**2012-N-1**
Examiners:		Operators:			(SRO)
					(RO)
					(BOP)

Initial Conditions:	The plant is at 70% power (MOL). Several days ago, the plant was taken to 50% due to a failure of the "B" MFW pump. Corrective maintenance was performed, and the plant was raised to 70% four days ago. It is intended to observe the "B" MFP operation for two more days at this power level and then raise power to 100%. RG&E Energy Control Center has requested transfer to 100 – 0 lineup in preparation for circuit 7T inspection next shift. The WCC is standing by to place protected equipment signs per OPG-PROTECTED-EQUIPMENT. The SM has directed that you complete the transfer when you have the shift.
Turnover:	The following equipment is Out-Of-Service: "B" Containment Spray Pump has been out of service for bearing replacement since late yesterday. Expected return to service is tomorrow. A-52.4 submitted for ITS 3.6.6, 72 Hour Action.

Event No.	Malf. No.	Event Type*	Event Description
0	FDW11B FDW15B		'B' MDAFW trip on overcurrent on start SAFW Pump "D" fails to start
1	NA	N-BOP N-SRO	Swap to 100/0 electrical lineup on Circuit 767 per O-6.9.2, Establishing And/Or Transferring Offsite Power To Bus 12A / 12B
2	PZR02D (2500) IND-RPS07BK (off)	I-BOP I-RO I(ITS)-SRO	Pressurizer pressure channel 449 fails HIGH (ITS 3.3.1: Trip channel within 6 hrs, TRM: TR 3.4.3 Immediately declare ATWS mitigating capability inoperable – was applicable until channel 429 was selected as the controlling channel in the PLP) TC408C Bistable status light failed
3	PZR05B [7.4] OVR-PZR03B (OFF)	C-RO C(TS)-SRO	Pressurizer PORV-431C leakage > "PORV INOPERABLE" condition (~21 gpm)
4	REM-CND50 (0.04)	R-BOP R-RO R-SRO	Loss of condenser vacuum will occur. (The loss of vacuum will be ramped over 12 minutes so that the crew will trip the turbine when meeting the 5 minute backpressure DO NOT OPERATE region criteria or a turbine trip will occur on low vacuum.) Turbine Trip causes a Reactor Trip.
5	OVR-DI-TUR05BD	C-BOP C-SRO	EH "Go" pushbutton does not work

6	STM09A (100) STM09C (100) STM11A (2E06) EDS08 (Both) EDS04A FDW12 (0)	M-BOP M-RO M-SRO	"B" SG Safety Valve 3508 and 3510 failed open (close when Bleed and Feed criteria met) Steam break on "A" SG inside CNMT 4KV Auto Bus Transfer fails to occur automatically Loss of Bus 14 (conditional on reactor trip) TDAFW Pump speed control failed to 0
7	SIS02A SIS02B (man avail)	C-RO C-CRS	SI fails to actuate automatically
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor			

Ginna 2012 NRC Scenario #3

The plant is at 70% power (MOL). Several days ago, the plant was taken to 50% due to a failure of the "B" MFW pump. Corrective maintenance was performed, and the plant was raised to 70% four days ago. It is intended to observe the "B" MFP operation for two more days at this power level and then raise power to 100%. RG&E Energy Control Center has requested transfer to 100 – 0 lineup in preparation for circuit 7T inspection next shift. The WCC is standing by to place protected equipment signs per OPG-Protected Equipment. The SM has directed that you complete the transfer when you have the shift.

The following equipment is Out-Of-Service: "B" Containment Spray Pump has been out of service for bearing replacement since late yesterday. Expected return to service is tomorrow. A-52.4 submitted for ITS 3.6.6, 72 Hour Action.

Shortly after taking the watch the team will swap to 100/0 electrical lineup per O-6.9.2.

Following the electrical lineup swap, the Pressurizer (PRZR) controlling pressure channel 449 will fail high, causing PRZR spray valves to open and disabling the PRZR heaters. Channel IV indication will show a high indication, whereas actual pressure is lowering due to spray. Prompt RO action is required to place the Master PRZR controller in Manual to close the spray valves and stabilize pressure. With no operator action, a reactor trip and SI will occur on low pressure. The team will respond per:

- AR-F-2, Pressurizer Hi Press 2310 psi, or
- AR-F-10, Pressurizer Lo Press 2205 psi;
- AP-PZR.1, Abnormal Pressurizer Pressure and
- ER-INST.1, Reactor Protection Bistable Defeat After Instrument Loop Failure

When the BOP defeats the failed channel, bistable status light TC408C will fail to light, which indicates that the channel may not be in the tripped condition. The SRO will notify the WCC, Operations Management, and possibly I/C to investigate further to ensure ITS requirements are met. (Sometimes the SRO will contact I/C directly, and sometimes he will request that the WCC contact I/C. Either communication is acceptable.) The SRO will refer to ITS 3.3.1 and TRM TR 3.4.3 (he will determine ITS 3.3.2 and 3.3.3 are not applicable).

While the PT-449 defeat is in progress, a 21 gpm leak will occur on PORV 431C. The PORV will indicate in the throttled open position. The team will respond per:

- AR-F-19, PRZR PORV Outlet Hi Temp 145°F
- AP-PZR.1, Abnormal Pressurizer Pressure

The crew will attempt to close PORV-431C, but fails to close and will isolate the leak by closing associated block valve MOV-515, SRO will refer to ITS section 3.4.11 (Pressurizer PORVs) and 3.4.13 (RCS Operational Leakage). Per 3.4.11, "A PORV with a leakage rate >10gpm must also be declared inoperable per this LCO." (Restriction based on the possible need to use this PORV during accident mitigation, and if the block valve then failed to close with greater than 10gpm leakage, the PORV leakage would be outside the accident analysis assumptions."

After the SRO has had an opportunity to identify the ITS / TRM requirements associated with the PT-449 failure and the PORV leakage, a loss of condenser vacuum will occur. (The loss of vacuum will be ramped over 12 minutes so that the crew will trip the turbine when meeting the 5 minute backpressure DO NOT OPERATE region criteria or a turbine trip will occur on low vacuum.) The team will respond per:

- AR-H-7, Condenser Hi Pressure 25.5" HG,
- AR-K-30, Turbine Plant Sampling Rack Trouble
- AP-TURB.4, Loss Of Condenser Vacuum, and refer to
- AP-TURB.5, Rapid Load Reduction

They will reduce turbine load in an attempt to stabilize condenser vacuum, and to get out of the "Avoid" region in condenser backpressure. When the BOP initiates load reduction he will discover the EH control panel will not respond in OPER PAN, and will reduce turbine load manually. The team will be unable to stabilize condenser vacuum. Once the 5 minute "Avoid" region in condenser backpressure limit is met, the crew will trip the turbine or a trip on low vacuum will occur. If the crew reduced power to less than 50% to get less than P-9 (Turbine Trip-Reactor Trip interlock), when the turbine is tripped manually a reactor trip will occur due to the failure of the P9 interlock.

Upon reactor trip, a failure of the 4KV Auto Bus Transfer and a loss of Bus 14 will occur. Additionally, the TDAFW Pump speed control is failed to zero and the 'B' MDAFW pump will trip on start. The team will respond per E-0, Reactor Trip or Safety Injection. With steam dump unavailable, SG pressure will rise rapidly causing SG ARVs and SG Safeties to open. Two SG safeties associated with 'B' SG will fail full open in conjunction with a MSLB on the 'A' SG inside containment. These events will cause a significant cooldown, RCS depressurization, and SI signal. The team will recognize that SI failed to actuate automatically and will manually actuate SI. At step 9 the team will transition to FR-H.1, Response To Loss of Secondary Heat Sink.

The MDAFW and TDAFW pumps are unavailable. "C" SBAFP has no power. Depending on SG level, the team will either go to step 13 for Bleed & Feed, or attempt to align and start "D" SBAFP. If there is time for the SBAFP start, the SRO will determine feed requirements per Attachment 22.0, Attachment Restoring Feed Flow (attempt to feed at max rate [225 gpm]). "D" SBAFP will trip when they try to start it. When less than or equal to120 [160] inches wide range SG level is reached in both SGs, the team will go to step 13 for Bleed & Feed. The team will perform Attachment 12.0, Attachment N2 PORVs to operate the PORVs. Subsequently, Bus 15 will be energized by cross-tie to Bus 16, and instrument air will be aligned to the PORVs.

After Bleed and Feed is established (PORVs open and SI flow verified), at the Lead Examiner's discretion, the SRO will be notified from the WCC that the "B" MDAFP is available. The team will establish AFW flow per the guidance of step 3.

Terminate the scenario when auxiliary feed flow is established.

Critical Tasks:

E-0--D

Manually actuate at least one train of SI before transition to FR-H.1.

Safety Significance:

The acceptable results obtained in the FSAR analyses are predicated on the assumption that, at the very least, one train of safeguards actuates. If SI is not actuated, the FSAR assumptions and results are invalid. Because compliance with the assumptions of the FSAR is part of the facility license condition, failure to manually actuate at least one train of SI (when it is possible to do so) constitutes a violation of the license condition.

Required Plant Conditions:

1. Reactor trip with valid SI required but not automatically actuated.
2. SI can be manually actuated from the control room.

Scenario Conditions:

1. Loss of Condenser vacuum causes a forced crew trip of the turbine, once the 5 minute "Avoid" region in condenser backpressure limit is met or a trip on low vacuum will occur. crew to trip the turbine trip which causes a reactor trip (P-9 present). Upon reactor trip, steam flow through the SG safeties will be sufficient to cause a valid SI signal prior to the team completing E-0 step 4.
2. Manual SI is available.

FR-H.1--F

Initiate RCS Bleed so that the RCS depressurizes sufficiently for RCS Feed (SI injection) to occur.

Safety Significance:

Failure to initiate RCS Bleed & Feed before the RCS saturates at a pressure above the shutoff head of the SI pumps results in significant and sustained core uncovery.

Required Plant Conditions:

1. Reactor trip.
2. No AFW available.
3. Secondary heat sink required.
4. RCS pressure below PRZR PORV setpoint.

Scenario Conditions:

1. Loss of Condenser vacuum will require a manual trip when meeting the 5 minute DO NOT OPERATE region trip requirement.
2. Failure of 4KV Auto Bus Transfer de-energizes the condensate pumps and MFPs. "B" Containment Spray Pump is OOS for bearing replacement. Loss of Bus 14 de-energizes "A" MDAFP. The TDAFP speed controller is failed to zero. SBAFW is not available ('C' SBAFW pump has no power, 'D' SBAFW pump will trip on start.)
3. Decay heat is adequate to require a heat sink.
4. The team must follow the guidance of FR-H.1 to initiate RCS Bleed & Feed while RCS pressure is below PRZR PORV setpoint.

PROGRAM: Ginna Operations Training

MODULE: 2012 Initial License Operator Training

TOPIC: NRC Simulator Exam

Scenario N12-1

REFERENCES:

1. O-5.2, Load Ascension
2. CNG-OP-5.01, Water Hammer Prevention and Mitigation Program, (Section 6.2.C)
3. Tech Spec LCO 3.6.6, Containment Spray (CS), Containment Recirculation Fan Cooler (CRFC), and NaOH Systems
4. AR-F-15, RCS TAVG DEV 4° F, or
5. AR-F-16, TAVG-TREF DEVIATION ± 5°F
6. AP-RCC.1, Continuous Control Rod Withdrawal/Insertion

7. AR-C-14, Rod Bottom
8. AP-RCC.3, Dropped Rod Recovery
9. ER-RCC.1,Retrieval of a Dropped RCC
10. Tech Spec LCO 3.3.1, Reactor Trip System (RTS) Instrumentation
11. TRM 3.4.3, ATWS Mitigation

12. E-0, Reactor Trip and Safety Injection
13. ES-0.1, Reactor Trip Response
14. ATT-27.0, Automatic Action Verification
15. ECA-0.0, Loss of All AC Power
16. ATT-11.2, Attachment Diesel Air Compressor
17. ATT-8.3, Attachment Nonvital
18. ATT-21.0, Attachment RCS Isolation
19. ATT-5.2, Attachment Alternate Cooling to TDAFW Pump
20. ATT-8.2, Attachment Gen Degas
21. ATT-8.0, Attachment DC Loads
22. ECA-0.2, Loss of All AC Power Recovery with SI Required
23. ECA-0.1, Loss of All AC Power Recovery without SI Required

Author: Norm Meaker, Exam Writer Contractor

Facility Review: Pat Landers, Lead Exam Author

Scenario Event Description
2012 NRC Scenario 1

Facility:	**Robert E. Ginna**	Scenario No.:	**1**	Op Test No.:	**2012-N-1**
Examiners:		Operators:			(SRO)
					(RO)
					(BOP)

Initial Conditions:	The plant is at 75% power (MOL). Several days ago, the plant was taken to 50% due to a failure of the B MFW pump. Corrective maintenance was performed, and the plant is returning to full power per O-5.2, Load Ascension, Step 6.2.32, Place Condensate Booster Pumps In Service. The trim valves are closed and MFP suction pressure is approaching 200 psig.
Turnover:	The following equipment is Out-Of-Service: B EDG has been OOS due to mechanical issue which prevents resetting of the fuel racks. This was found yesterday at 0800. Expected return to service is tomorrow. A-52.4 submitted for ITS 3.8.1.B, 7 Day Action. SR-3.8.1.1 and 3.8.1.2 completed successfully; SR-3.8.1.1 due again in 6 hrs. Continue load ascension.

Event No.	Malf. No.	Event Type*	Event Description
1	NA	N-BOP N-SRO	Start Condensate Booster Pump per O-5.2, Step 6.2.32.
2	OVR-D.O.-SIS02A, [Off]	(TS)-SRO	Green indicating light for 'A' CS pump deenergized and the Primary AO reports that there is an acrid smell, no fire, from breaker cubicle on 'A' CS Pump. Racking out breaker to investigate renders pump inoperable. ITS-3.6.6.A impacts EDG ITS-3.8.1.B.2
3	RCS20 (630) ROD12 (A+M)	C-RO C-SRO C-BOP	Average-Tavg fails high Rod Stop Failure
4	ROD02-D4 (STA)	R-RO R-BOP R (TS)-SRO	Dropped rod D-4 and power load reduction
5	RCS05A ROD03-K7 ROD03-K9 ROD03-L8 (Untrippable)	C-RO C-BOP C-SRO	'A' RCP trip results in reactor trip, multiple (3) rods not fully inserted and FRV's remain open
6	EDS01A EDS01B GEN04A (All conditions)	M-BOP M-RO M-SRO	Loss of Offsite Circuit 7T Loss of Offsite Circuit 767 'A' EDG fails to start
7	RPS07M RPS07N	C-BOP C-SRO	3504A fails to open in Auto 3505A fails to open in Auto

8	RPS07O RPS07Q	C-BOP C-SRO	'A' SW pump Auto failure to start 'C' SW pump Auto failure to start
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor			

Overview of Scenario #1

The plant is at 75% power (MOL). Several days ago, the plant was taken to 50% due to a failure of the B MFW pump. Corrective maintenance was performed, and the plant is returning to full power per O-5.2, Load Ascension, Step 6.2.32, Placing Condensate Booster Pumps In Service.

The following equipment is Out-Of-Service: B EDG is out of service B EDG has been OOS due to mechanical issue which prevents resetting of the fuel racks. ITS entry for 3.8.1.B, a 7-day LCO, has been entered, and all required surveillances are current.

Shortly after taking the watch, the operator will meet the conditions for starting the Condensate Booster Pumps (trim valves are closed and MFP suction pressure is approaching 200 psig), and will start the Condensate Booster Pumps per Step 6.32 of O-1.2.

After the Condensate Booster Pumps are started, the green indicating light for 'A' CNMT Spray Pump will go out and the Primary AO will report a strong acrid electrical odor with no fire, coming from the breaker cubicle for 'A' CNMT Spray Pump. Maintenance will request breaker be racked out to troubleshoot, rendering the 'A' CS pump inoperable. ITS-3.6.6.A for one spray train inoperable is a 72 hour action, BUT with the 'B' EDG OOS, ITS-3.8.1.B.2 requires that the SRO "Declare required feature(s) supported by the inoperable DG inoperable when its required redundant feature(s) is inoperable." This B.2 Action is a 4-hr completion time, after which LCO 3.0.3 applies. ER-FIRE.0 should NOT be entered for the report of an acrid smell.

After the field operator reports all conditions normal after the CBP start, the Average-Tavg signal will fail high, resulting in auto rod motion inward. The crew should respond per AR-F-15, RCS TAVG DEV and AP-RCC.1, Continuous Rod Withdrawal/Insertion.

After the actions of AR-F-15 are complete, Control Rod D-4 (Control Bank 'C') will drop. Crew should respond per AR-C-14, ROD BOTTOM, and AP-RCC.3, Dropped Rod Recovery. The CRS will address ITS 3.1.4 (Rod Group Alignment) and 3.2.4 (QPTR). When the crew has commenced the load reduction and the RO has commenced the boration, the 'A' RCP will trip.

The RCP trip results in a reactor trip and the crew will respond per E-0, Reactor Trip or Safety Injection. Both FRVs will fail to close due to the earlier Average-Tavg failure. Depending upon the timing of Immediate Action completion and the crew response to recognize/close the FRVs, the crew may remain in E-0 (SI due to excessive feed water cooling) or transition to ES-0.1, Reactor Trip Response. If the crew remains in E-0, the LOAAC event will occur when the HCO is directed to perform Att.27.0, Automatic Action Verification. If the crew successfully isolated MFW and transitioned to ES-0.1, the LOAAC event will occur at Step 4, after the crew has initiated emergency boration in response to the 3 control rods not inserted. In either path, transition to ECA-0.0, Loss of All AC Power will be required when the 'A' EDG failed to start following the loss of offsite power. TDAFW AFW Pump Steam Supply Valves MOV-3505A and MOV-3504A fail to automatically open.

At Step 20 of ECA-0.0 (after depressurization of S/Gs and RCS cooldown has been initiated), the AO will report the 'A' EDG is now available for start. The crew should manually start the 'A' EDG from the main control board and start 1 SW pump per step 7, then , go to Step 28 (per the CAUTION prior to Step 8), recognize that only one SW pump is required, and manually perform SW isolation per Step 29.

The scenario will end after SW lineup has been verified in Step 29 or when the correct transition to either ECA-0.2 is determined in Step 31 (examiner's discretion).

Critical Tasks:

ECA-0.0--B

Establish greater than 200 GPM AFW flow before both S/G levels decrease to < 120"wide range level [160" Adverse CNMT] .

Safety Significance: Failure to establish the minimum required AFW flow rate, under the postulated accident conditions, is a violation of the basic objective of ECA-0.0 and of the assumptions of the analyses upon which ECA-0.0 is based. Both intend to mitigate deterioration of RCS conditions while AC emergency power is not available. Without AFW flow, the S/Gs could not support any significant plant cooldown. Thus, the crew would lose the ability to delay the adverse consequences of core uncover. Also, without AFW flow, decay heat would still open the safety valves and would rapidly deplete the S/G inventory, leading to a loss of secondary heat sink or S/G dryout. Decay heat would then increase RCS temperature and pressure until the pressurizer PORVs open, imposing a larger LOCA than RCP seal leakage. Both of these examples violate the basic assumptions of the analyses on which ECA-0.0 is based, complicating the mitigation actions.

Required Plant Conditions:

1. A loss of all AC condition exists
2. Less than 200 GPM of AFW flow
3. The TDAFW pump is available, but must be manually started
4. S/G NR levels are less than 5%

Scenario Conditions:

1. A loss of all AC condition exists (no offsite power, 'B' EDG OOS, 'A' EDG fails)
2. Both MDAFW pumps have no power, TDAFW pump steam admission valves have not auto opened
3. Manual opening of TDAFW pump steam admission valves is available
4. Normal post-trip S/G level shrink in conjunction with no AFW availability will result in NR levels <5%.

ECA-0.0--F

Manually start the SW pump such that the EDG does not fail because of damage caused by engine overheating.

Safety Significance: Failure to manually start the SW pump under the postulated plant conditions means that the EDG is running without SW cooling. Running without SW cooling leads to a high-temperature condition that can result in EDG failure due to damage caused by engine overheating. Under the postulated plant conditions, the running EDG is the only operable EDG. Thus, failure to perform the critical task constitutes "mis-operation or incorrect crew performance that leads to degraded emergency power capacity."

Required Plant Conditions:

1. Loss of all AC initial condition with subsequent restoration of AC power from one EDG.
2. SW pump(s) fail to start automatically when the associated emergency bus is re-energized by the EDG.
3. A SW pump aligned to provide cooling for the running EDG can be manually started from the MCR.
4. The other EDG is inoperable.

Scenario Conditions:

1. AC power will be restored by 'A' EDG.
2. Auto start of 'A' and 'C' SWPs is failed.
3. Start of either 'A' or 'C' SW pump will provide cooling for the 'A' EDG
4. 'B' EDG is OOS.

ECA-0.0--H

Isolate RCP seal injection before a charging pump is started and isolate RCP thermal barriers before a CCW pump is started.

Safety Significance: Failure to isolate RCP seal injection before starting a charging pump or the thermal barrier before starting a CCW pump, under the postulated conditions can result in unnecessary and avoidable degradation of the RCS fission product barrier – specifically at the point of the RCP seals, especially if the RCPs are subsequently started. Additionally, failure to perform the critical task results in "significant degradation in their mitigative capability of the plant" in that the RCPs are not available for subsequent recovery actions (except for the red-path condition on the Core Cooling CSF that persists despite secondary depressurization).

Required Plant Conditions:

1. Station Blackout with subsequent restoration of power to at least one AC emergency bus.
2. Blackout condition persists long enough for the crew to reach Step 8 of ECA-0.0, and RCP #1 seal outlet temperature is >235°F.

Scenario Conditions:

1. Loss of all AC existed. 'A' EDG has started and is providing power to one emergency train (buses 14 and 18).
2. The 'A' EDG will not be reported as available until Step 20 of ECA-0.0 (after S/G depressurization and RCS cooldown has been initiated). RCP seal injection and thermal barriers are isolated, if the crew correctly applies the procedure). With no seal injection flow, RCP #1 seal outlet temperatures will rise to >235°F.

SIMULATOR DRIVER INSTRUCTIONS

	Bench Mark	ACTIVITY	DESCRIPTION
☐		**Reset to IC-27** (Temp I/C-NRC-)	**75% power MOL** **Note: If only a 70% MOL IC available, must raise power and stabilize, to be closer to starting a CBP per O-5.2.** **At T=0, insert:** • **MALF ROD03-K7, [Untrippable],** Stuck rod K7 • **MALF ROD03-K9, [Untrippable],** Stuck rod K9 • **MALF ROD03-L8, [Untrippable],** Stuck rod L8 • **MALF RPS07M,** Auto Fail: TDAFW STM SUP MOV-3504A • **MALF *RPS07N,*** *Auto Fail: TDAFW STM SUP MOV-3505A* • **MALF RPS07O,** Auto Fail: A SW Pump • **MALF RPS07Q,** Auto Fail: C SW Pump **To take 'B' EDG OOS:** ▪ **Pull stop the 'B' EDG Control Stop/Start Switch and place CAUTION tag on switch** ▪ **Pull stop the D/G'B' Bus 16 Supply Breaker and place CAUTION tag on switch** ▪ **Pull stop the D/G'B' Bus 17 Supply Breaker and place CAUTION tag on switch** ▪ **Place CAUTION tag on D/G 'B' start pushbutton** ▪ **Place PROTECT tags per OPG-Protected Equipment and black dot J-32.** **Insert the following:** • **OVR-D.O.-SIS02A, [Off], on T-2,** 'A' CS Pump red light indication • **MALF RCS20 [630], on T-3** (Failure of Average Tavg Channel) • **MALF ROD12 [Auto & Manual], on T-3** (Rod Stop Failure) • **ROD02D-D4, [Stationary],on T-4** (Dropped rod D-4) • **MALF RCS05A on T-5,** (A RCP Trip) • **MALF EDS01A, on T-7** (Loss of Offsite Circuit 7T) • **MALF EDS01B, on T-7** (Loss of Offsite Circuit 767) • **MALF GEN04A, [All Conditions], on T-7** (A D/G fails to start)
☐	Prior to Crew Briefing	**RUN**	• **Hang Protective Tags per OPG-Protected Equipment** • **Place Black Dot on MCB Annunciator J-32 and AA-25** • **Ensure Rods are in AUTO.**

	[illegible]	ACTIVITY	DESCRIPTION
☐	**Crew Briefing** • 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: o All steps in Sections 6.4.1 are marked NA o All steps in Sections 6.4.3 are marked NA		
☐	T-0	Begin Familiarization Period	
☐	At direction of examiner	**Event 1**	Start Condensate Booster Pump
☐	At direction of examiner	**Event 2** **OVR-D.O-SIS02A, [Off]**	Green indicating light for 'A' CS pump deenergized and the Primary AO reports that there is an acrid smell, no fire, from breaker cubicle on 'A' CS Pump. Racking out breaker to investigate renders pump inoperable. ITS-3.6.6.A impacts EDG ITS-3.8.1.B.2
☐	At direction of examiner	**Event 3** **Trigger#3** **RCS20 [630]** **ROD12 [Auto and Manual]**	Average-Tavg fails high Rod Stop Failure
☐	At direction of examiner	**Event 4** **Trigger#4** **ROD02-D4 [Stationary]**	Dropped Rod D-4

	Event Mark	ACTIVITY	DESCRIPTION
☐	At direction of examiner	**Event 5** **Trigger #5** **RCS05A** **MALF ROD03-K7, [Untrippable],** **MALF ROD03-K9, [Untrippable],** **MALF ROD03-L8, [Untrippable],**	'A' RCP trip results in reactor trip, multiple (3) rods not fully inserted and FRV's remain open Multiple (3) rods not fully inserted **NOTE: This Malfunction is inserted in the IC at T = 0.**
☐	Continued from Event 5	**Event 6** **MALF EDS01A** **MALF EDS01B** **MALF GEN04A, [All Conditions]**	Loss of Offsite Circuit 7T Loss of Offsite Circuit 767 "A" EDG fails fails to start
☐	Continued from Event 5	**Event 7** **MALF RPS07M** **MALF RPS07N**	TDAFW Steam Supply Auto Failure **NOTE: This Malfunction is inserted in the IC at T = 0.**
☐	Continued from Event 5	**Event 8** **MALF RPS07O** **MALF RPS07Q**	'A' SW pump failure to start 'C' SW pump failure to start **NOTE: This Malfunction is inserted in the IC at T = 0.**
☐	**Terminate the scenario upon direction of Lead Examiner**		

Op Test No.: N12-1 Scenario # 1 Event # 1 Page 13 of 56

Event Description: **Start a condensate booster pump**

Shortly after taking the watch, the operator will meet the conditions for starting the Condensate Booster Pumps (trim valves are closed and MFP suction pressure is approaching 200 psig), and will start the Condensate Booster Pumps per Step 6.32 of O-1.2

Booth Operator Instructions: **NA**

Indications Available: **NA**

Time	Pos.	Expected Alarms/Actions/Behavior	Comments
		O-5.2, Load Ascension	
			NOTE: EHC adjustments are being made per Step 6.2.24. Steps 6.2.26 thru 6.2.32 are completed.
	CRS	(Step 6.2.32) WHEN trim valves are closed AND MFW Pump suction pressure approaches 200 PSIG, THEN PLACE Condensate Booster Pumps in service as follows:	
	BOP	(Step 6.2.32.1) ADJUST TRIM VLV CONTROL, AOV-9508D AOV-9508G, controller output in AUTO UNTIL the first Trim Valve starts to open.	
	BOP	(Step 6.2.32.2) PLACE HOTWELL LEVEL LC-107, Controller in the MAN position.	
	BOP	(Step 6.2.32.3) PLACE the standby Condensate Pump control switch in the PULL STOP position AND INDICATE which pump was placed in PULL STOP.	**NOTE:** The CO will place one Condensate Pump in Pull Stop. **AR-J-17**, Non-Safeguards Equipment Locked Off, will be received.
	CRS	**Note:** Refer to CNG-OP-5.01, Water Hammer Prevention and Mitigation Program, (Section 6.2.C)	**Note:** Plant announcement of starting CBP and turbine building evacuation should be made.

Op Test No.: N12-1 Scenario # 1 Event # 1 Page 14 of 56

Event Description: **Start a condensate booster pump**

	BOP	(Step 6.2.32.4) PLACE one Condensate Booster Pump switch to the RUN position AND INDICATE which pump was placed in RUN.	**NOTE:** The CO will place a Condensate Booster Pump to run.
	BOP	(Step 6.2.32.5) IF the Condensate Booster Pump low suction pressure trip in NOT reset, THEN DEPRESS CNST BSTR PMPS START/RESET green RESET pushbutton.	**NOTE:** The CO will depress the RESET pushbutton if required.
	BOP	(Step 6.2.32.6) VERIFY CONDENSATE BOOSTER PUMP selected to RUN started.	**NOTE:** The Condensate Booster Pump will start in AUTO.
	BOP	(Step 6.2.32.7) IF the CONDENSATE BOOSTER PUMP selected to RUN in the previous step did NOT start automatically start, THEN DEPRESS CNDST BSTR PMPS START/RESET yellow START pushbutton. OTHERWISE, MARK this Step N/A.	**Note:** CRS marks this step N/A on normal start.
At the discretion of the Lead Examiner move to Event #2.			

Op Test No.: N12-1	Scenario # 1	Event # 2	Page 15 of 56
Event Description:	**Acrid order with no fire in 'A' CNMT Spray Pump Breaker**		

After the Condensate Booster Pumps are started, the green indicating light for 'A' CNMT Spray Pump will go out and the Primary AO will report a strong acrid electrical odor with no fire, coming from the breaker cubicle for 'A' CNMT Spray Pump. Maintenance will request breaker be racked out to troubleshoot, rendering the 'A' CS pump inoperable. ITS-3.8.8.A for one spray train inoperable is a 72 hour action, BUT with the 'B' EDG OOS, ITS-3.8.1.B.2 requires that the SRO "Declare required feature(s) supported by the inoperable DG inoperable when its required redundant feature(s) is inoperable." This B.2 Action is a 4-hr completion time, after which LCO 3.0.3 applies. ER-FIRE.0 should NOT be entered for the report of an acrid smell.

Booth Operator Instructions:

- **Trigger 2**
- Primary AO will report a strong acrid electrical odor with no fire, coming from the breaker cubicle for 'A' CNMT Spray Pump. Maintenance will request breaker be racked out to troubleshoot.

Indications Available:

- None

Time	Role	Expected Actions/Behavior	Comments
			SIM Driver: Trigger 2 and then make *report as Primary AO that a strong acrid electrical odor with no fire, coming from the breaker cubicle for 'A' CNMT Spray Pump. Maintenance will request breaker be racked out to troubleshoot.*
	HCO	Notes that the green indication light for 'A' CS Pump is off	
	CRS	Direct the HCO to pull stop the 'A' CS Pump	
	HCO	Pull stops 'A' CS Pump	
	CRS	Declares A CS Pump inoperable and refers to ITS 3.6.6.A and 3.8.1.B.2	

Op Test No.: N12-1 Scenario # 1 Event # 2 Page 16 of 56

Event Description: **Acrid order with no fire in 'A' CNMT Spray Pump Breaker**

Step	Pos.	Expected Actions/Behavior	Comments
	CRS	Notify the following: o SM o I&C o WCC	**NOTE:** The CRS may notify the WCC or request STA/SM perform notifications. **Booth Instructor:** as **WCCS**, acknowledge.
TECHNICAL SPECIFICATION 3.6.6 Containment Spray (CS), Containment Recirculation Fan Cooler (CRFC), and NaOH System			

Op Test No.: N12-1 Scenario # 1 Event # 2 Page 17 of 56

Event Description: **Acrid order with no fire in 'A' CNMT Spray Pump Breaker**

Time	Pos.	Expected Actions/Behavior	Comments

3.6.6 Containment Spray (CS), Containment Recirculation Fan Cooler (CRFC), and NaOH Systems

LCO 3.6.6 Two CS trains, four CRFC units, and the NaOH system shall be OPERABLE.

- NOTE -

In MODE 4, both CS pumps may be in pull-stop for up to 2 hours for the performance of interlock and valve testing of motor operated valves (MOVs) 857A, 857B, and 857C. Power may also be restored to MOVs 896A and 896B, and the valves placed in the closed position, for up to 2 hours for the purpose of each test.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

	CONDITION		REQUIRED ACTION	COMPLETION TIME
A.	One CS train inoperable.	A.1	Restore CS train to OPERABLE status.	72 hours
B.	NaOH system inoperable.	B.1	Restore NaOH System to OPERABLE status.	72 hours
C.	Required Action and associated Completion Time of Condition A or B not met.	C.1 AND	Be in MODE 3.	6 hours
		C.2	Be in MODE 5.	84 hours
D.	One or two CRFC units inoperable.	D.1	Restore CRFC unit(s) to OPERABLE status.	7 days
E.	Required Action and associated Completion Time of Condition D not met.	E.1 AND	Be in MODE 3.	6 hours
		E.2	Be in MODE 5.	36 hours

TECHNICAL SPECIFICATION 3.8.1 AC-Sources-Modes 1, 2, 3 and 4

Op Test No.: N12-1 Scenario # 1 Event # 2 Page 18 of 56

Event Description: **Acrid order with no fire in 'A' CNMT Spray Pump Breaker**

Time	Pos.	Expected Actions/Behavior	Comments

3.8.1 AC Sources - MODES 1, 2, 3, and 4

LCO 3.8.1 The following AC electrical sources shall be OPERABLE:

a. One qualified independent offsite power circuit connected between the offsite transmission network and each of the onsite 480 V safeguards buses required by LCO 3.8.9, "Distribution Subsystems - MODES 1, 2, 3, and 4"; and

b. Two emergency diesel generators (DGs) capable of supplying their respective onsite 480 V safeguards buses required by LCO 3.8.9.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

- NOTE -

LCO 3.0.4.b is not applicable to DGs.

CONDITION		REQUIRED ACTION		COMPLETION TIME
A.	Offsite power to one or more 480 V safeguards bus(es) inoperable.	A.1	Declare required feature(s) inoperable when its redundant required feature(s) is inoperable.	12 hours from discovery of Condition A concurrent with inoperability of redundant required feature(s)
		AND		
		A.2	Restore offsite circuit to OPERABLE status.	72 hours
B.	One DG inoperable.	B.1	Perform SR 3.8.1.1 for the offsite circuit.	1 hour AND Once per 8 hours thereafter
		AND		

Op Test No.: N12-1 Scenario # 1 Event # 2 Page 19 of 56

Event Description: **Acrid order with no fire in 'A' CNMT Spray Pump Breaker**

Time	Pos.	Expected Actions/Behavior	Comments

AC Sources - MODES 1, 2, 3, and 4
3.8.1

CONDITION		REQUIRED ACTION		COMPLETION TIME
		B.2	Declare required feature(s) supported by the inoperable DG inoperable when its required redundant feature(s) is inoperable.	4 hours from discovery of Condition B concurrent with inoperability of redundant required feature(s)
		AND		
		B.3.1	Determine OPERABLE DG is not inoperable due to common cause failure.	24 hours
			OR	
		B.3.2	Perform SR 3.8.1.2 for OPERABLE DG.	24 hours
		AND		
		B.4	Restore DG to OPERABLE status.	7 days
C.	Offsite power to one or more 480 V safeguards bus(es) inoperable. AND One DG inoperable.		- NOTE - Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems - MODES 1, 2, 3, and 4," when Condition C is entered with no AC power source to one distribution train. -	
		C.1	Restore required offsite circuit to OPERABLE status.	12 hours
		OR		
		C.2	Restore DG to OPERABLE status.	12 hours

At the discretion of the Lead Examiner move to Event #3.

Op Test No.: N12-1 Scenario # 1 Event # 3 Page 20 of 56

Event Description: **Average-Tavg fails high**

After the field operator reports all conditions normal after the CBP start, the Average-Tavg signal will fail high, resulting in auto rod motion inward. The crew should respond per AR-F-15, RCS TAVG DEV and AP-RCC.1, Continuous Rod Withdrawal/Insertion.

Booth Operator Instructions: Trigger 3

Indications Available:
- F-15, RCS TAVG DEV

	HCO	Notes AR-F-15	
AR-F-15, RCS TAVG DEV			
	HCO	1. Place Rods in manual (Auto rod motion will be blocked).	**NOTE:** The HCO will place the Rods in MANUAL. May enter AP-RCC.1 directly.
		2. Check RCS Tavg channels and Tavg chart recorder.	**Note:** Determines no channel failed and AVG-Tavg failed
		3. IF a turbine runback is occurring, THEN go to AP-TURB.2.	**NOTE:** a turbine runback is NOT occurring.
		4. IF a Tavg channel has failed, THEN go to ER-INST.1.	**Note:** No channel failure and should not enter ER-INST.1 at this point.
		5. IF average Tavg has failed, THEN perform the following: a. Place steam dump mode selector to MANUAL. b. Place charging in MANUAL and control PRZR level at program.	**Note:** Places Steam dump mode selector switch to manual.
	CRS HCO	Directs HCO to take Steam Dump Mode select Switch to manual	**Note:** Will receive MCB alarm, G-15. Should discuss this as a expected alarm prior to taking to manual.
	CRS/ HCO	Directs taking charging to manual and assigns a PRZR level control band.	
	CRS	Enter ER-INST.1.	**Note**: N/A

Op Test No.: N12-1 Scenario # 1 Event # 3 Page 21 of 56

Event Description: **Average-Tavg fails high**

AP-RCC.1, Continuous Control Rod Withdrawal/Insertion			
	HCO	(Step 1) Evaluate Rod Control System Operability:	
		a. Check turbine load –STABLE.	
		b. Place Rods in manual.	
		c. Verify control rod motion stops.	
	CRS	Ensures valid indications are used to control Tavg and Tref.	
	HCO	(Step 2*) Monitor Tavg:	
		• Tavg-GREATER THAN 545 F °	
		• Tavg-LESS THAN 579 F °	
	HCO	(Step 3) Check Tavg-TRENDING to Tref	
	HCO	(Step 4) Check RCS Tavg Channel Indications"	
		o All 4 channels indicate approximately the same value	
		o All 4 channels are responding to the power change	
	CRS	(Step 4 RNO) IF any of the Tavg channel malfunction is indicated, THEN refer to ER-INST.1.	**Note:** No Tavg Channel failure and should not enter ER-INST.1
			Note: May refer to AP-RCS.1 indication of RCS leak.
At the discretion of the Lead Examiner move to Event #4			

Op Test No.: N12-1 Scenario # 1 Event # 4 Page 22 of 56

Event Description: **Dropped Rod**

After the actions of AR-F-15 are complete, Control Rod D-4 (Control Bank 'C') will drop. Crew should respond per AR-C-14, ROD BOTTOM, and AP-RCC.3, Dropped Rod Recovery. The CRS will address ITS 3.1.4 (Rod Group Alignment) and 3.2.4 (QPTR).

Booth Operator Instructions: Trigger 4

Indications Available:

- C-14, ROD BOTTOM
- Control Rod D-4 on MRPI screen, indicates dropped

	HCO	Acknowledges MCB alarm C-14	
	HCO/ BOP	Note change RCS pressures and temperatures	
	BOP	Notes turbine load status	
AR-C-14, Rod Bottom			
	HCO	(Step 4.1) If Reactor is critical, THEN PERFORM the following:	
		(Step 4.1.1) Verify Rod on the bottom	
		(Step 4.1.2) GO TO AP-RCC.3 Dropped Rod Recovery	
	CRS	Enters AP-RCC.3, Dropped Rod Recovery	
AP-RCC.3, Dropped Rod Recovery			
	HCO	(Step 1) Verify only one rod has dropped.	**Note:** Rod D-4 , Bank C dropped.
	HCO	(Step 2) Places rods in manual.	**Note:** Rods in manual per alarm response.

Op Test No.: N12-1 Scenario # 1 Event # 4 Page 23 of 56

Event Description: **Dropped Rod**

	CRS/ HCO	(Step 3*) Check Tavg - STABLE AT PROGRAM	**NOTE:** Tavg will be lowering due to the dropped rod.
	CRS/ HCO	(Step 3 RNO) If Tavg is low, THEN perform the following:	
	BOP	a. Place EH control in manual	**Note:** Coordinates with HCO. Informs RG&E ECC of changing output to grid.
	BOP	b. Manually lower turbine load to match Tavg and Tref	
	BOP	(Step 4) Verify Annunciator G-15, STEAM DUMP ARMED - EXTINGUISHED	
	BOP	(Step 4 RNO) IF steam dump required but not operating THEN perform the following	**Note**: Not required
	BOP	(Step 5) Check Main Generator Load – GREATER THAN 15 MW	
	HCO	(Step 6) Establish Stable Plant Conditions:	
		• Tavg – TRENDING TO TREF	**Note:** Match Tavg to Tref
		• PRZR pressure – TRENDING TO 2235 PSIG IN AUTO	
		• PZRZ level – TRENDING TO PROGRAM IN AUTO CONTROL	**Note**: Charging in manual and adjusting speed to restore PRZR level due to failed AVG-Tavg Failure.
	BOP	• MFW Regulating Valves – RESTORING S/G LEVEL TO 52% IN AUTO	.
	HCO/ CRS	(Step 7) Check QPTR – LESS THAN 1.02	**NOTE:** QPTR will be > 1.02 [~1.09 during validations]. Obtain from PPCS.

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Event Description: **Dropped Rod**

[redacted]			
	CRS	(Step 7 RNO) Refer to ITS section 3.2.4.	**NOTE:** The CRS will evaluate Technical Specifications.
ITS 3.2.4, QUADRANT POWER TILT RATIO (QPTR)			

Op Test No.: N12-1 Scenario # 1 Event # 4 Page 25 of 56

Event Description: **Dropped Rod**

3.2.4 QUADRANT POWER TILT RATIO (QPTR)

LCO 3.2.4 The QPTR shall be ≤ 1.02.

APPLICABILITY: MODE 1 with THERMAL POWER > 50% RTP.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. QPTR not within limit.	A.1	Reduce THERMAL POWER ≥ 3% from RTP for each 1% of QPTR > 1.00.	2 hours after each QPTR determination
	AND		
	A.2	Determine QPTR	Once per 12 hours
	AND		
	A.3	Perform SR 3.2.1.1, SR 3.2.1.2 and SR 3.2.2.1.	24 hours after achieving equilibrium conditions from a THERMAL POWER reduction per Required Action A.1 AND Once per 7 days thereafter
	AND		
	A.4	Reevaluate safety analyses and confirm results remain valid for the duration of operation under this condition.	Prior to increasing THERMAL POWER above the limit of Required Action A.1
	AND		

Op Test No.: N12-1 Scenario # 1 Event # 4 Page 26 of 56

Event Description: **Dropped Rod**

Time	Pos	Expected Actions/Behavior	Comments

QPTR
3.2.4

CONDITION	REQUIRED ACTION	COMPLETION TIME
	A.5 - NOTE - 1. Perform Required Action A.5 only after Required Action A.4 is completed. 2. Required Action A.6 shall be completed whenever Required Action A.5 is performed Normalize excore detectors to restore QPTR to within limit.	Prior to increasing THERMAL POWER above the limit of Required Action A.1
	AND A.6 - NOTE - Perform Required Action A.6 only after Required Action A.5 is completed. Perform SR 3.2.1.1, SR 3.2.1.2, and SR 3.2.2.1.	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
B. Required Action and associated Completion Time of Condition A not met.	B.1 Reduce THERMAL POWER to ≤ 50% RTP.	4 hours

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Event Description: **Dropped Rod**

	CRS	(Step 8) Evaluate Control Rod Operability:	
		• Verify MRPI indicates rod on bottom	
		• Direct I&C to locally investigate rod failure	**NOTE:** The CRS may notify the WCC/I&C. **Booth Instructor:** as **WCCS/I&C**, acknowledge.
		• Refer to **ER-RCC.1, RETRIEVAL OF A DROPPED RCC**	
	CRS	• Rod failure identified and corrected – DROPPED ROD REPAIRED	**NOTE:** The cause of the dropped rod is still being investigated.
	CRS	(Step 8d RNO) Perform the following:	
	CRS	(Step 8d.1 RNO) Consult Reactor Engineer and ITS section 3.1.4 for operational concerns.	**NOTE:** The CRS may notify the RE. **Booth Instructor:** as **RE**, acknowledge. **Note:** ITS 3.1.4 Rod Group Alignment Limits
	CRS	Will refer to ITS 3.4.1 due to AR-F-10, PRZR LO PRESS 2205 PSI earlier during the plant transient.	

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Event Description: **Dropped Rod**

Note: Per Lead Examiner direction, call from OPS Management and Reactor Engineer, directs the crew to perform a load reduction to less than 50% at 1%/min per AP-TURB.5, in anticipation of retrieving the dropped rod.			
AP-TURB.5 Rapid Load Reduction			
	CRS	Perform a load reduction brief per A-503.1	
	HCO	(Step 1) Initiate Load Reduction	
		a. Verify rods in AUTO	
	BOP	b. Reduce turbine load in Auto as follows:	
		• Place Turbine EH Control in OPER PAN., IMP PRESS IN, if desired.	
		• Select desired rate on thumbwheel	**Note:** 1%/min
		• Reduce the setter to the desired load	
		• Depress the GO button	
	HCO	c. Initiate boration at the rate determined in OPG-REACTIVITY-CALC	**Note:** Determines amount of boration required to reduce power to <50%, discussed at PJB.
		d. Place PRZR backup heaters switch to ON	
	HCO	(*Step 2) Monitor RCS Tavg	
		• Tavg – GREATER THAN 545°F	
		• Tavg – LESS THAN 579°F	

Op Test No.: N12-1 Scenario # 1 Event # 4 Page 29 of 56

Event Description: **Dropped Rod**

	HCO	(Step 3) Adjust Boric Acid Addition Rate As Necessary To (refer to OPG-REACTIVITY-CALC):	**Note:** Determines amount of boration required to reduce power to <50%, discussed at PJB.
		• Maintain rods above the insertion limit	Sets boric acid integrator to desired amount. (~125 gal) To set the BA COUNTER: • Push 'SEL' Button to move the number column to be adjusted. • Raise or Lower the column value by depressing the "+" or "-". • Depress the 'ENT' Button to enter (Lock-in) the selected amount to be added.
		• Match Tavg and Tref	
		• Compensate for Xenon	
	HCO	(*Step 4) Monitor PRZR Pressure – TRENDING TO 2235 PSIG IN AUTO	
	BOP	(*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	
	BOP	(Step 7) Check IA available to CNMT o IA pressure-GREATER THAN 60 PSIG o Instr Air to CNMT Isol Valve, AOV-5392-OPEN	

Op Test No.: N12-1 Scenario # 1 Event # 4 Page 30 of 56

Event Description: **Dropped Rod**

	BOP	(*Step 8) Check Steam Dump Status: o Annunciator G-15, STEAM DUMP ARMED-LIT o Steam dump operating properly in AUTO	
	BOP	(Step 9) Check Hotwell Level: o Hotwell level controller in AUTO o Controller demand LESS THAN 60% o Hotwell level at setpoint	
		(Step 9 RNO) If controller demand approaching 70% (Large Reject Valve Opens). THEN place controller in manual and control level	
	BOP	(Step 10) Check if Condensate Booster pumps can be secured:	
		a. Condensate booster pumps-2 PUMPS Running	
		b. Verify the following: • Trim valve controller set at 400 PSIG • Trim valve, AOV-9508G- GREATER THAN 80% open • PI-4017 greater than 410 PSIG	
		b. (RNO) Go to Step 18	
		c. Place the auto condensate booster pump to the trip position	
		d. Stop one condensate booster pump.	

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Event Description: **Dropped Rod**

ITS 3.4.1, RCS Pressure, Temperature, and Flow Departure from Nucleate Boiling (DNB) Limits

3.4 REACTOR COOLANT SYSTEMS (RCS)

3.4.1 RCS Pressure, Temperature, and Flow Departure from Nucleate Boiling (DNB) Limits

LCO 3.4.1 RCS DNB parameters for pressurizer pressure, RCS average temperature, and RCS total flow rate shall be within the limits specified in the COLR.

- NOTE -

Pressurizer pressure limit does not apply during pressure transients due to:

a. THERMAL POWER ramp > 5% RTP per minute; or

b. THERMAL POWER step > 10% RTP.

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
B.	Required Action and associated Completion Time not met.	B.1	Be in MODE 2.	6 hours

Op Test No.: N12-1 Scenario # 1 Event # 4 Page 32 of 56

Event Description: **Dropped Rod**

ITS 3.1.4, Rod Group Alignment Limits

3.1.4 Rod Group Alignment Limits

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.

APPLICABILITY: MODE 1,
MODE 2 with $K_{eff} \geq 1.0$.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more rod(s) untrippable.	A.1.1 Verify SDM is within the limits specified in the COLR.	1 hour
	OR	
	A.1.2 Initiate boration to restore SDM to within limit.	1 hour
	AND	
	A.2 Be in MODE 2 with K_{eff} < 1.0.	6 hours
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 ≤ 75% RTP.	2 hours
	AND	

At the discretion of the Lead Examiner during the down power, proceed to Event #5

Op Test No.:	N12-1	Scenario #	1	Event #	5	Page	33	of	56

Event Description: **'A' RCP trip and reactor trip with 3 rods not tripped**

When the crew has commenced the load reduction and the RO has commenced the boration, the 'A' RCP will trip.

The RCP trip results in a reactor trip and the crew will respond per E-0, Reactor Trip or Safety Injection. Both FRVs will fail to close due to the earlier Average-Tavg failure. Depending upon the timing of Immediate Action completion and the crew response to recognize/close the FRVs, the crew may remain in E-0 (SI due to excessive feed water cooling) or transition to ES-0.1, Reactor Trip Response. If the crew remains in E-0, the LOAAC event will occur when the HCO is directed to perform Att.27.0, Automatic Action Verification. If the crew successfully isolated MFW and transitioned to ES-0.1, the LOAAC event will occur at Step 4, after the crew has initiated emergency boration in response to the 3 control rods not inserted. In either path, transition to ECA-0.0, Loss of All AC Power will be required when the 'A' EDG failed to start following the loss of offsite power. TDAFW AFW Pump Steam Supply Valves MOV-3505A and MOV-3504A fail to automatically open.

Booth Operator Instructions: **Trigger 5**

Indications Available: Delta Panel alarms

	CRS	Directs HCO and CO to perform Immediate Actions of E-0	
	HCO/ BOP	Perform Immediate Actions	**Note:** 3 rods did not trip. **HCO** should inform CRS.
	CRS	Enters E-0	
E-0, REACTOR TRIP OR SAFETY INJECTION			
	CRS	Upon report from the HCO that immediate actions are completed, starts E-0.	

Op Test No.: N12-1	Scenario # 1	Event # 5	Page 34 of 56
Event Description:	**'A' RCP trip and reactor trip with 3 rods not tripped**		

	HCO	(Step 1) Verify Reactor Trip:	
		• At least one train of reactor trip breakers – OPEN	
		• Neutron flux – LOWERING	
		• MRPI indicates – ALL CONTROL AND SHUTDOWN RODS ON BOTTOM	**Note:** 3 rods did not trip. **HCO** should inform CRS.
	BOP	(Step 2) Verify Turbine Stop Valves - CLOSED	
	BOP	(Step 3) Verify Both trains of AC Emergency Buses	
		• Bus 14 and Bus 18	
		• Bus 16 and Bus 17	
	HCO/ BOP	(Step 4) Check if SI is Actuated:	
		a) Any SI Annunciator – LIT	**Note:** None are lit and HCO/CRS verify SI not required with step RNO.
Note: **Depending upon the timing of Immediate Action completion and the crew response to recognize/close the FRVs, the crew may remain in E-0 (SI due to excessive feed water cooling) or transition to ES-0.1, Reactor Trip Response.**			
			Note to Examiner: If SI, continue with E-0 on page 38.

Op Test No.: N12-1 Scenario # 1 Event # 5 Page 35 of 56

Event Description: **'A' RCP trip and reactor trip with 3 rods not tripped**

	HCO	(Step 4a RNO)	
		o PRZR pressure less than 1750 psig o Steamline pressure leass than 514 psig o CNMT pressure greater than 4 psig o SI sequencing started o Operator determines SI required	**Note:** SI not required.
	CRS	Transition to ES-0.1	**Note:** May request a peer check with STA/SM.
ES-0.1 Reactor Trip Response			
	CRS	Directs STA/SM to monitor Critical Safety Function Status Trees.	
	CRS	Reviews foldout pages with HCO/CO.	
	HCO	(Step 1*) Monitor RCS Tavg-STABLE AT OR TRENDING TO 547˚F.	**Note:** RCS temp is lowering due to AFW/FW
	BOP	(Step1 RNO) a. Stop dumping steam	
	BOP	b. Ensure S/G blowdown and sample valves are closed	
	BOP	c. Ensure reheater steam supply valves are closed.	
	BOP	d. IF MDAFW pumps are supplying greater than 200 gpm, THEN ensure TDAFW pump supply valves in PULL STOP	**Note:** CO pull stop steam supply valves
	BOP	e. If cooldown continues , THEN control total feed flow greater than 200 gpm until narrow range level greater than 5% in at least one S/G. WHEN S/G level h=greater than 5% in one S/G, THEN limit feed flow to that required to maintain S/G level.	**Note:** CO secures all AFW flow if >5%.

Op Test No.: N12-1 Scenario # 1 Event # 5 Page 36 of 56

Event Description: **'A' RCP trip and reactor trip with 3 rods not tripped**

	BOP	(Step1 RNO) f. IF cooldown continues below 540°F, THEN perform the following: 1)Close both MSIVs. 2) Adjust S/G ARV controller in auto to control temperature at 547°F.	
	HCO	(Step 2) Check PRZR Level control:	
		a. Verify charging pumps-ANY running	
		b. PRZR level-GREATER THAN 13%	
		c. Verify letdown-IN SERVICE	
		d. PRZR level-TRENDING TO 20%	
		e. Check PRZR heaters-ENERGIZED o PRZR proportional heaters o PRZR heater backup group	
	BOP	(STEP 3) Check S/G Feed Flow Status	
		a. Check RCS Tavg –LESS THAN 554°F	
		b. Verify MFW flow control valves-CLOSED o MFW regulating valves o MFW bypass valves	**Note:** CO/CRS may have shut them earlier on reactor trip.
		b. (RNO) Depress MANUAL pushbuttons for A and B MFW regulating valves and bypass valve controllers AND adjust to 0% demand	
		c. Verify total AFW flow-GREATER THAN 200 GPM	**Note:** Controlling AFW if greater than 5% in at least 1 S/G.
		d. Close MFW pump discharge valves o MOV-3977, A MFW pump o MOV-3976, B MFW pump	
		e. Stop MFW pumps and place in PULL STOP.	

Op Test No.: N12-1 Scenario # 1 Event # 5 Page 37 of 56

Event Description: **'A' RCP trip and reactor trip with 3 rods not tripped**

	BOP	f. WHEN both MFP pumps are stopped. Depress MANUAL pushbuttons for A and B MFW regulating valves and bypass valve controllers AND adjust to 0% demand	**Note:** CO/CRS may have shut them earlier on reactor trip.
	HCO	(Step 4) Verify MRPI Indicates –ALL CONTROL AND SHUTDOWN RODS ON BOTTOM	**Note:** 3 rods are untrippable.
		(STEP 4 RNO) IF two or more Control Rods are NOT fully inserted, THEN perform the following:	
		a. Start both BA Transfer Pumps.	
		b. Open Emergency Boration Valve MOV-350	
		c. Borate a minimum of 650 gallons for each control rod not fully inserted.	**Note:** 1950 gallons required. HCO and CRS should calculate time required at obtained flowrate. (~52 minutes)

Note:

If the crew successfully isolated MFW and transitioned to ES-0.1, the Loss of ALL AC event will occur at Step 4, after the crew has initiated emergency boration in response to the 3 control rods not inserted. In either path, transition to ECA-0.0, Loss of All AC Power will be required when the 'A' EDG failed to start following the loss of offsite power

Note to Examiner:

If Loss of ALL AC Power occurred during ES-0.1,

then go to ECA-0.0 on page 39

Op Test No.: N12-1 Scenario # 1 Event # 5 Page 38 of 56

Event Description: **'A' RCP trip and reactor trip with 3 rods not tripped**

E-0, REACTOR TRIP OR SAFETY INJECTION			
	HCO/ BOP	(Step 4) Check if SI is Actuated:	
		a) Any SI Annunciator – LIT	
		b) SI sequencing-BOTH TRAINS	
	CRS	Foldout pages given to MCB operators	
	HCO	(Step 5*) Verify CNMT Spray Not Required: o Annunciator A-27 , CNMT SPRAY-EXTINGUSHED o CNMT pressure-LESS THAN 28 PSIG	
	CRS	Direct HCO to perform ATT-27.0, ATTACHMENT AUTOMATIC ACTION VERIFICATION	
Note: If in E-0, initiate Loss of ALL AC Power			

Op Test No.: N12-1	Scenario # 1	Event # 6 and 7	Page 39 of 56
Event Description:	**Loss of ALL AC Power with TDAFW Steam Supply Valve Failure to AUTO Start**		

The Loss of ALL AC event will occur at Step 4 of ES-0.1, after the crew has initiated emergency boration in response to the 3 control rods not inserted OR at step 7 of E-0.

In either path, transition to ECA-0.0, Loss of All AC Power will be required when the 'A' EDG failed to start following the loss of offsite power.

Booth Operator Instructions: **Operate Trigger # 6, Event 7 entered at T=0**

Indications Available:

- Numerous MCB Alarms
- Loss of Bus 14 and Bus 16

ECA-0.0 Loss of ALL AC Power			
	HCO	(Step 1) Verify Reactor Trip:	**Note:** The crew will attempt to start A D/G.
		• At least one train of reactor trip breakers – OPEN	
		• Neutron flux – LOWERING	
		• MRPI indicates – ALL CONTROL AND SHUTDOWN RODS ON BOTTOM	**Note:** 3 rods are untrippable.
	BOP	(Step 2) Verify turbine Stop Valves - CLOSED	
	BOP	(*Step 3) Adjust S/G ARVs to Control Tavg at Approximately 547	
	HCO	(Step 4) Stop Both RCPs	**Note:** Tripped on LOPP.

Op Test No.: N12-1 Scenario # 1 Event # 6 and 7 Page 40 of 56

Event Description: **Loss of ALL AC Power with TDAFW Steam Supply Valve Failure to AUTO Start**

	HCO	(Step 5) Check If RCS Is Isolated:	
		• PRZR PORVs – CLOSED	
		• Verify RCS isolation valves closed:	
		• PRZR PORVs – CLOSED	
		• Verify RCS isolation valves closed:	
		• Place letdown orifice valve switches to CLOSE	
		• AOV-200A	
		• AOV-200B	
		• AOV-202	
		• Place letdown isolation valve switches to CLOSE	
		• AOV-371	
		• AOV-427	
		• Place excess letdown isolation valve switch to CLOSE (AOV-310)	
	BOP	(Step 6) Verify Adequate TDAFW Flow:	
		• Verify TDAFW pump - RUNNING	**NOTE:** Fails to Auto start
		• (Step 6a RNO) Perform the following:	**Note:** S/G water levels are high due to failure of FRV's to close on trip.
		• Verify governor valve, V-3652, latched.	
		• Manually or locally open at least one TDAFW pump steam supply valve.	
		• MOV-3505A	
		• MOV-3504A	

Op Test No.: N12-1 Scenario # 1 Event # 6 and 7 Page 41 of 56

Event Description: **Loss of ALL AC Power with TDAFW Steam Supply Valve Failure to AUTO Start**

ECA-0.0--B

Establish greater than 200 GPM AFW flow before both S/G levels decrease to < 120"wide range level [160" Adverse CNMT] .

Safety Significance: Failure to establish the minimum required AFW flow rate, under the postulated accident conditions, is a violation of the basic objective of ECA-0.0 and of the assumptions of the analyses upon which ECA-0.0 is based. Both intend to mitigate deterioration of RCS conditions while AC emergency power is not available. Without AFW flow, the S/Gs could not support any significant plant cooldown. Thus, the crew would lose the ability to delay the adverse consequences of core uncover. Also, without AFW flow, decay heat would still open the safety valves and would rapidly deplete the S/G inventory, leading to a loss of secondary heat sink or S/G dryout. Decay heat would then increase RCS temperature and pressure until the pressurizer PORVs open, imposing a larger LOCA than RCP seal leakage. Both of these examples violate the basic assumptions of the analyses on which ECA-0.0 is based, complicating the mitigation actions.

Required Plant Conditions:

1. A loss of all AC condition exists
2. Less than 200 GPM of AFW flow
3. The TDAFW pump is available, but must be manually started
4. S/G NR levels are less than 5%

Scenario Conditions:

1. A loss of all AC condition exists (no offsite power, 'B' EDG OOS, 'A' EDG fails)
2. Both MDAFW pumps have no power, TDAFW pump steam admission valves have not auto opened
3. Manual opening of TDAFW pump steam admission valves is available
4. Normal post-trip S/G level shrink in conjunction with no AFW availability will result in NR levels <5%.

Op Test No.: N12-1	Scenario # 1	Event # 6 and 7	Page 42 of 56
Event Description:	**Loss of ALL AC Power with TDAFW Steam Supply Valve Failure to AUTO Start**		

	BOP	• (Step 6 Continued) Verify TDAFW pump flow – GREATER THAN 200 GPM	
		• (Step 6 Continued) Verify TDAFW pump flow – GREATER THAN 200 GPM	
	HCO/ BOP	(Step 7) Try To Restore Power to any Train of AC Emergency Busses:	
		• Verify emergency D/G aligned for unit operation	
		• Mode switch in UNIT	
		• Voltage control selector in AUTO	
		• Check emergency D/Gs – BOTH D/G RUNNING	**NOTE:** Neither D/G is running.
		• (Step 7 RNO) WHEN non-running D/G available for starting, THEN perform the following:	**NOTE:** This step will be performed later when the B D/G is restored.
		IF no emergency D/G available, THEN perform the following:	
		• Direct AO to attempt to restore emergency D/G (Refer to ER-D/G.1, RESTORING D/G)	**NOTE:** The CRS will dispatch an AO. **SIM DRIVER:** as **AO**, acknowledge.
	CRS	• Go to Step 8.	
	HCO/ BOP	(Step 8) Establish the Following Equipment Alignment:	
		• Pull stop AC emergency bus loads	
		• RHR pumps	

Op Test No.: N12-1	Scenario # 1	Event # 6 and 7	Page 43 of 56
Event Description:	**Loss of ALL AC Power with TDAFW Steam Supply Valve Failure to AUTO Start**		

		• CNMT RECIRC fans	
		• CNMT spray pumps	
		• SI pumps	
		• CCW pumps	
		• Charging pumps	
		• MDAFW pumps	
		• CREATS Fans	
		• Evaluate non-vital loads (Refer to ATT-8.3, ATTACHMENT NONVITAL)	
			NOTE: The CRS will hand this off to the HCO or the CO. **Examiner** following operator performing ATT-8.3 continue below. **Examiners** following other operators continue on **next page.**
ATT-8.3, ATTACHMENT NONVITAL			
	HCO/ BOP	(Step 1) Lockout the following equipment from the control board by placing the respective switches in PULL STOP or OFF as necessary:	
		• EH pumps	
		• Turning gear oil pump	
		• Hi Press seal oil backup pump	
		• Condensate pumps	
		• RCDT pumps	
		• MFP AC oil pumps	
		• PRZR heaters	
		• Boric acid transfer pumps	

Op Test No.: N12-1 Scenario # 1 Event # 6 and 7 Page 44 of 56

Event Description: **Loss of ALL AC Power with TDAFW Steam Supply Valve Failure to AUTO Start**

		• RMW pumps	
		• AUX BLDG sump pumps	
		• Air compressors	
		• Containment sump pumps	
		(Step 2) Consideration should be given to locking out the following loads locally,	
ECA-0.0, LOSS OF ALL AC POWER			
			Examiner following operator NOT performing ATT-8.3 continue **HERE**
	HCO/ BOP	• (Step 8.Continued) Place non-running SW pump switches to STOP, then return to AUTO	
		• Momentarily place switch for MOV-313, RCP seal return isolation valve, to CLOSE	
		• Momentarily place to CLOSE switches for RCP CCW return valves	
		• MOV-749A	
		• MOV-749B	
		• MOV-759A	
		• MOV-759B	
	HCO/ BOP	(Step 9) Try To Restore Offsite Power:	
		• Consult RG&E Energy Control Center to determine if either normal offsite power supply - AVAILABLE	**NOTE:** The CO will notify the RG&E ECC. **SIM DRIVER:** as **RG&E ECC**, acknowledge, and report that offsite power is NOT readily available.
		• 12B transformer via breaker 76702	
		OR	

Op Test No.: N12-1 Scenario # 1 Event # 6 and 7 Page 45 of 56

Event Description: **Loss of ALL AC Power with TDAFW Steam Supply Valve Failure to AUTO Start**

		• 12A transformer via breaker 7T1352	
		• (Step 9a RNO) IF normal offsite power supply NOT readily available, THEN perform the following:	
		• Restore IA system using the Diesel Air Compressor (Refer to ATT-11.2, ATTACHMENT DIESEL AIR COMPRESSOR).	**SIM DRIVER:** Set REM MIS42, OPEN, to establish IA using diesel air compressor.
		• Evaluate Main transformer backfeed for long term concerns (Refer to ER-ELEC.3, EMERGENCY OFFSITE BACKFEED VIA MAIN & UNIT TRANSFORMER).	
		• Go to Step 10.	
	HCO/ BOP	(Step 10) Initiate Local Action to Isolate RCS And To Provide Cooling To Vital Areas And Equipment	
		• Open all Reactor Protection and Control System rack doors in the Control Room.	
	CRS	• Direct Security personnel to open the following vital area doors to enhance cooling:	**NOTE:** The CRS will contact Security. **SIM DRIVER:** as **Security**, acknowledge.
		• Control Room Door S51F	
		• Intermediate Bldg Door S37F (AFW pump area)	
		• Intermediate Bldg Door F36F (Automatic fire door, Rod Drive MG set area)	
		• Intermediate Bldg Door S44F (Steam Header area)	
		• Intermediate Bldg Top Floor Overhead Door S55	

Op Test No.: N12-1 Scenario # 1 Event # 6 and 7 Page 46 of 56

Event Description: **Loss of ALL AC Power with TDAFW Steam Supply Valve Failure to AUTO Start**

Time	Pos.	Applicant's Actions or Behavior	Comments
		[illegible]	
	CRS	• Dispatch AO To Locally Isolate RCP Seals (Refer to ATT-21.0, ATTACHMENT RCS ISOLATION)	[illegible]

Critical Task:

ECA-0.0--H

Isolate RCP seal injection before a charging pump is started and isolate RCP thermal barriers before a CCW pump is started.

Safety Significance: Failure to isolate RCP seal injection before starting a charging pump or the thermal barrier before starting a CCW pump, under the postulated conditions can result in unnecessary and avoidable degradation of the RCS fission product barrier – specifically at the point of the RCP seals, especially if the RCPs are subsequently started. Additionally, failure to perform the critical task results in "significant degradation in their mitigative capability of the plant" in that the RCPs are not available for subsequent recovery actions (except for the red-path condition on the Core Cooling CSF that persists despite secondary depressurization).

Required Plant Conditions:

1. Station Blackout with subsequent restoration of power to at least one AC emergency bus.
2. Blackout condition persists long enough for the crew to reach Step 8 of ECA-0.0, and RCP #1 seal outlet temperature is >235°F.

Op Test No.: N12-1 Scenario # 1 Event # 6 and 7 Page 47 of 56

Event Description: **Loss of ALL AC Power with TDAFW Steam Supply Valve Failure to AUTO Start**

		• Dispatch AO to align backup cooling water to TDAFW Pump (Refer to ATT-5.2, ATTACHMENT ALTERNATE COOLING TO TDAFW PUMP)	**NOTE:** The CRS will dispatch an AO. **SIM DRIVER:** as **AO**, acknowledge, and use REM FDW66, ON to establish backup cooling to TDAFW pump.
	BOP	(Step 11) Isolate Makeup And Reject From Hotwell To CST By Placing Hotwell Level Controller (LC-107) In Manual AT 50%	
	BOP	(Step 12) Isolate S/G:	
		• Manually close both MSIVs	
	BOP	• Depress MANUAL pushbuttons for the A and B S/G MFW regulating and bypass valve controllers AND adjust to 0% demand	
		• S/G A, HCV-466 and HCV-480	
		• S/G B, HCV-476 and HCV-481	
		• Place MCB master switch for S/G blowdown and sample valves to CLOSE	
	BOP	(Step 13) Check if S/G Secondary Side is intact:	
		o Pressure in both S/Gs –STABLE OR RISING	
		o Pressure in both S/Gs-GREATER THAN 110 PSIG	
	HCO	(Step 14) Control PRZR Level:	
		a. Charging pumps-ANY RUNNING	
		(a. RNO) Go to Step 15.	
	CRS	(Step 15) Check if S/G Tubes are intact:	

Op Test No.: N12-1 Scenario # 1 Event # 6 and 7 Page 48 of 56

Event Description: **Loss of ALL AC Power with TDAFW Steam Supply Valve Failure to AUTO Start**

		o Dispatch RP Tech or AO to locally check steamline radiation-NORMAL	
	BOP	(Step 16*) Monitor Intact S/G Levels:	
		a. Narrow range level- GREATER THAN 7% [25% adverse CNMT]	
		b. Control AFW flow by throttling flow control valves: • S/G A, AOV-4297 • S/G B, AOV-4298	
		c. Control AFW flow to maintain narror range level between 17% [25% adverse CNMT] and 50%.	
	BOP	(Step 17) Check DC Loads:	
		a. Place control witches foe MFW pump AC oil pumps to OFF (allows timer to stop DC oil pumps)	
		b. Stop all large non-essential DC loads. 1)Evaluate DC loads (Refere to ATT-8.0, ATTACHMENT DC LOADS) 2)WHEN turbine is stopped, THEN perform the following: a)Locally close Turbine backup seal oil reg outlet valve V-5475J. b) Pull Stop Turbine DC lube oil pump (within 1 hour)	
	CRS	c. Direct electricians to locally monitor DC power supply.	
ATT-8.0, ATTACHMENT DC LOADS.			
	BOP	A) The A and MFP DC oil pumps should be automatically shed with 12 minutes to reduce battery load	

Op Test No.: N12-1 Scenario # 1 Event # 6 and 7 Page 49 of 56

Event Description: **Loss of ALL AC Power with TDAFW Steam Supply Valve Failure to AUTO Start**

	BOP	B) The following DC loads could be shed from A and B DC busses, if necessary (obtain DC panel key from SS):	**Note:** BOP will direct AO's.
		MAIN DC DISTRIBUTION PANEL A (DCPDPCB03A) (A Battery room): o Rod drive MG set control panel, position 4 o Iso phase control, position 5 o Exciter equipment panel, position 6	
		MAIN DC DISTRIBUTION PANEL B (DCPDPCB03B) (B Battery room): o Rod drive MG set control panel, position 3	
		AUX BLDG DC DIST PANEL 1B (DCPDPAB01B) (south end bus 16 on column near SI pump recuirc valves): o Aux Bldg Heat & Vent cont panel, position 1	
ATT-8.0, ATTACHMENT DC LOADS (conti)			
		SCREENHOUSE DC DISTRIBUTION PANEL B (DCPDSH01B) (screenhouse near MCC G): o Traveling screen control, position 1	
		TURB BLDG DC DISTRIBUTION PANEL B (DCPDTB01B) (TURB BLDG basement near fire water storage tank): o Hydrogen panel, position 3)after degasification) o MCC F, position 5 o Water treatment panel, position 6	
ECA-0.0, LOSS OF ALL AC POWER			
	HCO	(Step 18) Verify Source Range Detectors-ENERGIZED	
		• N-31 • N-32	

Op Test No.: N12-1 Scenario # 1 Event # 6 and 7 Page 50 of 56

Event Description: **Loss of ALL AC Power with TDAFW Steam Supply Valve Failure to AUTO Start**

Time	Pos.	Expected Actions/Behavior	Comments
	CRS	(Step 18 RNO) Dispatch personnel with relay rack key to turn off 125 VDC power switches in REACTOR PROTECTION racks RLTR-1 and RLTR-2 to deenergize source range block relays.	**Note:** AO or STA performs task. **SIM DRIVER:** REM NIS 097, [Switch Off].
	BOP	(Step 19) Monitor CST level-GREATER THAN 5 FEET	
	BOP	(Step 20) Initiate Depressurization of intact S/Gs to 260 PSIG:	
		a. Check S/G narrow range levels-GREATER THAN 17% [25%adverse CNMT] IN AT LEAST ONE S/G	
		b. Manually dump steam from intact S/Gs using S/G ARVs to maintain cooldown rate in RCS Cold Legs LESS THAN 100°F.he.	**Note**: Opens ARVs and controls cooldown rates.

Note:

At Step 20 of ECA-0.0 (after depressurization of S/Gs and RCS cooldown has been initiated), the AO will report the 'A' EDG is now available for start. The crew should manually start the 'A' EDG from the main control board and start 1 SW pump per step 7.

	HCO/ BOP	• (Step 7.b RNO) WHEN non-running D/G available for starting, THEN perform the following:	**SIM DRIVER: Delete MALF GEN04A**.
		• Depress D/G FIELD RESET pushbutton	
		• Depress D/G RESET pushbutton	
		• Start D/G	
		• IF D/G starts, THEN go to Step 7c.	**NOTE:** The A D/G will start.
	HCO/ BOP	• (Step 7c) Check D/G voltage and frequency	

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Event Description: **Loss of ALL AC Power with TDAFW Steam Supply Valve Failure to AUTO Start**

		• Voltage APPROXIMATELY 480v	
		• Frequency – APPROXIMATELY 60 Hz	
		• Verify adequate D/G cooling	
		• Bus 17 and/or Bus 18 – ENERGIZED	
		• One SW Pump running for each running D/G	**NOTE:** The A SW Pump will fail to start automatically, and the CO will need to start the A SW Pump manually.
		• (Step 7.d.RNO) Manually energize busses and start SW Pumps.	
		IF adequate cooling can NOT be supplied to a running D/G	**NOTE:** Once the A SW Pump is started, adequate cooling for the D/G will exist.
	BOP	• (Step 7.e) Verify at least one train of AC emergency busses - ENERGIZED	
		• Bus 14 and Bus 18	
		• Bus 16 and Bus 17	
		(Step 7e RNO) Manually energize AC Emergency busses	

Op Test No.: N12-1	Scenario # 1	Event # 6 and 7	Page 52 of 56
Event Description:	**Loss of ALL AC Power with TDAFW Steam Supply Valve Failure to AUTO Start**		

ECA-0.0--F

Manually start the SW pump such that the EDG does not fail because of damage caused by engine overheating.

Safety Significance: Failure to manually start the SW pump under the postulated plant conditions means that the EDG is running without SW cooling. Running without SW cooling leads to a high-temperature condition that can result in EDG failure due to damage caused by engine overheating. Under the postulated plant conditions, the running EDG is the only operable EDG. Thus, failure to perform the critical task constitutes "mis-operation or incorrect crew performance that leads to degraded emergency power capacity."

Required Plant Conditions:

5. Loss of all AC initial condition with subsequent restoration of AC power from one EDG.
6. SW pump(s) fail to start automatically when the associated emergency bus is re-energized by the EDG.
7. A SW pump aligned to provide cooling for the running EDG can be manually started from the MCR.
8. The other EDG is inoperable.

Scenario Conditions:

5. AC power will be restored by 'A' EDG.
6. Auto start of 'A' and 'C' SWPs is failed.
7. Start of either 'A' or 'C' SW pump will provide cooling for the 'A' EDG

'B' EDG is OOS

Note: Once AC Emergency busses are energized, CRS should go directly to Step 28.			
	BOP	(Step 28) Manually Control S/G ARVs To Stabilize S/G Pressures	
	BOP	(Step 29) Verify SW System Operation:	
		• Check Bus 17 and Bus 18 – AT LEAST ONE ENERGIZED	

Op Test No.: N12-1	Scenario # 1	Event # 6 and 7	Page 53 of 56
Event Description:	**Loss of ALL AC Power with TDAFW Steam Supply Valve Failure to AUTO Start**		

		• Verify two SW pumps – RUNNING	**NOTE:** The A & C SW pumps have failed to Auto start
		(Step 29b RNO) IF normal power available, THEN establish to SW pumps running.	
		IF normal power NOT available, THEN establish one SW pump running for each operating D/G.	
		IF only one SW pump running, THEN perform the following: 1. Manually perform SW isolation 2. Refer to AP-SW.2, Loss of Service Water	
	BOP	(Step 30) Verify Following Equipment Loaded On Available AC Emergency Busses:	
		• 480 volt MCCs - ENERGIZED	
		• MCC D from Bus 16	
		• Verify Instrument busses - ENERGIZED	
		• Bus A from MCC C	
		• Bus B from MCC C	
		• Bus C from MCC D	
		• Dispatch personnel to verify proper operation of battery chargers	**NOTE:** The CRS will dispatch an AO. **SIM DRIVER:** as **AO**, acknowledge.
	HCO	(Step 31) Select Recovery Procedure:	
		• Check RCS subcooling based on core exit T/Cs – GREATER THAN 0°F USING FIG-1.0, FIGURE MIN SUBCOOLING	
		• Check PRZR level – GREATER THAN 10% [30% adverse CNMT]	

Op Test No.: N12-1 Scenario # 1 Event # 6 and 7 Page 54 of 56

Event Description: **Loss of ALL AC Power with TDAFW Steam Supply Valve Failure to AUTO Start**

		• Check SI and RHR Pumps – NONE RUNNING	
	CRS	• Go to ECA-0.2, LOSS OF ALL AC POWER RECOVERY WITHOUT SI REQUIRED, Step 1.	**NOTE:** The CRS should go to ECA-0.2.

Crew Turnover Sheet for 2012 NRC Scenario #1

UNIT STATUS:

Power Level: 75% RCS [B] 1075 ppm BAST [B]: 14000 ppm

Power History: The Plant is at 70% power (MOL), for four days. Core Burnup: 10000 MWD/MTU

INFORMATION NEEDED TO ASSUME TO SHIFT:

- The plant is at 75% power (MOL).
- The plant power was reduced to 50% several days ago due to a malfunction on the B Main Feedwater Pump.
- Corrective maintenance was performed, and the plant is returning to full power per O-5.2, Load Ascension, Step 6.2.32, Placing Condensate Booster Pumps In Service.
- Per Chemistry direction, Normal Letdown is at 40 gpm.

The following equipment is Out-Of-Service:

- The 'B' EDG has been OOS due to mechanical issue which prevents resetting of the fuel racks. This was found yesterday at 0800. Expected return to service is tomorrow. A-52.4 submitted for ITS 3.8.1.B, 7 Day Action. SR-3.8.1.1 and 3.8.1.2 completed successfully; SR-3.8.1.1 due again in 6 hrs. Continue load ascension.

The crew has been directed to continue in O-5.2, step 6.2.32 and start Condensate Booster Pumps.

A-52.4

Equipment	***Date***	Time	Reason	Required Actions	Required Completion Date/Time	Required Action not met
B EDG	_/_/12	0800	Fuel racks will not reset	ITS 3.8.1 Enter Condition B Required Action: B.1: Perform SR 3.8.11 for the offsite circuit.-Perform every 8 hours, [Due in 6 hours] **AND** B.2. Declare required feature(s) supported by the inoperable DG inoperable when its required redundant feature(s) is inoperable. **AND** B.3.1 Determine OPERABLE DG is not inoperable due to common cause failure. **OR** B.3.2 Perform SR 3.8.1.2 for OPERABLE DG. **AND** B.4 Restore DG to OPERABLE status. [7 days]	0800 yesterday.	ITS 3.8.1 Enter Condition G Required Action C.1: Be in Mode 3 in 6 hours AND Required Action C.2: Be in Mode 5 in 84 hours

PROGRAM: Ginna Operations Training

MODULE: 2012 Initial License Operator Training

TOPIC: NRC Simulator Exam

Scenario N12-2

REFERENCES:

1. O-1.2, Plant Startup From Hot Shutdown to Full Load
2. AR-F-15, RCS TAVG DEV 4° F, or
3. AR-F-16, TAVG-TREF DEVIATION ± 5°F
4. ER-INST.1, Reactor Protection Bistable Defeat After Instrumentation Loop Failure
5. Tech Spec LCO 3.3.1, Reactor Trip System (RTS) Instrumentation
6. Tech Spec LCO 3.3.2, ESFAS Instrumentation
7. T-14F.1, S/G Blowdown System Operation
8. OPG-BRIEF, Operations Briefing Guidance

9. AR-RMS-17, R-17 Component Cooling
10. AP-RCP.1, RCP Seal Malfunction
11. AP-CCW.1, Leakage Into the Component Cooling Loop

12. E-0, Reactor Trip and Safety Injection
13. ATT-27.0, Automatic Action Verification
14. ATT-3.0, Attachment CI/CVI
15. E-1, Loss of Reactor or Secondary Coolant
16. ECA-1.2, LOCA Outside Containment

Author: Norm Meaker, Exam Writer Contractor

Facility Review: Pat Landers, Lead Exam Author

Scenario Event Description
2012 NRC Scenario 2

Facility:	**Robert E. Ginna**	Scenario No.:	**2**	Op Test No.:	**2012-N-1**
Examiners:		Operators:			(SRO)
					(RO)
					(BOP)

Initial Conditions:	The plant is at ~2% power (BOL). Plant startup is in progress per O-1.2, Plant Startup From Hot Shutdown To Full Load. The team is currently at step 6.7 (page 39). The "A" Main Feed Pump has just been placed in-service. Based upon the current plant risk assessment, the crew is waiting for completion of B EDG repair before entering Mode 1.
Turnover:	The following equipment is Out-Of-Service: B EDG has been OOS due repairs on the governor. Expected return to service is 1 hour. A-52.4 submitted for ITS 3.8.1.B, 7 Day Action. SR-3.8.1.1 was completed successfully 1 hour ago; all other EDG surveillances are current. Until B EDG is returned to service, hold power and do not go above 5 % Reactor Power till notified.

Event No.	Malf. No.	Event Type*	Event Description
1	FDW14C (0)	N-BOP N (TS)-SRO	Transition from AFW to MFW per O-1.2 steps 6.7.1 through 6.7.5. MD AFW Pump 1B Discharge VLV (MOV-4008) will not re-open during the realignment.
2	RCS11F (650)	I-RO I-BOP I(TS)-SRO	Th RTD (Channel 4) fails high
3	RCS01B (5 ramp for 120 sec)	C-RO C-SRO	"B" RCP Thermal Barrier leak
4	SIS01 EDS1A EDS1B RCS19C (1500) OVR-D.O.-FCP01BQ, [on, 30 delay]	M-BOP M-RO M-SRO	Spurious SI ("A" Train), Concurrent w/LOOP and LOCA Outside CNMT Fire alarms in Aux Bldg Basement RHR pump area
5	RPS05A RPS05B (man avail)	C-RO C-SRO	Reactor Trip Breakers fail to open automatically (manual available)
6	GEN08 (A DG)	C-RO C-SRO	"A" DG fails to start automatically (manual start available)
7	RPS11-A-2 (Isolation signal only)	C-RO C-SRO	AOV-371 (L/D Isolation to NRHX) fails to close automatically

8	RPS07K	C-BOP C-SRO	"A" MDAFW Pump fails to start automatically

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Overview of Scenario # 2

The plant is at ~2% power (BOL). Plant startup is in progress per O-1.2, Plant Startup from Hot Shutdown to Full Load. The team is currently at step 6.7 (page 39). The "A" Main Feed Pump has just been placed in-service. The plant is in a normal 50/50 electric plant lineup. Per Chemistry direction, the 60 gpm letdown orifice is in service.

The following equipment is Out-Of-Service: B EDG is out of service B EDG has been OOS due to mechanical linkage issue with the governor. ITS entry for 3.8.1.B, a 7-day LCO, has been entered, and all required surveillances are current. Work is in progress and expected return to service is 1 hour. A-52.4 submitted for ITS 3.8.1.B, 7 Day Action. SR-3.8.1.1 (offsite power availability and breaker alignment) was completed 1 hour ago. Until B EDG is returned to service, hold power and do not go above 5 % Reactor Power till notified.

After taking the watch, the team will transition from Auxiliary Feed Water (AFW) to Main Feed Water (MFW) per O-1.2 steps 6.7.1 through 6.7.5. This will involve the BOP verifying operation of the Feed Regulating Valves (FRVs) and the FRV Bypass valves, placing the FRV Bypass Valves in Auto, securing the AFW pumps, and placing the AFW pumps in safeguards alignment. During this normal alignment, AFW discharge valve on 'B' MDAFW pump will not reopen, rendering AFW Train B inoperable and entry into ITS 3.7.5, Action B.1, with a 7-day completion time.

Next a channel four Thot RTD will fail high. The team will respond per:

- AR-F-15, RCS Tavg Dev 4°F
- AR-F-16, Avg Tavg – Tref Dev +/- 5 °F
- AR-F-24, RCS AVG ΔT DEV 3°F

ER-INST.1, Reactor Protection Bistable Defeat After Instrumentation Loop Failure.
The RO will transfer the charging pump that is in automatic to manual and manually adjust its speed to control Pressurizer (PRZR) level. The BOP will defeat the failed channel per ER-INST.1. The SRO will refer to ITS 3.1.6, the COLR, and ITS 3.3.1 and 3.3.2

Next, a thermal barrier leak will occur on the "B" RCP. The team will respond per:

- AR-B-10, RCP 1B LABYR SEAL LO DIFF PRESS 15" H2O, or
- F-14, CHARGING PUMP SPEED, or
- A-5, CCW SURGE TANK HI LEVEL 58.8%

The crew may first enter AP-RCP.1, RCP SEAL MALFUNCTION, due to the AR procedural direction, but will end up in AP-CCW.1, LEAKAGE INTO THE CCW LOOP due to multiple indications of RCS in-leakage into the CCW system. Per AP-CCW.1, the RO will isolate the leak by closing AOV-754B. *Note that later in the scenario, when SI occurs, instrument air to containment will be isolated and AOV-754B will fail open.* The CCW leak will be re-isolated when the team restores Instrument Air to containment per EOP direction. (Due to electrical power availability, power will not be available to close MOV-749B and MOV-759B – the alternate isolation method.)

Next, a spurious "A" train SI signal will occur. At the same time there will be a loss of offsite power, the "A" DG will fail to start automatically, and a LOCA outside containment will be initiated. The team will respond per E-0, Reactor Trip or Safety Injection. At immediate action step 1, the RO will recognize that the reactor failed to trip automatically and will trip the reactor manually. At immediate action step 3 the BOP will inform the team of the status of Safeguard busses (no safeguard busses energized), and the RO will depress the "A" DG start pushbutton

(front left section of the MCB) which will restore the "A" train of safeguard buses (busses 14 and 18). When the RO performs Attachment 27.0, Attachment Automatic Action Verification, (step 6 of E-0) he will discover that AOV-371, L/D Isolation to NRHX and MOV-814, CCW From RX SUPP CLRS (loss of power), failed to isolate automatically. With the concurrent LOCA outside CNMT, the RHR-to-L/D flowpath established by AOV-371 will provide an additional pathway for RCS activity from RHR into the L/D system through the open AOV-371, thru PCV-135 (which will open further to reduce L/D system pressure), and lift L/D relief valve 209 (setpoint 200 psig) to the VCT. Closing AOV-371 manually per the guidance in ATT-27.0 will isolate this flowpath. Attachment-3.0 will be used to isolate MOV-814. At step 7 of E-0, no MDAFW pumps will be running. The BOP will manually start the "A" MDAFW pump and align the TDAFW pump as necessary.

The LOCA outside containment will be due to failure of check valve 853A. When the SI occurs RCS will flow backwards through MOV-852A (Core Deluge Valve) and cause an RHR system piping break inside the Auxiliary building (RHR system piping is designed for a maximum of 600 psi – not RCS pressure). RCS will also flow from the RHR system to the CVCS system (via a check valve around HCV-133), lift relief valve 203, and flow to the PRT. Within a few minutes (depending on the size of the RHR piping break) the PRT rupture disc will blow and cause a LOCA inside containment. Because of this, the team is expected to transition to E-1, Loss of Reactor or Secondary Coolant, at E-0 step 17, rather than transitioning to ECA-1.2, LOCA Outside Containment, at E-0 step 26. (Transition from E-0 step 26 is possible depending on break size and how fast the team progresses through E-0, but is unlikely.)

Instrument air to containment will be re-established at step 9 of E-1. This will re-isolate the CCW system leak. (Unable to close MOV-749B and 759B due to bus 16 de-energized.) The team will transition to ECA-1.2 at E-1 step 17.

At ECA-1.2 step 3 the RO will close MOV-852A and the team will check for an RCS pressure rise. With the leakpath isolated, RCS pressure will rise, indicating isolation of the LOCA outside containment. (The pressure rise may be delayed or slow depending on RCS inventory. If a sizable bubble exists in the reactor vessel head, injection flow has to refill the head to some extent before RCS pressure will rise significantly. The team should realize this.)

Terminate the scenario upon transition back to E-1.

Additional Information:

When the Aux Bldg sump reaches 15,000 gallons the RHR pumps, Aux Bldg sump pumps, and RCDT pumps will fail due to submergence (2 to 4 minute time delay after submergence).

Critical Tasks:

E-0--C

Energize at least one emergency bus before transition out of E-0.

Safety Significance:

Failure to re-energize an emergency train leads to degraded emergency power capacity, needless degradation of a fission release barrier (RCS through RCP Seals), and results in a continuing loss of RCS inventory.

Required Plant Conditions:

1. Reactor trip.
2. No emergency bus energized.
3. At least one EDG can be connected to an emergency bus.

Scenario Conditions:

1. Spurious SI will require reactor trip.
2. Offsite power is lost, "B" DG is OOS, and "A" DG fails to start automatically.
3. "A" DG can be started manually.

ECA-1.2--A

Isolate LOCA outside containment prior to transition out of ECA-1.2.

Safety Significance:
Failure to isolate this leak degrades containment integrity resulting in continuing radioactive release.

Required Plant Conditions:

1. Isolable LOCA outside containment.

Scenario Conditions:

1. The LOCA outside containment may be isolated by closing MOV-852A.

SIMULATOR DRIVER INSTRUCTIONS

	Bench Mark	ACTIVITY	DESCRIPTION
☐		**Reset to IC-41** (Temp I/C-NRC-)	**~2% power BOL** **Note: If only a IC-41 IC available, must start A MFP and stabilize main condenser vacuum. Simulator support can generate an IC with secondary plant stable. IC should have controlling S/G water levels using A and B MDAFW pump bypass valves, V-4480 and V-4481 (MOV-4007 and MOV-4008 closed).** **Ensure:** • **EHC valve limiter set 10% higher than setter.** • **Ensure 60 GPM orifice is on service** **At T=0, insert:** • **MALF FDW14C, [0],** AFW Feed Control Valves Failure: 4008 • **MALF RPS05A, [Manual Available],** Reactor Trip BKR A Failure • **MALF RPS05B, [Manual Available],** Reactor Trip BKR B Failure • **MALF GEN08, [A D/G],** Diesel Generator Auto Start Failure • **MALF RPS11-A2, [Isolation signal Only],** CI Failure –AOV-371 • **MALF RPS07K,** Auto Failure: A MDAFW Pump **To take 'B' EDG OOS:** ▪ **Pull stop the 'B' EDG Control Stop/Start Switch and place CAUTION tag on switch** ▪ **Pull stop the D/G'B' Bus 16 Supply Breaker and place CAUTION tag on switch** ▪ **Pull stop the D/G'B' Bus 17 Supply Breaker and place CAUTION tag on switch** ▪ **Place CAUTION tag on D/G 'B' start pushbutton** ▪ **Place PROTECT tags per OPG-Protected Equipment and black dot J-32.** **Insert the following:** • **MALF RCS11F [650], on T-2** (RTD FAILURE : LP B HOT TE-404A (TT-404) • **MALF RCS01B [5 gpm ramp 120sec], on T-3** (B RCP Thermal Barrier Leak) • **MALF SIS01, [Train A],on T-4** (Spurious SI 'A' Train) • **MALF EDS1A, on T-4,** (Loss of Off-Site Power : CKT 7T) • **MALF EDS1B, on T-4,** (Loss of Off-Site Power : CKT 767) • **MALF RCS19C, [1900], on T-4** (RHR Header Leak, Valve 853A)

Scenario Event Description
2012 NRC Scenario 2

	Bench Mark	ACTIVITY	DESCRIPTION
☐	Prior to Crew Briefing	**RUN**	• **Hang Protective Tags per OPG-Protected Equipment** • **Place Black Dot on MCB Annunciator J-32**
☐	**Crew Briefing** • 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-1.2, marked up to section 6.7.		
☐	T-0	Begin Familiarization Period	
☐	At direction of examiner	**Event 1**	Shift from AFW to MFP per O-1.2, section 6.7
☐	At direction of examiner	**Event 2** **Trigger#2** **MALF RCS11F [650], on T-2**	RTD Thot failure
☐	At direction of examiner	**Event 3** **Trigger#3** **MALF RCS01B [5 gpm ramp for 120 sec]**	B RCP Thermal Barrier Leak
☐	At direction of examiner	**Event 4** **MALF SIS01, [Train A]** **MALF EDS1A** **MALF EDS1B** **MALF RCS19C, [1900]**	Spurious SI ("A" Train), Concurrent w/LOOP and LOCA Outside CNMT Loss of Off-Site Power : CKT 7T Loss of Off-Site Power : CKT 767 RHR Header Leak, Valve 853A

	Bench Mark	ACTIVITY	DESCRIPTION
☐	At direction of examiner	**Event 5** **MALF RPS05A, [Manual Available]** **MALF RPS05B, [Manual Available]**	Reactor Trip Breakers fail to open automatically (manual available) **NOTE: This Malfunction is inserted in the IC at T = 0.**
☐	Continued from Event 5	**Event 6** **MALF GEN08, [A D/G]**	"A" DG fails to start automatically (manual start available) **NOTE: This Malfunction is inserted in the IC at T = 0.**
☐	Continued from Event 5	**Event 7** **MALF RPS11-A2, [Isolation Signal Only]**	AOV-371 (L/D Isolation to NRHX) fails to close automatically **NOTE: This Malfunction is inserted in the IC at T = 0.**
☐	Continued from Event 5	**Event 8** **MALF RPS07K**	"A" MDAFW Pump fails to start automatically **NOTE: This Malfunction is inserted in the IC at T = 0.**
☐	**Terminate the scenario upon direction of Lead Examiner**		

Op Test No.: N12-1	Scenario # 2	Event # 1	Page 10 of 55
Event Description:	**Shifting from AFW to MFW during startup per O-1.2**		

After taking the watch, the team will transition from Auxiliary Feed Water (AFW) to Main Feed Water (MFW) per O-1.2 steps 6.7.1 through 6.7.5. This will involve the BOP verifying operation of the Feed Regulating Valves (FRVs) and the FRV Bypass valves, placing the FRV Bypass Valves in Auto, securing the AFW pumps, and placing the AFW pumps in safeguards alignment. During this normal alignment, AFW discharge valve on 'B' MDAFW pump will not reopen, rendering AFW Train B inoperable and entry into ITS 3.7.5, Action B.1, with a 7-day completion time.

Booth Operator Instructions:	**NOTE: This Malfunction is inserted in the IC at T = 0**
Indications Available:	**NA**

Time	Pos.	Expected Actions/Behavior	Comments
O-1.2, PLANT STARTUP FROM HOT SHUTDOWN TO FULL LOAD			
	CRS	Reviews note at step 6.7.1 and G-22, ADFCS System Trouble may actuate.	
AR-G-22, ADFCS SYSTEM TROUBLE			

AR-G-22	Rev 01100
ADFCS SYSTEM TROUBLE	Page 1 of 3
Approval Authority-Manager - Operations	Continuous Use/Safety Related

1.0 ALARM SETPOINTS

- Numerous alarms generated by ADFCS (check printer or EMMI monitor))

2.0 SOURCE(S)

- ADFCS

3.0 AUTOMATIC ACTIONS

3.1. None

4.0 PERFORMANCE

4.1. **CHECK** ADFACS EMMI monitor (Relay Room) for the cause of the failure by performing the following:

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Event Description: **Shifting from AFW to MFW during startup per O-1.2**

Time	Pos.	Expected Actions/Behavior	Comments
	BOP	(Step 6.7.1) **VERIFY** operation of MFW regulating **AND** bypass valves by cycling each of the following valves **SLOWLY OPEN UNTIL** flow indication is observed **AND THEN** returning the valve to CLOSED:	
		• S/G A FW REG VLV, HCV-466	
		• S/G B FW REG VLV, HCV-476	
		• FW FLOW LOOP A BYPASS VLV, HCV-480	
		• FW FLOW LOOP B BYPASS VLV, HCV-481	
	BOP	(Step 6.7.2) **ALIGN** Feedwater Control as follows:	
		1. **PLACE** FW FLOW LOOP A BYPASS VLV, HCV-480 controller in AUTO.	
		2. **PLACE** FW FLOW LOOP B BYPASS VLV, HCV-481 controller in AUTO.	
		3. **IF** desired, **THEN PLACE** S/G A FW REG VLV, HCV-466, controller in AUTO. **OTHERWISE, MARK** this Step N/A.	**Note**: BOP will ask CRS.
		4. **IF** desired, **THEN PLACE** S/G B FW REG VLV, HCV-476, controller in AUTO. **OTHERWISE, MARK** this Step N/A.	

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Event Description: **Shifting from AFW to MFW during startup per O-1.2**

Time	Pos.	Expected Actions/Behavior	Comments
	BOP	(Step 6.7.3) **REMOVE** running AFW Pumps from service as follows:	**Note**: Both AFW pumps are running
		1. **IF** AFW Pump A is RUNNING, **THEN PERFORM** the following: **OTHERWISE, MARK** this Step N/A.	
		a. **CLOSE** MD AFW PUMP 1A DISCHARGE VLV, MOV-4007	
		b. **CLOSE** AFW BYPASS VLV A, AOV-4480	
		c. **STOP** AUXILIARY FEEDWATER PUMP A	
		d. **ENSURE** AUXILIARY FEEDWATER PUMP A,control switch is in AUTO	
	BOP	(Step 6.7.3) **REMOVE** running AFW Pumps from service as follows:	
		2. **IF** AFW Pump B is RUNNING, **THEN PERFORM** the following: **OTHERWISE, MARK** this Step N/A.	
		a. **CLOSE** MD AFW PUMP 1B DISCHARGE VLV, MOV-4008	
		b. **CLOSE** AFW BYPASS VLV A, AOV-4481	
		c. **STOP** AUXILIARY FEEDWATER PUMP B	
		d. **ENSURE** AUXILIARY FEEDWATER PUMP B,control switch is in AUTO	
	BOP	(Step 6.7.4) **IF** Blowdown is desired, **THEN THROTTLE OPEN** Blowdown Flow Control valves to desired flow rate **PER** applicable sections of T-14F.1, S/G Blowdown System Operation. **OTHERWISE, MARK** this Step N/A.	**Note:** Not desired. **SIM DRIVER:** If CRS ask Chem Tech, Blowdown permit being currently being generated by Chemistry and then will inform Control when completed.

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Event Description: **Shifting from AFW to MFW during startup per O-1.2**

Time	Pos.	Expected Actions/Behavior	Comments
	BOP	(Step 6.7.5) **PERFORM** the following to place Auxiliary Feedwater in safeguards alignment:	
		1. **ENSURE CLOSED** both AFW cross-connect valves: • AFW CROSSOVER VLV, MOV-4000A • AFW CROSSOVER VLV, MOV-4000B	
		2. **ENSURE OPEN** the following Auxiliary Feedwater Pump Discharge valves: • TURB DRVN AFW PUMP DISCHARGE VLV, MOV-3996 • MD AFW PUMP 1A DISCHARGE VLV, MOV-4007 • MD AFW PUMP 1B DISCHARGE VLV, MOV-4008	**Note:** MOV-4008 will not open. BOP should inform CRS. **Note:** CRS may dispatch Primary AO to look at breaker for MOV-4008. **Note:** Taking out MOV-4007 would complicate <u>both</u> trains out with 'B' EDG OOS (72 hr LCO now)
		3. **OPEN** both Turbine Driven Auxiliary Feedwater Pump flow control valves: • AFW TO S/G 1A CONTROL VLV, AOV-4297 • AFW TO S/G 1B CONTROL VLV, AOV-4298	**Note:** Valves currently open.
	CRS	Should refer to ITS requirement, Aux Feedwater System, 3.7.5. and have BOP continue with O-1.2.	
	BOP	(Step 6.7.5) 4. **PLACE** both AFW Bypass Pump switches to NORM: • AFW BYPASS PUMP 1A • AFW BYPASS PUMP 1B	

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Event Description: **Shifting from AFW to MFW during startup per O-1.2**

Time	Pos.	Expected Actions/Behavior	Comments
	BOP	5. **VERIFY CLOSED** MD AFW PUMP 1A RECIRC VLV, AOV-4304.	
		6. **VERIFY CLOSED** MD AFW PUMP 1B RECIRC VLV, AOV-4310.	
	BOP	(Step 6.7.6) **ADJUST** manual loader to provide CLOSE signal for MAIN FW PUMP CLEANUP RECIRC AND RECIRC DUMP AOV TO MAIN CONDENSER, AOV-4262	**Note:** Dispatches AO to perform step 6.7.6
TECHNICAL SPECIFICATION 3.7.5 Auxiliary Feedwater (AFW) System			

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Event Description: **Shifting from AFW to MFW during startup per O-1.2**

Time	Pos.	Expected Actions/Behavior	Comments

3.7.5 Auxiliary Feedwater (AFW) System

LCO 3.7.5 Two motor driven AFW (MDAFW) trains, one turbine driven AFW (TDAFW) train, and two standby AFW (SAFW) trains shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION		REQUIRED ACTION		COMPLETION TIME
A.	One TDAFW train flowpath inoperable.	A.1	Restore TDAFW train flowpath to OPERABLE status.	7 days
B.	One MDAFW train inoperable.	B.1	Restore MDAFW train to OPERABLE status.	7 days
C.	TDAFW train inoperable. OR Two MDAFW trains inoperable. OR One TDAFW train flowpath and one MDAFW train inoperable to opposite steam generators (SGs).	C.1	- NOTE - LCO 3.0.4.b is not applicable. Restore one MDAFW train or TDAFW train flowpath to OPERABLE status.	72 hours

At the discretion of the Lead Examiner move to Event #2

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Event Description: **Th RTD (Channel 4) fails high**

Next a channel four Thot RTD will fail high. The team will respond per:

- AR-F-15, RCS Tavg Dev 4°F
- AR-F-16, Avg Tavg – Tref Dev +/- 5 °F
- AR-F-24, RCS AVG ΔT DEV 3˚F

ER-INST.1, Reactor Protection Bistable Defeat After Instrumentation Loop Failure. The RO will transfer the charging pump that is in automatic to manual and manually adjust its speed to control Pressurizer (PRZR) level. The BOP will defeat the failed channel per ER-INST.1. The SRO will refer to ITS 3.1.6, the COLR, and ITS 3.3.1 and 3.3.2

Booth Operator Instructions:

- **Trigger #2**
- Acknowledge as WCC and OPS Management

Indications Available:

- AR-F-16, Avg Tavg – Tref Dev +/- 5 °F
- AR-F-15, RCS Tavg Dev 4°F
- AR-F-24, RCS AVG ΔT DEVIATION 3˚F
- TI-404, Loop B Tavg
- TI-408B, Loop B 1B-2 DT Temp

Time	Pos.	Expected Actions/Behavior	Comments
AR-F-15, RCS TAVG DEV 4°F			
	HCO	(Step 1) Place Rods in Manual (Auto rod motion will be blocked)	**NOTE:** The rods are already in manual due to power less than P-12.
	HCO	(Step 2) Check RCS Tavg channels and Tavg chart recorder.	
	BOP	(Step 3) IF a turbine runback is occurring THEN…	**NOTE:** a turbine runback is NOT occurring.
	CRS	(Step 4) IF a Tavg channel has failed, THEN go to ER-INST.1.	
	CRS	(Step 5) IF average Tavg has failed, THEN…	**NOTE:** average Tavg has NOT failed.
			NOTE: The CRS will go to ER-INST.1.

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Event Description: **Th RTD (Channel 4) fails high**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	Places charging in manual	
AR-F-24, RCS AVG ΔT DEVIATION 3°F			
	HCO	(Step 1) Perform a channel check.	
	CRS	(Step 2) Go to the appropriate procedure:	
		• ER-INST.1 for Failed Instrument Channel	
			NOTE: The CRS will go to ER-INST.1.
ER-INST.1, RPS BISTABLE DEFEAT AFTER INSTRUMENT LOOP FAILURE			
	HCO/ BOP	(Step 6.1.1) Identify the failed instrument channel by observation of the bistable status light board, MCB annunciators, and the MCB metering indication.	
	HCO/ BOP	(Step 6.1.2) WHEN a failed instrument loop and/or channel has been identified, THEN refer to the appropriate section of this procedure listed below:	**NOTE:** The CRS will identify an RCS Tavg or ΔT Failure, and go to Section 6.2.
	HCO	(Step 6.2.1) IF annunciator F-15, RCS TAVG DEV 4°F, is lit, THEN AUTOMATIC Rod control will be blocked and MANUAL rod control will be required.	
	BOP	(Step 6.2.2) An RTD failure will affect Steam Dump response if in AUTOMATIC TAVG control. IF unwarranted Steam Dump is occurring, THEN....	**NOTE:** unwarranted Steam Dump is NOT occurring.

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Event Description: **Th RTD (Channel 4) fails high**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 6.2.3) An RTD (Tavg) failure will affect the PRZR level setpoint. Place charging in MANUAL to stabilize PRZR level.	**NOTE:** The HCO will place Charging Pump Speed in MANUAL (if not done previously)
	CRS	(Step 6.2.4) Since Rod Insertion Limits (RIL) are generated from average ΔT, and RTD failure may result in unwarranted RIL alarms. Refer to ITS LCOs 3.1.5 and 3.1.6 to determine actual insertion limits.	**Note**: Power <50%
	CRS	(Step 6.2.5) IF hot leg streaming has been causing single channel ΔT runback signals, THEN....	**NOTE:** Power level too low for hot leg streaming to be a concern
	CRS	(Step 6.2.6) Refer to the appropriate attachment for defeat of the associated control functions:	**NOTE:** The CRS will determine that the Yellow Channel Attachment Tavg 404/Delta T 408 applies.
		• TAVG 404/DELTA T 408 YELLOW CHANNEL	
			NOTE: The CRS will hand this off to the CO, to coordinate with the HCO.
ER-INST.1, RPS BISTABLE DEFEAT AFTER INSTRUMENT LOOP FAILURE YELLOW CHANNEL ATTACHMENT TAVG 404/DELTA T 408			
Note: Operator will obtain data per step 5.0 to prepare for the instrument defeat brief and to determine expected status of proving lights during the defeat			
	BOP	Hold brief for instrument defeat per OPG-BRIEF	**Note**: Attachment 1 of OPG-BRIEF used
	HCO	(Step 1.0) Verify Rod Control selector switch in MANUAL.	
	HCO	(Step 2.0) Verify Charging Pump speed controllers in MANUAL.	

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Event Description: **Th RTD (Channel 4) fails high**

Time	Pos.	Expected Actions/Behavior	Comments
	BOP	(Step 3.0) In the RIL INSERTION LIMIT rack, PLACE T/405 DELTA T DEFEAT switch to LOOP B UNIT 2	
	BOP	(Step 4.0) In the STEAM DUMP rack, PLACE the TAVG DEFEAT switch T/401B to LOOP B UNIT 2	
		(Note Before Step 5.0) **NOTE** The following bistable status lights are expected to be lit after the DEFEAT: • LOOP B LO TAVG TC404A • OPΔT LOOP B TC408A • OTΔT LOOP B TC408C The following Annunciators are expected to be lit after the DEFEAT: • G-10, RCS LOOP B HIGH TAVG 579 F • F-8, RCS LOOP B LO TAVG 545 F • F-32, RCS OP DELTA T CHANNEL ALERT • F-23, RCS OT DELTA T CHANNEL ALERT	
	BOP	(Step 5.0) Determine the expected Bistable Proving light status for the post defeat conditions as flows:	**Examiner NOTE**: Initiate Event 3 while the CO/HCO is behind the MCB tripping *bistables*.
		(Step 5.1) Record the following Data: • LOOP B-2 T_{AVG} TI-404 _____ ^{0}F • LOOP 1B-2 Δ TEMP TI-408B _____ ^{0}F • OTΔT SP1 LOOP 1B-2 TEMP TI-408A _____ ^{0}F • OPΔT SP2 LOOP 1B-2 TEMP TI-408C _____ ^{0}F	**NOTE:** Data may have been obtained for the instrument defeat brief earlier.

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Event Description: **Th RTD (Channel 4) fails high**

Time	Pos.	Expected Actions/Behavior	Comments
	BOP	(Step 5.2) **DETERMINE** the expected post defeat Bistable proving light status and circle the expected status in table below: 404 LOOP B-2 • HIGH T'AVG Light OFF **IF** TI-404 ≥ 579°F • LOW T'AVG Light OFF **IF** TI-404 ≤ 545°F 408 LOOP B-2 • OVERTEMP TRIP Light OFF **IF** T-408B ≥ TI-408A • OVERPOWER TRIP Light OFF **IF** TI-408B ≥ TI-408C Bistable / Expected Proving Light status (Circle) / Post Defeat Light Status Verified 404 LOOP B-2 HIGH T'AVG — ON OFF 404 LOOP B-2 LOW T'AVG — ON OFF 408 LOOP B-2 OVERTEMP TRIP — ON OFF 408 LOOP B-2 OVERPOWER TRIP — ON OFF	**NOTE:** Expected Proving light stats may have been obtained for the instrument defeat brief earlier. **Note:** ON ON ON ON
	BOP	(Step 6.0) Place the affected channel Bistables in the Trip condition by PERFORMING the following:	**NOTE:** All Bistable lights are LIT.
		(Step 6.1) In the (YELLOW) Y-1 PROTECTION CHANNEL 4 rack, **PLACE** the following bistable proving switches to DEFEAT (UP) **AND VERIFY** the proving light status is correct per the table above. 404 LOOP B-2 • HIGH T'AVG • LOW T'AVG 408 LOOP B-2 • OVERTEMP TRIP • OVERPOWER TRIP	**Note:** ON ON ON ON
		(Step 6.2) Verify Correct Bistable Status Light And Annunicator status.	
	BOP	(Step 7.0-7.5) Delete 404/408 from the PPCS by performing the following:	
		• Select "Group Update" display	
		• Select "List Server Groups"	
		• Select 404_408 from the pick list	

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Event Description: **Th RTD (Channel 4) fails high**

Time	Pos.	Expected Actions/Behavior	Comments
		• Turn "OFF" scan processing, then click the "Set Scan Processing" button	
		• Answer prompts	
	CRS	(Step 8) GO TO Step 6.2.7	
ER-INST.1, RPS BISTABLE DEFEAT AFTER INSTRUMENT LOOP FAILURE			
	CRS	(Step 6.2.7) Restore following systems to automatic operation as necessary:	
	HCO	o PRZR level control	**NOTE:** The HCO will place Charging Pump Speed Control back in AUTO.
	HCO	o Rod control	**NOTE:** The HCO will place Rods back in AUTO.
	BOP	o Steam Dump	
	BOP	o Turbine EH control	
	CRS	(Step 6.2.8) Check the following ITS Sections for LCO's:	**NOTE:** The CRS will evaluate the Technical Specifications.
	CRS	(Step 6.2.8a) Section 3.3.1, Table 3.3.1-1, Functions 5 and 6	
	CRS	(Step 6.2.8b) Section 3.3.2, Table 3.3.2-1, Function 4d	
	CRS	(Step 6.2.9) GO TO Step 6.15	
	HCO	(Step 6.15.1) IF necessary, verify an operable channel is selected for the affected recorder.	

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Event Description: **Th RTD (Channel 4) fails high**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 6.15.2) Verify the following systems in AUTO if desired:	
	HCO	• Rod control	
	BOP	• Turbine EH control	
	HCO	• PRZR Pressure control	
		• HC431K	
		• PRZR spray valves	
		• PRZR heaters	
		• PRZR level control	
	BOP	• Steam Dump (Unless 1st stage pressure failed)	
	BOP	• MFW control	
	BOP	• S/G Atmos Relief Vlv Control	
	CRS	(Step 6.15.3) 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.
		• Operations Supervision	
		• STA	
	CRS	(Step 6.15.4) 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 6.15.5) 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.	
			NOTE: The CRS will evaluate the Technical Specifications.

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Event Description: **Th RTD (Channel 4) fails high**

Time	Pos.	Expected Actions/Behavior	Comments

TECHNICAL SPECIFICATION 3.3.1
REACTOR TRIP SYSTEM (RTS) INSTRUMENTATION

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.

ACTIONS

- NOTE -
Separate Condition entry is allowed for each Function.

CONDITION		REQUIRED ACTION		COMPLETION TIME
A.	One or more Functions with one channel inoperable. OR Two source range channels inoperable.	A.1	Enter the Condition referenced in Table 3.3.1-1 for the channel(s).	Immediately
B.	As required by Required Action A.1 and referenced by Table 3.3.1-1.	B.1	Restore channel to OPERABLE status.	48 hours
C.	Required Action and associated Completion Time of Condition B not met.	C.1 AND	Be in MODE 3.	6 hours
		C.2 AND	Initiate action to fully insert all rods.	6 hours
		C.3	Place Control Rod Drive System in a condition incapable of rod withdrawal.	7 hours

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Event Description: **Th RTD (Channel 4) fails high**

Time	Pos.	Expected Actions/Behavior	Comments
		•	

Table 3.3.1-1
Reactor Trip System Instrumentation

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	LIMITING SAFETY SYSTEM SETTINGS[a]
1.	Manual Reactor Trip	1, 2, 3[b], 4[b], 5[b]	2	B,C	SR 3.3.1.11	NA
2.	Power Range Neutron Flux					
	a. High	1, 2	4	D,G	SR 3.3.1.1 SR 3.3.1.2 SR 3.3.1.7 SR 3.3.1.10	≤ 109.27% RTP
	b. Low	1[c], 2	4	D,G	SR 3.3.1.1 SR 3.3.1.8 SR 3.3.1.10	≤ 29.28% RTP
3.	Intermediate Range Neutron Flux	1[c], 2	2	E,G	SR 3.3.1.1 SR 3.3.1.8 SR 3.3.1.10	(d)
4.	Source Range Neutron Flux	2[e]	2	F,G	SR 3.3.1.1 SR 3.3.1.8 SR 3.3.1.10	(d)
		3[b], 4[b], 5[b]	2	H,I	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10	(d)
		3[f], 4[f], 5[f]	1	J	SR 3.3.1.1 SR 3.3.1.10	NA
5.	Overtemperature ΔT	1, 2	4	D,G	SR 3.3.1.1 SR 3.3.1.3 SR 3.3.1.6 SR 3.3.1.7 SR 3.3.1.10	Refer to Note 1
6.	Overpower ΔT	1, 2	4	D,G	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10	Refer to Note 2

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Event Description: **Th RTD (Channel 4) fails high**

Time	Pos.	Expected Actions/Behavior	Comments

TECHNICAL SPECIFICATION 3.3.2
ENGINEERED SAFETY FEATURE ACTUATION (ESFAS) INSTRUMENTATION

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.

ACTIONS

- NOTE -
Separate Condition entry is allowed for each Function.

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
B.	As required by Required Action A.1 and referenced by Table 3.3.2-1.	B.1	Restore channel to OPERABLE status.	48 hours
C.	Required Action and associated Completion Time of Condition B not met.	C.1	Be in MODE 2.	6 hours
D.	As required by Required Action A.1 and referenced by Table 3.3.2-1.	D.1	Restore channel to OPERABLE status.	48 hours
E.	As required by Required Action A.1 and referenced by Table 3.3.2-1.	E.1	Restore train to OPERABLE status.	6 hours

Op Test No.: N12-1 Scenario # 2 Event # 2 Page 26 of 55

Event Description: **Th RTD (Channel 4) fails high**

Time	Pos.	Expected Actions/Behavior	Comments

Table 3.3.2-1
Engineered Safety Feature Actuation System Instrumentation

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	LIMITING SAFETY SYSTEM SETTINGS[a]
4.	Steam Line Isolation					
a.	Manual Initiation	1,2[d],3[d]	1 per loop	D,G	SR 3.3.2.4	NA
b.	Automatic Actuation Logic and Actuation Relays	1,2[d],3[d]	2 trains	E,G	SR 3.3.2.7	NA
c.	Containment Pressure-High High	1,2[d],3[d]	3	F,G	SR 3.3.2.1 SR 3.3.2.2 SR 3.3.2.5	≤ 18.0 psig
d.	High Steam Flow	1,2[d],3[d]	2 per steam line	F,G	SR 3.3.2.1 SR 3.3.2.2 SR 3.3.2.5	≤ 1.30E6 lbm/hr @ 1005 psig
	Coincident with Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.				
	and					
	Coincident with T_{avg}-Low	1,2[d],3[d]	2 per loop	F,G	SR 3.3.2.1 SR 3.3.2.2 SR 3.3.2.5	≥ 544.0°F
e.	High-High Steam Flow	1,2[d],3[d]	2 per steam line	F,G	SR 3.3.2.1 SR 3.3.2.2 SR 3.3.2.5	≤ 4.53E6 lbm/hr @ 785 psig
	Coincident with Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.				

At the discretion of the Lead Examiner move to Event #3

Op Test No.: N12-1 Scenario # 2 Event # 3 Page 27 of 55

Event Description: **'B' RCP Thermal Barrier Leak**

Next, a thermal barrier leak will occur on the "B" RCP. The team will respond per:

- AR-B-10, RCP 1B LABYR SEAL LO DIFF PRESS 15" H2O, or
- F-14, CHARGING PUMP SPEED, or
- A-5, CCW SURGE TANK HI LEVEL 58.8%

The crew may first enter AP-RCP.1, RCP SEAL MALFUNCTION, due to the AR procedural direction, but will end up in AP-CCW.1, LEAKAGE INTO THE CCW LOOP due to multiple indications of RCS in-leakage into the CCW system. Per AP-CCW.1, the RO will isolate the leak by closing AOV-754B. *Note that later in the scenario, when SI occurs, instrument air to containment will be isolated and AOV-754B will fail open.* The CCW leak will need to be re-isolated when the team restores Instrument Air to containment per EOP direction. (Due to electrical power availability, power will not be available to close MOV-749B and MOV-759B -- the alternate isolation method.)

Booth Operator Instructions: Trigger 3

Indications Available:

- AR-B-10, RCP 1B LABYR SEAL LO DIFF PRESS 15" H2O
- AR-A-5, CCW Surge Tank Hi-Level
- AR-RMS-17, R-17 Component Cooling

Time	Pos	Expected Actions/Behavior	Comments
	HCO	Notes AR-B-10	
AR-B-10, RCP 1B LABYR SEAL LO DIFF PRESS 15" H2O			
	HCO	(Step 1) Check AOV-142 position correct for plant conditions.	
		(Step 2) GO TO applicable procedure: • AP-RCP.1, RCP SEAL MALFUNCTION • AP-CVCS.1, CVCS LEAK • AP-CVCS.3, LOSS OF ALL CHARGING FLOW	
AR-RMS-17, R-17 Component Cooling			
	HCO	1. Verify RCV-017 closed	
		2. GO TO AP-CCW.1	
		3. Direct RP to perform CH-PRI-CCW leakage.	**Note:** CRS enters AP-CCW.1 when CCW surge level rising

Op Test No.: N12-1 Scenario # 2 Event # 3 Page 28 of 55

Event Description: **'B' RCP Thermal Barrier Leak**

Time	Pos	Expected Actions/Behavior	Comments
AP-CCW.1, Leakage Into the Component Cooling Loop			
			Note: Due to the cylindrical shape of CCW surge tank, using level indication to determine leak rate would be inaccurate. For a more accurate leak rate determination, use of Charging/Letdown mismatch should be used.
	HCO	(Step 1) Check CCW Indications	
		a. Check CCW surge tank level – RISING (PPCS Point L0618)	
		b. Direct RP tech to perform CH-PRI-CCW-LEAK, DETERMINATION OF CCW SYSTEM LEAKAGE	**NOTE:** The CRS/CO will contact RP. **SIM DRIVER**: as RP, acknowledge.
		c. CCW radiation monitor, R-17, RISING	**Note**: May declare a Local Radiation Emergency per EPIP 1-13
	HCO	(Step 2) Check RCP Thermal Barrier Indications:	**Note:** RCPs may be safely operated without CCW to the thermal barrier if seal injection flow is maintained.
		o Labyrinth seal D/Ps – GREATER THAN 15 INCHES OF WATER AND APPROXIMATELY EQUAL	
		o RCP #1 seal leak off flows-WITHIN THE NORMAL OPERATING RANGE OF FIG-4.0, FIGURE RCP SEAL LEAKOFF	
		o Annunciator A-7 (15), RCP A (B) CCW RETURN HI TEMP OR LO FLOW 165 GPM 125°F - EXTINGUSHED	

Op Test No.: N12-1 Scenario # 2 Event # 3 Page 29 of 55

Event Description: **'B' RCP Thermal Barrier Leak**

Time	Pos	Expected Actions/Behavior	Comments
		(Step 2 RNO) IF either pump has indication of a thermal barrier leak, THEN perform the following:	
		a. Verify seal injection flow to affected RCP.	
		b. Close CCW return from affected RCP thermal barrier (labyrinth seal D/P should rise) • RCP B, AOV-754A • RCP B, AOV-754B	**Note:** HCO closes AOV-754B
		c. Evaluate CCW surge tank level trend. If leakage has stopped, THEN go to step 17. (PPCS Point L0618)	
	CRS	(Step 17) Evaluate Plant Conditions:	
		• CCW inleakage – IDENTIFIED AND ISOLATED	**NOTE:** The leakage into the CCW System has been isolated.
		• Determine if operation can continue (Consult Plant staff if necessary) – OPERATION CAN CONTINUE	**SIM DRIVER:** If asked, OPS management has determined that operation should continue.
	HCO	(Step 18) Check CCW Surge Tank Level – APPROXIMATELY 50%	

Op Test No.: N12-1 Scenario # 2 Event # 3 Page 30 of 55

Event Description: **'B' RCP Thermal Barrier Leak**

Time	Pos	Expected Actions/Behavior	Comments
	HCO	(Step 19) Establish Control Systems In Auto	
		• Verify rods in AUTO	
		• Verify 431K in AUTO	
		• Verify PRZR spray valves in AUTO	
		• Verify PRZR heaters restored:	
		• PRZR proportional heaters breaker – CLOSED	
		• PRZR backup heaters breaker – RESET, IN AUTO	
		• Verify one charging pump in AUTO	
	HCO/ BOP	(Step 20) Evaluate MCB Annunciator Status (Refer to AR Procedures)	
At the discretion of the Lead Examiner, move to Event #4.			

Op Test No.: N12-1 Scenario # 2 Event # 4 Page 31 of 55

Event Description: **Spurious SI Signal Concurrent with LOOP and LOCA Outside Containment**

Next, a spurious "A" train SI signal will occur. At the same time there will be a loss of offsite power, the "A" DG will fail to start automatically, and a LOCA outside containment will be initiated. The team will respond per E-0, Reactor Trip or Safety Injection. At immediate action step 1, the RO will recognize that the reactor failed to trip automatically and will trip the reactor manually. At immediate action step 3 the BOP will inform the team of the status of Safeguard busses (no safeguard busses energized), and the RO will depress the "A" DG start pushbutton (front left section of the MCB) which will restore the "A" train of safeguard buses (busses 14 and 18). When the RO performs Attachment 27.0, Attachment Automatic Action Verification, (step 6 of E-0) he will discover that AOV-371, L/D Isolation to NRHX and MOV-814, CCW From RX SUPP CLRS (loss of power), failed to isolate automatically. With the concurrent LOCA outside CNMT, the RHR-to-L/D flowpath established by AOV-371 will provide an additional pathway for RCS activity from RHR into the L/D system through the open AOV-371, thru PCV-135 (which will open further to reduce L/D system pressure), and lift L/D relief valve 209 (setpoint 200 psig) to the VCT. Closing AOV-371 manually per the guidance in ATT-27.0 will isolate this flowpath. Attachment-3.0 will be used to isolate MOV-814. At step 7 of E-0, no MDAFW pumps will be running. The BOP will manually start the "A" MDAFW pump and align the TDAFW pump as necessary.

The LOCA outside containment will be due to failure of check valve 853A. When the SI occurs RCS will flow backwards through MOV-852A (Core Deluge Valve) and cause an RHR system piping break inside the Auxiliary building (RHR system piping is designed for a maximum of 600 psi – not RCS pressure). RCS will also flow from the RHR system to the CVCS system (via a check valve around HCV-133), lift relief valve 203, and flow to the PRT. Within a few minutes (depending on the size of the RHR piping break) the PRT rupture disc will blow and cause a LOCA inside containment. Because of this, the team is expected to transition to E-1, Loss of Reactor or Secondary Coolant, at E-0 step 17, rather than transitioning to ECA-1.2, LOCA Outside Containment, at E-0 step 26. (Transition from E-0 step 26 is possible depending on break size and how fast the team progresses through E-0, but is unlikely.)

At ECA-1.2 step 3 the RO will close MOV-852A and the team will check for an RCS pressure rise. With the leakpath isolated, RCS pressure will rise, indicating isolation of the LOCA outside containment. (The pressure rise may be delayed or slow depending on RCS inventory. If a sizable bubble exists in the reactor vessel head, injection flow has to refill the head to some extent before RCS pressure will rise significantly. The team should realize this.)

Booth Operator Instructions: Trigger 4, all other faults were entered at T=0

Indications Available:

- Numerous MCB alarms

Op Test No.: N12-1 Scenario # 2 Event # 4 Page 32 of 55

Event Description: **Spurious SI Signal Concurrent with LOOP and LOCA Outside Containment**

Time	Pos	Expected Actions/Behavior	Comments
	CRS	Directs HCO and CO to perform Immediate Actions of E-0	**Note:** D-Panel alarm with Rx Trip Breakers still closed
	HCO/ BOP	Perform Immediate Actions	**Note**: HCO manually trips Rx.
	HCO	Manual start of 'A' EDG	
	CRS	Upon report from the HCO that immediate actions are completed, starts E-0.	
E-0, REACTOR TRIP OR SAFETY INJECTION			
	HCO	(Step 1) Verify Reactor Trip:	
		• At least one train of reactor trip breakers – OPEN	
		• Neutron flux – LOWERING	
		• MRPI indicates – ALL CONTROL AND SHUTDOWN RODS ON BOTTOM	
	BOP	(Step 2) Verify Turbine Stop Valves - CLOSED	
Note: Next step meets Critical Task			
	BOP	(Step 3) Verify Both trains of AC Emergency Buses	
		• Bus 14 and Bus 18	**Note:** HCO will start 'A' DG
		• Bus 16 and Bus 17	**Note:** No power
		(RNO) Attempt to start any failed emergency D/G to restore power to ALL AC emergency buses.	**Note:** 'A' Train Bus 14 and Bus 18 restored.

Op Test No.: N12-1 Scenario # 2 Event # 4 Page 33 of 55

Event Description: **Spurious SI Signal Concurrent with LOOP and LOCA Outside Containment**

Critical Tasks:

E-0--C

Energize at least one emergency bus before transition out of E-0.

Safety Significance:

Failure to re-energize an emergency train leads to degraded emergency power capacity, needless degradation of a fission release barrier (RCS through RCP Seals), and results in a continuing loss of RCS inventory.

Required Plant Conditions:
1. Reactor trip.
2. No emergency bus energized.
3. At least one EDG can be connected to an emergency bus.

Scenario Conditions:

1. Spurious SI will require reactor trip.
2. Offsite power is lost, "B" DG is OOS, and "A" DG fails to start automatically.
3. "A" DG can be started manually.

Time	Pos	Expected Actions/Behavior	Comments
	HCO/ BOP	(Step 4) Check if SI is Actuated:	
		a) Any SI Annunciator – LIT	**Note:** D-19, Pressurizer LO Press Trip may be lit but only 'A' Train sequencing
		(RNO)	
		a. IF any of the following conditions are MET. THEN manually actuate SI and CI:	
		o PRZR pressure less than 1750 psig	
		o OR	
		o Steamline pressure less than 514 psig	
		o OR	
		o CNMT pressure greater than 4 psig	
		o OR	

Op Test No.: N12-1 Scenario # 2 Event # 4 Page 34 of 55

Event Description: **Spurious SI Signal Concurrent with LOOP and LOCA Outside Containment**

Time	Pos	Expected Actions/Behavior	Comments
	HCO	o SI sequencing started	**Note.** B Train is deenergized
	HCO	(Step 4.b.) SI Sequencing –BOTH TRAINS STARTED	
	HCO	(Steb 4b RNO) Manually actuate SI and CI	**Note:** HCO Manually actuate SI and CI
	HCO	(Step 5*) Verify CNMT Spray Not Required: o Annunciator A-27 , CNMT SPRAY-EXTINGUSHED o CNMT pressure-LESS THAN 28 PSIG	
	CRS	(Step 6) Direct HCO 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 38**.
ATTACHMENT 27.0, ATTACHMENT AUTOMATIC ACTION VERIFICATION			
	HCO	(Step 1) Verify SI and RHR Pumps Running:	
		• All SI pumps – RUNNING	
		• Both RHR pumps – RUNNING	

Op Test No.: N12-1 Scenario # 2 Event # 4 Page 35 of 55

Event Description: **Spurious SI Signal Concurrent with LOOP and LOCA Outside Containment**

Time	Pos	Expected Actions/Behavior	Comments
	HCO	(Step 2) Verify CNMT RECIRC Fans Running:	
		• All fans – RUNNING	
		• Charcoal filter dampers green status lights – EXTINGUISHED	
	HCO	(Step 3) Check If Main Steamlines Should Be Isolated:	
		• Any MSIV – OPEN	
	HCO	(Step 3a RNO) Go to Step 4.	
	HCO	(Step 4) Verify MFW Isolation:	
		• 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	(Step 5) Verify At Least Two SW Pumps - RUNNING	
	HCO	(Step 6) Verify CI and CVI:	**Note:** HCO notes CCW valve reopened
		• CI and CVI annunciators - LIT	
		• Annunciator A-26, CNMT ISOLATION	
		• Annunciator A-25, CNMT VENTILATION ISOLATION	
		• Verify CI and CVI valve status lights – BRIGHT	**Note:** AOV-371 (Auto Isolation failed) and MOV-814 (Loss of Power) failed to close. Refers to ATT-3.0.

Op Test No.: N12-1 Scenario # 2 Event # 4 Page 36 of 55

Event Description: **Spurious SI Signal Concurrent with LOOP and LOCA Outside Containment**

Time	Pos	Expected Actions/Behavior	Comments
ATT-3.0 , ATTACHMENT CI/CVI			
	HCO	AOV-371: Takes MCB switch to close.	**Note:** Uses ATT-3.0 for AOV-371 and MOV-814
	HCO	• Dispatches AO to locally close V-815A.	**Note:** Local isolation for MOV-814
			Note: HCO/CO continues with ATT-27.0
ATTACHMENT 27.0, ATTACHMENT AUTOMATIC ACTION VERIFICATION			
	HCO	• CNMT RECIRC fan coolers SW outlet valve status lights - BRIGHT	
		• FCV-4561	
		• FCV-4562	
		• Letdown orifice valves - CLOSED	
		• AOV-200A	
		• AOV-200B	
		• AOV-202	
	HCO	(Step 7) Check CCW System Status:	
		• Verify CCW pump – AT LEAST ONE RUNNING	
	HCO	(Step 8) Verify SI and RHR Pump Flow:	
		• SI flow indicators – CHECK FOR FLOW	
		• RHR flow indicator – CHECK FOR FLOW	
	HCO	(Step 7b RNO) IF RCS pressure less than 150 psig manually start pumps and align valves. IF NOT, THEN go to Step 9.	

Op Test No.: N12-1 Scenario # 2 Event # 4 Page 37 of 55

Event Description: **Spurious SI Signal Concurrent with LOOP and LOCA Outside Containment**

Time	Pos	Expected Actions/Behavior	Comments
	HCO	(Step 9) Verify SI Pump and RHR Pump Emergency Alignment:	
		a. RHR pump discharge to Rx vessel deluge - OPEN	
		• MOV-852A	
		• MOV-852B	
		b. Verify SI pump C – RUNNING	
		c. Verify SI pump A - RUNNING	
		d. Verify SI pump B – RUNNING	
		d. (RNO) (1) Ensure SI Pumps A and C running. If either pump NOT running, THEN go to step 9e.	
		(2) Ensure SI pump C aligned to discharge line B: o MOV-871B open o MOV-871A closed	
		(3) Go to Step 10.	
	HCO	(Step 10) Verify CREATS Actuation:	
		• At least one damper in each flowpath - CLOSED	
		• Normal Supply Air	
		• Normal Return Air	
		• CREATS fans – BOTH RUNNING	
	HCO	Reports completion of ATT-27.0 and status update.	**SIM DRIVER**: To reset TDAFW trip throttle valve, REM-FDW32, [1]
Reports status of completing ATT-27.0 to crew.			

Op Test No.: N12-1 Scenario # 2 Event # 4 Page 38 of 55

Event Description: **Spurious SI Signal Concurrent with LOOP and LOCA Outside Containment**

Time	Pos	Expected Actions/Behaviors	Comments
E-0, REACTOR TRIP OR SAFETY INJECTION			
			Examiner following operator NOT performing ATT-27.0 continue at **HERE**.
Note: Within a few minutes (depending on the size of the RHR piping break) the PRT rupture disc will blow and cause a LOCA inside containment. Because of this, the team is expected to transition to E-1, Loss of Reactor or Secondary Coolant, at E-0 step 17, rather than transitioning to ECA-1.2, LOCA Outside Containment, at E-0 step 26. (Transition from E-0 step 26 is possible depending on break size and how fast the team progresses through E-0, but is unlikely			
	HCO/ BOP	(Step 7) Verify Both MDAFW Pumps Running	
		(RNO Step 7) Manually start both MDAFW pumps.	**Note:** Only power available for A MDAFW pump.
	HCO/ BOP	(Step 8) Verify AFW Valve Alignment:	
		• AFW flow – INDICATED TO BOTH S/G(s)	
		• AFW flow from each MDAFW pump – LESS THAN 230 GPM	
		(Step 8 RNO) align valves as necessary	
	HCO/ BOP	(*Step 9) Monitor Heat Sink:	
		• 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.
		• Check S/G narrow range level BOTH S/G LESS THAN 50%	

Op Test No.: N12-1 Scenario # 2 Event # 4 Page 39 of 55

Event Description: **Spurious SI Signal Concurrent with LOOP and LOCA Outside Containment**

Time	Pos	Expected Actions/Behaviors	Comments
	BOP	• Control feed flow to maintain S/G narrow range level between 7% [25% adverse CNMT] and 50%.	**NOTE:** The CO may stop feeding the A SG based on the indications.
	HCO	(Step 11) Check CCW Flow to RCP Thermal Barriers:	
		• Annunciator A-7, RCP 1A CCW RETURN HI TEMP OR LO FLOW EXTINGUISHED	
		• Annunciator A-15, RCOP 1B CCW RETURN HI TEMP OR LOW FLOW - EXTINGUISHED	
	HCO	(Step 11 RNO) a. Stop affected RCPs.	
		(Step 11 RNO) b. Reset SI.	
	HCO	(Step 11 RNO) c. Check adequate power available to run one charging pump. 1. N/A 2. If Bus 14/16 D/G breakers are closed THEN verify adequate emergency D/G capacity to run one charging pump. (75 kw).,	
		d. IF seal outlet temperatures are greater than 235°F, THEN go to step 12.	
	BOP	(*Step 12) Monitor RCS Tavg – STABLE AT OR TRENDING TO 547°F	
		(Step 12 RNO) If temperature less than 547°F and lowering, THEN perform the following:	
		• Stop dumping steam.	
		• Ensure reheater steam supply valves are closed.	

Op Test No.: N12-1 Scenario # 2 Event # 4 Page 40 of 55

Event Description: **Spurious SI Signal Concurrent with LOOP and LOCA Outside Containment**

Time	Pos	Expected Actions/Behaviors	Comments
	BOP	• 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.	
		• 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.	
		• IF cooldown continues, THEN close both MSIVs.	**NOTE:** Both MSIVs are closed.
	HCO/ CO	(Step 13) Check PRZR PORVs and Spray Valves:	
		• PORVs – CLOSED	
		• Auxiliary Spray valves (AOV-296) – CLOSED	
		• Check PRZR pressure – LESS THAN 2260 PSIG	
		• Normal PRZR spray valves - CLOSED	
		• PCV-431A	
		• PCV-431B	
	HCO/ CO	(Step 14) Monitor RCP Trip Criteria:	
		• RCP status – ANY RCP RUNNING	
		(RNO)-GO to step 15.	
	HCO/ CO	(Step 15) Check I S/G Secondary Side Is Intact:	
		o Pressure in both S/G's-STABLE OR Rising	
		o Presssure in both S/G's –GREATER THAN 110 PSIG	

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Event Description: **Spurious SI Signal Concurrent with LOOP and LOCA Outside Containment**

Time	Pos	Expected Actions/Behaviors	Comments
	HCO	(Step 16) Check if S/G Tubes are intact:	
		o Air Ejector radiation monitors (R-15, R-47, R-48) -NORMAL	**Note:** R47 and R48 only detectors with power (PPCS).
		o S/G blowdown radiation monitors (R-19) -NORMAL	
		o Steamline radiation monitors (R-31, R-32) -NORMAL	
	CRS	(Step 17) Check if RCS is intact:	**Note:** May go to E-1, LOSS OF REACTOR COOLANT OR SECONDARY COOLANT if conditions met. **Note to examiner: Go to page 45 for E-1, IF not continue in E-0**.
		a. CNMT area radiation monitors –NORMAL • R-2 • R-7 • R-29 • R-30	
		b. CNMT pressure –LESS than 0.5 psig	
		c. CNMT sump B level-LESS THAN 8 inches.	
		d. CNMT sump A level o Level-STABLE o Annunciator C-19-CONTAINMENT SUMP A HI LEVEL EXTINGUISHED	

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Event Description: **Spurious SI Signal Concurrent with LOOP and LOCA Outside Containment**

Time	Pos	Expected Actions/Behaviors	Comments
	HCO	(step 18) Check if SI should be terminated:	
		a. RCS Pressure: o Pressure-GREATER THAN 1650 PSIG o Pressure –STABLE OR RISING	
		a. (RNO) Do NOT stop SI pumps. Go to Step 19.	
	CRS	(Step 19) Initiate Monitoring of Critical Safety Function Status Trees	
	BOP	(Step 20*) Monitor S/G Levels:	
		a. Narrow range level-GREATER THAN 7%	
		b. Control feed flow to maintain narrow range level between 17% and 50%	
	HCO	(step 21) Check Secondary Radiation Levels-NORMAL	
		o Steamline radiation monitor (R-31 and R-32)	
		o Dispatch AO to locally check steamline radiation	
		o Request Chem Tech sample S/Gs for activity	
	HCO	(Step 22) Reset SI	
	HCO	(step 23) Rest CI:	
		a. Depress CI reset pushbutton	
		b. Verify annunciator A-26, CNMT ISOLATION-EXTINGUISHED	

Op Test No.: N12-1 Scenario # 2 Event # 4 Page 43 of 55

Event Description: **Spurious SI Signal Concurrent with LOOP and LOCA Outside Containment**

Time	Pos	Expected Actions/Behaviors	Comments
	BOP	(Step 24) Verify adequate SW flow"	
		a. At least three SW pumps running	**Note:** Only power available for two SW pumps
		a. (RNO) Manually start SW pumps as power supply permits (257 kw each)	
		IF less than three pumps running, THEN ensure SW isolation	**Note:** Manually performs SW isolation by manually closing SW valves on MCB.
	BOP	b. Dispatch AO to establish normal shutdown alignment (refer to ATT-17.0, ATTACHMENT SD-1)	
	BOP	(step 25) Establish IA to CNMT:	
		a. Verify non-safeguards buses energized from off-site power o Bus 13 normal feed breaker- CLOSED OR o Bus 15 normal feed breaker - CLOSED	
		a. (RNO) Perform the following: 1) Close non-safeguards bus tie breakers: • Bus 13 to Bus 14 tie • Bus 15 to Bus 16 tie 2) Reset Control Room Lighting	**Note**: Since only 'A ' EDG is running with ~1875 KW, they may direct starting D/G Air Comp per ATT-11.2 and not tie to non-safeguards buses in step 25c.
		b. Verify SW isolation valves to turbine building -OPEN • MOV-4613 and MOV-4670 • MOV-4614 and MOV-4664	**Note**: Closed earlier due to less than 3 SW pumps running.
		b. (RNO) Restore IA using Service Air Compressor per step 25c.	
		c. Verify adequate air compressor(s)-RUNNING	

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Event Description: **Spurious SI Signal Concurrent with LOOP and LOCA Outside Containment**

Time	Pos	Expected Actions/Behaviors	Comments
		c. (RNO) Manually start electric air compressors as power supply permits: • Buses 13/15 normal feed breakers closed-no restrictions • Buses 14/16 normal feed breakers CLOSED 6 amps per air compressor • Buses 14/16 D/G breaker CLOSED 75 kw per air compressor IF eclectic air compressors CAN NOT be started, THEN start the diesel air compressor and tie to Instrument Air (refer to ATT-11.2, ATTACHMENT DIESEL AIR COMPRESSOR)	**Note**: Since only 'A ' EDG is running with ~1875 KW, they may direct starting D/G Air Comp per ATT-11.2 and not tie to non-safeguards buses.
	BOP	(Step 25d) Check IA supply: o Pressure –GREATER THAN 60 PSIG o Pressure-STABLE OR RISING	
		(Step 25d RNO) d. Perform the following: 1. Continue attempts to restore IA (refer to AP-IA.1, LOSS OF INSTRUMENT AIR) 2. Continue with Step 26. WHEN IA restored, THEN do Steps 25e and f.	
	HCO	(Step 25e) Reset both trains of XY relays for IA to CNMT AOV-5392	
	HCO	(Step 25f) Verify IA to CNMT AOV-5392-OPEN	

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Event Description: **Spurious SI Signal Concurrent with LOOP and LOCA Outside Containment**

Time	Pos	Expected Actions/Behaviors	Comments
	HCO	(Step 26) Check Auxiliary Building Radiation-NORMAL	
		• Plant vent iodine (R-10B) • Plant vent particulate (R-13) • Plant vent gas (R-14)	
		• CCW Monitor (R-17)	
		• Letdown Line monitor (R-9)	
		• Charging pump room (R-4)	
	CRS	(step 26 RNO) Evaluate cause of abnormal conditions. IF the cause is a loss of RCS inventory outside CNMT. THEN go to ECA-1.2, LOCA OUTSIDE CONTAINMENT, Step 1)	**Note to examiner: Go to page 51 for ECA-1.2**
E-1, LOSS OF REACTOR OR SECONDARY COOLANT			
	HCO	(Step 1) Monitor RCP Trip Criteria:	
		• RCP status – ANY RCP RUNNING	
		• SI pumps – AT LEAST TWO RUNNING	
		• RCS pressure minus maximum S/G pressure – LESS THAN 210 psi [240 psi adverse CNMT]	
		• Stop both RCPs	**NOTE:** If the RCPs have NOT been stopped prior to this step, they will be stopped here.
	BOP	(Step 2) Check If S/G Secondary Side Is Intact:	
		• Pressure in both S/Gs – STABLE OR RISING	
		• Pressure in both S/Gs – GREATER THAN 110 PSIG	

Op Test No.: N12-1 Scenario # 2 Event # 4 Page 46 of 55

Event Description: **Spurious SI Signal Concurrent with LOOP and LOCA Outside Containment**

Time	Pos	Expected Actions/Behaviors	Comments
	BOP	(*Step 3) Monitor Intact S/G Levels:	
		• Narrow range level – GREATER THAN 7% [25% adverse CNMT]	
		• Control feed flow to maintain narrow range level between 17% [25% adverse CNMT] and 50%	
		(Step 4) Monitor If Secondary Radiation Levels Are Normal	
		• Steamline radiation monitor (R-31 and R-32)	
		• Request Chem Tech sample S/Gs for activity	**NOTE:** The CRS may contact Chemistry. **SIM DRIVER:** As Chemistry, acknowledge.
	HCO	(*Step 5) Monitor PRZR PORV Status:	
		a. Power to PORV block valves – AVAILABLE	
		b. PORVs – CLOSED	
		• (Step 5b RNO) IF PRZR pressure less than 2335 psig, THEN manually close PORVs.	
		IF any PORV can NOT be closed, THEN manually close its block valve. IF block valve can NOT be closed, THEN dispatch AO to locally check breaker.	**NOTE:** The CRS will recognize that the Block Valve has failed, and that this step is NOT applicable.
		• MOV-515, MCC D position 6C	
		• MOV-516, MCC C position 6C	
		c. Block valves – AT LEAST ONE OPEN.	
	HCO	(Step 6) Reset SI.	

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Event Description: **Spurious SI Signal Concurrent with LOOP and LOCA Outside Containment**

Time	Pos	Expected Actions/Behaviors	Comments
	HCO	(Step 7) Reset CI:	
		• Depress CI reset pushbutton	
		• Verify annunciator A-26, CNMT ISOLATION – EXTINGUISHED	
	BOP	(Step 8) Verify Adequate SW Flow:	
		• Check at least two SW pumps RUNNING	**Note:** Manually start SW pumps as power permits
		• 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.
	HCO	(Step 9) Establish IA to CNMT:	
		a. Verify non-safeguards busses energized from offsite power	
		a. (RNO Perform the following:	
		1) Close the non-safeguards bus tie breakers	
		• Bus 13 to Bus 14 tie	
		• Bus 15 to Bus 19 tie	
		2) reset Control Room Lightning	
		b. Verify turbine building SW isolation valves - OPEN	
		• MOV-4613 and MOV-4670	
		• MOV-4614 and MOV-4664	
		C. Verify adequate air compressors-RUNNING	
		d. Check IA supply:	
		• Pressure – GREATER THAN 60 PSIG	
		• Pressure – STABLE OR RISING	

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Event Description: **Spurious SI Signal Concurrent with LOOP and LOCA Outside Containment**

Time	Pos	Expected Actions/Behaviors	Comments
		e. Reset both trains of XY relays for 1I to CNMT AOV-5392	
		f. Verify IA to CNMT AOV-5392 – OPEN	
	BOP	(Step 10) Check Normal Power Available To Charging Pumps:	
		• Bus 14 normal feed breaker – CLOSED	
		• Bus 16 normal feed breaker - CLOSED	
		(Step 10a. RNO) Verify adequate emergency D/G capacity to run charging pumps (75 kw each)	
		If sufficient power is available GO to Step 11.	
	HCO	(Step 11) Check If Charging Flow Has Been Established:	
		• Charging pumps – ANY RUNNING	**NOTE:** There are NO Charging Pumps running.
		• (Step 11a RNO) Perform the following:	
		• 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 to the RCP has NOT been lost, nor is any RCP #1 seal outlet temperature greater than 235°F.
		• Ensure HCV-142 open, demand at 0%.	
		• (Step 11 Continued) Charging pump suction aligned to RWST:	
		• LCV-112B – OPEN	
		• LCV-1112C – CLOSED	
		(Step 11b RNO) manually align valves as necessary.	

Op Test No.: N12-1 Scenario # 2 Event # 4 Page 49 of 55

Event Description: **Spurious SI Signal Concurrent with LOOP and LOCA Outside Containment**

Time	Pos	Expected Actions/Behaviors	Comments
	HCO	(Step 11 Continued) Start charging pumps and adjust charging flow as necessary to restore PRZR level	**NOTE:** The HCO will start one Charging Pump even though Pzr Level is off-scale high.
	HCO	(Step 12) Check If SI Should Be Terminated:	
		• RCS pressure:	
		• Pressure – GREATER THAN 1650 psig [1650 psig adverse CNMT]	
	CRS	(Step 12a RNO) Do NOT stop SI pumps. Go to Step 13.	
	HCO	(*Step 13) Monitor If CNMT Spray Should Be Stopped:	
		• CNMT spray pumps – ANY RUNNING	**NOTE:** No CS pumps running
	CRS	(Step 13a RNO) Go to Step 14.	
	HCO	(*Step 14) Monitor IF RHR Pumps Should Be Stopped:	
		• Check RCS pressure:	
		• Pressure – GREATER THAN 300 psig [350 psig adverse CNMT]	
		• RCS pressure – STABLE OR RISING	
		• RHR pumps – ANY RUNNING IN INJECTION MODE	
		• Stop RHR pumps and place in AUTO	**NOTE:** The HCO will STOP the RHR Pumps.

Op Test No.: N12-1 Scenario # 2 Event # 4 Page 50 of 55

Event Description: **Spurious SI Signal Concurrent with LOOP and LOCA Outside Containment**

Time	Pos	Expected Actions/Behaviors	Comments
	CRS	• Dispatch AO to perform ATT-14.6, ATTACHMENT RHR PRESS REDUCTION, Part A.	**NOTE:** The CRS will dispatch an AO. **SIM DRIVER:** as **AO**, acknowledge. Use INSIGHT point t_p682a to provide RHR pump suction pressure. If asked, report RHR discharge pressure ~100 PSIG, and pressure reduction is not necessary per this Att.
	BOP	(Step 15) Check RCS And S/G Pressures	
		• Check pressures in both S/Gs – STABLE OR RISING	
		• Check pressures in both S/Gs – GREATER THAN 110 PSIG	
		• Check RCS pressure – STABLE OR LOWERING	
	BOP	(Step 16) CHECK IF EMERGENCY D/Gs Should Be Stopped:	
		• Verify Safeguards busses 14, 16, 17, and 18 voltage – GREATER THAN 440 VOLTS	
		• Verify Safeguards busses 14, 16, 17, and 18 voltage energized by offsite power:	
		• Emergency D/G output breakers – OPEN	
		• AC emergency bus normal feed breakers - CLOSED	
		Stop any unloaded emergency D/G and place in standby (Refer to ATT-8.1, ATTACHMENT D/G STOP)	

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Event Description: **Spurious SI Signal Concurrent with LOOP and LOCA Outside Containment**

Time	Pos	Expected Actions/Behaviors	Comments
	HCO	(Step 17) Evaluate Plant Status:	
		a. Check auxiliary building radiation - NORMAL	
		• Plant vent iodine (R-108)	
		• Plant vent particulate (R-13)	
		• Plant vent gas (R-14)	
		• CCW liquid monitor (R-17)	
		• LTDN line monitor (R-9)	
		• CHG pump room (R-4)	
		b. WHEN TSC is manned, THEN request evaluation of sampling requirements.	**NOTE:** The TSC will NOT be manned.
		• RCS boron	
		• RCS activity	
		• CNMT hydrogen	
		• CNMT sump boron	
		• CNMT Sump pH	
		(Step 17) RNO If cause is a loss of RCS inventory outside CNMT, THEN go to ECA-1.2 LOCA OUTSIDE CONTAINMENT, step 1.	**Note:** The team will transition to ECA-1.2 at E-1 step 17.
ECA-1.2, LOCA Outside Containment			
	HCO	(Step 1) Verify Proper RHR Normal Cooling Valves Alignment:	
		a. Verify the following valves CLOSED	
		o MOV-700 and MOV-701 RHR suction valves from A hot leg-CLOSED	
		o MOV-720 and MOV-721 RHR discharge valves from B cold leg-CLOSED	

Op Test No.: N12-1 Scenario # 2 Event # 4 Page 52 of 55

Event Description: **Spurious SI Signal Concurrent with LOOP and LOCA Outside Containment**

Time	Pos.	Expected Actions/Behavior	Comments

Critical Task:

ECA-1.2--A

Isolate LOCA outside containment prior to transition out of ECA-1.2.

Safety Significance:
Failure to isolate this leak degrades containment integrity resulting in continuing radioactive release.

Required Plant Conditions:

1. Isolable LOCA outside containment.

Scenario Conditions:

1. The LOCA outside containment may be isolated by closing MOV-852A.

	HCO	(Step 2) Check CVCS Valves Alignment:	
		b. Verify the following valves CLOSED	
		o AOV-310 Excess letdown isolation	
		o AOV-296, auxiliary spray valve	
		o AOV-392A, Charging line isolation valve to loop B hot leg	
		b. Verify the following CI valves CLOSED	
		o MOV-313 seal return isolation	
		o AOV-371, letdown isolation valve	

Op Test No.: N12-1 Scenario # 2 Event # 4 Page 53 of 55

Event Description: **Spurious SI Signal Concurrent with LOOP and LOCA Outside Containment**

Time	Pos.	Expected Actions/Behavior	Comments
Note: Next step meets Critical Task			
	HCO	(Step 3) Check Safeguards Valves for backflow:	
		(Step 3 conti)	
		a. Ensure SI reset.	
		b. Close RHR pump discharge to Rx vessel deluge MOV-852A (turn DC power keyswitch)	**Note: Action meets Critical Task**
		c. Check for RCS pressure rise.	**Note:** The leak will be isolated and RCS pressure will rise.
		d. Go to Step 7.	
	HCO	(Step 7) Check if Break is isolated:	
		a. RCS pressure is rising.	
	HCO	(Step 8) Check if Leakage to the Auxiliary Building has stopped.	
		a. Monitor Leakage to the Auxiliary Building has stopped.	
		• Auxiliary Building sump	
		• WHUT Levels	
		b. Go to E-1, LOSS OF REACTOR COOLANT.	

Note: Terminate the scenario upon transition back to E-1, per Lead Examiner

Crew Turnover Sheet for 2012 NRC Scenario #2

UNIT STATUS:

Power Level: ~2% RCS [B] 2160pm BAST [B]: 14000 ppm

Power History: The Plant is at 2% power (BOL), with O-1.2 Startup in progress.. Core Burnup: 150 MWD/MTU

INFORMATION NEEDED TO ASSUME TO SHIFT:

- The plant is at ~2% power (BOL) with a plant startup in progress per O-1.2.
- Fuel pre-conditioning limits are no longer in effect
- The plant tripped several days ago due to a malfunction on the A Main Feedwater Pump.
- Corrective Maintenance has been completed, all post-maintenance testing was completed satisfactorily, and the A MFW pump is currently running.
- Per Chemistry direction, Normal Letdown is at 60 gpm.
- The electric plant is in a normal 50/50 lineup, and no electrical declarations are in effect.

The following equipment is Out-Of-Service:

- The B Diesel Generator is OOS for repairs to the governor. Work is in progress and expected return to service is 1 hour. LCO 3.8.1 was entered 24 hours ago, and an A-52.4 has been submitted. SR-3.8.1.1 (offsite circuit availability and breaker alignment) was performed 1 hr ago, and all other required surveillances are current.

The crew has been directed to continue the plant startup at Step 6.7, Transition from AFW to MFW. Until B EDG is returned to service, hold power and do not go above 5 % Reactor Power till notified.

As part of this major action sequence:

- S/G Blowdown will not be placed in service at this time.
- P-15.36, 'A' MFW Pump Seal Drain Tank Water Diversion and Restoration, has been completed

A-52.4

Equipment	***Date***	Time	Reason	Required Actions	Required Completion Date/Time	Required Action not met
B EDG	_/_/12	0800	Governor linkage will not reset	ITS 3.8.1 Enter Condition B Required Action: B.1: Perform SR 3.8.11 for the offsite circuit.-Perform every 8 hours, [Due in 6 hours] **AND** B.2. Declare required feature(s) supported by the inoperable DG inoperable when its required redundant feature(s) is inoperable. **AND** B.3.1 Determine OPERABLE DG is not inoperable due to common cause failure. **OR** B.3.2 Perform SR 3.8.1.2 for OPERABLE DG. **AND** B.4 Restore DG to OPERABLE status. [7 days]	0800 yesterday.	ITS 3.8.1 Enter Condition G Required Action C.1: Be in Mode 3 in 6 hours AND Required Action C.2: Be in Mode 5 in 84 hours

PROGRAM: Ginna Operations Training

MODULE: 2012 Initial License Operator Training

TOPIC: NRC Simulator Exam

Scenario N12-3

REFERENCES:

1. O-6.9.2, Establishing and/or Transferring Offsite Power to Bus 12A/12B
2. AR-F-2, Pressurizer Hi Press 2310 psi, or
3. AR-F-10, Pressurizer Lo Press 2205 psi;
4. A-503.1, Emergency and Abnormal Operating Procedures Users Guide
5. AP-PZR.1, Abnormal Pressurizer Pressure
6. ER-INST.1, Reactor Protection Bistable Defeat After Instrument Loop Failure
7. Tech Spec LCO 3.3.1, Reactor Trip System (RTS) Instrumentation
8. TRM 3.4.3, ATWS Mitigation

9. AR-F-19, PRZR PORV Outlet Hi Temp 145°F
10. AP-PZR.1, Abnormal Pressurizer Pressure
11. Tech Spec LCO 3.4.11, Pressurizer PORVs
12. Tech Spec LCO 3.4.13, RCS Operational Leakage

13. AR-H-7, Condenser High Pressure 25.5" Hg
14. AR-K-30, Turbine Sampling Rack Trouble
15. AP-FW.1, Abnormal MFW Pump or NPSH
16. AP-TURB.4, Loss of Condenser Vacuum
17. AP-TURB.5, Rapid Load Reduction

18. E-0, Reactor Trip and Safety Injection
19. FR-H.1, Response to a Loss of Secondary Heat Sink
20. ATT-12.0, N2 PORVs
21. ATT-5.1, SAFW
22. ATT-22.0, Restoring Feed Flow

Author: Norm Meaker, Exam Writer Contractor

Facility Review: Pat Landers, Lead Exam Author

Scenario Event Description
2012 NRC Scenario 3

Facility:	**Robert E. Ginna**	Scenario No.:	**3**	Op Test No.:	**2012-N-1**
Examiners:		Operators:			(SRO)
					(RO)
					(BOP)

Initial Conditions:	The plant is at 70% power (MOL). Several days ago, the plant was taken to 50% due to a failure of the "B" MFW pump. Corrective maintenance was performed, and the plant was raised to 70% four days ago. It is intended to observe the "B" MFP operation for two more days at this power level and then raise power to 100%. RG&E Energy Control Center has requested transfer to 100 – 0 lineup in preparation for circuit 7T inspection next shift. The WCC is standing by to place protected equipment signs per OPG-PROTECTED-EQUIPMENT, The SM has directed that you complete the transfer when you have the shift.
Turnover:	The following equipment is Out-Of-Service: "B" Containment Spray Pump has been out of service for bearing replacement since yesterday. Expected return to service is tomorrow at 0800.. A-52.4 submitted for ITS 3.6.6, 72 hour Action.

Event No.	Malf. No.	Event Type*	Event Description
0	FDW11B FDW15B		'B' MDAFW trip on overcurrent on start SAFW Pump "D" fails to start
1	NA	N-BOP N-SRO	Swap to 100/0 electrical lineup on Circuit 767 per O-6.9.2, Establishing And/Or Transferring Offsite Power To Bus 12A / 12B
2	PZR02D (2500) IND-RPS07BK (off)	I-BOP I-RO I(ITS)-SRO	Pressurizer pressure channel 449 fails high (ITS 3.3.1: Trip channel within 6 hrs, TRM: TR 3.4.3 Immediately declare ATWS mitigating capability inoperable – was applicable until channel 429 was selected as the controlling channel in the PLP) TC408C Bistable status light failed
3	PZR05B [7.4] OVR-PZR03B (OFF)	C-RO C(TS)-SRO	Pressurizer PORV-431C leakage > "PORV INOPERABLE" condition (~21 gpm)
4	REM-CND50 (0.04)	R-BOP R-RO R-SRO	Loss of condenser vacuum will occur. (The loss of vacuum will be ramped over 12 minutes so that the crew will trip the turbine when meeting the 5 minute backpressure DO NOT OPERATE region criteria or a turbine trip will occur on low vacuum.) Turbine Trip causes a Reactor Trip.
5	OVR-DI-TUR05BD	C-BOP C-SRO	EH "Go" pushbutton does not work

6	STM09A (100) STM09C (100) STM11A (1E07) EDS08 (Both) EDS04A FDW12 (0)	M-BOP M-RO M-SRO	"B" SG Safety Valve 3508 and 3510 failed open (close when Bleed and Feed criteria met) Steam break on "A" SG inside CNMT 4KV Auto Bus Transfer fails to occur automatically Loss of Bus 14 (conditional on reactor trip) TDAFW Pump speed control failed to 0
7	SIS02A SIS02B (man avail)	C-RO C-SRO	SI fails to actuate automatically
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor			

Overview of Scenario #3: PORV Leakage, Loss of Vacuum, Reactor Trip, SI, FR-H.1

The plant is at 70% power (MOL). Several days ago, the plant was taken to 50% due to a failure of the "B" MFW pump. Corrective maintenance was performed, and the plant was raised to 70% four days ago. It is intended to observe the "B" MFP operation for two more days at this power level and then raise power to 100%. RG&E Energy Control Center has requested transfer to 100 – 0 lineup in preparation for circuit 7T inspection next shift. The WCC is standing by to place protected equipment signs per OPG-Protected Equipment. The SM has directed that you complete the transfer when you have the shift.

The following equipment is Out-Of-Service: "B" Containment Spray Pump has been out of service for bearing replacement since late yesterday. Expected return to service is tomorrow at 0800. A-52.4 submitted for ITS 3.6.6, 72 Hour Action.

Shortly after taking the watch the team will swap to 100/0 electrical lineup per O-6.9.2.

Following the electrical lineup swap, the Pressurizer (PRZR) controlling pressure channel 449 will fail high, causing PRZR spray valves to open and disabling the PRZR heaters. Channel IV indication will show a high indication, whereas actual pressure is lowering due to spray. Prompt RO action is required to place the Master PRZR controller in Manual to close the spray valves and stabilize pressure. With no operator action, a reactor trip and SI will occur on low pressure. The team will respond per:

- AR-F-2, Pressurizer Hi Press 2310 psi, or
- AR-F-10, Pressurizer Lo Press 2205 psi;
- AP-PZR.1, Abnormal Pressurizer Pressure and
- ER-INST.1, Reactor Protection Bistable Defeat After Instrument Loop Failure

When the BOP defeats the failed channel, bistable status light TC408C will fail to light, which indicates that the channel may not be in the tripped condition. The SRO will notify the WCC, Operations Management, and possibly I/C to investigate further to ensure ITS requirements are met. (Sometimes the SRO will contact I/C directly, and sometimes he will request that the WCC contact I/C. Either communication is acceptable.) The SRO will refer to ITS 3.3.1 and TRM TR 3.4.3 (he will determine ITS 3.3.2 and 3.3.3 are not applicable).

While the PT-449 defeat is in progress, approximately a 20 gpm leak will occur on PORV 431C. The PORV will indicate in the throttled open position. The team will respond per:

- AR-F-19, PRZR PORV Outlet Hi Temp 145°F
- AP-PZR.1, Abnormal Pressurizer Pressure

The crew will attempt to close PORV-431C, but fails to close and will isolate the leak by closing associated block valve MOV-515, SRO will refer to ITS section 3.4.11 (Pressurizer PORVs) and 3.4.13 (RCS Operational Leakage). Per 3.4.11, "A PORV with a leakage rate >10gpm must also be declared inoperable (Block valve closed and power removed) per this LCO." (Restriction based on the possible need to use this PORV during accident mitigation, and if the block valve then failed to close with greater than 10gpm leakage, the PORV leakage would be outside the accident analysis assumptions."

After the SRO has had an opportunity to identify the ITS / TRM requirements associated with the PT-449 failure and the PORV leakage, a loss of condenser vacuum will occur. (The loss of vacuum will be ramped over 12 minutes so that the crew will trip the turbine when meeting the 5 minute backpressure DO NOT OPERATE region criteria or a turbine trip will occur on low vacuum.) The team will respond per:

- AR-H-7, Condenser Hi Pressure 25.5" HG,
- AR-K-30, Turbine Plant Sampling Rack Trouble
- AP-TURB.4, Loss Of Condenser Vacuum, and refer to
- AP-TURB.5, Rapid Load Reduction

They will reduce turbine load in an attempt to stabilize condenser vacuum, and to get out of the "Avoid" region in condenser backpressure. When the BOP initiates load reduction he will discover the EH control panel will not respond in OPER PAN, and will reduce turbine load manually. The team will be unable to stabilize condenser vacuum. Once the 5 minute "Avoid" region in condenser backpressure limit is met, the crew will trip the turbine or a trip on low vacuum will occur. If the crew reduced power to less than 50% to get less than P-9 (Turbine Trip-Reactor Trip interlock), when the turbine is tripped manually a reactor trip will occur due to the failure of the P9 interlock

Upon reactor trip, a failure of the 4KV Auto Bus Transfer and a loss of Bus 14 will occur. Additionally, the TDAFW Pump speed control is failed to zero and the 'B' MDAFW pump will trip on start. The team will respond per E-0, Reactor Trip or Safety Injection. With steam dump unavailable, SG pressure will rise rapidly causing SG ARVs and SG Safeties to open. Two SG safeties associated with 'B' SG will fail full open in conjunction with a MSLB on the 'A' SG inside containment. These events will cause a significant cooldown, RCS depressurization, and SI signal. The team will recognize that SI failed to actuate automatically and will manually actuate SI. At step 9 the team will transition to FR-H.1, Response To Loss of Secondary Heat Sink.

The MDAFW and TDAFW pumps are unavailable. "C" SBAFP has no power. Depending on SG level, the team will either go to step 13 for Bleed & Feed, or attempt to align and start "D" SBAFP. If there is time for the SBAFP start, the SRO will determine feed requirements per Attachment 22.0, Attachment Restoring Feed Flow (attempt to feed at max rate [225 gpm]). "D" SBAFP will trip when they try to start it. When less than or equal to120 [160] inches wide range SG level is reached in both SGs, the team will go to step 13 for Bleed & Feed. The team will perform Attachment 12.0, Attachment N2 PORVs to operate the PORVs. Subsequently, Bus 15 will be energized by cross-tie to Bus 16, and instrument air will be aligned to the PORVs.

After Bleed and Feed is established (PORVs open and SI flow verified), at the Lead Examiner's discretion, the SRO will be notified from the WCC that the "B" MDAFP is available. The team will establish AFW flow per the guidance of step 3.

Terminate the scenario when auxiliary feed flow is established.

Critical Tasks:

E-0--D

Manually actuate at least one train of SI before transition to FR-H.1.

Safety Significance:

The acceptable results obtained in the FSAR analyses are predicated on the assumption that, at the very least, one train of safeguards actuates. If SI is not actuated, the FSAR assumptions and results are invalid. Because compliance with the assumptions of the FSAR is part of the facility license condition, failure to manually actuate at least one train of SI (when it is possible to do so) constitutes a violation of the license condition.

Required Plant Conditions:

1. Reactor trip with valid SI required but not automatically actuated.
2. SI can be manually actuated from the control room.

Scenario Conditions:

1. Loss of Condenser vacuum causes a forced crew trip of the turbine, once the 5 minute "Avoid" region in condenser backpressure limit is met or a trip on low vacuum will occur. crew to trip the turbine trip which causes a reactor trip (P-9 present). Upon reactor trip, steam flow through the SG safeties will be sufficient to cause a valid SI signal prior to the team completing E-0 step 4.
2. Manual SI is available.

FR-H.1--F

Initiate RCS Bleed so that the RCS depressurizes sufficiently for RCS Feed (SI injection) to occur.

Safety Significance:

Failure to initiate RCS Bleed & Feed before the RCS saturates at a pressure above the shutoff head of the SI pumps results in significant and sustained core uncovery.

Required Plant Conditions:

1. Reactor trip.
2. No AFW available.
3. Secondary heat sink required.
4. RCS pressure below PRZR PORV setpoint.

SIMULATOR DRIVER INSTRUCTIONS

	Bench Mark	ACTIVITY	DESCRIPTION
☐		**Reset to IC-27**	**70% power MOL** **At T=0, insert:** • **MALF FDW11B,** MDAFW Pump 'B' trip • **MALF FDW15B,** SAFW Pump 'D' trip • **MALF FDW12 [0],** TDAFW speed control failure • **MALF SIS02A [Man Avail],** SI Train A failure • **MALF SIS02B [Man Avail],** SI Train B failure **Make a schedule file as follows:** • **Set T-30 conditional on "Reactor Trip Signal from Either Logic Train (1/2)"** ▪ **Set to Event 29 conditional to "x05i098d", Turbine manual trip PB** ▪ **Set to event 29, OVR-D.I.-RPS03, [True],** manual Rx Trip pushbutton ▪ **Set to event 29, MALF A-RPS12, [Off],** D-1 MCB alarm ▪ **Set to event 29, MALF, A-TUR01, [On],**D-24 MCB Alarm ▪ **Run schedule file while simulator in run.**
			Insert the following: • **MALF PZR02D [2500], on T-2 (**PT-449 failure) • **OVR-DO-IND-RPS07BK [OFF], on T-2** (B/S status light failure • **MALF PZR05B [7.4], on T-3 (**PORV-431C leakage) • **REM CND50 [0.04] on T-4, (**Condenser vacuum leak) • **MALF-A-MIS49, [ON, 120 sec delay],** AR-K-30, Turbine Plant Sampling Rack Touble • **OVR-DI-TUR05BD [False], on T-4** ('GO' pushbutton failure) • **MALF STM09A [100%], on T-30** (Safety valve fails open on 'B S/G) • **MALF STM09C [100], on T-30,** (Safety Valve fails open on 'B' S/G) • **MALF STM11A, [2E+6, 120 second Ramp], on T-30** (MSLB on 'B' S/G inside CNMT) • **MALF EDS08 [BOTH], on T-30** (4KV Auto Bus Transfer) • **MALF EDS04A, on T-30** (Loss of 480V Bus 14)

	Bench Mark	ACTIVITY	DESCRIPTION
☐	Prior to Crew Briefing	**RUN**	**To take 'B' CS pump OOS:** ▪ **Pull stop the 'B' CS Pump** ▪ **Place CAUTION tag on 'B' CS Pump** ▪ **Place PROTECT tags per OPG-Protected Equipment** • **Hang Protective Tags per OPG-Protected Equipment** • **Place Black Dot on MCB Annunciator J-28 and AA-25**
☐	**Crew Briefing** • 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: o All steps in Sections 6.4.1 are marked NA o All steps in Sections 6.4.3 are marked NA		
☐	T-0	Begin Familiarization Period	
☐	At direction of examiner	**Event 1**	Shift Electric Plant
☐	At direction of examiner	**Event 2** **Trigger #2** **PZR02D** **RPS07BK**	PT-449 fails High **2500, No Ramp**
☐	At direction of examiner	**Event 3** **Trigger#3** **PZR05B** **OVR-D.O.-PZR03B, [OFF]**	PORV-431C leakage >10 gpm requiring closing of MOV-515 **7.4 % open with open indication light override**

Scenario Event Description
2012 NRC Scenario 3

	Bench Mark	ACTIVITY	DESCRIPTION
☐	At direction of examiner	**Event 4** **Trigger#3** **REM CND50 [0.04]** **OVR-D.I-TURB05D [False]**	Loss of Condenser Vacuum with loss of auto EH control **No ramp**
☐	At direction of examiner	**Event 5** **Trigger #30** **STM09A** **STM09C** **STM11A** **EDS08 [BOTH]** **EDS04A**	Upon Reactor Trip [Conditional T-30]: **S/G safety for B S/G lifts (2)** **Steamline break in CNMT** **Failure of 4KV Auto Bus Transfer** **Loss of Emergency Bus 14**
☐	Continued from Event 5	**Event 6** **T=0** **SIS02A** **SIS02B**	SIS Train A and B failure to actuate **NOTE: This Malfunction is inserted in the IC at T = 0.**
☐	Continued from Event 5	**Event 7** **T=0** **FDW11B**	AUX Feedwater Pump 1B Failure **NOTE: This Malfunction is inserted in the IC at T = 0.**
☐	Continued from Event 5	**Event 8** **T = 0** **FDW12**	TDAFW Speed Control Failure **NOTE: This Malfunction is inserted in the IC at T = 0.**
☐	Continued from Event 5	**Event 9** **T = 0**	Standby AFW pump D fails to function **NOTE: This Malfunction is inserted in the IC at T = 0.**
☐	**Terminate the scenario upon direction of Lead Examiner**		

Op Test No.: N12-1	Scenario # 3	Event # 1	Page 11 of 67
Event Description:	**Shift Electric Plant**		

Shortly after taking the watch, the operator will shift the Electric Line-up from 50/50 to 100/0 in accordance with O-6.9.2, Establishing and/or Transferring Offsite Power to Bus 12A/12B, section 6.3.
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			
	BOP	(Step 6.3.1) ESTABLISH Offsite Power to 12B Bus using Circuit 767 as follows:	
		(1.) MARK BUS 12A NORMAL FEED FROM 7T, 52/12AY, BREAKER INITIAL POSITION.	**Note:** Closed
		(2.) VERIFY CLOSED CIRCUIT BKR 76702 34 KV BUS.	
		(3.) TURN ON BUS 12A ALT FEED FROM 767, 52/12BY SYNCHROSCOPE	
			Note: BOP reviews expected alarms with CRS. **AR-J-6**: 4KV MAIN OR TIE BREAKER TRIP **AR-L-20:** 12A XFMR or 12A BUS TROUBLE
		(4.) CLOSE BUS 12A ALT FEED FROM 767, 52/12BY.	
		(5.) IF BUS 12A NORMAL FEED FROM 7T, 52/12AY, was initially OPEN, THEN VERIFY breaker is OPEN AND RESET (Green light ILLUMINATED, White Light EXTINGUISHED). OTHERWISE, MARK this step N/A.	**Note:** Marks N/A

Op Test No.: N12-1 Scenario # 3 Event # 1 Page 12 of 67

Event Description: **Shift Electric Plant**

Time	Pos.	Expected Actions/Behavior	Comments
	BOP	(6.) IF BUS 12A NORMAL FEED FROM 7T, 52/12AY was initially CLOSED, THEN PERFORM the following: IF NOT, THEN MARK this Substep N/A a. VERIFY breaker OPENED (Green light ILLUMINATED, White light ILLUMINATED). b. PLACE BUS 12A NORMAL FEED FROM 7T, 52/12AY Control switch to the TRIP position AND THEN to AUTO c. VERIFY breaker is OPEN AND RESET (Green light ILLUMINATED, White light ILLUMINATED).	
		(7.) IF BUS 12A NORMAL FEED FROM 7T, 52/12AY, is not OPEN, **THEN IMMEDIATELY PERFORM** Attachment 1, 7T/Bus 12A Circulating Current Contingency Action, **OTHERWISE**, **MARK** this Step N/A.	**NOTE:** 52/12AY is OPEN. Marks step N/A.
		(8.) VERIFY BUS 12A VOLTMETER 4160V indicates approximately 4000 VOLTS	
		(9.) TURN OFF BUS 12A ALT FEED FROM 767, 52/12BY SYNCHROSCOPE AND REMOVE the handle.	
			SIM DRIVER: Use REM EDS49 to clear 12A transformer alarm L-20
At the discretion of the Lead Examiner move to Event #2.			

Op Test No.: N12-1 Scenario # 3 Event # 2 Page 13 of 67

Event Description: **Pressurizer pressure channel 449 fails low (2500#)**

Following the electrical lineup swap, the Pressurizer (PRZR) controlling pressure channel 449 will fail high, causing PRZR spray valves to open and disabling the PRZR heaters. Channel IV indication will show a high indication, whereas actual pressure is lowering due to spray. Prompt RO action is required to place the Master PRZR controller in Manual to close the spray valves and stabilize pressure. With no operator action, a reactor trip and SI will occur on low pressure. The team will respond per:

- AR-F-2, Pressurizer HI PRESS 2310 psi
- AR-F-10, Pressurizer Lo Press 2205 psi;
- AP-PZR.1, Abnormal Pressurizer Pressure and
- ER-INST.1, Reactor Protection Bistable Defeat After Instrument Loop Failure

When the BOP defeats the failed channel, bistable status light TC408C will fail to light, which indicates that the channel may not be in the tripped condition. The SRO will notify the WCC, Operations Management, and possibly I/C to investigate further to ensure ITS requirements are met. (Sometimes the SRO will contact I/C directly, and sometimes he will request that the WCC contact I/C. Either communication is acceptable.) The SRO will refer to ITS 3.3.1 and TRM TR 3.4.3 (he will determine ITS 3.3.2 and 3.3.3 are not applicable).

Booth Operator Instructions: **Operate Trigger #2**

Indications Available:

- AR-F-10, Pressurizer Lo Press 2205 psi
- AR-F-2, Pressurizer HI PRESS 2310 psi

Time	Pos.	Expected Actions/Behavior	Comments
		AR-F-10, Pressurizer Lo Press 2205 psi	
	BOP CRS	1. Perform a channel check.	**Note:** HCO will take 431K to manual and restore PRZR pressure per A-503.1.
	CRS	2. Go to applicable Procedure: • AP-TURB.2, if turbine load rejection has occurred. • AP-PRZR.1, if presence is abnormal for plant conditions. • ER-INST.1, if channel failed. • AP-RCS.1, If RCS leak is indicated.	**NOTE:** The CRS will go to ER-INST.1, may refer to AP-PRZR.1 and at exit at step 1.
	CRS	o Refer to ITS LCO 3.4.1	

Op Test No.: N12-1 Scenario # 3 Event # 2 Page 14 of 67

Event Description: **Pressurizer pressure channel 449 fails low (2500#)**

Time	Pos.	Expected Actions/Behavior	Comments

ITS 3.4.1, RCS Pressure, Temperature, and Flow Departure from Nucleate Boiling

TECHNICAL SPECIFICATION 3.4.1, RCS Pressure, Temperature, and Flow Departure from Nucleate Boiling (DNB) Limits

LCO 3.4.1 RCS DNB parameters for pressurizer pressure, RCS average temperature, and RCS total flow rate shall be within the limits specified in the COLR.

- NOTE -

Pressurizer pressure limit does not apply during pressure transients due to:

a. THERMAL POWER ramp > 5% RTP per minute; or

b. THERMAL POWER step > 10% RTP.

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
B.	Required Action and associated Completion Time not met.	B.1	Be in MODE 2.	6 hours

Op Test No.: N12-1 Scenario # 3 Event # 2 Page 15 of 67

Event Description: **Pressurizer pressure channel 449 fails low (2500#)**

Time	Pos.	Expected Actions/Behavior	Comments
	CRS	3. Notify the following: o SM o I&C o WCC	**NOTE:** The CRS may notify the WCC or request STA/SM perform notifications. **Booth Instructor:** as **WCC**, acknowledge.
AR-F-2, Pressurizer HI Press 2310 psi			
	BOP	1. IF RCS pressure is high, THEN go to AP-PRZR.1	**Note:** Should go to AP-PRZR.1 due to controlling channel failure.
	CRS	2. If due to instrument failure, THEN refer to ER-INST.1, Reactor Protection Bistable Defeat After Instrument Loop Failure	
AP-PRZR.1, ABNORMAL PRESSURIZER PRESSURE			
	HCO	(Step 1) Check PZR Pressure:	
		• All 4 narrow range channels – APPROXIMATELY EQUAL	**Note:** Channel 449 failed high
		• All 4 narrow range channels – TRENDING TOGETHER	
		(Step 1 RNO) If one pressure channel deviates significantly from the other 3, THEN perform the following:	
		a. IF the controlling PRZR pressure channel has failed, THEN place controller 431K in MANUAL and adjust output to restore PRZR pressure.	**Note:** HCO may have previously have taken 431K to manual and restore PRZR pressure per A-503.1.
		b. Refer to ER-INST.1 Reactor Protection Bistable Defeat After Instrument Loop Failure	
	HCO	(Step 2) Check Reactor Power - STABLE	

Op Test No.: N12-1 Scenario # 3 Event # 2 Page 16 of 67

Event Description: **Pressurizer pressure channel 449 fails low (2500#)**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 3) Check PRZR Pressure:	
		• Pressure – LESS THAN 2235 PSIG	
		• Pressure – GREATER THAN 2000 PSIG	
	HCO	(Step 4) Check PRZR Heater Status:	
		• PRZR proportional heater breaker – CLOSED	
		• PRZR heater backup group – ON	
	HCO	(Step 5) Verify Normal PRZR Spray valves – CLOSED	**NOTE:** The Spray Valves should be CLOSED now, but were previously opened.
		• AOV-431A	
		• AOV-431B	
	HCO	(Step 6) Check PRZR Pressure Controller, 431K, Demand – LESS THAN 50%	**NOTE:** The 431K Output is at 100% (at time of failure).
	HCO	(Step 6 RNO) Place 431K in MANUAL and lower output to restore PRZR pressure to 2235 psig.	**NOTE:** This may have already been accomplished, per the Guidance of A-503.1.
	HCO	(Step 7) Check PZR PORVs:	
		• PORVs – CLOSED	
		• Annunciator F-19, PRZR PORV OUTLET HI TEMP 145°F - EXTINGUISHED	
	CRS	• Go to Step 9.	

Op Test No.: N12-1 Scenario # 3 Event # 2 Page 17 of 67

Event Description: **Pressurizer pressure channel 449 fails low (2500#)**

Time	Pos.	Expected Actions/Behavior	Comments
		ER-INST.1 REACTOR PROTECTION BISTABLE DEFEAT AFTER INSTRUMENT LOOP FAILURE	
	CRS BOP	(Step 6.1.1) Identify the failed instrument channel by observation of the bistable status light board, MCB annunciators, and the MCB metering indication.	
	CRS	(Step 6.1.2) **WHEN** a failed instrument loop and/or channel has been identified, **THEN** refer to the appropriate section of this procedure listed below: PRZR Pressure Channel Failures Sect 6.3	
	HCO	(Step 6.3.1) (**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.	**NOTE:** The HCO may already have taken HC-431K to manual previously and controlling RCS pressure manually.
	CRS	(Step 6.3.2) **IF** PT-430 OR PT-431 has failed closed THEN CLOSE block valve: • PT-429: MOV-516 • PT-431: MOV-515	**NOTE: N/A**
	CRS	(Step 6.3.3) **IF** hot leg streaming has been causing single channel ΔT runback signals, **THEN** perform step 6.3.4.1. **IF NOT**, **THEN** go to step 6.3.5. 1. **IF** reactor power is greater than 98.5%, **THEN** reduce reactor power to approximately 98.5% RTP to minimize the possibility of reactor trip due to hot leg streaming.	**NOTE:** N/A but should evaluate.

Op Test No.: N12-1 Scenario # 3 Event # 2 Page 18 of 67

Event Description: **Pressurizer pressure channel 449 fails low (2500#)**

Time	Pos.	Expected Actions/Behavior	Comments
	CRS	(Step 6.3.4) Refer to the appropriate attachment to defeat the associated control functions: PRZR PRESSURE PI-429 RED CHANNEL PRZR PRESSURE PI-430 WHITE CHANNEL PRZR PRESSURE PI-431 BLUE CHANNEL PRZR PRESSURE PI-449 YELLOW CHANNEL	**Note:** Refers to PI-449 YELLOW CHANNEL Attachment
ER-INST.1 Attachment 8, YELLOW CHANNEL-PRZR PRESSURE PI-449			
Note: Operator will obtain data per step 4.0 to prepare for the instrument defeat brief and to determine expected status of proving lights during the defeat			
	CRS	Directs CO review attachment and hold a channel defeat brief.	
	BOP	Reviews Attachment-8 and notes expected plant response for conditions and when ready hold brief for defeating PI-449.	**NOTE:** The CO will request a peer checker during the defeat brief. Expected alarms/Indications during defeat: **AR-F-23**, RCS OTΔT Channel Alert **Bistable Lights**: PC449A Lo Press Trip TC408C OTΔT
	CRS	Once brief is complete, directs CO to perform defeat.	

Op Test No.: N12-1 Scenario # 3 Event # 2 Page 19 of 67

Event Description: **Pressurizer pressure channel 449 fails low (2500#)**

Time	Pos.	Expected Actions/Behavior	Comments
	BOP	(Step 1.0) **IF** PRZR pressure channel failure resulted in a runback, **THEN** verify the Rod Control selector switch (MCB) is in MANUAL until the defeat is completed. (step 1.1) Ensure Rod Control Select Switch (MCB) in MANUAL until the defeat is completed.	**NOTE:** N/A
	BOP	(Step 2.0) In the PLP PRZR PRESS AND LEVEL rack, check the PRZR pressure DEFEAT switch P/429A position. • **IF** P/429A is in NORMAL, **THEN** place P/429A to DEFEAT-1. **OR** • **IF** P/429A is NOT in NORMAL, **THEN** notify the Shift Manager.	**NOTE:** Places P/429A to DEFEAT-1.
	BOP	(Step 3.0) In the RIL INSERTION LIMIT rack, PLACE T/405F DELTA T DEFEAT switch to LOOP B UNIT 2.	**NOTE:** Places T/405F DELTA T DEFEAT switch to LOOP B UNIT 2.
Note: **While PT-449 defeat is in progress, a 20 gpm leak will occur on PORV-431C [Event #3] when directed by Lead Examiner. This attachment will be completed after PORV-431C event is completed**			
	BOP	(Step 4.0) Determine the expected Bistable light status for the post defeat condition as follows: (Step 4.1) **RECORD** the following Data: • PRZR Pressure PI-449_____PSIG • LOOP 1B-2 Δ TEMP TI-408B _____^{0}F • OTΔT SP1 LOOP 1B-2TEMP TI-408A_____^{0}F	

Op Test No.: N12-1 Scenario # 3 Event # 2 Page 20 of 67

Event Description: **Pressurizer pressure channel 449 fails low (2500#)**

Time	Pos.	Expected Actions/Behavior	Comments
		(Step 4.2) Determine the expected post defeat Bistable proving light status and circle the expected status in the table below: 408 LOOP B-2 • OVERTEMP TRIP Light OFF IF TI-408B ≥ TI-408A 449 CHANNEL 4 • LOW PRESS TRIP Light OFF IF PI-449 ≤ 1873 psig Bistable / Expected Proving Light Status (Circle) / Post Defeat Light Status Verified 408 LOOP B-2 OVERTEMP TRIP — ON OFF 449 CHANNEL 4 LOW PRESS TRIP — ON OFF	
		(Step 5.0) In the (YELLOW) Y1 PROTECTION CHANNEL 2 rack, PLACE the following bistable proving switches to DEFEAT (UP) and VERIFY the proving light status is correct per the table above. 408 LOOP B-2 • OVERTEMP TRIP 449 CHANNEL 4 • LO PRESS TRIP	**Note:** Expected proving lights: **[ON]** **[OFF]** **AR-F-23**, RCS OTΔT Channel Alert
	BOP	(step 6.0) **PLACE** the PRZR pressure recorder transfer switch (MCB) to position 1-3.	**NOTE:** Takes PRZR pressure recorder transfer switch (MCB) to position 1-3.
	BOP	(Step 7.0) Verify the bistable status lights listed above are lit.	**NOTE:** Bistable TC408C not lit and informs the CRS.

Op Test No.: N12-1 Scenario # 3 Event # 2 Page 21 of 67

Event Description: **Pressurizer pressure channel 449 fails low (2500#)**

Time	Pos.	Expected Actions/Behavior	Comments
	CRS	Notes that TC408C Bistable light is not lit.. Informs the SM and I&C. Directs the CO to continue with the defeat if not completed.	
	BOP	Step (8.0-8.15) Deletes 404/408 from processing in PPCS: o Select "Group Update" display o Select "List Server Groups" o Select 404_408 from the pick list o TURN "OFF" scan processing, then click the "SET SCAN Processing" button o Answer prompts o Select the "Sub/Delete/Restore" display o Select Point ID T0404 o TURN "ON" scan processing o Select "Change" o Answer prompts o Select the "Sub/Delete/Restore" display o Select Point ID P0449 o TURN "OFF" scan processing. o Select "Change" o Answer prompts	
	BOP	(Step 9.0) Informs CRS that defeat is completed and next attachment directs to go to step 6.3.5	

Op Test No.: N12-1 Scenario # 3 Event # 2 Page 22 of 67

Event Description: **Pressurizer pressure channel 449 fails low (2500#)**

Time	Pos.	Expected Actions/Behavior	Comments
	CRS	(Step 6.3.5) Restores systems to automatic: • PRZR Pressure Control o HC 431K o PRZR Spray Valves o PRZR Heaters o PRZR Level Control o Rod Control o Steam Dump o Turbine EH control	**Note:** Only controls in manual.
	CRS	(Step 6.3.7 Open any PORV Block Valve closed in step 6.3.2.	**Note:** N/A
	CRS	(Step 6.3.8) Check the following ITS Sections for LCO's: 1. Section 3.3.1, Table 3.3.1-1, Functions 5, 7a and 7b **(7b not required for PT-449)** 2. Section 3.3.2, Table 3.3.2-1, Function 1d (**not required for PT-449**) 3. Section 3.3.3, Table 3.3.3-1, Functions 1 and 6	**Note:** ITS 3.3.1: Reactor Trip System (RTS) Instrumentation ITS 3.3.2: Engineering Safety Feature Actuation System (ESFAS) Instrumentation ITS 3.3.2: Post Accident Monitoring (PAM) Instrumentation

Op Test No.: N12-1 Scenario # 3 Event # 2 Page 23 of 67

Event Description: **Pressurizer pressure channel 449 fails low (2500#)**

Time	Pos.	Expected Actions/Behavior	Comments

TECHNICAL SPECIFICATION 3.3.1 Reactor Trip (RS) Instrumentation

3.3.1 Reactor Trip System (RTS) Instrumentation

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.

ACTIONS

- NOTE -

Separate Condition entry is allowed for each Function.

	CONDITION		REQUIRED ACTION	COMPLETION TIME
A.	One or more Functions with one channel inoperable. OR Two source range channels inoperable.	A.1	Enter the Condition referenced in Table 3.3.1-1 for the channel(s).	Immediately

Op Test No.: N12-1 Scenario # 3 Event # 2 Page 24 of 67

Event Description: **Pressurizer pressure channel 449 fails low (2500#)**

Time	Pos.	Expected Actions/Behavior	Comments

Table 3.3.1-1
Reactor Trip System Instrumentation

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	LIMITING SAFETY SYSTEM SETTINGS[a]
1.	Manual Reactor Trip	1, 2, 3[b], 4[b], 5[b]	2	B,C	SR 3.3.1.11	NA
2.	Power Range Neutron Flux					
	a. High	1, 2	4	D,G	SR 3.3.1.1 SR 3.3.1.2 SR 3.3.1.7 SR 3.3.1.10	≤ 109.27% RTP
	b. Low	1[c], 2	4	D,G	SR 3.3.1.1 SR 3.3.1.8 SR 3.3.1.10	≤ 29.28% RTP
3.	Intermediate Range Neutron Flux	1[c], 2	2	E,G	SR 3.3.1.1 SR 3.3.1.8 SR 3.3.1.10	[d]
4.	Source Range Neutron Flux	2[e]	2	F,G	SR 3.3.1.1 SR 3.3.1.8 SR 3.3.1.10	[d]
		3[b], 4[b], 5[b]	2	H,I	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10	[d]
		3[f], 4[f], 5[f]	1	J	SR 3.3.1.1 SR 3.3.1.10	NA
5.	Overtemperature ΔT	1, 2	4	D,G	SR 3.3.1.1 SR 3.3.1.3 SR 3.3.1.6 SR 3.3.1.7 SR 3.3.1.10	Refer to Note 1
6.	Overpower ΔT	1, 2	4	D,G	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10	Refer to Note 2

Op Test No.: N12-1 Scenario # 3 Event # 2 Page 25 of 67

Event Description: **Pressurizer pressure channel 449 fails low (2500#)**

Time	Pos.	Expected Actions/Behavior	Comments

3.3.1

Table 3.3.1-1
Reactor Trip System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	LIMITING SAFETY SYSTEM SETTINGS[a]
7. Pressurizer Pressure					
a. Low	1[g]	4	K,L	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10	≥ 1791.3 psig

TECHNICAL SPECIFICATION 3.3.
Post accident (PAM) Instrumentation

LCO 3.3.3 The PAM instrumentation for each Function in Table 3.3.3-1 shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

- NOTE -
Separate Condition entry is allowed for each Function.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. - NOTE - Not applicable to Functions 3 and 4. One or more Functions with one required channel inoperable.	A.1 Restore required channel to OPERABLE status.	30 days

Op Test No.: N12-1 Scenario # 3 Event # 2 Page 26 of 67

Event Description: **Pressurizer pressure channel 449 fails low (2500#)**

Time	Pos.	Expected Actions/Behavior	Comments

Table 3.3.3-1
Post Accident Monitoring Instrumentation

	FUNCTION	REQUIRED CHANNELS	CONDITION
1.	Pressurizer Pressure	2	F
2.	Pressurizer Level	2	F
3.	Reactor Coolant System (RCS) Hot Leg Temperature	1 per loop	F
4.	RCS Cold Leg Temperature	1 per loop	F
5.	RCS Pressure (Wide Range)	2	F
6.	RCS Subcooling Monitor	2	F

	CRS	(step 6.3.9) Check TRM 3.4.3, Anticipated Transients Without Scram (ATWS) mitigation.	**Note:** N/A

Op Test No.: N12-1 Scenario # 3 Event # 2 Page 27 of 67

Event Description: **Pressurizer pressure channel 449 fails low (2500#)**

Time	Pos.	Expected Actions/Behavior	Comments

TECHNICAL Requirements Manual 3.4.3
Anticipated Transients Without Scram (ATWS) Mitigation

TR 3.4.3 Anticipated Transients Without Scram (ATWS) Mitigation

TR 3.4.3 ATWS Mitigation shall be OPERABLE as follows:

a. Each PORV shall be capable of automatic actuation and each block valve shall be open;

b. Manual rod insertion shall be OPERABLE; and

c. ATWS Mitigation System Actuation Circuitry (AMSAC) shall be OPERABLE.

APPLICABILITY: MODE 1 > 45% RTP.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more PORV automatic flow path inoperable. OR Manual rod insertion inoperable. OR AMSAC inoperable.	A.1 Declare ATWS mitigating capability inoperable.	Immediately

	CRS	(step 6.3.10) **IF** turbine runback has occurred AND rods are in MANUAL, **THEN** verify Rod Control is available by stepping Rods IN THEN OUT.	**Note:** N/A

Op Test No.: N12-1 Scenario # 3 Event # 2 Page 28 of 67

Event Description: **Pressurizer pressure channel 449 fails low (2500#)**

Time	Pos.	Expected Actions/Behavior	Comments
	CRS	(step 6.3.11) Restore AUTO Rod Control if desired.	**Note:** N/A
	CRS	(Step 6.3.12) Go to Step 6.15	
	CRS	(Step 6.15) Performs Follow Up Actions	
Note: When instrument defeated is completed following after the PORV-431C failure (Event #3), per Lead Examiner, commence event # 4			

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Event Description:	**Pressurizer PORV-431C leakage (PORV INOPERABLE)**		

While the PT-449 defeat is in progress, a 21 gpm leak will occur on PORV 431C. The PORV will indicate in the throttled open position. The team will respond per:

- AR-F-19, PRZR PORV Outlet Hi Temp 145°F
- AP-PZR.1, Abnormal Pressurizer Pressure

The crew will attempt to close PORV-431C, but fails to close and will isolate the leak by closing associated block valve MOV-515, SRO will refer to ITS section 3.4.11 (Pressurizer PORVs) and 3.4.13 (RCS Operational Leakage). Per 3.4.11, "A PORV with a leakage rate >10gpm must also be declared inoperable (Block valve closed and power removed) per this LCO." (Restriction based on the possible need to use this PORV during accident mitigation, and if the block valve then failed to close with greater than 10gpm leakage, the PORV leakage would be outside the accident analysis assumptions."

Booth Operator Instructions: **Operate Trigger #3**

Indications Available:

- AR-F-10, Pressurizer LO Press 2205 PSI
- AR-F-19, PRZR PORV Outlet Hi Temp 145°F
- PPCS Indications and alarms

Time	Pos	Expected Actions/Behaviors	Comments
AR-F-19, PRZR PORV OUTLET HI TEMP 145°F			
	CRS	(Step 1) IF Pressurizer pressure is lowering, THEN GO TO AP-PRZR.1, ABNORMAL PRESSURIZER PRESSURE.	**NOTE:** The HCO will recognize that PZR Pressure is lowering because of the Open PORV. **AR-F-10,** Pressurizer LO Pressure 2205 psi, ITS LCO 4.3.1

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Event Description: **Pressurizer PORV-431C leakage (PORV INOPERABLE)**

Time	Pos	Expected Actions/Behaviors	Comments
	HCO	(Step 2) Check PRZR PORV outlet temperature, TI-438.	**NOTE:** The HCO may attempt to close PCV-431C, in accordance with A-503.1. Upon recognizing that PCV-431C did NOT close, the HCO will close MOV-515.
	HCO	(Step 3) Check PRT parameters.	
	HCO	(Step 4) Check Containment temperature.	
	CRS	(Step 5) Start OR swap Containment Recirc Fans per Shift Manager directions.	
	CRS	(Step 6) Refer to ITS LCO 3.4.11 and 3.4.13.	Note: **ITS 3.4.11** Pressurizer Power Operated Relief Valves (PORVs) **ITS 3.4.13** RCS Operational Leakage

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Event Description: **Pressurizer PORV-431C leakage (PORV INOPERABLE)**

Time	Pos	Expected Actions/Behaviors	Comments
	CRS	Declares PORV-431C inoperable and informs SM.	**Note;** This nay be performed in AP-PZR.1
			Note: When block closed and CRS directs AO to open breaker for MOV-515, (MCC D pos 6c), which removes form MOV-515 and makes PORV-431C INOPERABLE to meet ITS 3.4.11. **SIM Driver INSERT** the following: • **OVR-D.O-PZR04A, [OFF], MOV-515** closed green light • **OVR-D.I.-OVR-PZR04D, [False],** MOV-515 open signal • **OVR-D.I-OVR-PZR04C, [True], MOV-515** close signal
AP-PRZR.1, ABNORMAL PRESSURIZER PRESSURE			
	HCO	(Step 1) Check PZR Pressure:	
		• All 4 narrow range channels – APPROXIMATELY EQUAL	**Note:** If PORV-431C closed previously, all pressures are rising except PT-449 which is failed high and defeat in progress.
		• All 4 narrow range channels – TRENDING TOGETHER	
	HCO	(Step 2) Check Reactor Power - STABLE	
	HCO	(Step 3) Check PRZR Pressure:	
		• Pressure – LESS THAN 2235 PSIG	
		• Pressure – GREATER THAN 2000 PSIG	

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Event Description: **Pressurizer PORV-431C leakage (PORV INOPERABLE)**

Time	Pos	Expected Actions/Behaviors	Comments
	HCO	(Step 4) Check PRZR Heater Status:	
		a. PRZR proportional heater breaker – CLOSED	
		b. PRZR heater backup group – ON	Note: Depends how quickly PORV-431C is isolated. Steps 4b RNO may be required.
	HCO	(Step 5) Verify Normal PRZR Spray valves – CLOSED	**NOTE:** The Spray Valves should be CLOSED now, but were previously opened.
		• AOV-431A	
		• AOV-431B	
	HCO	(Step 6) Check PRZR Pressure Controller, 431K, Demand – LESS THAN 50%	**NOTE:** 431K in manual previously during PT-449 failure
	HCO	(Step 7) Check PZR PORVs:	
		a. PORVs Closed	
		a. (RNO) Manually close PORVs. IF any valve can NOT be closed, THEN manually close the associated block Valve • MOV-516 for PCV-430 • MOV-515 for PCV-431C	Note: May have previously closed MOV-515
	HCO	Closes MOV-515	
	HCO	7b. Annunciator F-19 PRZR PORV OUTLET HI TEMP 145°F-EXTINGUSHED	**Note:** Alarm response actions may have been completed previously.

Op Test No.: N12-1 Scenario # 3 Event # 3 Page 33 of 67

Event Description: **Pressurizer PORV-431C leakage (PORV INOPERABLE)**

Time	Pos	Expected Actions/Behaviors	Comments
		b. (RNO) IF PORV leakage is indicated THEN perform the following: 1) Close PORV block valves one at a time AND check if pressure stabilizes. • MOV-516 for PCV-430 • MOV-515 for PCV-431C 2) If a leaking PRZR PORV identified, THEN open any non leaking PORV block valve and go to Step 8.	**Note:** MOV-515 should be closed and RCS pressure rising. Note: Only MOV-515 closed.
	HCO	(Step 8) Attempt to reseat any leaking any leaking PORV	
		a. Verify affected PORV block valve-CLOSED • MOV-516 for PCV-430 • MOV-515 for PCV-431C	**Note**: MOV-515 is closed
		b. Cycle the leaking PORV open and closed.	**Note**: PORV-431C does not operate due to failure.
		c. Open affected PORV block valve	**Note**: Since PORV-431C does not operate, they may not open associated block valve.
		d. Verify leakage has stopped.	**Note;** Leakage is stopped with block shut and PORV-431C failure
		e. Go to step 11.	
	HCO	(step 11) Check PRZR Pressure Control restored	
		a. Pressure-Trending to 2235	
		b. Go to Step 16	

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Event Description: **Pressurizer PORV-431C leakage (PORV INOPERABLE)**

Time	Pos	Expected Actions/Behaviors	Comments
	HCO	(step 16) Check PRT indications	
		a. level-Between 61-84%	
		b. Pressure-Approximately Stable 1.5 PSIG and Stable	
		c. Temperature-At CNMT ambient temperature and stable	
	HCO	(step 17) Establish PRZR pressure Control in AUTO	
		a. Verify 431K in Auto	
		a. (RNO) Place 431K in AUTO if desired	**Note:** Maintains in manual due to PT-449 failure
		b. Verify PRZR spray in AUTO	
		c. Verify PRZR heaters restored: o PRZR proportional heaters breaker closed o PRZR backup heaters breaker reset in AUTO	
	CRS	(Step 18) Evaluate MCB Annunciators	
	CRS	(Step 19) Notify higher supervision	
	CRS	(Step 20) Notify Reactor Engineer for Transient Monitoring Program	

Op Test No.:	N12-1	Scenario #	3	Event #	3	Page	35 of 67
Event Description:	**Pressurizer PORV-431C leakage (PORV INOPERABLE)**						

3.4.1 RCS Pressure, Temperature, and Flow Departure from Nucleate Boiling (DNB) Limits

LCO 3.4.1 RCS DNB parameters for pressurizer pressure, RCS average temperature, and RCS total flow rate shall be within the limits specified in the COLR.

- NOTE -

Pressurizer pressure limit does not apply during pressure transients due to:

a. THERMAL POWER ramp > 5% RTP per minute; or

b. THERMAL POWER step > 10% RTP.

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
B.	Required Action and associated Completion Time not met.	B.1	Be in MODE 2.	6 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.1.1	Verify pressurizer pressure is within limit specified in the COLR.	12 hours
SR 3.4.1.2	Verify RCS average temperature is within limit specified in the COLR.	12 hours

Time	Pos	Expected Actions/Behaviors	Comments
		• Annunciator F-19, PRZR PORV OUTLET HI TEMP 145°F - EXTINGUISHED	
	CRS	• Go to Step 9.	

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Event Description: **Pressurizer PORV-431C leakage (PORV INOPERABLE)**

TECHNICAL SPECIFICATION 3.4.11
Pressurizer Power Operated Relief Valves (PORVs)

3.4.11 Pressurizer Power Operated Relief Valves (PORVs)

LCO 3.4.11 Each PORV and associated block valve shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

- NOTE -

1. Separate entry into Condition A is allowed for each PORV.
2. Separate entry into Condition C is allowed for each block valve.

CONDITION		REQUIRED ACTION		COMPLETION TIME
A.	One or both PORVs OPERABLE and not capable of being automatically controlled.	A.1	Close and maintain power to associated block valve.	1 hour
		OR		
		A.2	Place associated PORV in manual control.	1 hour
B.	One PORV inoperable.	B.1	Close associated block valve.	1 hour
		AND		
		B.2	Remove power from associated block valve.	1 hour
		AND		
		B.3	Restore PORV to OPERABLE status.	72 hours
C.	One block valve inoperable.	C.1	Place associated PORV in manual control.	1 hour
		AND		

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Event Description: **Pressurizer PORV-431C leakage (PORV INOPERABLE)**

TECHNICAL SPECIFICATION 3.4.13
RCS Operational LEAKAGE

3.4.13 RCS Operational LEAKAGE

LCO 3.4.13 RCS operational LEAKAGE shall be limited to:

a. No pressure boundary LEAKAGE;

b. 1 gpm unidentified LEAKAGE;

c. 10 gpm identified LEAKAGE; and

d. 150 gallons per day primary to secondary LEAKAGE through any one steam generator (SG).

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION		REQUIRED ACTION		COMPLETION TIME
A.	RCS operational LEAKAGE not within limits for reasons other than pressure boundary LEAKAGE or primary to secondary LEAKAGE.	A.1	Reduce LEAKAGE to within limits.	4 hours
B.	Required Action and associated Completion Time not met. OR RCS pressure boundary LEAKAGE exists. OR Primary to secondary LEAKAGE not within limit.	B.1 AND B.2	Be in MODE 3. Be in MODE 5.	6 hours 36 hours

At the discretion of the Lead Examiner move to Event #4

Op Test No.: N12-1	Scenario # 3	Event # 4	Page 38 of 67
Event Description:	**Lowering main condenser vacuum**		

After the SRO has had an opportunity to identify the ITS / TRM requirements associated with the PT-449 failure and the PORV leakage, a loss of condenser vacuum will occur. (The loss of vacuum will be ramped over 12 minutes so that the crew will trip the turbine when meeting the 5 minute backpressure DO NOT OPERATE region criteria or a turbine trip will occur on low vacuum.) The team will respond per:

- AR-H-7, Condenser Hi Pressure 25.5" HG,
- AR-K-30, Turbine Plant Sampling Rack Trouble
- AP-TURB.4, Loss Of Condenser Vacuum, and refer to
- AP-TURB.5, Rapid Load Reduction

They will reduce turbine load in an attempt to stabilize condenser vacuum, and to get out of the "Avoid" region in condenser backpressure. When the BOP initiates load reduction he will discover the EH control panel will not respond in OPER PAN, and will reduce turbine load manually. The team will be unable to stabilize condenser vacuum. Once the 5 minute "Avoid" region in condenser backpressure limit is met, the crew will trip the turbine or a trip on low vacuum will occur. If the crew reduced power to less than 50% to get less than P-9 (Turbine Trip-Reactor Trip interlock), when the turbine is tripped manually a reactor trip will occur due to the failure of the P9 interlock.

Booth Operator Instructions: **Operate Trigger #4**

Indications Available:

- AR-H-7, Condenser Hi Pressure 25.5" HG, and
- AP-TURB.4, Loss Of Condenser Vacuum, and refer to
- AP-TURB.5, Rapid Load Reduction
- Numerous secondary plant PPCS alarms

Op Test No.: N12-1 Scenario # 3 Event # 4 Page 39 of 67

Event Description: **Lowering main condenser vacuum**

Time	Pos.	Expected Actions/Behavior	Comments
	CRS BOP	Upon PPCS alarms may refer to AP-FW.1 until load rejection or lowering vacuum is noted.	**Note to Examiner:** Depending on indications diagnosed, the crew will commence **AP-FW.1** until a more applicable AP entered. Crews during validations did steps in AP-FW.1 AP-TURB.2, Load Rejection AP-TURB.4, Loss of Condenser Vacuum
			SIM Driver: AR-K-30, Turbine Plant Sampling Rack will alarm and after 2 minutes after sent to investigate as Chem. Tech, report alarm due to high Condensate Dissolved Oxygen and investigating cause.
AP-FW.1, ABNORMAL MFW FLOW or NPSH			
	CRS	(Step 1) Check MFW requirements:	
		a. Power – GREATER THAN 50%	
		b. Both MPW pumps running	
		c. Go to Step 3	
	CRS	(Step 3) Check S/G Status:	
		• MFW flows > Steam flows	
		• S/G levels stabilizing or returning to program	
	BOP	(Step 4) Verify At Least 2 Condensate Pumps - RUNNING	**NOTE:** The B Condensate Pump may automatically START.
	BOP	(Step 5) Verify Both HDT Pumps - RUNNING	**NOTE:** The A Heater Drain Pump has tripped.

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Event Description: **Lowering main condenser vacuum**

Time	Pos.	Expected Actions/Behavior	Comments
	BOP	(Step 6) Check Condensate Booster Pumps running	Note: Power at 70% and not required.
		(Step 6 RNO) Ensure power less than 80% and continue with step 7	
	BOP	(Step 7) Check hotwell Level	Note: Hotwell levels and temperatures are rising due to hotwell recuirc valve open
		o Hotwell Level Controller in AUTO	
		o Controller demand less than 70%	
		o Hotwell Level at setpoint	
		(Step 7 RNO) Take manual control of hotwell level	
	BOP	(Step 8) Check MFW Pump Suction Pressure	
		o Both MFW pump suction pressures GREATER THAN 200 PSIG	
		o Annuciator H-17, FEED PUMP NET POSITIVE SUCTION HEAD-EXTINGUISHED	
	BOP	(Step 9) Verify adequate MFW flow	
		o A MFW flow-GREATER THAN OR EQUAL TO A STEAM FLOW	
		o B MFW flow-GREATER THAN OR EQUAL TO B STEAM FLOW	
	BOP	(Step 10) Check Status of MFW System:	
		a. Both MFW pumps -RUNNING	

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Event Description: **Lowering main condenser vacuum**

Time	Pos.	Expected Actions/Behavior	Comments
		b. Verify condensate pump recuirc valve AOV-4238- CLOSED (PPCS V4238)	**Note**: Valve is open due to opening to provide more cooling water to the air ejectors due to lowering vacuum.
AP-Turb.2 Load Rejection			
	BOP CRS	(Step 1) Monitor RCS Tavg • Tavg GREATER THAN 545°F • Tavg LESS THAN 579°F	**NOTE**: May enter AP-Turb.4 directly.
	BOP	(Step 2) Check Turbine valves: • Turbine stop valves and reheat steam valves-OPEN • Turbine control valves-ALL VALVES AT APPROXIMATELY THE SAME POSITION	
	BOP	(Step 3) Check Steam Dump Status	
	HCO	(Step 4) Verify Tavg-TRENDING TO TREF	
	HCO	(Step 5) Monitor PRZR Pressure-TRENDING TO 2235 PSIG AUTO	
	BOP	(Step 6) Monitor MFW regulatin Valves-RESTORING S/G LEVEL TO 52% IN AUTO	
	HCO	(Step 7) Monitor PRZR Level-TRENDING TO PROGRAM IN AUTO	

Op Test No.: N12-1 Scenario # 3 Event # 4 Page 42 of 67

Event Description: **Lowering main condenser vacuum**

Time	Pos.	Expected Actions/Behavior	Comments
	BOP	(Step 8) Check Turbine Runback Criteria: • Any ΔT annunicator -LIT	
	BOP CRS	(Step 9) Check condenser Back Pressure-PBACK LESS THAN 3 INCHES AND STABLE • IF loss of main condenser vacuum indicated THEN go to AP-TURB.4	**NOTE:** May send AO to investigate lowering vacuum **SIM DRIVER:** as **AO**, acknowledge, and report that all normal, still monitoring.
AP-Turb.4 Loss of Condenser Vacuum			
	BOP	(Step 1) Check condenser circulating Water sytem: • CW pump discharge valves–BOTH OPEN • CW pumps –BOTH RUNNING	
	BOP CRS	(Step 2) Check condenser Indications: • Turbine back pressure-EACH CONDENSER WITHIN THE SATISFACTORY OPERATING REGION OF FIG-13.0 FIGURE BACK PRESSURE • Condenser vacuum-STABLE OR IMPROVING	**NOTE:** BOP/HCO may be monitoring back pressure on PPCS and may be in DO NOT OPERATE REGION already. (PPCS Warnings and clock started)
	CRS BOP	(Step 2) IF in the avoid region, THEN adjust turbine load to return to the SATISFACTORY OPERATING REGION.	
	CRS BOP	(Step 2) While continuing with procedure reduce load per AP-TURB.5	

Op Test No.: N12-1	Scenario # 3	Event # 5	Page 43 of 67
Event Description:	**Loss of automatic EH control**		

They will reduce turbine load in an attempt to stabilize condenser vacuum, and to get out of the "Avoid" region in condenser backpressure. When the BOP initiates load reduction he will discover the EH control panel will not respond in OPER PAN, and will reduce turbine load manually. The team will be unable to stabilize condenser vacuum. Once the 5 minute "Avoid" region in condenser backpressure limit is met, the crew will trip the turbine or a trip on low vacuum will occur. If the crew reduced power to less than 50% to get less than P-9 (Turbine Trip-Reactor Trip interlock), when the turbine is tripped manually a reactor trip will occur due to the failure of the P9 interlock.

Booth Operator Instructions: **None (inserted on initial setup**

Indications Available:

- AR-H-7, Condenser Hi Pressure 25.5" HG, and
- AP-TURB.4, Loss Of Condenser Vacuum, and refer to
- AP-TURB.5, Rapid Load Reduction
- Numerous secondary plant PPCS alarms

Time	Pos	Expected Actions/Behaviors	Comments
AP-Turb.5-Rapid Load Reduction			
	CRS	Perform a load reduction brief per A-503.1	
	HCO	(Step 1) Initiate Load Reduction	
		• Verify rods in AUTO	
		• Reduce turbine load in Auto as follows:	
	BOP	• Place Turbine EH Control in OPER PAN., IMP PRESS IN, if desired.	
		• Select desired rate on thumbwheel	
		• Reduce the setter to the desired load	
		• Depress the GO button	**Note**: No response in AUTO
	BOP	Reports that there is a failure of AUTO EH control.	

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Event Description: **Loss of automatic EH control**

Time	Pos.	Expected Actions/Behaviors	Comments
	CRS	Directs the CO to take manual control of EH and reduce load on turbine	**NOTE:** The load reduction will continue till loss of vacuum trip or meeting the 5 minute time limit on AVOID region and manual trip is initiated.
	HCO	• Initiate boration at the rate determined in OPG-REACTIVITY-CALC.	**NOTE:** The HCO will initiate a boration.
		• 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	**NOTE:** The CRS will return to the body of the procedure.
		• Compensate for Xenon	
	HCO	(*Step 4) Monitor PRZR Pressure – TRENDING TO 2235 PSIG IN AUTO	**NOTE:** Pressurizer Pressure is trending down.
		(Step 4 RNO) Control PRZR pressure by one of the following:	
		• 431K in MANUAL	
		• Manual control of PRZR heaters and sprays	
		If PRZR pressure can NOT be controlled manually, THEN refer to AP-PRZR.1, ABNORMAL PRESSURIZER PRESSURE.	

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Event Description: **Loss of automatic EH control**

Time	Pos.	Expected Actions/Behaviors	Comments
	BOP	(*Step 5) Monitor MFW Regulating Valves – RESTORING S/G LEVEL TO 52% IN AUTO	**Note:** Continue with load reduction till trip
	HCO	(*Step 6) Monitor PRZR Level – TRENDING TO PROGRAM IN AUTO CONTROL	
Note: The next events automatically start upon the Reactor Trip			

Op Test No.: N12-1	Scenario # 3	Event # 6	Page 46 of 67

Event Description: **Reactor Trip with Steam Safety opening with a steam leak in containment, SI fail to actuate, loss of Bus 14 and failure of 4KV auto transfer , TDAFW pump failure, Loss of Heat Sink**

Upon reactor trip, a failure of the 4KV Auto Bus Transfer and a loss of Bus 14 will occur. Additionally, the TDAFW Pump speed control is failed to zero and the 'B' MDAFW pump will trip on start. The team will respond per E-0, Reactor Trip or Safety Injection. With steam dump unavailable, SG pressure will rise rapidly causing SG ARVs and SG Safeties to open. Two SG safeties associated with 'B' SG will fail full open in conjunction with a MSLB on the 'A' SG inside containment. These events will cause a significant cooldown, RCS depressurization, and SI signal. The team will recognize that SI failed to actuate automatically and will manually actuate SI. At step 9 the team will transition to FR-H.1, Response To Loss of Secondary Heat Sink.

The MDAFW and TDAFW pumps are unavailable. "C" SBAFP has no power. Depending on SG level, the team will either go to step 13 for Bleed & Feed, or attempt to align and start "D" SBAFP. If there is time for the SBAFP start, the SRO will determine feed requirements per Attachment 22.0, Attachment Restoring Feed Flow (attempt to feed at max rate [225 gpm]). "D" SBAFP will trip when they try to start it. When less than or equal to120 [160] inches wide range SG level is reached in both SGs, the team will go to step 13 for Bleed & Feed. The team will perform Attachment 12.0, Attachment N2 PORVs to operate the PORVs. Subsequently, Bus 15 will be energized by cross-tie to Bus 16, and instrument air will be aligned to the PORVs.

After Bleed and Feed is established (PORVs open and SI flow verified), at the Lead Examiner's discretion, the SRO will be notified from the WCC that the "B" MDAFP is available. The team will establish AFW flow per the guidance of step 3.

Terminate the scenario when auxiliary feed flow is established

Booth Operator Instructions: **Entered at T-0, occurred on trip**

Indications Available:

- Numerous alarms on trip

Op Test No.: N12-1 Scenario # 3 Event # 6 Page 47 of 67

Event Description: **Reactor Trip with Steam Safety opening with a steam leak in containment, SI fail to actuate, loss of Bus 14 and failure of 4KV auto transfer , TDAFW pump failure, Loss of Heat Sink**

Time	Pos	Expected Actions/Behaviors	Comments
		E-0, REACTOR TRIP OR SAFETY INJECTION	
	HCO	(Step 1) Verify Reactor Trip:	
		• At least one train of reactor trip breakers – OPEN	
		• Neutron flux – LOWERING	
		• MRPI indicates – ALL CONTROL AND SHUTDOWN RODS ON BOTTOM	
	BOP	(Step 2) Verify Turbine Stop Valves - CLOSED	
	BOP	(Step 3) Verify Both trains of AC Emergency Buses	
		• Bus 14 and Bus 18	**Note**: The BOP notes that Bus 14 is not energized (L-5, SAFEGUARD BUS MAIN BREAKER OVER CURRENT) TRIP is illuminated.
		• Bus 16 and Bus 17	
	HCO	Notes status of Emergency D/G's	
	HCO/ BOP	(Step 4) Check if SI is Actuated:	
		• Any SI Annunciator – LIT	
		• SI sequencing – BOTH TRAINS STARTED	

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Event Description: **Reactor Trip with Steam Safety opening with a steam leak in containment, SI fail to actuate, loss of Bus 14 and failure of 4KV auto transfer , TDAFW pump failure, Loss of Heat Sink**

Time	Pos	Expected Actions/Behaviors	Comments
		Note: Next step meets Critical Task	
	HCO	(Step 4 RNO) Manually actuate SI and CI	**Note:** Failure of SI automatic signal with SI required

Critical Tasks:

E-0--D

Manually actuate at least one train of SI before transition to FR-H.1.

Safety Significance:

The acceptable results obtained in the FSAR analyses are predicated on the assumption that, at the very least, one train of safeguards actuates. If SI is not actuated, the FSAR assumptions and results are invalid. Because compliance with the assumptions of the FSAR is part of the facility license condition, failure to manually actuate at least one train of SI (when it is possible to do so) constitutes a violation of the license condition.

Required Plant Conditions:

1. Reactor trip with valid SI required but not automatically actuated.
2. SI can be manually actuated from the control room.

	HCO	(*Step 5) Verify CNMT Spray Not Required:	
		• Annunciator A-27, CNMT SPRAY EXTINGUISHED	**Note:** Continuous action step when CNMT pressure rises to setpoint
		• CNMT pressure – LESS THAN 28 PSIG	

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Event Description: **Reactor Trip with Steam Safety opening with a steam leak in containment, SI fail to actuate, loss of Bus 14 and failure of 4KV auto transfer , TDAFW pump failure, Loss of Heat Sink**

Time	Pos	Expected Actions/Behaviors	Comments
	CRS	Directs HCO to perform Att-27.0	**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 53**.
E-0, REACTOR TRIP OR SAFETY INJECTION, ATTACHMENT 27.0, ATTACHMENT AUTOMATIC ACTION VERIFICATION			
	HCO	(Step 1) Verify SI and RHR Pumps Running:	
		• All SI pumps – RUNNING	
		• Both RHR pumps – RUNNING	
	HCO	(Step 2) Verify CNMT RECIRC Fans RUNNING:	
		• All fans RUNNING	
		• Charcoal filter dampers green status lights – EXTINGUISHED	
	HCO	(Step 3) Check If Main Steamlines Should Be Isolated:	
		• Any MSIV – OPEN	
		• Check CNMT pressure -- LESS THAN 18 PSIG	
		• Check if ANY main steamlines should be isolated	
		• Low Tavg (545°F) AND high steam flow (0.5×10^6 lb/hr) from either S/G	
		OR	

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Event Description: **Reactor Trip with Steam Safety opening with a steam leak in containment, SI fail to actuate, loss of Bus 14 and failure of 4KV auto transfer , TDAFW pump failure, Loss of Heat Sink**

Time	Pos	Expected Actions/Behaviors	Comments
		• High-High steam flow ($4.4x10^6$ lb/hr) from either S/G	
		• (Step3c RNO) Go to Step 4.	
	HCO	(Step 4) Verify MFW Isolation:	
		• MFW pumps – TRIPPED	
	HCO	• MFW Isolation valves - CLOSED	
		• S/G A, AOV-3995	
		• S/G B, AOV-3994	
		• S/G blowdown and sample valves - CLOSED	
	HCO	(Step 5) Verify At Least Two SW Pumps - RUNNING	
	HCO	(Step 6) Verify CI and CVI:	
		• CI and CVI annunciators - LIT	**NOTE:** MOV-313 and MOV-813 Status light is NOT bright. Fail to close due to loss of MCC-C/Bus 14 power.
	HCO	Refers to Attachment-3.0 to isolate MOV-313 and MOV-813 locally with AO.	

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Event Description: **Reactor Trip with Steam Safety opening with a steam leak in containment, SI fail to actuate, loss of Bus 14 and failure of 4KV auto transfer , TDAFW pump failure, Loss of Heat Sink**

Time	Pos	Expected Actions/Behaviors	Comments
		ATT-3.0-ATTACHMENT CI/CVI	
	HCO	Dispatches AO to isolate MOV-313 by closing: • V-315A • V-315C	**SIM DRIVER:** as Primary **AO**, acknowledge and Close V-265 [CVC15] to simulate V-315A and V-315C and report that those valves are closed. [3 min delay]
	HCO	Dispatches AO to isolate locally close MOV-813	**SIM DRIVER:** as Primary **AO**, acknowledge and locally close MOV-813: -CLG63 [Disengaged] -CLG64: [0] Report that MOV-813 is locally closed [5 min delay]
		E-0, REACTOR TRIP OR SAFETY INJECTION, ATTACHMENT 27.0, ATTACHMENT AUTOMATIC ACTION VERIFICATION	
	HCO	• (Step 6 Continued) CNMT RECIRC fan coolers SW outlet valve status lights - BRIGHT	
		• FCV-4561	
		• FCV-4562	
		• Letdown orifice valves - CLOSED	
		• AOV-200A	
		• AOV-200B	
		• AOV-202	
	HCO	(Step 7) Check CCW System Status:	
		• Verify CCW pump – AT LEAST ONE RUNNING	

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Event Description: **Reactor Trip with Steam Safety opening with a steam leak in containment, SI fail to actuate, loss of Bus 14 and failure of 4KV auto transfer , TDAFW pump failure, Loss of Heat Sink**

Time	Pos.	Expected Actions/Behavior	Comments
	HVO	(Step 8) Verify SI And RHR Pump Flow:	
		• SI flow indicators – CHECK FOR FLOW	
		• RHR flow indicator – CHECK FOR FLOW	
		• (Step 8b RNO) IF RCS pressure less than 150 psig manually start pumps and align valves. IF NOT, THEN go to Step 9.	

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Event Description: **Reactor Trip with Steam Safety opening with a steam leak in containment, SI fail to actuate, loss of Bus 14 and failure of 4KV auto transfer , TDAFW pump failure, Loss of Heat Sink**

Time	Pos.	Expected Actions/Behavior	Comments
	BOP	(Step 9) Verify SI Pump And RHR Pump Emergency Alignment:	
		• RHR pump discharge to Rx vessel deluge - OPEN	
		• MOV-852A	
		• MOV-852B	
		• Verify SI pump C – RUNNING	
		• Verify SI pump A - RUNNING	
		• Verify SI pump B – RUNNING	
		• Verify SI pump C discharge valves - OPEN	
		• MOV-817A	
		• MOV-817B	
	BOP	(Step 10) Verify CREATS Actuation:	
		• At least one damper in each flowpath - CLOSED	
		• Normal Supply Air	
		• Normal Return Air	
		• Lavatory Exhaust Air	
		• CREATS fans – BOTH RUNNING	
	BOP	Performs a Status update and informs crew of status of Att-27.0	
E-0, REACTOR TRIP OR SAFETY INJECTION			
			Examiner following operator NOT performing ATT-27.0 continue at **HERE**.

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Event Description: **Reactor Trip with Steam Safety opening with a steam leak in containment, SI fail to actuate, loss of Bus 14 and failure of 4KV auto transfer , TDAFW pump failure, Loss of Heat Sink**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 7) Verify Both MDAFW Pumps RUNNING	
		(Step 7 RNO) Manually start both MDAFW pumps.	**NOTE:** A MDAFW pump has no power (Bus 14) and B MDAFW pump tripped.
		IF less than 2 MDAFW pumps are running, THEN manually open TDAFW pump steam supply valves.	
		• MOV-3505A	
		• MOV-3504A	**NOTE:** The CO notes that the TDAFW pump is not operating.
	CRS	Notes that this a total loss of Heat Sink and continues with E-0 to Step 9.	
		•	
	HCO	(Step 8) Verify AFW Valve Alignment:	**Note:** AFW not available.
		• AFW flow – INDICATED TO BOTH S/G(s)	
		• AFW flow from each MDAFW pump LESS THAN 230 GPM	

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Event Description: **Reactor Trip with Steam Safety opening with a steam leak in containment, SI fail to actuate, loss of Bus 14 and failure of 4KV auto transfer , TDAFW pump failure, Loss of Heat Sink**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(*Step 9) Monitor Heat Sink:	
		• Check S/G narrow range level GREATER THAN 7% [25% adverse CNMT] in any S/G	**Note**: Adverse CNMT
		• RNO-Verify total AFW flow GREATER THAN 200 GPM	
		• Notes that no AFW flow and go to **FR-H.1, RESPONSE TO LOSS OF SECONDARY HEAT SINK**	
FR-H.1, RESPONSE TO LOSS OF SECONDARY HEAT SINK			
	HCO	(Step 1) Check If Secondary Heat Sink Is Required: a) RCS pressure- GREATER THAN ANY NON-FAULTED S/G PRESSURE b) Check RCS cold leg temperature GREATER THAN 350°F	
	BOP	(*Step 2) Monitor Secondary Heat Sink: o Verify either S/G level- WIDE RANGE GREATER THAN 120 inches [**160 inches adverse CNMT**] o Verify PRZR pressure- LESS THAN 2335 PSIG	**Note**: Adverse CNMT. In RNO to go to step 3 initially.
	HCO	(Step 3.a) Try to Establish AFW Flow To At Least One Intact S/G: a) Check Blowdown and Sample Valves-CLOSED	

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Event Description: **Reactor Trip with Steam Safety opening with a steam leak in containment, SI fail to actuate, loss of Bus 14 and failure of 4KV auto transfer , TDAFW pump failure, Loss of Heat Sink**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 3.a RNO) Place Blowdown and sample valve switches to CLOSE	
	BOP	(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	
	BOP	(Step 6) Try and Establish SAFW Flow To At Least One Intact S/G: a) Perform the following: 1) Align SAFW system for operation (Refer to ATT-5.1, ATTACHMENT SAFW)	**NOTE:** The CRS will hand off ATT-5.1 to either the HCO or the CO, and continue with the other operator in FR-H.1. **Examiner** following operator performing ATT-5.1, continue below. **Examiner** following operator NOT performing ATT-5.1 continue at **page 58**
ATTACHMENT-5.1, ATTACHMENT SAFW			
			NOTE: The CO will attempt to align Train B using D SBAFW pump to feed the B SG.

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Event Description: **Reactor Trip with Steam Safety opening with a steam leak in containment, SI fail to actuate, loss of Bus 14 and failure of 4KV auto transfer , TDAFW pump failure, Loss of Heat Sink**

Time	Pos.	Expected Actions/Behavior	Comments
	BOP	(Step C) Align SAFW Pump D to selected S/G as follows: 1) Ensure SI reset 2) Ensure the following valves open: • 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/ BOP	(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.

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Event Description: **Reactor Trip with Steam Safety opening with a steam leak in containment, SI fail to actuate, loss of Bus 14 and failure of 4KV auto transfer , TDAFW pump failure, Loss of Heat Sink**

Time	Pos.	Expected Actions/Behavior	Comments
ATT-22.0, ATTACHMENT RESTORING FEED FLOW			
	BOP	1. Initiate Feed flow as follows: 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			
	BOP	(Step 6.a.3) Start selected SAFW pump(s) 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.
	CRS	Notes that the SBAFW pump trips and might order second attempt before continuing on in FR-H.1	
	CRS	(Step 6.a RNO) If greater than 215 gpm total SAFW flow can NOT be established, THEN go to Step 7	

Op Test No.: N12-1 Scenario # 3 Event # 6 Page 59 of 67

Event Description: **Reactor Trip with Steam Safety opening with a steam leak in containment, SI fail to actuate, loss of Bus 14 and failure of 4KV auto transfer , TDAFW pump failure, Loss of Heat Sink**

Time	Pos.	Expected Actions/Behavior	Comments
	BOP	(Step 7) Try to Establish MFW Flow to at Least One S/G	**Note**: B FP is OOS and power not available to A FP.
		• RNO-Go to Step 8	
	BOP	(Step 8) Establish conditions to Feed S/G's from condensate System.	
		• RNO-Go to Step 8	
	BOP	(Step 8) Establish Conditions to Feed S/G's with Condensate System	
		• Any Condensate pumps running	
	CRS	RNO-Power not available, go to step 12.	**Note**: Power not available due.
	CRS/ BOP	(Step 12) Verify Secondary Heat Sink	
		• a) Check S/G wide range levels both LESS THAN 120 INCHES [160 inches adverse CNMT]	**Note**: CRS will return to step one and continue attempts to restore Heat Sink until the requirements for BLEED AND FEED met.

Op Test No.: N12-1 Scenario # 3 Event # 6 Page 60 of 67

Event Description: **Reactor Trip with Steam Safety opening with a steam leak in containment, SI fail to actuate, loss of Bus 14 and failure of 4KV auto transfer , TDAFW pump failure, Loss of Heat Sink**

CRITICAL TASK

FR-H.1--F

Initiate RCS Bleed so that the RCS depressurizes sufficiently for RCS Feed (SI injection) to occur.

Safety Significance:

Failure to initiate RCS Bleed & Feed before the RCS saturates at a pressure above the shutoff head of the SI pumps results in significant and sustained core uncovery.

Required Plant Conditions:

1. Reactor trip.
2. No AFW available.
3. Secondary heat sink required.
4. RCS pressure below PRZR PORV setpoint.

Time	Pos	Expected Actions/Behaviors	Comments
		Note: Next steps (13-15) meets Critical Task	
		Once Bleed and Feed criteria are met, GO TO STEP 13	
	HCO	(Step 13) Actuate SI and CI	
	HCO/ CRS	(Step 14) Verify RCS feed path:	
		a) Check SI pump status-All running	**Note:** 2 SI pumps running
		• a) RNO Manually start pumps and align valves as necessary • b) If at least 2 SI piumps running, GO to Step 15.	

Op Test No.: N12-1 Scenario # 3 Event # 6 Page 61 of 67

Event Description: **Reactor Trip with Steam Safety opening with a steam leak in containment, SI fail to actuate, loss of Bus 14 and failure of 4KV auto transfer , TDAFW pump failure, Loss of Heat Sink**

Time	Pos	Expected Actions/Behaviors	Comments
	HCO/ CRS	(Step 15) Establish RCS Bleed Path:	**Note**: CT
		• a) Open both PRZR PORV block valves	
		Opens MOV-515 closed earlier due to PORV leakage	**Note**: Opens available PORV, crew may choose open block valve of INOPERABLE PORV to get additional bleed flow. If power was removed from block valve, then directs AO to restore power. **SIM Driver Remove the following:** • **OVR-D.O-PZR04A, [OFF], MOV-515 closed green light** • **OVR-D.I.-OVR-PZR04D, [False], MOV-515 open signal** **OVR-D.I-OVR-PZR04C, [True], MOV-515 close signal**
		• b) Place both PORV switches to OPEN	**Note**: CT
		• c) Align RCS overpressure system to open both PRZR PORVs per ATT-12.0	**Note**: CT

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Event Description: **Reactor Trip with Steam Safety opening with a steam leak in containment, SI fail to actuate, loss of Bus 14 and failure of 4KV auto transfer , TDAFW pump failure, Loss of Heat Sink**

Time	Pos	Expected Actions/Behaviors	Comments
		ATT-12.0: ATTACHMENT N2 PORVS	
	HCO/ BOP	(Step A) Select a PORV with operable block valve, obtain a key for the RCS over pressurization system and perform the appropriate step below:	
	HCO/ BOP	PCV-431C: • a) Verify block valve MOV-515- OPEN AND OPERABLE • b) Place ACCUM TO SURGE TK VLV SOV-8616B to OPEN	
	HCO/ BOP	PCV-430: • a) Verify block valve MOV-516- OPEN AND OPERABLE • b) Place ACCUM TO SURGE TK VLV SOV-8616A to OPEN	
	BOP	B) To depressurize the RCS in accordance with the guidance provided by the EOP step, perform the following:	
		PCV-431C, place over pressurization system arming switch, N2 ARMING VLV SOV-8619B, to ARM	
		PCV-430, place over pressurization system arming switch, N2 ARMING VLV SOV-8619A, to ARM	

Op Test No.: N12-1 Scenario # 3 Event # 6 Page 63 of 67

Event Description: **Reactor Trip with Steam Safety opening with a steam leak in containment, SI fail to actuate, loss of Bus 14 and failure of 4KV auto transfer , TDAFW pump failure, Loss of Heat Sink**

Time	Pos	Expected Actions/Behaviors	Comments
FR-H.1, RESPONSE TO LOSS OF SECONDARY HEAT SINK			
	HCO	(Step 15d) Verify PORVs-BOTH OPEN	**Note:** CT
	HCO/ CRS	(Step 16) Check if SI can be reset:	
		a) Check SI blocked status light is EXTINGUISHED	
		b) Check the following: PRZR pressure-LESS THAN 1750 PSIG OR Either steamline pressure LESS THAN 514 PSIG	
		c) Reset SI	
	HCO	(Step 17) Reset CI	
		a. Depress CI reset pushbutton	
		b. Verify annunciator A-26, CONTAINMENT ISOLATION-EXTINGUISHED	
SIM DRIVER: Once SBAFW pump failed and Bleed and Feed is established, AND at the Lead Examiner's discretion, remove [MALF FDW11B], B MDAFW Trip and report as WCC that B MDAFW pump is available to start.			

Op Test No.: N12-1 Scenario # 3 Event # 6 Page 64 of 67

Event Description: **Reactor Trip with Steam Safety opening with a steam leak in containment, SI fail to actuate, loss of Bus 14 and failure of 4KV auto transfer , TDAFW pump failure, Loss of Heat Sink**

Time	Pos	Expected Actions/Behaviors	Comments
Note: CRS refers back to step 3 to start MDAFW pump and ATT-22.0 for feed requirements.			
	CRS	(Step 3c) Check MCB indications for cause of AFW failure:	
		1) Verify CST level –GREATER THAN 5 FEET	
		2) Verify busses supplying power to MDAFW pumps -ENERGIZED	
		• Bus 14 • Bus 16	**Note:** Bus 16 is energized and B MDAFW pump is avilable
		3) Determine AFW Flow requirements per ATT-22.0 ATTACHMENT RESTORING FEED FLOW	
	CRS	Directs starting MDAFW pump and feed limits per ATT-22.0.	
ATT-22.0, ATTACHMENT RESTORING FEED FLOW			
		•	
	CRS/ BOP	(Step 2) Initiate Feed flow as follows: a) Bleed and Feed initiated or required. b) Check if RCS temp stable or lowering c) Establish less than or equal to 100 gpm feed flow to affected S/G. WHEN S/G level greater than 50 inches (100 inches adverse CNMT, THEN fill as desired to restore narrow range greater than 7% (25% adverse CNMT)	**NOTE:** The CRS 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.
	BOP	Starts B MDAFW pump and feeds at max rate of (235 gpm)	

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Event Description: **Reactor Trip with Steam Safety opening with a steam leak in containment, SI fail to actuate, loss of Bus 14 and failure of 4KV auto transfer , TDAFW pump failure, Loss of Heat Sink**

Time	Pos	Expected Actions/Behaviors	Comments
	BOP	Notes rising wide range level of B S/G.	
	CRS	Continues with FR-H.1 while S.G water level is restored.	**Examiner NOTE: Terminate the Exam at the discretion of the Lead Examiner.**
FR-H.1, RESPONSE TO LOSS OF SECONDARY HEAT SINK			
	BOP	(Step 18) Verify Adequate SW flow:	
		a. Verify at least two SW pimps-RUNNING	
		b. Verify AUX BLDG SW isolation valves-AT LEAST ONE SET OPEN	
		• MOV-4615 and MOV-4734	
		• MOV-4616 and Mov-4735	
	BOP	(Step 19) Establish IA to CNMT:	
		a. Verify non-safeguards buses energized from off-site power	
Terminate the Exam at the discretion of the Lead Examiner			

Crew Turnover Sheet for 2012 NRC Scenario #3

UNIT STATUS:

Power Level: 70% RCS [B] 1075 ppm BAST [B]: 14000 ppm

Power History: The Plant is at 70% power (MOL), for four days. Core Burnup: 10000 MWD/MTU

INFORMATION NEEDED TO ASSUME TO SHIFT:

- The plant is at 70% power (MOL).
- The plant power was reduced several days ago due to a malfunction on the B Main Feedwater Pump.
- Corrective Maintenance has been completed, and the MFW pump is running and is being observed for two more days at present power level, then raise power to 100%.
- RG&E Energy Control Center has requested that the electric plant be aligned to a 100/0 configuration on circuit 767 to allow the RG&E personnel to perform an insulator inspection on the 7T Line. Evolution should occur immediately after crew assumes the watch to adhere to planned work schedule.
- Per Chemistry direction, Normal Letdown is at 40 gpm.

The following equipment is Out-Of-Service:

- The B Containment Spray Pump has been out of service for bearing replacement since 0800 yesterday. OPG-Protected Equipment signs are hanging. Expected return to service is tomorrow. A-52.4 for ITS 3.6.6.A, 72 hours LCO. has been submitted.

The crew has been directed to shift the electric plant be aligned to a 100/0 configuration on circuit 767 to allow the RG&E personnel to perform an insulator inspection on the 7T Line. Evolution should occur immediately after crew assumes the watch to adhere to planned work schedule.

A-52.4

Equipment	***Date***	Time	Reason	Required Actions	Required Completion Date/Time	Required Action not met
B Containment Spray Pump	_/_/12	0800	Bearing Replacement	ITS 3.6.6 Enter Condition A Required Action A.1: Restore CS Train to OPERABLE Status in 72 hours.	72 hours from 0800 yesterday.	ITS 3.6.6 Enter Condition C Required Action C.1: Be in Mode 3 in 6 hours AND Required Action C.2: Be in Mode 5 in 84 hours