JPM A1a RO

Job Performance Measure Worksheet

Facility:	Ginna	Task No.:	
Task Title:	Calculate SDM for an Operating Reactor with an Untripable Rod	JPM No.:	2014 Admin - JPM A1a RO
K/A Reference:	2.1.25 (3.9)		

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.

Provide Candidate with Initial Conditions/Cue (Last Page of this JPM).

Initial Conditions:

- Plant is at 100%
- Tavg is at 574°F
- Date: Today
- MWD/MTU: 18000
- Boron sample date: Today; Boron Sample Time: 0001; Boron Concentration: 200 ppm
- Bank C: 225; Bank D: 217
- Rod K-7 has just been determined to be untripable.

Initiating Cue:

- The CRS has directed you to calculate Shutdown Margin (SDM), and notify him if sufficient SDM exists for the current plant conditions.
- All Independent Verification steps will be performed upon completion of your calculation.

Task Standard: The operator will calculate Shutdown Margin in accordance with the O-3.2, Shutdown Margin for an Operating Reactor, and determine that sufficient SDM does NOT exist.

Required Materials:	Calculator Standard Procedure Reference Carts must be available to the operator
General References:	O-3.2, Shutdown Margin for an Operating Reactor, Rev 03700 Technical Specifications; Appendix A to Facility Operating License for the R.E. Ginna Nuclear Power Plant; Docket No. 50-244, Amendment 116
Handouts:	None
Time Critical Task:	YES (1 hour)
Validation Time:	29 minutes

(Denote Critical Steps with a √)

Provide Candidate with Initial Conditions/Cue (Last Page of this JPM).

START TIME: _____

O-3.2, Step 6.1

Note: Shutdown Margin SHALL be the instantaneous amount of reactivity by which the reactor is subcritical or would be subcritical from its present condition assuming:

- All rod cluster control assemblies (RCCAs) are fully inserted except for the single RCCA of highest reactivity worth, which is assumed to be fully withdrawn. IF any RCCAs is NOT capable of being fully inserted, THEN the reactivity worth of the RCCAs must be accounted for in the determination of SDM.
- In Modes 1 and 2, the fuel and moderator temperatures are changed to the nominal hot zero power temperature.

Performance Step: 1 CHECK Tavg is at program Tavg: ± 1.5°F.

_____

Standard: The operator obtains a copy of O-3.2, reviews it and arrives at Step 6.0.

The operator reads the Note, and proceeds to Step 6.1.

The operator observes that Tavg = Tref (Initial Conditions).

Comment:

O-3.2, Step 6.2

Performance Step: 2 IF Tavg is NOT at program Tavg: ± 1.5°F,……

_____

Standard: The operator recognizes that this Step is NA.

Comment:

O-3.2, Step 6.3

Note: IF the following calculations will be performed by a Licensed Operator, THEN ENSURE Independent Verification is performed by an STA OR the Reactor Engineer.

Note: IF the following calculations will be performed by an STA OR the Reactor Engineer, THEN ENSURE Independent Verification is performed by a Licensed Operator.

Performance Step: 3 RECORD the cycle burnup (PPCS point ID Burnup).

_____

_____ DATE

_____ MWD/MTU

Standard: The operator reads the Notes, and proceeds.

The operator records Today's date in the DATE block.

The operator records 18000 in the MWD/MTU block.

Comment:

O-3.2, Step 6.4

Performance Step: 4 OBTAIN last loop B boron sample results from on-duty RP AND RECORD date, time and concentration of sample.

_____

Sample Date: _____

Time: _____ Hours

Concentration: _____ ppm

Standard: The operator records Today in the SAMPLE DATE block.

The operator records 0001 in the TIME block.

The operator records 200 ppm in the CONCENTRATION block.

Comment:

Performance Step: 5 _____

O-3.2, Step 6.5
RECORD Reactor Power Level.

_____ %

Standard: The operator records 100 in the % block.

Comment:

Performance Step: 6 _____

O-3.2, Step 6.6
RECORD Bank C and D positions.

Bank C = _____ steps
Bank D = _____ steps

Standard: The operator records 225 steps in the BANK C block.
The operator records 217 steps in the BANK D block.

Comment:

O-3.2, Step 6.7

Note: WHEN determining values based on burnup, THEN the following curves indicated for the applicable burnup range SHALL be used:

- BOL to 6187 MWD/MTU Use BOL curves
- 6188 to 12,373 MWD/MTU Use MOL curves
- 12,374 to EOL MWD/MTU Use EOL curves

The Total Power Defect determined in Step 6.7 will be a positive number.

√ **Performance Step: 7**

_____

DETERMINE total Power Defect, using the appropriate Total Power Defect attachment. USE Attachment 2, Total Power Defect Figure 5-20 (BOL), OR Attachment 3, Total Power Defect Figure 5-21 (MOL), OR Attachment 4, Total Power Defect Figure 5-22 (EOL), using the boron concentration recorded in Step 6.4 and power level recorded in Step 6.5

Total Power Defect: +_____ pcm

Standard:

[√] The operator uses Attachment 4, and determines the intersection point of 100% on the Y Axis (Power Level) and an interpolated 200 PPM Curve (1/3 the distance toward the top of the curve between the 0 PPM and the 600 PPM Curves), and reads the corresponding point on the X Axis (Total Power Defect in PCM), and determines it to be -3050 pcm.

[√] The operator records 3050±100 pcm in the TOTAL POWER DEFECT block.

Comment:

O-3.2, Step 6.8/6.8.1

Note: During power operation ensuring that the shutdown bank is fully withdrawn, and the control banks are within the limits of LCO 3.1.6 verifies adequate shutdown margin (ITS B3.1.1).

√ **Performance Step: 8** _____

DETERMINE Control Rod negative reactivity available for insertion upon a Reactor trip as follows:

- DETERMINE the negative reactivity inserted upon trip from the ARO position assuming the most reactive rod remains stuck at the full out position using Attachment 1, Negative Reactivity Added On Trip From ARO, and the current burnup from Step 6.3.
  - Rod Worth - Stuck Rod -_____ pcm

Standard:

The operator reads the Note, and proceeds.

[√] The operator uses Attachment 1, and determines the Rod Worth – Stuck Rod for a Burnup of 18,000 MWD/MTU to be 5053 pcm.

[√] The operator records -5053 pcm in the ROD WORTH – STUCK ROD block.

Comment:

O-3.2, Step 6.8.2

Note: WHEN determining values based on burnup, THEN the following curves indicated for the applicable burnup range SHALL be used:

- BOL to 6187 MWD/MTU Use BOL curves
- 6188 to 12,373 MWD/MTU Use MOL curves
- 12,374 to EOL MWD/MTU Use EOL curves

The Integral Rod Worth determined in Step 6.8.2 will always be a positive value.

√ **Performance Step: 9**

_____

DETERMINE the integral rod worth from the rod position recorded in Step 6.6 to the full out position (ARO) using the appropriate Integral Rod Worth column BOL, MOL or EOL in Attachment 5.

Bank Worth to Full Out +_____ pcm

Standard:

The operator reads the Note, and proceeds.

[√] The operator uses Attachment 5, and determines the Integral Rod Worth for EOL conditions with Bank C Rods at 225 Steps and Bank D rods at 217 steps to be 18±1 pcm.

[√] The operator records 18±1 pcm in the BANK WORTH TO FULL OUT block.

Comment:

O-3.2, Step 6.8.3

Note: Stuck rod worth may be obtained from the Stuck Rod Worth column of Attachment 1 for current core burnup. Dropped rods are worth +250 pcm. Rods misaligned low are worth the lower of either +250 pcm (which would indicate it is fully inserted) or +15 pcm/step.

Note: IF there are no stuck, dropped, OR misaligned rod(s), THEN 0 pcm is to be entered.

Caution: Available Shutdown Margin is further reduced by the worth of any Control Rod known to be stuck out, dropped, or misaligned low relative to the bank position.

√ **Performance Step: 10**

_____

RECORD the control rod reactivity due to a known stuck (untripable), a dropped (fully inserted) and a misaligned low control rods.

- Stuck Rod + _____ pcm
- Dropped Rod + _____ pcm
- Rod Misaligned Low + _____ pcm

Standard:

The operator reads the Notes and Caution, and proceeds.

[√] The operator uses Attachment 1, and determines the Stuck Rod Worth for a Burnup of 18,000 MWD/MTU to be 932 pcm.

[√] The operator records 932 pcm in the STUCK ROD block.

The operator records 0 pcm in the DROPPED ROD block.

The operator records 0 pcm in the ROD MISALIGNED LOW block.

Comment:

O-3.2, Step 6.8.4

Performance Step: 11 _____

DETERMINE the reduction in control rod reactivity due to known stuck (untripable), dropped (fully inserted) or misaligned low control rods.

(+_____ pcm) + (+_____ pcm) + (+_____ pcm) = +_____ pcm
Step 6.8.3.1 Step 6.8.3.2 Step 6.8.3.3 Unavailable Rod Worth

Standard: [√] The operator calculates unavailable Rod Worth to be 932 pcm (932 pcm + 0 pcm + 0 pcm = 932 pcm)

Comment:

O-3.2, Step 6.8.5

Performance Step: 12 _____

DETERMINE the total available control rod negative reactivity.

(-_____ pcm) + (+_____ pcm) + (+_____ pcm) = -_____ pcm
Step 6.8.1 Step 6.8.2 Step 6.8.4

Standard: [√] The operator calculates unavailable Rod Worth to be -4103±1 pcm
(-5053 pcm + 18±1 pcm + 932 pcm = -4103±1 pcm)

Comment:

O-3.2, Step 6.9

Performance Step: 13 _____

CALCULATE the Shutdown Margin by adding the negative reactivity added by the control rods in Step 6.8.5 to the positive reactivity from Power Defect recorded in Step 6.7.

(-_____ pcm) + (+_____ pcm) = -_____ pcm
Step 6.8.5 Step 6.7

Standard: [√] The operator calculates Shutdown Margin to be -1053±101 pcm
(-4103±1 + 3050±100 pcm = -1103±101 pcm)

Comment:

O-3.2, Step 6.10

Note: 1.8% delta K/K = 1800 pcm (Single Loop Operation)

Note: 1.3% delta K/K = 1300 pcm (Two Loop Operation)

√ **Performance Step: 14** _____

LOCATE the required Shutdown Margin on Attachment 6, Required Shutdown Margin Figure COLR-2, AND CONVERT to pcm, using the latest boron sample recorded in Step 6.4, AND RECORD below.

Required SDM -_____ pcm

Standard:

The operator reads the Notes, and proceeds.

[√] The operator uses Attachment 6, and determines that for two loop operation and a Boron Concentration for 200 ppm, the required Shutdown Margin is 1.3 delta-K/K.

The operator records 1300 pcm in the REQUIRED SDM block.

Comment:

O-3.2, Step 6.11

√ **Performance Step: 15** _____

VERIFY the Shutdown Margin requirements are satisfied as indicated by the value calculated in Step 6.9 being more negative than the Required SDM in Step 6.10.

Standard:

[√] The operator uses Attachment 6, and determines that the value calculated in Step 6.9 (1053±101) is NOT more negative than the Required SDM (1300) in Step 6.10.

Comment:

Terminating Cue: **Evaluation on this JPM is complete.**

STOP TIME: _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2014 Admin - JPM A1a RO

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

JPM CUE SHEET

INITIAL CONDITIONS:

- Plant is at 100%
- Tavg is at 574°F
- Date: Today
- MWD/MTU: 18000
- Boron sample date: Today; Boron Sample Time: 0001; Boron Concentration: 200 ppm
- Bank C: 225;
  Bank D: 217
- Rod K-7 has just been determined to be untripable.

INITIATING CUE:

- The CRS has directed you to calculate Shutdown Margin (SDM), and notify him if sufficient SDM exists for the current plant conditions.
- All Independent Verification steps will be performed upon completion of your calculation.

THIS IS A TIME CRITICAL JPM

JPM A1b RO

Facility:	Ginna	Task No.:	320-001-01-01
Task Title:	Perform an Independent Verification of a Post-Trip Xenon Reactivity Calculation	JPM No.:	2014 Admin - JPM A1b RO
K/A Reference:	2.1.43 (4.1)		

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.

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

Initial Conditions:

- The plant has tripped from 50% power.
- The reactor had been operating at this power for the last 3 days prior to the trip.
- The XENON PREDICT program on the PPCS is NOT available.
- The Reactor Engineer has completed the Xenon Reactivity Calculation.
- It is currently 0900 on 12/3/14.

Initiating Cue: The CRS directed you to independently verify the Xenon Reactivity Calculation in accordance with Step 6.1.3 of O-3, Hot Shutdown With Xenon Present.

Task Standard: The operator will complete an independent verification of the Xenon Reactivity Calculation and determine that Xenon will equal the value at time of shutdown at 2100 on 12/3/14.

Required Materials: Calculator

General References: O-3, Hot Shutdown With Xenon Present, Rev 04300

Handouts: Handout 1: Copy of O-3, Hot Shutdown With Xenon Present, marked up for this JPM.

Time Critical Task: NO

Validation Time: 19 minutes

(Denote Critical Steps with a √)

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

START TIME: _____

	O-3, Step 6.1.3
Performance Step: 1 _____	COMPLETE Section 1.0 of Attachment 3, Independent Verification.
Standard:	The operator goes to Attachment 3.
Comment:	

	O-3, Attachment 3, Step 1.0/1.1
	NOTE: If calculations were performed by a Licensed Operator, then Independent Verification is performed by an STA OR Reactor Engineer. If calculations were performed by an STA OR Reactor Engineer, then Independent Verification is performed by a Licensed Operator.
Performance Step: 2 _____	CALCULATE the date and time for Xenon to return to the value at time of shutdown by one of the following methods: IF the PPCS program, XENON PREDICT will be used to determine the date and time for Xenon to return to the value at time of shutdown, THEN .....
Standard:	The operator reads the NOTE and proceeds. The operator recognizes that the XENON PREDICT program is OOS, marks this step NA, and proceeds to Step 1.2
Comment:	

O-3, Attachment 3, Step 1.2/1.2.1

√ **Performance Step: 3** _____

IF Attachment 1, Time To Equilibrium Xenon, will be used to determine the date and time for Xenon to return to the value at time of shutdown, THEN PERFORM the following: OTHERWISE, MARK this Step N/A.
RECORD the average power for the 6 hours prior to reactor shutdown.

Standard:

[√] The operator records 50%.

The operator initials Step 1.2.1.

Comment:

O-3, Attachment 3, Step 1.2.2

√ **Performance Step: 4** _____

DETERMINE the amount of time for Xenon to decay to the value at time of shutdown, using the Table in Attachment 1. USE the power level recorded in attachment Step 1.2.1 and the current burnup recorded in Prerequisite Step 5.9.

Standard:

[√] The operator observes that the current burnup recorded in Prerequisite 5.9 is 12,514 MWD/MTU.

[√] The operator uses Attachment 1 and finds the intersecting point for 12500 MWD/MTU and 50% power to be 13.5 hours, and records.

The operator initials Step 1.2.2.

Comment:

O-3, Attachment 3, Step 1.2.5

Performance Step: 5 _____

CALCULATE the date and time at which Xenon will equal the value at time of shutdown by adding the hours determined in Step 1.1.6 OR Step 1.2.2 to Prerequisite Step 5.8 and recording below.

Standard:

[√] The operator observes that the Date and time of the Trip were 0730 on 12/3/14.

[√] The operator adds 13.5 hours to the time of trip and determines that Xenon will equal the value at time of shutdown at 2100 on 12/3/14, and records.

The operator initials Step 6.1.3.

The operator places Printed Name, signature and initials I space provided in Step 5.1 (Page 6 of 19 of O-3).

EXAMINER NOTE: **The operator may report that the time that was determined in the Independent Verification is different from the time determined by the RE in Step 6.1.2.**

Comment:

Terminating Cue: **Evaluation on this JPM is complete.**

STOP TIME: _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2014 Admin - JPM A1b RO

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

JPM CUE SHEET

INITIAL CONDITIONS:

- The plant has tripped from 50% power.
- The reactor had been operating at this power for the last 3 days prior to the trip.
- The XENON PREDICT program on the PPCS is NOT available.
- The Reactor Engineer has completed the Xenon Reactivity Calculation.
- It is currently 0900 on 12/3/14.

INITIATING CUE:

The CRS directed you to independently verify the Xenon Reactivity Calculation in accordance with Step 6.1.3 of O-3, Hot Shutdown With Xenon Present.

5.0 PREREQUISITES

NOTE

Steps in Section 5.0 may be performed concurrently **OR** in any order.

5.1. **COMPLETE** signature/initial block below for all personnel performing this procedure.

Print Name	Signature	Initials
REACTOR ENG	Reactor Eng	RE
Shift Manager	Shift Manager	SM

5.2. **PERFORM** page check of this procedure. SM

5.3. Shift Manager has authorized performance of this procedure.

Shift Manager _____ Date 12/3/14

5.4. **NOTIFY** CRS of start of this procedure. SM

5.5. **NOTIFY** HCO to log start of this procedure. SM

5.6. **VERIFY** plant is at Hot Shutdown conditions following power operations. SM

5.7. **VERIFY** Both Reactor Coolant Pumps are operating. SM

5.8. **RECORD** date and time of trip or shutdown.

- Date 12/3/14 Time 0730 SM

5.9. **RECORD** the cycle burnup from PPCS point ID BURNUP.

- MWD/MTU: 12,514 SM

NOTE

Control rods that are **NOT** able to be verified fully inserted include control rods that are confirmed stuck (untrippable) or have lost rod position indication.

5.10. **IF** one or more control rods are **NOT** able to be verified fully inserted **THEN CALCULATE** required increase in boron concentration to compensate for the decrease in shutdown margin.

- 0 (No. of RCCA) × 150 ppm = 0 ppm

SM

6.0 PERFORMANCE

NOTE

The preferred method for determining Xenon reactivity is to use the PPCS program, XENON PREDICT. Use of Attachment 1, Time To Equilibrium Xenon, for a shutdown from non-equilibrium power conditions is an approximation and, if used, the results should be confirmed by the Reactor Engineer as soon as possible. **[G0237]**

6.1. Xenon Reactivity Calculation

6.1.1. **CALCULATE** the date and time for Xenon to return to the value at time of shutdown by one of the following methods:

1. **IF** the PPCS program, XENON PREDICT will be used to determine the date and time for Xenon to return to the value at time of shutdown,
   THEN PERFORM the following.
   OTHERWISE, MARK this Step N/A.

   a. **SELECT** the XENON PREDICT button from the "Operations Menu" on the PPCS. NA

   b. **OBTAIN** "Projected values of Xenon reactivity from current conditions" plot by depressing the TREND PLOT button using XENON PREDICT on the PPCS. NA

   c. **IF** accessing XENON PREDICT **WITHIN ONE** hour of the time at which the Reactor was subcritical,
   THEN RECORD the Xenon value at time zero (current conditions) for this calculation.
   OTHERWISE, MARK this Step N/A.

   XE _____ PCM NA

   d. **IF NOT** accessing XENON PREDICT within one hour of the time at which the Reactor was subcritical,
   THEN RECORD the value of Xenon reactivity that existed at the time the Reactor went subcritical from the hourly PPCS logs (Point ID "XFXEK") using nearest hourly reading.
   OTHERWISE, MARK this Step N/A.

   XE _____ PCM NA

6.1.1.1 (Continued)

e. **MOVE** the cursor on the plot to the location at which the Xenon value on the decaying side of the curve is equal to the Xenon value obtained in **EITHER** Step 6.1.1.1.c **OR** Step 6.1.1.1.d. _____

f. **DETERMINE** the number of hours for the projected Xenon to decay to the value of Xenon reactivity that existed at the time the Reactor went subcritical.

Hours: _____ _____

2. **IF** Attachment 1, Time To Equilibrium Xenon, will be used to determine the date and time for Xenon to return to the value at time of shutdown,
THEN PERFORM the following:
OTHERWISE, MARK this Step N/A.

a. **RECORD** the average power for the 6 hours prior to reactor shutdown.

Power: 100 % RE

b. **DETERMINE** the amount of time for Xenon to decay to the value at time of shutdown, using the Table in Attachment 1. **USE** the power level recorded in Step 6.1.1.2.a and the current burnup recorded in Prerequisite Step 5.9.

Hours 19.25 RE

6.1.2. **CALCULATE** the date and time at which Xenon will equal the value at time of shutdown by adding the hours determined in Step 6.1.1.1.f **OR** 6.1.1.2.b to Step 5.8 and recording below.

Date 12/4/14 Time 0245 RE

6.1.3. **COMPLETE** Section 1.0 of Attachment 3, Independent Verification. _____

6.1.4. **NOTIFY** Reactor Engineering to provide an estimated critical position strategy to ensure that large boron concentration changes are not required immediately prior to startup. _____

JPM A2 RO

Facility: Ginna Task No.:

Task Title: Perform RCS Leakrate Surveillance JPM No.: 2014 Admin - JPM A2 RO

K/A Reference: 2.2.12 (3.7)

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.

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

Initial Conditions:

- The plant is at 100% power with 40 gpm Letdown flow.
- The VCT Level point on the PPCS is OOS.
- At 1020 the VCT level was 25% when the HCO started the Day Shift RCS Leakage Monitoring Surveillance, intending to monitor for about 4 hours.
- At 1125 a VCT Level instrument failure occurred which I&C corrected and restored to operation within 10 minutes.
- It is currently 1415 and an Auto Makeup has just been completed.
  - No VCT Diversion occurred.
  - The ULR tool is temporarily OOS.
- The current Integrator Readings are as follows:
  - RMW Reading 240
  - BA Reading 21.0
- A check of the Identified Area Leakage has not changed since the leakrate determinations were recorded.

Initiating Cue:

- The CRS directed you to record the data for the recent Auto Makeup on Attachment 3, RCS Leakage Surveillance Record, AND determine the current RCS Leakrate.

- Identify Tech Spec LCOs, if any, that have been exceeded.

Task Standard:	The operator will complete Attachment 3 in accordance with the KEY provided, and identify the LCO 3.4.13, RCS Operational Leakage, is NOT met.
Required Materials:	Calculator Standard Procedure Reference Carts must be available to the operator
General References:	O-6.13, Daily Surveillance Log, Rev 18301 S-12.4, RCS Leakage Record Instructions, Rev 05701 S-12.2, Operator Action In The Event of Indication of Significant Increase in Leakage, Rev 04700 Technical Specifications; Appendix A to Facility Operating License for the R.E. Ginna Nuclear Power Plant; Docket No. 50-244, Amendment 115
Handouts:	Handout 1: Attachment 3 of S-12.4 marked up as required.
Time Critical Task:	NO
Validation Time:	11 minutes

(Denote Critical Steps with a √)

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

START TIME: _____

S-12.4, Step 6.1.1

√ **Performance Step: 1** _____

Reasons for Addition:

- A - Auto Make-up.
- B - Borate.
- D - Dilution.
- A/D - Alternate Dilution

Standard:

[√] The operator records **1415** in the TIME column of Section A, just below the 1215 entry.

[√] The operator records **A** in the REASON A D B A/D column of Section A.

Comment:

S-12.4, Step 6.1.2

√ **Performance Step: 2** _____

Diversions.

- LOG Y-Yes OR N-No.

Standard:

[√] The operator records **N** in the DIVERSION column of Section A.

Comment:

S-12.4, Step 6.1.3

Performance Step: 3 Gallons Added.

_____

- LOG the number of gallons added from the RMW AND B.A. integrators.

Standard: [√] The operator records **240** in the RMW READING column of Section A.

[√] The operator records **21.0** in the BA READING column of Section A.

Comment:

Performance Step: 4

S-12.4, Step 6.1.4

Calculated Leak Rate.

- OBTAIN Leak Rate from VCT level change if no diversion has occurred during the leakage calculation time period.
- Leakage can be calculated using the following formula:

(Δ% VCT Level) (12 gal./1%) + (Additions in gal. during time period)

- Time (In Minutes) between level readings
- In the above formula, 12 gal./1% is generally the conservative number used for the leak rate calculation. IF an exact number is necessary THEN REFER to Attachment 1 AND Attachment 2 of this procedure.
- IF determining calculated leak rate from an auto makeup, AND NO diversion has taken place, THEN take the total gallons added between auto makeups AND divide by the time elapsed (in minutes).
- IF necessary LCV-112A can be switched to VCT position to calculate a leak rate.
- ENSURE LCV-112A is returned to Auto after leakage calculation is complete or as necessary to maintain VCT Level.
- IF calculated leak rate is greater than 0.500 gpm, THEN submit a Condition Report for Engineering evaluation of impact on Charging Pump NPSH.

Standard:

The operator recognizes that the VCT Level change cannot be used to determine leak rate (Diversion has occurred).

The operator recognizes that the leak rate can be calculated from the last two Auto Make ups (1225 and 1415).

[√] The operator records **115.6** in the GALLONS ADDED BA+RMW column of Section A.

[√] The operator calculates the leakrate as follows:

Leakrate = [(Δ% VCT Level) (12 gal./1%) + (Additions in gal. during time period)]/ Time (In Minutes) between level readings

Leakrate = [(0%)(12.1 gal/%) + 115.6/110 = **1.051 gpm**

[√] The operator records **1.051** in the CALCULATED LEAK RATE column of Section A.

Comment:

S-12.4, Step 6.1.5

Performance Step: 5 Identified Leak Rate.

- This is the sum of the leak rates calculated from the RCDT, PRT, and CPLR, primary to secondary leakrate, AND any other known leak rates.
- The following guidance is provided for the Charging Pump Leakoff Rate data:
  - At 0.100 gpm: SUBMIT Condition Report for 12 week planning process.
  - At 0.150 gpm: Condition Report upgraded to Priority Two; work within two week
  - At 0.200 gpm: IF possible, THEN SECURE pump AND preferentially run other pumps until fixed.
  - At 0.500 gpm: TAG affected pump PER S-3.2G, Charging Pump Isolation.

Standard: The operator recognizes that a check of the Identified Area Leakage reveals that the leakrates in these areas have not changed since the previous leakrate determinations (Initial Conditions).

[√] The operator records **.045** in the IDENT LEAK RATE column of Section A.

Comment:

S-12.4, Step 6.1.6

Performance Step: 6 Unidentified Leak Rate.

- This is the difference in leak rates between the calculated leak rate AND the identified leak rate.

Standard:

[√] The operator DETERMINES THE Unidentified Leakrate to be 1.051-0.045 gpm = 1.006 gpm.

[√] The operator records **1.006 (1.004-1.010)** in the UNIDENTD LEAK RATE column of Section A.

[√] The operator reviews TS LCO 3.4.13 and determines that the LCO is NOT met because Unidentified Leak Rate is in excess of 1.0 gpm.

The operator initials the 1415 entry.

Comment:

S-12.4, Step 6.1.7

Performance Step: 7 RMW and Boric Acid Integrators.

- At 2400 hrs, LOG the 2400 hrs value of RMW AND Boric Acid Integrator reading from the MCB.
- CALCULATE the total number of gallons added to the RCS by subtracting the 0000 hrs (previous day 2400 hrs) reading from the current 2400 hrs reading for both RMW AND Boric Acid.
- To obtain a 24 hr leakage rate, ADD the total gallons of RMW AND Boric Acid. THEN divide by 1440 minutes. N/A if a diversion occurred within the day.

Standard: The operator determines that this step is NOT required yet.

Comment:

Terminating Cue: **Evaluation on this JPM is complete.**

STOP TIME: _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2014 Admin - JPM A2 RO

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

JPM CUE SHEET

INITIAL CONDITIONS:

- The plant is at 100% power with 40 gpm Letdown flow.
- The VCT Level point on the PPCS is OOS.
- At 1020 the VCT level was 25% when the HCO started the Day Shift RCS Leakage Monitoring Surveillance, intending to monitor for about 4 hours.
- At 1125 a VCT Level instrument failure occurred which I&C corrected and restored to operation within 10 minutes.
- It is currently 1415 and an Auto Makeup has just been completed.
  - No VCT Diversion occurred.
  - The ULR tool is temporarily OOS.
- The current Integrator Readings are as follows:
  - RMW Reading: 240
  - BA Reading 21.0
- A check of the Identified Area Leakage has not changed since the leakrate determinations were recorded.

INITIATING CUE:

- The CRS directed you to record the data for the recent Auto Makeup on Attachment 3, RCS Leakage Surveillance Record, AND determine the current RCS Leakrate.
- Identify Tech Spec LCOs, if any, that have been exceeded.

Handout.

Page 1 of 2

Attachment 3, RCS Leakage Surveillance Record

Category 3.3.39
Reviewed_____

Section "A"
System Inventory

Date: 12/2/14
Day: Tuesday

Time	RMW Reading	BA Reading	Reason A D B A/D	Diversion	Gallons Added BA + RMW	Calculated Leak Rate	Ident Leak Rate	Unidentd Leak Rate	ULR Tool Updated
1200-2142	—	—	—	—	ΔVCT	.072	.068	.004	
2300	15	0	A/D	N	15				
1020					ΔVCT				
1125				Y					
1200	30	0	A/D	N	15				
1225	135	10.4	A	N	115.4				

RMW Integrator
2400 HRS. _____
0000 HRS. 0
Total Gallons:_____

BA Integrator
2400 HRS. _____
0000 HRS. 0
Total Gallons:_____

24 Hr Leakage Rate, If NO Diversion
Total RMW + BA / 1440 = _____ gpm

NOTE: IF Reactor Makeup Rate Increases by 0.25 gpm Over The Normal, **REFER** to S-12.2.
NOTE: IF unidentified leak rate(ULR) meets criteria listed in 6.1.6, **REFER** to S-12.2, Operator Action In The Event Of Indication Of Significant Increase In Leakage
Remarks: Diverted Letdown for 15 seconds at 1125

Section "B"
Leakage From Identified Areas

Time	Night Shift Location	Night Shift G.P.M.	Time	Day Shift Location	Day Shift G.P.M.
2000	RCDT	.001	0900	RCDT	.001
2100	CPLR	.067	1000	CPLR	.044

Remarks:

Remarks:

RCP Standpipe Time	RCP A/B	Aux. Bldg. Sump	Aux. Bldg. Sump Tk	PZR Relief Tank Time	Temp	Press	Level

Section "C"
Containment Condensate Collectors

Total Fluid Released to Sump A:

(# Dumps) (Gal/Dump)

1090 (____) 2.57 = (____)
1091 (____) 2.45 = (____)
1092 (____) 2.42 = (____)
1093 (____) 3.05 = (____)

TOTAL _____

TOTAL / 1440 = _____ G.P.M.

Dump Time 1090	Dump Time 1091	Dump Time 1092	Dump Time 1093	Dump Time ( )
0258	0020	0953	0144	
0628	0353		0353	
0953	0727		0727	
1317	1114			

Remarks:

Section "D" – Containment
Sump Pump Actuations

1. Last Calculated Leak Rate in gpm.		.006			
2.Last Pump Actuation	Date:	10/30/14			
	TIME:	2018			
3.Present Pump Actuation	Date:				
	TIME:				
4.New Interval In Hours					
5.GPM = Note 1 OR 2 / STEP 4 X (0.0167)					

Remarks:
NOTE 1: Pump "A" 98 Gals/Actuation, **Pump "B"** 140 Gals/Actuation
NOTE 2: Δ Sump Level in gallons (120gal/ft)(PPCS pt. L2039 or L2044)
NOTE 3: IF sump leakage >0.02 gpm increase occurred, **Refer** to S-12.2

Attachment 3, RCS Leakage Surveillance Record, (Continued)

Section "E"

Containment Temperature:								Containment Pressure PI-944 SEE Note 2 SEE Note 3 SEE Note 4	HCO
PPCS POINTS	TCV03	TCV07	TCV08	TCV09	TCV10	TCV17	AVG. TEMP SEE NOTE 1		
Yesterdays Carry Over							92.77		
0700-1900	78.43	83.99	94.96	91.58	85.93	96.07	88.49	0.35	[illegible]
1900-0700	83.16	89.22	99.83	96.95	90.28	100.80	93.37	0.45	KM

NOTE 1 - Tech Spec limit is ≤ 125° F (SR 3.6.5.1), Refer to step 6.5 for Admin Limits
NOTE 2 - Admin Limit is from – 0.2 TO + 0.5 PSIG., Refer to O-11 for maintaining pressure.
NOTE 3 - Tech Spec limit ≥-2 psig and ≤1 psig (SR 3.6.4.1).
NOTE 4 – Refer to O-11 for procedural guidance to obtain a containment pressure reading via an alternate path when PI-944 out-of-service.

Remarks:

Section "F"

Containment Particulates – R11 (PPCS pt. R11H12)

Remarks:

1. Yesterday's 2400 hr avg 205
2. Today's 1200 hr avg 205
3. Difference Step 2 – Step 1 = 205 - 205 = 0 cpm INC or ____ cpm DEC (AM)
4. Today's 1200 hr avg 205
5. Today's 2400 hr avg 199
6. Difference Step 5 – Step 4 = 199 - 205 = ____ cpm INC or 6 cpm DEC (PM)
7. G.P.M Leakage = (cpm – background cpm) (1.8 E – 7) / μC/CC Krypton 88 In Reactor Coolant = (199 - 200) (1.8 E – 7) / (3.02E-3) = 0 gpm

NOTE: If Containment Particulate Average Increases by 2000 cpm Over The Last Average, Refer To S-12.2

Section "G"

Containment Gas – R12 (PPCS pt. R12H12)

Remarks:

1. Yesterday's 2400 hr avg 345
2. Today's 1200 hr avg 346
3. Difference Step 2 – Step 1 / Step 1 (100) = (346 - 345) / 345 (100) = 0.3 % INC or ____ % DEC (AM)
4. Today's 1200 HR AVG 346
5. Today's 2400 HR AVG 340
6. Difference Step 5 – Step 4 / Step 4 (100) = (340 346) / 346 (100) = ____ % INC or 1.7 % DEC (PM)

NOTE:- If Containment Gas Average increases by 20% over Last Average, Refer To S-12.2

SHIFT MANAGER REVIEW:

SHIFT 1 [signature] SHIFT 2 [signature]

Attachment 3, RCS Leakage Surveillance Record

Category 3.3.39
Reviewed_____

Date: 12/2/14
Day: Tuesday

Section "A"
System Inventory

Time	RMW Reading	BA Reading	Reason A D B A/D	Diversion	Gallons Added BA + RMW	Calculated Leak Rate	Ident Leak Rate	Unidentd Leak Rate	ULR Tool Updated
1200-2142	—	—	—	-	ΔVCT	.072	.068	.004	
2300	15	0	A/D	N	15				
1020	—	—	—	—	ΔVCT				
1125				Y					
1200	30	0	A/D	N	15				
1225	135	10.4	A	N	115.4				
1415	240	21	A	N	115.6				
1225-1415	—	—	—	—	ΔVCT	1.051	.045	1.006	

RMW Integrator
2400 HRS. _____
0000 HRS. 0
Total Gallons:_____

BA Integrator
2400 HRS. _____
0000 HRS. 0
Total Gallons:_____

24 Hr Leakage Rate, If NO Diversion
Total
RMW + BA / 1440 = _____ gpm

NOTE: IF Reactor Makeup Rate Increases by 0.25 gpm Over The Normal, **REFER** to S-12.2.
NOTE: IF unidentified leak rate(ULR) meets criteria listed in 6.1.6, **REFER** to S-12.2, Operator Action In The Event Of Indication Of Significant Increase In Leakage
Remarks: Diverted letdown for 15 seconds at 1125

Section "B"
Leakage From Identified Areas

Time	Night Shift Location	Night Shift G.P.M.	Time	Day Shift Location	Day Shift G.P.M.
2000	RCDT	.001	0900	RCDT	.001
2100	CPLR	.067	1000	CPLR	.044

Remarks:

Remarks:

RCP Standpipe Time	RCP A/B	Aux. Bldg. Sump	Aux. Bldg. Sump Tk	PZR Relief Tank Time	Temp	Press	Level

Section "C"
Containment Condensate Collectors

Total Fluid Released to Sump A:

(# Dumps) (Gal/Dump)

1090 (____) 2.57 = (____)
1091 (____) 2.45 = (____)
1092 (____) 2.42 = (____)
1093 (____) 3.05 = (____)

TOTAL _____

TOTAL / 1440 = _____ G.P.M.

Dump Time 1090	Dump Time 1091	Dump Time 1092	Dump Time 1093	Dump Time ( )
0258	0020	0953	0144	
0628	0353		0353	
0953	0727		0727	
1317	1114			

Remarks:

Section "D" – Containment
Sump Pump Actuations

1. Last Calculated Leak Rate in gpm.		.006			
2.Last Pump Actuation	Date:	11/30/14			
	TIME:	2018			
3.Present Pump Actuation	Date:				
	TIME:				
4.New Interval In Hours					
5.GPM = Note 1 OR 2 / STEP 4 X (0.0167)					

Remarks:
NOTE 1: Pump "A" 98 Gals/Actuation, **Pump "B"** 140 Gals/Actuation
NOTE 2: Δ Sump Level in gallons (120gal/ft)(PPCS pt. L2039 or L2044)
NOTE 3: IF sump leakage >0.02 gpm increase occurred, **Refer** to S-12.2

JPM A3 RO

Facility: Ginna Task No.:

Task Title: Evaluate Steam Generator Tube Leakage from R-47 Reading JPM No.: 2014 Admin - JPM A3 RO

K/A Reference: 2.3.5 (2.9)

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.

Provide Candidate with Initial Conditions/Cue (Last Page) of this JPM.

Initial Conditions:

- The plant is operating at 100% power.
- The Secondary AO has called and indicated that the R-47 AMBER light is blinking, and the R-47 bar graph indication, which is also AMBER, is reading 5.832E2 cpm.
- The AO reports that:
  - The R-47 WARNING alarm setpoint is 4.56E2 cpm.
  - The R-47 HIGH alarm setpoint is 9.11E2 cpm.
- The HCO reports that the PPCS point R47G is reading 4.3 gpd and stable.
- RP/Chemistry has been requested to obtain and analyze an air ejector grab sample.
- The crew is evaluating the need to enter AP-SG.1, Steam Generator Tube Leak.

Initiating Cue: The CRS directed you to:

1. Determine if the R-47 alarm setpoints are set properly.
2. Determine the estimated Steam Generator Tube Leakrate based on the local R-47 reading.

3. Determine if AP-SG.1, Steam Generator Tube Leak, should be entered based on the known information.

Task Standard:	The operator will determine that the R-47 alarm setpoints are set lower than identified by P-9, and that the local R-47 reading is too low to support entry into AP.SG.1.
Required Materials:	Calculator Standard Procedure Reference Carts must be available to the operator
General References:	AR-RMS-R47, R-47 Air Ejector Noble Gas Monitor, Rev 00000 AR-PPCS-R47AR, SGTL Indicated, Rev 00000 RE Ginna Curve Book, Curve 06-004, Steam Generator Tube Leak Rate vs. RM-47 Reading, Rev 8/8/14 AP-SG.1, Steam Generator Tube Leak, Rev 01500 P-9, Radiation Monitoring System, Rev 09900
Handouts:	None
Time Critical Task:	NO
Validation Time:	7 minutes

(Denote Critical Steps with a √)

Provide Candidate with Initial Conditions/Cue (Last Page) of this JPM.

START TIME: _____

√ **Performance Step: 1** Determine if the R-47 alarm setpoints are set properly.

_____

Standard: The operator obtains P-9, Radiation Monitoring System.

[√] The operator uses P-9 to determine that the required R-47 HIGH alarm must be set at 9.11E6 cpm.

[√] The operator compares the reported R-47 HIGH alarm setpoint to that required by P-9, and determines that the R-47 HIGH alarm setpoint is incorrectly set too LOW.

[√] The operator uses P-9 to determine that the R-47 WARNING alarm should be set at 4.56E6 cpm.

[√] The operator compares the reported R-47 WARNING alarm setpoint to that required by P-9, and determines that the R-47 WARNING alarm setpoint is incorrectly set too LOW.

EXAMINER CUE: **If the operator requests the alarm setpoints as listed on the PPCS, indicate that the WARNING alarm is set at 4.56E6 cpm, and the HIGH alarm setpoint is set at 9.11E6 cpm.**

EXAMINER NOTE: **There is a potential that the alarm setpoints on the PPCS and the local instrument could be set differently. The PPCS alarm setpoints are set by IT personal controlling the PPCS Software. The alarm setpoints on the local instrument are set by operators.**

Comment:

√ **Performance Step: 2** Determine the estimated Steam Generator Tube Leakrate based on the local R-47 reading.

_____

Standard: The operator obtains Curve 06-004, Steam Generator Tube Leak Rate vs. RM-47 Reading.

[√] The operator compares the local R-47 reading of 5.832E2 to Curve #06-004, and determines that Steam Generator Tube Leakage is ≈4.4 gpd.

EXAMINER CUE: **If asked, report as the Secondary AO that the Air Ejector leakoff is 3.0 SCFM.**

Comment:

√ **Performance Step: 3** Determine if AP-SG.1, Steam Generator Tube Leak, should be entered based on the known information.

_____

Standard: The operator obtains AP-SG.1 and reviews Entry Conditions and Symptoms.

[√] The operator compares the known information to the AP-SG.1 Entry Conditions and Symptoms and determines that none are met; and that AP-SG.1 should NOT be entered.

EXAMINER NOTE: **The operator may indicate that AP-SG.1 could be entered based on the results of the requested Air Ejector grab sample.**

Comment:

Terminating Cue: **Evaluation on this JPM is complete.**

STOP TIME: _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2014 Admin - JPM A3 RO

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS:

- The plant is operating at 100% power.
- The Secondary AO has called and indicated that the R-47 AMBER light is blinking, and the R-47 bar graph indication, which is also AMBER, is reading 5.832E2 cpm.
- The AO reports that:
  - The R-47 WARNING alarm setpoint is 4.56E2 cpm.
  - The R-47 HIGH alarm setpoint is 9.11E2 cpm.
- The HCO reports that the PPCS point R47G is reading 4.3 gpd and stable.
- RP/Chemistry has been requested to obtain and analyze an air ejector grab sample.
- The crew is evaluating the need to enter AP-SG.1, Steam Generator Tube Leak.

INITIATING CUE:

The CRS directed you to:

1. Determine if the R-47 alarm setpoints are set properly.
2. Determine the estimated Steam Generator Tube Leakrate based on the local R-47 reading.
3. Determine if AP-SG.1, Steam Generator Tube Leak, should be entered based on the known information.

JPM A1a SRO

Facility: Ginna Task No.:

Task Title: Determine Time to Boil for a Loss of Shutdown Cooling JPM No.: 2014 Admin - JPM A1a SRO

K/A Reference: 2.1.25 (4.2)

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X

Classroom X Simulator _____ Plant _____

READ TO THE EXAMINEE

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

Provide Candidate with Initial Conditions/Cue (Last Page of this JPM).

Initial Conditions:

- The plant is in Mode 5 for a refueling outage.
- The reactor has been shutdown for 25 hours.
- The pressurizer is solid with LTOP in service.
- RCS temperature is 140°F.
- The Ginna Defense-In-Depth computer program used to calculate time to boil and core uncovery is unavailable.

Initiating Cue:

The Shift Manager has directed you to determine the Time to Boil given a Loss of RHR and the following two sets of conditions:

- For present plant conditions,

AND

- Exactly four (4) days from now based on the following conditions:
  - RCS level will be reduced to 64 inches
  - RCS temperature will be lowered to 100°F
  - PRZR manway will be removed

Task Standard:	The operator will use IP-OUT-2, Outage Risk Management, and determine that the Time to Boil for the present plant conditions is 2.46 hours, and for the projected conditions four days from now is .43 hours (25.96 +0.1/-0.0 minutes).
Required Materials:	Calculator Standard Procedure Reference Carts must be available to the operator
General References:	IP-OUT-2, Outage Risk Management, Rev 02000
Handouts:	None
Time Critical Task:	NO
Validation Time:	7 minutes

(Denote Critical Steps with a √)

Provide Candidate with Initial Conditions/Cue (Last Page of this JPM).

START TIME: _____

IP-OUT-2, Attachment A.5, Core Cooling

√ **Performance Step: 1** _____

Present Plant conditions: Time to core boiling (saturation) and core uncovery can be determined from Attachments 5-14 of DA-ME- 98-115 (Attachment E, Time to Boil/Core Uncovery). Use the table which most closely matches actual plant conditions.

Standard:

The operator obtains a copy of IP-OUT-2, reviews it and arrives at Attachment E.

The operator determines that Page 5 of 11 on Attachment E, Time to Reach Saturation with Pressurizer Full and RCS Closed, most closely approximates present plant conditions, and addresses this page.

[√] The operator finds the intersecting cell for Time after Shutdown (hrs) - 25 and Time to Reach Saturation (hrs) w/Trcs = 140°F to **2.46 hours**.

Comment:

IP-OUT-2, Attachment A.5, Core Cooling

√ **Performance Step: 2**

Projected Plant conditions four (4) days from now: Time to core boiling (saturation) and core uncovery can be determined from Attachments 5-14 of DA-ME- 98-115 (Attachment E, Time to Boil/Core Uncovery). Use the table which most closely matches actual plant conditions.

Standard:

The operator obtains a copy of IP-OUT-2, reviews it and arrives at Attachment E.

The operator determines that Page 7 of 11 on Attachment E, Time to Reach Saturation at 64" and RCS Open, most closely approximates present plant conditions, and addresses this page.

[√] The operator finds the intersecting cell for Time after Shutdown (hrs) - 120 and Time to Reach Saturation (hrs) w/Trcs = 100°F to **0.43 hours/25.96 (+0.1/-0.0) minutes**.

EXAMINER NOTE:

The +0.1/0.0 allowance is based on the fact that there have been 121 hours rather than 120 hours since the shutdown, and the operator may interpolate between the 120 hour time to reach saturation in minutes and the 150 hour time to reach saturation in minutes. If this is the case, and the operator assumed a linear function between the two points, the time would be increased by approximately 0.1 minutes.

Comment:

Terminating Cue: **Evaluation on this JPM is complete.**

STOP TIME: _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2014 Admin - JPM A1a SRO

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

JPM CUE SHEET

INITIAL CONDITIONS:

- The plant is in Mode 5 for a refueling outage.
- The reactor has been shutdown for 25 hours.
- The pressurizer is solid with LTOP in service.
- RCS temperature is 140°F.
- The Ginna Defense-In-Depth computer program used to calculate time to boil and core uncovery is unavailable.

INITIATING CUE:

The Shift Manager has directed you to determine the Time to Boil given a Loss of RHR and the following two sets of conditions:

- For present plant conditions,

AND

- Exactly four (4) days from now based on the following conditions:
  - RCS level will be reduced to 64 inches
  - RCS temperature will be lowered to 100°F
  - PRZR manway will be removed

Record Answers Below:

Present Plant Conditions:	
Projected Plant Conditions: (Four Days from now)	

JPM A1b SRO

Facility: Ginna Task No.:

Task Title: Cold Weather Walkdown JPM No.: 2014 Admin - JPM A1b SRO

K/A Reference: 2.1.8 (4.1)

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.

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

Initial Conditions:

- The weekly Cold Weather Walkdown is in progress, and the Primary, Secondary and Outside Auxiliary Operators have just completed their Walkdown Tours.
- The Auxiliary Operator PDA is unavailable, however, the recently completed Attachment 1, Cold Weather Temperature Log, of O-22, Cold Weather Walkdown Procedure, is available.
- A severe lake-effect storm is occurring with 12 inches of snow having accumulated over the last four hours, and the Outside AO has reported that the snow has reached the nozzles of several fire hydrants.
- There are no open work orders/trouble reports numbers generated from M-1306.1, Ginna Station Maintenance Department, Winterizing Inspection Program.
- There are no light-weight easy-view thermometers that have been installed in any locations due to on-going temporary work activities.
- Other than the weather concern, there are no hazards to plant operation at this time.

Initiating Cue:

- You, as the Shift Manager, are required to review Attachment 1 and perform section 6.1, General Instructions, of O-22, and prioritize any areas of concern for the Auxiliary Operator Walkdown Tours.

- Document discrepancies, if any, and any required action(s).

Task Standard:	The operator will review the most recent plant area temperature data and then use O-22 to determine that two areas of the plant are too low in temperature. Then the operator will prioritize the actions of the Auxiliary Operators to tour these areas more frequently, and identify discrepancies and actions required in accordance with the attached KEY.
Required Materials:	None
General References:	O-22, Cold Weather Walkdown Procedure, Rev 01003
Handouts:	Handout 1: O-22, Cold Weather Walkdown Procedure, marked up as follows: • Step 5.1: Several Names inserted/Signatures and Initials • Step 5.2: Initialed • Step 5.3: SM Identified/Date entered and initialed • Step 5.4: Initialed • Step 5.5: Initialed Handout 2: Completed Attachment 1 of O-22, Cold Weather Walkdown Procedure
Time Critical Task:	NO
Validation Time:	20 minutes

(Denote Critical Steps with a √)

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

START TIME: _____

	O-22, Step 6.1.1
Performance Step: 1 _____	**Note:** The instructions in this section are applicable at all times between November 1 and April 1. **Note:** Steps of this Procedure may be performed out of sequence with SRO concurrence. IF an abnormal condition exists that poses a hazard to plant operation, THEN SUBMIT a work request AND immediately notify Maintenance to correct the problem. OTHERWISE, MARK this Step N/A.
Standard:	The operator reads the Notes, and proceeds. The operator recognizes that no abnormal condition exists which poses a hazard to plant operation, and proceeds.
EXAMINER NOTE:	**These Steps may be performed in any order.**
Comment:	

O-22, Step 6.1.2

Note: Routine thermometer readings are obtained with the Auxiliary Operators PDA. However when the Auxiliary Operators PDA is unavailable Attachment 1, Cold Weather Temperature Log may also be used to log the following readings.

Performance Step: 2 OBTAIN designated thermometer readings in potential cold areas once per shift. (Auxiliary Operator using PDA)

Standard: The operator reads the Note, and proceeds.

The operator reviews the completed Attachment 1 temperature readings and compares these to the minimum temperatures required by Precaution and Limitation 4.1.

[√] The operator determines that the temperatures in the B Diesel Room and the Screenhouse North Wall Area temperatures are below that required by Precaution and Limitation 4.1; and contacts Plant Management.

EXAMINER CUE: **As Plant Management, ask the SM to provide recommendations for corrective actions to raise temperature in the affected area(s) AND to raise surveillance frequency until temperature can be restored.**

[√] The operator prioritizes Section 6.2.11 for the Secondary Operator Walkdown Tour and/or requires inspection of the Diesel Generator Room B at a higher frequency than once every 12 hours.

The operator establishes any or no prioritization for the Primary Operator Walkdown Tour.

[√] The operator prioritizes Section 6.4.1 for the Outside Operator Walkdown Tour and/or requires inspection of the Screenhouse at a higher frequency than once every 12 hours.

EXAMINER NOTE: **These Steps may be performed in any order.**

Comment:

O-22, Step 6.1.3

Performance Step: 3

IF required by the Shift Manager, THEN PERFORM the following to install light weight easy view thermometers at locations susceptible to cold or hot air OR where temporary work setups would pose a freezing problem: OTHERWISE, MARK this Step N/A.

Standard:

The operator recognizes that there are no light-weight easy-view thermometers that have been installed in any locations due to on-going work activities, and marks this Step NA, and proceeds.

EXAMINER NOTE: **These Steps may be performed in any order.**

Comment:

O-22, Step 6.1.4

Performance Step: 4

WHEN contacted by the Mechanical PM Analyst, THEN LOG open WR/TR numbers and descriptions generated from completion of M-1306.1, Maintenance Department Winterizing Inspection Program, on Attachment 2.

Standard:

The operator recognizes that there are no open work orders/trouble reports numbers generated from M-1306.1, Ginna Station Maintenance Department, Winterizing Inspection Program, and requests that the SM initials this step.

EXAMINER Cue: **If requested, as the SM Initial Sep 6.1.4.**

EXAMINER NOTE: **These Steps may be performed in any order.**

Comment:

O-22, Step 6.1.5

Performance Step: 5 _____

IF snow accumulation reduces the 12 inch minimum from a fire hydrant nozzle to ground level, THEN NOTIFY Fire Brigade to implement SC-3.19, Snow Removal for Access to Fire Equipment. OTHERWISE, MARK this Step N/A.

Standard: [√] The operator notifies the Fire Brigade to implement SC-3.19, Snow Removal for Access to Fire Equipment.

EXAMINER NOTE: **These Steps may be performed in any order.**

Comment:

Terminating Cue: **Evaluation on this JPM is complete.**

STOP TIME: _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2014 Admin - JPM A1b SRO

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

KEY:

Priority Area(s) for Secondary Side Operator:	The operator prioritizes Section 6.2.11 for the Secondary Operator Walkdown Tour and/or requires inspection of the Diesel Generator Room B at a higher frequency than once every 12 hours. (JPM Step 2).
Priority Area(s) for Primary Side Operator:	The operator establishes any or no prioritization for the Primary Operator Walkdown Tour (JPM Step 2).
Priority Area(s) for Outside Operator:	The operator prioritizes Section 6.4.1 for the Outside Operator Walkdown Tour and/or requires inspection of the Screenhouse at a higher frequency than once every 12 hours (JPM Step 2).
Discrepancies (If any):	The operator determines that the temperatures in the B Diesel Room and the Screenhouse North Wall Area temperatures are below that required by Precaution and Limitation 4.1 (JPM Step 2).
Required Actions (If any):	Contact Plant Management to establish priority for corrective actions to raise temperature in the B Diesel Room and the Screenhouse North Wall Area temperatures (JPM Step 2). Notify the Fire Brigade to implement SC-3.19, Snow Removal for Access to Fire Equipment (JPM Step 5).

JPM CUE SHEET

INITIAL CONDITIONS:

- The weekly Cold Weather Walkdown is in progress, and the Primary, Secondary and Outside Auxiliary Operators have just completed their Walkdown Tours.
- The Auxiliary Operator PDA is unavailable, however, the recently completed Attachment 1, Cold Weather Temperature Log, of O-22, Cold Weather Walkdown Procedure, is available.
- A severe lake-effect storm is occurring with 12 inches of snow having accumulated over the last four hours, and the Outside AO has reported that the snow has reached the nozzles of several fire hydrants.
- There are no open work orders/trouble reports numbers generated from M-1306.1, Ginna Station Maintenance Department, Winterizing Inspection Program.
- There are no light-weight easy-view thermometers that have been installed in any locations due to on-going temporary work activities.
- Other than the weather concern, there are no hazards to plant operation at this time.

INITIATING CUE:

- You, as the Shift Manager, are required to review Attachment 1 and perform section 6.1, General Instructions, of O-22, and prioritize any areas of concern for the Auxiliary Operator Walkdown Tours.
- Document discrepancies, if any, and any required action(s).

Record Answers Below:

Priority Area(s) for Secondary Side Operator:	
Priority Area(s) for Primary Side Operator:	
Priority Area(s) for Outside Operator:	
Discrepancies (If any):	
Required Actions (If any):	

5.0 PREREQUISITES

NOTE

Steps in Section 5.0 may be performed concurrently **OR** in any order.

5.1. **COMPLETE** signature/initial block below for all personnel performing this procedure.

Print Name	Signature	Initials
Secondary AO	Secondary AO	SAO
Primary AO	Primary AO	PAO
Outside AO	Outside AO	OAO

5.2. **PERFORM** page check of this procedure. [illegible]

5.3. Shift Manager has authorized performance of this procedure.

Shift Manager — Shift Manager
Date — Today

5.4. **NOTIFY** CRS of start of this procedure. [illegible]

5.5. **NOTIFY** HCO to log start of this procedure. [illegible]

Attachment 1, Cold Weather Temperature Log

Outside Air Temp (33' Level) or outside Door 11 if Met Tower is OOS	10					
Int. Bldg. East end, top of stairs from Door S-44	72					
A Diesel Generator Room	66					
B Diesel Generator Room	64					
Main Feed Pump Room near NPSH Panel	78					
Main Feed Pump Room Northwest area	78					
Main Feed Pump Room Southwest Area	75					
MCC 1A Turbine Bldg. Basement	69					
Screenhouse South Screen Bay Area, East side	56					
Screenhouse, North wall	53					
Screenhouse, West wall	55					
Standby Aux. Feed Pump Room	68					
TSC Diesel Generator Room	66					
TSC Batt Room Whenever Generator Rm Heat E-28 is on, N/A the rest of the time. Maintain > 66°F	68					
Aux Building North wall by MCC 1E	71					
Aux Building South wall by Door #29	70					
Aux Building North of Door #28	69					
Battery Room A	75					
Battery Room B	76					
END OF SHIFT REVIEW by either Shift Manager or CRS						

JPM A2 SRO

Facility: Ginna Task No.:

Task Title: Perform RCS Leakrate Surveillance JPM No.: 2014 Admin - JPM A2 SRO

K/A Reference: 2.2.12 (4.1)

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.

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

Initial Conditions:

- The plant is at 100% power with 40 gpm Letdown flow.
- The VCT Level point on the PPCS is OOS.
- At 1020 the VCT level was 25% when the HCO started the Day Shift RCS Leakage Monitoring Surveillance, intending to monitor for about 4 hours.
- At 1125 a VCT Level instrument failure occurred which I&C corrected and restored to operation within 10 minutes.
- It is currently 1415 and an Auto Makeup has just been completed.
  - No VCT Diversion occurred.
  - The ULR tool is temporarily OOS.
- The current Integrator Readings are as follows:
  - RMW Reading 240
  - BA Reading 210
- A check of the Identified Area Leakage has not changed since the leakrate determinations were recorded.

Initiating Cue:

- The CRS directed you to record the data for the recent Auto Makeup on Attachment 3, RCS Leakage Surveillance Record, AND determine the current RCS Leakrate.

- Identify Tech Spec LCOs, if any, that have been exceeded; and if any LCOs are exceeded, identify any required Tech Spec ACTION.

Task Standard:	The operator will complete Attachment 3 in accordance with the KEY provided, and identify the LCO 3.4.13, RCS Operational Leakage, is NOT met, and that the required ACTION is to reduce leakage to within limits within 4 hours (A.1).
Required Materials:	Calculator Standard Procedure Reference Carts must be available to the operator
General References:	O-6.13, Daily Surveillance Log, Rev 18301 S-12.4, RCS Leakage Record Instructions, Rev 05701 S-12.2, Operator Action In The Event of Indication of Significant Increase in Leakage, Rev 04700 Technical Specifications; Appendix A to Facility Operating License for the R.E. Ginna Nuclear Power Plant; Docket No. 50-244, Amendment 115
Handouts:	Handout 1: Attachment 3 of S-12.4 marked up as required.
Time Critical Task:	NO
Validation Time:	15 minutes

PERFORMANCE INFORMATION

(Denote Critical Steps with a √)

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

START TIME: _____

S-12.4, Step 6.1.1

√ **Performance Step: 1** _____

Reasons for Addition:

- A - Auto Make-up.
- B - Borate.
- D - Dilution.
- A/D - Alternate Dilution

Standard:

[√] The operator records **1415** in the TIME column of Section A, just below the 1225 entry.

[√] The operator records **A** in the REASON A D B A/D column of Section A.

Comment:

S-12.4, Step 6.1.2

√ **Performance Step: 2** _____

Diversions.

- LOG Y-Yes OR N-No.

Standard:

[√] The operator records **N** in the DIVERSION column of Section A.

Comment:

S-12.4, Step 6.1.3

Performance Step: 3 Gallons Added.

_____

- LOG the number of gallons added from the RMW AND B.A. integrators.

Standard: [√] The operator records **240** in the RMW READING column of Section A.

[√] The operator records **21.0** in the BA READING column of Section A.

Comment:

Performance Step: 4

S-12.4, Step 6.1.4

Calculated Leak Rate.

- OBTAIN Leak Rate from VCT level change if no diversion has occurred during the leakage calculation time period.
- Leakage can be calculated using the following formula:

(Δ% VCT Level) (12 gal./1%) + (Additions in gal. during time period)

- Time (In Minutes) between level readings
- In the above formula, 12 gal./1% is generally the conservative number used for the leak rate calculation. IF an exact number is necessary THEN REFER to Attachment 1 AND Attachment 2 of this procedure.
- IF determining calculated leak rate from an auto makeup, AND NO diversion has taken place, THEN take the total gallons added between auto makeups AND divide by the time elapsed (in minutes).
- IF necessary LCV-112A can be switched to VCT position to calculate a leak rate.
- ENSURE LCV-112A is returned to Auto after leakage calculation is complete or as necessary to maintain VCT Level.
- IF calculated leak rate is greater than 0.500 gpm, THEN submit a Condition Report for Engineering evaluation of impact on Charging Pump NPSH.

Standard:

The operator recognizes that the VCT Level change cannot be used to determine leak rate (Diversion has occurred).

The operator recognizes that the leak rate can be calculated from the last two Auto Make ups (1225 and 1420).

[√] The operator records **115.6** in the GALLONS ADDED BA+RMW column of Section A.

[√] The operator calculates the leakrate as follows:

Leakrate = [(Δ% VCT Level) (12 gal./1%) + (Additions in gal. during time period)]/ Time (In Minutes) between level readings

Leakrate = [(0%)(12.1 gal/%) + 115.6/110 = **1.051 gpm**

[√] The operator records **1.051** in the CALCULATED LEAK RATE column of Section A.

Comment:

S-12.4, Step 6.1.5

Performance Step: 5 Identified Leak Rate.

- This is the sum of the leak rates calculated from the RCDT, PRT, and CPLR, primary to secondary leakrate, AND any other known leak rates.
- The following guidance is provided for the Charging Pump Leakoff Rate data:
  - At 0.100 gpm: SUBMIT Condition Report for 12 week planning process.
  - At 0.150 gpm: Condition Report upgraded to Priority Two; work within two week
  - At 0.200 gpm: IF possible, THEN SECURE pump AND preferentially run other pumps until fixed.
  - At 0.500 gpm: TAG affected pump PER S-3.2G, Charging Pump Isolation.

Standard: The operator recognizes that a check of the Identified Area Leakage reveals that the leakrates in these areas have not changed since the previous leakrate determinations (Initial Conditions).

[√] The operator records **.045** in the IDENT LEAK RATE column of Section A.

Comment:

S-12.4, Step 6.1.6

Performance Step: 6 Unidentified Leak Rate.

_____

- This is the difference in leak rates between the calculated leak rate AND the identified leak rate.

Standard:

[√] The operator DETERMINES THE Unidentified Leakrate to be 1.051-0.045 gpm = 1.006 gpm.

[√] The operator records **1.006 (1.004-1.010)** in the UNIDENTD LEAK RATE column of Section A.

[√] The operator reviews TS LCO 3.4.13 and determines that the LCO is NOT met because Unidentified Leak Rate is in excess of 1.0 gpm and identifies that ACTION A.1 is required (reduce leakage to within limits within 4 hours).

The operator initials the 1415 entry.

Comment:

S-12.4, Step 6.1.7

Performance Step: 7 RMW and Boric Acid Integrators.

_____

- At 2400 hrs, LOG the 2400 hrs value of RMW AND Boric Acid Integrator reading from the MCB.
- CALCULATE the total number of gallons added to the RCS by subtracting the 0000 hrs (previous day 2400 hrs) reading from the current 2400 hrs reading for both RMW AND Boric Acid.
- To obtain a 24 hr leakage rate, ADD the total gallons of RMW AND Boric Acid. THEN divide by 1440 minutes. N/A if a diversion occurred within the day.

Standard: The operator determines that this step is NOT required yet.

Comment:

Terminating Cue: **Evaluation on this JPM is complete.**

STOP TIME: _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2014 Admin - JPM A2 SRO

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

JPM CUE SHEET

INITIAL CONDITIONS:

- The plant is at 100% power with 40 gpm Letdown flow.
- The VCT Level point on the PPCS is OOS.
- At 1020 the VCT level was 25% when the HCO started the Day Shift RCS Leakage Monitoring Surveillance, intending to monitor for about 4 hours.
- At 1125 a VCT Level instrument failure occurred which I&C corrected and restored to operation within 10 minutes.
- It is currently 1415 and an Auto Makeup has just been completed.
  - No VCT Diversion occurred.
  - The ULR tool is temporarily OOS.
- The current Integrator Readings are as follows:
  - RMW Reading: 240
  - BA Reading 21.0
- A check of the Identified Area Leakage has not changed since the leakrate determinations were recorded.

INITIATING CUE:

- The CRS directed you to record the data for the recent Auto Makeup on Attachment 3, RCS Leakage Surveillance Record, AND determine the current RCS Leakrate.
- Identify Tech Spec LCOs, if any, that have been exceeded; and if any LCOs are exceeded, identify any required Tech Spec ACTION.

Handout.

Attachment 3, RCS Leakage Surveillance Record

Category 3.3.39
Reviewed_____

Section "A"
System Inventory

Date: 12/2/14
Day: Tuesday

Time	RMW Reading	BA Reading	Reason A D B A/D	Diversion	Gallons Added BA + RMW	Calculated Leak Rate	Ident Leak Rate	Unidentd Leak Rate	ULR Tool Updated
1200-2142	—	—	—	—	ΔVCT	.072	.068	.004	
2300	15	0	A/D	N	15				
1020					ΔVCT				
1125				Y					
1200	30	0	A/D	N	15				
1225	135	10.4	A	N	115.4				

RMW Integrator
2400 HRS. _____
0000 HRS. 0
Total Gallons:_____

BA Integrator
2400 HRS. _____
0000 HRS. 0
Total Gallons:_____

24 Hr Leakage Rate, If NO Diversion

Total
RMW + BA = _____ gpm
1440

NOTE: IF Reactor Makeup Rate Increases by 0.25 gpm Over The Normal, **REFER** to S-12.2.
NOTE: IF unidentified leak rate(ULR) meets criteria listed in 6.1.6, **REFER** to S-12.2, Operator Action In The Event Of Indication Of Significant Increase In Leakage
Remarks: Diverted Letdown for 15 seconds at 1125

Section "B"
Leakage From Identified Areas

Time	Night Shift Location	Night Shift G.P.M.	Time	Day Shift Location	Day Shift G.P.M.
2000	RCDT	.001	0900	RCDT	.001
2100	CPLR	.067	1000	CPLR	.044

Remarks:

Remarks:

RCP Standpipe Time	RCP A/B	Aux. Bldg. Sump	Aux. Bldg. Sump Tk	PZR Relief Tank Time	PZR Relief Tank Temp	PZR Relief Tank Press	PZR Relief Tank Level

Section "C"
Containment Condensate Collectors

Total Fluid
Released to Sump A:

(# Dumps) (Gal/Dump)

1090 (____) 2.57 = (____)
1091 (____) 2.45 = (____)
1092 (____) 2.42 = (____)
1093 (____) 3.05 = (____)

TOTAL _____

TOTAL = _____ G.P.M.
1440

Dump Time 1090	Dump Time 1091	Dump Time 1092	Dump Time 1093	Dump Time ( )
0258	0020	0953	0144	
0628	0353		0353	
0953	0727		0727	
1317	1114			

Remarks:

Section "D" – Containment
Sump Pump Actuations

1. Last Calculated Leak Rate in gpm.		.006			
2.Last Pump Actuation	Date:	10/30/14			
	TIME:	2018			
3.Present Pump Actuation	Date:				
	TIME:				
4.New Interval In Hours					
5.GPM = Note 1 OR 2 / STEP 4 X (0.0167)					

Remarks:
NOTE 1: Pump "A" 98 Gals/Actuation, **Pump "B"** 140 Gals/Actuation
NOTE 2: Δ Sump Level in gallons (120gal/ft)(PPCS pt. L2039 or L2044)
NOTE 3: IF sump leakage >0.02 gpm increase occurred, **Refer** to S-12.2

Handout.

Attachment 3, RCS Leakage Surveillance Record, (Continued)

Section "E"

Containment Temperature:								Containment Pressure PI-944 SEE Note 2 SEE Note 3 SEE Note 4	HCO
PPCS POINTS	TCV03	TCV07	TCV08	TCV09	TCV10	TCV17	AVG. TEMP SEE NOTE 1		
Yesterdays Carry Over							92.77		
0700-1900	78.43	83.99	94.96	91.58	85.93	96.07	88.49	0.35	[illegible]
1900-0700	83.16	89.22	99.83	96.95	90.28	100.80	93.37	0.45	KM

NOTE 1 - Tech Spec limit is ≤ 125° F (SR 3.6.5.1), Refer to step 6.5 for Admin Limits
NOTE 2 - Admin Limit is from – 0.2 TO + 0.5 PSIG., Refer to O-11 for maintaining pressure.
NOTE 3 - Tech Spec limit ≥-2 psig and ≤1 psig (SR 3.6.4.1).
NOTE 4 – Refer to O-11 for procedural guidance to obtain a containment pressure reading via an alternate path when PI-944 out-of-service.

Remarks:

Section "F"

Containment Particulates – R11 (PPCS pt. R11H12)

Remarks:

1. Yesterday's 2400 hr avg 205
2. Today's 1200 hr avg 205
3. Difference Step 2 – Step 1 = 205 - 205 = 0 cpm INC or _____ cpm DEC (AM)
4. Today's 1200 hr avg 205
5. Today's 2400 hr avg 199
6. Difference Step 5 – Step 4 = 199 - 205 = _____ cpm INC or 6 cpm DEC (PM)
7. G.P.M Leakage = (cpm – background cpm) (1.8 E – 7) / μC/CC Krypton 88 In Reactor Coolant = (199 - 200) (1.8 E – 7) / (3.02 E-3) = 0 gpm

NOTE: If Containment Particulate Average Increases by 2000 cpm Over The Last Average, Refer To S-12.2

Section "G"

Containment Gas – R12 (PPCS pt. R12H12)

Remarks:

1. Yesterday's 2400 hr avg 345
2. Today's 1200 hr avg 346
3. Difference Step 2 – Step 1 / Step 1 (100) = (346 - 345) / 345 (100) = 0.3 % INC or _____ % DEC (AM)
4. Today's 1200 HR AVG 346
5. Today's 2400 HR AVG 340
6. Difference Step 5 – Step 4 / Step 4 (100) = (340 346) / 346 (100) = _____ % INC or 1.7 % DEC (PM)

NOTE:- If Containment Gas Average increases by 20% over Last Average, Refer To S-12.2

SHIFT MANAGER REVIEW:

SHIFT 1 _____ SHIFT 2 _____

Attachment 3, RCS Leakage Surveillance Record

Category 3.3.39
Reviewed_____

Date: 12/2/14
Day: Tuesday

Section "A"
System Inventory

Time	RMW Reading	BA Reading	Reason A D B A/D	Diversion	Gallons Added BA + RMW	Calculated Leak Rate	Ident Leak Rate	Unidentd Leak Rate	ULR Tool Updated
1200-2142	—	—	—	-	ΔVCT	.072	.068	.004	
2300	15	0	A/D	N	15				
1020	—	—	—	—	ΔVCT				
1125				Y					
1200	30	0	A/D	N	15				
1225	135	10.4	A	N	115.4				
1415	240	21	A	N	115.6				
1225-1415	—	—	—	-	ΔVCT	1.051	.045	1.006	

RMW Integrator
2400 HRS. _____
0000 HRS. 0
Total Gallons:_____

BA Integrator
2400 HRS. _____
0000 HRS. 0
Total Gallons:_____

24 Hr Leakage Rate, If NO Diversion
Total
RMW + BA = _____ gpm
1440

NOTE: IF Reactor Makeup Rate Increases by 0.25 gpm Over The Normal, **REFER** to S-12.2.
NOTE: IF unidentified leak rate(ULR) meets criteria listed in 6.1.6, **REFER** to S-12.2, Operator Action In The Event Of Indication Of Significant Increase In Leakage
Remarks: Diverted letdown for 15 seconds at 1125

Section "B"
Leakage From Identified Areas

Time	Night Shift Location	Night Shift G.P.M.	Time	Day Shift Location	Day Shift G.P.M.
2000	RCDT	.001	0900	RCDT	.001
2100	CPLR	.067	1000	CPLR	.044

Remarks:

Remarks:

RCP Standpipe Time	RCP A/B	Aux. Bldg. Sump	Sump Tk	PZR Relief Tank Time	Temp	Press	Level

Section "C"
Containment Condensate Collectors

Total Fluid
Released to Sump A:

(# Dumps) (Gal/Dump)

1090 (____) 2.57 = (____)
1091 (____) 2.45 = (____)
1092 (____) 2.42 = (____)
1093 (____) 3.05 = (____)

TOTAL _____

TOTAL = _____ G.P.M.
1440

Dump Time 1090	Dump Time 1091	Dump Time 1092	Dump Time 1093	Dump Time ( )
0258	0020	0953	0144	
0628	0353		0353	
0953	0727		0727	
1317	1114			

Remarks:

Section "D" – Containment
Sump Pump Actuations

1. Last Calculated Leak Rate in gpm.		.006			
2.Last Pump Actuation	Date:	11/30/14			
	TIME:	2018			
3.Present Pump Actuation	Date:				
	TIME:				
4.New Interval In Hours					
5.GPM = Note 1 **OR** 2 / STEP 4 X (0.0167)					

Remarks:
NOTE 1: Pump "A" 98 Gals/Actuation, **Pump "B"** 140 Gals/Actuation
NOTE 2: Δ Sump Level in gallons (120gal/ft)(PPCS pt. L2039 or L2044)
NOTE 3: IF sump leakage >0.02 gpm increase occurred, **Refer** to S-12.2

JPM A3 SRO

Facility: Ginna Task No.:

Task Title: Evaluate the Impact of R-14 Failure on a Planned Gaseous Decay Tank Release JPM No.: 2014 Admin - JPM A3 SRO

K/A Reference: 2.3.15 (3.1)

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.

Provide Candidate with Initial Conditions/Cue (Last Page of this JPM).

Initial Conditions:

- The plant is at 100% power.
- An A Gas Decay Tank release is being planned.
- The HCO reports that R-14A, Plant Vent Gas, is de-energized and declared inoperable (A-52.12 submitted) for preventative maintenance that will require 2 more hours, and must be completed before it can be returned to service.
- The HCO reports that R-14, Plant Vent Gas, has just failed LOW. I&C has indicated that it will take at least four hours to troubleshoot and correct the failure.

Initiating Cue:

1. The SM has directed you to determine the required actions concerning the Aux Bldg ventilation release based on the additional failure of R-14.
   AND
2. The SM has directed you to determine the earliest time at which the A Gas Decay Tank release can start, and to identify any actions that will be required to start the release.

Task Standard:	The operator will declare R-14 inoperable, and determine that (1) on-going releases (i.e. ventilation) may continue provided grab samples are taken and analyzed for isotopic activity at least once per 8 hours, that (2) at least one of either R-14 or R-14A5 must be restored to OPERABLE status within 30 days or it must be explained in the next Annual Radioactive Effluent Release Report, and that (3) the earliest time that the A Gas Decay Tank release can be initiated is 2 hours from now when the maintenance on R-14A is completed and the instrument is declared OPERABLE, and ONLY if at least two independent samples of the tank's contents are analyzed, and at least two technically qualified members of the facility staff independently verify the release rate calculations and discharge valve lineup.
Required Materials:	Standard Procedure Reference Carts must be available to the operator
General References:	S-4.2.5, Release of Gas Decay Tank, Rev 01902 Offsite Dose Calculation Manual (ODCM), Rev. 29, section 3.2 (Gaseous Effluent Monitors), Table 3.2-1
Handouts:	None
Time Critical Task:	NO
Validation Time:	16 minutes

PERFORMANCE INFORMATION

(Denote Critical Steps with a √)

Provide Candidate with Initial Conditions/Cue (Last Page of this JPM).

START TIME: _____

√ **Performance Step: 1** _____

The SM has directed you to determine the required actions based on the failure of R-14.

Standard:

The operator declares R-14 inoperable.

The operator reviews C.3.2 of the ODCM and Table 3.2-1.

The operator recognizes that Plant Ventilation c is NOT met on Table 3.2-1 (i.e. currently 1 less than the minimum), and that ACTION 2 of Table 3.2-1 is required.

The operator determines that If the number of OPERABLE channels is less than required by the Minimum Channels OPERABLE requirement (i.e. 1), effluent releases via this pathway may continue provided grab samples are taken and analyzed for isotopic activity at least once per 8 hours.

The operator recognizes that C.3.2 is NOT met because Plant Ventilation c is NOT met on Table 3.2-1, and identifies that at least one of either R-14 or R-14A5 must be restored to OPERABLE status within 30 days or, if not, explain in the next Annual Radioactive Effluent Release Report, pursuant to Section 6.2 of the ODCM, why this inoperability was not corrected in a timely manner.

[√] The operator identifies that:

on-going releases (i.e. ventilation) may continue provided grab samples are taken and analyzed for isotopic activity at least once per 8 hours.

The operator identifies that:

at least one of either R-14 or R-14A5 must be restored to OPERABLE status within 30 days or it must be explained in the next Annual Radioactive Effluent Release Report.

EXAMINER NOTE: **The actions may be identified in any order.**

Comment:

Performance Step: 2 Determine the earliest time at which the A Gas Decay Tank release can start, and to identify any actions that will be required to start the release.

Standard: The operator reviews C.3.2 of the ODCM and Table 3.2-1, and determines that since the A Gas Decay Tank release is NOT in progress, it cannot be initiated until at least two actions are taken:

- Restore R-14A5 to OPERABLE status (2 hours away)

AND

- At least two independent samples of the tank's contents are analyzed, and at least two technically qualified members of the facility staff independently verify the release rate calculations and discharge valve lineup.

[√]The operator identifies that the earliest time that the A Gas Decay Tank release can be initiated is 2 hours from now when the maintenance on R-14A5 is completed and the instrument is declared OPERABLE, and ONLY if at least two independent samples of the tank's contents are analyzed, and at least two technically qualified members of the facility staff independently verify the release rate calculations and discharge valve lineup.

EXAMINER NOTE: **The operator must correctly interpret Note (b) of Table 3.2-1, which will not permit the initiation of the Gas Decay Tank Release until at least R-14A5 is OPERABLE and two independent samples have been independently analyzed. Otherwise, R-14 must be restored (4 hours away).**

EXAMINER NOTE: **IF R-14A is OPERABLE, R-14A5 is also OPERABLE.**

Comment:

Terminating Cue: **Evaluation on this JPM is complete.**

STOP TIME: _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2014 Admin - JPM A3 SRO

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

JPM CUE SHEET

INITIAL CONDITIONS:

- The plant is at 100% power.
- An A Gas Decay Tank release is being planned.
- The HCO reports that R-14A, Plant Vent Gas, is de-energized and declared inoperable (A-52.12 submitted) for preventative maintenance that will require 2 more hours, and must be completed before it can be returned to service.
- The HCO reports that R-14, Plant Vent Gas, has just failed LOW. I&C has indicated that it will take at least four hours to troubleshoot and correct the failure.

INITIATING CUE:

The SM has directed you to determine the required actions concerning the Aux Bldg ventilation release based on the additional failure of R-14.

AND

The SM has directed you to determine the earliest time at which the A Gas Decay Tank release can start, and to identify any actions that will be required to start the release.

JPM A4b SRO

NOTE: This JPM is intended to be used with Simulator Scenario N2014-301-2

Facility: Ginna Task No.:

Task Title: Classify an Emergency Event JPM No.: 2014 Admin - JPM A4b SRO

K/A Reference: 2.4.41 (4.6)

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.

Provide Candidate with Initial Conditions/Cue (Last Page of this JPM).

Initial Conditions: The sequence of events that you have just performed on the recently completed Simulator Scenario must be evaluated for any Emergency Classifications.

Initiating Cue:

- Determine the HIGHEST Emergency Classification that would have been made during the recently completed scenario.
- Prepare EP-Form-ALL25, GNP NY STATE RADIOLOGICAL EMERGENCY DATA FORM (Part 1), for notification by the Communicator.

A PORTION OF THIS JPM IS TIME CRITICAL.

Task Standard: The operator will determine that the highest Emergency Classification that must be made throughout this scenario was an ALERT based on FA1.1, HA2.1 and/or SA3.1; and complete EP-Form-ALL25 in accordance with the provided KEY, within 14 minutes.

Required Materials: None

General References: EPIP-1-0, Ginna Station Event and Classification, Rev 04900

	EP-Form-ALL25 R0, GNP NY STATE RADIOLOGICAL EMERGENCY DATA FORM (PART 1)
Handouts:	None
Time Critical Task:	YES (Once the classification is made, the form must be completed within 14 Minutes)
Validation Time:	20 minutes

(Denote Critical Steps with a √)

START TIME: _____

√ **Performance Step: 1** _____

Determine the HIGHEST Emergency Classification that would have been made during the recently completed scenario.

Standard:

[√] The operator uses EPIP-1-0 or the Wall Charts and determines that an ALERT must be declared based on **FA1.1** (ANY loss or ANY potential loss of either Fuel Clad or RCS (Table F-1 [RED path condition exists F-0.4 Integrity]))

OR

[√] The operator uses EPIP-1-0 or the Wall Charts and determines that an ALERT must be declared based on **HA2.1** (Fire or explosion resulting in EITHER: Visible damage to ANY safety-related structure, system, or component within ANY Table H-1 area OR Control Room indication of degraded performance of ANY safety-related structure, system, or component within ANY Table H-1 area [Intermediate Building])

OR

[√] The operator uses EPIP-1-0 or the Wall Charts and determines that an ALERT must be declared based on **SA3.1** (An automatic trip failed to shut down the reactor as indicated by reactor power > 5% **AND** Manual actions taken at the reactor control console successfully shut down the reactor as indicated by reactor power < 5%)

EXAMINER NOTE: **Only one of the classifications above must be made to satisfy the critical nature of this Step.**

Comment:

TIME CRITICAL START TIME: _____

√ _____	**Performance Step: 2**	Prepare EP-Form-ALL25, GNP NY STATE RADIOLOGICAL EMERGENCY DATA FORM (Part 1), for notification by the Communicator.
	Standard:	[√] The operator COMPLETES EP-Form-ALL25 in accordance with the provided KEY.
	Comment:	

Terminating Cue: **Evaluation on this JPM is complete.**

TIME CRITICAL STOP TIME: _____

STOP TIME: _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2014 Admin - JPM A4b SRO

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

JPM CUE SHEET

INITIAL CONDITIONS: The sequence of events that you have just performed on the recently completed Simulator Scenario must be evaluated for any Emergency Classifications.

INITIATING CUE:

- Determine the HIGHEST Emergency Classification that would have been made during the recently completed scenario.
- Prepare EP-Form-ALL25, GNP NY STATE RADIOLOGICAL EMERGENCY DATA FORM (Part 1), for notification by the Communicator.

A PORTION OF THIS JPM IS TIME CRITICAL.

JPM A46

GNP NY STATE RADIOLOGICAL EMERGENCY DATA FORM (PART 1)

EP-Form-ALL25 R0

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

☐* **4. Classification Time:**
This Emergency Classification declared at: Date Today Time Time of Classification

☐* **5. Release of Radioactive Materials due to the Classified Event:**
(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:**
(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:** *
EAL Number: FA1.1*
Brief Event Description and other significant information
and/or HA2.1 or SA3.1
Any loss or any potential loss of either Fuel Clad or RCS Barrier (or equivalent). **

☐* **8. Reactor Status:**
A. Operational (B.) Shutdown Date: Today Time: Time of Shutdown (subcritical)

☐* **9. Wind Speed:**
A. PPCS Miles/hour at elevation 33 feet

☐* **10. Wind Direction:**
From: PPCS degrees at elevation: 33 feet

☐* **11. Stability Class:**
ΔT PPCS - PPCS = ΔT
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	+4.77

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

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

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

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

** IF HA2.1: Control Room indication of degraded performance of Any Safety Related SSC within Any Table H-1 Area.
IF SA3.1: An Automatic trip failed to shut down the Reactor as indicated by Rx Power > 5% AND manual Actions successfully taken to

JPM A4c SRO

NOTE: This JPM is intended to be used with Simulator Scenario N2014-301-3

Facility: Ginna Task No.:

Task Title: Classify an Emergency Event JPM No.: 2014 Admin - JPM A4c SRO

K/A Reference: 2.4.41 (4.6)

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.

Provide Candidate with Initial Conditions/Cue (Last Page of this JPM).

Initial Conditions: The sequence of events that you have just performed on the recently completed Simulator Scenario must be evaluated for any Emergency Classifications.

Initiating Cue:

- Determine the HIGHEST Emergency Classification that would have been made during the recently completed scenario.
- Prepare EP-Form-ALL25, GNP NY STATE RADIOLOGICAL EMERGENCY DATA FORM (Part 1), for notification by the Communicator.

A PORTION OF THIS JPM IS TIME CRITICAL.

Task Standard: The operator will determine that the highest Emergency Classification that must be made throughout this scenario was a SITE AREA EMERGENCY based on FS1.1; and complete EP-Form-ALL25 in accordance with the provided KEY, within 14 minutes.

Required Materials: None

General References: EPIP-1-0, Ginna Station Event and Classification, Rev 04900

	EP-Form-ALL25 R0, GNP NY STATE RADIOLOGICAL EMERGENCY DATA FORM (PART 1)
Handouts:	None
Time Critical Task:	YES (Once the classification is made, the form must be completed within 14 Minutes)
Validation Time:	20 minutes

PERFORMANCE INFORMATION

(Denote Critical Steps with a √)

START TIME: _____

√	**Performance Step: 1** _____	Determine the HIGHEST Emergency Classification that would have been made during the recently completed scenario.
	Standard:	[√] The operator uses EPIP-1-0 or the Wall Charts and determines that a SITE AREA EMERGENCY must be declared based on **FS1.1** (Loss or potential loss of ANY two barriers).
	Comment:	

TIME CRITICAL START TIME: _____

√	**Performance Step: 2** _____	Prepare EP-Form-ALL25, GNP NY STATE RADIOLOGICAL EMERGENCY DATA FORM (Part 1), for notification by the Communicator.
	Standard:	[√] The operator COMPLETES EP-Form-ALL25 in accordance with the provided KEY.
	Comment:	

Terminating Cue: **Evaluation on this JPM is complete.**

TIME CRITICAL STOP TIME: _____

STOP TIME: _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2014 Admin - JPM A4c SRO

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

JPM CUE SHEET

INITIAL CONDITIONS: The sequence of events that you have just performed on the recently completed Simulator Scenario must be evaluated for any Emergency Classifications.

INITIATING CUE:

- Determine the HIGHEST Emergency Classification that would have been made during the recently completed scenario.
- Prepare EP-Form-ALL25, GNP NY STATE RADIOLOGICAL EMERGENCY DATA FORM (Part 1), for notification by the Communicator.

A PORTION OF THIS JPM IS TIME CRITICAL.

JPM A4c

GNP NY STATE RADIOLOGICAL EMERGENCY DATA FORM (PART 1)

EP-Form-ALL25 R0

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

☐* **4. Classification Time:**
This Emergency Classification declared at: Date Today Time Time of Classification

☐* **5. Release of Radioactive Materials due to the Classified Event:**
(**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:**
(**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:** **Brief Event Description** and other significant information

EAL Number	Brief Event Description
FS1.1	Potential loss of the RCS and fuel barriers (or equivalent)

☐* **8. Reactor Status:**
A. Operational (**B.**) Shutdown Date: Today Time: Time of Shutdown (subcritical)

☐* **9. Wind Speed:**
A. PPCS Miles/hour at elevation 33 feet

☐* **10. Wind Direction:**
From: PPCS degrees at elevation: 33 feet

☐* **11. Stability Class:**
ΔT PPCS − PPCS = ΔT
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	+4.77

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

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

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

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

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

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

Red = Critical

JPM A4d SRO

NOTE: This JPM is intended to be used with Simulator Scenario N2014-301-4

Facility: Ginna Task No.:

Task Title: Classify an Emergency Event JPM No.: 2014 Admin - JPM A4d SRO

K/A Reference: 2.4.41 (4.6)

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.

Provide Candidate with Initial Conditions/Cue (Last Page of this JPM).

Initial Conditions: The sequence of events that you have just performed on the recently completed Simulator Scenario must be evaluated for any Emergency Classifications.

Initiating Cue:

- Determine the HIGHEST Emergency Classification that would have been made during the recently completed scenario.
- Prepare EP-Form-ALL25, GNP NY STATE RADIOLOGICAL EMERGENCY DATA FORM (Part 1), for notification by the Communicator.

A PORTION OF THIS JPM IS TIME CRITICAL.

Task Standard: The operator will determine that the highest Emergency Classification that must be made throughout this scenario was an ALERT based on FA1.1; and complete EP-Form-ALL25 in accordance with the provided KEY, within 14 minutes.

Required Materials: None

General References: EPIP-1-0, Ginna Station Event and Classification, Rev 04900

	EP-Form-ALL25 R0, GNP NY STATE RADIOLOGICAL EMERGENCY DATA FORM (PART 1)
Handouts:	None
Time Critical Task:	YES (Once the classification is made, the form must be completed within 14 Minutes)
Validation Time:	20 minutes

PERFORMANCE INFORMATION

(Denote Critical Steps with a √)

START TIME: _____

√	**Performance Step: 1** _____	Determine the HIGHEST Emergency Classification that would have been made during the recently completed scenario.
	Standard:	[√] The operator uses EPIP-1-0 or the Wall Charts and determines that an ALERT must be declared based on **FA1.1** (ANY loss or ANY potential loss of either Fuel Clad or RCS (Table F-1)).
	Comment:	

TIME CRITICAL START TIME: _____

√	**Performance Step: 2** _____	Prepare EP-Form-ALL25, GNP NY STATE RADIOLOGICAL EMERGENCY DATA FORM (Part 1), for notification by the Communicator.
	Standard:	[√] The operator COMPLETES EP-Form-ALL25 in accordance with the provided KEY.
	Comment:	

Terminating Cue: **Evaluation on this JPM is complete.**

TIME CRITICAL STOP TIME: _____

STOP TIME: _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2014 Admin - JPM A4d SRO

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

JPM CUE SHEET

INITIAL CONDITIONS: The sequence of events that you have just performed on the recently completed Simulator Scenario must be evaluated for any Emergency Classifications.

INITIATING CUE:

- Determine the HIGHEST Emergency Classification that would have been made during the recently completed scenario.
- Prepare EP-Form-ALL25, GNP NY STATE RADIOLOGICAL EMERGENCY DATA FORM (Part 1), for notification by the Communicator.

A PORTION OF THIS JPM IS TIME CRITICAL.

JPM A4d

GNP NY STATE RADIOLOGICAL EMERGENCY DATA FORM (PART 1)

EP-Form-ALL25 R0

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

☐* **4. Classification Time:**
This Emergency Classification declared at: Date Today Time Time of Classification

☐* **5. Release of Radioactive Materials due to the Classified Event:**
(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:**
(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:** **Brief Event Description** and other significant information
EAL Number: FA1.1
RCS leakrate > available makeup capacity as indicated by a loss of RCS Subcooling (or equivalent)

☐* **8. Reactor Status:**
A. Operational (B.) Shutdown Date: Today Time: Time of Shutdown (subcritical)

☐* **9. Wind Speed:**
A. PPCS Miles/hour at elevation 33 feet

☐* **10. Wind Direction:**
From: PPCS degrees at elevation: 33 feet

☐* **11. Stability Class:**
ΔT PPCS − PPCS = ΔT
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	+4.77

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

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

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

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

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

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

Red = Critical

JPM A4e SRO

NOTE: This JPM is intended to be used with Simulator Scenario N2014-301-5

Facility: Ginna Task No.:

Task Title: Classify an Emergency Event JPM No.: 2014 Admin - JPM A4e SRO

K/A Reference: 2.4.41 (4.6)

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.

Provide Candidate with Initial Conditions/Cue (Last Page of this JPM).

Initial Conditions: The sequence of events that you have just performed on the recently completed Simulator Scenario must be evaluated for any Emergency Classifications.

Initiating Cue:

- Determine the HIGHEST Emergency Classification that would have been made during the recently completed scenario.
- Prepare EP-Form-ALL25, GNP NY STATE RADIOLOGICAL EMERGENCY DATA FORM (Part 1), for notification by the Communicator.

A PORTION OF THIS JPM IS TIME CRITICAL.

Task Standard: The operator will determine that the highest Emergency Classification that must be made throughout this scenario was a SITE AREA EMERGENCY based on FS1.1; and complete EP-Form-ALL25 in accordance with the provided KEY, within 14 minutes.

Required Materials: None

General References: EPIP-1-0, Ginna Station Event and Classification, Rev 04900

	EP-Form-ALL25 R0, GNP NY STATE RADIOLOGICAL EMERGENCY DATA FORM (PART 1)
Handouts:	None
Time Critical Task:	YES (Once the classification is made, the form must be completed within 14 Minutes)
Validation Time:	20 minutes

PERFORMANCE INFORMATION

(Denote Critical Steps with a √)

START TIME: _____

√	**Performance Step: 1** _____	Determine the HIGHEST Emergency Classification that would have been made during the recently completed scenario.
	Standard:	[√] The operator uses EPIP-1-0 or the Wall Charts and determines that a SITE AREA EMERGENCY must be declared based on **FS1.1** (Loss or potential loss of **ANY** two barriers)
	Comment:	

TIME CRITICAL START TIME: _____

√	**Performance Step: 2** _____	Prepare EP-Form-ALL25, GNP NY STATE RADIOLOGICAL EMERGENCY DATA FORM (Part 1), for notification by the Communicator.
	Standard:	[√] The operator COMPLETES EP-Form-ALL25 in accordance with the provided KEY.
	Comment:	

Terminating Cue: **Evaluation on this JPM is complete.**

TIME CRITICAL STOP TIME: _____

STOP TIME: _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2014 Admin - JPM A4e SRO

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

JPM CUE SHEET

INITIAL CONDITIONS: The sequence of events that you have just performed on the recently completed Simulator Scenario must be evaluated for any Emergency Classifications.

INITIATING CUE:

- Determine the HIGHEST Emergency Classification that would have been made during the recently completed scenario.
- Prepare EP-Form-ALL25, GNP NY STATE RADIOLOGICAL EMERGENCY DATA FORM (Part 1), for notification by the Communicator.

A PORTION OF THIS JPM IS TIME CRITICAL.

JPM A4e

GNP NY STATE RADIOLOGICAL EMERGENCY DATA FORM (PART 1)

EP-Form-ALL25 R0

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

☐* **4. Classification Time:**
This Emergency Classification declared at: Date Today Time Time of classification

5. Release of Radioactive Materials due to the Classified Event:
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:
(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:** **Brief Event Description** and other significant information

EAL Number	
FS1.1	Loss or potential loss of any two barriers (or equivalent)

☐* **8. Reactor Status:**
A. Operational (B.) Shutdown Date: Today Time: Time of Shutdown (subcritical)

☐* **9. Wind Speed:**
A. PPCS Miles/hour at elevation 33 feet

☐* **10. Wind Direction:**
From: PPCS degrees at elevation: 33 feet

☐* **11. Stability Class:**
ΔT PPCS − PPCS = ΔT
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	+4.77

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

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

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

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

SIM JPM A

Facility: Ginna Task No.:

Task Title: Lineup RCDT Pump for Core Cooling JPM No.: 2014 Systems - Control Room JPM A

K/A Reference: 005 A2.03 (2.9/3.1)

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X

Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

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

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

Initial Conditions:

- The plant is in a lowered inventory condition.
- Both RHR Pumps have tripped.
- AP-RHR.1, Loss of RHR, was entered and attempts to restart the pumps were unsuccessful.
- The crew is in progress of establishing Containment Integrity per O-1.1B, Establishing CNMT Integrity, and all personnel are clear of Containment.

Initiating Cue: The CRS has directed you to lineup and start the RCDT pumps to provide core cooling per ER-RHR.1, Section 6.2, Closed Loop RCS to RHR Cooling.

Task Standard: The operator will line up the RCDT pumps to provide core cooling per Section 6.2 of ER-RHR.1.

Required Materials: None

General References: AP-RHR.1, Loss of RHR, Rev 02200

	ER-RHR.1, RCDT Pump Operation for Core Cooling, Rev 00601
Handouts:	Handout 1: Blank copy of ER-RHR.1, RCDT Pump Operation for Core Cooling.
Time Critical Task:	NO
Validation Time:	10 minutes

SIMULATOR OPERATIONAL GUIDELINES

- Simulator reset to **IC-2** (85" Loop Level)
- Insert **MALF RHR 1A** and **RHR 1B**
- Insert **REM-RCS11, CLOSED,** to isolate RVLIS Valves
- Insert **IND-RCS11, 0%,** RVLIS A Meter Reading
- Insert **IND-RCS13, 0%,** RVLIS A Meter Reading
- Insert A-20, RHR LO FLOW, Annunciator Tile
- Insert C-5, LTOP HI/LOW Temp, Annunciator Tile
- Insert F-29, LTOP Hi/Low Pressure, Annunciator Tile
- Insert the following on Trigger #1
    - **REMOTE-MIS67** and **MIS68 to Close** (RCDT Suction AOV 1003A and B CLOSED)
    - **REMOTE-MIS05** and **MIS06 to 0** (RCDT Pump Discharge Valves V1726/1727 CLOSED)
    - **REMOTE-MIS09** and **MIS10 to 1** (RCDT Pump to RHR HX V1811A and B OPEN)
    - **REMOTE-RHR05 to 0** (RHR HX Bypass V712A CLOSED)
    - **REMOTE-RHR01 to 0** (RHR Pump A Discharge Valve V709A CLOSED)
    - **REMOTE-RHR02 to 0** (RHR Pump B Discharge Valve V709B CLOSED)
    - **REMOTE-EDS055** and **EDS056 to Close** (MOV-1813A and B Breakers CLOSED)

- Ensure RHR Screen (Group Display NPSH) is displayed on PPCS
- FREEZE the Simulator

OR

- IC 156 (December, 2014)
- Ensure RHR Screen (Group Display NPSH) is displayed on PPCS
- Place simulator in RUN
- Place simulator in FREEZE
- Place simulator in RUN when directed by examiner

NOTE: **The Simulator/Floor Instructor will need to control the BOP during the performance of this JPM.**

NOTE: **The Simulator/Booth Instructor will need to operate Trigger #1 at Performance Step 8 of this JPM, and provide a cue to the operator at Performance Step 20 of this JPM (See Body of JPM).**

(Denote Critical Steps with a √)

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

START TIME: _____

ER-RHR.1, Step 6.2.1

Caution: RCDT pump discharge relief valve lifts at 132 psig.

Performance Step: 1 _____

Verify RCS pressure less than 100 psig. IF NOT, then consult plant staff for other means of cooling RCS.

Standard:

The operator reads the Caution, and proceeds.

The operator observes MCB indication PI-420 or PPCS RCS pressure indication (or equivalent) and determines pressure is less than 100 psig.

Comment:

ER-RHR.1, Step 6.2.2

Performance Step: 2 _____

IF there are personnel in CNMT,.....

Standard:

The operator confirms via initial conditions no personnel are in CNMT.

Comment:

ER-RHR.1, Step 6.2.3

Performance Step: 3 _____

IF entry is from AP-RHR.1,THEN initiate measures to establish CNMT closure, (refer to O-1.1B, Establishing CNMT Integrity, for guidance).

Standard:

The operator confirms via initial conditions that establishing CNMT Integrity is in progress.

Comment:

ER-RHR.1, Step 6.2.4

Performance Step: 4 IF entry is from AP-RHR.2,.....

_____

Standard: The operator confirms via initial conditions that entry was from AP-RHR.1, and proceeds.

Comment:

ER-RHR.1, Step 6.2.5

Performance Step: 5 Continue to monitor core exit T/Cs.

_____

Standard: The operator observes CET indication on PPCS.

Comment:

ER-RHR.1, Step 6.2.6/6.2.6.1

Performance Step: 6 Align RHR CNMT sump suction valves for RCDT pump RCS loop suction as follows:

_____

- Close RHR suction valves from sump B inside CNMT:
  - MOV-851A Closed
  - MOV-851B CLOSED

Standard: The operator observes the MOV-851A Green status light is LIT, and the Red status light is OFF.

The operator observes the MOV-851B Green status light is LIT, and the Red status light is OFF.

Comment:

ER-RHR.1, Step 6.2.6.2

√ **Performance Step: 7** Open RHR suction valves from sump B outside CNMT:

_____

- MOV-850A Open
- MOV-850B Open

Standard: [√] The operator places the MOV-850A Control Switch to OPEN and releases; and observes the Red status light is LIT, and the Green status light is OFF.

[√] The operator places the MOV-850B Control Switch to OPEN and releases; and observes the Red status light is LIT, and the Green status light is OFF.

Comment:

ER-RHR.1, Step 6.2.7/6.2.7.1

√ **Performance Step: 8** Dispatch AO with locked valve key to locally perform the following:

_____

- Place RCDT pump suction valve switches to CLOSE.
  - LCV-1003A Switch In CLOSE
  - LCV-1003B Switch In CLOSE

Standard: [√] The operator directs AO to locally place LCV-1003A/B switches in CLOSE.

SIM DRIVER: **When contacted as AO, insert Trigger 1. Report that these valves are CLOSED.**

Comment:

√ **Performance Step: 9** _____	**ER-RHR.1, Step 6.2.7.2** Close RCDT pump manual discharge valves (AUX BLDG sub-basement). • V-1726 Closed • V-1727 Closed
Standard:	[√] The operator directs AO to locally CLOSE V-1726 and V1727.
SIM DRIVER:	**Report that these valves are CLOSED.**
Comment:	

√ **Performance Step: 10** _____	**ER-RHR.1, Step 6.2.7.3** Open RCDT pump discharge valves to RHR (AUX BLDG bsmt west behind stairway). • V-1811A Open • V-1811B Open
Standard:	[√] The operator directs AO to locally OPEN V-1811A and V-1811B.
SIM DRIVER:	**Report that these valves are OPEN.**
Comment:	

ER-RHR.1, Step 6.2.7.4

√ **Performance Step: 11** Close RHR Hx bypass isolation valve V-712A (AUX BLDG bsmt RHR Hx room wall).

Standard: [√] The operator directs AO to locally CLOSE V-712A.

SIM DRIVER: **Report that this valve is CLOSED.**

Comment:

ER-RHR.1, Step 6.2.7.5

√ **Performance Step: 12** Close RHR pump A discharge valve V-709A (AUX BLDG sub-basement).

Standard: [√] The operator directs AO to locally CLOSE V-709A.

SIM DRIVER: **Report that this valve is CLOSED.**

Comment:

ER-RHR.1, Step 6.2.7.6

√ **Performance Step: 13** Close RHR pump B discharge valve V-709B (AUX BLDG sub-basement).

Standard: [√] The operator directs AO to locally CLOSE V-709B.

SIM DRIVER: **Report that this valve is CLOSED.**

Comment:

ER-RHR.1, Step 6.2.7.7

Performance Step: 14 Dispatch AO with locked valve key to unlock and close breakers for RCDT pump suction valves from sump B.

_____

- MOV-1813A breaker (MCC C Pos 13M) Closed
- MOV-1813B breaker (MCC D Pos 13M) Closed

Standard: The operator directs AO to check CLOSE MOV-1813A and 1813B Breakers.

The operator observes the MOV-1813A Green status light is LIT, and the Red status light is OFF.

The operator observes the MOV-1813B Green status light is LIT, and the Red status light is OFF.

SIM DRIVER: **Report that these breakers are CLOSED.**

EXAMINER NOTE: **These Breakers are already closed for plant configuration.**

Comment:

ER-RHR.1, Step 6.2.8

√ **Performance Step: 15** WHEN local valve alignment complete, THEN open RCDT pump suction valves from sump B.

_____

- MOV-1813A Open
- MOV-1813B Open

Standard: [√] The operator places the MOV-1813A Control Switch to OPEN and observes the Red status light is LIT, and the Green status light is OFF.

[√] The operator places the MOV-1813B Control Switch to OPEN and observes the Red status light is LIT, and the Green status light is OFF.

Comment:

ER-RHR.1, Step 6.2.9

√ **Performance Step: 16** Start RCDT pump A.

_____

Standard: [√] The operator places the RCDT Pump A Control Switch in the START position and observes the Red status light is LIT, and the Green status light is OFF.

Comment:

ER-RHR.1, Step 6.2.10

√ **Performance Step: 17** Start RCDT pump B.

_____

Standard: [√] The operator places the RCDT Pump B in the START position and observes the Red status light is LIT, and the Green status light is OFF.

Comment:

ER-RHR.1, Step 6.2.11

√ **Performance Step: 18** Open RHR Hx A outlet valves HCV-625.

_____

Standard: [√] The operator rotates HCV-625 controller adjust knob clockwise until controller output demand is 0%.

Comment:

ER-RHR.1, Step 6.2.12

√ **Performance Step: 19** Open RHR Hx B outlet valve HCV-624.

_____

Standard: [√] The operator rotates HCV-624 controller adjust knob clockwise until controller output demand is 0%.

Comment:

ER-RHR.1, Step 6.2.13

Performance Step: 20 Direct AO to locally verify discharge pressure on RCDT pumps (AUX BLDG bsmt by RHR Hx room gate).

_____

Standard: The operator contacts the AO and requests RCDT Pump discharge pressure.

SIM DRIVER: **As the AO, report that RCDT Pump discharge pressure is approximately 40 psig and stable.**

Comment:

ER-RHR.1, Step 6.2.14

Caution: Reactor Coolant Drain Tank pumps may be insufficient for decay heat removal.

Performance Step: 21 Verify flow on FI-626.

_____

Standard: The operator reads the Caution and proceeds.

The operator observes approximately 100 GPM of flow on FI-626.

Comment:

Terminating Cue: **Evaluation on this JPM is complete.**

STOP TIME: _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2014 Systems - Control Room JPM A

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

JPM CUE SHEET

INITIAL CONDITIONS:

- The plant is in a lowered inventory condition.
- Both RHR Pumps have tripped.
- AP-RHR.1, Loss of RHR, was entered and attempts to restart the pumps were unsuccessful.
- The crew is in progress of establishing Containment Integrity per O-1.1B, Establishing CNMT Integrity, and all personnel are clear of Containment.

INITIATING CUE:

The CRS has directed you to lineup and start the RCDT pumps to provide core cooling per ER-RHR.1, Section 6.2, Closed Loop RCS to RHR Cooling.

SIM JPM B

Facility: Ginna Task No.:

Task Title: Verify Containment Isolation and Heat Removal JPM No.: 2014 Systems - Control Room JPM B (Alternate Path)

K/A Reference: EPE E14 EA1.1 (3.7/3.7)

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.

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

Initial Conditions:

- The plant tripped from 100% power and safety injection has actuated.
- The crew entered E-0, Reactor Trip or Safety Injection, and then transitioned to E-2, Faulted Steam Generator Isolation.
- Due to a degrading transient, an Orange Path now exists on the Containment Critical Safety Function Status Tree.

Initiating Cue: The CRS has directed you to verify Containment Isolation and Heat Removal systems are operating as expected by performing FR-Z.1, Response to High Containment Pressure, starting from Step 1.

Task Standard:	The operator will take action to verify Containment Isolation and Heat Removal systems are operating in accordance with Steps 1-3 of FR-Z.1. When the operator discovers that two Containment Isolation Valves have failed to close as expected the operator will close or direct that alternative valves be closed in accordance with ATT-3.0, Attachment CI/CVI. When it is revealed that one of the two actions on ATT-3.0 were unsuccessful at providing Containment Isolation, the operator will need to take actions to trip the Reactor Coolant Pumps, and close an alternate valve in the CCW System to fully achieve Containment Isolation.
Required Materials:	None
General References:	AR-A-27, Containment Spray 2/3 + 2/3 > 28 PSI, Rev 9 AR-A-28, Containment Spray Channel Alert 2/3 > 28 PSI, Rev 8 CNG-OP-1.01-1000, Conduct of Operations, Rev 01000 F-0.5, Containment, Rev 2 FR-Z.1, Response to High Containment Pressure, Rev 01200 ATT-3.0, Attachment CI/CVI, Rev 01200 P-7, Safety Injection and Containment Spray Systems, Rev 23
Handouts:	Handout 1: Blank copy of FR-Z.1, Response to High Containment Pressure Handout 2: Blank copy of ATT-3.0, Attachment CI/CVI.
Time Critical Task:	NO
Validation Time:	10 minutes

SIMULATOR OPERATIONAL GUIDELINES

- Initiate to **any 100% IC (IC-19)**
- Insert **Malfunctions RPS08A** and **RPS08B, No Manual** (Failure of CS Automatic Actuation/No Manual, Both Trains)
- Insert **Malfunction STM11A, 1.7e+05** (Steam Line Break Inside Containment, 'A' S/G)
- Insert **Malfunction RPS11-A5A** and **RPS11-A5B, Fail As-Is** (MOV-813 and 814 fail as-is on T-Signal, cannot be operated)
- Insert **REM-EDS054**, **Closed**, on **T-1 (Breaker for MOV-817)**
- Place simulator in RUN
- Carry out action of E-0 and transition to E-2.
- Upon transition to E-2, **increase** malfunction **STM11A to 1.7e+07** (Steam Rupture Inside Containment, 'A' S/G)
- Ensure Annunciator A-28 is LIT, that Containment Pressure is > 28 psig, and that CS has NOT automatically actuated
- Place simulator in FREEZE
- Place simulator in RUN when directed by examiner

OR

- IC 157 (December, 2014)
- Place simulator in RUN
- Place simulator in FREEZE
- Place simulator in RUN when directed by examiner

NOTE: **The Simulator/Floor Instructor will need to control the BOP during the performance of this JPM.**

NOTE: **The SIM DRIVER will need to respond as the AO at Performance Step 3, make a report from the field at Step 10, and insert REM-EDS054 at Step 11 of this JPM (See Cues in Body of JPM).**

(Denote Critical Steps with a √)

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

START TIME: _____

FR-Z.1 Step 1

Note: FOLDOUT Page should be open and monitored periodically.

Performance Step: 1 Verify All CI And CVI Valve Status Lights - BRIGHT

_____

Standard: The operator observes all CI And CVI Valve Status Lights are BRIGHT <u>except</u> MOV-813 and MOV-814.

The operator proceeds to the Step 1 RNO.

Comment: **At any time during this JPM, the operator may recognize that automatic actions have failed, and take manual action as needed to operate equipment as needed (See CNG-OP-1.01-1000, Step 5.10.C.4). While the operator *may* take this action, and it is permitted by procedures, and expected; if the action is not taken the operator will still be successful by adherence to the procedure assigned.**

NOTE: Any attempt by the operator to actuate CS by depressing two MCB pushbuttons simultaneously will not be successful (pushbutton operation has failed).

FR-Z.1 Step 1 RNO

Performance Step: 2

IF flow path NOT required, THEN manually close affected CI and CVI valves.

IF valves can NOT be verified closed by MCB indication, THEN close alternate isolation valves. (Refer to ATT-3.0, ATTACHMENT CI/CVI).

Standard:

The operator recognizes that the Rx Support Cooler CCW flowpaths are NOT required under the current conditions.

The operator observes the MOV-813 Red status light is LIT, and the Green status light is OFF.

The operator places the MOV-813 Control Switch to CLOSE, and observes Red status light is LIT, and the Green status light is OFF.

The operator observes the MOV-814 Red status light is LIT, and the Green status light is OFF.

The operator places the MOV-814 Control Switch to CLOSE, and observes Red status light is LIT, and the Green status light is OFF.

The operator refers to ATT-3.0.

EXAMINER CUE:

When the operator is looking to find ATT-3.0, PROVIDE operator with Handout 2 (ATT-3.0).

Comment:

ATT-3.0 Step 1

Note: Locked valve key may be required for local operations.

√ **Performance Step: 3** _____

For each of the following AUTO ISOL VALVES that will not close, take the action directed in the ALTERNATE ISOLATION column.

MOV-813 (CCW) Locally close MOV-813 (AB Int Level).

MOV-814 (CCW) Close V-815A (AB INT LEVEL)

Standard:

The operator reads the Note, and proceeds.

The operator will contact an AO and direct that MOV-813 be locally closed.

[√] The operator will contact an AO and direct that V-815A be locally closed.

The operator will proceed to Step 2 of FR-Z.1 while the local action is taking place.

SIM DRIVER NOTE:

The AO action will be delayed until Performance Step 10.

Upon completion of Performance Step 10, as the AO, report that V-815A has been locally closed, and report that MOV-813 will NOT operate manually.

There is NO Remote for V-815A (Not Modeled).

Comment:

FR-Z.1 Step 2/2.a

Caution: IF ECA-1.1, LOSS OF EMERGENCY COOLANT RECIRCULATION, IS IN EFFECT, THEN CNMT SPRAY SHOULD BE OPERATED AS DIRECTED IN ECA-1.1, RATHER THAN STEP 2 BELOW.
Caution: IF E-1, LOSS OF REACTOR OR SECONDARY COOLANT, IS IN EFFECT, THEN CNMT SPRAY SHOULD BE OPERATED AS DIRECTED IN E-1, LOSS OF REACTOR OR SECONDARY COOLANT, RATHER THAN STEP 2 BELOW.

Performance Step: 4 Verify CNMT Spray Actuated:

_____

- Verify RWST outlet to SI and CNMT spray pumps - OPEN
  - MOV-896A
  - MOV-896B

Standard: The operator reads the Cautions, and proceeds.

The operator observes the MOV-896A Red status light is LIT and the Green status light is OFF.

The operator observes the MOV-896B Red status light is LIT and the Green status light is OFF.

Comment:

FR-Z.1 Step 2.b

Performance Step: 5 Verify CNMT spray pumps - RUNNING

_____

Standard: The operator observes the A Containment Spray Pump Green status light is LIT, and the Red status light is OFF.

The operator observes the B Containment Spray Pump Green status light is LIT, and the Red status light is OFF.

The operator observes Containment pressure to be ≈40 psig.

The operator proceeds to the Step 2.b RNO.

Comment:

FR-Z.1 Step 2.b RNO

√ **Performance Step: 6** Manually start pumps.

_____

Standard:

[√] The operator places the A Containment Spray Pump Control Switch to START and observes the Red status light is LIT, and the Green status light is OFF.

[√] The operator places the B Containment Spray Pump Control Switch to START and observes the Red status light is LIT, and the Green status light is OFF.

Comment:

FR-Z.1 Step 2.c

Performance Step: 7 Verify NaOH flow (FI-930)

_____

Standard:

The operator observes FI-930 and notes flow at "0."

The operator proceeds to the Step 2.c RNO.

Comment:

FR-Z.1 Step 2.c RNO

√ **Performance Step: 8** _____

IF NaOH flow NOT indicated, THEN place switches for NaOH tank outlet valves to OPEN.

- AOV-836A
- AOV-836B

Standard:

[√] The operator places the Control Switch for AOV-836A in OPEN.

[√] The operator places the Control Switch for AOV-836B in OPEN.

EXAMINER NOTE:

One of the two valve Control Switches must be in the OPEN position to satisfy the Critical Step.

Flow on FI-930 will NOT be observed until Performance Step 10. When the Containment Spray Pump Discharge Valves are OPEN.

Comment:

FR-Z.1 Step 2.d

Performance Step: 9 Verify CNMT spray pump discharge valves - OPEN

_____

MOV-860A

MOV-860B

MOV-860C

MOV-860D

Standard: The operator observes the MOV-860A Green status light is LIT, and the Red status light is OFF.

The operator observes the MOV-860B Green status light is LIT, and the Red status light is OFF.

The operator observes the MOV-860C Green status light is LIT, and the Red status light is OFF.

The operator observes the MOV-860D Green status light is LIT, and the Red status light is OFF.

The operator proceeds to the Step 2.d RNO.

Comment:

FR-Z.1 Step 2.d RNO

√ **Performance Step: 10** Ensure at least one in each set valves - OPEN.

_____

MOV-860A or MOV-860B

MOV-860C or MOV-860D

Standard:

[√] The operator places the MOV-860A Control Switch in OPEN and observes the Red status light is LIT, and the Green status light is OFF.

OR

[√] The operator places the MOV-860B Control Switch in OPEN and observes the Red status light is LIT, and the Green status light is OFF.

AND

[√] The operator places the MOV-860C Control Switch in OPEN and observes the Red status light is LIT, and the Green status light is OFF.

OR

[√] The operator places the MOV-860D Control Switch in OPEN and observes the Red status light is LIT, and the Green status light is OFF.

The operator will observe flow on FI-930.

EXAMINER NOTE: **The operator may all OPEN all four valves, however, at least one valve in each set must be OPEN to satisfy the Critical Nature of this Step.**

Comment:

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

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

ATT-3.0 Step 1

Note: Locked valve key may be required for local operations.

√ **Performance Step: 11** _____

For each of the following AUTO ISOL VALVES that will not close, take the action directed in the ALTERNATE ISOLATION column.

MOV-813(CCW): IF MOV-813 can not be closed, THEN perform the following:

- Direct AO with locked valve key to unlock and close breaker for MOV-817 (MCC D POS 10C)
- Stop both RCPs
- Manually close MOV-817 (MCB). IF MOV-817 will not close, THEN direct AO to locally close MOV-817 (AB INT LEVEL).

Standard:

The operator reads the NOTE, and proceeds.

The operator will refer to ATT-3.0, contact the AO, and direct that the AO unlock and close the breaker for MOV-817.

[√] The operator will place the A RCP Control Switch to STOP and observe the Green status light is LIT, and the Red status light is OFF.

[√] The operator will place the B RCP Control Switch to STOP and observe the Green status light is LIT, and the Red status light is OFF.

[√]The operator will place the MOV-817 Control Switch to CLOSE and observe the Green status light is LIT, and the Red status light is OFF.

The operator returns to FR-Z.1.

SIM DRIVER NOTE:

Upon direction from the operator to unlock and close the MOV-817 breaker, operate Trigger 1 (REM-EDS054 (MOV-817 Breaker Closed).

Call as AO and report that you have unlocked and closed the MOV-817 breaker.

Comment:

FR-Z.1 Step 3/3.a

Performance Step: 12 Verify CNMT RECIRC Fans Running:

_____

All fans - RUNNING

Standard: The operator observes the A CNMT RECIRC Fan Red status light is LIT, and the Green status light is OFF.

The operator observes the B CNMT RECIRC Fan Red status light is LIT, and the Green status light is OFF.

The operator observes the C CNMT RECIRC Fan Red status light is LIT, and the Green status light is OFF.

The operator observes the D CNMT RECIRC Fan Red status light is LIT, and the Green status light is OFF.

Comment:

FR-Z.1 Step 3.b

Performance Step: 13 Charcoal filter dampers green status lights - EXTINGUISHED

_____

Standard: The operator observes the A CNMT RECIRC Fan Charcoal Filter Damper Red status light is LIT, and the Green status light is OFF.

The operator observes the C CNMT RECIRC Fan Charcoal Filter Damper Red status light is LIT, and the Green status light is OFF.

Comment:

Terminating Cue: **Evaluation on this JPM is complete.**

STOP TIME: _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2014 Systems - Control Room JPM B

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

JPM CUE SHEET

INITIAL CONDITIONS:

- The plant tripped from 100% power and safety injection has actuated.
- The crew entered E-0, Reactor Trip or Safety Injection, and then transitioned to E-2, Faulted Steam Generator Isolation.
- Due to a degrading transient, an Orange Path now exists on the Containment Critical Safety Function Status Tree.

INITIATING CUE:

The CRS has directed you to verify Containment Isolation and Heat Removal systems are operating as expected by performing FR-Z.1, Response to High Containment Pressure, starting from Step 1.

SIM JPM C

Facility: Ginna Task No.:

Task Title: CVCS Leak Isolation JPM No.: 2014 Systems - Control Room JPM C (Alternate Path)

K/A Reference: 004 A4.08 (3.8/3.4)

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X

Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

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

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

Initial Conditions:

- The Plant is at 100% power.
- Based on plant conditions the crew has entered AP-CVCS.1, "CVCS Leak," and has completed steps 1-5.
- Pressurizer level is stable.
- The leak is believed to be in the Containment and RP has been directed to sample the Containment for entry.
- The HCO is monitoring the automatic VCT makeups that are occurring.

Initiating Cue: While the CRS and the HCO continue to monitor plant conditions, continue with AP-CVCS.1 starting with Step 6 to control RCS inventory to maintain Pressurizer level stable.

Task Standard: The operator will isolate Normal Letdown and Charging, recognize that both operating Charging Pumps have tripped, use AP-CVCS.1 or AP-CVCS.3 to restore Charging flow, and then place Excess Letdown in service.

Required Materials: None

General References: S-3.2, Charging and Volume Control, Rev 02000
AR-A-4, REGEN HX LETDOWN OUT HIGH TEMP 395°F, Rev 00700
AP-CVCS.1, CVCS Leak, Rev 01501
AR-B-9, RCP 1A LABYR SEAL LO DIFF PRESS 15" H_2O, Rev 10
AR-B-10, RCP 1B LABYR SEAL LO DIFF PRESS 15" H_2O, Rev 10
AP-CVCS.3, Loss of All Charging Flow, Rev 01300
ATT-9.1, Attachment Excess L/D, Rev 00800

Handouts: Handout 1: AP-CVCS.1, CVCS Leak, marked up through Step 5. (with all ATTs/FIGs)
Handout 2: Blank copy of AP-CVCS.3, Loss of All Charging Flow
Handout 3: FIG-4.0, Figure RCP Seal Leakoff

Time Critical Task: NO

Validation Time: 20 minutes

SIMULATOR OPERATIONAL GUIDELINES

- Initiate to **any 100% power IC**
- Place simulator in RUN
- Ensure C Charging Pump running in AUTO, B Charging Pump running in MANUAL, and the A Charging Pump available, but OFF
- Insert **Malfunction CVC03, 30 GPM** (Charging Line Leak upstream of Regenerative Heat Exchanger)
- Respond to annunciator procedures and enter AP-CVCS.1, "CVCS Leak"
- Perform steps 1-5 of AP-CVCS.1
- Ensure Przr Level and VCT Level are stable, normal Letdown is in service, and that the VCT is aligned to the suction of the Charging Pumps
- Insert **Malfunctions CVC12B** and **CVC12C** on Trigger #1 (Charging Pumps 'B' and 'C' Trip)
- Place simulator in FREEZE
- Place simulator in RUN when directed by examiner

OR

- Initiate to IC-158 (December, 2014)
- Place simulator in RUN
- Place simulator in FREEZE
- Place simulator in RUN when directed by examiner

NOTE: The Floor Instructor will need to control BOP during the performance of this JPM.

The SIM DRIVER will need to insert Trigger #1 at Step 4 of this JPM.

(Denote Critical Steps with a √)

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

START TIME: _____

AP-CVCS.1, Step 6

Performance Step: 1 Check for leak in Charging Line to REGEN Hx:

_____

Annunciator A-4, REGEN HX LETDOWN OUT HI TEMP 395°F - EXTINGUISHED
Regen Hx Ltdn Outlet Temp - LESS THAN 350°F AND STABLE (TI-127)

Standard: The operator observes that Annunciator A-4 is LIT, and proceeds to the Step 6 RNO.

Comment:

AP-CVCS.1, Step 6 RNO a

√ **Performance Step: 2** Perform the following to isolate normal letdown:

_____

Close letdown isolation, AOV-427.

Standard: [√] The operator places the AOV-427 Control Switch to CLOSE, and observes the Green status light is LIT, Red status light is OFF.

Comment:

AP-CVCS.1, Step 6 RNO b

Performance Step: 3 Close letdown orifice valves (AOV-200A, AOV-200B, and AOV-202).

_____

Standard: The operator observes the Green status light is LIT, Red status light is OFF.

The operator places the AOV-200A Control Switch to CLOSE.

EXAMINER NOTE: **This valve auto closed when AOV-427 was CLOSED by interlock.**

Comment:

AP-CVCS.1, Step 6 RNO c

Performance Step: 4 Close letdown isolation, AOV-371.

_____

Standard: The operator places the AOV-371 Control Switch to CLOSE, and observes the Green status light is LIT, Red status light is OFF.

SIM DRIVER: **After Operator CLOSES AOV-371, INSERT Trigger #1**

Standard: The operator observes one or more of the following:

- Charging flow goes to 0 GPM
- Charging Pumps have tripped
- AR-B-9, RCP 1A LABYR SEAL LO DIFF PRESS 15" H2O, is LIT
- AR-B-10, RCP 1B LABYR SEAL LO DIFF PRESS 15" H2O, is LIT
- AR-G-25, MOTOR OFF CENTER SECTION PUMPS EXCEPT MFW AND AFW PUMPS.

The operator uses the ARP for these annunciators to go to AP-CVCS.3, or enters this procedure directly based on meeting the entry conditions.

EXAMINER NOTE: **Based on a Step 1 of AP-CVCS.1 which is a Continuous Action Step (CAS), the operator may start the A Charging Pump and stabilize Pressurizer level. If so, the operator may continue in AP-CVCS.1. If so, go to JPM Step 9.**

Comment:

EXAMINER NOTE: ALTERNATE PATH DECISION POINT OCCURS WHEN THE CHARGING PUMPS TRIP

AP-CVCS.3, Step 1

Performance Step: 5 Check Charging Pumps – ANY RUNNING

_____

Standard: The operator observes that the Green status lights for the A, B and C Charging Pumps are LIT, and the White status lights on Charging Pump B and C are LIT; and proceeds to the Step 1 RNO.

EXAMINER CUE: **When the operator is looking to find AP-CVCS.3, PROVIDE operator with Handout 2 (AP-CVCS.3).**

Comment:

AP-CVCS.3, Step 1 RNO

√ **Performance Step: 6** Start two charging pumps. IF at least one pump cannot be started, THEN….

_____

Standard: [√] The operator places START Switch for the A Charging Pump to the START Position, and observes Red status light is LIT, and the Green status light is OFF.

Comment:

AP-CVCS.3, Step 2

√ **Performance Step: 7** Check Charging Pump Conditions:

_____

- Check charging pump discharge pressure - GREATER THAN RCS PRESSURE AND STABLE
- Check charging flow - NORMAL
- Check RCP labyrinth seal dp - GREATER THAN 15 INCHES AND STABLE

Standard: The operator observes Charging Pump discharge pressure to be 2400 psig.

The operator observes Charging Pump flow to be 0 gpm.

[√] The operator adjusts the Charging Pump speed to raise RCP Seal flow to stabilize Pressurizer level.

The operator observes the 1A RCP labyrinth seal D/P to be between 15-80 inches H_20.

The operator observes the 1B RCP labyrinth seal D/P to be between 15-80 inches H_20.

EXAMINER NOTE: HCV-142 should remain closed during the recovery of Charging flow.

Comment:

AP-CVCS.3, Step 3

Performance Step: 8 Return To Guidance In Effect

_____

Standard: The operator returns to AP-CVCS.1 Step 6 RNO d.

Comment:

AP-CVCS.1, Step 6 RNO d

√ **Performance Step: 9**

_____

Close charging flow control valve, HCV-142 WHILE adjusting charging pump speed to maintain:

- RCP labyrinth seal D/P between 15 inches and 80 inches
- PRZR level at program

Standard: [√] The operator simultaneously adjusts HCV-142 Controller to 100% (Valve Fully Closed) and adjust B Charging Pump speed to maintain RCP Labyrinth Seal D/P 15-80 inches, and Przr Level at program level (56%).

Comment:

AP-CVCS.1, Step 6 RNO e

Performance Step: 10

_____

Close charging to loop B cold leg, AOV-294.

Standard: The operator places the AOV-294 Control Switch to CLOSE, and observes the Green status light is LIT, Red status light is OFF.

Comment:

AP-CVCS.1, Step 6 RNO f

Performance Step: 11

_____

Go to Step 9.

Standard: The operator proceeds to Step 9

Comment:

Performance Step: 12 **AP-CVCS.1, Step 9**

Check RCP Seal Injection Indications:

_____

- Seal injection flows - GREATER THAN 6 GPM AND STABLE
- RCP labyrinth seal D/Ps - GREATER THAN 15 INCHES AND APPROXIMATELY EQUAL
- RCP seal inlet temperatures - STABLE

Standard:

The operator observes the 1A RCP seal injection flow to be ≈8 gpm and stable.

The operator observes the 1B RCP seal injection flow to be ≈8 gpm and stable.

The operator observes the 1A RCP labyrinth seal D/P to be between 15-80 inches H_20.

The operator observes the 1B RCP labyrinth seal D/P to be between 15-80 inches H_20.

The operator observes the 1A RCP seal inlet temperature to be ≈110°F.

The operator observes the 1B RCP seal inlet temperature to be ≈110°F.

Comment:

AP-CVCS.1, Step 10

Performance Step: 13 Check RCP Seal Leakoff Flows:

_____

RCP seal leakoff flows - WITHIN THE NORMAL OPERATING RANGE OF FIG-4.0, FIGURE RCP SEAL LEAKOFF

RCP seal leakoff flows - STABLE

Standard: The operator observes the 1A RCP Seal Leakoff flow to be between 1-5 gpm, and compares this with FIG-4.0.

The operator observes the 1B RCP Seal Leakoff flow to be between 1-5 gpm, and compares this with FIG-4.0.

EXAMINER CUE: **When the operator is looking to find FIG-4.0, PROVIDE operator with Handout 3 (FIG-4.0).**

Comment:

AP-CVCS.1, Step 11

Performance Step: 14 Evaluate Local Leak Investigation - CVCS SYSTEM INTACT IN AUX BLDG

_____

Standard: The operator recognizes that this action is NA and proceeds.

SIM DRIVER: **If AO directed to investigate leakage in the Aux Building, report that no leakage has been detected in the Aux Building.**

Comment:

AP-CVCS.1, Step 12/12.a

Performance Step: 15 Evaluate Plant Status:

_____

- Leak location identified

Standard: The operator recognizes that the leak is in Containment on the normal Charging Line.

The operator recognizes that the leak is in Containment on the normal Charging Line.

Comment:

AP-CVCS.1, Step 12.b

Performance Step: 16 Check RCS leakage within limits (Refer to leakage surveillance sheet and ITS section 3.4.13)

_____

Standard: The operator recognizes with HCV-142 closed the leak is isolated and proceeds.

Comment:

AP-CVCS.1, Step 12.c

Performance Step: 17 At least one charging flowpath - AVAILABLE FOR INVENTORY CONTROL

_____

- AOV-294
- AOV-392A
- Seal Injection

Standard: The operator recognizes that the seal injection path is available for inventory control, and proceeds.

Comment:

AP-CVCS.1, Step 13

Performance Step: 18 Check Normal Or Excess Letdown - IN SERVICE

_____

Standard: The operator recognizes that neither Normal nor Excess Letdown is in service and proceeds to the Step 13 RNO.

Comment:

AP-CVCS.1, Step 13 RNO

Performance Step: 19 IF normal letdown desired, THEN establish normal letdown. (Refer to ATT-9.0, ATTACHMENT LETDOWN)

_____

IF normal letdown NOT available, THEN establish excess letdown if desired (Refer to ATT-9.1, ATTACHMENT EXCESS L/D).

Standard: The operator recognizes that Normal Letdown has been isolated to isolate a leak per this procedure and proceeds to ATT-9.1.

Comment:

ATT-9.1, Step A

Performance Step: 20 The following conditions must be met to place excess letdown in service:

_____

IA to CNMT - ESTABLISHED

CCW - IN SERVICE

PRZR level - GREATER THAN 13%

Standard: The operator observes that Instrument Air to Containment is established.

The operator observes that CCW is in service.

The operator observes that Pressurizer level is greater than 13%.

Comment:

ATT-9.1, Step B/B.1

Performance Step: 21 Establish excess letdown:

_____

Ensure EXCESS LTDN LOOP A COLD TO Hx, AOV-310 is closed.

Standard: The operator observes that the AOV-310 Green status light is LIT, and the Red status light is OFF.

Comment:

ATT-9.1, Step B.2

Performance Step: 22 Ensure EXCESS LTDN flow control valve, HCV-123 is closed, demand at 0.

_____

Standard: The operator observes that the HCV-123 Controller output is 0.

Comment:

ATT-9.1, Step B.3

Performance Step: 23 Ensure SEAL OR EXCESS LTDN RETURN ISOL VALVE, MOV-313, is open.

_____

Standard: The operator observes that the MOV-313 Red status light is LIT, and the Green status light is OFF.

Comment:

ATT-9.1, Step B.4

√ **Performance Step: 24** Place excess letdown divert valve, AOV-312, to DIVERT.

_____

Standard: [√] The operator places the AOV-312 Control Switch to DIVERT, and observes the Red status light is LIT, and the Green status light is OFF.

Comment:

ATT-9.1, Step B.5

Performance Step: 25 Ensure CCW FROM EX LTDN Hx, AOV-745 - OPEN.

_____

Standard: The operator observes that the AOV-745 Red status light is LIT, and the Green status light is OFF.

Comment:

ATT-9.1, Step B.6

√ **Performance Step: 26** Open EXCESS LTDN LOOP A COLD TO HX, AOV-310.

_____

Standard: [√] The operator places the AOV-310 Control Switch to OPEN, and observes the Red status light is LIT, and the Green status light is OFF.

Comment:

ATT-9.1, Step B.7/7.a

CAUTION: DIVERTING EXCESS LETDOWN TO RCDT WILL RESULT IN CVCS HUT LEVEL RISE OF APPROXIMATELY 4% PER HOUR.

√ **Performance Step: 27** _____

Flush approximately 10 gallons to RCDT as follows (3.2 gal/%, PPCS Point ID LI003).

- Slowly open EXCESS LTDN flow control valve, HCV-123, to maintain excess letdown temperature less than 195°F and pressure less than 100 psig.

Standard:

[√] The operator calls up PPCS Point LI003.

[√] The operator adjusts the HCV-123 Controller such that output rises above 0.

The operator observes TI-122 less than 195°F.

The operator observes PI-121 less than 100 psig.

Comment:

ATT-9.1, Step B.7.b

Performance Step: 28 _____

Ensure approximately 10 gallons is flushed to the RCDT.

Standard:

The operator observes the RDCT level rise approximately 3%.

Comment:

ATT-9.1, Step B.7.c

√ **Performance Step: 29** _____

IF RCP seal return has been established, THEN place EXCESS LTDN HX DIVERT TO VCT OR RCDT VALVE, AOV-312, to NORMAL. IF NOT, THEN leave AOV-312 in DIVERT.

Standard:

[√] The operator recognizes that RCP Seal return has been established and places the AOV-312 Control Switch to NORMAL, and observes the Green status light is LIT, and the Red status light is OFF.

Comment:

ATT-9.1, Step B.8

√ **Performance Step: 30** _____

Adjust charging pump speed to control PRZR level and labyrinth seal D/P.

Standard:

[√] The operator simultaneously adjusts HCV-142 and Charging Pump speed to maintain RCP Labyrinth Seal D/P 15-80 inches, and Przr Level is approaching program level (56%).

Comment:

Terminating Cue: **Evaluation on this JPM is complete.**

STOP TIME: _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2014 Systems - Control Room JPM C

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

JPM CUE SHEET

INITIAL CONDITIONS:

- The Plant is at 100% power.
- Based on plant conditions the crew has entered AP-CVCS.1, "CVCS Leak," and has completed steps 1-5.
- Pressurizer level is stable.
- The leak is believed to be in the Containment and RP has been directed to sample the Containment for entry.
- The HCO is monitoring the automatic VCT makeups that are occurring.

INITIATING CUE:

While the CRS and the HCO continue to monitor plant conditions, continue with AP-CVCS.1 starting with Step 6 to control RCS inventory to maintain Pressurizer level stable.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE: o Conditions should be evaluated for site contingency reporting (Refer to EPIP-1.0, GINNA STATION EVENT EVALUATION AND CLASSIFICATION.

o A local radiation emergency should be declared for any unexplained area radiation monitor alarm.

* 1 Monitor PRZR Level - STABLE AT PROGRAM LEVEL	→	Y IF PRZR level lowering, THEN start additional charging pumps and raise speed to raise PRZR level to program. N IF PRZR level continues to lower, THEN close letdown isolation AOV-427 AND excess letdown AOV-310. N IF available charging pumps are running at maximum speed with letdown isolated, AND PRZR level is lowering, THEN trip the reactor and go to E-0, REACTOR TRIP OR SAFETY INJECTION.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE: IF VCT level lowers to 5%, charging pump suction will swap to the RWST. This may require a load reduction.

2 Check VCT Makeup System:

a. Verify VCT level - GREATER THAN 5%

a. Perform the following:

1) Ensure charging pump suction aligned to RWST

- LCV-112B - OPEN
- LCV-112C - CLOSED

2) Go to Step 3.

b. Ensure the following:

1) RMW mode selector switch in AUTO

2) RMW control armed - RED LIGHT LIT

c. Check VCT level:

o Level GREATER THAN 20%

-OR-

o Level - STABLE OR RISING

c. Perform the following:

1) Ensure letdown divert valve, LCV-112A, aligned to VCT.

2) Manually raise VCT makeup flow as follows:

a) Ensure BA transfer pumps and RMW pumps running.

b) Adjust RMW flow control valve, HCV-111, to raise RMW flow.

c) Adjust boric acid flow to maintain required concentration.

IF VCT level can NOT be maintained, THEN refer to ER-CVCS.1, REACTOR MAKEUP CONTROL MALFUNCTION, if necessary.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE: A load reduction may be required if charging pump suction is aligned to the RWST.

3 Check Charging Pump Suction Aligned To VCT:

a. VCT level - GREATER THAN 20%

a. IF VCT level can NOT be maintained greater than 5%, THEN perform the following:

1) Ensure charging pump suction aligned to RWST

- o LCV-112B open
- o LCV-112C closed

2) Continue with Step 4. WHEN VCT level greater than 20%, THEN do Step 3b.

b. Align charging pumps to VCT

- o LCV-112C open
- o LCV-112B closed

4 Check If RCS Leakage In CNMT:

N o Check CNMT radiation monitors - NORMAL

- R-2
- R-7
- R-10A
- R-11
- R-12

N o CNMT sump A pump run frequency - NORMAL (Refer to leakage surveillance sheet)

IF leakage is indicated in CNMT, THEN perform the following:

Y a. Direct RP to sample CNMT for entry.

b. Continue with Step 5. WHEN CNMT cleared for entry, THEN dispatch personnel to investigate CNMT for RCS leakage.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

* * * *

SIM JPM D

Facility: Ginna Task No.:

Task Title: Depressurize the RCS During a SGTR JPM No.: 2014 Systems - Control Room JPM D (Alternate Path)

K/A Reference: EPE 038 EA1.04 (4.3/4.1)

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

Simulated Performance: _____ Actual Performance: __X__

Classroom _____ Simulator __X__ Plant _____

READ TO THE EXAMINEE

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

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

Initial Conditions:

- The plant has experienced a Steam Generator Tube Rupture.
- The crew has completed E-3, Steam Generator Tube Rupture, through Step 17.
- However, an attempt to re-establish Instrument Air to the Containment has been unsuccessful.
- The RCS has been cooled to target temperature.
- The crew is ready to commence RCS depressurization.

Initiating Cue: The CRS has directed you to depressurize the RCS to minimize break flow starting with Step 18 of E-3.

Task Standard: The operator will determine that Pressurizer Spray and the normal use of the Pressurizer PORVs is not possible, and use ATT-12.0 to open one Pressurizer PORV; and then close the PORV Block Valve when it is recognized that the previously opened Pressurizer PORV has failed OPEN.

Required Materials:	MCB Control Switch Key (Green)
General References:	E-3, Steam Generator Tube Rupture, Rev 04800 ATT-12.0 Attachment N2 PORVs, Rev 6
Handouts:	Handout 1: Blank copy of E-3, Steam Generator Tube Rupture Handout 2: Attachment 12.0, Attachment N2 PORVS
Time Critical Task:	NO
Validation Time:	15 minutes

SIMULATOR OPERATIONAL GUIDELINES

- Reset the Simulator to **any 100% power IC**
- Insert **Malf SGN04B, 500 gpm** (SGTR on 'B' S/G)
- Fail Instrument Air Valve to Containment closed (**OVR-DI-MIS05C, False**)
- Perform Steps 1-17 of E-3
- Ensure that AOV-5392 is closed
- Ensure PPCS is available
- To insert PORV failures when ATT-12.0 is performed:
    - Set Trigger 30 = **x08i160a** (N2 ARMING VLV SOV-8619B switch to ARM)
    - Set Trigger 29 = **x08i161a** (N2 ARMING VLV SOV-8619A switch to ARM)
    - Insert **Malf PZR05B, 100%** on Trigger 30
    - Insert **Malf PZR05A, 100%** on Trigger 29
- Place simulator in FREEZE
- Place simulator in RUN when directed by examiner

OR

- Initiate to IC-159 (December, 2014)
- Place simulator in RUN
- Place simulator in FREEZE
- Place simulator in RUN when directed by examiner

NOTE: **The Floor Instructor will need to control BOP during the performance of this JPM.**

(Denote Critical Steps with a √)

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

START TIME: _____

Performance Step: 1

_____

E-3, Step 18

NOTE: SI ACCUMS may inject during RCS depressurization

Depressurize RCS To Minimize Break Flow And Refill PRZR:

- Check the following:
  - Ruptured S/G Level – LESS THAN 90% [80% adverse CNMT]
  - Any RCP - RUNNING
  - IA to CNMT - AVAILABLE

Standard:

The operator reads the Note, and proceeds.

The operator observes that the B S/G is less than 90% (≈21%).

The operator observes that both RCPs are running.

The operator observes that the AOV-5392 Green status light is LIT, and the Red status light is OFF, and proceeds to the Step 18 RNO.

Comment:

Performance Step: 2

_____

E-3, Step 18 RNO

Go to Step 19.

Standard:

The operator proceeds to Step 19.

Comment:

E-3, Step 19/19.a

Caution: THE PRT MAY RUPTURE IF A PRZR PORV IS USED TO DEPRESSURIZE THE RCS. THIS MAY RESULT IN ABNORMAL CNMT CONDITIONS.
Caution: CYCLING OF THE PRZR PORV SHOULD BE MINIMIZED.
Caution: THE UPPER HEAD REGION MAY VOID DURING RCS DEPRESSURIZATION IF RCPS ARE NOT RUNNING. THIS MAY RESULT IN RAPIDLY RISING PRZR LEVEL.
Note: If auxiliary spray is in use, spray flow may be enhanced by closing normal charging valve AOV-294 and normal spray valves.
Note: When using PRZR PORV select one with an operable block valve.

Performance Step: 3 Depressurize RCS Using PRZR PORV To Minimize Break Flow And Refill PRZR:

_____

- Verify IA to CNMT – AVAILABLE.

Standard: The operator reads the three Cautions and proceeds.

The operator reads the two Notes and proceeds.

The operator observes that the AOV-5392 Green status light is LIT, and the Red status light is OFF, and proceeds to the Step 19 RNO.

Comment:

E-3, Step 19.a RNO

Performance Step: 4 Refer to ATT-12.0, ATTACHMENT N2 PORVS to operate PORVs.

_____

Standard: The operator refers to ATT-12.0 to operate the Pressurizer PORV, and reviews.

EXAMINER CUE: **When the operator is looking to find ATT-12.0, PROVIDE operator with <u>Handout 2 (ATT-12.0)</u>.**

Comment:

Performance Step: 5 _____

E-3, Step 19.b
PRZR PORVs – AT LEAST ONE AVAILABLE

Standard:

The operator observes the PCV-430 Green status light LIT, and the Red status light OFF, and determines that it is available.

The operator observes the PCV-431C Green status light LIT, and the Red status light OFF, and determines that it is available.

Comment:

Performance Step: 6 _____

E-3, Step 19.c
Open one PRZR PORV until ANY of the following conditions satisfied:

- PRZR level – GREATER THAN 75% [65% adverse CNMT]

OR

- RCS pressure – LESS THAN SATURATION USING FIG-1.0, FIGURE MIN SUBCOOLING

OR

- BOTH of the following:
  - RCS pressure – LESS THAN RUPTURED S/G PRESSURE
  - PRZR level – GREATER THAN 10% [30% adverse CNMT]

Standard:

The operator refers to ATT-12.0 to operate the Pressurizer PORV.

EXAMINER NOTE:

SROs should determine that the Minimum Subcooling stopping criteria is based on 520±5°F and 870±50 psig (Or actual plant conditions).

Inform the ROs that to stop depressurizing at an RCS pressure 870±50 psig based on MINIMUM Subcooling.

Comment:

ATT-12.0, Step A

NOTE: If RCS overpressurization accumulator pressure lowers to less than 200 psig, then recharge accumulators using S-29.2, Charging The Reactor Vessel Overpressure Protection System Accumulators with N2. This will require reset of CI and XY relays for the N2 supply valve to CNMT, AOV-846.

NOTE: For FR-H.1 Bleed and Feed the PORV block valve is not required to be operable.

√ **Performance Step: 7** _____

When IA to CNMT NOT available, THEN perform the following to operate one (or both) PRZR PORV (s) in accordance with guidance provided by the procedure step:

Select a PORV with an operable block valve, obtain a key for the RCS overpressurization system, and perform the step below:

- PCV-431C:
  - Verify block valve MOV-515 – OPEN AND OPERABLE
  - Place ACCUM TO SURGE NTK VLV SOV-8616B to OPEN
- PCV-430:
  - Verify block valve MOV-516 – OPEN AND OPERABLE
  - Place ACCUM TO SURGE NTK VLV SOV-8616A to OPEN

Standard:

The operator reads both Notes and proceeds.

The operator observes the MOV-515 Red status light is LIT, Green status light is OFF.

[√] The operator places the SOV-8616B Key Control Switch to OPEN.

OR

The operator observes the MOV-516 Red status light is LIT, Green status light is OFF.

[√] The operator places the SOV-8616A Key Control Switch to OPEN.

EXAMINER NOTE: **These valves have status lights that are NOT operational.**

Comment: **The SOVs are located on the rear of the MCB.**

ATT-12.0, Step B

√ **Performance Step: 8** _____

To depressurize the RCS in accordance with the guidance provided by the EOP step, perform the following:

- For PCV-431C, place overpressurization system arming switch, N2 ARMING VLV SOV-8619B to ARM
- For PCV-430, place overpressurization system arming switch, N2 ARMING VLV SOV-8619A to ARM

Standard:

[√] The operator places the SOV-8619B Key Control Switch to OPEN.

OR

[√] The operator places the SOV-8619A Key Control Switch to OPEN.

EXAMINER NOTE:

These valves have status lights that are NOT operational.

The PORV that is opened by the Operator will fail OPEN.

Comment:

E-3, Step 19.d

√ **Performance Step: 9** _____

Close PRZR PORV

Standard:

The operator observes RCS pressure and PRZR level.

The operator compares RCS pressure to FIG-1.0, FIGURE MIN SUBCOOLING

[√] The operator determines that one of the three stop criteria have been met, and attempts to close the PORV (Performance Step 10).

Comment:

ATT-12.0, Step D

√ **Performance Step: 10** _____

WHEN depressurization complete, THEN close the PORV(s) by performing the following:

- For PCV-431C:
  - Place N2 ARMING VLV SOV-8619B to BLOCK
  - Place ACCUM TO SURGE TNK VLV 8616B to CLOSE
- For PCV-430:
  - Place N2 ARMING VLV SOV-8619A to BLOCK
  - Place ACCUM TO SURGE TNK VLV 8616A to CLOSE

Standard:

[√] The operator places the SOV-8619B Key Control Switch to BLOCK.

[√] The operator places the SOV-8616B Key Control Switch to CLOSE.

OR

[√] The operator places the SOV-8619A Key Control Switch to BLOCK.

[√] The operator places the SOV-8616A Key Control Switch to CLOSE.

[√] The operator observes the previously opened PRZR PORV Red status light is LIT, Green status light is OFF, and recognizes that the PORV has failed to Close.

Comment:

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

√ **Performance Step: 11** _____

E-3, Step 19.d RNO
IF either PRZR PORV can NOT be closed, THEN close associated block valve.

Standard:

[√] If PCV-430 is OPEN, the operator places the MOV-516 to CLOSE, and observes the Green status light is LIT, Red status light is OFF.

OR

[√] If PCV-431C is OPEN, the operator places the MOV-515 to CLOSE, and observes the Green status light is LIT, Red status light is OFF.

Comment:

Performance Step: 12 _____

E-3, Step 20
Check RCS Pressure - RISING

Standard: The operator observes RCS pressure is rising.

Comment:

Terminating Cue: **Evaluation on this JPM is complete.**

STOP TIME: _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2014 Systems - Control Room JPM D

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

JPM CUE SHEET

INITIAL CONDITIONS:

- The plant has experienced a Steam Generator Tube Rupture.
- The crew has completed E-3, Steam Generator Tube Rupture, through Step 17.
- However, an attempt to re-establish Instrument Air to the Containment has been unsuccessful.
- The RCS has been cooled to target temperature.
- The crew is ready to commence RCS depressurization.

INITIATING CUE:

The CRS has directed you to depressurize the RCS to minimize break flow starting with Step 18 of E-3.

SIM JPM E

Facility: Ginna Task No.:

Task Title: Synchronize Generator On-Line with Improper Load Pickup JPM No.: 2014 Systems - Control Room JPM E (Alternate Path)

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

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.

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

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

Initiating Cue:
- The CRS has directed 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.

Task Standard: The operator will synchronize the Main Generator to the Electrical Grid, and when it is recognized that the Automatic Load Pickup has failed to function, the operator will manually load the Turbine to 40 to 60 MW, without reverse powering the Main Generator.

Required Materials: None

General References:	O-1.2, Plant Startup From Hot Shutdown to Full Load, Rev 20101 FIG-13.0, Figure Back Pressure, Rev 0
Handouts:	Handout 1: O-1.2, Plant Startup From Hot Shutdown to Full Load (Pages 1-11, 55, and 66-74) Handout 2: O-1.2, ATT-2, No Load Excitation Limits for #1 and #11 Transformers
Time Critical Task:	NO
Validation Time:	15 minutes
NOTE:	The operators should be pre-briefed in the Briefing Room prior to performance of this JPM.

SIMULATOR OPERATIONAL GUIDELINES

- 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, 1 MW** (Failure of Turbine Auto Load Pickup)
- Ensure Grid frequency [**Remote E-MIS11**] is adjusted so that when the examinee places the Synchroscope to ON it is moving slowly in the SLOW direction (e.g. 60.02 Hz).
- Ensure Grid voltage [**Remote E-MIS10**] is low enough to allow the examinee to adjust incoming voltage to slightly greater than system voltage, while maintaining generator voltage < 19.3 KV (Step 6.13.4)
- Set **REM EDS017** to **Closed** (Sta 13A Man Disconnect 1G13A73)
- Set **REM EDS016** to **Closed** (Sta 13A Man Disconnect 9X13A71)
- Select PBACK on the PPCS Screen in front of the Turbine Control Station.
- FREEZE

OR

- IC 160 (August, 2014)
- Place simulator in RUN.
- Place simulator in FREEZE.
- Select PBACK on the PPCS Screen in front of the Turbine Control Station.
- Place simulator in RUN when directed by examiner.

NOTE: **The Simulator/Floor Instructor will need to control Primary Plant during the performance of this JPM.**

(Denote Critical Steps with a √)

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

START TIME: _____

O-1.2, Step 6.13.1

Performance Step: 1 PLACE synchroscope switch handle in CIRCUIT BKR 1G 13A72 SYNCHROSCOPE.

_____

Standard: The operator places synchroscope switch handle in CIRCUIT BKR 1G 13A72 SYNCHROSCOPE.

EXAMINER NOTE: **There is a single switch handle that may be placed in either CIRCUIT BKR 1G 13A72 SYNCHROSCOPE, or CIRCUIT BKR 9X 13A72 SYNCHROSCOPE.**

Comment:

O-1.2, Step 6.13.2

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

_____

Standard: The operator reads the Note, and proceeds.

[√] The operator rotates CIRCUIT BKR 1G 13A72 SYNCHROSCOPE control switch clockwise to the ON position.

EXAMINER NOTE: **Alarm J-5 may cycle in and out of alarm per the note.**

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:

O-1.2, Step 6.13.3

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:

The operator reads the Note, and proceeds.

- The operator observes the SYNCHROSCOPE (MCB right section)
- [√] The operator adjusts setter up or down 1 rpm 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.**
- **It is likely that the operator will need to perform this action TWICE.**

Comment:

O-1.2, Step 6.13.4/4.1

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:

- CHECK voltage on all three phases.

Standard:

The operator rotates the GENERATOR VOLTMETER switch to each phase position and compares:

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

EXAMINER NOTE:

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

Comment:

O-1.2, Step 6.13.4.2

Performance Step: 5 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: The operator refers to Attachment 2

The operator observes the INCOMING VOLTMETER (GENERATOR) voltage and RUNNING VOLTMETER (SYSTEM) voltage.

The operator places the BASE ADJUSTER to RAISE until INCOMING VOLTMETER (GENERATOR) voltage is slightly higher than RUNNING VOLTMETER (SYSTEM) voltage.

The operator does NOT allow GENERATOR voltage to exceed 19.3 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 < 19.3 KV.**

Comment:

O-1.2, Step 6.13.4.3

Performance Step: 6 IF INCOMING VOLTMETER (GENERATOR) voltage CANNOT be made slightly higher than RUNNING VOLTMETER (SYSTEM) voltage,.....

_____

Standard: The operator marks this step NA.

Comment:

O-1.2, Step 6.13.5

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

_____

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

Comment:

O-1.2, 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: The operator observes the 1G13A71 Red status light is LIT and the Green status light is OFF.

The operator observes the 9X13A73 Red status light is LIT and the Green status light is OFF.

Comment:

O-1.2, Step 6.13.7

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

_____

Standard: The operator observes Power Range channels NI-41C, NI-42C, NI-43C, and NI-44C between 15% and 20% (Or equivalent).

EXAMINER CUE: (HCO) **(If asked to report power level): "Power level is 18 (current power level)".**

Comment:

O-1.2, Step 6.13.8

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

_____

Standard: The operator reads Caution prior to Step 6.9.1, and proceeds.

Comment:

O-1.2, Step 6.13.9

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

_____

Standard: [√] The operator 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:

O-1.2, Step 6.13.10/10.1

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:

- 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: The operator refers to FIG-13.0 or calls up PBACK on the PPCS.

The operator observes the INCOMING VOLTMETER (GENERATOR) voltage and RUNNING VOLTMETER (SYSTEM) voltage and determines that no adjustment is needed.

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

Comment:

O-1.2, Step 6.13.10.2

Performance Step: 13 IF INCOMING VOLTMETER (GENERATOR) voltage CANNOT be adjusted slightly higher than system RUNNING VOLTMETER (SYSTEM) voltage,……

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

Comment:

O-1.2, 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: The operator reviews Steps 6.13.10.4 thru 6.13.10.6.

Comment:

O-1.2, Step 6.13.10.4

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).

_____

- RECORD time of closure

Standard: The operator observes the synchroscope.

[√] The operator rotates 1G 13A72 breaker pistol-grip switch clockwise to the CLOSE position when the synchroscope is approaching 12 o'clock.

The operator observes the 1G 13A72 Red status lights LIT, Green status lights OFF.

The operator 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.**

EXAMINER CUE: **IF the operator communicates actions to the CRS, as CRS, acknowledge.**

Comment:

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

Performance Step: 16 _____

O-1.2, Step 6.13.10.5

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

VERIFY Automatic load pickup occurs within approximately 10 seconds.

Standard: The operator observes Generator load and determines that automatic load pickup is NOT raising load to the expected range.

Comment:

O-1.2, 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:

[√] The operator depresses TURB. MANUAL pushbutton.

The operator observes OPER PAN light off and TURB MANUAL light is LIT.

The operator observes digital Generator Gross MW indication.

[√] The operator intermittently depresses the RAISE pushbutton to adjust generator gross load to between 40 to 60 MW.

EXAMINER CUE:

IF the operator communicates actions to the CRS, as CRS, acknowledge.

EXAMINER NOTE:

The Main Generator will Reverse Power in about 40 seconds if the operator does NOT take this action.

Comment:

O-1.2, Step 6.13.10.7

Performance Step: 18

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

Standard:

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

Comment:

O-1.2, Step 6.13.10.8

Performance Step: 19 REMOVE synchroscope switch handle from CIRCUIT BKR 1G 13A72 SYNCHROSCOPE.

_____

Standard: The operator removes synchroscope switch handle from CIRCUIT BKR 1G 13A72 SYNCHROSCOPE.

Comment:

Terminating Cue: **Evaluation on this JPM is complete.**

STOP TIME: _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2014 Systems - Control Room JPM E

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

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.
- MTC is negative for this Startup.

INITIATING CUE:

- The CRS has directed 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.

SIM JPM F

Facility:	Ginna	Task No.:	
Task Title:	Continuous Rod Motion During Re-alignment of Misaligned Control Rod	JPM No.:	2014 Systems - Control Room JPM F (Alternate Path)
K/A Reference:	001 A4.06 (2.9/3.2)		

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.

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

Initial Conditions:

- While performing control rod testing in accordance with STP-O-1, Rod Control System, Shutdown Bank Rod I11 failed to move inward with the rest of the Shutdown Bank rods.
- I&C was notified, and a control circuit card was replaced. Follow up readings show the circuit was repaired successfully.
- ER-RCC.2, Restoring a Misaligned RCC, has been entered to restore the misaligned rod. ER-RCC.2 has been completed up to the start of Section 6.2.

Initiating Cue:

- The CRS has directed you to continue rod restoration per Section 6.2 of ER-RCC.2.
- The CO will control the secondary plant.

Task Standard: The operator will move the misaligned rod to a position in the core lower than its associated bank, and then realign the Shutdown Bank with the misaligned rod. While aligning the Shutdown Bank with the misaligned rod, the operator will diagnose a continuous rod insertion accident and manually trip the reactor.

Required Materials:	Lift Coil Cabinet Key (White)
General References:	ER-RCC.2, Restoring a Misaligned RCC, Rev 01701 AP-RCC.1, Continuous Control Rod Withdrawal/Insertion, Rev 11 E-0, Reactor Trip Or Safety Injection, Rev 04602 A-503.1, Emergency and Abnormal Operating Procedures Users Guide, Rev 04409
Handouts:	Handout 1: Blank copy of ER-RCC.1, Restoring a Misaligned RCC. Handout 2: Blank copy of AP-RCC.1, Continuous Control Rod Withdrawal/Insertion
Time Critical Task:	NO
Validation Time:	15 minutes

SIMULATOR OPERATIONAL GUIDELINES

- Place simulator in **IC-27**, 70% power
- Ensure the Shutdown Banks are selected on the MRPI Display Screen.
- Insert **MALF ROD03-I11, UNTRIPPABLE** (rod I11, no motion)
- Insert Shutdown Bank until a 12 step deviation occurs, ensure Step Counters matched and less than 212 Steps, and **clear** MALF ROD3 on Rod I11
- Adjust turbine as necessary for Tavg control, plant stabilization
- Insert **OVR-DI-ROD02B, TRUE** (Uncontrolled Rod Motion on IN SIGNAL) on **Trigger #1**.
-
- FREEZE

OR

- IC-161 (December, 2014)
- Verify that Step Counters and RBU correct.
- Place simulator in RUN
- Place simulator in FREEZE
- Place simulator in RUN when directed by examiner

NOTE: **The Floor Instructor will need to control Secondary Plant during the performance of this JPM at Step 8.**

The SIM DRIVER will need to operate Trigger #1 at Step 12 of this JPM.

(Denote Critical Steps with a √)

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

START TIME: _____

ER-RCC.2, Step 6.2.1

Performance Step: 1 IF affected bank group step counters not in agreement, THEN STEP RODS OUT ½ step.

_____

Standard: The operator observes Shutdown Bank A Step Counters for Group 1 and 2 are both 211 Steps.

Comment:

ER-RCC.2, Step 6.2.2

Performance Step: 2 RECORD the MCB step counter position for the affected group.

_____

Bank _____

Steps _____

Standard: The operator observes the Shutdown Bank step counters, and records the Bank as "Shutdown" and the Steps as "211".

Comment:

ER-RCC.2, Step 6.2.3

Performance Step: 3 PLACE control rod bank selector switch to the affected bank.

_____

Standard: The operator observes the Control Rod Bank Selector Switch is in the SBA.

Comment:

ER-RCC.2, Step 6.2.4

Performance Step: 4 IF the misaligned RCC is in a Control Bank……

_____

Standard: The operator recognizes that this step is Not Applicable and proceeds.

Comment:

ER-RCC.2, Step 6.2.5

√ **Performance Step: 5** DISCONNECT all lift coils for the affected bank except the one for the misaligned RCC.

_____

Standard: The operator obtains the Lift Coil Cabinet Key.

[√] The operator opens the Lift Coil Switch Cabinet and places the Disconnect Switch for Control Rods E3, C9, K5, I3, C5, E11 and K9 in the DOWN position.

EXAMINER NOTE: **The TOGGLE SWITCH is above the Nomenclature in the Lift Coil Switch Cabinet.**

Comment:

ER-RCC.2, Step 6.2.6/6.2.6.1

Note: To determine if a misaligned rod is moving, a MRPI transition should occur within 12 steps.

Note: Alarm C-30, Rod Control Urgent Failure Rod Stop will annunciate as insertion starts.

√ **Performance Step: 6** PERFORM the following to align the RCC with its bank position:

_____

INSERT the misaligned RCC until it transitions to one MRPI position below its bank.

Standard: The operator reads both Notes and proceeds.

[√] The operator places the Rod Control (In/Hold/Out) Switch to IN and observes MRPI for Control Rod I11 to make the first transition at 212 Steps.

[√] The operator releases the Rod Control (In/Hold/Out) Switch when the MRPI display for Control Rod I11 transitions to 200 Steps.

The operator acknowledges AR-C-30, Rod Control Urgent Failure Rod Stop, and notes that this is an expected alarm.

The operator observes MRPI (or equivalent) and determines that Rod I11 stops moving.

EXAMINER NOTE: **The other rods in Shutdown Bank A are at 212 Steps.**

Comment:

ER-RCC.2, Step 6.2.6.2

Performance Step: 7 IF rod will NOT move,.....

_____

Standard: The operator recognizes that the condition is NOT met, and proceeds.

Comment:

ER-RCC.2, Step 6.2.6.3

Performance Step: 8 LOWER Turbine Load to match Tavg to Tref.

_____

Standard: The operator requests that the BOP match Tavg and Tref.

Floor Instructor: **Functioning as the BOP, adjust Turbine Load as needed to match Tavg and Tref.**

Comment:

ER-RCC.2, Step 6.2.6.4

√ **Performance Step: 9** RECONNECT all lift coils on affected bank.

_____

Standard: The operator obtains the Lift Coil Cabinet Key.

[√] The operator opens the Lift Coil Cabinet and places the Disconnect Switch for Control Rods E3, C9, K5, I3, C5, E11 and K9 in the UP position.

Comment:

ER-RCC.2, Step 6.2.6.5

√ **Performance Step: 10** DISCONNECT the lift coil for the misaligned RCC.

_____

Standard: The operator obtains the Lift Coil Cabinet Key.

[√] The operator opens the Lift Coil Cabinet and places the Disconnect Switch for Control Rod I11 in the DOWN position.

Comment:

ER-RCC.2, Step 6.2.6.6

Note: The Rod Control alarm reset pushbutton will reset urgent failure alarms without resetting the counters.
Note: The alarm reset pushbutton also removes the Pulser inhibits for manual and auto rod operation, and the lockups for the stationary and moveable grippers. To ensure stationary gripper engagement, resetting the urgent failure places the stationary coil on hi voltage initially, then low voltage.

√ **Performance Step: 11** RESET Urgent Failure alarm by pushing the ROD CONTROL ALARM RESET pushbutton.

_____

Standard: The operator reads both Notes and proceeds.

[√] The operator depresses the ROD CONTROL ALARM RESET pushbutton, and acknowledges that AR-C-30 has cleared.

Comment:

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

ER-RCC.2, Step 6.2.6.7

√ **Performance Step: 12** **INSERT** the affected bank to the same MRPI transition as its misaligned rod

Standard: The operator places the Rod Control (In/Hold/Out) Switch to IN and observes MRPI for the Shutdown Bank Rods (Except Control Rod I11) transitions to 200, and then releases the Switch.

SIM DRIVER: **After Operator has initiated rod motion, INSERT Trigger #1**

[√] The operator observes that the Shutdown Bank rods continue to insert after the Rod Control (In/Hold/Out) Switch has been released, and transitions to AP-RCC.1.

EXAMINER CUE: **The operator may attempt to place the Rod Control bank Select Switch to MANUAL before entering AP-RCC.1.**

When it is apparent that the operator is looking for AP-RCC.1, provide Handout 2 to the operator.

EXAMINER NOTE: **Based on CNG-OP-1.01-1000 (Conduct of Operations) criteria, the operator may manually trip the reactor without addressing AP-RRC.1. If so, move to JPM Step 15.**

Comment:

AP-RCC.1, Step 1.a-c

Performance Step: 13 Evaluate Rod Control System Operability:

_____

Check turbine load - STABLE

Place Rods to MANUAL

Verify control rod motion stops

Standard: The operator places the Control Rod Bank Selector Switch to MANUAL, and observes that the Shutdown Bank Controls Rods are still moving, and proceeds to the Step 1.c RNO.

Comment:

AP-RCC.1, Step 1.c RNO

√ **Performance Step: 14** Manually trip the reactor and go to E-0, REACTOR TRIP or SAFETY INJECTION.

_____

Standard: [√] The operator manually trips the reactor by depressing one of the Reactor Emergency Trip pushbuttons, and begins to perform the Immediate Actions of E-0.

EXAMINER NOTE: **There are two Reactor Emergency Trip pushbuttons either of which will manually trip the reactor when depressed.**

Comment:

Terminating Cue: **Evaluation on this JPM is complete.**

STOP TIME: _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2014 Systems - Control Room JPM F

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

JPM CUE SHEET

INITIAL CONDITIONS:

- While performing control rod testing in accordance with STP-O-1, Rod Control System, Shutdown Bank Rod I11 failed to move inward with the rest of the Shutdown Bank rods.
- I&C was notified, and a control circuit card was replaced. Follow up readings show the circuit was repaired successfully.
- ER-RCC.2, Restoring a Misaligned RCC, has been entered to restore the misaligned rod. ER-RCC.2 has been completed up to the start of Section 6.2.

INITIATING CUE:

- The CRS has directed you to continue rod restoration per Section 6.2 of ER-RCC.2.
- The CO will control the secondary plant.

SIM JPM G

Facility: Ginna Task No.:

Task Title: Transfer Instrument Bus B to Normal Supply JPM No.: 2014 Systems - Control Room JPM G (Alternate Path)

K/A Reference: 062 A1.03 (2.5/2.8)

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

Simulated Performance: _____ Actual Performance: __X__

Classroom _____ Simulator __X__ Plant _____

READ TO THE EXAMINEE

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

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

Initial Conditions:

- The B Instrument Bus has been on the Maintenance Power supply for the last four hours to allow completion of maintenance on the normal supply transformer.
- Maintenance has been completed and the Hold Clearance has been removed.
- It is now desired to restore the B Instrument Bus to its normal power supply.
- There are no failed or defeated protection channels.

Initiating Cue: The CRS has directed you to transfer the "B" Instrument Bus from the Maintenance power supply to the normal power supply per Section 6.3 of ER-INST.3, Instrument Bus Power Restoration.

Task Standard: The operator will restore Instrument Bus B to its normal power supply in accordance with ER-INST.3, and take manual control of the Pressurizer Pressure Controller (431K) to stabilize Pressurizer pressure, when it is recognized that the controller has failed in AUTO.

Required Materials:	Protection Rack Key Instrument Bus/DC Cabinet Key
General References:	ER-INST.3, Instrument Bus Power Restoration, Rev 01200 CNG-OP-1.01-1000, Conduct of Operations, Rev 01000
Handouts:	Handout 1: Blank copy of ER-INST.3, Instrument Bus Power Restoration.
Time Critical Task:	NO
Validation Time:	20 minutes

SIMULATOR OPERATIONAL GUIDELINES

- Initiate to **any 100% IC**
- Align the B Instrument Bus to the Maintenance power supply in accordance with Section 6.2 of ER-INST.3
- Insert **MALF PZR04 at 100%** on Trigger #1 (PRZR Master Pressure Control failure)
- FREEZE the Simulator

OR

- IC 162 (December, 2014)
- Place simulator in RUN
- Place simulator in FREEZE
- Place simulator in RUN when directed by examiner.

NOTE: **The Simulator/Floor Instructor will need to control the BOP during the performance of this JPM.**

(Denote Critical Steps with a √)

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

START TIME: _____

ER-INST.3, Step 6.3.1

Note: IF a turbine runback occurs, THEN GO TO AP-TURB.2, TURBINE LOAD REJECTION.
Note: REFER TO Attachment 5, INSTRUMENT POWER SUPPLIES for equipment that could be affected by the swap of power supplies.
Note: REFER TO P-10, INSTRUMENT FAILURE REFERENCE MANUAL (Appendix L) for additional information relating to Instrument Bus failures.
Note: REFER TO P-12, ELECTRICAL SYSTEMS PRECAUTIONS, LIMITATIONS, AND SETPOINTS for additional information relating to instrument busses.
Note: Drawing 3201-0102, 120V AC INSTRUMENT BUS ONE-LINE DIAGRAM can be referenced for information on the Instrument Bus Power Supplies.

Performance Step: 1 VERIFY that normal feed is available as follows:

_____

- Inst Bus A –Supply voltage approximately 120 volts (EI/INVTCVTA, above Inst Bus A).
- Inst Bus B –Annunciator E-14, LOSS B INSTR. BUS, extinguished.
- Inst Bus C –Supply voltage approximately 120 volts (EI/INVTCVTB, above Inst Bus C).
- Inst Bus D –Annunciator E-30, LOSS D INSTR. BUS, extinguished

Standard: The operator reads the Notes, and proceeds.

The operator observes that Instrument Bus A Supply Voltage is 120 Volts.

The operator observes that E-14 is NOT LIT.

The operator observes that Instrument Bus C Supply Voltage is 120 Volts.

The operator observes that E-30 is NOT LIT.

Comment:

ER-INST.3, Step 6.3.2

√ **Performance Step: 2** PLACE Rod Control Bank selector switch to MANUAL.

_____

Standard: [√] The operator places Rod Control Bank Selector Switch to "M" (MANUAL) position.

Comment:

ER-INST.3, Step 6.3.3

√ **Performance Step: 3** REFER to the appropriate attachment for transfer of Instrument Bus power supply

_____

- Attachment Instrument Bus A
- Attachment Instrument Bus B
- Attachment Instrument Bus C
- Attachment Instrument Bus D

Standard: [√] The operator refers to Attachment 2, Attachment Instrument Bus B.

Comment:

ER-INST.3, Attachment 2, Step 1.0

Caution: IF the reactor trip breakers are CLOSED AND Intermediate Range NIS trips are NOT BLOCKED, THEN transfer of INSTRUMENT BUS B power supply may result in a Reactor Trip.

Note: Various single channel alarms will sound and can be reset as soon as power supply is transferred.

Performance Step: 4 VERIFY that any failed or defeated protection channels will not conflict with the Instrument Bus transfer to cause a Reactor Trip. Refer to Attachment 5, INSTRUMENT POWER SUPPLIES

_____

Standard: The operator reads the Caution and Note, and proceeds.

The operator recognizes that there are no failed or defeated protection channels at the present time.

Comment:

ER-INST.3, Attachment 2, Step 2.0/2.1

√ **Performance Step: 5** To prepare for transfer, PERFORM the following:

_____

PLACE CHARGING PUMP SPEED CONTROLLERS (MCB) in MANUAL.

Standard: The operator places the A Charging Pump controller mode select switch from AUTO to BALANCE.

The operator balances controller output to "0" by adjusting manual control knob (Lower black knob).

[√] The operator places the A Charging Pump controller mode select switch in MANUAL.

Comment:

ER-INST.3, Attachment 2, Step 2.2

√ **Performance Step: 6** PLACE PRZR LEVEL DEFEAT switch L/428A (PLP) in defeat-2.

_____

Standard: [√] The operator obtains Protection Rack Key and opens PLP PRZR PRESS and LEVEL Cabinet Door.

[√] The operator places the Przr Level Defeat Switch L/428A (PLP) in defeat-2.

Comment:

ER-INST.3, Attachment 2, Step 2.3

Performance Step: 7 PLACE one Charging Pump (MCB) in AUTO, if desired.

_____

Standard: The operator places controller mode select switch from MANUAL to BALANCE.

The operator balances controller output to "0" by adjusting manual control knob (Lower black knob).

The operator places controller mode select switch in AUTO.

EXAMINER NOTE: **The operator may choose to not place the controller in AUTO at this time.**

Comment:

ER-INST.3, Attachment 2, Step 2.4

√ **Performance Step: 8** PLACE PRZR PRESS CONTROLLER 431K in MANUAL.

_____

Standard: The operator places controller mode select switch from AUTO to BALANCE.

The operator balances controller output to "0" by adjusting manual control knob (Lower black knob).

[√] The operator places controller mode select switch in MANUAL.

Comment:

ER-INST.3, Attachment 2, Step 2.5

√ **Performance Step: 9** PLACE PRESSURIZER PRESSURE DEFEAT switch P/429A in defeat-2 (PLP).

_____

Standard: [√] The operator places Pressurizer Pressure Defeat Switch P\429A in Defeat-2.

[√] The operator closes and locks cabinet door.

Comment:

ER-INST.3, Attachment 2, Step 2.6

√ **Performance Step: 10** PLACE PRZR PRESS CONTROLLER 431K (MCB) in AUTO.

_____

Standard: The operator places controller mode select switch from MANUAL to BALANCE.

The operator balances controller output to "0" by adjusting manual control knob (Lower black knob).

[√] The operator places controller mode select switch in AUTO.

Comment:

ER-INST.3, Attachment 2, Step 3.0

√ **Performance Step: 11** TRANSFER Instrument Bus power supply as follows:

_____

- IF on NORMAL FEED AND MAINTENANCE FEED desired, THEN TRANSFER to MAINTENANCE.
- IF on MAINTENANCE FEED AND NORMAL FEED desired, THEN TRANSFER to NORMAL

Standard: [√] The operator obtains the Instrument Bus/DC Cabinet Key and opens the Instrument Bus B door.

[√] The operator pushes mechanically interlocked breakers from Maintenance closed/Normal open to Normal closed/Maintenance open.

Comment:

ER-INST.3, Attachment 2, Step 4.0/4.1

√ **Performance Step: 12** PERFORM the following to restore controls to normal:

_____

PLACE CHARGING PUMP SPEED CONTROLLERS in MANUAL.

Standard: The operator places controller mode select switch from AUTO to BALANCE.

The operator balances controller output to "0" by adjusting manual control knob (Lower black knob).

[√] The operator places controller mode select switch in MANUAL.

EXAMINER NOTE: **The Charging Controller may already be in MANUAL if it was NOT desired to place it in AUTO at Step 2.3. IF so, the Step is NOT CRITCAL.**

Comment:

ER-INST.3, Attachment 2, Step 4.2

√ **Performance Step: 13** PLACE PRZR LEVEL DEFEAT switch, L/428A (PLP) in NORMAL.

_____

Standard: [√] The operator unlocks and opens PLP PRZR PRESS & LEVEL rack cabinet door.

[√] The operator places Przr Level Defeat Switch, L/428A in NORMAL.

Comment:

ER-INST.3, Attachment 2, Step 4.3

Performance Step: 14 PLACE one Charging Pump in AUTO (MCB), if desired.

_____

Standard: The operator places controller mode select switch from MANUAL to BALANCE.

The operator balances controller output to "0" by adjusting manual control knob (Lower black knob).

The operator places controller mode select switch in AUTO.

EXAMINER NOTE: **The operator may choose to not place the controller in AUTO at this time.**

Comment:

ER-INST.3, Attachment 2, Step 4.4

√ **Performance Step: 15** PLACE PRZR PRESS CONTROLLER 431K (MCB) in MANUAL.

Standard: The operator places controller mode select switch from AUTO to BALANCE.

The operator balances controller output to "0" by adjusting manual control knob (Lower black knob).

[√] The operator places controller mode select switch in MANUAL.

Comment:

ER-INST.3, Attachment 2, Step 4.5

√ **Performance Step: 16** PLACE PRESSURIZER PRESSURE DEFEAT switch P/429A (PLP) in NORMAL.

Standard: [√] The operator places Pressurizer Pressure Defeat Switch P/429A in Normal.

Comment:

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

ER-INST.3, Attachment 2, Step 4.6

Performance Step: 17 PLACE PRZR PRESS CONTROLLER 431K (MCB) in AUTO.

_____

Standard: The operator places controller mode select switch from MANUAL to BALANCE.

The operator balances controller output to "0" by adjusting manual control knob (Lower black knob).

The operator places controller mode select switch in AUTO.

SIM DRIVER: **Simulator Instructor operate Trigger #1 when operator places controller in AUTO.**

Comment:

CNG-OP-1.01-1000, Step 5.10.C.2/3

√ **Performance Step: 18** _____

Recognize failed controller, take manual control and adjust controller output manually to maintain Przr pressure within normal band.

Standard:

The operator recognizes that the controller has failed in AUTO.

[√] The operator places controller mode select switch in MANUAL.

[√] The operator adjusts the controller output to restore Przr pressure within normal band.

EXAMINER NOTE:

According to CNG-OP-1.01-1000, Section 5.10.C.2&3, Transients induced by the malfunction of an automatic system should be terminated by operator action to establish manual control with a proper demand signal. The need and intent to place a controller into manual operation should be communicated to the CRS before taking this action.

Comment:

Terminating Cue: **Evaluation on this JPM is complete.**

STOP TIME: _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2014 Systems - Control Room JPM G

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

JPM CUE SHEET

INITIAL CONDITIONS:

- The B Instrument Bus has been on the Maintenance Power supply for the last four hours to allow completion of maintenance on the normal supply transformer.
- Maintenance has been completed and the Hold Clearance has been removed.
- It is now desired to restore the B Instrument Bus to its normal power supply.
- There are no failed or defeated protection channels.

INITIATING CUE:

The CRS has directed you to transfer the "B" Instrument Bus from the Maintenance power supply to the normal power supply per Section 6.3 of ER-INST.3, Instrument Bus Power Restoration.

SIM JPM H

Facility: Ginna Task No.:

Task Title: Defeat Failed RCS Temperature Channel JPM No.: 2014 Systems - Control Room JPM H

K/A Reference: 016 A4.01 (2.9/2.8)

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X

Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

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

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

Initial Conditions:
- The plant was operating at 100% power when TI-402 failed high.
- The crew took all the appropriate actions and the plant is stable at current plant conditions.

Initiating Cue:
- The CRS has directed you to defeat the affected RCS temperature channel per Attachment 2 of ER-INST.1, Reactor Protection Bistable Defeat After Instrumentation Loop Failure.
- For JPM performance, you are NOT expected to perform any instrument defeat briefings.

Task Standard: The operator will defeat the failed channel in accordance with ER-INST.1.

Required Materials: Cabinet Keys

General References: ER-INST.1, Reactor Protection Bistable Defeat After Instrumentation Loop Failure, Rev 03605

Handouts:	Handout 1: Blank copy of Attachment 2 of ER-INST.1, Reactor Protection Bistable Defeat After Instrumentation Loop Failure.
Time Critical Task:	NO
Validation Time:	13 minutes

SIMULATOR OPERATIONAL GUIDELINES

- Simulator reset to **IC-19**
- Insert **MALF RCS11B, 650** (TI-402 –Thot- Fails High)
- Place rods in Manual
- Place both running Charging Pumps in Manual
- FREEZE the Simulator

OR

- IC 163 (December, 2014)
- Place simulator in RUN
- Place simulator in FREEZE
- Place simulator in RUN when directed by examiner.

NOTE: **The Simulator/Floor Instructor will need to control the BOP during the performance of this JPM.**

(Denote Critical Steps with a √)

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

START TIME: _____

ER-INST.1, Attachment 2, Step 1.0

Note: IF a RTD has failed, THEN BOTH annunciators F-15 AND F-24 will be lit.
Note: IF the TAVG circuit has failed, THEN annunciator F-15 will be lit AND annunciator F-24 will be extinguished.
Note: IF the ΔT circuit has failed, THEN annunciator F-24 will be lit AND annunciator F-15 will be extinguished.

Performance Step: 1 ENSURE Rod Control selector switch in MANUAL.

_____

Standard: The operator reads the Notes, and proceeds.

The operator observes that the Rod Bank Selector Switch is in M (Manual)

Comment:

ER-INST.1, Attachment 2, Step 2.0

Performance Step: 2 ENSURE Charging Pump speed controllers in MANUAL.

_____

Standard: The operator observes that the A Charging Pump speed Controller is in MANUAL.

The operator observes that the A Charging Pump speed Controller is in MANUAL.

Comment:

ER-INST.1, Attachment 2, Step 3.0

Note: The following Step removes the failed ΔT input from the following functions:

- ΔT Runback and Rodstop
- RIL computer
- Annunciators F-30 OP DELTA T TURBINE RUNBACK
- Annunciator F- 31 OT DELTA T TURBINE RUNBACK

√ **Performance Step: 3** In the RIL INSERTION LIMIT rack, PLACE T/405E DELTA T DEFEAT switch to LOOP A UNIT 2.

_____

Standard: The operator reads the Note, and proceeds.

[√] The operator unlocks and opens the RIL Cabinet door.

[√] The operator shifts the T/405E DELTA T DEFEAT switch to LOOP A UNIT 2.

The operator closes and locks the RIL Cabinet door.

Comment:

ER-INST.1, Attachment 2, Step 4.0

Note: The following Step removes the failed T_{AVG} input from the following functions:

- Rod Control System
- Steam Dump System
- Pressurizer Level System

√ **Performance Step: 4** In the STEAM DUMP rack, PLACE the TAVG DEFEAT switch T/401A to LOOP A UNIT 2.

_____

Standard: The operator reads the Note, and proceeds.

[√] The operator unlocks and opens the Steam Dump Cabinet door.

[√] The operator shifts the TAVG DEFEAT switch T/401A to LOOP A UNIT 2.

The operator closes and locks the Steam Dump Rack Cabinet door.

Comment:

ER-INST.1, Attachment 2, Step 5.0/5.1

Note: The following bistable status lights are expected to be lit after the DEFEAT:

- LOOP A LO TAVG TC402A
- OPΔT LOOP A TC406A
- OTΔT LOOP A TC406C

Note: The following Annunciators are expected to be lit after the DEFEAT:

- G-9, RCS LOOP A HIGH TAVG 579 F
- F-7, RCS LOOP A LO TAVG 545 F
- F-32, RCS OP DELTA T CHANNEL ALERT
- F-23, RCS OT DELTA T CHANNEL ALERT

Performance Step: 5

_____

DETERMINE the expected Bistable proving light status for the post defeat condition as follows:

RECORD the following Data:

LOOP A-2 T_{AVG} TI-402 _____°F

LOOP 1A-2 Δ TEMP TI-406B _____°F

OTΔT SP1 LOOP 1A-2 TEMP TI-406A _____°F

OPΔT SP2 LOOP 1A-2 TEMP TI-406C _____°F

Standard:

The operator reads the Notes, and proceeds.

The operator observes TI-402, and records 585°F in LOOP A-2 T_{AVG} TI-402 block.

The operator observes TI-406B, and records 76°F in LOOP 1A-2 Δ TEMP TI-406B block.

The operator observes TI-406A, and records 67°F in OTΔT SP1 LOOP 1A-2 TEMP TI-406A block.

The operator observes TI-406C, and records 73°F in OPΔT SP2 LOOP 1A-2 TEMP TI-406C block.

Comment:

ER-INST.1, Attachment 2, Step 5.2

Performance Step: 6 DETERMINE the expected post defeat Bistable proving light status and circle the expected status in table below:

_____

- 402 LOOP A-2
  - HIGH T'AVG Light OFF IF TI-402 ≥ 579°F
  - LOW T'AVG Light OFF IF TI-402 ≤ 545°F
- 406 LOOP A-2
  - OVERTEMP TRIP Light OFF IF T-406B ≥ TI-406A
  - OVERPOWER TRIP Light OFF IF TI-406B ≥ TI-406C

Standard: The operator determines that TI-402 is > 579°F, and circles OFF in the 402 LOOP A-2 HIGH T'AVG

The operator determines that TI-402 is > 545°F, and circles ON in the 402 LOOP A-2 LOW T'AVG

The operator determines that TI-406B is > TI-406A°F, and circles OFF in the 406 LOOP A-2 OVERTEMP TRIP

The operator determines that TI-406B is > TI-406C°F, and circles OFF in the 406 LOOP A-2 OVERPOWER TRIP

Comment:

ER-INST.1, Attachment 2, Step 6.0/6.1

√ **Performance Step: 7**

PLACE the affected channel Bistables in the Trip condition by PERFORMING the following:

In the (WHITE) W-1 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:

- 402 LOOP A-2
  - HIGH T'AVG
  - LOW T'AVG
- 406 LOOP A-2
  - OVERTEMP TRIP
  - OVERPOWER TRIP

Standard:

[√] The operator unlocks and opens the White Protection Channel 2 Cabinet door.

[√] The operator pulls out and lifts the 402 LOOP A-2 HIGH T'AVG proving switch to the DEFEAT (UP) position.

The operator verifies that the 402 LOOP A-2 HIGH T'AVG proving light is OFF.

[√] The operator pulls out and lifts the 402 LOOP A-2 LOW T'AVG proving switch to the DEFEAT (UP) position.

The operator verifies that the 402 LOOP A-2 HIGH T'AVG proving light is ON.

[√] The operator pulls out and lifts the 406 LOOP A-2 OVERTEMP proving switch to the DEFEAT (UP) position.

The operator verifies that the 406 LOOP A-2 OVERTEMP proving light is OFF.

[√] The operator pulls out and lifts the 406 LOOP A-2 OVERPOWER proving switch to the DEFEAT (UP) position.

The operator verifies that the 406 LOOP A-2 OVERPOWER proving light is OFF.

The operator closes and locks the White Protection Channel 2 Cabinet door.

Comment:

ER-INST.1, Attachment 2, Step 6.2

Performance Step: 8 VERIFY Correct Bistable Status Light and Annunciator status.

_____

Standard: The operator observes the LOOP A LO TAVG TC402A white bistable light is LIT and determines that the bistable light and Annunciator status is correct.

The operator observes the OPΔT LOOP A TC406A white bistable light is LIT and determines that the bistable light and Annunciator status is correct.

The operator observes the OTΔT LOOP A TC 406C white bistable light is LIT and determines that the bistable light and Annunciator status is correct.

Comment:

ER-INST.1, Attachment 2, Step 7.0/7.1

√ **Performance Step: 9** DELETE 402/406 from the PPCS by performing the following:

_____

SELECT "Group Update" display.

Standard: [√] The operator selects "Group Update" on the PPCS.

Comment:

ER-INST.1, Attachment 2, Step 7.2

√ **Performance Step: 10** SELECT "List Server Groups".

_____

Standard: [√] The operator selects "List Server Groups" on the PPCS (Group Update).

Comment:

ER-INST.1, Attachment 2, Step 7.3

√ **Performance Step: 11** SELECT 402_406 from the pick list.

_____

Standard: [√] The operator selects "402_406" on the PPCS (List Server Groups).

Comment:

ER-INST.1, Attachment 2, Step 7.4

√ **Performance Step: 12** TURN "OFF" scan processing, THEN click the "Set Scan Processing" button.

_____

Standard: [√] The operator turns OFF the 402_406 scan processing on the PPCS (402_406).

[√] The operator clicks the "Set Scan Processing" button on the PPCS (402_406).

Comment:

ER-INST.1, Attachment 2, Step 7.5

√ **Performance Step: 13** ANSWER prompts.

_____

Standard: [√] The operator completes the PPCS deletion process by answering the required prompts.

Comment:

ER-INST.1, Attachment 2, Step 8.0

Performance Step: 14 GO TO step 6.2.7.

_____

Standard: The operator proceeds to Step 6.2.7 of the body of ER-INST.1

Comment:

Terminating Cue: **Evaluation on this JPM is complete.**

STOP TIME: _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2014 Systems - Control Room JPM H

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

JPM CUE SHEET

INITIAL CONDITIONS:

- The plant was operating at 100% power when TI-402 failed high.
- The crew took all the appropriate actions and the plant is stable at current plant conditions.

INITIATING CUE:

- The CRS has directed you to defeat the affected RCS temperature channel per Attachment 2 of ER-INST.1, Reactor Protection Bistable Defeat After Instrumentation Loop Failure.
- For JPM performance, you are NOT expected to perform any instrument defeat briefings.

In-Plant JPM I

Facility: Ginna Task No.:

Task Title: Locally Operate the ARVs JPM No.: 2014 Systems – In-Plant JPM I

K/A Reference: APE 068 AA1.01 (4.3/4.5)

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.

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

Initial Conditions:

- You are the Head Control Operator.
- The plant has experienced an uncontrollable Control Room Complex fire.
- The crew performed the required actions of AP-CR.1, Control Room Inaccessibility, and transitioned to ER-FIRE.1, Alternate Shutdown For Control Complex Fire.
- You have completed Attachment 3, Head Control Operator (HCO) and are equipped with a radio.
- The Shift Manager is stabilizing the plant in MODE 3.
- All the required Appendix R equipment has been retrieved from the Appendix R locker outside the Control Room.

Initiating Cue: The Shift Manager has directed you to locally open the A Atmospheric Relief Valve, V-3411, three turns per P-15.2, Dump Steam Through ARVs Locally.

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

Task Standard:	The operator will locally open the A Atmospheric Relief Valve, V-3411, three turns per P-15.2, and then isolate this valve when the handwheel will not rotate in the close direction.
Required Materials:	PPE (Hardhat, Safety Glasses, Hearing Protection, Safety Shoes etc.)
General References:	AP-CR.1, Control Room Inaccessibility, Rev 02403 ER-FIRE.1, Alternate Shutdown For Control Complex Fire, Rev 03301 P-15.2, Dump Steam Through ARVs Locally, Rev 00002
Handouts:	Handout 1: Blank copy of P-15.2, Dump Steam Through ARVs Locally.
Time Critical Task:	NO
Validation Time:	__ minutes

(Denote Critical Steps with a √)

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

START TIME: _____

P-15.2, Step 2.1

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

_____

Standard: The operator recognizes from the Initial Conditions that they have a radio and are in communication with the Shift Manager.

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

EXAMINER NOTE: **The communications check was completed earlier in ER-FIRE.1.**

Comment:

P-15.2, Step 2.2

Performance Step: 2 OBTAIN ladder, if needed.

_____

Standard: The operator verifies a ladder is in place at V-3411.

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

Comment:

P-15.2, Step 2.3

Note: IF the ARV was opened using the handwheel, THEN the local handwheel must be used to close the ARV.

Performance Step: 3 OPERATE the handwheel on ARV-3411, S/G A ARV, as required by Control Room personnel.

_____

Standard: The operator reads the NOTE, and proceeds.

[√] The operator rotates the "A" ARV (3411) handwheel in the counter-clockwise direction to position the valve to approximately three full turns open.

EXAMINER CUE: **The handwheel turned as desired.**

Standard: The operator leaves noisy area (IB Main Steam Area) to make report.

The operator reports over radio to Shift Manager that ARV-3411 is three full hand turns open.

EXAMINER NOTE: **If the radio call is made from the Main Steam Area: "I cannot hear you".**

EXAMINER CUE: **Acknowledge the report and then state the following:**

The valve has been open for 15 minutes and the SM now directs you to "Slowly throttle closed the valve."

Comment:

P-15.2, Step 2.3/2.3.1

Note: IF the ARV was opened using the handwheel, THEN the local handwheel must be used to close the ARV.

Performance Step: 4 _____

OPERATE the handwheel on ARV-3411, S/G A ARV, as required by Control Room personnel.

IF the handwheel on ARV-3411, S/G A ARV, will NOT close, THEN CLOSE V-3507, S/G A MS INLET BLOCK VLV TO ARV-3411.

Standard: The operator reads the Note, and proceeds.

The operator attempts to rotate the "A" ARV (3411) handwheel in the clockwise direction.

EXAMINER CUE: **The handwheel will not turn.**

Standard: [√] The operator proceeds to "A" ARV Root Isolation Valve (V3507) and rotates the valve handwheel in the clockwise direction.

EXAMINER CUE: **The handwheel turned as desired.**

Standard: The operator leaves noisy area (IB Main Steam Area) to make report.

The operator reports over radio to Shift Manager that ARV-3411 is three full handturns open. However, because it would not close, its Root isolation valve (V3507) was closed.

EXAMINER NOTE: **If the radio call is made from the Main Steam Area: "I cannot hear you".**

Comment:

Terminating Cue: **Evaluation on this JPM is complete.**

STOP TIME: _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2014 Systems – In-Plant JPM I

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

JPM CUE SHEET

INITIAL CONDITIONS:

- You are the Head Control Operator.
- The plant has experienced an uncontrollable Control Room Complex fire.
- The crew performed the required actions of AP-CR.1, Control Room Inaccessibility, and transitioned to ER-FIRE.1, Alternate Shutdown For Control Complex Fire.
- You have completed Attachment 3, Head Control Operator (HCO) and are equipped with a radio.
- The Shift Manager is stabilizing the plant in MODE 3.
- All the required Appendix R equipment has been retrieved from the Appendix R locker outside the Control Room.

INITIATING CUE:

The Shift Manager has directed you to locally open the A Atmospheric Relief Valve, V-3411, three turns per P-15.2, Dump Steam Through ARVs Locally.

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

In-Plant JPM J

Facility: Ginna Task No.:

Task Title: Isolate RCP Seals JPM No.: 2014 Systems – In-Plant JPM J

K/A Reference: EPE 055 EA2.03 (3.9/4.7)

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.

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

Initial Conditions:

- The plant was operating at 100% power when it suffered a loss of all AC power.
- The crew entered ECA-0.0, Loss of All AC Power, and is at the step that directs local isolation of RCP Seals.

Initiating Cue:

The CRS has directed you to isolate RCP seals in accordance with the applicable portions of ATT-21.0, Attachment RCS Isolation.

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

Task Standard: The operator will locally isolate the RCP Seals per ATT-21.0.

Required Materials: PPE (Hardhat, Safety Glasses, Hearing Protection, Safety Shoes etc.)
Laser Pointer

General References: ECA-0.0, Loss of All AC Power, Rev 03800

ATT-21.0, Attachment RCS Isolation, Rev 00300

Handouts: Handout 1: Blank copy of ATT-21.0, Attachment RCS Isolation.

Time Critical Task: NO

Validation Time: 7 minutes

(Denote Critical Steps with a √)

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

START TIME: _____

Examiner NOTE: **The order of valve isolation is NOT Critical**

ATT-21.0, Bullet 1

√ **Performance Step: 1** _____

Perform the following to locally complete isolation of the RCS:
- Close RCP #1 seal return isolation valve
  - MOV-313 (Pen 108)

Examiner Cue: **If the operator requests eSOMS location for MOV-313: AB Bsmt, RSWT locked area, elev. 5.**

Standard: [√] The operator presses downward on the declutch lever.

Examiner Cue: **The declutch lever is depressed.**

Standard: [√] While holding the declutch lever down, the operator rotates the valve handwheel in the clockwise direction.

Examiner Cue: **The valve handwheel rotates, and then stops rotating.**

Standard: [√] The operator releases the handwheel.

Examiner NOTE: **MOV-313 is located within a contaminated area and will require that the operator use the laser Pointer to identify the location and describe operation of the valve.**

See Page 12 for Pictures of this Valve.

Comment:

ATT-21.0, Bullet 2

Performance Step: 2 Perform the following to locally complete isolation of the RCS:

- Close RCP seal injection needle valves
  - V-300A (Pen 106)
  - V-300B (Pen 110)

Examiner Cue: **If the operator requests eSOMS location for V-300A and V-300B: AB Bsmt, RSWT locked area, elev. 4.**

Standard: [√] The operator rotates the V-300A Handwheel in the clockwise direction.

Examiner Cue: **The valve handwheel rotates, and then stops rotating.**

Standard: [√] The operator releases the handwheel.

[√] The operator rotates the V-300B Handwheel in the clockwise direction.

Examiner Cue: **The valve handwheel rotates, and then stops rotating.**

Standard: [√] The operator releases the handwheel.

Examiner NOTE: **V-300A and 300B are located within a contaminated area and will require that the operator use the laser Pointer to identify the location and describe operation of the valve.**

See Pages 10 & 11 for Pictures of these Valves.

Comment:

ATT-21.0, Bullet 3

√ **Performance Step: 3** Perform the following to locally complete isolation of the RCS:

- Close RCP CCW return valves (middle level by RWST)
  - MOV-759A
  - MOV-759B

_____

Examiner Cue: **If the operator requests eSOMS location for MOV-759A and MOV-759B: AB Inter Crane Bay area, elev. 5.**

Standard: [√] The operator presses downward on the MOV-759A declutch lever.

Examiner Cue: **The declutch lever is depressed.**

Standard: [√] While holding the declutch lever down, the operator rotates the MOV-759A valve handwheel in the clockwise direction.

Examiner Cue: **The valve handwheel rotates, and then stops rotating.**

Standard: [√] The operator releases the handwheel.

[√] The operator presses downward on the MOV-759B declutch lever.

Examiner Cue: **The declutch lever is depressed.**

Standard: [√] While holding the declutch lever down, the operator rotates the MOV-759B valve handwheel in the clockwise direction.

Examiner Cue: **The valve handwheel rotates, and then stops rotating.**

Standard: [√] The operator releases the handwheel.

Comment:

ATT-21.0, Bullet 4

√ **Performance Step: 4** Perform the following to locally complete isolation of the RCS:
- Close RCP CCW supply valves (middle level by RWST)
  - MOV-749A
  - MOV-749B

_____

Examiner Cue: **If the operator requests eSOMS location for MOV-749A and MOV-749B: AB Inter Crane Bay area, elev. 5.**

Standard: [√] The operator presses downward on the MOV-749A declutch lever.

Examiner Cue: **The declutch lever is depressed.**

Standard: [√] While holding the declutch lever down, the operator rotates the MOV-749A valve handwheel in the clockwise direction.

Examiner Cue: **The valve handwheel rotates, and then stops rotating.**

Standard: [√] The operator releases the handwheel.

[√] The operator presses downward on the MOV-749B declutch lever.

Examiner Cue: **The declutch lever is depressed.**

Standard: [√] While holding the declutch lever down, the operator rotates the MOV-749B valve handwheel in the clockwise direction.

Examiner Cue: **The valve handwheel rotates, and then stops rotating.**

Standard: [√] The operator releases the handwheel.

Comment:

ATT-21.0, Bullet 5

Performance Step: 5 Perform the following to locally complete isolation of the RCS:

- Close CCW isolation valves for Rx support coolers
  - MOV-813
  - MOV-814

Examiner Cue: **If the operator requests eSOMS location for MOV-813 and MOV-814: AB Inter Crane Bay area, elev. 5.**

Standard: [√] The operator presses downward on the MOV-813 declutch lever.

Examiner Cue: **The declutch lever is depressed.**

Standard: [√] While holding the declutch lever down, the operator rotates the MOV-813 valve handwheel in the clockwise direction.

Examiner Cue: **The valve handwheel rotates, and then stops rotating.**

Standard: [√] The operator releases the handwheel.

[√] The operator presses downward on the MOV-814 declutch lever.

Examiner Cue: **The declutch lever is depressed.**

Standard: [√] While holding the declutch lever down, the operator rotates the MOV-814 valve handwheel in the clockwise direction.

Examiner Cue: **The valve handwheel rotates, and then stops rotating.**

Standard: [√] The operator releases the handwheel.

Comment:

Terminating Cue: **Evaluation on this JPM is complete.**

STOP TIME: _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2014 Systems – In-Plant JPM J

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

VERIFICATION OF COMPLETION

Component ID:
300A

P ID chart #:
1265,1

Picture ID:
AUXRWST2-45

Building:
Auxiliary

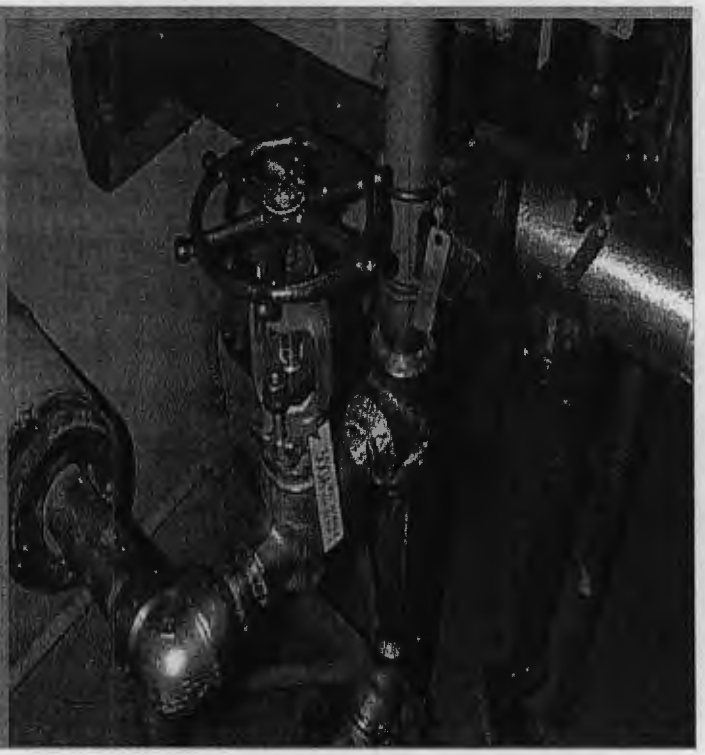
Level:
Basement

Picture File Location
S:\Databases\SharedData\AlaraTour\pictures\auxbldg\auxrwst2.jpg

Area:
Behind RWST on north west side

Description:
Seal injection inlet needle valve to RCP A

Print Current Record



VERIFICATION OF COMPLETION

Component ID:
3008

P ID chart #:
1265,1

Print Current Record

Picture ID:
AUXRWST2-25

Building:
Auxiliary

Level:
Basement

Picture File Location:
S:\Databases\SharedData\AlaraTour\pictures\auxbldg\auxrwst2\jpe

Area:
Behind RWST on north west side

Description:
Seal injection inlet needle valve to RCP B

Component ID:
3008

P ID chart #:
1265,1

Print Current Record

Picture ID:
AUXRWST2-38

Building:
Auxiliary

Level:
Basement

Picture File Location:
S:\Databases\SharedData\AlaraTour\pictures\auxbldg\auxrwst2\jpe

Area:
Behind RWST on north west side

Description:
Seal injection inlet needle valve to RCP B

VERIFICATION OF COMPLETION

Component ID:
313

P ID chart #:
1265,2

Picture ID:
AUXRWST2-26

Building:
Auxiliary

Level:
Basement

Picture File Location:
S:\Databases\SharedData\AlaraTour\pictures\auxbldg\auxrwst2\jpe

Area:
Behind RWST on north west side

Description:
Seal or excess letdown return isolation MOV

Print Current Record

Component ID:
313

P ID chart #:
1265,2

Picture ID:
AUXRWST2-31

Building:
Auxiliary

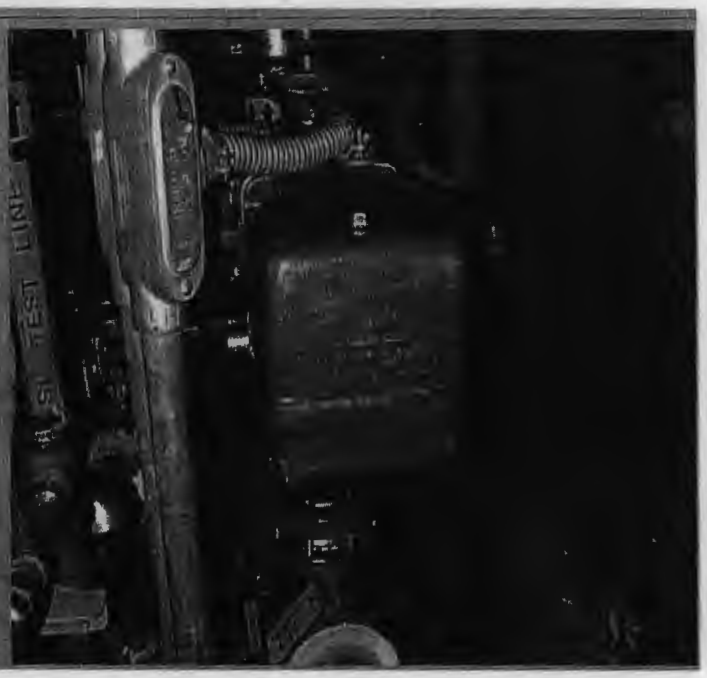
Level:
Basement

Picture File Location:
S:\Databases\SharedData\AlaraTour\pictures\auxbldg\auxrwst2\jpe

Area:
Behind RWST on north west side

Description:
Seal or excess letdown return isolation MOV

Print Current Record



JPM CUE SHEET

INITIAL CONDITIONS:

- The plant was operating at 100% power when it suffered a loss of all AC power.
- The crew entered ECA-0.0, Loss of All AC Power, and is at the step that directs local isolation of RCP Seals.

INITIATING CUE:

The CRS has directed you to isolate RCP seals in accordance with the applicable portions of ATT-21.0, Attachment RCS Isolation.

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

In-Plant JPM K

Facility: Ginna Task No.:

Task Title: Fire Water Cooling to CCW Heat Exchanger A JPM No.: 2014 Systems – In-Plant JPM K

K/A Reference: APE 062 AA1.07 (2.9/3.0)

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

Simulated Performance: X Actual Performance: _____

Classroom _____ Simulator _____ Plant X

READ TO THE EXAMINEE

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

Provide Candidate with Initial Conditions/Cue (Last Page of this JPM), a Laser Pointer and Handout 1.

Initial Conditions:

- The plant was operating at power when a loss of all Service Water pumps occurred.
- The crew responded using the emergency operating procedures and Attachment 2.4, Attachment No Service Water Pumps, as required.
- The crew is ready to align alternate cooling to one CCW heat exchanger.
- A normal SW discharge alignment is desired.
- SW isolations MOV-4616 and MOV-4735 have been closed from the Control Room.

Initiating Cue:

The CRS has directed you to line up Fire Water Cooling from the plant fire header to the A CCW Heat Exchanger per ER-CCW.1, Fire Water Cooling to CCW and A SFP Heat Exchangers.

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

Task Standard:	The operator will locally align fire water to CCW HX A in accordance with ER-CCW.1.
Required Materials:	PPE (Hardhat, Safety Glasses, Hearing Protection, Safety Shoes etc.) Laser Pointer
General References:	ATT-2.4, Attachment No Service Water Pumps, Rev 3 ER-CCW.1, Fire Water Cooling to CCW and A SFP Heat Exchangers, Rev 00301 33013-1250 Sheet 2 Showing Shower Tagout
Handouts:	Handout 1: Blank copy of ER-CCW.1, Fire Water Cooling to CCW and A SFP Heat Exchangers.
Time Critical Task:	NO
Validation Time:	22 minutes

(Denote Critical Steps with a √)

Provide Candidate with Initial Conditions/Cue (Last Page of this JPM), a Laser Pointer and Handout 1.

START TIME: _____

	ER-CCW.1, Step 6.1.1
Performance Step: 1	ENSURE the following valves are CLOSED • SFP SKID HX SW INLET HOSE CONN ISOL VLV, V-8687 (Aux Bldg top floor by CCW Hxs). • TIE IN VALVE FOR TEMP COOLING WATER SYSTEM. V-9184 (Aux Bldg top floor by G fan).
Standard:	The operator attempts to rotate the V-8687 handle in the clockwise direction.
Examiner Cue:	**The Handle will NOT rotate.**
Standard:	The operator attempts to rotate the V-9184 handwheel in the clockwise direction.
Examiner Cue:	**The Handwheel will NOT rotate.**
Comment:	

ER-CCW.1, Step 6.1.2/6.1.2.1

Note: The Fire Hose Flange Connections and Gaskets are located in the Turbine Operating Floor Staged Equipment Locker.
Note: Fire Hose is available in the Ginna Fire Trucks (Ginna 1 and 2).
Note: Maintenance may assist as needed with the next step.

Performance Step: 2 PERFORM the following:

REMOVE the Blind Flanges from V-8687 and V-9184.

Examiner Cue: **If requested, report that "Mechanical Maintenance and the Safety Group are available to assist."**

Standard: The operator reads the Notes, and proceeds.

The operator proceeds to the Turbine Building hose locker and obtains the required flanges/gaskets, and necessary tools.

Examiner Cue: **Report that "You have the flanges/gaskets and tools in your possession."**

EXAMINER NOTE: **It is NOT the intention of the JPM for the operator to leave the RCA. The Examiner shall have the operator describe/point out the location prior to/after the JPM performance.**

Standard: [√] The operator removes the Blind Flange downstream of V-8687.

Examiner Cue: **Report that "The Flange has been removed."**

Standard: [√] The operator removes the Blind Flange downstream of V-9184.

Examiner Cue: **Report that "The Flange has been removed."**

EXAMINER NOTE: **The order of removal of the Blind Flanges is NOT critical.**

Comment:

ER-CCW.1, Step 6.1.2.2

√ **Performance Step: 3**	INSTALL the Flange Fire Hose Connection on V-8687 and V-9184.
Examiner Cue:	**If requested, report that "Mechanical Maintenance is providing assistance as directed by YOU."**
Standard:	[√] The operator installs the Flange Fire Hose Connection on the V-8687 Flange Connection.
Examiner Cue:	**Report that "The Flange Fire Hose Connection has been installed."**
Standard:	[√] The operator installs the Flange Fire Hose Connection on the V-9184 Flange Connection.
Examiner Cue:	**Report that "The Flange Fire Hose Connection has been installed."**
EXAMINER NOTE:	**The order of Flange Fire Hose Connection installation is NOT critical.**
Comment:	

ER-CCW.1, Step 6.1.2.3

Performance Step: 4 INSTALL a 3" Fire Hose between V-8687 and V-9184.

Examiner Cue:
- **If requested, report that "Mechanical Maintenance is providing assistance as directed by YOU."**
- **A 3 inch Fire Hose is available.**

Standard: [√] The operator installs a 3 inch fire hose between the Flange Fire Hose Connection downstream of V-8687 and V-9184.

Examiner Cue: **Report that "The Fire Hose is connected."**

Comment:

ER-CCW.1, Step 6.1.3/6.1.3.1

Performance Step: 5 IF it is desired to supply the A CCW HX THEN PERFORM the following:

CLOSE AUXILIARY BUILDING SERVICE WATER ISOLATIONS, MOV-4616 and MOV-4735.

Standard: The operator recalls that MOV-4616 and MOV-4735 are closed (Initial Conditions).

Examiner Cue: **If the operator calls the Control Room for valve status, report that "MOV-4616 and MOV-4735 are closed."**

If the operator observes the two valves locally, report that "MOV-4616 and MOV-4735 indicate closed."

Comment:

ER-CCW.1, Step 6.1.3.2

Performance Step: 6 CLOSE SW LOOP A INLET BLOCK VLV TO SFP HX A, V-4621.

Standard: [√] The operator rotates the V-4621 Handwheel in the clockwise direction.

Examiner Cue: **The valve handwheel rotates, and then stops rotating.**

EXAMINER NOTE: **The operator/Examiner will need to fit through some tight spaces to get to this valve. The Examiner may elect to have the operator use the Laser Pointer to point out the valve, and describe its operation.**

Comment:

ER-CCW.1, Step 6.1.3.3

Performance Step: 7 CLOSE SW LOOP B INNER ISOL VLV TO VENT & EYE WASH/SHOWER, V-4618A.

EXAMINER CUE: **If the operator requests eSOMs location for V-4618A, states "AB operating Component Cooling Water HX Platform, 9ft. elevation."**

Standard: [√] The operator rotates the V-4618A Handle in the clockwise direction such that the handle is perpendicular to the pipe.

Examiner Cue: **The valve handle rotates, and then stops rotating.**

EXAMINER NOTE: **This valve is in the overhead. The Examiner may elect to have the operator use the Laser Pointer to point out the valve, and describe its operation.**

Comment:

ER-CCW.1, Step 6.1.3.4

Performance Step: 8 OPEN INLET BLOCK VLV TO CCW HX A, V-4617.

Standard: [√] The operator rotates the V-4617 Handwheel in the counter-clockwise direction.

Examiner Cue: **The valve handwheel rotates, and then stops rotating.**

Comment:

ER-CCW.1, Step 6.1.3.5

Performance Step: 9 IF the Normal SW Discharge Flowpath is desired THEN OPEN CCW HX A SW OUTLET ISOL VLV, V-4619.

Standard: [√] The operator rotates the V-4619 Handwheel in the counter-clockwise direction.

Examiner Cue: **The valve handwheel rotates, and then stops rotating.**

Comment:

ER-CCW.1, Step 6.1.3.6

Performance Step: 10 IF the Redundant SW Discharge Flowpath is desired....

Standard: The operator recognizes that the Redundant SW Discharge Flowpath is NOT desired, and proceeds.

Comment:

ER-CCW.1, Step 6.1.3.7

Note: The following steps will cause the Motor and/or the Engine Fire Pump(s) to start.

√ **Performance Step: 11** OPEN TIE IN VALVE FOR TEMP COOLING WATER SYSTEM. V-9184.

Standard: The operator reads the Note, and proceeds.

[√] The operator rotates the V-9184 Handwheel in the counter-clockwise direction.

Examiner Cue: **The valve handwheel rotates, and then stops rotating.**

Comment:

ER-CCW.1, Step 6.1.3.8

√ **Performance Step: 12** SLOWLY OPEN SFP SKID HX SW INLET HOSE CONN ISOL VLV, V-8687.

Standard: [√] The operator rotates the V-8687 Handle in the counter-clockwise direction.

Examiner Cue: **The valve handle rotates, and then stops rotating.**

Comment:

	ER-CCW.1, Step 6.1.3.9
Performance Step: 13	NOTIFY the Control Room that Fire Water Cooling is established to the A CCW HX.
Standard:	The operator contacts the Control Room and reports that Fire Water Cooling is established to the A CCW HX.
Examiner Cue:	**As the BOP, acknowledge.**
Comment:	

Terminating Cue: **Evaluation on this JPM is complete.**

STOP TIME: _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2014 Systems – In-Plant JPM K

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

JPM CUE SHEET

INITIAL CONDITIONS:

- The plant was operating at power when a loss of all Service Water pumps occurred.
- The crew responded using the emergency operating procedures and Attachment 2.4, Attachment No Service Water Pumps, as required.
- The crew is ready to align alternate cooling to one CCW heat exchanger.
- A normal SW discharge alignment is desired.
- SW isolations MOV-4616 and MOV-4735 have been closed from the Control Room.

INITIATING CUE:

The CRS has directed you to line up Fire Water Cooling from the plant fire header to the A CCW Heat Exchanger per ER-CCW.1, Fire Water Cooling to CCW and A SFP Heat Exchangers.

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

PROGRAM: Ginna Operations Training

MODULE: 2014 Initial License Operator Training Class

TOPIC: NRC Simulator Exam

Scenario N2014-301-2

REFERENCES:

1. Technical Specification 3.6.6, Containment Spray, Containment Recirculation Fan Cooler (CRFC), and NaOH Systems, Amendment 99
2. AR-A-17, MOTOR OFF RCP CCWP, Rev 9
3. AP-CCW.2, Loss of CCW During Power Operation, Rev 02201
4. Technical Specification 3.7.7, Component Cooling Water System, Amendment 80
5. AR-F-11, PZR LOW LEVEL 13%, Rev 4
6. ER-INST.1, Reactor Protection Bistable Defeat After Instrumentation Loop Failure, Rev 03605
7. S-3.2.E, Placing In or Removing From Service Normal Letdown/Excess Letdown, Rev 02700
8. Technical Specification 3.4.9, Pressurizer, Amendment 80
9. Technical Specification 3.3.1, Reactor Trip System (RTS) Instrumentation, Amendment 112
10. TURB.2, Turbine Load Rejection, Rev 02301
11. AP-TURB.5, Rapid Load Reduction, Rev 01600
12. AR-G-5, S/G/ B LEVEL DEVIATION ±7%, Rev 00701
13. Technical Specification LCO 3.7.3, Main Feedwater Isolation Valves (MFIVs), Main Feedwater Regulating Valves (MFRVs), and Associated Bypass Valves, Amendment 95
14. E-0, Reactor Trip and Safety Injection, Rev 04602
15. ATT-27.0, Attachment Automatic Action Verification, Rev 00300
16. E-2, Faulted Steam Generator Isolation, Rev 01301
17. ECA-2.1, Uncontrolled Depressurization of Both Steam Generators, Rev 03601
18. FR-P.1, Response to Imminent Pressurized Thermal Shock Condition, Rev 03200

Validation Time: 95 Minutes

Author: David Lazarony, Essential Training & Consulting, LLC

Facility Review:

Rev. 110414

Facility:	**Ginna**	Scenario No.: **2**	Op Test No.: **N2014-301**
Examiners:	_____	Operators:	_____ (SRO)
	_____		_____ (RO)
	_____		_____ (BOP)

Initial Conditions:	The plant is at 100% power (EOL), and has been at full power for 145 days. The area has experienced thunderstorms over the last 6 hours, and this is expected to continue for the next 6 hours.
Turnover:	The following equipment is Out-Of-Service: The B CNMT Spray Pump has been declared INOPERABLE due to excessive inboard vertical vibration during STP-O-3-COMP-B surveillance test yesterday. Engineering is evaluating the data. A-52.4 submitted for ITS 3.6.6, 72 hour Action.

Event No.	Malf. No.	Event Type*	Event Description
1	CLG05 CLG02A	C-RO C(TS)-SRO	Leak on the CCW System/B CCW Pump Trips
2	PZR03B	I-BOP I-RO I(TS)-SRO	PZR Level Channel 427 fails LOW
3	TUR11B	R-RO N-BOP N-SRO	Turbine Control Valve CV-L4 Drifts Closed
4	FDW07C	C-BOP C(TS)-SRO	B FRV fails AS-IS (Manual Control Available)
5	STM03 STM05A STM05B	M-RO M-BOP M-SRO	MSLB Downstream of MSIVs with MSIVs Stuck OPEN
6	RPS05A RPS05B	C-RO C-SRO	RPS fails to Trip Rx in AUTO/Manual Pushbutton
7	STM03	NA	Steam Break Degrades Creating PTS Concern
8	EDS01A EDS01B	C-BOP C-SRO	Loss of Offsite Power

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Ginna 2014 NRC Scenario #2

The plant is at 100% power (EOL), and has been at full power for 145 days. The area has experienced thunderstorms over the last 6 hours, and this is expected to continue for the next 6 hours.

The following equipment is Out-Of-Service: The B CNMT Spray Pump has been declared INOPERABLE due to excessive inboard vertical vibration during STP-O-3-COMP-B surveillance test yesterday. Engineering is evaluating the data. A-52.4 submitted for ITS 3.6.6, 72 hour Action.

Shortly after taking the watch, a CCW System Supply Relief Valve will lift and fail to reseat causing a 30 gpm CCW System leak. Approximately two minutes afterwards the B CCW Pump will trip, and the B CCW Pump will automatically start. The operator will respond in accordance with AR-A-17, MOTOR OFF RCP CCWP, and enter AP-CCW.2, Loss of CCW During Power Operation. The operator will address Technical Specification 3.7.7, Component Cooling Water System.

After this, Pressurizer Level Channel 427 will fail LOW, resulting in letdown isolation and de-energizing the pressurizer heaters. The crew will respond per AR-F-11, PZR LOW LEVEL 13%, and ER-INST.1, Reactor Protection Bistable Defeat After Instrumentation Loop Failure. They will defeat the failed channel, reset PZR heaters, reduce charging to a single charging pump, and re-establish letdown per S-3.2.E, Placing In or Removing From Service Normal Letdown/Excess Letdown. The crew will start a second charging pump and slowly restore PZR level to program (52%). The operator will address Technical Specification 3.3.1, Reactor Trip System (RTS) Instrumentation and 3.4.9, Pressurizer.

Then, turbine control valve CVL-4 will drift closed. The crew will respond per AP-TURB.2, Turbine Load Rejection, begin a load reduction to less than 50% power using AP-TURB.5, Rapid Load Reduction.

During the load reduction, a failure of the B FRV to control in AUTO. The operator will respond per AR-G-5, S/G/ B LEVEL DEVIATION ±7%, or upon observing an abnormally high level in the B Steam Generator and control the B FRV manually. The operator will address Technical Specification 3.7.3, Main Feedwater Isolation Valves (MFIVs), Main Feedwater Regulating Valves (MFRVs), and Associated Bypass Valves.

Subsequently, a major steamline break will occur in the Turbine Building downstream of the MSIVs. Both MSIVs will fail to close automatically in response to manual attempts from the MCB. The reactor will fail to trip automatically and manual pushbutton will not work, requiring opening of normal supply breakers for Bus 13 and Bus 15 to de-energize rod drive MG sets to trip the reactor. The crew will enter E-0, Reactor Trip or Safety Injection.

The crew will ultimately transition to E-2, Faulted S/G Isolation. Since both MSIVs are failed open, and with a downstream break, both SGs will be affected and their pressures will lower concurrently. Eventually, the crew will transition to ECA-2.1, Uncontrolled Depressurization of Both Steam Generators. After the operator throttles AFW flow in ECA-2.1, the leak will increase in magnitude, resulting in an Orange Path on RCS Integrity. Simultaneously the event will be complicated by a Loss of Offsite Power. Both Emergency Diesel Generators will start and automatically repower the respective Emergency Busses, and the operator will need to re-establish AFW flow of 50 gpm to each Steam Generator.

The crew will implement FR-P.1, Response to Imminent Pressurized Thermal Shock Condition, when RCS cold leg temperatures reach 311°F. In FR-P.1 the crew will stop the SI pumps and the RHR pumps.

The scenario will be terminated after the SI and RHR pumps are secured.

Critical Tasks:

1. **Manually trip the reactor from the control room before transition to FR-S.1**

Safety Significance: Failure to manually trip the reactor causes a challenge to the subcriticality CSF beyond that irreparably introduced by the postulated conditions. Additionally, it constitutes an "incorrect performance that necessitates the crew taking action which complicates the event mitigation strategy that demonstrates the inability by the crew to recognize a failure of the automatic actuation of the RPS.

2. **Control the AFW flowrate to 50 gpm per SG in order to minimize the RCS Cooldown rate**

Safety Significance: Failure to control the AFW flow rate to the SGs when able to do so causes a challenge to the subcriticality and RCS Integrity CSFs beyond that irreparably introduced by the postulated conditions. Additionally, it constitutes an "incorrect performance that may necessitate the crew taking action which complicates the event mitigation strategy (Transition to FR-S.1 on inability to maintain a negative SUR).

SIMULATOR OPERATOR INSTRUCTIONS

	Bench Mark	ACTIVITY	DESCRIPTION
☐		**Reset to Temp** I/C 172. **(Built on IC-24)**	**100% power EOL** **At T=0, insert:** • **MALF RPS05A, [No Manual],** Reactor Trip Bkr A Failure • **MALF RPS05B, [No Manual],** Reactor Trip Bkr B Failure • **MALFSTM05A, [100],** MSIV Fails Open VLV 3517 • **MALFSTM05B, [100],** MSIV Fails Open VLV 3516 **To take B CS pump OOS:** • **Pull stop the B CS pump** **Insert the following:** • **MALF CLG02B, 0%, on T-1 (2 Min Delayed),** B CCW Pump Trip • **MALF CLG05, 30 gpm, on T-1** • **MALF PZR03B [0], on T-2,** PZR Level Channel 427 failure • **MALF TUR11B [0 in 20 sec], on T-3, CVL-4 Failure** • **MALF FDW07C, [101],on T-4,** FRV fails as is on downpower • **MALFSTM03 [1E6] on T-5,** Steamline Break outside CNMT downstream of MSIV's • **MALFFPS01-237 [15 seconds delayed], on T-5, Fire in Zone 37** (Int Building Clean Side Main Steamline and above) • **MALFSTM03, [5E6], on T-6** Steamline Break outside CNMT downstream of MSIV's (larger for entry into FR-P.1) • **MALF EDS01A, on T-6** (Loss of Offsite Power) • **MALF EDS01B, on T-6** (Loss of Offsite Power)
☐	Prior to Crew Briefing	**RUN**	• **Hang Protective Tags per OPG-Protective Equipment.** • **Place Black Dot on MCB Annunciator J-25**
☐	**Crew Briefing** • Assign Crew Positions based on evaluation requirements • Review the Shift Turnover Information with the crew.		

	Bench Mark	ACTIVITY	DESCRIPTION
☐	T-0	Begin Familiarization Period	
☐	At direction of examiner	**Event 1** **Trigger#1** **CLG05** (30 gpm, No Ramp) **CLG02B** (B CCW Pump Trip 2 Minute Delayed)	Leak on the CCW System/B CCW Pump Trips
☐	At direction of examiner	**Event 2** **Trigger#2** **PZR03B (0)**	PZR Level Channel 427 fails LOW
☐	At direction of examiner	**Event 3** **Trigger#3** **TUR11B** (0 over 20 seconds)	Turbine Control Valve CV-L4 Drifts Closed
☐	At direction of examiner	**Event 4** **Trigger#4** **FDW07C** (Current Controller Output)	B FRV fails AS-IS (Manual Control Available)
☐	At direction of examiner	**Event 5** **Trigger#5** **STM03** (1E+6) **FPS01-237** **STM05A** (100) **STM05B** (100)]	MSLB Downstream of MSIVs with MSIVs Stuck OPEN **NOTE: The Fire Alarm is 15 seconds dealyed.** **NOTE: These Malfunctions are inserted in the IC at T = 0.**
☐	Continued from Event 5	**Event 6** **MALF RPS05A, [No Manual]** **MALF RPS05B, [No Manual]**	RPS fails to Trip Rx in AUTO/Manual Pushbutton **NOTE: These Malfunctions are inserted in the IC at T = 0.**
☐	After entry into ECA-2.1 At direction of examiner	**Event 7** **Trigger#6** **STM03** (5E+6)	Steam Break Degrades Creating PTS Concern
☐	Simultaneous with Event 7	**Event 8** **Trigger#6** **EDS01A** **EDS01B**	Loss of Offsite Power
☐	**Terminate the scenario upon direction of Lead Examiner**		

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Event Description: **Leak on the CCW System/B CCW Pump Trips**

Shortly after taking the watch, a CCW System Supply Relief Valve will lift and fail to reseat causing a 30 gpm CCW System leak. Approximately two minutes afterwards the B CCW Pump will trip, and the B CCW Pump will automatically start. The operator will respond in accordance with AR-A-17, MOTOR OFF RCP CCWP, and enter AP-CCW.2, Loss of CCW During Power Operation. The operator will address Technical Specification 3.7.7, Component Cooling Water System.

SIM DRIVER Instructions: **Operate Trigger #1 (CLG05 (30 gpm), CLG02B (2 minutes delayed))**

Indications Available:

- CCW Surge Tank Level starts to lower.
- Two minutes later, the B CCW Pump trips and the A CCW Pump starts automatically
- MCB Annunciator A-17; MOTOR OFF RCP CCWP
- MCB Annunciator A-13, CCW SURGE TANK LO LEVEL 41.2%

Time	Pos.	Expected Actions/Behavior	Comments
			NOTE: The crew may enter AP-CCW.2 directly.
AR-A-17, MOTOR OFF RCP CCWP			
	HCO	(Step 1) Verify which motor tripped.	
	HCO	(Step 2) IF a RCP has tripped, THEN.....	**NOTE:** An RCP has NOT tripped.
	CRS	(Step 3) IF a CCW pump has tripped, THEN go to the applicable AP-CCW procedure:	
		• AP-CCW.2 (LOSS OF CCW DURING POWER OPERATION)	
			NOTE: The CRS will go to AP-CCW.2.
AP-CCW.2, LOSS OF CCW DURING POWER OPERATION			
	HCO	(Step 1) Check CCW Pump Status:	
		• Both CCW pump breaker white lights – EXTINGUISHED	
		• Annunciator A-17, MOTOR OFF RCP CCWP - EXTINGUISHED	

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Event Description: **Leak on the CCW System/B CCW Pump Trips**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 1 RNO) Perform the following:	
		• Ensure standby CCW pump running.	
		IF no CCW pump can be operated, THEN……..	**NOTE:** The A CCW Pump is running.
		• IF annunciator A-22, CCW PUMP DISCHARGE LO PRESS 60 PSI, lit, THEN……..	**NOTE:** Annunciator A-22 is NOT lit.
	HCO	(*Step 2) Monitor CCW Surge Tank Level – APPROXIMATELY 50% AND STABLE….	**NOTE:** The CCW Surge Tank Level is lowering.
		(Step 2 RNO) Perform the following:	
		• Open RMW to CCW surge tank, MOV-823.	
		• Start RMW pump(s).	
		• IF surge tank level stable or rising, THEN control level at approximately 50% while continuing with Step 3.	**NOTE:** The makeup flow into the CCW Surge Tank will be able to stabilize the tank level.
	HCO	(*Step 3) Monitor CCW Hx Outlet Temperature (MCB rear or PPCS point ID T0621)	
		• CCW Hx Outlet temperature – LESS THAN 120°F	
	HCO	(*Step 4) Monitor RCP Indications:	
		• Annunciator A-7 (A-15), RCP 1A (1B) CCW return Hi Temp or low flow 165 gpm 125°F alarm – EXTINGUISHED	
		• RCP motor bearings temperature (PPCS Group Display – RCPS OR RXP temperature monitor RK-30A recorder) - ≤ 200°F	

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Event Description: **Leak on the CCW System/B CCW Pump Trips**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(*Step 5) Monitor If Letdown Should Be Isolated:	
		• Check annunciator A-12, Non-Regen Hx Letdown Out Hi Temp 145°F - EXTINGUISHED	
		• Check excess letdown temperature – LESS THAN 195°F	
	HCO	(Step 6) Check CCW Valve Alignment - NORMAL	
		• Check MCB CCW valves (Refer to ATT-1.0, ATTACHMENT AT POWER CCW ALIGNMENT)	
		• Direct AO to check local flow indications per ATT-1.1, ATTACHMENT NORMAL CCW FLOW	**NOTE:** The CRS will dispatch an AO. **SIM DRIVER:** as **AO**, acknowledge.
	HCO	(Step 7) Locally Check Seal Water Hx CCW Outlet Flow – NORMAL (FI-605)	**NOTE:** The CRS may direct the AO to report status of Seal Water Hx CCW Outlet Flow. If so, **SIM DRIVER** acknowledge as AO, and report flow is **96 gpm**.

SIM DRIVER:

As AO, call and report that Relief Valve V770 (Near Sample Coolers) is lifting to the drain system. The leak appears to be isolable, and valves V772C (Inlet Iso Valve) and V772D (Outlet Iso Valve) are nearby.

If directed to isolate the leak, Remove MALF CLG05

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Event Description: **Leak on the CCW System/B CCW Pump Trips**

Time	Pos.	Expected Actions/Behavior	Comments
			NOTE: The CRS may contact Chemistry and direct them to isolate CCW to the Sample Coolers. If so, **SIM DRIVER** acknowledge as Chemistry. **NOTE:** After the CCW to the Sample Cooler is isolated the crew may elect to isolate SG Blowdowns.
	HCO/ AO	(Step 8) Check for CCW Leakage In CNMT:	
		• Check CNMT sump A level:	
		• Level – STABLE	
		• Sump A pumps – OFF	
		• RCP oil levels - STABLE	
	HCO/ AO	(Step 9) Check for CCW Leakage In AUX BLDG:	
		• Start frequency of AUX BLDG sump pump(s) – NORMAL (Refer to RCS daily leakage log)	
		• Waste holdup tank level – STABLE OR RISING AS EXPECTED	**NOTE:** The CRS may direct the AO to report status of the WHUT. If so, **SIM DRIVER** acknowledge as AO, and report level is **slowly rising** (Modify if leak is isolated).
	HCO	(Step 10) Verify CCW System Leak - IDENTIFIED	
		• Leak identified	
		• Isolate leak if possible	**NOTE:** The leak has likely been discovered and isolated.

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Event Description: **Leak on the CCW System/B CCW Pump Trips**

Time	Pos.	Expected Actions/Behavior	Comments
		• Refer to IP-ENV-3, RESPONSE TO A SPILL OF HAZARDOUS MATERIAL/WASTE	**NOTE:** The CRS may ask the SM to address. If so, **SIM DRIVER** acknowledge as OSM.
	HCO	(Step 11) Check Normal or Excess Letdown – IN SERVICE	
	HCO	(Step 12) Check CCW System Leak Isolated	
		• Surge tank level – APPROXIMATELY 50%	
		• (Step 12a RNO) IF level less than 50%, THEN continue filling.	**NOTE:** The Surge Tank Level is stable (still rising if NOT isolated).
		IF ≥ 50% THEN perform the following:	
		• Stop RMW pump(s).	
		• Close MOV-823.	
		• (Step 12 Continued) Surge tank level - STABLE	
	HCO	(Step 13) Direct RP To Sample CCW System For Chromates	**NOTE:** The CRS may notify RP. **SIM DRIVER:** as **RP**, acknowledge.
	HCO/ CO	(Step 14) Evaluate MCB Annunciator Status (Refer to AR Procedures)	
	CRS	(Step 15) Evaluate Plant Conditions:	

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Event Description: **Leak on the CCW System/B CCW Pump Trips**

Time	Pos.	Expected Actions/Behavior	Comments
		• CCW system malfunction – IDENTIFIED AND CORRECTED.	**NOTE:** Although the leak has been isolated, the A CCW Pump has tripped, and needs to be evaluated.
		• CCW system status adequate for power operation (Refer to ITS Section 3.7.7).	
	CRS	(Step 16) Notify Higher Supervision	**NOTE:** The CRS may notify the WCC. **SIM DRIVER:** as **WCCS**, acknowledge.
	CRS	(Step 17) Return To Procedure Or Guidance In Effect	
			NOTE: The CRS will likely check the Tech Specs.
TECHNICAL SPECIFICATION 3.7.7, COMPONENT COOLING (CCW) WATER SYSTEM			
	CRS	3.7.7 Two CCW trains, two CCW heat exchangers, and the CCW loop header shall be OPERABLE.	
	CRS	APPLICABILITY: MODES 1, 2, 3, and 4.	
		ACTIONS	
		CONDITION / REQUIRED ACTION / COMPLETION TIME A. One CCW train inoperable. / A.1 Restore CCW train to OPERABLE status. / 72 hours	
			NOTE: The CRS will likely conduct a Plant Status Brief.
At the discretion of the Lead Examiner move to Event #2.			

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Event Description:	**Leak on the CCW System/B CCW Pump Trips**								

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Event Description:	**PZR Level Channel 427 fails LOW**		

After this, Pressurizer Level Channel 427 will fail LOW, resulting in letdown isolation and de-energizing the pressurizer heaters. The crew will respond per AR-F-11, PZR LOW LEVEL 13%, and ER-INST.1, Reactor Protection Bistable Defeat After Instrumentation Loop Failure. They will defeat the failed channel, reset PZR heaters, reduce charging to a single charging pump, and re-establish letdown per S-3.2.E, Placing In or Removing From Service Normal Letdown/Excess Letdown. The crew will start a second charging pump and slowly restore PZR level to program (52%). The operator will address Technical Specification 3.3.1, Reactor Trip System (RTS) Instrumentation, 3.3.3, Post Accident Monitoring (PAM) Instrumentation, and 3.4.9, Pressurizer.

SIM DRIVER Instructions: **Operate Trigger #2 (PZR03B [0])**

Indications Available:

- MCB Annunciator F-4, PRESSURIZER LEVEL DEVIATION -5 NORMAL +5
- MCB Annunciator F-11, PRESSURIZER LO LEVEL 13%
- VCT Level (LT-112) starts to lower
- LT-427 indicates low compared to remaining PRZR Level Channels
- Normal Letdown has isolated due to one PZR level channel failing low

Time	Pos.	Expected Actions/Behavior	Comments
			NOTE: The CRS may enter ER-INST.1 directly.
AR-F-4, PRESSURIZER LEVEL DEVIATION -5 NORMAL +5			
	HCO	(Step 1) Perform a channel check.	**NOTE:** LT-427 will indicate low compared to the others.
	HCO	(Step 2) Verify Backup Heaters on at + 5%	
	HCO	(Step 3) Check charging pump speed and controls.	**NOTE:** Auto pump has reduced to MIN speed.
	HCO	(Step 4) Check Letdown in service.	**NOTE:** Normal Letdown will auto isolate.
	HCO	(Step 5) Control Charging and Letdown as necessary to control level.	

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Event Description: **PZR Level Channel 427 fails LOW**

Time	Pos.	Expected Actions/Behavior	Comments
	CRS	(Step 6) Go to the appropriate procedure:	
		• AP-RCS.1 for RCS leak	
		• ER-INST.1 for failed channel	**NOTE:** The CRS will go to ER-INST.1.
AR-F-11, PRESSURIZER LO Level 13%			
	HCO	(Step 1) Perform a channel check	**NOTE:** LT-427 will indicate low compared to the others.
	CRS	(Step 2) Go to the appropriate procedure:	
		• AP-RCS.1 for RCS leak	
		• ER-INST.1 for failed channel	**NOTE:** The CRS will go to ER-INST.1.
ER-INST.1, REACTOR PROTECTION BISTABLE DEFEAT AFTER INSTRUMENTATION LOOP FAILURE			
	HCO	(Step 6.1.1) IDENTIFY the failed instrument channel by observation of the bistable status light board, MCB annunciators, and the MCB metering indication.	**NOTE:** The HCO will identify that LI-427 has failed LOW.
	HCO	(Step 6.4.2) If letdown isolation valve, AOV-427 has closed, THEN perform the following:	**NOTE:** Letdown isolated
		1. Place charging pump speed controllers in MANUAL AND minimize charging flow.	**NOTE:** The HCO will place Charging Pump Speed in MANUAL.
		2. Stop all but one charging pumps (s).	**NOTE:** The HCO will stop one Charging Pump.
		3. Adjust HCV-142 as necessary to maintain RCP labyrinth seal ΔP between 20 and 80 inches.	**NOTE:** The HCO will close HCV-142 due to letdown isolation.
		4. Place loop B cold leg to REGEN HX AOV-427 switch (MCB) to close position	

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Event Description: **PZR Level Channel 427 fails LOW**

Time	Pos.	Expected Actions/Behavior	Comments
		5. Consider placing excess letdown in service, refer to S-3.2E, PLACING IN OR REMOVING FROM SERVICE NORMAL LETDOWN/EXCESS LETDOWN	**NOTE:** CRS will likely defeat channel and then return Normal Letdown to service.
	HCO	(Step 6.3.4) REFER TO the appropriate attachment to defeat the associated control functions:	**NOTE:** The CRS will go Attachment 10, White Channel - PRZR Level LI-427.
		Attachment 9, Red Channel - PRZR Level LI-426	
		Attachment 10, White Channel - PRZR Level LI-427	
		Attachment 11, Blue Channel - PRZR Level LI-428	
			NOTE: The CRS will hand this off to the CO.
ER-INST.1, REACTOR PROTECTION BISTABLE DEFEAT AFTER INSTRUMENTATION LOOP FAILURE ATTACHMENT 10 WHITE CHANNEL - PRZR LEVEL LI-427			
			NOTE: The CO will likely conduct Instrument Defeat Brief.
	HCO	(Step 1) Ensure Charging pump controllers are in MANUAL	
	CO	(Step 2) In the PLP PRESS AND LEVEL rack, check the PRZR level defeat switch L/428A position.	**NOTE:** The CO will unlock and open the PLP PRZR PRESS AND LEVEL Rack Cabinet, take the required action, and then close and lock the cabinet door.
		• IF L/428A is in NORMAL, THEN place L-428A to DEFEAT-2.	
	CO	(Step 3) Notify the CRS that PRZR Heaters and Letdown can now be restored per steps 6.4.4 and 6.4.5.	

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Event Description: **PZR Level Channel 427 fails LOW**

Time	Pos.	Expected Actions/Behavior	Comments
	CO	(Step 4) DETERMINE the expected Bistable proving light status for the post defeat condition as follows:	
		RECORD the following Data:	
		• PRZR Level LI-427_____%	
	CO	(Step 5) DETERMINE the expected post defeat Bistable proving light status and circle the expected status in table below:	
		• 427 CHANNEL 2 HIGH LEVEL TRIP Light OFF if LI-427 ≥87%	**NOTE:** The CO will determine that the Proving Light should be ON in the Post-Defeat condition.
	CO	(Step 6) In the (WHITE) W-1 PROTECTION CHANNEL 2 rack, PLACE the following bistable proving switches to DEFEAT (UP) AND verify the proving light status is correct: <u>427 CHANNEL 2</u> HIGH LEVEL TRIP	**NOTE:** The CO will unlock and open the W-1 PROTECTION CHANNEL 2 Rack Cabinet, take the required action, and then close and lock the cabinet door. **NOTE:** The B/S proving light should be ON after defeat.
	HCO	(Step 7) PLACE the PRZR level recorder transfer switch (MCB) to position 428.	
	HCO	(Step 8) VERIFY the bistable status lights AND Annunciators listed above are lit.	
	HCO/ CO	(Step 9) Remove the PRZR level channel from the PPCS, by performing the following: • On the "Sub/Delete/Restore" display • Select Point ID L0427 • Turn "OFF" scan processing. • Select "Change". • Answer prompts	

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Event Description: **PZR Level Channel 427 fails LOW**

Time	Pos.	Expected Actions/Behavior	Comments
	CRS	(Step 10) GO TO step 6.4.4	**NOTE:** The CRS will return to the body of the procedure.
ER-INST.1, REACTOR PROTECTION BISTABLE DEFEAT AFTER INSTRUMENTATION LOOP FAILURE			
	HCO	(Step 6.4.4) Reset PRZR heaters breakers as necessary.	**NOTE:** Not necessary
	HCO	(Step 6.4.5) Restore normal letdown as follows, if desired.	**NOTE:** If excess letdown was placed on service earlier then Section 6.6 (Removing Excess Letdown from Service) will be performed.
		1. COMPLETE removal of normal letdown from service per S-3.2E, PLACING IN OR REMOVING FROM SERVICE NORMAL LETDOWN/EXCESS LETDOWN.	
		2. RESTORE normal letdown per S-3.2E, PLACING IN OR REMOVING FROM SERVICE NORMAL LETDOWN/EXCESS LETDOWN.	
			NOTE: The CRS will continue with ER-INST.1.
S-3.2E, PLACING IN OR REMOVING FROM SERVICE NORMAL LETDOWN/EXCESS LETDOWN			
			NOTE: This action will complete the removal of Normal Letdown from Service.
	HCO/ CO	(Step 6.2.1) PLACE Charging Pumps in MANUAL	
	HCO/ CO	(Step 6.2.2) ENSURE CLOSED Letdown Orifice isolation valves. AOV-200A AOV-200B AOV-202	

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Event Description: **PZR Level Channel 427 fails LOW**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO/ CO	(Step 6.2.3) CLOSE LTDN ISOLATION VLV RHR to NRHX, AOV-427.	
	HCO/ CO	(Step 6.2.4) REDUCE charging flow while throttling closed charging flow to Regenerative Heat Exchanger HCV-142 to maintain greater than 20" RCP labyrinth seal ΔP.	
	HCO/ CO	(Step 6.2.5) CLOSE LETDOWN ISOL VLV RHR TO NRHX AOV-371.	
	HCO/ CO	(Step 6.2.6) PLACE NRHX LTDN OUTLET TEMP (TI-130) TCV-130 in MANUAL/ CLOSED.	
	HCO/ CO	(Step 6.3.1) Determine if a flush is required. If the letdown line has been isolated for less than one hour perform section 6.4 and N/A section 6.5 with permission of the Shift Manager or Control Room Supervisor.	**NOTE:** Since letdown has been isolated ONLY a few minutes, a flush will NOT be required.
	HCO/ CO	(Step 6.4.1) Restore Letdown Without a Flush	
	HCO/ CO	(Step 6.4.1.1) ENSURE letdown is secured PER Section 6.2 prior to restoring.	
	HCO/ CO	(Step 6.4.1.2) IF charging flowpath to Loop B COLD Leg is desired (preferred method), THEN PERFORM the following:	
		ENSURE CLOSED CHARGING VLV RHX TO LOOP B HOT, AOV-392A.	
		OPEN CHARGING VLV RHX TO LOOP B COLD LEG AOV-294.	

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Event Description: **PZR Level Channel 427 fails LOW**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO/ CO	(Step 6.4.1.3) IF Charging flowpath to Loop B HOT leg is desired,.....	**NOTE:** Charging alignment to the Hot Leg will NOT be desired.
	HCO/ CO	(Step 6.4.2) START a second Charging Pump at minimum speed.	
	HCO/ CO	(Step 6.4.3) SLOWLY OPEN charging flow to Regenerative Heat Exchanger HCV-142 to reduce labyrinth seal ΔP to - 40".	
	HCO/ CO	(Step 6.4.4) ADJUST Charging Pump speed while maintaining - 40" labyrinth seal ΔP UNTIL HCV-142 is fully OPEN.	
	HCO/ CO	(Step 6.4.5) ESTABLISH greater than or equal to 22 gpm charging line flow.	
	HCO/ CO	(Step 6.4.6) IF placing 40 GPM orifice in service	**NOTE:** A 60 gpm Orifice was previously in service.
	HCO/ CO	(Step 6.4.7) IF placing 60 GPM orifice in service THEN	
		PLACE LOW PRESS LTDN PRESS PCV-135 in MANUAL at - 60% open.	
		PLACE NRHX LTDN OUTLET TEMP (TI-130) TCV-130 in MANUAL at - 60% open.	
	HCO/ CO	(Step 6.4.8) OPEN LETDOWN ISOL VLV RHR TO NRHX AOV-371.	
	HCO/ CO	(Step 6.4.9) PLACE LTDN LOOP B COLD LEG TO RHX AOV-427 to OPEN and THEN to AUTO.	

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Event Description: **PZR Level Channel 427 fails LOW**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO/ CO	(Step 6.4.10) OPEN desired Letdown orifice valve AOV-200A, AOV-200B, or AOV-202 AND MARK AOV's not opened N/A.	
		AOV-200A	
		AOV-200B	
		AOV-200	
	HCO/ CO	(Step 6.4.11) ADJUST LOW PRESS LTDN PRESS PCV-135 to achieve Letdown pressure of - 250 psig on PI-135.	
	HCO/ CO	(Step 6.4.12) PLACE LOW PRESS LTDN PRESS, PCV-135 IN AUTO.	
	HCO/ CO	(Step 6.4.13) PLACE NRHX LTDN OUTLET TEMP (TI-130) TCV-130 in AUTO at the setpoint recorded in Step 5.4.	**Examiner NOTE:** At the discretion of the Lead Examiner move to Event #3.
	HCO/ CO	(Step 6.4.14) PLACE Pressurizer level control (Charging Pump) to AUTO.	
ER-INST.1, REACTOR PROTECTION BISTABLE DEFEAT AFTER INSTRUMENTATION LOOP FAILURE			
	HCO	(Step 6.4.6) WHEN PRZR level is restored to normal, THEN place an operating charging pump controller in AUTO.	
	HCO	(Step 6.3.6) Open associated block valve closed in step 4.4.3	**NOTE:** No Block Valve was Closed.
	CRS	(Step 6.4.7) Check the following ITS Sections for LCOs:	
		• Section 3.3.1, Table 3.3.1-1, Function 8	
		• Section 3.3.3, Table 3.3.3-1, Function 2	

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Event Description: **PZR Level Channel 427 fails LOW**

Time	Pos.	Expected Actions/Behavior	Comments
		• Section 3.4.9	
	CRS	(Step 6.4.8) GO TO Step 6.15.	
	HCO	(Step 6.15.1) IF necessary, VERIFY an operable channel is selected for the affected recorder.	
	HCO	(Step 6.15.2) Verify the following systems in AUTO if desired: o Rod Control	
	CO	o Turbine EH control	
	HCO	o PRZR Pressure control • HC 431K • PRZR spray valves • PRZR heaters	
	HCO	o PRZR level control	
	CO	o Steam Dump (unless 1st stage pressure failed)	
	CO	o MFW control	
	CO	o S/G Atmos Relief Vlv Control	
	CRS	(Step 6.15.3) NOTIFY the following people: o Operations Supervision o STA o Work Week Manager	**NOTE:** The CRS may notify the SM/STA/WWM. **SIM DRIVER:** as **SM/STA/WWM**, acknowledge.
	CRS	(Step 6.15.4) REFER to the following for Notification Requirements:	**NOTE:** The CRS may ask the SM. **SIM DRIVER:** as **SM**, acknowledge.
		CNG-NL-1.01-1004, REGULATORY REPORTING	
		OPG-NOTIFICATION, REQUIRED NOTIFICATIONS TO THE PSC/PIO/CEG SENIOR MANAGEMENT/OPERATIONS MANAGEMENT	

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Event Description: **PZR Level Channel 427 fails LOW**

Time	Pos.	Expected Actions/Behavior	Comments
			NOTE: The CRS will address the Technical Specifications.
TECHNICAL SPECIFICATION 3.3.1, REACTOR TRIP (RTS) INSTRUMENTATION			
	CRS	LCO 3.3.1 The RTS instrumentation for each Function in Table 3.3.1-1 shall be OPERABLE.	
		APPLICABILITY: According to Table 3.3.1-1 (Function 8)	
		ACTIONS	
		CONDITION / REQUIRED ACTION / COMPLETION TIME A. One or more functions with one channel inoperable. / A.1 Enter the Condition referenced in Table 3.3.1-1 for the channel(s). / Immediately D. As required by Required Action A.1 and referenced by Table 3.3.1-1 / D.1 Place channel in trip / 6 hours	**NOTE:** Function 8 is affected.
TECHNICAL SPECIFICATION 3.4.9, PRESSURIZER			
	CRS	LCO 3.4.9: The pressurizer shall be OPERABLE.	
	CRS	APPLICABILITY: modes 1, 2 and 3.	

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Event Description: **PZR Level Channel 427 fails LOW**

Time	Pos.	Expected Actions/Behavior			Comments
		CONDITION	REQUIRED ACTION	COMPLETION TIME	**NOTE:** The CRS will identify that the crew was in this TS LCO when the Heaters tripped on low pressurizer level, and out of this TS LCO when the heaters were reset.
		B. Pressurizer heaters capacity not within limits.	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	6 hours. 12 hours.	
					NOTE: The CRS may address LCO 3.3.3, but determine that this TS is met using in-service instruments.
At the discretion of the Lead Examiner move to Event #3.					

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Event Description:	**Turbine Control Valve CV-L4 Drifts Closed**		

Then, turbine control valve CVL-4 will drift closed. The crew will respond per AP-TURB.2, Turbine Load Rejection, begin a load reduction to less than 50% power using AP-TURB.5, Rapid Load Reduction.

SIM DRIVER Instructions: **Operate Trigger #3 (TUR11B (20 over 20 seconds))**

Indications Available:

- MW lowering on turbine
- CLV-4 closing/closes
- Rx Power lowering (7-8% change)
- Tref lowering
- Rods stepping in to lower Tavg
- RCS Pressure lowering during transient
- MCB Annunciator AR-G-15, STEAM DUMP ARMED
- Steam dumps cycle

Time	Pos.	Expected Actions/Behavior	Comments
		AP-TURB.2, TURBINE LOAD REJECTION	
	HCO	(Step 1*) Montor RCS Tavg	
		• Tavg-GREATER THAN 545˚F	
		• Tavg-LESS THAN 579˚F	
	CO	(Step 2) Check Turbine Valves:	
		• Turbine stop valves and reheat steam valves-OPEN	
		• Turbine control valves-ALL VALVES AT APPROXIMATELY THE SAME POSITION	
	CRS	(Step 2 RNO) If failure of turbine control valves indicated, THEN reduce power to less than 80% (refer to AP-TURB.5, RAPID LOAD REDUCTION).	**NOTE:** The CRS may use both AP-TURB.2 and 5 simultaneously during the downpower. **SIM DRIVER:** as **Plant Management**, direct that power be lowered to 70%.

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Event Description: **Turbine Control Valve CV-L4 Drifts Closed**

Time	Pos.	Expected Actions/Behavior	Comments
			NOTE: The CRS will go to AP-TURB.5 and conduct Rapid Load Reduction Brief prior to commencing load reduction.
AP-TURB.5, RAPID LOAD REDUCTION			
	HCO	(Step 1) Initiate Load Reduction a) Verify rods in AUTO	
	CO	b) Reduce turbine load in Auto as follows:	
		• Place Turbine EH Control in OPER PAN., IMP PRESS IN, if desired.	**NOTE:** OPER PAN IMP PRESS IN is desired.
		• Select desired rate on thumbwheel	**NOTE:** The operator will select 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:** The HCO will initiate a boration.
	HCO	d) Place PRZR backup heaters switch to ON	
	HCO	(*Step 2) Monitor RCS Tavg • Tavg- GREATER THAN 545°F • Tavg- LESS THAN 579°F	**NOTE:** This is a Continuous Action. The CRS will make both board operators aware.
	HCO	(Step 3) Adjust Boric Acid Addition Rate As Necessary To (refer to OPG-REACTIVITY-CALC): • Maintain rods above the insertion limit • Match Tavg and Tref • Compensate for Xenon	

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Event Description: **Turbine Control Valve CV-L4 Drifts Closed**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(*Step 4) Monitor PRZR Pressure- TRENDING TO 2235 PSIG IN AUTO	**NOTE:** This is a Continuous Action. The CRS will make both board operators aware.
	CO	(*Step 5) Monitor MFW Regulating Valves- RESTORING S/G LEVEL TO 52% IN AUTO	**NOTE:** This is a Continuous Action. The CRS will make both board operators aware.
	HCO	(*Step 6) Monitor PRZR Level- TRENDING TO PROGRAM IN AUTO CONTROL	**NOTE:** This is a Continuous Action. The CRS will make both board operators aware.
	CO	(Step 7) Check IA Available To CNMT	
		IA pressure - GREATER THAN 60 PSIG	
		Instr Air to CNMT Isol Valve, AOV-5392 - OPEN	
	HCO/ CO	(Step 8) Check Steam Dump Status:	
		Annunciator G-15, STEAM DUMP ARMED - LIT	**NOTE:** The Steam Dump System will be ARMED.
		Steam dump operating properly in AUTO	
	CO	(Step 9) Check Hotwell Level:	
		Hotwell level controller in AUTO	
		Controller demand LESS THAN 60%	
		Hotwell level at setpoint	
	CO	(Step 9 RNO) IF controller demand approaching 70% (Large Reject Valve Opens), THEN place controller in Manual and control level.	
	CRS/ CO	(Step 10) Check If Condensate Booster Pumps Should Be Secured	

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Event Description:	**Turbine Control Valve CV-L4 Drifts Closed**							

Time	Pos.	Expected Actions/Behavior	Comments
		Condensate booster pumps – 2 PUMPS RUNNING	**NOTE:** There are two Condensate Booster Pumps running.
		Verify the following:	
		Verify reactor power is 70%-75%	**NOTE:** Rx power is expected to be > 75%.
	CRS	(Step 10.b RNO) Go to Step 18.	
	CRS	(Step 18) Evaluate Plant Status	
		IF load was reduced more than 15% RTP in one hour, THEN notify RP to obtain primary samples required by ITS LCO 3.4.16	**NOTE:** The CRS may call Chemistry to address the samples. If so, **SIM DRIVER** acknowledge as Chemistry (Note that Sample Coolers were previously isolated).
			NOTE: The CRS address remaining steps of AP-TURB.2 while continuing the power reduction.
(While still in downpower) At the discretion of the Lead Examiner move to Event #4.			

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Event Description:	**B FRV fails AS-IS (Manual Control Available)**							

During the load reduction, a failure of the B FRV to control in AUTO. The operator will respond per AR-G-5, S/G/ B LEVEL DEVIATION ±7%, or upon observing an abnormally high level in the B Steam Generator and control the B FRV manually. The operator will address Technical Specification 3.7.3, Main Feedwater Isolation Valves (MFIVs), Main Feedwater Regulating Valves (MFRVs), and Associated Bypass Valves.

SIM DRIVER Instructions: **Operate Trigger #4 (FDW07C (Current Controller Output in %))**

Indications Available:

- Feed flow in the B SG will stabilize during the downpower
- B SG level starts to rise.
- MCB Annunciator G-22, ADFCS SYSTEM TROUBLE
- MCB Annunciator G-5, S/G LEVEL DEVIATION ±7%

Time	Pos.	Expected Actions/Behavior	Comments
			NOTE: The CO will dispatch the AO to the relay room to check the ADFCS Panel. **SIM DRIVER:** as AO report that ADFCS Panel indicates "Control Card Failure" after 3 minutes.
AR-G-5, S/G LEVEL DEVIATION ±7%			
	CO	(Step 4.1) PERFORM a channel check of the following:	
		• LI-471	
		• LI-472	
		• LI-473	
	CO	(Step 4.2) IF Main Feedwater is supplying the S/G, THEN PERFORM the following as necessary:	
		• PLACE SG B MFW REG VLV HCV-476 in MANUAL.	**NOTE:** The CO will take manual control of the B FRV, and control B S/G level manually.
		• PLACE FW FLOW LOOP B BYPASS VLV HCV-481 in • MANUAL.	
		• CONTROL SG level manually.	

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Event Description: **B FRV fails AS-IS (Manual Control Available)**

Time	Pos.	Expected Actions/Behavior	Comments
			NOTE: The CRS will most likely NOT check the Tech Specs during the transient. The Examiner may need to check this after the scenario
TECHNICAL SPECIFICATION 3.7.3, MAIN FEEDWATER ISOLATION VALVES (MFIVS), MAIN FEEDWATER REGULATING VALVES (MFRVS), AND ASSOCIATED BYPASS VALVES			
	CRS	3.7.3 Two MFIVs, two MFRVs, and associated bypass valves shall be OPERABLE.	
	CRS	APPLICABILITY: MODES 1, 2, and 3 except when both steam generators are isolated from both main feedwater pumps.	
		ACTIONS	
		CONDITION / REQUIRED ACTION / COMPLETION TIME	
		B.One or more MFRV(s) inoperable. / B.1 Close or isolate MFRV(s). AND B.2 Verify MFRV(s) is closed or isolated. / 72 hours; Once per 7 day	
			NOTE: The CRS will likely conduct a Plant Status Brief.
At the discretion of the Lead Examiner move to Events #5-8.			

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Event Description:	**MSLB Downstream of MSIVs with MSIVs Stuck OPEN / RPS fails to Trip Rx in AUTO/Manual Pushbutton / Steam Break Degrades Creating PTS Concern / Loss of Offsite Power**		

Subsequently, a major steamline break will occur in the Turbine Building downstream of the MSIVs. Both MSIVs will fail to close automatically in response to manual attempts from the MCB. The reactor will fail to trip automatically and manual pushbutton will not work, requiring opening of normal supply breakers for Bus 13 and Bus 15 to deenergize rod drive MG sets to trip the reactor. The crew will enter E-0, Reactor Trip or Safety Injection. The crew will ultimately transition to E-2, Faulted S/G Isolation. Since both MSIVs are failed open, and with a downstream break, both SGs will be affected and their pressures will lower concurrently. Eventually, the crew will transition to ECA-2.1, Uncontrolled Depressurization of Both Steam Generators. After the operator throttles AFW flow in ECA-2.1, the leak will increase in magnitude, resulting in an Orange Path on RCS Integrity. Simultaneously the event will be complicated by a Loss of Offsite Power. Both Emergency Diesel Generators will start and automatically repower the respective Emergency Busses, and the operator will need to re-establish AFW flow of 50 gpm to each Steam Generator. The crew will implement FR-P.1, Response to Imminent Pressurized Thermal Shock Condition, when RCS cold leg temperatures reach 311°F. In FR-P.1 the crew will stop the SI pumps and the RHR pumps. The scenario will be terminated after the SI and RHR pumps are secured.

SIM DRIVER Instructions: Operate Trigger #5 (STM03 (1E+6), FDS-1-237 [15 seconds delayed])

Indications Available:

- Numerous MCB Annunciators.
- Pressurizer pressure and level start to lower.
- RCS Tavg starts to lower.
- Steam break heard in Control Room.
- Intermediate Building Fire alarm (15 seconds delayed).

Time	Pos.	Expected Actions/Behavior	Comments
		E-0, REACTOR TRIP OR SAFETY INJECTION	
	HCO	(Step 1) Verify Reactor Trip:	**Immediate Action**
		• At least one train of reactor trip breakers – OPEN	
		• Neutron flux - LOWERING	**NOTE:** The reactor will NOT trip automatically or via manual pushbutton.
		• MRPI indicates – ALL CONTROL AND SHUTDOWN RODS ON BOTTOM	

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Event Description: **MSLB Downstream of MSIVs with MSIVs Stuck OPEN / RPS fails to Trip Rx in AUTO/Manual Pushbutton / Steam Break Degrades Creating PTS Concern / Loss of Offsite Power**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 1 RNO) Manually trip reactor.	**Immediate Action**
		• IF reactor trip breakers NOT open, THEN perform the following:	
		• Open Bus 13 and Bus 15 normal feed breakers.	
		• Verify rod drive MG sets tripped.	
		• Close Bus 13 and Bus 15 normal feed breakers.	
		• Reset lighting breakers.	
		• IF the reactor will NOT trip OR IF power range NIS indicates greater than 5%, THEN	**NOTE:** The reactor will Trip when the Rod Drive MG Sets are de-energized.

CRITICAL TASK

1. Manually trip the reactor from the control room before transition to FR-S.1

Safety Significance: Failure to manually trip the reactor causes a challenge to the subcriticality CSF beyond that irreparably introduced by the postulated conditions. Additionally, it constitutes an "incorrect performance that necessitates the crew taking action which complicates the event mitigation strategy that demonstrates the inability by the crew to recognize a failure of the automatic actuation of the RPS.

	CO	(Step 2) Verify Turbine Stop Valves – CLOSED	**Immediate Action**
	CO	(Step 3) Verify Both Trains of AC Emergency Busses Energized to at Least 440 VOLTS:	**Immediate Action**
		• Bus 14 and Bus 18	
		• Bus 16 and Bus 17	
	HCO	(*Step 4) Check if SI is Actuated:	**Immediate Action**

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Event Description: **MSLB Downstream of MSIVs with MSIVs Stuck OPEN / RPS fails to Trip Rx in AUTO/Manual Pushbutton / Steam Break Degrades Creating PTS Concern / Loss of Offsite Power**

Time	Pos.	Expected Actions/Behavior	Comments
		• Any SI Annunciator – LIT	**NOTE:** Based on Pressurizer Pressure, the HCO may Manually actuate SI and CI. If Not, auto actuation will occur.
		• SI sequencing – BOTH TRAINS STARTED.	
	HCO/ CO	Foldout Page	**NOTE:** The crew will monitor these conditions throughout the performance of E-0.
		RCP TRIP CRITERIA	
		LOSS OF SW CRITERIA	
		AFW SUPPLY SWITCHOVER CRITERION	
		SFP COOLING CRITERIA	**NOTE:** The CRS may dispatch an AO to address the status of the SFPCS. If so, **SIM DRIVER** acknowledge as AO, and report in 5 Minutes that the SFPCS is operating normally.
	HCO	(*Step 5) Verify CNMT Spray Not Required:	
		• Annunciator A-27, CNMT SPRAY – EXTINGUISHED	
		• CNMT pressure- LESS THAN 28 PSIG	**NOTE:** Containment Pressure will be normal (The Steam Break is outside Containment).
	CRS	(Step 6) Direct Operator to Perform ATT-27.0, ATTACHMENT AUTOMATIC ACTION VERIFICATION	

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Event Description: **MSLB Downstream of MSIVs with MSIVs Stuck OPEN / RPS fails to Trip Rx in AUTO/Manual Pushbutton / Steam Break Degrades Creating PTS Concern / Loss of Offsite Power**

Time	Pos.	Expected Actions/Behavior	Comments
			NOTE: The CRS will hand off ATT-27.0 to either the HCO or the CO, and continue with the other operator in E-0. **Examiner** following operator performing ATT-27.0 continue below. **Examiner** following operator NOT performing ATT-27.0 continue at **Page 37**.
E-0, REACTOR TRIP OR SAFETY INJECTION, ATTACHMENT 27.0, ATTACHMENT AUTOMATIC ACTION VERIFICATION			
	HCO/ CO	(Step 1) Verify SI and RHR Pumps Running:	
		• All SI pumps – RUNNING	
		• Both RHR pumps – RUNNING	
	HCO/ CO	(Step 2) Verify CNMT RECIRC Fans Running:	
		• All fans – RUNNING	
		• Charcoal filter dampers green status lights – EXTINGUISHED	
	HCO/ CO	(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 (0.5x106 lb/hr) from either S/G	**NOTE:** Tavg will be LOW with Hi Steam Flow from both S/Gs.
		OR	

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Event Description: **MSLB Downstream of MSIVs with MSIVs Stuck OPEN / RPS fails to Trip Rx in AUTO/Manual Pushbutton / Steam Break Degrades Creating PTS Concern / Loss of Offsite Power**

Time	Pos.	Expected Actions/Behavior	Comments
		• High-High steam flow (4.4x106 lb/hr) from either S/G	
		• Verify MSIV closed on the affected S/G(s)	**NOTE:** The HCO/CO will attempt to close the MSIVs however, they will NOT Close.
	HCO/ CO	(Step 3.d RNO) Manually close valves.	
	HCO/ CO	(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/ CO	(Step 5) Verify At Least Two SW Pumps - RUNNING	
	HCO/ CO	(Step 6) Verify CI and CVI:	
		• CI and CVI annunciators - LIT	
		• Annunciator A-26, CNMT ISOLATION	
		• Annunciator A-25, CNMT VENTILATION ISOLATION	
		• Verify CI and CVI valve status lights – BRIGHT	
		• CNMT RECIRC fan coolers SW outlet valve status lights - BRIGHT	
		• FCV-4561	
		• FCV-4562	

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Event Description: **MSLB Downstream of MSIVs with MSIVs Stuck OPEN / RPS fails to Trip Rx in AUTO/Manual Pushbutton / Steam Break Degrades Creating PTS Concern / Loss of Offsite Power**

Time	Pos.	Expected Actions/Behavior	Comments
		• Letdown orifice valves - CLOSED	
		• AOV-200A	
		• AOV-200B	
		• AOV-202	
	HCO/ CO	(Step 7) Check CCW System Status:	
		• Verify CCW pump – AT LEAST ONE RUNNING	
	HCO/ CO	(Step 8) Verify SI and RHR Pump Flow:	
		• SI flow indicators – CHECK FOR FLOW	
		• RHR flow indicator – CHECK FOR FLOW	
		(Step 7b RNO) IF RCS pressure less than 150 psig…….	**NOTE:** RCS Pressure is > 150 psig.
	HCO/ CO	(Step 9) Verify SI Pump and RHR Pump Emergency Alignment:	
		• 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-871A	
		• MOV-871B	

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Event Description: **MSLB Downstream of MSIVs with MSIVs Stuck OPEN / RPS fails to Trip Rx in AUTO/Manual Pushbutton / Steam Break Degrades Creating PTS Concern / Loss of Offsite Power**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO/ CO	(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	
	HCO/ CO	(Step 11) Verify CI and CVI During a Fire Event	
		A confirmed fire has occurred in the control complex or cable tunnel (fire systems S05, S06, S08, Z05, Z18, or Z19).	
		(Step 11 RNO) Go to END	
E-0, REACTOR TRIP OR SAFETY INJECTION			
			Examiner following operator NOT performing ATT-27.0 continue **HERE**.
	HCO/ CO	(Step 7) Verify Both MDAFW Pumps Running	
	HCO/ CO	(Step 8) Verify AFW Valve Alignment:	
		• AFW flow – INDICATED TO BOTH S/G(s)	
		• AFW flow from each MDAFW pump – LESS THAN 230 GPM	
	HCO/ CO	(*Step 9) Monitor Heat Sink:	

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Event Description: **MSLB Downstream of MSIVs with MSIVs Stuck OPEN / RPS fails to Trip Rx in AUTO/Manual Pushbutton / Steam Break Degrades Creating PTS Concern / Loss of Offsite Power**

Time	Pos.	Expected Actions/Behavior	Comments
		• Check S/G narrow range level – GREATER THAN 7% [25% ADVERSE CNMT] in any S/G	
	CO	(Step 9.a RNO) Perform the following:	
		Verify total AFW flow - GREATER THAN 200 GPM	**NOTE:** AFW flow is expected to be 200 gpm.
		IF total AFW is less than 200 gpm, THEN....	
	CRS	Go to Step 10.	
	CO	(Step 10) Check If TDAFW Pump Can Be Stopped:	
		• Both MDAFW pumps – RUNNING	**NOTE:** Both of the AFW Pumps are running.
		• PULL STOP TDAFW pump steam supply valves	
		• MOV-3504A	
		• MOV-3505A	
	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, RCP 1B CCW RETURN HI TEMP OR LOW FLOW - EXTINGUISHED	
	HCO	(*Step 12) Monitor RCS Tavg – STABLE AT OR TRENDING TO 547°F	**NOTE:** Tavg is ≈400°F and lowering.
	HCO	(Step 12 RNO) If temperature less than 547°F and lowering, THEN perform the following:	
		• Stop dumping steam.	

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Event Description: **MSLB Downstream of MSIVs with MSIVs Stuck OPEN / RPS fails to Trip Rx in AUTO/Manual Pushbutton / Steam Break Degrades Creating PTS Concern / Loss of Offsite Power**

Time	Pos.	Expected Actions/Behavior	Comments
		• Ensure reheater steam supply valves are closed.	
		• IF cooldown continues, THEN control total feed flow between 200 gpm to 230 gpm until narrow range level greater than 7% [25% adverse CNMT] in at least one S/G.	
		• 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:** The MSIVs have failed OPEN, and cannot be closed.
	HCO	(Step 13) Check PRZR PORVs and Spray Valves:	
		• PORVs – CLOSED	
		• Auxiliary Spray Valve (AOV-296) – CLOSED	
		• Check PRZR pressure – LESS THAN 2260 PSIG	
		• Normal PRZR spray valves - CLOSED	
		• PCV-431A	
		• PCV-431B	
	HCO	(Step 14) Monitor RCP Trip Criteria:	
		• RCP status – ANY RCP RUNNING	**NOTE:** The RCPs are both running.
		• SI pumps - AT LEAST TWO RUNNING	
		• RCS pressure minus maximum S/G pressure - LESS THAN 210 psi [240 psi adverse CNMT]	**NOTE:** The RCP trip criteria is NOT met.
	CRS	(Step 14c RNO) Go to Step 15.	

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Event Description: **MSLB Downstream of MSIVs with MSIVs Stuck OPEN / RPS fails to Trip Rx in AUTO/Manual Pushbutton / Steam Break Degrades Creating PTS Concern / Loss of Offsite Power**

Time	Pos.	Expected Actions/Behavior	Comments
	CO	(Step 15) 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	**NOTE:** The A SG is depressurizing in an uncontrolled manner (≈200 psig and lowering).
	CRS	(Step 15 RNO) IF any S/G pressure lowering in an uncontrolled manner OR completely depressurized, THEN go to E-2, FAULTED STEAM GENERATOR ISOLATION, Step 1.	**NOTE:** While Steam pressure in both SGs is greater than 110 psig, both SG pressures are lowering.
			NOTE: The CRS will go to E-2.
			NOTE: The CRS will likely conduct an Alignment Brief.
E-2, FAULTED STEAM GENERATOR ISOLATION			
	HCO/ CO	Foldout Page	**NOTE:** The crew will monitor these conditions throughout the performance of E-2.
		LOSS OF SW CRITERIA	
	CO	(Step 1) Check MSIV of Faulted S/G(s) - CLOSED	**NOTE:** BOTH MSIVs are OPEN.
	CO	(Step 1 RNO) Manually close valve.	
	CRS	IF valve will NOT close from MCB, THEN dispatch AO with locked valve key to locally closed faulted S/G(s) MSIV as follows:	**NOTE:** The CRS will dispatch an AO to address the status of the MSIVs. If so, **SIM DRIVER** acknowledge as AO, after 5 minutes, report that steam in the local spaces is preventing access.

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Event Description: **MSLB Downstream of MSIVs with MSIVs Stuck OPEN / RPS fails to Trip Rx in AUTO/Manual Pushbutton / Steam Break Degrades Creating PTS Concern / Loss of Offsite Power**

Time	Pos.	Expected Actions/Behavior	Comments
		• S/G A	
		• close IA to MSIV, V-5408A	
		• open vent valves V-5471 AND V-5473	
		• S/G B	
		• close IA to MSIV, V-5409B	
		• open vent valves V-5472 AND V-5474	
	CO	(Step 2) Check If Any S/G Secondary Side Is Intact:	
		• Check pressure in S/G A- STABLE OR RISING	**NOTE:** The A SG is depressurized.
		OR	
		• Check pressure in S/G B – STABLE OR RISING	
	CO	(Step 2 RNO) IF both S/G pressures lowering in an uncontrolled manner, THEN go to ECA-2.1, UNCONTROLLED DEPRESSURIZATION OF BOTH STEAM GENERATORS, Step 1.	
			NOTE: The CRS will likely conduct an Alignment Brief.
ECA-2.1, UNCONTROLLED DEPRESSURIZATION OF BOTH STEAM GENERATORS			
	HCO/ CO	Foldout Page	**NOTE:** The crew will monitor these conditions throughout the performance of ECA-2.1.
		LOSS OF SW CRITERIA	
		SI REINITIATION CRITERIA	
		E-2 TRANSITION CRITERIA	
		COLD LEG RECIRCULATION SWITCHOVER CRITERION	

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Event Description: **MSLB Downstream of MSIVs with MSIVs Stuck OPEN / RPS fails to Trip Rx in AUTO/Manual Pushbutton / Steam Break Degrades Creating PTS Concern / Loss of Offsite Power**

Time	Pos.	Expected Actions/Behavior	Comments
		AFW SUPPLY SWITCHOVER CRITERION	
		E-3 TRANSITION CRITERIA	
	CO	(Step 1) Check Secondary Pressure Boundary:	
		a. Verify all of the following:	
		• MSIVs - CLOSED	**NOTE:** Both MSIVs are failed OPEN.
		• MFW flow control valves - CLOSED	
		• MFW regulating valves	
		• MFW bypass valves	
		• MFW pump discharge valves - CLOSED	**NOTE:** The CO will re-energize MCC A and B to re-power the MFW Pump Discharge Valves.
		• S/G blowdown and sample valves - CLOSED	
		• TDAFW pump steam supply valves – PULL STOP	
		• TDAFW pump flow control valves - CLOSED	
		• S/G ARVs - CLOSED	
	CRS	(Step 1 RNO) Manually close valves one loop at time. If valves can NOT be closed. THEN dispatch AO to locally isolate flowpaths, one at a time	**NOTE:** The CRS will dispatch an AO to address the status of the MSIVs. If so, **SIM DRIVER** acknowledge as AO, after 5 minutes, report that steam in the local spaces is preventing access.

Op Test No.: N2014-301 Scenario # 2 Event # 5, 6, 7 & 8 Page 43 of 49

Event Description: **MSLB Downstream of MSIVs with MSIVs Stuck OPEN / RPS fails to Trip Rx in AUTO/Manual Pushbutton / Steam Break Degrades Creating PTS Concern / Loss of Offsite Power**

Time	Pos.	Expected Actions/Behavior	Comments
	CRS	(Step 1.b) Dispatch AO to locally isolate S/Gs (Refer to ATT-10.0, ATTACHMENT FAULTED S/G)	**NOTE:** The CRS will dispatch an AO. If so, **SIM DRIVER** acknowledge as AO, after 5 minutes, report that steam in the local spaces is preventing access.
	CO	(Step 2) Control Feed Flow to Minimize RCS Cooldown:	
		• Check cooldown rate in RCS cold legs – LESS THAN 100°F/HR	**NOTE:** The cooldown rate is likely to be higher than 100°F/HR.
	CO	(Step 2a RNO) Lower feed flow to 50 gpm to each S/G and go to Step 2c.	**NOTE:** The CO will lower the AFW flow rate to each SG to 50 gpm in an effort to control the cooldown rate.

CRITICAL TASK:

2. **Control the AFW flowrate to 50 gpm per SG in order to minimize the RCS Cooldown rate (EXAMINER NOTE: The operator may have difficulty adjusting the flowrate to 50 gpm without the control valve going completely CLOSED)**

Safety Significance: Failure to control the AFW flow rate to the SGs when able to do so causes a challenge to the subcriticality and RCS Integrity CSFs beyond that irreparably introduced by the postulated conditions. Additionally, it constitutes an "incorrect performance that may necessitate the crew taking action which complicates the event mitigation strategy (Transition to FR-S.1 on inability to maintain a negative SUR).

SIM DRIVER Instructions: Operate Trigger #6 (STM03 (5E+6), EDS01A, and EDS01B)

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Event Description: **MSLB Downstream of MSIVs with MSIVs Stuck OPEN / RPS fails to Trip Rx in AUTO/Manual Pushbutton / Steam Break Degrades Creating PTS Concern / Loss of Offsite Power**

Time	Pos.	Expected Actions/Behavior	Comments
Indications Available: • Numerous MCB Annunciators. • Control Room lights go dark. • Both Emergency Diesels start and repower their respective ESF Busses.			
			NOTE: Since SI is NOT reset, the AFW valves will OPEN fully on Sequencer actuation requiring the operator to re-throttle AFW flow to 50 gpm per SG.
CRITICAL TASK: **2. Control the AFW flowrate to 50 gpm per SG in order to minimize the RCS Cooldown rate (EXAMINER NOTE: The operator may have difficulty adjusting the flowrate to 50 gpm without the control valve going completely CLOSED)** Safety Significance: Failure to control the AFW flow rate to the SGs when able to do so causes a challenge to the subcriticality and RCS Integrity CSFs beyond that irreparably introduced by the postulated conditions. Additionally, it constitutes an "incorrect performance that may necessitate the crew taking action which complicates the event mitigation strategy (Transition to FR-S.1 on inability to maintain a negative SUR).			
			Examiner NOTE: The crew will continue on in ECA-2.1 until an Orange Path develops on RCS Integrity, at which time the crew will transition to FR-P.1.
			NOTE: A Red path on Heat Sink will exist because the operator has throttled AFW flow to 50 gpm per SG. However, FR-H.1 will NOT be addressed because the Red Path exists due to operator action.
FR-P.1, RESPONSE TO IMMINENT PRESSURIZED THERMAL SHOCK CONDITION			

Op Test No.: N2014-301 Scenario # 2 Event # 5, 6, 7 & 8 Page 45 of 49

Event Description: **MSLB Downstream of MSIVs with MSIVs Stuck OPEN / RPS fails to Trip Rx in AUTO/Manual Pushbutton / Steam Break Degrades Creating PTS Concern / Loss of Offsite Power**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO/ CO	Foldout Page	**NOTE:** The crew will monitor these conditions throughout the performance of FR-P.1.
		LOSS OF SW CRITERIA	
	HCO	(Step 1) Check RCS Pressure – GREATER THAN 300 PSIG [350 PSIG adverse CNMT]	**NOTE:** RCS pressure is > 300 psig.
	HCO	(step 2) Check if RCS Cold Leg temperatures –STABLE OR RISING	**NOTE:** Cold Leg temperatures will be lowering.
	CO	(Sep 2 RNO) Try to stop RCS cooldown:	
		Ensure S/G ARV's closed	
		Close both S/G MSIVs.	**NOTE:** Both MSIVs have failed OPEN. **NOTE:** The CRS may dispatch an AO. If so, **SIM DRIVER** acknowledge as AO, after 5 minutes, report that steam in the local spaces is preventing access.
	CO	Ensure MFW flow control valves	
		• MFW regulating valves	
		• MFW bypass valves	
		Ensure MFW pumps are tripped	
		Ensure reheater steam supply valves are closed.	
		IF S/G pressure less than condensate pressure, **THEN** stop all condensate pumps.	**NOTE:** The CO may stop the Condensate Pumps.
		IF RHR system in service, THEN ….	**NOTE:** RHR is NOT in service.

Op Test No.: N2014-301 Scenario # 2 Event # 5, 6, 7 & 8 Page 46 of 49

Event Description: **MSLB Downstream of MSIVs with MSIVs Stuck OPEN / RPS fails to Trip Rx in AUTO/Manual Pushbutton / Steam Break Degrades Creating PTS Concern / Loss of Offsite Power**

Time	Pos.	Expected Actions/Behavior	Comments
	CO	Control total feed flow to non-faulted S/G(s) greater than 200 gpm until narrow range level greater than 7% [25% adverse CNMT] in at least one non-faulted S/G. WHEN S/G level greater than 7% [25% adverse CNMT] in one non-faulted S/G, THEN limit feed flow to stop RCS cooldown.	**NOTE:** Both SGs are faulted.
	CO	(Step 3) Check if any S/G Secondary is intact:	
		o Pressure in both S/G's-STABLE or Rising	
		o Pressure in both S/G's Greater than 110 PSIG	
	CO	(Step 3 RNO) Minimize cooldown from faulted S/G's.	
		Close faulted S/G's TDAFW pump steam supply valves • S/G A, MOV-3505A • S/G B, MOV-3504A	**NOTE:** This action has already been taken.
		IF BOTH S/Gs faulted, THEN control AFW feed flow to 50 GPM to each S/G.	**NOTE:** Both SGs are faulted.
		If ANY S/G NOT FAULTED, THEN	**NOTE:** Both SGs are faulted.
	HCO	(Step 4) Check PRZR PORV Block Valves:	
		Power to PORV block valves-AVAILABLE	
		Block valves-AT LEAST ONE OPEN.	
	HCO	(Step 5) Check PRZR PORV Status:	
		Check Reactor Vessel Overpressure Protection is on service.	**NOTE:** LTOPs is NOT in service.
	CRS	(Step 5 RNO) Go to step 5d.	

Op Test No.: N2014-301 Scenario # 2 Event # 5, 6, 7 & 8 Page 47 of 49

Event Description: **MSLB Downstream of MSIVs with MSIVs Stuck OPEN / RPS fails to Trip Rx in AUTO/Manual Pushbutton / Steam Break Degrades Creating PTS Concern / Loss of Offsite Power**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 5.d) PRZR pressure –LESS THAN 2335 psig	
		Verify PRZR PORVs -CLOSED	
	HCO	(Step 6) Check if SI Pumps-ANY RUNNING	**NOTE:** All three SI Pumps are running.
	HCO	(Step 7) Check if SI Can be terminated:	
		• RCS subcooling based on core exit T/Cs-GREATER THAN 50˚F USING FIG-1.0, FIGURE MIN SUBCOOLING	**NOTE:** SI Termination Criteria will be met.
		• Check RVLIS Indication • Fluid Fraction (any RCP running)-GREATER THAN 82%	**NOTE:** RVLIS is at 100%.
	HCO	(Step 8) Reset SI	
	HCO	(Step 9) STOP SI AND RHR Pumps and Place in AUTO	

Terminate the Exam at the discretion of the Lead Examiner

SRO Examiner Perform Admin JPM A4b on CRS

TURNOVER SHEET for NRC Exam Scenario #2

Core Age: EOL 100% Power, Equilibrium Xe Outside Air Temp = 82°F Water Temp = 70°F	Procedure in Use:	ACTIONS/NOTES: • The plant is at 100% power (EOL), and has been at full power for 145 days. • The area has experienced thunderstorms over the last 6 hours, and this is expected to continue for the next 6 hours. • The B CNMT Spray Pump has been declared INOPERABLE due to excessive inboard vertical vibration during STP-O-3-COMP-B surveillance test yesterday. Engineering is evaluating the data. A-52.4 submitted for ITS 3.6.6, 72 hour Action. • Letdown flow is on the 60 gpm Orifice. • The following Alarms are in: • J-25, SAFEGUARDS EQUIPMENT LOCKED OFF (B Cont Spray Pump OOS) • Protected equipment IAW OPG Protected Equipment.
Boron: 297 ppm BAST: 17,400 ppm RCS Activity: Normal	RCS LEAKAGE: (gpm) Total: .021 Identified: .003 Unidentified: .018	
Equipment Problems/OOS: See NOTES	*Planned Activities for Shift:* • None	Electrical System Operator Declarations None in effect

	BAST (gal)	RWST (gal)	1st hour dilution stabilization (gal RMW)	2nd hour dilution stabilization (gal RMW)
10% at 1% per minute	70	446	358	181
10% at 10% per hour	68	434	360	185
50% at 1% per minute	315	2039	2182	1264
50% at 10% per hour	273	1760	1038	591

TURNOVER SHEET for NRC Exam Scenario #2

A-52.4					
EQUIPMENT	**DATE/TIME OOS**	**LCO**	**TITLE**	**EXP DATE**	**ECD**
'B' Cont Spray Pump	Yesterday, 24hrs ago	3.6.6.A	CS system	72 hours	30 hours from now AM
A-52.12					
EQUIPMENT	**DATE/TIME OOS**	**TRM /ODCM**	**TITLE**	**EXP DATE**	**ECD**

PROGRAM: Ginna Operations Training

MODULE: 2014 Initial License Operator Training Class

TOPIC: NRC Simulator Exam

Scenario N2014-301-3

REFERENCES:

1. Technical Specification 3.7.5, Auxiliary Feedwater (AFW) System, Amendment 88
2. Technical Specification 3.1.7, Rod Position Indication, Amendment 114
3. O-6.9.2, Establishing and/or Transferring Offsite Power to Bus 12A/12B, Rev 02201
4. AR-E-14, LOSS B INSTR. BUS, Rev 12
5. ER-INST.3, Instrument Bus Power Restoration, Rev 01200
6. S-3.2E, Placing In or Removing From Service Normal Letdown/Excess Letdown, Rev 02700
7. AR-K-32, CV AIR DRYER LOW PRESS SG B/D TANK HIGH LEVEL, Rev 01000
8. Technical Specification 3.8.7, AC Instrument Bus Sources - Modes 1-4, Amendment 80
9. Technical Specification 3.8.9, Distribution Systems – Modes 1, 2, 3 and 4, Amendment 80
10. AR-F-2, PRESSURIZER HI PRESS 2310 PSI, Rev 11
11. AR-F-10, PRESSURIZER LO PRESS 2205 PSI, Rev 10
12. AP-PRZR.1, Abnormal Pressurizer Pressure, Rev 01700
13. ER-INST.1, Reactor Protection Bistable Defeat After Instrumentation Loop Failure, Rev 03605
14. Technical Specification 3.4.1, RCS Pressure, Temperature, and Flow Departure From Nucleate Boiling (DNB) Limits, Amendment 80
15. Technical Specification 3.3.1, Reactor Trip System (RTS) Instrumentation, Amendment 112
16. Technical Requirement 3.4.3, Anticipated Transient Without Scram (ATWS) Mitigation, Rev Rev 31
17. AR-I-27, ROTOR ECCENTRICITY OR VIBRATION, Rev 01301
18. AP-TURB.3, Turbine Vibration, Rev 01700
19. AP-TURB.5, Rapid Load Reduction, Rev 01600
20. E-0, Reactor Trip and Safety Injection, Rev 04602
21. ATT-27.0, Attachment Automatic Action Verification, Rev 00300
22. E-1, Loss of Reactor or Secondary Coolant, Rev 04100
23. F-0.3, Heat Sink, Rev 4
24. FR-H.1, Response to Loss of Secondary Heat Sink, Rev 04002
25. ATT-5.1, Attachment SAFW, Rev 01002
26. ATT-22.0, Attachment Restoring Feed Flow, Rev 00600
27. E-2, Faulted Steam Generator Isolation, Rev 01301

Validation Time: 116 Minutes

Author: David Lazarony, Essential Training & Consulting, LLC

Facility Review:

Rev. 110414

Facility:	**Ginna**	Scenario No.: **3**	Op Test No.: **N2014-301**
Examiners:	_____	Operators:	_____ (SRO)
	_____		_____ (RO)
	_____		_____ (BOP)

Initial Conditions:	The plant is at 48% power (MOL). The plant power was reduced several days ago due to a malfunction on the A MFW Pump. Corrective Maintenance has been completed, and the pump is running for retest. RG&E Energy Control Center has requested that the electric plant be aligned to a 0/100 configuration on circuit 7T to allow the RG&E personnel to perform an insulator inspection on the 767 Line. The 767 line will remain OPERABLE throughout the inspection.
Turnover:	The following equipment is Out-Of-Service: The B AFW Pump is OOS for Bearing Replacement. A-52.4 submitted for ITS 3.7.5, 7 day Action. MRPI for Rod G3 indicates on the bottom, however, this is a confirmed instrumentation problem (I&C is working).

Event No.	Malf. No.	Event Type*	Event Description
1	NA	N-BOP N-SRO	Shift Electric Plant
2	EDS07B	C-RO C-BOP C(TS)-SRO	Loss of B Instrument Bus
3	PZR02D	I-RO I-BOP I(TS)-SRO	Pressurizer Pressure (PT-449) fails HIGH
4	TUR05E	R-RO N-BOP N-SRO	Main Turbine High Vibration/Downpower
5	CND03A	C-BOP C-SRO	Hotwell Level Transmitter fails HIGH
6	FDW09A	M-RO M-BOP M-SRO	Feed Line Rupture Inside Containment/Turbine fails to Auto Trip
7	SIS02A SIS02B	C-RO C-SRO	Safety Injection fails to actuate Automatically
8	RPS07K REM FDW32 OVR FDW42A FDW15B	C-BOP C-SRO	A AFW Pump to Auto Start/Trips after Manual Start/TDAFW Pump trips on Overspeed/ Standby AFW fails to function

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Ginna 2014 NRC Scenario #3

The plant is at 48% power (MOL). The plant power was reduced several days ago due to a malfunction on the A MFW Pump. Corrective Maintenance has been completed, and the pump is running for retest. RG&E Energy Control Center has requested that the electric plant be aligned to a 0/100 configuration on circuit 7T to allow the RG&E personnel to perform an insulator inspection on the 767 Line. The 767 line will remain OPERABLE throughout the inspection.

The following equipment is Out-Of-Service: The B AFW Pump is OOS for Bearing Replacement. A-52.4 submitted for ITS 3.7.5, 7 day Action. MRPI for Rod G3 indicates on the bottom, however, this is a confirmed instrumentation problem (I&C is working).

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

Shortly afterwards, a loss of the B Instrument Bus will occur. The operator will respond in accordance with AR-E-14, LOSS B INSTR. BUS. Power will be restored to the bus per guidance in ER-INST.3, Instrument Bus Power Restoration, which will include the isolation and re-establishment of Normal Letdown in accordance with S-3.2E, Placing In or Removing From Service Normal Letdown/Excess Letdown. The operator will address AR-K-32, CV AIR DRYER LOW PRESS SG B/D TANK HIGH LEVEL, while restoring from the transient. The operator will address Technical Specification 3.8.7, AC Instrument Bus Sources Modes 1-4, and 3.8.9, Distribution Systems – Modes 1, 2, 3 and 4.

After this, the controlling Pressurizer Pressure Transmitter will fail HIGH, causing the Spray Valves to open. The operator will respond in accordance with AR-F-2, PRESSURIZER HIGH PRESS 2310 PSI and AR-F-10, PRESSURIZER LO PRESS 2205 PSI, and enter AP-PZR.1, Abnormal PZR Pressure. AP-PZR.1 will refer the operator to ER-INST.1, Reactor Protection Bistable Defeat After Instrumentation Loop Failure, for the defeat of PT-449. The operator will address Technical Specification 3.4.1, RCS Pressure, Temperature, and Flow Departure From Nucleate Boiling (DNB) Limits; 3.3.1, Reactor Trip System (RTS) Instrumentation; and TRM-3.4.3, Anticipated Transient Without Scram (ATWS) Mitigation.

Following this, a turbine high vibration condition on Bearing #5 will develop within about 3 minutes. The operator will respond in accordance with AR-I-27, ROTOR ECCENTRICITY OR VIBRATION; and enter AP-TURB.3, Turbine Vibration; and then AP-TURB.5, Rapid Downpower. The operator will need to lower the Turbine Load to stabilize the vibrations. During the load reduction Hotwell Level Transmitter will fail HIGH. The operator will need to manually control the Hotwell Level Controller.

Subsequently, a feed line rupture inside Containment will occur. The Reactor will trip however, the Turbine will fail to trip automatically and Safety Injection will fail to actuate automatically. The operator will enter E-0, Reactor Trip or Safety Injection. On the reactor trip the A AFW Pump will fail to Autostart, then trip after it is manually started; and the TDAFW Pump will trip on overspeed. The operator will transition from E-0 to FR-H.1, Response to a Loss of Secondary Heat Sink.

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

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

Critical Tasks:

1. **Manually actuate Safety Injection before transition out of E-0 into ES-0.1**

Safety Significance: Failure to actuate Safety Injection when it is required to be actuated, and can be actuated, violates the assumptions of the Safety Analysis and constitutes incorrect performance that could lead to misdiagnosis of the event, implementation of an incorrect mitigation strategy and ultimately degradation of the RCS and/or fuel cladding fission product barriers.

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

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

SIMULATOR OPERATOR INSTRUCTIONS

	Bench Mark	ACTIVITY	DESCRIPTION
☐		**Reset to Temp** I/C 171. **(Built on IC-20)**	**48% power MOL** **To take B MDAFW pump OOS:** ▪ **Pull stop the B MDAFW pump** ▪ **Insert OVR-DO-FDW-06A, OFF (4008 Green light OFF)** ▪ **Close MOV-4008** ▪ **Close MOV-4000A and B** ▪ **OVR-DO-FDW21A=OFF (MOV-4000A Green Lamp)** ▪ **OVR-DO-FDW22A=OFF (MOV-4000B Green Lamp)** **Insert MALF ROD 11-G3 (MRPI G3 on Bottom)** **Insert SIS02A (SIS Train A fails in AUTO)** **Insert SIS02B (SIS Train B fails in AUTO)** **Insert TUR02 (Turbine Fails to AUTO Trip)** **Insert MALF RPS07K (Autostart failure of A MDAFW pump)** **Insert OVR-DI-FDW42D = FALSE (MOV-9629A CLOSED, unable to OPEN)** **Insert MALF FDW15B (SAFW pump D failure)** **Set Trigger 30 = True when a reactor trip signal is received from either Train** **Set REM FDW32, Severity = 0, T-30 (Trip valve 3652 trips to simulate overspeed condition on TDAFW pump)** **Set Trigger 29 = x06i236b = = 1 to activate when A MDAFW pump manually started** **Insert MALF FDW11A, 30 second delayed, T-29 (A MDAFW pump trip on manual start switch)** **MALF EDS07B, on T-1** **MALF PZR02D, 2500, 0 Ramp, on T-2** **MALF TUR05E, 8 Mils, 180 second Ramp on T-3** **MALF CND03A, 48 inches, on T-4** **MALF FDW09A, 2E+7, 120 second Ramp, on T-5**
☐	Prior to Crew Briefing	**RUN**	• **Hang Protective Tags per OPG-Protective Equipment.** • **Hang Caution Tags on MOV-4000A and B** • **Place Black Dot on all required MCB Annunciators**

	Bench Mark	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**	Shift Electric Plant
☐	At direction of examiner	**Event 2** **Trigger #1** **EDS07B**	Loss of B Instrument Bus
☐	At direction of examiner	**Event 3** **Trigger#2** **PZR02D**	Pressurizer Pressure (PT-449) fails HIGH **2500, No Ramp**
☐	At direction of examiner	**Event 4** **Trigger#3** **TUR05E**	Main Turbine High Vibration/Downpower **NOTE:** • **Initial Value is 8 mils over 180 second ramp to cause Annunciator I-27.** • **When I-27 is received, THEN modify TUR05E to 9.6 mils over 480 seconds.** • **WHEN crew stops Load Reduction, THEN modify TUR05E to the current value.**
☐	When Turbine Placed in GO	**Event 5** **Trigger #4** **CND03A**	Hotwell Level Transmitter fails HIGH **48 inches**
☐	At direction of examiner	**Event 6** **Trigger #5** **FDW09A**	Feed Line Rupture Inside Containment/Turbine fails to Auto Trip **2E+7, 180 second Ramp** **TUR02 entered at T = 0**

	Bench Mark	ACTIVITY	DESCRIPTION
☐	Continued from Event 6	**Event 7** **T = 0** **SIS02A** **SIS02B**	Safety Injection fails to actuate Automatically **NOTE: These Malfunctions inserted in the IC at T = 0.**
☐	Continued from Event 6	**Event 8** **RPS07K** **REM FDW32 = 0** **OVR-FDW42A** **FDW15B**	A AFW Pump to Auto Start/Trips after Manual Start/TDAFW Pump trips on Overspeed/ Standby AFW fails to function **NOTE: These Malfunctions inserted in the IC at T = 0.** **T-29 (When pump manually started) (30 seconds delayed)** **T-30 (Conditional on Rx Trip)** **FALSE (MOV-9629A CLOSED, unable to OPEN)** **(SAFW pump D failure)**
Terminate the scenario upon direction of Lead Examiner			

Op Test No.:	N2014-301	Scenario #	3	Event #	1	Page	8	of 58
Event Description:	**Shift Electric Plant**							

Shortly after taking the watch, the operator will shift the Electric Line-up from 50/50 to 0/100 in accordance with O-6.9.2, Establishing and/or Transferring Offsite Power to Bus 12A/12B.	
SIM DRIVER 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			
			NOTE: The CO will contact the RG&E Energy Control Center, and inform them that the Ginna Electric Plant will be realigned. **SIM DRIVER:** Acknowledge as RG&E ECC.
		(Step 6.4.2) ESTABLISH Offsite Power to 12B Bus using Circuit 7T as follows:	
	CO	(1.) MARK BUS 12B ALT FEED FROM 767, 52/12BX, breaker initial position:	**NOTE:** 52/12BX is CLOSED.
		• OPEN	
		• CLOSED	
	CO	(2.) VERIFY CLOSED CIRCUIT BKR 7T1352 34 KV BUS.	
	CO	(3.) TURN ON BUS 12B ALT FEED FROM 7T, 52/12AX SYNCHROSCOPE	
	CO	(4.) CLOSE BUS 12B ALT FEED FROM 7T, 52/12AX.	**NOTE:** J-6/L-28 will be expected alarms. **NOTE:** When the CO closes the 52/12AX the 52/12BX will auto OPEN.
	CO	(5.) IF BUS 12B ALT FEED FROM 767, 52/12BX, was initially OPEN, THEN	**NOTE:** 52/12BX was CLOSED.

Op Test No.: N2014-301 Scenario # 3 Event # 1 Page 9 of 58

Event Description: **Shift Electric Plant**

Time	Pos.	Expected Actions/Behavior	Comments
	CO	(6.) IF BUS 12B NORMAL FEED FROM 767, 52/12BX, was initially CLOSED, THEN PERFORM the following: OTHERWISE, MARK this Step N/A.	
		• VERIFY breaker OPENED (Green light ILLUMINATED, White light ILLUMINATED).	
		• PLACE BUS 12B NORMAL FEED FROM 767, 52/12BX, control switch to TRIP AND THEN to AUTO.	
		• VERIFY breaker is OPEN AND RESET (Green light ILLUMINATED, White light EXTINGUISHED).	
	CO	(7.) IF BUS 12B NORMAL FEED FROM 767, 52/12BX, is NOT OPEN,....	**NOTE:** 52/12BX is OPEN.
	CO	(8.) VERIFY BUS 12B VOLTMETER 4160 V indicates approximately 4000 VOLTS on all 3 phases.	
	CO	(9.) VERIFY Bus 16 and Bus 17 voltmeter indicates greater than 440 volts on all 3 phases.	
	CO	(10.) TURN OFF BUS 12B ALT FEED FROM 7T, 52/12AX SYNCHROSCOPE AND REMOVE the handle.	
	CRS	(Step 6.7) IF required, THEN RESET 12A and 12B Alarm Panels in Relay Room Annex.	**SIM DRIVER:** Use REM EDS50 to clear 12B transformer alarm L-28
			NOTE: The CRS will likely conduct a Plant Status Brief.
At the discretion of the Lead Examiner move to Event #2.			

Op Test No.:	N2014-301	Scenario #	3	Event #	2	Page	10	of 58
Event Description:	**Loss of B Instrument Bus**							

Shortly afterwards, a loss of the B Instrument Bus will occur. The operator will respond in accordance with AR-E-14, LOSS B INSTR. BUS. Power will be restored to the bus per guidance in ER-INST.3, Instrument Bus Power Restoration, which will include the isolation and re-establishment of Normal Letdown in accordance with S-3.2E, Placing In or Removing From Service Normal Letdown/Excess Letdown. The operator will address AR-K-32, CV AIR DRYER LOW PRESS SG B/D TANK HIGH LEVEL, while restoring from the transient. The operator will address Technical Specification 3.8.7, AC Instrument Bus Sources Modes 1-4, and 3.8.9, Distribution Systems – Modes 1, 2, 3 and 4.

SIM DRIVER Instructions: **Operate Trigger #1 (EDS07B)**

Indications Available:

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

Time	Pos.	Expected Actions/Behavior	Comments
		AR-E-14, LOSS B INSTR BUS	
	CRS	1. Restore power to Instrument Bus B (Refer to ER-INST.3, INSTRUMENT BUS POWER RESTORATION)	
	CRS	2. Evaluate plant conditions to determine if additional action is required by referring to the following: o ITS LCO 3.8.7 and 3.8.8	
	CRs	3. Notify the following: o SM o Electricians o Electrical Planner	**NOTE:** The CRS may notify the WCC. **SIM DRIVER:** as **WCCS**, acknowledge.
			NOTE: The CRS will go to ER-INST.3.

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Event Description:	**Loss of B Instrument Bus**						

Time	Pos.	Expected Actions/Behavior	Comments
ER-INST.3, INSTRUMENT BUS POWER RESTORATION			
	CO	(Step 6.1.1) IF Any instrument bus is deenergized THEN PERFORM the following:	
		Verify an alternate power supply is available by checking supply voltage as follows:	
		Maintenance- Supply voltage approximately 120 volts (EI/CVTAUX, above Instr Bus D)	
	HCO	(Step 6.1.2) Close letdown isolation valve, AOV-427.	**NOTE:** The HCO will isolate Normal Letdown.
			NOTE: VCT level indication is lost, and with L/D isolated, actual level is lowering, and CRS may direct AO to monitor VCT level locally (no ER-INST.3 procedure guidance) If so, **SIM DRIVER:** as **AO**, acknowledge, and **Use Insight from Scenario Setup, or Monitor VCT level on drawing VCT1 and report value to CRS (When requested or the remainder of the scenario).**
	HCO	(Step 6.1.3) Place charging pump controllers in MANUAL	**NOTE:** The HCO will place Charging Pump speed control in Manual OR may secure one of the two Charging Pumps altogether.
			NOTE: The HCO may place the Auto Makeup to the VCT in Manual to prevent overfilling the VCT.
	CO	(Step 6.1.4) Place hotwell level controller to manual, if desired.	

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Event Description: **Loss of B Instrument Bus**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 6.1.5) Place PRZR PRESS CONTROLLER 431K in MANUAL, if necessary.	
	HCO	(Step 6.1.6) Place rods in MANUAL.	**NOTE:** The HCO will place Rods in Manual.
	CRS	(Step 6.1.7) Transfer Instrument Bus to an available power supply. (Maintenance or Normal)	**NOTE:** The CRS will direct the bus to be energized from the Maintenance supply.
	CO	o IF on NORMAL FEED AND MAINTENANCE FEED desired, THEN TRANSFER to MAINTENANCE	**NOTE:** Instrument Bus B is now re-energized.
	CO	(Step 6.1.8) CHECK Instrument Bus supply voltage within ITS limits. (Refer to O-6.11, SURVEILLANCE REQUIREMENT/ROUTINE OPERATIONS CHECK SHEET)	**NOTE:** O-6.11 requires voltage between 113-123V
	CRS	(Step 6.1.9) Go to Step 6.4	
	HCO	(Step 6.4.1) VERIFY one Charging Pump in AUTO, IF desired.	
	HCO	(Step 6.4.2) VERIFY PRZR PRESS CONTROLLER 431K in AUTO.	
	HCO	(St5ep 6.4.3) RESTORE PRZR Heaters as required.	
	HCO	(step 6.4.4) IF letdown isolation valve, AOV-427 has been closed, THEN RESTORE Letdown as follows:	

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Event Description: **Loss of B Instrument Bus**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 6.4.4.1) COMPLETE removal of normal letdown from service per S-3.2E, PLACING IN OR REMOVING FROM SERVICE NORMAL LETDOWN/EXCESS LETDOWN	**NOTE:** Removed per Section 6.2 of S-3.2E
			NOTE: The CRS will hand this off to the HCO or the CO, and continue on in ER-INST.3.
S-3.2E, PLACING IN OR REMOVING FROM SERVICE NORMAL LETDOWN/EXCESS LETDOWN			
	HCO/ CO	(Step 6.2.1) PLACE Charging Pumps in MANUAL	
	HCO/ CO	(Step 6.2.2) ENSURE CLOSED Letdown Orifice isolation valves. AOV-200A AOV-200B AOV-202	
	HCO/ CO	(Step 6.2.3) CLOSE LTDN ISOLATION VLV RHR to NRHX, AOV-427.	
	HCO/ CO	(Step 6.2.4) REDUCE charging flow while throttling closed charging flow to Regenerative Heat Exchanger HCV-142 to maintain greater than 20" RCP labyrinth seal ΔP.	
	HCO/ CO	(Step 6.2.5) CLOSE LETDOWN ISOL VLV RHR TO NRHX AOV-371.	
	HCO/ CO	(Step 6.2.6) PLACE NRHX LTDN OUTLET TEMP (TI-130) TCV-130 in MANUAL/ CLOSED.	
			NOTE: The CRS will continue with ER-INST.3.

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Event Description: **Loss of B Instrument Bus**

Time	Pos.	Expected Actions/Behavior	Comments
ER-INST.3, INSTRUMENT BUS POWER RESTORATION			
	CRS	(Step 6.4.3.2) RESTORE normal letdown per S-3.2E, PLACING IN OR REMOVING FROM SERVICE NORMAL LETDOWN/EXCESS LETDOWN.	**NOTE:** Restored per Section 6.3 and 6.4 of S-3.2E
			NOTE: The CRS will hand this off to the HCO or the CO, and continue on in ER-INST.3.
S-3.2E, PLACING IN OR REMOVING FROM SERVICE NORMAL LETDOWN/EXCESS LETDOWN			
	HCO/ CO	(Step 6.3.1) Determine if a flush is required. If the letdown line has been isolated for less than one hour perform section 5.3.2 and N/A section 5.3.3 with permission of the Shift Manager or Control Room Foreman.	**NOTE:** Since letdown has been isolated ONLY a few minutes, a flush will NOT be required.
	HCO/ CO	(Step 6.4.1) Restore Letdown Without a Flush.	
	HCO/ CO	(Step 6.4.1.1) ENSURE letdown is secured PER Section 6.2 prior to restoring.	
	HCO/ CO	(Step 6.4.1.2) IF charging flowpath to Loop B COLD Leg is desired (preferred method), THEN PERFORM the following:	
		ENSURE CLOSED CHARGING VLV RHX TO LOOP B HOT, AOV-392A.	
		OPEN CHARGING VLV RHX TO LOOP B COLD LEG AOV-294.	
	HCO/ CO	(Step 6.4.1.3) IF Charging flowpath to Loop B HOT leg is desired,.....	**NOTE:** Charging alignment to the Hot Leg will NOT be desired.
	HCO/ CO	(Step 6.4.2) START a second Charging Pump at minimum speed.	

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Event Description: **Loss of B Instrument Bus**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO/ CO	(Step 6.4.3) SLOWLY OPEN charging flow to Regenerative Heat Exchanger HCV-142 to reduce labyrinth seal ΔP to - 40".	
	HCO/ CO	(Step 6.4.4) ADJUST Charging Pump speed while maintaining - 40" labyrinth seal ΔP UNTIL HCV-142 is fully OPEN.	
	HCO/ CO	(Step 6.4.5) ESTABLISH greater than or equal to 22 gpm charging line flow.	
	HCO/ CO	(Step 6.4.6) IF placing 40 GPM orifice in service THEN PERFORM the following	**NOTE:** A 40 gpm Orifice was previously in service.
		PLACE LOW PRESS LTDN PRESS PCV-135 in MANUAL at - 40% open.	
		PLACE NRHX LTDN OUTLET TEMP (**T**I-130) TCV-130 in MANUAL at -40% open.	
	HCO/ CO	(Step 6.4.7) IF placing 60 GPM orifice in service THEN	
	HCO/ CO	(Step 6.4.8) OPEN LETDOWN ISOL VLV RHR TO NRHX AOV-371.	
	HCO/ CO	(Step 6.4.9) PLACE LTDN LOOP B COLD LEG TO RHX AOV-427 to OPEN and THEN to AUTO.	
	HCO/ CO	(Step 6.4.10) OPEN desired Letdown orifice valve AOV-200A, AOV-200B, or AOV-202 AND MARK AOV's not opened N/A.	
		AOV-200A	
		AOV-200B	
		AOV-200	

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Event Description: **Loss of B Instrument Bus**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO/ CO	(Step 6.4.11) ADJUST LOW PRESS LTDN PRESS PCV-135 to achieve Letdown pressure of -250 psig on PI-135.	
	HCO/ CO	(Step 6.4.12) PLACE LOW PRESS LTDN PRESS, PCV-135 IN AUTO.	
	HCO/ CO	(Step 6.4.13) PLACE NRHX LTDN OUTLET TEMP (TI-130) TCV-130 in AUTO at the setpoint recorded in Step 5.4.	**Examiner NOTE:** At the discretion of the Lead Examiner move to **Event #3**.
	HCO/ CO	(Step 6.4.14) PLACE Pressurizer level control (Charging Pump) to AUTO.	
			NOTE: The CRS will continue with ER-INST.3, Step 6.4.5.
ER-INST.3, INSTRUMENT BUS POWER RESTORATION			
	CO	(Step 6.4.5) RESTORE EH control to AUTO/IMP IN, If desired.	
	HCO	(Step 6.4.6) RESTORE ROD CONTROL BANK SELECTOR Switch to AUTO, if desired.	**NOTE:** The HCO will place the Rods back in Auto.
	HCO	(Step 6.4.7) VERIFY CNMT ventilation isolation is reset.	
	HCO	(Step 6.4.8) VERIFY Hotwell level controller in AUTO, if desired.	
	CO	(Step 6.4.9) RESTORE desired SW pump alignment.	
	CO	(Step 6.4.10) ENSURE motor fire pump breaker closed.	

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Event Description: **Loss of B Instrument Bus**

Time	Pos.	Expected Actions/Behavior	Comments
	CO/AO	(Step 6.4.11) DISPATCH an AO to verify proper operation of Battery Chargers if necessary.	**NOTE:** The CRS may dispatch an AO. **If so, SIM DRIVER:** as **AO**, acknowledge.
	HCO/ CO	(Step 6.4.12) EVALUATE MCB Annunciator status (refer to AR procedures)	**NOTE:** Annunciator K-32 needs follow-up.
AR-K-32, SG BLOWDOWN TANK HIGH LEVEL			
	CO	1. Direct AO to remove and then restore Blowdown per T-14.F.1, SG Blowdown System Operation	**SIM DRIVER:** Insert REM SGN05, RESET,
ER-INST.3, INSTRUMENT BUS POWER RESTORATION			
	CRS	(Step 6.4.13) IF Instrument Bus D was affected, THEN …….	**NOTE:** Instrument Bus D was NOT affected.
	CRS	(Step 6.4.14) IF Instrument Bus A or C is being powered from associated emergency AC Bus, then ……	**NOTE:** Instrument Bus A or C is NOT being powered form the emergency AC Bus.
	CRS	(Step 6.4.15) RETURN to procedure or guidance in effect.	
			NOTE: The CRS will likely conduct a Plant Status Brief.
			NOTE: The CRS will address the Technical Specifications.

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Event Description: **Loss of B Instrument Bus**

Time	Pos.	Expected Actions/Behavior	Comments
TECHNICAL SPECIFICATION 3.8.7, AC INSTRUMENT BUS SOURCES – MODES 1, 2, 3 AND 4			
	CRS	LCO 3.8.7 The following AC instrument bus power sources shall be OPERABLE: a) Inverters for Instrument Buses A and C; and b) Class 1E constant voltage transformer (CVT) for Instrument Bus B.	
	CRS	APPLICABILITY: MODES 1, 2, 3, AND 4.	
		CONDITION / REQUIRED ACTION / COMPLETION TIME B. Class 1E CVT for AC Instrument Bus B inoperable / B.1 Power AC Instrument Bus B from its non-Class 1E CVT. / 2 hours AND B.2 Restore Class 1E CVT for AC Instrument Bus B to OPERABLE status. / 7 Days	**NOTE:** The CRS will take ACTIONS B.1 and B.2.
TECHNICAL SPECIFICATION 3.8.9, DISTRIBUTION SYSTEMS – MODES 1, 2, 3 AND 4			
	CRS	LCO 3.8.9 Train A and Train B of the following electrical power distribution subsystems shall be OPERABLE: a) AC power; b) AC instrument bus power; and c) DC power	
	CRS	APPLICABILITY: modes 1, 2, 3 and 4.	

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Event Description: **Loss of B Instrument Bus**

Time	Pos.	Expected Actions/Behavior			Comments
		CONDITION	REQUIRED ACTION	COMPLETION TIME	**NOTE:** The CRS will note that while Instrument Bus B was OOS, they were in B.1, but came out of this action when power to the Bus was restored.
		B. One AC Instrument bus electrical power distribution train inoperable.	B.1 Restore AC Instrument bus electrical power distribution train to OPERABLE status.	2 hours.	
At the discretion of the Lead Examiner move to Event #3.					

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Event Description:	**Pressurizer Pressure (PT-449) fails HIGH**		

After this, the controlling Pressurizer Pressure Transmitter will fail HIGH, causing the Spray Valves to open. The operator will respond in accordance with AR-F-2, PRESSURIZER HIGH PRESS 2310 PSI and AR-F-10, PRESSURIZER LO PRESS 2205 PSI, and enter AP-PZR.1, Abnormal PZR Pressure. AP-PZR.1 will refer the operator to ER-INST.1, Reactor Protection Bistable Defeat After Instrumentation Loop Failure, for the defeat of PT-449. The operator will address Technical Specification 3.4.1, RCS Pressure, Temperature, and Flow Departure From Nucleate Boiling (DNB) Limits; 3.3.1, Reactor Trip System (RTS) Instrumentation; and TRM-3.4.3, Anticipated Transient Without Scram (ATWS) Mitigation.

SIM DRIVER Instructions: **Operate Trigger #2 (PZR02D (2500))**

Indications Available:

- MCB Annunciator F-2, PRESSURIZER HIGH PRESS 2310
- PI-449 reading 2250 psig, all others lowering slowly
- Both Presssurizer Spray Valves fully OPEN
- Master pressure Controller 431K output at 100%
- PPCS Alarm PZR AVG PRESS HI ALARM
- MCB Annunciator F-10, PRESSURIZER LO PRESS 2205 (15 seconds delayed)

Time	Pos.	Expected Actions/Behavior	Comments
			NOTE: The HCO may take action to place 431K in MANUAL control, or the Spray Valve Controllers in MANUAL control, before arriving at the procedurally directed step, per the Guidance of A-503.1.
			NOTE: The crew may enter AP-PRZR.1 directly.
AR-F-2, PRESSURIZER HI PRESS 2310 PSI			
	CRS	(Step 1) IF RCS pressure is high, THEN go to AP-PRZR.1.	**NOTE:** Pressurizer Pressure is NOT high.
	CRS	(Step 2) IF due to instrument failure, THEN refer to ER-INST.1, REACTOR PROTECTION BISTABLE DEFEAT AFTER INSTRUMENTATION LOOP FAILURE	**NOTE:** While an instrument has failed, the failure has created a pressure transient, and AP-PRZR.1 is the appropriate procedure.

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Event Description: **Pressurizer Pressure (PT-449) fails HIGH**

Time	Pos.	Expected Actions/Behavior	Comments
		AR-F-10, PRESSURIZER LO PRESS 2205 PSI	
			NOTE: This alarm will occur if the Spray Valves are open ≈15 seconds.
	HCO	(Step 1) Perform a channel check.	
	CRS	(Step 2) Go to the applicable procedure: • AP-TURB.2, if turbine load rejection has occurred. • AP-PRZR.1, if pressure is abnormal for plant condition. • ER-INST.1, if channel failed	
	CRS	(Step 3) Refer to ITS LCO 3.4.1	
			NOTE: The CRS will go to AP-PRZR.1.
		AP-PRZR.1, ABNORMAL PRESSURIZER PRESSURE	
	HCO	(Step 1) Check PRZR Pressure: • All 4 narrow range channels- APPROXIMATELY EQUAL	
	HCO/ CRS	(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 b) Refer to ER-INST.1. REACTOR PROTECTION BISTABLE DEFEAT AFTER INSTRUMENTATION LOOP FAILURE.	**NOTE:** The CRS may refer to ER-INST.1 here, or later when the pressure transient has been verified to be under control.
	HCO	(Step 2) Check Reactor Power- STABLE	

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Event Description: **Pressurizer Pressure (PT-449) fails HIGH**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 3) Check PRZR Pressure: a) Pressure- LESS THAN 2235 PSIG b) Pressure- GREATER THAN 2000 PSIG	
	HCO	(Step 4) Check PRZR Heater Status: a) PRZR proportional heater breaker- CLOSED b) PRZR heater backup group- ON	
	HCO	(Step 5) Verify Normal PRZR Spray Valves- CLOSED o AOV-431A o AOV-431B	**NOTE:** The HCO may take action to place 431K in MANUAL control, or the Spray Valve Controllers in MANUAL control, before arriving at THIS step, per the Guidance of A-503.1.
	HCO	(Step 5 RNO) Place Controllers in MANUAL at 0% Demand.	
	HCO	(Step 6) Check PRZR Pressure Controller, 431K, Demand- LESS THAN 50%	
	HCO	(Step 7) Check PRZR PORVs: a) PORVs- CLOSED b) Annunciator F-19. PRZR PORV OUTLET HI TEMP 145°F- EXTINGUISHED	
	CRS	c) Go to Step 9	

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Event Description: **Pressurizer Pressure (PT-449) fails HIGH**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 9) Check PRZR Safety Valves: o Position indicator- LESS THAN 0.1 INCH o Annunciator F-18. PRZR SAFETY VLV OUTLET HI TEMP 145°F- EXTINGUISHED o Annunciator AA-13, PRESSURIZER SAFETY VALVE POSITION- EXTINGUISHED.	
	HCO	(Step 10) Check AUX Spray Valve, AOV-296 - CLOSED	
	HCO	(Step 11) Check PRZR Pressure Control Restored: a) Pressure- TRENDING TO 2235 PSIG	
	CRS	b) Go to Step 16	
	HCO	(Step 16) Check PRT Indications: a) Level- BETWEEN 61% and 84% b) Pressure- APPROXIMATELY 1.5 PSIG AND STABLE c) Temperature- AT CNMT AMBIENT TEMPERATURE AND STABLE	
	HCO	(Step 17) Establish PRZR Pressure Control In Auto: a) Verify 431K in AUTO	

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Event Description: **Pressurizer Pressure (PT-449) fails HIGH**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 17 RNO) Place 431K in AUTO, if desired.	**NOTE:** 431K cannot be placed in Auto until the Instrument is defeated. IF the Instrument has NOT been defeated in accordance with ER-INST.1, the CRS may refer to this procedure here.
ER-INST.1, REACTOR PROTECTION BISTABLE DEFEAT AFTER INSTRUMENTATION LOOP FAILURE			
	HCO	(Step 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:	**NOTE:** The CRS will refer to PRZR Pressure Channel Failures, Section 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	
	HCO	(Step 6.3.2) IF PT-430 OR PT-431 has failed, THEN	**NOTE:** Neither PT-430 nor PT-431 has failed.
	HCO	(Step 6.3.3) IF hot leg streaming has been causing single channel ΔT runback signals, THEN.....	**NOTE:** hot leg streaming has NOT been causing runback signals.
	HCO	(Step 6.3.4) REFER TO the appropriate attachment to defeat the associated control functions:	**NOTE:** The CRS will go to the PRZR PRESSURE PI-449 YELLOW CHANNEL Attachment 8.

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Event Description: **Pressurizer Pressure (PT-449) fails HIGH**

Time	Pos.	Expected Actions/Behavior	Comments
			NOTE: The CRS will hand this off to the CO.
ER-INST.1, REACTOR PROTECTION BISTABLE DEFEAT AFTER INSTRUMENTATION LOOP FAILURE ATTACHMENT 8 YELLOW CHANNEL - PRZR PRESSURE PI-449			
			NOTE: The CO will likely conduct Instrument Defeat Brief.
	HCO	(Step 1) IF PRZR Pressure channel failure resulted in a runback, THEN	**NOTE:** The failure did NOT result in a runback.
	CO	(Step 2) In the PLP PRZR PRESS AND LEVEL rack, VERIFY the PRZR pressure DEFEAT switch P/429A position. o IF P/429A is in NORMAL, THEN place P/429A to DEFEAT-1.	**NOTE:** The CO will unlock and open the PLP PRZR PRESS AND LEVEL Rack Cabinet, take the required action, and then close and lock the cabinet door.
	CO	(Step 3) In the RIL INSERTION LIMIT rack, PLACE T/405F DELTA T DEFEAT switch to Loop B UNIT 2.	**NOTE:** The CO will unlock and open the RIL Insertion Limit Rack Cabinet, take the required action, and then close and lock the cabinet door.
	CO	(Step 4) DETERMINE the expected Bistable proving light status for the post defeat condition as follows:	
		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	
		DETERMINE the expected post defeat Bistable proving light status and circle the expected status in table below:	
		408 LOOP B-2 • OVERTEMP TRIP Light OFF IF TI-408B ≥ TI-408A	**NOTE:** The CO will determine that the Proving Light should be ON in the Post-Defeat condition.

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Event Description: **Pressurizer Pressure (PT-449) fails HIGH**

Time	Pos.	Expected Actions/Behavior	Comments
		449 CHANNEL 4 • LOW PRESS TRIP Light OFF IF PI-449 ≤ 1873 psig	**NOTE:** The CO will determine that the Proving Light should be ON in the Post-Defeat condition.
	CO	(Step 5) In the (YELLOW) Y-1 PROTECTION CHANNEL 4 rack, PLACE the following bistable proving switches to DEFEAT (UP) AND verify the proving light status is correct: <u>408 LOOP B-2</u> OVER TEMP TRIP <u>449 CHANNEL 4</u> LOW PRESS TRIP	**NOTE:** The CO will unlock and open the Y-1 PROTECTION CHANNEL 4 Rack Cabinet, take the required action, and then close and lock the cabinet door. **NOTE:** Both B/S proving lights should be ON after defeat.
	HCO	(Step 6) PLACE the PRZR pressure recorder transfer switch (MCB) to position 1-3	
	HCO	(Step 7) VERIFY the bistable status lights AND Annunciators listed above are lit.	**Examiner NOTE:** At the discretion of the Lead Examiner move to **Event #4**.

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Event Description: **Pressurizer Pressure (PT-449) fails HIGH**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO/ CO	(Step 8) DELETE 404/408 from processing by performing the following on the PPCS: • SELECT "Group Update" display • SELECT "List Server Groups" • SELECT 404_408 from the pick list • TURN "OFF" scan processing, THEN click the "Set Scan Processing" button • ANSWER prompts • SELECT the "Sub/Delete/Restore" display • SELECT Point ID T0404 • TURN "ON" scan processing • SELECT "Change" • ANSWER prompts • SELECT the "Sub/Delete/Restore" display • SELECT Point ID P0449 • TURN "OFF" scan processing • SELECT "Change" • ANSWER prompts	
	CRS	(Step 9) GO TO step 6.3.5	**NOTE:** The CRS will return to the body of the procedure.
	HCO	(Step 6.3.5) RESTORE the following systems to automatic operation as necessary: o PRZR Pressure control • HC 431K • PRZR Spray Valves • PRZR Heaters	**NOTE:** The HCO will return 431K to Auto.
	HCO	o PRZR Level Control	
	HCO	o Rod Control	
	CO	o Steam Dump	
	CO	o Turbine EH control	

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Event Description: **Pressurizer Pressure (PT-449) fails HIGH**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 6.3.6) Open associated block valve closed in step 4.4.3	**NOTE:** No Block Valve was Closed.
	CRS	(Step 6.3.7) REFER TO the following ITS Sections for LCO's: Section 3.3.1, Table 3.3.1-1, Functions 5, 7a, and 7b (7b not required for PT-449) Section 3.3.2, Table 3.3.2-1, Function 1d (not required for PT-449) Section 3.3.3, Table 3.3.3-1, Functions 1 and 6	**NOTE:** The CRS will evaluate Technical Specifications.
	CRS	(Step 6.3.8) REFER TO TRM 3.4.3, Anticipated Transients Without Scram (ATWS) mitigation	**NOTE:** The CRS will evaluate Technical Requirements Manual.
	CRS	(Step 6.3.9) IF turbine runback has occurred AND rods are in MANUAL, ……	**NOTE:** The failure did NOT result in a runback.
	HCO	(Step 6.3.10) RESTORE AUTO Rod Control, if desired.	**NOTE:** The HCO will place the Rods in Auto.
	CRS	(Step 6.3.11) GO TO step 6.15	
	HCO	(Step 6.15.1) IF necessary, VERIFY an operable channel is selected for the affected recorder.	
	HCO	(Step 6.15.2) Verify the following systems in AUTO if desired: o Rod Control	
	CO	o Turbine EH control	
	HCO	o PRZR Pressure control • HC 431K • PRZR spray valves • PRZR heaters	
	HCO	o PRZR level control	

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Event Description: **Pressurizer Pressure (PT-449) fails HIGH**

Time	Pos.	Expected Actions/Behavior	Comments
	CO	o Steam Dump (unless 1st stage pressure failed)	
	CO	o MFW control	
	CO	o S/G Atmos Relief Vlv Control	
	CRS	(Step 6.15.3) NOTIFY the following people: o Operations Supervision o STA o Work Week Manager	**NOTE:** The CRS may notify the SM/STA/WWM. **SIM DRIVER:** as **SM/STA/WWM**, acknowledge.
	CRS	(Step 6.15.4) REFER to the following for Notification Requirements:	**NOTE:** The CRS may ask the SM. **SIM DRIVER:** as **SM**, acknowledge.
		CNG-NL-1.01-1004, REGULATORY REPORTING	
		OPG-NOTIFICATION, REQUIRED NOTIFICATIONS TO THE PSC/PIO/CEG SENIOR MANAGEMENT/OPERATIONS MANAGEMENT	
AP-PRZR.1, ABNORMAL PRESSURIZER PRESSURE			
	HCO	(Step 17.b) Verify PRZR Spray Valves in Auto.	
	HCO	(Step .c) Verify PRZR Heaters restored: • PRZR proportional heaters breaker – Closed • PRZR backup heaters RESET in AUTO	
	CRS	(Step 18) Evaluate MCB Annunciator Status (Refer to AR Procedures)	
	CRS	(Step 19) Notify Higher Supervision	

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Event Description:	**Pressurizer Pressure (PT-449) fails HIGH**		

Time	Pos.	Expected Actions/Behavior	Comments
	CRS	(Step 20) Notify Reactor Engineer for Transient Monitoring Program	
			NOTE: The CRS will address the Technical Specifications.
TECHNICAL SPECIFICATION 3.4.1, RCS PRESSURE, TEMPERATURE, AND FLOW DEPARTURE FROM NUCLEATE BOILING (DNB) LIMITS			
	CRS	(LCO 3.4.1) RCS DNB Parameters for pressurizer pressure, RCS average temperature, and RCS total flow rate shall be within the limits specified in the COLR	**NOTE:** The CRS will determine that the crew be in and then out of this Technical Specification during the course of this event.
		APPLICABILITY: Mode 1.	
		ACTIONS:	

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more RCS DNB parameters not within limits.	A.1 Restore RCS DNB parameter(s) to within limit.	2 hours

TECHNICAL SPECIFICATION 3.3.1, REACTOR TRIP (RTS) INSTRUMENTATION			
	CRS	LCO 3.3.1 The RTS instrumentation for each Function in Table 3.3.1-1 shall be OPERABLE.	
		APPLICABILITY: According to Table 3.3.1-1 (Functions 5, 7a)	
		ACTIONS	

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Event Description: **Pressurizer Pressure (PT-449) fails HIGH**

Time	Pos.	Expected Actions/Behavior			Comments
		CONDITION	REQUIRED ACTION	COMPLETION TIME	**NOTE:** Functions 5 and 7a are affected.
		A. One or more functions with one channel inoperable.	A.1 Enter the Condition referenced in Table 3.3.1-1 for the channel(s).	Immediately	
		D. As required by Required Action A.1 and referenced by Table 3.3.1-1	D.1 Place channel in trip	6 hours	
		K. As required by Required Action A.1 and referenced by Table 3.3.1-1	K.1 Place channel in trip	6 hours	
TECHNICAL REQUIREMENT 3.4.3, ANTICIPATED TRANSIENTS WITHOUT SCRAM (ATWS) MITIGATION					
	CRS	TR 3.4.3 ATWS Mitigation shall be OPERABLE as follows:			
		• Each PORV shall be capable of automatic actuation and each block valve shall be open;			
		• Manual rod insertion shall be OPERABLE; and			
		• ATWS Mitigation System Actuation Circuitry (AMSAC) shall be OPERABLE.			
		APPLICABILITY MODE 1 > 45% RTP.			
		CONDITION	REQUIRED ACTION	COMPLETION TIME	
		A. One or more PORV automatic flow path inoperable.	A.1 Declare ATWS mitigating capability inoperable.	Immediately	

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Event Description:	**Pressurizer Pressure (PT-449) fails HIGH**							

At the discretion of the Lead Examiner move to Events #4-5.			

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Event Description:	**Main Turbine High Vibration/Downpower w/Hotwell Level Transmitter fails HIGH**		

Following this, a turbine high vibration condition on Bearing #5 will develop within about 3 minutes. The operator will respond in accordance with AR-I-27, ROTOR ECCENTRICITY OR VIBRATION; and enter AP-TURB.3, Turbine Vibration; and then AP-TURB.5, Rapid Downpower. The operator will need to lower the Turbine Load to stabilize the vibrations. During the load reduction Hotwell Level Transmitter will fail HIGH. The operator will need to manually control the Hotwell Level Controller.

SIM DRIVER Instructions:

Operate Trigger #3

- **Initial Value is 8 mils over 180 second ramp to cause Annunciator I-27.**
- **When I-27 is received, THEN modify TUR05E to 9.6 mils over 480 seconds.**
- **WHEN crew stops Load Reduction, THEN modify TUR05E to the current value.**

Indications Available:

- MCB Annunciator I-27, ROTOR ECCENTRICITY OR VIBRATION
- MCB Turbine Bearing Recorder Bearing 5 indicating high, bearings 4 and 6 rising at a lower rate.
- Back of MCB Turbine Bearing Vibration Panel Bearing 5 indicating high, bearings 4 and 6 rising at a lower rate.
- Hotwell level controller output rising to greater than 60% (120 seconds delayed from Turbine in GO)

Time	Pos.	Expected Actions/Behavior	Comments
			NOTE: The crew may enter AP-TURB.3 directly.
AR-I-27, ROTOR ECCENTRICITY OR VIBRATION			
	CO/ CRS	(Step 4.1) CHECK vibration levels on the following:	
		TURBINE VIBRATION, RK-14 (MCB front)	
		Turbine Vibration Monitor (MCB rear)	
	CO	(Step 4.2) IF high vibration on Bearings 1 – 8, THEN GO TO AP-TURB.3.	
			NOTE: The CRS will go to AP-TURB.3.
AP-TURB.3, TURBINE VIBRATION			

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Event Description: **Main Turbine High Vibration/Downpower w/Hotwell Level Transmitter fails HIGH**

Time	Pos.	Expected Actions/Behavior	Comments
	CO	(Step 1) Verify Turbine Vibration- ALL BEARINGS LESS THAN 14 MILS	
	CO	(Step 2) Check Turbine Bearings No.1 through No. 8 Vibration- LESS THAN 7 MILS	**NOTE:** The highest vibration will be on Bearing #5 at 8-9 Mils.
	CO	(Step 2 RNO) Attempt to stabilize vibration as follows: IF generator on line, THEN begin reducing load to stabilize vibrations. (Refer to AP-TURB.5, RAPID LOAD REDUCTION	
			NOTE: The CRS will go to AP-TURB.5 and conduct Rapid Load Reduction Brief prior to commencing load reduction.
AP-TURB.5, RAPID LOAD REDUCTION			
	HCO	(Step 1) Initiate Load Reduction a) Verify rods in AUTO	
	CO	b) Reduce turbine load in Auto as follows:	
		• Place Turbine EH Control in OPER PAN., IMP PRESS IN, if desired.	**NOTE:** IMP PRESS IN is desired.
		• Select desired rate on thumbwheel	**NOTE:** The operator will select 1%/Min.
		• Reduce the setter to the desired load	
		• Depress the GO button	
SIM DRIVER Instructions:		**Operate Trigger #4 (CND03A (48 Inches))**	
	HCO	c) Initiate boration at the rate determined in OPG-REACTIVITY-CALC	**NOTE:** The HCO will initiate a boration.

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Event Description: **Main Turbine High Vibration/Downpower w/Hotwell Level Transmitter fails HIGH**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	d) Place PRZR backup heaters switch to ON	
	HCO	(*Step 2) Monitor RCS Tavg • Tavg- GREATER THAN 545°F • Tavg- LESS THAN 579°F	**NOTE:** This is a Continuous Action. The CRS will make both board operators aware.
	HCO	(Step 3) Adjust Boric Acid Addition Rate As Necessary To (refer to OPG-REACTIVITY-CALC): • Maintain rods above the insertion limit • Match Tavg and Tref • Compensate for Xenon	
	HCO	(*Step 4) Monitor PRZR Pressure- TRENDING TO 2235 PSIG IN AUTO	**NOTE:** This is a Continuous Action. The CRS will make both board operators aware.
	CO	(*Step 5) Monitor MFW Regulating Valves- RESTORING S/G LEVEL TO 52% IN AUTO	**NOTE:** This is a Continuous Action. The CRS will make both board operators aware.
	HCO	(*Step 6) Monitor PRZR Level- TRENDING TO PROGRAM IN AUTO CONTROL	**NOTE:** This is a Continuous Action. The CRS will make both board operators aware.
	CO	(Step 7) Check IA Available To CNMT	
		IA pressure - GREATER THAN 60 PSIG	
		Instr Air to CNMT Isol Valve, AOV-5392 - OPEN	
	HCO/ CO	(Step 8) Check Steam Dump Status:	
		Annunciator G-15, STEAM DUMP ARMED - LIT	

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Event Description: **Main Turbine High Vibration/Downpower w/Hotwell Level Transmitter fails HIGH**

Time	Pos.	Expected Actions/Behavior	Comments
		Steam dump operating properly in AUTO	
	CO	(Step 9) Check Hotwell Level:	**NOTE:** The CO will recognize that the Hotwell Controller Output is greater than 60%.
		Hotwell level controller in AUTO	
		Controller demand LESS THAN 60%	
		Hotwell level at setpoint	
	CO	(Step 9 RNO) IF controller demand approaching 70% (Large Reject Valve Opens), THEN place controller in Manual and control level.	**NOTE:** The CO will place the Hotwell Controller in MANUAL.
	CRS/ CO	(Step 10) Check If Condensate Booster Pumps Should Be Secured	
		Condensate booster pumps – 2 PUMPS RUNNING	**NOTE:** There are NO Condensate Booster Pumps running.
At the discretion of the Lead Examiner move to Events #6-8.			

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Event Description: **Feed Line Rupture Inside Containment/Turbine fails to Auto Trip ment/Safety Injection fails to actuate Automatically/A AFW Pump to Auto Start/Trips after Manual Start/TDAFW Pump trips on Overspeed/Standby AFW fails to function**

Subsequently, a feed line rupture inside Containment will occur. The Reactor will trip however, the Turbine will fail to trip automatically and Safety Injection will fail to actuate automatically. The operator will enter E-0, Reactor Trip or Safety Injection. On the reactor trip the A AFW Pump will fail to Autostart, then trip after it is manually started; and the TDAFW Pump will trip on overspeed. The operator will transition from E-0 to FR-H.1, Response to a Loss of Secondary Heat Sink. The operator will unsuccessfully attempt to place the Standby AFW System in service, and then attempt to restore a Secondary Heat Sink using the MFW System. Once the Secondary Heat Sink is re-established using MFW, the operator will transition back to E-0, and then transition to E-2, Faulted Steam Generator Isolation. The scenario will terminate at Step 9 of E-2, after the crew has determined that a transition to E-1, Loss of Reactor or Secondary Coolant, is required.

SIM DRIVER Instructions: Operate Trigger #5 (FDW09A, 2E+7 over 180 seconds)

Indications Available:

- Containment NR Pressure starts to rise.
- Feedflow A SG starts to rise.
- A SG NR Level starts to lower.

Time	Pos.	Expected Actions/Behavior	Comments
		E-0, REACTOR TRIP OR SAFETY INJECTION	
	HCO	(Step 1) Verify Reactor Trip:	**Immediate Action**
		• At least one train of reactor trip breakers – OPEN	
		• Neutron flux - LOWERING	
		• MRPI indicates – ALL CONTROL AND SHUTDOWN RODS ON BOTTOM	
	CO	(Step 2) Verify Turbine Stop Valves – CLOSED	**Immediate Action**
	CO	(Step 3) Verify Both Trains of AC Emergency Busses Energized to at Least 440 VOLTS:	**Immediate Action**
		• Bus 14 and Bus 18	

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Event Description: **Feed Line Rupture Inside Containment/Turbine fails to Auto Trip ment/Safety Injection fails to actuate Automatically/A AFW Pump to Auto Start/Trips after Manual Start/TDAFW Pump trips on Overspeed/Standby AFW fails to function**

Time	Pos.	Expected Actions/Behavior	Comments
		• Bus 16 and Bus 17	
	HCO	(*Step 4) Check if SI is Actuated:	**Immediate Action**
		• Any SI Annunciator – LIT	**NOTE:** D-28, CNMT Press
		• SI sequencing – BOTH TRAINS STARTED.	

CRITICAL TASK

1. Manually actuate Safety Injection before transition out of E-0 into ES-0.1

Safety Significance: Failure to actuate Safety Injection when it is required to be actuated, and can be actuated, violates the assumptions of the Safety Analysis and constitutes incorrect performance that could lead to misdiagnosis of the event, implementation of an incorrect mitigation strategy and ultimately degradation of the RCS and/or fuel cladding fission product barriers.

	HCO/ CO	Foldout Page	**NOTE:** The crew will monitor these conditions throughout the performance of E-0.
		RCP TRIP CRITERIA	
		LOSS OF SW CRITERIA	
		AFW SUPPLY SWITCHOVER CRITERION	
		SFP COOLING CRITERIA	**NOTE:** The CRS may dispatch an AO to address the status of the SFPCS. If so, **SIM DRIVER** acknowledge as AO, and report in 5 Minutes that the SFPCS is operating normally.
	HCO	(*Step 5) Verify CNMT Spray Not Required:	
		• Annunciator A-27, CNMT SPRAY – EXTINGUISHED	

Op Test No.: N2014-301 Scenario # 3 Event # 6, 7 &8 Page 39 of 58

Event Description: **Feed Line Rupture Inside Containment/Turbine fails to Auto Trip ment/Safety Injection fails to actuate Automatically/A AFW Pump to Auto Start/Trips after Manual Start/TDAFW Pump trips on Overspeed/Standby AFW fails to function**

Time	Pos.	Expected Actions/Behavior	Comments
		• CNMT pressure- LESS THAN 28 PSIG	**NOTE:** Containment Pressure will be rising, and will exceed 28 psig. This is a Continuous Action Step, and will need to be verified when the conditions are met (i.e. by performing Step 5 RNO).
	HCO	(Step 5 RNO) Verify CNMT spray initiated.	
	CRS	(Step 6) Direct Operator to Perform ATT-27.0, ATTACHMENT AUTOMATIC ACTION VERIFICATION	
			NOTE: The CRS will hand off ATT-27.0 to either the HCO or the CO, and continue with the other operator in E-0. **Examiner** following operator performing ATT-27.0 continue below. **Examiner** following operator NOT performing ATT-27.0 continue at **Page 42**.
E-0, REACTOR TRIP OR SAFETY INJECTION, ATTACHMENT 27.0, ATTACHMENT AUTOMATIC ACTION VERIFICATION			
	HCO/ CO	(Step 1) Verify SI and RHR Pumps Running:	
		• All SI pumps – RUNNING	
		• Both RHR pumps – RUNNING	
	HCO/ CO	(Step 2) Verify CNMT RECIRC Fans Running:	
		• All fans – RUNNING	

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Event Description: **Feed Line Rupture Inside Containment/Turbine fails to Auto Trip ment/Safety Injection fails to actuate Automatically/A AFW Pump to Auto Start/Trips after Manual Start/TDAFW Pump trips on Overspeed/Standby AFW fails to function**

Time	Pos.	Expected Actions/Behavior	Comments
		• Charcoal filter dampers green status lights – EXTINGUISHED	
	HCO/ CO	(Step 3) Check If Main Steamlines Should Be Isolated:	
		• Any MSIV – OPEN	
		• Check CNMT pressure- LESS THAN 18 PSIG	
		• Ensure BOTH MSIVs closed and go to Step 4.	
	HCO/ CO	(Step 4) Verify MFW Isolation:	
		• MFW pumps – TRIPPED	
		• MFW Isolation valves – CLOSED	
		• S/G A, AOV-3995	
		• S/G B, AOV-3994	
		• S/G Blowdown and sample valves - CLOSED	
	HCO/ CO	(Step 5) Verify At Least Two SW Pumps - RUNNING	
	HCO/ CO	(Step 6) Verify CI and CVI:	
		• CI and CVI annunciators - LIT	
		• Annunciator A-26, CNMT ISOLATION	
		• Annunciator A-25, CNMT VENTILATION ISOLATION	
		• Verify CI and CVI valve status lights – BRIGHT	

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Event Description: **Feed Line Rupture Inside Containment/Turbine fails to Auto Trip ment/Safety Injection fails to actuate Automatically/A AFW Pump to Auto Start/Trips after Manual Start/TDAFW Pump trips on Overspeed/Standby AFW fails to function**

Time	Pos.	Expected Actions/Behavior	Comments
		• 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/ CO	(Step 7) Check CCW System Status:	
		• Verify CCW pump – AT LEAST ONE RUNNING	
	HCO/ CO	(Step 8) Verify SI and RHR Pump Flow:	
		• SI flow indicators – CHECK FOR FLOW	
		• RHR flow indicator – CHECK FOR FLOW	
		(Step 7b RNO) IF RCS pressure less than 150 psig…….	**NOTE:** RCS Pressure is > 150 psig.
	HCO/ CO	(Step 9) Verify SI Pump and RHR Pump Emergency Alignment:	
		• 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	

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Event Description: **Feed Line Rupture Inside Containment/Turbine fails to Auto Trip ment/Safety Injection fails to actuate Automatically/A AFW Pump to Auto Start/Trips after Manual Start/TDAFW Pump trips on Overspeed/Standby AFW fails to function**

Time	Pos.	Expected Actions/Behavior	Comments
		• Verify SI pump C discharge valves - OPEN	
		• MOV-871A	
		• MOV-871B	
	HCO/ CO	(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	
	HCO/ CO	(Step 11) Verify CI and CVI During a Fire Event	
		A confirmed fire has occurred in the control complex or cable tunnel (fire systems S05, S06, S08, Z05, Z18, or Z19).	
		Go to END	
E-0, REACTOR TRIP OR SAFETY INJECTION			
			Examiner following operator NOT performing ATT-27.0 continue **HERE**.
	HCO/ CO	(Step 7) Verify Both MDAFW Pumps Running	**NOTE:** The B AFW Pump is OOS, and the A AFW Pump will TRIP shortly after manual START.

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Event Description: **Feed Line Rupture Inside Containment/Turbine fails to Auto Trip ment/Safety Injection fails to actuate Automatically/A AFW Pump to Auto Start/Trips after Manual Start/TDAFW Pump trips on Overspeed/Standby AFW fails to function**

Time	Pos.	Expected Actions/Behavior	Comments
	CO	(Step 7 RNO) Manually start both MDAFW pumps. IF less than 2 MDAFW pumps are running, THEN manually open TDAFW pump steam supply valves. • MOV-3505A • MOV-3504A	**NOTE:** The TDAFW Pump will trip on overspeed If dispatched as an AO, **SIM DRIVER:** Report that governor valve **cannot be reset** in **5 minutes**.
	HCO/ CO	(Step 8) Verify AFW Valve Alignment:	
		• AFW flow – INDICATED TO BOTH S/G(s)	
		• AFW flow from each MDAFW pump – LESS THAN 230 GPM	
	HCO/ CO	(Step 8 RNO) Manually align valves as necessary	**NOTE:** There will be no AFW flow, and manually alignment of valves will NOT restore flow.
	HCO/ CO	(*Step 9) Monitor Heat Sink:	
		• Check S/G narrow range level – GREATER THAN 7% [**25% ADVERSE CNMT**] in any S/G	**NOTE:** Adverse Containment Numbers should be used, until Containment Pressure is less than 4 psig.
	HCO/ CO	(Step 9 RNO) Perform the following: Verify total AFW flow GREATER THAN 200 GPM IF total AFW is less than 200 GPM, THEN manually start pumps and align valves to establish greater than 200 gpm AFW flow. IF AFW flow greater than 200 gpm can flow can NOT be established, THEN go to FR-H.1, RESPONSE TO LOSS OF SECONDARY HEAT SINK. Step 1.	

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Event Description: **Feed Line Rupture Inside Containment/Turbine fails to Auto Trip ment/Safety Injection fails to actuate Automatically/A AFW Pump to Auto Start/Trips after Manual Start/TDAFW Pump trips on Overspeed/Standby AFW fails to function**

Time	Pos.	Expected Actions/Behavior	Comments
			NOTE: The CRS will go to FR-H.1.
			Examiner NOTE: An Orange Path on Containment will also exist but the Red Path on Heat Sink will be a higher priority.
FR-H.1, RESPONSE TO LOSS OF SECONDARY HEAT SINK			
	HCO/ CO	Foldout Page	**NOTE:** The crew will monitor these conditions throughout the performance of FR-H.1.
		LOSS OF SW CRITERIA	
	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	
	CO	(*Step 2) Check if Bleed and Feed is Required Both S/G level wide range levels LESS THAN 120 inches [160 inches adverse CNMT]	**NOTE:** Adverse Containment Numbers should be used, until Containment Pressure is less than 4 psig.
	CRS	(Step 2 RNO) Go to Step 3.	
	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: **Feed Line Rupture Inside Containment/Turbine fails to Auto Trip ment/Safety Injection fails to actuate Automatically/A AFW Pump to Auto Start/Trips after Manual Start/TDAFW Pump trips on Overspeed/Standby AFW fails to function**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 3.a RNO) Place Blowdown and sample valve switches to CLOSE	
	CO	(Step 3.b) Verify 2 MDAFW Pump-AVAILABLE	**NOTE:** Neither MDAFW Pump is 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	**NOTE:** The HCO will stop both RCPs.
	HCO	(Step 5) Reset SI if Actuated	
	CO	(Step 6) Try and Establish SAFW Flow To At Least One Intact S/G: a) Perform the following: 1) Align SAFW system for operation (Refer to ATT-5.1, ATTACHMENT SAFW)	
ATTACHMENT-5.1, ATTACHMENT SAFW			
			NOTE: The CO will attempt to align Train B to feed the B SG due to the fault in A SG.

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Event Description: **Feed Line Rupture Inside Containment/Turbine fails to Auto Trip ment/Safety Injection fails to actuate Automatically/A AFW Pump to Auto Start/Trips after Manual Start/TDAFW Pump trips on Overspeed/Standby AFW fails to function**

Time	Pos.	Expected Actions/Behavior	Comments
	CO	(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/ CO	(Step 6.a.2) Determine SAFW flow requirements per ATT-22.0, ATTACHMENT RESTORING FEED FLOW	**NOTE:** The CRS will direct the CO to use ATT-22.0 to determine the allowable rate of feed flow to the B SG.
ATT-22.0, ATTACHMENT RESTORING FEED FLOW			
	HCO	(Step 1) Check affected S/G Loop RCS Temperature	**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.
		Tavg in the affected Loop Less Than 550°F.	

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Event Description: **Feed Line Rupture Inside Containment/Turbine fails to Auto Trip ment/Safety Injection fails to actuate Automatically/A AFW Pump to Auto Start/Trips after Manual Start/TDAFW Pump trips on Overspeed/Standby AFW fails to function**

Time	Pos.	Expected Actions/Behavior	Comments
	CO	Fill affected S/G as necessary to restore level	
	CRS	Go to Step 3.	
	HCO	(Step 3) Check RCS Loop Hot Legs - BOTH HOT LEG TEMPERATURES LOWERING	
	HCO/ CO	(Step 4) Verify affected S/G is not faulted or ruptured.	**NOTE:** The B SG is NOT Faulted or Ruptured.
FR-H.1, RESPONSE TO LOSS OF SECONDARY HEAT SINK			
	CO	(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, and the CRS will direct the CO to start the C SAFW pump per Section B of ATT-5.1.
ATTACHMENT-5.1, ATTACHMENT SAFW			
	CO	(Step B) Align SAFW Pump C to selected S/G as follows: 1) Ensure SI reset 2) Ensure the following valves open: • MOV-9701A, SAFW PUMP C DISCHARGE • MOV-4616, AUX BLDG SW ISOL VLVS • MOV-9704A, SAFW PUMP C ISOL VLV 3) Open MOV-9629A, SAFW PUMP C SUCTION VLV	**NOTE:** MOV-9629A will NOT open . HCO/CO should inform CRS that suction valve to C SAFW pump cannot be opened.
FR-H.1, RESPONSE TO LOSS OF SECONDARY HEAT SINK			

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Event Description: **Feed Line Rupture Inside Containment/Turbine fails to Auto Trip ment/Safety Injection fails to actuate Automatically/A AFW Pump to Auto Start/Trips after Manual Start/TDAFW Pump trips on Overspeed/Standby AFW fails to function**

Time	Pos.	Expected Actions/Behavior	Comments
	CRS	(Step 6.a RNO) If greater than 215 gpm total SAFW flow can NOT be established, THEN go to Step 7	
	CO	(Step 7) Try to Establish MFW Flow to at Least One S/G	
		• Check any MFW pump AVAILABLE	
		• Check condensate system:	
		• Condensate pump - ANY RUNNING	
		• MFW pump suction pressure GREATER THAN 200 PSIG	
	CO	• Establish MFW flow:	
		• Check MFW pump discharge valves-CLOSED	
		• Verify MFW regulating or bypass valves - OPERABLE	
		• Depress MANUAL pushbuttons for A and B MFW regulating valve and bypass valve controllers AND adjust to 0% demand.	
	CO	• Open MFIV's for both S/G's: • S/G A. AOV-3995 • S/G B. AOV-3994	**NOTE:** The operator may NOT open AOV-3995 because the A S/G is Faulted (Feed Line Fault).
	CRS	• Dispatch AO to restore MFW pump SW cooling	**NOTE:** The CRS will dispatch an AO. **SIM DRIVER:** as **AO**, acknowledge, and immediately reports that SW is verified.
	HCO	• Verify S/G blowdown key switches in NORMAL	
	CO	• Ensure Annunciator H-4, MAIN FEED PUMP OIL SYSTEM-EXTINGUISHED	

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Event Description: **Feed Line Rupture Inside Containment/Turbine fails to Auto Trip ment/Safety Injection fails to actuate Automatically/A AFW Pump to Auto Start/Trips after Manual Start/TDAFW Pump trips on Overspeed/Standby AFW fails to function**

Time	Pos.	Expected Actions/Behavior	Comments
	CO	• Close Condensate Bypass valve, AOV-3959	
	CO	• Ensure Annunciator H-11, Feed PUMP SEAL WATER LO DIFF PRESS 15 PSI- EXTINGUISHED	**NOTE:** Whether or not this Annunciator is LIT will depend on the control of the Hotwell Level, which is in MANUAL Control
	CO	• Ensure one MFW pump recirc valve-OPEN	
	CO	• Start Selected MFW pump	
	CO	• Open MFW pump discharge valve	
	CO	• Open MFW regulating or bypass valves to control MFW flow per requirements of ATT-22.0, ATTACHMENT RESTORING FEED FLOW	**NOTE:** The CO will determine that the B SG can be filled as desired to restore Narrow Range Level to > 25% per ATT-22.0, when a Feedwater flow source is restored.
	CRS	• Go to Step 11	
	CO	Step 11. Check S/G Levels: a) Narrow range level in at least one S/G- GREATER THAN 7% [**25% adverse CNMT**] IF feed flow verified and level rising in at Least one S/G, THEN maintain flow to Restore narrow range level greater than 7% [**25% adverse CNMT**]. b) Return to procedure and step in effect.	**NOTE:** Adverse Containment Numbers should be used, until Containment Pressure is less than 4 psig. **NOTE:** The CRS will determine that a Secondary Heat Sink has been restored with the MFW System, and return to E-0, Step 9.

Op Test No.: N2014-301 Scenario # 3 Event # 6, 7 &8 Page 50 of 58

Event Description: **Feed Line Rupture Inside Containment/Turbine fails to Auto Trip ment/Safety Injection fails to actuate Automatically/A AFW Pump to Auto Start/Trips after Manual Start/TDAFW Pump trips on Overspeed/Standby AFW fails to function**

Time	Pos.	Expected Actions/Behavior	Comments
CRITICAL TASK **2. Establish feedwater flow into at least one Steam Generator before RCS Bleed and Feed is required.** Safety Significance: Failure to establish feedwater flow into at least one Steam Generator results in the crew having to rely upon the lower-priority action of having to initiate RCS Bleed and Feed to minimize the possibility of core uncovery. Failure to perform this task, when able to do so, constitutes incorrect performance that leads to degradation of the RCS and/or fuel cladding fission product barriers.			
			NOTE: The CRS will likely conduct an Alignment Brief.
		E-0, REACTOR TRIP OR SAFETY INJECTION	
	CO	(*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%	
		• Control feed flow to maintain S/G narrow range level between 7% [**25% adverse CNMT**] and 50%.	**NOTE:** Adverse Containment Numbers should be used, until Containment Pressure is less than 4 psig.
	CO	(Step 10) Check If TDAFW Pump Can Be Stopped:	
		• Both MDAFW pumps – RUNNING	**NOTE:** None of the AFW Pumps are running.
	CRS	(Step 10 RNO) Go to Step 11	
	HCO	(Step 11) Check CCW Flow to RCP Thermal Barriers:	

Op Test No.: N2014-301 Scenario # 3 Event # 6, 7 &8 Page 51 of 58

Event Description: **Feed Line Rupture Inside Containment/Turbine fails to Auto Trip ment/Safety Injection fails to actuate Automatically/A AFW Pump to Auto Start/Trips after Manual Start/TDAFW Pump trips on Overspeed/Standby AFW fails to function**

Time	Pos.	Expected Actions/Behavior	Comments
		• Annunciator A-7, RCP 1A CCW RETURN HI TEMP OR LO FLOW EXTINGUISHED	
		• Annunciator A-15, RCP 1B CCW RETURN HI TEMP OR LOW FLOW - EXTINGUISHED	
	HCO	(*Step 12) Monitor RCS Tavg – STABLE AT OR TRENDING TO 547°F	**NOTE:** The crew may take the RNO action depending on how the crew has controlled Temperature to this point.
	HCO	(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.	
		• 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.	**NOTE:** Adverse Containment Numbers should be used, until Containment Pressure is less than 4 psig.
		• 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.	**NOTE:** Adverse Containment Numbers should be used, until Containment Pressure is less than 4 psig.
		• IF cooldown continues, THEN close both MSIVs.	
	HCO	(Step 13) Check PRZR PORVs and Spray Valves:	
		• PORVs – CLOSED	
		• Auxiliary Spray Valve (AOV-296) – CLOSED	

Op Test No.: N2014-301 Scenario # 3 Event # 6, 7 &8 Page 52 of 58

Event Description: **Feed Line Rupture Inside Containment/Turbine fails to Auto Trip ment/Safety Injection fails to actuate Automatically/A AFW Pump to Auto Start/Trips after Manual Start/TDAFW Pump trips on Overspeed/Standby AFW fails to function**

Time	Pos.	Expected Actions/Behavior	Comments
		• Check PRZR pressure – LESS THAN 2260 PSIG	
		• Normal PRZR spray valves - CLOSED	
		• PCV-431A	
		• PCV-431B	
	HCO	(Step 14) Monitor RCP Trip Criteria:	
		• RCP status – ANY RCP RUNNING	**NOTE:** The RCPs were previously stopped.
	CRS	(Step 14c RNO) Go to Step 15.	
	CO	(Step 15) 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	**NOTE:** The A SG is depressurizing in an uncontrolled manner.
	CRS	(Step 15 RNO) IF any S/G pressure lowering in an uncontrolled manner OR completely depressurized, THEN go to E-2, FAULTED STEAM GENERATOR ISOLATION, Step 1.	
			NOTE: The CRS will go to E-2.
			NOTE: The CRS will likely conduct an Alignment Brief.
E-2, FAULTED STEAM GENERATOR ISOLATION			
	HCO/ CO	Foldout Page	**NOTE:** The crew will monitor these conditions throughout the performance of E-2.
		LOSS OF SW CRITERIA	

Op Test No.: N2014-301 Scenario # 3 Event # 6, 7 &8 Page 53 of 58

Event Description: **Feed Line Rupture Inside Containment/Turbine fails to Auto Trip ment/Safety Injection fails to actuate Automatically/A AFW Pump to Auto Start/Trips after Manual Start/TDAFW Pump trips on Overspeed/Standby AFW fails to function**

Time	Pos.	Expected Actions/Behavior	Comments
	CO	(Step 1) Check MSIV of Faulted S/G(s) - CLOSED	**NOTE:** BOTH MSIVs are CLOSED.
	CO	(Step 2) Check If Any S/G Secondary Side Is Intact:	
		• Check pressure in S/G A- STABLE OR RISING	**NOTE:** The A SG is depressurized.
		OR	
		• Check pressure in S/G B – STABLE OR RISING	
	CO	(Step 3) Check Faulted S/G Status:	**NOTE:** The A SG is depressurized.
		• Faulted S/G pressure – LOWERING IN AN UNCONTROLLED MANNER	
		OR	
		• Faulted S/G – COMPLETELY DEPRESSURIZED	
	CO	(Step 4) Isolate Feed Flow to Faulted S/G:	
		• Close or verify closed the following valves:	
		• Faulted S/G MDAFW pump discharge valve	
		• S/G A, MOV-4007	
		• Faulted S/G MFW regulating valve and bypass valve - CLOSED	
		• S/G A, HCV-466 and HCV-480	
		• MFW isolation valves - CLOSED	
		• S/G A, AOV-3995	
		• MDAFW pump crosstie valves – BOTH CLOSED	

Op Test No.: N2014-301 Scenario # 3 Event # 6, 7 &8 Page 54 of 58

Event Description: **Feed Line Rupture Inside Containment/Turbine fails to Auto Trip ment/Safety Injection fails to actuate Automatically/A AFW Pump to Auto Start/Trips after Manual Start/TDAFW Pump trips on Overspeed/Standby AFW fails to function**

Time	Pos.	Expected Actions/Behavior	Comments
		• MOV-4000A	
		• MOV-4000B	
	CO	• Faulted S/G SAFW pump discharge valve	
		• S/G A, MOV-9704A	**NOTE:** MOV-9704A is OPEN from ATT-5.1, and must be closed.
		• Pull stop faulted S/G MDAFW pump	
		• Close faulted S/G TDAFW flow control valve	
		• S/G A, AOV-4297	
	CO	(Step 5) Isolate Steam Flow From Faulted S/G:	
		• Verify faulted S/G ARV – CLOSED	
		• S/G A, AOV-3411	
		• Close faulted S/G TDAFW pump steam supply valve and place in PULL STOP	
		• S/G A, MOV-3505A	
		• Verify faulted S/G blowdown and sample valves – CLOSED	
		• S/G A, AOV-5738 and AOV-5735	
		• Dispatch AO to complete faulted S/G isolation (Refer to ATT-10.0, ATTACHMENT FAULTED S/G)	**NOTE:** The CRS will dispatch an AO. **SIM DRIVER:** as **AO**, acknowledge.
	CO	(*Step 6) Monitor Intact S/G Levels:	**Examiner NOTE:** Terminate the Exam at the discretion of the Lead Examiner.

Op Test No.: N2014-301 Scenario # 3 Event # 6, 7 &8 Page 55 of 58

Event Description: **Feed Line Rupture Inside Containment/Turbine fails to Auto Trip ment/Safety Injection fails to actuate Automatically/A AFW Pump to Auto Start/Trips after Manual Start/TDAFW Pump trips on Overspeed/Standby AFW fails to function**

Time	Pos.	Expected Actions/Behavior	Comments
		• Narrow range level – GREATER THAN 7% [**25% adverse CNMT**]	**NOTE:** Adverse Containment Numbers should be used, until Containment Pressure is less than 4 psig.
		• Control feed flow to maintain narrow range level between 17% [**25% adverse CNMT**] and 50%	**NOTE:** Adverse Containment Numbers should be used, until Containment Pressure is less than 4 psig.
	HCO	(Step 7) Check Secondary Radiation Levels - NORMAL	
		• Steamline radiation monitor (R-31 and R-32)	
		• Air ejector radiation monitor (R-15)	
		• S/G blowdown radiation monitor (R-19)	
		• Request Chem Tech sample S/Gs for activity	
	CO	(Step 8) Adjust Steam Dump to Minimize RCS Heatup:	
		• Determine allowable intact S/G pressure using maximum hot leg temperature (Refer to FIG-7.0, FIGURE INTACT S/G PRESSURE)	
		• Check condenser steam dump available:	**NOTE:** Steam Dump to the Condenser is **NOT** available.
	CO	(Step 8b RNO) Perform the following:	
		• Adjust intact S/G ARV to pressure determined from FIG-7.0, FIGURE INTACT S/G PRESSURE.	
	CRS	• Go to E-1, LOSS OF REACTOR OR SECONDARY COOLANT, Step 1.	

Op Test No.: N2014-301 Scenario # 3 Event # 6, 7 &8 Page 56 of 58

Event Description: **Feed Line Rupture Inside Containment/Turbine fails to Auto Trip ment/Safety Injection fails to actuate Automatically/A AFW Pump to Auto Start/Trips after Manual Start/TDAFW Pump trips on Overspeed/Standby AFW fails to function**

Time	Pos.	Expected Actions/Behavior	Comments
			NOTE: The CRS will go to E-1.
Terminate the Exam at the discretion of the Lead Examiner **SRO Examiner Perform Admin JPM A4c on CRS**			

TURNOVER SHEET for NRC Exam Scenario #3

Core Age: MOL
48% Power, Equilibrium Xe
Outside Air Temp = 45°F
Water Temp = 45°F
	Procedure in Use:	ACTIONS/NOTES:
		• The plant is at 48% power (MOL).
		• The plant power was reduced several days ago due to a malfunction on the A MFW Pump.
		• Corrective Maintenance has been completed, and the pump is running for retest.
		• The B AFW Pump is OOS for Bearing Replacement. A-52.4 submitted for ITS 3.7.5, 7 day Action.
		• MRPI for Rod G3 indicates on the bottom, however, this is a confirmed instrumentation problem (I&C is working).
		• RG&E Energy Control Center has requested that the electric plant be aligned to a 0/100 configuration on circuit 7T to allow the RG&E personnel to perform an insulator inspection on the 767 Line. The 767 line will remain OPERABLE throughout the inspection.
		• The following Alarms are in:
		  • C-5, PPCS ROD SEQUENCE OR ROD (MRPI Failure)
		  • DEVIATION/PPCS LTOP HI-LOW TEMPERATURE
		  • C-14, ROD BOTTOM (MRPI Failure)
		  • E-4, POWER RANGE UPPER DETECT FLUX DEV OR AUTO DEFEAT (< 50% Power)
		  • E-12, POWER RANGE LOWER DETECT FLUX DEV OR AUTO DEFEAT (< 50% Power)
		  • J-25, SAFEGUARDS EQUIPMENT LOCKED OFF (B MD AFW Pump OOS)
		• Protected equipment IAW OPG Protected Equipment.

Boron: 1106 ppm BAST: 17,400 ppm RCS Activity: Normal	RCS LEAKAGE: (gpm) Total: .021 Identified: .003 Unidentified: .018	

TURNOVER SHEET for NRC Exam Scenario #3

Equipment Problems/OOS:	*Planned Activities for Shift:*	Electrical System Operator Declarations
See NOTES	• Align a 0/100 configuration on circuit 7T	None in effect

	BAST (gal)	RWST (gal)	1st hour dilution stabilization (gal RMW)	2nd hour dilution stabilization (gal RMW)
10% at 1% per minute	52	545	77	51
10% at 10% per hour	48	503	77	52
50% at 1% per minute	229	2482	558	314
50% at 10% per hour	173	1860	296	98

A-52.4					
EQUIPMENT	**DATE/TIME OOS**	**LCO**	**TITLE**	**EXP DATE**	**ECD**
'B' MDAFW Pump	Yesterday, 24hrs ago	3.7.5.B	AFW system	7 days	2 days from now AM
MRPI for Rod G3	Today 4hrs ago	3.1.7.A2	Rod Position Indication	None	None

A-52.12					
EQUIPMENT	**DATE/TIME OOS**	**TRM /ODCM**	**TITLE**	**EXP DATE**	**ECD**

PROGRAM: Ginna Operations Training

MODULE: 2014 Initial License Operator Training Class

TOPIC: NRC Simulator Exam

Scenario N2014-301-4

REFERENCES:

1. S-3.2P, Swapping CVCS Letdown Orifices, Rev 00401
2. P-17, Operations Control Room Operating Instructions, Attachment 12, CROI-12 Swapping Electro-Hydraulic Pumps, Rev 01602
3. AR-E-26, POWER RANGE CHANNEL DEV ±2%, Rev 12
4. AR-E-28, POWER RANGE ROD DROP ROD STOP -5%/5SEC, Rev 00700
5. ER-NIS.3, PR Malfunction, Rev 02603
6. Technical Specification 3.3.1, Reactor Trip Instrumentation, Amendment 112
7. CNG-OP-1.01-1000, Conduct of Operations, Rev 01000
8. AR-F-19, PRZR PORV OUTLET HI TEMP 145°F, Rev 01101
9. AP-PRZR.1, Abnormal Pressurizer Pressure, Rev 01700
10. A-503.1, Emergency And Abnormal Operating Procedures Users Guide, Rev 04409
11. Core Operating Limits Report (COLR), Cycle 37, Rev 0
12. AP-RCS.1, Reactor Coolant Leak, Rev 02001
13. AR-F-9, PRT HI PRESS 5 PSI, Rev 00701
14. AP-TURB.5, Rapid Load Reduction, Rev 01600
15. ATT-23.0, Attachment Transfer 4160 V Loads, Rev 0
16. Technical Specification 3.4.13, RCS Leakage, Amendment 100
17. Technical Specification 3.4.11, Pressurizer PORVs, Amendment 88
18. Technical Specification 3.4.1 RCS Pressure, Temperature, and Flow Departure from Nucleate Boiling (DNB) Limits, Amendment 80
19. TRM 3.4.3, Anticipated Transients Without Scram (ATWS) Mitigation, Rev 31
20. E-0, Reactor Trip and Safety Injection, Rev 04602
21. ATT-27.0, Attachment Automatic Action Verification, Rev 00300
22. E-1, Loss of Reactor or Secondary Coolant, Rev 04100
23. ATT-8.1, Attachment D/G Stop, Rev 6
24. ES-1.2 Post-LOCA Cooldown and Depressurization, Rev 03601
25. ATT-15.0, Attachment RCP Start, Rev 11
26. FR-P.1, Response to Imminent Pressurized Thermal Shock Condition, Rev 03200

Validation Time: 108 Minutes

Author: David Lazarony, Essential Training & Consulting, LLC

Facility Review:

Rev. 110714

Facility:	**Ginna**	Scenario No.: **4**	Op Test No.: **N2014-301**
Examiners:	_____	Operators:	_____ (SRO)
	_____		_____ (RO)
	_____		_____ (BOP)

Initial Conditions:	The plant is at 48% power (MOL). Power has been held at this level for approximately four days while corrective maintenance is performed on the A MFW Pump. Maintenance has just been completed. Chemistry has requested that Letdown flow be raised from 40 gpm to 60 gpm. Also, it is expected to swap EHC Pumps per P-17 for routine equipment rotation. The area has experienced severe weather over the last 6 hours, and this is expected to continue for the next 6 hours.
Turnover:	The following equipment is Out-Of-Service: The B AFW Pump is OOS for Bearing Replacement. Steam Flow channel FT-475 is OOS. The channel has been defeated per ER-INST.1.

Event No.	Malf. No.	Event Type*	Event Description
1	NA	N-RO N-SRO	Swap Letdown Orifice (40 gpm to 60 gpm)
2	NA	N-BOP N-SRO	Alternate EHC Supply Pumps
3	NIS06A CVC07A CVC23	C-RO I-BOP I(TS)-SRO	Power Range N41 Upper Detector fails LOW/Letdown Pressure Controller Failure
4	PZR05B	C-RO C(TS)-SRO	PORV Leak/Block Valve Failure
5	TUR09D	R-RO C-BOP C-SRO	Downpower/Failure of Turbine Control/EHC
6	PZR07	M-RO M-BOP M-SRO	Pzr Steam Space Break
7	RPS11-A3	C-RO C-SRO	Seal Water Return Isolation CIV Fails in AUTO

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Ginna 2014 NRC Scenario #4

The plant is at 48% power (MOL). Power has been held at this level for approximately four days while corrective maintenance is performed on the A MFW Pump. Maintenance has just been completed. Chemistry has requested that Letdown flow be raised from 40 gpm to 60 gpm. Also, it is expected to swap EHC Pumps per P-17 for routine equipment rotation. The area has experienced severe weather over the last 6 hours, and this is expected to continue for the next 6 hours.

The following equipment is Out-Of-Service: The B AFW Pump is OOS for Bearing Replacement. Steam Flow channel FT-475 is OOS. The channel has been defeated per ER-INST.1.

Shortly after taking the watch, the operator will swap Letdown Orifice Control valves in accordance with S-3.2P, Swapping CVCS Letdown Orifices.

After this, the operator will alternate the EHC Supply Pump alignment in accordance with P-17, Operations Control Room Operating Instructions, Attachment 12, CROI-12 Swapping Electro-Hydraulic Pumps.

Then, the N41 Power Ranger Upper Detector will fail Low. The operator will respond in accordance with AR-E-26, POWER RANGE CHANNEL DEV ±2%, and/or AR-E-28, POWER RANGE ROD DROP ROD STOP -5%/5SEC, and then enter ER-NIS.3, PR Malfunction. The operator will address Technical Specification 3.3.1, Reactor Trip Instrumentation. While the CO is defeating the failed Power Range Channel, a failure of the Letdown Pressure Controller will cause PCV-135 to fail OPEN. The operator will need to take manual control of the failed controller, and control Letdown pressure manually.

Subsequently, Pressurizer PORV-431C will fail partially open. The operator will respond in accordance with AR-F-18, PRZR PORV OUTLET HI TEMP 145°F, and enter AP-PZR.1, Abnormal Pressurizer Pressure. When the operator attempts to isolate the PORV, the Block Valve will fail to shut fully resulting in a 2-5 gpm leak into the PRT. The crew may implement AP-RCS.1, Reactor Coolant Leak, and prepare to make a Containment entry. Ultimately, the crew will be directed to take the unit off-line. The operator will address Technical Specification 3.4.11, Pressurizer PORVs, 3.4.1 RCS Pressure, Temperature, and Flow Departure from Nucleate Boiling (DNB) Limits, as well as TRM 3.4.3, Anticipated Transients Without Scram (ATWS) Mitigation. Although the crew will address Technical Specification 3.4.13, RCS Leakage, it is likely that at the current leakrate, this specification will be met.

The operator will take the unit off line in accordance with AP-TURB.5, Rapid Load Reduction During the downpower, the Main Turbine will fail in automatic control, and shift to manual control. The operator will identify that the load reduction has been stopped, and use manual control of the turbine to restart and continue the downpower. The remainder of the downpower will need to be accomplished using manual control of the Turbine.

When the plant is at approximately 40% power, the piping leading to the failed PORV will fail so that a vapor space Small Break LOCA occurs. The plant will trip and Safety Injection will be actuated, and the operator will enter E-0, Reactor Trip or Safety Injection. On the plant trip Containment Isolation Valve MOV-313, the Seal Water Return Line CIV, will fail to close automatically, requiring that the operator manually close this valve.

The operator will transition from E-0 to E-1, Loss of Reactor or Secondary Coolant, and then into ES-1.2 Post-LOCA Cooldown and Depressurization. While in ES-1.2, an Orange Path may occur on the RCS Integrity Critical Safety Function Status Tree.

The scenario will terminate at Step 14 of ES-1.2, after the crew has demonstrated the ability to evaluate/perform the SI flow reduction sequence, or upon transition to FR-P.1, Response to Imminent Pressurized Thermal Shock Condition.

Critical Tasks:

1. Trip all RCPs within 5 minutes of reaching trip criteria

Safety Significance: Failure to trip all RCPs when required can lead to core uncovery and to fuel temperatures in excess of 2200°F. Analyses have shown that if the RCPs are tripped within 5 minutes of the trip criteria being met, PCT will remain below 2200 °F, and if this action is delayed beyond 5 minutes, this PCT will be exceeded. It is a management expectation that the RCPs be tripped as quickly as possible, but within 5 minutes when the trip criteria is met. Failure to take this action represents mis-operation by the operator which leads to degradation of the fuel cladding fission produce barrier, and a violation of a license condition.

2. Close the Seal Water Return Containment Isolation Valve before transition out of E-0.

Safety Significance: Failure to close at least one Containment Isolation Valve on each critical penetration under the postulated conditions when it is possible to do so, constitutes mis-operation leading to degradation of the Containment Barrier. Failure to take this action leads to an unnecessary release of fission products to the auxiliary building, increasing the potential for release to the environment, and reducing accessibility to vital equipment within the Auxiliary Building. Higher radiation levels within the Auxiliary Building will result in a degradation of ALARA principles.

SIMULATOR OPERATOR INSTRUCTIONS

	Bench Mark	ACTIVITY	DESCRIPTION
☐		**Reset to Temp I/C 151 (Built from IC-20)**	**48% power MOL** **T=0:** **OVR-DO-FDW21A=OFF (MOV-4000A Green Lamp)** **OVR-DO-FDW22A=OFF (MOV-4000B Green Lamp)** **MALF RPS11-A3, ISOL SIG ONLY** **Set T-30 = x06i230a==1 (Close for MOV-515)** **Insert MALF STM01E, 0** **Insert OVR-DO-FDW06A, OFF** **Insert MALF NIS06A, 0, on T-1** **Insert MALF CVC07A, 100, on T-2** **Insert MALF CVC23, on T-2** **Insert MALF PZR05B, 5, on T-3** **Insert OVR-DI-PZR04C, FALSE, on T-30** **Insert OVR-DI-PZR04D, TRUE, on T-30** **Insert OVR-DO-PZR04A, ON, on T-30** **Insert OVR-DO-PZR04B, ON, on T-30** **Insert MALF TUR09D, 100, on T-4** **Insert OVR-DO-TUR05O=OFF (IMP IN), on T-4** **Insert OVR-DO-TUR05P=ON (IMP OUT), on T-4** **Insert MALF PZR07, 89000, on T-5**
☐	Prior to Crew Briefing	**RUN**	• **Hang Protective Tags on the A MDAFW Pump and the TDAFW Pump Steam Supply Valves.** • **Hang CAUTION tags on the B MDAFW pump and R-19 panel** • **Hang Caution Tags on MOV-4000A and B.** • **Place a Black Dot on annunciator J-25 for the Safeguards equipment OOS.**
☐	**Crew Briefing** 1. Assign Crew Positions based on evaluation requirements 2. Review the Shift Turnover Information with the crew. 3. Provide crew with a copy of S-3.2P and P-17, Attachment 12.		
☐	T-0	Begin Familiarization Period	
☐	Upon Turnover	**Event 1**	Swap Letdown Orifice (40 gpm to 60 gpm)
☐	Upon Completion of Orifice Swap	**Event 2**	Alternate EHC Supply Pumps

	Bench Mark	ACTIVITY	DESCRIPTION
☐	At direction of examiner	**Event 3** **Trigger #1** **NIS06A** **Trigger #2** **CVC07A** **CVC23**	Power Range N41 Upper Detector fails LOW/Letdown Pressure Controller Failure **0%, No Ramp** **100%, No Ramp** **NOTE: This Malfunction (Letdown Line Safety Valve fails OPEN) has been included to ensure that Letdown Pressure drops sufficiently on a Letdown Pressure Controller failure causing PCV-135 to fail OPEN. When this is inserted the SIM DRIVER will also be required to use INSIGHT and set cldsp 135 = 1.1.**
☐	At direction of examiner	**Event 4** **Trigger #3** **PZR05B** **Trigger #30 (Block Valve CS to CLOSE)** **OVR-PZR04A, ON (Green light LIT)** **OVR-PZR04B, ON (Red light LIT)** **OVR-PZR04C, FALSE (Close signal)** **OVR-PZR04D, TRUE (Open signal)**	PORV Leak/Block Valve Failure **5%, No Ramp (Throttled back to 2% after the operator attempts to close the PORV Block Valve)** **Block Valve fails in mid-position**
☐	At direction of examiner	**Event 5** **Trigger#4** **TUR09D** **OVR-TUR05O=OFF** **OVR-TUR05P=ON**	Downpower/Failure of Turbine Control/EHC **100%, No Ramp** **NOTE: will need to insert:** **REM-EDS49=RESET** **REM-EDS50=RESET** **When performing ATT-23.0**
☐	At direction of examiner	**Event 6** **Trigger#5** **PZR07**	Pzr Steam Space Break (PORV Leakage) **89,000, No Ramp**

	Bench Mark	ACTIVITY	DESCRIPTION
☐	At direction of examiner	**Event 7** **RPS11-A3 (T=0)**	Seal Water Return Isolation CIV Fails in AUTO **NOTE: This MALF is entered at T=0, and will become effective on Reactor Trip/SIS/CIS**
☐	**Terminate the scenario upon direction of Lead Examiner**		

Op Test No.:	N2014-301	Scenario #	4	Event #	1	Page	8	of 67
Event Description:	**Swap Letdown Orifice (40 gpm to 60 gpm)**							

Shortly after taking the watch, the operator will swap Letdown Orifice Control valves in accordance with S-3.2P, Swapping CVCS Letdown Orifices.	
SIM DRIVER Instructions:	**NA**
Indications Available:	**NA**

Time	Pos.	Expected Actions/Behavior	Comments
S-3.2P, SWAPPING CVCS LETDOWN ORIFICES			
			NOTE: The HCO will contact an AO. **SIM DRIVER:** as **AO**, acknowledge.
	HCO	(Step 6.1.1) VERIFY DIVERT VLV CATION DEBOR DI, AOV-244 is in the BYPASS position.	
	HCO	(Step 6.1.2) IF required, THEN PLACE TCV-130 to manual AND ADJUST as necessary to maintain letdown temperature at desired value. OTHERWISE, MARK this Step N/A.	**NOTE:** Since TCV-130 is slow to react, most operators will take this controller to MANUAL.
	HCO	(Step 6.1.3) PLACE PCV-135 to MANUAL AND ADJUST as necessary to control Low Pressure Letdown pressure at approximately 200 psig.	
	HCO	(Step 6.1.4) CLOSE one of the following 40 gpm orifice valves, THEN IMMEDIATELY OPEN LTDN ORIFICE AOV-202 (N/A 40 gpm orifice valve not operated).	**NOTE:** The HCO will close AOV-202A completely before opening AOV-200.
		• AOV-202	
		• AOV-200A	
		• AOV-200B	
	HCO	(Step 6.1.5) ADJUST PCV-135 UNTIL PI-135 indicates approximately 250 psig.	

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Event Description: **Swap Letdown Orifice (40 gpm to 60 gpm)**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 6.1.6) ENSURE PCV-135 controller signal is nulled/balanced, THEN PLACE PCV-135 to AUTO.	**NOTE:** It will be desired to leave PCV-135 in AUTO control.
	HCO	(Step 61.7) ADJUST the Charging Pump that is in manual UNTIL the speed of the operating pumps is approximately equal.	
	HCO	(Step 6.1.8) VERIFY Letdown temperature is at desired value, THEN ENSURE TCV-130 is in AUTO.	**NOTE:** It will be desired to leave TCV-130 in AUTO control.
	HCO	(Step 6.1.9) IF Charging/Letdown mismatch exist, THEN PLACE Charging Pumps in manual AND ADJUST as necessary to maintain Charging/Letdown mismatch at approximately 0. OTHERWISE, MARK this Step N/A.	**NOTE:** Most operators will leave the A Charging Pump in Auto, and attempt to control the speed of the C Charging Pump speed in MANUAL.
	HCO/ AO	(Step 6.1.10) LOCALLY ADJUST SEAL INJECTION INLET NEEDLE VLV TO RCP A, V-300A AND SEAL INJECTION INLET NEEDLE VLV TO RCP B, V-300B, as necessary to maintain labyrinth seal D/P between 30 and 40 inches.	
	HCO	(Step 6.1.11) MONITOR Letdown Temperature is controlling at desired value.	
	HCO/ AO	(Step 6.1.12) VERIFY local demin D/P less than 25 psid (DPI-100, DPI-101).	**NOTE:** The HCO will contact an AO. **SIM DRIVER:** as **AO**, acknowledge, and report that the Demin D/P is 12 psid.

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Event Description: **Swap Letdown Orifice (40 gpm to 60 gpm)**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 6.1.13) NOTIFY Shift Chemistry Technician.	**NOTE:** The HCO will contact Chemistry. **SIM DRIVER:** as **Chemistry**, acknowledge.
Crew should initiate actions to complete Event #2 after this evolution is complete.			

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Event Description:	**Alternate EHC Supply Pumps**						

After this, the operator will alternate the EHC Supply Pump alignment in accordance with P-17, Operations Control Room Operating Instructions, Attachment 12, CROI-12 Swapping Electro-Hydraulic Pumps.	
SIM DRIVER Instructions:	**NA**
Indications Available:	**NA**

Time	Pos.	Expected Actions/Behavior	Comments
P-17, OPERATIONS CONTROL ROOM OPERATING INSTRUCTIONS ATTACHMENT 12, CROI-12 SWAPPING ELECTRO-HYDRAULIC PUMPS			
			NOTE: The CO will dispatch an AO. **SIM DRIVER:** as **AO**, acknowledge.
	CO	(Step 2.1) START EH System Supply Pump B.	
	CO	(Step 2.2) STOP EH System Supply Pump A.	
	CO	(Step 2.3) VERIFY EH Pump B is operating normally AND discharge pressure is between 1600 and 2100 lbs as indicated on PI-6055 when loaded.	**NOTE:** The CO will contact the AO. **SIM DRIVER:** as **AO**, acknowledge, report that EH Pump B discharge pressure is 1860 psig.
	CO	(Step 2.4) IF EH System Supply Pump B is NOT maintaining system pressure between 1600 to 2100 lbs as indicted on PI-6054, THEN	**NOTE:** The CO will recognize that this is NOT applicable
	CO	(Step 2.5) MONITOR AND MAINTAIN EH system temperature between 110 and 130°F.	**NOTE:** The CO will contact the AO. **SIM DRIVER:** as **AO**, acknowledge, report that EH Pump B discharge temperature is 118°F.

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Event Description: **Alternate EHC Supply Pumps**

Time	Pos.	Expected Actions/Behavior	Comments
	CO	(Step 3.0) MONITOR System operation for 15 minutes after pump swap to ENSURE stable system operation and normal parameters.	
			NOTE: The CRS may notify the **WCC**. **SIM DRIVER:** as **WCCS**, acknowledge.
			NOTE: The CRS will likely conduct a Plant Status Brief.
At the discretion of the Lead Examiner move to Event #3.			

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Event Description:	**Power Range N41 Upper Detector fails LOW/Letdown Pressure Controller Failure**		

Then, the N41 Power Ranger Upper Detector will fail Low. The operator will respond in accordance with AR-E-26, POWER RANGE CHANNEL DEV ±2%, and/or AR-E-28, POWER RANGE ROD DROP ROD STOP -5%/5SEC, and then enter ER-NIS.3, PR Malfunction. The operator will address Technical Specification 3.3.1, Reactor Trip Instrumentation. While the CO is defeating the failed Power Range Channel, a failure of the Letdown Pressure Controller will cause PCV-135 to fail OPEN. The operator will need to take manual control of the failed controller, and control Letdown pressure manually.

SIM DRIVER Instructions: **Operate Trigger #1 (NIS06A, 0%)**

Indications Available:

- MCB Annunciator E-26, POWER RANGE CHANNEL DEV ±2%
- MCB Annunciator E-28, POWER RANGE ROD DROP ROD STOP -5%/5SEC
- NI-41C, Power Range Flux indicating 25%
- NI-41B, Power Range Full Power indicating 25%
- Power Range Drawer, N41A indicating 25%
- Power Range Drawer, Upper Detector Current indicating 0
- Power Range Drawer, Dropped Rod Rod Stop light is LIT

Time	Pos.	Expected Actions/Behavior	Comments
			NOTE: The crew may enter ER-NIS.3 directly.
AR-E-26, POWER RANGE CHANNEL DEV ±2%			
	CRS	(Step 1) Refer to ER-NIS.3.	
	HCO	(Step 2) Check alarm F-29 and power tilt indication on PPCS.	
	HCO	(Step 3) Monitor MRPI for Rod out of alignment.	
	HCO	(Step 4) Monitor incore thermocouples.	
AR-E-28, POWER RANGE ROD DROP ROD STOP -5%/5 SEC			

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Event Description: **Power Range N41 Upper Detector fails LOW/Letdown Pressure Controller Failure**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO/ CO	(Step 4.1) CHECK the Following for indication of a dropped or misaligned RCC	**NOTE:** The CRS will recognize that AP-RCC.3 is NOT applicable.
		• Power Range indications	
		• MRPI indication	
		• RCS Tavg	
		• Core Exit Thermocouples	
	CRS	(Step 4.1.1) IF conditions indicate a dropped or misaligned RCC THEN…..	**NOTE:** There is no Dropped or Misaligned RCC.
	CRS	(Step 4.1.2) IF conditions indicate a malfunctioning Power Range THEN GO TO ER-NIS.3 POWER RANGE MALFUNCTION	
			NOTE: The CRS will go to ER-NIS.3.
ER-NIS.3, PR MALFUNCTION			
	HCO	(Step 6.1) PLACE the Rod Control Bank Selector switch in M (MANUAL).	**NOTE:** The HCO will place the Rods in MANUAL.
	HCO	(Step 6.2) ADJUST Tavg Tref.	
	HCO	(Step 6.3) IF hot leg streaming has been causing single channel Δ runback signals,…..	**NOTE:** Hot leg streaming has NOT been causing single channel ΔT runback signals – reactor power too low for this concern.
	HCO	(Step 6.4) DEFEAT the inoperable Power Range per appropriate attachment:	**NOTE:** The appropriate Attachment is Attachment 1.
		• Attachment 1, N-41 Defeat	
			NOTE: The CRS will hand off the Attachment to the CO.

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Event Description: **Power Range N41 Upper Detector fails LOW/Letdown Pressure Controller Failure**

Time	Pos.	Expected Actions/Behavior	Comments
		ER-NIS.3, PR MALFUNCTION ATTACHMENT 1, N-41 DEFEAT	
			NOTE: The CO will conduct an Instrument Defeat Brief.
	CO	(Step 1) IF the PPCS is operational, THEN delete NIS Channel 41 from processing by performing the following:	
		• SELECT "Group Update" display	
		• Select "List Server Groups"	
		• Select NIS1 from the pick list	
		• TURN "OFF" scan processing, then click the "Set Scan Processing" button	
		• ANSWER prompts	
	CO	(Step 2) VERIFY the ROD CONTROL BANK SELECTOR switch (MCB) is in the M (MANUAL) position.	
	CO	(Step 3) PLACE the DROPPED ROD MODE switch (Power Range N41A drawer) to BYPASS AND VERIFY the following:	
		• DROPPED ROD BYPASS (local light) is ILLUMINATED.	
		• POWER RANGE-1 ROD DROP BYPASS (MCB BYPASS STATUS LIGHT) is ILLUMINATED.	
		• Annunciator (MCB) E-7, NIS TRIP BYPASS, is ILLUMINATED.	
	CO	(Step 4) PLACE T/405E DELTA T DEFEAT switch (RIL Insertion Limit Rack) to LOOP A UNIT 1 (Defeats the ΔT Runback and Rodstop for the failed channel AND removes the associated ΔT input from the RIL computer-Annunciators F-30 AND F-31 will clear if lit).	**NOTE:** The CO will unlock and open the RIL Insertion Limit Rack Cabinet, take the required action, and then close and lock the cabinet door.

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Event Description: **Power Range N41 Upper Detector fails LOW/Letdown Pressure Controller Failure**

Time	Pos.	Expected Actions/Behavior	Comments
	CO/ HCO	(Step 5) Place the OVERTEMP TRIP bistable (RED R-1 Protection Channel 1 rack) proving switch to DEFEAT (UP) AND VERIFY the following:	**NOTE:** The CO will unlock and open the RED R-1 Protection Channel 1 Rack Cabinet, take the required action, and then close and lock the cabinet door.
		• Annunciator F-23, RCS OTΔT CHANNEL ALERT, is ILLUMINATED.	
		• Proving light OFF if TI-405B ≥ TI-405A	**NOTE:** Light is ON
		IF any proving light status is NOT correct, THEN SUBMIT a Condition Report on the discrepancy and continue with the channel defeat steps.	**NOTE:** The Proving Light status is Correct.
	CO/ HCO	(Step 6) PLACE the OVERPOWER TRIP bistable (Red R-1 Protection Channel 1 rack) proving switch to DEFEAT (UP) AND VERIFY the following:	
		• Annunciator F-32, RCS OPΔT CHANNEL ALERT, is ILLUMINATED.	
		• Proving light OFF if TI-405B ≥ TI-405C	**NOTE:** Light is ON
		IF any proving light status is NOT correct, THEN SUBMIT a Condition Report on the discrepancy and continue with the channel defeat steps.	**NOTE:** The Proving Light status is Correct.
	CO	(Step 7) Verify the following bistables are ILLUMINATED:	
		• TC405A OPΔT Loop A	
		• TC405C OTΔT Loop A	
		IF any bistable above is NOT lit, THEN the ΔT channel(s) may not be in the tripped condition. Further investigation is necessary to ensure ITS requirements are met.	

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Event Description:	**Power Range N41 Upper Detector fails LOW/Letdown Pressure Controller Failure**							

Time	Pos.	Expected Actions/Behavior	Comments
			Examiner NOTE: This malfunction should be inserted while the CO is in the back of the MCB, defeating the Power Range Channel failure. If following the CO, continue with Step 8 of ER-NIS.3 on **Page 18**.
SIM DRIVER Instructions:		**Operate Trigger #2 (CVC07A, 100%, CVC23)** **NOTE: After operating Trigger #2, call up INSIGHT and set <u>cldsp 135 = 1.1.</u>**	
Indications Available: • Letdown pressure will start to lower. • Letdown flow (FI-134) starts to oscillate. • A-19, LETDOWN LINE HI FLOW 70 GPM, will alarm. •			
CNG-OP-1.01-1000, CONDUCT OF OPERATIONS			
			NOTE: The CRS may contact the AO to investigate the status of PCV-135. IF so, **SIM DRIVER**, as AO, report that the valve is **FULLY OPEN**, and that there are **NO Air Leaks.**
	HCO	(Step 5.10.C.1) Use sound judgment when deciding to take manual actions before automatic actions in response to parameter trends. Take manual actions when automatic actions do not occur.	**NOTE:** The HCO will diagnose a failure of the PCV-135 Controller in AUTO, and place the controller in MANUAL.

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Event Description: **Power Range N41 Upper Detector fails LOW/Letdown Pressure Controller Failure**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 5.10.C.2) Transients induced by the malfunction of an automatic system should be terminated by operator action to establish manual control with a proper demand signal. Unless an instrument indication or control action is demonstrated to be incorrect by checking multiple and diverse indications, the control shall remain in automatic.	
	HCO	(Step 5.10.C.3) The need and intent to place a controller into manual operation should be communicated to the CRS before taking this action.	**NOTE:** The HCO will communicate to the CRS that the PCV-135 controller is in MANUAL.
ER-NIS.3, PR MALFUNCTION ATTACHMENT 1, N-41 DEFEAT			
			Examiner NOTE: If following the CO, continue HERE.
	CO	(Step 8) PLACE the UPPER SECTION DEFEAT switch (Detector Current Comparator-Miscellaneous Control & Indications drawer) to the PRN41 position AND VERIFY the following:	
		• Local light for CHANNNEL DEFEAT upper section is ILLUMINATED.	
	CO	(Step 9) PLACE the LOWER SECTION DEFEAT switch (Detector Current Comparator-Miscellaneous Controls & Indications drawer) to PRN41 position AND VERIFY the following:	
		• Local light for CHANNEL DEFEAT lower section is ILLUMINATED.	
	CO	(Step 10) PLACE the POWER MISMATCH BYPASS switch (Detector Current Comparator-Miscellaneous Controls & Indications drawer) to BYPASS PR N41	

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Event Description: **Power Range N41 Upper Detector fails LOW/Letdown Pressure Controller Failure**

Time	Pos.	Expected Actions/Behavior	Comments
	CO	(Step 11) PLACE the ROD STOP BYPASS switch (Detector Current Comparator-Miscellaneous Controls & Indications drawer) to BYPASS PR N41.	
	CO	(Step 12) PLACE the COMPARATOR CHANNEL DEFEAT switch (Comparator and Rate drawer) to N41 AND VERIFY the following:	
		• Local light for COMPARATOR DEFEAT is ILLUMINATED.	
	CO	(Step 13) REMOVE the 118V 5A AC INSTR POWER fuses (Power Range N41B drawer) AND VERIFY the following alarms (MCB) are ILLUMINATED:	
		• E-18, POWER RANGE LOSS OF DETECTOR VOLTAGE	
		• E-19, POWER RANGE HI RANGE CHANNEL ALERT 108%	
		• E-21, POWER RANGE OVERPOWER ROD STOP 103%^	
		• E-27, POWER RANGE LO RANGE CHANNEL ALERT 24%	**NOTE:** Normally LIT above 24% power.
		• E-28, POWER RANGE ROD DROP ROD STOP -5%/5 SEC	
	CO/ HCO	(Step 13.1) VERIFY the following RED bistable lights (MCB) are ILLUMINATED:	
		• HI POW RANGE P-10 NC41M	
		• HI POW RANGE P-8 NC41N	
		• LO POW RANGE TRIP NC41P	
		• HI POW RANGE TRIP NC41R	
		• HI POW RANGE P-9 NC41S	

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Event Description: **Power Range N41 Upper Detector fails LOW/Letdown Pressure Controller Failure**

Time	Pos.	Expected Actions/Behavior	Comments
		IF any bistable above is NOT ILLUMINATED, THEN the channel may not be in the tripped condition. Further investigation is necessary to ensure ITS requirements are met.	
	CO	(Step 13.2) VERIFY the following status lights (Power Range N41A drawer) are lit:	
		• CONTROL POWER ON	
		• LOSS OF DETECTOR VOLT	
		• OVERPOWER TRIP HIGH RANGE	
		• OVERPOWER ROD STOP	
		• OVERPOWER TRIP LOW RANGE	
		• POWER ABOVE PERMISSIVE P10	
		• POWER ABOVE PERMISSIVE P8	
		• POWER ABOVE PERMISSIVE P9	
		• ROD DROP	
		• DROPPED ROD BYPASS	
	CO	(Step 13.3) VERIFY the following status lights (Power Range N41B drawer) are extinguished:	
		• INSTRUMENT POWER ON	
		• CHANNEL ON TEST	
	CO	(Step 14) NOTIFY I&C to INSTALL jumpers across contacts 1-5 AND 4-8 of Power Range relays NC 41 MX (both A train and B train Protection Racks). This will remove N-41 from the logic circuit for reinstating the PR low power trip and the source ranges (P-10).	**NOTE:** The CO may notify the WCC/I&C. **SIM DRIVER:** as **WCCS/I&C**, acknowledge. Set **REM NIS105 to INSTALLED** to complete jumper installation.
	CO	(Step 15) INITIATE an A-52.4 on N-41.	

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Event Description: **Power Range N41 Upper Detector fails LOW/Letdown Pressure Controller Failure**

Time	Pos.	Expected Actions/Behavior	Comments
	CO	(Step 16) Go to step 6.5.	**NOTE:** The CO will notify the CRS that Attachment N-41 Defeat is complete.
	CRS	(Step 6.5) WHEN the appropriate channel defeat attachment is complete, THEN restore the following systems to AUTOMATIC as desired:	
	CO	• STEAM DUMP	
	HCO	• ROD CONTROL	**NOTE:** The HCO will place the Rods in AUTO.
	CO	• EH	
	CRS	(Step 6.6) CHECK the following for required actions:	
		• Tech Spec Sections	
		• Section 3.3.1 TABLE 3.3.1-1 Functions 2a & b, 5, 6, 16b, 16c, 16d and 16e.	
		• Section 3.2.1 (SR 3.2.1.2)	
		• Section 3.2.2 (SR 3.2.2.2)	
		• Section 3.2.3	**NOTE:** N/A if < 50% power
		• Section 3.2.4	**NOTE:** N/A if < 50% power
		• TRM Sections	
		• Section 3.2.3	**NOTE:** N/A if < 50% power
		• Section 3.2.4	**NOTE:** N/A if < 50% power
TECHNICAL SPECIFICATION 3.3.1, REACTOR TRIP (RTS) INSTRUMENTATION			
	CRS	LCO 3.3.1 The RTS instrumentation for each Function (functions 2a, 2b, 5, 6, 16b, 16c, 16d, 16e) in Table 3.3.1-1 shall be OPERABLE.	

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Event Description: **Power Range N41 Upper Detector fails LOW/Letdown Pressure Controller Failure**

Time	Pos.	Expected Actions/Behavior			Comments
		APPLICABILITY According to Table 3.3.1-1.			
		CONDITION	REQUIRED ACTION	COMPLETION TIME	
		A. One or more Functions with one channel inoperable.	A.1 Enter the Condition reference in Table 3.3.1-1 for the channel(s).	Immediately	
		D. As required by Required Action A.1 and referenced by Table 3.3.1-1.	D.1 Place channel in trip.	6 hours	
		S. As required by Required Action A.1 and referenced by Table 3.3.1-1.	S.1 Verify interlock is in required state for existing plant conditions.	1 hour	
			OR		
			S.2 Declare associated RTS Function channel(s) inoperable.	1 hour	
					NOTE: The CRS will likely conduct a Plant Status Brief.
At the discretion of the Lead Examiner move to Event #4.					

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Event Description: **PORV Leak/Block Valve Failure**

Subsequently, Pressurizer PORV-431C will fail partially open. The operator will respond in accordance with AR-F-18, PRZR PORV OUTLET HI TEMP 145°F, and enter AP-PZR.1, Abnormal Pressurizer Pressure. When the operator attempts to isolate the PORV, the Block Valve will fail to shut fully resulting in a 2-5 gpm leak into the PRT. The crew may implement AP-RCS.1, Reactor Coolant Leak, and prepare to make a Containment entry. Ultimately, the crew will be directed to take the unit off-line. The operator will address Technical Specification 3.4.11, Pressurizer PORVs, 3.4.1 RCS Pressure, Temperature, and Flow Departure from Nucleate Boiling (DNB) Limits, as well as TRM 3.4.3, Anticipated Transients Without Scram (ATWS) Mitigation. Although the crew will address Technical Specification 3.4.13, RCS Leakage, it is likely that at the current leakrate, this specification will be met.

SIM DRIVER Instructions: **Operate Trigger #3 (PZR05B, 5%, Throttled back to 2% after the operator attempts to close the PORV Block Valve)**

Indications Available:

- MCB Annunciator F-19, PRZR PORV OUTLET HI TEMP 145°F
- MCB Annunciator F-18, PRZR SAFETY VALVE HI TEMP 145°F
- Pressurizer Pressure decreases slowly
- PRT Pressure (PI-440A) increases
- PCV-431C has dual indication

Time	Pos.	Expected Actions/Behavior	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.
	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 attempt to close MOV-515.
	HCO	(Step 3) Check PRT parameters.	

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Event Description: **PORV Leak/Block Valve Failure**

Time	Pos.	Expected Actions/Behavior	Comments
	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: The CRS will go to AP-PRZR.1.

SIM DRIVER Note: **When the operator attempts to close the PORV Block Valve, Trigger #30 will activate, failing the valve at mid-position.**

Throttle PZR05B back to 2%.

Indications Available:

- PORV Block Valve Red status light LIT
- PORV Block Valve Green status light LIT
- Pressurizer Pressure continues to decreases slowly

			Examiner NOTE: If the crew enters AP-RCS.1 at any time, proceed to the actions on **Page 28.**
AP-PRZR.1, ABNORMAL PRESSURIZER PRESSURE			
	HCO	(Step 1) Check PRZR Pressure:	
		• All 4 narrow range channels – APPROXIMATELY EQUAL	
		• All 4 narrow range channels – TRENDING TOGETHER	
	HCO	(Step 2) Check Reactor Power – STABLE	
	HCO	(Step 3) Check PRZR Pressure:	
		• Pressure – LESS THAN 2235 PSIG	
		• Pressure – GREATER THAN 2000 PSIG	

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Event Description: **PORV Leak/Block Valve Failure**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 4) Check PRZR heater Status:	
		• PRZR proportional heater breaker – CLOSED	
		• PRZR heater backup group - ON	**NOTE:** All Pzr Heaters will be energized.
	HCO	(Step 5) Verify Normal PRZR Spray Valves - CLOSED	
		• AOV-431A	
		• AOV-431B	
	HCO	(Step 6) Check PRZR Pressure Controller, 431K, Demand – LESS THAN 50%	
	HCO	(Step 7) Check PRZR PORVs:	
		• PORVs – CLOSED	**NOTE:** PCV-431C will be in mid-position.
		• (Step 7a RNO) Manually close PORVs	**NOTE:** PORV will not close.
		IF any valve can NOT be closed, THEN manually close the associated block valve.	
		• MOV-515 for PCV-431C	**NOTE:** The HCO will attempt to close the Block Valve unsuccessfully (if not attempted earlier).
	HCO	• (Step 7 Continued) Annunciator F-19, PRZR PORV OUTLET HI TEMP 145ºF – EXTINGUISHED	**NOTE:** F-19 is LIT.
		• (Step 7b RNO) IF PORV leakage is indicated, THEN perform the following:	

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Event Description: **PORV Leak/Block Valve Failure**

Time	Pos.	Expected Actions/Behavior	Comments
		• Close PORV block valves one at a time AND check if pressure stabilizes.	
		• MOV-515	**NOTE:** The HCO will attempt to close the Block Valve unsuccessfully (if not attempted earlier).
	CRS	• (Step 7c Go to step 9)	
	HCO	(Step 9) Check PRZR Safety Valves:	
		Position indicator - LESS THAN 0.1 INCH	
		Annunciator F-18, PRZR SAFETY VLV OUTLET HI TEMP 145°F - EXTINGUISHED	
		Annunciator AA-13, PRESSURIZER SAFETY VALVE POSITION - EXTINGUISHED	
	HCO	(Step 10) Check AUX Spray Valve, AOV-296 – CLOSED.	
	HCO	(Step 11) Check PRZR Pressure Control Restored:	
		• Pressure – TRENDING TO 2235 PSIG	**NOTE:** The Pressurizer Pressure is expected to be rising by this time.
	CRS	• Go to Step 16.	
	HCO	(Step 16) Check PRT Indications:	
		• Level - BETWEEN 61% AND 84%	
		• Pressure – APPROXIMATELY 1.5 PSIG AND STABLE	**NOTE:** The PRT pressure will be rising.

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Event Description: **PORV Leak/Block Valve Failure**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 16.b RNO) Open PRT vent, AOV-527 until PRT 1.5 PSIG AND STABLE pressure is approximately 1.5 psig. IF PRT pressure will NOT lower, THEN open PRT drain valve, AOV-526, to reduce pressure until PRT pressure is approximately 1.5 psig.	**NOTE:** The HCO will attempt to control PRT pressure.
	HCO	(Step 16.c) Temperature - AT CNMT AMBIENT TEMPERATURE AND STABLE	
	HCO	(Step 17) Establish PRZR Pressure Control 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	
	CRS/ HCO/ CO	(Step 18) Evaluate MCB Annunciator Status (Refer to AR Procedures)	
	CRS	(Step 19) Notify Higher Supervision	
	CRS	(Step 20) Notify Reactor Engineer for Transient Monitoring Program	**NOTE:** The CRS will call RE. **SIM DRIVER:** as **RE**, acknowledge.
			NOTE: IF crew does not enter AP-RCS.1, then PROMPT (as Ops Management) that plant should be S/D per AP-TURB.5 at 1%/minute.

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Event Description: **PORV Leak/Block Valve Failure**

Time	Pos.	Expected Actions/Behavior	Comments
			NOTE: The following steps assumes CRS enters AP-RCS.1.IF AP-TURB.5 entry, Move forward to Event 5.
		AP-RCS.1, REACTOR COOLANT LEAK	
	HCO	(*Step 1) Monitor PRZR Level – STABLE AT PROGRAM LEVEL	**NOTE:** The HCO may raise Charging Pump Speed.
	HCO	(Step 2) Check VCT Makeup System:	
		• Verify VCT level – GREATER THAN 5%	
		• Ensure the following:	
		• RMW mode selector switch in AUTO	
		• RMW control armed – RED LIGHT LIT	
		• Check VCT level:	
		• Level GREATER THAN 20%	
		OR	
		• Level - STABLE OR RISING	
	HCO	(Step 3) Check If RCS Leakage In CNMT:	**NOTE:** The leakage is into the PRT.
		• Check CNMT radiation monitors - NORMAL	
		• R-2	
		• R-7	
		• R-10A	
		• R-11	
		• R-12	
		• CNMT sump A pump run frequency – NORMAL (Refer to RCS Daily Leakage Log)	

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Event Description: **PORV Leak/Block Valve Failure**

Time	Pos.	Expected Actions/Behavior	Comments
	CRS	(Step 4) Dispatch AO to AUX BLDG To Investigate For CVCS Leak (locked area keys required)	**NOTE:** The CRS will dispatch an AO. **SIM DRIVER:** as **AO**, acknowledge.
	HCO	(Step 5) Check For Leak To CCW System:	**NOTE:** The leakage is into the PRT.
		• CCW surge tank level – APPROXIMATELY 50% AND STABLE	
		• CCW radiation monitor, R-17 - NORMAL	
	HCO	(Step 6) Check CVCS Conditions:	**NOTE:** The leakage is into the PRT.
		• Normal letdown – IN SERVICE	
		• Letdown indication:	
		• Letdown flow – APPROXIMATELY 40 GPM (60 GPM IF AOV-202 OPEN)	
		• Low pressure LTDN pressure – APPROXIMATELY 250 PSIG	
		• Letdown pressure control valve, PCV-135, demand APPRXIMATELY 35% OPEN (40% OPEN IF AOV-202 OPEN)	
	HCO	• Charging indication:	
		• Seal injection flows – GREATER THAN 6 GPM AND STABLE	
		• RCP Labyrinth seal D/Ps – GREATER THAN 15 INCHES AND APPROXIMATELY EQUAL	
		• Charging pump discharge pressure – GREATER THAN RCS PRESSURE	
		• AUX BLDG radiation levels - NORMAL	
		• R-4	
		• R-9	
		• R-10B	

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Event Description: **PORV Leak/Block Valve Failure**

Time	Pos.	Expected Actions/Behavior	Comments
		• R-13	
		• R-14	
	HCO	(Step 7) Check PRT Indications:	**NOTE:** The leakage is into the PRT.
		• Level – BETWEEN 61% AND 84%	
		• Pressure – APPROXIMATELY 1.5 PSIG AND STABLE	**NOTE:** PRT pressure is increasing.
		• Temperature - AT CNMT AMBIENT TEMPERATURE AND STABLE	
	HCO	(Step 7 RNO) Check tailpipe and valve leakoff temperatures for the PRZR safety valves and PORVs for indication of leakage.	**NOTE:** Tailpipe temperatures are high.
		IF no PORV or safety valve leakage is indicated, THEN…….	**NOTE:** There is PORV leakage indicated into the PRT.
	HCO	(Step 8) Check S/Gs for Leakage:	
		• Air ejector radiation monitors - NORMAL	
		• R-15	
		• R-47	
		• R-48	
		• S/G blowdown radiation monitor (R-19) – NORMAL	
		• Steamline radiation monitors - NORMAL	
		• R-31	
		• R-32	
		• S/G sample activity – NORMAL (Check with Chemistry Department for normal)	
	HCO	(Step 9) Check SI Accumulator Levels – STABLE	**NOTE:** The leakage is into the PRT.

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Event Description: **PORV Leak/Block Valve Failure**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 10) Check RCP Seal Leakoff Flows:	
		• Leakoff flows – WITHIN THE NORMAL OPERATING RANGE OF FIG-4.0, FIGURE RCP SEAL LEAKOFF	
		• Leakoff flows - STABLE	
	HCO	(Step 11) check RCDT Leak Rate – NORMAL (Refer to RCS Daily Leakage Log and PPCS point ID L1003)	**NOTE:** The leakage is into the PRT.
	HCO	(Step 12) Check Valve Leakoff Temperatures – NORMAL (Refer to Pressurizer Valve Leak-Off Temperature Record Log)	
	HCO	(Step 13) Check Normal or Excess Letdown – IN SERVICE	**NOTE:** Normal Letdown is in service.
	HCO	(Step 14) Establish Stable Plant Conditions:	
		• PRZR level – TRENDING TO PROGRAM IN AUTO CONTROL	
		• Check PRZR pressure – TRENDING TO 2235 PSIG IN AUTO	**NOTE:** Pressurizer Pressure is trending down.
		• (Step 14b RNO) Control PRZR pressure by one of the following:	
		• 431K in MANUAL	
		• Manual control of PRZR heaters and sprays	
		• IF pressure can NOT be controlled manually THEN refer to AP-PRZR.1, ABNORMAL PRESSURIZER PRESSURE.	
	HCO	(Step 15) Establish Control Systems In Auto	
		• Verify 431K in AUTO	

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Event Description: **PORV Leak/Block Valve Failure**

Time	Pos.	Expected Actions/Behavior	Comments
		• (Step 15a RNO) Place 431K in AUTO, if desired.	
		• (Step 15 Continued) Verify PRZR spray valves in AUTO	
		• Verify PRZR heaters restored:	
		• PRZZR proportional heaters breaker – CLOSED	
		• PRZR backup heaters breaker – RESET, IN AUTO	
		• Verify one charging pump in AUTO	
	HCO/ CO	(Step 16) Evaluate MCB Annunciator Status (Refer to AR Procedures)	
	CRS	(Step 17) Evaluate RCS Leakage:	
		• Leakage within limits (Refer to leakage surveillance sheet and ITS section 3.4.13)	**NOTE:** The leakage is > than that allowed by TS.
		• (Step 17a RNO) IF leak NOT isolable, but PRZR level and seal injection can be maintained, THEN shut the plant down (Refer to 0-2.1, NORMAL SHUTDOWN TO HOT SHUTDOWN or AP-TURB.5, RAPID LOAD REDUCTION).	**SIM DRIVER:** As the Shift Manager, direct the CRS to shutdown the plant using AP-TURB.5 at 1%/minute.
		• (Step 17 Continued) Leak location identified	
		• (Step 17b RNO) Return to Step 1.	

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Event Description: **PORV Leak/Block Valve Failure**

Time	Pos.	Expected Actions/Behavior	Comments
			NOTE: The CRS will likely conduct a Plant Status Brief. **NOTE:** The CRS will go to AP-TURB.5. **NOTE:** The CO may notify the **CENG Generation Dispatch**. **SIM DRIVER:** as **CENG Generation Dispatch**, acknowledge. **NOTE:** The CO may notify the **RG&E ECC**. **SIM DRIVER:** RG&E ECC, acknowledge. **NOTE:** The CRS may notify the **WCC**. **SIM DRIVER:** as **WCCS**, acknowledge.
			Examiner NOTE: The CRS may NOT check TS during the plant transient. If NOT, **CRS Examiner** check TS after the scenario is complete.
TECHNICAL SPECIFICATION 3.4.1, RCS PRESSURE, TEMPERATURE, AND FLOW DEPARTURE FROM NUCLEATE BOILING (DNB) LIMITS			
	CRS	RCS Pressure, Temperature, and Flow Departure from Nucleate Boiling (DNB) Limits	
	CRS	LCO 3.4.1 RCS DNB parameters for pressurizer pressure, RCS average temperature, and RCS total flow rate shall be within the limits specified in the COLR.	**NOTE:** According to Section 2.10.1 of the COLR, the Przr Pressure shall be ≥2205 psig.
		APPLICABILITY: MODE 1	
		ACTIONS	

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Event Description: **PORV Leak/Block Valve Failure**

Time	Pos.	Expected Actions/Behavior			Comments
		CONDITION	REQUIRED ACTION	COMPLETION TIME	
		A. One or more RCS DNB parameters not within limits.	A.1 Restore RCS DNB parameter(s) to within limit.	2 hours	
TECHNICAL SPECIFICATION 3.4.11, PRESSURIZER POWER OPERATED RELIEF VALVES (PORVs)					
	CRS	LCO 3.4.11 Each PORV and associated block valve shall be OPERABLE.			
	CRS	APPLICABILITY MODES 1, 2, and 3.			
		CONDITION	REQUIRED ACTION	COMPLETION TIME	
		C. One block valve inoperable.	C.1 Place associated PORV in manual control. AND C.2 Restore block valve to OPERABLE status.	1 hour 7 days	
TECHNICAL SPECIFICATION 3.4.13, RCS OPERATIONAL LEAKAGE					
	CRS	LCO 3.4.13 RCS operational LEAKAGE shall be limited:			**NOTE:** The CRS will evaluate this Tech Spec but conclude the LCO is MET (Identified leakrate is 2-5 gpm).
		• No pressure boundary LEAKAGE;			
		• 1 gpm unidentified LEAKAGE;			
		• 10 gpm identified LEAKAGE; and			

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Event Description: **PORV Leak/Block Valve Failure**

Time	Pos.	Expected Actions/Behavior			Comments
		• 150 gallons per day primary to secondary LEAKAGE through any one steam generator (SG).			
		APPLICABILITY MODES 1, 2, 3, and 4.			
		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	
TECHNICAL REQUIREMENT 3.4.3, ANTICIPATED TRANSIENTS WITHOUT SCRAM (ATWS) MITIGATION					
	CRS	TR 3.4.3 ATWS Mitigation shall be OPERABLE as follows:			
		• Each PORV shall be capable of automatic actuation and each block valve shall be open;			
		• Manual rod insertion shall be OPERABLE; and			
		• ATWS Mitigation System Actuation Circuitry (AMSAC) shall be OPERABLE.			
		APPLICABILITY MODE 1 > 45% RTP.			
		CONDITION	REQUIRED ACTION	COMPLETION TIME	

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Event Description: **PORV Leak/Block Valve Failure**

Time	Pos.	Expected Actions/Behavior			Comments
		A. One or more PORV automatic flow path inoperable.	A.1 Declare ATWS mitigating capability inoperable.	Immediately	
When the crew starts the downpower move to Event #5					

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Event Description: **Downpower/Failure of Turbine Control/EHC**

The operator will take the unit off line in accordance with AP-TURB.5, Rapid Load Reduction During the downpower, the Main Turbine will fail in automatic control, and shift to manual control. The operator will identify that the load reduction has been stopped, and use manual control of the turbine to restart and continue the downpower. The remainder of the downpower will need to be accomplished using manual control of the Turbine.

SIM DRIVER Instructions: **NA**

Indications Available: **NA**

Time	Pos.	Expected Actions/Behavior	Comments
		AP-TURB.5, RAPID LOAD REDUCTION	
			Examiner NOTE: The crew may perform ATT-23.0 based on the Note prior to Step 1 of AP-TURB-5. If so, Examiner following CO continue, while other Examiners continue with Step 1 of AP-TURB.5 on **Page 38.**
		ATT-23.0, ATTACHMENT TRANSFER 4160V LOADS	
	CO	(Step 1) Place Bus 12A – Bus 11A TIE SYNCHROSCOPE to ON.	
	CO	(Step 2) Close BUS 12A – BUS 11A TIE 4160V.	
	CO	(Step 3) Place BUS 12A – BUS 11A TIE SYNCHROSCOPE to OFF.	
	CO	(Step 4) Open BUS 11A NORMAL FEED 4160V.	
	CO	(Step 5) Place BUS 11B – BUS 12B TIE SYNCHROSCOPE to ON.	

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Event Description: **Downpower/Failure of Turbine Control/EHC**

Time	Pos.	Expected Actions/Behavior	Comments
	CO	(Step 6) Close BUS 11B – BUS 12B TIE 4160V.	
	CO	(Step 7) Place BUS 11B – BUS 12B TIE SYNCHROSCOPE to OFF.	
	CO	(Step 8) Open BUS 11B NORMAL FEED 4160V.	
	CO	(Step 9) Reset alarms L-20 AND L-28, locally in the Relay Room Addition.	**NOTE:** The BOP will contact the AO to perform this action. **SIM DRIVER:** as AO, acknowledge and will need to insert: **REM-EDS49=RESET** **REM-EDS50=RESET**
AP-TURB.5, RAPID LOAD REDUCTION			
			Examiners NOTE: Examiners following HCO and CRS, continue HERE.
			NOTE: The CRS will conduct a load reduction brief.
	HCO	(Step 1) Initiate Load Reduction	
		• Verify rods in AUTO	
		• Reduce turbine load in Auto as follows:	
	CO	• Place Turbine EH Control in OPER PAN., IMP PRESS IN, if desired.	
		• Select desired rate on thumbwheel	**NOTE:** The CO will select 1%/Minute.
		• Reduce the setter to the desired load	
		• Depress the GO button	**NOTE:** The CO will start the load decrease.

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Event Description: **Downpower/Failure of Turbine Control/EHC**

Time	Pos.	Expected Actions/Behavior	Comments
	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	
		• Compensate for Xenon	
	HCO	(*Step 4) Monitor PRZR Pressure – TRENDING TO 2235 PSIG IN AUTO	**NOTE:** Pressurizer Pressure may be trending down.
	HCO	(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.	**NOTE:** This procedure has already been completed.
	CO	(*Step 5) Monitor MFW Regulating Valves – RESTORING S/G LEVEL TO 52% IN AUTO	
	HCO	(*Step 6) Monitor PRZR Level – TRENDING TO PROGRAM IN AUTO CONTROL	

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Event Description:	**Downpower/Failure of Turbine Control/EHC**						

Time	Pos.	Expected Actions/Behavior	Comments
SIM DRIVER Instructions:		**Operate Trigger #4 (TUR09D, 100%, OVR-TUR05O = OFF, OVR-TUR5P = ON)**	

Indications Available:
• Turbine Load decrease stops
• EH valve control status lights:
  • OPER PAN – DARK
  • IMP PRESS OUT – DARK
  • TURB MANUAL – LIT
  • MANUAL CONTROL VALVE LOWER – LIT
  • MANUAL CONTROL VALVE FAST – LIT
  • MANUAL CONTROL VALVE RAISE – LIT
• Reference and Setter Control Valve Position are equalized			

			NOTE: Based on the changing plant condition, the CRS may re-enter AP-TURB.5.
AP-TURB.5, RAPID LOAD REDUCTION			
	HCO	(Step 1) Initiate Load Reduction	
		• Verify rods in AUTO	
		• Reduce turbine load in Auto as follows:	
	CO	• (Step 1b RNO) IF Auto control is inoperable, THEN reduce turbine load in manual at the desired rate.	
At the discretion of the Lead Examiner move to Events #6-7.			

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Event Description: **Pzr Steam Space Break/Seal Water Return Isolation CIV Fails in AUTO**

When the plant is at approximately 40% power, the piping leading to the failed PORV will fail so that a vapor space Small Break LOCA occurs. The plant will trip and Safety Injection will be actuated, and the operator will enter E-0, Reactor Trip or Safety Injection. On the plant trip Containment Isolation Valve MOV-313, the Seal Water Return Line CIV, will fail to close automatically, requiring that the operator manually close this valve. The operator will transition from E-0 to E-1, Loss of Reactor or Secondary Coolant, and then into ES-1.2 Post-LOCA Cooldown and Depressurization. While in ES-1.2, an Orange Path may occur on the RCS Integrity Critical Safety Function Status Tree. The scenario will terminate at Step 14 of ES-1.2, after the crew has demonstrated the ability to evaluate/perform the SI flow reduction sequence, or upon transition to FR-P.1, Response to Imminent Pressurized Thermal Shock Condition.

SIM DRIVER Instructions: Operate Trigger #5 (PZR07, 89,0000)

Indications Available:

- Pressurizer Pressure decreases at a faster rate
- Pzr level initially decreases and then starts to rise
- PRT pressure increases rapidly and then equalizes with Containment Pressure

Time	Pos.	Expected Actions/Behavior	Comments
			Examiner NOTE: RCS pressure will drop to within 210 psig [240 psig Adverse Containment] of Maximum SG Pressure shortly after the LOCA, and the SI Pumps are operating. The five minute Clock to stop the RCPs should start when this occurs. **Record Time:** _____
		E-0, REACTOR TRIP OR SAFETY INJECTION	
	HCO	(Step 1) Verify Reactor Trip:	**Immediate Action**
		• At least one train of reactor trip breakers – OPEN	
		• Neutron flux – LOWERING	
		• MRPI indicates – ALL CONTROL AND SHUTDOWN RODS ON BOTTOM	

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Event Description: **Pzr Steam Space Break/Seal Water Return Isolation CIV Fails in AUTO**

Time	Pos.	Expected Actions/Behavior	Comments
	CO	(Step 2) Verify Turbine Stop Valves - CLOSED	**Immediate Action**
	CO	(Step 3) Verify Both trains of AC Emergency Buses	**Immediate Action**
		• Bus 14 and Bus 18	
		• Bus 16 and Bus 17	
	HCO/ CO	(Step 4) Check if SI is Actuated:	**Immediate Action**
		• Any SI Annunciator – LIT	
		• SI sequencing – BOTH TRAINS STARTED	
	HCO/ CO	Foldout Page	**NOTE:** The crew will monitor these conditions throughout the performance of E-0.
		RCP TRIP CRITERIA	**NOTE:** This condition is expected to be met.
		• IF BOTH conditions listed below occur, THEN trip both RCPs:	
		o SI pumps - AT LEAST TWO RUNNING	
		o RCS pressure minus maximum S/G pressure - LESS THAN 210 psi [240 psi adverse CNMT]	
		LOSS OF SW CRITERIA	
		AFW SUPPLY SWITCHOVER CRITERION	
		SFP COOLING CRITERIA	
	HCO	(*Step 5) Verify CNMT Spray Not Required:	**NOTE:** The Containment Pressure is expected to be ≈2 psig and rising slowly.
		• Annunciator A-27, CNMT SPRAY EXTINGUISHED	

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Event Description: **Pzr Steam Space Break/Seal Water Return Isolation CIV Fails in AUTO**

Time	Pos.	Expected Actions/Behavior	Comments
		• CNMT pressure – LESS THAN 28 PSIG	
	CO	(Step 6) Direct Operator to Perform ATT-27.0, ATTACHMENT AUTOMATIC ACTION VERIFICATION	
			NOTE: The CRS will hand off ATT-27.0 to either the HCO or the CO, and continue with the other operator in E-0. **Examiner** following operator performing ATT-27.0 continue below. **Examiner** following operator NOT performing ATT-27.0 continue at **page 47**.
E-0, REACTOR TRIP OR SAFETY INJECTION, ATTACHMENT 27.0, ATTACHMENT AUTOMATIC ACTION VERIFICATION			
	HCO/ CO	(Step 1) Verify SI and RHR Pumps Running:	
		• All SI pumps – RUNNING	
		• Both RHR pumps – RUNNING	
	HCO/ CO	(Step 2) Verify CNMT RECIRC Fans RUNNING:	
		• All fans RUNNING	
		• Charcoal filter dampers green status lights – EXTINGUISHED	
	HCO/ CO	(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	

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Event Description: **Pzr Steam Space Break/Seal Water Return Isolation CIV Fails in AUTO**

Time	Pos.	Expected Actions/Behavior	Comments
		• Low Tavg (545°F) AND high steam flow ($0.5x10^6$ lb/hr) from either S/G	
		OR	
		• High-High steam flow ($4.4x10^6$ lb/hr) from either S/G	
		• (Step3c RNO) Go to Step 4.	
	HCO/ CO	(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/ CO	(Step 5) Verify At Least Two SW Pumps - RUNNING	
	HCO/ CO	(Step 6) Verify CI and CVI:	
		• CI and CVI annunciators - LIT	
		• Annunciator A-26, CNMT ISOLATION	
		• Annunciator A-25, CNMT VENTILATION ISOLATION	
		• (Step 6 Continued) Verify CI and CVI valve status lights - BRIGHT	**NOTE:** MOV-313 Status light is NOT bright.
		• (Step 6b RNO) Manually close affected CI and CVI valve(s).	**NOTE:** The HCO will manually close MOV-313.

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Event Description: **Pzr Steam Space Break/Seal Water Return Isolation CIV Fails in AUTO**

Time	Pos.	Expected Actions/Behavior	Comments
		IF valve(s) can NOT be closed from the MCB, THEN.....	**NOTE:** MOV-313 can be closed.

CRITICAL TASK

2. Close the Seal Water Return Containment Isolation Valve before transition out of E-0.

Safety Significance: Failure to close at least one Containment Isolation Valve on each critical penetration under the postulated conditions when it is possible to do so, constitutes mis-operation leading to degradation of the Containment Barrier. Failure to take this action leads to an unnecessary release of fission products to the auxiliary building, increasing the potential for release to the environment, and reducing accessibility to vital equipment within the Auxiliary Building. Higher radiation levels within the Auxiliary Building will result in a degradation of ALARA principles.

		• (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	
	CO	(Step 7) Check CCW System Status:	
		• Verify CCW pump – AT LEAST ONE RUNNING	
	CO	(Step 8) Verify SI And RHR Pump Flow:	
		• SI flow indicators – CHECK FOR FLOW	
		• RHR flow indicator – CHECK FOR FLOW	

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Event Description: **Pzr Steam Space Break/Seal Water Return Isolation CIV Fails in AUTO**

Time	Pos.	Expected Actions/Behavior	Comments
		• (Step 8b RNO) IF RCS pressure less than 150 psig manually start pumps and align valves. IF NOT, THEN go to Step 9.	
	CO	(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	
	CO	(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	
	CO	(Step 11) Verify CI and CVI During a Fire Event	
		• A confirmed fire has occurred in the control complex or cable tunnel (fire systems S05, S06, S08, Z05, Z18, or Z19).	

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Event Description: **Pzr Steam Space Break/Seal Water Return Isolation CIV Fails in AUTO**

Time	Pos.	Expected Actions/Behavior	Comments
	CO	(Step 11 RNO) Go to END	
E-0, REACTOR TRIP OR SAFETY INJECTION			
			Examiner following operator NOT performing ATT-27.0 continue **HERE**.
	HCO	(Step 7) Verify Both MDAFW Pumps RUNNING	
		(Step 7 RNO) Manually start both MDAFW pumps.	**NOTE:** ONLY the A MDAFW Pump will be running.
		IF less than 2 MDAFW pumps are running, THEN manually open TDAFW pump steam supply valves.	
		• MOV-3505A	
		• MOV-3504A	**NOTE:** The CO will start the TDAFW Pump.
	HCO	(Step 8) Verify AFW Valve Alignment:	
		• AFW flow – INDICATED TO BOTH S/G(s)	
		• AFW flow from each MDAFW pump LESS THAN 230 GPM	
	HCO	(*Step 9) Monitor Heat Sink:	
		• Check S/G narrow range level GREATER THAN 7% [25% adverse CNMT] in any S/G	
		• Check S/G narrow range level BOTH S/G LESS THAN 50%	
		• Control feed flow to maintain S/G narrow range level between 7% [25% adverse CNMT] and 50%.	

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Event Description: **Pzr Steam Space Break/Seal Water Return Isolation CIV Fails in AUTO**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 10) Check If TDAFW Pump Can Be Stopped:	
		• Both MDAFW pumps – RUNNING	**NOTE:** ONLY the A MDAFW Pump will be running.
	CRS	(Step 10 a RNO) Go to Step 11.	
	HCO	(Step 11) Check CCW Flow to RCP thermal Barriers:	
		• Annunciator A-7. RCP 1A CCW RETURN HI TEMP OR LOW FLOW - EXTINGUISHED	
		• Annunciator A-15, RCP 1B CCW RETURN HI TEMP OR LOW FLOW EXTINGUISHED	
	HCO	(*Step 12) Monitor RCS Tavg – STABLE AT OR TRENDING TO 547°F	**NOTE:** Tavg is expected to be less than 547°F and lowering.
	CO	(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.	
		• IF cooldown continues, THEN control total feed flow between 200 gpm to 230 gpm until narrow range level greater than 7% [25% adverse CNMT] in at least one S/G.	**NOTE:** Adverse Containment may exist at this time.
		• 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:** The CO will CLOSE both MSIVs.

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Event Description: **Pzr Steam Space Break/Seal Water Return Isolation CIV Fails in AUTO**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 13) Check PRZR PORVS And Spray Valves:	
		• PORVs – CLOSED	**NOTE:** PCV-431C is still OPEN.
	HCO	• (Step 13a RNO) IF PRZR pressure less than 2335 psig, THEN manually close PORVs.	
		IF any valve can NOT be closed, THEN manually close its block valve.	
		• MOV-516 for PCV-430	
		• MOV-515 for PCV-431C	**NOTE:** MOV-515 is still OPEN.
	CRS	IF block valve can NOT be closed, **T**HEN go to E-1, LOSS OF REACTOR OR SECONDARY COOLANT, Step 1.	
			NOTE: The CRS will go to E- 1. The CRS will conduct an alignment brief.
E-1, LOSS OF REACTOR OR SECONDARY COOLANT			
	HCO/ CO	Foldout Page	**NOTE: T**he crew will monitor these conditions throughout the performance of E-0.
		RCP TRIP CRITERIA	**NOTE:** This condition is expected to be met.
		• IF BOTH conditions listed below occur, THEN trip both RCPs:	
		○ SI pumps - A**T** LEAST TWO RUNNING	
		○ RCS pressure minus maximum S/G pressure - LESS THAN 210 psi [240 psi adverse CNMT]	**NOTE:** Adverse Containment is likely to exist at this time.
		LOSS OF SW CRITERIA	

Op Test No.: N2014-301 Scenario # 4 Event # 6 & 7 Page 50 of 67

Event Description: **Pzr Steam Space Break/Seal Water Return Isolation CIV Fails in AUTO**

Time	Pos.	Expected Actions/Behavior	Comments
		SI REINITIATION CRITERIA	
		SI TERMINATION CRITERIA	
		SECONDARY INTEGRITY CRITERIA	
		E-3 TRANSITION CRITERIA	
		COLD LEG RECIRCULATION SWITCHOVER CRITERION	
		AFW SUPPLY SWITCHOVER CRITERION	
	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.

CRITICAL TASK

1. Trip all RCPs within 5 minutes of reaching trip criteria

Safety Significance: Failure to trip all RCPs when required can lead to core uncovery and to fuel temperatures in excess of 2200°F. Analyses have shown that if the RCPs are tripped within 5 minutes of the trip criteria being met, PCT will remain below 2200°F, and if this action is delayed beyond 5 minutes, this PCT will be exceeded. It is a management expectation that the RCPs be tripped as quickly as possible, but within 5 minutes when the trip criteria is met. Failure to take this action represents mis-operation by the operator which leads to degradation of the fuel cladding fission produce barrier, and a violation of a license condition.

Record Pump Stop Time: _____

Subtract time recorded at time of the RCP Trip Criteria met on Page 41 _____ = _____ minutes.

Op Test No.: N2014-301 Scenario # 4 Event # 6 & 7 Page 51 of 67

Event Description: **Pzr Steam Space Break/Seal Water Return Isolation CIV Fails in AUTO**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO/ CO	(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	
	CO	(*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:	
		• Power to PORV block valves – AVAILABLE	
		• PORVs – CLOSED	**NOTE:** PCV-431C is still OPEN.
	HCO	• (Step 5b RNO) IF PRZR pressure less than 2335 psig, THEN manually close PORVs.	

Op Test No.: N2014-301 Scenario # 4 Event # 6 & 7 Page 52 of 67

Event Description: **Pzr Steam Space Break/Seal Water Return Isolation CIV Fails in AUTO**

Time	Pos.	Expected Actions/Behavior	Comments
		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:** MOV-515 is still OPEN. The CRS may dispatch an AO. **SIM DRIVER:** as **AO**, acknowledge.
		• MOV-515, MCC D position 6C	
		• MOV-516, MCC C position 6C	
	HCO	• (Step 5 Continued) Block valves – AT LEAST ONE OPEN.	
	HCO	(Step 6) Reset SI.	
	HCO	(Step 7) Reset CI:	
		• Depress CI reset pushbutton	
		• Verify annunciator A-26, CNMT ISOLATION – EXTINGUISHED	
	CO	(Step 8) Verify Adequate SW Flow:	
		• Check at least two SW pumps RUNNING	
		• 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/ CO	(Step 9) Establish IA to CNMT:	
		• Verify non-safeguards busses energized from offsite power	
		• Bus 13 normal feed – CLOSED	
		OR	
		• Bus 15 normal feed – CLOSED	

Op Test No.: N2014-301 Scenario # 4 Event # 6 & 7 Page 53 of 67

Event Description: **Pzr Steam Space Break/Seal Water Return Isolation CIV Fails in AUTO**

Time	Pos.	Expected Actions/Behavior	Comments
		• Verify turbine building SW isolation valves - OPEN	
		• MOV-4613 and MOV-4670	
		• MOV-4614 and MOV-4664	
		• Verify adequate air compressors – RUNNING	
		• Check IA supply:	
		• Pressure – GREATER THAN 60 PSIG	
		• Pressure – STABLE OR RISING	
		• Reset both trains of XY relays for IA to CNMT AOV-5392	
		• Verify IA to CNMT AOV-5392 – OPEN	
	CO	(Step 10) Check Normal Power Available To Charging Pumps:	
		• Check Normal Power Available To Charging Pumps:	
		• Bus 14 normal feed breaker – CLOSED	
		• Bus 16 normal feed breaker - CLOSED	
		• Verify adequate Safeguards Bus capacity to run charging pumps (6 amps each)	
		• Station Service transformer 14 ammeter	
		• Station Service transformer 16 ammeter	
	HCO	(Step 11) Check If Charging Flow Has Been Established:	
		• Charging pumps – ANY RUNNING	**NOTE:** There are NO Charging Pumps running.

Op Test No.: N2014-301 Scenario # 4 Event # 6 & 7 Page 54 of 67

Event Description: **Pzr Steam Space Break/Seal Water Return Isolation CIV Fails in AUTO**

Time	Pos.	Expected Actions/Behavior	Comments
		• (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.	
		• (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]	**NOTE:** Adverse Containment is likely to exist at this time. RCS pressure is expected to be ≈1200 psig and stable.
		• Pressure – STABLE OR RISING	
	CRS	• (Step 12a RNO) Do NOT stop SI pumps. Go to Step 13.	
	HCO	(*Step 13) Monitor If CNMT Spray Should Be Stopped:	

Op Test No.: N2014-301 Scenario # 4 Event # 6 & 7 Page 55 of 67

Event Description: **Pzr Steam Space Break/Seal Water Return Isolation CIV Fails in AUTO**

Time	Pos.	Expected Actions/Behavior	Comments
		• 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]	**NOTE:** Adverse Containment is likely to exist at this time.
		• 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.
		• 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.
	CO	(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	

Op Test No.: N2014-301 Scenario # 4 Event # 6 & 7 Page 56 of 67

Event Description: **Pzr Steam Space Break/Seal Water Return Isolation CIV Fails in AUTO**

Time	Pos.	Expected Actions/Behavior	Comments
	CO	(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)	**NOTE:** Both D/Gs are running unloaded.
			NOTE: The CRS will hand this off to the CO. **CRS/HCO Examiner** continue on **page 58**.
ATT-8.1, ATTACHMENT D/G STOP			
	CO	(Step A) Perform the following to STOP D/G A and restore to AUTO:	
		• Verify D/G A Bus 14 supply breaker is OPEN.	
		• Verify D/G A Bus 18 supply breaker is OPEN.	
		• Using D/G A GOVERNOR, adjust D/G A speed to return frequency to 60Hz.	
		• Using D/G A AUTO VOLTAGE CONTROL rheostat adjust D/G A voltage to 480 volts.	
		• Place D/G A CONTROL switch to STOP AND immediately depress D/G A VOLTAGE SHUTDOWN button until voltage decays to zero.	
		• After ~60 seconds, perform the following:	

Op Test No.: N2014-301 Scenario # 4 Event # 6 & 7 Page 57 of 67

Event Description: **Pzr Steam Space Break/Seal Water Return Isolation CIV Fails in AUTO**

Time	Pos.	Expected Actions/Behavior	Comments
		• Depress D/G A FIELD RESET	
		• Depress D/G A RESET	
		• Verify D/G A AIR START SOLENOID lights – LIT	
		• Verify D/G A START RELAY lights - LIT	
		• IF alternate cooling is being supplied to the D/G A……	**NOTE:** Alternate Cooling is NOT being supplied.
	CO	(Step B) Perform the following to STOP D/G B and restore to AUTO:	
		• Verify D/G B Bus 16 supply breaker is OPEN.	
		• Verify D/G B Bus 17 supply breaker is OPEN.	
		• Using D/G B GOVERNOR, adjust D/G B speed to return frequency to 60Hz.	
		• Using D/G B AUTO VOLTAGE CONTROL rheostat adjust D/G B voltage to 480 volts.	
		• Place D/G B CONTROL switch to STOP AND immediately depress D/G B VOLTAGE SHUTDOWN button until voltage decays to zero.	
		• After ~60 seconds, perform the following:	
		• Depress D/G B FIELD RESET	
		• Depress D/G B RESET	
		• Verify D/G B AIR START SOLENOID lights - LIT	
		• Verify D/G b START RELAY lights - LIT	
		• IF alternate cooling is being supplied to the D/G B……	**NOTE:** Alternate Cooling is NOT being supplied.

Op Test No.: N2014-301 Scenario # 4 Event # 6 & 7 Page 58 of 67

Event Description: **Pzr Steam Space Break/Seal Water Return Isolation CIV Fails in AUTO**

Time	Pos.	Expected Actions/Behavior	Comments
E-1, LOSS OF REACTOR OR SECONDARY COOLANT			
			CRS/HCO Examiner continue HERE.
	HCO	(Step 17) Evaluate Plant Status:	
		• Check auxiliary building radiation - NORMAL	
		• Plant vent iodine (R-10B)	
		• Plant vent particulate (R-13)	
		• Plant vent gas (R-14)	
		• CCW liquid monitor (R-17)	
		• LTDN line monitor (R-9)	
		• CHG pump room (R-4)	
		• 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	
		• Verify adequate Rx head cooling:	
		• Verify at least one control rod shroud fan - RUNNING	
		• Verify one Rx compartment cooling fan - RUNNING	
	HCO	(Step 18) Verify CNMT Sump Recirculation Capability:	
		• Check RHR and Support systems:	
		• At least one recirculation flowpath, including required power supplies, from Sump B and back to RCS available per ATT-14.5, ATTACHMENT RHR SYSTEM	**NOTE:** The HCO will refer to ATT-14.5.

Op Test No.: N2014-301 Scenario # 4 Event # 6 & 7 Page 59 of 67

Event Description: **Pzr Steam Space Break/Seal Water Return Isolation CIV Fails in AUTO**

Time	Pos.	Expected Actions/Behavior	Comments
		• At least one SW pump available.	
		• At least one CCW pump available.	
		• At least one CCW Hx available.	
		• Check SW pumps – AT LEAST 2 PUMPS AVAILABLE	
		• Dispatch AO to check AUX BLDG sub-basement for RHR system leakage (AUX BLDG sub-basement key may be required)	**NOTE:** The CRS will dispatch an AO. **SIM DRIVER:** as **AO**, acknowledge (Report No Leaks).
	HCO	(Step 19) Check If RCS Cooldown And Depressurization Is Required:	
		• RCS pressure – GREATER THAN 300 psig (350 psig adverse CNMT)	**NOTE:** Adverse Containment is likely to exist at this time.
		• Go To ES-1.2, POST LOCA COOLDOWN AND DEPRESSURIZATION, Step 1	
			NOTE: The CRS will go to ES-1.2.
ES-1.2, POST-LOCA COOLDOWN AND DEPRESSURIZATION			
			Examiner NOTE: An Orange Path on RCS Integrity is expected during the steps taken in ES-1.2. If so, move forward to exam termination.
	HCO/ CO	Foldout Page	**NOTE:** The crew will monitor these conditions throughout the performance of E-0.
		LOSS OF SW CRITERIA	
		SI REINITIATION CRITERIA	
		SI TERMINATION CRITERIA	
		SECONDARY INTEGRITY CRITERIA	

Op Test No.: N2014-301 Scenario # 4 Event # 6 & 7 Page 60 of 67

Event Description: **Pzr Steam Space Break/Seal Water Return Isolation CIV Fails in AUTO**

Time	Pos.	Expected Actions/Behavior	Comments
		COLD LEG RECIRCULATION SWITCHOVER CRITERION	
		AFW SUPPLY SWITCHOVER CRITERION	
		E-3 TRANSITION CRITERIA	
	HCO	(*Step 1) Monitor If RHR Pumps Should Be Stopped:	
		• RHR pumps – ANY RUNNING IN INJECTION MODE	**NOTE:** The RHR Pumps have previously been stopped.
	CRS	• (Step 1a RNO) Go to Step 2.	
	CO	(Step 2) Monitor AC Bus Power:	
		• Verify Safeguards Busses 14, 16, 17, and 18 – GREATER THAN 440 VOLTS	
		• Monitor All AC Busses – BUSSES ENERGIZED BY OFFSITE POWER	
		• Normal feed breakers to all 480 volt busses – CLOSED	
		• Emergency D/G output breakers - OPEN	
	CO	(Step 3) Check Power Availability To Charging Pumps:	
		• Check Normal Power Available To Charging Pumps:	
		• Bus 14 normal feed breaker – CLOSED	
		• Bus 16 normal feed breaker - CLOSED	
		• Verify adequate Safeguards Bus capacity to run charging pumps (6 amps each)	
		• Station Service transformer 14 ammeter	

Op Test No.: N2014-301 Scenario # 4 Event # 6 & 7 Page 61 of 67

Event Description: **Pzr Steam Space Break/Seal Water Return Isolation CIV Fails in AUTO**

Time	Pos.	Expected Actions/Behavior	Comments
		• Station Service transformer 16 ammeter	
	HCO	(Step 4) Establish 75 GPM Charging Flow:	
		• Charging pumps – ANY RUNNING	**NOTE:** There are one or two Charging Pumps running.
		• Align charging pump suction to RWST:	
		• LCV-112B – OPEN	
		• LCV-112C – CLOSED	
		• Start charging pumps as necessary (75 kw each) and establish 75 gpm total charging flow	
		• Charging line flow	
		• Seal injection flow	
	CO	(Step 5) Establish Condenser Steam Dump Pressure Control:	
		• Verify condenser available:	
		• Any MSIV – OPEN	**NOTE:** Both MSIVs are CLOSED.
		• (Step 4a RNO) Place S/G ARV controllers in AUTO at current SG pressure and go to Step 6.	
	CO	(*Step 6) Monitor Intact S/G Levels:	
		• Narrow range level – GREATER THAN 7% [25% adverse CNMT]	**NOTE:** Adverse Containment is likely to exist at this time.
		• Control feed flow to maintain narrow range level between 17% [25% adverse CNMT] and 50%	
	HCO	(Step 7) Deenergize PRZR Heaters	

Op Test No.: N2014-301 Scenario # 4 Event # 6 & 7 Page 62 of 67

Event Description: **Pzr Steam Space Break/Seal Water Return Isolation CIV Fails in AUTO**

Time	Pos.	Expected Actions/Behavior	Comments
		• Place PRZR proportional heaters in PULL STOP	
		• Place PRZR backup heaters in OFF	
		• Consult TSC for a recommended minimum indicated PRZR water level that will ensure heaters are covered	**NOTE:** The TSC is NOT manned.
	CO	(Step 8) Initiate RCS Cooldown To Cold Shutdown:	
		• Establish and maintain cooldown rate using CET's – BETWEEN 80°F/HR AND 100°F/HR	**NOTE:** Current C/D due to SI flow should be > 100°F/hr
		• Use RHR system if in service	
		• Dump steam to condenser from intact S/G(s)	
	HCO	(Step 9) Check RCS Subcooling Based On Core Exit T/Cs – GREATER THAN 0°F USING FIG-1.0, FIGURE MIN SUBCOOLING	**NOTE:** IF subcooling is indicated, crew should transition to FR-P.1 if entry conditions are reached.
	HCO	(Step 10) Check SI and RHR Pump Status:	
		• SI pumps – ANY RUNNING	
		OR	
		• RHR pumps – ANY RUNNING IN INJECTION MODE	
	HCO	(Step 11) Depressurize RCS To Refill PRZR:	**NOTE:** Pzr Level is off-scale HIGH.
		• Depressurize using normal PRZR spray if available	
		• (Step 10a RNO) Depressurize using one PRZR PORV.	

Op Test No.: N2014-301 Scenario # 4 Event # 6 & 7 Page 63 of 67

Event Description: **Pzr Steam Space Break/Seal Water Return Isolation CIV Fails in AUTO**

Time	Pos.	Expected Actions/Behavior	Comments
		• (Step 10 Continued) PRZR level – GREATER THAN 20% [40% adverse CNMT]	**NOTE:** Adverse Containment is likely to exist at this time.
		• Stop RCS depressurization	
	HCO	(Step 12) Check If An RCP Should Be Started:	
		• Both RCPs – STOPPED	**NOTE:** Both RCPs are stopped.
		• RCS subcooling based on core exit T/Cs – GREATER THAN 0ºF USING FIG-1.0, FIGURE MIN SUBCOOLING	
		• PRZR level – GREATER THAN 20% (40% adverse CNMT)	**NOTE:** Adverse Containment is likely to exist at this time.
		• Try to start an RCP	
		• Establish conditions for starting an RCP	
		• Bus 11A or 11B energized	
		• Refer to ATT-15.0, ATTACHMENT RCP START	
ATT-15.0, ATTACHMENT RCP START			
	HCO	(Step A) The following are prerequisites for starting an RCP:	
		• MCC E energized	
		• RCP oil lift pump running (~2 minutes)	
		• RCP oil lift pressure white light - LIT	
	HCO	(Step B) In addition, the following conditions should be met prior to starting an RCP:	
		• Both PRZR spray valves closed – DEMAND AT 0%	

Op Test No.: N2014-301 Scenario # 4 Event # 6 & 7 Page 64 of 67

Event Description: **Pzr Steam Space Break/Seal Water Return Isolation CIV Fails in AUTO**

Time	Pos.	Expected Actions/Behavior	Comments
		• CCW in service to selected RCP(s) with flow and temperature alarms (A-7, A-15) extinguished.	
		• Selected RCP(s) seal inlet temperature – LESS THAN 135°F	
		• Selected RCP(s) motor bearing temperatures – LESS THAN 200°F	
		• Selected RCP(s) seal injection in service	
		• Seal injection flow – GREATER THAN 6 GPM	
		• Labyrinth seal D/P – GREATER THAN 15 INCHES OF WATER	
		• Selected RCP(s) #1 seal D/P – GREATER THAN 220 PSID	
		• Selected RCP(s) oil levels:	
		• Level alarms (A-24, A-32) - EXTINGUISHED	
		• Level indicators – ON SCALE	
		• Selected RCP(s) seal return alignment	
		• RCP #1 seal outlet valve(s) open:	
		• AOV-270A for RCP A	
		• IF MOV-313, seal return isolation, open……	**NOTE:** MOV-313 is Closed.
		• IF MOV-313 closed, THEN verify other RCP #1 seal parameters normal for selected RCP(s):	
		• RCP #1 seal inlet temperature – LESS THAN 135°F	
		• RCP #1 seal D/P – GREATER THAN 220 PSID	
		• IF ES-0.2, ES-0.3 or ES-1.1 is in effect…..	**NOTE:** These procedures are NOT in effect.
ES-1.2, POST-LOCA COOLDOWN AND DEPRESSURIZATION			

Op Test No.: N2014-301 Scenario # 4 Event # 6 & 7 Page 65 of 67

Event Description: **Pzr Steam Space Break/Seal Water Return Isolation CIV Fails in AUTO**

Time	Pos.	Expected Actions/Behavior	Comments
		• (Step 12 Continued) Start one RCP.	**NOTE:** The HCO will START one RCP.
	HCO	(Step 13) Check If One Of Three SI Pumps Should Be Stopped:	
		• Three SI pumps – RUNNING	
		• RCS subcooling based on core exit T/Cs – GREATER THAN 35ºF [50°F adverse CNMT] USING FIG-1.0, FIGURE MIN SUBCOOLING	**NOTE:** Adverse Containment is likely to exist at this time.
		• Check PRZR level – GREATER THAN 20% [40% adverse CNMT]	**NOTE:** Adverse Containment is likely to exist at this time.
		• Stop one SI pump	**NOTE:** The HCO will STOP one SI pump.
	HCO	(Step 14) Check If One Of Two SI Pumps Should Be Stopped:	
		• Two SI pumps – RUNNING	
		• Determine required RCS subcooling from table:	
		• RCS subcooling based on core exit T/Cs – GREATER THAN VALUE FROM TABLE ABOVE USING FIG-1.0, FIGURE MIN SUBCOOLING	**NOTE:** The HCO will NOT be able to stop the second SI Pump, due to Subcooling requirements NOT met.

Terminate the Exam at the discretion of the Lead Examiner

SRO Examiner Perform Admin JPM A4 on CRS

TURNOVER SHEET for NRC Exam Scenario #4

Core Age: MOL
48% Power, Equilibrium Xe
Outside Air Temp = 45°F
Water Temp = 45°F
	Procedure in Use:
	• S-3.2P, Swapping CVCS Letdown Orifices
	• P-17, Operations Control Room Operating Instructions, Attachment 12, CROI-12 Swapping Electro-Hydraulic Pumps
		ACTIONS/NOTES:
		• The plant is at ~48% power (MOL). Reactor power is below P-9.
		• Power has been held at this level for approximately four days while corrective maintenance is performed on the A MFW Pump. Maintenance has just been completed.
		• Chemistry has requested that Letdown flow be raised from 40 gpm to 60 gpm. The crew should be prepared to raise Letdown flow to 60 gpm by swapping to AOV-200 immediately after turnover.
		• The crew should also plan to swap EHC Pumps per P-17 in preparation for performing maintenance on the A EHC supply pump after the letdown orifice flow has been adjusted.
		• The B AFW Pump is OOS for Bearing Replacement. LCO 3.7.5 was entered 24 hours ago. Estimated return to service is within 48 hours.
		• Steam Flow channel FT-475 is OOS. The channel has been defeated per ER-INST.1.
		• The following Alarms are in:
		  ○ E-4, POWER RANGE UPPER DETECT FLUX DEV OR AUTO DEFEAT (< 50% Power)
		  ○ E-12, POWER RANGE LOWER DETECT FLUX DEV OR AUTO DEFEAT (< 50% Power)
		  ○ J-25, SAFEGUARDS EQUIPMENT LOCKED OFF (B MD AFW Pump OOS)
		• Protected equipment IAW OPG Protected Equipment.

Boron: 1106 ppm BAST: 17,400 ppm RCS Activity: Normal	RCS LEAKAGE: (gpm) Total: .021 Identified: .003 Unidentified: .018	

TURNOVER SHEET for NRC Exam Scenario #4

Equipment Problems/OOS:	*Planned Activities for Shift:*	Electrical System Operator Declarations
See NOTES	• Shift Letdown from 60 gpm to 40 gpm. • Swap EHC Pumps per P-17	None in effect

	BAST (gal)	RWST (gal)	1st hour dilution stabilization (gal RMW)	2nd hour dilution stabilization (gal RMW)
10% at 1% per minute	52	545	77	51
10% at 10% per hour	48	503	77	52
50% at 1% per minute	229	2482	558	314
50% at 10% per hour	173	1860	296	98

A-52.4					
EQUIPMENT	**DATE/TIME OOS**	**LCO**	**TITLE**	**EXP DATE**	**ECD**
'B' MDAFW Pump	Yesterday, 24hrs ago	3.7.5.B	AFW system	7 days	2 days from now AM
FT-475	Today, 0200	3.3.2 4.d/4.e	ESFAS Instrumentation	Indefinite	3 Days
A-52.12					
EQUIPMENT	**DATE/TIME OOS**	**TRM /ODCM**	**TITLE**	**EXP DATE**	**ECD**

PROGRAM: Ginna Operations Training

MODULE: 2014 Initial License Operator Training Class

TOPIC: NRC Simulator Exam

Scenario N2014-301-5

REFERENCES:

1. O-1.2, Plant Startup From Hot Shutdown to Full Power Load, Rev 20101
2. T-16A, Turbine Pre-Startup, Rev 09400
3. A-503.1, Emergency and Abnormal Operating Procedures Users Guide, Rev 04409
4. AR-L-8, 480V GROUND, Rev 8
5. AR-A-22, CCW PUMP DISCHARGE LO PRESS 60 PSI, Rev 12
6. AP-CCW.2, Loss of CCW During Power Operation, Rev 02201
7. Technical Specification 3.7.7, CCW System, Amendment 80
8. AR-E-9, IR N-35 LOSS OF COMPENSATING VOLTAGE, Rev 4
9. ER-NIS.2, IR MALFUNTION, Rev 00501
10. AR-L-23, BUS18 UNDER VOLTAGE SAFEGUARDS, Rev 01102
11. AP-ELECT.17/18, Loss of Safeguards Bus 17/18, Rev 00802
12. AP-SW.2, Loss of Service Water, Rev 00801
13. Technical Specification 3.8.1, AC Sources – Modes 1, 2, 3, and 4, Amendment 109
14. Technical Specification 3.8.9, Distribution Systems – Modes 1, 2, 3,and 4, Amendment 80
15. Technical Specification 3.7.8, Service Water System, Amendment 102
16. AR-A-11, LETDOWN LINE HI PRESS 400 PSI, Rev 4
17. E-0, Reactor Trip and Safety Injection, Rev 04602
18. ATT-27.0, Attachment Automatic Action Verification, Rev 00300
19. E-2, Faulted Steam Generator Isolation, Rev 01301
20. E-3, Steam Generator Tube Rupture, Rev 04800
21. ECA-3.1, SGTR with Loss of Reactor Coolant, Subcooled Recovery Desired, Rev 03401
22. FR-P.1, Response to Imminent Pressurized Thermal Shock Condition, Rev 03200

Validation Time: 98 Minutes

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Facility Review:

Rev. 110714

Facility:	**Ginna**	Scenario No.:	**5**	Op Test No.:	**N2014-301**
Examiners:		Operators:			(SRO)
					(RO)
					(BOP)

Initial Conditions:	The plant is at 1 x 10-8 amps (BOL). The plant ran at 100% power for 12 days, and then tripped four days ago due to a MFW Pump failure. The repairs have been made and the plant is ready to be started back up. The crew will be directed to pull rods to the point of adding heat (POAH), and start the A MFW Pump in accordance with O-1.2, Plant Startup From Hot Shutdown to Full Power Load, Step 6.3.4 and beyond. The area has experienced thunderstorms over the last 6 hours, and this is expected to continue for the next 6 hours.
Turnover:	The following equipment is Out-Of-Service: The B Condensate Pump is OOS for Bearing Replacement.

Event No.	Malf. No.	Event Type*	Event Description
1	NA	R-RO N-SRO	Raise Power to POAH
2	NA	N-BOP N-SRO	Testing of the MFW Oil Pumps
3	CLG10 CLG02A A-EDS33	C-RO C(TS)-SRO	480VAC Ground/A CCW Pump trips w/B CCW Pump failure to start in AUTO
4	EDS04D CLG01D	C-BOP C(TS)-SRO	Fault on 480V Bus 18/SW Pump D fails to start
5	CVC07A	C-RO C-SRO	PCV-135 fails CLOSED
6	NIS05A	C-BOP C(TS)-SRO	Loss of Compensating Voltage to Intermediate Range N35
7	STM04D STM09A	M-RO M-BOP M-SRO	B ARV fails CLOSED/B SG Safety Valve Lifts and fails OPEN
8	RPS05A RPS05B	C-RO C-SRO	Failure of Reactor to Trip in AUTO only
9	SGN04B RCS16	C-BOP C-SRO	B Steam Generator Tube Rupture/1% Failed Fuel

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Ginna 2014 NRC Scenario #5

The plant is at 1 x 10-8 amps (BOL). The plant ran at 100% power for 12 days, and then tripped four days ago due to a MFW Pump failure. The repairs have been made and the plant is ready to be started back up. The crew will be directed to pull rods to the point of adding heat (POAH), and start the B MFW Pump in accordance with O-1.2, Plant Startup From Hot Shutdown to Full Power Load, Step 6.3.4 and beyond. The area has experienced thunderstorms over the last 6 hours, and this is expected to continue for the next 6 hours.

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

Shortly after taking the watch, the operator will raise power to the POAH in accordance with Step 6.3.4 of O-1.2, Plant Startup From Hot Shutdown to Full Load. The operator will raise reactor power and stabilize reactor power at 0.5-1.0%; and then control Tavg at 547°F.

After this, the operator will conduct the oil pump checks on the A Main Feedwater (MFW) Pump accordance with Attachment 5, Main Feed Pump A Startup of O-1.2, Plant Startup From Hot Shutdown to Full Load, in preparation for starting the A MFW Pump.

Subsequently, a 480VAC ground will occur on Bus 14 and the A CCW Pump will trip, and the B CCW Pump will fail to automatically start. The operator will either start the A CCW pump manually per A-503.1, Emergency and Abnormal Operating Procedures Users Guide; or respond in accordance with AR-A-22, CCW PUMP DISCHARGE LO PRESS 60 PSI, and enter AP-CCW.2, Loss of CCW During Power Operation. The operator will evaluate Technical Specification 3.7.7, CCW System.

Shortly after this, a fault on 480V Bus 18 will occur, resulting in Bus 18 de-energizing. The operator will respond in accordance with AR-L-23, BUS18 UNDER VOLTAGE SAFEGUARDS and/or AR-L-5, SAFEGUARD BUS MAIN BREAKER OVERCURRENT TRIP and enter AP-ELECT.17/18, Loss of Safeguards Bus 17/18. The D Service Water Pump has failed to start, leaving only the B SW Pump running. The operator may leave the A EDG running or trip it within AP-ELECT.17/18, but in either case align Alternate Cooling to the EDG. The operator will enter AP-SW.2, Loss of Service Water, and take actions to isolate non-essential SW loads. The operator will address Technical Specification 3.8.1, AC Sources – Modes 1, 2, 3, and 4; 3.8.9, Distribution Systems – Modes 1, 2, 3,and 4; and 3.7.8, Service Water System.

During the recovery, Letdown Pressure Control Valve PCV-135 will fail closed causing the Letdown Line Relief valve to lift to the PRT. The operator will respond in accordance with AR-A-11, LETDOWN LINE HI PRESS 400 PSI, and take manual control of the valve.

Shortly afterwards, the compensating voltage power supply for the Intermediate Range Nuclear Instrument N35 will fail Low. The operator will respond in accordance with AR-E-9, IR N-35 LOSS OF COMPENSATING VOLTAGE and enter ER-NIS.2, IR MALFUNTION. The operator will address Technical Specification 3.3.1, Reactor Trip Instrumentation.

After this, the B ARV will inadvertently close, and one SG Safety valve will open and stick open. The reactor will fail to trip automatically, and the operator will need to manually trip the reactor and enter E-0, Reactor Trip or Safety Injection. On the trip approximately 1% failed fuel will occur. The operator will proceed through E-0, and then transition to E-2, Faulted Steam Generator Isolation.

While in E-2 a large Steam Generator Tube Rupture will develop on the B Steam Generator, and the operator will transition to E-3, Steam Generator Tube Rupture. Because the B Steam Generator is both Ruptured and Faulted, the operator will transition to ECA-3.1, SGTR with Loss of Reactor Coolant, Subcooled Recovery Desired.

Also, while in E-2, it is expected that high temperatures will occur on the RCPs due to low service water flow, requiring the crew to stop these pumps. Because of this the NC condition of the RCS will tend to lower loop Tcold temperatures causing an Orange/Red condition on RCS Integrity. If so, the operator may need to transition to FR-P.1, Response to Imminent Pressurized Thermal Shock Condition.

The scenario will terminate at Step 15 of ECA-3.1, after the crew has monitored conditions for continuing with the Subcooled Recovery procedure, or upon transition to FR-P.1.

Critical Tasks:

1. **Manually trip the reactor prior to transition to FR-S.1, "Response to Nuclear Generation/ATWS."**

Safety Significance: Failure to trip the reactor when required causes a challenge to the Subcriticality Critical Safety Function that otherwise would not exist. This mis-operation by the operator necessitates the crew taking compensating action which complicates the event mitigation strategy and demonstrates an inability by the operator to recognize a failure of the automatic actuation of the RPS.

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

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

SIMULATOR OPERATOR INSTRUCTIONS

	Bench Mark	ACTIVITY	DESCRIPTION
☐		**Reset to Temp** I/C 175. **(Built on IC-7)**	**0% power BOL** **T=0:** **Place B Condensate Pump is Pull-Stop.** **InsertCND05, Vacuum Priming Pump A ON** **Insert CND06, Vacuum Priming Pump B ON** **ENSURE that the A CCW Pump is ON and the B CCW Pump is in STANDBY.** **ENSURE that Steam Generator Levels are stabilized.** **Insert MALF CLG10 (Auto start failure of standby CCW pump on low pressure)** **Insert MALF RPS05A, MAN AVAIL (Reactor trip breaker A failure)** **Insert MALF RPS05B, MAN AVAIL (Reactor trip breaker B failure)** **Insert MALF CLG01D (SWP D Trip)** **MALF CLG02A, on T-1,** A CCW Pump Trip **ANN A-EDS33, ON, on T-1,** 480 VAC Ground (15 Seconds delayed, clears in 20 seconds) **MALF EDS04D, on T-2,** Fault on Bus 18 **MALF CVC07A, 0%, 0 Ramp, MAN AVAIL, on T-3,** PCV-135 Fails CLOSED **MALF NIS05A, 1E-8 amps, 0 Ramp, on T-4,** Loss of Compensating Voltage in N35 **MALF STM04D, 0%, 0 Ramp, on T-5** **MALF STM09A, 40%, 30 second delay, 15 second Ramp, on T-5** **MALF SGN04B, 60% [600 gpm], 0 Ramp, on T-6** **MALFRCS16=1%, 0 Ramp, on T-6,** 1% failed fuel
☐	Prior to Crew Briefing	**RUN**	• **Hang Protective Tags per OPG-Protective Equipment.** • **Place Black Dot on J-17** • **Place a Critical Parameter Marker on SG Narrow Range level at 52±7%.**

	Bench Mark	ACTIVITY	DESCRIPTION
☐	**Crew Briefing** • Assign Crew Positions based on evaluation requirements • Review the Shift Turnover Information with the crew. 1. Provide crew with Reactivity Plan for the startup. 2. Hand out O-1.2, Step 6.3 and substeps (p24-26), marked up as follows: • Step 6.3.1 – Initialed • Step 6.3.2.1 and 2 – NA • Step 6.3.3.1 - Initialed • Step 6.3.3.2.a – Initialed • Step 6.3.3.2.b 1st Bullet – Record 100, Initialed • Step 6.3.3.2.b 2nd Bullet – Record D, Initialed • Step 6.3.3.2.c 1st Bullet – Record 110, Initialed • Step 6.3.3.2.c 2nd Bullet – Record D, Initialed • Step 6.3.3.2.d – Record 2094, Initialed • Step 6.3.3.2.e – Record 547, Initialed • Step 6.3.3.2.f – Initialed • Step 6.3.6 – Initialed • Step 6.3.7 – Initialed • Step 6.3.8 – NA • All other Steps blank 3. Provide a Blank Copy of Attachment 5. 4. Low Power Attachment of O-1.2 should be covered in the Pre-Job Briefing.		
☐	T-0	Begin Familiarization Period	
☐	At direction of examiner	**Event 1**	Raise power to POAH
☐	At direction of examiner	**Event 2**	Testing of the MFW Oil Pumps
☐	At direction of examiner	**Event 3** **Trigger#1** **A-EDS33** **CLG02A** **CLG10 (T=0)**	480VAC Ground/A CCW Pump trips w/B CCW Pump failure to start in AUTO **ON, (Simulates simultaneous 480V ground). Alarm will clear 20 seconds after alarm.** **NOTE: This Malfunction is inserted in the IC at T = 0.**

	Bench Mark	ACTIVITY	DESCRIPTION
☐	At direction of examiner	**Event 4** **Trigger #2** **EDS04D** **CLG01D (T=0)**	Loss of Emergency Bus: 480V Bus 18/SW Pump D fails to start **NOTE: This Malfunction is inserted in the IC at T = 0.**
☐	At direction of examiner	**Event 5** **Trigger #3** **CVC07A**	PCV-135 fails Closed **0% (MAN AVAIL), No Ramp**
☐	At direction of examiner	**Event 6** **Trigger#4** **NIS05A**	Loss of Compensating Voltage to Intermediate Range N35 **1E-8 amps, No Ramp**
☐	At direction of examiner	**Event 7** **Trigger #5** **STM04D (0%)** **STM09A (40%) 30 seconds delay, 15 second ramp**	B ARV fails CLOSED/B SG Safety Valve Lifts and fails OPEN
☐	Continued from Event 7	**Event 8** **RPS05A (T=0)** **RPS05B (T=0)**	Failure of Reactor to Trip in AUTO only **NOTE: This Remote is inserted in the IC at T = 0.**
☐	Upon Entry into E-2	**Event 9** **Trigger #6** **SGN04B (600 gpm)** **RCS16 (1%)**	B Steam Generator Tube Rupture/1% Failed Fuel
☐	**Terminate the scenario upon direction of Lead Examiner**		

Op Test No.:	N2014-301	Scenario #	5	Event #	1	Page	8	of 57
Event Description:	**Raise Power to POAH**							

Shortly after taking the watch, the operator will raise power to the POAH in accordance with Step 6.3.4 of O-1.2, Plant Startup From Hot Shutdown to Full Load. The operator will raise reactor power and stabilize reactor power at 0.5-1.0%; and then control Tavg at 547°F.	
SIM DRIVER Instructions:	**NA**
Indications Available:	**NA**

Time	Pos.	Expected Actions/Behavior	Comments
O-1.2, PLANT STARTUP FROM HOT SHUTDOWN TO FULL LOAD			
			NOTE: The CRS will conduct an alignment brief.
	HCO	(Step 6.3.4) WITHDRAW controlling bank of Rods and raise Reactor Power to the point of adding heat without exceeding the capacity of one AFW Pump.	**NOTE:** The HCO will raise Reactor power.
	CO/ CRS	(Step 6.3.5) VERIFY one of the following is operating to control RCS Tavg AND MARK component NOT controlling Tavg N/A.	
		• SG ARVs	
		• Condenser Steam Dumps	
	CO	(Step 6.3.9) ENSURE Steps 1.1 through 1.5 are complete on the following MFW Pump Attachments for available Main Feed Water Pump(s):	
		• Attachment 5, Main Feedwater Pump A	**NOTE:** The CRS will hand Attachment 5 off to the CO.
		• Attachment 6, Main Feedwater Pump B	
			NOTE: The CRS will likely conduct a Plant Status Brief.
At the discretion of the Lead Examiner move to Event #2.			

Op Test No.:	N2014-301	Scenario #	5	Event #	2	Page	9	of 57
Event Description:	**Testing of the MFW Oil Pumps**							

After this, the operator will conduct the oil pump checks on the A Main Feedwater (MFW) Pump accordance with Attachment 5, Main Feed Pump A Startup of O-1.2, Plant Startup From Hot Shutdown to Full Load, in preparation for starting the A MFW Pump.
SIM DRIVER Instructions: **NA**
Indications Available: **NA**

Time	Pos.	Expected Actions/Behavior	Comments
			NOTE: The CO will contact and coordinate with the Secondary AO to complete this Attachment. **SIM DRIVER:** Acknowledge as AO as appropriate.
O-1.2, PLANT STARTUP FROM HOT SHUTDOWN TO FULL LOAD ATTACHMENT 5, MAIN FEEDWATER PUMP A			
	CO	(Step 1.0) PERFORM the following to align and start MFW Pump A:	
	CO	(Step 1.1) PLACE Feedwater Pump A Oil Pump in service as follows:	
	CO	(Step 1.1.1) START a FEEDWATER PUMP A AC OIL PUMP AND MARK the Oil Pump NOT started N/A.	
		• 1A1	
		• 1A2	
	CO	(Step 1.1.2) PERFORM the following to ensure the FEEDWATER PUMP A DC OIL PUMP starts on low oil pressure:	
		• PLACE FEEDWATER PUMP A DC OIL PUMP in AUTO.	
		• SLOWLY SELECT standby FEEDWATER PUMP A AC OIL PUMP.	**NOTE:** The CO will need to move the Select Switch slowly.

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Event Description: **Testing of the MFW Oil Pumps**

Time	Pos.	Expected Actions/Behavior	Comments
		• VERIFY FEEDWATER PUMP A DC OIL PUMP starts.	
			NOTE: MCB Annunciator J-31 may alarm when the DC Oil Pump is started. Based on this alarm, the CRS may contact maintenance to evaluate the DC Distribution System. If so, **SIM DRIVER:** Acknowledge as Maintenance, and report that the alarm will clear when the DC Oil Pump is stopped; and that it is appropriate to continue with the test.
	CO	• VERIFY MCB Alarm H-12, FEED PUMP DC OIL PUMP AUTO START, is ILLUMINATED.	
		• VERIFY MCB Alarm H-4, MAIN FEED PUMP OIL SYSTEM, is ILLUMINATED.	
		• STOP FEEDWATER PUMP A DC OIL PUMP.	
		• VERIFY MCB Alarm H-12, FEED PUMP DC OIL PUMP AUTO START is EXTINGUISHED.	
		• VERIFY MCB Alarm H-4, MAIN FEED PUMP OIL SYSTEM, is EXTINGUISHED.	
		• ENSURE FEEDWATER PUMP A DC OIL PUMP in AUTO.	
		• SLOWLY SELECT the original running FEEDWATER PUMP A AC OIL PUMP.	**NOTE:** The CO will need move the Select Switch slowly.
		• OBSERVE FEEDWATER PUMP A DC OIL PUMP starts.	
		• VERIFY MCB Alarm H-12, FEED PUMP DC OIL PUMP AUTO START, is ILLUMINATED.	

Op Test No.: N2014-301 Scenario # 5 Event # 2 Page 11 of 57

Event Description: **Testing of the MFW Oil Pumps**

Time	Pos.	Expected Actions/Behavior	Comments
		• VERIFY MCB Alarm H-4, MAIN FEED PUMP OIL SYSTEM, is ILLUMINATED.	
		• STOP FEEDWATER PUMP A DC OIL PUMP.	
		• VERIFY MCV Alarm H-12, FEED PUMP DC OIL PUMP AUTO START, is EXTINGUISHED.	
		• VERIFY MCB Alarm H-4, MAIN FEED PUMP OIL SYSTEM, is EXTINGUISHED.	
		• ENSURE FEEDWATER PUMP A DC OIL PUMP in AUTO.	
At the discretion of the Lead Examiner move to Event #3.			

Op Test No.: N2014-301	Scenario # 5	Event # 3	Page 12 of 57
Event Description:	**480VAC Ground/A CCW Pump trips w/B CCW Pump failure to start in AUTO**		

Subsequently, a 480VAC ground will occur on Bus 14 and the A CCW Pump will trip, and the B CCW Pump will fail to automatically start. The operator will either start the A CCW pump manually per A-503.1, Emergency and Abnormal Operating Procedures Users Guide; or respond in accordance with AR-A-22, CCW PUMP DISCHARGE LO PRESS 60 PSI, and enter AP-CCW.2, Loss of CCW During Power Operation. The operator will evaluate Technical Specification 3.7.7, CCW System.

SIM DRIVER Instructions: **Operate Trigger #1 (CLG02A, A-EDS33 (ON))**

Indications Available:

- MCB Annunciator L-8, 480V GROUND
- MCB Annunciator, CCW PUMP DISCHARGE LO PRESS 60 PSIG
- A CCW Pump Green Breaker Status Light LIT
- A CCW Pump White Breaker Status Light LIT
- B CCW Pump Green Breaker Status Light LIT

Time	Pos.	Expected Actions/Behavior	Comments
			NOTE: The HCO may start the B CCW directly, or the crew may enter AP-CCW.2 directly.
		AR-L-8, 480V GROUND	
	CO	(Step 1) Notify AOs to verify which 480V Bus has the ground.	**NOTE:** The CRS will dispatch an AO. **SIM DRIVER:** as **AO**, acknowledge.
	CRS	(Step 2) Notify SS to determine WHAT equipment may be removed AND returned service on the affected Bus AND MCC(s).	**NOTE:** The CRS may notify the SS. **SIM DRIVER:** as **SS**, acknowledge.
	CRS	(Step 3) IF necessary, THEN refer to ITS LCO 3.8.1 OR 3.8.2.	

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Event Description: **480VAC Ground/A CCW Pump trips w/B CCW Pump failure to start in AUTO**

Time	Pos.	Expected Actions/Behavior	Comments
	CRS	(Step 4) IF necessary, THEN notify the following:	**NOTE:** The CRS may notify the WCC/Electricians. **SIM DRIVER:** as **WCCS/Electricians**, acknowledge, and **after 3 Minutes** report that **the A CCW has tripped**.
		• Electricians	
		• Electric Planner	
AR-A-22, CCW PUMP DISCHARGE LO PRESS 60 PSI			
	CRS	(Step 1) GO TO the applicable AP-CCW procedure:	
		• AP-CCW.2, LOSS OF CCW DURING POWER OPERATION	
	HCO	(Step 2) Notify AO to check CCW pumps.	**NOTE:** The CRS may direct the AO to check the CCW Pumps. If so, **SIM DRIVER** acknowledge as AO, and report A CCW Pump Motor Hot to Touch.
	HCO	(Step 3) IF CCW pump cavitation is evident with normal CCW surge tank level as indicated on LI-618,....	**NOTE:** The CRS may direct the AO to check the CCW Pumps. If so, **SIM DRIVER** acknowledge as AO, and report no evidence of cavitation exists on any CCW Pump.
	CRS	(Step 4) Refer to ITS LCO 3.4.6, 3.4.7, 3.4.8, 3.7.7, 3.9.4 and 3.9.5.	

Op Test No.: N2014-301 Scenario # 5 Event # 3 Page 14 of 57

Event Description: **480VAC Ground/A CCW Pump trips w/B CCW Pump failure to start in AUTO**

Time	Pos.	Expected Actions/Behavior	Comments
			NOTE: The HCO may start the B CCW directly per the guidance of A-503.1, and/or the CRS may go to AP-CCW.2.
A-503.1, EMERGENCY AND ABNORMAL OPERATING PROCEDURES USERS GUIDE			
	HCO	(Step 1) Manual backup is the insertion of a manual trip, actuation, or control signal after a given parameter has reached or exceeded the setpoint for the corresponding automatic signal, based on the observed failure of the automatic function to occur. Manual backup is in an attempt to restore or maintain the design function.	**NOTE:** The HCO may start the B CCW, restoring CCW flow, and the crew MAY NOT enter the AP.
			Examiner NOTE: Although the CRS will probably NOT enter AP-CCW.2, it is scripted here in case he does. If NOT, proceed to Technical Specification evaluation on **Page 18**.
AP-CCW.2, LOSS OF CCW DURING POWER OPERATION			
			Examiner NOTE: If the B CCW Pump is started already upon entry into this procedure, move on to Event 4 and the discretion of the Lead Examiner, and address TS Evaluation upon completion of the scenario.
	HCO	(Step 1) Check CCW Pump Status:	
		• Both CCW pump breaker with lights - EXTINGUISHED	**NOTE:** The A CCW Pump white Breaker Status light will be LIT.
		(Step 1 RNO) Perform the following:	
		• Ensure standby CCW pump running.	**NOTE:** The HCO will start the B CCW Pump here, if NOT previously started.

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Event Description: **480VAC Ground/A CCW Pump trips w/B CCW Pump failure to start in AUTO**

Time	Pos.	Expected Actions/Behavior	Comments
		IF no CCW pump can be operated,....	**NOTE:** The B CCW Pump can be started.
		• IF annunciator A-22, CCW PUMP DISCHARGE LO PRESS 60 PSI, lit,.....	**NOTE:** Once the B CCW Pump is started, this annunciator will NOT be LIT.
	HCO	(*Step 2) Monitor CCW Surge Tank Level – APPROXIMATELY 50% AND STABLE (PPCS Point L0618)	
	HCO	(*Step 3) Monitor CCW Hx Outlet Temperature (MCB rear or PPCS point ID T0621)	
		• CCW Hx Outlet temperature – LESS THAN 120°F	
	HCO	(*Step 4) Monitor RCP Indications:	
		• Annunciator A-7 (A-15), RCP 1A (1B) CCW return Hi temp or low flow 165 gpm 125°F alarm – EXTINGUISHED	
		• RCP motor bearings temperature (PPCS Group Display – RCPS OR RCP temperature monitor RK-20A recorder) - ≤ 200°F.	
	HCO	(*Step 5) Monitor If Letdown Should Be Isolated:	
		• Check annunciator A-12, Non-Regen Hx Letdown Out Hi Temp 145°F – EXTINGUISHED	
		• Check Excess letdown temperature – LESS THAN 195°F	
	HCO/ CO/ AO	(Step 6) Check CCW Valve Alignment - NORMAL	

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Event Description: **480VAC Ground/A CCW Pump trips w/B CCW Pump failure to start in AUTO**

Time	Pos.	Expected Actions/Behavior	Comments
		• Check MCB CCW valves (Refer to ATT-1.0, ATTACHMENT AT POWER CCW ALIGNMENT)	**NOTE:** The CRS will hand off ATT-1.0 to the HCO or CO.
		• Direct AO to check local flow indications per ATT-1.1, ATTACHMENT NORMAL CCW FLOW	**NOTE:** The CRS may dispatch an AO. **SIM DRIVER:** as **AO**, acknowledge, and **after 5 Minutes**, report that **ATT-1.1. is complete**.
	HCO/ AO	(Step 7) Locally Check Seal Water Hx CCW Outlet Flow – NORMAL	**NOTE:** The CRS may dispatch an AO. **SIM DRIVER:** as **AO**, acknowledge, and report after 2 Minutes that flow is 96 gpm.
	HCO	(Step 8) check For CCW Leakage In CNMT:	
		• Check CNMT sump A level:	
		• Level – STABLE	
		• Sump A pumps – OFF	
		• RCP oil levels - STABLE	
	HCO	(Step 9) Check for CCW Leakage In AUX BLDG:	
		• Start frequency of AUX BLDG sump pump(s) – NORMAL (Refer to RCS daily leakage log)	
		• Waste holdup tank level – STABLE OR RISING AS EXPECTED	**NOTE:** The CRS may contact an AO. **SIM DRIVER:** as **AO**, acknowledge, and report that the **WHUT Level is stable**.
	HCO	(Step 10) Verify CCW System Leak – IDENTIFIED	

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Event Description: **480VAC Ground/A CCW Pump trips w/B CCW Pump failure to start in AUTO**

Time	Pos.	Expected Actions/Behavior	Comments
		• Leak identified	**NOTE:** The CRS will answer this "YES" being aware that there is NO leak, and continue.
		• Isolate leak if possible	
		• Refer to IP-ENV-3, RESPONSE TO A SPILL OF HAZARDOUS MATERIAL/WASTE	**NOTE:** The CRS may NOT take this action, knowing that there is no leak.
	HCO	(Step 11) Check Normal or Excess Letdown – IN SERVICE	**NOTE:** Normal letdown is in service.
	HCO	(Step 12) Check CCW System Leak Isolated	
		• Surge tank level – APPROXIMATELY 50%	
		• Surge tank level - STABLE	
	HCO	(Step 13) Direct RP To Sample CCW System For Chromates	**NOTE:** The CRS may NOT take this action, knowing that there is no leak.
	HCO/ CO	(Step 14) Evaluate MCB Annunciator Status (Refer to AR Procedures)	
	CRS	(Step 15) Evaluate Plant Conditions:	
		• CCW system malfunction – IDENTIFIED AND CORRECTED	
		• CCW system status adequate for power operation (Refer to ITS Section 3.7.7).	
	CRS	(Step 16) Notify Higher supervision	**NOTE:** The CRS may notify the WCC. **SIM DRIVER:** as **WCCS**, acknowledge.

Op Test No.:	N2014-301	Scenario #	5	Event #	3	Page	18 of 57
Event Description:	**480VAC Ground/A CCW Pump trips w/B CCW Pump failure to start in AUTO**						

Time	Pos.	Expected Actions/Behavior	Comments
	CRS	(Step 17) Return to Procedure Or Guidance In Effect	
			Examiner NOTE: If the CRS does NOT enter AP-CCW.2, continue **HERE**.
TECHNICAL SPECIFICATION 3.7.7, COMPONENT COOLING WATER (CCW) SYSTEM			
	CRS	LCO 3.7.7 Two CCW trains, two CCW heat exchangers, and the CCW loop header shall be OPERABLE.	**NOTE:** CRS should recognize escalating MODE change to >5% power cannot occur with LCO not met.
		AAPLICABILITY: MODES 1, 2, 3, and 4.	
	CRS	CONDITION / REQUIRED ACTION / COMPLETION TIME A. One CCW train inoperable. / A.1 Restore CCW train to OPERABLE status. / 72 hours	
			NOTE: The CRS will likely conduct a Plant Status Brief.
At the discretion of the Lead Examiner move to Event #4.			

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Event Description:	**Fault on 480V Bus 18/SW Pump D fails to start**							

Shortly after this, a fault on 480V Bus 18 will occur, resulting in Bus 18 de-energizing. The operator will respond in accordance with AR-L-23, BUS18 UNDER VOLTAGE SAFEGUARDS and/or AR-L-5, SAFEGUARD BUS MAIN BREAKER OVERCURRENT TRIP and enter AP-ELECT.17/18, Loss of Safeguards Bus 17/18. The D Service Water Pump has failed to start, leaving only the B SW Pump running. The operator may leave the A EDG running or trip it within AP-ELECT.17/18, but in either case align Alternate Cooling to the EDG. The operator will enter AP-SW.2, Loss of Service Water, and take actions to isolate non-essential SW loads. The operator will address Technical Specification 3.8.1, AC Sources – Modes 1, 2, 3, and 4; 3.8.9, Distribution Systems – Modes 1, 2, 3,and 4; and 3.7.8, Service Water System.

SIM DRIVER Instructions: **Operate Trigger #2 (EDS04D)**

Indications Available:

- MCB Annunciator L-23, BUS 18 UNDER VOLTAGE SAFEGUARDS
- MCB Annunciator L-5, SAFEGUARD BUS MAIN BREAKER OVERCURRENT TRIP
- Multiple MCB Annunciators
- Bus 18 Volts indicating 0
- Bus 18 amperage indicating 0
- A EDG starts, voltage at 480 VAC, but will not load on Bus 18.

Time	Pos.	Expected Actions/Behavior	Comments
			NOTE: The crew may enter AP-ELECT.17/18 directly.
AR-L-23, BUS 18 UNDER VOLTAGE SAFEGUARDS			
	CRS	(Step 4.1) IF either L-20, 12A XFMR OR 12A BUS TROUBLE OR L-28, 12B XFMR OR 12B BUS TROUBLE- IS LIT, THEN…..	**NOTE:** These annunciators are NOT LIT.
	CRS	(Step 4.2) IF D/G A ties onto Bus 18 THEN….	**NOTE:** D/G A will NOT tie onto Bus 18.
	CRS	(Step 4.3) IF D/G does not start THEN…..	**NOTE:** D/G A will start.
AR-L-13, SAFEGUARDS BUS D/G BREAKER OVERCURRENT TRIP			

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Event Description: **Fault on 480V Bus 18/SW Pump D fails to start**

Time	Pos.	Expected Actions/Behavior	Comments
	CRS	(Step 1) Notify Electricians.	
	CRS	(Step 2) Investigate overcurrent condition.	
	CRS	(Step 3) Refer to ITS LCO 3.8.1 or 3.8.2.	
	CRS	(Step 4) When electricians have corrected the overcurrent condition, reset alarm by going to the AFTER TRIP position on the applicable breaker.	
			NOTE: The CRS will go to AP-ELEC.17/18.
AP-ELECT.17/18, LOSS OF SAFEGUARDS BUS 17/18			
	CO	(Step 1) Verify Emergency D/G Associated With Affected Bus – RUNNING	**NOTE:** The A D/G is RUNNING, but its breaker is NOT Closed.
		• Bus 18 – D/G A	
	CO	(Step 2) Verify Both trains Of AC Emergency Busses Energized To At Least 440 VOLTS:	
		• Bus 14 and Bus 18	**NOTE:** Bus 18 is de-energized.
		• Bus 16 and Bus 17	
	CO	(Step 2 RNO) IF Bus 14 AND Bus 16 are deenergized, THEN…..	**NOTE:** Bus 16 is energized.
		IF one train deenergized, THEN perform the following:	
		• Ensure D/G aligned for unit operation	
		• Mode switch in UNIT	
		• Voltage control selector in AUTO	
		• Check D/G running.	

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Event Description: **Fault on 480V Bus 18/SW Pump D fails to start**

Time	Pos.	Expected Actions/Behavior	Comments
		IF NOT, THEN…..	**NOTE:** The A D/G is RUNNING, but its breaker is NOT Closed.
		• Adjust D/G voltage to approximately 480V.	
		• Adjust D/G frequency to approximately 60 Hz.	
	CO	(Step 3) Verify Service Water System Operation:	
		• SW pumps – AT LEAST ONE RUNNING IN EACH LOOP	**NOTE:** The D SW Pump has failed to Start, ONLY the B SW Pump is RUNNING.
		• A or B pump in Loop A	
		• C or D pump in Loop B	
			NOTE: The CRS may address AP.SW.1, SW Leak, however this procedure will NOT address the low flow condition.
	CO	(Step 3a RNO) Perform the following:	
		• Manually start SW pump as necessary (357 kw each).	**NOTE:** The CO may attempt to START the D SW Pump, but it will fail.
		• IF adequate cooling can NOT be supplied to a running D/G.	**NOTE:** The CRS will have to decide whether or not 1 SW Pump is adequate cooling. **IF NOT**, the CRS will direct that the A D/G be stopped, and address ER-D/G.2 for Alternate Cooling. **If SO**, CRS will continue as scripted.
		• IF no SW pumps can be operated, THEN….	**NOTE:** The B SW Pump is RUNNING.
		• IF only one SW pump can be operated, THEN refer to AP-SW.2, LOSS OF SERVICE WATER.	
			NOTE: The CRS will go to AP-SW.2.

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Event Description: **Fault on 480V Bus 18/SW Pump D fails to start**

Time	Pos.	Expected Actions/Behavior	Comments
		AP-SW.2, LOSS OF SERVICE WATER	
	CO	(Step 1) Verify 480V AC Emergency Busses 17 and 18 – ENERGIZED	**NOTE:** Bus 18 is de-energized.
	CO	(Step 1 RNO) Ensure associated D/G(s) running and attempt to manually load busses 17 and/or 18 onto their respective D/G(s).	
		IF neither bus 17 nor bus 18 can be energized, THEN…….	**NOTE:** Bus 17 is energized.
	CO	(*Step 2) verify SW Pump Alignment:	
		• Check at least one SW pump running in each loop	
		• A or B pump in loop A	**NOTE:** The B SW Pump is RUNNING.
		• C or D pump in loop B	**NOTE:** Both C and D SW Pumps are OFF.
	CO	• (Step 2a RNO) Perform the following:	
		• Manually start SW pumps as necessary (257 kw each).	**NOTE:** The CO may attempt to START the D SW Pump, but it will fail.
		• IF adequate cooling can NOT be supplied to a running D/G, THEN……	**NOTE:** The CRS will direct action based on whether or NOT one SW Pump can adequately cool the D/G.
		• IF no SW pumps can be operated, THEN…….	**NOTE:** The B SW Pump is RUNNING.
	CRS	• IF only one SW pump can be operated, THEN go to Step 3.	
	CO	(Step 3) Align Alternate Cooling To One D/G (Refer to ER-D/G.2, ALTERNATE COOLING FOR EMERGENCY D/Gs):	

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Event Description: **Fault on 480V Bus 18/SW Pump D fails to start**

Time	Pos.	Expected Actions/Behavior	Comments
		• IF B or D SW Pump is operating, THEN align alternate cooling to D/G A per ER-D/G.2.	**NOTE:** The CRS will dispatch an AO. **SIM DRIVER:** as **AO**, acknowledge, and use REM-GEN21 = OPEN. Report after 3 Minutes that ATT-2.2 is complete.
	CO	(Step 4) Isolate SW To Non-Essential Loads	
		• Close screenhouse SW isolation valves	
		• MOV-4609	
		• MOV-4780	
		• Close air conditioning SW isolation valves	
		• MOV-4663	
		• MOV-4733	
		• Direct AO to perform Part C of ATT-2.2, ATTACHMENT SW ISOLATION	**NOTE:** The CRS will dispatch an AO. **SIM DRIVER:** as **AO**, acknowledge, and report after 3 Minutes that ATT-2.2 is complete.
	CO	(Step 5) Monitor Plant Equipment Cooled By SW – TEMPERATURES STABLE	
		• Exciter	
		• MFP oil coolers	
		• Instrument air compressors	
		• Bus duct coolers	
		• Seal Oil unit	
		• Turbine lube oil cooler	
		• CCW Hx	
		• SFP Hx	
		• AFPs	
		• Condensate Pumps	

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Event Description: **Fault on 480V Bus 18/SW Pump D fails to start**

Time	Pos.	Expected Actions/Behavior	Comments
		• Secondary sample coolers	
		(Step 6) Notify Higher Supervision	**NOTE:** The CRS may notify the WCC. **SIM DRIVER:** as **WCCS**, acknowledge.
	CO	(Step 7) Check SW System Status:	
		• Check SW loop header pressures:	
		• PPCS SW low pressure alarm status – NOT LOW	
		• PPCS point ID P2160	
		• PPCS point ID P2161	
		• Pressure in both loops STABLE OR RISING	
		• Check SW loop header pressures – GREATER THAN 40 PSIG	**NOTE:** The SW System pressures are < 40 psig.
	CO/ AO	• (Step 7a RNO) Locally isolate selected SW loads as desired (Refer to ATT 2.2, ATTACHMENT SW ISOLATION)	**NOTE:** The CRS will dispatch an AO. **SIM DRIVER:** as **AO**, acknowledge.
	CO	• (Step 7b) Check at least one SW pump running in each loop:	
		• A or B pump in loop A	**NOTE:** The B SW Pump is RUNNING.
		• C or D pump in loop B	**NOTE:** Both C and D SW Pumps are OFF.
		• (Step 7b RNO) Perform the following:	
		• Continue efforts to start at least one SW pump in each loop.	
		• IF at least two SW pumps can be operated, THEN,……	**NOTE:** Two SW Pumps cannot be operated.

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Event Description: **Fault on 480V Bus 18/SW Pump D fails to start**

Time	Pos.	Expected Actions/Behavior	Comments
		• IF NOT, THEN return to Step 3.	**NOTE:** The CRS will continue efforts to restore the SW System.
TECHNICAL SPECIFICATION 3.8.1, AC SOURCES – MODES 1, 2, 3 AND 4			
	CRS	LCO 3.8.1 The following AC electrical sources shall be OPERABLE:	
		• One qualified independent offsite power circuit connected between the offsite transmission network and each of the onsite 480 V safeguards buses required by LCO 3.8.9, "Distribution Subsystems – MODES 1, 2, 3, and 4"; and	
		• Two emergency diesel generators (DGs) capable of supplying their respective onsite 480 V safeguards buses required by LCO 3.8.9.	
	CRS	APPLICABILITY: MODES 1, 2, 3, and 4.	
	CRS	ACTIONS	

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. One DG inoperable.	B.1 Perform SR 3.8.1.1 for the offsite circuit.	1 hour AND Once per 8 hours thereafter
	B.2Declare required feature(s) supported by the inoperable DG inoperable when its required redundant feature(s) is inoperable. AND	4 hours from discovery of Condition B concurrent with inoperability of redundant required feature(s).

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Event Description: **Fault on 480V Bus 18/SW Pump D fails to start**

Time	Pos.	Expected Actions/Behavior			Comments
			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	
TECHNICAL SPECIFICATION 3.8.9, DISTRIBUTION SYSTEMS – MODES 1, 2, 3 AND 4					
	CRS	LCO 3.8.9 Train A and Train B of the following electrical power distribution subsystems shall be OPERABLE:			
		• AC power.			
	CRS	APPLICABILITY: MODES 1, 2, 3, and 4.			
	CRS	ACTIONS			
	CRS	CONDITION	REQUIRED ACTION	COMPLETION TIME	
		A. One AC electrical power distribution train inoperable	A.1 Restore AC electrical power distribution train to OPERABLE status.	8 hours	

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Event Description: **Fault on 480V Bus 18/SW Pump D fails to start**

Time	Pos.	Expected Actions/Behavior			Comments
TECHNICAL SPECIFICATION 3.7.8, SERVICE WATER (SW) SYSTEM					
	CRS	LCO 3.7.8 Four SW pumps and the SW loop header shall be OPERABLE.			
	CRS	APPLICABILITY: MODES 1, 2, 3, and 4.			
	CRS	CONDITION	REQUIRED ACTION	COMPLETION TIME	
		A. One SW pump inoperable	A.1Restore SW pump to OPERABLE status.	14 days	
At the discretion of the Lead Examiner move to Event #5.					

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Event Description:	**PCV-135 fails CLOSED**							

During the recovery, Letdown Pressure Control Valve PCV-135 will fail closed causing the Letdown Line Relief valve to lift to the PRT. The operator will respond in accordance with AR-A-11, LETDOWN LINE HI PRESS 400 PSI, and take manual control of the valve.

SIM DRIVER Instructions: **Operate Trigger #3 (CVC07A (0%))**

Indications Available:

- PCV-135 Controller output goes to 100
- MCB Annunciator A-11, LETDOWN LINE HI PRESS 400 PSI
- Letdown flow drops to 0.

Time	Pos.	Expected Actions/Behavior	Comments
AR-A-11, LETDOWN LINE HI PRESS 400 PSI			
	HCO	(Step 1) Adjust PCV-135 controller to lower setting.	**NOTE:** The HCO will take manual control of PCV-135, and adjust Letdown Pressure to ≈250 psig.
	HCO	(Step 2) Transfer PCV-135 controller to manual if necessary.	
	HCO	(Step 3) Verify letdown flow (FI-134) is consistent with letdown orifice in service.	**NOTE:** The CRS may notify the WCC. **SIM DRIVER:** as **WCCS**, acknowledge.
			NOTE: The CRS will likely conduct a Plant Status Brief.
At the discretion of the Lead Examiner move to Event #6.			

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Event Description: **Loss of Compensating Voltage to Intermediate Range N35**

Shortly afterwards, the compensating voltage power supply for the Intermediate Range Nuclear Instrument N35 will fail Low. The operator will respond in accordance with AR-E-9, IR N-35 LOSS OF COMPENSATING VOLTAGE and enter ER-NIS.2, IR MALFUNTION. The operator will address Technical Specification 3.3.1, Reactor Trip Instrumentation.

SIM DRIVER Instructions: **Operate Trigger #4 (NIS05A (1E-8%))**

Indications Available:

- MCB Annunciator E-9, IR N-35 LOSS OF COMPENSATING VOLTAGE

Time	Pos.	Expected Actions/Behavior	Comments
AR-E-9, IR N-35 LOSS OF COMPENSATION VOLTAGE			
	CRS	(Step 1) Refer to ER-NIS.2	
			NOTE: The CRS will go to ER-NIS.2.
ER-NIS.2, IR MALFUNCTION			
	CO	(Step 6.1) DEFEAT the reactor trip and rod stop function for the affected channel by placing the level trip switch in the BYPASS position.	**NOTE:** E-7 alarm, NIS TRIP BYPASS, will light
	CRS	(Step 6.2) NOTIFY I&C to repair the faulty channel.	**NOTE:** The CRS may notify the WCC/I&C. **SIM DRIVER**: as **WCCS/I&C**, acknowledge.
	CRS	(Step 6.3) REFER to ITS Section 3.3.1, Table 3.3.1-1, function 3 and Function 16a for NIS intermediate range channel operability requirements.	

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Event Description: **Loss of Compensating Voltage to Intermediate Range N35**

Time	Pos.	Expected Actions/Behavior	Comments
			NOTE: The CRS will evaluate Technical Specifications and determine that per Condition E, reactor S/D is required to reduce power to <5E-11 amps (can't raise power > 5% due to CCW pump failure and Mode Change requirements).
TECHNICAL SPECIFICATION 3.3.1, REACTOR TRIP SYSTEM (RTS) INSTRUMENTATION			
	CRS	LCO 3.3.1 The RTS instrumentation for each Function in Table 3.3.1-1 shall be OPERABLE.	
	CRS	APPLICABILITY: According to Table 3.3.1-1.	
	CRS	ACTIONS	

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
E. As required by Required Action A.1 and referenced by Table 3.3.1-1.	E.1 Reduce THERMAL POWER to < 5E-11 amps. OR	2 hours
	E.2 Increase THERMAL POWER to ≥ 8% RTP.	2 hours

NOTE: The CRS will recognize that Function 3 requires ACTION E.1, and that No mode change with CCW pump inoperable. Power must be reduced to < 5E-11 amps.

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Event Description: **Loss of Compensating Voltage to Intermediate Range N35**

Time	Pos.	Expected Actions/Behavior			Comments
		S. As required by Required Action A.1 and referenced by Table 3.3.1-1.	S.1 Verify interlock is in required state for existing plant conditions. OR	1 hour	**NOTE:** The CRS will recognize that Function 16.a requires ACTION S.1.
			S.2 Declare associated RTS Function channel(s) inoperable.	1 hour	
					NOTE: The CRS will evaluate Technical Specifications and determine that reactor S/D is required to reduce power to <5E-11 amps.
At the discretion of the Lead Examiner move to Events #7-9.					

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Event Description: **B ARV fails CLOSED/B SG Safety Valve Lifts and fails OPEN/ Failure of Reactor to Trip in AUTO only/B Steam Generator Tube Rupture/1% Failed Fuel**

After this, the B ARV will inadvertently close, and one SG Safety valve will open and stick open. The reactor will fail to trip automatically, and the operator will need to manually trip the reactor and enter E-0, Reactor Trip or Safety Injection. On the trip approximately 1% failed fuel will occur. The operator will proceed through E-0, and then transition to E-2, Faulted Steam Generator Isolation. While in E-2 a large Steam Generator Tube Rupture will develop on the B Steam Generator, and the operator will transition to E-3, Steam Generator Tube Rupture. Because the B Steam Generator is both Ruptured and Faulted, the operator will transition to ECA-3.1, SGTR with Loss of Reactor Coolant, Subcooled Recovery Desired. Also, while in E-2, it is expected that high temperatures will occur on the RCPs due to low service water flow, requiring the crew to stop these pumps. Because of this the NC condition of the RCS will tend to lower loop Tcold temperatures causing an Orange/Red condition on RCS Integrity. If so, the operator may need to transition to FR-P.1, Response to Imminent Pressurized Thermal Shock Condition. The scenario will terminate at Step 15 of ECA-3.1, after the crew has monitored conditions for continuing with the Subcooled Recovery procedure, or upon transition to FR-P.1.

SIM DRIVER Instructions: **Operate Trigger #5 (STM05B (0%) and STM09B (40%))**

Indications Available:
- The B ARV closes.
- The B SG pressure rises and Safety Valve(s) lift.
- One SG Safety Valve in the B SG sticks open causing SG/RCS pressure to lower.

Time	Pos.	Expected Actions/Behavior	Comments
		E-0, REACTOR TRIP OR SAFETY INJECTION	
	HCO	(Step 1) Verify Reactor Trip:	**Immediate Action** **NOTE:** The Reactor will fail to trip in Auto and Manually.
		• At least one train of reactor trip breakers – OPEN	
		• Neutron flux - LOWERING	
		• MRPI indicates – ALL CONTROL AND SHUTDOWN RODS ON BOTTOM	
	HCO/ CO	(Step 1 RNO) Manually trip reactor.	**Immediate Action**

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Event Description: **B ARV fails CLOSED/B SG Safety Valve Lifts and fails OPEN/ Failure of Reactor to Trip in AUTO only/B Steam Generator Tube Rupture/1% Failed Fuel**

Time	Pos.	Expected Actions/Behavior	Comments
		IF reactor trip breakers NOT open, THEN perform the following:	
		• Open Bus 13 and Bus 15 normal feed breakers.	
		• Verify rod drive MG sets tripped.	
		• Close Bus 13 and Bus 15 normal feed breakers.	
		• Reset lighting breakers.	
		IF the reactor will NOT trip.....	**NOTE:** De-energizing Bus 13 and 15 causes the Rods to insert.

CRITICAL TASK

1. **Manually trip the reactor prior to transition to FR-S.1, "Response to Nuclear Generation/ATWS."**

Safety Significance: Failure to trip the reactor when required causes a challenge to the Subcriticality Critical Safety Function that otherwise would not exist. This mis-operation by the operator necessitates the crew taking compensating action which complicates the event mitigation strategy and demonstrates an inability by the operator to recognize a failure of the automatic actuation of the RPS.

	CO	(Step 2) Verify Turbine Stop Valves – CLOSED	**Immediate Action**
	CO	(Step 3) Verify Both Trains of AC Emergency Busses Energized to at Least 440 VOLTS:	**Immediate Action**
		• Bus 14 and Bus 18	**NOTE:** Bus 18 is de-energized.
		• Bus 16 and Bus 17	

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Event Description: **B ARV fails CLOSED/B SG Safety Valve Lifts and fails OPEN/ Failure of Reactor to Trip in AUTO only/B Steam Generator Tube Rupture/1% Failed Fuel**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 3 RNO) Attempt to start any failed emergency D/G to restore power to all AC emergency busses.	**Immediate Action** **NOTE:** The A D/G breaker has previously failed, and actions taken will be dependent upon how this was mitigated previously.
		IF Bus 14 AND Bus 16 are deenergized, THEN go to……..	**NOTE:** Busses 14 and 16 are both energized.
	HCO	(*Step 4) Check if SI is Actuated:	**Immediate Action** **NOTE:** SI may or may NOT have actuated at this point. If it has, continue with Step 5.
	HCO/ CO	• (Step 4a 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,…..	
	HCO/ CO	• (Step 4b) SI sequencing – BOTH TRAINS STARTED.	**NOTE:** The SG Safety Valve being stuck OPEN will eventually require that SI be actuated.

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Event Description: **B ARV fails CLOSED/B SG Safety Valve Lifts and fails OPEN/ Failure of Reactor to Trip in AUTO only/B Steam Generator Tube Rupture/1% Failed Fuel**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO/ CO	(Step 4b RNO) Manually actuate SI and CI.	
	HCO/ CO	Foldout Page	**NOTE:** The crew will monitor these conditions throughout the performance of E-0.
		RCP TRIP CRITERIA	
		LOSS OF SW CRITERIA	
		AFW SUPPLY SWITCHOVER CRITERION	
		SFP COOLING CRITERIA	**NOTE:** The CRS may dispatch an AO to address the status of the SFPCS. If so, **SIM DRIVER** acknowledge as AO, and report in 5 Minutes that the SFPCS is operating normally.
	HCO	(*Step 5) Verify CNMT Spray Not Required:	
		• Annunciator A-27, CNMT SPRAY – EXTINGUISHED	
		• CNMT pressure – LESS THAN 28 PSIG	
	CRS	(Step 6) Direct Operator to Perform ATT-27.0, ATTACHMENT AUTOMATIC ACTION VERIFICATION	
			NOTE: The CRS will hand off ATT-27.0 to either the HCO or the CO, and continue with the other operator in E-0. **Examiner** following operator performing ATT-27.0 continue below. **Examiner** following operator NOT performing ATT-27.0 continue at **Page 39**.

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Event Description: **B ARV fails CLOSED/B SG Safety Valve Lifts and fails OPEN/ Failure of Reactor to Trip in AUTO only/B Steam Generator Tube Rupture/1% Failed Fuel**

Time	Pos.	Expected Actions/Behavior	Comments
E-0, REACTOR TRIP OR SAFETY INJECTION, ATTACHMENT 27.0, ATTACHMENT AUTOMATIC ACTION VERIFICATION			
	HCO/ CO	(Step 1) Verify SI and RHR Pumps Running:	
		• All SI pumps – RUNNING	
		• Both RHR pumps – RUNNING	
	HCO/ CO	(Step 2) Verify CNMT RECIRC Fans Running:	
		• All fans – RUNNING	
		• Charcoal filter dampers green status lights – EXTINGUISHED	
	HCO/ CO	(Step 3) Check If Main Steamlines Should Be Isolated:	
		• Any MSIV – OPEN	**NOTE:** B MSIV is CLOSED, Both MSIVs may be Closed.
		• Check CNMT pressure- LESS THAN 18 PSIG	
		• Ensure BOTH MSIVs closed and go to Step 4.	
	HCO/ CO	(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	

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Event Description: **B ARV fails CLOSED/B SG Safety Valve Lifts and fails OPEN/ Failure of Reactor to Trip in AUTO only/B Steam Generator Tube Rupture/1% Failed Fuel**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO/ CO	(Step 5) Verify At Least Two SW Pumps - RUNNING	
	HCO/ CO	(Step 6) Verify CI and CVI:	
		• CI and CVI annunciators - LIT	
		• Annunciator A-26, CNMT ISOLATION	
		• Annunciator A-25, CNMT VENTILATION ISOLATION	
		• Verify CI and CVI valve status lights – BRIGHT	
		• 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/ CO	(Step 7) Check CCW System Status:	
		• Verify CCW pump – AT LEAST ONE RUNNING	
	HCO/ CO	(Step 8) Verify SI and RHR Pump Flow:	
		• SI flow indicators – CHECK FOR FLOW	
		• RHR flow indicator – CHECK FOR FLOW	

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Event Description: **B ARV fails CLOSED/B SG Safety Valve Lifts and fails OPEN/ Failure of Reactor to Trip in AUTO only/B Steam Generator Tube Rupture/1% Failed Fuel**

Time	Pos.	Expected Actions/Behavior	Comments
		(Step 7b RNO) IF RCS pressure less than 150 psig…….	**NOTE:** RCS Pressure is > 150 psig.
	HCO/ CO	(Step 9) Verify SI Pump and RHR Pump Emergency Alignment:	
		• 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-871A	
		• MOV-871B	
	HCO/ CO	(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	
	HCO/ CO	(Step 11) Verify CI and CVI During a Fire Event	
		A confirmed fire has occurred in the control complex or cable tunnel (fire systems S05, S06, S08, Z05, Z18, or Z19).	
		Go to END	

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Event Description: **B ARV fails CLOSED/B SG Safety Valve Lifts and fails OPEN/ Failure of Reactor to Trip in AUTO only/B Steam Generator Tube Rupture/1% Failed Fuel**

Time	Pos.	Expected Actions/Behavior	Comments
E-0, REACTOR TRIP OR SAFETY INJECTION			
			Examiner following operator NOT performing ATT-27.0 continue **HERE**.
	HCO/ CO	(Step 7) Verify Both MDAFW Pumps Running	
	HCO/ CO	(Step 8) Verify AFW Valve Alignment:	
		• AFW flow – INDICATED TO BOTH S/G(s)	
		• AFW flow from each MDAFW pump – LESS THAN 230 GPM	
	CO	(*Step 9) Monitor Heat Sink:	**NOTE:** The A SG is likely > 7%, and the crew will stop AFW flow.
		• Check S/G narrow range level – GREATER THAN 7% [25% ADVERSE CNMT] in any S/G	
		• Check S/G narrow range level BOTH S/G LESS THAN 50%	
		• Control feed flow to maintain S/G narrow range level between 7% [25% adverse CNMT] and 50%.	
	CO/ HCO	(Step 10) Check If TDAFW Pump Can Be Stopped:	
		• Both MDAFW pumps – RUNNING	
		• PULL STOP TDAFW pump steam supply valves	
		• MOV-3504A	
		• MOV-3505A	

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Event Description: **B ARV fails CLOSED/B SG Safety Valve Lifts and fails OPEN/ Failure of Reactor to Trip in AUTO only/B Steam Generator Tube Rupture/1% Failed Fuel**

Time	Pos.	Expected Actions/Behavior	Comments
	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, RCP 1B CCW RETURN HI TEMP OR LOW FLOW - EXTINGUISHED	
	HCO	(*Step 12) Monitor RCS Tavg – STABLE AT OR TRENDING TO 547°F	**NOTE:** A cooldown is in progress through the SG Safety Valve.
	HCO	(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.	
		• IF cooldown continues, THEN control total feed flow between 200 gpm to 230 gpm until narrow range level greater than 7% [25% adverse CNMT] in at least one S/G.	
		• 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.	
	HCO	(Step 13) Check PRZR PORVs and Spray Valves:	
		• PORVs – CLOSED	
		• Auxiliary Spray Valve (AOV-296) – CLOSED	

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Event Description: **B ARV fails CLOSED/B SG Safety Valve Lifts and fails OPEN/ Failure of Reactor to Trip in AUTO only/B Steam Generator Tube Rupture/1% Failed Fuel**

Time	Pos.	Expected Actions/Behavior	Comments
		• Check PRZR pressure – LESS THAN 2260 PSIG	
		• Normal PRZR spray valves - CLOSED	
		• PCV-431A	
		• PCV-431B	
	HCO	(Step 14) 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]	
	CRS	(Step 14c RNO) Go to Step 15.	
	CO	(Step 15) 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	**NOTE:** The B SG is depressurizing in an uncontrolled manner.
	CRS	(Step 15 RNO) IF any S/G pressure lowering in an uncontrolled manner OR completely depressurized, THEN go to E-2, FAULTED STEAM GENERATOR ISOLATION, Step 1.	
			NOTE: The CRS will go to E-2.
			NOTE: The CRS will likely conduct an Alignment Brief.

SIM DRIVER Instructions: Operate Trigger #6 (SGN04B (60%)/RCS16 (1%))

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Event Description: **B ARV fails CLOSED/B SG Safety Valve Lifts and fails OPEN/ Failure of Reactor to Trip in AUTO only/B Steam Generator Tube Rupture/1% Failed Fuel**

Time	Pos.	Expected Actions/Behavior	Comments
Indications Available: • The B SG wide range level starts to rise. • The RCS pressure starts to lower. • R-32 alarms			
E-2, FAULTED STEAM GENERATOR ISOLATION			
	HCO/ CO	Foldout Page	**NOTE:** The crew will monitor these conditions throughout the performance of E-2.
		LOSS OF SW CRITERIA	
	CO	(Step 1) Check MSIV of Faulted S/G(s) - CLOSED	**NOTE:** BOTH MSIVs are CLOSED.
	CO	(Step 2) Check If Any S/G Secondary Side Is Intact:	
		• Check pressure in S/G A- STABLE OR RISING	**NOTE:** The A SG is intact.
		OR	
		• Check pressure in S/G B – STABLE OR RISING	
	CO	(Step 3) Check Faulted S/G Status:	**NOTE:** The B SG is depressurized.
		• Faulted S/G pressure – LOWERING IN AN UNCONTROLLED MANNER	
		OR	
		• Faulted S/G – COMPLETELY DEPRESSURIZED	
	CO	(Step 4) Isolate Feed Flow to Faulted S/G:	
		• Close or verify closed the following valves:	

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Event Description: **B ARV fails CLOSED/B SG Safety Valve Lifts and fails OPEN/ Failure of Reactor to Trip in AUTO only/B Steam Generator Tube Rupture/1% Failed Fuel**

Time	Pos.	Expected Actions/Behavior	Comments
		• Faulted S/G MDAFW pump discharge valve	
		• S/G B, MOV-4008	
		• Faulted S/G MFW regulating valve and bypass valve - CLOSED	
		• S/G B, HCV-476 and HCV-481	
		• MFW isolation valves - CLOSED	
		• S/G B, AOV-3994	
		• MDAFW pump crosstie valves – BOTH CLOSED	
		• MOV-4000A	
		• MOV-4000B	
	CO	• Faulted S/G SAFW pump discharge valve	
		• S/G B, MOV-9704B	
		• Pull stop faulted S/G MDAFW pump	
		• Close faulted S/G TDAFW flow control valve	
		• S/G B, AOV-4298	
			NOTE: If Feed flow has NOT been isolated previously, it will be isolated here.

CRITICAL TASK:

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

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

	CO	(Step 5) Isolate Steam Flow From Faulted S/G:	
		• Verify faulted S/G ARV – CLOSED	

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Event Description: **B ARV fails CLOSED/B SG Safety Valve Lifts and fails OPEN/ Failure of Reactor to Trip in AUTO only/B Steam Generator Tube Rupture/1% Failed Fuel**

Time	Pos.	Expected Actions/Behavior	Comments
		• S/G B, AOV-3410	
		• Close faulted S/G TDAFW pump steam supply valve and place in PULL STOP	
		• S/G B, MOV-3504A	
		• Verify faulted S/G blowdown and sample valves – CLOSED	
		• S/G B, AOV-5737 and AOV-5736	
		• Dispatch AO to complete faulted S/G isolation (Refer to ATT-10.0, ATTACHMENT FAULTED S/G)	**NOTE:** The CRS will dispatch an AO. **SIM DRIVER:** as **AO**, acknowledge and After 3 Minutes report that the Attachment is complete.
	CO	(*Step 6) Monitor Intact S/G Levels:	
		• Narrow range level – GREATER THAN 7% [25% adverse CNMT]	**NOTE:** The B SG has a SGTR.
		• Control feed flow to maintain narrow range level between 17% [25% adverse CNMT] and 50%	
	HCO	(Step 7) Check Secondary Radiation Levels - NORMAL	
		• Steamline radiation monitor (R-31 and R-32)	**NOTE:** R-32 will be in alarm.
		• Air ejector radiation monitor (R-15)	
		• S/G blowdown radiation monitor (R-19)	
		• Request Chem Tech sample S/Gs for activity	**NOTE:** The CRS will request that Chemistry sample. **SIM DRIVER:** as **chemistry**, acknowledge.
	CO	(Step 7 RNO) IF steamline radiation monitors NOT available, THEN dispatch AO to locally check steamline radiation.	

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Event Description: **B ARV fails CLOSED/B SG Safety Valve Lifts and fails OPEN/ Failure of Reactor to Trip in AUTO only/B Steam Generator Tube Rupture/1% Failed Fuel**

Time	Pos.	Expected Actions/Behavior	Comments
	CO	IF abnormal radiation levels detected in any S/G, THEN go to E-3, STEAM GENERATOR TUBE RUPTURE, Step 1.	
			NOTE: It is expected that A-7/A-15 will alarm because of limited SW flow to CCW. If so, the RCPs will need to be stopped due to hi temperatures.
			NOTE: The CRS will go to E-3.
E-3, STEAM GENERATOR TUBE RUPTURE			
	HCO/ CO	Foldout Page	**NOTE:** The crew will monitor these conditions throughout the performance of E-3.
		LOSS OF SW CRITERIA	
		SI REINITIATION CRITERIA	
		SECONDARY INTEGRITY CRITERIA	
		COLD LEG RECIRCULATION SWITCHOVER CRITERIA	
		AFW SUPPLY SWITCHOVER CRITERION	
		MULTIPLE S/G TUBE RUPTURE CRITERIA	
	CRS	(Step 1) Dispatch an AO to standby at door 44 in the Turbine Building.	**NOTE:** The CRS may direct the AO to standby at door 44 in the Turbine Building. If so, **SIM DRIVER** acknowledge as AO.
	HCO	(*Step 2) Monitor RCP Trip Criteria:	

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Event Description: **B ARV fails CLOSED/B SG Safety Valve Lifts and fails OPEN/ Failure of Reactor to Trip in AUTO only/B Steam Generator Tube Rupture/1% Failed Fuel**

Time	Pos.	Expected Actions/Behavior	Comments
		• RCP status –ANY RCP RUNNING	**NOTE:** It is likely that both RCPs are OFF due to high temperatures (Low SW flow).
		• SI pumps –AT LEAST TWO RUNNING	
		• RCS pressure minus maximum S/G pressure – LESS THAN 210 psi [240 psi adverse CNMT]	**NOTE:** Trip criteria is NOT met.
		(Step 1c RNO) Go to step 3	
	CO	(Step 3) Identify Ruptured S/G(s):	
		• Unexpected rise in either S/G narrow range level	**NOTE:** The CO may report that there is an unexpected increase in B SG Level.
		OR	
		• High radiation indication on main steamline radiation monitor	
		• R-31 for S/G A	
		• R-32 for S/G B	
		OR	
		• RP reports high radiation from S/G activity sample.	**NOTE:** The CRS will request that RP assist the Chemistry sample. **SIM DRIVER:** as **RP**, acknowledge, and report that the B SG has high radioactivity.
	CO	(Step 4) Isolate Flow From Ruptured S/G(s):	**NOTE:** B is ruptured
		• Adjust ruptured S/G ARV controller to 1050 psig in AUTO	
		• Check ruptured S/G ARV - CLOSED	
		• Close ruptured S/G TDAFW pump steam supply valve and place in PULL STOP	
		• S/G A, MOV-3504A	

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Event Description: **B ARV fails CLOSED/B SG Safety Valve Lifts and fails OPEN/ Failure of Reactor to Trip in AUTO only/B Steam Generator Tube Rupture/1% Failed Fuel**

Time	Pos.	Expected Actions/Behavior	Comments
		• Verify ruptured S/G blowdown valve - CLOSED	
		• S/G B, AOV-5737	
	CO	(Step 5) Complete Ruptured S/G Isolation:	
		• Close ruptured S/G MSIV –RUPTURED S/G MSIV CLOSED	
		• Dispatch AO to complete ruptured S/G isolation (Refer to ATT-16.0, ATTACHMENT RUPTURED S/G part A)	**NOTE:** The CRS will dispatch an AO. **SIM DRIVER:** as **AO**, acknowledge, and perform all remotes associated with ATT-16.0 (Schedule File **ATT16SGBpartA.sch**).
	CO	(Step 6) Check Ruptured S/G Level:	
		• Narrow range level – GREATER THAN 7% [25% adverse CNMT]	
	CO	(Step 6a RNO) IF ruptured S/G NOT faulted, THEN…..	**NOTE:** The CRS will determine that the Ruptured SG is Faulted, and continue.
		• Close MDAFW pump discharge valve to ruptured S/G	
		• S/G B, MOV-4008	
		• Pull stop MDAFW pump for ruptured S/G	
		• Close TDAFW pump flow control valve to ruptured S/G	
		• S/G B, AOV-4298	
		• Verify MDAFW pump crosstie valves - CLOSED	
		• MOV-4000A	
		• MOV-4000B	

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Event Description: **B ARV fails CLOSED/B SG Safety Valve Lifts and fails OPEN/ Failure of Reactor to Trip in AUTO only/B Steam Generator Tube Rupture/1% Failed Fuel**

Time	Pos.	Expected Actions/Behavior	Comments
	CO	(Step 7) Verify Ruptured S/G Isolated:	
		• Check ruptured MSIV - CLOSED	
		• Check TDAFW pump steam supply from ruptured S/G - ISOLATED	
		• Ruptured S/G pressure – GREATER THAN 500 PSIG	**NOTE:** The B SG is less than 500 psig.
	CRS	(Step 7 RNO) Go to ECA-3.1, SGTR WITH LOSS OF REACTOR COOLANT – SUBCOOLED RECOVERY DESIRED, Step 1.	
			NOTE: The CRS will go to ECA-3.1.
ECA-3.1, SGTR WITH LOSS OF REACTOR COOLANT SUBCOOLED RECOVERY DESIRED			
			Examiner NOTE: It is expected that at some time during the performance of ECA-3.1, an Orange/Red Path may exist on RCS Integrity. If so, Terminate Exam at the discretion of the Lead Examiner.
	HCO/ CO	Foldout Page	**NOTE:** The crew will monitor these conditions throughout the performance of ECA-3.1.
		LOSS OF SW CRITERIA	
		SI REINITIATION CRITERIA	
		SATURATED RECOVERY CRITERIA	
		SECONDARY INTEGRITY CRITERIA	
		COLD LEG RECIRCULATION SWITCHOVER CRITERIA	
		AFW SUPPLY SWITCHOVER CRITERION	

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Event Description: **B ARV fails CLOSED/B SG Safety Valve Lifts and fails OPEN/ Failure of Reactor to Trip in AUTO only/B Steam Generator Tube Rupture/1% Failed Fuel**

Time	Pos.	Expected Actions/Behavior	Comments
	HCO	(Step 1) Reset SI	
	HCO	(Step 2) Reset CI:	
		• Depress CI reset pushbutton	
		• Verify annunciator A-26, CNMT ISOLATION – EXTINGUISHED	
	CO	(Step 3) Verify Adequate SW Flow:	
		• Check at least two SW pumps – RUNNING	
	CO	(Step 3.a RNO) Manually start SW pumps as power supply permits (257 kw each).	
		• IF less than two SW pumps running, THEN perform the following:	**NOTE:** Only one SW Pump is running.
		• Ensure SW isolation.	
	CRS	• Refer to AP-SW.2, LOSS OF SERVICE WATER.	**NOTE:** The CRS may refer to AP-SW.2, however, no additional SW Pumps can be started.
		• Dispatch AO to establish normal shutdown alignment (Refer to ATT-17.0, ATTACHMENT SD-1)	**NOTE:** This task is already in progress.
	HCO/ CO	(Step 4) Establish IA to CNMT:	
		• Verify non-safeguards busses energized from offsite power	
		• Bus 13 normal feed – CLOSED	
		OR	
		• Bus 15 normal feed - CLOSED	
		• Verify SW isolation valves to turbine building - OPEN	**NOTE:** These valves are closed.

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Event Description: **B ARV fails CLOSED/B SG Safety Valve Lifts and fails OPEN/ Failure of Reactor to Trip in AUTO only/B Steam Generator Tube Rupture/1% Failed Fuel**

Time	Pos.	Expected Actions/Behavior	Comments
		• MOV-4613 and MOV-4670	
		• MOV-4614 and MOV-43664	
	CO	(Step 4.b RNO) Perform the following:	
		Restore IA using Service Air Restore IA using Service Air	**NOTE:** The CRS will start the Diesel SA Compressor.
		• Verify adequate air compressor(s) – RUNNING	
		• Check IA supply:	
		• Pressure – GREATER THAN 60 PSIG	
		• Pressure – STABLE OR RISING	
		• Reset both trains of XY relays for IA to CNMT AOV-5392	
		• Verify IA to CNMT AOV-5392 - OPEN	
	CO	(Step 5) Monitor AC Bus Power:	
		• Verify Safeguards Busses 14, 16, 17, and 18 – GREATER THAN 440 VOLTS	**NOTE:** Bus 18 is de-energized.
	CRS	(Step 5a RNO) Perform the following:	
		• Restore bus voltage (Refer to AP-ELEC.2, SAFEGUARD BUSSES LOW VOLTAGE OR SYSTEM LOW FREQUENCY)	
		• Continue with Step 6. WHEN bus voltage restored, THEN do Step 5b.	
		• Verify All AC Busses – BUSSES ENERGIZED BY OFFSITE POWER	
		• Normal feed breakers to all 480 volt busses – CLOSED	

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Event Description: **B ARV fails CLOSED/B SG Safety Valve Lifts and fails OPEN/ Failure of Reactor to Trip in AUTO only/B Steam Generator Tube Rupture/1% Failed Fuel**

Time	Pos.	Expected Actions/Behavior	Comments
		• Emergency D/G output breakers - OPEN	
	HCO	(Step 6) Deenergize PRZR Heaters	
		• Place PRZR proportional heaters in PULL STOP	
		• Place PRZR backup heaters to OFF	
		• Consult TSC for a recommended minimum indicated PRZR level that will ensure heaters are covered.	**NOTE:** The CRS will contact the TSC. **SIM DRIVER:** as **TSC**, acknowledge, indicate that TSC is NOT manned, and will call when active.
	HCO	(Step 7) Monitor If CNMT Spray Should Be Stopped:	
		• CNMT spray pumps – ANY RUNNING	**NOTE:** The CS Pumps are NOT running.
	CRS	• (Step 7a RNO) Go to Step 8.	
	CO	(Step 8) Check Ruptured S/G Level:	
		• Narrow range level – GREATER THAN 7% [25% adverse CNMT]	
		• Close MDAFW pump discharge valve to ruptured S/G	
		• S/G A, MOV-4007	
		• S/G B, MOV-4008	
		• Pull stop MDAFW pump for ruptured S/G	
		• Close TDAFW pump flow control valve to ruptured S/G	
		• S/G A, AOV-4297	
		• S/G B, AOV-4298	

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Event Description: **B ARV fails CLOSED/B SG Safety Valve Lifts and fails OPEN/ Failure of Reactor to Trip in AUTO only/B Steam Generator Tube Rupture/1% Failed Fuel**

Time	Pos.	Expected Actions/Behavior	Comments
		• Verify MDAFW pump crosstie valves - CLOSED	
		• MOV-4000A	
		• MOV-4000B	
	HCO	(*Step 9) Monitor If RHR Pumps Should Be Stopped:	
		• RHR pumps – ANY RUNNING IN INJECTION MODE	**NOTE:** The RHR Pumps are BOTH running.
		• Check RCS pressure:	
		• Pressure - GREATER THAN 300 psig [350 psig adverse CNMT]	
		• Pressure - STABLE OR RISING	
		• Stop RHR pumps and place in AUTO	
	CRS	(Step 10) Evaluate Plant Status:	
	HCO	• Check auxiliary building radiation - NORMAL	
		• Plant vent iodine (R-10B)	
		• Plant vent particulate (R-13)	
		• Plant vent gas (R-14)	
		• CCW liquid monitor (R-17)	
		• Letdown line monitor (R-9)	
		• CHC pump room (R-4)	
	CRS	• Direct Chem Tech to obtain following samples:	**NOTE:** The CRS may contact Chemistry. **SIM DRIVER:** as **Chemistry**, acknowledge.
		• RCS boron	
		• RCS activity	
		• CNMT hydrogen	
		• CNMT sump boron	

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Event Description: **B ARV fails CLOSED/B SG Safety Valve Lifts and fails OPEN/ Failure of Reactor to Trip in AUTO only/B Steam Generator Tube Rupture/1% Failed Fuel**

Time	Pos.	Expected Actions/Behavior	Comments
		• CNMT sump pH	
	HCO	• Verify adequate Rx head cooling:	
		• Verify at least one control rod shroud fan – RUNNING	
		• Verify one Rx compartment cooling fan - RUNNING	
	HCO	(Step 10.c.2 RNO) Perform the following:	
		• Dispatch AO to locally reset UV relays at MCC C and MCC D.	**NOTE:** The CRS will dispatch an AO. **SIM DRIVER:** as **AO**, acknowledge, and use EDS033 and 034 = RESET.
		• Manually start one fan as power supply permits (23 kw)	**NOTE:** The HCO starts one Rx Compartment Cooling Fan.
	HCO/ CO	(Step 11) Check Power Availability to Charging Pumps:	
		• Check Normal Power Available To Charging Pumps:	
		• Bus 14 normal feed breaker - CLOSED	
		• Bus 16 normal feed breaker - CLOSED	
		• Verify adequate Safeguard Bus capacity to run charging pumps (6 amps each)	
		• Station Service transformer 14 ammeter	
		• Station Service transformer 16 ammeter	
	HCO	(Step 12) Establish 75 GPM Charging Flow:	
		• Charging pumps – ANY RUNNING	
		• Align charging pump suction to RWST:	
		• LCV-112B – OPEN	

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Event Description: **B ARV fails CLOSED/B SG Safety Valve Lifts and fails OPEN/ Failure of Reactor to Trip in AUTO only/B Steam Generator Tube Rupture/1% Failed Fuel**

Time	Pos.	Expected Actions/Behavior	Comments
		• LCV-112C CLOSED	
		• Start charging pumps as necessary and establish 75 gpm total charging flow	
		• Charging line flow	
		• Seal injection	
	CO	(Step 13) Check If S/G Secondary Side Is Intact:	**NOTE:** The A SG is intact.
		• Pressure in both S/Gs – STABLE OR RISING	
		• Pressure in both S/Gs – GREATER THAN 110 PSIG	
	CO	(*Step 14) 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%	
	CO	(Step 15) Initiate RCS Cooldown To Cold Shutdown:	
		• Establish and maintain cooldown rate in RCS cold legs – LESS THAN 100°F/HR	
		• Use RHR system if in service	
		• Dump steam to condenser from intact S/G	
	CO	(*Step 16) Monitor Conditions For Subcooled Recovery:	
		• Check RWST level – GREATER THAN 56%	
		• Check ruptured S/G narrow level – LESS THAN 90% [80% adverse CNMT]	**NOTE:** If SG Level < 90%, continue in ECA-3.1.

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Event Description: **B ARV fails CLOSED/B SG Safety Valve Lifts and fails OPEN/ Failure of Reactor to Trip in AUTO only/B Steam Generator Tube Rupture/1% Failed Fuel**

Time	Pos.	Expected Actions/Behavior	Comments
		• (Step 15b RNO) Consult TSC to determine if recovery should be completed using ECA-3.2, SGTR WITH LOSS OF REACTOR COOLANT – SATURATED RECOVERY DESIRED.	
Terminate the Exam at the discretion of the Lead Examiner **SRO Examiner Perform Admin JPM A4e on CRS**			

TURNOVER SHEET for NRC Exam Scenario #5

Core Age: BOL 0%, Equilibrium Xe Outside Air Temp = 51°F Water Temp = 50°F	Procedure in Use: `	ACTIONS/NOTES: • The plant is at 1 x 10-8 amps (BOL). • The plant ran at 100% power for 12 days, and then tripped four days ago due to an A MFW Pump failure. • The repairs have been made and the plant is ready to be started back up. • The crew is directed to pull rods to the point of adding heat (POAH), and stabilize power between 0.5 and 1%; and start the A MFW Pump in accordance with O-1.2, Plant Startup From Hot Shutdown to Full Power Load, Step 6.3.4. • The crew is directed to test the MFW Lube Oil Pumps in accordance with O-1.2, Plant Startup From Hot Shutdown to Full Power Load, Step 6.3.9. • The area has experienced thunderstorms over the last 6 hours, and this is expected to continue for the next 6 hours. • The B Condensate Pump is OOS for Bearing Replacement. • The alarms on the MCB have been evaluated and are expected for the current plant conditions. • Protected equipment IAW OPG Protected Equipment.
Boron: 2094 ppm BAST: 17,400 ppm RCS Activity: Normal	RCS LEAKAGE: (gpm) Total: .021 Identified: .003 Unidentified: .018	
Equipment Problems/OOS: See NOTES	*Planned Activities for Shift:* • Plant Startup	Electrical System Operator Declarations None in effect

	BAST (gal)	RWST (gal)	1st hour dilution stabilization (gal RMW)	2nd hour dilution stabilization (gal RMW)
10% at 1% per minute	52	545	77	51
10% at 10% per hour	48	503	77	52
50% at 1% per minute	229	2482	558	314
50% at 10% per hour	173	1860	296	98

TURNOVER SHEET for NRC Exam Scenario #5

A-52.4					
EQUIPMENT	**DATE/TIME OOS**	**LCO**	**TITLE**	**EXP DATE**	**ECD**
A-52.12					
EQUIPMENT	**DATE/TIME OOS**	**TRM /ODCM**	**TITLE**	**EXP DATE**	**ECD**
B Condensate Pump	__/__/14, 0200	NA	NA	No Time Limit	__/__/14, 0800