

Facility: Ginna Task No.: 001-008-01-01
Task/JPM Title: Critical Rod Position Calculation JPM No.: 2008 NRC JPM N-RA-1
K/A Reference: 2.1.25 3.9 / 4.2

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

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

Applicability: RO/SRO

SUBMITTED BY: Ted Coe DATE: 6/30/08
Developer

REVIEWED BY: Art Vest DATE: 6/30/08
Training Technical Reviewer

REVIEWED BY: Don Dettman DATE: 6/30/08
Operations Technical Reviewer

APPROVED BY: John Brown DATE: 6/30/08
Training Management

Task Standard: Critical Rod Position Calculation performed correctly and all critical tasks evaluated as satisfactory.

Required Materials: Calculator, Nomograph Tables

General References: O-1.2.2, Critical Rod Position Calculation, Rev. 06500

Handouts: O-1.2.2, Critical Rod Position Calculation, Rev. 06500

Time Critical Task: NO

Validation Time: 30 minutes

Alternate Path: NO

Instructor Notes: Have a copy of O-1.2.2, Critical Rod Position Calculation, Rev. 06500, ready to give to the CRS during the Initiating Cue.

READ TO THE EXAMINEE

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

Initial Conditions:

- You are an extra RO.
- The plant is in MODE 3.
- The reactor is at normal operating temperature and pressure.
- The Reactor tripped 48 hours ago.
- The PPCS and PCNDR are unavailable.

Initiating Cue: The Shift Manager instructs you to calculate an Estimated Critical Position using O-1.2.2 up to Step 5.7.1 using the given parameters.

CUE: Hand the Operator a copy of O-1.2.2, Critical Rod Position Calculation, Rev. 06500.

Note to examiner: If asked about Rod Control before or after the reactor trip, all aspects of Rod Control were working as designed.

START TIME: _____

√ = CRITICAL STEP

Performance Step: 1 **O-1.2.2, section 1.0 thru 4.0**
Reviews sections 1.0 thru 4.0.

Standard: Reviews and understands sections 1.0 thru 4.0.
Initials for step 3.1.

Comment:

√ **Performance Step: 2** **O-1.2.2, section 5.1**
Calculate the reactivity due to Power Defect.

Standard: Using the correct curves for time in life determine Power Defect
within +/- 50 PCM.

ACTUAL: 1150 PCM STUDENT: _____ PCM

See provided "KEY" for details.

Comment:

√ **Performance Step: 3** **O-1.2.2, section 5.2**
Calculate the reactivity due to Rod Worth.

Standard: Using correct Integral Rod Worth table for time in life determine
Integral Rod Worth within +/- 20 PCM.

ACTUAL: 128.4 PCM STUDENT: _____ PCM

See provided "KEY" for details.

Comment:

O-1.2.2, section 5.3

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

Standard: Using correct Xenon Worth curve determine reactivity due to the change in Xenon within +/- 100 PCM.

ACTUAL: 1930 PCM STUDENT: _____ PCM

See provided "KEY" for details.

Comment:

O-1.2.2, section 5.4

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

Standard: Differential Boron Concentration should be made without error. Using correct Boron Worth curve determine Differential Boron Worth to within +/- 0.1 PCM.

ACTUAL: -6.90 PCM STUDENT: _____ PCM

Reactivity added due to Boron Concentration change should be made without error. Discrepancies due to error carried forward are not considered an error in calculation.

ACTUAL: -690 PCM STUDENT: _____ PCM

See provided "KEY" for details.

Comment:

O-1.2.2, section 5.5

√ **Performance Step: 6** Calculate the reactivity due to the change in "effective" Samarium.

Standard: Using the correct curve determine the reactivity added due to effective Samarium within +/- 12.5 PCM.

ACTUAL: -35 PCM STUDENT: _____ PCM

See provided "KEY" for details.

Comment:

√ **Performance Step: 7** **O-1.2.2, section 5.6**
Calculate total reactivity change.

Standard: Total reactivity change should be within +/- 350 PCM.

ACTUAL: 2483.4 PCM STUDENT: _____ PCM
See provided "KEY" for details.

Comment:

√ **Performance Step: 8** **O-1.2.2, section 5.7.1**
Estimate Critical Rod Position.

Standard: Estimated Critical Rod Position must be within the band of
Bank C (34) Steps and/or BANK B (165) Steps, +/- (30) steps

CALCULATED VALUE ECP

ACTUAL: BANK C STEPS 34 and/or BANK B STEPS 165
STUDENT: BANK _____ STEPS _____.

See provided "KEY" for details.

Comment:

CUE if the COLR is asked for: Read your "Initiating Cue" again.

Terminating Cue: Evaluation on this JPM is complete.

STOP TIME: _____ **TIME CRITICAL STOP TIME:** _____

Job Performance Measure No.: 2008 NRC JPM N-RA-1

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

- Initial Conditions:
- You are an extra RO.
 - The plant is in MODE 3.
 - The reactor is at normal operating temperature and pressure.
 - The Reactor tripped 48 hours ago.
 - The PPCS and PCNDR are unavailable.
- Initiating Cue: The Shift Manager instructs you to calculate an Estimated Critical Position using O-1.2.2 up to Step 5.7.1 using the given parameters.

Plant Status for Estimated Critical Rod Position
Cycle 34

Reactor power prior to reactor trip. (Assume steady state power for > 50 hours)	50 %
Burnup	7,000 Mwd/mtu
Time reactor subcritical to now	48 hours
Last Boron sample prior to trip	Performed 1 hour before trip, was 1300 ppm.
Boron/RMW added since last sample, prior to trip	14,000 BAST ppm 0 gal boric acid 0 gal RMW
Rod position prior to shutdown	D Bank 180 Steps
Time from now to estimated criticality	2 hours
Current boron concentration from sample 2 hours ago.	1400 ppm

Facility: Ginna Task No.: 015-004-04-01A
Task/JPM Title: Manually Calculate QPTR JPM No.: 2008 NRC JPM N-RA-2
K/A Reference: 2.1.7 4.4 / 4.7

Examinee: NRC Examiner:
Facility Evaluator: Date:

Method of testing:

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

Applicability: RO/SRO

SUBMITTED BY: Ted Coe DATE: 6/30/08
Developer

REVIEWED BY: Art Vest DATE: 6/30/08
Training Technical Reviewer

REVIEWED BY: Vince Fabrizio DATE: 6/30/08
Operations Technical Reviewer

APPROVED BY: John Brown DATE: 6/30/08
Training Management

Task Standard: QPTR correctly calculated and all critical tasks evaluated as satisfactory.

Required Materials: Volts/Mamp values sheets
O-6.4 JPM N-RA-2 Key

General References: O-6.4: Core Quadrant Power Tilt Calculation, Rev. 23

Handouts: O-6.4: Core Quadrant Power Tilt Calculation, Rev. 23

Time Critical Task: NO

Validation Time: 15 minutes

Alternate Path: NO

Instructor Notes: Ensure a marked up copy of O-6.4: Core Quadrant Power Tilt Calculation and Volts/Mamp values sheets are ready to give to the operator during the Initiating Cue.

Use **O-6.4 JPM N-RA-2 Key** for correct values.

READ TO THE EXAMINEE

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

Initial Conditions:

- You are the HCO.
- I will be the CRS if you need one.
- The plant was at 100% power when Control Rod G-9 dropped.
- AP-RCC.3, Dropped Rod Recovery was entered.
- The plant is now at 92.5% and stable.
- PPCS is out of service.

Initiating Cue: The CRS directs you to perform a QPTR per Attachment 1 of O-6.4, Quadrant Power Tilt Ratio Calculation.

CUE: Hand the Operator marked up copies of O-6.4: Core Quadrant Power Tilt Calculation, Rev. 23 and Volts/Mamp values sheets.

SIMULATOR SETUP

For the 2008 ILT NRC Exam load I/C # 179 if simulator is used and ensure PPCS monitors are off.

or

- Any 100% IC (IC-19).
- The plant in a normal 100% power lineup.
- In a normal 50/50 electric lineup.
- Insert Malf. ROD02 - G9 Dropped Rod G-9 (Stationary Grippers).
- Place rods in manual.
- Ensure PPCS monitors are off.
- Allow plant to stabilize and Freeze.

START TIME: _____

√ = CRITICAL STEP

O-6.4, step 6.1.1 thru 6.1.3**Performance Step: 1**

- **IF** one power range channel is inoperable, **THEN ENSURE** the QPTR Monitor alarm has been declared nonfunctional, **AND PERFORM** TSR 3.2.4.2. **IF NOT, THEN MARK** this Step N/A.
- **IF** one power range channel is inoperable **AND** Thermal Power is less than 75% RTP, **THEN CALCULATE** the Quadrant Power Tilt Ratio using the remaining three power range channels. **IF NOT, THEN MARK** this Step N/A.
- **IF** one power range channel is inoperable when greater than or equal to 75% RTP **AND** the channel is **NOT** expected to be returned to service within 12 hours, **THEN NOTIFY** Reactor Engineering as soon as possible since a flux map may need to be performed. **IF NOT, THEN MARK** this Step N/A.

Standard:

- Marks all (3) steps N/A

Comment:**O-6.4, step 6.1.4 Note****Performance Step: 1**

Volts/Mamp values for upper and lower detectors; determine if values are less than 3 months old.

Standard:

- Looks on sheets provided for Volts/Mamp values for proper date.
- Determines values are less than 3 months old.

Note: Applicant may use the wrong data sheet, this will yield an incorrect answer.

Comment:

O-6.4, step 6.1.4 / Att. 1 step 1√ **Performance Step: 2**

Records Mamps and Volts/Mamps for each channel and calculates total volts for each power range channel.

Standard:

- Obtains Power Range detector currents from NI drawer pictures.
- Obtains Volts/Mamp values from provided sheets.
- Records all values on Attachment 1.
- See **O-6.4 JPM N-RA-2 Key** for correct values.
- Critical criteria for values from sheets must be exactly correct.
- Critical criteria for values from meters must be +/- .010.
- Initials for step completion.

Comment:**O-6.4, step 6.1.4 / Att. 1 step 2 Note**√ **Performance Step: 4**

IF one power range channel inoperable, THEN the Highest (Total) in numerator of the equation below must be multiplied by three instead of four AND only the three operable channels are to be summed in the denominator.

Standard:

- Uses all four channels in QPTR calculation.

Comment:**O-6.4, step 6.1.4 / Att. 1 step 2**√ **Performance Step: 5**

Calculate QPTR.

Standard:

- Correctly calculates QPTR.
- See **O-6.4 JPM N-RA-2 Key** for correct values (QPTR = 1.053).
- Critical criteria for calculated value must be +/- .015.
- Initials for step completion.

Comment:

O-6.4 Att. 1, step 3

Performance Step: 6 Independent Verification.

Standard: • Asks for an independent verification.

CUE: **No further actions are required.**

Comment:

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

STOP TIME: _____

TIME CRITICAL STOP TIME: _____

Job Performance Measure No.: 2008 NRC JPM N-RA-2

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

Initial Conditions:

- You are the HCO.
- I will be the CRS if you need one.
- The plant was at 100% power when Control Rod G-9 dropped.
- AP-RCC.3, Dropped Rod Recovery was entered.
- The plant is now at 92.5% and stable.
- PPCS is out of service.

Initiating Cue:

The CRS directs you to perform a QPTR per Attachment 1 of O-6.4, Quadrant Power Tilt Ratio Calculation.

Facility: Ginna Task No.: 119-014-03-01
Task/JPM Title: Tagout Boundary for "B" Heater
Drain Tank Pump JPM No.: 2008 NRC JPM N-RA-3
K/A Reference: 2.2.13 4.1 / 4.3

Examinee: _____ NRC Examiner: _____
Facility Evaluator: _____ Date: _____

Method of testing:

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

Applicability: RO/SRO

SUBMITTED BY: Ted Coe DATE: 6/30/08
Developer

REVIEWED BY: Art Vest DATE: 6/30/08
Training Technical Reviewer

REVIEWED BY: Vince Fabrizio DATE: 6/30/08
Operations Technical Reviewer

APPROVED BY: John Brown DATE: 6/30/08
Training Management

Task Standard:	Provide adequate Hold Boundary for "B" Heater Drain Tank Pump and all critical tasks evaluated as satisfactory.
Required Materials:	None
General References:	A-1401, Station Holding Rules, Rev.06300 PID: 33013-1923, Rev. 22 PID: 10905-0035B, Rev. 2 PID: 33013-0653 Rev. 13
Handouts:	A-1401, Station Holding Rules, Rev.06300 PID: 33013-1923, Rev. 22 PID: 10905-0035B, Rev. 2 PID: 33013-0653 Rev. 13
Time Critical Task:	NO
Validation Time:	20 minutes
Alternate Path:	NO
Instructor Notes:	Ensure a copy of A-1401, Station Holding Rules, Rev.06300 is ready to give to the operator during the Initiating Cue.

READ TO THE EXAMINEE

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

- Initial Conditions:
- The unit was at 80% Power.
 - You are an extra RO in the Work Control Center.
 - "B" Heater Drain Tank Pump is making noises and will require a lower pump bearing replacement.
 - The plant has down powered to 40% to make repairs to the "B" Heater Drain Tank Pump.
 - Heater Drain Tank temperature is 305°F.
 - Heater Drain Tank pressure is 74 psig.
- Initiating Cue:
- The Shift Manager requests you to determine the Hold Boundaries for the "B" Heater Drain Tank Pump.
 - Gland Seal and Service Water side Holds will be held by a different Hold section.
 - On the request below, record Equipment Names/EIN, the Required Positions, type of tag to be hung and order tags are to be hung per A-1401, Station Holding Rules requirements.
 - When completed, provide list and any comments to the Shift Manager.
 - See Examiner with any questions or concerns concerning the Hold.

CUE: Hand the Operator a copy of A-1401, Station Holding Rules, Rev.06300.

START TIME: _____

√ = **CRITICAL STEP**

Examiners Note: Due to the elevated temperature of the Heater Drain Tank (HDT) the Hold should have double valve protection/isolation. However due to plant power and system configuration this cannot be achieved. There are (2) acceptable options:

- a. Request an Exceptional Hold. or
- b. Reduce system temperature to less than 200°F.

CUE: Hand the Operator a copy of PID: 33013-1923, Rev. 22 and PID: 33013-0653 Rev. 13 when asked for.

CUE: When asked for direction on Hold, ask for recommendation (see a. and b. above).

CUE: Write Hold as an Exceptional Hold.

A-1401

Performance Step: 1 Refers to procedure, A-1401 as needed.

Standard: Uses A-1401 as needed.

Comment:

Prints

Performance Step: 2 Refers to prints as needed:

- PID: 33013-1923, Rev. 22
- PID: 10905-0035B, Rev. 2
- PID: 33013-0653 Rev. 13

Standard: Uses prints as needed:

- PID: 33013-1923, Rev. 22
- PID: 10905-0035B, Rev. 2
- PID: 33013-0653 Rev. 13

CUE: Only if asked for provide PID: 10905-0035B this can be done at any time.

Comment:

√ **Performance Step: 3** Determines Hold Boundary for "B" Heater Drain Tank Pump.

Standard:

- See Key on next page.
- Equipment may be listed in any order.

Comment:

KEY FOR PERFORMANCE STEP # 3**REQUEST**

	EQUIPMENT NAMES / EIN FOR ISOLATED WORK AREA	REQUIRED POSITION	TYPE OF TAG REQUIRED	ORDER TAGS TO BE HUNG
1.	V-4114	Closed	Hold	3
2.	V-4118	Closed	Hold	3
3.	V-4116	Closed	Hold	3
4.	V-4120	Closed	Hold	3
5.	V-3098 **	Open	Hold or No Tag	4
6.	V-2967A **	Open	Hold or No Tag	4
7.	V-2967B **	Open	Hold or No Tag	4
8.	V-3094D *	Open	Hold or No Tag	4
9.	V-3093F *	Open	Hold or No Tag	4
10.	"B" Heater Drain Tank Pump MCB H/S 1/HDP1B	Pull/Stop	Block	1
11.	4160 Bus 11B / 27	Racked out/Knife switch open	Hold	2
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				

*To satisfy the critical step for V-3094D and V-3093F, either valve or both valves may be listed as drain paths.

**To satisfy the critical step for a vent path, either V-3098 and/or V-2967A and V-2967B may be listed as vent paths.

Comments:

1. Identifies (2) valve boundary (with bleed valve) cannot be provided per 5.6.a.2, for fluids greater than 200°F if unit stays at 40% to perform work.
2. For tag order, 1 and 2 must be first and second, any tag 3s can be in any order after 1 and 2 and before any 4s. Tag 4s can be in any order after all the 3s are hung.

Terminating Cue:

Evaluation on this JPM is complete.

STOP TIME: _____

TIME CRITICAL STOP TIME: _____

Job Performance Measure No.: 2008 NRC JPM N-RA-3

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

JPM CUE SHEET

Initial Conditions:

- The unit was at 80% Power.
- You are an extra RO in the Work Control Center.
- "B" Heater Drain Tank Pump is making noises and will require a lower pump bearing replacement.
- The plant has down powered to 40% to make repairs to the "B" Heater Drain Tank Pump.
- Heater Drain Tank temperature is 305°F.
- Heater Drain Tank pressure is 74 psig.

Initiating Cue:

- The Shift Manager requests you to determine the Hold Boundaries for the "B" Heater Drain Tank Pump.
- Gland Seal and Service Water side Holds will be held by a different Hold section.
- On the request below, record Equipment Names/EIN, the Required Positions, type of tag to be hung and order tags are to be hung per A-1401, Station Holding Rules requirements.
- When completed, provide list and any comments to the Shift Manager.
- See Examiner with any questions or concerns concerning the Hold.

REQUEST

	EQUIPMENT NAMES / EIN FOR ISOLATED WORK AREA	REQUIRED POSITION	TYPE OF TAG REQUIRED	ORDER TAGS TO BE HUNG
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				

Comments:

Worksheet

Task Standard:	Correctly monitor CSFSTs and report/recommend correct red path/procedure and all critical tasks evaluated as satisfactory.	
Required Materials:	CSFST Binder with cards and Grease pencils or equivalent.	
General References:	F-0.1: SUBCRITICALITY CSFST F-0.3: HEAT SINK CSFST F-0.5: CONTAINMENT CSFST	F-0.2: CORE COOLING CSFST F-0.4: INTEGRITY CSFST F-0.6: INVENTORY CSFST
Handouts:	CSFST Binder	
Time Critical Task:	NO	
Validation Time:	10 minutes	
Alternate Path:	NO	
Instructor Notes:	Ensure CSFST Binder with cards and Grease pencils or equivalent are available and data sheet #1.	

READ TO THE EXAMINEE

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

Initial Conditions:	<ul style="list-style-type: none">• You are an extra RO.• The plant has experienced a Reactor Trip and a Safety Injection.• I will be the CRS.• The SM has directed you to monitor Critical Safety Function Status Trees.• It has been 65 minutes since the Reactor Tripped.• Tavg just prior to the trip was 574°F.
Initiating Cue:	Monitor ALL the Critical Safety Function Status Trees using Data Sheet # 1 and make a written report to the CRS identifying each Critical Safety Function, which CSF is the highest priority and what procedure is recommended.

START TIME: _____√ = **CRITICAL STEP**

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

Standard:**MONITOR: (F-0.1)**

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

Correct terminus: Orange – FR-S.1

Comment:

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

Standard:**MONITOR: (F-0.2)**

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

Correct terminus: Red – FR-C.1

Comment:

√ **Performance Step: 3** **F-0.3**
Monitor Heat Sink and determine correct terminus.

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

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

Correct terminus: Green

Comment:

F-0.4

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

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

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

Correct terminus: Green

Comment:**F-0.5**

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

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

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

Correct terminus: Red – FR-Z.1

Comment:**F-0.6**

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

Standard:**MONITOR: (F-0.6)**

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

Correct terminus: Yellow – FR-I.2

Comment:

PERFORMANCE INFORMATION

Report to CRS

√ **Performance Step: 7**

Identify highest priority Critical Safety Function.
Recommend procedure.

Standard:

Identify highest priority. RED terminus: Core Cooling
Recommend correct procedure: Enter FR-C.1.

Comment:

Terminating Cue:

Evaluation on this JPM is complete.

STOP TIME: _____

TIME CRITICAL STOP TIME: _____

Job Performance Measure No.: 2008 NRC JPM N-RA-4

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

- Initial Conditions:
- You are an extra RO.
 - The plant has experienced a Reactor Trip and a Safety Injection.
 - I will be the CRS.
 - The SM has directed you to monitor Critical Safety Function Status Trees.
 - It has been 65 minutes since the Reactor Tripped.
 - Tavg just prior to the trip was 574°F.

Initiating Cue: Monitor **ALL** the Critical Safety Function Status Trees using Data Sheet # 1 and make a written report to the CRS identifying each Critical Safety Function, which CSF is the highest priority and what procedure is recommended.

Data Sheet # 1

Reactor Power is 0%
All Reactor Trip Breakers are Open
Intermediate Range indication is 3×10^{-10}
Intermediate Range SUR is 0.1
Source Range Indication is 1×10^3
Source Range SUR is 0.1

RCS Pressure is 982 psig
"A" RCS cold Leg Temperature is 495°F
"A" RCS cold Leg Temperature is 490°F
"B" RCS cold Leg Temperature is 493°F
"B" RCS cold Leg Temperature is 491°F
Pressurizer water level is 0%
RVLIS water level is 40%
CETs are 709°F

No SI pumps are running
(2) RHR Pumps are running
"A" RCP Pump is tripped
"B" RCP Pump is tripped

Cnmt Pressure is 62 psig
R-29, Cnmt Radiation Monitor reads 1500 mrem/hr
R-30, Cnmt Radiation Monitor reads 1600 mrem/hr
Cnmt Sump "A" is 200 inches
Cnmt Sump "B" is 120 inches

"A" Stream Generator Water Level is 27%
"B" Stream Generator Water Level is 28%
"A" Stream Generator Pressure is 922 psig
"B" Stream Generator Pressure is 920 psig
TDAFW Pump is not running
"A" MDAFW Pump is running
"B" MDAFW Pump is running
"A" MDAFW Pump flow is 100 gpm
"B" MDAFW Pump flow is 105 gpm

Task Standard: Critical Rod Position Calculation verification performed correctly finding all errors and all critical tasks evaluated as satisfactory.

Required Materials: Calculator, Nomograph Tables

General References: O-1.2.2, Critical Rod Position Calculation, Rev. 06500

Handouts: Completed O-1.2.2, Critical Rod Position Calculation, Rev. 06500

Time Critical Task: NO

Validation Time: 30 minutes

Alternate Path: NO

Instructor Notes: Have a copy of a completed copy of O-1.2.2, Critical Rod Position Calculation, Rev. 06500, ready to give to the CRS during the Initiating Cue.

READ TO THE EXAMINEE

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

Initial Conditions:

- You are the Control Room Supervisor.
- The plant is in MODE 3.
- The reactor is at normal operating temperature and pressure.
- The Reactor tripped 48 hours ago.
- The PPCS and PCNDR are unavailable.
- The HCO has completed an Estimated Critical Position using O-1.2.2.

Initiating Cue: The Shift Manager instructs you to perform the independent verification of O-1.2.2, Critical Rod Position Calculation, up thru Step 5.7.1, using the given parameters.
Report all results to the Shift Manager.

CUE: Hand the Operator a marked up copy of O-1.2.2, Critical Rod Position Calculation, Rev. 06500.

START TIME: _____

√ = CRITICAL STEP

- Performance Step: 1** **O-1.2.2, section 1.0 thru 4.0**
Reviews sections 1.0 thru 4.0.
- Standard:** Reviews and understands sections 1.0 thru 4.0.
Verifies initials on step 3.1.
- Comment:**
- Performance Step: 2** **O-1.2.2, section 5.1**
Verifies correct calculation of the reactivity due to Power Defect.
- Standard:** **Discovers no errors.**
Using the correct curves for time in life determine Power Defect.
- Comment:** ACTUAL: 1150 PCM HCO: 1150 PCM
- √ **Performance Step: 3** **O-1.2.2, section 5.2**
Verifies correct calculation of the reactivity due to Rod Worth.
- Standard:** **Discovers error in Rod Worth reactivity calculation.**
Using correct Integral Rod Worth table for time in life determines reactivity due to Rod Worth.
- Comment:** ACTUAL: 128.5 PCM HCO: 194 PCM

Performance Step: 4	O-1.2.2, section 5.3 Verifies correct calculation of the reactivity due to Xenon.
Standard:	Discovers no errors. Using correct Xenon Worth curve determine reactivity due to the change in Xenon.
Comment:	ACTUAL: <u>1930 PCM</u> HCO: <u>1930 PCM</u>
Performance Step: 5	O-1.2.2, section 5.4 Verifies correct calculation of the reactivity due to Boron.
Standard:	Discovers no errors. Using correct Boron Worth curve determine Differential Boron. Reactivity added due to Boron Concentration change should be made without error.
Comment:	Differential Boron: ACTUAL: <u>-6.90 PCM</u> HCO: <u>-6.90 PCM</u> Boron Con. Change: ACTUAL: <u>-690 PCM</u> HCO: <u>-690 PCM</u>
√ Performance Step: 6	O-1.2.2, section 5.5 Verifies correct calculation of the reactivity due to the change in "effective" Samarium.
Standard:	Discovers error in reactivity added due Samarium calculation. Using the correct curve determine the reactivity added due to effective Samarium.
Comment:	ACTUAL: <u>-35 PCM</u> HCO: <u>-185 PCM</u>

✓ **Performance Step: 7** **O-1.2.2, section 5.6**
Verifies correct calculation of total reactivity change.

Standard: **Discovers error in total reactivity change.**
Total reactivity change calculated.

Comment: ACTUAL: 2483.4 PCM HCO: 2399 PCM

✓ **Performance Step: 8** **O-1.2.2, section 5.7**
Verifies correct Estimate Critical Rod Position.

Standard: **Discovers error in calculated value for ECP.**
Determines Estimated Critical Rod Position.

Comment: ACTUAL: BANK C STEPS 34 .
HCO: BANK C STEPS 39 .

√ **Performance Step: 9** Informs SM of status of ECP.

Standard:

Informs the SM of the following errors:

- Reactivity due to Integral Rod Worth.
- Reactivity due to Samarium.
- Total Reactivity Change.
- Estimated Critical Rod Position.

Informs the SM that the ECP will have to be reperformed (or words to that effect).

Cue: Acknowledge report.**Comment:****Terminating Cue:** **Evaluation on this JPM is complete.****STOP TIME:** _____**TIME CRITICAL STOP TIME:** _____

Job Performance Measure No.: 2008 NRC JPM N-SA-1

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

- Initial Conditions:
- You are the Control Room Supervisor.
 - The plant is in MODE 3.
 - The reactor is at normal operating temperature and pressure.
 - The Reactor tripped 48 hours ago.
 - The PPCS and PCNDR are unavailable.
 - The HCO has completed an Estimated Critical Position using O-1.2.2.

Initiating Cue: The Shift Manager instructs you to perform the independent verification of O-1.2.2, Critical Rod Position Calculation, up thru Step 5.7.1, using the given parameters.
Report all results to the Shift Manager.

Plant Status for Estimated Critical Rod Position
Cycle 34

Reactor power prior to reactor trip. (Assume steady state power for > 50 hours)	50 %
Burnup	7,000 Mwd/mtu
Time reactor subcritical to now	48 hours
Last Boron sample prior to trip	Performed 1 hour before trip, was 1300 ppm.
Boron/RMW added since last sample, prior to trip	14,000 BAST ppm 0 gal boric acid 0 gal RMW
Rod position prior to shutdown	D Bank 180 Steps
Time from now to estimated criticality	2 hours
Current boron concentration from sample 2 hours ago.	1400 ppm

Facility: Ginna Task No.: 341-030-03-02A
Task/JPM Title: A-52.12, Nonfunctional Equipment Important to Safety JPM No.: 2008 NRC N-SA-2
K/A Reference: 2.1.18 3.8

Examinee:

NRC Examiner:

Facility Evaluator:

Date:

Method of testing:

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

Applicability: SRO

SUBMITTED BY: Ted Coe DATE: 6/30/08
Developer

REVIEWED BY: Art Vest DATE: 6/30/08
Training Technical Reviewer

REVIEWED BY: Vince Fabrizio DATE: 6/30/08
Operations Technical Reviewer

APPROVED BY: John Brown DATE: 6/30/08
Training Management

Task Standard: Determined the QPTR Monitor Alarm is inoperable, fill out A-52.12, Attachment 1 correctly and all critical tasks evaluated as satisfactory.

Required Materials: Attached Key.

General References: A-52.12 Nonfunctional Equipment Important to Safety, Rev. 05900
Technical Requirements Manual (TRM) Rev. 35

Handouts: A-52.12 Nonfunctional Equipment Important to Safety, Rev. 05900
A-52.12 att. 1 (4 pages), A-52.12 att. 2 (1 page)

Time Critical Task: NO

Validation Time: 20 minutes

Alternate Path: NO

Instructor Notes: Have a copy of A-52.12 Nonfunctional Equipment Important to Safety, Rev. 05900 and A-52.12 att. 1 (4 pages), ready to give to the CRS when cued.

READ TO THE EXAMINEE

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

Initial Conditions:

- You are the CRS.
- The plant is at 98% power, no equipment is out of service.

Initiating Cue: The CO has just completed S-26.1, Computer Program Check. All sections were performed sat, except the QPTR Monitor Alarm did not alarm.

START TIME: _____

√ = CRITICAL STEP

Notifications

Performance Step: 1 May notify the following people:
SM, WCC, Maintenance, WWM, Operations and Plant
Supervision

Standard: Notifies SM and others as time permits. (May be done at any
time.)

Cue: Acknowledge reports.

Comment:

TRM – TR 3.2.4 Condition

√ **Performance Step: 2** QPTR Monitor Alarm is inoperable IAW TR 3.2.4 - The QPTR
monitor alarm shall be OPERABLE when in MODE 1 with
THERMAL POWER > 50% RTP

Standard: QPTR Monitor Alarm is inoperable IAW TR 3.2.4 due to alarm
not alarming and Thermal Power is at 98%.

Comment:

TRM – TR 3.2.4 Required Action and Completion Time

√ **Performance Step: 3** Required Action A.1 or A.2 needs to be completed.

Standard: Determines Required Action A.1 or A.2 needs to be completed
once within 24 hours and every 24 hours there after.

Cue: After examinee determines QPTR Monitor Alarm is inoperable, as
the SM tell the examinee to fill out the appropriate paper work.

Comment:

CUE: Hand the examinee a copy of A-52.12 Nonfunctional Equipment Important to
Safety, Rev. 05900 and Attachment 1 (4 pages).

A-52.12 Attachment I page 1

√ **Performance Step: 4** Properly fill in appropriate data on A-52.12 Att. I, Page 1 of 4.

Standard: See attached "Key" for requirements.
Critical task is to determine correct "REQUIRED COMPLETION DATE/TIME" in Step 6.6.1(10).

CUE : When requested provide the following information:

- The CR number is CR-2008-000792.
- The work order number is: WO2344561.
- The HCO has determined with the QPTR Monitor Alarm OOS, EOOS PRF color is GREEN and EOOS Top Level System Status is GREEN.

Comment:

A-52.12 Attachment I page 2

Performance Step: 5 Properly fill in appropriate data on A-52.12 Att. I, Page 2 of 4.

Standard: See attached "Key" for requirements.

CUE when CRS determines an A-52.16 is required: The WCC will fill out the A-52.16.

Comment:

A-52.12 Attachment I page 3

Performance Step: 6 Properly fill in appropriate data on A-52.12 Att. I, Page 3 of 4.

Standard: See attached "Key" for requirements.

Comment:

A-52.12 Attachment I page 4

Performance Step: 7 Properly fill in appropriate data on A-52.12 Att. I, Page 4 of 4.

Standard: See attached "Key" for requirements.

Comment:

A-52.12 Attachment 2 page 1

Performance Step: 8 Properly fill in appropriate data on A-52.12 Att. 2, Page 1 of 1.

Standard: See attached "Key" for requirements. This is a non-critical step. Performance is optional and is not required at this time but is required when required action is performed.

Candidate may or may not fill this page out.

CUE: If requested provide A-52.12 Attachment 2, to candidate.

Comment:

Terminating Cue: Evaluation on this JPM is complete.

STOP TIME: _____

TIME CRITICAL STOP TIME: _____

Job Performance Measure No.: 2008 NRC N-SA-2

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

Initial Conditions:

- You are the CRS.
- The plant is at 98% power, no equipment is out of service.

Initiating Cue:

The CO has just completed S-26.1, Computer Program Check.
All sections were performed sat, except the QPTR Monitor Alarm did not alarm.

Facility: Ginna Task No.: 342-004-03-02A
Task/JPM Title: Review the Tagout Boundary for "B" Heater Drain Tank Pump JPM No.: 2008 NRC JPM N-SA-3
K/A Reference: 2.2.13 4.3

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

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

Applicability: SRO

SUBMITTED BY: Ted Coe DATE: 6/30/08
Developer

REVIEWED BY: Art Vest DATE: 6/30/08
Training Technical Reviewer

REVIEWED BY: Vince Fabrizio DATE: 6/30/08
Operations Technical Reviewer

APPROVED BY: John Brown DATE: 6/30/08
Training Management

Task Standard:	Identify Hold Boundary for "B" Heater Drain Tank Pump is inadequate and all critical tasks evaluated as satisfactory.
Required Materials:	None
General References:	A-1401, Station Holding Rules, Rev.06300 PID: 33013-1923, Rev. 22 PID: 10905-0035B, Rev. 2 PID: 33013-0653 Rev. 13
Handouts:	A-1401, Station Holding Rules, Rev.06300 PID: 33013-1923, Rev. 22 PID: 10905-0035B, Rev. 2 PID: 33013-0653 Rev. 13
Time Critical Task:	NO
Validation Time:	20 minutes
Alternate Path:	NO
Instructor Notes:	Ensure a copy of A-1401, Station Holding Rules, Rev.06300, is ready to give to the operator during the Initiating Cue.

READ TO THE EXAMINEE

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

Initial Conditions:	<ul style="list-style-type: none"> • The unit was at 80% POWER. • You are an extra SRO in the Work Control Center. • "B" Heater Drain Tank Pump is making noises and will require a lower pump bearing replacement. • The plant has down powered to 40% to make repairs to the "B" Heater Drain Tank Pump. • Heater Drain Tank temperature is 305°F. • Heater Drain Tank pressure is 74 psig.
Initiating Cue:	<ul style="list-style-type: none"> • The Shift Manager requests you to review the Hold Boundaries for the "B" Heater Drain Tank Pump. • Gland Seal and Service Water side Holds will be held by a different Hold section. • On the request below, an extra RO has recorded the Equipment Names/EIN, the Required Positions, type of tags to be hung and order tags are to be hung per A-1401, Station Holding Rules requirements to perform the work. • When completed, provide an update to the Shift Manager. • See Examiner with any questions or concerns concerning the Hold.

CUE: Hand the Operator a copy of A-1401, Station Holding Rules, Rev.06300.

START TIME: _____**√ = CRITICAL STEP**

Examiners Note: Due to the elevated temperature of the Heater Drain Tank (HDT) the Hold should have double valve protection/isolation. However due to plant power and system configuration this cannot be achieved. There are (2) acceptable options:

- a. Request an Exceptional Hold. or
- b. Reduce system temperature to less than 200°F.

CUE: Hand the Operator a copy of PID: 33013-1923, Rev. 22 and PID: 33013-0653 Rev. 13 when asked for.

CUE: When asked for direction on Hold, ask for recommendation (see a. and b. above).

CUE: Write Hold as an Exceptional Hold.

A-1401

Performance Step: 1 Refers to procedure, A-1401 as needed.

Standard: Uses A-1401 as needed.

Comment:

Prints

Performance Step: 2 Refers to prints as needed:

- PID: 33013-1923, Rev. 22
- PID: 10905-0035B, Rev. 2
- PID: 33013-0653 Rev. 13

Standard: Uses prints as needed:

- PID: 33013-1923, Rev. 22
- PID: 10905-0035B, Rev. 2
- PID: 33013-0653 Rev. 13

CUE: Only if asked for, provide PID: 10905-0035B, this can be done at any time.

Comment:

√ **Performance Step: 3** Determines Hold Boundary for "B" Heater Drain Tank Pump.

Standard:

Hold boundary is inadequate for the following reasons:

- V-3098 should be Open not Closed and should be a 4 for order.
- V-4120 should be Closed not Open and should be a 3 for order.
- V-4116 must be added as a Hold tag, Closed and order should be a 3.
- V-3094C is for the "A" HDT pump and should not be listed.
- V-3093F should be listed as Open/Hold/4.
- Identifies **ONE** of the following issues associated with fluids greater than 200°F.
 1. Identifies (2) valve boundary (with bleed valve) is not provided per 5.6.a.2, for fluids greater than 200°F if unit stays at 40% to perform work.
 2. Identifies can work "B" Heater Drain Tank Pump as an Exceptional Hold at 40%.
 3. Lower Power as needed to lower HDT fluid temperature to less than 200°F.

Comment:

Terminating Cue:

Evaluation on this JPM is complete.

STOP TIME: _____

TIME CRITICAL STOP TIME: _____

Job Performance Measure No.: 2008 NRC JPM N-SA-3

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

JPM CUE SHEET

Initial Conditions:

- The unit was at 80% POWER.
- You are an extra SRO in the Work Control Center.
- "B" Heater Drain Tank Pump is making noises and will require a lower pump bearing replacement.
- The plant has down powered to 40% to make repairs to the "B" Heater Drain Tank Pump.
- Heater Drain Tank temperature is 305°F.
- Heater Drain Tank pressure is 74 psig.

Initiating Cue:

- The Shift Manager requests you to review the Hold Boundaries for the "B" Heater Drain Tank Pump.
- Gland Seal and Service Water side Holds will be held by a different Hold section.
- On the request below, an extra RO has recorded the Equipment Names/EIN, the Required Positions, type of tags to be hung and order tags are to be hung per A-1401, Station Holding Rules requirements to perform the work.
- When completed, provide an update to the Shift Manager.
- See Examiner with any questions or concerns concerning the Hold.

REQUEST

	EQUIPMENT NAMES / EIN FOR ISOLATED WORK AREA	REQUIRED POSITION	TYPE OF TAG REQUIRED	ORDER TAGS TO BE HUNG
1.	V-4114	Closed	Hold	3
2.	V-4118	Closed	Hold	3
3.	V-3098	Closed	Hold	3
4.	V-4120	Open	Hold	4
5.	V-3094D	Open	Hold	4
6.	V-3094C	Open	Hold	4
7.	"B" Heater Drain Tank Pump MCB H/S 1/HDP1B	Pull/Stop	Block	1
8.	4160 Bus 11B / 27	Racked out/Knife switch open	Hold	2
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				

Comments: None.

Task Standard:	Identify Gas Decay Tank release must be secured and Aux Building ventilation may continue provided (8) hour samples are taken and all critical tasks evaluated as satisfactory.
Required Materials:	None
General References:	Offsite Dose Calculation Manual (ODCM), Rev. 21 S-4.2.5, Release of Gas Decay Tank Rev. 19
Handouts:	Offsite Dose Calculation Manual (ODCM), Rev. 21 S-4.2.5, Release of Gas Decay Tank Rev. 19
Time Critical Task:	NO
Validation Time:	15 minutes
Alternate Path:	NO
Instructor Notes:	None

READ TO THE EXAMINEE

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

- Initial Conditions:
- You are the CRS.
 - The plant is in MODE 1 with a normal at power lineup.
 - R-14A5 has been out of service for the past week.
 - "A" Gas Decay Tank is being released per S-4.2.5, Release of Gas Decay Tank.
 - The HCO informs you R-14 radiation monitor has just failed low.
 - All other plant equipment is operating properly.

Initiating Cue: What are your actions?

Examiners Note: If asked for S-4.2.5, Release of Gas Decay Tank Rev. 19 provide a copy.

START TIME: _____

√ = CRITICAL STEP

Performance Step: 1 **ODCM**
Identifies entry into ODCM required.

Standard: Recognizes entry condition for ODCM and finds a copy of the ODCM.

Comment:

√ **Performance Step: 2** **ODCM, section 3.2**
Enters section 3.2, Gaseous Effluent Monitors.
Reads and understands Controls, Applicability, Notes and Actions (2).

Standard: **First Action:** N/A.
Second Action: With less than the minimum number of radioactive gaseous effluent monitoring instrumentation channels OPERABLE, take the ACTION shown in Table 3.2-1. **Restore the inoperable instrumentation 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.

CUE: Acknowledge report.

Comment:

√ **Performance Step: 3** **ODCM, section 3.2**
Enters section 3.2, Gaseous Effluent Monitors.
Reads and understands Controls, Applicability, Notes and Actions for: **"A" GDT Release**

Standard: 1. Identifies R-14 is required for GDT release. **Orders "A" GDT release secured**, per table 3.2-1, step c, note (b).

CUE: Acknowledge report.

Comment:

✓ **Performance Step: 4** **ODCM, section 3.2**
Enters section 3.2, Gaseous Effluent Monitors.
Reads and understands Controls, Applicability, Notes and
Actions for: **Aux Building Ventilation running**

Standard: 1. Identifies Aux Building Ventilation still running with R-14 and
R-14A5 out of service. Orders action # 2: If the number of
OPERABLE channels is less than required by the Minimum
Channels OPERABLE requirement, effluent releases via this
pathway may continue provided **(orders) grab samples are
taken and analyzed for isotopic activity at least once per 8
hours**, per table 3.2-1, step c, action 2.

CUE: **Acknowledge report.**

Comment:

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

STOP TIME: _____ **TIME CRITICAL STOP TIME:** _____

Job Performance Measure No.: 2008 NRC JPM N-SA-4

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

Initial Conditions:

- You are the CRS.
- The plant is in MODE 1 with a normal at power lineup.
- R-14A5 has been out of service for the past week.
- "A" Gas Decay Tank is being released per S-4.2.5, Release of Gas Decay Tank.
- The HCO informs you R-14 radiation monitor has just failed low.
- All other plant equipment is operating properly.

Initiating Cue:

What are your actions?

Task Standard: Correct classification level, EAL number and all critical tasks evaluated as satisfactory.

Required Materials: None

General References: EPIP 1-0: Ginna Station Event Evaluation and Classification, Rev. 04200

Handouts: EPIP 1-0: Ginna Station Event Evaluation and Classification, Rev. 04200

Time Critical Task: YES, 15 minutes

Validation Time: 10 minutes

Alternate Path: NO

Instructor Notes: To be performed following an evaluated simulator scenario.

READ TO THE EXAMINEE

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

Initial Conditions:

- You have just completed an evaluated simulator scenario.

Initiating Cue:

- Classify this event per EPIP 1-0.
- Provide classification level and EAL number.
- This is a time critical JPM.

START TIME: _____

√ = CRITICAL STEP

Performance Step: 1 Locate a controlled copy of EPIP 1.0, Ginna Station Event Evaluation and Classification.

Standard: Locates a controlled copy of EPIP 1.0.

Comment:

EPIP 1.0, section 4.0

Performance Step: 2 Review Precautions section of procedure.

Standard: Reviews Precautions section of procedure.

Comment:

EPIP 1.0, section 5.0

Performance Step: 3 Review Prerequisites section of procedure.

Standard: Reviews Prerequisites section of procedure.

Comment:

EPIP 1.0, section 6.0

√ **Performance Step: 4** Evaluate event as per EPIP 1.0.

Standard:

- Determines event classification and EAL number correctly per simulator scenario guide.
- Makes declaration **within 15 minutes of initiating cue.**

Comment:

Terminating Cue: Evaluation on this JPM is complete.

STOP TIME: _____

TIME CRITICAL STOP TIME: _____

Job Performance Measure No.: 2008 NRC JPM N-SA-5

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

Initial Conditions: • You have just completed an evaluated simulator scenario.

Initiating Cue: • Classify this event per EPIP 1-0.
 • Provide classification level and EAL number.
 • This is a time critical JPM.

Facility: Ginna Task No.: 004-037-01-01
Task/JPM Title: Alternate Dilution of the RCS (R/B occurs during dilution) JPM No.: 2008 NRC JPM A
K/A Reference: 004 A2.16 3.2 / 3.6

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

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

Applicability: RO/SRO

SUBMITTED BY: Ted Coe DATE: 6/30/08
Developer

REVIEWED BY: Art Vest DATE: 6/30/08
Training Technical Reviewer

REVIEWED BY: Don Dettman DATE: 6/30/08
Operations Technical Reviewer

APPROVED BY: John Brown DATE: 6/30/08
Training Management

Task Standard:	Alternate dilution is secured and all critical tasks evaluated as satisfactory.
Required Materials:	None
General References:	S-3.1, Boron Concentration Control, Rev. 02900 S-12.4, RCS Leakage Surveillance Record Instructions, Rev.54
Handouts:	S-3.1, Boron Concentration Control, Rev. 02900 S-12.4, RCS Leakage Surveillance Record Instructions, Rev.54, Attachment RCS Leakage Surveillance Record
Time Critical Task:	NO
Validation Time:	15 minutes
Alternate Path:	Yes
Instructor Notes:	Have the Reactivity Binder cleaned and a copy of S-12.4, Attachment RCS Leakage Surveillance Record available for examinee.

READ TO THE EXAMINEE

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

Initial Conditions:	<ul style="list-style-type: none">• You are the HCO.• I will be the CRS and the CO if you need one.• The plant is at ~98% power in a normal 50/50 at power lineup.• The unit has been operating at rated power for the last 16 months.• Attachment 1, Makeup Determinations of S-3.1, Boron Concentration Control has been completed.
Initiating Cue:	Perform an alternate dilution of 100 gallons of water at 20 gpm to maintain Tavg at Tref.

SIMULATOR SETUP

For the 2008 ILT NRC Exam load I/C # 171

or

- Any 100% IC (IC-19).
- The plant in a normal ~98% power lineup.
- In a normal 50/50 electric lineup.
- RMW PUMP 1B in Pull-Stop.
- Ensure Tavg is slightly below Tref.
- Insert NIS07A, PR Channel Failure CH: N-41 failed low on Manual Trigger 1.
- Control Rods in auto.
- Set RMW to BA Blender flow control valve, HCV-111 controller to 40 gpm.

START TIME: _____

√ = CRITICAL STEP

Performance Step: 1 **S-3.1, Att. 4, step 1.0**
ENSURE Attachment 1, Makeup Determinations, is complete.

Standard: Given in the initial cue.

Comment:

Performance Step: 2 **S-3.1, Att. 4, step 2.0 and 2.1**
2.0 The board operator SHALL inform the CRS (SM in the CRSs absence) of the intent to change core reactivity.
2.1 The CRS (SM in the CRSs absence) SHALL acknowledge the reactivity manipulation and provide input and oversight.

Standard: Informs CRS of 100 gallons of water addition. (or something to that effect)

CUE: Acknowledge report.

Comment:

√ **Performance Step: 3** **S-3.1, Att. 4, step 3.0**
PLACE RMW MODE SELECTOR control switch to ALT DIL position.

Standard: RMW MODE SELECTOR in ALT DIL.

Comment:

Performance Step: 4 **S-3.1, Att. 4, step 4.0**
SET RMW TO BA BLENDER FLOW CONTROL VLV, HCV 111, controller to the desired flow rate.

Standard: RMW TO BA BLENDER FLOW CONTROL VLV, HCV 111, controller, set to 20 gpm.

Comment:

✓ **Performance Step: 5** **S-3.1, Att. 4, step 5.0**
SET the RMW COUNTER, YIC-111, to the quantity determined in Attachment 1, Step 2.1.

Standard: RMW COUNTER, YIC-111 set to 100 gallons.

Comment:

✓ **Performance Step: 6** **S-3.1, Att. 4, step 6.0**
PLACE RMW CONTROL control switch to START position.

Standard: RMW CONTROL switch to START and released.
Red light on, Green light off.

Comment:

Performance Step: 7 **S-3.1, Att. 4, step 7.0**
VERIFY the following:

- RMW PUMP 1A OR 1B STARTS.
- REACTOR MAKEUP TO VCT, AOV 110C, opens.
- RMW TO BA BLENDER FLOW CONTROL VLV, HCV 111, valve throttles open to the preset flow position.
- REACTOR MAKEUP TO CHG PUMP, AOV-110B, opens.

Standard:

- RMW PUMP 1A STARTS. Red light on, Green light off.
- AOV 110C, opens. Red light on, Green light off.
- HCV 111, valve throttles open to the preset flow position.
- AOV-110B, opens. Red light on, Green light off.

SIM OPERATOR: As soon as the student has completed verifying proper lineup insert Manual Trigger 1.

Comment:

(Start Alternate Path)

√ **Performance Step: 8** PLACE RMW CONTROL switch to STOP position.

- Standard:**
- The examinee determines a Rod Block exists and per the note prior to step 6.0 immediately secures the dilution operation.
 - RMW CONTROL switch in STOP.
 - Red light off, Green light on.

CUE: Acknowledge reports. (Ask for recommendations as needed.)

CUE: HCO continue with S-3.1 Attachment 4, the CO will address the other issues.

Comment:

S-3.1, Att. 4, step 8.0 (End Alternate Path)

Performance Step: 9 WHEN dilution is complete, THEN PERFORM the following:

- 8.1 PLACE RMW MODE SELECTOR control switch to AUTO position.
- 8.2 PLACE RMW CONTROL switch to START position, and verify RMW control red light illuminated.
- 8.3 SET RMW TO BA BLENDER FLOW CONTROL VLV, HCV 111, controller to the normal flow setpoint of 40 GPM.

- Standard:**
- 8.1 RMW MODE SELECTOR control switch to AUTO position.
 - 8.2 RMW CONTROL switch in START position, Red light on, Green light off.
 - 8.3 RMW TO BA BLENDER FLOW CONTROL VLV, HCV 111, controller at 40 GPM.

Comment:

S-3.1, Att. 4, step 9.0

Performance Step: 10 RECORD the amount of reactor makeup water added on S-12.4, RCS Leakage Surveillance Record Instructions, Attachment RCS Leakage Surveillance Record.

Standard: Amount added in gallons of water recorded on S-12.4, RCS Leakage Surveillance Record Instructions, Attachment RCS Leakage Surveillance Record.

Comment:

S-3.1, Att. 4, step 10.0

Performance Step: 11 The board operator SHALL inform the CRS (SM in the CRSs absence) the reactivity manipulation is complete.

Standard: CRS notified that reactivity manipulation is complete.

CUE: Acknowledge report.

Comment:

Terminating Cue: Evaluation on this JPM is complete.

STOP TIME: _____

TIME CRITICAL STOP TIME: _____

Job Performance Measure No.: 2008 NRC JPM A

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

Initial Conditions:

- You are the HCO.
- I will be the CRS and the CO if you need one.
- The plant is at ~98% power in a normal 50/50 at power lineup.
- The unit has been operating at rated power for the last 16 months.
- Attachment 1, Makeup Determinations of S-3.1, Boron Concentration Control has been completed.

Initiating Cue:

Perform an alternate dilution of 100 gallons of water at 20 gpm to maintain Tavg at Tref.

Task Standard: One RHR pump running, taking suction from the Containment "B" sump and all critical tasks evaluated as satisfactory.

Required Materials: DC power panel key.

General References: ES-1.3, TRANSFER TO COLD LEG RECIRCULATION, Rev. 04200

Handouts: ES-1.3, TRANSFER TO COLD LEG RECIRCULATION, Rev. 04200

Time Critical Task: NO

Validation Time: 15 minutes

Alternate Path: YES

Instructor Notes: **The simulator will stay in freeze until the candidate is ready to take the watch. This is very important as the RWST level will lower as soon as the simulator goes to run.**

Booth Operator: Keep the simulator in Freeze until the candidate has the watch.

READ TO THE EXAMINEE

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

Initial Conditions:

- You are the HCO.
- Reactor trip with SI occurred.
- The has CRS initiated loss of coolant actions
- RWST level is at 28% and trending down slowly.
- The Control Room crew is currently at Step 22 of E-1.

Initiating Cue: The CRS directs you to transfer to Cold Leg Recirculation per ES-1.3, Transfer to Cold Leg Recirculation.

SIMULATOR SETUP

For the 2008 ILT NRC Exam load I/C # 172 and Freeze the simulator until the operator is ready to start then go to run.

or

- Any at power IC.
- Max break LOCA.
- Insert MALF RCS03B.
- Ensure (4) SW pumps running.
- Complete E-1 up to Step 19 with RWST Level > 28% (approx. 29%).
- Ensure both CS Pumps are running.
- Ensure A CCW Pump is running.
- Ensure B CCW Pump is secured.
- Insert trip CLG02B for B CCW Pump.
- Ensure MOV-738A and 738B are closed.
- Freeze simulator until operator ready to start then go to run.

START TIME: _____

√ = CRITICAL STEP

	ES-1.3, step 1
Performance Step: 1	Verify RWST level - GREATER THAN 15%
Standard:	Monitors RWST Level. IF sump recirculation NOT in progress, THEN pull-stop all pumps taking suction from RWST, EXCEPT one SI pump AND go to ECA-1.1, LOSS OF EMERGENCY COOLANT RECIRCULATION, Step 1.
Comment:	
	ES-1.3, step 2
Performance Step: 2	Verify CNMT Sump B Level – AT LEAST 113 INCHES
Standard:	Locates and identifies CNMT Sump B Level is at least 113 INCHES. (2) 113 inches Red indicator lights lit on CNMT Sump Level Indicator.
Comment:	
	ES-1.3, step 3
Performance Step: 3	Reset SI
Standard:	Depresses SI reset P/B.
Comment:	
	ES-1.3, step 4.a
Performance Step: 4	Check IF Unnecessary Pumps Can Be Stopped: a. Three SI pumps - RUNNING
Standard:	Locates and identifies A, B and C SI pumps running. Red lights on and Green lights off.
Comment:	

- √ **Performance Step: 5** **ES-1.3, step 4.b**
Stop SI pump C and place both switches in PULL STOP
- Standard:** Locates and identifies Bus 14 SI pump C and places switch in PULL STOP.
Locates and identifies Bus 16 SI pump C and places switch in PULL STOP.
Red lights off and Green lights off.
- Comment:**
- √ **Performance Step: 6** **ES-1.3, step 4.c**
Stop both RHR pumps and place in PULL STOP
- Standard:** Locates and identifies A RHR pump and places switch in PULL STOP.
Locates and identifies B RHR pump and places switch in PULL STOP.
Red lights off and Green lights off.
- Comment:**
- Performance Step: 7** **ES-1.3, step 4.d**
Both CNMT spray pumps - RUNNING
- Standard:** Locates and identifies A and B CNMT spray pumps running.
Red lights on and Green lights off.
- Comment:**

√ Performance Step: 8	ES-1.3, step 4.e Pull stop one CNMT spray pump
Standard:	Locates and identifies A CS pump switch and places in PULL STOP. or Locates and identifies B CS pump switch and places in PULL STOP. Red light off and Green light off for secured pump.
Comment:	
Performance Step: 9	ES-1.3, step 4.f Check CNMT pressure - LESS THAN 28 PSIG
Standard:	Locates and identifies on PI-944, 945,947 or 949 CNMT pressure is <28 psig.
Comment:	
√ Performance Step: 10	ES-1.3, step 4.g Place NaOH Tank outlet valve switches to OPEN <ul style="list-style-type: none">• AOV-836A• AOV-836B
Standard:	Locates, identifies and places NaOH Tank outlet valve switches to OPEN. <ul style="list-style-type: none">• AOV-836A is open• AOV-836B is open
Comment:	
√ Performance Step: 11	ES-1.3, step 4.h Reset CNMT spray
Standard:	Depresses Containment Spray reset P/B.
Comment:	

√ Performance Step: 12	<p>ES-1.3, step 4.i</p> <p>Close discharge valves for idle CNMT spray pump(s)</p> <ul style="list-style-type: none"> • Pump A MOV-860A MOV-860B • Pump B MOV-860C MOV-860D
Standard:	<p>Locates, identifies and closes discharge valves for idle CNMT spray pump stopped in Performance Step 8.</p> <ul style="list-style-type: none"> • Pump A MOV-860A MOV-860B - Closed <li style="text-align: center;">or • Pump B MOV-860C MOV-860D - Closed <p>Red lights off and Green lights on for closed valves.</p>
Comment:	
Performance Step: 13	<p>ES-1.3, step 5.a</p> <p>Establish Adequate SW Flow:</p> <p>a. Verify at least two SW pumps - RUNNING</p>
Standard:	<p>Locates and identifies (4) Service Water Pumps running. Red lights on and Green lights off.</p>
Comment:	
Performance Step: 14	<p>ES-1.3, step 5.b</p> <p>Verify AUX BLDG SW isolation valves - OPEN</p> <ul style="list-style-type: none"> • MOV-4615 and MOV-4734 • MOV-4616 and MOV-4735
Standard:	<p>Locates and identifies AUX BLDG SW isolation valves.</p> <ul style="list-style-type: none"> • MOV-4615 and MOV-4734 - OPEN • MOV-4616 and MOV-4735 - OPEN <p>Red lights on and Green lights off.</p>
Comment:	
Performance Step: 15	<p>ES-1.3, step 5.c</p> <p>Determine required SW flow to CCW HXs per table:</p>
Cue: You have 6000 gpm total Service Water flow. 3000 gpm to each heat exchanger.	
Standard:	<p>Total of 5000 gpm - 6000 gpm equally divided to both HXs. Normal SW Discharge alignment.</p>
Comment:	

ES-1.3, step 5.d

- Performance Step: 16** Direct AO to adjust SW flow to required value.
IF on normal SW discharge:
- V-4619, CCW HX A
 - V-4620, CCW HX B

Cue: You have 6000 gpm total Service Water flow. 3000 gpm to each heat exchanger.

Standard: Determines no adjustments are needed.

Comment:

ES-1.3, step 6.a

- √ **Performance Step: 17** Check both CCW pumps - RUNNING

Standard: Locates A CCW Pump - Red light on and Green light off.
Locates B CCW Pump - Red light off and Green light on.
Identifies B CCW pump not running and goes to 6.a RNO

Comment:

ES-1.3, step 6.a.1 RNO (START Alternate Path)

- Performance Step: 18** Start CCW pumps as power supply permits (122 kw each).

Standard: Locates and starts B CCW Pump.
Red light off. Green light on. White light on.
Identifies B CCW pump will not start.

Comment:

ES-1.3, step 6.a.2 RNO

- √ **Performance Step: 19** IF both CCW pumps are running, THEN go to step 6.b.

Standard: Determines both CCW pumps are not running and does not go to step 6.b. Goes to RNO step 6.a.3.

Comment:

ES-1.3, step 6.a.3 RNO (End Alternate Path)

- √ **Performance Step: 20** IF only one CCW pump is running, THEN perform the following:
- a) Place NRHx temperature control valve TCV-130 to MANUAL and close valve.
 - b) Manually open CCW MOV to only one operable RHR loop.
 - Open MOV-738A
 - or
 - Open MOV-738B
 - c) Go to step 7.

Standard:

- a) Places NRHx temperature control valve TCV-130 to MANUAL and closes valve.
- b) Locates, identifies and opens only (1) CCW valve to one RHR Hx:
 - MOV-738A – open
 - or
 - MOV-738B - open
 Red light on and Green light off for open valve.
- c) Goes to step 7. Does not perform step 6.b.

Comment:**ES-1.3, step 7.a**

- Performance Step: 21** Verify RHR System Alignment:
- a. Verify the following valves - CLOSED
 - o RHR suction valves from loop A hot leg
 - MOV-700
 - MOV-701
 - o RHR discharge valves to loop B cold leg
 - MOV-720
 - MOV-721

Standard:

- Locates, identifies and verifies closed:
- MOV-700
 - MOV-701
 - MOV-720
 - MOV-721
- Red lights off and Green lights on.

Comment:

ES-1.3, step 7.b

- Performance Step: 22** Verify RHR pump suction crosstie valves - OPEN
- MOV-704A
 - MOV-704B

- Standard:** Locates, identifies and verifies open:
- MOV-704A
 - MOV-704B
- Red lights on and Green lights off.

Comment:

ES-1.3, step 7.c

- Performance Step: 23** Verify the following valves - OPEN
- o RHR pump discharge to Rx vessel deluge valves
 - MOV-852A
 - MOV-852B
 - o RHR suction from sump B (inside CNMT)
 - MOV-851A
 - MOV-851B

- Standard:** Locates, identifies and verifies open:
- MOV-852A
 - MOV-852B
 - MOV-851A
 - MOV-851B
- Red lights on and Green lights off.

Comment:

ES-1.3, step 7.d

- Performance Step: 24** Verify RCDT pump suction valves from sump B - CLOSED
- MOV-1813A
 - MOV-1813B

- Standard:** Locates, identifies and verifies closed:
- MOV-1813A
 - MOV-1813B
- Red lights off and Green lights on.

Comment:

PERFORMANCE INFORMATION

	ES-1.3, step 8.a
√ Performance Step: 25	Close RWST outlet valve to RHR pump suction, MOV-856 (turn on DC power key switch)
Standard:	Locates, identifies and closes (turns on DC power key switch): <ul style="list-style-type: none">• MOV-856 - Closed Red light off and Green light on.
Comment:	
	ES-1.3, step 8.b
√ Performance Step: 26	Open both RHR suction valves from sump B (outside CNMT) <ul style="list-style-type: none">• MOV-850A - OPEN• MOV-850B - OPEN
Standard:	Locates, identifies and opens: <ul style="list-style-type: none">• MOV-850A - open• MOV-850B - open Red lights on and Green lights off.
Comment:	
	ES-1.3, step 8.c (START Alternate Path)
√ Performance Step: 27	Check MOV-738A AND MOV-738B - BOTH OPEN
Standard:	Locates, identifies and verifies: (one valve will be shut due to only having (1) CCW pump available – Performance Step 17) <ul style="list-style-type: none">• MOV-738A - Open• MOV-738B - Open Red light on and Green light off for open valve Red light off and Green light on for closed valve. Goes to step 8.c RNO since both valves are not open.
Comment:	

ES-1.3, step 8.c RNO (End Alternate Path)√ **Performance Step: 28**

Perform the following:

- 1) IF MOV-738A open, THEN start RHR Pump A and go to step 8d.
- 2) IF MOV-738B open, THEN start RHR Pump B and go to step 8d.

Standard:

Locates, identifies and starts:
 RHR Pump A if MOV-738A is open.
 RHR Pump B if MOV-738B is open.
 Red light on and Green light off for started pump.
 Goes to step 8.d.

Comment:**ES-1.3, step 8.d****Performance Step: 29**

Start one RHR pump - ONE RHR PUMP RUNNING

Standard:

Locates, identifies and verifies RHR pump started in previous step is still running.
 Red light on and Green light off for running pump.

Comment:**ES-1.3, step 9****Performance Step: 30**

Check RWST Level - LESS THAN 15%

Standard:

Locates and determines what RWST Level is.

CUE: No further action is required.**Comment:****Terminating Cue:****Evaluation on this JPM is complete.****STOP TIME:** _____**TIME CRITICAL STOP TIME:** _____

Job Performance Measure No.: 2008 NRC JPM B

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

Initial Conditions:

- You are the HCO.
- Reactor trip with SI occurred.
- The has CRS initiated loss of coolant actions
- RWST level is at 28% and trending down slowly.
- The Control Room crew is currently at Step 22 of E-1.

Initiating Cue:

The CRS directs you to transfer to Cold Leg Recirculation per ES-1.3, Transfer to Cold Leg Recirculation.

Task Standard:	Place PC-430 on service and all critical tasks evaluated as satisfactory.
Required Materials:	(1) Panel key for LTOP operations.
General References:	O-7, Alignment and Operation of the Reactor Vessel Overpressure Protection System, Rev. 04701 O-2.2, Plant Shutdown from Hot Shutdown to Cold Conditions, Rev. 15000
Handouts:	O-7, Alignment and Operation of the Reactor Vessel Overpressure Protection System, Rev. 04701
Time Critical Task:	NO
Validation Time:	10 minutes
Alternate Path:	NO
Instructor Notes:	Ensure a marked up copy O-7, Alignment and Operation of the Reactor Vessel Overpressure Protection System, Rev. 04701 is ready to give to the operator during the Initiating Cue.

READ TO THE EXAMINEE

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

- Initial Conditions:
- You are an extra RO.
 - A unit shutdown is in progress.
 - The control room team is performing procedure O-2.2, Plant Shutdown from Hot Shutdown to Cold Conditions and are at step 6.4.20 waiting for LTOP to be placed on service.
 - Section 1 through section 6.1 of O-7, Alignment and Operation of the Reactor Vessel Overpressure Protection System has been completed.

Initiating Cue: The Shift Manager directs you to place PCV-430 on service per O-7, Alignment and Operation of the Reactor Vessel Overpressure Protection System section 6.2.

CUE: Hand the Operator a marked up copy of copy O-7, Alignment and Operation of the Reactor Vessel Overpressure Protection System, Rev. 04701.

SIMULATOR SETUP

For the 2008 ILT NRC Exam load I/C # 173

or

- Any shutting down IC where LTOP is ready to be placed on service.
- Tave is between 350°F and 330°F.
- At least (1) RCP is running.
- RCS pressure is ~325 psig.
- Properly markup a copy of O-7, Alignment and Operation of the Reactor Vessel Overpressure Protection System, Rev. 04701 to section 6.2.
- Use Override IND-RCS43 to set "A" Accumulator pressure to 710 psig.

START TIME: _____

√ = CRITICAL STEP

Performance Step: 1 **O-7, step 6.2.1**
VERIFY the following MCB Alarms extinguished:

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

Standard: MCB Alarms out:

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

Comment:

√ **Performance Step: 2** **O-7, step 6.2.2**
ENSURE the PRZR PORV, PCV-430 Control Switch is in the CLOSE position.

Standard: • PCV-430 control switch is in the closed position.
• Red light off and Green light on.

Comment:

√ **Performance Step: 3** **O-7, step 6.2.3**
OPEN ACCUM TO SURGE TANK VLV SOV-8616A. (MCB Rear)

Standard: • Gets proper key from CRS desk.
• SOV-8616A open.

Comment:

√ **Performance Step: 4** **O-7, step 6.2.4**
ENSURE N₂ ARMING VLV SOV-8619A is in the ARM position.
(MCB Rear)

Standard:

- Uses proper key.
- SOV-8619A is in ARM.

Comment:

Performance Step: 5 **O-7, step 6.2.5**
VERIFY CLOSED PRZR PORV, PCV-430.

Standard:

- PCV-430 control switch is in the closed position.
- Red light off and Green light on.

Comment:

Performance Step: 6 **O-7, step 6.2.6**
RECORD pressure indicated on OP ACCUM A N₂ PRESSURE,
PI-455. (MCB Rear)

Standard: Pressure recorded as shown on PI-455.

Comment:

√ **Performance Step: 7** **O-7, step 6.2.7**
IF Accumulator A pressure is **NOT** between 735 and 760 psig,
THEN CHARGE the accumulator as **PER** S-29.2, Charging the
Reactor Vessel Overpressure Protection System Accumulators
with N₂.
IF Accumulator A pressure is correct, **THEN MARK** this Step
N/A.

**Examiners Note: Annunciator AA-14, "N₂ Accum A Lo Press 725 psi" alarms at
725 psi.**

Standard:

- Checks Accumulator A pressure is between 735 and 760 psig.
- Identifies the need to charge the "A" Accumulator.

CUE after it is identified the "A" Accumulator **must be recharged: For the purposes of this JPM, ten minutes have passed and the "A" Accumulator has been charged with nitrogen per S-29.2.**

BOOTH OPERATOR: Delete override IND-RCS43 when directed to by the evaluator.

Comment:

Performance Step: 8 **O-7, step 6.2.7**
Checks Accumulator A pressure is between 735 and 760 psig.

Standard:

- Checks Accumulator A pressure is between 735 and 760 psig.
- Charging is not required.

Comment:

Performance Step: 9 **O-7, step 6.2.8**
ENSURE CLOSED MOV 516 breaker, MCC C position 6C, VLV-516 RCS.

Standard: Calls AO to verify MOV 516 breaker is closed

CUE: Acknowledge request.

REPORT: MOV 516 breaker, MCC C position 6C is closed.

Comment:

Performance Step: 10 **O-7, step 6.2.9**
ENSURE OPEN PRZR PORV BLOCK VLV, MOV 516.

Standard:

- MOV 516, PRZR PORV BLOCK VLV is open.
- Red light on and Green light off.

Comment:

Performance Step: 11 **O-7, step 6.2.10**
RECORD the time Train A Overpressure Protection System is operable.

Standard: Records current time.

Comment:

Performance Step: 12 Reports PCV-430 is on service.

Standard: Reports PCV-430 is on service.

CUE: Acknowledge report.

Comment:

Terminating Cue: Evaluation on this JPM is complete.

STOP TIME: _____

TIME CRITICAL STOP TIME: _____

Job Performance Measure No.: 2008 NRC JPM C

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

Initial Conditions:

- You are an extra RO.
- A unit shutdown is in progress.
- The control room team is performing procedure O-2.2, Plant Shutdown from Hot Shutdown to Cold Conditions and are at step 6.4.20 waiting for LTOP to be placed on service.
- Section 1 through section 6.1 of O-7, Alignment and Operation of the Reactor Vessel Overpressure Protection System has been completed.

Initiating Cue:

The Shift Manager directs you to place PCV-430 on service per O-7, Alignment and Operation of the Reactor Vessel Overpressure Protection System section 6.2.

Facility: Ginna Task No.: 344-068-05-02
Task/JPM Title: Respond To a Control Room Evacuation JPM No.: 2008 NRC JPM D
K/A Reference: APE 068 AA1.23 4.3 / 4.4

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

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

Applicability: RO/SRO

SUBMITTED BY: Ted Coe DATE: 6/30/08
Developer

REVIEWED BY: Art Vest DATE: 6/30/08
Training Technical Reviewer

REVIEWED BY: Don Dettman DATE: 6/30/08
Operations Technical Reviewer

APPROVED BY: John Brown DATE: 6/30/08
Training Management

Task Standard: Immediate actions of AP-CR.1 completed from memory and all critical tasks evaluated as satisfactory.

Required Materials: None

General References: AP-CR.1, CONTROL ROOM INACCESSIBILITY, Rev.24

Handouts: AP-CR.1, CONTROL ROOM INACCESSIBILITY, Rev.24

Time Critical Task: NO

Validation Time: 5 minutes

Alternate Path: Yes

Instructor Notes: Evaluator will act as the CRS for the initiating cue.

READ TO THE EXAMINEE

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

Initial Conditions:

- You are the HCO.
- The CO and the SM are in the Relay Room investigating an issue.
- I will be the CRS if you need one.
- The plant is at 100% power in a normal 50/50 at power lineup.

Initiating Cue: You have the watch.

SIMULATOR SETUP

For the 2008 ILT NRC Exam load I/C # 174

or

- Any 100% IC (IC-19).
- The plant in a normal 100% power lineup.
- In a normal 50/50 electric lineup.
- Insert TUR02, Turbine failure to Auto trip.
- Insert TUR17A, Turbine Stop Valve: VLV 3545.
- Insert TUR17B, Turbine Stop Valve: VLV 3544.
- Insert RPS05A, Reactor trip A breaker failure.
- Insert RPS05B, Reactor trip B breaker failure.
- A-RPS12
- TURB12A,B,C,D
- A-R0D05

START TIME: _____

√ = CRITICAL STEP

To Evaluator: All Operator actions shall be from memory, without the aid of the procedure.**CRS Initiating Cue:** Status update, Ready. (wait for response) I have just been informed there are poisonous fumes coming up from the Relay Room. Entering AP-CR.1, CONTROL ROOM INACCESSIBILITY. HCO, perform immediate operator actions for AP-CR.1. End of Update.**AP-CR.1, step 1 (Start Alternate Path)****Performance Step: 1**

Verify Reactor Trip:

- At least one train of reactor trip breakers – OPEN.
- Neutron flux – LOWERING.
- MRPI indicates - ALL CONTROL AND SHUTDOWN RODS ON BOTTOM.

Standard:

Reactor is not tripped.

- No reactor trip breakers are OPEN.
- Neutron flux at 100%.
- MRPI indicates ALL CONTROL AND SHUTDOWN RODS are still at normal positions.

Goes to step 1 RNO.

Comment:**AP-CR.1, step 1 RNO****Performance Step: 2**

Manually trip reactor.

Standard:

Depresses Reactor Trip Pushbutton

Reactor is not tripped.

- No reactor trip breakers are OPEN.
- Neutron flux at 100%.
- MRPI indicates ALL CONTROL AND SHUTDOWN RODS are still at normal positions.

Goes to RNO step 1.a.

Comment:

√ Performance Step: 3	AP-CR.1, steps 1.a thru 1.d RNO IF reactor trip breakers NOT open, THEN perform the following: a. Open Bus 13 and Bus 15 normal feed breakers. b. Verify rod drive MG sets tripped. c. Close Bus 13 and Bus 15 normal feed breakers. d. Reset lighting breakers. IF the Rx can NOT be tripped from the Control Room, THEN dispatch personnel to locally open the reactor trip breakers.
Standard:	a. Opens Bus 13 and Bus 15 normal feed breakers. • Red lights off and Green lights on. b. Rod drive MG sets tripped. • Rod Drive MG set A and B Red lights off and Green lights on. c. Closes Bus 13 and Bus 15 normal feed breakers. • Red lights on and Green lights off. d. Resets lighting breakers by depressing Bus 13 and 15 Lighting Breaker green Pushbuttons. (ONLY a, b and c are critical steps. Step d is NOT a critical step.)
Comment:	
Performance Step: 4	AP-CR.1, step 2 Verify Turbine Stop Valves - CLOSED
Standard:	On EHC valve status panel. SVL Open red light on and SVR Open red light on. Identifies Turbine stop valves are still open and goes to step 2 RNO.
Comment:	

√ **Performance Step: 5** **AP-CR.1, step 2 RNO (End Alternate Path)**
Manually trip turbine. IF turbine can NOT be tripped, THEN close both MSIVs.

Standard: Depresses Turbine Emergency Trip P/B – Turbine Does not Trip.
Closes A MSIV and B MSIV

- Handswitch MSIV A, AOV-3517 to close.
- Handswitch MSIV B, AOV-3516 to close.
- Red lights off and Green lights on.

(Critical Steps are closing A and B MSIVs.)

Comment:

Performance Step: 6 **Completion of Immediate Operator Actions**
CRS, Immediate Operator Actions for AP-CR.1 are complete.

Standard: Informs CRS that, Immediate Operator Actions for AP-CR.1 are complete.

CUE: **Acknowledge report.**

CUE: **No further actions are required.**

Comment:

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

STOP TIME: _____

TIME CRITICAL STOP TIME: _____

Job Performance Measure No.: 2008 NRC JPM D

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

JPM CUE SHEET

Initial Conditions:

- You are the HCO.
- The CO and the SM are in the Relay Room investigating an issue.
- I will be the CRS if you need one.
- The plant is at 100% power in a normal 50/50 at power lineup.

Initiating Cue:

You have the watch.

Facility: Ginna Task No.: 076-004-05-01

Task/JPM Title: Respond to a Total Loss of SW JPM No.: 2008 NRC JPM E

K/A Reference: 076 A2.01 3.5* / 3.7*

Examinee:

NRC Examiner:

Facility Evaluator:

Date:

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

Applicability: RO/SRO

SUBMITTED BY: Ted Coe DATE: 6/30/08
DeveloperREVIEWED BY: Art Vest DATE: 6/30/08
Training Technical ReviewerREVIEWED BY: Don Dettman DATE: 6/30/08
Operations Technical ReviewerAPPROVED BY: John Brown DATE: 6/30/08
Training Management

Task Standard: E-0 immediate actions performed, RCPs tripped, Letdown isolated and all critical tasks evaluated as satisfactory.

Required Materials: None

General References: AP-SW.2, LOSS OF SERVICE WATER, Rev. 00801
E-0, REACTOR TRIP OR SAFETY INJECTION, Rev. 04100

Handouts: AP-SW.2, LOSS OF SERVICE WATER, Rev. 00801

Time Critical Task: NO

Validation Time: 10 minutes

Alternate Path: YES

Instructor Notes: Ensure a copy of AP-SW.2, LOSS OF SERVICE WATER, Rev. 00801 is ready to give to the operator.
Candidate may perform actions from memory, but must verify actions with the procedure.

READ TO THE EXAMINEE

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

Initial Conditions:

- You are the CO.
- I will be the CRS if you need one.
- The plant is at 100% power in a normal 50/50 electrical lineup.

Initiating Cue: You have the watch.

SIMULATOR SETUP

For the 2008 ILT NRC Exam load I/C # 175 and insert CLG01A and CLG01C (or remote 1) one minute after the candidate takes the watch.

or

- Any 100% IC (IC-19).
- The plant in a normal 100% power lineup.
- In a normal 50/50 electric lineup.
- Ensure A and C Service Water pumps are running.
- Insert CLG01B and CLG01D.
- Insert CLG01A and CLG01C (or remote 1) one minute after the candidate takes the watch.

START TIME: _____

√ = **CRITICAL STEP**

Booth Operator: One minute after the candidate takes the watch insert CLG01A and CLG01C (or Remote 1).

√ **Performance Step: 1** Identifies that "A" and "C" Service Water pumps are tripped.

Standard:

- Identifies that "A" and "C" Service Water pumps are tripped.
- Informs the CRS that "A" and "C" Service Water pumps are tripped.

CUE: Acknowledge reports and ask for recommendation.

CUE: CO start "B" and "D" Service Water pumps.

Comment:

Performance Step: 2 Starts "B" and "D" Service Water pumps.

Standard:

- Places switches for "B" and "D" Service Water pumps to start.
- Identifies that "B" and "D" Service Water pumps are tripped.
- Informs the CRS that "B" and "D" Service Water pumps are tripped

CUE: Acknowledge reports and ask for recommendation.

CUE: CO Perform AP-SW.2, LOSS OF SERVICE WATER

Evaluator: Hand the Operator a copy AP-SW.2, LOSS OF SERVICE WATER, Rev. 00801.

Comment:

AP-SW.2, step 1

Performance Step: 3 Verify 480V AC Emergency Busses 17 and 18 – ENERGIZED.

- Standard:**
- Busses 17 and 18 voltage meters read ~480 volts.
 - Normal feeds to Bus 17 and 18 are closed.
 - Red lights on and Green lights off.

Comment:

AP-SW.2, step 2a

Performance Step: 4 Verify SW Pump Alignment:
Check at least one SW pump running in each loop:

- A or B pump in loop A.
- C or D pump in loop B.

- Standard:**
- A and C SW Pumps Tripped (given in initial cue).
 - B and D SW Pumps not running. Red lights off and Green lights on.
 - Recognizes no Service Water pumps running.
 - Goes to step 2a RNO.

CUE: Acknowledge any report.

Comment:

AP-SW.2, step 2.a.1 RNO (Start Alternate Path)

Performance Step: 5 a. Perform the following:
1) Manually start SW pumps as necessary (257 kw each).

- Standard:**
- Attempt to start B and D SW Pumps by taking associated control switches to Start.
 - Recognizes B and D SW Pumps trip.
 - Red lights off, White lights on and Green lights on.
 - May report SW pump trips to the CRS.

CUE: Acknowledge any report.

Comment:

PERFORMANCE INFORMATION

AP-SW.2, step 2.a.2 RNO

Performance Step: 6 IF adequate cooling can NOT be supplied to a running D/G, THEN perform the following:
 a) Pull stop affected D/G.
 b) Immediately depress voltage shutdown pushbutton.

Standard:

- D/G A and B voltmeters read "0 volts".
- Recognizes no Diesel Generators are running and performs no actions.

CUE: Acknowledge any report.

Comment:

AP-SW.2, step 2.a.3.a RNO

√ **Performance Step: 7** IF no SW pumps can be operated, THEN perform the following:
 a) Trip the reactor.

Standard: Depresses Reactor Emergency Trip Pushbutton.

CUE: Acknowledge any report.

Comment:

AP-SW.2, step 2.a.3.b RNO

√ **Performance Step: 8** WHEN all E-0 Immediate Actions done, THEN trip BOTH RCPs.

Standard: E-0 Immediate Actions: (these actions performed from memory)

1. **Verify Reactor Trip** - Neutron flux lowering, at least one train of Reactor trip breakers open and MRPI indicates all rods are on the bottom.
2. **Verifies Turbine is tripped** – Turbine Stop valves are closed as indicated on EHC valve status panel. SVL Closed Green light on and SVR Closed Green light on.
3. **Verify Both Trains of AC Emergency Busses energized to at least 420 volts: Busses 14, 16, 17 and 18** – Volt meters for Busses 14, 16, 17 and 18 all read ~480 VAC.
4. **Check if SI is Actuated: Any SI Annunciator – LIT** - Annunciators D-19, 21, 22 and 28 extinguished and no indications that an SI is required.

Trip both RCPs:

1. **A RCP H/S to Stop** - Red light off and Green light on.
 2. **B RCP H/S to Stop** - Red light off and Green light on.
- (Critical steps are to trip both RCPs.)

CUE: Acknowledge any report.

Comment:

AP-SW.2, step 2.a.3.c RNO

√ **Performance Step: 9** Close letdown isol, AOV-427.

- Standard:**
- AOV-427 switch in Closed.
 - Red light off and Green light on.

CUE: Acknowledge any report.

Comment:

AP-SW.2, step 2.a.3.d RNO (End Alternate Path)

Performance Step: 10 Close excess letdown, HCV-123.

Standard: HCV-123 is at 0% demand.

CUE: Acknowledge any report.

CUE: No further action is required.

Comment:

Terminating Cue: Evaluation on this JPM is complete.

STOP TIME: _____

TIME CRITICAL STOP TIME: _____

Job Performance Measure No.: 2008 NRC JPM E

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

- Initial Conditions:
- You are the CO.
 - I will be the CRS if you need one.
 - The plant is at 100% power in a normal 50/50 electrical lineup.

Initiating Cue: You have the watch.

Facility: Ginna Task No.: 064-007-01-01A

Task/JPM Title: Shutdown the "A" Emergency Diesel Generator JPM No.: 2008 NRC JPM F

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

Examinee: NRC Examiner:

Facility Evaluator: Date:

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

Applicability: RO/SRO

SUBMITTED BY: Ted Coe DATE: 6/30/08
DeveloperREVIEWED BY: Art Vest DATE: 6/30/08
Training Technical ReviewerREVIEWED BY: Don Dettman DATE: 6/30/08
Operations Technical ReviewerAPPROVED BY: John Brown DATE: 6/30/08
Training Management

Task Standard: The "A" D/G shutdown and all critical tasks evaluated as satisfactory.

Required Materials: None

General References: STP-O-12.1: EMERGENCY DIESEL GENERATOR A, Rev. 00201

Handouts: STP-O-12.1: EMERGENCY DIESEL GENERATOR A, Rev. 00201

Time Critical Task: NO

Validation Time: 20 minutes

Alternate Path: NO

Instructor Notes: Ensure a marked up copy of STP-O-12.1: EMERGENCY DIESEL GENERATOR A, Rev. 00201 is ready to give to the operator during the Initiating Cue.

READ TO THE EXAMINEE

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

Initial Conditions:

- You are an extra RO.
- The plant is at 100% power with a normal electrical lineup.
- The "A" EDG is running for the monthly surveillance per STP-O-12.1 through Step 6.2.42.
- All readings have been taken and evaluated as satisfactory.
- There is an AO available at the A D/G.
- The Diesel has run for 65 minutes, all readings have been taken.
- The AO has the data sheets.
- Bi-Annual selected Service Water Pump starts are not required.

Initiating Cue: The CRS has directed you to shutdown the "A" D/G per STP-O-12.1 steps 6.3 through 6.3.19.

CUE: Hand the Operator a marked up copy of STP-O-12.1, EMERGENCY DIESEL GENERATOR A, Rev. 00201.

SIMULATOR SETUP

For the 2008 ILT NRC Exam load I/C # 176 and Insert Manual Triggers 1 and 2 to reset DG1A ELCP Annunciator Panel, when requested in performance step 24.

or

- 100% power IC with normal electrical lineup (IC-19).
- "A" D/G running at between 2025 and 2050 KW per STP-O-12.1, step 6.2.36 rev. 00201.
- Ensure "A" SW running and "C" SW stopped.
- Ensure SW selected to "A" SW Pump.
- Complete and mark up STP-O-12.1 through Step 6.2.42.
- Insert Manual Triggers 1 and 2 to reset DG1A ELCP Annunciator Panel, when requested in performance step 24.

START TIME: _____

√ = CRITICAL STEP

Performance Step: 1

STP-O-12.1, step 6.3.1.1

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

Standard:

Records time unloading begins.

Comment:

√ Performance Step: 2

STP-O-12.1, step 6.3.1.2

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

**Cue when asked about Load Limit: LOAD LIMIT is
NOT at Max Fuel.**

- a. **ADJUST** Emergency Diesel Generator A load to between 1925 and 1950 KW using the D/G A GOVERNOR switch **AND MAINTAIN** Power Factor 0.9 (lag) using the D/G A AUTO VOLTAGE CONTROL RHEOSTAT as necessary.
- b. **RESTORE** LOAD LIMIT setting to normal (MAX FUEL).

**Cue when told to adjust Load Limit: LOAD LIMIT is
now at Max Fuel.**

Standard:

- Calls the AO to request if LOAD LIMIT setting is at MAX FUEL.
- Adjusts D/G A load to between 1925 and 1950 KW using the D/G A GOVERNOR switch.
- Maintains Power Factor 0.9 (lag) using the D/G A AUTO VOLTAGE CONTROL RHEOSTAT.
- Calls the AO to restore LOAD LIMIT setting to MAX FUEL.

Comment:

Performance Step: 3 **STP-O-12.1, step 6.3.1.3**
IF the Mechanical Governor was adjusted to lock the load,
THEN ADJUST Emergency Diesel Generator A load to between
 2150 and 2175 KW using D/G A GOVERNOR switch **AND**
MAINTAIN Power Factor at approximately 0.9 (lag) using D/G A
 AUTO VOLTAGE CONTROL RHEOSTAT as necessary.

Standard:

- Adjusts D/G A load to between 2150 and 2175 KW using D/G A GOVERNOR switch.
- Maintains Power Factor at approximately 0.9 (lag) using D/G A AUTO VOLTAGE CONTROL RHEOSTAT.

Comment:

√ **Performance Step: 4** **STP-O-12.1, step 6.3.1.4**
UNLOAD Emergency Diesel Generator A; to 400 KW by
 intermittently turning D/G A GOVERNOR switch in the lower
 direction, **AND MAINTAIN** Power Factor at approximately 0.9
 (lag) using D/G A AUTO VOLTAGE CONTROL RHEOSTAT as
 necessary.

Standard:

- Does not violate the D/G A unloading rate of approximately 500 KW every 30 seconds.
- Unloads D/G A, to 400 KW by intermittently turning D/G A GOVERNOR switch in the lower direction.
- Maintains Power Factor at approximately 0.9 (lag) using D/G A AUTO VOLTAGE CONTROL RHEOSTAT.

Comment:

Performance Step: 5 **STP-O-12.1, step 6.3.2**
IF Bi-Annual selected Service Water Pump starts are required,
THEN PERFORM Attachment 13, Bi-Annual Service Water
 Pump Starts. **OTHERWISE, MARK** this Step **AND** Attachment
 13 N/A.

Standard: Determines from Initiating Cue, not required, marks step N/A.

Comment:

STP-O-12.1, step 6.3.3

PERFORMANCE INFORMATION

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

Standard:

- WHEN D/G A is at ~400 KW, TRIPS one D/G A supply breaker for Bus 14 or Bus 18.
- Green light on, red light off.
- If Diesel Generator Trips on Reverse Power due to operator error, the step will be evaluated as Unsat.

Comment:

√ **Performance Step: 7** **STP-O-12.1, step 6.3.4**
WHEN Emergency Diesel Generator A load has been reduced to approximately 200 KW **AND** Power Factor is 0.9 (lag), **THEN TRIP** the remaining closed Emergency Diesel Generator A supply breaker.

Standard:

- WHEN D/G A load is at ~200 KW and Power Factor is 0.9 (lag), TRIPS the remaining closed D/G A supply breaker for Bus 14 or Bus 18.
- Green light on, red light off.
- If Diesel Generator Trips on Reverse Power due to operator error, the step will be evaluated as Unsat.

Comment:

Performance Step: 8 **STP-O-12.1, step 6.3.5**
RECORD time breaker was opened.

Standard:

Records time breaker was opened.

Comment:

Performance Step: 9 **STP-O-12.1, step 6.3.6**
IF Attachment 13, Bi-Annual Service Water Pump Starts, was performed, **THEN ENSURE** Service Water Pumps **AND** Selector Switches are aligned to the desired configuration.
OTHERWISE, MARK this Step N/A.

Standard: Determines from Initiating Cue, not required, marks step N/A.

Comment:

√ **Performance Step: 10** **STP-O-12.1, step 6.3.7**
PLACE D/G A UNIT/PARALLEL OPERATION SELECTOR switch to UNIT position.

Standard: D/G A UNIT/PARALLEL OPERATION SELECTOR switch in UNIT position.

Comment:

Performance Step: 11 **STP-O-12.1, step 6.3.8**
PLACE D/G A SYNCHROSCOPE switch in the BUS 14 or BUS 18 position.

Standard: D/G A SYNCHROSCOPE switch in the BUS 14 or BUS 18 position.

Comment:

Performance Step: 12 **STP-O-12.1, step 6.3.9**
IF Emergency Diesel Generator A frequency is high, **THEN OPERATE** D/G A GOVERNOR switch to return to a setting of between 60 and 60.1 Hertz (revolving slowly in the clockwise direction) **AND TRANSFER** frequency setting data to Attachment 3, As Found/As Left Voltage and Frequency.
OTHERWISE, MARK this Step N/A.

Standard: Determines frequency is satisfactory, marks step N/A.

Comment:

STP-O-12.1, step 6.3.10

Performance Step: 13 PLACE D/G A SYNCHROSCOPE switch to the OFF position.

Standard: D/G A SYNCHROSCOPE switch in off.

Comment:

Performance Step: 14 **STP-O-12.1, step 6.3.11**
MEASURE the Emergency Diesel Generator A speed using a photo-tachometer, **AND RECORD** speed data on Attachment 3, As Found/As Left Voltage and Frequency.

Standard:

- Directs the AO to measure the D/G A speed using a Photo-tachometer.
- Records the speed data on Attachment 3.

CUE: A D/G speed is 900 rpm.

Comment:

Performance Step: 15 **STP-O-12.1, step 6.3.12**
ADJUST D/G A AUTO VOLTAGE CONTROL RHEOSTAT to establish Emergency Diesel Generator A output voltage between 480 and 490 Volts (adjust as close to 480 volts as possible) **AND RECORD** voltage data on Attachment 3, As Found/As Left Voltage and Frequency.

Standard:

- D/G A output voltage between 480 and 490 Volts.
- Records voltage data on Attachment 3.

Comment:

Performance Step: 16 **STP-O-12.1, step 6.3.13**
RECORD the as left D/G A AUTO VOLTAGE CONTROL RHEOSTAT position on Attachment 14, Auto Voltage Control Rheostat After Start – As Left, by sketching in the dial setting.

Standard: Sketching in the dial setting on Attachment 14.

Comment:

STP-O-12.1, step 6.3.14

√ **Performance Step: 17** **TURN** the D/G A CONTROL switch to the STOP position.

Standard: D/G A CONTROL switch to STOP then spring returns to mid position (red flagged).

Comment:

√ **Performance Step: 18** **STP-O-12.1, step 6.3.15**
PUSH AND HOLD the D/G A VOLTAGE SHUTDOWN button (Black button) for a few seconds immediately after stopping Emergency Diesel Generator A.

Standard: Pushes and holds the D/G A VOLTAGE SHUTDOWN button for a few seconds immediately after stopping D/G A.

CUE: If requested, report as the AO, "A" D/G has stopped.

Comment:

√ **Performance Step: 19** **STP-O-12.1, step 6.3.16**
WHEN the Emergency Diesel Generator A has stopped rolling, **THEN PUSH** the following buttons:

- D/G A RESET
- D/G A FIELD RESET

Standard:

- D/G A RESET button depressed.
- D/G A FIELD RESET button depressed.

Comment:

STP-O-12.1, step 6.3.17**Performance Step: 20**

WHEN the Emergency Diesel Generator A is reset,
THEN VERIFY the following indicating lamps are illuminated (MCB Rear):

- AIR START SOLENOID VALVE 1 POWER AVAILABLE
- AIR START SOLENOID VALVE 2 POWER AVAILABLE
- START RELAY 1 POWER AVAILABLE
- START RELAY 2 POWER AVAILABLE

Standard:

Verifies the following indicating lamps are illuminated:

- AIR START SOLENOID VALVE 1 POWER AVAILABLE
- AIR START SOLENOID VALVE 2 POWER AVAILABLE
- START RELAY 1 POWER AVAILABLE
- START RELAY 2 POWER AVAILABLE

Comment:**STP-O-12.1, step 6.3.18****Performance Step: 21**

DECLARE Emergency Diesel Generator A unavailable.

Standard:

Informs the CRS/HCO A D/G is unavailable.

CUE: Acknowledge report.

Comment:**STP-O-12.1, step 6.3.19.1****Performance Step: 22**

VERIFY D/G A CONTROL switch reset alarm operability as follows:

1. **VERIFY** no other alarm condition exists on the Emergency Diesel Generator A alarm panel.

Standard:

No alarms.

CUE: If requested, report as the AO, no other alarm condition exists on the Emergency Diesel Generator A alarm panel.

Comment:

- ✓ **Performance Step: 23** **STP-O-12.1, step 6.3.19.2**
PLACE D/G A CONTROL switch in the PULL STOP position
AND VERIFY the following:
- MCB Alarm J-24, EMERGENCY DIESEL GEN 1A PANEL, is illuminated.
 - Emergency Diesel Generator A START RELAY 1 POWER AVAILABLE **AND** START RELAY 2 POWER AVAILABLE lights are extinguished (MCB).

Standard:

- D/G A CONTROL switch in PULL STOP.
- MCB Alarm J-24, EMERGENCY DIESEL GEN 1A PANEL, is illuminated.
- Emergency Diesel Generator A START RELAY 1 POWER AVAILABLE **AND** START RELAY 2 POWER AVAILABLE lights are extinguished (MCB).

Comment:

- Performance Step: 24** **STP-O-12.1, step 6.3.19.3**
DEPRESS ACK button at DG1A ELCP Annunciator Panel **AND VERIFY** Emergency Diesel Generator A shutdown reset annunciator (R3) is illuminated.

Standard: Contacts AO to perform step 6.3.19.3.

CUE: Acknowledge request.

Simulator Operator: Insert Manual Triggers 1 and 2 to reset DG1A ELCP Annunciator Panel.

CUE: ACK button at DG1A ELCP Annunciator Panel has been depressed and (R3) is illuminated.

Comment:

Terminating Cue: Evaluation on this JPM is complete.

STOP TIME: _____

TIME CRITICAL STOP TIME: _____

Job Performance Measure No.: 2008 NRC JPM F

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

Initial Conditions:

- You are an extra RO.
- The plant is at 100% power with a normal electrical lineup.
- The "A" EDG is running for the monthly surveillance per STP-O-12.1 through Step 6.2.42.
- All readings have been taken and evaluated as satisfactory.
- There is an AO available at the A D/G.
- The Diesel has run for 65 minutes, all readings have been taken.
- The AO has the data sheets.
- Bi-Annual selected Service Water Pump starts are not required.

Initiating Cue:

The CRS has directed you to shutdown the "A" D/G per STP-O-12.1 steps 6.3 through 6.3.19.

Task Standard: Remove N-41 from service and all critical tasks evaluated as satisfactory.

Required Materials: None

General References: ER-NIS.3, PR Malfunction, Rev. 26

Handouts: ER-NIS.3, PR Malfunction, Rev. 26

Time Critical Task: NO

Validation Time: 19 minutes

Alternate Path: NO

Instructor Notes: Ensure a marked up copy of ER-NIS.3, PR Malfunction, Rev. 26 is ready to give to the operator during the Initiating Cue.

READ TO THE EXAMINEE

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

Initial Conditions:

- You are an extra RO.
- Power Range channel N-41 drifted low over a period of several minutes and has been declared inoperable.
- No plant transient has occurred.
- Procedure ER-NIS.3 is being implemented.
- Reactor power is 100%.
- No other channels have been defeated.

Initiating Cue: The CRS has directed you to remove PR N-41 from service per ER-NIS.3 Step 4.4 Attachment N-41 Defeat.
All notifications have been made and approvals received.

CUE: Hand the Operator a marked up copy of ER-NIS.3, PR Malfunction, Rev. 26.

SIMULATOR SETUP

For the 2008 ILT NRC Exam load I/C # 177

or

- Select IC 19 (or any full power IC).
- Place Rods in manual.
- Place N-41 to Rod Drop Bypass, reduce gain to 0.
- Return Rod Drop Bypass to Normal.
- Adjust Tave = Tref.

START TIME: _____√ = **CRITICAL STEP**

- √ **Performance Step: 1** **ER-NIS.3, Att. N-41 Defeat, 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.

Standard: Deletes NIS Channel 41 from processing by performing the following:

- Selects "Group Update" display.
- Selects "List Server Groups".
- Selects NIS1 from the pick list.
- Turns "OFF" scan processing, then clicks the "Set Scan Processing" button.
- Answers prompts.

Comment:

- Performance Step: 2** **ER-NIS.3, Att. N-41 Defeat, step 2**
Verify the ROD CONTROL BANK SELECTOR switch (MCB) is in the M (MANUAL) position.

Standard: ROD CONTROL BANK SELECTOR switch is selected to MANUAL.

Comment:

√ Performance Step: 3	ER-NIS.3, Att. N-41 Defeat, step 3 Place the DROPPED ROD MODE switch (Power Range N41A drawer) to BYPASS AND verify the following: <ul style="list-style-type: none">• DROPPED ROD BYPASS (local light) is lit.• POWER RANGE-1 ROD DROP BYPASS (MCB bypass status light) is lit.• Annunciator (MCB) E-7, NIS TRIP BYPASS, is lit.
Standard:	Places the DROPPED ROD MODE to BYPASS AND verifies: <ul style="list-style-type: none">• DROPPED ROD BYPASS (local light) is lit.• POWER RANGE-1 ROD DROP BYPASS (MCB bypass status light) is lit.• Annunciator (MCB) E-7, NIS TRIP BYPASS, is lit.
Comment:	
√ Performance Step: 4	ER-NIS.3, Att. N-41 Defeat, step 4 Place T/405E DELTA T DEFEAT switch (RIL Insertion Limit Rack) to LOOP A UNIT 1 (Defeats the delta T Runback and Rodstop for the failed channel AND removes the associated delta-T input from the RIL computer-Annunciators F-30 AND F-31 will clear if lit).
Standard:	Places T/405E DELTA T DEFEAT switch (RIL Insertion Limit Rack) to LOOP A UNIT 1 - Annunciators F-30 AND F-31 will clear if lit.
Comment:	

- ✓ **Performance Step: 5** **ER-NIS.3, Att. N-41 Defeat, step 5**
Place the OVERTEMP TRIP bistable (Red R-1 Protection Channel 1 rack) proving switch to DEFEAT (UP) AND verify the following:
- Annunciator F-23, RCS OT)T CHANNEL ALERT, is lit
 - Proving light OFF if TI-405B > or = TI-405A
- IF any proving light status is NOT correct, THEN submit an ACTION Report on the discrepancy and continue with the channel defeat steps.
- Standard:** Places the OVERTEMP TRIP bistable proving switch to DEFEAT (UP) AND verifies the following:
- Annunciator F-23, RCS OT delta-T CHANNEL ALERT, is lit
 - Proving light OFF if TI-405B > or = TI-405A
- Comment:**
- ✓ **Performance Step: 6** **ER-NIS.3, Att. N-41 Defeat, 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 OP delta-T CHANNEL ALERT, is lit
 - Proving light OFF if TI-405B > or = TI-405C
- IF any proving light status is NOT correct, THEN submit an ACTION Report on the discrepancy and continue with the channel defeat steps.
- ✓ **Standard:** Places the OVERPOWER TRIP bistable proving switch to DEFEAT (UP) AND verifies the following:
- Annunciator F-32, RCS OP delta-T CHANNEL ALERT, is lit
 - Proving light OFF if TI-405B > or = TI-405C
- Comment:**

	ER-NIS.3, Att. N-41 Defeat, step 7
Performance Step: 7	Verify the following bistables are lit: a. TC405A OP Delta T Loop A b. TC405C OT Delta T Loop A
Standard:	Verifies bistables are lit: a. TC405A OP Delta T Loop A b. TC405C OT Delta T Loop A
Comment:	
	ER-NIS.3, Att. N-41 Defeat, step 8
√ Performance Step: 8	Place the UPPER SECTION DEFEAT switch (Detector Current Comparator- Miscellaneous Control & Indications drawer) to the PRN41 position AND verify the following: <ul style="list-style-type: none">• Local light for CHANNEL DEFEAT upper section is lit.
Standard:	Places the UPPER SECTION DEFEAT switch to the PRN41 position AND verifies: Local light for CHANNEL DEFEAT upper section is lit.
Comment:	
	ER-NIS.3, Att. N-41 Defeat, step 9
√ Performance Step: 9	Place the LOWER SECTION DEFEAT switch (Detector Current Comparator-Miscellaneous Controls & Indications drawer) to the PRN41 position AND verify the following: <ul style="list-style-type: none">• Local light for CHANNEL DEFEAT lower section is lit.
Standard:	Places the LOWER SECTION DEFEAT to the PRN41 position AND verifies: Local light for CHANNEL DEFEAT lower section is lit.
Comment:	

- √ **Performance Step: 10** **ER-NIS.3, Att. N-41 Defeat, step 10**
Place the POWER MISMATCH BYPASS switch (Detector Current Comparator-Miscellaneous Controls & Indications drawer) to BYPASS PR N41.
- Standard:** Places the POWER MISMATCH BYPASS to BYPASS PR N41.
- Comment:**
- √ **Performance Step: 11** **ER-NIS.3, Att. N-41 Defeat, step 11**
Place the ROD STOP BYPASS switch (Detector Current Comparator-Miscellaneous Controls & Indications drawer) to BYPASS PR N41.
- Standard:** Places the ROD STOP BYPASS switch to BYPASS PR N41.
- Comment:**
- √ **Performance Step: 12** **ER-NIS.3, Att. N-41 Defeat, step 12**
Place the COMPARATOR CHANNEL DEFEAT switch (Comparator and Ratedrawer) to N41 AND verify the following:
- Local light for COMPARATOR DEFEAT is lit.
- Standard:** Places the COMPARATOR CHANNEL DEFEAT switch to N41 AND verifies:
- Local light for COMPARATOR DEFEAT is lit.
- Comment:**

- ✓ **Performance Step: 13** **ER-NIS.3, Att. N-41 Defeat, step 13**
- Remove the 118V 5A AC INSTR POWER fuses (Power Range N41B drawer) AND verify the following alarms (MCB) are lit:
- 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%
 - E-28, POWER RANGE ROD DROP ROD STOP -5%/5 SEC

- Standard:**
- Removes the 118V 5A AC INSTR POWER fuses (Power Range N41B drawer) AND verifies the following alarms (MCB) are lit:
- 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%
 - E-28, POWER RANGE ROD DROP ROD STOP -5%/5 SEC

Comment:

- Performance Step: 14** **ER-NIS.3, Att. N-41 Defeat, step 13.1**
- Verify the following red bistable lights (MCB) are lit:
- 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
- IF any bistable above is NOT lit, THEN the channel may not be in the tripped.

- Standard:**
- Verifies the following red bistable lights (MCB) are lit:
- 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

Note to Examiner: There are no more critical steps in the rest of this JPM.

Comment:

ER-NIS.3, Att. N-41 Defeat, step 13.2**Performance Step: 15**

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
- DROPPED ROD ROD STOP
- DROPPED ROD BYPASS

Standard:

Verifies 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
- DROPPED ROD ROD STOP
- DROPPED ROD BYPASS

Comment:**ER-NIS.3, Att. N-41 Defeat, step 13.3****Performance Step: 16**

Verify the following status lights (Power Range N41B drawer) are extinguished:

- INSTRUMENT POWER ON
- CHANNEL ON TEST

Standard:

Verifies the following status lights (Power Range N41B drawer) are extinguished:

- INSTRUMENT POWER ON
- CHANNEL ON TEST

Comment:

ER-NIS.3, Att. N-41 Defeat, step 14

Performance Step: 17 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).

Standard: Notifies 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).

CUE: Acknowledge request.

Comment:

ER-NIS.3, Att. N-41 Defeat, step 15

Performance Step: 18 Initiate an A-52.4 on N-41.

Standard: Initiates an A-52.4 on N-41 or informs CRS to initiate A-52.4.

CUE: CRS has initiated an A-52.4 for NI-41.

Comment:

ER-NIS.3, Att. N-41 Defeat, step 16

Performance Step: 19 Go to step 4.5.

Standard: Goes to step 4.5.

CUE: CRS will continue at step 4.5.

Comment:

Terminating Cue: Evaluation on this JPM is complete.

STOP TIME: _____

TIME CRITICAL STOP TIME: _____

Job Performance Measure No.: 2008 NRC JPM G

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

Initial Conditions:

- You are an extra RO.
- Power Range channel N-41 drifted low over a period of several minutes and has been declared inoperable.
- No plant transient has occurred.
- Procedure ER-NIS.3 is being implemented.
- Reactor power is 100%.
- No other channels have been defeated.

Initiating Cue:

The CRS has directed you to remove PR N-41 from service per ER-NIS.3.
Step 4.4 Attachment N-41 Defeat.
All notifications have been made and approvals received.

Task Standard: The Containment Purge shutdown and all critical tasks evaluated as satisfactory.

Required Materials: None

General References: S-23.2.2, Containment Purge Procedure, Rev. 04801

Handouts: S-23.2.2, Containment Purge Procedure, Rev. 04801

Time Critical Task: NO

Validation Time: 5 minutes

Alternate Path: NO

Instructor Notes: Ensure a marked up copy of S-23.2.2, Containment Purge Procedure, Rev. 04801 is ready to give to the operator during the Initiating Cue.

READ TO THE EXAMINEE

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

Initial Conditions:

- You are an extra RO.
- The plant is in cold shutdown.
- A Containment Purge is in progress.
- The Refuel SRO has requested Containment Purge be secured due to a Refueling Incident.
- RP has authorized securing the purge.

Initiating Cue: The Shift Manager directs you to secure the Containment Purge per Step 6.3 of S-23.2.2.

CUE: Hand the Operator a marked up copy of S-23.2.2, Containment Purge Procedure, Rev. 04801.

SIMULATOR SETUP

For the 2008 ILT NRC Exam load I/C # 178

or

- Any cold shutdown IC.
- Remove purge flanges, MIS78.
- Place purge system in service with both fans running.
- S-23.2.2 signed off up to section 6.3.

START TIME: _____

√ = CRITICAL STEP

√ **Performance Step: 1** **S-23.2.2, step 6.3.1**
STOP Containment Purge Supply and Exhaust Fans "A" if running. OTHERWISE MARK this step N/A.

Standard: Switch to stop. Red lights off, Green lights on.

Comment:

√ **Performance Step: 2** **S-23.2.2, step 6.3.2**
STOP Containment Purge Supply and Exhaust Fans "B" if running OTHERWISE MARK this step N/A.

Standard: Switch to stop. Red lights off, Green lights on.

Comment:

√ **Performance Step: 3** **S-23.2.2, step 6.3.4**
CLOSE Containment Purge Supply Valve V-5869.

Standard: Switch to close. Red light off, Green light on.

Comment:

√ **Performance Step: 4** **S-23.2.2, step 6.3.4**
CLOSE Containment Purge Exhaust Valve V-5879.

Standard: Switch to close. Red light off, Green light on.

Comment:

PERFORMANCE INFORMATION

S-23.2.2, step 6.3.5

Performance Step: 5 LOG information on Containment Purge Release Permit.

Standard: Logs information on Containment Purge Release Permit.

CUE: The HCO will do that.

Comment:

Terminating Cue: Evaluation on this JPM is complete.

STOP TIME: _____

TIME CRITICAL STOP TIME: _____

Job Performance Measure No.: 2008 NRC JPM H

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

Initial Conditions:

- You are an extra RO.
- The plant is in cold shutdown.
- A Containment Purge is in progress.
- The Refuel SRO has requested Containment Purge be secured due to a Refueling Incident.
- RP has authorized securing the purge.

Initiating Cue:

The Shift Manager directs you to secure the Containment Purge per Step 6.3 of S-23.2.2.

Facility: Ginna Task No.: 001-007-01-04A

Task/JPM Title: Startup and Parallel Rod Drive MG Set (Parallel Fails) JPM No.: 2008 NRC JPM I

K/A Reference: 001 A4.0 8 3.7 / 3.4

Examinee:

NRC Examiner:

Facility Evaluator:

Date:

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

Applicability: RO/SRO

SUBMITTED BY: Ted Coe DATE: 6/30/08
DeveloperREVIEWED BY: Art Vest DATE: 6/30/08
Training Technical ReviewerREVIEWED BY: Don Dettman DATE: 6/30/08
Operations Technical ReviewerAPPROVED BY: John Brown DATE: 6/30/08
Training Management

Task Standard: MG sets paralleled and all critical tasks evaluated as satisfactory.

Required Materials: Proper Noise Protection, Hard Hat, Safety Glasses, Safety Shoes, Leather Gloves.

General References: S-1A, Startup of Rod Drive Motor Generator Sets, Rev.18

Handouts: S-1A, Startup of Rod Drive Motor Generator Sets, Rev.18

Time Critical Task: NO

Validation Time: 20 minutes

Alternate Path: YES

Instructor Notes: Ensure Proper Noise Protection, Hard Hat, Safety Glasses, Safety Shoes and leather gloves are worn as required.
Ensure a marked up copy of S-1A, Startup of Rod Drive Motor Generator Sets, Rev.18 is ready to give to the operator during the Initiating Cue.

READ TO THE EXAMINEE

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

Initial Conditions:

- You are an extra RO.
- Preparations for startup of Rod Control System are under way.
- The "1B" MG set is running.

Initiating Cue: The Shift Manager directs you to startup and parallel the 1A Rod Drive MG Set per S-1A section 5.3.
Simulate all activities - DO NOT MANIPULATE ANY EQUIPMENT.

CUE: Hand the Operator a marked up copy of S-1A, Startup of Rod Drive Motor Generator Sets, Rev.18.

START TIME: _____

√ = CRITICAL STEP

S-1A, step 5.3.1**Performance Step: 1** One MG set is running and carrying a steady electrical load.**Standard:** Verifies 1B MG set is running. Given in initial cue.**CUE:** 1B MG set is running, carrying a steady electrical load. 1A MG set is secured.**Comment:****S-1A, step 5.3.2****Performance Step: 2** Verify remaining motor generator set ALARM BYPASS switch is in the "BYPASS" position.**Standard:** Verifies 1A MG set ALARM BYPASS switch is in the "BYPASS" position.**CUE:** 1A MG set ALARM BYPASS switch is in the "BYPASS" position.**Comment:****S-1A, step 5.3.3****Performance Step: 3** Verify the remaining Motor Generator set VOLTAGE ADJUST in full counter-clockwise position.**Standard:** 1A MG set VOLTAGE ADJUST is in full counter-clockwise position.**CUE:** 1A MG set VOLTAGE ADJUST is in full counter-clockwise position.**Comment:****S-1A, step 5.3.4.1**√ **Performance Step: 4** Rotate the MOTOR NO. 1A CIRCUIT BREAKER CONTROL switch to CLOSE.**Standard:** Identifies the MOTOR NO. 1A CIRCUIT BREAKER CONTROL switch, and simulates rotating to CLOSE.**CUE:** Component is in desired position.**Comment:**

CUE: Motor is at full speed.

- √ **Performance Step: 5** **S-1A, step 5.3.4.2**
WHEN motor is at full speed, THEN depress AND hold the FIELD FLASH pushbutton.

Standard: Identifies FIELD FLASH pushbutton, and generator voltage indication (OUTPUT AC VOLTAGE METER).
Simulate depressing and holding FIELD FLASH pushbutton.

CUE: Component is in desired condition.

Comment:

- √ **Performance Step: 6** **S-1A, step 5.3.4.3**
WHEN Generator voltage has risen to > 234 volts AND is NOT increasing, THEN release the FIELD FLASH pushbutton.

Standard: Simulates FIELD FLASH pushbutton released.

CUE: Generator voltage has risen to 250 volts AND is steady.

CUE: Component is in desired condition.

Comment:

- √ **Performance Step: 7** **S-1A, step 5.3.4.4**
Rotate the VOLTAGE ADJUST potentiometer clockwise UNTIL voltage is 260.

Standard: Rotates the VOLTAGE ADJUST potentiometer clockwise UNTIL voltage is 260.

CUE: Generator voltage has risen slowly to 260 volts.

Comment:

- Performance Step: 8** **S-1A, step 5.3.5**
Verify FIELD CURRENT is >1.2 amps AND <4.8 amps as read on the FIELD CURRENT METER.

Standard: Identifies FIELD CURRENT METER.

CUE: FIELD CURRENT is as read.

Comment:

S-1A, step 5.3.6

Performance Step: 9 Verify FIELD CURRENT alarm has cleared. (Alarm LED is located on the FIELD CURRENT METER)

Standard: Identifies alarm LED on the FIELD CURRENT METER is out.

CUE: Alarm LED on the FIELD CURRENT METER is out.

Comment:

S-1A, step 5.3.7

Performance Step: 10 Place ALARM BYPASS switch in the "ACTIVE" position.

Standard: Identifies ALARM BYPASS switch and simulates placing in "ACTIVE".

CUE: Component is in desired position.

Comment:

S-1A, step 5.3.8

Performance Step: 11 Verify MCB annunciator C-21 (Rod Control MG Set Trouble) is extinguished.

Standard: Contacts control room on status of C-21.

CUE: C-21, (Rod Control MG Set Trouble) is extinguished.

Comment:

S-1A, step 5.3.9

√ **Performance Step: 12** Rotate the synchronize switch to ON (on the MG set being started) AND allow a few seconds for the synchronizer to warm up.

Standard: Rotates the 1A synchronize switch to ON (AND allows a few seconds for the synchronizer to warm up).

CUE: Component is in desired position.

Comment:

- ✓ **Performance Step: 13** **S-1A, step 5.3.10.1**
Observe the Synchroscope (Syn/CRDMGAB) for indication when the two generators are in sync and trip the on-coming M/G Set Motor Breaker by rotating the circuit breaker control handle to the **TRIP POSITION** just after the Synchronizing Point (approximately 3 minutes after 12).
- Standard:** Observes the Synchroscope for indication when the two generators are in sync and trips the 1A M/G Set Motor Breaker by rotating the circuit breaker control handle to the **TRIP POSITION** just after the Synchronizing Point (approximately 3 minutes after 12).
- CUE:** **Component is in desired position.**
- CUE:** **It has been 30 seconds and the Synchroscope indicates the two generators are not in parallel.**
- Comment:**
- ✓ **Performance Step: 14** **S-1A, step 5.3.10.2**
Should the Generator fail to parallel within 30 seconds, THEN return the synchronize switch to OFF, AND proceed with steps 5.3.1 through 5.3.10 again. N/A if generator paralleled.
- Standard:** Synchronize switch to OFF.
Returns to step 5.3.1.
- CUE:** **Synchroscope indicates the two generators are not in parallel.**
- CUE:** **Component is in desired position.**
- Comment:**
- Performance Step: 15** **S-1A, step 5.3.1 (Start Alternate Path)**
One MG set is running and carrying a steady electrical load.
- Standard:** Verifies 1B MG set is running. Given in initial cue.
- CUE:** **1B MG set is running, carrying a steady electrical load.**
- Comment:**
- Performance Step: 16** **S-1A, step 5.3.2**
Verify remaining motor generator set ALARM BYPASS switch is in the "BYPASS" position.
- Standard:** Places 1A MG set ALARM BYPASS switch in the "BYPASS" position.
- CUE:** **1A MG set ALARM BYPASS switch is in the "BYPASS" position.**

Comment:

S-1A, step 5.3.3
Performance Step: 17 Verify the remaining Motor Generator set VOLTAGE ADJUST in full counter-clockwise position.

Standard: Adjusts 1A MG set VOLTAGE ADJUST to the full counter-clockwise position.

CUE: 1A MG set VOLTAGE ADJUST is in full counter-clockwise position.

Comment:

√ **Performance Step: 18** **S-1A, step 5.3.4.1**
Rotate the MOTOR NO. 1A CIRCUIT BREAKER CONTROL switch to CLOSE.

Standard: Identifies switch, and simulate rotating to CLOSE.

CUE: Component is in desired position.

Comment:

CUE: Motor is at full speed.

√ **Performance Step: 19** **S-1A, step 5.3.4.2**
WHEN motor is at full speed, THEN depress AND hold the FIELD FLASH pushbutton.

Standard: Identifies FIELD FLASH pushbutton, and generator voltage indication (OUTPUT AC VOLTAGE METER).

Simulate depressing and holding FIELD FLASH pushbutton.

CUE: Component is in desired condition.

Comment:

√ **Performance Step: 20** **S-1A, step 5.3.4.3**
WHEN Generator voltage has risen to > 234 volts AND is NOT increasing, THEN release the FIELD FLASH pushbutton.

Standard: Simulates FIELD FLASH pushbutton released.

CUE: Generator voltage has risen to 250 volts AND is steady.

CUE: Component is in desired condition.

Comment:

- ✓ **Performance Step: 21** **S-1A, step 5.3.4.4**
Rotate the VOLTAGE ADJUST potentiometer clockwise UNTIL voltage is 260.
- Standard:** Rotates the VOLTAGE ADJUST potentiometer clockwise UNTIL voltage is 260.
- CUE:** **Generator voltage has risen slowly to 260 volts.**
- Comment:**
- Performance Step: 22** **S-1A, step 5.3.5**
Verify FIELD CURRENT is >1.2 amps AND <4.8 amps as read on the FIELD CURRENT METER.
- Standard:** Identifies FIELD CURRENT METER.
- CUE:** **FIELD CURRENT is as read.**
- Comment:**
- Performance Step: 23** **S-1A, step 5.3.6**
Verify FIELD CURRENT alarm has cleared. (Alarm LED is located on the FIELD CURRENT METER)
- Standard:** Identifies alarm LED on the FIELD CURRENT METER is out.
- CUE:** **Alarm LED on the FIELD CURRENT METER is out.**
- Comment:**
- Performance Step: 24** **S-1A, step 5.3.7**
Place ALARM BYPASS switch in the "ACTIVE" position.
- Standard:** Identifies ALARM BYPASS switch and simulates placing in "ACTIVE".
- CUE:** **Component is in desired position.**
- Comment:**

S-1A, step 5.3.8

Performance Step: 25 Verify MCB annunciator C-21 (Rod Control MG Set Trouble) is extinguished.

Standard: Contacts control room on status of C-21.

CUE: C-21, (Rod Control MG Set Trouble) is extinguished.

Comment:

S-1A, step 5.3.9

√ **Performance Step: 26** Rotate the synchronize switch to ON (on the MG set being started) AND allow a few seconds for the synchronizer to warm up.

Standard: Rotates the 1A synchronize switch to ON (AND allows a few seconds for the synchronizer to warm up.

CUE: Component is in desired position.

Comment:

S-1A, step 5.3.10.1

√ **Performance Step: 27** Observe the Synchroscope (Syn/CRDMGAB) for indication when the two generators are in sync and trip the on-coming M/G Set Motor Breaker by rotating the circuit breaker control handle to the **TRIP POSITION** just after the Synchronizing Point (approximately 3 minutes after 12).

Standard: Observes the Synchroscope for indication when the two generators are in sync and trips the 1A M/G Set Motor Breaker by rotating the circuit breaker control handle to the **TRIP POSITION** just after the Synchronizing Point (approximately 3 minutes after 12).

CUE: Component is in desired position.

CUE: Synchroscope indicates the two generators are in parallel.

Comment:

S-1A, step 5.3.10.2 (End Alternate Path)

Performance Step: 28 Should the Generator fail to parallel within 30 seconds, THEN return the synchronize switch to OFF, AND proceed with steps 5.3.1 through 5.3.10 again. N/A if generator paralleled.

Standard: Synchronize switch in on.
Step N/Ad.

CUE: Synchroscope indicates the two generators are in parallel.

Comment:

S-1A, step 5.3.10.3

Performance Step: 29 Turn the Synchronize switch to the OFF position.

Standard: Synchronize switch in the OFF position.

CUE: Component is in desired position.

Comment:

S-1A, step 5.3.11

Performance Step: 30 Verify ROD DRIVE M-G SET 1A (MCB center section) red status light is lit.

Standard: Calls Control Room to verify ROD DRIVE M-G SET 1A red status light is lit.

CUE: From Control Room, ROD DRIVE M-G SET 1A red status light is lit.

Comment:

S-1A, step 5.3.12

Performance Step: 31 Verify ROD DRIVE M-G SET 1B (MCB center section) red status light is lit.

Standard: Calls Control Room to verify ROD DRIVE M-G SET 1B red status light is lit.

CUE: From Control Room, ROD DRIVE M-G SET 1B red status light is lit.

Comment:

- √ **Performance Step: 32** **S-1A, step 5.3.13**
Adjust MG1A and MG1B voltages to minimize MG CIRCULATING CURRENT (indicated on CIRCULATING CURRENT METER) with MG OUTPUT AC VOLTAGE close to 260 volts (between 250 and 270 volts) and FIELD CURRENT >1.2 amps and <4.8 amps on both MGs.
- Standard:** MG OUTPUT AC VOLTAGE close to 260 volts (between 250 and 270 volts) and FIELD CURRENT >1.2 amps and <4.8 amps on both MGs.
Records Circulating Current.
- CUE:** CIRCULATING CURRENT is as read.
- Comment:**
- Performance Step: 33** **S-1A, step 5.3.14**
Verify MCB annunciator C-21 (Rod Control MG Set Trouble) is extinguished.
- Standard:** Contacts control room on status of C-21.
- CUE:** C-21, (Rod Control MG Set Trouble) is extinguished.
- Comment:**
- Terminating Cue:** Evaluation on this JPM is complete.

STOP TIME: _____

TIME CRITICAL STOP TIME: _____

Job Performance Measure No.: 2008 NRC JPM I

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

Initial Conditions:

- You are an extra RO.
- Preparations for startup of Rod Control System are under way.
- The "1B" MG set is running.

Initiating Cue:

The Shift Manager directs you to startup and parallel the 1A Rod Drive MG Set per S-1A section 5.3.
Simulate all activities - DO NOT MANIPULATE ANY EQUIPMENT.

Task Standard:	Line up to fill CST in accordance with ER-AFW.1 section 4.3.1 and all critical tasks evaluated as satisfactory.
Required Materials:	Proper Noise Protection, Hard Hat, Safety Glasses, Safety Shoes, Gloves. (2) Spanner wrenches and Fire Hose.
General References:	ER-AFW.1,; ALTERNATE WATER SUPPLY TO THE AFW PUMPS, Rev. 03001
Handouts:	ER-AFW.1,; ALTERNATE WATER SUPPLY TO THE AFW PUMPS, Rev. 03001
Time Critical Task:	Yes
Validation Time:	11 minutes
Alternate Path:	NO
Instructor Notes:	Ensure Proper Noise Protection, Hard Hat, Safety Glasses, Safety Shoes, Gloves are worn as required. Ensure a marked up copy of ER-AFW.1, ALTERNATE WATER SUPPLY TO THE AFW PUMPS, Rev.03001 is ready to give to the operator during the Initiating Cue.

READ TO THE EXAMINEE

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

- Initial Conditions:
- You are an extra RO.
 - The Plant has experienced a loss of Offsite Power.
 - CST inventory is depleted with level < 5 ft.
 - The AFW pumps are providing S/G inventory.

Initiating Cue: The Shift Manager directs you to align the Fire Water System to fill the CSTs using the Condensate Transfer System in accordance with ER-AFW.1 section 4.3.1.
Simulate all activities - DO NOT MANIPULATE ANY EQUIPMENT.
This is a time critical JPM.

CUE: Hand the Operator a marked up copy of ER-AFW.1, Rev. 03001.

START TIME: _____

√ = CRITICAL STEP

ER-AFW.1, step 4.3.1.1**Performance Step: 1** Place Howell Level Controller LC-107 in manual at 50%.**Standard:** Simulates requesting Control Room place Hotwell Level Controller in manual and 50% output.**CUE:** Acknowledge request and inform the examinee that the Hotwell Level controller is in manual at 50% output.**Comment:****ER-AFW.1, step 4.3.1.2**

√ **Performance Step: 2** Close or verify closed the following valves:

- CNDST XFER PUMP DISCH ISOL TO HOSE TAPS, valve 4049C
- CNDST XFER PUMP DISCH SAMPLE, valve 4049A
- CNDST XFER PUMP DISCH TO MIX BED POLISHER DI'S, valve 4050
- CNDST XFER PUMP DISCH TO CST, valve 9509C
- CNDST XFER PUMP SUCTION ISOL FROM HOTWELL, valve 4046 (in east condenser pit)
- CNDST XFER PUMP SUCTION FROM A&B CST, valve 4047
- OUTSIDE CST FILL ISOL, valve 9509D

Standard: Finds, identifies and closes or verifies closed the following valves:

1. CNDST XFER PUMP DISCH ISOL TO HOSE TAPS, valve 4049C
2. CNDST XFER PUMP DISCH SAMPLE, valve 4049A
3. CNDST XFER PUMP DISCH TO MIX BED POLISHER DI'S, valve 4050
4. CNDST XFER PUMP DISCH TO CST, valve 9509C
5. CNDST XFER PUMP SUCTION ISOL FROM HOTWELL, valve 4046 (in east condenser pit)
6. CNDST XFER PUMP SUCTION FROM A&B CST, valve 4047
7. OUTSIDE CST FILL ISOL, valve 9509D

CUE: Component is in desired position. (for each valve operated)**Comment:**

ER-AFW.1, step 4.3.1.3

Performance Step: 3 Obtain two spanner wrenches (on handrail by Cond Transfer Pump).

Standard: Locates spanner wrenches.

CUE: You have two spanner wrenches.

Comment:

ER-AFW.1, step 4.3.1.4

Performance Step: 4 Isolate/remove and cap all temporary hoses from the connections at CNDST XFER PUMP DISCH ISOL TO HOSE TAPS, valve 4049C.

Standard: Finds and simulates removing and capping hoses connected at valve 4049C.

CUE: All hoses are disconnected and capped.

Comment:

ER-AFW.1, step 4.3.1.5

√ **Performance Step: 5** Run the hose from fire water hose reel #2 (located by Battery Room door) AND connect at CNDST XFER PUMP DISCH ISOL TO HOSE TAPS, valve 4049C.

Standard: Simulates running hose from hose reel #2 to valve 4049C.

CUE: The hose is connected between hose reel #2 and valve 4049C.

Comment:

ER-AFW.1, step 4.3.1.6 NOTE

Performance Step: 6 **NOTE: The Diesel Fire Pump should auto start while performing the following.**

Standard: Placekeeps and reads note. May inform control room.

CUE: Acknowledge report, if made.

Comment:

ER-AFW.1, step 4.3.1.6√ **Performance Step: 7**

Slowly open the following valves:

- CNDST XFER PUMP RECIRC, valve 4048
- CNDST XFER PUMP DISCH ISOL TO HOSE TAPS, valve 4049C
- TURBINE BLDG HOSE REEL #2 ISOL, valve 5178

Standard:

Finds, identifies and slowly opens the following valves:

1. CNDST XFER PUMP RECIRC, valve 4048
2. CNDST XFER PUMP DISCH ISOL TO HOSE TAPS, valve 4049C
3. TURBINE BLDG HOSE REEL #2 ISOL, valve 5178

CUE: Component is in desired position. (for each valve operated)**Comment:****Record TIME CRITICAL STOP TIME, must be less than 12 minutes from start time.****ER-AFW.1, step 4.3.1.7****Performance Step: 8**

Fill CSTs as required.

Standard:

Monitors filling CST.

CUE: No further action required.**Comment:****Terminating Cue:****Evaluation on this JPM is complete.****STOP TIME:** _____**TIME CRITICAL STOP TIME:** _____

Job Performance Measure No.: 2008 NRC JPM J

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

Initial Conditions:

- You are an extra RO.
- The Plant has experienced a loss of Offsite Power.
- CST inventory is depleted with level < 5 ft.
- The AFW pumps are providing S/G inventory.

Initiating Cue:

The Shift Manager directs you to align the Fire Water System to fill the CSTs using the Condensate Transfer System in accordance with ER-AFW.1 section 4.3.1.
Simulate all activities - DO NOT MANIPULATE ANY EQUIPMENT.
This is a time critical JPM.

Worksheet

Task Standard:	Perform a manual trip of a relay for undervoltage protection on Bus 14 and all critical tasks evaluated as satisfactory.
Required Materials:	Proper Noise Protection, Hard Hat, Safety Glasses, Safety Shoes, Gloves. Undervoltage cabinet key #25 (the use of this key will be simulated).
General References:	ER-UV.1, TRIP OF FAILED AC EMERGENCY UV RELAY, Rev. 5
Handouts:	ER-UV.1, TRIP OF FAILED AC EMERGENCY UV RELAY, Rev. 5
Time Critical Task:	NO
Validation Time:	10 minutes
Alternate Path:	NO
Instructor Notes:	Ensure Proper Noise Protection, Hard Hat, Safety Glasses, Safety Shoes, Gloves are worn as required. Ensure a marked up copy of ER-UV.1, TRIP OF FAILED AC EMERGENCY UV RELAY, Rev. 5 is ready to give to the operator during the Initiating Cue and undervoltage cabinet key #25.

READ TO THE EXAMINEE

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

- Initial Conditions:
- You are an extra RO.
 - The control room has received L-14, "Bus 14 Undervoltage Safeguards" annunciator.
 - Procedure ER-UV.1, TRIP OF FAILED AC EMERGENCY UV RELAY is being performed and the control room staff is at step 4.2.2.

Initiating Cue: The CRS directs you to perform a manual trip of Loss of Voltage 27 D/B relay for Bus 14 per Attachment BUS 14, PART B of ER-UV.1. Simulate all activities - **DO NOT MANIPULATE ANY EQUIPMENT**. Bus 14, Attachment BUS 14, PART A of ER-UV.1 has **NOT** been performed.

CUE: Hand the Operator a marked up copy of ER-UV.1, TRIP OF FAILED AC EMERGENCY UV RELAY, Rev. 5 and undervoltage cabinet key #25.

START TIME: _____

√ = CRITICAL STEP

ER-UV.1, Att. Bus 14, part B, step B.1
Performance Step: 1 Verify Part A has NOT been performed.

Standard: Verifies with Part A has not been performed, given in initiating cue, may call control room or may check Part A for Bus 14.

CUE: If requested, report as CRS Part A for Bus 14, has not been performed.
If local indications are checked: Component is in as found position.

Comment:

ER-UV.1, Att. Bus 14, part B, step B.2
√ **Performance Step: 2** Place the TEST ENABLE key switch (S20) on the Bus 14 Auxiliary Relay Rack (bottom left hand corner) to the TEST position. (Key cannot be removed when in TEST position.)

Standard: Locates key switch and simulates inserting key and rotating key to TEST position.

CUE: Component is in desired position.

Comment:

PERFORMANCE INFORMATION

ER-UV.1, Att. Bus 14, part B, step B.3√ **Performance Step: 3**

Place each individual Auxiliary Relay toggle switch to the TRIP position and verify that each Yellow UV light energizes or remains energized. (Located on the Auxiliary Relay Rack)

- Relay BX1/14 Toggle switch to TRIP Yellow UV Light LIT
MCB Annunciator L-14 ENERGIZED
- Relay BX2/14 Toggle switch to TRIP Yellow UV Light LIT
- Relay BX3/14 Toggle switch to TRIP Yellow UV Light LIT
- Relay BX4/14 Toggle switch to TRIP Yellow UV Light LIT
- Relay BX5/14 Toggle switch to TRIP Yellow UV Light LIT
- Relay BX6/14 Toggle switch to TRIP Yellow UV Light LIT

Standard:

Locates each toggle switch listed and simulates toggling switch to TRIP. Verifies UV light lit for each toggle switch operated.

- Relay BX1/14 Toggle switch in TRIP Yellow UV Light LIT
MCB Annunciator L-14 ENERGIZED
- Relay BX2/14 Toggle switch in TRIP Yellow UV Light LIT
- Relay BX3/14 Toggle switch in TRIP Yellow UV Light LIT
- Relay BX4/14 Toggle switch in TRIP Yellow UV Light LIT
- Relay BX5/14 Toggle switch in TRIP Yellow UV Light LIT
- Relay BX6/14 Toggle switch in TRIP Yellow UV Light LIT

CUE: Component is in desired position. / Light is lit. / MCB Ann. Is energized.

Comment:

ER-UV.1, Att. Bus 14, part B, step B.4**Performance Step: 4**

Return to step 4.2.3.

Standard:

Contacts the control room to continue on at step 4.2.3.

CUE: Acknowledge report.

Comment:

Terminating Cue:

Evaluation on this JPM is complete.

STOP TIME: _____

TIME CRITICAL STOP TIME: _____

Job Performance Measure No.: 2008 NRC JPM K

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

Initial Conditions:

- You are an extra RO.
- The control room has received L-14, "Bus 14 Undervoltage Safeguards" annunciator.
- Procedure ER-UV.1, TRIP OF FAILED AC EMERGENCY UV RELAY is being performed and the control room staff is at step 4.2.2.

Initiating Cue:

The CRS directs you to perform a manual trip of Loss of Voltage 27 D/B relay for Bus 14 per Attachment BUS 14, PART B of ER-UV.1. Simulate all activities - DO NOT MANIPULATE ANY EQUIPMENT. Bus 14, Attachment BUS 14, PART A of ER-UV.1 has **NOT** been performed.

Scenario Description:

After the crew takes the watch, PT-486, Turbine First Stage Pressure fails low. This results in Steam Dumps being armed, but not open. The crew should determine the instrument is failed, verify AR-G-15, and implement ER-INST.1, Reactor Protection Bistable Defeat after Instrumentation Failure, to place the appropriate RPS bistables in the trip condition.

After the crew completes actions for PT-486, Loop B Thot TE-404A fails high. This results in the steam dumps opening. The crew should take action to stabilize the plant, implement ER-INST.1, and close the steam dumps. The ATC should place Rods and Charging pump A in manual. The SRO should refer to and enter TS 3.3.1 Condition D and Action D.1 and 3.3.2 Condition F and Action F.1.

After the crew stabilizes the plant but before the failed channel is defeated, a 10 GPM primary-to-secondary leak develops in Steam Generator B. The crew should implement AP-SG.1, Steam Generator Tube Leakage. The SRO should refer to and enter TS 3.4.13 Condition B and Actions B.1 and B.2.

Due to the steam generator tube leakage, the crew should initiate a plant shutdown with a turbine ramp rate of 3%/min per AP-SG.1.

During the plant shutdown, RCP 1B Vibration rises. The crew should implement AR-AA-18 and/or AR-AA-26. Vibrations rise to the point of requiring a manual reactor trip to allow securing RCP 1B.

After the crew trips the reactor and secures RCP 1B, a steam leak downstream of the MSIVs occurs, which causes the tube leakage to rise to 400 gpm. MSIV B fails to close automatically or manually from the Control Room requiring local closure. SI Pump C fails to auto start and RHR Pump A trips on start after an SI. The crew should manually start SI Pump C. The crew should implement E-0, transition to E-2, and then to E-3. The crew should send an AO to locally close the failed MSIV and secure feeding S/G B when level requirements are met (> 7% NR). The local closure of the MSIV will be successful after entry into E-3. Once in E-3 the crew may need to feed S/G B to > 7% NR and then re-isolate feed flow. The scenario may be ended after the crew completes the initial cool down of the RCS in E-3.

CRITICAL TASKS

CT E-0--I

Task: Establish flow from at least one train of high pressure SI pumps (two pumps running with flow to opposite trains) before transition out of E-0.

Cues: A SI pump OOS

B SI pump running

C SI pump not running

Indication: C SI pump manually started from MCB

Feedback: B and C SI pump indicate running from status lights and SI flow indicated

CT E-3--A

Task: Isolate feedwater flow into and steam flow from the ruptured steam generator before a transition to ECA-3.1 occurs.

Cues: Indication of SGTR

- Increasing SG water level
- Steam generator radiation

and

- SI actuated

and

- Rx trip actuated

Indication: Manipulations of controls to isolate the ruptured SG

- MSIV closed
- Local isolation by attachment Ruptured SG initiated
- ARV setpoint adjusted to 1050 in Auto
- SG blowdown and sample valve closed (verify)
- TDAFW steam supply valve from ruptured SG closed
- MDAFW and TDAFW discharge valve to ruptured SG closed
- Main feed reg and bypass valve to ruptured SG closed, main feedwater pumps tripped (verify)

Feedback: Ruptured SG pressure stable or increasing. No indication of feed flow to ruptured SG.

Facility: R. E. Ginna Scenario No.: 1 Op-Test No.: 1

Scenario Timeline:

Event Number	Time (Min)	Key	Event	Delay HH:MM:SS	Ramp HH:MM:SS	Final
N/A	LOAD	SGN01B	N/A	00:00:00	00:00:00	0
S/G LEVEL CHANNEL FAILURE: LT-461(I)						
1	2	TUR16B	1	00:00:00	00:00:00	0
FIRST STAGE PRESSURE TRANSMITTER FAILURE : PT-486						
2	*** (~ 11)	RCS11F	3	00:00:00	00:00:00	980
RTD FAILURE : LP B HOT TE-404A (TT-404)IV						
3	*** (~18)	SGN04B	5	00:00:00	00:01:00	10
S/G B TUBE LEAK AT TUBE SHEET						
4	(~22)	N/A	N/A	00:00:00	00:00:00	N/A
PLANT POWER REDUCTION						
5	*** (~28)	RCS15B	7	00:00:00	00:03:00	25
RCP HIGH VIBRATION : RCP-1B SHAFT						
5	***	RCS15D	7	00:00:00	00:03:00	10
RCP HIGH VIBRATION : RCP-1B SEISMIC						
6	*** (~32)	STM03	9	00:00:00	00:00:00	200,000
STEAMLINE BREAK OUTSIDE CNMT DOWNSTREAM OF MSIV'S						
6	*** (~32)	SGN04B	N/A	00:00:00	00:03:00	400
S/G B TUBE LEAK AT TUBE SHEET						
6	LOAD	STM05B	N/A	00:00:00	00:00:00	100
MAIN STEAM ISOLATION VALVE FAILURE : VLV 3516						
6	LOAD	RPS07C	N/A	00:00:00	00:00:00	1
AUTO FAIL: C SI PUMP ON BUS 14						
6	LOAD	RPS07D	N/A	00:00:00	00:00:00	1
AUTO FAIL: C SI PUMP ON BUS 16						
6	LOAD	RHR01A	N/A	00:00:00	00:00:00	1
RHR PUMP 1A TRIP						

*** Events initiated on cue from NRC Lead Examiner

Estimated Time: 65 Minutes

Op-Test No.: 1 Scenario No.: 1 Event No.: 1

Event Description: (T=2)

PT-486, Turbine First Stage Pressure Fails Low

Indications:

- PI-486 on vertical section of Board 1 failed Lo
- G-15, Steam Dump Armed lit
- AMSAC Auto Block Light after 205 seconds

Time	Position	Applicant's Actions or Behavior
	BOP	Recognizes failure of PT-486 and reports to SRO.
	BOP/SRO	Refers to Annunciator Response Procedure AR-G-15 and determines that ER-INST.1, Reactor Protection Bistable Defeat After Instrumentation Failure should be entered.
	SRO	Enters ER-INST.1 and determines Section 4.12 is the correct section to implement.
	SRO	Determines that the Steam Dump system should not be reset.
	SRO	Refers to Attachment FIRST STAGE PRESSURE PI-486, BLUE, to defeat channel AND to restore AUTOMATIC control.
	BOP	Places the following bistable proving switch to DEFEAT (UP) AND verifies the proving light status is correct in the (BLUE) B-1 PROTECTION CHANNEL 3 rack: <ul style="list-style-type: none"> • 486 CHANNEL 3 TURBINE PWR TRIP Light ON
	BOP/ATC	Verifies the AMSAC TRIPPED status light (MCB) is extinguished.
	BOP/SRO	Requests an AO verify the TL 400 bistable indicating light (FOX 3-RELAY ROOM) is extinguished.
	BOP/SRO	Sends an AO to verify AMSAC feedwater flow bistables are reset: (FOX 3 RELAY ROOM) <ul style="list-style-type: none"> • TL/466 TRIP STATUS LIGHT EXTINGUISHED • TL/467 TRIP STATUS LIGHT EXTINGUISHED • TL/476 TRIP STATUS LIGHT EXTINGUISHED • TL/477 TRIP STATUS LIGHT EXTINGUISHED
	BOP/SRO	Requests AO place switch TPS/486 (FOX 3-RELAY ROOM) to the TRIP position AND verify TL/486 TRIP STATUS light is lit.
	BOP/ATC	Verifies the AMSAC AUTO BLOCK status light (MCB) is extinguished.
	BOP	Deletes the computer point from the PPCS by performing the following on the "Sub/Delete/Restore" display: <ul style="list-style-type: none"> • Select Point ID P0486 • Turn "OFF" scan processing • Select "Change"
		End of Event

Op-Test No.: 1 Scenario No.: 1 Event No.: 2

Event Description: (~ T=11)

Loop B T_{hot} TE-404A fails high

Indications:

- Steam Dumps indicate open
- F-14, CHARGING PUMP SPEED LIT
- F-15, RCS TAVG DEV 4°F LIT
- F-16, TAVG-TREF DEVIATION +/- 5 °F LIT
- F-23, RCS OTΔT CHANNEL ALERT LIT
- F-24, RCS AVG ΔT DEVIATION LIT
- F-32, RCS OPΔT CHANNEL ALERT LIT
- RCS Tavg lowering TI 404 higher than TI-401 through TI-403
- PR NIs, NI-41B through NI-44B rising

Time	Position	Applicant's Actions or Behavior
NOTE TO LEAD EXAMINER: Ensure that Event 3 is initiated prior to defeating the failed channel.		
	BOP	Recognizes failure of TE-404A and reports to SRO.
	SRO	Determines that instrument failure is causing Steam Dump operation and orders steam dump closure.
	BOP	Take Steam Dump Mode Selector Switch to Manual, places Steam Dump Controller in MANUAL, lowers output to 0, and verifies Steam Dump valves indicate closed. (may enter ER-INST.1 first)
	SRO	Enters ER-INST.1, Reactor Protection Bistable Defeat after Instrumentation Failure, and goes to step for RCS Tavg or ΔT failures.
	ATC	Drives rods in manually until operable Tavg channels are at program.
	BOP	Places steam dump mode selector to MANUAL.
	ATC	Places charging in MANUAL to stabilize PRZR level.
	SRO	Refers to ITS LCOs 3.1.5 and 3.1.6 to determine actual insertion limits.
	SRO	Refers to TAVG 404/ DELTA T 408 YELLOW CHANNEL attachment for defeat of the associated control functions.
	ATC	Verifies Rod Control selector switch in MANUAL.
	ATC	Verifies Charging Pump speed controllers in MANUAL.
	SRO	Check the following ITS Sections for LCOs: <ul style="list-style-type: none"> • Section 3.3.1, Table 3.3.1-1, Functions 5 and 6 <ul style="list-style-type: none"> ○ Enters Condition D and Action D.1 • Section 3.3.2, Table 3.3.2-1, Function 4d <ul style="list-style-type: none"> ○ Enters Condition F and Action F.1
		End of Event

Op-Test No.: 1 Scenario No.: 1 Event No.: 3

Event Description: (~ T=18)

S/G B Tube Leak of ≈ 10 gpm

Indications:

- PRZR Level slowly lowering
- PRZR Pressure slowly lowering
- PPCS, computer point SGTL Indicated
- R-15 rising or in alarm

Time	Position	Applicant's Actions or Behavior
	ATC/BOP	Recognizes indications and alarms and reports to SRO.
	SRO/ATC	Refers to AR-PPCS-1 (SGTL Indicated) <ul style="list-style-type: none"> • Trends PPCS point R-47G. • Notifies RP/Chemistry to IMMEDIATELY obtain and analyze an air ejector grab sample per CH-SAMP-SG-LEAKRATE. • Determines the estimated leak rate using PPCS point R47G or the R-47 Local Reading and the Conversion Table (Curve Book #06-004). • IF any condition below is met, THEN go to AP-SG.1, STEAM GENERATOR TUBE LEAK: <ul style="list-style-type: none"> ○ R47G (PPCS) greater than 5 gpd OR ○ R-47 greater than or equal to 5 gpd (per conversion table)
	SRO	Enters AP-SG.1, Steam Generator Tube Leakage
	ATC	Monitors PRZR Level and starts additional charging pumps, or raises charging pump speed, as necessary to stabilize PRZR level.
	Crew	Monitors S/G tube leak rate and estimates S/G tube leak rate: <ul style="list-style-type: none"> • Charging/Letdown mismatch • Δ VCT Level/Time • PPCS Point R47G • R-47 drawer indication (using conversion table, Curve Book #06-004)
	ATC/BOP	Determines total RCS to secondary leak rate is not less than 1 gallon per minute (1440 GPD)
	SRO	Moves forward in procedure to step 8 and orders a plant shutdown.
	SRO	Notifies Higher Supervision.
	Crew	Performs parts A AND B of ATT-16.1, ATTACHMENT SGTL.
	SRO	Dispatches an AO to perform T-35H, Nuclear House Heating Steam To Boiler Steam Supply Change Over

Op-Test No.: 1 Scenario No.: 1 Event No.: 3

Event Description: (~ T=18)

S/G B Tube Leak of ≈ 10 gpm

Indications:

- PRZR Level slowly lowering
- PRZR Pressure slowly lowering
- PPCS, computer point SGTL Indicated
- R-15 rising or in alarm

Time	Position	Applicant's Actions or Behavior
	SRO	Requests RP obtain the following samples: <ul style="list-style-type: none"> • RCS boron • RCS activity (ITS 3.4.16)
	ATC	Monitors PRZR Pressure - TRENDING TO 2235 PSIG IN AUTO or Control PRZR pressure by one of the following: <ul style="list-style-type: none"> • 431K in MANUAL • Manual control of PRZR heaters and sprays
	SRO	IF PRZR pressure can NOT be controlled manually, THEN refers to AP-PRZR.1, Abnormal Pressurizer Pressure.
	BOP	Monitors MFW Regulating Valves - RESTORING S/G LEVEL TO 52% IN AUTO or perform the following: <ul style="list-style-type: none"> • Place affected S/G(s) MFW regulating valve in MANUAL • Restore S/G level to 52%
	SRO	IF S/G level can NOT be controlled manually, THEN refer to AP-FW.1, Abnormal MFW Pump Flow Or NPSH.
		End of Event

Op-Test No.: 1 Scenario No.: 1 Event No.: 4

Event Description: (~ T=22)

Plant Shutdown

Time	Position	Applicant's Actions or Behavior
	SRO	Provides ATC and BOP with instructions for down power.
	ATC	Verifies Rods in AUTO or adjusts rods in MANUAL to maintain Tavg to Tref.
	BOP	Reduces turbine load in Auto as follows: <ul style="list-style-type: none"> Places Turbine EH Control in OPER PAN., IMP PRESS IN Selects rate of 3%/min on thumbwheel. Reduces the setter to zero. Depresses the GO button.
	ATC	Initiates boration (~2-4 gal/% load reduction) at flowrate directed by SRO.
	ATC	Places PRZR backup heaters switch to ON.
	BOP	Transfers 4160V Auxiliary loads from #11 Transformer. <ul style="list-style-type: none"> Places Bus 12A - BUS 11A TIE SYNCHROSCOPE to ON. Closes BUS 12A - BUS 11A TIE 4160V. Places BUS 12A - BUS 11A TIE SYNCHROSCOPE to OFF. Opens BUS 11A NORMAL FEED 4160V. Places BUS 11B - BUS 12B TIE SYNCHROSCOPE to ON. Closes BUS 11B - BUS 12B TIE 4160V. Places BUS 11B - BUS 12B TIE SYNCHROSCOPE to OFF. Opens BUS 11B NORMAL FEED 4160V. Requests an AO reset alarms L-20 AND L-28, locally in the Relay Room Addition.
	ATC	Monitors Tavg 545-579°F and verifies proper operation of Rods in Auto or controls rods manually.
	ATC	Adjusts Boric Acid addition rate as necessary to: <ul style="list-style-type: none"> Maintain control rods above insertion limits Match Tavg and Tref Compensate for Xenon
		End of Event

Op-Test No.: 1 Scenario No.: 1 Event No.: 5

Event Description: (~ T=28)

RCP B High Vibration

Indications

- AA-18, Reactor Coolant Pump Vibration Alert
- AA-26, Reactor Coolant Pump Vibration Danger
- RCP 1B Shaft and Seismic Vibration Meters rising on RCP Vibration Panel

Time	Position	Applicant's Actions or Behavior
	ATC	Recognizes alarms and reports to SRO.
	SRO	Enters AR-AA-18 and/or AR-AA-26 based on magnitude of vibration at time of entry.
	ATC	Performs the following at the RCP VIBRATION panel: <ul style="list-style-type: none"> • Determines which pump is causing the alarm • Verifies the reading
	ATC	Checks the CONTAINMENT SOUND MONITOR for abnormal noise from the affected pump.
	ATC/BOP	Checks associated pump's instrumentation for abnormal indications.
	SRO	Notifies the Maintenance Manager, Component Engineer and RCS System Engineer, if the vibration level continues to rise AND is evident on BOTH Pump Shaft and Motor Casing.
	SRO/ATC	Performs the following if pump shaft vibration level rises to 20 mils or greater OR motor casing vibration rises to 5 mils or greater: <ul style="list-style-type: none"> • Trips the reactor • WHEN all E-0 Immediate Actions done, THEN trip the affected RCP(s) • Go to E-0, REACTOR TRIP OR SAFETY INJECTION.
		End of Event

Op-Test No.: 1 Scenario No.: 1 Event No.: 6

Event Description:

Main Steam Line Break Downstream of MSIVs which causes S/G tube leak to rise to a 400 GPM tube rupture in S/G B. MSIV B fails to close automatically or manually from the MCB, SI Pump C fails to Auto Start on SI Signal, RHR Pump A trips on auto start.

Indications:

- PRZR Level lowering
- PRZR Pressure lowering
- RCS Tcold, Thot, Tavg lowering
- S/G pressures lowering
- Steam flow noise
- R-32 rising or in alarm
- R-15 rising

Time	Position	Applicant's Actions or Behavior
	ATC/BOP	Recognizes indications and alarms and reports to SRO.
	ATC	Verifies Reactor Tripped <ul style="list-style-type: none"> • At least one set of reactor trip breakers open • Neutron flux lowering • MRPI indicates all rods on bottom
	BOP	Verifies all turbine stop valves closed
	BOP	Verifies Buses 14, 16, 17, and 18 \geq 440V
	ATC	Checks if SI has been actuated by verifying SI annunciators and SI sequencing started both trains.
	SRO	Enters E-0, Reactor Trip or Safety Injection and re-verifies Immediate Actions before continuing with supplemental actions.
	ATC	Verifies Containment Spray not required by verifying Containment pressure < 28 psig and annunciator A-27, Containment Spray is not lit.
	BOP	Performs ATT-27.0, Attachment Automatic Action Verification <ul style="list-style-type: none"> • Manually starts SI Pumps C (Critical Task CT E-0--I) • Reports RHR Pump A tripped
	ATC	Verifies MDAFW pump B running with flow to B S/G and running at < 230 gpm. Verifies TDAFW Pump running by verifying MOV-3505A and MOV-3504A open.
	ATC	Verifies AFW flow to both S/Gs or manually aligns TDAFW Pump to S/G A.

Op-Test No.: 1 Scenario No.: 1 Event No.: 6

Event Description:

Main Steam Line Break Downstream of MSIVs which causes S/G tube leak to rise to a 400 GPM tube rupture in S/G B. MSIV B fails to close automatically or manually from the MCB, SI Pump C fails to Auto Start on SI Signal, RHR Pump A trips on auto start.

Indications:

- PRZR Level lowering
- PRZR Pressure lowering
- RCS Tcold, Thot, Tavg lowering
- S/G pressures lowering
- Steam flow noise
- R-32 rising or in alarm
- R-15 rising

Time	Position	Applicant's Actions or Behavior
	ATC	Monitors Heat Sink <ul style="list-style-type: none"> • Verifies S/G NR levels > 7% or verifies total AFW 200 gpm • Isolates AFW flow to any S/G >50% NR • Controls S/G levels 7-50% NR
	ATC	Determines TDAFW Pump should not be stopped.
	ATC	Verifies annunciators A-7(A-15), CCW Pump 1A(1B) Return HI Temp or Low Flow are not lit.
	ATC	Monitors RCS Tavg <ul style="list-style-type: none"> • Stops dumping steam (Steam Dumps or ARV) • Ensures Reheater steam supply valves closed • Limits feed flow to maintain one S/G > 7% NR • Closes MSIVs (Notes MSIV B failed and reports to SRO may have been done during ATT. 27-0)
	ATC	Verifies both PORVs closed, Auxiliary Spray valve AOV-296 closed, and when RCS pressure < 2260 psig verifies both Spray Valves are closed
	ATC	Verifies RCP Trip Criteria <ul style="list-style-type: none"> • Verifies an RCP running • Verifies at least two SI Pumps running • Verifies RCS pressure- maximum S/G pressure >210 psid or secures RCP 1A
	ATC	Verifies S/G pressures and determines S/G 1B is not intact.
	SRO	Transitions to E-2, Faulted Steam Generator Isolation
	BOP	Attempts to manually close MSIV B.
	SRO	Dispatches AO with locked valve key to locally close faulted S/G B MSIV

Op-Test No.: 1 Scenario No.: 1 Event No.: 6

Event Description:

Main Steam Line Break Downstream of MSIVs which causes S/G tube leak to rise to a 400 GPM tube rupture in S/G B. MSIV B fails to close automatically or manually from the MCB, SI Pump C fails to Auto Start on SI Signal, RHR Pump A trips on auto start.

Indications:

- PRZR Level lowering
- PRZR Pressure lowering
- RCS Tcold, Thot, Tavg lowering
- S/G pressures lowering
- Steam flow noise
- R-32 rising or in alarm
- R-15 rising

Time	Position	Applicant's Actions or Behavior
	SRO/BOP	Checks If Any S/G Secondary Side Is Intact: <ul style="list-style-type: none"> • Checks pressure in S/G A - STABLE OR RISING OR <ul style="list-style-type: none"> • Checks pressure in S/G B - STABLE OR RISING
	CREW	Checks Faulted S/G Status: <ul style="list-style-type: none"> • Faulted S/G pressure - LOWERING IN AN UNCONTROLLED MANNER OR <ul style="list-style-type: none"> • Faulted S/G - COMPLETELY DEPRESSURIZED IF both S/G pressures stable or rising, THEN searches for initiating break and goes to Step 6. <ul style="list-style-type: none"> • Main steam lines • Main feed lines • S/G blowdown system • Sample system

Op-Test No.: 1 Scenario No.: 1 Event No.: 6

Event Description:

Main Steam Line Break Downstream of MSIVs which causes S/G tube leak to rise to a 400 GPM tube rupture in S/G B. MSIV B fails to close automatically or manually from the MCB, SI Pump C fails to Auto Start on SI Signal, RHR Pump A trips on auto start.

Indications:

- PRZR Level lowering
- PRZR Pressure lowering
- RCS Tcold, Thot, Tavg lowering
- S/G pressures lowering
- Steam flow noise
- R-32 rising or in alarm
- R-15 rising

Time	Position	Applicant's Actions or Behavior
	BOP	Isolates Feed Flow To Faulted S/G. <ul style="list-style-type: none"> • Closes or verifies closed the following valves: <ul style="list-style-type: none"> • MDAFW pump B discharge valve, MOV-4008 • MFW regulating valve and bypass valve to S/G B, HCV-476 and HCV-481 • MFW isolation valve to S/G B, AOV-3994 • BOTH MDAFW pump crosstie valves - MOV-4000A and MOV-4000B • SAFW pump discharge valve to S/G B, MOV-9704B • Pull stops faulted S/G MDAFW pump B • Closes TDAFW flow control valve to S/G B - AOV-4298.
	SRO/BOP	Isolates Steam Flow From Faulted S/G: <ul style="list-style-type: none"> • Verifies faulted S/G ARV CLOSED - S/G B, AOV-3410 • Closes faulted S/G TDAFW pump steam supply valve and place in PULL STOP S/G B, MOV-3504A • Verifies faulted S/G blowdown and sample valves CLOSED - S/G B, AOV-5737 and AOV-5736 • Dispatches AO to complete faulted S/G isolation (Refer to ATT-10.0, ATTACHMENT FAULTED S/G)
	SRO/BOP	Monitors Intact S/G Levels: <ul style="list-style-type: none"> • Maintains total feed flow greater than 200 gpm until narrow range level greater than 7% in S/G A. Controls feed flow to maintain narrow range level in S/G A between 17% and 50% • IF narrow range level in any S/G continues to rise in an uncontrolled manner THEN go to E-3, STEAM GENERATOR TUBE RUPTURE, Step 1.

Op-Test No.: 1 Scenario No.: 1 Event No.: 6

Event Description:

Main Steam Line Break Downstream of MSIVs which causes S/G tube leak to rise to a 400 GPM tube rupture in S/G B. MSIV B fails to close automatically or manually from the MCB, SI Pump C fails to Auto Start on SI Signal, RHR Pump A trips on auto start.

Indications:

- PRZR Level lowering
- PRZR Pressure lowering
- RCS Tcold, Thot, Tavg lowering
- S/G pressures lowering
- Steam flow noise
- R-32 rising or in alarm
- R-15 rising

Time	Position	Applicant's Actions or Behavior
	ATC	Checks Secondary Radiation Levels - NORMAL <ul style="list-style-type: none"> • Steam line radiation monitors (R-31 and R-32) • Air ejector radiation monitor (R-15) • S/G blowdown radiation monitor (R-19) • Requests RP sample S/Gs for activity
	SRO	Transitions to E-3, STEAM GENERATOR TUBE RUPTURE, Step 1.
	ATC	Monitors RCP Trip Criteria <ul style="list-style-type: none"> • Stops RCP 1A IF AT LEAST TWO SI pumps RUNNING and RCS pressure minus maximum S/G pressure is LESS THAN 210 psid.
	SRO/BOP	Identifies Ruptured S/G is S/G B by: <ul style="list-style-type: none"> • Unexpected rise in S/G narrow range level • High radiation indication on main steam line B radiation monitor R-32
	BOP	Isolates Flow From S/G B (Critical Task CT E-3--A) <ul style="list-style-type: none"> • Adjusts ruptured S/G ARV controller to 1050 psig in AUTO and checks ruptured S/G ARV CLOSED when ruptured S/G pressure less than 1050 psig • Closes TDAFW pump steam supply valve MOV-3504A and places in PULL STOP • Ensures S/G B blowdown valve, AOV-5737 - CLOSED
	BOP	Completes Ruptured S/G B Isolation: (Critical Task CT E-3--A) <ul style="list-style-type: none"> • Ensures MSIV B, AOV-3516 Closed • Dispatches AO to complete ruptured S/G isolation for S/G B (Refer to ATT-16.0, ATTACHMENT RUPTURED S/G part A)

Op-Test No.: 1 Scenario No.: 1 Event No.: 6

Event Description:

Main Steam Line Break Downstream of MSIVs which causes S/G tube leak to rise to a 400 GPM tube rupture in S/G B. MSIV B fails to close automatically or manually from the MCB, SI Pump C fails to Auto Start on SI Signal, RHR Pump A trips on auto start.

Indications:

- PRZR Level lowering
- PRZR Pressure lowering
- RCS Tcold, Thot, Tavg lowering
- S/G pressures lowering
- Steam flow noise
- R-32 rising or in alarm
- R-15 rising

Time	Position	Applicant's Actions or Behavior
	BOP	<p>Checks Ruptured S/G Level: (Critical Task CT E-3--A)</p> <ul style="list-style-type: none"> • Ensures S/G B Narrow range level - GREATER THAN 7% <ul style="list-style-type: none"> ○ IF ruptured S/G NOT faulted and Narrow Range level is < 7%, THEN performs the following: <ul style="list-style-type: none"> ▪ Maintains feed flow to ruptured S/G until level greater than 7% ▪ Continues with Step 6. WHEN ruptured S/G level greater than 7%, THEN does Steps 5b through e. • Ensures MDAFW pump discharge valve to S/G B, MOV-4008 closed. • Ensures MDAFW pump B in Pull Stop • Ensures TDAFW pump flow control valve to S/G B, AOV-4298 closed • Ensures MDAFW pump crosstie valves closed <ul style="list-style-type: none"> ○ MOV-4000A ○ MOV-4000B
	BOP	<p>Verifies Ruptured S/G Isolated:</p> <ul style="list-style-type: none"> • Checks MSIV B, AOV-3516 closed • Checks TDAFW pump steam supply from S/G B MOV-3504A isolated • Verifies S/G B pressure - GREATER THAN 300 PSIG
	BOP	<p>Establishes Condenser Steam Dump Pressure Control:</p> <ul style="list-style-type: none"> • Determines Intact MSIV A is closed and adjusts S/G ARV controllers to maintain S/G A pressure in AUTO and goes to Step 8.
	ATC/BOP	Resets SI

Op-Test No.: 1 Scenario No.: 1 Event No.: 6

Event Description:

Main Steam Line Break Downstream of MSIVs which causes S/G tube leak to rise to a 400 GPM tube rupture in S/G B. MSIV B fails to close automatically or manually from the MCB, SI Pump C fails to Auto Start on S Signal, RHR Pump A trips on auto start.

Indications:

- PRZR Level lowering
- PRZR Pressure lowering
- RCS Tcold, Thot, Tavg lowering
- S/G pressures lowering
- Steam flow noise
- R-32 rising or in alarm
- R-15 rising

Time	Position	Applicant's Actions or Behavior
	Crew	Initiates RCS Cooldown: <ul style="list-style-type: none"> • Determines required core exit temperature for S/G B pressure • Manually initiates dumping steam from intact S/G at maximum rate using S/G A ARV. • WHEN core exit T/Cs temperatures less than required, THEN stops RCS cooldown and stabilizes core exit T/Cs less than required temperature
		End of Scenario
	SRO	Perform Emergency Plan Classification for final event Expected EAL: Alert, 3.1.2, RCS Leakage > 46 gpm Start Time: _____ Stop Time: _____ EAL: _____

Scenario Description:

Shortly after the crew takes the watch, Pressurizer Master Pressure Controller PC-431K output fails high. This causes the PRZR Spray Valves to open and Pressurizer heater to de-energize. The crew should take manual control of the Spray Valve controllers and close the Spray Valves and implement AP-PRZR.1. The SRO should refer to TS 3.4.1 and COLR Section 2.10 and enter TS 3.4.1 if Pressurizer Pressure drops below 2205 psig. SRO refers to TR 3.4.3 with PC-431K in Manual. PORV-431C is still OPERABLE but the ATWS mitigating system is not.

After the crew addresses the Pressurizer Pressure Controller failure and restores RCS pressure, a 20 gpm RCS leak occurs in Hot Leg B. The crew should implement AP-RCS.1, Reactor Coolant Leak. The SRO should review TS 3.4.13 and enter Condition A and Action A.1.

While implementing AP-RCS.1, Heater Drain Tank Pump 1A trips on overload. The crew should implement AP-FW.1, Abnormal MFW Pump Flow or NPSH.

The crew should perform a down power to 70% due to the trip of Heater Drain Tank Pump 1A to ensure sufficient NPSH for the Main Feedwater Pumps.

After the crew satisfies the reactivity manipulation requirements, LT-463 fails high forcing the S/G 1A MFW Reg Vlv controller HCV-466 to manual requiring manual control of S/G 1A level and implement AP-FW.1. The SRO should review Technical Specifications 3.3.1 and 3.3.2 and determine there are no actions for 2 instruments OOS on the same S/G and enters TS 3.0.3. The SRO should review TS 3.3.3 and enter Condition D and Action D.1.

After the crew restores S/G 1A level to \approx 52% NR, the RCS leak rises requiring a reactor trip and entry into E-0, Reactor Trip or Safety Injection. The RHR Pumps, MDAFW Pump B, and the TDAFW Pump fail to start automatically, requiring the crew to start the pumps manually when SI occurs. MOV-313, Seal or Excess Letdown Return Isolation Valve, fails to close on a CI, requiring the crew to close MOV-313 from the Main Control Board. The crew should transition to E-1, Loss of Reactor or Secondary Coolant. During the injection phase RWST Level Channel 921 fails low. The crew should determine that an instrument failure has occurred and continue in E-1 vice transition to ES-1.3, Transfer to Cold Leg Recirculation. The scenario may be secured when the crew reaches the decision point to transition to ES-1.3 or return to step 17 of E-1 based on the operable RWST level.

CRITICAL TASKS

CT E-0--H

Task: Manually start at least one RHR pump before transition out of E-0.

Cues: SI Actuated

RCS press < RHR pump shutoff head

No RHR pump running

Indication: Manipulation of controls to start at least one RHR pump.

Feedback: Indication that a RHR Pump(s) are running

- Breaker Status Lights
- RHR Flow

CT E-0--O

Task: Initiate CNMT isolation such that at least one valve is closed in Seal or Excess Letdown Return Line which is passing fluid out of containment.

Cues: LOCA in CNMT

and

SI actuated

and

CNMT isolation valve MOV-313, Seal and Excess Letdown Return Isolation Valve, is not closed

- Status lights indicate valve is open

Indication: Manipulation of controls to isolate the flow path by closing MOV-313 before the end of the scenario.

Feedback: Valve status lights indicate MOV-313 is closed.

Facility: R. E. Ginna Scenario No.: 2 Op-Test No.: 1

Scenario Timeline:

Event Number	Time (Min)	Key	Event	Delay HH:MM:SS	Ramp HH:MM:SS	Final
N/A	AT LOAD	SGN01B	N/A	00:00:00	00:00:00	0
S/G LEVEL CHANNEL FAILURE: LT-461(I)						
1	2	PZR04	1	00:00:00	00:02:00	100
PRESSURIZER MASTER PRESSURE CONTROLLER FAILURE						
2	***(~ 12)	RCS02C	3	00:00:00	00:00:00	20
RCS LEAK INTO CNMT: LOOP B HOT LEG (UNREC)						
3	***(~ 19)	HTR02A	5	00:00:00	00:00:00	1
HEATER DRAIN TANK 1A TRIP						
4	***(~ 26)	N/A	N/A	N/A	N/A	N/A
POWER REDUCTION TO 70%						
5	***(~ 32)	SGN01D	7	00:00:00	00:03:00	70
S/G LEVEL CHANNEL FAILURE: LT-463 (IV)						
6	***(~ 38)	RCS03C	9	00:00:00	00:01:00	1
RCS DBA BREAK IN CNMT : LOOP B HOT LEG (UNREC)						
6	AT LOAD	RPS07E	N/A	00:00:00	00:00:00	1
AUTO FAIL: A RHR PUMP						
6	AT LOAD	RPS07F	N/A	00:00:00	00:00:00	1
AUTO FAIL: B RHR PUMP						
6	AT LOAD	RPS07L	N/A	00:00:00	00:00:00	1
AUTO FAIL: B MDAFW PUMP						
6	AT LOAD	RPS07M	N/A	00:00:00	00:00:00	1
AUTO FAIL: TDAFW STM SUP MOV-3504A						
6	AT LOAD	RPS07N	N/A	00:00:00	00:00:00	1
AUTO FAIL: TDAFW STM SUP MOV-3505A						
6	AT LOAD	MIS05D	N/A	00:00:00	00:00:00	ISOL SIGNAL ONLY (0)
CNMT ISO VLV FAILURE: MOV 313 (SEAL WTR RTN VLV)						
6	***	A-SIS01	11	00:00:00	00:00:00	ON (1)
B8: RWST HI_LO LEVEL 95 % 28						
6	***	IND-SIS44	11	00:00:00	00:00:00	0
SI-LI-921 METER SIGNAL REFUELING WATER STORAGE TANK LEVEL						

*** Events initiated on cue from NRC Lead Examiner

Estimated Time: 60 Minutes

Op-Test No.: 1 Scenario No.: 2 Event No.: 1

Event Description: (T=2 minutes)

Pressurizer Pressure Master Controller PC-431K output fails high

Indications:

- Maximum output on PRZR PRES CONTROLLER 431K
- Maximum output on PRESSURIZER SPRAY CONTROLLER PCV-431A and PCV-431B
- Heater output at minimum
- Both Spray Valves PCV-431A and B indicate open
- Actual RCS pressure lowering (PI-429, PI-430, PI-431, and PI-449)

Time	Position	Applicant's Actions or Behavior
	ATC	Recognizes indications and alarms and reports to SRO.
	SRO/ATC	Takes manual control of Pressurizer Pressure Control in one of the following ways: <ul style="list-style-type: none"> • Places PRZR PRES CONTROLLER 431K in manual and lowers output using the Manual potentiometer to close PCV-431A and PCV-431B ($\approx 50\%$). • Places both PRESSURIZER SPRAY CONTROLLER PCV-431A and PCV-431B in manual and closes Spray Valves by lowering output to 0 using the Manual potentiometer on each controller.
	SRO	Enters AP-PRZR.1, Abnormal Pressurizer Pressure
	ATC	Checks PRZR Pressure Channels <ul style="list-style-type: none"> • Reports PRZR 1A-1 through 4, (PI-429, PI-430, PI-431, and PI-449) are reading approximately equal and trending down
	ATC	Checks Reactor Power Stable <ul style="list-style-type: none"> • Reports that POWER RANGE 1 through 4 FLUX (NI-41B through NI-44B) are stable
	ATC	Checks PRZR Pressure between 2235 and 2000 psig and not dropping uncontrollably.
	ATC	Verifies PRZR PROPORTIONAL HEATERS Breaker closed (Red Light On) and energizes PRZR BACKUP HEATERS by taking C/S to ON.
	ATC	Verifies Normal PRZR Spray Valves closed by verifying PRESSURIZER SPRAY VALVE, AOV-431A and AOV-431B status lights (Green Light On, Red Light Off).
	ATC	Verifies PRZR PRESS CONTROLLER 431K demand is less than 50% and lowers demand to restore PRZR pressure to 2235 psig.
	SRO	Refers to TS 3.4.1 and COLR Section 2.10. Enters TS 3.4.1 if Pressurizer Pressure drops below 2205 psig. Refers to TR 3.4.3 with PC-431K in Manual. PORV-431C is still OPERABLE but the ATWS mitigating system is not.
		End of Event

Op-Test No.: 1 Scenario No.: 2 Event No.: 2

Event Description: (~ T=12 minutes)

RCS Leak Hot Leg B

Indications:

- Slowly lowering PRZR level
- Slowly lowering RCS Pressure
- Annunciator F-14, Charging Pump Speed
- Rising indications or alarms on R-10A, R-11, or R-12
- PPCS alarm, R-11 Rate of Change

Time	Position	Applicant's Actions or Behavior
	ATC	Recognizes indications and alarms and reports to SRO.
	SRO	Enters AP-RCS.1, Reactor Coolant Leak
	ATC	Monitors PRZR Level and starts additional charging pumps, or raises charging pump speed as necessary to stabilize PRZR level.
	ATC	Check VCT Makeup System <ul style="list-style-type: none"> • Monitors VCT Level on LI-112 • Ensures RMW Mode Selector in AUTO • Verifies RMW Armed red light lit • Verifies Makeup occurring between 20% and 30% on LI-112
	ATC	Determines Leakage is in Containment By: <ul style="list-style-type: none"> • Rising readings on any of the following Rad Monitors: R-2, R-7, R-10A, R-11, R-12 • CNMT Sump A pump run frequency rises
	SRO	Directs RP to sample Containment for entry and informs AO to be prepared to enter CNMT to search for leaks
	SRO	Continues to eliminate other sources of leakage by dispatching AO to AUX BLDG for CVCS leaks with RP support.
	ATC	Checks CCW System for leaks by: <ul style="list-style-type: none"> • Monitors CCW Surge Tank Level on LI-618 - ~ 50% and stable • Monitor CCW Radiation Monitor R-17 reading not rising and not in alarm
	ATC	Checks Letdown indications Normal: <ul style="list-style-type: none"> • Letdown Line Flow on LI-134 ~ 40 gpm • Low Press Ltdn Pressure on PI-135 or PCV-135 ~ 250 psig • Low Press Ltdn Pressure PCV-135 ~ 35% open (~ 65% controller output)

Op-Test No.: 1 Scenario No.: 2 Event No.: 2

Event Description: (~ T=12 minutes)

RCS Leak Hot Leg B

Indications:

- Slowly lowering PRZR level
- Slowly lowering RCS Pressure
- Annunciator F-14, Charging Pump Speed
- Rising indications or alarms on R-10A, R-11, or R-12
- PPCS alarm, R-11 Rate of Change

Time	Position	Applicant's Actions or Behavior
	ATC/BOP	Checks Charging indications Normal <ul style="list-style-type: none"> • Seal Injection Flows > 6 gpm and stable on FI 115A and FI-116A • Labyrinth Seal D/Ps PI-131 and PI-124 > 15 inches and approximately equal • Charging Pump Discharge pressure PI-128 > RCS pressure PI-429, PI-430, PI-431, PI-449
	ATC	Checks AUX BLDG rad levels Normal by verifying no rise indication or alarms on R-4, R-9, R-10B, R-13, or R-14
	ATC/BOP	Checks PRT indications Normal <ul style="list-style-type: none"> • PRT Level 61%-84% on LI-442 • PRT Pressure ~1.5 psig and stable on PI-440A and PI-440B • PRT Temperature at CNMT Ambient Temperature and Stable on TI-439
	SRO/ATC	Check S/Gs for leakage <ul style="list-style-type: none"> • Air Ejector rad monitors no rise or alarms on R-15, R-47, and R-48 • S/G Blowdown rad monitor R-19 - no rise or alarms • Steam line rad monitors R-31 and R-32 no rise or alarms • No rise in S/G sample activities
	ATC	Checks SI Accumulator levels stable (not rising) on LI-938 and LI-934
	ATC	Checks RCP Seal Leakoff flows stable and within normal operating range of Fig-4.0, Figure RCP Seal Leakoff on F-175 to F-178 (Seal Leakoff Recorders)
	Crew	Checks leak is not into RCDT by checking PPCS PID L1003 and RCS Daily Leakage Log
	ATC	Verifies Normal Letdown in service
	ATC	Verifies RCS pressure and PRZR level are trending back to normal steady state values 2235 psig and ~ 56%

Op-Test No.: 1 Scenario No.: 2 Event No.: 2

Event Description: (~ T=12 minutes)

RCS Leak Hot Leg B

Indications:

- Slowly lowering PRZR level
- Slowly lowering RCS Pressure
- Annunciator F-14, Charging Pump Speed
- Rising indications or alarms on R-10A, R-11, or R-12
- PPCS alarm, R-11 Rate of Change

Time	Position	Applicant's Actions or Behavior
	ATC	Verifies Control Systems in AUTO <ul style="list-style-type: none"> • Determines Pressurizer Press Controller 431K needs to stay in MANUAL • Pressurizer Spray Valve Controllers PCV-431A and PCV-431B in AUTO (may be in manual from 431K failure) • PRZR Proportional Heater Breaker Closed • PRZR Backup Heater C/S in AUTO (may be in ON after 431K failure) • One Charging Pump Controller in AUTO
	Crew	Evaluates MCB Annunciators - Refers to AR procedures
	SRO	Determines RCS leak rate and determines TS 3.4.13 is not being met enters Condition A and Action A.1.
		End of Event

Op-Test No.: 1 Scenario No.: 2 Event No.: 3

Event Description: (~ T=19 minutes)

Heater Drain Tank Pump 1A Trips

Indications:

- G-8, 4 KV Breaker Overload
- G-25, Motor Off Ctr Sect Pumps Except Main & Aux Feed Pumps
- H-14, Condensate Hdr Lo Pressure 245 psi
- H-17, Feed Pump Net Positive Suction Head
- H-29, Fdwtr Htr and Drain Tank Level Hi-Lo or Presep Tk Hi Level
- H-30, Condensate Bypass Valve Open
- Condensate B Auto Starts (Green Flag on pump C/S w/Red Run indication)
- Condensate Bypass Valve AOV-3959 indicates open
- Feed Pump 1A and 1B Suction Pressure indicators lower and then recover after Condensate pump starts and Condensate Bypass Valve opens
- Reactor power rises to > 100%

Time	Position	Applicant's Actions or Behavior
	BOP	Recognizes indications and alarms and reports to SRO
	BOP/ATC	Determines reactor power > 100%
	SRO	SRO orders BOP to lower turbine load to reduce reactor power < 100%
	BOP	Commences turbine load reduction
	SRO	Enters AP-FW.1, Abnormal MFW Pump Flow or NPSH
	BOP	Checks MFW Requirements <ul style="list-style-type: none"> • Verifies Power > 50% • Verifies two MFW Pumps Running
	BOP	Check S/G Status <ul style="list-style-type: none"> • Checks MFW Flow greater than Steam Flow • Checks levels in both S/Gs stabilizing or trending back to 52% NR
	BOP	Verifies at least two Condensate Pumps running
	BOP	Verifies and reports only one Heater Drain Pump running.
	SRO	Determines a power reduction to 70% is required (May determine to use AP-TURB.5, Rapid Load Reduction.
		End of Event

Op-Test No.: 1 Scenario No.: 2 Event No.: 4

Event Description: (~ T=26 minutes)

Power Reduction to 70%

Time	Position	Applicant's Actions or Behavior
	SRO	Provides ATC and BOP with instructions for down power.
	ATC	Verifies Rods in AUTO or adjusts rods in MANUAL to maintain Tavg to Tref.
	BOP	Reduces turbine load in Auto as follows: <ul style="list-style-type: none"> • Places Turbine EH Control in OPER PAN., IMP PRESS IN • Selects rate on thumbwheel per SRO instructions. • Reduces the load setter per SRO instructions. • Depresses the GO button.
	ATC	Initiates a boration of 2-4 gals/% (60-120 gals) at a rate per SRO instructions.
	ATC/BOP	Adjusts Turbine load rate, Boric Acid flow rate, and/or Rods to maintain Tavg to Tref.
	BOP	Verifies Turbine Load reduction stops when Load = Setter
		End of Event

Op-Test No.: 1 Scenario No.: 2 Event No.: 5

Event Description: (~ T=32 minutes)

S/G A Level LT-463 fails high

Indications:

- LI-463 rising
- S/G A FRV controller is in manual

Time	Position	Applicant's Actions or Behavior
	BOP	Recognizes indications and alarms and reports to SRO.
	BOP	Takes action to stabilize S/G A level by adjusting S/G A FRV controller in manual to restore S/G Level to 52% on LI-462. Continues to control S/G A level in manual during the down power to 70%.
	SRO	Enters ER-INST.1 and goes to step 4.8.
	SRO	Determines that one channel is already tripped per ER-INST.1, that tripping another channel will initiate a reactor trip, and does NOT give an order to continue with the ER procedure attachment for tripping the second bistable.
	ATC/BOP	If the SRO does not recognize the effect of tripping second channel and gives the order to complete the attachment for tripping the channel, at least one RO candidate recognizes the effect and communicates it to the SRO.
	SRO	Checks ITS <ul style="list-style-type: none"> • Reviews Technical Specifications 3.3.1 and 3.3.2 and determines there are no actions for 2 instruments inoperable on the same S/G and enters TS 3.0.3. • The SRO should review TS 3.3.3 and enter Condition D and Action D.1.
		End of Event

Op-Test No.: 1 Scenario No.: 2 Event No.: 6

Event Description: (~ T=38 minutes)

Large Break LOCA Hot Leg B, RHR Pumps A and B fail to auto start on SI Signal, MDAFW Pump B and the TDAFW Pump fail to auto start, MOV-313 fails to close on CI, RWST Level Channel 921 Fails Low during Injection Phase

Indications:

- PRZR and RCS Pressures dropping Rapidly
- PRZR level dropping rapidly
- Reactor trip on Low PRZR Pressure
- Low RCS Pressure SI
- R-11 rising and in alarm
- R-29 and R-30, Containment Hi Range Rad Monitors rising
- Containment Pressure rising rapidly
- S/G Pressures relatively stable

Time	Position	Applicant's Actions or Behavior
	ATC/BOP	Recognizes alarms and indications and reports to SRO
	ATC	Verifies Reactor Tripped <ul style="list-style-type: none"> • One set of reactor trip breakers open • Neutron flux lowering • MRPI indicates all rods on bottom
	BOP	Verifies all turbine stop valves closed
	BOP	Verifies Buses 14, 16, 17, and 18 \geq 440V
	ATC	Checks if SI has been actuated by verifying SI annunciators and SI sequencing started both trains.
	SRO	Enters E-0, Reactor Trip or Safety Injection and re-verifies Immediate Action's before continuing with supplemental actions.
	ATC	Verifies Containment Spray required by verifying Containment pressure > 28 psig and annunciator A-27, Containment Spray is lit and verifies Containment Spray is initiated.
	BOP	Perform ATT-27.0, Attachment Automatic Action Verification <ul style="list-style-type: none"> • Manually starts RHR Pumps A and B (Critical Task CT E-0—H) • Manually starts TDAFW Pump and MDAFW Pump B • Manually close MOV-313, Seal or Excess Ltdn Return Isol Vlv (Critical Task CT E-0—O)
	ATC	Verifies MDAFW pump B running with flow to B S/G at < 230 gpm. Verifies TDAFW Pump running by verifying MOV-3505A and MOV-3504A open.
	ATC	Verifies AFW flow to both S/Gs or manually aligns TDAFW Pump to S/G A.

Op-Test No.: 1 Scenario No.: 2 Event No.: 6

Event Description: (~ T=38 minutes)

Large Break LOCA Hot Leg B, RHR Pumps A and B fail to auto start on SI Signal, MDAFW Pump B and the TDAFW Pump fail to auto start, MOV-313 fails to close on CI, RWST Level Channel 921 Fails Low during Injection Phase

Indications:

- PRZR and RCS Pressures dropping Rapidly
- PRZR level dropping rapidly
- Reactor trip on Low PRZR Pressure
- Low RCS Pressure SI
- R-11 rising and in alarm
- R-29 and R-30, Containment Hi Range Rad Monitors rising
- Containment Pressure rising rapidly
- S/G Pressures relatively stable

Time	Position	Applicant's Actions or Behavior
	ATC	Monitors Heat Sink <ul style="list-style-type: none"> • Verifies S/G NR levels > 25% or verifies total AFW 200 gpm • Isolates AFW flow to any S/G > 50% NR • Controls S/G levels 25-50% NR
	SRO	Determines TDAFW Pump should not be stopped.
	ATC	Verifies annunciators A-7(A-15), CCW Pump 1A(1B) Return HI Temp or Low Flow are not lit.
	ATC	Monitors RCS Tavg <ul style="list-style-type: none"> • Stops dumping steam (Steam Dumps or ARVs) • Ensures Reheater steam supply valves closed • Maintains total Feed flow at 200-230 gpm until one S/G is >25% NR • Limits feed flow to maintain one S/G > 25% NR • Closes MSIVs if cooldown continues
	ATC	Verifies both PORVs closed, Auxiliary Spray valve AOV-296 closed, and when RCS pressure < 2260 psig both Spray Valves are closed
	ATC	Verifies RCP Trip Criteria <ul style="list-style-type: none"> • Verifies both RCPs running • Verifies at least two SI Pimps running • Verifies RCS pressure- maximum S/G pressure <240 psid and secures RCP 1A and RCP 1B by taking C/S to STOP
	BOP	Determines both S/Gs are intact <ul style="list-style-type: none"> • Both S/G Pressures stable or rising and > 110 psig

Op-Test No.: 1 Scenario No.: 2 Event No.: 6

Event Description: (~ T=38 minutes)

Large Break LOCA Hot Leg B, RHR Pumps A and B fail to auto start on SI Signal, MDAFW Pump B and the TDAFW Pump fail to auto start, MOV-313 fails to close on CI, RWST Level Channel 921 Fails Low during Injection Phase

Indications:

- PRZR and RCS Pressures dropping Rapidly
- PRZR level dropping rapidly
- Reactor trip on Low PRZR Pressure
- Low RCS Pressure SI
- R-11 rising and in alarm
- R-29 and R-30, Containment Hi Range Rad Monitors rising
- Containment Pressure rising rapidly
- S/G Pressures relatively stable

Time	Position	Applicant's Actions or Behavior
	ATC	Checks that S/G Tubes Are Intact: <ul style="list-style-type: none"> • Verifies air ejector radiation monitors (R-15, R-47, or R-48) are not rising or in alarm • Verifies S/G blowdown radiation monitor (R-19) are not rising or in alarm • Verifies steam line radiation monitors (R-31 and R-32) are not rising or in alarm
	ATC	Checks If RCS Is Intact: <ul style="list-style-type: none"> • Reports CNMT area radiation monitors R-2, R-7, R-29, R-30 are rising and in alarm • Reports CNMT pressure is rising and > 0.5 PSIG • Reports CNMT sump B level is rising and > 8 inches • Reports CNMT sump A level rising • Reports Annunciator C-19, CONTAINMENTSUMP A HI LEVEL is lit
	SRO	Transitions to E-1, LOSS OF REACTOR OR SECONDARY COOLANT, Step 1.
	SRO	Instructs Crew review foldout page criteria and to monitor Critical Safety Functions. Review Red Path Summaries, determines RCS Integrity red path criteria is met and transitions to FR-P.1, Response To Imminent Pressurized Thermal Shock Condition.
	ATC	Verifies RCS pressure is < 465 psig and RHR flow is > 475 gpm
	SRO	Returns to step in effect in E-1, Loss Of Reactor Or Secondary Coolant.
	SRO	Determines RCPs secured and goes to Step 2
	SRO	Re-verifies S/Gs are intact and goes to step 3

Op-Test No.: 1 Scenario No.: 2 Event No.: 6

Event Description: (~ T=38 minutes)

Large Break LOCA Hot Leg B, RHR Pumps A and B fail to auto start on SI Signal, MDAFW Pump B and the TDAFW Pump fail to auto start, MOV-313 fails to close on CI, RWST Level Channel 921 Fails Low during Injection Phase

Indications:

- PRZR and RCS Pressures dropping Rapidly
- PRZR level dropping rapidly
- Reactor trip on Low PRZR Pressure
- Low RCS Pressure SI
- R-11 rising and in alarm
- R-29 and R-30, Containment Hi Range Rad Monitors rising
- Containment Pressure rising rapidly
- S/G Pressures relatively stable

Time	Position	Applicant's Actions or Behavior
	BOP	Monitors S/G and B levels: <ul style="list-style-type: none"> • Maintains total AFW flow greater than 200 gpm until at one S/G level is > 25% NR • Controls AFW flow to maintain S/G A and B NR levels between 25%-50%
	SRO/ATC	Monitors Secondary Rad Levels are not rising on steam line rad monitors R-31 and R-32 and requests RP sample S/Gs for activity
	ATC/BOP	Verifies PORV block valves are energized, both PORVs are closed and at least one PORV block valve is open
	ATC	Resets SI by depressing SI Reset Pushbutton
	ATC	Resets CI by depressing CI Reset Pushbutton and verifies A-26, CNMT Isolation is not lit
	BOP	Verifies at least 2 SW pumps are running
	SRO	Dispatches AO to establish normal shutdown alignment per ATT-17.0, ATTACHMENT SD-1
	BOP	Establishes IA to CNMT <ul style="list-style-type: none"> • Verifies Busses 13 and 15 powered through normal feeder breakers from offsite. Should also check bus voltage > 440V. • Verifies Turbine Building SW isolation valves MOV-4613/MOV-4670 and MOV-4614/MOV-4664 are open • Verifies adequate air compressors are operating or starts additional air compressors • Verifies IA pressure > 60 psig and stable or rising • Resets both train XY relays for AOV-5392 and verifies AOV-5392 open

Op-Test No.: 1 Scenario No.: 2 Event No.: 6

Event Description: (~ T=38 minutes)

Large Break LOCA Hot Leg B, RHR Pumps A and B fail to auto start on SI Signal, MDAFW Pump B and the TDAFW Pump fail to auto start, MOV-313 fails to close on CI, RWST Level Channel 921 Fails Low during Injection Phase

Indications:

- PRZR and RCS Pressures dropping Rapidly
- PRZR level dropping rapidly
- Reactor trip on Low PRZR Pressure
- Low RCS Pressure SI
- R-11 rising and in alarm
- R-29 and R-30, Containment Hi Range Rad Monitors rising
- Containment Pressure rising rapidly
- S/G Pressures relatively stable

Time	Position	Applicant's Actions or Behavior
	BOP	Checks Bus 14 and 16 normal feeder breakers closed
	ATC	Establishes Charging Flow <ul style="list-style-type: none"> • Checks CCW Flow has not been lost to either RCP thermal barrier (MOV-817, AOV-814, AOV-815, AOV-754A, and AOV-754B open with a CCW Pump running) and verifies #1 seal and verifies RCP 1A and 1B #1 Seal Outlet Temperature (TI-181 and TI-182) are $\leq 235^{\circ}\text{F}$ • Ensures HCV-142, Charging Flow to Regen HX is open, controller demand is 0% • Verifies Charging Pump suction is aligned to the RWST <ul style="list-style-type: none"> ○ Verifies LCV-112B, Emerg Makeup RWST to Charging Pump is open and LCV-112B, VCT Outlet Vlv is closed • Starts charging pumps and adjusts Charging flow
	SRO/ATC	Determines SI should not be terminated by verifying RCS pressure is < 1825 psig
	SRO/ATC	Determines that one CS Pump may be secured
	ATC	Secures one CS Pump by placing the CS Pump C/S in PULL STOP and verifying CNMT Pressure is stable or lowering
	SRO/ATC	Determines RHR pumps should not be stopped by verifying RCS pressure < 465 psig
	ATC	Recognizes and reports failed RWST instrument to SRO.
	SRO	Determines actual RWST level is $> 28\%$ and continues in E-1.

Op-Test No.: 1 Scenario No.: 2 Event No.: 6

Event Description: (~ T=38 minutes)

Large Break LOCA Hot Leg B, RHR Pumps A and B fail to auto start on SI Signal, MDAFW Pump B and the TDAFW Pump fail to auto start, MOV-313 fails to close on CI, RWST Level Channel 921 Fails Low during Injection Phase

Indications:

- PRZR and RCS Pressures dropping Rapidly
- PRZR level dropping rapidly
- Reactor trip on Low PRZR Pressure
- Low RCS Pressure SI
- R-11 rising and in alarm
- R-29 and R-30, Containment Hi Range Rad Monitors rising
- Containment Pressure rising rapidly
- S/G Pressures relatively stable

Time	Position	Applicant's Actions or Behavior
	BOP	<p>Checks if Emergency D/Gs should be stopped</p> <ul style="list-style-type: none"> • Verifies EDG A and B output breakers open • Verifies Bus 14, Bus 16, Bus 17, and Bus 18 Voltages > 440 V and individual bus normal feeder breakers are closed • Stops both EDGs using ATT 8.1, Attachment D/G Stop <ul style="list-style-type: none"> ○ 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 60 Hz. ○ 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: <ul style="list-style-type: none"> ▪ 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

Op-Test No.: 1 Scenario No.: 2 Event No.: 6

Event Description: (~ T=38 minutes)

Large Break LOCA Hot Leg B, RHR Pumps A and B fail to auto start on SI Signal, MDAFW Pump B and the TDAFW Pump fail to auto start, MOV-313 fails to close on CI, RWST Level Channel 921 Fails Low during Injection Phase

Indications:

- PRZR and RCS Pressures dropping Rapidly
- PRZR level dropping rapidly
- Reactor trip on Low PRZR Pressure
- Low RCS Pressure SI
- R-11 rising and in alarm
- R-29 and R-30, Containment Hi Range Rad Monitors rising
- Containment Pressure rising rapidly
- S/G Pressures relatively stable

Time	Position	Applicant's Actions or Behavior
	BOP	<ul style="list-style-type: none"> ○ 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 60 Hz. ○ 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: <ul style="list-style-type: none"> ▪ 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
	ATC/BOP	<p>Verifies CNMT Sump Recirculation Capability:</p> <ul style="list-style-type: none"> • Checks RHR and Support systems: <ul style="list-style-type: none"> ○ At least one recirculation flow path, including required power supplies, from Sump B and back to RCS available per ATT-14.5, ATTACHMENT RHR SYSTEM ○ At least one SW pump available. ○ At least one CCW pump available. ○ At least one CCW Hx available. • Checks at least 2 SW pumps available • Dispatches AO to check AUX BLDG sub-basement for RHR system leakage (AUX BLDG sub-basement key may be required)

Op-Test No.: 1 Scenario No.: 2 Event No.: 6

Event Description: (~ T=38 minutes)

Large Break LOCA Hot Leg B, RHR Pumps A and B fail to auto start on SI Signal, MDAFW Pump B and the TDAFW Pump fail to auto start, MOV-313 fails to close on CI, RWST Level Channel 921 Fails Low during Injection Phase

Indications:

- PRZR and RCS Pressures dropping Rapidly
- PRZR level dropping rapidly
- Reactor trip on Low PRZR Pressure
- Low RCS Pressure SI
- R-11 rising and in alarm
- R-29 and R-30, Containment Hi Range Rad Monitors rising
- Containment Pressure rising rapidly
- S/G Pressures relatively stable

Time	Position	Applicant's Actions or Behavior
	SRO	Evaluates Plant Status: <ul style="list-style-type: none"> • Checks auxiliary building radiation - NORMAL <ul style="list-style-type: none"> ○ 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. <ul style="list-style-type: none"> ○ RCS boron ○ RCS activity ○ CNMT hydrogen ○ CNMT sump boron ○ CNMT Sump pH • Verifies adequate Rx head cooling: <ul style="list-style-type: none"> ○ Verifies at least one control rod shroud fan - RUNNING ○ Verifies one Rx compartment cooling fan - RUNNING
	SRO	Verifies that RCS cooldown is not required <ul style="list-style-type: none"> • RCS Pressure \leq 465 psig • RHR Pump flow > 475 gpm

Op-Test No.: 1 Scenario No.: 2 Event No.: 6

Event Description: (~ T=38 minutes)

Large Break LOCA Hot Leg B, RHR Pumps A and B fail to auto start on SI Signal, MDAFW Pump B and the TDAFW Pump fail to auto start, MOV-313 fails to close on CI, RWST Level Channel 921 Fails Low during Injection Phase

Indications:

- PRZR and RCS Pressures dropping Rapidly
- PRZR level dropping rapidly
- Reactor trip on Low PRZR Pressure
- Low RCS Pressure SI
- R-11 rising and in alarm
- R-29 and R-30, Containment Hi Range Rad Monitors rising
- Containment Pressure rising rapidly
- S/G Pressures relatively stable

Time	Position	Applicant's Actions or Behavior
	BOP	Establishes Adequate SW Flow <ul style="list-style-type: none"> • Verifies at least 2 SW pumps running • Verifies MOV-4615/MOV-4734 Open • Verifies MOV-4616/MOV-4735 open • Verifies 5000-6000 gpm SW flow equally divided between CCW HX A and B or Dispatches SO to adjust flow to required value
	ATC	Establishes flow to RHR HXs <ul style="list-style-type: none"> • Starts Backup CCW Pump • Opens CCW Valves to RHR HX A and B (MOV-738A and B)
	SRO	Checks If Transfer To Cold Leg Recirculation Is Required: <ul style="list-style-type: none"> • If RWST level > 28% returns to Step 17 • If RWST level < 28%, transitions to ES-1.3, TRANSFER TO COLD LEG RECIRCULATION, Step 1
		End of Scenario
	SRO	Perform Emergency Plan Classification for final event Expected EAL: Site Area Emergency, 3.1.3, RVLIS can not be maintained < 77% with no RCPs running Start Time: _____ Stop Time: _____ EAL: _____

Scenario Description:

After the crew takes the watch they will initiate a power ascension to 100% power using O-5.2, Load Ascension.

When the crew has met reactivity manipulation requirements, or at the lead examiner's discretion, Loop A T_{coil} TE-401B Fails Low with Rod Block failed. The crew should take manual control of RODS, stabilize the plant, and implement AP-RCC.1, Continuous Rod Withdrawal/Insertion and ER-INST.1, Reactor Protection Bistable Defeat after Instrumentation Loop Failure. The SRO should apply TS 3.3.1 Condition D, Action D.1 and 3.3.2 Condition F, Action F.1.

After the affected bistables have been tripped, Containment Recirc Fan A will trip. The crew should start the standby Containment Recirc Fan. The SRO should apply TS 3.6.6 Condition D, Action D.1.

After addressing the Containment Recirc Fan failure, LT-112, VCT Level instrument will fail. The crew should realign the LCV-112A to the VCT and refer to ER-CVCS.1, Reactor Makeup Control Malfunction for guidance on manual makeup.

After the VCT level failure has been addressed, Feedwater Control Valve B, FCV-476, controller fails high. The crew should take manual control of FCV-476 and restore S/G B level to 52% NR. The crew should implement AP-FW.1, Abnormal MFW Pump Flow or NPSH.

After the crew restores S/G B level, a Main Steam Line Break occurs downstream of the MSIVs. SI fails to actuate automatically and the MSIVs can not be closed from the control room or locally. The crew should manually initiate SI, attempt to close the MSIVs and implement the following procedures:

- E-0, Reactor Trip or Safety Injection,
- E-2, Faulted Steam Generator Isolation,
- ECA-2.1, Uncontrolled Depressurization of Both Steam Generators and
- FR-P.1, Response to Imminent Pressurized Thermal Shock Condition

The scenario will end after the crew has taken action to minimize the RCS cooldown and stops SI and RHR pumps.

CRITICAL TASKS

CT E-0--D

Task: Manually initiate at least one train of SI before transition to E-1

Cues: RCS pressure < SI setpoint

or

CNMT pressure > SI setpoint

and

SI component failed to start

Indication: Manipulation of control to activate at least one train of SI

Feedback: SI components start, SI flow delivery to RCS

CT FR-P.1--B

Task: Control the AFW flow rate in order to minimize RCS cooldown rate before an extreme (red path) challenge develops to the Integrity CSF.

Cues: RCS cold leg cooldown rate > 100°F in last 60 minutes.

and

Cold leg temperature on either cold leg is < 285°F

and

AFW flow rate to faulted S/G is > 50 gpm

Indication: Manipulation of control to throttle AFW flow to both faulted S/G to 50 gpm (within the ability to control the AFW control valves)

Feedback: RCS cooldown slow and eventually stops.

CT FR-P.1--A

Task: Terminate SI flow so that if the challenge to integrity CSF is:

- Severe, an extreme challenge is prevented
- Extreme, SI is terminated by the end of the scenario.

Cues: Indication of a red or orange challenge to the integrity CSFST

and

Indication that SI termination criteria are met

and

AFW flow rate to faulted S/G is > 50 gpm

Indication: Manipulation of control to terminate SI flow (SI and RHR pumps secured)

Feedback: SI and RHR flow rate zero.

Scenario Timeline:

Event Number	Time (Min)	Key	Event	Delay HH:MM:SS	Ramp HH:MM:SS	Final
1	0	N/A	N/A	00:00:00	00:00:00	N/A
Power Ascension						
2	***(~15)	RCS11C	1	00:00:00	00:00:00	0
RTD Failure: LP A Cold TE-401B (TT-401)I						
2	At Load	ROD12	N/A	00:00:00	00:00:00	AUTO ONLY (0)
Rod Stop Failure						
3	***(~ 22)	OVR-MIS06D	3	00:00:00	00:00:00	True (NULL)
CP-HS-CR1A Stop Signal Containment Recirculation Fan No. 1A						
3	***	OVR-MIS06B	3	00:00:00	00:00:00	ON
CP-HS-CR1A White Lamp CONTAINMENT RECIRCULATION FAN NO 1A						
3	***	A-EDS16	3	00:00:00	00:00:00	ON (1)
J-9: Safeguard Breaker Trip						
4	***(~27)	CVC10A	5	00:00:00	00:00:30	100
VCT Level Transmitter Failure: LT-112						
5	***(~32)	FDW07C	7	00:00:00	00:02:00	100
"B" FRV FCV-476 - Manual Available						
6	***(~37)	STM03	9	00:00:00	00:01:00	4000000
Steamline Break Outside CNMT Downstream of MSIVs						
6	At Load	STM05A	N/A	00:00:00	00:00:00	100
Main Steam Isolation Valve Failure: VLV 3517						
6	At Load	STM05B	N/A	00:00:00	00:00:00	100
Main Steam Isolation Valve Failure: VLV 3516						
6	At Load	SIS02A	N/A	00:00:00	00:00:00	MANUAL AVAIL (0)
SIS Train A Failure to Actuate						
6	At Load	SIS02B	N/A	00:00:00	00:00:00	MANUAL AVAIL (0)
SIS Train B Failure to Actuate						
N/A	At Load	SGN01B	N/A	00:00:00	00:00:00	0
S/G Level Channel Failure: LT-461(I)						

*** Events initiated on cue from NRC Lead Examiner

Estimated Time: 65 Minutes

Op-Test No.: 1 Scenario No.: 3 Event No.: 1

Event Description: (T=0 min)

Power Ascension

Time	Position	Applicant's Actions or Behavior
	SRO	Provides instructions to ATC and BOP to continue raising power.
	ATC	Initiates Dilution per SRO instructions using O-3.1
	BOP	Raises turbine load in Auto as follows: <ul style="list-style-type: none"> Places Turbine EH Control in OPER PAN., IMP PRESS IN Selects rate on thumbwheel per SRO instructions. Raises the load setter SRO instructions. Depresses the GO button.
	SRO	Directs the BOP to Start Condensate Booster Pumps.
	BOP	Adjusts TRIM VLV CONTROL, AOV 9508D AOV-9508G, controller output in AUTO UNTIL the first Trim Valve starts to open.
	BOP	Places HOTWELL LEVEL LC-107, Controller in the MAN position
	BOP	Places the standby Condensate Pump control switch in the PULL STOP position.
	BOP	Places one CONDENSATE BOOSTER PUMP switch to the RUN position and observes CONDENSATE BOOSTER PUMP selected to RUN starts.
	BOP	Raises TRIM VLV CONTROL, AOV 9508D AOV-9508G controller setpoint to approximately 375 psig.
	BOP	Places a second CONDENSATE BOOSTER PUMP switch to the RUN position WHEN CONDENSATE TRIM CONTROL AOV, valve 9508G, is less than 20% OPEN.
	BOP	Places the third CONDENSATE BOOSTER PUMP switch to the AUTO position.
	BOP	Adjusts TRIM VLV CONTROL, AOV 9508D AOV-9508G, as necessary during power ascension to maximize the MFWP available NPSH. <ul style="list-style-type: none"> Monitors PPCS Point NPAVMFPA and NPAVMFPB
	BOP	Places HOTWELL LEVEL, LC-107, controller in AUTO with controller setpoint at approximately 24 inches.
	BOP	Places the standby Condensate Pump control switch in AUTO.
	BOP/ATC	Adjusts dilution flow rate and/ or Turbine Load rate as necessary to maintain Tavg at Tref.
	End of Event	When required reactivity manipulation is satisfied go to Event 2.

Op-Test No.: 1 Scenario No.: 3 Event No.: 2

Event Description: (~ T=15 min)

Loop A T_{cold} TE-401B Fails Low, Rod Block failed

Indications:

- F-4, PRESSURIZER LEVEL DEVIATION -5 NORMAL +5
- F-7, RCS LOOP A LO TAVG
- F-14, CHARGING PUMP SPEED
- F-15, RCS TAVG DEV 4°F
- F-16, TAVG-TREF DEVIATION +/- 5°F
- F-24, RCS AVG ΔT DEVIATION 3°F
- LOOP 1A-1 DTEMP, TI-405B reads significantly higher than TI-406B, TI-407B, and TI-408B
- LOOP A-1 TAVG, TI-401 reads significantly lower than TI-402, TI-403, and TI-404
- Charging Pump A speed signal goes to minimum and charging flow lowers
- PRZR Backup Heaters energized (Red light on) (PRZR Level setpoint lowers)
- Outward Rod Motion (Rod Block circuit is inoperable)

Time	Position	Applicant's Actions or Behavior
	BOP/ATC	Recognizes indications and alarms and reports to SRO.
	SRO	Enters AP-RCC.1, Continuous Rod Withdrawal/Insertion
	BOP	Checks turbine load - STABLE
	ATC	Places Rod Control in Manual and verifies rod motion stops.
	ATC	Verifies Tavg between 547 and 579°F
	ATC	Restores Tavg to Tref using Rod insertion in Manual or Boration
	SRO/ATC	Determines Tavg TI-401 failed
	SRO	Enters ER-INST.1, Reactor Protection Bistable Defeat After Instrumentation Loop Failure.
	ATC	Places Charging Pump A Speed Controller in MANUAL and adjusts charging pump speeds to stabilize PRZR level.
	SRO	Refers to ITS LCOs 3.1.5 and 3.1.6 to determine actual rod insertion limits.
	SRO	Determines that hot leg streaming does not apply.
	SRO	Directs BOP to perform Tavg 401/Delta T 405 Attachment.
	BOP/ATC	Verifies Rod Control selector switch in MANUAL.
	BOP/ATC	Verifies Charging Pump speed controllers in MANUAL..
	BOP	In the RIL INSERTION LIMIT rack, Places T/405E DELTA T DEFEAT switch to LOOP A UNIT 2.
	BOP	In the STEAM DUMP rack, Places the TAVG DEFEAT switch T/401A to LOOP A UNIT 1.

Op-Test No.: 1 Scenario No.: 3 Event No.: 2

Event Description: (~ T=15 min)

Loop A T_{cold} TE-401B Fails Low, Rod Block failed

Indications:

- F-4, PRESSURIZER LEVEL DEVIATION -5 NORMAL +5
- F-7, RCS LOOP A LO TAVG
- F-14, CHARGING PUMP SPEED
- F-15, RCS TAVG DEV 4°F
- F-16, TAVG-TREF DEVIATION +/- 5°F
- F-24, RCS AVG ΔT DEVIATION 3°F
- LOOP 1A-1 DTEMP, TI-405B reads significantly higher than TI-406B, TI-407B, and TI-408B
- LOOP A-1 TAVG, TI-401 reads significantly lower than TI-402, TI-403, and TI-404
- Charging Pump A speed signal goes to minimum and charging flow lowers
- PRZR Backup Heaters energized (Red light on) (PRZR Level setpoint lowers)
- Outward Rod Motion (Rod Block circuit is inoperable)

Time	Position	Applicant's Actions or Behavior
	BOP	<p>In the (RED) R-1 PROTECTION CHANNEL 1 rack</p> <ul style="list-style-type: none"> • Places 401 LOOP A-1 HIGH T'AVG Bistable Proving Switch in DEFEAT (UP) • Verifies 401 LOOP A-1 HIGH T'AVG Bistable Proving Light ON • Places 401 LOOP A-1 LOW T'AVG Bistable Proving Switch in DEFEAT (UP) • Verifies 401 LOOP A-1 LOW T'AVG Bistable Proving Light OFF • Places 405 LOOP A-1 OVERTEMP TRIP Bistable Proving Switch in DEFEAT (UP) • Verifies 405 LOOP A-1 OVERTEMP TRIP Bistable Proving Light OFF • Places 405 LOOP A-1 OVERPOWER TRIP Bistable Proving Switch in DEFEAT (UP) • Verifies 405 LOOP A-1 OVERPOWER TRIP Bistable Proving Light OFF
	BOP/ATC	<p>Verifies proper bistable status lights and associated annunciators lit.</p> <ul style="list-style-type: none"> • G-9, RCS LOOP A HI TAVG 579° • TC401A Lo Tavg • F-7, RCS LOOP A LO TAVG 545°F • TC405A OPΔT • F-32, RCS OPΔT CHANNEL ALERT • TC405C OTΔT • F-23, RCS OTΔT CHANNEL ALERT

Op-Test No.: 1 Scenario No.: 3 Event No.: 2

Event Description: (~ T=15 min)

Loop A T_{cold} TE-401B Fails Low, Rod Block failed

Indications:

- F-4, PRESSURIZER LEVEL DEVIATION -5 NORMAL +5
- F-7, RCS LOOP A LO TAVG
- F-14, CHARGING PUMP SPEED
- F-15, RCS TAVG DEV 4°F
- F-16, TAVG-TREF DEVIATION +/- 5°F
- F-24, RCS AVG ΔT DEVIATION 3°F
- LOOP 1A-1 DTEMP, TI-405B reads significantly higher than TI-406B, TI-407B, and TI-408B
- LOOP A-1 TAVG, TI-401 reads significantly lower than TI-402, TI-403, and TI-404
- Charging Pump A speed signal goes to minimum and charging flow lowers
- PRZR Backup Heaters energized (Red light on) (PRZR Level setpoint lowers)
- Outward Rod Motion (Rod Block circuit is inoperable)

Time	Position	Applicant's Actions or Behavior
	BOP	Deletes 401/405 from the PPCS by performing the following: <ul style="list-style-type: none"> • Selects "Group Update" display • Selects "List Server Groups" • Selects 401_405 from the pick list • Turns "OFF" scan processing, then clicks the "Set Scan Processing" button • Answers prompts
	ATC	Restores following systems to automatic operation as necessary: <ul style="list-style-type: none"> • PRZR level control • Rod control
	SRO	Checks the following ITS Sections for LCOs: <ul style="list-style-type: none"> • Section 3.3.1, Table 3.3.1-1, Functions 5 and 6 • Section 3.3.2, Table 3.3.2-1, Function 4d Determines the following LCO Actions are applicable 3.3.1 Condition D Action D.1 - Place associated channel in trip within 6 hrs 3.3.2, Condition F, Action F.1 - Place associated channel in trip within 6 hrs
		End of Event

Op-Test No.: 1 Scenario No.: 3 Event No.: 3

Event Description: (~ T=22 min)

Containment Recirculation Fan Cooler A Trips

Indications:

- Red status light for Containment Recirc Fan A OFF
- Green and White status lights for Containment Recirc Fan ON
- J-9, Safeguard Breaker Tripped annunciator ON

Time	Position	Applicant's Actions or Behavior
	ATC/BOP	Recognizes alarms and indications and reports to SRO.
	BOP/SRO	Refers to AR-J-9, Safeguard Breaker Trip
	SRO	Notifies AO to investigate and report findings to the Control Room.
	SRO	Determines reset or reclosure of a breaker should not be attempted.
	SRO	Notifies Electricians or Work Control Center
	SRO	Refer to ITS LCO 3.6.6 and determines Condition D, Action D.1 should be entered.
	SRO	Notifies higher supervision
		End of Event

Op-Test No.: 1 Scenario No.: 3 Event No.: 4

Event Description: (~ T=27 min)

VCT Level Transmitter LT-112 Fails High

Indications:

- LI-112, VCT Level indicates 100%
- VCT OR HOLDUP TK DIVERT VALVE LCV-112A indicates diverted to Holdup Tanks
- VCT Level 14 % 86 annunciator alarms when actual level reaches 14%.

Time	Position	Applicant's Actions or Behavior
	ATC	Recognizes indications and alarms and reports to SRO.
	SRO	Notify AO to monitor LI-139 in valve alley, and report reading.
	ATC	Places LCV-112A in the "VCT" position.
	SRO	Informs AO to notify Control Room for manual makeup requirement when LI-139 indicates approximately 20%.
	SRO	Refers to ER-CVCS.1, REACTOR MAKEUP CONTROL MALFUNCTION, for manual makeup guidance.
	ATC	Performs makeup as required per ER-CVCS.1
		End of Event

Op-Test No.: 1 Scenario No.: 3 Event No.: 5

Event Description: (~ T=32 min)

Feedwater Control Valve B, FCV-476, Auto Controller Fails High, w/Manual Control available

Indications:

- FCV-476 Controller output at 100%
- S/G B NR and WR Levels rising
- Feedwater Flow > Steam Flow

Time	Position	Applicant's Actions or Behavior
	BOP	Recognizes alarms and indications and reports to SRO.
	BOP	Performs a Channel Check of LI-471, LI-472, and LI-473
	BOP	Takes manual control of FCV-476 and reduces output to restore level in S/G B level to 52% Narrow Range.
	SRO	Enters AP-FW.1, Abnormal MFW Pump Flow or NPSH.
	BOP	Checks MFW requirements and determines 2 MFW Pumps required and running
	BOP	Checks S/G status and continues to monitor S/G B level and adjust FCV-476 to restore level to 52%
		End of Event

Op-Test No.: 1 Scenario No.: 3 Event No.: 6

Event Description: (~ T=37 min)

Main Steam line break downstream of MSIVs, both MSIVs fail to close automatically or from the MCB, SI fails to actuate when setpoint reached

Indications:

- Gross Generator Load lowering
- RCS Tcold, Thot, and Tavg lowering
- Reactor Power rising
- RCS and PRZR Pressure lowering
- PRZR level lowering
- S/G Pressures lowering
- Steam Flow rising
- Steam Flow Noise

Time	Position	Applicant's Actions or Behavior
	ATC/BOP	Recognizes indications and alarms and reports to SRO.
	ATC	Verifies Reactor Tripped <ul style="list-style-type: none"> • At least one set of reactor trip breakers open • Neutron flux lowering • MRPI indicates all rods on bottom
	BOP	Verifies all turbine stop valves closed
	BOP	Verifies Buses 14, 16, 17, and 18 \geq 440V
	ATC	Checks if SI has been actuated by verifying SI annunciators and SI sequencing started both trains. Determines SI is not actuated and Manually actuates SI and CI by depressing SI and CI Manual Pushbuttons. (Critical Task CT E-0--D)
	SRO	Enters E-0, Reactor Trip or Safety Injection and re-verifies Immediate Actions before continuing with supplemental actions.
	ATC	Verifies Containment Spray not required by verifying Containment pressure < 28 psig and annunciator A-27, Containment Spray is not lit.
	BOP	Perform ATT-27.0, Attachment Automatic Action Verification
	ATC	Verifies MDAFW pump A and B running with flow to S/Gs and running at < 230 gpm.
	ATC	Monitors Heat Sink <ul style="list-style-type: none"> • Verifies S/G NR levels > 7% or verifies total AFW 200 gpm • Isolates AFW flow to any S/G > 50% NR • Controls S/G levels 7-50% NR
	ATC	Secures TDAFW Pump by placing switches in Pull Stop for TDAFW Pump steam isolation valves MOV-3504A and MOV 3505A.

Op-Test No.: 1 Scenario No.: 3 Event No.: 6

Event Description: (~ T=37 min)

Main Steam line break downstream of MSIVs, both MSIVs fail to close automatically or from the MCB, SI fails to actuate when setpoint reached

Indications:

- Gross Generator Load lowering
- RCS Tcold, Thot, and Tavg lowering
- Reactor Power rising
- RCS and PRZR Pressure lowering
- PRZR level lowering
- S/G Pressures lowering
- Steam Flow rising
- Steam Flow Noise

Time	Position	Applicant's Actions or Behavior
	ATC	Verifies annunciators A-7(A-15), CCW Pump 1A(1B) Return HI Temp or Low Flow are not lit.
	ATC	Monitors RCS Tavg and determines RCS temperatures is lowering <ul style="list-style-type: none"> • Stops dumping steam (Steam Dumps or ARVs) • Ensures Reheater steam supply valves closed • Limits feed flow to 200-230 gpm (~ 100 gpm per S/G) • Attempts to close both MSIVs (Notes MSIV A and B failed and reports to SRO)
	ATC	Verifies both PORVs closed, Auxiliary Spray valve AOV-296 closed, and when RCS pressure < 2260 psig both Spray Valves are closed
	ATC	Verifies RCP Trip Criteria <ul style="list-style-type: none"> • Verifies an RCP running • Verifies at least two SI Pumps running • Verifies RCS pressure-maximum S/G pressure >210 psid or secures RCP 1A and 1B
	ATC	Verifies S/G pressures and determines neither S/G is intact.
	SRO	Transitions to E-2, Faulted Steam Generator Isolation
	BOP	Attempts to manually close MSIV A and B.
	SRO	Dispatches AO with locked valve key to locally closed faulted S/G A and B MSIVs if not done previously

Op-Test No.: 1 Scenario No.: 3 Event No.: 6

Event Description: (~ T=37 min)

Main Steam line break downstream of MSIVs, both MSIVs fail to close automatically or from the MCB, SI fails to actuate when setpoint reached

Indications:

- Gross Generator Load lowering
- RCS Tcold, Thot, and Tavg lowering
- Reactor Power rising
- RCS and PRZR Pressure lowering
- PRZR level lowering
- S/G Pressures lowering
- Steam Flow rising
- Steam Flow Noise

Time	Position	Applicant's Actions or Behavior
	SRO/BOP	Check If Any S/G Secondary Side Is Intact: <ul style="list-style-type: none"> • Check pressure in S/G A - STABLE OR RISING OR <ul style="list-style-type: none"> • Check pressure in S/G B - STABLE OR RISING IF both S/G pressures lowering in an uncontrolled manner, THEN go to ECA-2.1, UNCONTROLLED DEPRESSURIZATION OF BOTH STEAM GENERATORS
	SRO	Determines Orange or Red path criteria for Integrity (PTS) are met and transitions to FR-P.1 (May occur directly from E-2)
	SRO/ATC	Determines RCS Pressure is > 250 psig
	SRO/BOP	Determines cold Leg temperatures are lowering and attempts to stop RCS Cooldown <ul style="list-style-type: none"> • Verifies ARVs AOV-3411 and AOV-3410 are closed by verifying Green status light only • May attempt to close MSIVs again from MCB (valves will not close. AO can not access valves due to location of steam break) • Verifies 0% valve position indicated on HCV-466, HCV-480, HCV-476, and HCV-481 • Ensures MFW Pumps A and B C/Ss in PULL STOP • Ensures only green status lights for Reheater Steam Supply valves AOV-3425, 3426, 3427 and 3428 lit. If not positions cam on REHEATER STEAM SUPPLY CONTROLLER, TC-3040 to allow arm to go to center of cam. • Verifies S/G Pressure is < Condensate Pressure and Places Condensate Pump A, B, and C C/Ss in PULL STOP • Verifies Total AFW flow > 200 gpm (~ 100 gpm per S/G)

Op-Test No.: 1 Scenario No.: 3 Event No.: 6

Event Description: (~ T=37 min)

Main Steam line break downstream of MSIVs, both MSIVs fail to close automatically or from the MCB, SI fails to actuate when setpoint reached

Indications:

- Gross Generator Load lowering
- RCS Tcold, Thot, and Tavg lowering
- Reactor Power rising
- RCS and PRZR Pressure lowering
- PRZR level lowering
- S/G Pressures lowering
- Steam Flow rising
- Steam Flow Noise

Time	Position	Applicant's Actions or Behavior
	SRO	Determines both S/Gs faulted
	BOP	Minimizes Cooldown from faulted S/Gs <ul style="list-style-type: none"> • Verifies TDAFW Pump Steam Supply Valves MOV-3504A and MOV-3505A are in PULL STOP and closed • Adjusts AFW flow to S/G A and B to 50 gpm each. (Critical Task CT-FR-P.1--B)
	ATC	Checks PRZR PORV block valves have power available and at least one is open
	ATC	Ensures one PORV open if RCS pressure is > 2335 psig and closes when less than 2335 psig.
	ATC	Determines SI Pumps B and C running
	SRO/ATC	Checks if SI can be reset <ul style="list-style-type: none"> • Determines RCS subcooling > 50°F using core exit T/Cs and Fig. 1.0 - Figure Min Subcooling • Verifies RVLIS Fluid Fracture > 84%
	ATC	Verifies SI Reset
	ATC	Stops SI pumps B and C and RHR pumps A and B by placing C/Ss in STOP and returning to AUTO. (Critical Task CT FR-P.1--A)
		End of Scenario

Op-Test No.: 1 Scenario No.: 3 Event No.: 6

Event Description: (~ T=37 min)

Main Steam line break downstream of MSIVs, both MSIVs fail to close automatically or from the MCB, SI fails to actuate when setpoint reached

Indications:

- Gross Generator Load lowering
- RCS Tcold, Thot, and Tavg lowering
- Reactor Power rising
- RCS and PRZR Pressure lowering
- PRZR level lowering
- S/G Pressures lowering
- Steam Flow rising
- Steam Flow Noise

Time	Position	Applicant's Actions or Behavior
	SRO	Perform Emergency Plan Classification for final event Expected EAL: Alert, 1.4.1, Red Path on F-0.4 Integrity Start Time: _____ Stop Time: _____ EAL: _____

Scenario Description:

Shortly after taking the watch, a fuel failure will occur. The crew should enter AP-RCS.3, High Reactor Coolant Activity and EPIP 1-13, Local radiation Emergency and place the 60 GPM letdown orifice in service, in accordance with S-3.2P, Swapping Letdown Orifice. The SRO should refer to TS 3.4.16 and enter appropriate actions after sample results are obtained.

After the 60 gpm letdown orifice is in service, Steam Generator A Pressure Transmitter PT-469 fails low. The crew should implement ER-INST.1, Reactor Protection Bistable Defeat after Instrumentation Loop Failure, and place appropriate bistables in the tripped condition. The SRO should refer to TS 3.3.1, 3.3.2, and 3.3.3 and enter the appropriate actions.

After ER-INST.1 has been addressed, TT-130, Letdown non-regenerative heat exchanger outlet temperature instrument fails low resulting in TCV-130 closing and letdown temperature rising. TCV-145 will bypass the ion exchangers due to high letdown temperature. The crew should implement AR-A-12, NON-REGEN HX LETDOWN OUT HI TEMP 145°F, take manual control of TCV-130, return letdown temperature to normal, and ensure ion exchangers are placed in service.

After letdown temperature is returned to normal, MFW Pump B develops an oil leak requiring a down power to 50% power. The crew should enter AP-FW.1, Abnormal MFW Pump Flow or NPSH and perform the down power per AP-TURB.5, Rapid Load Reduction.

After the reactivity manipulation is satisfied, the Condensate header ruptures resulting in a loss of normal feedwater. The crew should perform a manual trip. The manual trip pushbutton fails and the crew should trip the reactor by opening the Bus 13 and Bus 15 normal feeder breakers. The crew should note at some point that auto failure has occurred as evidenced by S/G levels < 17% trip setpoint and reactor trip breakers still closed. The TDAFW pump fails to auto start and Bus 16 trips resulting in loss of the only operable Motor Driven AFW pump. The BOP should manually start the TDAFW Pump if not still running from AP-FW.1. The crew should perform the immediate actions of E-0, Reactor Trip or Safety injection, and transition to ES-0.1, Reactor Trip Response. After at least one S/G NR level exceeds 7%, the TDAFW pump fails and the crew should note a red path condition on the Heat Sink Critical Safety Function after both S/G levels fall below 7% NR and transition to FR-H.1. The crew should start the Standby AFW Pumps and restore level in at least one S/G to > 7% Narrow Range. After performing the required actions of FR-H.1, the crew should transition back to ES-0.1. The scenario can be terminated after this transition.

CRITICAL TASKS

CT E-0--A - Manually trip the reactor from the control room before both SG levels lower to 50 inches wide range level.

Cues: 'D' panel alarm annunciates and no reactor trip occurs

Indication: Reactor trip and bypass breakers open

OR

Rod drive MG set breakers open

Feedback: MRPI indicates rod on bottom

Neutron flux lowering

CT FR-H.1--E - Establish 200 gpm feed flow before both SG wide range levels lower below 50 inches.

Cues: Indication of Rx trip

and

Indication that RCS pressure is > SG pressure

and

Total FW flow to SG is < 200 gpm

Indication: Align and start the 'C' SBAFW pump and establish > 200 gpm flow as indicated on flow indicator FI-4084B.

Feedback: 'C' SBAFW indicates running

Flow is indicated to the SG(s) at > 200 gpm

Steam generator level(s) rises

Facility: R. E. Ginna Scenario No.: 4 Op-Test No.: 1

Scenario Timeline:

Event Number	Time (Min)	Key	Event	Delay HH:MM:SS	Ramp HH:MM:SS	Final
N/A	N/A	SGN01B	N/A	00:00:00	00:00:00	0
S/G LEVEL CHANNEL FAILURE: LT-461(I)						
1	1	RCS16	1	00:00:00	00:00:00	60
FUEL CLADDING FAILURE						
2	***(~ 11)	SGN03B	3	00:00:00	00:00:00	0
S/G PRESSURE CHANNEL FAILURE: PT-469 (II)						
3	***(~20)	CVC05	5	00:00:00	00:00:00	0
LOSS OF CCW TO NON-REGENERATIVE LETDOWN HX						
4	***(~28)	FDW04B	7	00:00:00	00:10:00	100
FEEDWATER PUMP 1B LUBE OIL SYSTEM FAILURE						
5	(~30)	N/A	N/A	00:00:00	00:00:00	N/A
DOWN POWER TO 50%						
6	***(~ 35)	CND08	9	00:00:00	00:01:00	20000
CONDENSATE PIPE BREAK						
6	***(~37)	EDS04B	9	00:00:00	00:00:00	1
LOSS OF EMERGENCY BUS: 480V BUS 16						
6	Load	RPS07M	N/A	00:00:00	00:00:00	1
AUTO FAIL: TDAFW STM SUP MOV-3504A						
6	Load	RPS07N	N/A	00:00:00	00:00:00	1
AUTO FAIL: TDAFW STM SUP MOV-3505A						
6	Load	RPS05A	N/A	00:00:00	00:00:00	NO MAN (1)
REACTOR TRIP BREAKER A FAILURE						
6	Load	RPS05B	N/A	00:00:00	00:00:00	NO MAN (1)
REACTOR TRIP BREAKER B FAILURE						
6	***(~ 38)	FDW12	11	00:00:00	00:00:00	0
AFW TURBINE DRIVEN PUMP SPEED CONTROL FAILURE						

*** Events initiated on cue from NRC Lead Examiner

Estimated Time: 60 Minutes

Op-Test No.: 1 Scenario No.: 4 Event No.: 1

Event Description: (T=1 min)

High RCS Activity

Indications:

- R-9, Letdown Line Monitor indication rising and in alarm
- E-24, RMS Area Monitor High-Activity

Time	Position	Applicant's Actions or Behavior
	ATC	Recognizes alarms and indications and reports to SRO.
	ATC/BOP	Refers to AR-E-24 and AR-RMS-9
	SRO	Enters AP-RCS.3, High Reactor Coolant Activity
	SRO	Directs RP to sample RCS for activity
	ATC	Places 60 GPM orifice in service per S-3.2P, Swapping CVCS Letdown Orifice Valves <ul style="list-style-type: none"> • Verifies AOV-244 is in the BYPASS position. • Places PCV-135 to MANUAL AND adjusts as necessary to control Low Pressure Letdown pressure at approximately 200 psig. • Closes on-line 40 gpm orifice valve and verifies standby 40 gpm orifice valve is closed (AOV-200A and AOV-200B), THEN immediately open 60 gpm orifice valve, AOV-202 • Adjusts PCV-135 to achieve Letdown pressure of ~ 250 psig on PI-135. • Ensures PCV-135 controller signal is nulled/balanced and then places PCV-135 to AUTO. • Ensures TCV-130 is in AUTO. • Monitors Charging/Letdown mismatch and verifies Charging pump A responds in AUTO or adjusts charging flow manually. • Requests an AO locally adjust Reactor Coolant Pump Seal Injection Flow to maintain labyrinth seal D/P between 30 and 40 inches. • Monitors Letdown temperature controller TCV-35 is controlling at desired value. • Requests an AO verify local demin D/P <25 psid (DPI-100, DPI-101). • Notifies Shift Chemistry Technician.
	SRO	Determines R-9 reading > 200 mR/hr and implements EPIP 1-13, Local Radiation Emergency concurrently with AP-RCS.3.
	SRO	Directs RP to determine DI decontamination factor.
	SRO	Directs RP to perform surveys in the AUX BLDG
	SRO	Evaluates MCB annunciators.
	SRO	Consults with plant staff to determine if shutdown is required
	SRO	Notifies higher supervision.
	SRO	Refers to TS 3.4.16 and enters Condition A, Action A.1

Op-Test No.: 1 Scenario No.: 4 Event No.: 1

Event Description: (T=1 min)

High RCS Activity

Indications:

- R-9, Letdown Line Monitor indication rising and in alarm
- E-24, RMS Area Monitor High-Activity

Time	Position	Applicant's Actions or Behavior
		End of Event

Op-Test No.: 1 Scenario No.: 4 Event No.: 2

Event Description: (~ T=11 min)

Steam Generator A Pressure Transmitter PT-469 Fails Low

Indications:

- FI-465, STEAM GEN A-2 STEAM FLOW reads lower than FI-464, STEAM GEN A-1 STEAM FLOW and FI-493, STEAM GEN A-3 STEAM FLOW
- PI-469, STEAM GEN A-2 PRESSURE failed low
- G-22, ADFCS SYSTEM TROUBLE lit
- G-11, LO STEAM PRESSURE LOOP A 600 PSI
- G-27, STM LINE A LO-LO PRESS CHANNEL ALERT 514 PSI

Time	Position	Applicant's Actions or Behavior
	BOP	Recognizes alarms and indications and reports to SRO.
	SRO	Enters ER-INST.1 and goes to Section 4.9 and implements Attachment S/G Pressure Channel PI-469 White Channel
	BOP	In the (WHITE) W2 PROTECTION CHANNEL 2 rack: <ul style="list-style-type: none"> • Places the 469 LOOP A-2 LO LO PRESS SI bistable proving switch to DEFEAT (UP) • Verifies the 469 LOOP A-2 LO LO PRESS SI bistable proving light OFF • Places the 469 LOOP A-2 LOW PRESS bistable proving switch to DEFEAT (UP) • Verifies the 469 LOOP A-2 LOW PRESS bistable proving light OFF • Places the 465 LOOP A-2 HIGH TRIP bistable proving switch to DEFEAT (UP) • Verifies the 465 LOOP A-2 HIGH TRIP bistable proving light OFF • Places the 465 LOOP A-2 HI HI TRIP bistable proving switch to DEFEAT (UP) • Verifies the 465 LOOP A-2 HI HI TRIP bistable proving light ON
	BOP/ATC	Verifies the bistable status lights and annunciators listed are lit: <ul style="list-style-type: none"> • FC465A Hi Steam Flow • FC465B Hi Hi Steam Flow • PC469A Lo Press SI • G-11, LO STEAM PRESSURE LOOP A 600 PSI • G-26, S/G A HI STEAM FLOW • G-27, STM LINE A LO-LO PRESS CHANNEL ALERT 514 PSI

Op-Test No.: 1 Scenario No.: 4 Event No.: 2

Event Description: (~ T=11 min)

Steam Generator A Pressure Transmitter PT-469 Fails Low

Indications:

- FI-465, STEAM GEN A-2 STEAM FLOW reads lower than FI-464, STEAM GEN A-1 STEAM FLOW and FI-493, STEAM GEN A-3 STEAM FLOW
- PI-469, STEAM GEN A-2 PRESSURE failed low
- G-22, ADFCS SYSTEM TROUBLE lit
- G-11, LO STEAM PRESSURE LOOP A 600 PSI
- G-27, STM LINE A LO-LO PRESS CHANNEL ALERT 514 PSI

Time	Position	Applicant's Actions or Behavior
	BOP	Deletes the channel from the PPCS by performing the following: <ul style="list-style-type: none"> • On the "Sub/Delete/Restore" display <ul style="list-style-type: none"> ○ Selects Point ID P0469 ○ Turns "OFF" scan processing ○ Selects "Change" • On the "Sub/Delete/Restore" display <ul style="list-style-type: none"> ○ Selects Point ID F0465 ○ Turns "OFF" scan processing ○ Selects "Change"
	SRO	Checks the following ITS Sections for LCOs: <ul style="list-style-type: none"> • Section 3.3.2, Table 3.3.2-1, Function 1e <ul style="list-style-type: none"> ○ Enters Condition L, Action L.1 • Section 3.3.2, Table 3.3.2-1, Functions 4d and 4e <ul style="list-style-type: none"> ○ Enters Condition F, Action F.1 • Section 3.3.3, Table 3.3.3-1, Functions 24 and 25 <ul style="list-style-type: none"> ○ Determines requirements are still being met with one channel out of service, No further action required
		End of Event

Op-Test No.: 1 Scenario No.: 4 Event No.: 3

Event Description: (~ T=20 min)

Letdown Non-Regenerative Heat Exchanger Outlet Temperature TT-130 Fails Low

Indications:

- A-12, NON-REGEN HX LETDOWN OUT HI TEMP 145°F
- TI-130, NON-REGEN HX LTDN OUT TEMP failed low
- LTDN DIVERT TO DI OR VCT, TCV-145 positioned to VCT in AUTO
- NRHX LTDN OUTLET TEMP (TI-130) TCV-130 controller output 100%
- TI-140, VCT OUTLET TEMP begins to rise

Time	Position	Applicant's Actions or Behavior
	ATC	Recognizes alarms and indications and reports to SRO.
	SRO/ATC	Refers to AR-A-12, NON-REGEN HX LETDOWN OUT HI TEMP 145°F
	ATC	Ensures LTDN Divert to DI or VCT, TCV-145 is diverting to VCT.
	ATC	Monitors for reactivity changes and RCP seal performance.
	ATC	Adjusts NRHX LTDN outlet temp (TI-130) TCV-130 to maintain letdown temp at the normal value using PPCS point T0145.
	ATC/BOP	Checks for proper charging and letdown flows, and temperatures. <ul style="list-style-type: none"> • Charging Line Flow (FI-128B or C) ≈ 25 gpm. • LTDN Line Flow (FI-134) ≈ 40 gpm • NRHX LTDN Outlet Temp PPCS Point T0145 at the normal value.
	SRO	Refers to S-8A, COMPONENT COOLING WATER SYSTEM STARTUP AND NORMAL OPERATION VALVE ALIGNMENT.
	SRO	Initiates Condition Report for Technical Evaluation.
		End of Event

Op-Test No.: 1 Scenario No.: 4 Event No.: 4

Event Description: (~ T=28 min)

Feedwater Pump B Lube Oil System Leak

Indications:

- H-12, Feed Pump DC Oil Pump Auto Start
- H-4, Main Feed Pump Oil System

Time	Position	Applicant's Actions or Behavior
	BOP	Reports Annunciator H-12 to SRO. <ul style="list-style-type: none"> • Verifies DC Oil Pump started.
	SRO/BOP	Notifies AO to perform the following: <ul style="list-style-type: none"> • VERIFY Oil in the sump by LG-2764(2773) OR dipstick. • CHECK DC Oil Pump. • IF required, THEN START the other AC Oil Pump.
	BOP	Reports Annunciator H-4 to SRO.
	SRO/BOP	Notifies AO to perform the following: <ul style="list-style-type: none"> • Check for leaks. • Check filter DP.
	SRO	When MFW Pump trips, goes to AP-FW.1, Abnormal MFW Pump Flow or NPSH.
	ATC	Verifies Reactor Power > 50%.
	SRO/BOP	Determines only one MFW Pump running.
	ATC	Verifies Reactor Power < 75%.
	BOP	Starts all 3 AFW pumps and verifies flow.
	SRO	Initiates power reduction per AP-TURB.5, RAPID LOAD REDUCTION.
	SRO	If S/G levels drop to 20% NR performs a manual reactor trip and goes to E-0, Reactor Trip or Safety Injection.
		End of Event

Op-Test No.: 1 Scenario No.: 4 Event No.: 5

Event Description: (~T=30)

Down Power to 50%

Time	Position	Applicant's Actions or Behavior
	SRO	Provides ATC and BOP with instructions for down power.
	ATC	Verifies Rods in AUTO or adjusts rods in MANUAL to maintain Tavg to Tref.
	BOP	Reduces turbine load in Auto as follows: <ul style="list-style-type: none"> • Places Turbine EH Control in OPER PAN., IMP PRESS IN • Selects rate on thumbwheel per SRO instructions. • Reduces the load setter to 50% load value. • Depresses the GO button.
	ATC	Initiates boration at ~ 2-4 gal/% load reduction (~40-80 gals) per SRO instructions.
	ATC	Places PRZR backup heater switch to ON.
	ATC/BOP	Adjusts Turbine load rate, Boric Acid flowrate, Rods to maintain Tavg to Tref.
	BOP	Verifies Turbine Load reduction stops when Load = Setter
		End of Event

Op-Test No.: 1 Scenario No.: 4 Event No.: 6

Event Description: (~T=35 min)

Condensate Line Break, Bus 16 Fault, Loss of all Feedwater

Indications:

- H-1, Feedwater Pump Lo Suct Press 185 PSI
- H-11, Feed Pump Seal Water Lo Diff Press 15 PSI
- H-14, Condensate Header Press Lo
- H-17, Feed Pump Net Positive Suction Head
- H-30, Condensate Bypass Valve Open
- AA-9, Cond Bstr Pump Press Trip 100 PSI 425
- AA-25, Cond Sys Lo Press 325 PSI
- AA-30, Cond Bstr Pmp Lo Suct Press 100 PSI
- Feed Flow < Steam Flow
- S/G NR and WR levels lowering
- Hotwell Level lowering with Hotwell Level Controller LC-107 indicating full makeup signal

Time	Position	Applicant's Actions or Behavior
	BOP	Recognizes alarms and indications and reports to SRO.
	SRO	Orders Reactor Trip per AP-FW.1 with no MFW Pumps running and goes to E-0, Reactor Trip or Safety Injection.
	ATC	Verifies Reactor Tripped (Critical Task CT-E-0--A) <ul style="list-style-type: none"> • Opens Bus 13 And 15 normal feeder breakers • Verifies Rod Drive MG sets tripped • Closes Bus 13 and Bus 15 normal feeder breakers • Resets lighting breakers • Verifies neutron flux lowering - Power range indicators NI-41 through NI-44 < 5% • Verifies MRPI indicates all rods on bottom
	BOP	Manually trips turbine and verifies all turbine stop valves closed
	BOP	Verifies Buses 14, 17, and 18 \geq 440V, determines Bus 16 is de-energized.
	ATC	Determines SI is not actuated or required. <ul style="list-style-type: none"> • No SI Annunciators • RCS Pressure > 1750 psig • Steam line Pressure > 514 psig • CNMT Pressure < 4 psig • SI not sequencing
	SRO	Re-verifies Immediate Actions

Op-Test No.: 1 Scenario No.: 4 Event No.: 6

Event Description: (~T=35 min)

Condensate Line Break, Bus 16 Fault, Loss of all Feedwater

Indications:

- H-1, Feedwater Pump Lo Suct Press 185 PSI
- H-11, Feed Pump Seal Water Lo Diff Press 15 PSI
- H-14, Condensate Header Press Lo
- H-17, Feed Pump Net Positive Suction Head
- H-30, Condensate Bypass Valve Open
- AA-9, Cond Bstr Pump Press Trip 100 PSI 425
- AA-25, Cond Sys Lo Press 325 PSI
- AA-30, Cond Bstr Pmp Lo Suct Press 100 PSI
- Feed Flow < Steam Flow
- S/G NR and WR levels lowering
- Hotwell Level lowering with Hotwell Level Controller LC-107 indicating full makeup signal

Time	Position	Applicant's Actions or Behavior
	SRO	Transitions to ES-0.1, Reactor Trip Response
	SRO/ATC/BOP	Commences CSFST and Foldout Page monitoring.
	ATC	Monitors Tavg at or trending to 547°F.
	ATC	Checks PRZR level control <ul style="list-style-type: none"> • Verifies at least one charging pump running • Verifies letdown in service • Verifies PRZR level > 13% and trending to 20% • Verifies PRZR Proportional and Backup Heaters ON
	ATC/BOP	Checks S/G feed Flow Status <ul style="list-style-type: none"> • Verifies RCS Tavg < 554°F • Verifies MFW regulating and bypass valves closed • Reports 0 gpm AFW flow and MDAFW pumps or MFW available • Opens MOV-3505A or MOV-3504A and verifies TDAFW pump flow to both S/Gs (NOTE TO LEAD EXAMINER: Cue Booth Operator to trip pump when at least one S/G NR level is > 7%) • Closes MFW Pump Discharge Valves MOV-3977 and MOV-3976 • Places both MFW Pump C/Ss to PULL STOP • Places MFW Regulating valve controllers in MANUAL and lowers output to 0.
	ATC	Verifies all rods fully inserted using MRPI display
	SRO	When Narrow Range level in both S/Gs is < 7% with < 200 gpm total

Op-Test No.: 1 Scenario No.: 4 Event No.: 6

Event Description: (~T=35 min)

Condensate Line Break, Bus 16 Fault, Loss of all Feedwater

Indications:

- H-1, Feedwater Pump Lo Suct Press 185 PSI
- H-11, Feed Pump Seal Water Lo Diff Press 15 PSI
- H-14, Condensate Header Press Lo
- H-17, Feed Pump Net Positive Suction Head
- H-30, Condensate Bypass Valve Open
- AA-9, Cond Bstr Pump Press Trip 100 PSI 425
- AA-25, Cond Sys Lo Press 325 PSI
- AA-30, Cond Bstr Pmp Lo Suct Press 100 PSI
- Feed Flow < Steam Flow
- S/G NR and WR levels lowering
- Hotwell Level lowering with Hotwell Level Controller LC-107 indicating full makeup signal

Time	Position	Applicant's Actions or Behavior
		feedwater flow to the S/Gs, transitions to FR-H.1, Response to Loss of Secondary Heat Sink.
	ATC	Verifies secondary heat sink required <ul style="list-style-type: none"> • RCS pressure is > S/G A and S/G B pressure • RCS Cold Leg temperature >350°F
	BOP/ATC	Monitors Secondary Heat Sink (Continuous Action) <ul style="list-style-type: none"> • Verifies at least one S/G Wide Range level > 50 inches • Verifies PRZR pressure < 2335 psig
	SRO/BOP	Determines neither MDAFW pump available
	SRO/BOP	Verifies TDAFW pump available(if not previously started and tripped in ES-0.1, if not available goes to step to stop RCPs)

NOTE: The following steps up to but not including stopping the RCPs will only be performed if the TDAFW Pump start was not attempted previously.

	BOP/ATC	Verifies S/G blowdown and sample valves closed <ul style="list-style-type: none"> • S/G 1A Bldn Isol AOV-5738 White Status Light Bright • S/G 1B Bldn Isol AOV-5737 White Status Light Bright • S/G 1A Sample AOV-5735 White Status Light Bright • S/G 1B Sample AOV-5736 White Status Light Bright
	SRO/BOP	Checks MCB indications for cause of AFW Failure <ul style="list-style-type: none"> • Verifies CST > 5 Ft • Determines one MDAFW pump unavailable because Bus 16 is de-energized the other is OOS for impeller replacement.

Op-Test No.: 1 Scenario No.: 4 Event No.: 6

Event Description: (~T=35 min)

Condensate Line Break, Bus 16 Fault, Loss of all Feedwater

Indications:

- H-1, Feedwater Pump Lo Suct Press 185 PSI
- H-11, Feed Pump Seal Water Lo Diff Press 15 PSI
- H-14, Condensate Header Press Lo
- H-17, Feed Pump Net Positive Suction Head
- H-30, Condensate Bypass Valve Open
- AA-9, Cond Bstr Pump Press Trip 100 PSI 425
- AA-25, Cond Sys Lo Press 325 PSI
- AA-30, Cond Bstr Pmp Lo Suct Press 100 PSI
- Feed Flow < Steam Flow
- S/G NR and WR levels lowering
- Hotwell Level lowering with Hotwell Level Controller LC-107 indicating full makeup signal

Time	Position	Applicant's Actions or Behavior
	SRO/BOP	Determines desired feed flow rate per ATT 22.0 <ul style="list-style-type: none"> • Determines feed and bleed not in progress or required • If level > 50" feed as desired • If level < 50" feed affected S/G at ≤ 100 gpm until > 50" then fill as desired • After feed initiation: <ul style="list-style-type: none"> ○ Verify both hot leg temperatures lowering ○ Verify affected S/G is not faulted or ruptured
	BOP	Checks TDAFW Pump flow control valves open: <ul style="list-style-type: none"> • AOV-4297 • AOV-4298
	BOP	Starts TDAFW Pump by opening MOV-3504A and MOV-3505A
	BOP	Determines TDAFW pump is not feeding S/Gs
	ATC	Stops RCP 1A and 1B
	SRO/ATC	Verifies SI not actuated and goes to next step

Op-Test No.: 1 Scenario No.: 4 Event No.: 6

Event Description: (~T=35 min)

Condensate Line Break, Bus 16 Fault, Loss of all Feedwater

Indications:

- H-1, Feedwater Pump Lo Suct Press 185 PSI
- H-11, Feed Pump Seal Water Lo Diff Press 15 PSI
- H-14, Condensate Header Press Lo
- H-17, Feed Pump Net Positive Suction Head
- H-30, Condensate Bypass Valve Open
- AA-9, Cond Bstr Pump Press Trip 100 PSI 425
- AA-25, Cond Sys Lo Press 325 PSI
- AA-30, Cond Bstr Pmp Lo Suct Press 100 PSI
- Feed Flow < Steam Flow
- S/G NR and WR levels lowering
- Hotwell Level lowering with Hotwell Level Controller LC-107 indicating full makeup signal

Time	Position	Applicant's Actions or Behavior
	BOP	Establishes SAFW flow to at least one S/G (CT FR-H.1--E) <ul style="list-style-type: none"> • Using ATT. 5.1, Attachment SAFW, Aligns SAFW Pump C to selected S/G as follows: <ul style="list-style-type: none"> ○ Ensures SI Reset ○ Ensures the following valves open: <ul style="list-style-type: none"> ▪ MOV-9701A, SAFW PUMP C DISCHARGE VLV ▪ MOV-4616, AUX BLDG SW ISOL VLV ▪ MOV-9704A, SAFW PUMP C ISOL VLV ○ Opens MOV-9629A, SAFW PUMP C SUCTION VLV. ○ Verifies at least 1 SW pump running.

Op-Test No.: 1 Scenario No.: 4 Event No.: 6

Event Description: (~T=35 min)

Condensate Line Break, Bus 16 Fault, Loss of all Feedwater

Indications:

- H-1, Feedwater Pump Lo Suct Press 185 PSI
- H-11, Feed Pump Seal Water Lo Diff Press 15 PSI
- H-14, Condensate Header Press Lo
- H-17, Feed Pump Net Positive Suction Head
- H-30, Condensate Bypass Valve Open
- AA-9, Cond Bstr Pump Press Trip 100 PSI 425
- AA-25, Cond Sys Lo Press 325 PSI
- AA-30, Cond Bstr Pmp Lo Suct Press 100 PSI
- Feed Flow < Steam Flow
- S/G NR and WR levels lowering
- Hotwell Level lowering with Hotwell Level Controller LC-107 indicating full makeup signal

Time	Position	Applicant's Actions or Behavior
	BOP	<ul style="list-style-type: none"> ○ To feed selected S/G: (CT FR-H.1--E) <ul style="list-style-type: none"> ▪ S/G A - restores SAFW flow as directed by procedure in effect. OR ▪ S/G B, performs the following: <ul style="list-style-type: none"> • Ensures MOV-9746, SAFW PMP D EMERG DISCH VLV, open • Closes MOV-9704A, SAFW PUMP C ISOL VLV • Opens either SAFW CROSSOVER VLV: <ul style="list-style-type: none"> ○ MOV-9703A OR ○ MOV-9703B • Verifies open MOV-9704B, SAFW PUMP D ISOL VLV • Restores SAFW flow as directed by procedure in effect. • Verifies selected S/G Wide Range level is > 50 inches and determines from ATT-22.0, Attachment Restoring Feed Flow that flow can be started at > 235 gpm • Starts SAFW Pump C by taking C/S to START • When intact S/G level GREATER THAN 50 inches (100 inches adverse CNMT), THEN verify SAFW flow GREATER THAN 235 GPM

Op-Test No.: 1 Scenario No.: 4 Event No.: 6

Event Description: (~T=35 min)

Condensate Line Break, Bus 16 Fault, Loss of all Feedwater

Indications:

- H-1, Feedwater Pump Lo Suct Press 185 PSI
- H-11, Feed Pump Seal Water Lo Diff Press 15 PSI
- H-14, Condensate Header Press Lo
- H-17, Feed Pump Net Positive Suction Head
- H-30, Condensate Bypass Valve Open
- AA-9, Cond Bstr Pump Press Trip 100 PSI 425
- AA-25, Cond Sys Lo Press 325 PSI
- AA-30, Cond Bstr Pmp Lo Suct Press 100 PSI
- Feed Flow < Steam Flow
- S/G NR and WR levels lowering
- Hotwell Level lowering with Hotwell Level Controller LC-107 indicating full makeup signal

Time	Position	Applicant's Actions or Behavior
	SRO	Goes to step 11
	SRO/BOP	Checks Narrow Range Level in selected S/G > 7% or SAFW flow is > 235 gpm to selected S/G and selected S/G level WR and/or NR rising.
	SRO	Returns to step in effect in ES-0.1, Reactor Trip Response
		End of Scenario
	SRO	Perform Emergency Plan Classification for final event Expected EAL: Site Area Emergency, 1.3.1, Red Path in F-0.3 Heat Sink Start Time: _____ Stop Time: _____ EAL: _____