

FINAL SUBMITTAL

NORTH ANNA EXAM 50-338/2000-301

SEPTEMBER 14 - 21, 2000

NUREG-1021 - ES-501

ES-301-1 - ADMIN TOPICS OUTLINE

& ADMIN JPMS

Administrative Topic/Subject Description		Describe method of evaluation: 1. ONE Administrative JPM, OR 2. TWO Administrative Questions
Facility: North Anna Power Station Exam Level: RO / SRO		Date of Examination: 9/18 - 21/00 Operating Test Number: 1
A.1	Shift staffing requirements (Both) (NEW)	JPM: Evaluate overtime eligibility
	Plant parameters verification (Both) (BANK)	JPM: Determine shutdown margin by hand calculation
A.2	Tagging and clearances (Both) (NEW)	JPM: Determine if tagging boundaries are adequate
A.3	Radiation exposure limits (Both) (NEW)	JPM: Assess personnel exposure to determine if/how RHR inlet valve can be opened
A.4	Emergency communications (RO Only) (NEW)	JPM: Meteorological and stability class determination
	Emergency protective action recommendations (SRO Only) (BANK)	JPM: Determine protective action recommendations (PAR)

NRC Developed Admin JPM on Overtime Eligibility

(NRC ADMIN A1)

LESSON TITLE: Evaluate Overtime Eligibility.

Validation time: 15 min.

REVISION NO: 0

Developed by: R. Aiello

SAFETY CONSIDERATIONS:

None.

EVALUATOR NOTES: (Do not read to trainee)

- 1__ The applicable procedure section **WILL NOT** be provided to the trainee.
- 2__ If this is the first JPM of the JPM set, read the JPM briefing contained NUREG-1021, Appendix E, or similar to the trainee.

Read the following to trainee.

TASK CONDITIONS:

- 1__ A startup is planned for the following shift. One Reactor Operator must be held over two hours for startup
- 2__ The following is the work history (excluding shift turnover time) of the available reactor operators on shift. A break of at least 8 hours occurred between all work periods. All operators began their shift schedule at the same time each day and none stood watch as the OATC on day 8 (today).

Evaluate Overtime Eligibility.

DAY	1	2	3	4	5	6	7	8 (Today)
Operator #1	0	0	12	12	12	8	14	10
Operator #2	0	0	12	12	12	12	8	14
Operator #3	0	0	12	12	12	8	8	15
Operator #4	0	8	12	10	10	8	10	12
Operator #5	0	4	12	10	10	14	10	12

INITIATING CUE:

Evaluate the work history for all 5 operators. Determine which operator(s), if any, can be held over for two hours without prior overtime approval, and determine which operators CANNOT be held over for two hours without prior overtime approval.

Evaluate Overtime Eligibility.

PERFORMANCE CHECKLIST

NOTE: Sequence is assumed unless denoted in the **Comments**.

Step 1 - Obtain a current revision of VPAP-0103

Current Revision of VPAP-0103 obtained and verified.

SAT/UNSAT* _____

Step 2 - Determine Operator #1 would exceed 24 hours in a 48-hour period.

Determined that Operator #1 would exceed 24 hours in a 48-hour period.

**** CRITICAL STEP ** SAT/UNSAT*** _____

Step 3 - Determine Operator #2 would not exceed any overtime restrictions.

Determined that Operator #2 would not exceed any overtime restrictions.

SAT/UNSAT* _____

Step 4 - Determine Operator #3 would exceed 16 hours straight.

Determined that Operator #3 would exceed 16 hours straight.

**** CRITICAL STEP ** SAT/UNSAT*** _____

Evaluate Overtime Eligibility.

Step 5 - Determine Operator #4 would not exceed any overtime restrictions.

Determined that Operator #4 would not exceed any overtime restrictions.

SAT/UNSAT* _____

Step 6 - Determine Operator #5 would exceed 72 hours in a 7-day period.

Determined that Operator #5 would exceed 72 hours in a 7 day period

SAT/UNSAT* _____

TERMINATING CUE: When the examinee has evaluated overtime restrictions, this JPM is complete.

*** Comments required for any step evaluated as UNSAT.**

Evaluate Overtime Eligibility.

RELATED TASKS:

Conduct shift turnover and relief

K/A REFERENCE AND IMPORTANCE RATING:

GEN 2.1.4, 2.1.5

REFERENCES:

VPAP-0103

TOOLS AND EQUIPMENT:

None.

SAFETY FUNCTION (from NUREG 1123, Rev 2.):

A.1 - Conduct Of Operations

REASON FOR REVISION:

New JPM for NRC exam.

Evaluate Overtime Eligibility.

Time Required for Completion: 10 Minutes (approximate).

APPLICABLE METHOD OF TESTING

Performance: Simulate Actual Unit:
Setting: Control Room Simulator (Not applicable to In-Plant JPMs)
Time Critical: Yes No Time Limit N/A
Alternate Path: Yes No

EVALUATION

Trainee: _____ SSN: _____

JPM: Pass Fail

Remedial Training Required: Yes No

Did Trainee Obtain Procedure using PROMIS/MIND?: Yes No
(Each Student should obtain one procedure per evaluation set using PROMIS/MIND.)

Comments: _____

TASK CONDITIONS:

- 1__ A startup is planned for the following shift. One Reactor Operator must be held over two hours for startup
- 2__ The following is the work history (excluding shift turnover time) of the available reactor operators on shift. A break of at least 8 hours occurred between all work periods. All operators began their shift schedule at the same time each day and none stood watch as the OATC on day 8 (today).

DAY	1	2	3	4	5	6	7	8 (Today)
Operator #1	0	0	12	12	12	8	14	10
Operator #2	0	0	12	12	12	12	8	14
Operator #3	0	0	12	12	12	8	8	15
Operator #4	0	8	12	10	10	8	10	12
Operator #5	0	4	12	10	10	14	10	12

INITIATING CUE:

Evaluate the work history for all 5 operators. Determine which operator(s), if any, can be held over for two hours without prior overtime approval, and determine which operators CANNOT be held over for two hours without prior overtime approval.

**NORTH ANNA POWER STATION
INITIAL LICENSE EXAMINATION
ADMINISTRATIVE
JOB PERFORMANCE MEASURE**

Determine shutdown margin by hand calculation

CANDIDATE

EXAMINER

Virginia Power
North Anna Power Station

REACTOR OPERATOR

JOB PERFORMANCE MEASURE
(Admin A1)
R97

TASK

Determine the shutdown margin by hand calculation (1-PT-10A).

NOTE TO THE TRAINER AND THE EVALUATOR

Unless a specific evaluator's cue is provided, you should provide a cue indicating that the component or parameter is in the condition specified by the procedure.

PREREQUISITES

The trainee has completed the applicable course knowledge training at the reactor operator level.

INITIAL CONDITIONS

Reactor has been shut down for 72 hours following a reactor trip.

Shift supervisor has been notified of this test

There are no equivalent stuck rods

Reactor power was 100% for > 100days prior to the trip with all rods fully withdrawn and a Reactor Coolant System boron concentration of 750 ppm

Core burnup is 9000 MWD/MTU

Reactor Coolant System boron concentration was determined 15 minutes ago to be 1200 PPM

Reactor Coolant System projected temperature is 200°F

No dilutions have occurred since the last Reactor Coolant System boron concentration was determined

Test is being performed to determine if an RCS boration is required prior to cooling down to 200°F

There are no control rods stuck

INITIATING CUE

You are requested to determine the shutdown margin by hand calculation using 1-PT-10A.

STANDARDS

Task was performed as directed by the procedure referenced in the task statement within parentheses (one of the underlined procedures if several are cited)

Self-checking practices were used throughout task performance

Verbal communication related to any of the following modes was conducted in accordance with VPAP-1407

- Emergency communication
- Face-to-face communication
- Giving and acknowledging orders
- Phonetic alphabet
- Telephone communication systems

TOOLS AND EQUIPMENT

Calculator

PREFERRED EVALUATION METHOD

Demonstration

VALIDATION TIME: 25 min.

K/A: 001A411 (3.5/4.1)

START TIME: _____

PERFORMANCE STEPS

(HAND APPLICANT THE PARTIALLY FILLED OUT SDM SHEET, 1-PT-10A)

- 1 Review the initial conditions, precautions, and limitations.

Standards

Procedure initial conditions, precautions and limitations are reviewed

SAT [] UNSAT [] NOTE:

- 2 Check the reason for doing the procedure.

Standards

The "calculation of shutdown margin for projected conditions" blank is checked

SAT [] UNSAT [] NOTE:

- 3 Determine the worth of rods that are stuck, untrippable, and not fully inserted.

Standards

Attachment 1 is completed

SAT [] UNSAT [] NOTE:

- 4 Record the current or projected shutdown conditions.

Standards

Data is obtained from the initial conditions page and the station curve book; calculations are performed and data is entered in column 1 of attachment 2

SAT [] UNSAT [] NOTE:

- 5 Record the previous critical conditions.

Standards

Data is obtained from the initial conditions page and the station curve book; calculations are performed and data is entered in column 2 of attachment 2

SAT [] UNSAT [] NOTE:

- 6 Calculate the sum of the current or projected shutdown conditions.

Critical Standards

Sum is determined to be -10417 ± 100 pcm

SAT [] UNSAT [] NOTE:

- 7 Calculate the sum of the previous critical conditions.

Critical Standards

Sum is determined to be -10175 ± 100 pcm

SAT [] UNSAT [] NOTE:

- 8 Calculate the difference between the current or projected shutdown conditions and the previous critical conditions.

Critical Standards

Difference is calculated to be -242 pcm \pm 25 pcm

SAT [] UNSAT [] NOTE:

- 9 If necessary, calculate the boron concentration required to achieve a shutdown margin of at least 1.77% $\Delta K/K$.

Critical Standards

Determines that RCS must be borated 221.5 PPM \pm 11 ppm

SAT [] UNSAT [] NOTE:

10 Verify that the acceptance criteria cited in the procedure have been met.

Evaluator's Cue

Assume another operator will complete the procedure

SAT []	UNSAT []	NOTE:
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FINISH TIME: _____

>>>> END OF EVALUATION <<<<

Virginia Power
North Anna Power Station

REACTOR OPERATOR

JOB PERFORMANCE MEASURE

R97

INITIAL CONDITIONS

Reactor has been shut down for 72 hours following a reactor trip.

Shift supervisor has been notified of this test

There are no equivalent stuck rods

Reactor power was 100% for > 100days prior to the trip with all rods fully withdrawn and a Reactor Coolant System boron concentration of 750 ppm

Core burnup is 9000 MWD/MTU

Reactor Coolant System boron concentration was determined 15 minutes ago to be 1200 PPM

Reactor Coolant System projected temperature is 200°F

No dilutions have occurred since the last Reactor Coolant System boron concentration was determined

Test is being performed to determine if an RCS boration is required prior to cooling down to 200°F

There are no control rods stuck

INITIATING CUE

You are requested to determine the shutdown margin by hand calculation using 1-PT-10A.

**NORTH ANNA POWER STATION
INITIAL LICENSE EXAMINATION
ADMINISTRATIVE
JOB PERFORMANCE MEASURE**

Determine if tagging boundaries are adequate

CANDIDATE

EXAMINER

Tools/Equipment/Procedures Needed:

1-OPAP-0010
Station Load List
Mind computer or FM prints

READ TO OPERATOR

DIRECTION TO TRAINEE:

I will explain the initial conditions, and state the task to be performed. All steps shall be performed for this JPM. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

High-pressure heater drain pump 1-SD-P-1A has been shutdown due to excessive packing leakage and must be isolated and tagged for maintenance.

A draft tagging record has been generated by shift personnel.

INITIATING CUES:

You are requested to determine if the tagging boundaries identified by the shift will adequately isolate high-pressure heater drain pump 1-SD-P-1A. You may any plant reference **except** the computerized tagging system and the maintenance operating procedure for 1-SD-P-1A. Continue until the entire tagging record has been reviewed.

NOTE TO EXAMINER: JPM steps need NOT be performed in sequence.

<p><u>STEP 1:</u> Review the appropriate electrical references.</p> <p><u>STANDARD:</u> Operator reviews station load list or electrical diagrams.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 2:</u> Determine if electrical boundary is adequate.</p> <p><u>STANDARD:</u> Operator determines that the breaker listed on the tagging record will not de-energize 1-SD-P-1A.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 3:</u> Review the appropriate mechanical drawings.</p> <p><u>STANDARD:</u> Operator reviews 11715-FM -75A, sheet 1.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 4:</u> Determine if mechanical boundaries are adequate.</p> <p><u>STANDARD:</u> Operator determines that the following errors exist in the mechanical section:</p> <ul style="list-style-type: none"> • 1-SD-12, check valve on the pump discharge, is tagged closed instead of the discharge isolation valve • The vents and drains are opened before the discharge/suction isolations are closed. • The suction is isolated before the discharge is isolated. <p><u>COMMENTS:</u></p> <p style="text-align: center;">END OF TASK</p>	<p>CRITICAL STEP</p> <p>___ SAT</p> <p>___ UNSAT</p>

**CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)**

INITIAL CONDITIONS:

High-pressure heater drain pump 1-SD-P-1A has been shutdown due to excessive packing leakage and must be isolated and tagged for maintenance.

A draft tagging record has been generated by shift personnel.

INITIATING CUES:

You are requested to determine if the tagging boundaries identified by the shift will adequately isolate high-pressure heater drain pump 1-SD-P-1A. You may any plant reference **except** the computerized tagging system and the maintenance operating procedure for 1-SD-P-1A. Continue until the entire tagging record has been reviewed.

**NORTH ANNA POWER STATION
INITIAL LICENSE EXAMINATION
ADMINISTRATIVE
JOB PERFORMANCE MEASURE**

Assess personnel exposure to determine
if/how RHR inlet valve can be opened

CANDIDATE

EXAMINER

NORTH ANNA POWER STATION
INITIAL LICENSE EXAMINATION
ADMINISTRATIVE
JOB PERFORMANCE MEASURE

Task:

Assess personnel exposure to determine if/how RHR inlet valve can be opened

References:

Survey maps

Validation Time: 30 min. **Time Critical:** No

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Candidate: _____
NAME

Performance Rating: SAT _____ UNSAT _____

Examiner: _____ / _____
NAME SIGNATURE DATE

=====

COMMENTS

JPM TITLE: Assess personnel exposure to determine if/how RHR inlet valve can be opened

JPM NUMBER:NRC Admin A3

JPM REV. DATE:8/17/00

TIME VALIDATION:15 MINUTES

AN 'X' BELOW INDICATES THE APPLICABLE METHOD(S) OF TESTING WHICH MAY BE USED:

PERFORM: X SIMULATE: DISCUSS:

INSTRUCTOR'S INFORMATION

TASK STANDARDS:

Determined there is no success path for opening valve without exceeding dose margin limits.

REQUIRED MATERIALS:

1. Unit 1 containment survey maps with estimated transit times
2. Calculator

REFERENCES:

None

VALIDATION TIME: 25 min.

K/A: 2.3.4 (2.5/3.1)
2.3.10 (2.9/3.3)

TERMINATING CUES:

Determined there is no success path for opening valve.

READ TO THE TRAINEE

If you have any questions, ask them now and I will answer them. During the test, I cannot answer questions. When you complete all the steps correctly, you will pass this Job Performance Measure.

I will describe the general conditions for the task you will perform and provide the initiating cues.

INITIAL CONDITIONS:

1. Unit 1 has experienced a valid safety injection signal.
2. The crew is attempting to place the residual heat removal system in service, but they are unable to open 1-RH-MOV-1701 from the Main Control Room.
3. You have been tasked with entering containment and locally opening 1-RH-MOV-1701.
4. Your allowable dose margin limit is 1850 mr.
5. Survey maps of the unit 1 containment are available, showing dose rates and one way travel time to reach the valve for each of 2 possible routes.
6. Health physics personnel are currently unavailable to provide assistance.

INITIATING CUES:

You have been directed to determine:

- 1) Which roundtrip path would result in the lowest radiation exposure.
- 2) If you can locally open 1-RH-MOV-1701 without exceeding your dose margin limit.

() ELEMENT: 1

Calculate exposure at valve.

STANDARDS:

__1. $(6 \text{ R/HR})(1000 \text{ MR/R})(1 \text{ HR/60 MIN})(5 \text{ MIN}) = 500 \text{ MR}$

EVALUATOR'S NOTES:

NOTE: The operator may perform the calculations in any order.

() ELEMENT: 2

Calculate exposure from using stairway.

STANDARDS:

__1. Personnel hatch to top of stairway:

$(4 \text{ R/HR})(1000 \text{ MR/R})(1 \text{ HR/60 MIN})(0.5 \text{ MIN})(2 \text{ TRIPS}) = 66 \frac{2}{3} \text{ MR.}$

__2. On stairway and walk to valve:

$(12 \text{ R/HR})(1000 \text{ MR/R})(1 \text{ HR/60 MIN})(5 \text{ MIN})(2 \text{ TRIPS}) = 2000 \text{ MR}$

__3. Total dose received:

$(66 \frac{2}{3} \text{ MR}) + (2000 \text{ MR}) + (500 \text{ MR}) = 2566 \frac{2}{3} \text{ MR TOTAL DOSE.}$

() ELEMENT: 3

Calculate exposure from using spiral staircase.

STANDARDS:

__1. Personnel hatch to top of spiral staircase:

$$(1 \text{ R/HR})(1000 \text{ MR/R})(1 \text{ HR/60 MIN})(1 \text{ MIN})(2 \text{ TRIPS}) = 33 \frac{1}{3} \text{ MR.}$$

__2. On spiral staircase and walk to valve:

$$(16 \text{ R/HR})(1000 \text{ MR/R})(1 \text{ HR/60 MIN})(4 \text{ MIN})(2 \text{ TRIPS}) = 2133 \frac{1}{3} \text{ MR.}$$

__3. Total dose received:

$$(33 \frac{1}{3} \text{ MR})+(2133 \frac{1}{3} \text{ MR})+(500 \text{ MR}) = 2666 \frac{2}{3} \text{ MR.}$$

(C) ELEMENT: 4

Determine lowest exposure path.

STANDARDS:

__1. Compared results of the calculations and determined the path using the stairway to be the lowest exposure.

EVALUATOR'S NOTES:

None

(C) ELEMENT: 5

Compare exposure to margin.

STANDARDS:

- __1 Compared exposure to margin and determined alignment could not be made within allowable margin of 1850 mr.

EVALUATOR'S NOTES:

TERMINATE JPM AT THIS POINT

JPM STUDENT IC SHEET

INITIAL CONDITIONS:

1. Unit 1 has experienced a valid safety injection signal.
2. The crew is attempting to place the residual heat removal system in service, but they are unable to open 1-RH-MOV-1701 from the Main Control Room.
3. You have been tasked with entering containment and locally opening 1-RH-MOV-1701.
4. Your allowable dose margin limit is 1850 mr.
5. Survey maps of the unit 1 containment are available, showing dose rates and one way travel time to reach the valve for each of 2 possible routes.
6. Health physics personnel are currently unavailable to provide assistance.

INITIATING CUES:

You have been directed to determine:

- 1) Which roundtrip path would result in the lowest radiation exposure.
- 2) If you can locally open 1-RH-MOV-1701 without exceeding your dose margin limit.

SURVEY DATA:

Location of 1-RH-MOV-1701 is designated on Survey Map.

Estimated time at the valve: 5 minutes.

Dose rate at the valve: 6 R/hr.

Survey Map Area	One Way Travel Time (min.)	Average Dose Rate (R/hr)
B (from personnel hatch to top of spiral staircase)	1	1
C (spiral staircase to 241' & walk to valve)	4	16
D (from personnel hatch to top of stairway)	0.5	4
E (stairway to 241' & walk to valve)	5	12

RESULTS:

Identify the Lowest Exposure Path:

STAIRWAY: _____

SPIRAL STAIRCASE: _____

Can the Alignment be completed within your Dose Margin Limit?

 YES NO

U. S. NUCLEAR REGULATORY COMMISSION

REGION II

A-4 ADMINISTRATIVE SECTION RO

NRC-JPM-04/R

Title:

Meteorological and Stability Class Determination

IAW

EPIP-2.01 Notification of State and Local Governments

Time Required for Completion: 10 Minutes (approximate).

APPLICABLE METHOD OF TESTING

Performance: Simulate Actual Unit:
Setting: Control Room Simulator (Not applicable to In-Plant JPMs)
Time Critical: Yes No Time Limit N/A
Alternate Path: Yes No

EVALUATION

Trainee: _____ SSN: _____

JPM: Pass Fail

Remedial Training Required: Yes No

Did Trainee Obtain Procedure using PROMIS/MIND?: Yes No
(Each Student should obtain one procedure per evaluation set using PROMIS/MIND.)

Comments:

*Indicates a critical step

Read to the Operator

DIRECTION TO APPLICANT:

I will explain the initial conditions, and state the task to be performed. All steps shall be performed/simulated for this JPM. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

An ALERT was declared 30 minutes ago due to a unit 1 SGTR with safety injection required based on EAL tab B-6.

An initial notification to state and local governments was completed 15 minutes ago with an update schedule of 30 minutes.

The SG PORV has just lifted on the ruptured SG and will not reset.

A release of radioactive material is presently occurring.

A follow-up message is being prepared to the state and local governments IAW attachment 2 of EPIP-2.01

The main tower lower-level wind direction recorder is OOS.

The main tower Delta T recorder is OOS.

The main tower lower-level wind speed recorder is OOS.

INITIATING CUES:

The Unit 1 SRO has requested that you to perform steps 7- 12 of EPIP 2.01, "Notification of State and Local Governments," to obtain meteorological data from the Met Panel.

Meteorological and Stability Class Determination

<p><u>STEP 1 :</u> Observes Note prior to Step 7.</p> <p><u>STANDARD:</u></p> <p>_____ Wind direction is always given as the compass point the wind blows from. Example: Wind direction is from East North East (ENE).</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 2:</u> Get meteorological information. (Step 7)</p> <p><u>STANDARD:</u></p> <p>_____ Determines the Main Tower Lower Level Wind Direction recorder is not in service IAW the Initial Conditions and uses an alternate: Backup Tower, Main Tower Upper Level. (Step 7. a)</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>*STEP 3:</u> Obtains approximate average wind direction. (Step 7.b)</p> <p><u>STANDARD:</u></p> <p>_____ Locates and observes the average wind direction for previous 15 minutes (appx. 308°).</p> <p>Evaluators Cue: Provide the wind direction once applicant has located the appropriate indication. The wind direction has been bouncing between 306° to 316°.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

*Indicates a critical step

<p><u>*STEP 4:</u> Determine compass point wind blowing from. (Step 7.c)</p> <p><u>STANDARD:</u></p> <p>_____ Uses the table in step 7 to determine the compass point based on the average wind direction is NW.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 5:</u> Determine wind speed. (Step 7.d)</p> <p><u>STANDARD:</u></p> <p>_____ Determines the Main Tower Lower Level Wind Speed recorder is not in service IAW the Initial Conditions and uses an alternate: Backup Tower, Main Tower Upper Level.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>*STEP 6:</u> Obtains wind speed. (Step 7 e)</p> <p><u>STANDARD:</u></p> <p>_____ Obtains wind speed from either the Backup Tower or Main Tower Upper Level Wind Speed recorder.</p> <p>Evaluator Cue: Provide the wind speed once applicant has located the appropriate indication. The wind speed is 10 MPH.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

*Indicates a critical step

<p><u>STEP 7:</u> Record the following in Item 7 (Step 7.f)</p> <ul style="list-style-type: none"> • Source of meteorological data (on-site/regional) • Compass point • Wind speed <p><u>STANDARD:</u></p> <p>_____ Records the following on Item 7 of Attachment 2.</p> <ul style="list-style-type: none"> • Source of meteorological data is from on-site. • Compass point is NW. • Wind speed is 10 MPH. <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 8:</u> Check any of the following information needed: (Step 8)</p> <ul style="list-style-type: none"> • Downwind sectors • Stability Class • Temperature <p><u>STANDARD:</u></p> <p>_____ Determines all above are necessary.</p> <p>Evaluators Cue: The SEM desires this information.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>*STEP 9:</u> Determine Downwind Sectors: (Step 9)</p> <p><u>STANDARD:</u></p> <p>_____ Uses table in step 9 and determines downwind sectors are F,G,H.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

*Indicates a critical step

<p><u>STEP 10:</u> Observes Note Prior to step 10.</p> <p><u>STANDARD:</u></p> <p>_____ NOTE: Numerical ranges presented below for Delta T and Sigma Theta are less than the range of the chart recorder and indicator in the Control Room. Indications are not expected to read outside the ranges found on these tables.</p> <p><u>COMMENTS:</u></p>	<p>_____SAT</p> <p>_____UNSAT</p>
<p><u>STEP 11:</u> Determines Stability Class: (Step 10.a)</p> <p><u>STANDARD:</u></p> <p>_____ Determines that the Main Tower Delta T recorder is not in service IAW the Initial Conditions and uses the alternate: Backup Tower Sigma Theta Recorder.</p> <p><u>COMMENTS:</u></p>	<p>_____SAT</p> <p>_____UNSAT</p>
<p><u>*STEP 12:</u> Determines Stability Class (Step 10b)</p> <p><u>STANDARD:</u></p> <p>_____ Locates the Backup Tower Sigma Theta recorder. Reads recorder and determines Stability class is E.</p> <p>Evaluators Cue: Provide Sigma Theta once applicant has located the appropriate indication. Sigma Theta is 6.8 degrees.</p> <p><u>COMMENTS:</u></p>	<p>_____SAT</p> <p>_____UNSAT</p>

*Indicates a critical step

<p><u>STEP 13:</u> Use value closer to "G" (if unable to distinguish Delta T or Sigma Theta Value) (Step 10.c)</p> <p><u>STANDARD:</u> _____ Determines that this step is not applicable.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>*STEP 14:</u> Determine Temperature (Step 11)</p> <p><u>STANDARD:</u> _____ Determines Temperature from the Main Tower Temperature Recorder (Step 11.a)</p> <p>Evaluators Cue: Provide the temperature once applicant has located the appropriate indication. The temperature is 74°F.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>*STEP 15:</u> Give Meteorological information to the requestor.</p> <p><u>STANDARD:</u> _____ Provides the filled out Attachment 2 to the evaluator.</p> <p><u>COMMENTS:</u></p> <p style="text-align: center;">END OF TASK</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

*Indicates a critical step

Virginia Power
North Anna Power Station

REACTOR OPERATOR

JOB PERFORMANCE MEASURE

INITIAL CONDITIONS:

An ALERT was declared 30 minutes ago due to a unit 1 SGTR with safety injection required based on EAL tab B-6.

An initial notification to state and local governments was completed 15 minutes ago with an update schedule of 30 minutes.

The SG PORV has just lifted on the ruptured SG and will not reseal.

A release of radioactive material is presently occurring.

A follow-up message is being prepared to the state and local governments IAW attachment 2 of EPIP-2.01

The main tower lower-level wind direction recorder is OOS.

The main tower Delta T recorder is OOS.

The main tower lower-level wind speed recorder is OOS.

INITIATING CUES:

The Unit 1 SRO has requested that you to perform steps 7- 12 of EPIP 2.01, "Notification of State and Local Governments," to obtain meteorological data from the Met Panel.

**NORTH ANNA POWER STATION
INITIAL LICENSE EXAMINATION
ADMINISTRATIVE
JOB PERFORMANCE MEASURE**

Determine protective action recommendations

CANDIDATE

EXAMINER

Virginia Power
North Anna Power Station

SENIOR REACTOR OPERATOR

JOB PERFORMANCE MEASURE
(Admin A4)

S93

TASK

Determine protective action recommendations (EPIP-1.06).

NOTE TO THE TRAINER AND THE EVALUATOR

Unless a specific evaluator's cue is provided, you should provide a cue indicating that the component or parameter is in the condition specified by the procedure.

PREREQUISITES

The trainee has completed the applicable course knowledge training at the senior reactor operator level.

INITIAL CONDITIONS

A reactor trip and safety injection has occurred.

A large tube rupture has occurred in the "A" steam generator.

"A" main steam line is faulted in the main steam valve house upstream of the main steam trip valve.

RCS specific activity is 500 $\mu\text{Ci/gm}$ dose equivalent Iodine-131.

A general emergency has been declared due to a fuel failure with a steam generator tube rupture.

INITIATING CUE

You are requested to determine protective action recommendations (PARs).

Continue until off-site authorities have been notified.

STANDARDS

Task was performed as directed by the procedure referenced in the task statement within parentheses (one of the underlined procedures if several are cited)

Self-checking practices were used throughout task performance

Verbal communication related to any of the following modes was conducted in accordance with VPAP-1407

- Emergency communication
- Face-to-face communication
- Giving and acknowledging orders
- Phonetic alphabet
- Telephone communication systems

TOOLS AND EQUIPMENT

None

PREFERRED EVALUATION METHOD

Verbal-visual

VALIDATION TIME: 15 min.

K/A: 038EK306 (4.2/4.5); 038EA207 (4.4/4.8)

START TIME: _____

PERFORMANCE STEPS

- 1 Initiate EPIP-1.01.

Standards

EPIP-1.01 is initiated

SAT [] UNSAT [] NOTE:

- 2 Determine the emergency action level used to classify the general emergency.

Standards

Tab B-2 is noted as the applicable EAL

SAT [] UNSAT [] NOTE:

- 3 Determine the wind speed and three downwind sectors.

Standards

Meteorological monitoring instrumentation is observed

Evaluator's Cue

Wind speed is 10 mph, and wind direction is 220 degrees

SAT [] UNSAT [] NOTE:

- 4 Determine the protective action recommendation.

Standards

PAR-1 is noted as the applicable PAR

SAT [] UNSAT [] NOTE:

- 5 Record the wind speed and downwind sectors.

Critical Standards

"10" is entered into the "wind speed" block, and "B, C, D" is entered into the "downwind sectors" block of the meteorological data section of the protective action recommendation form

SAT [] UNSAT [] NOTE:

- 6 Mark the appropriate protective action recommendation box.

Critical Standards

"PAR" 1 box is marked on the protective action recommendation form

SAT [] UNSAT [] NOTE:

- 7 Enter the downwind sectors to be evacuated.

Critical Standards

"B, C, D" is entered into the "evacuate downwind sectors" blanks of the "protective action recommendation 1" (PAR 1) section

SAT [] UNSAT [] NOTE:

- 8 Sign and date the protective action recommendation form.

Standards

Protective action recommendation form is signed and dated

SAT [] UNSAT [] NOTE:

- 9 Request the emergency communicators to notify off-site authorities.

Critical Standards

Operator performs both of the following actions:

- Request the state and local communicator to notify the state emergency operations center of the protective action recommendation in accordance with EPIP-2.01
- Request the NRC communicator to notify the Nuclear Regulatory Commission of the protective action recommendation in accordance with EPIP-2.02

SAT [] UNSAT [] NOTE:

- 10 Request the radiological assessment director to implement EPIP-4.07.

Standards

Radiological assessment director is requested to implement EPIP-4.07

SAT [] UNSAT [] NOTE:

- 11 Check if a radiological-based protective action recommendation is recommended.

Evaluator's Cue

Radiological-based protective action recommendation is not recommended

SAT [] UNSAT [] NOTE:

- 12 Check if the emergency is terminated.

Evaluator's Cue

Emergency has not been terminated

SAT [] UNSAT [] NOTE:

13 Determine the appropriate procedure step to perform.

Evaluator's Cue

Assume that another operator will perform this step

SAT[] UNSAT[] NOTE:

FINISH TIME: _____

>>>> END OF EVALUATION <<<<

Virginia Power
North Anna Power Station

SENIOR REACTOR OPERATOR

JOB PERFORMANCE MEASURE

S93

INITIAL CONDITIONS

A reactor trip and safety injection has occurred.

A large tube rupture has occurred in the "A" steam generator.

"A" main steam line is faulted in the main steam valve house upstream of the main steam trip valve.

RCS specific activity is 500 $\mu\text{Ci/gm}$ dose equivalent Iodine-131.

A general emergency has been declared due to a fuel failure with a steam generator tube rupture.

INITIATING CUE

You are requested to determine protective action recommendations (PARs).

Continue until off-site authorities have been notified.

FINAL SUBMITTAL

**NORTH ANNA EXAM
50-338, 50-339/00-301**

SEPTEMBER 14 - 21, 2000

FINAL SUBMITTAL SCENARIO

Facility: <u>North Anna</u>	Scenario No.: <u>1</u>	Op-Test No.: <u>1</u>	
Examiners: _____ _____	Operators: (RO) _____ (BOP) _____ (SRO) _____		
<p>Initial Conditions: EOL. Condenser steam dumps are in steam pressure control due to a problem with the Tavg input, which is under I&C investigation. A AFW pump is OOS for corrective maintenance. No other equipment is OOS.</p> <p>Turnover: There are thunderstorms in the area with winds clocking at 60 mph. Large golf ball size hail has also been reported. Unit 2 SRO is coordinating AP-41, Severe Weather. Slight tremors on the order of 2.1 on the Richter scale have been detected.</p> <p>POD: Maintain 100% power. Complete 1-PT-17.1 rod operability test, which was commenced by the offgoing shift. Continue corrective maintenance on the A AFW pump.</p>			
Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N (R)	Conduct rod movement test
2	MRC0702	I (R)	PT-1445 failure high (with failure of turbine to runback in event fail to react timely to PT-445 failure)
3	MRC32	C (R)	Unisolable PZR PORV leak
4	N/A	I (B)	Power reduction due to excessive RCS leakage
5	MFW0103	C (B)	A S/G level channel III (LT-1476) failure low
6	MS_286	C (R)	Steam-driven AFW pump failure
7	MMS0901	C->M (A)	Main steam line break
7a	N/A	M (A)	Reactor trip with MS isolation failure
7b	MFW2302	C (B)	Loss of all auxiliary feed
7c	N/A	C (A)	Loss of secondary heat sink with RCS bleed & feed

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor
(R)O (B)OP (A)LL

**NORTH ANA POWER STATION
RO/SRO NRC INITIAL LICENSE EXAM
SIMULATOR EVALUATION SCENARIO NRC-1**

PROGRAM: RO/SRO Initial License Training
DESCRIPTION: Main Steam Line Break / Loss of All Feedwater
LENGTH: 90 minutes
AUTHOR: R. Aiello (Chief Examiner North Anna)
REVISION DATE: 8/15/00

REVIEWED BY: _____
NRC Senior License Examiner Date

APPROVED BY: _____
NRC Chief Examiner (Surry) Date

EVALUATION SCENARIO OBJECTIVES

TERMINAL OBJECTIVE: During normal and abnormal plant conditions, the Shift Operating Crew will perform control room operations in accordance with (IAW) approved plant procedures ensuring that the health and safety of the public is protected and the integrity of the plant maintained.

ENABLING OBJECTIVES:

1. Conduct control rod movement test
2. Given specific plant conditions, plant procedures, and a shift turnover, respond to the following events IAW approved plant procedures:
 - a. PT-1445 failure high
 - b. Unisolable PRZR PORV leak
 - c. LT-1476 failure low
 - d. Steam-driven AFW pump failure
 - e. Power reduction due to inoperable AFW pumps
 - f. Main steam line break on MS manifold
 - g. Reactor trip with MS isolation failure
 - h. Loss of all auxiliary feed
 - i. Loss of secondary heat sink with RCS bleed & feed
3. Given abnormal plant conditions, mitigate the adverse consequences of the following events IAW approved plant procedures:
 - a. Identify abnormalities while assessing actual system response with respect to predicted system response.
 - b. Investigate the cause and effect of abnormalities in system performance.
 - c. Implement applicable procedures.
 - d. Perform immediate actions from memory.
4. Given abnormal plant conditions, implement the applicable on-site and off-site reports and notifications IAW approved plant procedures.
5. Given normal and abnormal plant conditions, using the following principles for operational effectiveness as they apply to all operators, conduct plant operations IAW approved plant procedures:
 - a. Plant and control room communication.
 - b. Plant/Control Board monitoring.
 - c. Plant/Control Board manipulation.
 - d. Operational problem solving.
 - e. Use of OPs/APs and Technical Specifications.
 - f. Use of EOPs IAW EOP Rules of Usage.
 - g. Annunciator recognition and response.
 - h. Written communications/logs.
 - i. ALARA awareness.

EVALUATION SCENARIO OBJECTIVES (cont'd)

6. Given normal and abnormal plant conditions, using the following principles for operational effectiveness as they apply to the Unit Supervisor (US), conduct plant operations IAW approved plant procedures:
 - a. Team performance management.
 - b. Problem solving.
 - c. Decision analysis.
 - d. Action planning.
 - e. Self-checking.

7. During abnormal and emergency events, the shift operating crew shall apply techniques of teamwork and self-checking IAW established work practices and operating guidelines.

EVALUATION SCENARIO DESCRIPTION

Initial Conditions: Mode 1, 581 degrees F

Turnover: Maintain 100% power steady state operation. Condenser steam dumps are in steam pressure control due to a problem with the Tavg input, which is under I&C investigation. A AFW pump is OOS for corrective maintenance. Control rod movement surveillance test is in progress.

Synopsis: Shortly after completion of the control rod movement test, PT-1445 fails high causing PRZR PORV PCV-1456 to automatically open. Operators respond per 1-AP-44 by manually closing the opened PORV. Following PORV closure, the PORV (PCV-1456) develops a leak. Operators respond by attempting to close MOV-1535, which trips on breaker overload leaving the leak unisolated. The crew evaluates Tech Specs and determines a shutdown is required due to excessive RCS leakage. After a 5% power reduction (or as determined by the evaluator), the A S/G level channel III (LT-1476) fails low. The resulting transient requires the BOP to take A S/G level control to manual per 1-AP-3. Once Technical Specifications have been consulted and the crew briefed on the effects of the failure, the steam-driven AFW pump spuriously auto-starts. When the crew identifies the failure and stops the AFW pump, the overspeed trip mechanism fails, rendering the pump inoperable. After the crew evaluates Technical Specifications, the next event occurs. A steam break occurs on the main steam manifold in the turbine building. The crew responds per E-0 and addresses a failure of main steamline isolation and a trip of the B AFW pump after auto-start causing a loss of all auxiliary feed water (A AFW pump OOS, B AFW pump failed, steam-driven AFW pump previously failed). Transition to FR-H.1 is made in response to low steam generator levels with a loss of all AFW. Steam generator levels are sufficiently low to require RCS bleed and feed initiation. The exercise is concluded upon establishment of adequate RCS heat removal by bleed & feed (FR-H.1 step 26) or at the evaluator's discretion. The event is classified after scenario completion as a notification of unusual event per EPIP-1.01, tabs A-10, B-8 and G-3 (note that SRO may elect to classify the event as an Alert per tab M-3 based on SEM judgment.)

Event Summary:

<u>EVENT #</u>	<u>DESCRIPTION</u>
1	Conduct rod movement test <i>K/A: 001A106 (4.1/4.4)</i>
2	PT-1445 fails high <i>K/A: APE027; AA215 (3.7/4.0)</i>
3	PRZR PORV-1456 leak / MOV-1535 overload trip <i>K/A: 010A203 (4.2/4.2)</i>
4	Power reduction due to excessive RCS leakage <i>K/A: GEN-2.1.12 (2.9/4.0)</i>
5	LT-1476 fails low <i>K/A: 016A201 (3.0/3.1)</i>
6	Steam-driven AFW spurious auto-start/failure <i>K/A: 061A204 (3.4/3.8)</i>
7a/b	Main steam line break/reactor trip with B AFW pump and MS isolation failures <i>K/A: APE040; AA104 (4.3/4.3)</i>
7c	Loss of secondary heat sink (bleed & feed required) <i>K/A: E05; EK12 (3.9/4.5); EK22 (3.9/4.2)</i>

Crew Critical Steps:

<u>EVENT #</u>	<u>DESCRIPTION</u>
7	1. Manually actuate steam line isolation (MSTV pushbuttons) prior to orange path on subcriticality or integrity or transition to ECA-2.1 (whichever occurs first) (applicable only after main steam line isolation step is read).
7	1. When required, initiate RCS bleed and feed so that the RCS depressurizes sufficiently for HHSI injection flow to occur.

Individual Critical Steps:

The bolded individual actions listed under the respective positions (RO, US, etc.) are for use during evaluations to identify steps that are critical to the individual position.

EVALUATION SCENARIO PRE-EXERCISE BRIEFING

1. **Review the following with students:**
 - a. Primary responsibility of the student is to operate the simulator as if it were the actual plant.
 - b. The evaluators will observe teamwork skills, communication, and the crew's ability to safely operate the plant during the simulator examination. This includes individual & crew performance.
 - c. If you recognize an incorrect decision, response, answer, analysis, action, or interpretation by another crew member but fail to correct it, then the evaluator may assume that you agree with the incorrect item.
 - d. The crew should keep a rough log during each scenario sufficient to complete necessary formal log entries.
 - e. The simulator instructor facility operator will perform all of the functions of personnel needed outside the control room area.
 - f. Before the examination begins, crew members may perform a control board walkdown for up to 10 minutes.

2. **The following are initial conditions for this exam (in shift turnover package, but may be covered verbally if needed):**
 - a. Time in core life – 18,000 MWD/MTU
 - b. Reactor power and power history – 100% steady state
 - c. Turbine status - online
 - d. RCS boron concentration - 26 ppm
 - e. A BAST boron concentration is 14,100 ppm
 - f. Temperature - 581 degrees F
 - g. Pressure - 2235 psig
 - h. Xenon – Equilibrium for 100% power.
 - i. Core cooling - forced
 - j. Tech. Spec. LCO(s) in effect
- 3.7.1.2 Action 3 (30 days); A AFW pump bearing failure (entered action 12 hrs ago)
 - k. Tagouts in effect – A AFW pump
 - l. Significant problems/abnormalities – Condenser steam dumps in steam pressure (manual) control due to Tavg input problem. I&C investigating.
 - m. Evolutions/maintenance for the coming shift – Complete rod operability surveillance and maintain 100% power steady state operation.
 - n. Unit 2 - mode 5 on RHR

3. **Ensure students understand examination schedule and that a break will be necessary between scenarios to allow simulator initial condition setup. Cover exam security rules to be observed by students both during and after the exam IAW the latest revision of AG-017 or NUREG-1021 as applicable.**

4. **Before the examination begins, make crew position assignments and allow students to ask any questions concerning the administration of the test.**

EXPECTED OPERATOR ACTIONS

EVENT: 1

BRIEF DESCRIPTION: Conduct rod movement test.

INDICATIONS: 1. Shift orders direct completion of 1-PT-17.1, Rod Operability.

<u>POSITION</u>	<u>TIME</u>	<u>EXPECTED ACTIONS</u>
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BOP	1.	Assists RO as directed by US
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RO	1.	Verifies shutdown bank A step counter readings.
	2.	Selects SBA on bank selector switch.
	3.	Records initial position for shutdown bank A in PT data sheet.
	4.	Inserts shutdown bank A 18 steps and observes plant response.
	5.	Records final position for shutdown bank A in PT data sheet.
	6.	Withdraws shutdown bank A 18 steps and observes plant response.
	7.	Calculates rod travel and record in PT data sheet.
	8.	Places bank selector switch in MANUAL.
	9.	Verifies "D" bank position.
	10.	Ensures T_{avg} and T_{ref} are within 1°F.
	11.	Requests watchstander to observe bank overlap counter reading.
	12.	Records bank overlap counter reading and "D" bank position in PT.
	13.	Calculates difference between bank overlap counter and "D" bank position and records in PT.
	14.	Places bank selector switch in AUTO.
	15.	Performs follow-on tasks and informs US that PT is complete.

US	1.	Coordinates/directs performance of PT-17.1
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	2.	Keeps SS informed of plant status
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EXPECTED OPERATOR ACTIONS

EVENT: 2

BRIEF DESCRIPTION: Pressure transmitter PT-1445 fails high opening PORV PCV-1456 and decreasing pressure. The problem is diagnosed and the PORV closed stopping the pressure decrease. The plant is stabilized and PT-1445 is declared OOS.

- INDICATIONS:**
1. PT-1445 failed high
 2. Pressurizer pressure decreases rapidly.
 3. Overtemperature Delta-T runback occurs in event of failure to react timely to PT-1445 failure (FAIL THE RUNBACK).
 4. All pressurizer heaters energize.
 5. When pressure returns above 2000 psig, PCV-1456 opens..
 6. Pressure oscillates with PCV-1456 cycling around 2000 psig as appropriate.
 7. PRESSURIZER HIGH PRESSURE and PRZR SAFETY VALVE OR PORV OPEN alarms are actuated.

<u>POSITION</u>	<u>TIME</u>	<u>EXPECTED ACTIONS</u>
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- | | | |
|-----|----|---|
| BOP | 1. | Assists RO as directed by US |
| | 2. | Recognize failure of turbine to runback |
| | 3. | Manually run back the turbine (if auto runback called for) |

- | | | |
|----|----|--|
| RO | 1. | Recognizes & reports PRZR pressure control problem |
| | 2. | Checks PRZR PORVs closed – NO |
| | | a. Closes PRZR PORV PCV-1456 |
| | 3. | Checks master pressure controller controlling properly |
| | 4. | Verifies PRZR spray valves closed |
| | 5. | Verifies all PRZR heaters energized |
| | 6. | Checks auxiliary spray valve closed |
| | 7. | Verifies PRZR safety valves closed |
| | 8. | Verifies RCS pressure stable or increasing |
| | 9. | Verifies RCS pressure normal |

EXPECTED OPERATOR ACTIONS (cont'd)

EVENT: 2 (cont'd)

POSITION TIME EXPECTED ACTIONS

RO
(cont'd)

10. Verifies PRZR heaters operable
11. Checks if PRZR PORV is leaking – NO
12. Checks if leaking PRZR safety is reducing pressure – NO
13. Determines if RCS leak is reducing pressure – NO
14. Checks if PRZR pressure decreasing – NO
15. Checks RCS pressure stable
16. Checks if auto pressure control can be established
17. Establishes auto pressure control
18. Keeps US informed of plant status

US

1. Coordinates/directs performance of AP-44
2. Reviews Technical Specifications
3. Ensures I&C notified
4. Keeps SS informed of plant status

EXPECTED OPERATOR ACTIONS

EVENT: 3

BRIEF DESCRIPTION: A pressurizer PORV begins to leak. Tech Specs are consulted and the decision is made to attempt to isolate the leaking PORV, but the associated block MOV trips on overload before the leak is isolated. Tech Specs are referenced and the determination is made that unit shutdown is required due to excessive RCS leakage.

INDICATIONS:

1. Increased charging flow compared to initial conditions
2. PORV tailpipe temperature increased
3. Spray valves closed and additional PRZR heaters required to maintain RCS pressure compared to initial conditions
4. PRT level increase

<u>POSITION</u>	<u>TIME</u>	<u>EXPECTED ACTIONS</u>
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BOP		1. Assists RO as directed by the US
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RO		1. RO identifies elevated PRZR tailpipe temperature, spray valves closed with additional heaters required to maintain RCS pressure, and increased charging flow.
		2. Recognizes PRZR PORV leaking and notifies US.
		3. Attempts to close PORV block MOV at US direction.
		4. Recognizes PORV block MOV breaker thermal O/L actuated and notifies US.

EXPECTED OPERATOR ACTIONS (cont'd)

EVENT: 3 (cont'd.)

<u>POSITION</u>	<u>TIME</u>	<u>EXPECTED ACTIONS</u>
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US		<ol style="list-style-type: none">1. Directs PRZR PORV leak response per Tech Specs.<ol style="list-style-type: none">a. Directs MOV-1535 closure & response to ensuing overload trip including direction to locally reset MOV-1535 breaker overload (will not reset)b. Ensures PRZR htrs on to keep pressure > 2205 psigc. Directs STA to perform RCS leak rated. Concludes excessive RCS leakage due to unisolable leaking PRZR PORV2. Reviews T.S. 3.4.3.2 and determines leaking PORV must be locally isolated.3. Informs SS of plant status & requests electrical maintenance support with block MOV bkr
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NOTE TO EVALUATOR: Provide STA-calculated RCS leak rate (12 gpm) to US.

EXPECTED OPERATOR ACTIONS

EVENT: 4

BRIEF DESCRIPTION: With reactor power initially at 100% power, a power reduction to Hot Standby is commenced in response to excessive RCS leakage.

INDICATIONS: 1. US review of TS-3.4.3.2/3.4.6.2, SS/Ops Management direction

POSITION TIME EXPECTED ACTIONS

BOP

1. Reduces turbine load IAW AP-2.2 or OP-2.2
2. Performs secondary plant s/d generator-load-dependent activities IAW AP-2.2 or OP-2.2.
3. Performs activities as directed by US
 - a. Notifies Chemistry of need to sample RCS if reactor power reduced > 15%
4. Keeps US informed of plant status

RO

1. Reduces Rx power IAW AP-2.2 or OP-2.2.
 - a. Calculates change req'd to reduce power and borates at rate directed by US
 - b. Energizes PRZR backup heaters
 - c. Coordinates w/BOP to keep Tref w/in 3°F of Tavg w/rods in manual (1°F w/rods in auto) (if using AP-2.2, maintains Tave and Tref within 5°F)
 - d. Observes AFD limitations
2. Keeps US informed of plant status

EXPECTED OPERATOR ACTIONS (cont'd)

EVENT: 4 (cont'd)

POSITION **TIME** **EXPECTED ACTIONS**

US		<ol style="list-style-type: none">1. Coordinates power reduction activities of RO & BOP2. Performs other activities IAW AP-2.2 or OP-2.2.<ol style="list-style-type: none">a. Evaluates Xe changes and directs boration rate changes as necessary3. Notifies System Dispatcher of load reduction4. Keeps SS informed of plant status
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EXPECTED OPERATOR ACTIONS

EVENT: 5

BRIEF DESCRIPTION: A S/G level transmitter LT-1476 fails low. The crew recognizes the failure, takes manual control of A S/G FRV, and regains control of S/G level. The channel is declared OOS and compensatory actions taken per 1-AP-3.

INDICATIONS:

1. Failure low of LI-1476
2. A S/G level decreases
3. Annunciator F-B1, SG A LO-LO LEVEL
4. Annunciator F-D1, SG A FF<SF
5. Annunciator F-F1, SG A LEVEL ERROR

POSITION TIME EXPECTED ACTIONS

BOP		<ol style="list-style-type: none">1. Recognizes failure of LT-1476 and responds as directed by US<ol style="list-style-type: none">a. Compares to other SG level channelsb. Verifies no off-normal conditions on related indications2. Notifies US of failure3. Takes manual control of A S/G level
RO		<ol style="list-style-type: none">1. Assists BOP as directed by US2. Informs US of plant status
US		<ol style="list-style-type: none">1. Directs stabilization of plant conditions. May suspend load reduction to perform actions of AP-3 <u>or</u> may continue load reduction and trip bistables later.2. Directs compensatory action per AP-3<ol style="list-style-type: none">a. Verifies related instrument statusb. Determines which bistables to trip and effects on plant of tripping bistables. Provides this info to RO/BOP for guidance.3. Notifies SS of plant status4. Ensures Tech. Spec. 3.3.1.1/2 requirements met5. Ensures I&C notification of LT-1476 failure and directs initiation of

PWO.

EXPECTED OPERATOR ACTIONS

EVENT: 6

BRIEF DESCRIPTION: Steam-driven AFW pump spuriously auto-starts. The crew recognizes the failure and stops the pump. When the pump is stopped, the overspeed trip mechanism fails, which renders the pump inoperable.

INDICATIONS:

1. Steam-driven AFW pump steam supply valves open indication
2. A S/G MFW flow must be manually decreased to maintain SG level
3. A S/G AFW flow indicated
4. RCS Tave decreasing
5. Reactor power increasing
6. Annunciator F-D8, TDAFWP TROUBLE

POSITION TIME EXPECTED ACTIONS

BOP

1. Recognizes steam-driven AFW pump auto-start and notifies US
 - a. Observes steam supply valves indicating open
 - b. Observes AFW flow indicated to A S/G
 - c. Observes A S/G level increasing
2. Notifies US of failure
3. **Stops steam-driven AFW pump when directed by US**
4. Notes TDAFW pump trouble alarm and informs US
5. Dispatches watchstander to locally check AFW pump

RO

1. Observes RCS Tave decreasing and reactor power increasing
2. Notifies US of RCS parameter changes

US

1. **Directs BOP to stop steam-driven AFW pump**
2. Directs BOP to dispatch watchstander to check AFW pump
3. Reviews TS-3.7.1.2 and determines plant shutdown is required
4. Notifies SS of plant status
5. Ensures Maintenance Dept notified of failure and directs initiation of

a PWO.

EXPECTED OPERATOR ACTIONS

EVENT: 7a/b

BRIEF DESCRIPTION: In response to a steam break on the main steam manifold in the turbine building, reactor trip and SI occur. Operators perform actions of E-0. When MSTVs are verified closed, all MSTVs fail to auto-close. No AFW flow exists (no pumps available: A OOS, B trip on auto-start, steam-driven AFW pump previously failed). Transition to FR-H.1 is made.

INDICATIONS:

1. Reactor trip & SI actuates
2. MSTVs remain open
3. All S/G Pressures dropping
4. No AFW flow

CREW CRITICAL STEPS:

1. **Manually actuate steam line isolation (MSTV pushbuttons) prior to orange path on subcriticality or integrity, or transition to ECA-2.1 (whichever occurs first) (applicable only after main steam line isolation step is read).**

POSITION TIME EXPECTED ACTIONS

BOP

1. Performs IOAs in response to reactor trip with SI per E-0:
 - a. Verifies all turbine stop valves closed
 - b. Resets MSR steam supply FCVs
 - c. Verifies open generator output breaker
2. Performs other E-0 immediate actions:
 - a. Manually initiates SI.

EXPECTED OPERATOR ACTIONS (cont'd)

EVENT: 7a/b (cont'd)

<u>POSITION</u>	<u>TIME</u>	<u>EXPECTED ACTIONS</u>
-----------------	-------------	-------------------------

BOP
(cont'd)

- | | | |
|--|----|---|
| | 3. | Performs subsequent E-0 actions at US direction: <ol style="list-style-type: none">Verifies feedwater isolationManually initiates containment isolation phase AVerifies AFW pumps running – NO<ol style="list-style-type: none">Manually starts AFW pumps - NODetermines NO AFW pumps available (A OOS, B start fail & steam-driven AFW pump overspeed trip). Dispatches local operators to check B AFW pump.Verifies LHSI pumps runningVerifies SW pumps runningChecks if main steamlines should be isolated<ol style="list-style-type: none">Verifies MSTVs and bypass valves closed – NOManually closes MSTVsChecks if CDA or QS is required – NOVerifies SI flow indicatedVerifies AFW flow – NO<ol style="list-style-type: none">Checks S/G NR level >11%[22%] – NOVerifies AFW flow > 340 gpm – NOManually starts pumps/directs local valve realignment as directed by US to get AFW > 340 gpm – NO |
| | 4. | Keeps US informed of plant status |

EXPECTED OPERATOR ACTIONS (cont'd)

EVENT: 7a/b (cont'd)

<u>POSITION</u>	<u>TIME</u>	<u>EXPECTED ACTIONS</u>
-----------------	-------------	-------------------------

- | | | |
|----|----|---|
| RO | 1. | Performs IOAs in response to reactor trip with SI per E-0 |
| | a. | Verifies reactor tripped |
| | b. | Verifies AC emergency busses energized |
| | c. | Manually initiates SI |
| | 2. | Performs subsequent actions of E-0 as directed by US |
| | a. | Manually initiates containment isolation phase A |
| | b. | Verifies HHSI pumps running |
| | 3. | Keeps US informed of plant status |

- | | | |
|----|----|---|
| US | 1. | Directs response to reactor trip and failure of main steam isolation per E-0 |
| | a. | Obtains verification of reactor and turbine trip |
| | b. | Determines electric plant status |
| | c. | Directs manual SI/phase A |
| | d. | Monitors foldout page including direction to RO to stop all RCPs if subcooling lost |
| | e. | Directs subsequent actions |
| | 1. | Ensures manual closure of MSTVs |
| | 2. | Transitions to FR-H.1 |
| | 3. | Keeps SS informed of plant status |

EXPECTED OPERATOR ACTIONS

EVENT: 7c

BRIEF DESCRIPTION: Loss of secondary heat sink with RCS bleed and feed

INDICATIONS:

1. No AFW flow indicated
2. All SGs wide-range levels <12%
3. RCS pressure > SG pressures
4. Hot-leg temperatures >350°F

POSITION TIME EXPECTED ACTIONS

BOP	1.	Observes all SG wide-range levels <12%
	2.	Verifies HHSI flow indicated
	3.	Verifies instrument air aligned to containment
	4.	Opens all reactor head vents and PRZR vents
	5.	Verifies applicable E-0 actions per FR-H.1 attachment 5
	6.	Keeps US informed of plant status
RO	1.	Checks RCS pressure > SG pressures
	2.	Checks hot-leg temperatures >350°F
	3.	Stops all RCPs
	4.	Places all PRZR heaters in PULL-TO-LOCK
	5.	Checks SI actuated
	6.	Checks at least one charging pump running
	7.	Checks SI valve alignment
	8.	Resets both trains of SI and containment isolation phase A
	9.	Checks PRZR block MOVs energized and open
	10.	Opens both PRZR PORVs - NO
	11.	Verifies adequate RCS bleed path – NO
	12.	Closes charging pump recirc valves

13. Keeps US informed of plant status

EXPECTED OPERATOR ACTIONS (cont'd)

EVENT: 7c (cont'd)

<u>POSITION</u>	<u>TIME</u>	<u>EXPECTED ACTIONS</u>
US		<ol style="list-style-type: none">1. Determines secondary heat sink is required2. Determines bleed and feed is immediately required3. Directs response to loss of secondary heat sink per FR-H.1<ol style="list-style-type: none">a. Directs RCPs stopped and PRZR heaters in PTLb. Directs bleed and feed alignment4. Transitions to ES-1.3 if RWST level decreases to <23%5. Classifies event as a Notification of Unusual Event per EPIP-1.01, tabs A-10, B-8 and G-3 (may elect to classify as an Alert per tab M-3 based on SEM judgment)6. Keeps SS informed of plant status

SIMULATOR INSTRUCTOR FACILITY OPERATING INSTRUCTIONS

I. SETUP

- A. Recall IC # 31
- B. Ensure EOL curve book in place
- C. Verify auxiliary steam isolated from unit 2 (U2_AS_54)
- D. Verify 1-FW-P-3A tagged out per MOP-31.01 (red sticker on C/S)
- E. Verify steam dumps in steam pressure mode
- F. Verify analog trend pens set up for Tave, Tref, PDDT level & VCT level
- G. Verify the following malfunctions are preloaded:
 - 1. MMS0501/02/03 (MSTV fails to close when req'd); TD = 0 sec; trigger = N/A
 - 2. MFW2302 (B AFW pump trips on overcurrent); TD = 5 sec; trigger = SI1

II. CONDUCTING THE EXAMINATION:

- A. **Unfreeze the simulator and begin the exam.**
- B. **Perform 1-PT-17.1, Control Rod Operability Test**
 - 1. Initiation: Shift orders
 - 2. Response: Respond as safeguards watchstander when requested to obtain bank overlap counter reading (counter reads 613)
- C. **PT-1445 fails high (event 2).**
 - 1. Initiation: MRC0702: TD = 10 sec; ramp = 10 sec; start deg = 50; stop deg = 100; trigger = N/A

NOTE: Allow timer to run until the next malfunction (MRC32) is implemented.

 - 2. Response: As SS, state that a work request will be generated and I&C will be notified of the failure. As I&C, reply that a planner will initiate a work package for troubleshooting & repair.
- D. **PORV-1456 leak (event 3).**
 - 1. Initiation: MRC32: TD = 20 sec; ramp = 10 sec; start deg = 0; stop deg = 3; trigger = N/A. When crew attempts to close block MOV, takesimloch variable RCMOV535_RACKIN = F; monitor valve position using

RCMOV535.

NOTE: Ensure PORV leak does NOT result in pressure decrease (preclude entry into AP-44, which requires a unit trip if the block MOV cannot be closed)

2. Response: As SS state that, due to a history of the block MOV stem binding, station management does not desire to attempt to close the block MOV until cold shutdown is reached. When notified by US of excessive RCS leakage, direct US to commence unit shutdown without delay. As safeguards watchstander, report that breaker thermal O/L has actuated. If directed to reset, report that the reset button was pushed but didn't feel like it reset the O/L.

E. Power reduction due to excessive RCS leakage (event 4).

1. Initiation: US review of TS-3.7.1.2 and decision to remove unit from service to comply with the action statement.
2. Response: As SS, concur with US decision to remove unit from service.

F. LT-1476 fails low (event 5)

1. Initiation: MFW0103; TD = 30 sec; ramp = 10 sec; start deg = 50; stop deg = 0; trigger = N/A
2. Response: As SS, state that a work request will be generated and I&C will be notified of the failure. As I&C, reply that a planner will initiate a work package for troubleshooting & repair.

G. Steam-driven AFW pump spuriously starts/fails (event 6).

1. Initiation: Start pump: Simloch variables MSTV111A(B)_RATE=0, then take simloch variables MSTV111A(B) = 0.1 to give mid-position, then = 1.0 to fully open; When BOP places switches to CLOSE, take rate to 300. Immediately after valves begin to close, trip pump by taking simloch variable MS_286 = 0
2. Response: As outside watchstander, report steam exhausting from the TDAFW pump. Respond as safeguards watchstander when requested to locally check steam-driven AFW pump that the overspeed trip latch is broken. As SS, state that a work request will be generated and mechanical maintenance will be notified of the failure. As mechanical maintenance, reply that the trip latch repair will require approximately one hour to accomplish.

H. Steam break with failure of MS isolation (event 7a/b)

1. Initiation: MMS0901: TD = 50 sec; ramp = 5 sec; start deg = 0; sbp deg = 100; trigger = N/A. When at least two S/G wide-range levels decrease to

<12%, remove malfunctions MMS0501/02/03 (MSTV fails to close when required)

NOTE: Allow timer to run until B AFW pump trips.

2. Response: Respond as turbine building watchstander that the turbine building is engulfed in steam.

I. Loss of secondary heat sink with RCS bleed and feed (event 7c)

1. Initiation: Previous events cause loss of AFW and SI causes loss of MFW. SG levels decrease below bleed and feed setpoint due to failure of MSTVs to auto-close.

2. Response: Respond as electrical maintenance that B AFW pump breaker has overcurrent trips.

III. TERMINATION CRITERIA:

A. Upon completion of RCS bleed and feed alignment by closing charging pump recirc valves (step 26 of FR-H.1),

OR

B. At the discretion of the evaluator.

EVALUATION SCENARIO CONTENT SUMMARY

1.	Total Number of Malfunctions:	8
2.	Malfunctions Occurring During EOP Performance:	2
	a. B AFW pump start failure	
	b. MS isolation failure	
3.	Abnormal Events:	4
	a. PT-1445 fails high	
	b. PCV-1456 block MOV fails to close	
	c. LT-1476 fails low	
	d. Steam-driven AFW pump spurious start/failure	
4.	Major Transients:	2
	a. MS line break in turbine bldg	
	b. RCS bleed and feed	
5.	EOPs Used:	2
6.	EOP Contingencies Entered:	0
7.	Simulator Run Time:	90 minutes
8.	EOP Run Time:	45 minutes
9.	Crew Critical Tasks:	2

Facility: North Anna Scenario No.: 2 Op-Test No.: 1

Examiners: _____ Operators: (RO) _____
 _____ (BOP) _____
 _____ (SRO) _____

Initial Conditions: BOL. Mode 1, 564 degrees. J EDG is OOS for corrective governor maintenance. No other equipment is OOS. No surveillance tests are in progress.

Turnover: There are thunderstorms in the area with winds clocking at 60 mph. Large golf ball size hail has also been reported. Unit 2 SRO is coordinating AP-41, Severe Weather. Slight tremors on the order of 2.1 on the Richter scale have been detected.

POD: Perform 1-PT-60.2 Reactor Containment Average Air Temperature, with annulus temperature element 1-LM-TE-100-15 inoperable. Conduct a power increase from 50% to 100%. The system dispatcher has asked that this power increase be expedited to deal with an expected high peak demand towards the end of day shift.

Event No.	Malf. No.	Event Type*	Event Description
1a	N/A	N (R)	Perform 1-PT-60.2, Reactor Containment Average Air Temperature
1	N/A	R (R)	Power increase from 50%
2	MMS0102	I (B)	FT-475 failure low (controlling channel)
3	MRD07	R,I (R)	TM-408F failure low
3a	MEL1304	C (B)	Loss of Vital bus 1-IV
4	MCC0502	C (R)	RCP thermal barrier failure CC-TV-116B
5	MRC0302	M (A)	Large break LOCA
6	MEL01	C (A)	LOOP
7	MSI1501	C (A)	A LHSI pump trip (Loss of emergency coolant recirc)

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor
 (R)O, (B)OP, (A)LL

NORTH ANNA POWER STATION

RO/SRO NRC INITIAL LICENSE EXAM

SIMULATOR EVALUATION SCENARIO NRC-2

PROGRAM: RO/SRO Initial License Training

DESCRIPTION: Large Break Loss of Coolant Accident /
Loss of Offsite Power

LENGTH: 90 minutes

AUTHOR: R. F. Aiello

REVISION DATE: 8/15/00

REVIEWED BY: _____
Senior Operations Engineer Date

APPROVED BY: _____
NRC Chief Examiner (Surry) Date

EVALUATION SCENARIO OBJECTIVES

TERMINAL OBJECTIVE: During normal and abnormal plant conditions, the Shift Operating Crew will perform control room operations in accordance with (IAW) approved plant procedures ensuring that the health and safety of the public is protected and the integrity of the plant maintained.

ENABLING OBJECTIVES:

1. Given specific plant conditions, plant procedures, and a shift turnover, respond to the following events IAW approved plant procedures:
 - a. Perform 1-PT-60.2, Reactor Containment Average Air Temperature
 - b. Power increase from 50%
 - c. FT-475 failure low (controlling channel)
 - d. TM-408F failure low
 - e. Loss of Vital bus 1-IV
 - f. RCP thermal barrier failure / CC-TV-116B auto close failure
 - g. Large break LOCA
 - h. Loss of offsite power
 - i. A LHSI pump trip (loss of emergency coolant recirculation)
2. Given abnormal plant conditions, mitigate the adverse consequences of the following events IAW approved plant procedures:
 - a. Identify abnormalities while assessing actual system response with respect to predicted system response.
 - b. Investigate the cause and effect of abnormalities in system performance.
 - c. Implement applicable procedures.
 - d. Perform immediate actions from memory.
3. Given abnormal plant conditions, implement the applicable on-site and off-site reports and notifications IAW approved plant procedures.
4. Given normal and abnormal plant conditions, using the following principles for operational effectiveness as they apply to all operators, conduct plant operations IAW approved plant procedures:
 - a. Plant and control room communication.
 - b. Plant/Control Board monitoring.
 - c. Plant/Control Board manipulation.
 - d. Operational problem solving.
 - e. Use of OPs/APs and Technical Specifications.
 - f. Use of EOPs IAW EOP Rules of Usage.
 - g. Annunciator recognition and response.
 - h. Written communications/logs.
 - i. ALARA awareness.

EVALUATION SCENARIO OBJECTIVES (cont'd)

5. Given normal and abnormal plant conditions, using the following principles for operational effectiveness as they apply to the Unit Supervisor (US), conduct plant operations IAW approved plant procedures:
 - a. Team performance management.
 - b. Problem solving.
 - c. Decision analysis.
 - d. Action planning.
 - e. Self-checking.

6. During abnormal and emergency events, the shift operating crew shall apply techniques of teamwork and self-checking IAW established work practices and operating guidelines.

EVALUATION SCENARIO DESCRIPTION

Initial Conditions: Mode 1, 50% power

Turnover: Power increase from 50% to 100% power is in progress following main feed pump breaker repair. The system dispatcher has asked that this power increase be expedited to deal with an expected high peak demand towards the end of day shift. J EDG is OOS for corrective governor maintenance. Perform 1-PT-60.2, Reactor Containment Average Air Temperature PT with annulus temperature element 1-LM-TE-100-15 inoperable. Use the provided printout of group review #1.

Synopsis: Perform 1-PT-60.2, Reactor Containment Average Air Temperature. After a 5% power increase (or at lead examiner direction) the controlling steam flow channel on A S/G (FT-475) fails low causing FCV-478 to automatically close. Operator action is required to manually control A S/G level and select the other steam flow channel for level control input. The crew responds per 1-AP-3. Once the plant is stabilized, Technical Specifications are consulted and the crew briefed on the effects of the failure. Next, TM-408F fails low generating erroneous Tref input to rod control. If rods are in AUTO, inward rod movement occurs and operators respond per 1-AP-1.1 taking rod control to MANUAL. Next, the Vital Bus Inverter for Vital Bus 1-IV will fail resulting in a loss of vital bus 1-IV. The crew should identify the bus failure and enter 0-AP-10, "Loss of Electrical Power". The crew will be informed that the Inverter has failed and they will need to re-energize the vital bus via the SOLA transformer. The Unit Supervisor (US) should refer to technical specifications and declare the vital bus inoperable since it is being supplied by the SOLA transformer. Once the bus is re-energized the next event will occur. Following plant stabilization, the B RCP thermal barrier HX experiences a large leak and CC-TV-116B fails to automatically close on high flow. The operators respond per AR-C-C4. After thermal barrier return isolation, RCP shaft vibration begins to increase enough to eventually require a reactor and B RCP trip per AR-A-E6. When B RCP is tripped, the leak becomes a large break loss of coolant accident on the B RCS loop. The crew responds per E-0. While verifying FW isolation, a loss of offsite power occurs. Since the J EDG is OOS, only the H 4kV bus re-energizes on the H EDG. Train A safeguards loads fail to restart and must be manually restarted. An RWST rupture occurs, which results in rapidly decreasing RWST level. The crew transitions to FR-P.1 momentarily, then to E-1. Due to low RWST level, the crew transitions to 1-ES-1.3. Then, the A LHSI pump trips causing a loss of all LHSI. With no LHSI pumps running, transition is made to ECA-1.1. The exercise is concluded upon restoration of LHSI flow (return of J bus from SBO EDG) or at the evaluator's discretion. The event is classified after scenario completion as a Site Area Emergency per EPIP-1.01, Tab B-3.

Event summary:

<u>EVENT #</u>	<u>DESCRIPTION</u>
1a	Perform 1-PT-60.2, Reactor Containment Average Air Temperature <i>K/A: 2.1.23 (3.9/4.0)</i>
1	Power increase from 50% <i>K/A: 2.2.2 (4.0/3.5)</i>
2	FT-475 fails low (A S/G FRV closes) <i>K/A: 035K401 (3.6/3.8)</i>
3	TM-408F fails low <i>K/A: 001K602 (2.8/3.3)</i>
3a	Loss of Vital bus 1-IV <i>K/A: 062K301 (3.5/3.9)</i>
4	B RCP TBHX failure / CC-TV-116B auto close failure <i>K/A: 008K104 (3.3/3.8); 003K112 (3.0/3.3)</i>
5	Large break loss of coolant accident <i>K/A: EPE 011; EK309 (4.2/4.5); EK312 (4.4/4.6)</i>
6	Loss of offsite power (loss of J 4kV bus) <i>K/A: EPE055; EA106 (4.1/4.5)</i>
7	A LHSI pump trip (loss of emergency coolant recirc) <i>K/A: E01; EA11 (3.7/3.7); EK22 (3.5/3.8)</i>

Crew Critical Steps:

<u>EVENT #</u>	<u>DESCRIPTION</u>
6	1. Ensure one train of safeguards is actuated and running prior to transitioning from E-0
7	1. Stop SI and QS pumps upon reaching 3% in the RWST 2. Make up to the RWST and minimize RWST outflow per ECA-1.1

Individual Critical Steps:

The bolded individual actions listed under the respective positions (RO, US, etc.) are for use during evaluations to identify steps that are critical to the individual position.

EVALUATION SCENARIO PRE-EXERCISE BRIEFING

1. Review the following with students:

- a. Primary responsibility of the student is to operate the simulator as if it were the actual plant.
- b. The evaluators will observe teamwork skills, communication, and the crew's ability to safely operate the plant during the simulator examination. This includes individual & crew performance.
- c. If you recognize an incorrect decision, response, answer, analysis, action, or interpretation by another crew member but fail to correct it, then the evaluator may assume that you agree with the incorrect item.
- d. The crew should keep a rough log during each scenario sufficient to complete necessary formal log entries.
- e. The simulator instructor facility operator will perform all of the functions of personnel needed outside the control room area.
- f. Before the examination begins, crew members may perform a control board walkdown for up to 10 minutes.

2. The following are initial conditions for this exam (in shift turnover package, but may be covered verbally if needed):

- a. Time in core life – 4000 MWD/MTU
- b. Reactor power and power history - 100%-50% 4 hr ago
- c. Turbine status - online
- d. RCS boron concentration - 1332 ppm
- e. A BAST boron concentration is 14,100 ppm
- f. Temperature - 564°F
- g. Pressure - 2235 psig
- h. Xenon - Increasing following 100%-50% downpower 4 hr ago.
- i. Core cooling - forced
- j. Tech. Spec. LCO(s) in effect
- 3.8.1.1 Action b (1 hrs); J EDG OOS (governor)
- k. Tagouts in effect - J EDG
- l. Significant problems/abnormalities - None
- m. Evolutions/maintenance for the coming shift - Return to 100% power this shift. Expedite to meet system peak.
- n. Unit 2 status – Mode 5 on RHR

3. Ensure students understand examination schedule and that a break will be necessary between scenarios to allow simulator initial condition setup. Cover exam security rules to be observed by students both during and after the exam IAW the latest revision of AG-017 or NUREG-1021 as applicable.

4. Before the examination begins, make crew position assignments and allow students to ask any questions concerning the administration of the test.

EXPECTED OPERATOR ACTIONS

EVENT: 1a

BRIEF DESCRIPTION: Reactor Containment Average Air Temperature Test (1-PT-60.2) with Annulus Temperature Element (1-LM-TE-100-15) inoperable.

INDICATIONS: 1. Shift orders

<u>POSITION</u>	<u>TIME</u>	<u>EXPECTED ACTIONS</u>
BOP	1.	Assists RO as directed by US
RO	1.	Reviews containment temperature elements group review (provided).
	2.	Determines average temperature of the operable elements at annulus elevation 329 ft.
	3.	Enters the average value for the inoperable element into the computer.
	4.	Waits at least one minute for the computer to update.
	5.	Prints the containment weighted average temperature.
	6.	Records data in the PT.
	7.	Performs follow-on tasks and informs US that PT is complete.
US	1.	Coordinates/directs performance of PT-60.2
	2.	Keeps SS informed of plant status

EXPECTED OPERATOR ACTIONS

EVENT: 1

BRIEF DESCRIPTION: Unit is at reduced power (50%) and is directed to return to 100% power.

INDICATIONS:

1. Notification by System
2. Shift turnover

<u>POSITION</u>	<u>TIME</u>	<u>EXPECTED ACTIONS</u>
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BOP		<ol style="list-style-type: none">1. Increases turbine load at the rate determined by the US.2. Keeps US informed of plant status
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RO		<ol style="list-style-type: none">1. Maintains Tref/Tavg approx equal during uppower2. At steady state power with Tavg within 1°F of Tref, places rods in AUTO3. Keeps US informed of plant status
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US		<ol style="list-style-type: none">1. Coordinates and directs uppower evolution2. Keeps SS informed of plant status
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EXPECTED OPERATOR ACTIONS

EVENT: 2

BRIEF DESCRIPTION: A S/G controlling steam flow FT-475 fails low. The A S/G FRV requires manual operation. The channel is called OOS and compensatory actions are initiated per AP-3.

INDICATIONS:

1. Annunciator F-E1, SG A FEED > STEAM
2. Annunciator F-F1, SG A LEVEL ERROR
3. FI-475 off scale low
4. FCV-478 closing in AUTO
5. Decreasing level in A S/G

POSITION TIME EXPECTED ACTIONS

BOP	<ol style="list-style-type: none">1. Recognizes failure of FT-475 and responds as directed by US<ol style="list-style-type: none">a. Compares to other SG FT's and verifies no off-normal conditions on other SG FT's2. Notifies US of failure3. Takes manual control of FCV-478, restores steam/feed flow balance and stabilizes SG level4. Selects alternate SG steam FT channel for control and returns FCV-478 to automatic
RO	<ol style="list-style-type: none">1. Assists BOP as directed by US
US	<ol style="list-style-type: none">1. Directs stabilization of plant conditions2. Directs compensatory action per AP-3<ol style="list-style-type: none">a. Verifies BOP determination of SG FT statusb. Determines which b/s to trip and effects on plant of tripping b/s. Provides this info to RO/BOP for guidance.3. Notifies SS of plant status

EXPECTED OPERATOR ACTIONS (cont'd)

EVENT: 2 (cont'd)

POSITION **TIME** **EXPECTED ACTIONS**

US
(cont'd)

4. Ensures Tech Spec requirements are met
5. Notifies I&C of FT-475 failure and directs initiation of PWO

EXPECTED OPERATOR ACTIONS

EVENT: 3

BRIEF DESCRIPTION: TM-408F loses power. Rod control Tref fails low. Rods step in if in AUTO. The crew responds per AP-1.1.

INDICATIONS:

1. Annunciator B-A7, Tavg-Tref DEVIATION
2. Tref input on Tavg-Tref recorder failed low
3. Control rods stepping in if in AUTO

<u>POSITION</u>	<u>TIME</u>	<u>EXPECTED ACTIONS</u>
BOP		1. Assists RO as directed by US.
RO		1. Responds to TM-408F failure per AP-1.1: <ol style="list-style-type: none">a. Determines rods should NOT be moving, places rods in MANUAL & verifies rod motion stoppedb. Verifies rod low-low insertion limits not exceededc. Increases Tave to match Tref using rods or dilution as directed by USd. Checks PRZR pressure and level stablee. Checks rods above low insertion limit and restores if necessary as directed by US
		2. Informs US of plant status
US		1. Directs response per AP-1.1
		2. Informs SS/I&C of TM-408F failure
		3. Directs PWO initiation

EXPECTED OPERATOR ACTIONS

EVENT: 3a

BRIEF DESCRIPTION: A loss of vital bus 1-IV occurs. The crew responds per 0-AP-10.

INDICATIONS:

1. Numerous status lights due to de-energized ch IV instruments
2. Vital bus 1-IV voltmeter decreases to zero
3. Annunciator H-A4, VITAL BUS 1-IV INVERTER TROUBLE

<u>POSITION</u>	<u>TIME</u>	<u>EXPECTED ACTIONS</u>
BOP		<ol style="list-style-type: none">1. Identifies annunciator 1H-A4, VITAL BUS 1-IV INVERTER TROUBLE2. Identifies loss of vital bus 1-IV.3. Notifies US of vital bus loss.4. Directs safeguards operator to investigate loss of vital bus 1-IV.5. Enters 0-AP-10 and performs electrical system diagnostic.6. Restores vital bus from SOLA transformer per MOP-26.63
RO		<ol style="list-style-type: none">1. Assists BOP as directed by US.
US		<ol style="list-style-type: none">1. Directs BOP to enter 0-AP-10.2. Directs electrical department to investigate 1-IV vital bus and inverter.3. Directs BOP to energize the vital bus via the SOLA transformer.4. Refers to TS 3.8.2.1 and MOP-26.63 and declares the vital bus inoperable.

EXPECTED OPERATOR ACTIONS

EVENT: 4

BRIEF DESCRIPTION: B RCP thermal barrier HX (TBHX) fails. CC-TV-116B fails to auto-close on high flow requiring manual closure. AR-C-C4 is performed. After CC-TV-116B closure, B RCP shaft vibration increases requiring a reactor and B RCP trip.

INDICATIONS:

1. Annunciator C-C4, RCP A-B-C THERMAL BARR CC HI-LO FLOW, alarms (CC-TV-116B fails)
2. Annunciator C-D4, RCP A-B-C THERM BARR CC HI TEMP, alarms.
3. Annunciator A-E6, RCP 1B VIBRATION ALERT/DANGER

<u>POSITION</u>	<u>TIME</u>	<u>EXPECTED ACTIONS</u>
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BOP	1.	Assists RO as directed by US
	2.	Reports shaft high vibration condition (RCP vibration monitor panel)
	3.	Performs E-0 immediate actions when directed by US

RO	1.	Recognizes RCP TBHX failure & informs US
	2.	Performs actions as directed by AR-C-C4
	a.	Manually closes CC-TV-116B

NOTE TO EVALUATOR: After operator has depressed the CLOSE pushbutton, inform the booth operator.

RO	b.	Verifies seal injection flow to B RCP
	c.	Monitors B RCP temperatures
	3.	Performs actions as directed by AR-A-E6
a.	Trips reactor & B RCP when directed by US	

EXPECTED OPERATOR ACTIONS (cont'd)

EVENT: 4 (cont'd)

POSITION **TIME** **EXPECTED ACTIONS**

US		<ol style="list-style-type: none">1. Directs mitigative actions IAW AR-C-C4 and A-E6<ol style="list-style-type: none">a. Directs CC-TV-116B closureb. Directs reactor trip followed by B RCP trip due to high shaft vibration2. Informs SS of plant status
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EXPECTED OPERATOR ACTIONS

EVENT: 5 & 6

BRIEF DESCRIPTION: In response to a large-break LOCA, a reactor trip & SI has occurred. Operators perform actions of E-0. While verifying FW isolation per E-0, a loss of offsite power occurs and train A ESF loads fail to restart requiring manual restart. E-0 is completed and transition is then made to E-1.

INDICATIONS:

1. Reactor trip directed or actuates
2. Rod bottom lights on and RTBs/BYBs open
3. SI alarms & ESF equipment auto starts
4. Switchyard deenergizes & only H emergency bus reenergizes (J EDG OOS)

CREW CRITICAL STEPS:

1. **Ensure one train of safeguards is actuated and running prior to transitioning from E-0**

<u>POSITION</u>	<u>TIME</u>	<u>EXPECTED ACTIONS</u>
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BOP		<ol style="list-style-type: none">1. Responds to reactor trip and SI per E-0<ol style="list-style-type: none">a. Verifies turbine tripb. Manually initiates SIc. Verifies feedwater isolationd. Manually initiates containment isolation phase Ae. Verifies AFW pumps running - NO<ol style="list-style-type: none">1. Manually starts the A AFW pumpf. Verifies LHSI pumps runningg. Verifies SW pumps running - NO<ol style="list-style-type: none">1. Manually starts the A SW pumph. Checks if main steam lines should be isolatedi. Manually initiates CDA
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EXPECTED OPERATOR ACTIONS (cont'd)

EVENT: 5 & 6 (cont'd)

<u>POSITION</u>	<u>TIME</u>	<u>EXPECTED ACTIONS</u>
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BOP(cont)	1.	Responds to reactor trip and SI per E-0 (cont'd)
	j.	Verifies CC pumps stopped
	k.	Verifies QS pumps running
	l.	Verifies HHSI and LHSI flow
	m.	Verifies proper AFW alignment and flow
	n.	Performs MSLB & SGTR diagnostics
	2.	Responds to loss of J bus as directed by US
	3.	Informs US of plant status

RO	1.	Responds to reactor trip and SI per E-0
	a.	Verifies reactor tripped
	b.	Verifies both AC emergency busses energized
	c.	Manually initiates SI
	2.	Performs continuous action page items as directed by US
	a.	Checks RCS subcooling and HHSI flow, then trips all RCPs
	b. Closes all charging pump recirc valves	
	c. Manually actuates CDA	

EXPECTED OPERATOR ACTIONS (cont'd)

EVENT: 5 & 6 (cont'd)

<u>POSITION</u>	<u>TIME</u>	<u>EXPECTED ACTIONS</u>
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RO		<ol style="list-style-type: none">3. Performs subsequent actions of E-0 as directed by US<ol style="list-style-type: none">a. Manually initiates containment isolation phase Ab. Verifies charging pumps runningc. Checks RCS Taved. Checks PRZR PORVs/spray valves closede. Checks RCP trip and charging pump recirc criteriaf. Performs LOCA diagnostics
US		<ol style="list-style-type: none">1. Directs response to reactor trip per E-0<ol style="list-style-type: none">a. Obtains verification of reactor tripb. Directs entry into AP-10 for loss of emergency busc. Directs manual SI/phase A if requiredd. Monitors continuous action page items:<ol style="list-style-type: none">1. Direction to RO to close charging pump recirc valves if required by subcooling/Phase B actuation/RCS pressure2. Directs manual initiation of CDAe. Directs manual start of train A SW pump2. Transitions to appropriate plant procedure (E-1 or appropriate FRP)3. Informs SS as to status of plant

EXPECTED OPERATOR ACTIONS

EVENT: 7

BRIEF DESCRIPTION: With a large break LOCA/LOOP, only train A ESF is running (J EDG OOS). From E-0, FR-P.1 is briefly entered followed by transition to either FR-Z.1 if needed or E-1. When RWST level decreases below 23%, transition to ES-1.3 is made, after which A LHSI pump trips. From ES-1.3, with no LHSI pumps, ECA-1.1 is entered.

INDICATIONS:

1. Cntmt radiation & sump level indications abnormal
2. Safety injection actuated and injecting
3. RWST level dropping
4. RCS cold leg temperature (<285°F for FR-P.1)
5. Annunciator J-A5, LHSI PP A LO OR OL TRIP

CREW CRITICAL STEPS:

1. **Stop charging/QS pumps upon reaching 3% in the RWST**
2. **Make up to the RWST and minimize RWST outflow per ECA-1.1**

<u>POSITION</u>	<u>TIME</u>	<u>EXPECTED ACTIONS</u>
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BOP		<ol style="list-style-type: none">1. Performs actions of E-1 as directed:<ol style="list-style-type: none">a. Checks for faulted S/Gsb. Checks S/G levels and secondary radiationc. Checks QS/casing cooling/RS pump statusd. Checks if EDGs should be stopped – NOe. Identifies rapidly decreasing RWST level and informs US2. Performs actions of ES-1.3 as directed:<ol style="list-style-type: none">a. Verifies proper SW system operationb. Verifies recirc spray pumps aligned and runningc. Identifies A LHSI pump tripped and informs USd. Verifies LHSI pumps running – NOe. Aligns SI system for cold-leg recirc - NO
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EXPECTED OPERATOR ACTIONS (cont'd)

EVENT: 7 (cont'd)

<u>POSITION</u>	<u>TIME</u>	<u>EXPECTED ACTIONS</u>
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BOP
(cont'd)

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|--|----|--|
| | 3. | Performs actions of ECA-1.1 as directed |
| | a. | Checks for cold leg recirc capability - NO |
| | b. | Resets SI recirc mode |
| | c. | Maintains intact S/G levels 11 – 50% |
| | d. | Initiates RCS cooldown using S/G PORVs |
| | e. | Restores J bus from SBO EDG, then aligns and starts B LHSI |
| | 4. | Informs US of plant status |

RO

- | | | |
|--|----|--|
| | 1. | Performs actions of FR-P.1 as directed: |
| | a. | Checks RCS press > 225 [450] psig – NO |
| | 1. | Checks LHSI flow > 650 gpm |
| | 2. | Performs actions of E-1 as directed: |
| | a. | Check RCP trip and charging pump recirc criteria |
| | b. | Verifies SI, phase A and AMSAC reset |
| | c. | Checks PRZR PORVs and block valves |
| | d. | Checks if SI should be terminated – NO |
| | 3. | Performs actions of ES-1.3 as directed: |
| | a. | Resets both trains of SI |
| | b. | Checks charging pump status |
| | c. | Aligns SI system for cold-leg recirc – NO |

EXPECTED OPERATOR ACTIONS (cont'd)

EVENT: 7 (cont'd)

<u>POSITION</u>	<u>TIME</u>	<u>EXPECTED ACTIONS</u>
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RO
(cont'd)

- | | | |
|--|--|---|
| | | 2. Performs actions of ECA-1.1 as directed: |
| | | a. Checks cold-leg recirc capability available – NO |
| | | b. Verifies SI reset |
| | | c. Aligns makeup to the RWST |
| | | d. If RWST level <3%, stops charging/QS pumps |
| | | e. Checks containment air recirc fans |
| | | f. Verifies only one charging pump running |
| | | g. Checks if an RCP should be started - NO |
| | | h. Establishes minimum SI as directed |
| | | 4. Informs US of plant status |

EXPECTED OPERATOR ACTIONS (cont'd)

EVENT: 7 (cont'd)

<u>POSITION</u>	<u>TIME</u>	<u>EXPECTED ACTIONS</u>
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US

1. Determines FR-P.1 N/A for LBLOCA
2. **Directs response to LBLOCA per E-1:**
 - a. Determines SI cannot be terminated
 - b. **Transitions to appropriate procedure or FRP if required by red/orange path CSFST:**
 - 1) **FR-Z.1 if CNMT pressure > 28 psia**
 - 2) **ES-1.3 if RWST level < 23%**
3. **Directs response to decreasing RWST level per ES-1.3:**
 - a. Determines flow path from containment sump to RCS cannot be established.
 - b. **Transitions to ECA-1.1 for loss of both LHSI pumps**

EXPECTED OPERATOR ACTIONS (cont'd)

EVENT: 7 (cont'd)

<u>POSITION</u>	<u>TIME</u>	<u>EXPECTED ACTIONS</u>
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US (cont'd)		<ol style="list-style-type: none">4. Directs response to LBLOCA per ECA-1.1:<ol style="list-style-type: none">a. Directs addition of makeup to the RWSTb. Directs RCS cooldownc. If RWST level >3%:<ol style="list-style-type: none">1) Reduces containment spray to minimum2) Verifies no backflow from RWST to sump & determines RCP could not be started3) Determines minimum SI flow (figure 1) & directs action accordinglyd. If RWST level < 3%, directs all charging and QS pumps to be stopped5. Classifies event as a Site Area Emergency per EPIP-1.01, Tab B-36. Informs SS of status of unit
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SIMULATOR INSTRUCTOR FACILITY OPERATING INSTRUCTIONS

I. SETUP

- A. Recall IC # 32
- B. Ensure BOL curve book in place
- C. Verify auxiliary steam isolated from unit 2 (U2_AS_54)
- D. Verify channel IV SF/FF/1st stage pressure selected for SGWLC
- E. Verify analog trend pens set up for Tave, Tref, PDTT level & VCT level
- F. Verify 1J EDG T.O. (red sticker on breaker)
- G. Verify the following malfunctions are preloaded:
 - 1. Switch O/R SWP1A_ASTART; TD = 0 sec; O/R = OFF
 - 2. Switch O/R FWP3A_ASTART; TD = 0 sec; O/R = OFF
 - 3. Switch O/R FWP3A_ASTOP; TD = 0 sec; O/R = OFF

II. CONDUCTING THE EXAMINATION:

- A. **Unfreeze the simulator and begin the exam.**
- B. **Perform 1-PT-60.2, Reactor Containment Average Air Temperature**
 - 1. Initiation: Crew should begin in response to shift turnover.
 - 2. Response: As SS, acknowledge completion of surveillance.
- C. **Power increase from 50% (event 1).**
 - 1. Initiation: Crew should begin in response to shift turnover. If slow to begin, call as System Dispatcher and prompt commencement of load increase.
 - 2. Response: Acknowledge load dispatcher/plant management notifications of the load increase. Respond as field operator in response to notification of starting/stopping plant equipment.
- D. **FT-475 fails low (A S/G FRV closes) (event 2).**
 - 1. Initiation: MMS0102; TD = 10 sec; ramp = 60 sec; start deg = 50; stop deg = 0; trigger = N/A
 - 2. Response: As SS state that a work request will be generated and I&C will be notified of the failure. As I&C, reply that a planner will initiate a work package for troubleshooting & repair.

SIMULATOR INSTRUCTOR FACILITY OPERATING INSTRUCTIONS (cont'd)

E. TM-408F fails low (event 3).

1. **Initiation:** After channel III is selected and rod control is returned to AUTO, implement MRD07 (continuous rod insertion in AUTO); TD = 20 sec; trigger = N/A. Meter override: TI-408B (Tref); TD = 19 sec; ramp = 1 sec; 100% negative deviation.
2. **Response:** Respond as SS/I&C to notification of TM-408B failure. As SS state that a work request will be generated and I&C will be notified. As I&C, reply that a planner will initiate a work package for troubleshooting/repair.

F. Loss of Vital bus 1-IV (event 3a)

1. **Initiation:** MEL1304; TD = 30 sec; trigger = N/A
2. **Response:** About 2 minutes after requested, report as safeguards watchstander that the 1-IV inverter appears to have smoked, the outside is charred. Report as the electricians that the inverter is damaged and cannot be re-energized. Also report that the 1-IV vital bus has been checked and has been given the "OK" to re-energize.

G. B RCP TBHX failure / CC-TV-116B auto close failure / RCP vibration (event 4).

1. **Initiation:** MCC0502; TD = 40 sec; ramp = 5 sec; deg = 100; trigger = N/A. Prevent auto-closure of CC-TV-116B using CCTV116_RATE(2) = 0; monitor valve position using CCTV116(2). When RO pushes CLOSE button, take CCTV116_RATE(2) = 1200. MRC3902; TD = 50 sec; ramp = 5 sec; start deg = 0; stop deg = 12; trigger = N/A.

NOTE: Allow timer to run after TBHX failure until the RCP vibration malfunction is implemented (requires time for the vibrations to build in after the malfunction is implemented.)

2. **Response:** Acknowledge direction to auxiliary building watchstander for verification of RCP seal injection flows.

H. Large break loss of coolant accident (event 5)

1. **Initiation:** When the B RCP is tripped, implement malfunction MRC0302; TD = 60 sec; trigger = N/A.
2. **Response:** Respond as HP if directed to survey the main steam lines and outside containment. After 10-15 minutes, report elevated general area radiation in all areas near containment.

SIMULATOR INSTRUCTOR FACILITY OPERATING INSTRUCTIONS (cont'd)

I. Loss of offsite power (loss of B 4kV bus) (event 6)

1. Initiation: After B MFW pump is placed in PTL, implement malfunction MEL01; TD = 70 sec; trigger = N/A. After unit-2 EDGs reenergize the emergency busses, implement malfunctions MSW0104 and 0105 (unit-2 SW pumps trip); TD = 0 sec; trigger = N/A.
2. Response: If requested, respond as safeguards watchstander to align alternate power supply to the J emergency bus. If requested, swap common RM power supply using RMS_ALT_SUPPLY=T. If requested to throttle AFW flow to A SG, take FWMOV100D_RATE=0, then FWMOV100D=0.9, 0.8, etc.

J. A LHSI pump trip/RWST rupture (loss of emergency coolant recirc) (event 7).

1. Initiation: Immediately after LOOP, implement MQS07 (RWST rupture). After transition from FR-P.1 to either FR-Z.1 or back to E-1, implement malfunction MSI1501; TD = 80 sec; trigger = N/A.
2. Response: Report as Health Physics that water is issuing from the side of the RWST about three feet above the bottom edge. When directed as safeguards watchstander to check out the A LHSI pump, wait 1-3 minutes and report as follows:

- If the pump is still running, state that the pump is much noisier than usual and getting worse.

- If the pump has tripped, state that top of the motor casing is very hot with burnt insulation smell in the room. The pump shaft will not rotate (seized) by hand.

If asked as mechanical maintenance about J EDG, state that the governor is disassembled and awaiting parts arriving tomorrow. Respond as HP as in event 5. Surveys may now include areas around containment. Acknowledge requests as Chemistry to take periodic S/G activity samples (no activity).

When requested to restore J bus from SBO EDG, delay completion of the alignment until ECA-1.1 has been entered. Then, use PEDS to align the SBO EDG to supply D transfer bus per 0-OP-6.4.

III. TERMINATION CRITERIA:

- A. Upon reduction of SI flow to minimum or trip of all pumps with RWST suction (step 17 or 30 of ECA-1.1),

OR

- B. At the discretion of the evaluator.

EVALUATION SCENARIO CONTENT SUMMARY

1.	Total Number of Malfunctions:	8
2.	Malfunctions Occurring During EOP Performance:	1
	a. A LHSI pump trip /	
	2. loss of emergency coolant recirc	
3.	Abnormal Events:	5
	a. FT-475 fails low	
	b. TM-408 fails low	
	c. Loss of Vital bus 1-IV	
	d. RCP thermal barrier failure	
	e. CC-TV-116B auto close failure	
4.	Major Transients:	2
	a. Large break loss of coolant accident	
	b. Loss of offsite power	
5.	EOPs Used:	2
6.	EOP Contingencies Entered:	1
7.	Simulator Run Time:	90 minutes
8.	EOP Run Time:	45 minutes
9.	Crew Critical Tasks:	3