

Draft Submittal
(Pink Paper)

SURRY EXAM
50-280, 50-281/2004-301

FEBRUARY 24 - MARCH 2
& MARCH 4, 2004 (WRITTEN)

1. Administrative Questions/JPMs
2. In-plant JPMs
3. Control Room JPMs (simulator JPMs)
4. Administrative Topics Outline ES-301-1
5. Control Room Systems and Facility Walk Through
Test Outline ES-301-2

Conditions

- Task is to be PERFORMED in the Main Control Room, Simulator Control Room, or Classroom.

Standards

- "General Emergency" declared IAW EPIP-1.01.

Initiating Cues

- You are to determine if the event should be classified IAW EPIP-1.01 and if classification is required, make the classification IAW EPIP-1.01.
- When you finish the actions necessary to accomplish this, please inform me of your findings and classification, if applicable

Terminating Cues

- Report received of event classification.

Tools, Equipment, and Procedures

- EPIP-1.01, Emergency Manager Controlling Procedure, Rev. 43

Safety Considerations

- None

Performance Checklist

Notes to the Evaluator

- Task critical elements are denoted by an asterisk (*). If substeps of a critical element also have an asterisk (*), then only those asterisked substeps are critical to performance of that task element.
- **STARTTIME:**

<p>Step 1 OBTAIN EPIP-1.01, EMERGENCY MANAGER CONTROLLING PROCEDURE</p> <p>Standard</p> <ul style="list-style-type: none"> a) Obtains SEM emergency package (or STA classification package). b) Gets copy of EPIP-1.01, EAL Tabs. <p>Evaluator's Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>Step 2 DETERMINE EVENT CATEGORY.</p> <p>Standard</p> <ul style="list-style-type: none"> a) Turns to EPIP-1.01, Attachment 1, page 1, EAL Table Index. b) Determines event category to be a RADIOACTIVITY EVENT. c) Turns to TAB E. d) Evaluation of B and G TABs may also be made. <p>Evaluator's Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>*Step 3 CLASSIFY EVENT.</p> <p>Standard</p> <ul style="list-style-type: none"> a) Determines that event is E-1, Release imminent or in progress and site boundary doses projected to exceed 1.0 Rem TEDE or 5.0 Rem Thyroid CDE. b) Classifies event as a General Emergency. <p>STQPTIME:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

**Operator Directions Handout
(TO BE READ TO APPLICANT BY EXAMINER)**

Task

- Task is to **be** PERFORMED in the Main Control Room, Simulator Control Room, or Classroom.
- CLASSIFY A STATION EVENT IAW EPIP-1.01 (11).

Directions

The evaluator will explain the initial conditions of the task to **be** performed and **will** provide the initiating cue. Ensure you indicate to the evaluator when you understand your assigned task

Initial Conditions

- You are the Nuclear Shift Manager. A Design Basis Steam Generator Tube Rupture has occurred with the associated SG Safety Valve stuck open. Pressurizer level cannot be maintained **with** the SI system and HP reports projected doses at the Site Boundary are greater than 0.8 Rem TEDE and 6.0 Rem Thyroid CDE. The operating team has just entered E-3.

Initiating Cues

- You are to determine if the event should be classified IAW EPIP-1.01 and if classification is required, make the classification IAW EPIP-1.01.
- When you finish the actions necessary to accomplish this, please inform **me** of **your** findings and classification, if applicable.

**Operator Directions Handout
(TO BE GIVEN TO APPLICANT)**

Task

- Task is to be PERFORMED in the Main Control Room, Simulator Control Room, or Classroom.
- e CLASSIFY A STATION EVENT IAW EPIP-1.01 (11).

Directions

The evaluator will explain the initial conditions of the task to be performed and will provide the initiating cue. Ensure you indicate to the evaluator when you understand your assigned task

Initial Conditions

- e You are the Nuclear Shift Manager. A Design Basis Steam Generator Tube Rupture has occurred with the associated SG Safety Valve stuck open. Pressurizer level cannot be maintained with the SI system and HP reports projected doses at the Site Boundary are greater than 0.8 Rem TEDE and 6.0 Rem Thyroid CDE. The operating team has just entered E-3.

Initiating Cues

- You are to determine if the event should be classified IAW EPIP-1.81 and if classification is required, make the classification IAW EPIP-1.01.
- When you finish the actions necessary to accomplish this, please inform me of your findings and classification, if applicable.

Conditions

- Task is to be PERFORMED in a classroom.

Standards

- Stay times are correctly calculated.

Initiating Cues

- You are to answer two radiation control questions, placing your responses on the paper containing the questions.
- When you finish responding to **the** questions, inform an examiner.

Terminating Cues

- Applicant informs examiner that answers to both questions have been completed.

Tools, Equipment, and Procedures

- Applicants may request various procedures.
- Calculators

Safety Considerations

- None

Performance Checklist

Notes to the Evaluator

- Task critical elements are denoted by an asterisk (*). If substeps of a critical element also have an asterisk (*), then only those asterisked substeps are critical to performance of that task element.
- **STARTTIME:**

<p>*Step 1 APPLICANT ANSWERS QUESTION 1</p> <p>Standard Applicant's response is 25.5 minutes OR 25 minutes 30 seconds.</p> <p>Page 12 of above reference states that the Quarterly TEDE Admin Limit is 2 rem and the Annual TEDE Limit is 4 rem.</p> <p>Margin to yearly limit = $4.00 - [0.72 + 1.98 + 0.13] = 1.17 \text{ rem}$ (more limiting) Margin to quarterly limit = $2.00 - [0.13] = 1.87 \text{ rem}$</p> <p>$[1.17 \text{ rem}] / [0.400 \text{ rem / hr}] = 2.925 \text{ hour} = 2 \text{ hours } 55.5 \text{ minutes} = 2 \text{ hours } 55 \text{ minutes } 30 \text{ seconds}$</p> <p>Evaluator's Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>*Step 2 APPLICANT ANSWERS QUESTION 2</p> <p>Standard Applicant's response is 2 hours 18 minutes OW 2.3 hours.</p> <p>Page 12 of above reference states that the Annual TEDE Limit is 4 rem, but may be granted a dose extension up to 4750 mrem with proper management approval.</p> <p>Margin to yearly limit = $4.75 - [0.72 + 1.98 + 0.13] = 1.92 \text{ rem}$ Margin to quarterly limit = $2.00 - [0.13] = 1.87 \text{ rem}$ (more limiting)</p> <p>$[1.87 \text{ rem}] / [0.480 \text{ rem / hr}] = 4.675 \text{ hour} = 4 \text{ hours } 40 \text{ minutes } 30 \text{ seconds}$</p> <p>STOP TIME: _____</p> <p>Evaluator's Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

**Operator Directions Handout
(TO BE READ TO APPLICANT BY EXAMINER)**

Task

- To be performed in a classroom.
- Answer radiation control questions.

Directions

The evaluator will read **the** questions that are to be answered and will provide the initiating cue. Ensure you indicate **to** the evaluator when you understand your assigned **task**.

Initial Conditions

- An operator must perform work in an **area** with a general dose rate of 400 mrem/hour.
- It is currently **the** third annual quarter **of** the year.
- The operator's quarterly accumulated dose for **TEDE** is as follows:
 - Quarter 1: 0.72 Rem
 - Quarter 2: 1.98 Rem
 - Quarter 3: 0.13 Rem

Initiating Cues

- **You** are to answer two radiation control questions, placing your responses on the paper containing the questions.
- When you finish responding to **the** questions, inform an examiner.

**Operator Directions Handout
(TO BE GIVEN TO APPLICANT)**

Task

- To be performed in a classroom.
- Answer radiation control questions.

Directions

The evaluator will read the questions that are to be answered and will provide the initiating cue. Ensure you indicate to the evaluator when you understand your assigned task.

Initial Conditions

- An operator must perform work in an area with a general dose rate of 400 mrem/hour.
- It is currently the third annual quarter of the year.
- The operator's quarterly accumulated dose for TEDE is as follows:
 - Quarter 1: 0.72 Rem
 - Quarter 2: 4.98 Rem
 - Quarter 3: 0.13 Rem

Initiating Cues

- You are to answer two radiation control questions, placing your responses on the paper containing the questions.
- **When** you finish responding to the questions, inform an examiner.

(TO BE GIVEN TO APPLICANT)

QUESTION 1:

What is the maximum time the worker can stay in the area without violating Dominion's Administrative Dose Limit for TEDE?

(Assuming no dose extensions to the Administrative Limits)

QUESTION 1:

What is the maximum time the worker can stay in the area without violating Dominion's Administrative Dose Limit for TEDE?

(Assuming the maximum dose extensions to the Administrative Limits are approved by management)

Task

PERFORM A SHUTDOWN MARGIN CALCULATION AT ZERO POWER.

Applicability

RO/SRO

Est Completion Time

60 Minutes

Actual Time

K/A (Importance Ratings)

G2.1.7 (3.7/4.4)

References

Station Curve Book, Rev. 63

1-OP-RX-002, Shutdown Margin (Calculated at Zero Power), Rev. 013.

Applicant: _____

Performance Rating: **SAT:** _____ **UNSAT:** _____

Examiner: _____

NAME

SIGNATURE **DATE**

COMMENTS:

Conditions

- Task may be PERFORMED in the simulator (or any other area with access to a Station Curve Book).
- Unit 1 ramped off-line from 76% power.

Standards

- 1-OP-RX-002, Shutdown Margin (Calculated at Zero Power)

Initiating Cues

- Shift Supervisor direction

Terminating Cues

- 1-OP-RX-002, Shutdown Margin (Calculated at Zero Power) completed.

Tools, Equipment, and Procedures

- 1-OP-RX-002, Shutdown Margin (Calculated at Zero Power)
- Station Curve Book
- Calculator

Safety Considerations

- None

PERFORMANCE CHECKLIST

Notes to the Evaluator.

- The trainee will utilize a Curve Book to locate the necessary curves for 1-OP-RX-002.
- Task critical elements are **denoted** by an asterisk (*). If substeps of a critical element also have an asterisk (*), then only those asterisked substeps are critical to performance of that task element.
- Critical **step** sequencing requirements: None

- **STARTTIME:** _____

<p>Step 1 REVIEW ADMINISTRATIVE SECTIONS OF 1-OP-RX-002.</p> <p>Standard</p> <ul style="list-style-type: none"> a) Reviews Section 1, Purpose b) Reviews Section 2, References c) Reviews Section 3, Initial Conditions d) Reviews Section 4, Precautions and Limitations <p>Evaluator Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>Step 2 RECORDS PREVIOUS CRITICAL CONDITIONS NEEDED TO DOCUMENT AND PERFORM THE SHUTDOWN MARGIN CALCULATIONS IN SECTION 5.1</p> <p>Standard</p> <ul style="list-style-type: none"> a) Determines and records time and date of previous critical conditions. (Yesterday – 1200 hours) b) Determines and records previous critical reactor power. (76%) c) Determines and records previous critical boron concentration. (800 PPM) d) Determines and records cycle burnup. (9,000 MWD/MTU) e) Determines and records "D" Bank rod <i>position</i> at previous critical conditions. (180 steps on "D" bank) <p>Evaluator Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

<p>"Step 3 CALCULATES PARAMETERS FOR SECTION 5.1 FROM DATA RECORDED.</p> <p>Standard</p> <ul style="list-style-type: none"> a) Calculates Xenon Worth for 76% power to be 2475 pcm using the Xenon Reactivity Worth at HZP vs. Previous Equilibrium Power Level Curve. (2450 - 2500 acceptable) b) Calculates Power Defect for 76% power and 800 PPM boron to be 1525 pcm using the Power Defect Curve. (1500 - 1550 acceptable) c) Calculates rod worth for 180 steps on "D" bank to be 242.55(220.5 X 1.1) using the AT Power Integral Rod Worth Table for Control Banks C & D in Overlap. (242.0 to 243.0 acceptable) <p>Evaluator Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>Step 4 RECORDS REACTOR SHUTDOWN INFORMATION IN SECTION 5.2</p> <p>Standard</p> <ul style="list-style-type: none"> a) Determines and records time and date the reactor initially reaches shutdown. (today – now) b) Determines and records method of shutdown as an orderly shutdown and initial power prior to shutdown was 76%. c) Determines and records that the orderly shutdown xenon curve best represents core conditions. <p>Evaluator Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>Step 5 RECORDS SHUTDOWN CONDITIONS NEEDED TO DOCUMENT AND PERFORM THE SHUTDOWN MARGIN CALCULATIONS IN SECTION 5.3</p> <p>Standard</p> <ul style="list-style-type: none"> a) Determines and records Cycle Burnup. (9,000 MWD/MTU). b) Determines and records time and date covered by this SDM. (24 hours after reaching HSD). c) Determines and records control rod position during shutdown conditions. (All rods in). d) Determines and records that current boron concentration is 860 PPM. e) Determines and records that minimum temperature during the shutdown is 140F. (Recalls from directions that the SDM is to be calculated for the minimum temperature throughout the shutdown) <p>Evaluator Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

<p>Step 6 CALCULATE PARAMETERS FOR SECTION 5.3 FROM DATA RECORDED</p> <p>Standard</p> <ul style="list-style-type: none"> a) Calculates worth of all rods to be 7352 pcm from the Total Rod Worth vs. Burnup Curve. (7350 - 7360 is acceptable) b) Enters Zero (0) in blanks for worth of equivalent stuck rods, shutdown banks withdrawn and other rods out. (Recalls from initial data that all rods are in during the shutdown) c) Calculates Total Rod Worth to be 7202 pcm (Worth of all rods + additional conservatism) (7200 - 7210 Acceptable) d) Calculates Temperature defect at 860 ppm boron and 140F to be 4207.5 pcm using the Hot to Cold Temperature Defect vs. Average Moderator Temperature Curve. (4150 - 4220 acceptable) e) Enters (1550) pcm for value of xenon worth. (1500 to 1600 acceptable) f) Calculates Net Isotopic Decay to be Zero (0) pcm using the Net Isotopic Decay Reactivity After Shutdown from HFP Curve. g) Calculates the Boron Coefficient at Zero Power to be 7.18 pcm/ppm using the Boron Coefficient vs. Burnup Curve. (7.15 - 7.25 acceptable) h) Calculates the Redistribution Factor to be 257 pcm using the Reactivity Redistribution Factor vs. Burnup Curve. (250 - 260 acceptable) <p>Evaluator Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>Step 7 CALCULATES SUBCRITICAL MARGIN IN SECTION 5.4</p> <p>Standard</p> <ul style="list-style-type: none"> a) Calculates Boron Reactivity from data previously calculated to be -430.8 pcm. (860 ppm - 800 ppm X 7.18 pcm/ppm) (-435.0 to -429.0 Acceptable) b) Calculates Power Defect from data previously calculated to be +1525 pcm. (0 pcm - (-1525 pcm)) (1500 - 1550 Acceptable) c) Calculates Temperature Defect from data previously calculated to be +4207.5 pcm. (4207.5 pcm - 0 pcm) (4150 - 4220 Acceptable) d) Calculates Rod Worth from data previously calculated to be -6959.45 pcm (-7202 - (-242.55)) (-6968.0 to -6957.0 Acceptable) e) Calculates Xenon Worth from data previously calculated to be +925 pcm (1550 pcm - (-2475 pcm)) (850 - 1000 Acceptable) f) Calculates Net Isotopic Decay from data previously calculated to be 0 pcm (0 pcm - 0 pcm) g) Calculates Reactivity Redistribution Factor (RRF) from data previously calculated to be +257 pcm (257 pcm - 0 pcm) (250 - 260 Acceptable) h) Calculates Subcritical Margin by adding the above values to be -475.75 pcm (-653 to -356 Acceptable) <p>Evaluator Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

<p>*Step 8 CALCULATES THE REQUIRED SUBCRITICAL BORON CONCENTRATION IN SECTION 5.5.</p> <p>Standard</p> <ul style="list-style-type: none"> a) Identifies and records the required SDM to be -1770 pcm. b) Calculates the difference in reactivity between present SDM and required SDM to be -1 294.25 pcm. (-1770 pcm - (+475.75 pcm)) (-1414 to -1117 acceptable) c) Calculates the required boron addition to be 180.26 ppm (-1294.25 pcm/-7.18 pcm/ppm) (154.07 to 197.76 acceptable) d) Calculates the minimum Subcritical Boron Concentration to be 1040.26 ppm (860 ppm + 180.26 ppm) (1014.07 to 1057.76 acceptable) e) Determines that Attachment 3 does not need to be performed. <p>Evaluator Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>*Step 9 VERIFIES COMPLIANCE WITH TECHNICAL SPECIFICATION 3.92.A.4 IN SECTION 5.6.</p> <p>Standard</p> <ul style="list-style-type: none"> a) Determines that RCS temperature will be greater than 530F during the time period covered by this SDM and proceeds to Attachment 2 of 1-OP-RX-002 to calculate the Critical Boron Concentration at HSD with "D" Bank Rods at 23 Steps. b) Calculates Power Defect from data previously calculated to be 1525 pcm (1500 - 1500 acceptable) c) Calculates the Reactivity Redistribution Factor from data previously calculated to be 257 pcm. (250 - 260 acceptable) d) Calculates Xenon Worth from data previously calculated to be +925 pcm (850 - 1000 acceptable) e) Calculates Rod Worth at 23 steps on "D" Bank to be 1580.2 pcm using the HZP Integral Rod Worth Table for Control Banks C and D in Overlap Table (1570.4 to 1590.0 acceptable) f) Calculates Rod Worth from data previously recorded to be 1179.6 pcm. (1170.36 to 1189.0 acceptable) g) Calculates Net Isotopic Decay from data previously recorded to be 0 pcm. h) Calculates Temperature Defect at 530F and 860 PPM boron to be 250 pcm. (100 - 400 acceptable) i) Calculates the reactivity change from previous critical conditions by adding the above listed values to be +1777.37 pcm. (1511.00 to 2039.64 acceptable) j) Calculates the boron equivalent of the reactivity change to be -247.54 ppm. (-285.26 to -288.41 acceptable) k) Calculates the required critical boron concentration at HSD with "D" Bank rods at 23 steps to be 1047.54 ppm. (800 ppm - (-247.54 ppm)) (1008.41 to 1085.26 acceptable) l) Records value obtained in (j) above in Section 5.6 of 1-OP-RX-002 (this step not critical) <p>Evaluator Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

<p>Step 10 VERIFIES COMPLIANCE WITH TECHNICAL SPECIFICATION 3.12.A.4. IN BORON DILUTION SECTION 5.7.</p> <p>Standard</p> <ul style="list-style-type: none"> a) Determines that temperature during time period covered by this SDM will be greater than 200F and completion of Section 5.7 is required. b) Determines that "C" WCP is to remain running while the unit is shutdown and enters NA for step 5.7.1.a. c) Records the lowest anticipated temperature during the time period covered by this SDM as 200F. d) Calculates the value for boron concentration to be 1335 ppm using the 1.1 X Cb(N-1) vs Temperature at Various Burnups Curve for 200F and 9,000 MWD/MTU. (1300 to 1375 acceptable). e) Determines values for Equivalent Boron for worth of stuck rods is Zero (0) ppm. f) Calculates the Adjusted Boron Dilution Accident Analysis Requirement to be 1335 ppm.(1300 to 1375 acceptable) <p>Evaluator Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>Step 11 VERIFIES COMPLIANCE WITH TECHNICAL SPECIFICATION 3.12.A.4 IN SECTION 5.8.</p> <p>Standard</p> <ul style="list-style-type: none"> a) Determines that Attachment 3 was not performed and records the value from substep 5.5.2.b for step 5.8.1. (1040.26 ppm) (1014.07 – 1057.76 acceptable) b) Enters the value for boron concentration from substep 5.6.1. (1047.54 ppm) (1008.41 to 1085.26 acceptable) c) Enters the value for boron concentration from substep 5.7.1.b.5. (1335 ppm)(1300 to 1375 acceptable) d) Determines that pressurizer spray is available and enters 0 ppm for step 5.9.4 (not a critical step) e) Enters value for highest boron concentration listed in Section 5.8 (1335 ppm)(1300 to 1375 acceptable) <p>Evaluator Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

<p>Step 12 CALCULATES ADDITIONAL VOLUME OF BORIC ACID REQUIRED IN SECTION 5.9.</p> <p>Standard</p> <ul style="list-style-type: none"> a) Records 860 ppm for the most recent measured boron concentration b) Records 1335 ppm from step 5.9.5 (1300 – 1375 acceptable) *c) Calculates number of gallons of boric acid to increase boron by 1 ppm to be 4.044 gallons/ppm based on present concentration of 860 ppm and 8.0 w/o in "A" BAST. (4.0 to 4.1 acceptable) *d) Calculates additional volume of boric acid to be added to be 1920.9 gallons. (1335 ppm – 860 ppm) X 4.044 (1760.0 – 2111.5 acceptable) e) Informs SS that 1921 gallons of boric acid should be added to the RCS. <p>Evaluator Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>Step 13 COMPLETES SECTION 5.10 FOR FOLLOW ON ACTIONS</p> <p>Standard</p> <ul style="list-style-type: none"> a) Records time and date for performance of the next SDM as 24 hours after reaching HSD. b) Determines P-250 is in service and enters N/A for step 5.1 1.2. c) Determines another SDM is needed and retains procedure to allow copying of data. <p>Evaluator's Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>Step 14 REPORT TO THE SHIFT SUPERVISOR</p> <p>Standard Verbal status report made. of task completion</p> <p>STOP TIME: _____</p> <p>Evaluator's Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

**Operator Directions Handout
(TO BE READ TO APPLICANT BY EXAMINER)**

Task

- Task is to be performed in any location where the applicant has access to a Station Curve Book.
- Task is to perform a Shutdown Margin Calculation.

Directions

The evaluator will explain the initial conditions of **the** task **to be** performed and will provide the initiating cue. Ensure you indicate to **the** evaluator **when** you understand your assigned task

Initial Conditions

- Unit 1 ramped off-line from 76% power.
- The Unit just reached HSD.
- Data sheet is provided containing the necessary calculation information.

Initiating Cues

- Perform a Shutdown Margin Calculation for the first 24 hours following Unit Shutdown.
- When you finish the actions necessary to accomplish this, please inform me.

**Operator Directions Handout
(TO BE GIVEN TO APPLICANT)**

Task

- Task is to be performed in any location where the applicant has access to a Station Curve Book.
- Task is to perform a Shutdown Margin Calculation.

Directions

The evaluator will explain the initial conditions of the task to be performed and will provide the initiating cue. Ensure you indicate to the evaluator when you understand your assigned task.

Initial Conditions

- Unit 1 ramped off-line from 76% power.
- The Unit just reached HSD.
- Data sheet is provided containing the necessary calculation information.

Initiating Cues

- Perform a Shutdown Margin Calculation for the first 24 hours following Unit Shutdown.
- When you finish the actions necessary to accomplish this, please inform me.

(TO BE PROVIDED TO APPLICANT)

ATTACHMENT 1
SHUTDOWN MARGIN CONDITIONS

Previous Critical Conditions

Data taken from stable conditions yesterday at 1200 hours.

- e 76% Reactor Power - stable for previous 3 days with Delta Flux at Target Value.
- 800 PPM Boron
- e 9000 MWD/MTU
- e 180 Steps on "D" Bank

Present Unit Conditions

- e Orderly ramp at 155 MW/Hr began 5 hours ago
- e Unit ~~is~~ at HSB
- e 860 PPM Boron

Shutdown Unit Conditions

- e All Rods fully inserted
- e Minimum Temperature during S/D is 140F
- e "C" RCP to remain running throughout shutdown
- e Spray valve 1-RC-PCV-1455A is available
- "A" BAST boron concentration is 8.0 w/o

P-250 computer is in service.

You are directed to perform a SDM to cover the first 24 hours after reaching HSD.

Task

CALCULATE THE MAXIMUM ALLOWABLE REACTOR VESSEL HYDROGEN VENTING TIME

Applicability

RO/SRO

Est Completion Time

5 Minutes

Actual Time

K/A (Importance Ratings)

G2.1.23 (3.9/4.0)

G2.1.25 (2.8/3.1)

References

Surry JPM LO99-10

FR-I.3, Response to Void in Reactor Vessel, Attachments 1 and 2, Rev. 16.

Applicant: _____

Performance Rating: SAT: _____ UNSAT: _____

Examiner: _____
NAME SIGNATURE DATE

COMMENTS:

Conditions

- e Task is to be PERFORMED in the classroom.
- e A simulated SBLOCA has occurred on Unit 1.

Standards

- e Allowable vent time calculated IAW FW-1.3, Attachment 1.

Initiating Cues

- Calculate maximum allowable reactor vessel hydrogen venting time using FR-1.3, Attachments 1 and 2.
- e When you finish the actions necessary to accomplish this, please inform me of the allowable vessel venting time.

Terminating Cues

- e Report received of allowable vessel vent period.

Tools, Equipment, and Procedures

- FR-1.3, **Response** to Void in Reactor Vessel, attachments 1 and 2.
- e Calculator

Safety Considerations

- e None

Performance Checklist

Notes to the Evaluator

- Task critical elements are denoted by an asterisk (*). If substeps of a critical element also have an asterisk (*), then only **those** asterisked substeps are critical to performance of that task element.
- Critical step sequencing requirements: 1 & 2 (any order) before 3; 3 & 4 (any order) before 5.
- **STARTTIME:**

<p>* step 1 DETERMINE CONTAINMENT VOLUME (STP).</p> <p>Standards</p> <ul style="list-style-type: none"> a) Determines containment temperature from Initial Conditions. b) Converts containment temperature in °F to °R. ($165^{\circ}\text{F} + 460 = 625 \text{ R}$) c) Determines containment pressure from Initial Conditions. d) Inserts containment pressure and °R into formula. *e) Determines Containment volume (ref: $1.312 \times 10^6 \text{ Cu Ft}$). <p>Evaluator's Note **This step is sequence critical.**</p> <p>Evaluator's Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>Step 2 DETERMINE CONTAINMENT HYDROGEN CONCENTRATION.</p> <p>Standards</p> <ul style="list-style-type: none"> a) Gets results of Chemistry department H₂ analysis from Initial Conditions. b) Records Containment hydrogen concentration. <p>Evaluator's Note **This step is sequence critical.**</p> <p>Evaluator's Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

<p>*Step 3 DETERMINE MAXIMUM HYDROGEN VOLUME PO BE VENTED.</p> <p>Standards</p> <ul style="list-style-type: none"> a) Inserts H₂ concentration and containment volume into formula. *b) Determines max H₂ volume to be vented. (Ref: 31488 Cu Ft). <p>Evaluator's Note ** This step is sequence critical.**</p> <p>Evaluator's Comments</p>	<p>_____ SAT</p> <p>_____ UNSAY</p>
<p>Step 4 DETERMINE HYDROGEN FLOW RAPE BASED ON RCS PRESSURE</p> <p>Standard</p> <ul style="list-style-type: none"> a) Consults Attachment 2 to determine hydrogen flow rate. b) Determines RCS pressure from Initial Conditions. *c) Based on RCS pressure of 1800 psig, determines flow rate (Ref: 8500 +/- 100 scfm). d) Records flow rate in step 4b. <p>Evaluator's Note *** This step is sequence critical**</p> <p>Evaluator's Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>Step 5 CALCULATE MAXIMUM VENT PERIOD.</p> <p>Standard</p> <ul style="list-style-type: none"> a) Recalls maximum H₂ volume and inserts into formula. b) Recalls H₂ flowrate and inserts into formula. *c) Calculates venting period as 3.70 minutes or 3 minutes 42 seconds (3.65 – 3.75 acceptable). c) Records vent period in step 4d. <p>Evaluator's Note *** This step is sequence critical.**</p> <p>Evaluator's Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

<p>Step 6 REPORT TO NUCLEAR SHIFT MANAGER (EVALUATOR).</p> <p>Standard Verbal status report made of task completion.</p> <p>STOP TIME: _____</p> <p>Evaluator's Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
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**Operator Directions Handout
(TO BE READ TO APPLICANT BY EXAMINER)**

Task

- Task is to be PERFORMED in the classroom.
- Calculate maximum allowable Reactor Vessel Hydrogen venting time.

Directions

The evaluator will explain the initial conditions of the task to be performed and will provide the initiating cue. Ensure you indicate to the evaluator when you understand your assigned task.

Initial Conditions

- A SBLOCA has occurred on Unit 1.
- FR-1.3, Response to Void in Reactor Vessel, Step 18 is being performed in response to a hydrogen void in the vessel head.
- RCS Pressure = 4 **B00** psig
- Containment Pressure = 14.0 psia
- Containment Temperature = 165 °F
- Hydrogen Concentration = 0.6%

Initiating Cues

- Calculate maximum allowable reactor vessel hydrogen venting time using FR-1.3, Attachments 1 and 2.
- When you finish the actions necessary to accomplish this, please inform an examiner.

**Operator Directions Handout
(TO BE GIVEN TO APPLICANT)**

Task

- Task is to **be** PERFORMED in the classroom.
- Calculate maximum allowable Reactor Vessel Hydrogen venting time.

Directions

The evaluator will explain the initial conditions of **the** task to be performed and will provide the initiating cue. Ensure you indicate to the evaluator when you understand your assigned task.

Initial Conditions

- A SBLOCA has occurred on Unit 1.
- FR-1.3, Response to Void in Reactor Vessel, Step **18** is being performed in response to a hydrogen void in the vessel **head**.
- RCS Pressure = 1800 psig
- Containment Pressure = **14.0** psia
- Containment Temperature = **165** °F
- Hydrogen Concentration = 0.6%

Initiating Cues

- Calculate maximum allowable reactor vessel hydrogen venting time using FR-1.3, Attachments 1 and 2.
- When you finish the actions necessary to accomplish this, please inform an examiner.

Conditions

- Task is to be PERFORMED in a classroom.

Standards

- Correctly state the critical elements of the tagging order.

Initiating Cues

- You are **requested** to determine all requirements/elements necessary to prepare 1-RT-P-1C, Steam Generator Weirc And Transfer Pump, for the required maintenance (Tag out elements, valve/breaker positions, etc).
- **Use** the attached table to identify all components and their required positions. The number of blanks on this table does not indicate the number of steps in the tagout or the number of components to be tagged.
- The order in which tags should be placed is not necessary.
- When you finish responding to the questions, inform an examiner.
- Computerized Tagging Systems are not operational and may not be used for this **task**.

Terminating Cues

- Applicant informs examiner that the task has been completed.

Tools, Equipment, and Procedures

- Applicants may request administrative procedures and plant drawings.

Safety Considerations

- None

Performance Checklist

Notes to the Evaluator.

- Task critical elements are denoted by an asterisk (*).
- **STARTTIME:**

	Component ID Number / Name	Position	Danger Tag Required (Yes / No)
1	1-RT-P-1C, Steam Generator Recirc and Transfer Pump, Handswitch	PTL	No (Have utility verify no tag required)
*2	Breaker for 1-RT-P-1C, MCC 1A2-1 Breaker 4E (have utility verify breaker nomenclature)	Disconnect	Yes
*3	1-RT-46, Steam Generator Recirc and Transfer Pump Suction Valve	Closed	Yes
*4	1-RT-60, Steam Generator Recirc and Transfer Pump Discharge Valve	Closed	Yes
*5	1-RT-51, Steam Generator Recirc and Transfer Pump Discharge To Steam Generator Recirc Cooler	Closed	Yes
*6	1-RT-90, Flow From Hydrazine Pump	Closed	Yes
7	1-RT-50, 1-RT-P-1C Discharge Drain	Open with Cap Removed	No (Have utility verify no tag required)
8	1-RT-47, 1-RT-P-1C Suction Drain	Open with Cap Removed	No (Have utility verify no tag required)
9	1-RT-48, 1-RT-PI-100C Isolation	Closed	Yes (Have utility verify tag required)

STOP TIME: _____

**Operator Directions Handout
(TO BE READ TO APPLICANT BY EXAMINER)**

Task

- To be performed in a classroom.
- Determine tagging elements / boundary determination for 1-RT-P-1C, Steam Generator Recirc And Transfer Pump.

Directions

The evaluator will explain the initial conditions and initiating cues. Ensure you indicate to the evaluator when you understand your assigned task. When you finish the task, inform an examiner.

Initial Conditions

- 1-RT-P-1C, Steam Generator Recirc And Transfer Pump, has been experiencing high vibrations and requires maintenance.
- 1-RT-P-1C, Steam Generator Recirc And Transfer Pump, must be isolated electrically and mechanically to support maintenance.

Initiating Cues

- You are requested to determine all requirements/elements necessary to prepare 1-RT-P-1C, Steam Generator Recirc. And Transfer Pump, for the required maintenance (Tag out elements, valve/breaker positions, etc).
- Use the attached table to identify all components and their required positions. The number of blanks on this table does not indicate the number of steps in the tagout or the number of components to be tagged.
- The order in which tags should be placed is not necessary.
- When you finish responding to the questions, inform an examiner.
- Computerized Tagging Systems are not operational and may not be used for this task.

**Operator Directions Handout
(TO BE GIVEN TO APPLICANT)**

Task

- To be performed in a classroom.
- Determine tagging elements / boundary determination for 1-RT-P-1C, Steam Generator Recirc And Transfer Pump.

Directions

The evaluator will explain the initial conditions and initiating cues. Ensure you indicate to the evaluator when you understand your assigned task. When you finish the task, inform an examiner.

Initial Conditions

- 1-RT-P-1C, Steam Generator Recirc And Transfer Pump, has been experiencing high vibrations and requires maintenance.
- 1-RT-P-1C, Steam Generator Recirc And Transfer Pump, must be isolated electrically and mechanically to support maintenance.

Initiating Cues

- You are requested to determine all requirements/elements necessary to prepare 1-RT-P-1C, Steam Generator Recirc. And Transfer Pump, for the required maintenance (Tag out elements, valve/breaker positions, etc).
- Use the attached table to identify all components and their required positions. The number of blanks on this table does not indicate the number of steps in the tagout or the number of components to be tagged.
- The order in which tags should be placed is not necessary.
- When you finish responding to the questions, inform an examiner.
- Computerized Tagging Systems are not operational and may not be used for this task.

(TO BE GIVEN TO APPLICANT)

	Component ID Number / Name	Position	Danger Tag Required? (Yes / No)
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			

Task

CROSS-CONNECT TURBINE BUILDING INSTRUMENT AIR TO CONTAINMENT.

Applicability

RO/SRO

Est Completion Time

6 Minutes

Actual Time

K/A (Importance Ratings)

078K1.03 (3.3/3.4)

065AK3.08 (3.7/3.9)

065AK3.04 (3.0/3.2)

069AA2.02 (3.9/4.4)

References

Surry JPM LO17-02

ARP 1B-F6, CTMT INST AIR LO HDR PRESS, Step 2 RNO, Rev. 1

Applicant: _____

Performance Rating: SAT: _____ UNSAT: _____

Examiner: _____

NAME

SIGNATURE

DATE

COMMENTS:

Conditions

- Task is to be SIMULATED in the plant.
- Any plant mode/condition.

Standards

- 1-IA-446 and 1-IA-447 open.

Initiating Cue

- Unit 1 is experiencing a loss of Ctmt IA pressure.
- Perform ARP 1B-F6, Step 1 and 2 RNO to manually align valves.
- When you finish the actions necessary to accomplish this, please inform me.

Terminating Cues

- Turb Rldg IA cross-connected to containment.

Tools, Equipment, & Procedures Needed:

- Zone 5 (Aux Bldg) Admin Key
- ARP 1B-F6, CTMT INST AIR LO HDW PRESS, Step 2 RNO.

Safety Considerations

- Standard Personal Safety Equipment
- ALARA
- Potential overhead contamination

Performance Checklist

Notes to the Evaluator

- This task is to be SIMULATED. Do NOT allow the operator to manipulate valves or violate the containment integrity boundary.
- There is **potential overhead contamination** in the Aux Bldg basement clean floor areas, DO NOT touch overhead piping.
- Task critical elements are denoted by an asterisk (*). If substeps of a critical element also have an asterisk (*), then only those asterisked substeps are critical to performance of that task element.
- Critical step sequencing requirements: 1 - 3 - 4/5 (4 & 5 any order).

- **STARTTIME:**

<p>"STEP 1: OBTAIN ZONE 5 ADMIN KEY</p> <p>STANDARD: Obtains Zone 5 Admin key.</p> <p>EVALUATOR'S NOTE: **This step is sequence critical.**</p> <p>When operator demonstrates ability to obtain key, simulate having the key (do not actually remove key from the MCR ANNEX).</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 2: LOCATE 1-IA-446 AND 1-IA-447.</p> <p>STANDARD: Proceeds to the Unit 1 side of Aux Bldg bsmt penetration area and locates these valves (in overhead).</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

<p>* STEP 3: REMOVE CHAIN FROM 1-IA-446 AND 1-IA-447.</p> <p>STANDARD: Unlocks & removes lock and chain from Unit 1 cross-connect valves.</p> <p>EVALUATOR'S NOTE: ** This step is sequence critical.**</p> <p>CUE: Following simulated chain removal, inform Applicant that chains are removed.</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>* STEP 4: OPEN 1-IA-446.</p> <p>STANDARD: Opens valve by turning handwheel counter-clockwise.</p> <p>EVALUATOR'S NOTE: ** This step is sequence critical.**</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>* STEP 5: OPEN 1-IA-447.</p> <p>STANDARD: Opens valve by turning handwheel counter-clockwise.</p> <p>CUE: When the second valve is being throttled open, notify performer that air flow is heard through the valve.</p> <p>EVALUATOR'S NOTE: ** This step is sequence critical.**</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

**Operator Directions Handout
(TO BE READ TO APPLICANT BY EXAMINER)**

Task

- The task will be simulated in the plant.
- Cross-connect turbine building instrument air to containment.

Directions

The evaluator will explain the initial conditions of the task to be performed. The evaluator will provide the initiating cue. Ensure you indicate to the evaluator when you understand your assigned task. This **task** is to be SIMULATED. Do NOT turn switches, manipulate controls or reposition valves.

Initial Conditions

- Unit 1 is experiencing a loss of Ctmt IA pressure.
- ARP 1B-F6, CTMT INST AIR LO HDR PRESS, has annunciated.

Initiating Cue

- Unit 1 is experiencing a loss of Ctmt IA pressure.
- Perform ARP 1B-F6, **Step 1** and **2 RNO** to manually align valves.
- When you finish the actions necessary to accomplish this, please inform me.

**Operator Directions Handout
(TO BE GIVEN TO APPLICANT)**

Task

- The task will be simulated in the plant.
- Cross-connect turbine building instrument air to containment.

Directions

The evaluator will explain the initial conditions of the task to be performed. The evaluator will provide the initiating cue. Ensure you indicate **to** the evaluator when you understand your assigned task. This task is to be SIMULATED. Do NOT turn switches, manipulate controls or reposition valves.

Initial Conditions

- Unit 1 is experiencing a loss of Ctmt IA pressure.
 - ARP 1B-F6, CTMT INST AIR LO HDR PRESS, has annunciated.

Initiating Cue

- Unit 1 is experiencing a **loss** of Ctmt IA pressure.
- Perform ARP 1B-F6, Step 1 and 2 RNO to manually align **valves**.
- When you finish the actions necessary to accomplish **this**, please inform **me**.

Task

CROSS-TIE UNIT 2 EMERGENCY BUSES FOR CW ISOLATION.

Applicability

RO/SRO

Est Completion Time

20 Minutes

Actual Time

K/A (Importance Ratings)

056AA1.02 (4.0/3.9)

062A2.12 (3.2/3.6)

062AA2.02 (2.9/3.6)

076A2.01 (3.5/3.7)

References

Surry JPM LO35-02

1-ECA-0.0, Loss of All AC Power, Attachment 3, Rev. 21.

Applicant: _____

Performance Rating: SAT: _____ UNSAT: _____

Examiner: _____

NAME

SIGNATURE

DATE

COMMENTS:

Conditions

- Task is to be SIMULATED in the plant.
- A simulated loss of all on-site **and** off-site power (station blackout) is in progress on Unit 1. Unit 2 has the 2H emergency bus energized. 4-ECA-0.0 is in progress and at step 10 for actions to conserve canal level. The Unit 1 CW MOVs are still open (MOV-CW-100A, 106B, 100C, 106D).

Standards

- 1-ECA-0.0, Attachment 3.

Initiating Cues

- Using ECA 0.0, Loss of All AC, Attachment 3 perform Parts 1 & 2 to cross-tie the Unit 2 emergency buses for Circ Water isolation.
 - When you finish the actions necessary to accomplish this, please inform me.

Terminating Cues

- Completion of 1-ECA-0.0, attachment 3, part 2, step 6.

Tools, Equipment, & Procedures Needed

- Breaker racking tool
- 1-ECA-0.0, Loss of All AC Power, Attachment 3.

Safety Considerations

- Standard Personal Safety Equipment

Performance Checklist

Notes to the Evaluator

- e This task is to be SIMULATED. Do NOT allow the operator to manipulate controls, operate switches or reposition valves.
- e Task critical elements are denoted by an asterisk (*). If substeps of a critical element also have an asterisk (*), then only those asterisked substeps are critical to performance of that task element.
- e Critical step sequencing requirements: 1 through 13 (any order) before 14.

● **STARTTIME:**

<p>*STEP 1: LOCKOUT EQUIPMENT.</p> <p>STANDARD: Places the following controls in the PTL or LOCKOUT position:</p> <ul style="list-style-type: none"> a) * 1-VS-F-58A, b) * 2-FW-P-3B, c) * 2-CH-P-1C (Alternate supply), d) * 2-CH-P-1B, e) * Unit 2 PWZR heater group "A", f) * 2-CS-P-1B, g) * 2-RS-P-2B, h) * 2-RS-P-1B, i) * 2-SI-P-1B, j) * 2-VS-F-1B, k) * 25J3 (#3 EDG supply to Unit 2), l) * Bus tie (25H1), m) * 15J3 (#3 EDG supply to Unit 1). <p>CUES: If asked: 1-VS-F-58A is powered from Unit "1" Bus</p> <p>EVALUATOR'S NOTE: ** This step is sequence critical.**</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
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<p>STEP 2: LOCALLY VERIFY THE "B" CONTAINMENT SPRAY PUMP BREAKER OPEN.</p> <p>STANDARD: Proceeds to 480v breaker 24J-5 and verifies breaker indicates OPEN by observing the breaker mechanical indicating flag.</p> <p>CUES: If asked: Breaker mechanical indicator Rag shows OPEN.</p> <p>COMMENTS:</p>	<p>_____ SAP</p> <p>_____ UNSAT</p>
<p>STEP 3: LOCALLY VERIFY THE "B" RECIRC SPRAY PUMP BREAKER OPEN.</p> <p>STANDARD: Proceeds to 480v breaker 24J-4 and verifies breaker indicates OPEN by observing the breaker mechanical indicating flag.</p> <p>CUES: If asked: Breaker mechanical indicator flag shows OPEN.</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>* STEP 4: LOCALLY OPEN THE SUPPLY BREAKER FOR MCC 2J1-2.</p> <p>STANDARD: Proceeds to 480v breaker 24J1-4 (behind Unit 2 EHC control cabinets) and opens the breaker by depressing the breaker TRIP pushbutton.</p> <p>CUES: If asked: Breaker mechanical indicator flag shows CLOSED before trip. Tell operator: (When breaker trip button pressed), a "bang" breaker operating noise is heard. If asked: Breaker mechanical indicator flag shows OPEN following trip.</p> <p>EVALUATOR'S NOTE: ** This step is <i>sequence critical</i>. **</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

<p>STEP 5: LOCALLY VERIFY THE "B" AUXILIARY FEEDWATER PUMP BREAKER OPEN.</p> <p>STANDARD: Proceeds to 4160v breaker 25J4 and verifies breaker indicates OPEN by observing the breaker indicating lights and/or breaker mechanical indicator flag.</p> <p>CUES: If asked: Breaker mechanical indicator flag shows OPEN. If asked: Breaker indicating lights show green light lit & red light off.</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 6: LOCALLY VERIFY 2J BUS STUB BUS SEPARATED.</p> <p>STANDARD: Proceeds to Unit 2 Emergency Switchgear Room 4160v breaker 25J9 and verifies breaker indicates OPEN by observing breaker indicating lights and/or breaker mechanical indicator flag.</p> <p>CUES: If asked: Breaker mechanical indicator flag shows OPEN. If asked: Breaker indicating lights show green and amber lights lit and red light off.</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>* STEP 7: LOCALLY OPEN ALL BREAKERS ON MCC 2J1-1.</p> <p>STANDARD:</p> <ul style="list-style-type: none"> a) Proceeds to MCC 2J1-1 (beside double doors exiting to #1 TB). b) Records on attachment 1, all breakers found open or tagged-open on MCC 2J1-1. c) * Opens all other breakers on the MCC by turning handles to the OFF position. <p>EVALUATOR'S NOTE: ** This step is sequence critical.**</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

<p>* STEP 8: LOCALLY CLOSE UNIT 2 SUPPLY TO MCC 1J1-1A (#3 EDG AUTOMATIC BUS TRANSFER DEVICE SUPPLY BREAKER).</p> <p>STANDARD: At MCC 2J1-1, closes #3 EDG ABT supply breaker, 2J1-1-4C, by rotating handle to the ON position.</p> <p>EVALUATOR'S NOTE: ** <i>This step is sequence critical.</i>**</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 9: LOCALLY VERIFY FUSES INSTALLED IN CROSSTIE BREAKER.</p> <p>STANDARD: Proceeds to 4160V breaker 25H1 and performs the following: a) Verifies the breaker control power fuses are installed. b) Verifies breaker trip fuses are installed in fuse socket.</p> <p>CUES: If asked: Trip and control fuses are already installed properly in fuse sockets.</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 10: LOCALLY VERIFY CHARGING SPRING TOGGLE SWITCH ON.</p> <p>STANDARD: Observes bottom area of breaker to verify the breaker charging spring toggle switch is in the ON position.</p> <p>CUES: If asked: Breaker charging spring toggle switch is ON.</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

<p>* STEP 11: LOCALLY RACK-IN THE EMERGENCY BUS CROSS-TIE BREAKER.</p> <p>STANDARD:</p> <ul style="list-style-type: none"> a) Checks breaker racked to the DISCONNECT position by opening breaker door and observing mechanical position indicator inside cubicle. b) Closes breaker door. c) * Obtains breaker racking tool from storage hanger. d) * Inserts breaker racking tool into racking mechanism. e) * Racks breaker to the CONNECT position by turning racking tool in the clockwise direction. f) Removes breaker racking tool from racking mechanism. <p>CUES: If asked: Breaker initially racked to DISCONNECT position. If asked: No green tags seen; no ground straps installed. If asked: SS approval for RED tag removal granted. If asked: When breaker correctly racked, it is in CONNECT position</p> <p>EVALUATOR'S NOTE: ** <i>This step is sequence critical.</i>**</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 12: INFORM UNIT 2 OPERATOR OF CROSS-CONNECT OF 2H & 2J EMERGENCY BUSES.</p> <p>STANDARD:</p> <ul style="list-style-type: none"> a) Returns to MCR. b) Informs Unit 2 operator that next action that will cross-connect the 2H and 2J emergency buses. <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

<p>* STEP 13: CLOSE EMERGENCY BUS CROSS-TIE BREAKER. 25H1.</p> <p>STANDARD:</p> <ul style="list-style-type: none"> a) * Removes 25H1 breaker control switch from PTL. b) * Places 25H1 breaker control switch to the CLOSED position. c) Verifies breaker closes (red light lit). d) Checks voltage indicated on 2J bus voltmeter. <p>CUES: If asked: Initial indication is green light on & red off. If asked: After closure, red light is on and green off. If asked: 2H & 2J bus voltages indicate 4200 volts. If local closure attempted using breaker close lever TELL operator: Breaker operating noise heard; it initially indicated red light lit; then breaker operating noise heard again and breaker indication shows green light lit. If local closure attempted using local control switch TELL operator: the green light is lit and the local indicator indicates open.</p> <p>EVALUATOR'S NOTE: ** <i>This step is sequence critical.</i> **</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 14: VERIFY CLOSURE OF UNIT 1 CIRCULATING WATER MOVs.</p> <p>STANDARD: Proceeds to Unit 1 benchboard 1-1 CW section and verifies closed indication (green light lit) for the following MOVs:</p> <ul style="list-style-type: none"> e 1-CW-MOV-100A, e 1-CW-MOV-106B, ● 1-CW-MOV-100C, e 1-CW-MOV-106D. <p>CUES: If asked: Green lights on & red off for all above listed MOVs.</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

**Operator Directions Handout
(TO BE READ TO APPLICANT BY EXAMINER)**

Task

- Task is *to* be simulated in the plant.
- a Cross-Tie Unit 2 Emergency Buses For CW Isolation

Directions

The evaluator will explain the initial conditions of the task to be performed. The evaluator will provide the initiating cue. Ensure *you* indicate to the evaluator when you understand your assigned task. This task **is to be** SIMULATED. Do **NOT** turn switches, manipulate controls or reposition valves.

Initial Conditions

- A simulated **loss** of all on-site and off-site power (station blackout) is in progress on Unit 1. Unit 2 has the 2H emergency bus energized. 1-ECA-0.0 is in progress and at step 10 for actions to **conserve** canal level. The Unit 1 CW MOVs are **still** open (MOV-CW-100A, 106B, 100C, 106D).

Initiating Cues

- Using ECA-0.0, **Loss of All AC**, Attachment 3 perform Parts 1 & 2 to cross-tie the Unit 2 emergency buses **for** Circ Water isolation.
- When *you* finish the actions necessary to accomplish *this*, *please* inform me.

**Operator Directions Handout
(TO BE GIVEN TO APPLICANT)**

Task

- Task is to be simulated in the plant.
- Cross-Pie Unit 2 Emergency Buses For CW Isolation

Directions

The evaluator will explain the initial conditions of the task to be performed. The evaluator will provide the initiating cue. Ensure you indicate to the evaluator when you understand your assigned task. This task is to be SIMULATED. Do NOT turn switches, manipulate controls or reposition valves.

Initial Conditions

- A simulated loss of all on-site and off-site power (station blackout) is in progress on Unit 1. Unit 2 has the 2H emergency bus energized. 1-ECA-0.0 is in progress and at step 10 for actions to conserve canal level. The Unit 4 CW MOVs are still open (MOV-CW-100A, 106B, 100C, 106D).

Initiating Cues

- Using ECA-0.0, Loss of All AC, Attachment 3 perform Parts 1 & 2 to cross-tie the Unit 2 emergency buses for Circ Water isolation.
- When you finish the actions necessary to accomplish this, please inform me.

Task

LOCALLY EMERGENCY BORATE

Applicability

RO/SRO

Est Completion Time

10 Minutes

Actual Time

K/A (Importance Ratings)

024AA1.04 (3.6/3.7)

References

Sur9 JPM LO41-01B

2-AP-3.00, Emergency Boration, Rev. 1

Applicant: _____

Performance Rating: SAT: _____ UNSAT: _____

Examiner: _____
NAME

SIGNATURE DATE

COMMENTS:

Conditions

- Task is to be SIMULATED in the plant.
- A simulated unit startup is in progress when a condition requiring emergency boration occurred.

Standards

- 2-CH-228 locally opened IAW 2-AP-3.00 step 1b RNO.

Initiating Cues

- Locally initiate emergency boration in accordance with 2-AP-3.00, Emergency Boration, Step 1b RNO.
- When **you** finish the actions necessary to accomplish this, please inform **me**.

Terminating Cues

- Report received 2-CH-228 locally opened.

Tools, Equipment, and Procedures Needed

- 2-AP-3.00, Emergency Boration.

Safety Considerations

- Standard Personal Safety Equipment
- ALARA
- DO NOT enter contaminated areas.

Performance Checklist

Notes to the Evaluator

- This task is to be SIMULATED. Do NOT allow the operator to manipulate controls, operate switches or reposition valves. DO NOT allow the operator to enter a contaminated area for the simulation of this JPM.
- Task critical elements are denoted by an asterisk (*). If substeps of a critical element also have an asterisk (*), then only those asterisked substeps are critical to performance of that task element.
- Critical step sequencing requirements: None.
- **STARTTIME:**

<p>STEP 1: LOCATES 2-CH-MOV-2350.</p> <p>STANDARD:</p> <ul style="list-style-type: none"> a) Proceeds to Aux building 13 ft level boric acid flats. b) Locates MOV on EAST end of the BA Rats area. <p>EVALUATOR'S NOTE: If valve is in Contaminated area, pointing out w/ flashlight is acceptable.</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 2: LOCALLY ATTEMPTS TO OPENS 2-CW-MOV-2350.</p> <p>STANDARD:</p> <ul style="list-style-type: none"> a) Attempts to engage 2-CH-MOV-2350 manual operator by depressing clutch mechanism. b) Attempts to open valve by rotating MOV handwheel in the counter-clockwise direction. <p>CUES: Tell operator: The MOV handwheel will not turn or move in the counter-clockwise direction (regardless of how much opening pressure is applied). If asked: Valve stem rod does <i>not</i> move. If asked: No flow noise heard through valve. If asked: Ne change in either the audible BATP operating noise or BATP discharge pressure. If asked: The MOV handwheel will move in the clockwise direction approximately one-quarter turn.</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

<p>STEP 3: REPORT TO SHIFT SUPERVISOR (EVALUATOR) THAT MOV NOT OPERATING.</p> <p>STANDARD: a) Contacts Shift Supervisor (Evaluator). b) Informs him that CH-MOV-2350 will not locally operate (appears to be jammed or frozen-up).</p> <p>CUES: If applicant asked if 2-CH-228 should be locally opened, ask the applicant for a recommendation.</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 4: LOCALLY OPENS 2-CH-228, MANUAL BORATION VALVE.</p> <p>STANDARD: a) Operator requests the RO to Manually open 1-CH-FCV-2113A. b) Locates 2-CH-228 on EAST wall of BA flats area. c) * Opens 2-CH-228 by turning valve handwheel in the counter-clockwise direction.</p> <p>CUES: Tell operator: When operator attempts to open CH-228, tell him that the handwheel turns in the counter-clockwise direction. If asked: The valve stem rises as valve is opened.</p> <p>EVALUATOR'S NOTE: 2-CH-228 is a small grinnell valve on the EAST wall area of the BA flats in the BA piping. If valve is in Contaminated area, pointing out w/ flashlight is acceptable. If asked: The RO has manually opened 2-CH-FCV-2113A.</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 5: REPORT TO SHIFT SUPERVISOR (EVALUATOR).</p> <p>STANDARD: Reports to Shift Supervisor (Evaluator) that 2-CH-228 is open.</p> <p>STOP TIME:</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

**Operator Directions Handout
(TO BE READ TO APPLICANT BY EXAMINER)**

Task

- Task is to be simulated in the plant.
- Local Emergency Boration

Directions

The evaluator will explain the initial conditions of the task to be performed. The evaluator will provide the initiating cue. Ensure you indicate to the evaluator when you understand your assigned task. This task is to **be** SIMULATED. Do NOT turn switches, manipulate controls or reposition valves.

Initial Conditions

- There is a challenge to unit 2's Shutdown Margin in progress.
- A simulated unit startup is in progress when a condition requiring emergency boration occurred.
- Emergency boration was attempted from the Control Room, but the MOV thermalled before it opened.

Initiating Cues

- Locally initiate emergency boration in accordance with **2-AP-3.00**, Emergency Boration, Step 1b RNO.
- When you finish the actions necessary to accomplish this, please inform me.

**Operator Directions Handout
(TO BE GIVEN TO APPLICANT)**

Task

- Task is to be simulated in the plant.
- Local Emergency boration

Directions

The evaluator will explain the initial conditions of the task to be performed. The evaluator will provide the initiating cue. Ensure you indicate to the evaluator when you understand your assigned task. This task is to be SIMULATED. Do NOT turn switches, manipulate controls or reposition valves.

Initial Conditions

- There is a challenge to unit 2's Shutdown Margin in progress.
- A simulated unit startup is in progress when a condition requiring emergency boration occurred.
- Emergency boration was attempted from the Control Room, but the MOV thermalled before it opened.

Initiating Cues

- Locally initiate emergency boration in accordance with 2-AP-3.00, Emergency Boration, Step 1b RNO.
- When you finish the actions necessary to accomplish this, please inform me.

Task

0-AP-22.00, FUEL HANDLING ABNORMAL CONDITIONS IMMEDIATE ACTIONS

Applicability

RO/SRO

Est Completion Time

5 Minutes

Actual Time

K/A (Importance Ratings)

034.A2.01 (3.6/4.4)

036.AK1.01 (3.5/4.1)

References

Surry JPM LO36-04

0-RM-D3, 1-RM-RI-153 High **Annunciator** Response Procedure, Rev. 4.

0-AP-22.60, Fuel Handling Abnormal Conditions, Rev. 18

Applicant: _____

Performance Rating: SAT: _____ UNSAT: _____

Examiner: _____

NAME

SIGNATURE DATE

COMMENTS:

Conditions

- Task is to be PERFORMED in the simulator.
- Unit 1 is operating at 100% power, Unit 2 is at CSD for refueling.

Standards

- 0-AP-22.00, Fuel Handling Abnormal Conditions, Steps 6 and 7 completed.

Initiating Cues

- There has been a **Fuel** Handling accident in the Fuel Building. The Fuel handling crew has placed the leaking fuel assembly in a safe condition and evacuated the Fuel Building. No fuel repair **was** or is in progress.
- You are to perform the **last two** Immediate Action Steps of 0-AP-22.00, Fuel Handling Abnormal Conditions, without the use of the procedure. (Secure Normal MCR Ventilation and Bump MCR Bottled Air)
- e When *you* finish the actions necessary to accomplish this, please inform me.

Terminating Cues

- 0-AP-22.00, Fuel Handling Abnormal Conditions, Steps 6 and 7 completed.

Tools, Equipment, & Procedures Needed

- 0-RM-D3, 1-RM-Ri-153 High Annunciator Response Procedure.

Safety Considerations

- Standard Personal Safety Equipment
- e ALARA

Simulator Setup

- Call up 100% IC and initialize.
- Place the Fuel Building on Filtered Exhaust (VS-F-58A and B) using 0-OP-VS-014. The MCR is on normal ventilation.
- Enter malfunctions for Fuel Bldg Bridge Crane, New Fuel Area, and Vent-Vent RMs so that Alert and High Alarms are lit.
- Override OFF annunciator VSP-C-1
- Start the air compressor for simulating air pressure to the MCR and close the door from the simulator booth to the simulator. The door must be closed in order to have positive air pressure indicated in the simulator.
- Place the simulator in freeze until JPM Performance.

PERFORMANCE CHECKLIST

Notes to the Evaluator

- Task critical elements are denoted by an asterisk (*). If substeps of a critical element also have an asterisk (*), then only those asterisked substeps are critical to performance of that task element.
- Critical step sequencing requirements: None.
- **STARTTIME:**

<p>"STEP 1: SECURE NORMAL MAIN CONTROL ROOM VENTILATION (0-A&-22.00, Step 6)</p> <p>STANDARD:</p> <ul style="list-style-type: none"> a) * Close 1-VS-MOD-103C. b) Verify closed: Green Light lit and Red light not lit. c) * Close 1-VS-MOD-103D. d) Verify closed: Green Light lit and Red light not lit. e) Verifies MCR Exhaust Fan 1-VS-F-15 is secured (Green Light lit, Red light not lit). f) Verifies MCR Supply Fan 1-VS-AC-4 is secured (Green Light lit, Red Light not lit). <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>"STEP 2: BUMP MCR BOTTLED AIR (0-WP-22.00, Step 7)</p> <p>STANDARD:</p> <ul style="list-style-type: none"> a) Applicant attempts to close 1-VS-MOD-103B (dumps Unit 1 Cable Vault air bottles). Valve does not close and RNO must be performed. Valve red light on handswitch still lit. b) * RNO: Closes 4-VS-103A (Dumps MEW 3 air bottles). <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 3: REPORTS TO SHIFT SUPERVISOR (EVALUATOR) THAT TASK IS COMPLETE.</p> <p>STANDARD:</p> <ul style="list-style-type: none"> a) Reports to SS that Steps 6 and 7 of AP-22.00 have been completed and the RNO for Step 7 was utilized. <p>STOP TIME:</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

**Operator Directions Handout
(TO BE READ TO APPLICANT BY EXAMINER)**

Task

- e Task is to be performed in **the** simulator.
- e Perform 0-A\$-22.00, Fuel Handling Abnormal Conditions, Immediate Action Steps.

Directions

The evaluator will explain the initial conditions of the task to be performed and **will** provide the initiating cue. Ensure you indicate *to* the evaluator when you understand your assigned task.

Initial Conditions

- Unit 1 is operating at 100% power, Unit 2 is at CSD for refueling.

Initiating Cues

- There has been a Fuel Handling accident in **the** Fuel Building. The Fuel handling crew has placed the leaking fuel **assembly** *in* a safe condition and evacuated **the** Fuel Building. **No** fuel repair **was**. or is, in progress.
- You are *to* perform the last **two** Immediate Action Steps of 0-AP-22.00, Fuel Handling Abnormal Conditions, without the use **of** the procedure. (Secure Normal MCR Ventilation and Dump MCR Bottled Air)
- When you finish **the** actions **necessary to** accomplish this, please inform **me**.

**Operator Directions Handout
(TO BE GIVEN TO APPLICANT)**

Task

- Task is to be performed in the simulator.
- e Perform 0-AP-22.00, Fuel Handling Abnormal Conditions, Immediate Action Steps.

Directions

The evaluator will explain the initial conditions of the task to be performed and will provide the initiating cue. Ensure you indicate to the evaluator when you understand your assigned task.

Initial Conditions

- e Unit 1 is operating at 100% power, Unit 2 is at CSD for refueling.

Initiating Cues

- e There has been a Fuel Handling accident in the Fuel Building. The Fuel handling crew has placed the leaking fuel assembly in a safe condition and evacuated the Fuel Building. No fuel repair was, or is, in progress.
- e You are to perform the last two Immediate Action Steps of 0-AP-22.00, Fuel Handling Abnormal Conditions, without the use of the procedure. (Secure Normal MCR Ventilation and Dump MCR Bottled Air)
- When you finish the actions necessary to accomplish this, please inform me.

Task

TRANSFER FEED WATER CONTROL FROM FW BYP FLOW HCVS TO THE FEED REG FCVS IN MANUAL CONTROL.

Applicability

RO/SRO

Est Completion Time

10 Minutes

Actual Time

K/A (Importance Ratings)

059A4.08(3.02/2.9)

References

1-GO\$-1.5, Unit Startup, 2% **Reactor Power** to Max Allowable Power, Rev. 32

Applicant: _____

Performance Rating: SAT: _____ UNSAT: _____

Examiner: _____
NAME

SIGNATURE DATE

COMMENTS:

Conditions

- You are the Unit 1 BOP.
- The unit is operating at 20% power.
- Feedwater is being controlled by FW **BYF** FLOW HCVs for all SG.
- All FEED REG FCVs are in MANUAL.

Standards

- Transfer Feed Water Control from FW **BYP** FLOW HCVs to the FEED REG FCVs in MANUAL control *then* place FRVs in AUTO.
- Stabilize SG Levels at Program Level.

Initiating Cue

You are to transfer Feedwater Control from the FW **BYP** FLOW HCVs to the FEED REG FCVs in MANUAL per GOP-1.5, Unit Startup 2% Reactor Power to Max Allowable Power, Step 5.3.28 through 5.3.30 for all Steam Generators. Then place FEED REG FCVs in AUTO per step 5.3.31.

Terminating Cues

- SG Levels at Program Level and FEED REG FCVs are *in* AUTO.

Tools, Equipment, and Procedures Needed

- 1-GOP-1.5, Unit Startup, 2% Reactor Power to **Max** Allowable Power, Rev. 32

Safety Considerations

- None

Simulator Setup

- Call up 20% power iC

Performance Checklist

Notes to the Evaluator

- Task critical elements are denoted by an asterisk (*). If substeps of a critical element also have an asterisk (*), then only those asterisked substeps are critical to performance of that task element.

START TIME:

<p>Step 1: Transfer Feed Water Control from FW BYP FLOW HCVs to the FEED REG FCVs in MANUAL control. (GOP-1.5, Step 5.3.28)</p> <p>Standards</p> <ul style="list-style-type: none"> a) Open 1-FW-MOV-154A, SG A FW ISOL. b) Open 1-FW-MOV-154B, SG B FW ISOL. c) Open 1-FW-MOV-154C, SG C FW ISOL. d) Throttle open 1-FW-FCV-1478, SG A FEED REG. e) Close 1-FW-HCV-155A, SG A FW BYP FLOW. f) Throttle open 1-FW-FCV-1488, SG A FEED REG. g) Close 1-FW-HCV-155B, SG B FW BYP FLOW. h) Throttle open 1-FW-FCV-1498, SG C FEED REG. i) Close 1-FW-HCV-155C, SG C FW BYP FLOW. <p>Evaluator's Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>Step 2: Applicant determines that MFRVs are not in AUTO and N/As GOP-1.5, Step 5.3.29.</p> <p>Standards</p> <ul style="list-style-type: none"> a) N/As step 5.3.29. <p>Evaluator's Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

<p>step 3: Verifies feed flow is indicated on all six channels of SG FEED FLOW PROTECT. (GOP-1.5, Step 5.3.30)</p> <p>Standards</p> <ul style="list-style-type: none"> a) 1-FW-FI-1477, SG A FEEQ FLOW PROTECT b) 1-FW-FI-1476, SG A FEED FLOW PROTECT c) 1-FW-FI-1487, SG B FEEB FLOW PROTECT d) 4-FW-FI-1486, SG B FEED FLOW PKOTECT e) 1-FW-FI-1497, SG C FEED FLOW PROTECT f) 1-FW-FI-1496, SG C FEED FLOW PROTECT <p>Evaluator's Note</p> <p>Evaluator's Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>*Step 4: When feedwater flow is nearly equal to steam flow AND SG levels are being controlled at the setpoint, THEN place the FEED REG FCVs in AUTO. (GOP-1.5, Step 5.3.31)</p> <p>Standards</p> <ul style="list-style-type: none"> a) When feed flow and steam flow are approximately equal for the A SG, then 1-FW-FCV-1478 is placed in AUTO. b) When feed flow and steam flow are approximately equal for the B SG, then 1-FW-FCV-1488 is placed in AUTO. c) When feed flow and steam flow are approximately equal for the C SG, then 1-FW-FCV-1498 is placed in AUTO. <p>Evaluator's Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>Step 5: Reports to the Shift Manager that MFRVs are controlling feedwater flow in AUTO to all three SGs.</p> <p>Standards</p> <ul style="list-style-type: none"> a) Reports that MFRVs are controlling feedwater flow in AUTO to all three SGs. <p>Step Time:</p> <p>Evaluator's Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

**operator Directions Handout
(TO BE READ TO APPLICANT BY EXAMINER)**

Task

- Task is to be performed in the simulator.
- Transfer Feedwater Control from the FW BYP FLOW HCVs to the FEED REG FCVs

Directions

The evaluator will explain the initial conditions of the task to be performed and will provide the initiating cue. Ensure you indicate to the evaluator when you understand your assigned task.

Initial Conditions

- You are the Unit 1 BOP.
- The unit is operating at 20% power.
- Feedwater is being controlled by FW BYP FLOW HCVs for all SG.
- All FEED REG FCVs are in MANUAL.

Initiating Cue

You are to transfer Feedwater Control from the FW BYP FLOW HCVs to the FEED REG FCVs in MANUAL per GOP-1.5, Unit Startup 2% Reactor Power to Max Allowable Power, Step 5.3.28 through 5.3.30 for all Steam Generators. Then place FEED REG FCVs in AUTO per step 5.3.31.

**Operator Directions Handout
(TO BE GIVEN TO APPLICANT)**

Task

- Task is to be performed in the simulator.
- Transfer Feedwater Control from the FW BYP FLOW HCVs to the FEED REG FCVs

Directions

The evaluator will explain the initial conditions of the task to be performed and will provide the initiating cue. Ensure you indicate to the evaluator when you understand your assigned task.

Initial Conditions

- e You are the Unit 1 BOP.
- The unit is operating at 20% power.
- e Feedwater is being controlled by FW BYP FLOW HCVs for all SG.
- All FEED REG FCVs are in MANUAL.

Initiating Cue

You are to transfer Feedwater Control from the FW BYP FLOW HCVs to the FEED REG FCVs in MANUAL per GOP-1.5, Unit Startup 2% Reactor Power to Max Allowable Power, Step 5.3.28 through 5.3.30 for all Steam Generators. Then place FEED REG FCVs in AUTO per step 5.3.31.

Task
START THE B RCP

Applicability	Est Completion Time	Actual Time
RO/SRO	20 Minutes	

K/A (Importance Ratings)
015AA1.23(3.1/3.2)

References
1-OP-RC-001, Starting And Running Any Reactor Coolant Pump, Rev. 13
1C-H4, RCP FRAME DANGER, Rev. 2
1C-H5, RCP SHAFT DANGER, Rev. 1

Applicant: _____

Performance Rating: **SAT:** _____ **UNSAT:** _____

Examiner: _____	_____	_____
NAME	SIGNATURE	DATE

COMMENTS:

Conditions

- You are the Unit 1 RO and I am the Nuclear Shift Manager.
- A Unit 1 startup is in progress.
- "A" RCP is operating satisfactorily.
- "B" RCP is coupled
- 4-QP-RC-001, Section 5.1 has been completed
- Unit 2 is shutdown with no RCPs operating

Standards

- a Starts B WCP
- Secures B RCP due to High Vibrations

Initiating Cues

Start the B RCP in accordance with 1-OP-RC-001, Starting and Running Any Reactor Coolant Pump, Section 5.3.

Terminating Cues

- B RCP is secured due to high vibrations.

Tools, Equipment, and Procedures Needed

- OP-RC-001, Starting and Running Any Reactor Coolant Pump, Rev. 13
- 1C-H4, RCP FRAME DANGER, Rev. 2
- 1C-H5, RCP SHAFT DANGER, Rev. 1

Safety Considerations

- None

Simulator Setup

- Call up 0% power IC

Performance Checklist

Notes to the Evaluator

- ⦿ Task critical elements are denoted by an asterisk (*). If substeps of a critical element also have an asterisk (*), then only those asterisked substeps are critical to performance of that task element.
- ⦿ Critical step sequencing requirements: Step 16 prior to Step 32.

START TIME:

<p>Step 1: Obtains correct procedure and verifies correct revision.</p> <p>Standards Applicant obtains procedure and verifies the correct revision.</p> <p>Examiner's Cue After the applicant explains how to obtain a copy of the procedure, then provide a copy of the procedure.</p> <p>Evaluator's Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>Step 2: Reviews 1-OP-RC-001 Initial Conditions and Precautions and Limitations.</p> <p>Standards a) Reviews 1-OP-RC-001, Section 3.0. b) Reviews 1-OP-RC-001, Section 4.0.</p> <p>Evaluator's Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>Step 3: Verifies Subsection 5.1 completed (1-OP-RC-001, Step 5.3.1)</p> <p>Standards Check initiating cues and determines that Subsection 5.1 has been completed.</p> <p>Examiner's Cue If applicant asks if Subsection 5.1 is completed: Have applicant check initiating cues.</p> <p>Evaluator's Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

<p>Step 4: Rack Breaker 15B3, 1-RC-P-1B, to TEST (1-OP-RC-001, Step 5.3.2).</p> <p>Standards Calls field operator to rack 1583 to TEST.</p> <p>Evaluator's Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>Step 5: Verify 1-RC-MOV-1593, LOOP B COLD LEG ISOL, and 1-RC-MOV-1592, LOOP B HOT LEG ISOL, are open (1-OP-RC-001, Step 5.3.3).</p> <p>Standards 1-RC-MOV-1593 and 1592 Red Breaker Indication illuminated.</p> <p>Evaluator's Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>Step 6: Verify 1-CH-FI-1127A, RCP B SEAL WTR IMJ FLOW, is greater than 6.5 gpm and less than 13 gpm (1-OP-RC-001, Step 5.3.4).</p> <p>Standards 1-CH-FI-1127A indicates between 6.5 and 13 gpm.</p> <p>Evaluator's Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>Step 7: Verify 1-CH-PI-1117, VCT Press, is greater than or equal to 15 psig (1-OP-RC-001, Step 5.3.5).</p> <p>Standards 1-CH-PI-1117 is greater than 15 psig.</p> <p>Evaluator's Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

<p>Step 8: Verify RCP No. 1 Seal Delta P is greater than or equal to 200 psid for 1-CH-PI-1155A, RCP B No. 1 SEAL Delta P (1-OP-RC-001, Step 5.3.6).</p> <p>Standards Verify 1-CH-PI-1155A indicates greater than 200 psid.</p> <p>Evaluator's Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>Step 9: Verify Open or Open 1-CH-1303B, RCP 1B SEAL LEAKOFF ISOL VV (1-OP-RC-001, Step 5.3.7).</p> <p>Standards Ensure Red Indicating Light illuminated for 1-CH-1303B.</p> <p>Evaluator's Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>Step 10: Verify that No. 1 seal leakoff is within the NORMAL OPERATING RANGE for 1-CH-PI-1155A, RCP B No. 1 SEAL Delta P (1-OP-RC-001, Step 5.3.8).</p> <p>Standards Determines leak off within normal operating range using Attachment 1.</p> <p>Evaluator's Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>step 1a : Verify Component Cooling flow has been established to the following: Thermal Barrier, Lube Oil Coolers, and Stator Cooler (1-OP-RC-001, Step 5.3.9)</p> <p>Standards Verify CCW flow to Thermal Barrier, Lube Oil Coolers, and Stator Cooler.</p> <p>Evaluator's Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

<p>Step 12: Verify the overcurrent and speed sensing start permissives for RCP 1B are clear IAW Attachment 2 (1-OP-RC-001, Step 5.3.10).</p> <p>Standards All lights specified in Attachment 2 are verified per the attachment. All are lit except for Pro Star Motor Protection System LEDs.</p> <p>Evaluator's Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>step 13: Acknowledge Note prior to Step 5.3.11</p> <p>Standards If 1K-D4 is in alarm, then determine cause.</p> <p>Evaluator's Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>step 14: Verify common RCP annunciators are clear (1-OP-RC-001, Step 5.3.11).</p> <p>Standards Verify Clear:</p> <ul style="list-style-type: none"> a) 1C-D2, RCP THERMALBARRIER RETURN HDR HI FLOW b) 1C-E2, SEAL WTR INJ FILTER Hi Delta PRESS c) 1C-F2, RCP BEARING HI TEMP d) 1K-D4, 4KV BKR AUTO TRIP <p>Evaluator's Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

<p>Step 15 Verify RCP 1B alarms are clear (1-OP-RC-001, Step 5.3.12).</p> <p>Standards Verify Clear:</p> <ul style="list-style-type: none"> a) 1B-E7, RCP 1B OIL RSVR HI-LO LEVEL b) 1B-E8, RCP 1B VAPOR SEAL TK LO LVL c) 1C-B1, WCP 1B CC RETURN LO FLOW d) 1C-B2, RCP 1B THERMAL BARRIER CC HI FLOW e) 1C-B3, RCP 1B THERMAL BARRIER CC HI TEMP 9 1C-B4, RCP 1B SEAL LEAKOFF HI FLOW g) 1C-B5, RCP 1B SEAL WTR RETURN LO DELTA PRESS h) 1C-E1, RCP 1B CC RETURN HI TEMP i) 1C-E3, RCP 1B SHAFT SEAL WTR LO INJ FLOW j) 1C-E4, RCP 1B SEAL LEAKOFF FLOW <p>Evaluator's Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>Step 16 Start the associated Bearing Lift Pump and record start time (1-OP-RC-001, Step 5.3.13).</p> <p>Standards Bearing Lift Pump for RCP 4B started and time recorded.</p> <p>Evaluator's Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>Step 17 Verify RCP Bearing Lift Pump has been running for greater than 2 minutes (1-OP-RC-001, Step 5.3.14).</p> <p>Standards Two minutes have elapsed since starting the Bearing Lift Pump.</p> <p>Evaluator's Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>Step 18 Verify proper Bearing Lift Pump discharge pressure (1-OP-RC-001, Step 5.3.15).</p> <p>Standards White oil pressure light is LIT for 1-RC-P-1B.</p> <p>Evaluator's Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

<p>Step 19 Verify RCP start logic is established. (1-OP-RC-001, Step 5.3.16)</p> <p>Standards Place control switch to START and verify breaker 15B3 closes</p> <p>Evaluator's Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>Step 20 Place control switch for RCP 1B in PTL. (1-OP-RC-001, Step 5.3.17)</p> <p>Standards RCP 1B is placed to PTL.</p> <p>Evaluator's Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>* step 21 Rack breaker 1583, 1-RC-P-1B to CONNECT (1-OP-RC-001, Step 5.3.18).</p> <p>Standards Instructs field operator to place 15B3 to CONNECT.</p> <p>Evaluator's Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>step 22 Acknowledges CAUTION prior to step 5.3.19.</p> <p>Standards Acknowledges caution.</p> <p>Examiner's Cue If asked about Unit 2 Station Service supply: state that the Unit 2 Station Service is being supplied by Reserve Station Service Transformers.</p> <p>Evaluator's Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

<p>Step 23 Determine required position for Load Shed Mode Select Switch (1-OP-RC-001, Step 5.3.19).</p> <p>Standards Chooses the DISABLE position due to all Unit 2 RCPs secured.</p> <p>Examiner's Cue If applicant <i>asks if</i> Unit 2 RCPs are running: Have applicant check initiating cues.</p> <p>Evaluator's Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>Step 24 Determines Step 5.3.20 is not applicable.</p> <p>Standards Applicant does not perform Step 5.3.20.</p> <p>Evaluator's Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>Step 25 Place Load Shed Mode Selector in required position (1-OP-RC-001, Step 5.3.21).</p> <p>Standards Places switch in DISABLE position.</p> <p>Evaluator's Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>Step 26 Select and monitor RCP temperatures on the PCS using CRT or Digital Trend block (1-OQ-RC-001, Step 5.3.22) .</p> <p>Standards Monitors RCP temperatures using PCS.</p> <p>Evaluator's Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

<p>step 27 Verify an Emergency Diesel Generator is not connected to the grid(1-OP-RC-001, Step 5.3.23) .</p> <p>Standards All Diesel Output Breakers have Green Breaker Indication illuminated.</p> <p>Evaluator's Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>step 28 Acknowledge CAUTION prior to Step 5.3.24.</p> <p>Standards: This caution does not apply.</p> <p>Evaluator's Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>Step 29 Acknowledge Step 5.3.24 does not apply.</p> <p>Standards: This step does not apply.</p> <p>Evaluator's Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>Step 30 Verify personnel are clear of pump (1-OP-RC-001, Step 5.3.25).</p> <p>Standards: Makes plant announcement or dispatches operator to make the verification.</p> <p>Evaiuator's Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>step 31 Acknowledge CAUTION prior to Step 5.3.26.</p> <p>Standards: Acknowledges caution.</p> <p>Evaluator's Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

<p>* step 32 Start 1-RC-P-1B (1-OP-WC-001, Step 5.3.26)</p> <p>Standards: Starts 5-RC-P-1B.</p> <p>Note Input High Vibration 30 seconds after 1-RC-P-1B start.</p> <p>Evaluator's Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>step 33 Record No. 1 Seal Leak Off Flow (1-OP-RC-001, Step 5.3.27).</p> <p>Standards Records flow and verifies that it is acceptable iaw Attachment 1.</p> <p>Evaluator's Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>Step 34 Record Parameters (1-OP-RC-001, Step 5.3.28).</p> <p>Standards Records parameters.</p> <p>Evaluator's Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>Step 35 Stop associated Lift Pump (1-OP-RC-001, Step 5.3.29).</p> <p>Standards Lift Pump is secured.</p> <p>Evaluator's Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>Step 36 Acknowledge 1C-H4, RCP FRAME DANGER.</p> <p>Standards Verifies that RCP 1B is the source of the alarm and vibrations are greater than 5 mils on 1-RC-P-1B.</p> <p>Evaluator's Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

<p>* Step 37 Secures 1-RC-P-1B per 1C-H4.</p> <p>Standards Stops RCP 1B.</p> <p>Note Applicant may not refer to ARP when securing pump. This is acceptable.</p> <p>Evaluator's Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>Step 38 Notifies Shift Manager that RCP 1B was secured.</p> <p>Standards Shift Manager was notified that RCP 1B was secured.</p> <p>STOP TIME:</p> <p>Evaluator's Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

**Operator Directions Handout
(TO BE READ TO APPLICANT BY EXAMINER)**

Task

- a Task is to be performed in the simulator.
- Start B RCP

Directions

The evaluator will explain the initial conditions of the task to be performed and **will** provide the initiating cue. Ensure you indicate to the evaluator when you understand your assigned task.

Initial Conditions

- You are the Unit 1 RO.
- A Unit 1 startup is in progress.
- "A" RCP is operating satisfactorily.
- a "B" RCP is coupled
- 1-OP-RC-001, Section 5.1 has been completed
- Unit 2 is shutdown **with** no RCPs operating

Initiating Cue

Start the B RCP in accordance with 1-OP-RC-001, Starting and Running Any Reactor Coolant Pump, Section 5.3.

**Operator Directions Handout
(TOBE GIVEN TO APPLICANT)**

Task

- Task is to be performed in the simulator.
- Start B RCP

Directions

The evaluator will explain the initial conditions of the task to be performed and will provide the initiating cue. Ensure you indicate to the evaluator when you understand your assigned task.

Initial Conditions

- You are the Unit 1 RO.
- A Unit 1 startup is in progress.
- "A" RCP is operating satisfactorily.
- "B" RCP is coupled
- 1-OP-RC-001, Section 5.1 has been completed
- Unit 2 is shutdown with no RCPs operating

Initiating Cue

Start the B RCP in accordance with 1-OP-RC-001, Starting and Running Any Reactor Coolant Pump, Section 5.3.

Task

RESTORE OFFSITE POWER TO 1H 4160V EMERGENCY BUS IAW AP-10.08.

Applicability

RO/SRO

Est Completion Time

13 Minutes

Actual Time

K/A (Importance Ratings)

062A4.01 (3.3/3.1)

055EA2.06 (3.7/4.1)

References

Surry JPM LO18-06

AP-18.08, Station Power Restoration, Rev. 8

Applicant: _____

Performance Rating: SAT: _____ UNSAT: _____

Examiner: _____

NAME

SIGNATURE DATE

COMMENTS:

Conditions

- Task is to be PERFORMED in the Simulator.
- A loss of #6 34.5 KV Bus power has occurred.

Standards

- AP-10.08, Station Power Restoration.

Initiating Cues

- You are to restore power to 1H Bus from off-site IAW O-AP-10.08 (beginning with Step 21) and inform me when #1 EDG may be shut down.
- Unit 2 operator will perform all necessary evolutions on Unit 2 when requested.
- When you finish the actions necessary to accomplish this, please inform me.

Terminating Cues

- Breaker 15H8, 1H 4160v Emergency Bus Supply Breaker closed.

Tools, Equipment, Procedures Needed

- AP-10.08, Station Power Restoration.

Safety Considerations

- None

Simulator Setup

- Call up IC #1 and initialize.
- Place the simulator in run.
- From MONITOR, open breaker 15F1 (B15F1 = F).
- Place 1-CC-P-1A control switch in PTL.
- From MONITOR, close the stub bus 15H9 (B15H9 = T).
- Place the control switches for 1-SW-P-1CB and 1-CC-P-2B to off and return to auto.
- Stop the "A" CH pump and place in auto.
- Once conditions have stabilized then freeze the simulator.

PERFORMANCE CHECKLIST

Notes to the Evaluator

- Bask critical elements are denoted **by** an asterisk (*). If substeps **of** a critical element also have an asterisk (*), then only those asterisked substeps are critical to performance of that task element.
- Critical step sequencing requirements: 4i, before 6k; 6f before 6k.

- **STARTTIME:**

<p>STEP 1: VERIFY 34.5 KV BUS 6 ENERGIZED FROM OFF-SITE POWER. (0-AP-10.08, Step 21)</p> <p>STANDARD: a) Acknowledges NOTE that the RAD waste facility is powered from bus 6. b) Checks C.B. L-202 en switchyard status panel closed by observing the red light on and the green light off.</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 2: VERIFY RSS TRANSFORMER "C" ENERGIZED. (0-AP-10.08, Step 22)</p> <p>STANDARD: Checks C.B. 262 on switchyard status panel closed by observing the red light on and the green light off.</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 3: CHECK 15F1 OPEN. (0-AP-10.08, Step 23)</p> <p>STANDARD: Checks ACB-15F1 open by observing green light ON and red light OFF for 15F1.</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

<p>* STEP 4: ENERGIZE TRANSFER BUS "F". (0-AP-10.08, Step 24)</p> <p>STANDARD:</p> <ul style="list-style-type: none"> a) Acknowledges caution that load placed on EDG should not exceed 2750 KW. b) Verifies breaker ACB-15H8 open by observing the green light on and the red light off. c) Verifies breaker ACB-25J8 open by asking Unit 2 operator. d) Verifies breaker ACB-15C1 open by observing the green light on and the red light off. e) Verifies breaker ACB-25C1 open by asking Unit 2 operator. f) Checks breaker ACB-15C2 shut by observing red light on and green light off. g) Checks breaker ACB-25C2 shut by asking Unit 2 operator. h) Resets breaker disagreement on breaker ACB-15F1 by momentarily turning switch to open position and observing amber light goes out. i) * Closes breaker ACB-15F1 by taking control switch to close and holding until the red light comes on and the green light goes off end 15 seconds have elapsed. <p>CUES: If asked: 2J bus is energized by #3 EDG. If asked: ACB-25J8 and ACB-25C1 are open. If asked: ACB-25C2 is shut.</p> <p>EVALUATOR'S NOTE: <i>** This step is sequence critical. **</i></p> <p>COMMENTS:</p>	
<p>STEP 5: CHECK 4160V BUS 1H ENERGIZED FROM EBG 1. (0-AQ-10.08, Step 25)</p> <p>STANDARD:</p> <ul style="list-style-type: none"> a) Checks 4160 V bus 1H energized by observing voltage on the EDG Panel. b) Goes to Attachment 8. (0-AP-10.08, Step 26) <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

<p>STEP 6: PARALLEL 1H BUS TO THE "F" TRANSFER BUS. (0-AP-10.08, Att. 8)</p> <p>STANDARD:</p> <ul style="list-style-type: none"> a) Turns to AP-10.08, Attachment 8. b) * Turns the #1 EDG AUTO-EXERCISE switch to EXERCISE. c) Acknowledges annunciator C-G-6 (#1 EDG auto start disabled). d) * Plashes the fast start reset push button. e) Checks the fast start reset red light is illuminated. f) * Notifies auxiliary operator to adjust speed droop from 0 to the scribe mark. g) * Turns sync switch ACB-15H8 on. h) Adjusts incoming voltage to within ± 5 volts of running voltage using VOLT ABJ switch. i) * Adjusts EDG speed until sync scope is moving slowly in the fast direction using the SPEED ADJ switch. j) Resets breaker disagreement on breaker ACB-15H8 by momentarily turning switch to the open position and observing amber light light goes out. k) * Closes the ACB-15H8 breaker when the sync scope is between 5 minutes of and 12 o'clock. l) Verifies Kilowatts are greater than zero. m) Using the volt adj switch, maintain reactive 100 - 500 Kilovars out and emerg bus 1H volts between 4000 and 4400 volts. n) Turns sync switch ACB-15H8 off. <p>CUES: Tell operator: After call made to auxiliary operator, inform operator that the speed droop has been set to the scribe mark.</p> <p>EVALUATOR'S NOTE: **This step is sequence critical.**</p> <p>Simulator timing response to closing the ACB-15H8 breaker is slow. The breaker may not actually close until the sync scope is slightly beyond 42 o'clock.</p> <p>COMMENTS:</p>	<p>SAT</p> <p>UNSAT</p>
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**Operator Directions Handout
(TO BE READ TO APPLICANT BY EXAMINER)**

Task

- Task is to be performed in the simulator.
- Restore Offsite Power To 1H 4160V Emergency Bus IAW AP-10.08., Station Power Restoration.

Directions

The evaluator will explain the initial conditions of the **task** to be performed and will provide **the** initiating cue. Ensure you indicate to the evaluator when you understand your assigned task.

Initial Conditions

- A loss of #6 34.5 KV bus power has occurred.
- Unit conditions have stabilized and Bus #6 has been re-energized using a local switching order and power has been restored to the low level intake.
- AP-10.08, Station Power Restoration, Steps 1 through 20 have been completed.

Initiating Cues

- You are to restore power to 1H Bus from off-site IAW O-AP-10.08 (beginning with Step 21) and inform **me** when #1 EDG may **be shut down**.
- Unit 2 operator will **perform** all necessary evolutions on Unit 2 when requested.
- When you finish the actions necessary to accomplish this, please inform me.

**Operator Directions Handout
(TO BE GIVEN TO APPLICANT)**

Task

- Task is to be performed in the simulator.
- Restore Offsite Power To 1H 4160V Emergency Bus EAW AP-10.08., Station Power Restoration.

Directions

The evaluator will explain the initial conditions of the task to be performed and will provide the initiating cue. Ensure you indicate to the evaluator when you understand your assigned task.

Initial Conditions

- A loss of #6 34.5 KV bus power has occurred.
- Unit conditions have stabilized and Bus #6 has been re-energized using a local switching order and power has been restored to the low level intake.
- AP-10.08, Station Power Restoration, Steps 1 through 20 have been completed.

Initiating Cues

- You are to restore power to 1H Bus from off-site IAW 0-AP-10.08 (beginning with Step 21) and inform me when #1 EDG may be shut down.
- Unit 2 operator will perform all necessary evolutions on Unit 2 when requested.
- When you finish the actions necessary to accomplish this, please inform me.

Task

REMOVE A FAILED SOURCE **RANGENI** FROM SERVICE DURING A REACTOR STARTUP.

Applicability

RO/SRO

Est Completion Time

4 Minutes

Actual Time

K/A (Importance Ratings)

015A2.02 (3.1/3.5)

015A4.03 (3.8/3.9)

References

Surry JPM LO62-02

1-AP-4.00, Nuclear Instrumentation Malfunction, Rev. 18

Applicant: _____

Performance Rating: **SAT:** _____ **UNSAT:** _____

Examiner: _____

NAME

SIGNATURE

DATE

COMMENTS:

Conditions

- Task is to be PERFORMED in the simulator.
- N-31 has failed low with reactor power at 1.3×10^{-10} amps during a startup, and the SR high voltage cannot be removed from either N-31 or N-32.

Standards

- 1-AP-4.00, Nuclear Instrumentation Malfunction.

Initiating Cues

- During a reactor startup, when P-6 was reached the operator pushed 1/N-33A TR A and 1/N-33B TR B to de-energize the Source Range NIs. However, N-31 failed low instead, and the high voltage was not removed from either detector (PI-31 or N-32).
- I need you to respond to a failure of **both** Source Range NIs, IAW 1-AP-4.00, so the reactor startup can continue.
- When you finish the actions necessary to accomplish this, please inform me.

Terminating Cues

- 1-AP-4.00, Nuclear Instrumentation Malfunction, step 18.c completed.

Tools, Equipment & Procedures Needed

- 1-AP-4.00, Nuclear Instrumentation Malfunction.

Safety Considerations

- None

Simulator Setup

- Call up Reactor Startup IC and initialize.
- Perform the startup to obtain power at -1.2×10^{-10} amps (or slightly greater), then implement malfunction (MNI0101, 1 sec, 50 to 0%), N-31 failure in the low direction. Implement switch overrides (SRTRP_BLK_TRA_PB AND SRTRP_BLK_TRB_PB, ACTIVE), Flux Level Trip Cutout Pushbuttons. Freeze the simulator until ready for operator to perform JPM.
- Do not allow the SUR to be greater than +0.1 dpm.

PERFORMANCE CHECKLIST

Notes to the Evaluator

- Task critical elements are denoted by an asterisk (*). If substeps of a critical element also have an asterisk (*), **then** only those asterisked substeps are critical to performance **of** that task element.
- e Critical step sequencing requirements: Step 2 before Step 4. Step 4(c) before 4(d), 4(e) before 4(f).
- **An additional instructor/operator may be needed to operate the control boards for the examinee.**
- **STARTTIME:**

<p>STEP 1: DETERMINES PROCEDURAL STEPS TO RESPOND TO SRNI FAILURE.</p> <p>STANDARD:</p> <ul style="list-style-type: none"> a) Enters 1-AP-4.00 at Step 1. b) Determines failure not in Power Range NI and goes to step 10. c) Determines failure not in Intermediate Range NI and goes to step 17. <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 2: STABILIZES UNIT CONDITIONS</p> <p>STANDARD:</p> <ul style="list-style-type: none"> a) Determines failure in the Source Range Nis. b) Verifies unit conditions stable with a zero startup rate. c) Maintains power with zero startup rate. <p>EVACUATOR'S NOTE: A manual reactor trip is NOT an acceptable action.</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

<p>STEP 3: CHECKS REACTOR POWER</p> <p>STANDARD: Checks reactor power level by observing INT RNG FLUX meters NI-1-35B and NI-1-36B (on Benchboaad 1-2) or the meters on the IR NIS cabinets. (Reactor power should be above 1×10^{-10} amps).</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>* STEP 4: REMOVE FAILED SOURCE RANGE NI FROM OPERATION.</p> <p>STANDARD:</p> <ul style="list-style-type: none"> a) Pushes "1/N 33A TR A" pushbutton and "1/N 33B TR B" pushbutton. b) Notes that N-31 and N-32 still have high voltage applied to the detectors. c) Informs operator that annunciator G-D-1, "Source or INT RNG NIS TRIP BYP" will be received. d) * Places LEVEL TRIP switch for N-31 in BYPASS. e) * Removes INSTRUMENT POWER fuses for N-31. f) * Places LEVEL TRIP switch for N-32 in BYPASS. g) * Removes INSTRUMENT POWER fuses for N-32. h) Notes requirement to refer to Tech Spec Table 3.7-1 Item 4. i) Notes requirement to make entry in PSL and shift turnover to reinstall fuses. j) Goes to step 36 of 1-AP-4.00. <p>EVALUATOR'S NOTE:</p> <ul style="list-style-type: none"> • When the 1/N 33A TR A or 1/N 33B TR B buttons are pressed, annunciator 6-A-3, "NIS SOURCE RNG LOSS OF BET VOL" is received but clears when acknowledged. • It is acceptable to place both SRNI in LEVEL TRIP BYPASS before removing the INSTRUMENT POWER fuses. <p>CUES</p> <ul style="list-style-type: none"> • Tell operator (or if asked): The SS will ensure that Tech Specs are checked and that appropriate log entries will be made. <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

**Operator Directions Handout
(TO BE READ TO APPLICANT BY EXAMINER)**

Task

- Task is to be performed in the simulator.
- Perform Steps of 1-AP-4.00, Nuclear Instrumentation Malfunction, to allow reactor startup to continue.

Directions

The evaluator will explain the initial conditions of the task to be performed and will provide the initiating cue. Ensure you indicate to the evaluator when you understand your assigned task.

Initial Conditions

- N-31 has failed low with reactor power at 1.3×10^{-10} amps during a startup, and the SR high voltage cannot be removed from either N-31 or N-32.

Initiating Cues

- During a reactor startup, when P-6 was reached the operator pushed 1/N-33A TR A and 1/N-33B TR B to de-energize the Source Range NIs. However, N-31 failed low instead, and the high voltage was not removed from either detector (N-31 or N-32).
- I need you to respond to a failure of **both** Source Range NIs, IAW 1-A-4.00, **so** the reactor startup can continue.
- When you finish the actions necessary to accomplish this, please inform me.

**Operator Directions Handout
(TO BE GIVEN TO APPLICANT)**

Task

- e Task is to be performed in the simulator.
- e Perform Steps of 1-AP-4.00, Nuclear Instrumentation Malfunction, to allow reactor startup to continue.

Directions

The evaluator will explain the initial conditions of the task to be performed and will provide the initiating cue. Ensure you indicate to the evaluator when you understand your assigned task.

Initial Conditions

- N-37 has failed low with reactor power at 1.3×10^{-10} amps during a startup, and the SR high voltage cannot be removed from either N-31 or N-32.

Initiating Cues

- During a reactor startup, when P-6 was reached the operator pushed 1/N-33A TR A and 1/N-33B TR B to de-energize the Source Range NIs. However, N-31 failed low instead, and the high voltage was not removed from either detector (N-31 or N-32).
- e I need you to respond to a failure of both Source Range NIs, IAW 1-AP-4.00, so the reactor startup can continue.
- When you finish the actions necessary to accomplish this, please inform me.

Task

RESPONSE TO PRESSURIZER LEVEL CHANNEL-3 FAILING LOW

Applicability

RO/SRO

Est Completion Time

10 Minutes

Actual Time

K/A (Importance Ratings)

028AA1.08(3.7/3.6)

References

Surry JPM LO38-07

1E-H6, PRZR LO LVL CH-3, Rev. 3

1C-E8, PWZR LO LVL HTRS OFF & LETDOWN ISOL., Rev. 1

1-OP-CH-020, Placing Letdown In Service Following Auto or Manual Isolation, Rev. 1

Applicant: _____

Performance Rating: SAT: _____ UNSAT: _____

Examiner: _____

NAME

SIGNATURE

DATE

COMMENTS:

Conditions

- Task is to be PERFORMED in the simulator.
- Plant is at 100% Power, Steady State

Standards

- Pressurizer Heaters Energized and Letdown Flow Established

Initiating Cues

- You are the RO. You are to respond to plant conditions as they present themselves.

Terminating Cues

- 1-OP-CH-020 completed

Tools, Equipment, and Procedures Needed

- 1E-H6, PRZR LO LVL CH-3.
- 1C-E8, PRZR LO LVL HTRS OFF & LETDOWN ISOL.
- 1-OP-CH-020, Placing Letdown In Service Following Auto or Manual Isolation

Safety Considerations

- None

Simulator Setup

- Call up 100% power IC and initialize place in RUN, select position III/II on the Pressurizer level control selector switch..
- Program malfunction for low failure of Pressurizer bevel Channel III (RC-LT-1461), trigger 1.
- Freeze simulator for task performance.
- Obtain a copy of OP-CH-020.
- After evaluation begins, activate trigger 1.

Performance Checklist

Notes to the Evaluator.

- Task critical elements are denoted by an asterisk (*). If substeps of a critical element also have an asterisk (*), then only those asterisked substeps are critical to performance of that task element.
- Critical step sequencing requirements: Step 3 prior to Step 5; Step 5o prior to Step 5r.

START TIME:

<p>Step 1: IDENTIFIES CHANNEL III PRESSURIZER LEVEL FAILED LOW</p> <p>Standards</p> <ul style="list-style-type: none"> (a) Identifies 1-RC-61-1461 failed low. (b) Acknowledges Annunciator E-H-6, PRZR LOLVL CH-3. <p>Evaluator's Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>step 2: IDENTIFIES PRESSURIZER HEATERS DE-ENERGIZED/ LETDOWN ISOLATED.</p> <p>Standards</p> <ul style="list-style-type: none"> (a) Identifies amber lights on above all Pressurizer Heater Control bank switches (b) Acknowledges Annunciator 6-E-8, PWZR LOLVL HTRS OFF & LETDOWN ISOL. (c) Identifies 0 flow indicated en 1-CH-FI-1150, letdown line flow. <p>Evaluator's Comments</p>	<p>_____ SAT</p> <p>_____ UNSM</p>

<p>* Step 3: DESELECTS CHANNEL III PRESSURIZER LEVEL CONTROL CHANNEL.</p> <p>Standards *(a) Moves PRZR LVL CH SEL to the I/II position. (b) Verifies Pressurizer Heater banks re-energize as indicated by RED Lights above the Heater control switches on.</p> <p>Evaluator's Note ""This <i>step</i> is sequence <i>critical</i>.**</p> <p>Procedural guidance is given in ARP E-H-6: PRZR LO LVL CH-3, C-D-8: PRZR LO LVL., or C-E-8: PRZR LO LVL HTRS OFF & LETDOWN ISOL, But is not required to control critical parameter (PRZR level).</p> <p>If ARP C-E-8 is used, Pressurizer heaters are placed in OFF (Step 4 RNO a) and Returned to service (Step 4 RNO e.3.c). Step b above is ONLY a critical step failure if the pressurizer heaters are NOT returned to service.</p> <p>Evaluator's Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>Step 4: REDUCES CHARGING FLOW TO MINIMIZE PRESSURIZER FILL.</p> <p>Standards (a) Places 1-CH-FCV-1122 controller in manual. (b) Reduces charging flow to minimum as indicated on 1-CH-LI-1122, Charging line Flow.</p> <p>Evaluator's Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

<p>* Step 5: IRESTORES LETDOWN FLOW,</p> <p>Standards</p> <ul style="list-style-type: none"> (a) Obtains a copy of 1-OP-CH-020. (b) Verifies and signs Section 3.0, Initial Conditions, that normal and excess Letdown are not in service. (c) Acknowledges statements in Section 4.0, Precautions and Limitations. (d) Acknowledges Caution concerning Cation Bed. (e) Verifies Pressurizer level is greater than 14.4% on 1-RC-LI-1459 and 1-RC-LI-1460. (f) Verifies C-E-8, PRZR LOLVL HTRS OFF & LETDOWN ISOL is clear. (g) Verifies one CC pump is running by verifying Red light on. (h) Verifies closed the following valves as indicated by Green light on: <ul style="list-style-type: none"> • 1-CH-FCV-1460A, LETDOWN LINE ISOL • 1-CH-FCV-1460B, LETDOWN LINE ISOL • 1-CH-HCV-1200A, LETDOWN ORIFICE ISOL • 1-CH-HCV-1200B, LETDOWN ORIFICE ISOL • 1-CH-HCV-1200C, LETDOWN ORIFICE ISOL (i) Verifies open the following valves as indicated by Red light on: <ul style="list-style-type: none"> • 1-CH-TV-1204A, LETDOWN LINE I/S TV • 1-CH-TV-1204B, LETDOWN LINE O/S TV (j) Verifies 1-CH-PCV-1145, LETDOWN LINE PRESS CNTRL, setpoint at 5.0 on the controller setpoint dial. * (k) Races 1-CH-PCV-1145 in Manual and increases demand to 0. (l) Enters N/A for steps 5.1.9 and 10. (m) Verifies 1-CH-LCV-1115A, VCT LEVEL DIVERT, is aligned to the VCT as indicated by Red light on. (n) Acknowledges NOTE concerning Flashing in NRHX. * (o) Increases demand on 1-CH-FCV-1122 to establish at least 45 gpm of charging flow. * (p) Opens the following valves as indicated by Red light on: <ul style="list-style-type: none"> • 1-CH-LCV-1460A, LETDOWN LINE ISOL • 1-CH-LCV-1460B, LETDOWN LINE ISOL (q) Notes concerning one 45 gpm and one 65 gpm orifice; 45 gpm orifice first; end care to limit letdown flow to 125 gpm. * (r) Opens 1-CH-HCV-1200A as indicated by red light on. (s) Verifies proper response on the following meters: <ul style="list-style-type: none"> • 1-CH-FI-1150 indicates 45 gpm (60 gpm if 12008 or C used) • 1-CC-TCV-103 demand indicated • 1-CH-TI-1144 indicates 90 degrees * (t) Opens 1-CH-HCV-1200B or 1-CH-HCV-1200C as indicated by Red light on. (u) Verifies 1-CH-FI-1150 indicates 115 gpm. * (v) Lowers demand on 1-CH-PCV-1145 until 300-350 psig is indicated on 1-CH-PI-1145 (w) Places 1-CH-PCV-1145 in Auto as indicated by AUTO illuminated. (x) Adjusts charging flow to lower charging flow to program level. <p>CUES</p> <ul style="list-style-type: none"> • If Task reported completed prior to Letdown in service: State – “I need you to complete all applicable ARPs.” 	<p style="text-align: center;">SAT</p> <hr/> <p style="text-align: center;">UNSAT</p>
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<ul style="list-style-type: none"> ● If Requested: Supply a copy of OP-CH-020. ● If Asked: Cation Bed is NOT in service. ● If Asked: Mixed Bed IX will remain in service. ● If Asked: Deborating bed was not previously in service. <p>Evaluator's Note ** This step is <i>sequence</i> critical.**</p> <p>Evaluator's Note Step r may be Interchanged with step t, however a follow-up question should be asked to determine basis to deviate from the NOTE prior to step 5.1.12.c.</p> <p>JPM performance may be terminated at the discretion of the evaluator if all steps accomplished and Pressurizer level decreasing towards program.</p> <p>Notes</p> <p>Evaluator's Comments</p>	
<p>'Step 6: VERIFY PRESSURIZER HEATERS ON.</p> <p>Standards If heaters not already on, then applicant re-energizes heaters. Heater RED indicating lights above Heater control switches illuminated.</p> <p>Stop Time:</p> <p>Evaluator's Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>step 7: REPORTS TO NUCLEAR SHIFT MANAGER (EVALUATOR).</p> <p>Standards Verbal status report made that normal charging established.</p> <p>Stop Time:</p> <p>Evaluator's Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

**Operator Directions Handout
(TO BE READ TO APPLICANT BY EXAMINER)**

Task

- Task is to be performed in the simulator.
- Respond to plant conditions.

Directions

The evaluator will explain the initial conditions of the task to be performed. The simulator will provide the initiating cue. Ensure you indicate to the evaluator when you understand your assigned task.

Initial Conditions

- Plant is at 100% Power, Steady State

Initiating Cues

- You are the RO. You are to respond to plant conditions as they present themselves.

**Operator Directions Handout
(TO BE GIVEN TO APPLICANT)**

Task

- Task is to be performed in the simulator.
- Respond to plant conditions.

Directions

The evaluator will explain the initial conditions of **the** task to be performed. The simulator will provide the initiating cue. Ensure you indicate to the evaluator when you understand your assigned task.

Initial Conditions

- Plant is at 100% **Power**, Steady **State**

Initiating Cues

- You are the RO. **You** are to respond to plant conditions **as** they present themselves.

Task

PLACE HYDROGEN ANALYZERS IN SERVICE FOLLOWING A LOCA.

Applicability

RO/SRO

Est Completion Time

5 Minutes

Actual Time

K/A (Importance Ratings)

028.A4.03 (3.1/3.3)

References

Surry JPM LO58-01

1-E-1, Attachment 3, Hydrogen Analyzer Operation, Rev. 21

Applicant: _____

Performance Rating: SAT: _____ UNSAT: _____

Examiner: _____

NAME

SIGNATURE

BATE

COMMENTS:

Conditions

- Task is to be PERFORMED in the simulator.
- A LOCA has occurred from 100% power.
- A determination of Containment Hydrogen concentration is desired.

Standards

- 1-E-1, Attachment 3, Hydrogen Analyzer Operation.

Initiating Cues

- You are to place Unit 1's Hydrogen Analyzer in service on Unit 1 Containment.
- When you finish the actions necessary to accomplish this, please inform me.

Terminating Cues

- 1-E-1, Attachment 3, step 1.2.h completed.

Tools, Equipment, Procedures Needed

- 1-E-1, Attachment 3, Hydrogen Analyzer Operation

Safety Considerations

- None

Simulator Setup

- Call up 100% IC, initialize & place simulator in RUN.
- Initiate LBLLOCA malfunction.
- Allow CTMT pressure to increase and return to < 18 psia.
- Place selector switch for H₂A-GW104 in the Unit 2 position.
- Verify **selector** switch for the H₂ ANALYZER (H₂A-GW-104) MEAT TRACE PANEL 6, 1-HT-HTP-6, is in the AUTO position & reset S₁. Check heat tracing de-energized.
- Freeze simulator.

Performance Checklist

Notes to the Evaluator

- e Task critical elements are denoted by an asterisk (*). If substeps of a critical element also have an asterisk (*), then only those asterisked substeps are critical to performance of that task element.
- e Critical step sequencing requirements: 3,4,5 (any order) before 6; 6 before 7.
- START TIME:

<p>STEP 1: CHECKS NOTES AT BEGINNING OF ATTACHMENT 3.</p> <p>STANDARD:</p> <ul style="list-style-type: none"> a) Determines containment pressure is between 9 & 60 psia by observing containment pressure indication (1-LM-PI-100A, B, C, and D). b) Determines containment temperature is between 40°F and 290°F by observing containment Temperature indication (1-LM-TI-100-1 and 1-LM-TI-100-2). <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 2: DETERMINES ANALYZER TO BE USED.</p> <p>STANDARD: Determines from previous instructions that H2A-GW104 is the analyzer to be used.</p> <p>CUES: If asked: Unit 1's analyzer is the desired analyzer.</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>* STEP 3: SELECT THE ANALYZER (H2A-GW104).</p> <p>STANDARD:</p> <ul style="list-style-type: none"> a) Places selector switch "XFER CKT UNIT #1 TO UNIT #2" (for H2A-GW104) to the UNIT 1 position. b) Checks that white analyzer indicating light for Unit 1 lit. <p>EVALUATOR NOTE: **This step is sequence critical.**</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

<p>* STEP 4: ENERGIZE HEAT TRACING.</p> <p>STANDARD:</p> <ul style="list-style-type: none"> a) * Places selector switch for H₂ ANALYZER (H2A-GW-104) HEAT TRACE PANEL 6, 1-HT-HTP 6, in the <i>ON</i> position. b) Checks RED light illuminates after switch is in ON position. c) Records time that heat tracing was energized in the appropriate block on Attachment 3. <p>EVALUATOR NOTE: **This step is sequence critical.**</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 5: PERFORM VALVE LINEUP TO H2A-GW104.</p> <p>STANDARD:</p> <ul style="list-style-type: none"> a) * Opens analyzer inlet, 1-GW-TV-100. b) Checks valve open by observing red indicating light lit & green off. c) Opens analyzer inlet, 1-GW-TV-101. d) Checks valve open by observing red indicating light lit & green off. e) * Opens analyzer return, 1-GW-TV-103. f) Checks valve open by observing red indicating light lit & green off. g) * Opens analyzer return, 1-GW-TV-102. h) Checks valve open by observing red indicating light lit & green off. <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

<p>* STEP 6: ENSURE HEAT TRACING HAS HEATED TO MINIMUM ANALYSIS TEMPERATURE.</p> <p>STANDARD:</p> <ul style="list-style-type: none"> a) Reads NOTE that heat tracing must be in service for 20 minutes prior to placing the analyzer in service. b) * Determines that 20 minute period has NOT yet elapsed and a wait period will be required. c) Following a 20 minute heat tracing warm-up period, proceeds to next step. <p>CUES AFTER OPERATOR DETERMINES WAIT PERIOD REQUIRED, tell operator that a TIME COMPRESSION has occurred and 20 minutes has elapsed.</p> <p>EVALUATOR NOTE: <i>"This step is sequence critical."</i></p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>* STEP 7: INITIATE ATMOSPHERE ANALYSIS.</p> <p>STANDARD:</p> <ul style="list-style-type: none"> a) * Places H2A-GW104 mode select switch to the ANALYZE position. b) Checks RED light illuminates after switch is in ANALYZE position. <p>EVALUATOR NOTE: <i>**This step is sequence critical.**</i></p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 8: REPORT TO NUCLEAR SHIFT MANAGER (EVALUATOR).</p> <p>STANDARD: Verbal status report made that analyzer has been placed in service.</p> <p>STOP TIME:</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

**Operator Directions Handout
(TO BE READ TO APPLICANT BY EXAMINER)**

Task

- Task is to be performed in the simulator.
- Place Unit 1's hydrogen analyzer in service on Unit 1 Containment.

Directions

The evaluator will explain the initial conditions of the task to be performed and will provide the initiating cue. Ensure you indicate to the evaluator when you understand your assigned task.

Initial Conditions

- A LOCA has occurred from 100% power.
 - A determination of Containment Hydrogen concentration is desired (1-E-1, Loss of Reactor or Secondary Coolant, step 25a.)

Initiating Cues

- You are to place Unit 1's Hydrogen Analyzer in service on Unit 1 Containment.
- When you finish the actions necessary to accomplish this, please inform me.

**Operator Directions Handout
(TO BE GIVEN TO APPLICANT)****Task**

- Task is to be performed in the simulator.
- Place Unit 1's hydrogen analyzer in service on Unit 1 Containment.

Directions

The evaluator will explain the initial conditions of the task to be performed and will provide the initiating cue. Ensure you indicate to the evaluator when you understand your assigned task.

Initial Conditions

- A LOCA has occurred from 100% power.
- A determination of Containment Hydrogen concentration is desired ($1\text{-E-}1$, Loss of Reactor or Secondary Coolant, step 25a.)

Initiating Cues

- You are to place Unit 1's Hydrogen Analyzer in service on Unit 1 Containment.
- When you finish the actions necessary to accomplish this, please inform me.

Task

TRANSFER THE SI SYSTEM TO HOT LEG RECIRCULATION.

Applicability

RO/SRO

Est Completion Time

6 Minutes

Actual Time

K/A (Importance Ratings)

011EA1.11(4.2/4.2)

References

Surry JPM LO52-02

1-ES-1.4, Transfer to Hot beg Recirculation, Rev. 4

1-E-1, Loss of Reactor or Secondary Coolant, Rev. 21

Applicant: _____

Performance Rating: SAT: _____ UNSAT: _____

Examiner: _____

NAME

SIGNATURE

DATE

COMMENTS:

Conditions

- Task is to be PERFORMED in **the** simulator.
- The SI system **is** on T_C Recirc with the time simulated to be 8 hours after a DBA.

Standards

- 1-ES-1.4, Transfer to **Hot** Leg Recirculation.

Initiating Cue

- You are the Unit RO. The 8 hour point after a major LOCA on Unit 1 has been reached. Currently the SI system is in the Cold Leg Recirc mode with " C Charging pump on the normal header.
- You are to get a copy of 1-ES-1.4 end transfer the SI system to Hot **beg** Recirculation.
 - When you finish **the** actions necessary to accomplish this, please inform me.

Terminating Cues

- Completion of 1-ES-1.4, Transfer to Hot **Leg** Recirculation.

Tools, Equipment, and Procedures Needed

- 1-ES-1.4, Transfer to Hot Leg Recirculation.

Safety Considerations

- None

Simulator Setup

- e If no pre-staged IC is available, this setup takes ~55 minutes.
- e Call up 100% power IC & initialize. Put "A" Chg PP in PTL.
- e From SIMLOC, energize MOV-1890A, 1890B, 1890C, 1869A & 1869B.
- e Place keys (#46 & 47) in MOV control switches For 1890A, 1890B, 1869A & 1869B.
- e Initiate a LBLOCA on " A loop; perform 1-E-0 and transfer to 1-E-1; perform E-1, Loss of Reactor or Secondary Coolant, up to **step** 27; 2 HHSI pumps (C on normal hdr/B on alt hdr) and 2 LHSI pumps are to be operating on Cold beg Recirc.
- After system **is** stable on ColdLeg Recirc, freeze simulator for JPM performance.

Performance Checklist

Notes to the Evaluator

- Task critical elements are denoted by an asterisk (*). If substeps of a critical element also have an asterisk (*), then only those asterisked substeps are critical to performance of that task element.
- Critical step sequencing requirements: None.

● **STARTTIME:**

<p>step 1: REVIEW NOTE PRIOR TO STEP 1.</p> <p>Standards Notes that if Hot Leg injection MOV will not open, then the TSC should be consulted to determine the optimal SI alignment.</p> <p>Evaluator's Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>* Step 2: ALIGN "A" LHSI PUMP TO THE HOT LEG FLOWPATH.</p> <p>Standards</p> <ul style="list-style-type: none"> (a) Verifies "A" LHSI pump running by observing breaker indication red light on, amps indicated, and flow indication on 1-SI-FI-1945. *(b) Closes 1-SI-MOV-1864A ("A" LHSI to Tc) by holding control switch in CLOSE position. (c) Verifies 1-SI-MOV-1864A dosed by observing green light on & red off. *(d) Throttles open 1-SI-MOV-1890A ("A" LHSI to Th) until "A" LHSI pump stabilized flow < 3500 gpm as shown on 1-Si-Fi-1945. <p>Evaluator's Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

<p>* Step 3: ALIGN "5" LHSI PUMP TO THE HOT LEG FLOWPATH.</p> <p>Standards</p> <p>(e) Verifies B LHSI pump running by observing breaker indication red light on, amps indicated, and flow indicated on 1-SI-FI-1946.</p> <p>* (b) Closes 1-SI-MOV-1864B ("B" LHSI to Tc) by holding control switch in CLOSE position.</p> <p>(c) Verifies 1-SI-MBV-18648 closed by observing green light on & red off.</p> <p>* (d) Throttles open 1-SI-MBV-18905 ("B" LHSI to Th) until "B" LHSI pump stabilized flow < 3500 gpm as shown on 1-SI-FI-1946.</p> <p>Evaluator's Comments</p>	<p>_____ SAP</p> <p>_____ UNSAT</p>
<p>Step 4: REVIEW CAUTION AND NOTE PRIOR TO STEP 2.</p> <p>Standards</p> <p>(a) Notes that the amount of time the CHG pumps are stopped should be minimized.</p> <p>(b) Notes that CHG pumps order of priority is C, B, A.</p> <p>Evaluator's Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>* step 5: CHECK CHARGING PUMPS - TWO RUNNING.</p> <p>Standards</p> <p>(a) Checks that 1-CH-P-1C running by observing breaker indication red light on and amps indicated.</p> <p>(b) Notes that 1-CH-P-1B is not running by observing breaker indication green light on and no amps indicated. (recall 1-CH-P-?Ais Tagged Out of Service)</p> <p>* (c) Places 1-CH-P-1C in PTL.</p> <p>* (d) Opens 1-SI-MOV-1869B, HHSI to Hot Legs.</p> <p>' (e) Closes 1-SI-MOV-1867C, HHSI to Cold legs</p> <p>* (f) Closes 1-SI-MOV-1867D, HHSI to Cold Legs</p> <p>* (g) Starts 1-CH-P-1C, CHARGING PUMP</p> <p>(k) Verify HHSI flow</p> <ul style="list-style-type: none"> • 1-SI-FI-1943 & A • 4-SI-FI-1933 & 1960 & 1932 (NQ) <p>Notes If applicant tries to start 1-CH-P-1B, it will not start.</p> <p>Evaluator's Comments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

**Operator Directions Handout
(TO BE READ TO APPLICANT BY EXAMINER)**

Task

- Task is to be performed in the simulator.
- Transfer to Hot Leg Recirculation.

Directions

The evaluator will explain the initial conditions of the task to be performed and will provide the initiating cue. Ensure you indicate to the evaluator when you understand your assigned task.

Initial Conditions

- The SI system is on T_C Recirc with the time simulated to be 8 hours after a DBA.

Initiating Cue

- You are the Unit RO. The 8 hour point after a major LOCA on Unit 1 has been reached. Currently the SI system is in the Cold Leg Recirc mode with "C" Charging pump on the normal header.
- You are to get a copy of 1-ES-1.4 and transfer the SI system to Hot Leg Recirculation.
- When you finish the actions necessary to accomplish this, please inform me.

**Operator Directions Handout
(TO BE GIVEN TO APPLICANT)**

Task

- Task is to be performed in the simulator.
- Transfer to Hot Leg Recirculation.

Directions

The evaluator will explain the initial conditions of the task to be performed and will provide the initiating cue. Ensure you indicate to the evaluator when you understand your assigned task.

Initial Conditions

- The SI system is on T_C Recirc with the time simulated to be 8 hours after a BBA.

Initiating Cue

- You are the Unit RO. The 8 hour point after a major LOCA on Unit 1 has been reached. Currently the SI system is in the Cold Leg Recirc mode with "C" Charging pump on the normal header.
- You are to get a copy of 1-ES-1.4 and transfer the SI system to Hot Leg Recirculation.
- When you finish the actions necessary to accomplish this, please inform me.

DRAFT

Facility: Surry Date of Examination: FEB2004	
Examination bevel (Underline one): RO / <u>SRO</u> Operating Test Number: 2004-301	
Administrative Topic (see Note)	Describe activity <i>to be performed</i>
Conduct of Operations	Calculate the Maximum Allowable Reactor Vessel Hydrogen Venting Time G2.1.23 (3.9/4.0); G2.1.25 (2.8/3.1)
Conduct of Operations	Shutdown Margin Calculation at Zero Power G2.1.7 (3.7/4.4)
Equipment Control	Construct Tagout for 1-RT-P-1C (SG Recirc & Transfer Pump) G2.2.13 (3.6/3.8)
Radiation Control	Dose / Stay Time Calculation G2.3.1 (2.6/3.1); G2.3.4 (2.5/3.1)
Emergency Plan	Emergency Classification 2.4.41 (2.3/4.1); 2.4.44 (2.114.Q)
NOTE: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when 5 are required.	

DRAFT

Facility: Surry Date of Examination: FEB2004	
Examination Level (Underline one): <u>RO</u> / SRO Operating Test Number: 2004-301	
Administrative Topic (see Note)	Describe activity to be performed
Conduct of Operations	Calculate the Maximum Allowable Reactor Vessel Hydrogen Venting Time
Conduct of Operations	Shutdown Margin Calculation at Zero Power
Equipment Control	Construct Tagout for 1-RT-P-1C (SG Wecirc & Transfer Pump)
Radiation Control	Dose / Stay Time Calculation
Emergency Plan	N/A
NOTE: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when 5 are required.	

DRAFT

DRAFT

ES-301

Control Room/In-Plant Systems
Outline

Form ES-301-2

System / JPM Title		Type Code*	Safety Function
Facility: Surry Exam Level (underline one): <u>RO</u> / SRO(I) / SRO(U) Date of Examination: FEB2004 Operating Test No.: 2004-301			
Control Room Systems (8 for RO; 7 for SRO-I; 2 or 3 for SRO-U)			
a. Start 2 nd RCP / High Vibration	015AA1.23 (3.1/3.2)	N A S	4 _{primary}
b. Place Hydrogen Analyzer In Service Following LOCA	(58.01) 028A4.03 (3.1/3.3)	D S	5
c. 0-AP-22.00, Fuel Handling Abnormal Condition Immediate Actions	(36.06) 034A2.01 (3.6/4.4); 036AK1.a1 (3.5/4.1)	D A S	8
d. Restore Offsite Power to 1H 4160V Emergency Bus IAW AP-10.08	(18.06) 062A4.01 (3.3/3.1); 055EA2.06 (3.7/4.1)	D S	6
e. Transfer to Hot Leg Recirculation with 1 Charging Pump in Service	(52.02) - ESF 011EA1.11 (4.2/4.2)	M S	3
f. Transfer Feedwater Control from FW BYP FLOW HCVs to the FEED REG FCVs in Manual control	059A4.08 (3.012.9)	N L S	4 _{secondary}
g. Response to tailed low Pressurizer Level Channel	(38.07) 028AA1.08 (3.7/3.6)	D A S	2
h. Remove a failed Source Range NI from Service During a Reactor Startup	(62.02) 015A2.02 (3.1/3.5); 015A4.03 (3.8/3.9)	D S (or C)	7
In-Plant Systems (3 for RO; 3 for SRQ-I; 3 or 2 for SRO-U)			
i. Cross-Tie Unit 2 Emergency Buses for Circulating Water Isolation	(35.02) 062A2.12 (3.2/3.6); 062AA2.02 (2.9/3.6); 076A2.01 (3.5/3.7); 056AA1.02 (4.0/3.9)	D	6
j. Locally Emergency Borate per AOP-3.0, Emergency Boration	(41.01B) 024AA1.04 (3.6/3.7)	D A R	1
k. Cross-Connect Turbine Building instrument Air	(17.02) 065AK3.04 (3.0/3.2); 078K1.03 (3.3/3.4); 065AK3.08 (3.7/3.9); 069AA2.02 (3.9/4.4)	D	8
* Type Codes: (D)irect from bank, (M)odified from bank, (N)ew, (A)lternate path, (C)ontrol room, (S)imulator, (L)ow-Power, (R)CA			

NUREG-1021, Draft Revision 9

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ES-301

Control Room/In-Plant Systems
Outline

Form ES-301-2

System/ JPM Title		Type Code*	Safety Function
Facility: Surry Exam Level (underline one): RO / <u>SRO(I)</u> / SRO(U)			
		Date of Examination: FEB2004 Operating Test No.: 2004-301	
Control Room Systems (8 for RO; 7 for SRO-I; 2 or 3 for SRO-U)			
8. Start 2 nd RCP / High Vibration		N A S	4 _{primary}
b.			
c. 0-AB-22.00, Fuel Handling Abnormal Condition Immediate Actions (36.06) 034A2.01 (3.6/4.4); 036AK1.01 (3.5/4.1)		D A S	8
d. Restore Offsite Power to 1H 4160V Emergency Bus IAW AP-10.08		D S	6
e. Transfer to Hot Leg Recirculation with 1 Charging Pump in Service (52.02) - ESF		M S	3
f. Transfer Feedwater Control from FW BYP FLOW HCVs to the FEED REG FCVs in Manual control for SG 1A		N L S	4 _{secondary}
g. Response to failed high Pressurizer Level Channel (38.07) 028AA1.08 (3.7/3.6)		M A S D	2
h. Remove a failed Source Range NI from Service During a Reactor Startup.		D S (or C)	7
in-Plant Systems (3 for RO; 3 for SRO-I; 3 or 2 for SRO-U)			
i. Cross-Tie Unit 2 Emergency Buses for Circulating Water Isolation		D	6
j. Locally Emergency Borate per AOP-3.0, Emergency Boration		D A R	1
k. Cross-Connect Turbine Building Instrument Air		D	8
* Type Codes: (D)irect from bank, (M)odified from bank, (N)ew, (A)lternate path, (C)ontrol room, (S)imulator, (L)ow-Power, (R)CA			

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ES-301

Control Room/In-Plant Systems
Outline

Form ES-301-2

* Type Codes: (D)irect from bank, (M)odified from bank, (N)ew, (A)lternate path, (C)ontrol room, (S)imulator, (&)ow-Power, (R)CA		
Facility: Surry Exam bevel (underline one): RO / SRO(I) / SRO(U)		Date of Examination: FEB2004 Operating Test No.: 2004-301
Control Room Systems (8 for RO; 7 for SRO-I; 2 or 3 for SRO-U)		
System / JPM Title	Type Code*	Safety Function
a. Start 2 nd RCP / High Vibration	N A S	4 _{primary}
b.		
c.		
d.		
e. Transfer to Hot Leg Recirculation with 1 Charging Pump in Service (52.02) - ESF		3
f. Transfer Feedwater Control from FW BYP FLOW HCVs to the FEED REG FCVs in Manual control for SG 1A	N L S	4 _{secondary}
g.		
h.		
In-Plant Systems (3 for RO; 3 for SRO-I; 3 or 2 for SRO-U)		
i.		
j. Locally Emergency Borate per AOP-3.0, Emergency Boration	D A R	1
k. Cross-Connect Turbine Building Instrument Air	D	8
* Type Codes: (D)irect from bank, (M)odified from bank, (N)ew, (A)lternate path, (C)ontrol room, (S)imulator, (L)ow-Power, (R)CA		