

Final Submittal
(Blue Paper)

FINAL JPMS

1. ADMINISTRATIVE JPMS
2. IN-PLANT JPMS
3. SIMULATOR JPMS (CONTROL ROOM)

SURRY JAN./FEB. 2006 EXAM

0500180/2006301 AND 05000281/2006301

**JANUARY 23 - FEBRUARY 3, 2006
FEBRUARY 8, 2006 (WRITTEN)**

FINAL

Facility: <u> SURRY </u>		Date of Examination: <u> Jan. 2006 </u>
Examination Level (circle one): <u> RO </u>		Operating Test Number: <u> 2006-301 </u>
Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations G2.1.7 (3.7/4.4)	M	Title: Perform At-Power Shutdown Margin Calculation Description: Modified facility JPM LO88-13. Perform SDM calc. (1-OP-RX-001) at 100% power following one dropped control rod.
Conduct of Operations		
Equipment Control G2.2.12 (3.0/3.4)	N, S	Title: Perform Shift Average Power Calculation Description: Perform 1-OPT-RX-007 with the PP Program returned to operable status (step 6.1.5).
Radiation Control G2.3.10 (2.9/3.3)	N	Title: Calculate Total Effective Dose Equivalent (Unshielded and Shielded) Description: Calculate unshielded TEDE for a point source and shielded TEDE for same point source.
Emergency Plan G2.4.43 (2.8/3.5)	N, S	Title: Transmit Report of Emergency to State and Local Governments (RO only). Description: Transmit prepared report per EPIP-2.01, Notification of State and Local Governments (alternate path – Isle of Wight does not acknowledge roll calls).
NOTE: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when all 5 are required.		
* Type Codes & Criteria: (C)ontrol room (D)irect from bank (≤ 3 for ROs; ≤ 4 for SROs & RO retakes) (N)ew or (M)odified from bank (≥ 1) (P)revious 2 exams (≤ 1; randomly selected) (S)imulator		

FINAL

Facility: <u> Surry </u>		Date of Examination: <u> Jan. 2006 </u>
Examination Level (circle one): SRO		Operating Test Number: <u> 2006-301 </u>
Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations G2.1.7 (3.7/4.4)	M	Title: Perform At-Power Shutdown Margin Calculation Description: Modified facility JPM LO88-13. Perform SDM calc. (1-OP-RX-001) at 100% power following one dropped control rod. Could be done in a group setting.
Conduct of Operations G2.1.23 (3.9/4.0)	N	Title: Select Alternate Mode of Decay Heat Removal (SRO only) Description: Using 1-AP-27.00, Loss of Decay Heat Removal Capability, steps 22-25, and 1-OSP-ZZ-004, Unit 1 Safety System Status List for Cold Shutdown/Refueling Conditions, determines the desired alternate means of decay heat removal. Could be done in a group setting.
Equipment Control G2.2.12 (3.0/3.4)	N, S	Title: Perform Shift Average Power Calculation Description: Perform 1-OPT-RX-007 with the PP Program returned to operable status (step 6.1.5).
Radiation Control G2.3.10 (2.9/3.3)	N	Title: Calculate Total Effective Dose Equivalent (Unshielded and Shielded) Description: Calculate unshielded TEDE for a point source and shielded TEDE for same point source.
Emergency Plan G2.4.41 (2.3/4.1)	M	Title: Classify a station event IAW EPIP-10.1 (SRO only) Description: Facility JPM LO-88.20 (classify security event) modified to take place at ISFSI instead of Cond. Polishing. Could be done in a group setting.
NOTE: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when all 5 are required.		
* Type Codes & Criteria: (C)ontrol room (D)irect from bank (≤ 3 for ROs; ≤ 4 for SROs & RO retakes) (N)ew or (M)odified from bank (≥ 1) (P)revious 2 exams (≤ 1 ; randomly selected) (S)imulator		

U.S. Nuclear Regulatory Commission
Surry Power Station

SR06301
Administrative Job Performance Measure G2.1.7

Applicant _____

Start Time _____

Examiner _____

Date _____

Stop Time _____

Title

PERFORM AN AT-POWER SHUTDOWN MARGIN CALCULATION

Applicability

Estimated Time

Actual Time

RO/SRO

20 Minutes

Conditions

- Task may be PERFORMED in the simulator (or any area with access to a Station Curve Book).
- Unit 1 is at 99.9% power with Rod F8 at the bottom of the core.

Standards

- 1-OP-RX-001, Shutdown Margin (Calculated at Power) within 50 minutes.

Initiating Cues

- Nuclear Shift Manager direction.

Terminating Cues

- 1-OP-RX-001, Shutdown Margin (Calculated at Power), step 5.1.7 completed.

Procedures

- 0-AP-1.00, Rod Control System Malfunction
- 1-OP-RX-001, Shutdown Margin (Calculated At Power).
- 1-DRP-003, Curve Book, Revision 69

Tools and Equipment

Safety Considerations

- None

- None

Simulator Setup (If Applicable)

- Call up 100% IC and initialize. Ensure Control Bank D is at 227 steps with all other rod banks at the normal rod withdrawal limit (fully withdrawn).
- Core age 7000 MWD/MTU and boron concentration 1000 ppm per current Surry Unit 1 operating Cycle.
- Insert Control Bank C Rod F8 to 0 steps.
- Lock in alarms for a dropped rod (1G-H2 and 1G-H1, if applicable) and implement rod malfunction (to keep rods immovable).
- Stabilize unit per AP-1.00 (if necessary).

Initiating Cues

- Perform 0-AP-1.00 Step 15, PERFORM SHUTDOWN MARGIN CALCULATION IAW 1-OP-RX-001, SHUTDOWN MARGIN (CALCULATED AT POWER) WITHIN 1 HOUR.

Directions to the Applicant

- During Control Rod Assembly Partial Movement testing in accordance with 1-OPT-RX-005, Control Bank C Rod F8 dropped to the bottom of the core (rod bottom light LIT). 0-AP-1.00, Rod Control System Malfunction, is in progress on Unit 1 for Rod F8. Unit 1 conditions are stable.
- IAW step 15 of 0-AP-1.00, Perform Shutdown Margin Calculation IAW 1-OP-RX-001, Shutdown Margin (Calculated At Power) within 1 Hour.
- The following unit conditions exist:
 - Core Burnup: 7000 MWD/MTU
 - C_B1000 ppm, measured 1 hour ago. No dilutions have taken place.

Notes

- Ensure use of current (Cycle 20) DRP-003 (Curve Book) values.
- **If performed outside of the simulator, examiner will need to provide cues** for Control Bank "D" height and reactor power (ΔT and PRNIS).
 - Control Bank "D" height: 227 steps
 - ΔT and PRNIS: 99.9% power (T_{AVG} & T_{REF} are matched)

PERFORMANCE CHECKLIST

Start Time:

1. REVIEW ADMINISTRATIVE SECTIONS OF PROCEDURE

- Reviews Section 1, Purpose
- Reviews Section 2, References
- Reviews and completes Section 3, Initial Conditions
- Reviews Section 4, Precautions and Limitations

2. RECORD CORE PARAMETERS NEEDED TO DOCUMENT & PERFORM THE SDM CALCULATION (Step 5.11)

- Determines and records time and date of calculation
S U
- Determines and records Core Burnup (MWD/MTU)
S U
- Determines and records control bank D rod position
S U
- Determines and records current estimated boron concentration
S U

3. RECORD WORTH OF ANY BANKS INSERTED THAT CANNOT BE RETURNED TO ORIGINAL POSITION (Step 5.12)

- Determines that NO bank of rods has been inserted and cannot be returned to the original position

S U

- Enters "N/A" for Step 5.12

S U

- Enters "0" at Step 5.1.5.c

S U

4. CALCULATE THE WORTH OF ANY STUCK OR DECLARED INOPERABLE ROD(S) (Step 5.13)

- Determines that there are NO stuck or inoperable rods

S U

- Enters 1 stuck rod in the appropriate blank of step 5.1.3

S U

- Obtains Stuck Rod Worth Vs Burnup Curve (Attachment 40)

S U

- Locates cycle burnup value of 7,000 MWD/MTU

S U

- Follows 7,000 MWD/MTU burnup line up until it intersects with the bold line
S U

- Follows intersected line to the left until it reaches Stuck Rod Worth axis
S U

- Determines reactivity worth to be approximately 1061 pcm (+/- 2 pcm) and enters value in appropriate blank of step 5.1.3
S U

- Calculates a stuck rod worth value of 1061 pcm and enters it in the appropriate blank of step 5.1.3
S U

CUES

- **If asked:** ALL rods remain trippable

5. CALCULATE THE WORTH OF ANY DROPPED ROD(S) (Step 5.14)

- Enters 1 dropped rod in the appropriate blank of step 5.1.4
S U

- Calculates a stuck rod worth value of 1000 pcm (+/- 0 pcm) and enters it in the appropriate blank of step 5.1.4
S U

6. READ CAUTION PRIOR TO STEP 5.1.5

- Acknowledges that positive reactivity values must be entered in appropriate steps

7. DETERMINE VALUE OF POWER DEFECT (Step 5.1.5.a)

- Obtains Power Defect Curve (Attachment 31)

S U

- Locates C_B value of 1000 ppm

S U

- Follows 1000 ppm line up until it intersects with the line equating to 100% power

S U

- Follows intersected line to the left until it reaches the Power Defect Value axis

S U

- Determines Power Defect to be 1790 pcm (+10 / -20 pcm)

S U

- Records value in step 5.1.5.a

S U

8. DETERMINE VALUE OF REACTIVITY REDISTRIBUTION FACTOR (Step 5.1.5.b)

- Turns to Reactivity Redistribution Factor Vs Burnup Curve (Attachment 42)

S U

- Locates cycle burnup value of 7000 MWD/MTU

S U

- Follows 7000 burnup line up until it intersects with the bold line

S U

- Follows intersected line to the left until it reaches Redistribution Factor axis

S U

- Determines Redistribution Factor to be 185 pcm (+/- 5 pcm)

S U

- Records value in step 5.1.5.b

S U

9. TRANSFER THE VALUE OF THE OUT OF SEQUENCE BANK WORTH FROM PREVIOUS CALCULATION (Steps 5.1.5.c – 5.1.5.e).

- Enters "0" in step 5.1.5.c (if not done in Step 5.1.2)

S U

- Transfers stuck worth value from Step 5.1.3 to Step 5.1.5.d (1061 pcm)

S U

- Transfers dropped rod worth value from Step 5.1.4 to Step 5.1.5.e (1000 pcm)

S U

10. DETERMINE VALUE OF PRESENT CONTROL BANK WORTH (Step 5.1.5.f).

- Obtains At-Power Integral Worth Table For Control Banks C And D In Overlap (Attachment 29)

S U

- Locates CBD height of 227 steps

S U

- Follows row to the right until under the 6000.1 – 8000.0 MWD/MTU cycle burnup range

S U

- Determines Control Banks' worth to be 0.0 pcm (+/- 0 pcm)

S U

- Records value in step 5.1.5.f.

S U

11. DETERMINE VALUE OF TOTAL ROD WORTH (Step 5.1.5.g)

- Obtains Total Rod Worth Vs Burnup Curve (Attachment 38)

S U

- Locates cycle burnup value of 7000 MWD/MTU

S U

- Follows 7000 burnup line up until it intersects with the bold line

S U

- Follows intersected line to the left until it reaches Total Rod Worth axis

S U

- Determines Total Rod Worth to be 7005 pcm (+/- 5 pcm)

S U

- Records value in step 5.1.5.g

S U

12. DETERMINE TOTAL VALUE OF AT-POWER SHUTDOWN MARGIN (Step 5.1.6)

- Adds values inserted in steps 5.1.5.a through 5.1.5.h

- Uses a negative value for step 5.1.5.g

S U

- Adds 150 pcm from step 5.1.5.h for Rod Worth Conservatism

S U

- ■ Determines value of SDM to be -2819 pcm (accept - 2797 to - 2851)

S U

- Records calculated SDM value in step 5.1.6

S U

13. COMPARE CALCULATED SDM TO MINIMUM TECH SPEC REQUIREMENT (Step 5.1.7)

- Identifies minimum TS requirement to be -1770 pcm
S U

- Recognizes that -2819 pcm is more negative than -1770 pcm
S U

- Enters N/A for step 5.1.7
S U

- Signs for procedure completion
S U

- Makes verbal report of task completion

STOP TIME:

Collect Applicant examination material

- **Task performed within 50 minutes** (one hour tech spec requirement minus 10 minutes).

Pass Fail

If applicant fails, provide brief reason:

INSTRUCTIONS TO APPLICANT

Conditions

- Control Bank C Rod F8 dropped to the bottom of the core (rod bottom light LIT) during Control Rod Assembly Partial Movement (1-OPT-RX-005) **10 minutes ago**.
- 0-AP-1.00, Rod Control System Malfunction, is in progress on Unit 1 for Rod F8.
- The following Unit 1 conditions exist:

Core Burnup: 7000 MWD/MTU

Control Bank "D" height: 227 steps

All rods remain trippable

C_B: 1000 ppm, measured 1 hour ago. No dilutions have taken place.

ΔT and PRNIS: 99.9% power (T_{AVG} & T_{REF} are matched)

Unit 1 conditions are stable.

Initiating Cues

- IAW step 15 of 0-AP-1.00, Perform Shutdown Margin Calculation IAW 1-OP-RX-001, Shutdown Margin (Calculated At Power)

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SR06301
Administrative Job Performance Measure G2.1.23

Applicant _____

Start Time _____

Examiner _____

Date _____

Stop Time _____

Title

SELECT ALTERNATE MODE OF DECAY HEAT REMOVAL

Applicability

Estimated Time

Actual Time

SRO

15 Minutes

Conditions

- Task may be PERFORMED in the simulator or classroom.

Standards

- Reflux Boiling method of decay heat removal selected per 1-AP-27.00.

Initiating Cues

- Nuclear Shift Manager direction.

Terminating Cues

- Alternate method of decay heat removal selected.

Procedures

- 1-AP-27.00, Loss of Decay Heat Removal Capability
- 1-OSP-ZZ-004, Unit 1 Safety Systems Status List For Cold Shutdown/Refueling Conditions.
- Completed 1-OSP-ZZ-004, Attachment 1, Cold Shutdown Conditions, and Attachment 3, Forced Feed & Bleed, for plant conditions.

Tools and Equipment

- None

Safety Considerations

- None

Simulator Setup (If Applicable)

- Call up IC ____ (B-train components running) and initialize.
- Ensure RCS temperature stable at approximately 155 °F. Level at 18.7 feet.
- Deenergize bus 1J. Ensure RCS level is stable. Determine RCS heatup rate.

Initiating Cues

- Determine an alternate method of decay heat removal per 1-AP-27.00, Steps 22-25, in the event that Bus J is not and can not be restored.

Directions to the Applicant

- Unit 1 was shutdown for a refueling outage 88 hours ago.
- Unit 1 is in COLD SHUTDOWN, depressurized to atmospheric conditions, with the Reactor Vessel Head installed.
- Pressurizer level is off-scale low and Reactor Vessel Level (1-RC-LI-100A) is 18.7 feet and stable in preparation for Reactor Vessel Head removal.
- Loop B is isolated and draining. No other RCS openings exist.
- RCS temperature is 155 °F.
- 'A' and 'C' SGs are being maintained at 70% NR level with their associated loop stop valves open.
- 'A' and 'C' SG PORVs are operable.
- 'A' and 'C' Loop wide range T_{HOT} and T_{COLD} are operable.
- All PRZR Safety valves are installed and PRZR PORVs are operable.
- RCS Narrow Range Pressure Transmitters are operable.
- Unit 1 RWST level is 98%
- Both trains of Unit 2 AFW are operable.
- Bus 1H is deenergized for electrical maintenance.
- Bus 1J just deenergized. Unit 2 remained at 100% power and was unaffected by the electrical problem.
- The Unit 1 SRO and RO are attempting to restore power to Bus J per 1-AP-10.07.
- The crew entered 1-AP-27.00, Loss of Decay Heat Removal Capability, due to no RHR pumps running.
- Forced Feed and Bleed was the Mandatory Backup Cooling Method required by 1-OSP-ZZ-004, Unit 1 Safety Systems Status List for Cold Shutdown / Refueling Conditions.

ALTERNATE DECAY HEAT REMOVAL METHOD: _____

Notes

If performed in the simulator, verbal cuing will be required for one or more of steps 18, 19, 20, and 21. This JPM is written for classroom use and will need to be modified for use in simulator.

Natural Circulation Cooling (1-AP-27.00, Attachment 4) is not available because the RCS is not pressurized and SG tubes are not filled at current RCS level. 1-OSP-ZZ-004 Attachment 2, Natural Circulation Cooling, checks for "Pressurizer Available" and "PRZR Pressure."

SFP/RWST Cooling (1-AP-27.00, Attachment 10) is not available because the RX head is installed (no flowpath). Caution preceding Step 1 of Attachment 10 states this.

Gravity Feed Cooling (1-AP-27.00, Attachment 8) is not available because all PRZR safety valves are installed (no heat removal path). Caution preceding Step 1 of Attachment 8 and 1-OSP-ZZ-004, Attachment 5, Gravity Feed and Bleed Cooling with Any RCS Level, state and check for this.

PERFORMANCE CHECKLIST

Start Time:

1. REVIEW 1-AP-27.00 (Steps 4, 16 – 21)

- Determines that performance of steps 4 and 16-21 do not affect performance of Steps 22-25 (selection of alternate mode of decay heat removal).

S U

2. CHECK CONDITIONS REQUIRED FOR NATURAL CIRCULATION COOLING AVAILABLE (Step 22)

- Reads Note preceding Step 22.

- Refers to Attachment 10.

- Determines cooling the RCS with SFP and RWST coolers can not be used due to RX head is on (Caution preceding Step 1 of Attachment 10).

S U

- Locates 1-OSP-ZZ-004, Attachment 2.

S U

- Determines natural circulation cooling not available (either due to PRZR level less than 15% or PRZR pressure less than 84 psig from Conditions).

S U

- Goes to Step 24.

S U

3. CHECKS CONDITIONS REQUIRED TO SUPPORT REFLUX COOLING AVAILABLE (Step 24)

- Locates 1-OSP-ZZ-004, Attachment 4

S U

- Determines SG requirements met (2 with NR level between 12% and 74% from Conditions).

S U

- Determines one train of AFW X-Tie from Unit 2 available (no loss of power on Unit 2 from Conditions).

S U

- Determines SG PORV available (A and C from Conditions)

S U

- Determines PRZR PORVs operable (air available).

S U

- Determines no PRZR Safety Valves are removed (from Conditions).

S U

- Determines loop stop valves for operable SGs (A&C) are open (from Conditions).

S U

- Determines that openings on SG side of B loop are not required to be capable of closing (from Attachment 4).

S U

- Determines RCS inventory not decreasing.

S U

- Goes to Attachment 5, Reflux Boiling Heat Removal

S U

- **Tells Unit 1 SRO that Reflux Boiling is the alternate method of decay heat removal** if an RHR pump is not restored (and that the JPM task is complete).

S U

STOP TIME:

Collect Applicant examination material

Pass

Fail

If applicant fails, provide brief reason:

INSTRUCTIONS TO APPLICANT

Conditions

- Unit 1 was shutdown for a refueling outage 88 hours ago.
- Unit 1 is in COLD SHUTDOWN, depressurized to atmospheric conditions, with the Reactor Vessel Head installed.
- Pressurizer level is off-scale low and Reactor Vessel Level (1-RC-LI-100A) is 18.7 feet and stable in preparation for Reactor Vessel Head removal.
- Loop B is isolated and draining. No other RCS openings exist.
- RCS temperature is 155 °F.
- 'A' and 'C' SGs are being maintained at 70% NR level with their associated loop stop valves open.
- 'A' and 'C' SG PORVs are operable.
- 'A' and 'C' Loop wide range T_{HOT} and T_{COLD} are operable.
- All PRZR Safety valves are installed and PRZR PORVs are operable.
- RCS Narrow Range Pressure Transmitters are operable.
- Unit 1 RWST level is 98%
- Both trains of Unit 2 AFW are operable.
- Bus 1H is deenergized for electrical maintenance.
- Bus 1J just deenergized. Unit 2 remained at 100% power and was unaffected by the electrical problem.
- The Unit 1 SRO and RO are attempting to restore power to Bus J per 1-AP-10.07.
- The crew entered 1-AP-27.00, Loss of Decay Heat Removal Capability, due to no RHR pumps running.
- Forced Feed and Bleed was the Mandatory Backup Cooling Method required by 1-OSP-ZZ-004, Unit 1 Safety Systems Status List for Cold Shutdown / Refueling Conditions.

Initiating Cues

- Determine an alternate method of decay heat removal per 1-AP-27.00, Steps 22-25, in the event that Bus J is not and can not be restored (All Precautions and Limitations have been reviewed).

ALTERNATE DECAY HEAT REMOVAL METHOD: _____

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SR06301
Administrative Job Performance Measure G2.2.12

Applicant _____

Start Time _____

Examiner _____

Date _____

Stop Time _____

Title

PERFORM SHIFT AVERAGE POWER CALCULATION

K/A: G2.2.12 Knowledge of Surveillance Procedures (3.0/3.4)

Applicability

Estimated Time

Actual Time

RO/SRO

15 Minutes

Conditions

- Task may be PERFORMED in the simulator.
- Unit 1 is at 99.8% power.

Standards

- Shift average power recorded per 1-OPT-RX-007, Shift Average Power Calculation, step 6.1.5.

Initiating Cues

- Nuclear Shift Manager direction.

Terminating Cues

- 1-OPT-RX-007, Shift Average Power Calculation, step 6.1.5 completed

Procedures

- 1-OPT-RX-007, Shift Average Power Calculation

Tools and Equipment

Safety Considerations

- Calculator

- None

Simulator Setup

- Call up 100% IC and initialize.
- Core age and boron concentration per current Surry Unit 1 operating Cycle.
- Ensure plant stable at approximately 99.8% reactor power.
- Ensure PP Program available.
- Ensure shift average power calculation is NOT poor or bad and does not have an associated reason code.

Initiating Cues

- Perform 1-OPT-RX-007 to obtain the 10:00 shift average power reading.

Directions to the Applicant

- Unit 1 is operating at approximately 100% steady state power.
- Operations is on 8 hour shifts.
- The Plant Performance Program became non-functional yesterday due to a software problem.
- 1-OPT-RX-007, Shift Average Power Calculation, is in progress at step 6.1.4.
- The Plant Performance Program was repaired and declared operable and reliable 1 hour and 10 minutes ago.
- The 09:00 shift average power was completed per step 6.1.4.
- The time is currently 10:10
- Perform 1-OPT-RX-007 to obtain the 10:00 shift average power reading.

Notes

PERFORMANCE CHECKLIST

Start Time:

1. REVIEW ADMINISTRATIVE SECTIONS OF PROCEDURE

- Reviews Section 1, Purpose
- Reviews Section 2, References
- Reviews Section 3, Initial Conditions
- Reviews Section 4, Precautions and Limitations

2. REVIEW PREVIOUSLY COMPLETED STEPS (Steps 6.1.1 – 6.1.4)

- Locates Attachment 1 (8 hour shift)

S U

3. DETERMINES STEP 6.1.5 IS APPLICABLE FOR 10:00 READING

- Reads step 6.1.5

 - Determines that PP Program has been reliable greater than 1 hour
- S U
- Determines step 6.1.5 should be performed for 10:00 reading

S U

4. VERIFIES CURRENT BLOWDOWN FLOWS CORRESPOND TO ENTERED CONSTANT VALUES (Step 6.1.5.a)

Note: Click "Prog" and then click "Primary Plant" to access Plant Process Computer data and calculations.

Obtains entered constant values (from plant process computer)

Loop A _____

Loop B _____

Loop C _____

S U

Obtains current values for blowdown flows (from MCR back panel)

Loop A _____ (FI-BD-104A)

Loop B _____ (FI-BD-104B)

Loop C _____ (FI-BD-104C)

S U

- Determines that entered constant values of blowdown match current values

S U

5. CHECKS BASIS FOR CALORIMETRIC (Step 6.1.5)

- Checks Feed Flow (K7030) (by determining that current selected calculation shows feed flow)

S U

OR

- Determines K7030 value equals required value of "0" (using PPC, K7030 = 0.0)

S U

- Checks off Step 6.1.5.b for Feed Flow

S U

6. OBTAIN 10:00 HOURLY ROLLING AVG REACTOR POWER (U9125) (Step 6.1.5.d)

- ■ Obtains U9125 value using trend function of PCS
 - Value obtained IS from the first minute of the hour to be recorded (before 10:01:00)
 - Value obtained is NOT from the first five seconds of the minute (10:00:00 to 10:00:05)

Examiner: Have applicant demonstrate the ability to obtain the U9125 value 5 minutes before the current time. After the applicant has read 6.1.5.d.1 and has brought up the trend, provide the following cue:

Cue (Examiner): Before you perform step 6.1.5.d.1, show me what the U9125 value was 5 minutes ago using PCS time.

S U

Cue (Examiner): After demonstrating the ability to determine the U9125 value, state “The 10:00 U9125 reading reads 99.98%.”

- Records value obtained in Col. 7 of Attachment 2 for hour 3

S U

7. CALCULATE SHIFT AVERAGE POWER FOR 10:00 (Step 6.16)

- ■ Performs the following calculation:

[Row 2, Column 8 SUM (199.6) + Row 3, Column 7 (from previous step)] / 3

99.98 +/- 0.1 is acceptable

S U

- Records value obtained in Row 3, Column 9, Attachment 2

S U

8. DETERMINES SHIFT AVERAGE POWER FOR 10:00 DOES NOT EXCEED 100% (Step 6.1.7)

- Determines that value calculated above (Row 3, Column 9) is less than or equal to 100%

S

U

- Makes verbal report of task completion

STOP TIME:

Collect Applicant examination material

Pass

Fail

If applicant fails, provide brief reason:

INSTRUCTIONS TO APPLICANT

Conditions

- Unit 1 is operating at approximately 100% steady state power.
- Operations is on 8 hour shifts.
- The Plant Performance Program became non-functional yesterday due to a software problem.
- 1-OPT-RX-007, Shift Average Power Calculation, is in progress at step 6.1.5.
- The Plant Performance Program was repaired and declared operable and reliable 1 hour and 10 minutes ago.
- The 09:00 shift average power was completed per step 6.1.4.
- The time is currently 10:10

Initiating Cues

- Perform 1-OPT-RX-007 to obtain the 10:00 shift average power reading (All Precautions and Limitations have been reviewed).

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Surry Power Station

SR06301
Administrative Job Performance Measure G2.3.10

Applicant _____

Start Time _____

Examiner _____

Date _____

Stop Time _____

Title

CALCULATE TOTAL EFFECTIVE DOSE EQUIVALENT (UNSHIELDED AND SHIELDED)

Applicability

Estimated Time

Actual Time

RO/SRO

15 Minutes

Conditions

- Task may be performed in the classroom.

Standards

- Complete TEDE calculations for the given conditions.

Initiating Cues

- Nuclear Shift Manager direction.

Terminating Cues

- Unshielded and shielded calculations completed and determination of which would best support ALARA goals

Procedures

- None

Tools and Equipment

Safety Considerations

- Calculator

- None

Initiating Cues

1. Calculate the estimated Total Effective Dose Equivalent upon completion of the job with NO shielding.
2. Calculate the estimated Total Effective Dose Equivalent with 2" of lead shielding installed.
3. Using ALARA principles, determine whether or not the installation of shielding is required (explain).

Directions to the Applicant

- The operator has been assigned to perform a job that is located 3 feet from a gamma point source that reads 9 Rem at 6 inches.
- The job is estimated to take 1.5 hours.

- RP has 2 inches of lead shielding that can be installed between the operator and the gamma point source.
- RP tells you that the tenth thickness for the lead shielding is 2.0 inches.
- RP also informs you that it will take 2 people, ½ hour each, at a dose rate of 360 mrem/hr to install the lead shielding.

- Calculate the estimated dose upon completion of the job with NO shielding.

- Calculate the total estimated dose for installing the lead shielding and for the completion of the job with the 2" of lead shielding installed.

- Using ALARA principles, determine whether or not the installation of lead shielding is required (explain).

Notes

PERFORMANCE CHECKLIST

Start Time:

1. CALCULATE DOSE RATE TO OPERATOR WITHOUT SHIELDING

CUE: If applicant requests the equation sheet, provide it to him.

○ $[9 \text{ Rem/hr} \times (0.5')^2 / (3')^2] \times 1000 \text{ mRem/Rem} = 250 \text{ mRem/hr}$

S U

2. CALCULATE DOSE TO OPERATOR WITHOUT SHIELDING

○ $250 \text{ mRem / hr} \times 1.5 \text{ hr} = 375 \text{ mRem (+/- 2 mRem)}$

S U

3. CALCULATE SHIELDED DOSE RATE TO OPERATOR

- Determine that 2 inches of lead shielding is equivalent to one tenth-value thicknesses (initial conditions)

S U

- Calculate shielded dose rate:

$$250 \text{ mRem/hr} \times (1/10) = 25 \text{ mRem/hr}$$

S U

4. CALCULATE DOSE TO THE OPERATOR WITH SHIELDING

○ $25 \text{ mRem/hr} \times 1.5 \text{ hr} = 37.5 \text{ mRem (+/- 1 mRem)}$

S U

5. **DETERMINE DOSE REQUIRED TO INSTALL SHIELDING**

- It will take 2 people, ½ hour each, at a dose rate of 360 mRem/hr to install the lead shielding.
- 2 people x ½ hour = 1 man-hour
- 1 man-hour x 360 mRem/hr = **360 mRem**

S U

6. **DETERMINE TOTAL JOB DOSE WITH INSTALLATION OF SHIELDING**

- Total Dose = Operator Dose (with shielding) + Dose to install Shielding
- Total Dose = 37.5 mRem + 360 mRem = **397.5 (+/- 1 mRem)**

S U

7. **USING ALARA PRINCIPLES DETERMINE WHETHER OR NOT THE INSTALLATION OF LEAD SHIELDING IS REQUIRED (EXPLAIN).**

- Compares dose without shielding (375 mRem) to dose with shielding and shielding installations (397.5 mRem).
- Identifies that dose without shielding is lower. **Job should be performed without shielding.**

S U

STOP TIME:

Collect Applicant examination material

Pass Fail

If applicant fails, provide brief reason:

INSTRUCTIONS TO APPLICANT

- The operator has been assigned to perform a job that is located 3 feet from a gamma point source that reads 9 Rem at 6 inches.
- The job is estimated to take 1.5 hours.

- RP has 2 inches of lead shielding that can be installed between the operator and the gamma point source.
- RP tells you that the tenth thickness for the lead shielding is 2.0 inches.
- RP also informs you that it will take 2 people, ½ hour each, at a dose rate of 360 mrem/hr to install the lead shielding.

Initiating Cues

1. Calculate the estimated dose upon completion of the job with NO shielding.

2. Calculate the total estimated dose for installing the lead shielding and for the completion of the job with the 2" of lead shielding installed.

3. Using ALARA principles, determine whether or not the installation of lead shielding is required (explain).

U.S. Nuclear Regulatory Commission
Surry Power Station

SR06301
Administrative Job Performance Measure G2.4.43

Applicant _____

Start Time _____

Examiner _____

Date _____

Stop Time _____

Title

TRANSMIT REPORT OF EMERGENCY TO STATE AND LOCAL GOVERNMENTS

Applicability

Estimated Time

Actual Time

RO

10 Minutes

Conditions

- Task may be performed in a room with two way telephone capability.

Standards

- Report of Emergency transmitted per EPIP-2.01 Attachment 2.

Initiating Cues

- Nuclear Shift Manager direction.

Terminating Cues

- Report transmitted.

Procedures

- EPIP-2.01, Attachment 2, Report of Emergency to State and Local Governments

Tools and Equipment

Safety Considerations

- Telephone(s)

- None

Initiating Cues

- The Shift Manager has directed you to complete EPIP-2.01, Notification of State and Local Governments, beginning at Step 6. The SEM has approved Attachment 2, Report of Emergency to State and Local Governments.

Directions to the Applicant

- Unit 2 experienced a SGTR on the 2C SG about five minutes ago.
- The Shift Manager declared an ALERT due to the 2C SGTR one minute ago.
- The Shift Manager has completed EPIP-2.01, Attachment 2, Report of Emergency to State and Local Governments for the ALERT classification.
- You are in the Control Room.

- The Shift Manager has directed you to complete EPIP-2.01, Notification of State and Local Governments, beginning at Step 6. The SEM has approved Attachment 2, Report of Emergency to State and Local Governments.

Notes

PERFORMANCE CHECKLIST

Start Time:

1. PERFORM INITIAL ROLL CALL AND TRANSMITTAL TO STATE AND LOCAL GOVERNMENT (Step 6 a – h)

- Checks Instaphone clear of conflicting traffic.

S U

- **■ Uses Instaphone to contact State and local EOCs.**

Note: Must be less than 14 minutes after start of JPM

S U

- Records time notification started on Attachment 2

S U

- **■ Performs initial roll call**

- Checks all boxes EXCEPT Isle of Wight County (Isle of Wight County does NOT answer roll call).

S U

- **■ Reads items 1-8 of Attachment 2.**

S U

- Performs item 9 of Attachment 2.
 - Fills in name on Item 9.
S U

 - **■ Performs acknowledgement roll call.**
 - Checks all boxes EXCEPT Isle of Wight County (Isle of Wight County does NOT answer roll call).
S U

- Circles Isle of Wight per EPIP-2.10 step 6 f) RNO.
S U

- Checks “Control Room” of item 9.
S U

- Records date and time in item 9.
S U

2. TRANSMIT RADIOLOGICAL CONDITIONS TO STATE EOC (Step 6 j) – Step 7)

- Uses DEM ARD phone to contact State EOC.

S U

- Checks State EOC acknowledged message.

S U

- Reads (Attachment 2) Items 10 and 11.

S U

- Checks "60 minute" update schedule.

Note: Cued by training staff manning telephone

S U

- Records name of State EOC Duty Officer in item 12.

Note: Cued by training staff manning telephone (Bob Johnson)

S U

- Checks "Control Room" of item 12.

S U

- Records date and time in item 12.

S U

3. VERIFY ALL LOCAL EOCs ANSWERED ACKNOWLEDGEMENT ROLL CALL

- **■ Identifies Isle of Wight County did not answer acknowledgement roll call.**

S

U

- **■ Uses autodial pushbutton or dials (757) 357-2151 to initiate call to Isle of Wight**

S

U

Cue: This completes the JPM

STOP TIME:

Collect Applicant examination material

Pass

Fail

If applicant fails, provide brief reason:

INSTRUCTIONS TO APPLICANT

Conditions

- Unit 2 experienced a SGTR on the 2C SG about five minutes ago.
- The Shift Manager declared an ALERT due to the 2C SGTR one minute ago.
- The Shift Manager approved transmittal of the completed EPIP-2.01, Attachment 2, Report of Emergency to State and Local Governments for the ALERT classification.
- You are in the Control Room.

Initiating Cues

- The Shift Manager has directed you to complete EPIP-2.01, Notification of State and Local Governments, beginning at Step 6. The SEM has approved Attachment 2, Report of Emergency to State and Local Governments.

U.S. Nuclear Regulatory Commission
Surry Power Station

SR06301
Administrative Job Performance Measure G2.4.41
Time Critical

Applicant _____

Start Time _____

Examiner _____

Date _____

Stop Time _____

Title

DETERMINE EVENT CLASSIFICATION

K/A: G2.4.41 Knowledge of the emergency action level thresholds and classifications (2.3/4.1)

Applicability

Estimated Time

Actual Time

SRO

5 Minutes

Conditions

- Task may be performed in the simulator or the Main Control Room.

Standards

- "Alert" declared IAW EPIP-1.01.

Initiating Cues

- Significant event notification.
- EPIP-1.01, Emergency Manager Controlling Procedure.

Terminating Cues

- Report received of event classification.

Procedures

- EPIP-1.01, Emergency Manager Controlling Procedure.

Tools and Equipment

Safety Considerations

- None

- None

Initiating Cues

- Determine the event classification, if any.

Directions to the Applicant

- You are the Nuclear Shift Manager.
- Security has just reported the following:
 - Two armed intruders are currently inside the ISFSI Inner Security Fence and have not been apprehended but are confined by Security near the south end of Pad 1.
 - Two other armed intruders are outside the ISFSI fence near the southeast corner and have been neutralized.
 - One guard is wounded and requires medical assistance.
 - Local law enforcement is en route to the site, responding to shots fired.
 - The two ISFSI beacon lights near the main access gate are LIT.
- Determine the event classification, if any.
- This is a Time Critical task.

Notes

PERFORMANCE CHECKLIST

Start Time:

1. OBTAIN EPIP-1.01, EMERGENCY MANAGER CONTROLLING PROCEDURE.

- Proceeds to Nuclear Shift Manager console bookrack.
- Obtains SEM emergency package (or STA classification package).
- Gets copy of EPIP-1.01, EAL Tabs.

S U

2. DETERMINE EVENT CATEGORY.

- Turns to EPIP-1.01, Attachment 1, page 1, EAL Table Index.
- Determines event category to be a SECURITY EVENT.

S U

- Turns to TAB J.

S U

3. CLASSIFY EVENT.

- Determines that event is J-3, Ongoing Security compromise.

S U

- Classifies event as an ALERT (in less than or equal to 15 minutes).

S U

STOP TIME:

Collect Applicant examination material

Examiner record total time to complete JPM (stop time – start time): _____ minutes.

Pass

Fail

If applicant fails, provide brief reason:

INSTRUCTIONS TO APPLICANT

Conditions

- You are the Nuclear Shift Manager.
- Security has just reported the following:
 - Two armed intruders are currently inside the ISFSI Inner Security Fence and have not been apprehended but are confined by Security near the south end of Pad 1.
 - Two other armed intruders are outside the ISFSI fence near the southeast corner and have been neutralized.
 - One guard is wounded and requires medical assistance.
 - Local law enforcement is en route to the site, responding to shots fired.
 - The two ISFSI beacon lights near the main access gate are LIT.

Initiating Cues

- Determine the event classification, if any.
- This is a **Time Critical** task.

FINAL

Facility: <u>Surry</u> Date of Examination: <u>Jan. 2006</u> Exam Level (circle one): RO / SRO (I) / SRO (U) Operating Test No.: <u>2006-301</u>		
Control Room Systems [®] (8 for RO; 7 for SRO-I; 2 or 3 for SRO-U)		
System / JPM Title	Type Code*	Safety Function
a. AFW / Cross Connect AFW from Unit 1 to Unit 2. 061A1.03 (3.1/3.6)	S/D	4(S)
b. PZR / Respond to Stuck Open PRZR Spray Valve 010A2.02 (3.9/3.9)	S/N	3
c. CS / Respond to Spurious Hi Hi CLS Signal / CS Actuation – B Train Hi Hi CLS Will Not Reset. 026A4.01 (4.5/4.3)	S/L/A/N	5
d. RX / Perform Control Rod Assembly Partial Movement for CBC 001A4.03 (4.0/3.7)	S/N	1
e. RCP / Respond to RCP 1A CC Return Lo Flow Alarm 003A1.03 (2.6/2.6)	S/L/N	8
f. EDG / RESTORE POWER TO AN AC EMERGENCY BUS FOLLOWING LOSS OF ALL AC 055EA2.03 (3.9/4.7)	S/A/N	6
g. PRM / Respond to Effluent Radiation Monitor Trouble Alarm 073A4.02 (3.7/3.7)	S/N/L	7
h. WG / Respond to Waste Gas Decay Tanks Hi Oxygen Alarm 071A4.29 (3.0/3.6) – RO ONLY	S/M	9
In-Plant Systems [®] (3 for RO; 3 for SRO-I; 3 or 2 for SRO-U)		
i. CVCS / Locally Emergency Borate (Unit 2) 024AA1.20 (3.2/3.3)	D/A/E/R	1
j. MS / Locally Isolate the Secondary System (Unit 2) 038EA1.32 (4.6/4.7)	D/E	3
k. SFP / Perform Local Actions for Loss of Spent Fuel Pit Level 033A2.03 (3.1/3.5)	N/A/E/R	8
@ All control room (and in-plant) systems must be different and serve different safety functions; in-plant systems and functions may overlap those tested in the control room.		
* Type Codes Criteria for RO / SRO-I / SRO-U		
(A)lternate path	4-6 / 4-6 / 2-3	
(C)ontrol room		
(D)irect from bank	≤ 9 / ≤ 8 / ≤ 4	
(E)mergency or abnormal in-plant	≥ 1 / ≥ 1 / ≥ 1	
(L)ow-Power	≥ 1 / ≥ 1 / > 1	
(N)ew or (M)odified from bank including 1(A)	≥ 2 / ≥ 2 / ≥ 1	
(P)revious 2 exams	≤ 3 / ≤ 3 / ≤ 2 (randomly selected)	
(R)CA	≥ 1 / ≥ 1 / > 1	
(S)imulator		

Virginia Power
Surry Power Station

Licensed Operator Programs
Job Performance Measure 26.03 (Rev 10)

Operator _____ Evaluator _____
Observer _____ Evaluation Date _____

Task

CROSS-CONNECT AUXILIARY FEEDWATER FROM UNIT 1 TO UNIT 2.

<u>Applicability</u>	<u>Est Completion Time</u>	<u>Actual Time</u>
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RO/SRO	5 Minutes	_____
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<u>NUREG-1122 Importance Ratings</u>	<u>Surry Importance Rating</u>
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APE054.AA1.01 (RO 4.5/SRO 4.4)	RO 3.71/SRO 2.78
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Conditions

- Task is to be PERFORMED in the simulator.
- Unit 1 is at 100% power with all systems normal & in AUTO.
- Unit 2 is simulated to be experiencing a loss of all FW

Standards

- 2-FR-H.1, Loss of Secondary Heat Sink, step 2d RNO, steps d3 through d5.

Initiating Cues

- 2-FR-H.1, Loss of Secondary Heat Sink, step 2d RNO.
- Shift Supervisor direction.

Terminating Cues

- Report received that AFW cross-tie performed (step 2d RNO, substep 5 completed).

Procedures

- 2-FR-H.1, Loss of Secondary Heat Sink.

Tools and Equipment

- None

Safety Considerations

- None

Simulator Setup

- Call up 100% power IC and initialize.
- Setup meter override FWP3A_AMPERES and FWP3B_AMPERES 1 second TD, 60 second ramp, 20% positive deviation.
- Implement meter overrides when operator opens FW-MOV-260A and 260B.
- Prepare a copy of 2-FR-H.1, step 2 for the operator's use.

Performance Checklist

Directions to the Operator.

- Unit 1 is at 100% power with all systems in AUTO. Unit 2 is currently experiencing a loss of all feedwater. They are in FR-H.1 at step 2d RNO and need Aux Feed flow from both motor-driven AFW pumps.
- Here's a copy of 2-FR-H.1, step 2. You are to cross-connect Aux Feedwater from Unit 1 to Unit 2 starting at step 2 RNO d.3).
- When you finish the actions necessary to accomplish this, please inform me.

Notes to the Evaluator.

- Operator is provided with a copy of 2-FR-H.1, step 2 during directions.
- Task critical elements are denoted by an asterisk (*).
- Critical step sequencing requirements: None.
- **START TIME:**

-
- * 1. CLOSE THE UNIT 1 AFW MOVs.

Standards

Closes and verifies closed indication (green light on - red light off) received for:

- *(a) 1-FW-MOV-151A,
- *(b) 1-FW-MOV-151B,
- *(c) 1-FW-MOV-151C,
- *(d) 1-FW-MOV-151D,
- *(e) 1-FW-MOV-151E and
- *(f) 1-FW-MOV-151F.

Evaluator's Comments

-
- * 2. OPEN THE AFW CROSS-CONNECT VALVES TO SUPPLY UNIT 2.

Standards

- *(a) Places control switch for 2-FW-MOV-260A to the OPEN position.
- *(b) Places control switch for 2-FW-MOV-260B to the OPEN position.
- (c) Checks 2-MOV-FW-260A open indication received (red on & green off).
- (d) Checks 2-MOV-FW-260B open indication received (red on & green off).
- (e) Acknowledges annunciator D-D-4, AFW X-TIE MOVs NOT FULLY CLOSED.

Evaluator's Comments

Performance Checklist
(continued)

- * 3. START THE UNIT 1 MOTOR DRIVEN AFW PUMPS.

Standards

- (a) Announces AFW pump start over Gai-tronics system.
- * (b) Starts 1-FW-P-3A by placing control switch to START.
- (c) Verifies start indications (red light on & amps indicated),
- * (d) Starts 1-FW-P-3B by placing control switch to START.
- (e) Verifies start indications (red light on & amps indicated),
- (f) Checks no Unit 1 AFW flow indicated on 1-FW-FI-100A, B & C.

CUES

- **If asked:** (Following proper performance,) ~700 gpm AFW flow indicated on Unit 2 AFW flow transmitters.

Evaluator's Comments

4. REPORT TO SHIFT SUPERVISOR (EVALUATOR).

Standards

Verbal status report made that AFW x-tied.

Evaluator's Comments

STOP TIME:

Licensed Operator Programs
Operator Directions Handout

Conditions

- Task is to be PERFORMED in the simulator.
- Unit 1 is at 100% power with all systems normal & in AUTO.
- Unit 2 is simulated to be experiencing a loss of all FW

Initiating Cues

- 2-FR-H.1, Loss of Secondary Heat Sink, step 2d RNO.
- Shift Supervisor direction.

Directions

- Unit 1 is at 100% power with all systems in AUTO. Unit 2 is currently experiencing a loss of all feedwater. They are in FR-H.1 at step 2d RNO and need Aux Feed flow from both motor-driven AFW pumps.
- Here's a copy of 2-FR-H.1, step 2. You are to cross-connect Aux Feedwater from Unit 1 to Unit 2 starting at step 2 RNO d.3).
- When you finish the actions necessary to accomplish this, please inform me.

U.S. Nuclear Regulatory Commission
Surry Power Station

SR06301
Simulator Job Performance Measure 010A2.02

Applicant _____

Start Time _____

Examiner _____

Date _____

Stop Time _____

Title

RESPOND TO STUCK OPEN PRZR SPRAY VALVE

K/A: 010A2.02 Ability to (a) predict the impacts of the following malfunctions or operations on the PZR PCS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Spray valve failures (3.9/3.9)

Applicability

Estimated Time

Actual Time

RO / SRO(I) / SRO(U)

10 Minutes

Conditions

- Task is to be PERFORMED in the simulator.
- PRZR pressure decreases due to 1-RC-PCV-1455B stuck throttled open.

Standards

- Applicant manually trips Unit 1 per 1-AP-31.00, Step 12.a), before automatic reactor trip (1875 psig).
- Applicant stops 1C RCP (terminates pressure decrease) per 1-AP-31.00, Step 12.b)

Initiating Cues

- Lowering PRZR pressure.
- 1C-B8, PRZR LO PRESS (2210 psig).

Terminating Cues

- 1-AP-31.00, Increasing or Decreasing RCS Pressure completed.

Procedures

- 1C-B8, PRZR LO PRESS.
- 1-AP-31.00, Increasing or Decreasing RCS Pressure.

Tools and Equipment

- None

Safety Considerations

- None

Simulator Setup

- Call up (NOP/NOT) IC and initialize.
- On pre-arranged cue from examiner, insert 1-RC-PCV-1455B failure.

- Intent is for failure to produce a slow, steady PRZR pressure decrease (with all PRZR heaters ON), but not so fast that a reactor trip is imminent or that an OT delta T runback occurs within the first few minutes. Consider choice of power level to prevent/delay OT delta T runback/trip.

Initiating Cues

- Respond to plant conditions.

Directions to the Applicant

- You are the Unit 1 Reactor Operator.
- Unit 1 is at 100% power.

- Respond to plant conditions.

Notes

PERFORMANCE CHECKLIST

Start Time:

1. RECOGNIZE PRZR PRESSURE DECREASE.

- Identifies PRZR pressure decrease.
 - Decreasing trend on PRZR PRESS recorder, 1-RC-PR-1444 Pos 1
 - 1C-B8, PRZR Lo Press

Note: Applicant may attempt to diagnose reason for pressure decrease.

S U

2. IMPLEMENT 1-AP-31.00, INCREASING OR DECREASING RCS PRESSURE.

Note: Applicant may first refer to 1C-B8, PRZR Lo Press.

Caution before 1C-B8 step 1 directs entering LCO 3.12.F.2 if PRZR pressure is less than 2205 psig.

Cue (Examiner): If informed, acknowledge Tech Spec entry.

1C-B8 Step 2 directs Operator to verify alarm due to increased RCS leakage (1-AP-16.00). **RNO directs entry into 1-AP-31.00.**

- Checks turbine load STABLE (Step 1).

S U

- Checks RCS pressure – DECREASING (Step 2).

S U

- Stop Pressure Decrease (Step 3)
 - Acknowledges Caution (regarding OT delta T setpoint) and Note (regarding PRZR PORV inoperable).
 - Places 1-RC-PC-1444J, PRZR Press Master Cntrl, in MANUAL
 - Depresses manual pushbutton.

S U

- DECREASES demand on PRZR Press Master Cntrl to raise RCS pressure
 - Depresses lower pushbutton.

S U

- Observes demand indicator at zero.

Note: If applicant recognizes spray valve failure, the applicant may take manual control of PRZR spray valve(s) and attempt to close them (Step 10).

- Determines RCS pressure still decreasing (Step 4)

S U

- Verifies no pressure loss through PRZR PORVs (Step 5)

- Verifies closed BOTH PORVs (RED lights NOT LIT).

Note: applicant may also check PORV tailpipe temp, 1-RC-TI-1463, normal (alarms at 227 °F).

S U

- Turns ON ALL PRZR heaters (Step 6)

Note: All pressurizer heaters are normally ON.

- Observes ALL heater indicating lights RED

S U

- Verifies 1-CH-HCV-1311, Aux Spray Isolation, CLOSED (Step 7).

- Observes green light lit.

S U

- Checks Aux Spray Line – Leakage Suspected (Step 8)

- Goes to Step10 (per RNO).

S U

- Place Spray Valve Controllers in Manual and Adjust Demand to Zero (Step 10).

- Depresses manual pushbutton on BOTH controllers
- Observes 1-RC-PCV-1455A manual light is lit.
- Observes 1-RC-PCV-1455B manual light is NOT lit.

S U

- May attempt to depresses lower pushbutton on BOTH controllers

S U

- Observes "A" demand at zero, "B" stuck in AUTO at 40%

S U

- Determines spray valve 1-RC-PCV-1455B will not close (Step 11).

S U

- Perform the Following to Compensate for Leaking Spray Valve(s) (Step 12).

- Acknowledges Caution regarding manual control of steam dumps and throttling of AFW.

Cue (Examiner): "Another crew member is available to monitor steam dumps and AFW flow if necessary."

S U

- Acknowledges NOTE regarding allowing RCS temperature to stabilize before securing RCP(s)

S U

- **Manually trip the reactor and initiate 1-E-0 (Step 12.a)**

Note: A Safety Injection may or may not occur.

Cue (Examiner): "The SRO acknowledges that you intend to trip Unit 1."

Examiner: acknowledge applicant's report as he/she completes immediate actions.

S U

Cue (Examiner): "The extra operator will perform 1-E-0 actions. Continue with 1-AP-31.00."

- Stop Affected RCP(s) (Step 12.b).
 - Determines RCS temperature has stabilized by observing _____
S U
 - **Places control switch for 1C RCP to stop.**

Note: If applicant trips the "A" RCP and not the "C" RCP, RCS pressure will continue to decrease (until the "C" RCP is tripped).

If the applicant ONLY trips the "A" RCP, the surrogate should throttle AFW flow to the A SG to ___ gpm and report this to the Examiner. **The Examiner** should acknowledge the report and continue evaluating until the applicant trips the "C" RCP, initiates a manual SI (failure), or the plant auto-SIs (failure).

S U

Cue (Examiner): This completes the JPM.

STOP TIME:

Collect Applicant examination material

Pass Fail

If applicant fails, provide brief reason:

INSTRUCTIONS TO APPLICANT

Conditions

- You are the Unit 1 Reactor Operator.
- Unit 1 is at 100% power.

Initiating Cues

- Respond to plant conditions.

U.S. Nuclear Regulatory Commission
Surry Power Station

SR06301
Simulator Job Performance Measure 026A4.01
Alternate Path

Applicant _____

Start Time _____

Examiner _____

Date _____

Stop Time _____

Title

RESPOND TO SPURIOUS HI HI CLS SIGNAL / CS ACTUATION – B TRAIN HI HI CLS WILL NOT RESET

K/A: 026A4.01 Ability to manually operate and/or monitor in the control room: CSS controls (4.5/4.3)

Applicability

Estimated Time

Actual Time

RO / SRO(I) / SRO(U)

15 Minutes

Conditions

- Task is to be PERFORMED in the simulator.
- Respond to spurious Hi Hi CLS signal with CS actuation.

Standards

- Applicant recognizes spurious Hi Hi CLS signal.
- Applicant secures 1-CS-P-1B, closes discharge MOVs 1-CS-MOV-101C, D from MCR.
- Applicant directs actions to secure 1-CS-P-1A, close discharge MOVs 1-CS-MOV-101A, B from field / MCR.

Initiating Cues

- Various MCR alarms. 1B-A6/B6, CTMT PART PRESS -0.1 PSI CH 1 / 2 remain locked in.

Terminating Cues

- 1B-A6 (or 1B-B6) Attachment 1 actions complete.

Procedures

- 1B-A6, CTMT PART PRESS -0.1 PSI CH 1.
- 1B-B6, CTMT PART PRESS -0.1 PSI CH 2.

Tools and Equipment

- Radio

Safety Considerations

- Electrical safety

Simulator Setup

- Call up (shutdown) IC and initialize.
- Spurious Hi Hi CLS, Train B cannot be reset from MCR.
- Containment partial pressure deviation of more than -0.1 psi due to CS actuation.
- D-H-8, Prot Rack Door Open Tr B, Lit
- Time compression will be used for events that occur in the field.

Initiating Cues

- Perform annunciator response B-A-6 to realign the CS system
- Time compression will be used for events that occur in the field.

Directions to the Applicant

- You are the Reactor Operator.
- Unit 1 is at Hot Shutdown
- There are NO personnel in Unit 1 containment.
- An inadvertent CS actuation occurred.

- Perform annunciator response B-A-6 to realign the CS system.

Notes

PERFORMANCE CHECKLIST

Time Start:

1. ACKNOWLEDGE ALARMS / RECOGNIZES HI HI CLS ACTUATION

- Acknowledges alarms.
 - 1B-A3, CTMT SUMP HI LVL
 - 1B-A6 CTMT PART PRESS -0.1 PSI CH 1
 - 1B-B6 CTMT PART PRESS -0.1 PSI CH 2

S U

Cue (Examiner): The surrogate operator will respond to containment sump high level. Respond to all other alarms.

Note: The following alarms remain locked in when acknowledged.

1B-A6 CTMT PART PRESS -0.1 PSI CH 1
1B-B6 CTMT PART PRESS -0.1 PSI CH 2
1B-A3, CTMT SUMP HI LVL

2. IMPLEMENTS 1B-A6 (OR 1B-B6).

- Verify Alarm (Step 1).
 - Compare setpoint on PI-CV-101 (A) 3 to CTMT PARTL PRESS CH 1 on PI-CV-101 (A) 2
 - Recognizes that deviation exceeds -0.1 psi

S U

- Checks CTMT Vacuum Pump – Stopped (Step 2).
 - Checks 1-CV-P-1A green light lit.

S U

 - Checks 1-CV-P-1B green light lit.

S U

- Check CS Pumps – Spurious Actuation Has Occurred (Step 3).
 - Recognizes that both CS pumps (1-CS-P-1A and 1-CS-P-1B) are running.
 - Red run lights lit.
 - Amps indicated
 - Discharge pressure indicated

S U

- Goes to Attachment 1 (Step 4).

S U

- Verify reset or reset Hi Hi CLS signal (Attachment 1 Step 1)

Note: 1B-C4, CLS HI HI TR A, and 1B-C5, CLS HI HI TR B, are NOT lit.

 - May attempt to reset Hi Hi CLS by pushing CLS Reset Train A and CLS Reset Train B.

S U

- Places control switches for running CS pumps in PTL (Att. 1 Step 2)
 - Note: 1B-B1, CS PP 1A LOCKOUT OR OL TRIP will alarm when control switch for 1-CS-P-1A is placed in PTL.
 - **■ 1-CS-P-1A** (stops as indicated by green light on)
 - 1-CS-P-1B (remains running as indicated by red light on)
 - S U
- Recognizes 1-CS-P-1B did NOT stop.
 - S U
- **■ Directs Operator to locally open supply breaker 1-CS-P-1B supply breaker 14J-5** (Att. 1 Step 3).
 - S U
- When local operator reports 14J-5 is open, recognizes breaker for 1-CS-P-1B is open (red light off)
- Acknowledges Note before step 4 stating CS pump discharge MOVs will not close if Hi Hi CLS signal is present.
- Places control switches for the following MOVs to closed (Att. 1 Step 4).
 - 1-CS-MOV-101A (closes: green light LIT, red light NOT lit)
 - S U
 - 1-CS-MOV-101B (closes: green light LIT, red light NOT lit)
 - S U
 - 1-CS-MOV-101C (closes then reopens: red light LIT, green light NOT lit)
 - S U
 - 1-CS-MOV-101D (closes then reopens: red light LIT, green light NOT lit)
 - S U
- Recognizes 1-CS-MOV-101C and D did not close
 - S U

- Sends Operator to Unit 1 Cable Vault (Att. 1 Step 5.a).

S U

- Holds control switch for 1-CS-MOV-101C (D) in CLOSE (Att. 1 Step 5.b).

S U

- When 1-CS-MOV-101C (D) indicates closed (green light LIT, red light NOT lit), directs field Operator to OPEN 1H1-2S-2B (1J1-2W-4A) (Att. 1 Step 5.c)

S U

- Closes 1-CS-MOV-102A (B) by placing control switch to CLOSE (Att. 1 Step 6).

S U

- Consult with Station Management on desired course of action (Att. 1 Step 7.)

S U

Cue: The JPM is complete.

STOP TIME:

Collect Applicant examination material

Pass

Fail

If applicant fails, provide brief reason:

INSTRUCTIONS TO APPLICANT

Conditions

- You are the Reactor Operator.
- Unit 1 is at Hot Shutdown
- There are NO personnel in Unit 1 containment.
- An inadvertent CS actuation occurred.

Initiating Cues

- Perform annunciator response B-A-6 to realign the CS system.

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Surry Power Station

SR06301
Simulator Job Performance Measure 001A4.03

Applicant _____

Start Time _____

Examiner _____

Date _____

Stop Time _____

Title

PERFORM CONTROL ROD ASSEMBLY PARTIAL MOVEMENT FOR CBC

K/A: 001A4.03 Ability to manually operate and/or monitor in the control room: CRDS mode control (4.0/3.7)

Applicability

Estimated Time

Actual Time

RO / SRO(I)

25 Minutes

Conditions

- Task is to be PERFORMED in the simulator.
- With Unit 1 at 100% power, applicant performs Control Rod Assembly Partial Movement test for Control Bank C.

Standards

- Applicant operates correct bank of control rods.
- Applicant correctly records baseline and inserted rod positions.
- Applicant does not generate a Rod Group Sequence Error.
- Applicant correctly calculates Control Bank C Insertion.

Initiating Cues

- Nuclear Shift Manager direction

Terminating Cues

- Applicant completes 1-OPT-RX-005 partial procedure.

Procedures

- 1-OPT-RX-005, Control Rod Assembly Partial Movement.

Tools and Equipment

Safety Considerations

- Calculator

- None

Simulator Setup

- Call up (100% power) IC and initialize.
- Ensure unit power is stable.

Initiating Cues

- The Shift Manager has directed you to perform the post maintenance test starting at Step 6.4 (an offgoing Operator completed Steps 6.1 and 6.2).
- You are ONLY responsible for performing the post maintenance test. The Unit 1 Reactor Operator has been briefed on the test and will monitor primary plant parameters. Another Operator is available, via telephone, at the Rod Control Logic Cabinet, to report any information needed from outside the control room.

Directions to the Applicant

- You are an extra Reactor Operator.
- Unit 1 is at 100% power and stable.
- Electrical Maintenance and System Engineering just completed maintenance on the Rod Control Logic Cabinet (work order # 123456).
- The maintenance consisted of re-landing a lead that was found to be loose during a visual inspection by the System Engineer.
- The approved post maintenance test for this maintenance activity is partial performance, for Control Bank C only, of 1-OPT-RX-005, Control Rod Assembly Partial Movement.
- The Shift Manager has directed you to perform the post maintenance test starting at Step 6.4 (an offgoing Operator completed Steps 6.1 and 6.2).
- You are ONLY responsible for performing the post maintenance test. The Unit 1 Reactor Operator has been briefed on the test and will monitor primary plant parameters. Another Operator is available, via Gaitronics, at the Rod Control Logic Cabinet, to report any information needed from outside the control room and has been briefed.

Notes

PERFORMANCE CHECKLIST

1. WORK PREPARATION

- Reviews Initial Conditions, Precautions and Limitations, and Special Tools and Equipment.
- Reviews steps 6.1 and 6.2.

S U

2. BANK OVERLAP VERIFICATION AND DOCUMENTATION (Step 6.4)

- Acknowledges Note before Step 6.4.1.
- **■ Turns ROD CONT MODE SEL switch to CBC (Step 6.4.1).**

S U

- Records baseline rod positions on the Withdrawn line of Attachment 1, Table 2, Control Bank C.

S U

- **■ Inserts CBC 12 steps (Step 6.4.3) to (227-12 = 215 steps on group demand counters).**

Task standard: applicant inserts CBC to 215 steps without inserting below 211 steps (1 step below G-H-7).

Note: Applicant should verify the following:

- The ROD DIRECTION IN light is LIT.
- ROD SPEED SI-1-408 indicates 48 SPM.
- GP 1 AND GP 2 DEMAND POSTN counters alternately step.

S U

- Completes Inserted line of Attachment 1, Table 2 (Step 6.4.4).

S U

- Verifies 1G-B5 is LIT (Step 6.4.5).

S U

- Verifies 1G-G7 is LIT (Step 6.4.6).

S U

- Acknowledges Note before Step 6.4.7.

- Withdraws CBC to 235 steps as indicated by Group Step Demand Counters (the control rods will physically stop stepping out at 230 steps. The Group Demand counters will continue to step past 230 steps) (Step 6.4.7).

Note: Applicant should verify the following:

- The ROD DIRECTION OUT light is LIT.
- ROD SPEED SI-1-408 indicates 48 SPM.
- GP 1 AND GP 2 DEMAND POSTN counters alternately step.

Note: **IF Group 1 and Group 2 Step Counters are not the same** after the applicant has withdrawn CBC to 235, they must be made the same **only by stepping OUT** in order to ensure rods are at 230 steps and to prevent a Rod Group Sequence Error (see note before 6.4.7).

S U

- Pulse CBC Group Step Demand Counters DOWN to 230 steps using the small pushbutton on the counters (Attachment 2, right side, middle button) (Step 6.4.8).

S U

- **Insert CBC to 227 steps** (Step 6.4.9).

Task standard: applicant inserts CBC to 227 steps without inserting below 211 steps (1 step below G-H-7).

Note: Applicant should verify the following:

- The ROD DIRECTION IN light is LIT.
- ROD SPEED SI-1-408 indicates 48 SPM.
- GP 1 AND GP 2 DEMAND POSTN counters alternately step.

S U

- **Calculates Control Bank C Insertion** (Withdrawn – Inserted) for each CBC rod and records in Attachment 1, Table 2 (Step 6.4.10).

S U

- Verifies 1G-B5 and 1G-G7 are NOT LIT (Step 6.4.11).

S U

Cue (Examiner): If asked, complete the surveillance.

3. RODS IN AUTOMATIC, BANK OVERLAP VERIFICATION AND DOCUMENTATION (Step 6.9)

- Verifies T AVG is within +/- 1 oF of T REF (Step 6.9.1).

S U

- Places ROD CONT MODE SEL switch in AUTO (Step 6.9.1).

Cue: If asked, the Shift Manager wants the control rods in AUTO if the results of the testing have been successful so far.

S U

- Records step counter DEMAND POSTN for CONT BANKs A, B, C (Step 6.9.2).

S U

- Contacts extra Operator and records bank overlap thumbwheel settings S1, S2, S3, S4, S5, S6 (Step 6.9.3).

S1: 128; S2: 227; S3: 256; S4: 355; S5: 384; S6: 483

S U

- Contacts extra Operator and records step counter DEMAND POSTN for CONT BANK D (Step 6.9.4).

Demand position: 610

S U

- Records CONT BANK D step counter DEMAND POSTN (Step 6.9.4).

S U

- Calculates the difference between CBD demand position and step counter.

S U

- Determines difference is 384 and equal to required difference.

S U

- Writes "N/A" in step 6.9.5.

S U

4. FOLLOW-ON (Step 7.0).

- Reviews acceptance criteria of Step 7.1.1 and initials substeps.

S U

- Checks the "Satisfactory" line and initials Step 7.1.2.

S U

- Writes "N/A" for all substeps of Step 7.2.1

S U

- Documents reason for partial test in Operator Comments (Step 7.2.2).

S U

- Notifies Chemistry to obtain a sample of the RCS (Step 7.2.3).

S U

- Notifies Shift Manger (Examiner) that the test is complete (JPM complete).

S U

STOP TIME:

Collect Applicant examination material

Pass

Fail

If applicant fails, provide brief reason:

INSTRUCTIONS TO APPLICANT

Conditions

- You are an extra Reactor Operator.
- Unit 1 is at 100% power and stable.
- Electrical Maintenance and System Engineering just completed maintenance on the Rod Control Logic Cabinet (work order # 123456).
- The maintenance consisted of re-landing a lead that was found to be loose during a visual inspection by the System Engineer.
- The approved post maintenance test for this maintenance activity is partial performance, for Control Bank C only, of 1-OPT-RX-005, Control Rod Assembly Partial Movement.

Initiating Cues

- The Shift Manager has directed you to perform the post maintenance test starting at Step 6.4 (an offgoing Operator completed Steps 6.1 and 6.2).
- You are ONLY responsible for performing the post maintenance test. The Unit 1 Reactor Operator has been briefed on the test and will monitor primary plant parameters. Another Operator is available, via Gaitronics, at the Rod Control Logic Cabinet, to report any information needed from outside the control room and has been briefed.

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Surry Power Station

SR06301
Simulator Job Performance Measure 003A1.03

Applicant _____

Start Time _____

Examiner _____

Date _____

Stop Time _____

Title

RESPOND TO RCP 1A CC RETURN LO FLOW ALARM

K/A: 003A1.03 Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the RCPS controls including: RCP motor stator winding temperatures (2.6/2.6)

Applicability

Estimated Time

Actual Time

RO / SRO(I)

10 Minutes

Conditions

- Task is to be PERFORMED in the simulator.
- With Unit 1 Off Line, annunciator 1C-A1, RCP 1A RETURN LO FLOW, alarms due to less than 200 gpm flow from stator air cooler.

Standards

- Applicant identifies RCP 1A stator winding temperature trending to Action Level limit.
- Applicant trips RCP 1A.

Initiating Cues

- 1C-A1, RCP 1A RETURN LO FLOW alarm.

Terminating Cues

- Applicant completes 1C-A1 procedure.

Procedures

- 1C-A1, RCP 1A RETURN LO FLOW.

Tools and Equipment

- None

Safety Considerations

- None

Simulator Setup

- Call up (Intermediate or Cold Shutdown, 1C RCP secured) IC and initialize. Ensure IC / equipment lineup will not result in Tech Spec violation when 1A RCP is tripped.
- 1C RCP tagged out.
- Inserted malfunction should result in a noticeable 1A RCP stator temperature increase (i.e. throttle 1-CC-12 to 0 gpm as read on FI-CC-105A, see 11448-FM-072A, Sheet 2 of 7).
- On pre-arranged cue from examiner, place the simulator in run.

Initiating Cues

- Respond to plant conditions.

Directions to the Applicant

- You are the Unit 1 Reactor Operator.
 - Unit 1 is in Cold Shutdown.
 - Unit 1 is in day 15 of a refueling outage.
 - Major activities scheduled or in progress include work on 1C RCP support systems.
-
- Respond to plant conditions.

Notes

PERFORMANCE CHECKLIST

1. VERIFY ALARM C-A-1, RCP 1A CC RETURN LO FLOW (Step 1).

- Silences alarm.

S U

- Locates 1C-A1 procedure.

S U

- Determines FI-CC-104A NOT less than 140 gpm.

S U

- Determines FI-CC-105A less than 200 gpm.

S U

- Determines FI-CC-106A NOT less than 5 gpm.

S U

- Determines alarm due to low CC flow from stator air cooler.

S U

2. INCREASE SURVEILLANCE OF RCP PARAMETERS

Note: Applicant may refer to 1C-A1, Attachment 1, RCP Parameters.

- Checks 1A RCP frame vibration (annunciator 1C-H4).

S U

- Checks 1A RCP shaft vibration (annunciator 1C-H5).

S U

- Checks 1A RCP pump amps.

S U

3. VERIFY RCP A CC FLOW 0 GPM (Step 3).

- Determines A RCP CC flow is 0.

S U

4. VERIFY CC ISOLATION VALVE OPEN (Step 4).

- Determines TV-CC-105A, RCP A CLR CC OUTLT FLOW OTSD TRIP VV is OPEN.

S U

5. MONITOR RCP PARAMETERS IAW ATTACHMENT 1 – NORMAL (Step 5).

- Refers to Attachment 1 (if not done earlier).

S U

- Checks 1A RCP temperatures:

<u>Temperature</u>	<u>P-250 Point / Action Level limit</u>
• Stator winding	T4014A / 300 °F
• Motor upper thrust bearing	T0414A / 195 °F
• Motor upper radial bearing	T0413A / 195 °F
• Motor lower radial bearing	T0415A / 195 °F
• Motor lower thrust bearing	T0416A / 195 °F
• Lower bearing seal water	T0417A / 225 °F

S U

- Determines 1A RCP stator winding temperature is going UP.

S U

- Determines 1A RCP stator winding temperature is going UP.

S U

- Determines 1A RCP stator winding temperature is NOT normal.

S U

- Refers to Step 5 RNO.

S U

- Goes to Step 7.

S U

6. CHECK REACTOR POWER -- LESS THAN 35% (Step 7).

- Determines reactor power is less than 35%.

S U

- Goes to Step 8.

S U

7. CHECK UNIT -- ON LINE (Step 8).

- Determines Unit 1 is NOT on line.

S U

- Goes to Step 10.

S U

8. TRIP RCP A (Step 10).

- Places control switch for RCP 1A in Pull To Lock (or Normal After Trip).

S U

- Goes to Step 11.

S U

9. PROVIDE NOTIFICATIONS AS NECESSARY (Step 11).

Cue: The SRO will provide all notifications. This completes the JPM.

STOP TIME:

Collect Applicant examination material

Pass

Fail

If applicant fails, provide brief reason:

INSTRUCTIONS TO APPLICANT

Conditions

- You are the Unit 1 Reactor Operator.
- Unit 1 is in Cold Shutdown
- Unit 1 is in day 15 of a refueling outage.
- Major activities scheduled or in progress include work on 1C RCP support systems.

Initiating Cues

- Respond to plant conditions.

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Surry Power Station

SR06301
Simulator Job Performance Measure 055EA2.03
Alternate path

Applicant _____

Start Time _____

Examiner _____

Date _____

Stop Time _____

Title

RESTORE POWER TO AN AC EMERGENCY BUS FOLLOWING LOSS OF ALL AC

Applicability

Estimated Time

Actual Time

RO / SRO(I)

10 Minutes

Conditions

- Task is to be PERFORMED in the simulator.
- Following a loss of all AC power, the #1 EDG was previously tagout and the #3 EDG failed to start. Alternate path steps within 1-ECA-0.0 and 0-AP-17.06 must be performed in order to restore power to an AC Emergency Bus by loading AAC Diesel Generator.

Standards

- Applicant starts #3 EDG.
- Applicant energizes bus 1J within 10 minutes following transition to 0-AP-17.06 using the AAC Diesel Generator.

Initiating Cues

- Nuclear Shift Manager direction.

Terminating Cues

- Applicant energizes 1J bus.

Procedures

- 1-ECA-0.0, Loss of All AC Power
- 0-AP-17.06, AAC Diesel Generator-Emergency Operations

Tools and Equipment

- None

Safety Considerations

- None

Simulator Setup

- Call up IC # and initialize.
- Ensure #1 EDG is tagout out of service.
- Ensure breaker 15-H3 will NOT close.
- Ensure #3 EDG fails to start but CAN be started (and can NOT be loaded).

Initiating Cues

- The Nuclear Shift Manager has directed you to restore power to a Unit 1 AC Emergency Bus per 1-ECA-0.0, Step 5.

Directions to the Applicant

- A PORTION OF THIS JPM IS TIME CRITICAL
 - You are the Unit 1 Admin Operator.
 - A Loss of All AC Power occurred on Units 1 and 2 less than one minute ago.
 - Both units entered ECA-0.0.
 - Bus 2H is energized by the #2 EDG.
-
- The Nuclear Shift Manager has directed you to restore power to a Unit 1 AC Emergency Bus per 1-ECA-0.0, Step 5.

Notes

Time Critical JPM

PERFORMANCE CHECKLIST

Examiner: Record time: ____:____:____

1. TRY TO RESTORE POWER TO ANY EMERGENCY BUS (Step 5).

- Acknowledge Cautions before step 5.
- Determines # 3 EDG is NOT running.

S U

2. START #3 EDG (Step 5.a RNO and b).

- Places Auto Exercise Emerg Gen 3 selector switch in Exercise.

S U

- Starts #3 EDG by pushing Emerg Gen No. 3 Engine Start pushbutton.

S U

- Determines NO #3 EDG generator voltage.

S U

- Pushes Emerg Gen No. 3 Field Flash pushbutton.

S U

- Determines #3 EDG generator voltage established.

S U

- Places Auto Exercise Emerg Gen 3 selector switch in AUTO.

S U

- Goes to Step 5c.

S U

2. ATTEMPT TO LOAD #3 EDG (Step 5.c)

- Determines NO Emergency Buses energized. (goes to RNO portion of 5.c)

S U

- Determines #3 EDG is running.

S U

3. ATTEMPT TO LOAD #3 EDG (Step 5.c RNO)

- Verifies #3 EDG in Exercise.

S U

- Turn Sync key switch to ON for affected breaker 15J3.

S U

- Determines #3 EDG generator voltage established at earlier step.

S U

- Attempts to close #3 EDG Output breaker 15J3.

S U

- Determines #3 EDG Output breaker 15J3 failed to close.

S U

- Turn Sync key switch to OFF for affected breaker 15J3.

S U

- Determines NO emergency buses energized

S U

4. SHUTDOWN UNLOADED #3 EDG (Step 5.c RNO 3)

- Determines both Emergency Buses NOT energized.

S U

- Determines #3 EDG is running unloaded and NOT available for Unit 2.

S U

- Stop #3 EDG in Exercise by pushing the stop pushbuttons.

S U

- Determines both Unit 1 Emergency Buses still de-energized then INITIATE 0-AP-17.06, AAC Diesel Generator – Emergency Operations.

S U

5. Load AAC Diesel Generator on to 1J Emergency Bus (0-AP-17.06)

CUE: THIS PORTION OF THE JPM IS TIME CRITICAL

This JPM is TIME CRITICAL in that the emergency bus must be re-energized within 10 minutes. (Failure to reenergize "J" bus within 10 minutes is deemed UNSAT).

- START TIME:

6. READS NOTES PRIOR TO STEP 1.

Standards

- (a) Acknowledges a one-line diagram exists in Attachment 1.
- (b) References Attachment 1 as desired.
- (c) Acknowledges AAC diesel auto starts on loss of associated units transfer buses.
- (d) Identifies all three transfer buses are de-energized.

CUES

- If asked: Unit 2 transfer buses are de-energized, "2H" Bus is energized by #2 EDG.

Evaluator's Comments

7. CHECKS EMERGENCY BUSES 1J and 2H - EITHER OR BOTH DEENERGIZED.

Standards

- (a) Identifies 1J Bus is de-energized.
- (b) Identifies from instructions or Unit 2 inquiry that 2H energized.

CUES

- If asked: "2H" Bus is energized from the #2 EDG.

Evaluator's Comments

8. GOES TO APPROPRIATE STEP BASED ON DESIRED USE OF THE AAC DIESEL GENERATOR.

Standards

- (a) Acknowledges CAUTION regarding availability of I.A.
- (b) Recognizes only 1J Bus will be energized and proceeds to Step 3.

CUES

- If asked: "1J" Bus is to be energize from the AAC DG.

Evaluator's Comments

9. CHECKS AAC DIESEL GENERATOR - AVAILABLE AND RUNNING.

Standards

- (a) Identifies 0-WD-C2, AAC SYSTEM AVAILABLE BUS 1D, is lit.
- (b) Identifies 0-WD-D1, AAC GENERATOR TRIP, is not lit.

Evaluator's Comments

10. READS CAUTION AND NOTE PRIOR TO STEP 4.

Standards

- (a) Acknowledges an overcurrent fault on 15D1 will prevent 0-AAC-BKR-05L3 from closing.
- (b) Acknowledges 0-WD-C2, AAC SYSTEM AVAILABLE BUS 1D should go out when 0-AAC-BKR-05L3 closes.

Evaluator's Note

- If asked: 15D1 has no drops.

Evaluator's Comments

* 11. ENERGIZES TRANSFER BUS D BY CLOSING 0-AAC-BKR-05L3

Standards

- (a) Places the "TRANSFER SWITCH NORMAL/AAC" switch (0-AAC-43-15J8) on the #3 EDG Control Panel to the "AAC" Position.
- (b) Verifies annunciator 1K-D3, BUS 1D UNDERVOLT not lit.
- (c) Verifies annunciator 0-WD-C2, AAC SYSTEM AVAILABLE BUS 1D extinguished (from NOTE prior to step)

Evaluator's Comments

12. VERIFIES OR PLACE THE FOLLOWING LOADS IN PTL.

Standards

- (a) Places 1-VS-F-1B in PTL
- (b) Places 1-SI-P-1B in PTL
- (c) Acknowledges annunciator 1A-H4
- (d) Places 1-RS-P-2B in PTL
- (e) Acknowledges annunciator 1A-H8
- (f) Places 1-RS-P-1B in PTL
- (g) Acknowledges annunciator 1A-D8
- (h) Places 1-CS-P-1B in PTL
- (i) Acknowledges annunciator 1B-B2
- (j) Places "A" PZR heater group in LOCKOUT
- *(k) Places 1-CH-P-1B in PTL**
- (l) Identifies 1-CH-P-1C ALT in PTL.
- (m) Places 1-FW-P-3B in PTL
- (n) Acknowledges annunciator 1H-C8
- (o) Places 1-CC-P-1B in PTL
- (p) Identifies 1-VS-F-58B is powered from its normal source and not required to be manipulated.
- (q) Identifies 1-CS-P-1B breaker open (Red light off, green light off).
- (r) Identifies 1-RS-P-1B breaker open (Red light off, green light off).
- (s) Identifies 1-FW-P-3B breaker closed (Red light on, green light off).
- (t) Opens 1-FW-P-3B breaker by resetting AMSAC or dispatching an operator to locally open breaker 15J4.
- (u) If AMSAC reset, verifies annunciator 1H-D1 clears.
- (v) Identifies 1-FW-P-3B breaker opened (Red light off, green light off).

CUES

- **If asked to locally open breaker 15J4:** Set FWP3B_RKDIN to "False" to open breaker 15J4 locally.

Evaluator's Comments

* 13. **ENERGIZES EMERGENCY BUS 1J.**

Standards

- (a) Locates the generator synch switch and places it in 15J8.
- (b) Rotates the synch switch for 15J8 in the clockwise direction to the "ON" position
- *(c) Rotates 15J8 breaker control switch in the clockwise direction to the close position, releases switch.**
- (d) Verifies 15J8 breaker closed (Red light on, green light off).
- (e) Verifies 1J Bus energized (frequency at approximately 60 hz and voltage approximately 4200V).
- (f) Rotates the synch switch for 15J8 in the counterclockwise direction to the "OFF" position.

Evaluator's Comments

Time step 13c completed: _____

14. **REPORTS TO NUCLEAR SHIFT MANAGER (EVALUATOR).**

Standards

Verbal status report that 1J Bus is energized and AP-17.06 is completed up to Step 7.

Evaluator's Comments

STOP TIME:

Collect Applicant examination material.

Determine whether time to load AAC was greater than or less than 10 minutes from the initiation of AP-17.06.

Pass

Fail

If applicant fails, provide brief reason:

INSTRUCTIONS TO APPLICANT

Conditions

- A PORTION OF THIS JPM IS TIME CRITICAL
- You are the Unit 1 Admin Operator.
- A Loss of All AC Power occurred on Units 1 and 2 less than one minute ago.
- Both units entered ECA-0.0.
- Bus 2H is energized by the #2 EDG.
- #1 EDG was previously tagout.

Initiating Cues

- The Nuclear Shift Manager has directed you to restore power to a Unit 1 AC Emergency Bus per 1-ECA-0.0, Step 5.

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Surry Power Station

SR06301
Simulator Job Performance Measure 073A4.02

Applicant _____

Start Time _____

Examiner _____

Date _____

Stop Time _____

Title

RESPOND TO EFFLUENT RADIATION MONITOR TROUBLE ALARM

Applicability

Estimated Time

Actual Time

RO / SRO(I)

15 Minutes

Conditions

- Task is to be PERFORMED in the simulator.
- Annunciator 1-RM-Q7, CTMT PARTC ALERT/FAILURE, has alarmed due to a failure.

Standards

Applicant identifies failure.
Applicant verifies automatic functions associated with radiation monitor failure.

Initiating Cues

- Annunciator 1-RM-Q7, CTMT PARTC ALERT/FAILURE, has alarmed.

Terminating Cues

- Applicant completes Annunciator 1-RM-Q7 procedure.

Procedures

- 1-RM-Q7, CTMT PARTC ALERT/FAILURE

Tools and Equipment

Safety Considerations

- None

- None

Simulator Setup

- Call up CSD IC with containment purge in service and initialize.

Initiating Cues

- Respond to Annunciator 1-RM-Q7.

Directions to the Applicant

- You are the Unit 1 Balance of Plant Operator.
- Unit 1 is at CSD with Reactor Vessel level at 17.6 feet
- The Unit 1 Reactor Operator will respond to all unit operations other than the specific task you are assigned.
- 1-RM-Q7, Containment Particular Alert/Failure has just alarmed. I need you to perform ARP 1-RM-Q7.

Notes

PERFORMANCE CHECKLIST

1. READS THE FOLLOWING CAUTIONS AND NOTES:

- An LCO will be entered if the Containment Particulate monitor is failed IAW Tech Spec 3.10.

Cue: The Unit Supervisor will perform the Tech Spec evaluation

- If a monitor fails, the automatic functions associated with that monitor must be verified or performed.
- When HP has surveyed the area and declared radiation levels normal, the components that were realigned due to monitor failure may be returned to normal and activities in the affected area may continue.
- Upon failure of digital ratemeter with all EEEEEEs indicated on display, all automatic actions associated with radiation monitor failure will need to be verified as having occurred, the digital ratemeter reset, and a source check performed IAW 0-OPT-RM-001, Radiation Monitoring Equipment Check.
- If both 1-RM-RI-159 and 160 are inoperable, four hour CTMT atmosphere sampling is required when RCS is greater than 200 °F. This sampling requirement meets the intent of Tech Spec 3.1.C

S U

2. VERIFY ALARM – READING ON MONITOR OR CHART RECORDER GREATER THAN OR EQUAL TO ALERT SETPOINT OR RADIATION LEVEL HAS TRENDED UP.

- Observes 1-RM-RI-159 and 1-RM-RR-100B Pen 3 and identifies that radiation levels are not increasing or greater than setpoint. Goes to Step 1 RNO. Determines that 1-RM-RI-159 has failed and performs the items below:

S U

- Determines that stopping refueling is not required and increases surveillance of monitors 1-RM-RI-160, 162, and 163.

S U

- Determines need to review Tech Spec 3.10 is not necessary.

S U

Cue: If asked, the Unit Supervisor will perform the Tech Spec evaluation

3. EVACUATE CONTAINMENT AS NECESSARY

S U

NOTE – Applicant may evacuate containment as directed by the procedure or may not evacuate containment based on all other containment radiation monitors being operable and showing no increase in containment activity. Either is acceptable.

4. CHECK MANUAL INITIATION OF AUTOMATIC FUNCTIONS – REQUIRED

- Determines that Containment Purge MOVs should be closed and Containment IA Suction valves should be swapped and proceeds to Step 4.

S U

5. MANUALLY ISOLATE CONTAINMENT PURGE SYSTEM

- Close Containment Purge Supply MOVs

▣ 1-VS-MOV-100A Either 100A or 100B must be shut for critical task completion

▣ 1-VS-MOV-100B

▣ 1-VS-MOV-100C Either 100C or 100D must be shut for critical task completion

▣ 1-VS-MOV-100D

S U

- Put Containment Purge Supply Fans in STOP. Identifies fans already OFF.

1-VS-F-4A

1-VS-F-4B

S U

- Close Containment Purge Bypass Valve. Identifies valve is already shut

1-VS-MOV-101

S U

6. CLOSE CONTAINMENT INSTRUMENT AIR COMPRESSOR SUCTION VALVES

▣ 1-IA-TV-101A Either 101A or 101B must be shut for critical task completion

▣ 1-IA-TV-101B

S U

7. CHECK CONTAINMENT INSTRUMENT AIR OUTSIDE SUCTION OPEN

- Checks 1-IA-AOV-103 Open.

S U

8. NOTIFIES HEALTH PHYSICS TO PERFORM THE FOLLOWING;

- Verify area evacuated as necessary.
- Control access as necessary.
- Survey area as necessary.
- Investigate cause.

S U

9. OPERATE VENTILATION EQUIPMENT AS NECESSARY

- Identifies Containment Air Recirc Fans are operating as necessary.
- Notes that Iodine Filtration fans are not running and do not need to be started.

S U

10. CHECK REFUELING IN PROGRESS

- Identifies that refueling is not in progress and goes to RNO column.

S U

Cue: If asked, Refueling is not in progress.

- Identifies that there is no indication of increased RCS leakage and goes to Step 13.

S U

Cue: If asked, Unit 1 Reactor Operator sees no increase in RCS leakage.

11. PROVIDE NOTIFICATIONS AS NECESSARY

- Shift Supervisor
- OMOC
- STA
- Health Physics
- Instrument Department.

S U

Cue: The SRO will initiate the Plant Issue and Work Request and will provide notifications. This completes the JPM.

STOP TIME:

Collect Applicant examination material

Pass

Fail

If applicant fails, provide brief reason:

INSTRUCTIONS TO APPLICANT

Conditions

- You are the Unit 1 Balance of Plant Operator.
- Unit 1 is at CSD with Reactor Vessel level at 17.6 feet
- The Unit 1 Reactor Operator will respond to all unit operations other than the specific task you are assigned.

Initiating Cues

- 1-RM-Q7, Containment Particulate Alert/Failure has just alarmed. I need you to perform ARP 1-RM-Q7.

U.S. Nuclear Regulatory Commission
Surry Power Station

SR06301
Simulator Job Performance Measure 071A4.29
RO ONLY

Applicant _____

Start Time _____

Examiner _____

Date _____

Stop Time _____

Title

RESPOND TO WASTE GAS DECAY TANK HIGH OXYGEN ALARM

K/A: 071A4.29 Ability to manually operate and/or monitor in the control room: Sampling oxygen, hydrogen, and nitrogen concentrations in WDGS decay tank; knowledge of limits (3.0/3.6)

Applicability

Estimated Time

Actual Time

RO

25 Minutes

Conditions

- Task is to be PERFORMED in the simulator.
- Annunciator 0-WD-D9, Waste Gas Decay Tanks HI O₂ has alarmed with an indicated oxygen concentration of 4.2%.

Standards

Applicant closes 1-BR-79 to suspend all additions to 1B WGDT
Applicant recognizes that 1B WGDT must be reduced to less than or equal to 2% per OP-22.2.4.
Applicant correctly calculates 1B WGDT pressure for O₂ dilution, per OP-23.2.4, within +/- 1 psig.

Initiating Cues

- 0-WD-D9, Waste Gas Decay Tank HI O₂.
- Unit Supervisor direction.

Terminating Cues

- Final WGDT pressure after dilution determined using Attachment 3 of OP-23.2.4, Release of Waste Gas Decay Tank 1B.

Procedures

- 0-WD-D9, Waste Gas Decay Tank HI O₂.
- OP-23.2.4, Release of Waste Gas Decay Tank 1B.

Tools and Equipment

- None

Safety Considerations

- None

Simulator Setup

- Call up IC-1 and initialize.
- **On pre-arranged cue from examiner**, meter override 1B Waste Gas Decay Tank pressure to 30 psig, and override GW-AIT-150B, pen # (green) to an indicated concentration of 4.2%.
- Verify in service / isolated tanks swapped ("Isolated" magnet on WGDT "B").

Initiating Cues

- Respond to plant conditions.

Directions to the Applicant

- You are the Unit 1 Admin Operator.
- Unit 1 is at 100% power.
- A 24 hour safety standdown is in progress. There is NO maintenance or testing in progress.
- WGDT "A" is isolated.
- WGDT "B" is in service on the "A" Oxygen analyzer.

- Annunciator WD D-9 has just alarmed.
- Respond to Waste Disposal Panel annunciator D-9.

Notes

PERFORMANCE CHECKLIST

Start Time:

1. CHECK I&C TESTING - IN PROGRESS ON STANDBY ANALYZER (0-WD-D9 Step 1).

- Determines (from Conditions) that NO testing is in progress on 1-GW-AIT-150A.

Cue (from floor or booth): IF ASKED, no testing or maintenance is in progress on 1-GW-AIT-150 A (or B).

S U

- Goes to Step 7 (per RNO).

S U

2. CHECK RECORDER OF IN-SERVICE TANK ANALYZER (1A) – FAILED (0-WD-D9 Step 7).

Note: "B" analyzer (green pen) is out of service.

- Acknowledges NOTE: Recorder Trace spiking is indicative of a clogged or worn sensing device.
- Acknowledges NOTE: Red indicates for Analyzer A, Green indicated for Analyzer B on GW-AR-150A&B.
- Determines that 1A (red) recorder for "B" WGDT is NOT spiking.

Cue: IF ASKED, recorder trace is "as you see it."

S U

- Directs operator (booth) to determine if local power light is lit and local oxygen concentration is indicated.

Cues (provided by booth): Local power light is LIT. Local O2 concentration is approximately 4.2%

S U

- In RNO column, determines oxygen concentration greater than 4%.

S U

- **Direct local operator to close 1-BR-79.**

S U

Cue (booth): Time compression has been used. 1-BR-79 is closed.

- Goes to Step 14.

S U

3. REDUCE OXYGEN TO LESS THAN OR EQUAL TO 2.0% WITHIN 48 HOURS ON OUT-OF-SPEC TANK IAW APPROPRIATE OPERATING PROCEDURE (0-WD-D9 Step 14, OP-23.2.4 Steps 5.1.1-5.1.3).

- Acknowledges NOTE: The maximum pressure allowed in the WGDT is 115 psig.
- Locates OP-23.2.4 (1B WGDT)
- Reads, acknowledges and initials the Initial Conditions and Precautions and Limitations.

Cue (If asked): Continue with the procedure.

Cue: The Operations Computer Calculation Program is NOT available.

S U

- Goes to Section 5.1, Waste Gas Decay Tank 1B Sampling and Dilution.

S U

- Acknowledges that WGDT 1B has been sampled and O2 verified (Step 5.1.1).

Cue (Booth): Time compression has been used. 1B WGDT has been isolated and sampled. 1B WGDT oxygen is 4.2%. A WGDT has been placed in service (booth swap magnets on MCB).

S U

- Determine that FCV-GW-104B will be used (Step 5.1.2).

S U

- Opens 1-GW-755 (Step 5.1.2).

S U

Cue (booth): 1-GW-755 is open. Time compression has been used.

Cue (Examiner): Dilute "B" WGDT to less than 2% Oxygen.

- Using Attachment 3 of OP-23.2.4, determines that final pressure in 1B WGDT is between 83 and 85 psig.

Examiner: Write down value applicant determines for 1B WGDT pressure: _____ psig.

Cue: Another operator will perform the B WGDT release. This completes the JPM.

S U

STOP TIME:

Collect Applicant examination material

Pass Fail

If applicant fails, provide brief reason:

INSTRUCTIONS TO APPLICANT

Conditions

- You are the Unit 1 Admin Operator.
- Unit 1 is at 100% power.
- A 24 hour safety standdown is in progress. There is NO maintenance or testing in progress.
- WGDT "A" is isolated.
- WGDT "B" is in service on the "A" Oxygen analyzer.

Initiating Cues

- Annunciator WD D-9 has just alarmed.
- Respond to Waste Disposal Panel annunciator D-9.

Virginia Power
Surry Power Station

Licensed Operator Programs
In-Plant Job Performance Measure 41.01B (Rev 09)
Alternate Path / Inside RCA

Operator _____ Evaluator _____

Observer _____ Evaluation Date _____

Task

LOCALLY EMERGENCY BORATE.

K/A: 024AA1.20 Ability to operate and/or monitor the following as they apply to the Emergency Boration: Manual boration valve and indicators (3.2/3.2)

<u>Applicability</u>	<u>Est Completion Time</u>	<u>Actual Time</u>
RO/SRO	5 Minutes	
<u>NUREG-1122 Importance Ratings</u>	<u>Surry Importance Rating</u>	
APE024.AA1.04 (RO 3.6/SRO 3.7)	NLO 4.73	

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

Initiating Cues

- 2(1)-AP-3.00, Emergency Boration, step 1b RNO.
- Nuclear Shift Manager direction.

Terminating Cues

- Report received 2(1)-CH-228 locally opened.

Procedures

- 2(1)-AP-3.00, Emergency Boration.

Tools and Equipment

- None

Safety Considerations

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

Performance Checklist

Initiating Cues

- 2(1)-AP-3.00, Emergency Boration, step 1b RNO.
- Nuclear Shift Manager direction.

Directions to the Operator.

- This task is to be SIMULATED. Do NOT turn switches, manipulate controls or reposition valves.
- I am the Nuclear Shift Manager. There is a challenge to Unit 2(1)'s Shutdown Margin in progress. We started to emergency borate but MOV 2(1)-CH-MOV-2350 thermalled before it opened.
- I need you to locally initiate emergency boration by opening 2(1)-CH-MOV-2350.
- When you finish the actions necessary to accomplish this, please inform me.

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 or break the vertical plane of 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.
 - Ensure a current copy of 2(1)-AP-3.00 Emergency Boration is available in the field.
 - **START TIME:**
-

2. LOCALLY ATTEMPTS TO OPENS 2(1)-CH-MOV-2350.

Standards

- (a) Attempts to engage 2(1)-CH-MOV-2350 manual operator by depressing clutch mechanism.
- (b) Attempts to open valve by rotating MOV handwheel in the counter-clockwise direction.

Evaluator's 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 is as you see it.

<p><u>Evaluator's Note</u></p> <ul style="list-style-type: none">• If trainee requests a copy of 2(1)-AP-3.00 provide it.
--

S U

Evaluator's Comments

3. REPORT TO NUCLEAR SHIFT MANAGER (EVALUATOR) THAT MOV NOT OPERATING.

Standards

- (a) Contacts Nuclear Shift Manager (Evaluator).
- (b) Informs him that 2(1)-CH-MOV-2350 will not locally operate (appears to be jammed or frozen-up).

Evaluator's Cues

- **Tell operator:** The Nuclear Shift Manager directs you to locally open 2(1)-CH-228.

<p><u>Evaluator's Note</u></p> <ul style="list-style-type: none">• If trainee requests a copy of 2(1)-AP-3.00 provide it.
--

S U

Evaluator's Comments

Performance Checklist
(continued)

- * 4. LOCALLY OPENS 2(1)-CH-228, MANUAL BORATION VALVE.

Standards

- (a) Locates 2(1)-CH-228 on EAST wall of BA flats area.
(b) **▣ Opens 2-CH-228 by turning valve handwheel in the counter-clockwise direction.**

Evaluator's Cues

- **If asked:** The RO has manually opened 2(1)-CH-FCV-2113A.
- **Tell operator:** When operator attempts to open 2(1)-CH-228, tell him that the handwheel turns in the counter-clockwise direction.
- **If asked:** The valve stem rises as valve is opened.
- **If asked:** You hear flow.
- 2(1)-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.

S U

Evaluator's Comments

5. REPORTS TO NUCLEAR SHIFT MANAGER (EVALUATOR).

Standards

Reports to Nuclear Shift Manager (Evaluator) that 2-CH-228 is open.

S U

Cue: This completes the JPM

Evaluator's Comments

STOP TIME: _____

Licensed Operator Programs
Operator Directions Handout

Conditions

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

Initiating Cues

- 2-AP-3.00, Emergency Boration, step 1b RNO.
- Nuclear Shift Manager direction.

Directions

- This task is to be SIMULATED. Do NOT turn switches, manipulate controls or reposition valves.
- I am the Nuclear Shift Manager. There is a challenge to Unit 2's Shutdown Margin in progress. We started to emergency borate but MOV 2-CH-MOV-2350 thermalled before it opened.
- I need you to locally initiate emergency boration by opening 2-CH-MOV-2350.
- When you finish the actions necessary to accomplish this, please inform me.

Virginia Power
Surry Power Station

Licensed Operator Programs
In-Plant Job Performance Measure 23.05B (Rev 08)

Operator _____ Evaluator _____
Observer _____ Evaluation Date _____

Task

LOCALLY ISOLATE THE SECONDARY SYSTEM (E-3, ATTACHMENT 1).

K/A: 038EA1.32 Ability to operate and monitor the following as they apply to a SGTR: Isolation of a ruptured S/G (4.6/4.7)

<u>Applicability</u>	<u>Est Completion Time</u>	<u>Actual Time</u>
RO/SRO	30 Minutes	_____
<u>NUREG-1122 Importance Ratings</u>	<u>Surry Importance Rating</u>	
EPE038.EA1.32 (RO 4.6/SRO 4.7) GEN2.1.30 (RO 3.9/SRO 3.4)	RO 4.69/SRO 4.73	

Conditions

- Task is to be SIMULATED in the plan.
- A simulated SGTR has occurred on the Unit 2 "B" SG and the "B" MSTV and NRV will not close. The other SG MSTVs have been closed.

Standards

- Unit 2 secondary system isolated IAW 2-E-3, Attachment 1.

Initiating Cues

- 2-E-3, SGTR, (RNO column) Step 3.e RNO e.1.
- Shift Supervisor direction.

Terminating Cues

- 2-E-3, Attachment 1 completed.

Procedures

- 2-E-3, SGTR, Attachment 1, Secondary System Isolation.

Tools and Equipment

- None

Safety Considerations

- Standard Personal Safety Equipment

Performance Checklist

Directions

- This task is to be SIMULATED. Do NOT turn switches, manipulate controls or reposition valves.
- I am the Shift Supervisor. There has been a SGTR identified in Unit 2's "B" SG. We have attempted to isolate the ruptured SG but its MSTV and NRV will not close. The other MSTVs have been closed and now we have to isolate the secondary system.
- Here's 2-E-3, Attachment 1. I need you to locally isolate Unit 2's secondary system. The control room items have already been performed and checked off.
- When you finish the actions necessary to accomplish this, please inform me.

Directions to the Operator.

- This task is to be SIMULATED. Do NOT turn switches, manipulate controls or reposition valves.
- I am the Shift Supervisor. There has been a SGTR identified in Unit 1's "B" SG. We have attempted to isolate the ruptured SG but its MSTV and NRV will not close. The other MSTVs have been closed and now we have to isolate the secondary system.
- Here's 2-E-3, Attachment 1. I need you to locally isolate Unit 2's secondary system. The control room items have already been performed and checked off.
- When you finish the actions necessary to accomplish this, please inform me.

Notes to the Evaluator.

- This task is to be SIMULATED. Do NOT allow the operator to manipulate controls, operate switches or reposition valves.
 - **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.
 - **START TIME:**
-

Start Time:

1. **LOCALLY OPEN AUXILIARY STEAM CROSS-TIE VALVE.**

Standards

Opens 1-AS-8.

S

U

Evaluator's Note

On stairs, Unit 1 TB side of fire door #28 going to cable spread area.

Evaluator's Comments

2. LOCALLY CLOSE AUXILIARY STEAM SUPPLY ISOLATION VALVE.

Standards

■ Closes 2-AS-1.

S

U

Evaluator's Note

Located on TB mezzanine level just west of the 2-PCV-AS-200, ~6 feet above grating.

Evaluator's Comments

3. LOCALLY VERIFY GLAND STEAM SUPPLY FROM MAIN STEAM ISOLATION VALVE CLOSED.

Standards

Verifies 2-MS-15 closed.

S

U

Evaluator's Note

Located just west of PCV-MS-204 (GS reducer), ~6 feet above grating.

Evaluator's Comments

4. LOCALLY CLOSE MAIN STEAM LINE AND TURBINE STEAM TRAP ISOLATION VALVES.

Standards

Closes the following valves:

- (a) 2-MS-46 (mezz level north face of south stanchion under HP turb),

S U

- (b) 2-MS-50 (mezz level north face of south stanchion under HP turb),

S U

- (c) 2-MS-35 (mezz level south face of north stanchion under HP turb),

S U

- (d) 2-MS-30 (mezz level south face of north stanchion under HP turb),

S U

- (e) 2-MS-55 (mezz level west of grating over HP drain pp).

S U

Evaluator's Note

Locations as listed above.

Evaluator's Comments

5. LOCALLY CLOSE REHEAT STEAM LINE TRAP ISOLATION VALVES.

Standards

Closes the following valves:

- (a) 2-SD-367 (mezz level; NW corner of condenser; between 2nd & 3rd point ES piping),

S U

- (b) 2-SD-382 (mezz level; SW corner of condenser),

S U

- (c) 2-SD-415 (mezz level; SE corner of condenser; left of stairs to H₂ area,

S U

- (d) 2-SD-420 (mezz level; NE corner of condenser; behind VP tank).

S U

Evaluator's Note

Locations as listed above.

Evaluator's Comments

Performance Checklist
(continued)

6. LOCALLY CLOSE THE STEAM DUMP LINE STEAM TRAP ISOLATION VALVES.

Standards

Closes the following valves:

- (a) 2-SD-425 (mezz level; under 4th point ext. steam line from #2 LP Turbine.
S U

- (b) 2-SD-430 (mezz level; under 4th point ext. steam line from #2 LP Turbine.
S U

- (c) 2-SD-372 (mezz level; under 3rd point ext. steam line from #1 LP Turbine.
S U

- (d) 2-SD-377 (mezz level; under 3rd point ext. steam line from #1 LP Turbine.
S U

- (e) 2-SD-432 (TB bsmt; East end of condenser; left under TCV-MS-205B).
S U

- (f) 2-SD-436 (TB bsmt; East end of condenser; left under TCV-MS-206B).
S U

- (g) 2-SD-401 (TB bsmt; West end of condenser; right under TCV-MS-206A).
S U

- (h) 2-SD-405 (TB bsmt; West end of condenser; right under TCV-MS-205A).
S U

Evaluator's Note

Locations as listed above.

Evaluator's Comments

7. LOCALLY CLOSE THE MAIN STEAM LINE SAMPLING SYSTEM ISOLATION VALVES.

Standards

Note: Valves for each sample system line are in series (e.g. 2SS-455 is in series with 2-SS-337 in the "A" sample line). The applicant must close ONE valve in EACH (A, B, and C) sample line (e.g. the applicant must close 2-SS-460 OR 2-SS-338).

Closes the following sample isolation valves:

- (a) 2-SS-455, "A" steam line sample isolation.

S U

- (b) 2-SS-337, "A" steam line sample isolation.

S U

- (c) 2-SS-460, "B" steam line sample isolation.

S U

- (d) 2-SS-338, "B" steam line sample isolation.

S U

- (e) 2-SS-459, "C" steam line sample isolation.

S U

- (f) 2-SS-339, "C" steam line sample isolation.

S U

Evaluator's Note

Valves are in TB bsmt at west-most "on-line" sampler unit, 2-SS-PNL-101, at the west end of panel.

Evaluator's Comments

Performance Checklist
(continued)

8. LOCALLY ISOLATE CYLINDER HEATING STEAM.

Standards

Proceeds to the turbine "dog house" and closes the following valves:

(a) 2-MS-245,

S U

(b) 2-MS-236.

S U

Cue (Examiner): AFTER the applicant proceeds to the "doghouse" and states that 2-MS-245/236 are inside, then state that "2-MS-245 and 2-MS-236 are verified tagged closed."

Evaluator's Note

Locations per sketch --> Need copy of sketch from facility

Evaluator's Comments

9. REPORT TO SHIFT SUPERVISOR (EVALUATOR).

Standards

Verbal status report made that E-3 Attachment 2 completed.

S U

Evaluator's Comments

STOP TIME:

Licensed Operator Programs
Operator Directions Handout

Conditions

- Task is to be SIMULATED in the plant.
- A simulated SGTR has occurred on the Unit 2 "B" SG and the "B" MSTV and NRV will not close. The other SG MSTVs have been closed.

Initiating Cues

- 2-E-3, SGTR, (RNO column) Step 3.e RNO e.1.
- Shift Supervisor direction.

Directions

- This task is to be SIMULATED. Do NOT turn switches, manipulate controls or reposition valves.
- I am the Shift Supervisor. There has been a SGTR identified in Unit 2's "B" SG. We have attempted to isolate the ruptured SG but its MSTV and NRV will not close. The other MSTVs have been closed and now we have to isolate the secondary system.
- Here's 2-E-3, Attachment 1. I need you to locally isolate Unit 2's secondary system. The control room items have already been performed and checked off.
- When you finish the actions necessary to accomplish this, please inform me.