

Draft Submittal

(Pink Paper)

1. ADMINISTRATIVE TOPICS OUTLINE (ES-301-1)
2. CONTROL ROOM SYSTEMS & FACILITY WALK-THROUGH
TEST OUTLINE (ES-301-2)
3. ADMINISTRATIVE JPMS
4. IN-PLANT JPMS
5. CONTROL ROOM JPMS (SIMULATOR JPMS)

SURRY JAN./FEB. 2006 EXAM

0500280/2006301 AND 0500281/2006301

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

**JPMs
Initial
Submittal
(DRAFT)**

DRAFT

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		

DRAFT

Facility: <u> Surry </u>		Date of Examination: <u> Jan. 2006 </u>
Examination Level (circle one): <u> SRO </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. 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, S	Title: Fuel Pit Bridge Rad Monitor Alarm (SRO only) Description: Perform the required actions of 0-RM-C3 for an Alert alarm on the Fuel Pit Bridge Rad Monitor with irradiated fuel movement in the Fuel Building in progress.
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		

DRAFT

Facility: Surry Date of Examination: Jan. 2006
 Exam Level (circle one): RO / SRO (I) / **SRO (U)** Operating Test No.: 2006-301

Control Room Systems® (8 for RO; 7 for SRO-I; 2 or 3 for SRO-U)

System / JPM Title	Type Code*	Safety Function
a. AFW / Cross Connect AFW from Unit 1 to Unit 2. 061A1.03 (3.1/3.6)	S/D	4(S)
b. PZR / Trip Due to Stuck Open Spray Valve 010A2.02 (3.9/3.9)	S/N	3
c. CS / Respond to Spurious Hi Hi CLS Signal / CS Actuation – A Train Hi Hi CLS Will Not Reset. (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	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 (3.2/3.2)	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	

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SR06301
Simulator Job Performance Measure 001A4.03

Applicant _____

Start Time _____

Examiner _____

Date _____

Stop Time _____

Title

PERFORM CONTROL ROD ASSEMBLY PARTIAL MOVEMENT FOR CBC

Applicability

Estimated Time

Actual Time

RO / SRO(I)

20 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

- Calculator

Safety Considerations

- 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 telephone, at the Rod Control Logic Cabinet, to report any information needed from outside the control room.

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).**

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).

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

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).

S U

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

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 telephone, at the Rod Control Logic Cabinet, to report any information needed from outside the control room.

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SR06301
Simulator Job Performance Measure 003A1.03

Applicant_____

Start Time_____

Examiner_____

Date _____

Stop Time_____

Title

RESPOND TO RCP 1A CC RETURN LO FLOW ALARM

Applicability

Estimated Time

Actual Time

RO / SRO(I)

15 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, but not zero CC flow (e.g. throttle 1-CC-12 to 50 gpm as read on FI-CC-105A, see 11448-FM-072A, Sheet 2 of 7).
- **On pre-arranged cue from examiner, xxxxxxxxxxxxxxxxxxxx.**

Initiating Cues

- Respond to plant conditions.

Directions to the Applicant

- You are the Unit 1 Reactor Operator.
 - Unit 1 is in day 15 of a refueling outage.
 - Major activities scheduled or in progress include work on 1C RCP support systems.
 - (Add relevant information from IC)
-
- Respond to plant conditions.

Notes

PERFORMANCE CHECKLIST

1. **VERIFY ALARM (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 (limit per _____ is _____ amps).

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

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

- Determines NO 1A RCP CC flow is 0.

S U

- Contacts field operator to investigate / return 1A RCP CC stator air cooler CC flow to greater than 200 gpm (RNO 3.a).

S U

Cue (from booth): If contacted, local operator reports that he can NOT enter containment because RP just kicked everyone out due to high airborne activity. If applicant pursues attempting to contact a field operator, booth should cue him, via radio or telephone, that no operators are able to get into Unit 1 containment.

- Acknowledges Step 3 RNO substeps b-d.

S U

- Determines going to step 11 won't address the problem.

S U

- Goes to Step 4.

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

- Goes to Step 5.

S U

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

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

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

6. CHECK UNIT – ON LINE (Step 8).

- Determines Unit 1 is NOT on line.

S U

- Goes to Step 10.

S U

7. 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

8. 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 day 15 of a refueling outage.
- Major activities scheduled or in progress include work on 1C RCP support systems.
- (Add relevant information from IC)

Initiating Cues

- Respond to plant conditions.

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SR06301
Simulator Job Performance Measure 010A2.02

Applicant _____

Start Time _____

Examiner _____

Date _____

Stop Time _____

Title

RESPOND TO STUCK OPEN PRZR SPRAY VALVE

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.

- A surrogate operator may perform certain tasks for which you will not be evaluated. The purpose of the surrogate is to facilitate conduct of the JPM. The surrogate will not assist you in performing any tasks. The surrogate operator will not provide you with information, advice, or peer checks and will not take directions to perform actions from you.

Directions to the Applicant

- You are the Unit 1 Reactor Operator.
- (Add relevant information from IC)

- Respond to plant conditions.
- A surrogate operator will perform certain tasks for which you will not be evaluated. The purpose of the surrogate is to facilitate conduct of the JPM. The surrogate will not assist you in performing any tasks. The surrogate operator will not provide you with information, advice, or peer checks and will not take directions to perform actions from you.

Notes

Ron:

If licensee has an OP to equalize RCS and PRZR boron concentration (I could not find in material submitted), I could start applicant at this point so that he/she is already observing PRZR controls and indications.

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. 1-RC-PCV-1455B will indicate dual as shown by (*what is light configuration/color for spray valves?*).

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 going DOWN.

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)
 - Places control switch _____ to _____
 - S U
 - Observes ALL heater indicating lights RED
- Verifies 1-CH-HCV-1311, Aux Spray Isolation, CLOSED (Step 7).
 - Observes _____ light _____
 - S U
- Checks Aux Spray Line – Leakage Suspected (Step 8)
 - Applicant should have recognized 1-RC-PCV-1455B dual valve position indication (open and closed lights both lit) .
 - 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
S U
 - Depresses lower pushbutton on BOTH controllers
S U
 - Observes demand indicator going UP on BOTH controllers
S U
- Observes dual valve position indication on 1-RC-PCV-1455B

Note: Applicant may have performed these actions while performing Step 3 (Stop Pressure Decrease).

- 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)**

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

- Stop Affected RCP(s) (Step 12.b).
 - Determines RCS temperature has stabilized by observing _____

S U

- **Places control switch for 1C RCP to _____.**

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.
- (Add relevant information from IC)

Initiating Cues

- Respond to plant conditions.
- A surrogate operator may perform certain tasks for which you will not be evaluated. The purpose of the surrogate is to facilitate conduct of the JPM. The surrogate will not assist you in performing any tasks. The surrogate operator will not provide you with information, advice, or peer checks and will not take directions to perform actions from you.

**LOCALLY EMERGENCY BORATE
DOCUMENT REVISION RECORD**

Dist. No.	Rev. No.	Date Issued	Reason for Revision	TIR Number(s)
01	0	08/23/91		
02	1	07/16/92	Editorial/formatting changes.	
03	2	08/08/93	Rev. 7 formatting changes. Deleted **TC**.	S93-1098
04	3	06/07/95	Latest procedure revision.	S95-0461
05	4	08/12/96	KA number and procedure changes; component label verification.	S96-0228
06	5	03/24/98	Delete JPM # from trainee handouts.	S98-0286
07	6	12/09/98	Convert to Word.	S98-0936
08	7	02/25/00	2000 OP EVAL	S00-0032
09	8	02/26/04	2004 Op Eval	S04-0136
10	9	02/01/05	2005 OP EVAL	S05-0099

Virginia Power
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Licensed Operator Programs
In-Plant Job Performance Measure 41.01B (Rev 09)

Operator _____ Evaluator _____

Observer _____ Evaluation Date _____

Task

LOCALLY EMERGENCY BORATE.

Applicability

RO/SRO

Est Completion Time

5 Minutes

Actual Time

NUREG-1122 Importance Ratings

APE024.AA1.04 (RO 3.6/SRO 3.7)

Surry Importance Rating

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

Initiating Cues

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

Terminating Cues

- Report received 2-CH-228 locally opened.

Procedures

- 2-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-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'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.

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-AP-3.00 Emergency Boration is available in the field.
 - **START TIME:**
-

Start Time:

1. LOCATES 2-CH-MOV-2350.

Standards

- (a) Proceeds to Aux building 13 ft level boric acid flats.
- (b) Locates MOV on **EAST** end of the BA flats area.

S U

Evaluator's Cue

- **If asked:** the breaker for 2-CH-MOV-2350 has been opened.

Evaluator's Note

- If valve is in Contaminated area, pointing out w/ flashlight is acceptable.
- If trainee requests a copy of 2-AP-3.00, provide it.
- Remember to STOP THE TIME CLOCK upon entering health physics.
_____ Time Stop
- RESTART THE TIME CLOCK upon clearing health physics.
_____ Time Start

Evaluator's Comments

2. LOCALLY ATTEMPTS TO OPENS 2-CH-MOV-2350.

Standards

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

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 does not move.
- **If asked:** No flow noise heard through valve.
- **If asked:** No change in either the audible BATP operating noise or BATP discharge pressure.
- **If asked:** The MOV handwheel will move in the clockwise direction approximately one-quarter turn.

Evaluator's Note

- If trainee requests a copy of 2-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-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-CH-228.

Evaluator's Note

- If trainee requests a copy of 2-AP-3.00 provide it.

S

U

Evaluator's Comments

Performance Checklist
(continued)

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

Standards

- (a) Locates 2-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-CH-FCV-2113A.
- **Tell operator:** When operator attempts to open 2-CH-228, tell him that the handwheel turns in the counter-clockwise direction.
- **If asked:** The valve stem rises as valve is opened.
- 2-CH-228 is a small grinnell valve on the EAST wall area of the BA flats in the BA piping.
- If valve is in Contaminated area, pointing out w/ flashlight is acceptable.

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.

U.S. Nuclear Regulatory Commission
Surry Power Station

SR06301
Simulator Job Performance Measure 026A4.01

Applicant_____

Start Time_____

Examiner_____

Date _____

Stop Time_____

Title

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

Applicability

Estimated Time

Actual Time

RO / SRO(I) / SRO(U)

10 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 A cannot be reset from MCR.
- Containment partial pressure deviation of more than -0.1 psi due to CS actuation.

Initiating Cues

- Respond to plant conditions.
- Time compression will be used for events that occur in the field.

Directions to the Applicant

- You are the Reactor Operator.
- (Add relevant information from IC)
- There are NO personnel in Unit 1 containment.
- Instrument Maintenance is performing (Containment Spray related surveillance).

- Respond to plant conditions.

Notes

JPM is written for Hi Hi CLS actuation without Hi CLS
Time compression for local Operator actions.

PERFORMANCE CHECKLIST

Time Start:

1. ACKNOWLEDGE ALARMS / RECOGNIZES HI HI CLS ACTUATION

- Silences alarms.

S U

- Acknowledges alarms.

- 1B-C4 CLS HI-HI TR A (will not clear/reset)
- 1B-C5 CLS HI-HI TR B (clears when Hi Hi CLS reset)

S U

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-D4 CLS TR A RESET PERM
1B-D5 CLS TR B RESET PERM

- May verify Hi Hi CLS actions:

- CS pumps start
- ISRS pumps start (2 min delay)
- OSRS pumps start (5 min delay)
- #1 EDG start
- #3 EDG start
- A&B CARFs trip

Examiner: If applicant does not recognize spurious nature of actuation **AND** starts to perform actions unrelated to recovery, **direct the booth to cue the applicant as follows:** "This is (IMD), we dropped (test equipment related to surveillance) inside cabinet (related to surveillance) and this could have caused a spurious Hi Hi CLS. I have notified my supervisor and he is contacting the Shift Manager".

S U

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 _____.

S U

- Check CS Pumps – Spurious Actuation Has Occurred (Step 3).
 - Recognizes that both CS pumps are running.

- Run lights lit.
- Amps

S U

- Goes to Attachment 1 (Step 4).

S U

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

- Resets Hi Hi CLS by _____.

S U

- Places control switches for running CS pumps in PTL (Att. 1 Step 2)
 - 1-CS-P-1A (remains running as indicated by _____)
 - **■ 1-CS-P-1B** (stops as indicated by _____)
 - S U

- Recognizes 1-CS-P-1A did NOT stop.
 - S U

- **■ Directs Operator to locally open supply breaker 1-CS-P-1A supply breaker 14H-5** (Att. 1 Step 3).
 - S U

- 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 (does not close: _____ light LIT, _____ light NOT lit)
 - S U
 - 1-CS-MOV-101B (does not close: _____ light LIT, _____ light NOT lit)
 - S U
 - **■ 1-CS-MOV-101C** (closes: _____ light LIT, _____ light NOT lit)
 - S U
 - **■ 1-CS-MOV-101D** (closes: _____ light LIT, _____ light NOT lit)
 - S U

- Recognizes 1-CS-MOV-101A and B 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-101A (B) in CLOSE** (Att. 1 Step 5.b).

S U

- **■ When 1-CS-MOV-101A (B) indicates closed** (_____ light LIT, _____ light NOT lit), **directs field Operator to OPEN 1H1-2S-1A (1J1-2W-5A)** (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.
- (Add relevant information from IC).
- There are NO personnel in Unit 1 containment.
- Instrument Maintenance is performing (Containment Spray related surveillance).

Initiating Cues

- Respond to plant conditions.
- Time compression will be used for events that occur in the field.

U.S. Nuclear Regulatory Commission
Surry Power Station

SR06301
In-Plant Job Performance Measure 033A2.03

Applicant_____

Start Time_____

Examiner_____

Date _____

Stop Time_____

Title

PERFORM LOCAL ACTIONS FOR LOSS OF SPENT FUEL PIT LEVEL

Applicability

Estimated Time

Actual Time

RO / SRO (I)

15 Minutes

Conditions

- Task is to be SIMULATED in the plant.
- A simulated loss of spent fuel pit level requiring local actions is in progress.

Standards

- Locally adjusts 2-IA-PCV-106
- Locally opens 1-PG-54

Initiating Cues

- 0-AP-22.02, Loss of Spent Fuel Pit Level, Steps 6-8.
- Unit 1 SRO direction.

Terminating Cues

- Applicant reports task complete.

Procedures

- 0-AP-22.02, Loss of Spent Fuel Pit Level

Tools and Equipment

- None

Safety Considerations

- Standard Personnel Safety Equipment
- ALARA
- DO NOT enter contaminated areas
- FME control near Spent Fuel Pit

Initiating Cues

- The Unit 1 SRO has directed you to perform Steps 6 – 8 of 0-AP-22.02

Directions to the Applicant

- You are an extra Operator.
- Unit 1 is performing 0-AP-22.02, Loss of Spent Fuel Pit Level, due to lowering Spent Fuel Pit level.
- Fuel handling activities are NOT in progress.
- High Volume Makeup is NOT required.
- Area radiation levels allow performance of local actions.

- The Unit 1 SRO has directed you to perform Steps 6 – 8 of 0-AP-22.02

Notes

- This task is to be SIMULATED.
- Do NOT break the vertical plane of a contaminated area.
- Ensure a copy of 0-AP-22.02 is available in the field.

PERFORMANCE CHECKLIST

Start Time:

1. OBTAIN 0-AP-22.02, LOSS OF SPENT FUEL PIT LEVEL.

- Proceeds to xxxxxxxxxxxx.

S U

- Obtains 0-AP-22.02.

S U

- Reviews steps 1-5.

S U

2. CHECK TRANSFER CANAL DOOR IN PLACE (Step 6).

- Checks Unit 1 side.

Cue: As you see it.

S U

- Checks Unit 2 side.

Cue: As you see it.

S U

3. **LOCALLY VERIFY IA SUPPLY TO XFR CANAL DOOR SEAL 25 – 30 PSIG (Step 7).**

- Checks Unit 1, 1-IA-PCV-107.

Cue: As you see it.

S U

- Checks Unit 2, 2-IA-PCV-107.

Cue: Use pen to indicate 10 PSIG on gage.

S U

- Determines Unit 2 IA NOT 25-30 psig.

- **■ Simulates adjusting 2-IA-PCV-106 in the CCW direction per Step 7 RNO.**

Cue: When applicant attempts to adjust regulator per RNO, use pen to show no change, i.e. 10 PSIG regardless of adjustments.

S U

- Checks IA pressure available from backup bottles at 2-IA-PI-219 (2-IA-PCV-106).

Cue: As you see it.

S U

4. CHECK HIGH VOLUME MAKEUP REQUIRED (Step 8)

- Determines (from Conditions) that high volume makeup is NOT required.

S U

- **■ Simulates locally opening (turns CCW) 1-PG-54.**

Cue: If applicant asks which method to use, cue that Unit 1 SRO has talked to Chemistry and directs him to take local actions to fill the SFP.

Cue: If applicant asks if SFP level is going UP (or down), cue that another operator has isolated the leak, SFP level is going UP, and another operator has relieved him (JPM complete).

S U

- Reports steps 6 – 8 completed

S U

STOP TIME:

Collect Applicant examination material

Pass Fail

If applicant fails, provide brief reason:

INSTRUCTIONS TO APPLICANT

Conditions

- You are an extra Operator.
- Unit 1 is performing 0-AP-22.02, Loss of Spent Fuel Pit Level, due to lowering Spent Fuel Pit level.
- Fuel handling activities are NOT in progress.
- High Volume Makeup is NOT required.
- Area radiation levels allow performance of local actions.

Initiating Cues

- The Unit 1 SRO has directed you to perform Steps 6 – 8 of 0-AP-22.02

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).

Applicability

RO/SRO

Est Completion Time

30 Minutes

Actual Time

NUREG-1122 Importance Ratings

EPE038.EA1.32 (RO 4.6/SRO 4.7)
GEN2.1.30 (RO 3.9/SRO 3.4)

Surry Importance Rating

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

<p><u>Evaluator's Note</u> Locations as listed above.</p>

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

<p><u>Evaluator's Note</u> Locations as listed above.</p>

Evaluator's Comments

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

Standards

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

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.

U.S. Nuclear Regulatory Commission
Surry Power Station

SR06301
Simulator Job Performance Measure 055EA2.03

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 started but failed to load and the #3 EDG failed to start. Alternate path steps within 1-ECA-0.0 must be performed in order to restore power to an AC Emergency Bus by starting, flashing, and loading #3 EDG.

Standards

- Applicant starts #3 EDG.
- Applicant energizes bus 1J within 10 minutes.

Initiating Cues

- Nuclear Shift Manager direction.

Terminating Cues

- Applicant energizes 1J bus.

Procedures

- 1-ECA-0.0, Loss of All AC Power.

Tools and Equipment

- None

Safety Considerations

- None

Simulator Setup

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

- 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).

- Acknowledges Caution before step 5.
- Determines EDG 3 is NOT loaded on 2J emergency bus.

S U

2. CHECK EDG – RUNNING (Step 5.a and b).

PATH 1

- Determines #1 EDG running.
S U

- Verifies Auto Exercise Emerg Gen 1 selector switch in AUTO
S U

PATH 2

- Determines #3 EDG NOT running.
S U

- **■ 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

3. CHECK AC BUSES – AT LEAST ONE ENERGIZED (Step 5.c).

- Determines NO AC buses are energized.

S U

- Determines one or more EDGs are running (RNO 5.c.1. NOT applicable)

- Determines #1 EDG running unloaded.

S U

- Places Auto Exercise Emerg Gen 1 selector switch in EXERCISE

S U

- Places Breaker Synchroscope switch SYNC ACB-15H3 to ON.

S U

- Verifies #1 EDG generator voltage.

S U

- Closes ACB-15H3, EMERG SUP.

S U

- Determines #3 EDG running unloaded.

S U

- **■ Places Auto Exercise Emerg Gen 3 selector switch in EXERCISE**

S U

- **■ Places Breaker Synchroscope switch SYNC ACB-15J3 to ON.**

S U

- Verifies #3 EDG generator voltage.

S U

- **■ Closes ACB-15J3, EMERG SUP.**

S U

Examiner: Record time: ____:____:____

- Determines ACB-15H3 will NOT close.

S U

- Goes back to Step 5.a for the #3 EDG.

S U

- Places Breaker Synchroscope switch SYNC ACB-15J3 to OFF.

S U

- Goes to Step 5.d.

S U

- Goes to Step 5.f.

S U

Note: **If applicant does NOT attempt to reenergize bus 1J using the #3 EDG and instead goes to RNO Step 5.c)5) (Intitate 0-AP-17.06), then cue that the JPM is complete.**

Note: If asked, it is NOT desired to energize bus 1J from the AAC DG.

- Informs Shift Manager (Examiner) that bus 1J is energized by the #3 EDG (JPM complete).

S U

STOP TIME:

Collect Applicant examination material.

Determine whether time to complete JPM was greater than or less than 10 minutes.

Pass

Fail

If applicant fails, provide brief reason:

INSTRUCTIONS TO APPLICANT

Conditions

- 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.

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.

**CROSS-CONNECT AUXILIARY FEEDWATER FROM UNIT 1 TO UNIT 2
DOCUMENT REVISION RECORD**

Dist. No.	Rev. No.	Date Issued	Reason for Revision	TIR Number(s)
01	0	02/20/89		
02	1	09/11/90	Conversion to WP-5 & Rev 2 to EOPs.	
03	2	06/17/91	Editorial changes & clarify Q1 stem.	
04	3	07/27/92	Editorial/format changes.	
05	4	09/08/93	Rev. 7 formatting changes.	
06	5	09/23/94	Simulate AFW pumps flowing to Unit 2 by increasing MD AFW pumps' amps.	S94-0991
07	6	08/05/96	KA number and procedure changes; component label verification.	S96-0195
08	7	03/23/98	Delete JPM # from trainee handouts.	S98-0286
09	8	12/09/98	Convert to Word.	S98-0936
10	9	03/02/00	2000 Op Eval.	S00-0032

Virginia Power
Surry Power Station

Licensed Operator Programs
Job Performance Measure 26.03 (Rev 09)

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>
RO/SRO	5 Minutes	_____

<u>NUREG-1122 Importance Ratings</u>	<u>Surry Importance Rating</u>
APE054.AA1.01 (RO 4.5/SRO 4.4)	RO 3.71/SRO 2.78

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 d2 through d4.

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 4 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.
- 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-MOV-FW-151A,
- *(b) 1-MOV-FW-151B,
- *(c) 1-MOV-FW-151C,
- *(d) 1-MOV-FW-151D,
- *(e) 1-MOV-FW-151E and
- *(f) 1-MOV-FW-151F.

Evaluator's Comments

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

Standards

- *(a) Places control switch for 2-MOV-FW-260A to the OPEN position.
- *(b) Places control switch for 2-MOV-FW-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:

Evaluation Items

The following question is related to the conditions and task that has just been performed. Please indicate when you have finished answering the question.

1. After performing the cross-connect steps on this control board, Unit 2 operator states they still do not have flow.

What action would you take, or direct to be taken, to correct this situation?

ANSWER

(Direct operator to) check the AFW valve lineup (cross-connect manual isolation valves and/or pump discharge isolation valves).

COMMENTS

<u>NUREG-1122 K/A REFERENCE</u>	<u>EST TIME</u>	<u>ACTUAL TIME</u>
SYS061.K4.09 RO3.7/SRO4.1	1.5 Min	_____

<u>QUESTION REFERENCE</u>	<u>REFERENCE ALLOWED?</u>
• 11448-FM-68A	YES

Evaluation Items
(Continued)

The following question is related to the conditions and task that has just been performed. Please indicate when you have finished answering the question.

2. You have been supplying Unit 2 with AFW for a period of time.

What are the three (3) available sources and flowpaths that can supply water to the Unit 1 AFW pumps when the ECST level gets low?

ANSWER

- (a) Main CN tank (TK-2) (0.30) via chain valve (1-CN-150) (0.05) (to replenish TK-1),
- (b) Underground CN tank (TK-3) (0.30) via booster pumps, (0.05)
- (c) Fire Main water (directly into AFW pump suction) (0.30).

COMMENTS

NUREG-1122 K/A REFERENCE

SYS061.K4.01 RO3.9/SRO4.2

EST TIME

1 Min

ACTUAL TIME

QUESTION REFERENCE

- NCRODP-SSM-26

REFERENCE ALLOWED?

YES

Licensed Operator Programs
FOLLOW UP QUESTION PERFORMANCE SUMMARY
Job Performance Measure 26.03 (Rev 09)
CROSS-CONNECT AUXILIARY FEEDWATER FROM UNIT 1 TO UNIT 2

Performed by: _____

Evaluation Date:

Evaluated by:

QUESTION #1: N/A _____

Fractional Score _____

Final Score: 1 / 0

(≥0.7 = 1 or <0.7 = 0)

Est Completion Time: 1.5 Min

Actual Completion Time:

Comments: _____

QUESTION #2: N/A _____

Fractional Score _____

Final Score: 1 / 0

(≥0.7 = 1 or <0.7 = 0)

Est Completion Time: 1 Min

Actual Completion Time:

Comments: _____

Evaluation Items

Question 2 Operator Handout

The following question is related to the conditions and task that has just been performed. Please indicate when you have finished answering the question.

2. You have been supplying Unit 2 with AFW for a period of time and the Emergency Condensate Storage Tank level begins to get low.

What are the three (3) available sources/flowpaths that can supply water to the Unit 1 AFW pumps?

Evaluation Items

Question 1 Operator Handout

The following question is related to the conditions and task that has just been performed. Please indicate when you have finished answering the question.

1. After performing the cross-connect steps on this control board, Unit 2 operator states they still do not have flow.

What action would you take, or direct to be taken, to correct this situation?

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.
- 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 071A4.29

Applicant _____

Start Time _____

Examiner _____

Date _____

Stop Time _____

Title

RESPOND TO WASTE GAS DECAY TANK HIGH OXYGEN ALARM

Applicability

Estimated Time

Actual Time

RO

15 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 (any?) IC and initialize.
- **On pre-arranged cue from examiner**, meter override 1B Waste Gas Decay Tank pressure to xx psig, and override GW-AIT-150B, pen # (green) to an indicated concentration of x.x%.

Initiating Cues

- Respond to plant conditions.

Directions to the Applicant

- You are the Unit 1 Admin Operator.
- (Add relevant information from IC)
- A 24 hour safety standdown is in progress. There is NO maintenance or testing in progress.

- Respond to plant conditions.

Notes

Exam submittal did not contain OP-23.2.4, Release of Waste Gas Decay Tank 1B. JPM was written using procedure for 1A tank (OP-23.2.3) with the assumption that system and procedures are identical except for nomenclature. Need to verify this assumption before conducting JPM.

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 (1B) ANALYZER – FAILED (0-WD-D9 Step 7).

- Acknowledges NOTE: Recorder Trace spiking is indicative of a clogged or worn sensing device.
- Acknowledges NOTE: Red indicates for Tank A. Green indicated for Tank B.
- Determines that 1B (green) recorder 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 concentration greater than 4%.

S U

- **■ Closes 1-BR-79.**

S U

- **■ 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, 1B WGDT has been sampled. Pressure is 30 psig, oxygen concentration is 4.2%. Hydrogen concentration is 1.4%

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: IF ASKED, 1B WGDT has been sampled per OP-23.2.xx. Pressure is 30 psig, oxygen concentration is 4.2%. Hydrogen concentration is 1.4%

S U

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

S U

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

S U

- **■ 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 1B 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.
- (Add relevant information from IC).
- A 24 hour safety standdown is in progress. There is NO maintenance or testing in progress.

Initiating Cues

- Respond to plant conditions.

U.S. Nuclear Regulatory Commission
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 0-RMA-C4, Effluent Rad Mon Trbl, has alarmed due to check source failure on Process Vent monitor 1-GW-RI-130-2 (High Range) channel # (Iodine). Check source fails to retract/re-shield (EQUIP FAIL light does NOT clear, TEST light clears and Effluent Rad Mon TRBL alarm clears after check source sequence).

Standards

Applicant identifies correct failure (5-Check Source) on correct channel (Process Vent High Range Iodine)
Applicant verifies automatic functions associated with rad monitor failure.
Applicant declares (or informs SRO) that High Range monitor is inoperable.

Initiating Cues

- 0-RMA-C4, Effluent Rad Mon Trbl

Terminating Cues

- Applicant completes 0-RMA-C4 procedure.

Procedures

- 0-RMA-C4, Effluent Rad Mon Trbl.
- 0-AP-5.24, Radiation Monitor System Kaman Monitor Malfunction.

Tools and Equipment

- None

Safety Considerations

- None

Simulator Setup

- Call up (any?) IC and initialize.
- **On pre-arranged cue from examiner, xxxxxxxxxxxxxxxxxxxxxxx.**

Initiating Cues

- Respond to plant conditions.

Directions to the Applicant

- You are the Unit 1 Admin Operator.
- (Add relevant information from IC)
- Respond to plant conditions.

Notes

PERFORMANCE CHECKLIST

1. ACKNOWLEDGE ALARM.

- Silences alarm.

S U

- Locates 0-RMA-C4 procedure.

S U

2. CHECK PROCESS VENT AND VENT VENT MONITORS – NOT AFFECTED (0-RMA-C4, Step 1).

- Acknowledges three (3) notes before Step 1.

- Observes Equip Fail light on 1-GW-RM-130-2 is LIT.

S U

- **■ Determines Process Vent monitor 1-VG-RI-130-2 is affected.**

S U

- Verifies (per first Note):

- **■ FCV-GW-160 CLOSED**

S U

- **■ FCV-GW-260 CLOSED**

S U

- **■ FCV-GW-101 CLOSED**

S U

Note: Based on Note before Step 1 regarding monthly check source, applicant may wait for a short period of time for Equip Fail light to clear.

- Obtains 0-AP-5.24.

S U

3. IDENTIFY MALFUNCTION (0-AP-5.24, Step 1).

- Acknowledges Caution before Step 1.
- Acknowledges Note before Step 1.
- Performs the following on 1-GW-RM-131-2 KERIC panel:
 - Determines digital readout is indicating a reading (Step 1.a)
S U
 - Pushes "DSP" button.
S U
 - Enters "(channel # 1-5)30"
S U
 - Pushes "ENT" button.
S U

Note: Applicant should repeat the above sequence for each of the five channels of 1-GW-RM-131-2 per step 1.d). **Expected result** is Check Source Failure (Number 5) on Iodine Channel (channel # x).

Examiner: Record all failures noted by applicant below:

<u>Channel</u>	<u>Number/Failure</u>
----------------	-----------------------

4. CHECK MALFUNCTION 1, 2, OR 4 (Step 2).

- Determines malfunction number is NOT 1, 2, or 4.

S U

- Goes to Step 7 per RNO.

S U

5. CHECK TYPE MALFUNCTION 6 (Step 7).

- Determines malfunction number is NOT 6.

S U

- Goes to Step 13 per RNO.

S U

5. CHECK TYPE MALFUNCTION 3 OR 5 (Step 13).

- **■** Determines malfunction IS 3 or 5.

S U

- Goes to Step 14.

S U

- Goes to Step 17 (per Step 14).

S U

6. RESET MONITOR FAILURE MEMORY (Step 17).

- Turns key switch to ENABLE.

S □ U □

- Pushes "FTN" button.

S □ U □

- Enters "(channel #)07".

S □ U □

- Turns key switch to DISABLE.

S □ U □

- Recognizes that alarm did NOT clear

S □ U □

- Goes to Step 18 (Step 17.d) RNO)

S □ U □

7. DO THE FOLLOWING (Step 18).

- **■ Declares (or notifies Unit 1 SRO) the High Range Process Vent monitor 1-GW-RM-130-2 is INOPERABLE.**

S U

- Determines that 1-GW-RI-122 is the preplanned alternate to monitor Process Vent radiation levels.

S U

- Notifies Health Physics that Offsite Monitoring Teams may be required per Tech Spec Table 3.7-6.

S U

- Initiate a Deviation Report.

Cue: The SRO will initiate the Deviation Report and Work Request and will provide notifications. 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.
- (Add relevant information from IC)

Initiating Cues

- Respond to plant conditions.

**Admin
Initial
Submittal
(DRAFT)**

U.S. Nuclear Regulatory Commission
Surry Power Station

SR06301
Administrative Job Performance Measure G2.3.10RO

Applicant _____

Start Time _____

Examiner _____

Date _____

Stop Time _____

Title

CALCULATE TOTAL EFFECTIVE DOSE EQUIVALENT (UNSHIELDED AND SHIELDED)

Applicability

Estimated Time

Actual Time

RO

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

Procedures

- None

Tools and Equipment

Safety Considerations

- Calculator

- None

Initiating Cues

1. Calculate the operator's estimated Total Effective Dose Equivalent upon completion of the job with NO shielding.
2. Calculate the operator's estimated Total Effective Dose Equivalent with 2" of lead shielding installed.

Directions to the Applicant

- An operator has received a Deep Dose Equivalent (DDE) of 2345 mRem and a Committed Effective Dose Equivalent (CEDE) of 540 mRem for the first quarter of this year.
 - The operator has been assigned to perform a job that is located 3 feet from a gamma point source that reads 545 Rem at 6 inches.
 - The job is estimated to take one hour and 30 minutes.
 - The job will result in a whole body dose and is NOT expected to result in any internal uptake of radionuclides.
 - RP has 2 inches of lead shielding that can be installed between the operator and the gamma point source.
 - RP tells you that the half value thickness for the lead shielding is 0.5 inches.
-
- Calculate the operator's estimated Total Effective Dose Equivalent upon completion of the job with NO shielding.
 - Calculate the operator's estimated Total Effective Dose Equivalent with 2" of lead shielding installed.

Notes

PERFORMANCE CHECKLIST

Start Time:

1. CALCULATE DOSE RATE TO OPERATOR WITHOUT SHIELDING

○ $[545 \text{ Rem/hr} \times (0.5"/36")^2] \times 1000 = 105 \text{ mRem/hr}$

S U

2. CALCULATE DOSE (DDE) TO OPERATOR WITHOUT SHIELDING

○ $105 \text{ mRem / hr} \times 1.5 \text{ hr} = 157.5 \text{ mRem}$

S U

3. CALCULATE TEDE TO OPERATOR FOLLOWING COMPLETION OF JOB

○ $\text{TEDE} = \text{DDE} + \text{CEDE}$

○ **■ $\text{TEDE} = (2345 + 157.5) + 540 = 3043 \text{ mRem (+/- 2 mRem is acceptable)}$**

S U

4. CALCULATE SHIELDED DOSE RATE TO OPERATOR

- Determine that 2 inches of lead shielding is equivalent to four (4) half-value thicknesses

S U

- Calculate shielded dose rate:

$$105 \text{ mRem/hr} \times (1/2)^4 = 6.5 \text{ mrem/hr}$$

S U

5. CALCULATE DOSE (DDE) TO THE OPERATOR WITH SHIELDING

- $6.5 \text{ mRem/hr} \times 1.5 \text{ hr} = 9.75 \text{ mrem}$

S U

6. CALCULATE TEDE (SHIELDED) TO OPERATOR FOLLOWING COMPLETION OF JOB

- $\text{TEDE} = \text{DDE} + \text{CEDE}$

- **TEDE = (2345 + 9.8) + 540 = 2895 mRem (+/- 2 mRem is acceptable)**

S U

STOP TIME:

Collect Applicant examination material

Pass

Fail

If applicant fails, provide brief reason:

INSTRUCTIONS TO APPLICANT

Conditions

- An operator has received a Deep Dose Equivalent (DDE) of 2345 mRem and a Committed Effective Dose Equivalent (CEDE) of 540 mRem for the first quarter of this year.
- The operator has been assigned to perform a job that is located 3 feet from a gamma point source that reads 545 Rem at 6 inches.
- The job is estimated to take one hour and 30 minutes.
- The job will result in a whole body dose and is NOT expected to result in any internal uptake of radionuclides.
- RP has 2 inches of lead shielding that can be installed between the operator and the gamma point source.

Initiating Cues

1. Calculate the operator's estimated Total Effective Dose Equivalent upon completion of the job with NO shielding.
2. Calculate the operator's estimated Total Effective Dose Equivalent with 2" of lead shielding installed.

U.S. Nuclear Regulatory Commission
Surry Power Station

SR06301

**Administrative Job Performance Measure G2.3.10SRO
(Must be done in SIMULATOR)**

Applicant _____

Start Time _____

Examiner _____

Date _____

Stop Time _____

Title

FUEL PIT BRIDGE RAD MONITOR ALARM

Applicability

Estimated Time

Actual Time

SRO

10 Minutes

Conditions

- Task must be PERFORMED in the simulator.

Standards

- Fuel Bldg evacuated.
- 0-AP-22.00, Fuel Handling Abnormal Conditions, initiated.

Initiating Cues

- 0-RM-C3, Fuel Pit Brdg Alert/Failure

Terminating Cues

- 0-AP-22.00, Fuel Handling Abnormal Conditions, initiated.

Procedures

- 0-RM-C3, Fuel Pit Brdg Alert/Failure

Tools and Equipment

Safety Considerations

- None

- None

Simulator Setup

- Can be done from any stable IC.
- Initiate 0-RM-C3 alarm on pre-arranged cue from examiner.
- Provide consistent indications (upward trends) on any other rad monitors that would be affected.

Initiating Cues

- Respond to plant conditions.

Directions to the Applicant

- You are the Reactor Operator.
- Unit 1 is (provide details of IC regarding Mode, power level, etc.)
- John Smith is supervising irradiated fuel movement in the Fuel Building.

- Respond to plant conditions.

Notes

PERFORMANCE CHECKLIST

1. ACKNOWLEDGE AND VERIFY ALARM

- Silences 0-RM-C3

S U

- Locates 0-RM-C3 Alarm Response Procedure

S U

- Verifies Alarm greater than alert setpoint or trending up (Step 1)

- 1-RM-RI-153A (greater than setpoint)
- 1-RM-RR-175A, Pen 3 (trending up)

S U

2. EVACUATE AFFECTED AREA (Step 2)

- **Makes plant page to evacuate Fuel Building**

Note: May attempt to contact fuel handling supervisor (ask facility if normal communications is via radio or phone – incorporate in cues) – see 5.

S U

3. NOTIFY HEALTH PHYSICS TO (Step 3)

- Verify area evacuated
- Control access
- Survey area
- Investigate cause

S U

4. CHECK FUEL PIT LEVEL – NORMAL (Step 4)

Note: Fuel pit level is normal

S U

5. CHECK WITH FUEL HANDLING PERSONNEL (Step 5)

- Contacts fuel handling supervisor.

When contacted, **booth to provide cue** from fuel handling supervisor that:

- A spent fuel assembly was dropped on top of another assembly.
- At least two fuel rods in the dropped element are bent.
- The water near the dropped element is cloudy.
- The RP tech covering the job ordered us to evacuate the area.

S U

6. INITIATE 0-AP-22.00, FUEL HANDLING ABNORMAL CONDITIONS (Step 6)

- Obtains 0-AP-22.00

S U

- Determines that entry conditions are met (1-RM-RMS-153 alarm OR report from fuel handling supervisor).

S U

- **Announces entry into 0-AP-22.00 or informs SRO of need to enter 0-AP-22.00**

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

- You are the Reactor Operator.
- Unit 1 is (provide details of IC regarding Mode, power level, etc.)
- John Smith is supervising irradiated fuel movement in the Fuel Building.

Initiating Cues

- Respond to plant conditions.

U.S. Nuclear Regulatory Commission
Surry Power Station

SR06301

Administrative Job Performance Measure G2.4.41

Applicant _____

Start Time _____

Examiner _____

Date _____

Stop Time _____

Title

DETERMINE EVENT CLASSIFICATION

Applicability

Estimated Time

Actual Time

SRO

5 Minutes

Conditions

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

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 are pinned down 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.

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.**

S U

STOP TIME:

Collect Applicant examination material

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 are pinned down 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.

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 transmit the Report of Emergency per EPIP-2.01, Notification of State and Local Governments, Steps 6 - and Attachment 1, Instructions for Completing 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 transmit the Report of Emergency per EPIP-2.01, Notification of State and Local Governments, Steps 6 - and Attachment 1, Instructions for Completing 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.**

S U

- **■ Records time notification started on Attachment 2**

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

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.

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

- **■ Dials (757) 357-2151 or -3191 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 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.

Initiating Cues

- The Shift Manager has directed you to transmit the Report of Emergency per EPIP-2.01, Notification of State and Local Governments, Steps 6 - and Attachment 1, Instructions for Completing Report of Emergency to State and Local Governments.

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

Tools and Equipment

Safety Considerations

- None

- None

Simulator Setup (If Applicable)

- Call up 100% IC and initialize. Ensure Control Bank D is at 229 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

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.
- Perform step 15 of 0-AP-1.00.
- 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: 230 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 1064 pcm (+/- 2 pcm) and enters value in appropriate blank of step 5.1.3
S U
- Calculates a stuck rod worth value of 1064 pcm and enters it in the appropriate blank of step 5.1.3
S U

CUES

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

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 (1064 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 -2816 pcm (**accept -2848 → -2794**)
S U
- Records calculated SDM value in step 5.1.6
S U

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

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

- Recognizes that -2816 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: 230 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

- Perform 0-AP-1.00 Step 15 (All Precautions & Limitations have been reviewed)

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Surry Power Station

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 depressurized in COLD SHUTDOWN with the Reactor Vessel Head installed.
 - RCS Level (1-RC-LI-100A) is 18.7 feet in preparation for Reactor Vessel Head removal.
 - Bus 1H is deenergized for electrical maintenance.
 - Loop B is isolated and draining.
 - RCS temperature is 155 °F.
 - Forced Feed and Bleed is the Mandatory Backup Cooling Method required by 1-OSP-ZZ-004, Unit 1 Safety Systems Status List for Cold Shutdown / Refueling Conditions.
 - A and C SGs are being maintained at 70% NR level with their associated loop stop valves open.
 - All PRZR Safety valves are installed.
 - Unit 1 RWST level is 98%
-
- Bus 1J just deenergized. Unit 2 remained at 100% power and was unaffected by the electrical problem.
 - The crew entered 1-AP-27.00, Loss of Decay Heat Removal Capability, due to no RHR pumps running, and has completed the procedure up to step 4. RNO d).
 - The Unit 1 SRO and RO are attempting to restore power to Bus J per 1-AP-10.07.
 - 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.

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 depressurized in COLD SHUTDOWN with the Reactor Vessel Head installed.
- RCS Level (1-RC-LI-100A) is 18.7 feet in preparation for Reactor Vessel Head removal.
- Bus 1H is deenergized for electrical maintenance.
- Loop B is isolated and draining.
- RCS temperature is 155 °F.
- Forced Feed and Bleed is the Mandatory Backup Cooling Method required by 1-OSP-ZZ-004, Unit 1 Safety Systems Status List for Cold Shutdown / Refueling Conditions.
- A and C SGs are being maintained at 70% NR level with their associated loop stop valves open.
- All PRZR Safety valves are installed.
- Unit 1 RWST level is 98%.
- Bus 1J just deenergized. Unit 2 remained at 100% power.
- The crew entered 1-AP-27.00, Loss of Decay Heat Removal Capability, and has completed the procedure up to step 4. RNO d).
- The Unit 1 SRO and RO are attempting to restore power to Bus J per 1-AP-10.07.

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).

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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

Applicability

Estimated Time

Actual Time

RO/SRO

10 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

- None

Safety Considerations

- 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 12 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 20 minutes ago.
- The 09:00 shift average power was completed per step 6.1.4.
- 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 2 (12 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)

- Obtains entered constant values (from.....)

Loop A _____

Loop B _____

Loop C _____

S U

- Obtains current values for blowdown flows (by.....)

Loop A _____

Loop B _____

Loop C _____

S U

- Determines that entered constant values of blowdown match current values

S U

5. CHECKS BASIS FOR CALORIMETRIC (Step 6.1.5)

- Checks Steam Flow (K7030) (by.....)

S U

- Records K7030 value for Steam Flow

S U

- Determines K7030 value equals required value of "1"

S U

- Checks Feed Flow (K7030) (by.....)

S U

- Records K7030 value for Feed Flow

S U

- Determines K7030 value equals required value of "0"

S U

- Checks off Step 6.1.5.b

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)

S U

- 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

99.8 +/- 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 12 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 20 minutes ago.
- The 09:00 shift average power was completed per step 6.1.4.

Initiating Cues

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