Final Submittal

(Blue Paper)

HARRIS 2007-301
EXAM

1. Administrative JPMs
2. In-plant JPMs
3. Control Room JPMs (simulator JPMs)

Facility:	Shearon-Harris	Task No.:	005016H101
Task Title:	Perform the Train "A" Emergency Service Water System Essential Flow Path Valve Alignment Verification (AEP-1 and MCB Valves only)	JPM No.:	2007 NRC RO ADM JPM A1-1
K/A Reference:	2.1.31 (4.2)		

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing: **This JPM should be performed on a running or frozen simulator.**

Simulated Performance: _____ Actual Performance: X

Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

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

Initial Conditions:
- The plant is in Mode 3, with a heatup in progress.
- OST-1015, EMERGENCY SERVICE WATER SYSTEM OPERABILITY MONTHLY INTERVAL MODES 1-2-3-4, is in progress.

Task Standard: All misaligned valves identified and documented in comments section of OST-1015.

Required Materials: None

General References: OST-1015, EMERGENCY SERVICE WATER SYSTEM OPERABILITY MONTHLY INTERVAL MODES 1-2-3-4, Revision 20

Handouts: OST-1015

Initiating Cue: You have been assigned to perform Attachment 1, Train "A" Emergency Service Water System Essential Flow Path Valve Alignment Verification, for AEP-1 and MCB valves. An AO is checking the local equipment.

Time Critical Task: No

Validation Time: 10 minutes

SIMULATOR SETUP

IC for Mode 3.

- On AEP-1: place 1SW-1055, SW FROM WC-2 A-SA CONDENSER, in MANUAL.
- On MCB: Align Train "B" to supply the chiller(s) and OPEN 1SW-179, HEADER A TO CVCS CHILLERS
- On MCB: Tag AH-3 with 1SW-92 and 1SW-97 valves tagged CLOSED.
- On MCB: Ensure all ESW Pumps stopped and OPEN 1SW-270, HEADER A TO AUXILIARY RESERVOIR.
- FREEZE and SNAP
- Perform on frozen simulator.

(Denote Critical Steps with a √)

Start Time: _____.

Performance Step: 1 Obtain procedure.

Standard: Locates and reviews procedure.

Evaluator Cue: **Provide OST-1015 after the procedure is located.**

Evaluator Note:

- **The Attachment can be performed in any order. The valves/controls listed in this JPM are not in the position according to Attachment 1. All others are in the position described.**

Precaution and Limitation 4.0.1 states:

- **No valve operations are to be performed under this OST. Report any valves found out of position during the performance of this OST to the Unit SCO and take appropriate action per applicable plant procedures.**
- **The applicant can complete Attachment 4, Certifications and Reviews, at the conclusion of the lineup verification.**

Comment:

√ **Performance Step: 2** Locates, determines actual position, and logs on Attachment 1:

- 1SW-1055, SW FROM WC-2 A-SA CONDENSER

Standard:

- Crosses out AUTO and initials or otherwise logs 1SW-1055 in MAN. **(√)**
- Reports/Notes on at least Attachment 4 that 1SW-1055 should be in AUTO.

Evaluator Cue: **As USCO: Throughout the JPM, acknowledge any verbal communications and specify that discrepancies will be addressed when the lineup is complete.**

Comment:

√ **Performance Step: 3** Locates, determines actual position, and logs on Attachment 1:

- 1SW-179, HEADER A TO CVCS CHILLERS

Standard:

- Circles OPEN for 1SW-179. **(√)**
- Reports/Notes on at least Attachment 4 that 1SW-179 should be SHUT because Train "B" is aligned to supply the chillers (Attachment 1 Note [7]).

Comment:

√ **Performance Step: 4** Locates, determines actual position, and logs on Attachment 1:

- 1SW-92, CNMT FAN COOLER AH-3 INLET
- 1SW-97, CNMT FAN COOLER AH-3 OUTLET

Standard:

- Crosses out OPEN, initials or otherwise logs 1SW-92 and 1SW-97 as SHUT **(√)**
- Reports/Notes on at least Attachment 4 that 1SW-92 and 1SW-97 are tagged SHUT.

Comment:

√ **Performance Step: 5** Locates, determines actual position, and logs on Attachment 1:

- 1SW-270, HEADER A TO AUXILIARY RESERVOIR

Standard:

- Circles OPEN for 1SW-270. **(√)**
- Reports/Notes on at least Attachment 4 that 1SW-270 should be SHUT because no ESW Pump is running (Attachment 1 Note [9]).

Comment:

√ **Performance Step: 6** Complete Attachment 4, Certifications and Reviews/provide Attachment to USCO.

Standard: Completes Attachment 4

- Periodic Surveillance Requirement checked
- Plant Conditions – proper Mode
- OST Completed By – may be left blank since it was partial
- Initials/Name
- General Comments – each discrepancy is logged.
  - SW-1055 in MAN **[√]**
  - 1SW-179 OPEN (Train "B" supplying chillers) **[√]**
  - 1SW-92 and 1SW-97 SHUT (AH-3 tagged) **[√]**
  - 1SW-270 OPEN (No ESW Pumps running) **[√]**

Evaluator Cue: **Acknowledge any verbal report.**

Comment:

Terminating Cue: **When the partially completed OST-1015 is returned to the USCO: Evaluation on this JPM is complete.**

Stop Time: _____.

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2007 NRC RO ADM JPM A1-1

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

JPM CUE SHEET

INITIAL CONDITIONS:

- The plant is in Mode 3, with a heatup in progress.
- OST-1015, EMERGENCY SERVICE WATER SYSTEM OPERABILITY MONTHLY INTERVAL MODES 1-2-3-4, is in progress.

INITIATING CUE:

You have been assigned to perform Attachment 1, Train "A" Emergency Service Water System Essential Flow Path Valve Alignment Verification, for AEP-1 and MCB valves. An AO is checking the local equipment.

KEY

KO H1-1

Attachment 1 - Train A Emergency Service Water System Essential Flow Path Valve Alignment Verification

Sheet 1 of 4

NOTES:

[1] Normally SHUT; Open when backflushing the strainer.

[2] Normally OPEN; SHUT when 1SW-20 has failed OPEN unless backflushing the strainer.

[3] Normally OPEN; SHUT when ESW Pump is operating.

[4] OPEN when Train A is cooling the chiller(s); SHUT when Train B is cooling the chiller(s).

[5] Normally OPEN; SHUT when Booster Pump is operating.

[6] **IF** C-CSIP is currently aligned to Emergency Bus 1A-SA,
THEN the valve should be OPEN. Otherwise, the valve should be SHUT.

[7] OPEN when Train A is cooling the chiller(s); SHUT when Train B is cooling the chiller(s).

[8] OPEN when NSW is supplying Train A ESW Hdr; SHUT when A ESW Hdr is pressurized by NSW or A ESW Pump is operating.

[9] Normally SHUT; OPEN when ESW Pump is operating.

[10] Normally SHUT; OPEN when ESW Pump is operating taking suction from the Main Reservoir.

[11] Normally SHUT; OPEN when ESW Pump is operating taking suction from the Auxiliary Reservoir.

[12] Normally SHUT; OPEN when Fire Service Pump is operating.

[13] Valve is required to be locked shut per OP-139 for the Train to be declared operable.

KEY

KEY

KU M-1

Attachment 1 - Train A Emergency Service Water System Essential Flow Path Valve Alignment Verification

Sheet 2 of 4

COMPONENT NUMBER	COMPONENT DESCRIPTION	NOTES	POSITION	VERIFY
	AEP 1			
1SW-1171	EMERGENCY MAKE UP SUPPLY ISOL		SHUT	
1SW-1055	SW FROM WC-2 A-SA CONDENSER	MAN	~~AUTO~~ JW	
	MCB			
1SW-39	Normal SW Supply to Header A	[3]	OPEN/SHUT (circle one)	
1SW-116	AH-2 & 3 SW Return Orifice Bypass Isol	[5]	OPEN/SHUT (circle one)	
1SW-179	Header A to CVCS Chillers Should be SHUT	[7]	OPEN/SHUT (circle one)	
1SW-206	SW from CVCS Chillers to Header A	[7]	OPEN/SHUT (circle one)	
1SW-275	Header A Return to Normal Header	[8]	OPEN/SHUT (circle one)	
1SW-270	Header A to Auxiliary Reservoir Should be SHUT	[9]	OPEN/SHUT (circle one)	
1SW-121	SW Header A to Aux FW Motor Pump A-SA		SHUT	
1SW-123	SW Header A to Aux FW Motor Pump A-SA		SHUT	
1SW-124	SW Header A to Aux FW Turbine Pmp		SHUT	
1SW-126	SW Header A to Aux FW Turbine Pmp		SHUT	
1SW-91	CNMT Fan Cooler AH-2 Inlet		OPEN	
1SW-92	CNMT Fan Cooler AH-3 Inlet } AH-3 TAGGED		SHUT ~~OPEN~~ JW	
1SW-97	CNMT Fan Cooler AH-3 Outlet } AH-3 TAGGED		SHUT ~~OPEN~~ JW	
1SW-109	CNMT Fan Cooler AH-2 Outlet		OPEN	

KEY

KEY

ROAI-1

Attachment 4 - Certifications and Reviews
Sheet 1 of 1

This OST was performed as a:

Periodic Surveillance Requirement: ✓

Postmaintenance Operability Test: _____

Redundant Subsystem Test: _____

Plant Conditions: Mode 3

Mode: 3

OST Completed By: Applicant or BLANK

Date: Today

Time: Now

OST Performed By:

Initials	Name (Print)	Initials	Name (Print)
JKL	James K. Lloyd		

General Comments/Recommendation/Corrective Actions/Exceptions:

- 1SW-1055 in MAN rather than AUTO – no explanation
- 1SW-179 should be SHUT per current alignment (Att. 1, NOTE 7)
- 1SW-270 should be SHUT with no ESW Pump running (Att. 1, NOTE 9)
- 1SW-92 and 1SW-97 are SHUT because AH-3 is CLEARED and TAGGED.

Pages Used: 5, 6

OST Completed with NO EXCEPTIONS/EXCEPTIONS:

_____ Date: _____
Unit SCO

After receiving the final review signature, this OST becomes a QA RECORD and should be submitted to Document Services.

KEY

Facility:	Shearon-Harris	Task No.:	344047H402
Task Title:	Complete GP-002, Attachment 5 – Minimum Equipment List (MEL) for Entry into Mode 4	JPM No.:	2007 NRC SRO A1-1
K/A Reference:	2.1.20 (4.2)		

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X

Classroom X Simulator _____ Plant _____

READ TO THE EXAMINEE

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

Initial Conditions:
- The unit is in Mode 5, heading for Mode 4 in accordance with GP-002, NORMAL PLANT HEATUP FROM COLD SOLID TO HOT SUBCRITICAL MODE 5 TO MODE 3
- See Plant Conditions Sheet for specific conditions.

Task Standard: All conditions not meeting Mode 4 requirement identified.

Required Materials: Technical Specifications

General References: GP-002, NORMAL PLANT HEATUP FROM COLD SOLID TO HOT SUBCRITICAL MODE 5 TO MODE 3, Revision 38

Handouts:
- Partially completed GP-002, Attachment 5 matching the Plant Conditions handout.
- Plant Conditions sheet matching the JPM content.

Initiating Cue: The previous shift partially completed GP-002, Attachment 5 – MEL for Entry into Mode 4. The USCO has assigned you to finish the remaining items on GP-002, Attachment 5.

Time Critical Task: No

Validation Time: 15 minutes

PERFORMANCE INFORMATION

(Denote Critical Steps with a √)

Start Time: _____.

Performance Step: 1 Obtain procedure and determine existing plant conditions.

Standard: Reviews Attachment 5 and Plant Conditions.

Evaluator Cue: **Provide handout (Plant Conditions Sheet and partially completed GP-002, Attachment 5).**

Evaluator Note: **All conditions except the following meet the MEL requirements.**

Comment:

√ **Performance Step: 2** Compare Plant Conditions to Attachment 5 requirements.

Standard: Boric Acid Tank and Associated Temperatures:

- Identify that Boric Acid Tank needs to be filled to ≥ 74 %.

Comment:

√ **Performance Step: 3** Compare Plant Conditions to Attachment 5 requirements.

Standard: Reactor Coolant Loops/RHR Loops:

- Identify the need to either restore RHR Loop "B" or increase at least one S/G NR level to >30%.

Comment:

PERFORMANCE INFORMATION

√ **Performance Step: 4** Compare Plant Conditions to Attachment 5 requirements.

Standard: Safety Related Electrical Buses:

- Identify need to restore S1 Inverter and supply 1DP-1A-SI through the inverter, connected to DC Bus DP-1A-SA.

Comment:

Performance Step: 5 Provide Attachment 5 to the USCO.

Standard: Provides Attachment 5 to the USCO and may make a verbal report.

Evaluator Cue: **Acknowledge any verbal communication.**

Comment:

Terminating Cue: **After Attachment 5 and/or the optional report has been provided to the USCO: Evaluation on this JPM is complete.**

STOP TIME: _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2007 NRC SRO A1-1

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS:

- The unit is in Mode 5, heading for Mode 4 in accordance with GP-002, NORMAL PLANT HEATUP FROM COLD SOLID TO HOT SUBCRITICAL MODE 5 TO MODE 3
- See Plant Conditions Sheet for specific conditions.

INITIATING CUE:

The previous shift partially completed GP-002, Attachment 5 – MEL for Entry into Mode 4. The USCO has assigned you to finish the remaining items on GP-002, Attachment 5.

2007 NRC JPM SRO A1-1 PLANT CONDITIONS

- The Reactor Trip Breakers are OPEN.
- DRPI indicates all rods inserted.
- All ventilation systems are in normal alignment with nothing tagged.
- RCS Temperature is 195 °F with a bubble in the PRZ.
- LTOP is in service.
- All PRZ Code Safety Valves are operable.
- Chemistry has reported RCS Specific Activity, O, Cl, and Fl are within TS limits.
- RHR Train "A" is providing cooling.
- RHR Pump "B" is isolated and tagged due to mechanical seal leakage.
- All RCP's are stopped.
- CSIP "A" was stopped due to an oil leak 75 minutes ago and was declared inoperable, cleared and tagged 20 minutes later.
- Operators removed the tags and started CSIP "B" 30 minutes ago.
- Operable indicators indicate the following levels:
  - BAT – 20%
  - RWST – 93%
- The BAT is at 93 °F and 7450 ppm Boron.
- Both BAT Pumps are operable.
- The RWST is at 73 °F and 2525 ppm.
- Both Emergency Diesel Generators are operable.
- Instrument Bus SI is powered from 1DP-S1, Alternate Supply from PP-1A211-SA, while a breaker is replaced in the inverter.
- Two physically independent off-site power circuits are available.
- All other AC buses are in normal alignment.
- All DC buses are energized.
- Operable indicators indicate SG NR Levels as:
  - SG "A" – 28%
  - SG "B" – 26%
  - SG "C" – 26%
- SG WR Level indicators are inoperable.
- All MSIVs and SG PORV's are closed.
- CREVS and Train "A" and "B" are operable.
- FHB Emergency Exhaust Train "A" and Train "B" are operable.
- Engineering reported that all snubbers required for Mode 4 and 5 are operable.

SRO A1-1
handout

Attachment 5 - MEL for Entry into MODE 4

Sheet 1 of 4

NOTE 1: Maximum of one CSIP operable when < 325°F RCS cold leg temperature on any cold leg and the Reactor vessel head is in place.

HOT OPS MEL FOR MODE 4 ENTRY			Time Now	Date Today
Equipment	Tech Spec	MODE 4	Number Operable	Within Limits
Containment Spray System	3.6.2.1	2 systems	2	N/A
Spray Add. Tank	3.6.2.2	3268 - 3964 gal. (92 - 96%) 28 - 30% NaOH	N/A	ABC L - 94% 28.5% NaOH
Spray Add. Educators	3.6.2.2	2	2	N/A
ECCS Subsystems	3.5.3	1 NOTE 1		N/A
ESW Loops	3.7.4	2	2	N/A
RWST	3.1.2.6	≥ 92% 2400 - 2600 ppm Min. 40°F Max. 125°F	N/A	
CCW Systems	3.7.3	2	2	N/A
Fuel Pool Water Level	3.9.11	≥ 23 ft. above irradiated fuel rods	N/A	ABC A - 23'5" B - 23'6" C - 23'7"
Boron Injection Flow Paths	3.1.2.1	1		N/A
Charging/SI Pumps	3.1.2.3	1 NOTE 1		N/A
Boric Acid Tank and Associated Temperatures	3.1.2.6	≥ 74% 7000 - 7750 ppm ≥ 65°F	N/A	

SRO A1-1 handout

NOTE 2: Required when temperature of any RCS cold leg is ≤ 325°F.

NOTE 3:
- When the Reactor Trip System breakers are closed.
- Capable of determining rod's position within 12 steps.

NOTE 4: For Reactor Coolant Loop A, B or C and its associated S/G and RCP to be an operable loop, the S/G shall be determined OPERABLE by verifying Wide Range level greater than 74% or Narrow Range greater than 30%.

HOT OPS MEL FOR MODE 4 ENTRY				
Equipment	Tech Spec	MODE 4	Number Operable	Within Limits
RCS Overpressure Protection Systems	3.4.9.4	2 PORVs NOTE 2		N/A
Pressurizer Code Safety Valves	3.4.2.1	1	3	N/A
Reactor Coolant Loops/RHR Loops a) In Operation b) Operable	3.4.1.3	2 NOTE 4		N/A
Digital Rod Position Indication	3.1.3.3	52 NOTE 3	N/A	N/A
Steam Generators	3.4.5	3	3	N/A
Main Steam Line Code Safety Valves	3.7.1.1	N/A	N/A	N/A
Auxiliary Feedwater Pumps	3.7.1.2	N/A	N/A	N/A
Condensate Storage Tank	3.7.1.3	N/A	N/A	ABC
MSIVs	3.7.1.5	3	3	N/A
SATs	3.8.1.1	2		N/A
Safety Related Electrical Buses	3.8.3.1	All Energized		N/A

SRO A1-1 Handout

NOTE 5: Specified in PLP-106

HOT OPS MEL FOR MODE 4 ENTRY				
Equipment	Tech Spec	MODE 4	Number Operable	Within Limits
DC Elect. Sources	3.8.2.1	2 Trains		N/A
Emerg. DG'S	3.8.1.1	2		N/A
Cont. Fan Coolers	3.6.2.3	4	4	N/A
Cont. Vacuum Relief System	3.6.5	2	2	N/A
Containment Internal Pressure	3.6.1.4	-1.0 in. w.g. to 1.6 psig	N/A	0 psig ATC
Containment Air Locks	3.6.1.3	2	2	N/A
Cont. Purge Makeup	3.6.1.7	2 isol. valves	2 isol. valves	N/A
Cont. Purge Exhaust	3.6.1.7	2 isol. valves	2 isol. valves	N/A
Cont. Pre-entry Purge Makeup Exhaust	3.6.1.7	4 isol. Valves Sealed Closed	4 isol. valves sealed closed	N/A
Control Room Emerg. Filtration Systems	3.7.6	2 systems		N/A
Cont. Isol. Valves	3.6.3	ALL NOTE 5	ALL	N/A
ESCW Loops	3.7.13	2	2	N/A
RAB Emerg. Exhaust Systems	3.7.7	2 systems	2 systems	N/A
FHB Emerg. Exh.	3.9.12	2 Trains		N/A
RCS Leakage Detection Systems	3.4.6.1	3 systems	3 systems	N/A

SRO A1-1 handout

NOTE 6:
- If a reservoir temperature computer point is bad, manual reservoir temperature readings can be performed per APP-ALB-002-7-5. Instruction 1 is also applicable.
- If a reservoir level computer point is bad, manual reservoir level determination can be performed per OP-163.

NOTE 7: Protective devices listed in PLP-106

NOTE 8: Dissolved oxygen limit is not applicable less than or equal to 250°F

INSTRUCTION

1. Due to a potential 3°F instrument inaccuracy associated with the permanently installed reservoir TSWs, if TSW9114/TSW9115 indicate ≥ 91°F, obtain local temperature readings per APP-ALB-002-7-5.

HOT OPS MEL FOR MODE 4 ENTRY				
Equipment	Tech Spec	Minimum Number	Number Operable	Within limits
RCS Leakage Limit				
a) Pressure Boundary	3.4.6.2	None	N/A	0.0 gpm A B C
b) Unidentified		1 gpm	N/A	0.03 gpm A B C
c) Prim. to Sec.		1 gpm total and 150 g.p.d. ea. SG	N/A	0.0 gpm A B C
d) Identified		10 gpm	N/A	0.03 gpm A B C
e) Controlled		31 gpm	N/A	28 gpm A B C
f) Press. Isol. Valve		see Table 3.4-1	N/A	0.0 gpm A B C
RCS Chemistry			MAX LIMIT	
a) Dissolved oxygen	3.4.7	0.1 ppm NOTE 8	N/A	0.05 ppm A B C
b) Chloride		0.15 ppm	N/A	0.02 ppm A B C
c) Fluoride		0.15 ppm	N/A	0.01 ppm A B C
RCS Specific Activity	3.4.8	≤ 1.0 µCi/gm DE ≤ 100/ĒµCi/gm	N/A	0.1 µCi/gm DE 2/Ē µCi/gm A B C
Second Coolant Specific Act.	3.7.1.4	≤.1 µCi/gm DE-I-131	N/A	.01 µCi/gm DE-131 A B C
Aux. Reservoir	3.7.5	≤ 94°F ≥ 250' NOTE 6	N/A	85°F 252.0' A B C
Main Reservoir	3.7.5	≤94°F ≥ 215' NOTE 6	N/A	83°F 220.0' A B C
Containment Avg Air Temp	3.6.1.5	120°F Max	N/A	105°F A B C
Hyd. & Mech. Snubbers	3.7.8	All	ALL	N/A
Cont. Penet. Conductor OC Prot. Devices	3.8.4.1	All NOTE 7	ALL	N/A

SRO A1-1 handout

KEY

Attachment 1 - MEL for Entry into MODE 4
Sheet 1 of 4

NOTE 1: Maximum of one CSIP operable when < 325°F RCS cold leg temperature on any cold leg and the Reactor vessel head is in place.

HOT OPS MEL FOR MODE 4 ENTRY			Time Now	Date Today
Equipment	Tech Spec	MODE 4	Number Operable	Within Limits
Containment Spray System	3.6.2.1	2 systems	2	N/A
Spray Add. Tank	3.6.2.2	3268 - 3964 gal. (92 - 96%) 28 - 30% NaOH	N/A	ABC L - 94% 28.5% NaOH
Spray Add. Educators	3.6.2.2	2	2	N/A
ECCS Subsystems	3.5.3	1 NOTE 1	1	N/A
ESW Loops	3.7.4	2	2	N/A
RWST	3.1.2.6	≥ 92% 2400 - 2600 ppm Min. 40°F Max. 125°F	N/A	ABC L - 93% 2525 ppm 73°
CCW Systems	3.7.3	2	2	N/A
Fuel Pool Water Level	3.9.11	≥ 23 ft. above irradiated fuel rods	N/A	ABC A - 23'5" B - 23'6" C - 23'7"
Boron Injection Flow Paths	3.1.2.1	1	2	N/A
Charging/SI Pumps	3.1.2.3	1 NOTE 1	1	N/A
Boric Acid Tank and Associated Temperatures	3.1.2.6	≥ 74% 7000 - 7750 ppm ≥ 65°F	N/A	L - 20% * 7450 ppm 93°F

Revised KEY

KEY

SRO A1-1 handout

NOTE 2: Required when temperature of any RCS cold leg is ≤ 325°F.

NOTE 3:
- When the Reactor Trip System breakers are closed.
- Capable of determining rod's position within 12 steps.

NOTE 4: For Reactor Coolant Loop A, B or C and its associated S/G and RCP to be an operable loop, the S/G shall be determined OPERABLE by verifying Wide Range level greater than 74% or Narrow Range greater than 30%.

HOT OPS MEL FOR MODE 4 ENTRY				
Equipment	Tech Spec	MODE 4	Number Operable	Within Limits
RCS Overpressure Protection Systems	3.4.9.4	2 PORVs NOTE 2	2	N/A
Pressurizer Code Safety Valves	3.4.2.1	1	3	N/A
Reactor Coolant Loops/RHR Loops a) In Operation b) Operable	3.4.1.3	2 NOTE 4	a.) 1 b.) 1 *	N/A
Digital Rod Position Indication	3.1.3.3	52 NOTE 3	N/A	N/A
Steam Generators	3.4.5	3	3	N/A
Main Steam Line Code Safety Valves	3.7.1.1	N/A	N/A	N/A
Auxiliary Feedwater Pumps	3.7.1.2	N/A	N/A	N/A
Condensate Storage Tank	3.7.1.3	N/A	N/A	ABC
MSIVs	3.7.1.5	3	3	N/A
SATs	3.8.1.1	2	2	N/A
Safety Related Electrical Buses	3.8.3.1	All Energized	*	N/A

Instrument Bus 5I is not supplied from its inverter as required by T.S. 3.8.3.1

Required

KEY

KEY

SRO A1-1 Handout

NOTE 5: Specified in PLP-106

HOT OPS MEL FOR MODE 4 ENTRY				
Equipment	Tech Spec	MODE 4	Number Operable	Within Limits
DC Elect. Sources	3.8.2.1	2 Trains	2 trains	N/A
Emerg. DG'S	3.8.1.1	2	2	N/A
Cont. Fan Coolers	3.6.2.3	4	4	N/A
Cont. Vacuum Relief System	3.6.5	2	2	N/A
Containment Internal Pressure	3.6.1.4	-1.0 in. w.g. to 1.6 psig	N/A	0 psig ABC
Containment Air Locks	3.6.1.3	2	2	N/A
Cont. Purge Makeup	3.6.1.7	2 isol. valves	2 isol. valves	N/A
Cont. Purge Exhaust	3.6.1.7	2 isol. valves	2 isol. valves	N/A
Cont. Pre-entry Purge Makeup Exhaust	3.6.1.7	4 isol. Valves Sealed Closed	4 isol. valves sealed closed	N/A
Control Room Emerg. Filtration Systems	3.7.6	2 systems	2	N/A
Cont. Isol. Valves	3.6.3	ALL NOTE 5	ALL	N/A
ESCW Loops	3.7.13	2	2	N/A
RAB Emerg. Exhaust Systems	3.7.7	2 systems	2 systems	N/A
FHB Emerg. Exh.	3.9.12	2 Trains	2 trains	N/A
RCS Leakage Detection Systems	3.4.6.1	3 systems	3 systems	N/A

Revised

KEY

KEY

SRO A1-1 handout

NOTE 6:
- If a reservoir temperature computer point is bad, manual reservoir temperature readings can be performed per APP-ALB-002-7-5. Instruction 1 is also applicable.
- If a reservoir level computer point is bad, manual reservoir level determination can be performed per OP-163.

NOTE 7: Protective devices listed in PLP-106

NOTE 8: Dissolved oxygen limit is not applicable less than or equal to 250°F

INSTRUCTION

1. Due to a potential 3°F instrument inaccuracy associated with the permanently installed reservoir TSWs, if TSW9114/TSW9115 indicate ≥ 91°F, obtain local temperature readings per APP-ALB-002-7-5.

HOT OPS MEL FOR MODE 4 ENTRY				
Equipment	Tech Spec	Minimum Number	Number Operable	Within limits
RCS Leakage Limit				
a) Pressure Boundary	3.4.6.2	None	N/A	0.0 gpm ABL
b) Unidentified		1 gpm	N/A	0.03 gpm ABL
c) Prim. to Sec.		1 gpm total and 150 g.p.d. ea. SG	N/A	0.0 gpm ABL
d) Identified		10 gpm	N/A	0.03 gpm ABL
e) Controlled		31 gpm	N/A	28 gpm ABL
f) Press. Isol. Valve		see Table 3.4-1	N/A	0.0 gpm ABL
RCS Chemistry			MAX LIMIT	
a) Dissolved oxygen	3.4.7	0.1 ppm NOTE 8	N/A	0.05 ppm ABL
b) Chloride		0.15 ppm	N/A	0.02 ppm ABL
c) Fluoride		0.15 ppm	N/A	0.01 ppm ABL
RCS Specific Activity	3.4.8	≤ 1.0 µCi/gm DE ≤ 100/ĒµCi/gm	N/A	0.1 µCi/gm DE 2/Ē µCi/gm ABL
Second Coolant Specific Act.	3.7.1.4	≤.1 µCi/gm DE-I-131	N/A	.01 µCi/gm DE-131 ABL
Aux. Reservoir	3.7.5	≤ 94°F ≥ 250' NOTE 6	N/A	85°F 252.0' ABL
Main Reservoir	3.7.5	≤94°F ≥ 215' NOTE 6	N/A	83°F 220.0' ABL
Containment Avg Air Temp	3.6.1.5	120°F Max	N/A	105°F ABL
Hyd. & Mech. Snubbers	3.7.8	All	ALL	N/A
Cont. Penet. Conductor OC Prot. Devices	3.8.4.1	All NOTE 7	ALL	N/A

Key 2

KEY

SRO A1-1
handout

KEY

Attachment 5 - MEL for Entry into MODE 4
Sheet 1 of 4

(REVISED)

NOTE 1: Maximum of one CSIP operable when < 325°F RCS cold leg temperature on any cold leg and the Reactor vessel head is in place.

HOT OPS MEL FOR MODE 4 ENTRY			Time Now	Date Today
Equipment	Tech Spec	MODE 4	Number Operable	Within Limits
Containment Spray System	3.6.2.1	2 systems	2	N/A
Spray Add. Tank	3.6.2.2	3268 - 3964 gal. (92 - 96%) 28 - 30% NaOH	N/A	ABC L - 94% 28.5% NaOH
Spray Add. Educators	3.6.2.2	2	2	N/A
ECCS Subsystems	3.5.3	1 NOTE 1	0 *	N/A
ESW Loops	3.7.4	2	2	N/A
RWST	3.1.2.6	≥ 92% 2400 - 2600 ppm Min. 40°F Max. 125°F	N/A	ABC L - 93% 2525 ppm 73°
CCW Systems	3.7.3	2	2	N/A
Fuel Pool Water Level	3.9.11	≥ 23 ft. above irradiated fuel rods	N/A	ABC A - 23'5" B - 23'6" C - 23'7"
Boron Injection Flow Paths	3.1.2.1	1	2	N/A
Charging/SI Pumps	3.1.2.3	1 NOTE 1	1	N/A
Boric Acid Tank and Associated Temperatures	3.1.2.6	≥ 74% 7000 - 7750 ppm ≥ 65°F	N/A	L - 20% * 7450 ppm 93°F

* ECCS subsystem components not supplied by same safety train as required by OP-111, P&L 31.b.

KEY

(REVISED)

KEY

SRO A1-1 handout

Attachment 5 - MEL for Entry into MODE 4
Sheet 2 of 4

NOTE 2: Required when temperature of any RCS cold leg is ≤ 325°F.

NOTE 3:
- When the Reactor Trip System breakers are closed.
- Capable of determining rod's position within 12 steps.

NOTE 4: For Reactor Coolant Loop A, B or C and its associated S/G and RCP to be an operable loop, the S/G shall be determined OPERABLE by verifying Wide Range level greater than 74% or Narrow Range greater than 30%.

HOT OPS MEL FOR MODE 4 ENTRY				
Equipment	Tech Spec	MODE 4	Number Operable	Within Limits
RCS Overpressure Protection Systems	3.4.9.4	2 PORVs NOTE 2	2	N/A
Pressurizer Code Safety Valves	3.4.2.1	1	3	N/A
Reactor Coolant Loops/RHR Loops a) In Operation b) Operable	3.4.1.3	2 NOTE 4	a.) 1 b.) 1 *	N/A
Digital Rod Position Indication	3.1.3.3	52 NOTE 3	N/A	N/A
Steam Generators	3.4.5	3	3	N/A
Main Steam Line Code Safety Valves	3.7.1.1	N/A	N/A	N/A
Auxiliary Feedwater Pumps	3.7.1.2	N/A	N/A	N/A
Condensate Storage Tank	3.7.1.3	N/A	N/A	ABC
MSIVs	3.7.1.5	3	3	N/A
SATs	3.8.1.1	2	2	N/A
Safety Related Electrical Buses	3.8.3.1	All Energized	*	N/A

Instrument Bus 5I is not supplied from its inverter as required by T.S. 3.8.3.1

KEY

KEY

SRO A1-1 Handout

Attachment 5 - MEL for Entry into MODE 4

Sheet 3 of 4

NOTE 5: Specified in PLP-106

HOT OPS MEL FOR MODE 4 ENTRY				
Equipment	Tech Spec	MODE 4	Number Operable	Within Limits
DC Elect. Sources	3.8.2.1	2 Trains	2 trains	N/A
Emerg. DG'S	3.8.1.1	2	2	N/A
Cont. Fan Coolers	3.6.2.3	4	4	N/A
Cont. Vacuum Relief System	3.6.5	2	2	N/A
Containment Internal Pressure	3.6.1.4	-1.0 in. w.g. to 1.6 psig	N/A	0 psig ATSC
Containment Air Locks	3.6.1.3	2	2	N/A
Cont. Purge Makeup	3.6.1.7	2 isol. valves	2 isol. valves	N/A
Cont. Purge Exhaust	3.6.1.7	2 isol. valves	2 isol. valves	N/A
Cont. Pre-entry Purge Makeup Exhaust	3.6.1.7	4 isol. Valves Sealed Closed	4 isol. valves sealed closed	N/A
Control Room Emerg. Filtration Systems	3.7.6	2 systems	2	N/A
Cont. Isol. Valves	3.6.3	ALL NOTE 5	ALL	N/A
ESCW Loops	3.7.13	2	2	N/A
RAB Emerg. Exhaust Systems	3.7.7	2 systems	2 systems	N/A
FHB Emerg. Exh.	3.9.12	2 Trains	2 trains	N/A
RCS Leakage Detection Systems	3.4.6.1	3 systems	3 systems	N/A

KEY

KEY

SRO A1-1 handout

NOTE 6:
- If a reservoir temperature computer point is bad, manual reservoir temperature readings can be performed per APP-ALB-002-7-5. Instruction 1 is also applicable.
- If a reservoir level computer point is bad, manual reservoir level determination can be performed per OP-163.

NOTE 7: Protective devices listed in PLP-106

NOTE 8: Dissolved oxygen limit is not applicable less than or equal to 250°F

INSTRUCTION

1. Due to a potential 3°F instrument inaccuracy associated with the permanently installed reservoir TSWs, if TSW9114/TSW9115 indicate ≥ 91°F, obtain local temperature readings per APP-ALB-002-7-5.

HOT OPS MEL FOR MODE 4 ENTRY				
Equipment	Tech Spec	Minimum Number	Number Operable	Within limits
RCS Leakage Limit				
a) Pressure Boundary	3.4.6.2	None	N/A	0.0 gpm A B C
b) Unidentified		1 gpm	N/A	0.03 gpm A B C
c) Prim. to Sec.		1 gpm total and 150 g.p.d. ea. SG	N/A	0.0 gpm A B C
d) Identified		10 gpm	N/A	0.03 gpm A B C
e) Controlled		31 gpm	N/A	28 gpm A B C
f) Press. Isol. Valve		see Table 3.4-1	N/A	0.0 gpm A B C
RCS Chemistry			MAX LIMIT	
a) Dissolved oxygen	3.4.7	0.1 ppm NOTE 8	N/A	0.05 ppm A B C
b) Chloride		0.15 ppm	N/A	0.02 ppm A B C
c) Fluoride		0.15 ppm	N/A	0.01 ppm A B C
RCS Specific Activity	3.4.8	≤ 1.0 μCi/gm DE ≤ 100/Ē μCi/gm	N/A	0.1 μCi/gm DE 2/Ē μCi/gm A B C
Second Coolant Specific Act.	3.7.1.4	≤.1 μCi/gm DE-I-131	N/A	.01 μCi/gm DE-131 A B C
Aux. Reservoir	3.7.5	≤ 94°F ≥ 250' NOTE 6	N/A	85°F 252.0' A B C
Main Reservoir	3.7.5	≤94°F ≥ 215' NOTE 6	N/A	83°F 220.0' A B C
Containment Avg Air Temp	3.6.1.5	120°F Max	N/A	105°F A B C
Hyd. & Mech. Snubbers	3.7.8	All	ALL	N/A
Cont. Penet. Conductor OC Prot. Devices	3.8.4.1	All NOTE 7	ALL	N/A

KEY

Facility: Shearon-Harris Task No.:

Task Title: Complete OP-107, Attachment 17 – Blender Manual Calculation Sheet JPM No.: 2007 NRC JPM RO-SRO A1-2

K/A Reference: G2.1.23 (3.9)

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X

Classroom X Simulator _____ Plant _____

READ TO THE EXAMINEE

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

Initial Conditions:

- A refueling outage has concluded.
- One of the activities planned for this shift is to raise RWST level from 93% to 95%.
- RWST Boron concentration is 2500 PPM.
- Boric Acid Tank concentration is 7300 PPM.

Task Standard: All arithmetical calculations performed correctly and within specified tolerance.

Required Materials:

- Straight edge
- Calculator

General References:

- OP-107, CHEMICAL AND VOLUME CONTROL SYSTEM, Revision 71
- RWST Level Curve

Handout:

- OP-107, Section 8.7, Blender Manual Operation, with the Initial Conditions signed off.
- RWST Level Curve
- OP-107, Attachment 17 – Blender Manual Calculation Sheet
- OP-107, Attachment 19 – Makeup Concentration Limits

Initiating Cue:

- You have been directed to perform OP-107, Chemical and Volume Control System, Section 8.7 - Blender Manual Operation, to determine the blender settings for filling the RWST.
- The procedure Initial Conditions are met and signed off.
- Computer program OP-107 is NOT available.
- There will be no independent verification of your work.

Time Critical Task: No

Validation Time: 12 minutes

SIMULATOR SETUP

N/A

PERFORMANCE INFORMATION

(Denote Critical Steps with a check mark)

START TIME: _____

Performance Step: 1 Obtain procedure.

Standard: Reviews Section 8.7/verifies Initial Conditions signed.

Evaluator Cue: **Provide handout, calculator and straight edge.**

Evaluator Note: **To be evaluated as SAT on a critical task, the applicant must perform the calculation correctly; not just arrive within the tolerance through errors.**

Comment:

OP-107, 8.7.2.1.1

Performance Step: 2 If filling the VCT, then proceed to Section 8.7.2.4.

Standard: Marks N/A (filling the RWST)

Comment:

OP-107, 8.7.2.1.2

Performance Step: 3 Verify the boron concentration in the tank to be filled has been determined.

Standard: Yes – 2500 PPM provided in Initial Conditions.

Comment:

PERFORMANCE INFORMATION

OP-107, 8.7.2.1.3

Procedure Caution: Observe the VCT level to verify the level remains above the automatic makeup setpoint when filling the RWST or RHT. Computer program OP-107 calculates the time the manual operation will take based on the information input to it. Some manual operations could continue for long periods of time in which the VCT level could decrease to the automatic switchover to RWST for CSIP suction.

Performance Step: 4 If computer program OP-107 is to be used - - - - .

Standard: Marks N/A per Initial Conditions.

Comment:

OP-107, 8.7.2.1.4

Performance Step: 5 If the computer program is not being used to perform the fill calculations then complete the Blender Manual Calculations Sheet, Attachment 17.

Standard: Reviews Attachment 17 from the handout.

Comment:

PERFORMANCE INFORMATION

OP-107, Attachment 17, Step 1

Performance Step: 6 Obtain the following data:

- Initial Tank Boron Concentration
- Initial Tank Volume
- Boric Acid Tank Boron Concentration
- Final Tank Volume
- Final Tank Boron Concentration

Standard:

- Initial Tank Boron Concentration (C1): 2500 PPM
- Initial Tank Volume (V1): >438,000 ≤440,000 (from RWST Curve)
- Boric Acid Tank Boron Concentration (Cbat): 7300 PPM
- Final Tank Volume (V3): >448,00 ≤450,000 (from RWST Curve)
- Final Tank Boron Concentration (C3): 2500 PPM

Comment:

OP-107, Attachment 17, Step 2

√ **Performance Step: 7** Calculate volume of the blended fluid to be added.

V2 = V3 – V1

Standard: ≥ 8000 but ≤ 12000

Evaluator Note: **It is difficult to be precise reading the RWST Curve. It has small divisions representing a large volume and has been copied repeatedly. The RWST level values selected (93% and 95%) fall right on an intersect so the tolerance chosen allows for minor errors associated with copying the graph. Applicants should calculate approximately 10000 gallons. The computer program calculates a volume change of 8240 gallons.**

Comment:

PERFORMANCE INFORMATION

OP-107, Attachment 17, Step 3

Performance Step: 8 Calculate the required blended flow concentration by inserting the values from above:

- C3V3 – C1V1 ÷ V2 = C2

Standard: The calculation will come out to 2500 PPM since the concentration is not being changed.

Comment:

OP-107, Attachment 17, Step 4

√ **Procedure Note:** Blended flows at high boron concentrations require lower total makeup flow as indicated in Attachment 19.

Performance Step: 9 Using the required blended flow concentration (C2) and the Boric Acid Tank boron concentration (Cbat), select an appropriate total makeup flow rate (Q) from Attachment 19.

Standard: Selects 80 GPM per Attachment 19.

Comment:

OP-107, Attachment 17, Step 5

√ **Performance Step: 10** Calculate the required Boric Acid Flow Rate.

- (Q)(C2) ÷ Cbat
- If the calculated boric acid flow rate is greater than 30 GPM then recalculate using a lower total makeup flow rate (Q).

Standard: (80)(2500) ÷ 7300 = ≥ 27.3 but ≤ 27.5 GPM (Actual is 27.4 GPM)

Evaluator Note: **The ± .1 tolerance allows for an error in rounding. Actual is 27.397.**

Comment:

PERFORMANCE INFORMATION

OP-107, Attachment 17, Step 6

√ **Performance Step: 11** Calculate the total volume of boric acid: (X is equal to boric acid flow rate)

- (X)(V2) ÷ Q

Standard: (≥ 27.3 ≤ 27.5)(> 8000 < 12000) ÷ 80 = > 2730 GALS < 4125 GALS

Evaluator Note: **The wide acceptable range carries forward from the difficulty in precisely reading the RWST Curve. The computer program indicates 2822 GALS of boric acid will be used.**

Comment:

OP-107, Attachment 17, Step 7

Procedure Note: The Boric Acid Flow Controller has a 10 turn potentiometer and controls linearly from 0 to 50 GPM.

√ **Performance Step: 12** Calculate the required controller setpoint per the following equation:

- (X) ÷ 5 GPM/TURN

Standard: (≥ 27.3 ≤ 27.5) ÷ 5 = ≥ 5.4 ≤ 5.5 TURNS

Evaluator Note: **Tolerance allows for rounding to the nearest tenth.**

Comment:

PERFORMANCE INFORMATION

OP-107, Attachment 17, Step 8

Procedure Note: The RWMU Flow Controller has a 10 turn potentiometer and controls linearly from 0 to 160 GPM.

√ **Performance Step: 13** Calculate the required controller setpoint per the following equation:

- Q ÷ 16 GPM/TURN

Standard: 80 ÷ 16 GPM/TURN = 5 TURNS

Comment:

OP-107, Attachment 17

Performance Step: 14 Completes Page 1 of Attachment 17

Standard:

- Initials, Name, Time/Date Started, Time/Date Completed
- Submits to Unit SCO.

Comment:

Terminating Cue: **After Attachment 17 has been submitted, collect the remainder of the handout: Evaluation on this JPM is complete.**

STOP TIME: _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2007 NRC JPM RO-SRO A1-2

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

JPM CUE SHEET

INITIAL CONDITIONS:

- A refueling outage has concluded.
- One of the activities planned for this shift is to raise RWST level from 93% to 95%.
- RWST Boron concentration is 2500 PPM.
- Boric Acid Tank concentration is 7300 PPM.

INITIATING CUE:

- You have been directed to perform OP-107, Chemical and Volume Control System, Section 8.7 - Blender Manual Operation, to determine the blender settings for filling the RWST.
- The procedure Initial Conditions are met and signed off.
- Computer program OP-107 is NOT available.
- There will be no independent verification of your work.

HANDOUT

Attachment 17 - Blender Manual Operation Calculation Sheet
Sheet 1 of 3

Person(s) Performing Checklist

Initials	Name (Print)	Initials	Name (Print)

Remarks – Indicate any component not in the prescribed position.

Checklist Started Time _____ Date _____

Checklist Completed Time _____ Date _____

Approved by _____ Date _____
Unit SCO

After receiving the final review signature, this OP Attachment becomes a QA RECORD.

1. **OBTAIN** the following data:

Initial Tank Boron Concentration	C_1 = _____ PPM
Initial Tank Volume	V_1 = _____ GAL
Boric Acid Tank Boron Concentration	C_{BAT} = _____ PPM
Final Tank Volume	V_3 = _____ GAL
Final Tank Boron Concentration	C_3 = _____ PPM

2. **CALCULATE** volume of the blended fluid to be added:

$V_2 = V_3 - V_1$ = _____ GAL _____

_____
Verify

3. **CALCULATE** the required blended flow concentration by inserting the appropriate values from above:

$$C_2 = \frac{(C_3\ V_3) - (C_1\ V_1)}{V_2} = \_\_\_\_\_ \text{ PPM}$$

_____

_____
Verify

NOTE:	Blended flows at high boron concentrations require lower total makeup flow as indicated in Attachment 19

4. Using the required blended flow concentration (C_2) and the Boric Acid Tank boron concentration (C_{BAT}), **SELECT** an appropriate total makeup flow rate (Q) from Attachment 19.

Q = _____ GPM _____

_____
Verify

5. **CALCULATE** the required boric acid flowrate:

$$X = \text{Boric Acid Flowrate} = \frac{Q\,(C_2)}{(C_{BAT})} = \_\_\_\_\_ \text{ GPM}$$

_____

_____
Verify

a. **IF** the calculated Boric Acid flow rate (X) is greater than 30 gpm, **THEN RECALCULATE** using a lower total makeup flow rate (Q). _____

6. **CALCULATE** total volume of boric acid: (X is equal to boric acid flowrate)

$$\text{Volume of Boric Acid} = \frac{(X)(V_2)}{Q} = \_\_\_\_\_ \text{ GAL}$$ _____

_____
Verify

NOTE:	The Boric Acid Flow Controller has a 10 turn potentiometer and controls linearly from 0 to 50 gpm.

7. **CALCULATE** the required controller setpoint per the following equation:

$$\underset{(X)}{\_\_\_\_\_} \text{ gpm} \div 5 \text{ gpm/turn} = \_\_\_\_\_ \text{ turns}$$

_____

_____
Verify

NOTE:	The RWMU Flow controller has a 10 turn potentiometer and controls linearly from 0 to 160 gpm.

8. **CALCULATE** the required controller setpoint per the following equation:

$$\underset{(Q)}{\_\_\_\_\_} \text{ gpm} \div 16 \text{ gpm/turn} = \_\_\_\_\_ \text{ turns}$$ _____

_____
Verify

RO-SRO A1-2
Key

Attachment 17 - Blender Manual Operation Calculation Sheet
Sheet 1 of 3

Person(s) Performing Checklist

Initials	Name (Print)	Initials	Name (Print)
✓	✓		

Remarks – Indicate any component not in the prescribed position.

Checklist Started Time ✓ Date ✓

Checklist Completed Time ✓ Date ✓

Approved by _____ Date _____
Unit SCO

After receiving the final review signature, this OP Attachment becomes a QA RECORD.

Key

RO-SRO A1-2
Key

1. **OBTAIN** the following data:

Initial Tank Boron Concentration	C_1 = 2500 PPM
Initial Tank Volume	V_1 = ≥ 438,000 GAL ≤ 440,000
Boric Acid Tank Boron Concentration	C_{BAT} = 7300 PPM
Final Tank Volume	V_3 = ≥ 448,000 GAL ≤ 450,000
Final Tank Boron Concentration	C_3 = 2500 PPM

2. **CALCULATE** volume of the blended fluid to be added:

$V_2 = V_3 - V_1$ = ≥ 8000 ≤ 12,000 GAL _____

_____
Verify

3. **CALCULATE** the required blended flow concentration by inserting the appropriate values from above:

$$C_2 = \frac{(C_3 V_3) - (C_1 V_1)}{V_2} = 2500 \text{ PPM}$$

_____

_____
Verify

NOTE:	Blended flows at high boron concentrations require lower total makeup flow as indicated in Attachment 19

4. Using the required blended flow concentration (C_2) and the Boric Acid Tank boron concentration (C_{BAT}), **SELECT** an appropriate total makeup flow rate (Q) from Attachment 19.

Q = 80 GPM _____

_____
Verify

Key

RO-SRO A1-2
Key

Attachment 17 – Blender Manual Operation Calculation Sheet
Sheet 3 of 3

5. **CALCULATE** the required boric acid flowrate:

$$X = \text{Boric Acid Flowrate} = \frac{Q\,(C_2)}{(C_{BAT})} = \frac{(80)(2500)}{(7300)} = 27.4 \text{ GPM}$$

≥27.3 ≤27.5 _____

_____ Verify

a. **IF** the calculated Boric Acid flow rate (X) is greater than 30 gpm, **THEN RECALCULATE** using a lower total makeup flow rate (Q). _____

6. **CALCULATE** total volume of boric acid: (X is equal to boric acid flowrate)
(≥27.3 ≤27.5)(>8000 <12000)

$$\text{Volume of Boric Acid} = \frac{(X)(V_2)}{Q\,(80)} = \_\_\_\_\_ \text{ GAL}$$

≥2730 ≤4125 _____

_____ Verify

NOTE:	The Boric Acid Flow Controller has a 10 turn potentiometer and controls linearly from 0 to 50 gpm.

7. **CALCULATE** the required controller setpoint per the following equation:

(X) ≥27.3 ≤27.5 gpm ÷ 5 gpm/turn = ≥5.4 ≤5.5 turns

_____

_____ Verify

NOTE:	The RWMU Flow controller has a 10 turn potentiometer and controls linearly from 0 to 160 gpm.

8. **CALCULATE** the required controller setpoint per the following equation:

(Q) 80 gpm ÷ 16 gpm/turn = 5 turns _____

_____ Verify

Key

Facility:	Shearon-Harris	Task No.:	002001H201
Task Title:	Perform the RCS Water Inventory Balance surveillance	JPM No.:	2007 NRC RO JPM A2
K/A Reference:	G2.2.12 (3.0)		

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing: **This JPM should be performed in the Simulator at the STA computer.**

Simulated Performance: _____ Actual Performance: X

Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

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

Initial Conditions:
- The plant is at 100 percent power.
- The operating crew has entered AOP-016, EXCESSIVE PRIMARY PLANT LEAKAGE, suspecting an increase in RCS leakage.
- Radiation levels are normal but the frequency of makeup has increased.

Task Standard: RCS leakage calculated within required range.

Required Materials: PC with RCS Continuous Leak Rate Program

General References: OST-1026, RCS LEAKAGE EVALUATION, Rev. 34

Handouts:
- OST-1026 with Prerequisites and Steps 7.0.1 – 7.0.8 signed
- Start Data Sheet (JPM pg. 3) information entered on Attachment 1.

Initiating Cue:

- The Unit SCO directs you perform a 30 minute leak rate in accordance with OST-1026, RCS LEAKAGE EVALUATION.
- Assume that Steam Generator Tube Leakage, Miscellaneous Identified Leakage and Reactor Coolant Pressure Boundary (RCPB) leakage equals ZERO.
- All prerequisites are met.
- The procedure has been completed through Step 7.0.8 and Attachment 1 data has been entered.
- Begin at Step 7.0.9.
- The ending data should be gathered as you normally would in the plant.

For the purpose of the examination, there will be no independent verification of your data entry.

Time Critical Task: No

Validation Time: 10 minutes

Setup Instructions

The setup is the same for 2007 NRC SRO A2.

- 100% power IC
- Adjust OST-1026 parameters to the values on the End Point Attachment of this JPM.
- FREEZE and SNAP.
- Perform JPM on frozen simulator.
- Log onto the STA computer using the generic login, bring up the STA icons then minimize the icons.
- **At the conclusion of each JPM** re-open the OST-1026 program and enter erroneous data or ensure previous data entry is deleted. This will prevent the next student from inadvertently pulling up previous work.

START DATA

TODAY
TIME: ZERO

POINT ID	PARAMETER	CURRENT VALUE	QUALITY CODE	ENGR UNITS
LRC0460M	PRZ LVL-2	59.45	GOOD	PCNT
PRC0455M	PRESSURIZER PRESS CH1	2233.4	GOOD	PSIG
TRC0408M	RCS MEDIAN T-AVG (CONTROL)	588.8	GOOD	DEGF
LRC0470M	PRT LEVEL	70.0	GOOD	PCNT
LI-1003	RCDT Level	50.4		
LCS0115M	VCT LEVEL	52.0	GOOD	PCNT

END DATA

TODAY
TIME: 30 minutes later

POINT ID	DESCRIPTION	CURRENT VALUE	QUALITY CODE	ENGR UNITS
LRC0460M	PRZ LVL-2	59.46	GOOD	PCNT
PRC0455M	PRESSURIZER PRESS CH1	2233.4	GOOD	PSIG
TRC0408M	RCS MEDIAN T-AVG (CONTROL)	588.8	GOOD	DEGF
LRC0470M	PRT LEVEL	70.0	GOOD	PCNT
LI-1003	RCDT Level	51.1		
LCS0115M	VCT LEVEL	46.9	GOOD	PCNT

PERFORMANCE INFORMATION

(Denote Critical Steps with a √)

Start Time _____.

Performance Step: 1 Obtain procedure.

Standard: Reviews procedure.

Evaluator Cue: **Provide handout for RO JPM A2.**

Comment:

OST-1026, 7.0.9

Performance Step: 2 IF RCS TAVG at the end of the test interval differs by more than 0.2°F from TAVG at the start of the test, OR, IF an automatic VCT makeup has occurred during the data collection, THEN perform the following:

Standard: Verifies START and END Tavg within .2 °F and marks N/A.

Evaluator Cue: **No makeup occurred during the data collection.**

Comment:

7.0.10.a and b

Procedure Note: The "Step" numbers cited in the instructions below refer to labels displayed in the "Manual RCS Leakrate" spreadsheet.

√ **Performance Step: 3** **PERFORM** the following to calculate RCS leakage using the RCS Real-Time Continuous Leakrate Program, Manual RCS Leakrate spreadsheet.

- **START** the RCS Real-Time Continuous Leakrate Program.
- **CLICK** on the "Manual RCS Leakrate" tab.

Standard: **STARTs** the RCS Real-Time Continuous Leakrate Program and then clicks on the "Manual RCS Leakrate" tab.

Comment:

7.0.10.c

Procedure Caution: Computer points TRC0408M and TRC0408ZM represent time averaged values of RCS Tavg. Use of these points when RCS temperature is unstable can result in large calculated unidentified leakages due to incorrect temperature compensation. These points should **NOT** be used to calculate RCS leak rate when RCS temperature is **NOT** stable.

√ **Performance Step: 4** **PERFORM** the following to calculate RCS leakage using the RCS Real-Time Continuous Leakrate Program, Manual RCS Leakrate spreadsheet.

- **ENTER** the starting data in the designated table (Step 1).

Standard: Accurately enters START data from handout as prompted by the computer program.

Comment:

7.0.10.d

√ **Performance Step: 5**

PERFORM the following to calculate RCS leakage using the RCS Real-Time Continuous Leakrate Program, Manual RCS Leakrate spreadsheet.

- **ENTER** the ending data in the designated table (Step 1).

Standard:

Gathers END data by accessing computer for:

- GROUP: OST-1026
- NAME: RCS LEAKRATE

Accurately enters END data from the OST-1026 screen or printout as prompted by the computer program. **(√)**

Booth Operator Cue:

When contacted as RadWaste Operator: RCDT Level is 51.1%.

Comment:

7.0.10.e

Procedure Note:

The basis for any pre-calculated Steam Generator Tube Leakage must be documented on Attachment 5.

Performance Step: 6

PERFORM the following to calculate RCS leakage using the RCS Real-Time Continuous Leakrate Program, Manual RCS Leakrate spreadsheet.

ENTER the Miscellaneous Data in the designated table (Step 3).

- SG Tube Leakage
- Miscellaneous Identified Leakage
- Known Non-RCPB Leakage

Standard:

Enters ZERO per Initiating Cue.

Comment:

7.0.10.f and g

Procedure Note: The "Perform Data Validation" verifies all required "Start" and "End" data is entered. It does **NOT** check for correct format **OR** for an expected range of values

√ **Performance Step: 7** **PERFORM** the following to calculate RCS leakage using the RCS Real-Time Continuous Leakrate Program, Manual RCS Leakrate spreadsheet.

- **CLICK** on the "Perform Data Validation box (Step 4).
- **VERIFY** the text "Data Validation – Completed" is displayed.

Standard: **CLICKs** on the "Perform Data Validation" box and verifies "Data Validation – Completed" displays.

Comment:

7.0.10.h and i

Procedure Note: When the "Manual Data Upload" box is clicked, the user will receive a prompt that this action upload all manually calculated data to the "RCS Leakrate Report" and defeat the automatic calculation functions. The automatic functions will be restored through subsequent operations directed on the spreadsheet.

√ **Performance Step: 8** PERFORM the following to calculate RCS leakage using the RCS Real-Time Continuous Leakrate Program, Manual RCS Leakrate spreadsheet.

- **CLICK** on the "Manual Data Upload box (Step 5)
- **WHEN** prompted to complete the manual data upload, **THEN CLICK** "YES".

Standard: **CLICKs** on the "Manual Data Upload" box and "YES" when prompted.

Comment:

7.0.10.j

√ **Performance Step: 9** PERFORM the following to calculate RCS leakage using the RCS Real-Time Continuous Leakrate Program, Manual RCS Leakrate spreadsheet.

- **CLICK** on the "Print RCS Leakrate Report" box (Step 6) to automatically print the report

Standard:

- **CLICKs** on the "Print RCS Leakrate Report" box and retrieves the report.
- Unidentified Leakage ≥ 2.16 GPM ≤ 2.38 GPM. **(√)** [Actual is 2.27 GPM]
- Identified leakage ≤ .1 GPM [Actual is .09]

Evaluator Note: **Tolerance band for critical task allows for ± 5% error. This accounts for any small errors that may occur due to obtaining the readings from the Simulator in freeze.**

Comment:

7.0.10.k and l

Performance Step: 10 PERFORM the following to calculate RCS leakage using the RCS Real-Time Continuous Leakrate Program, Manual RCS Leakrate spreadsheet.

- **CLICK** on the "Restore Automatic Calculations" box (Step 7).
- **VERIFY** the text "Automatic Calculations – Restored" is displayed.

Standard: **CLICKs** on the "Restore Automatic Calculations" box and verifies "Automatic Calculations – Restored" displays.

Comment:

7.0.10.m and n

Performance Step: 11 PERFORM the following to calculate RCS leakage using the RCS Real-Time Continuous Leakrate Program, Manual RCS Leakrate spreadsheet.

- **INDEPENDENTLY VERIFY** the input data on the printout is correct.
- **ATTACH** the computer printout to this procedure.

Standard:

- May take this opportunity to check work/data.
- Clips or staples printout to procedure.

Evaluator Cue: **If necessary: No independent verification will be provided.**

Comment:

7.0.11

√ **Performance Step: 12** **VERIFY** calculated leak rates are within the Acceptance Criteria listed in Section 6.0.

Standard:

- References Section 6.0 for limits, as necessary.
- Informs USCO that Acceptance Criteria 6.2 (UNIDENTIFIED LEAKAGE) is exceeded.

Comment:

Terminating Cue: **After RO has evaluated the calculation against the acceptance criteria: Evaluation on this JPM is complete.**

End Time: _____.

JPM CUE SHEET

Job Performance Measure No.: 2007 NRC RO JPM A2

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

JPM CUE SHEET

INITIAL CONDITIONS:

- The plant is at 100 percent power.
- The operating crew has entered AOP-016, EXCESSIVE PRIMARY PLANT LEAKAGE, suspecting an increase in RCS leakage.
- Radiation levels are normal but the frequency of makeup has increased.

INITIATING CUE:

- The Unit SCO directs you perform a 30 minute leak rate in accordance with OST-1026, RCS LEAKAGE EVALUATION.
- Assume that Steam Generator Tube Leakage, Miscellaneous Identified Leakage and Reactor Coolant Pressure Boundary (RCPB) leakage equals ZERO.
- All prerequisites are met.
- The procedure has been completed through Step 7.0.8 and Attachment 1 data has been entered.
- Begin at Step 7.0.9.
- The ending data should be gathered as you normally would in the plant.

For the purpose of the examination, there will be no independent verification of your data entry.

Facility:	Shearon-Harris	Task No.:	002001H201
Task Title:	Perform the RCS Water Inventory Balance surveillance and evaluate the result	JPM No.:	2007 NRC SRO JPM A2
K/A Reference:	G2.2.12 (3.0)		

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing: **This JPM should be performed in the Simulator at the STA computer.**

Simulated Performance: _____ Actual Performance: X

Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

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

Initial Conditions:
- The plant is at 100 percent power.
- The operating crew has entered AOP-016, EXCESSIVE PRIMARY PLANT LEAKAGE, suspecting an increase in RCS leakage.
- Radiation levels are normal but the frequency of makeup has increased.

Task Standard:
- RCS leakage calculated within required range.
- Applicable TS identified.

Required Materials:
- PC with RCS Continuous Leak Rate Program
- Technical Specifications

General References: OST-1026, RCS LEAKAGE EVALUATION, Rev. 34

Handouts:
- OST-1026 with Prerequisites and Steps 7.0.1 – 7.0.8 signed
- Start Data Sheet (JPM pg. 3) information entered on Attachment 1.

Initiating Cue:
- The Unit SCO directs you perform a 30 minute leak rate in accordance with OST-1026, RCS LEAKAGE EVALUATION.
- Assume that Steam Generator Tube Leakage, Miscellaneous Identified Leakage and Reactor Coolant Pressure Boundary (RCPB) leakage equals ZERO.
- All prerequisites are met.

- The procedure has been completed through Step 7.0.8 and Attachment 1 data has been entered.
- Begin at Step 7.0.9.
- The ending data should be gathered as you normally would in the plant.

For the purpose of the examination, there will be no independent verification of your data entry.

Time Critical Task: No

Validation Time: 12 minutes

Setup Instructions

The setup is the same for 2007 NRC RO A2.

- 100% power IC
- Adjust OST-1026 parameters to the values on the End Point Attachment of this JPM.
- FREEZE and SNAP.
- Perform JPM on frozen simulator.
- Log onto the STA computer using the generic login, bring up the STA icons then minimize the icons.
- **At the conclusion of each JPM** re-open the OST-1026 program and enter erroneous data or ensure previous data entry is deleted. This will prevent the next student from inadvertently pulling up previous work.

START DATA

TODAY
TIME: ZERO

POINT ID	PARAMETER	CURRENT VALUE	QUALITY CODE	ENGR UNITS
LRC0460M	PRZ LVL-2	59.45	GOOD	PCNT
PRC0455M	PRESSURIZER PRESS CH1	2233.4	GOOD	PSIG
TRC0408M	RCS MEDIAN T-AVG (CONTROL)	588.8	GOOD	DEGF
LRC0470M	PRT LEVEL	70.0	GOOD	PCNT
LI-1003	RCDT Level	50.4		
LCS0115M	VCT LEVEL	52.0	GOOD	PCNT

END DATA

TODAY
TIME: 30 minutes later

POINT ID	DESCRIPTION	CURRENT VALUE	QUALITY CODE	ENGR UNITS
LRC0460M	PRZ LVL-2	59.46	GOOD	PCNT
PRC0455M	PRESSURIZER PRESS CH1	2233.4	GOOD	PSIG
TRC0408M	RCS MEDIAN T-AVG (CONTROL)	588.8	GOOD	DEGF
LRC0470M	PRT LEVEL	70.0	GOOD	PCNT
LI-1003	RCDT Level	51.1		
LCS0115M	VCT LEVEL	46.9	GOOD	PCNT

(Denote Critical Steps with a √)

Start Time _____.

Performance Step: 1 Obtain procedure.

Standard: Reviews procedure.

Evaluator Cue: **Provide handout for RO JPM A2.**

Comment:

OST-1026, 7.0.9

Performance Step: 2 IF RCS TAVG at the end of the test interval differs by more than 0.2°F from TAVG at the start of the test, OR, IF an automatic VCT makeup has occurred during the data collection, THEN perform the following:

Standard: Verifies START and END Tavg within .2 ˚F and marks N/A.

Evaluator Cue: **No makeup occurred during the data collection.**

Comment:

7.0.10.a and b

Procedure Note: The "Step" numbers cited in the instructions below refer to labels displayed in the "Manual RCS Leakrate" spreadsheet.

√ **Performance Step: 3** **PERFORM** the following to calculate RCS leakage using the RCS Real-Time Continuous Leakrate Program, Manual RCS Leakrate spreadsheet.

- **START** the RCS Real-Time Continuous Leakrate Program.
- **CLICK** on the "Manual RCS Leakrate" tab.

Standard: **STARTs** the RCS Real-Time Continuous Leakrate Program and then clicks on the "Manual RCS Leakrate" tab.

Comment:

7.0.10.c

Procedure Caution: Computer points TRC0408M and TRC0408ZM represent time averaged values of RCS Tavg. Use of these points when RCS temperature is unstable can result in large calculated unidentified leakages due to incorrect temperature compensation. These points should **NOT** be used to calculate RCS leak rate when RCS temperature is **NOT** stable.

√ **Performance Step: 4** **PERFORM** the following to calculate RCS leakage using the RCS Real-Time Continuous Leakrate Program, Manual RCS Leakrate spreadsheet.

- **ENTER** the starting data in the designated table (Step 1).

Standard: Accurately enters START data from handout as prompted by the computer program.

Comment:

7.0.10.d

√ **Performance Step: 5** **PERFORM** the following to calculate RCS leakage using the RCS Real-Time Continuous Leakrate Program, Manual RCS Leakrate spreadsheet.

- **ENTER** the ending data in the designated table (Step 1).

Standard: Gathers END data by accessing computer for:

- GROUP: OST-1026
- NAME: RCS LEAKRATE

Accurately enters END data from the OST-1026 screen or printout as prompted by the computer program. **(√)**

Booth Operator Cue: **When contacted as RadWaste Operator: RCDT Level is 51.1%.**

Comment:

7.0.10.e

Procedure Note: The basis for any pre-calculated Steam Generator Tube Leakage must be documented on Attachment 5.

Performance Step: 6 **PERFORM** the following to calculate RCS leakage using the RCS Real-Time Continuous Leakrate Program, Manual RCS Leakrate spreadsheet.

ENTER the Miscellaneous Data in the designated table (Step 3).

- SG Tube Leakage
- Miscellaneous Identified Leakage
- Known Non-RCPB Leakage

Standard: Enters ZERO per Initiating Cue.

Comment:

7.0.10.f and g

Procedure Note: The "Perform Data Validation" verifies all required "Start" and "End" data is entered. It does **NOT** check for correct format **OR** for an expected range of values

√ **Performance Step: 7** **PERFORM** the following to calculate RCS leakage using the RCS Real-Time Continuous Leakrate Program, Manual RCS Leakrate spreadsheet.

- **CLICK** on the "Perform Data Validation box (Step 4).
- **VERIFY** the text "Data Validation – Completed" is displayed.

Standard: **CLICKs** on the "Perform Data Validation" box and verifies "Data Validation – Completed" displays.

Comment:

7.0.10.h and i

Procedure Note: When the "Manual Data Upload" box is clicked, the user will receive a prompt that this action upload all manually calculated data to the "RCS Leakrate Report" and defeat the automatic calculation functions. The automatic functions will be restored through subsequent operations directed on the spreadsheet.

√ **Performance Step: 8** PERFORM the following to calculate RCS leakage using the RCS Real-Time Continuous Leakrate Program, Manual RCS Leakrate spreadsheet.

- **CLICK** on the "Manual Data Upload box (Step 5)
- **WHEN** prompted to complete the manual data upload, **THEN CLICK** "YES".

Standard: **CLICKs** on the "Manual Data Upload" box and "YES" when prompted.

Comment:

7.0.10.j

√ **Performance Step: 9** PERFORM the following to calculate RCS leakage using the RCS Real-Time Continuous Leakrate Program, Manual RCS Leakrate spreadsheet.

- **CLICK** on the "Print RCS Leakrate Report" box (Step 6) to automatically print the report

Standard:

- **CLICKs** on the "Print RCS Leakrate Report" box and retrieves the report.
- Unidentified Leakage ≥ 2.16 GPM ≤ 2.38 GPM. **(√)** [Actual is 2.27 GPM]
- Identified leakage ≤ .1 GPM [Actual is .09]

Evaluator Note: **Tolerance band for critical task allows for ± 5% error. This accounts for any small errors that may occur from obtaining the readings from the Simulator in freeze.**

Comment:

7.0.10.k and l

Performance Step: 10 PERFORM the following to calculate RCS leakage using the RCS Real-Time Continuous Leakrate Program, Manual RCS Leakrate spreadsheet.

- **CLICK** on the "Restore Automatic Calculations" box (Step 7).
- **VERIFY** the text "Automatic Calculations – Restored" is displayed.

Standard: **CLICKs** on the "Restore Automatic Calculations" box and verifies "Automatic Calculations – Restored" displays.

Comment:

7.0.10.m and n

Performance Step: 11 PERFORM the following to calculate RCS leakage using the RCS Real-Time Continuous Leakrate Program, Manual RCS Leakrate spreadsheet.

- **INDEPENDENTLY VERIFY** the input data on the printout is correct.
- **ATTACH** the computer printout to this procedure.

Standard:

- May take this opportunity to check work/data.
- Clips or staples printout to procedure.

Evaluator Cue: **If necessary, no independent verification will be provided.**

Comment:

7.0.11

√ **Performance Step: 12** **VERIFY** calculated leak rates are within the Acceptance Criteria listed in Section 6.0.

Standard:

- References Section 6.0 for limits, as necessary.
- Informs USCO that Acceptance Criteria 6.2 (UNIDENTIFIED LEAKAGE) is exceeded.

Evaluator Cue: **After the SRO candidate has calculated the leakage: Assume that you are the Unit SCO – apply your calculation against facility requirements.**

Comment:

AOP-016, Step 18

√ **Performance Step: 13** Evaluate RCS leakage.

Standard:

- Refers to Technical Specification 3.4.6.2 and determines 3.4.6.2.b is exceeded.
- Enters Action Statement 3.4.6.2.b - With any Reactor Coolant System leakage greater than any one of the above limits excluding Pressure Boundary Leakage and leakage from Reactor Coolant System Pressure Isolation Valves, reduce the leakage rate to within limits within 4 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

Comment:

Terminating Cue: **After SRO has determined the TS application: Evaluation on this JPM is complete.**

End Time: _____.

JPM CUE SHEET

Job Performance Measure No.: 2007 NRC SRO JPM A2

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS:

- The plant is at 100 percent power.
- The operating crew has entered AOP-016, EXCESSIVE PRIMARY PLANT LEAKAGE, suspecting an increase in RCS leakage.
- Radiation levels are normal but the frequency of makeup has increased.

INITIATING CUE:

- The Unit SCO directs you perform a 30 minute leak rate in accordance with OST-1026, RCS LEAKAGE EVALUATION.
- Assume that Steam Generator Tube Leakage, Miscellaneous Identified Leakage and Reactor Coolant Pressure Boundary (RCPB) leakage equals ZERO.
- All prerequisites are met.
- The procedure has been completed through Step 7.0.8 and Attachment 1 data has been entered.
- Begin at Step 7.0.9.
- The ending data should be gathered as you normally would in the plant.

For the purpose of the examination, there will be no independent verification of your data entry.

Facility: Shearon-Harris | Task No.:

Task Title: Given a set of conditions, determine and apply the facility dose limits. | JPM No.: 2007 NRC ADM JPM RO-SRO A3

K/A Reference: 2.3.1 (2.6/3.0)

Examinee: | NRC Examiner:

Facility Evaluator: | Date:

Method of testing:

Simulated Performance: _____ | Actual Performance: X

Classroom X Simulator _____ Plant _____

READ TO THE EXAMINEE

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

Initial Conditions:

- A fire has occurred in 1-A-SWGRA
- The reactor is tripped.
- The operating crew is performing AOP-036.08, FIRE AREAS: 1-A-SWGRA, 1-A-SWGRB
- Charging flow cannot be controlled from the control room.

Task Standard: Lowest facility limit determined and stay time calculated within tolerance band.

Required Materials: Calculator

General References:

- AOP-036.08, FIRE AREAS: 1-A-SWGRA, 1-A-SWGRB, Revision 3

Handout:

- Routine Operations Activities RWP (00001771)
- Survey Map (A47) for area including FCV-122, 1CS-228, 1CS-227
- AOP-036.08, Page 12 (Step 7)

Initiating Cue:	You have been assigned to locally control charging in accordance with AOP-036.08, Step 7. This is not considered to be an emergency evolution. Your accumulated TEDE dose for this year is 1800 mr. You will be performing the task under the "Routine Operations Activities" RWP. Determine the maximum permissible stay time before the first facility limit requires you to exit the area. Assume that you remain at the valves and no dose is received in transit.
Time Critical Task:	No
Validation Time:	10 minutes

SIMULATOR SETUP

N/A

PERFORMANCE INFORMATION

(Denote Critical Steps with a check mark)

START TIME: _____

Performance Step: 1 Determine the general valve location on the survey map.

Standard: Locates general area on the Survey Map.

Evaluator Cue:

- **Provide the handout.**
- **Assume that all handout materials are the most recent, approved documents.**

Comment:

√ **Performance Step: 2** Determine the radiation level in the area of the valves.

Standard: Using Survey Map A47, determines general radiation level in the area of the valves to be 3 mr/hr.

Comment:

√ **Performance Step: 3** Determine the first facility limit.

Standard: Reviews RWP and determines first facility limit will be reached when the Alarming Dosimeter actuates:

- 32 mr accumulated dose or 200 mr/hr dose rate.

Comment:

PERFORMANCE INFORMATION

√ **Performance Step: 4** Calculate maximum stay time.

Standard: (32 mr)(1 hr/3 mr) = ≥ 10.1 hours ≤ 10.67 hours.

Evaluator Note: **Tolerance allows for 5% error on the low end without exceeding the upper limit. 5% is permitted in the event the candidate interpolates the radiation level using adjacent areas.**

Comment:

Terminating Cue: **After stay time is reported: Evaluation on this JPM is complete.**

STOP TIME: _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2007 NRC ADM JPM RO-SRO A3

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS:

- A fire has occurred in 1-A-SWGRA
- The reactor is tripped.
- The operating crew is performing AOP-036.08, FIRE AREAS: 1-A-SWGRA, 1-A-SWGRB
- Charging flow cannot be controlled from the control room.

INITIATING CUE:

You have been assigned to locally control charging in accordance with AOP-036.08, Step 7. This is not considered to be an emergency evolution. Your accumulated TEDE dose for this year is 1800 mr. You will be performing the task under the "Routine Operations Activities" RWP. Determine the maximum permissible stay time before the first facility limit requires you to exit the area. Assume that you remain at the valves and no dose is received in transit.

ADMIN A3 HANDOUT

Map #:

RADIOLOGICAL SURVEY RECORD

Unit: 1	Bldg/Elev: RAB 236	Area: Mechanical Penetration Mezz	Date: 6/3/07	Time: 1553	RWP#: 1769	Survey#: 0603-009

Component: N/A

Work Description: Monthly survey. Lower elevation, mech pen, is posted as RA.

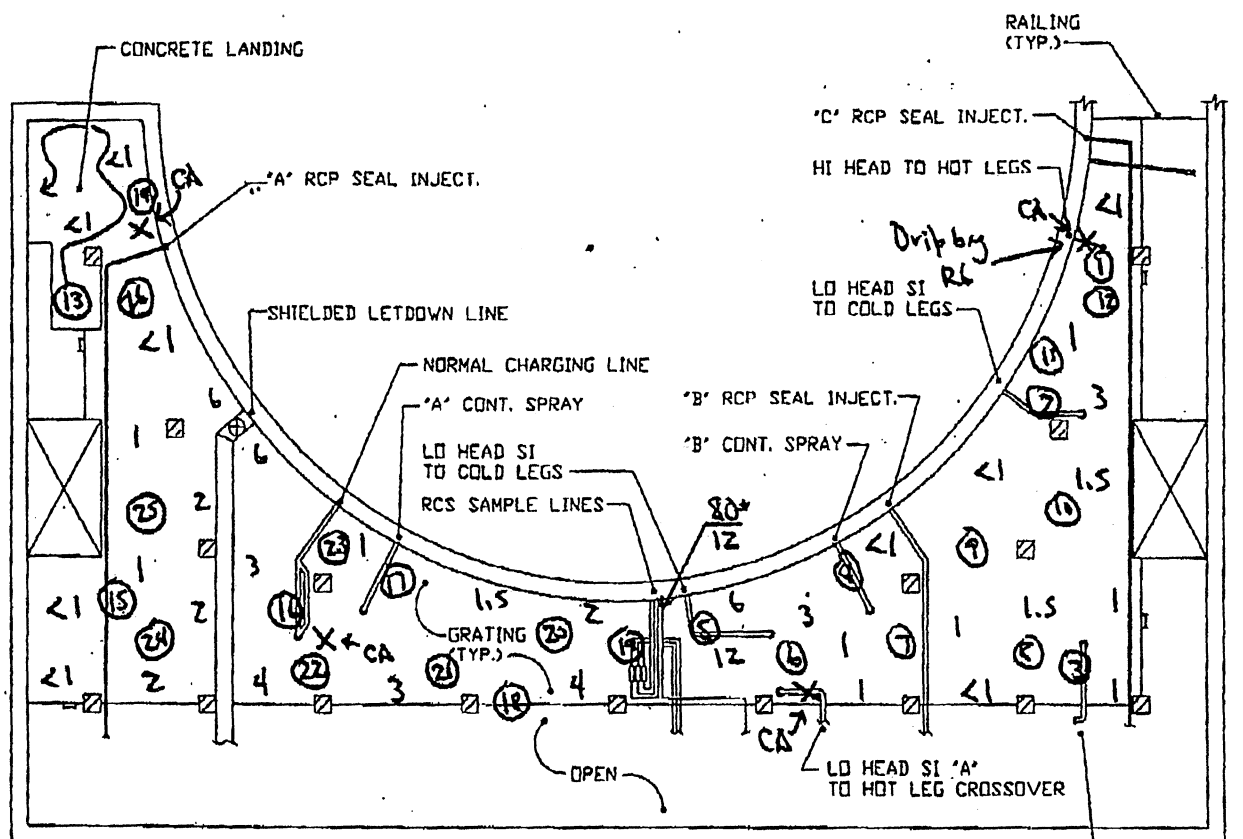
Surveyor: Michael P. Hoover

Signature: Michael P. Hoover

Reviewed By: C. [illegible] 6-3-07

Comments: All dose rates <1 unless otherwise indicated.

dose received 0.6 mrem



#	dpm/100cm²	Location
1-5	<1K	Pipes/Valves
6-12	↓	Grating
13	<1K/M	Landing
14-17	<1K	Pipes/valves
18	↓	Handrail
19	↓	Sample lines
20-26	↓	Grating
	N	
	A	

QA RECORD

Instrument	Serial #
RO-2	4993
L-177	41295
N	
	A

RA	Radiation Area	β	Beta Dose Rate
HRA	High Radiation Area	n	Neutron Dose Rate
LHRA	Locked High Radiation Area	R	Rem/Hour
VHRA	Very High Radiation Area	~~XXXX~~	Boundary
ARA	Airborne Radioactivity Area	o	Smear Location
CA	Contaminated Area	Δ	Air Sample Location
RMA	Radioactive Materials Area	Dose rates in mrem/hr unless otherwise noted	

K=1,000

M=Masslin

Air Activity

No. ___ DAC ___ % Activity ___ μCi/cc

No. ___ DAC ___ % Activity ___ μCi/cc

No. ___ DAC ___ % Activity ___ μCi/cc

N

A

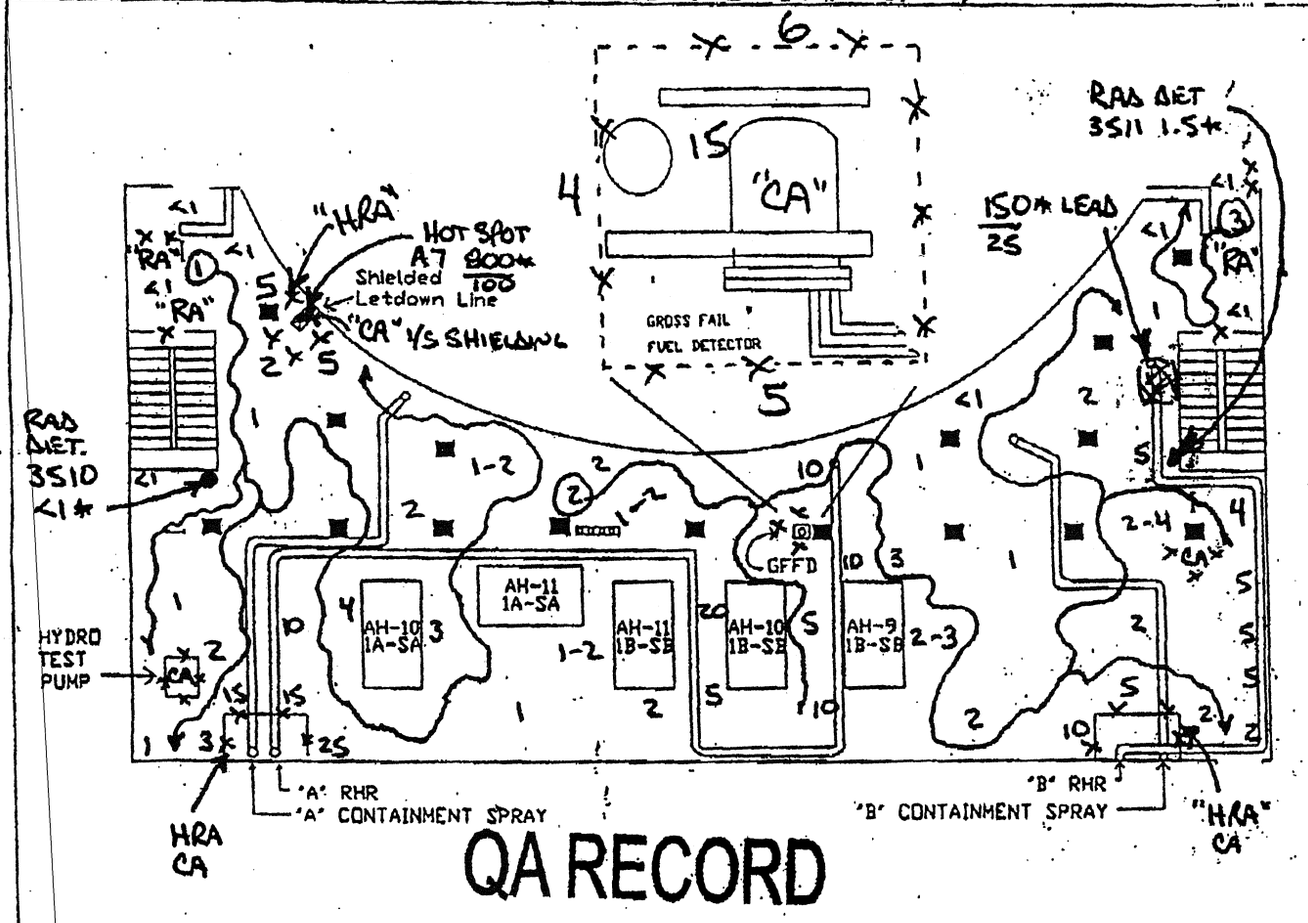
WRJO/Action Request# ___

Map # 6

RADIOLOGICAL SURVEY RECORD

Unit: 1	Bldg/Elev: RAB 236	Area: Mechanical Penetration Area	Date: 5-2-07	Time: 1330	RWP#: 1769	Survey#: 0502-008
Component: N/A		Work Description: MONTHLY SURVEY				
Surveyor: B. CLAY		Signature: [signature]		Reviewed By: [signature] 5-2-07		

Comments: GENERAL AREA DOSE RATES + SMEARS ONLY dose received N/A mrem



QA RECORD

#	dpm/100cm²	Location
1	<1000	FLOOR
2	↓	↓
3		

Instrument	Serial #
RO-2	3599
L-177	41295
N/A	

RA	Radiation Area	β	Beta Dose Rate
HRA	High Radiation Area	n	Neutron Dose Rate
LHRA	Locked High Radiation Area	R	Rem/Hour
VHRA	Very High Radiation Area	✱✱✱✱	Boundary
ARA	Airborne Radioactivity Area	o	Smear Location
CA	Contaminated Area	Δ	Air Sample Location
RMA	Radioactive Materials Area	Dose rates in mrem/hr unless otherwise noted	

o → MASSUN SMEAR

Air Activity

No. ___ DAC ___ % Activity ___ µCi/cc

No. ___ DAC N/A % Activity ___ µCi/cc

No. ___ DAC ___ % Activity ___ µCi/cc

WRJO/Action Request# ___

N/A

PASSPORT - TOTAL EXPOSURE SYSTEM

RADIATION WORK PERMIT

						ALARA Task		
Report ID :	TIPH900	RWP Number:	00001771	02	WO 00490854		01	01
Page :	1	Facility :	HNP					

RWP Title : ROUTINE OPERATIONS ACTIVITIES
Type : LR Status: ACTIVE Date : 06/20/2005 14:31
Area : GENERAL FACILITY Location:

Work Begin Date: 12/15/2003 00:00 Work End Date: 12/31/2010 23:59
Extension Date : By:
Initiated Date : 06/20/2005 14:31 By: KIVETP CHRISTENSEN CHRIS P
Approved Date : 06/20/2005 14:31 By: KIVETP CHRISTENSEN CHRIS P

ALARA Task

ALARA Task : WO 00490854 01 01 Status: READY
ALARA Desc : OPS ACTIVITIES

Radiological Conditions

ED Time Alarm: 900
(in Minutes)

Administrative Dose Limit: 40 (mrem)

ED Dose Alarm: 32 (mrem) ED Dose Rate Alarm: 200 (mrem/hr)

Radiological Hazard

Radiological Hazard	!--Distance--!	!-------Reading-------!	
SEE HOLD POINT INST	N/A	N/A	N/A

Radiation Protection Requirements

Dosimetry Type : S STANDARD (DRD/TLD) Multi-Pack Type:

Type	Code	Description	Type	Code	Description
SPCL	SPCL	SEE SPECIAL INSTRUCTION			

RADIATION WORK PERMIT

						ALARA Task		
Report ID :	TIPH900	RWP Number:	00001771	02	WO 00490854		01	01
Page :	2	Facility :	HNP					

Hold Points and Special Instructions

Nbr	Hold Point Description
10	ENTRY ALLOWED TO ALL AREAS EXCEPT AREAS POSTED:
10	VERY HIGH RADIATION AREAS (VHRA)
20	AIRBORNE RADIATION AREAS (ARA),
30	HOT PARTICLE AREAS (HPA),
30	CONTAINMENT WHEN REACTOR CRITICAL
30	NO ENTRY INTO DOSE FIELDS > 1000 MREM/HR

Nbr	Special Instructions
10	********** WORK DESCRIPTION**********
10	ROUNTINE OPERATIONS ACTIVITIES
10	----------
10	.
10	1.REVIEW AREA SURVEY MAPS AND/OR CONTACT RADIATION
10	CONTROL FOR SPECIFIC WORK AREA RADIOLOGICAL
10	CONDITIONS PRIOR TO START OF WORK.
10	2.IF RADIOLOGICAL CONDITIONS ARE SIGNIFICANTLY HIGHER
10	THAN CURRENT SURVEYS OR HISTORICAL SURVEY DATA
10	THEN WORK IS NOT ALLOWED TO CONTINUE ON THIS RWP
10	WITHOUT APPROVAL FROM RC SUPERVISION.
10	3.NOTIFY RADIATION CONTROL PRIOR TO CLIMBING IN
10	THE OVERHEAD.
10	4.FOR HIGH NOISE AREAS EVALUATE THE USE OF THE
10	FOLLOWING:
10	- LED LIGHT
10	- VIBRATING DOSIMETRY
10	- TELEMETRY
10	- STAY TIMES
10	5.IF ACCUMULATED DOSE ALARM OR UNANTICIPATED DOSE
10	RATE ALARM SOUNDS, LEAVE THE AREA AND CONTACT
10	RADIATION CONTROL.
10	.
20	********LOCKED HIGH RADIATION AREA ENTRIES*****
20	----------
20	1.PRE-JOB BRIEFING REQUIRED.
20	2.RC SUPERVISOR APPROVAL REQUIRED PRIOR TO ENTRY.
20	3.CONTINUOUS RADIATION CONTROL COVERAGE REQUIRED
20	4.WHEN PROVIDING CONTINUOUS COVERAGE, RP PERSONNEL
20	SHALL NOT ENGAGE IN ANY ACTIVITIES WHICH COULD
20	DISTRACT THEM FROM MONITORING THE WORKERS AND THE
20	WORK ENVIRONMENT.
20	.
40	**** CONTAMINATED SYSTEM BREACH (LINES > 1 INCH) ***
40	----------
40	1.CONTINUOUS RC COVERAGE REQUIRED FOR INITIAL

PASSPORT - TOTAL EXPOSURE SYSTEM

RADIATION WORK PERMIT

					ALARA Task		
Report ID :	TIPH900	RWP Number:	00001771	02	WO 00490854	01	01
Page :	3	Facility :	HNP				

Nbr	Special Instructions
40	SYSTEM BREACH.
40	2.FULL PROTECTIVE CLOTHING (TYPE W) W/HOOD
40	REQUIRED FOR WET WORK, AND ADDITIONAL DRESS
40	CONTROLS MAY BE REQUIRED BASED ON RC INSTRUCTIONS.
40	3.GLOVES AND A CONTAINMENT DEVICE ARE REQUIRED AS A
40	MINIMUM IN CLEAN AREAS.
40	4.ENGINEERING CONTROLS AS PER RADIATION CONTROL.
40	5.PROVIDE PATH OR CONTAINMENT FOR SYSTEM DRAINAGE,
40	IF NEEDED TO CONTAIN LIQUIDS.
40	.
60	**********CONTAMINATED AREA ENTRIES**********
60	----------
60	1.GLOVES AND SHOECOVERS REQUIRED AS A MINIMUM
60	FOR INSPECTIONS ACTIVITIES.
60	2.FULL PROTECTIVE CLOTHING AND HOOD (TYPE D) REQUIRED
60	FOR CLIMBING IN OVERHEAD ABOVE 8 FEET AND/OR
60	CRAWLING.
60	3.FULL PROTECTIVE CLOTHING (TYPE D) REQUIRED FOR HANDS
60	ON WORK.
60	4.DOUBLE SURGEONS GLOVES MAY BE SUBSTITUTED FOR
60	RUBBER GLOVES WITH RADIATION CONTROL APPROVAL.
60	5.FULL PROTECTIVE CLOTHING (TYPE W) REQUIRED FOR WET
60	WORK AND ADDITIONAL DRESS CONTROLS MAY BE REQUIRED
60	BASED ON RC INSTRUCTIONS.
60	6.INTERMITTENT RC COVERAGE, UNLESS OTHERWISE
60	INSTRUCTED.
60	.

- End of Report -

Facility:	Shearon-Harris	Task No.:	345001H602
Task Title:	Upgrade an EAL and make a PAR	JPM No.:	2007 NRC JPM SRO A4
K/A Reference:	2.4.44 (4.0)		

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing: **This JPM can be performed in any setting with the required references available.**

Simulated Performance: _____ Actual Performance: X

Classroom X Simulator _____ Plant _____

READ TO THE EXAMINEE

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

Initial Conditions: See Plant Conditions handout.

Task Standard: Upgrade EAL to GE and correct PAR

Required Materials: None

General References:
- PEP-110, EMERGENCY CLASSIFICATION AND PROTECTIVE ACTION RECOMMENDATIONS, Rev. 16
- PEP-230, CONTROL ROOM OPERATIONS, Rev.14
- PEP-310, NOTIFICATIONS AND COMMUNICATIONS, Rev. 21

Handouts:
- Attached Initial Conditions
- EAL Flowcharts
- PEP-110
- PEP-310
- EP/EAL Guidelines
- PEP-230, Attachment 1 – SITE EMERGENCY COORDINATOR

Initiating Cue: You are the Site Emergency Coordinator. Review the plant conditions handout sheet and perform PEP-110 and PEP-230 Attachment 1, Step 4, 10, 11 as applicable. Steps 5 - 9 are not required. This is a time critical JPM. The examiner will read the Plant Conditions to you and then start the time.

The computer is unavailable for transmitting Emergency Notification Forms, so notifications will be done using the Manual Notification Form in accordance with PEP-230, Attachment 1, Step 11.b

Time Critical Task: YES – 15 minutes to classify then 15 more minutes to make the PAR.

Validation Time: 10 minutes to classify, 12 minutes for PAR/Emergency Notification Form.

PERFORMANCE INFORMATION

(Denote Critical Steps with a √)

Start Time: _____.

Performance Step: 1 Evaluate changing conditions.

Standard: Compares conditions against EAL Flowchart criteria.

Evaluator Cue:

- **Provide Initial Conditions sheet (last page of JPM).**
- **Provide reference materials if not available in the JPM performance location.**
- **Log Classification Start Time.**

Comment: **Classification Start Time _____.**

√ **Performance Step: 2** Determine EAL.

Standard: Upgrade to GE (2-1-4) required:

- RCS breached – SGTR
- Fuel Jeopardized – Core Cooling RED
- CNMT Breached – SG Safety Valves lifting

Evaluator Note:

- **It may be necessary to cue the PAR performance. The facility normally splits the EAL and the PAR into two JPM's.**
- **If the applicant incorrectly classifies then skip to the cue in Performance Step 3 - hand write the ENF.**
- **Log Classification End Time/PAR Start Time.**

Comment: **Classification End Time/PAR Start Time _____.**

PERFORMANCE INFORMATION

√ **Performance Step: 3** Determine PAR (PEP-230, Attachment 1, Step 10).

Standard: Refers to PEP-110, Attachment 3:

PROTECTIVE ACTION RECOMMENDATION:

- EVACUATE: 2 mile radius
- EVACUATE: Subzones A, B, C
- SHELTER: Subzones D, E, F, G, H, I, J, K, L, M, N

Evaluator Cue: **The computer program is not available. Hand write a paper copy of the Manual Notification Form in accordance with PEP-230, Attachment 1, Step 11.b.**

Comment:

√ **Performance Step: 4** Complete the ENF.

Standard: Critical Elements:

- Block 4: GE
- Block 4 EAL: 2-1-4
- Block 5 PAR: Evacuate 2 mile radius and Subzones A, B, C; Shelter Subzones D, E, F, G, H, I, J, K, L, M, N
- Block 6 Emergency Release: Is Occurring
- Block 9 Wind Direction from: 223˚
- Block 10: DECLARATION; Current TIME; Current DATE
- Block 17: Applicant signature/Title/Current Time/ Current Date
- Provide form to communicator

Evaluator Note: **An ENF KEY is attached.**

Comment: **PAR Notification End Time _____.**

Terminating Cue: **After the ENF is handed to the communicator: Evaluation on this JPM is complete.**

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2007 NRC JPM SRO A4

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

JPM CUE SHEET

INITIAL CONDITIONS: See Plant Conditions handout.

INITIATING CUE: You are the Site Emergency Coordinator. Review the plant conditions handout sheet and perform PEP-110 and PEP-230 Attachment 1, Step 4, 10, 11 as applicable. Steps 5 - 9 are not required. This is a time critical JPM. The examiner will read the Plant Conditions to you and then start the time.

The computer is unavailable for transmitting Emergency Notification Forms, so notifications will be done using the Manual Notification Form in accordance with PEP-230, Attachment 1, Step 11.b

2007 NRC JPM SRO A4 Plant Conditions

- Increasing RCS leakage required a MANUAL Reactor Trip and Safety Injection.
- Vital Bus 1A-SA locked out on a relay actuation.
- The TDAFW Pump is cleared and tagged.
- The EAL Network was entered at Point X.
- The crew diagnosed a Steam Generator Tube Rupture on SG "A". The EAL Network was re-entered at Point U.
- An ALERT has been declared (EAL 2-1-2).
- After the ALERT declaration, off-site power was lost and EDG 1B failed while starting.
- Containment Pressure is normal.
- Containment Area Radiation Monitors are rising slowly but none are in an alarm status.
- Safety valves are lifting on all steam generators.
- The following Critical Safety Functions have been confirmed:
    - Heat Sink – RED
    - Core Cooling – RED
- Outside temperature is 88 °F.
- Thunderstorms are moving into the area.
- The wind is blowing at 12 MPH from 223 °.

SKU M4 KEY

Attachment 9 - NUCLEAR POWER PLANT EMERGENCY NOTIFICATION FORM Sheet 1 of 1

1. [A] DRILL [B] ACTUAL EVENT MESSAGE # _____

2. [A] INITIAL [B] FOLLOW-UP NOTIFICATION: TIME _____ DATE ____/____/____ AUTHENTICATION # _____

3. SITE: HNP-1 Confirmation Phone # (____)_____

4. **EMERGENCY CLASSIFICATION:** [A] UNUSUAL EVENT [B] ALERT [C] SITE AREA EMERGENCY [D] GENERAL EMERGENCY

BASED ON EAL # 2-1-4, EAL DESCRIPTION: 3 FPB's Breached or Jeopardized Fuel jeopardized/SGTR/SG Safety Valve stuck open

5. **PROTECTIVE ACTION RECOMMENDATIONS:** [A] NONE

[B] EVACUATE 2 mile radius and subzones A, B, C

[C] SHELTER D, E, F, G, H, I, J, K, L, M, N

[D] CONSIDER THE USE OF KI (POTASSIUM IODIDE) IN ACCORDANCE WITH STATE PLANS AND POLICY.

[E] OTHER _____

6. **EMERGENCY RELEASE:** [A] None [B] Is Occurring [C] Has Occurred

7. RELEASE SIGNIFICANCE: [A] Not applicable [B] Within normal operating limits [C] Above normal operating limits [D] Under evaluation

8. EVENT PROGNOSIS: [A] Improving [B] Stable [C] Degrading

9. METEOROLOGICAL DATA: Wind Direction* from 223 degrees Wind Speed* _____mph

(*Not Required for Initial Notifications) Precipitation* _____ Stability Class* [A] [B] [C] [D] [E] [F] [G]

10. [A] DECLARATION [B] TERMINATION Time ✓ Date ✓/____/____

11. AFFECTED UNIT(S): [1] [2] [3] [All]

12. UNIT STATUS: (Unaffected Unit(s) Status Not Required for Initial Notifications)

[A] U1 0 % Power Shutdown at Time _____ Date ___/____/____

[B] U2 ____% Power Shutdown at Time _____ Date ___/____/____

[C] U3 ____% Power Shutdown at Time _____ Date ___/____/____

13. REMARKS: _____

FOLLOW-UP INFORMATION (Lines 14 through 16 Not Required for Initial Notifications)

EMERGENCY RELEASE DATA. NOT REQUIRED IF LINE 6 A IS SELECTED.

14. RELEASE CHARACTERIZATION: TYPE: [A] Elevated [B] Mixed [C] Ground UNITS: [A] Ci [B] Ci/sec [C] µCi/sec

MAGNITUDE: Noble Gases:_____ Iodines:_____ Particulates:_____ Other: _____

FORM: [A] Airborne Start Time _____ Date ___/____/____ Stop Time _____ Date ___/____/____

[B] Liquid Start Time _____ Date ___/____/____ Stop Time _____ Date ___/____/____

15. PROJECTION PARAMETERS: Projection period: _____Hours Estimated Release Duration _____Hours

Projection performed: Time _____ Date ___/____/____

16. PROJECTED DOSE:

DISTANCE	TEDE (mrem)	Adult Thyroid CDE (mrem)
Site boundary		
2 Miles		
5 Miles		
10 Miles		

17. APPROVED BY: NAME Title ✓ Time ✓ Date ___/✓/____

NOTIFIED BY:_____ RECEIVED BY: _____ Time _____ Date ___/____/____

KEY

Facility:	SHEARON-HARRIS	Date of Examination:	8/6/2007
Exam Level (circle one):	RO / SRO(I) / **SRO (U)**	Operating Test No.:	**NRC**

Control Room Systems@ (8 for RO; 7 for SRO-I; 2 or 3 for SRO-U)			
	System / JPM Title	Type Code*	Safety Function
a.	**Pull control rods to reactor criticality/MSSV fails OPEN after reactor is critical** **001 A1.07 (3.7/4.0)**	**M, L, S**	**1**
b.	Transfer to Hot Leg Recirculation EPE 011 EA1.11 (4.2/4.2)	D, A, S	3
c.	**Isolate ECCS Accumulators** **006 A4.02 (4.0/3.8)**	**P, D, A, S**	**2**
d.	**Initiate RCS Feed and Bleed** **E05 EA1.1 (4.1/4.0)**	**M, A, S**	**4P**
e.	Control RCS temperature following a reactor trip 041 A2.02 (3.6/3.9)	N, A, S	4S
f.	Reduce Containment Spray flow 026 A4.01 (4.5/4.3) ***RO ONLY***	N, S	5
g.	Restore Offsite power to an Emergency Bus 062 A4.01 (3.3/3.1)	D, S	6
h.	Respond to a loss of all CCW APE026 AA1.02 (3.2/3.3)	D, A, S	8
In-Plant Systems@ (3 for RO; 3 for SRO-I; 3 or 2 for SRO-U)			
i.	Inhibit both trains of SSPS APE068 AK 3.18 (4.2/4.5)	P, M, E	8
j.	**Locally close the MSIV's** **APE040 AA1.04 (4.3/4.3)**	**D, R, E**	**4S**

k.	**Respond to a radiation alarm with a WG release in progress** **071 G2.1.30 (3.9/3.4)**	**D, R**	**9**

@ 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	

HARRIS 2007 NRC JPM OUTLINE SUMMARY

a. Pull to criticality in accordance with GP-004/MSSV fails OPEN after reactor is critical. The applicant will assume the watch with the reactor at the third doubling and pull rods to criticality. Then, when the reactor is on the way to 10 E-8 amps, a main steam safety valve will fail open causing Tave to lower to a point requiring a manual reactor trip. This is a JPM from a previous AUDIT exam that is not in the facility bank. Modify by changing the insertion point of the malfunction which adds steps to block SRNIS. To be performed by all applicants.

b. Transfer to Hot Leg Recirculation in accordance with EPP-011, TRANSFER BETWEEN COLD LEG AND HOT LEG RECIRCULATION. The applicant will assume the watch with conditions met for transferring to hot leg recirculation. The alternate path is an RNO action for failure of a valve to re-position. Bank JPM CR-066. To be performed by RO and SROI applicants.

c. Isolate ECCS Accumulators in accordance with EPP-009, LOCA COOLDOWN AND DEPRESSURIZATION. The applicant will assume the watch at the point for isolating the ECCS accumulators to prevent discharge. The alternate path is an RNO action for failure of an isolation valve to close. This is a randomly selected task from the 2004 NRC Exam that is not in the facility bank. The failed accumulator isolation valve has been changed from “C” to “B”. To be performed by all applicants.

d. Initiate RCS Feed and Bleed in accordance with FRP-H.1, RESPONSE TO LOSS OF SECONDARY HEAT SINK. The applicant will assume the watch with conditions met for initiating RCS Feed and Bleed. Modify Bank JPM CR-068 by allowing only one Pressurizer PORV to open. This will require RNO actions to establish adequate vent paths. To be performed by all applicants.

e. Control RCS temperature following a reactor trip in accordance with EPP-004, REACTOR TRIP RESPONSE. The applicant will assume the watch at the EPP-4 entry point. At the RCS temperature evaluation step the applicant will be required to take RNO actions for open SG blowdown valves and a stuck open steam dump valve. New JPM to be performed by RO and SROI applicants.

f. Reduce Containment Spray flow in accordance with EPP-012, LOSS OF EMERGENCY COOLANT RECIRCULATION. The applicant will assume the watch at the "Determine Containment Spray Requirements" step with two Containment Spray Pumps and three Containment Coolers running. This will require an evaluation of Containment Pressure and RWST level, applying those conditions to a table and stopping one Containment Spray Pump. New JPM to be performed by RO applicants only.

g. Restore Offsite power to an Emergency Bus in accordance with OP-156.02, AC ELECTRICAL DISTRIBUTION. The applicant will assume the watch with one de-energized vital bus and off-site power restored. Bank JPM CR-027. To be performed by RO and SROI applicants.

h. Respond to a loss of all CCW IAW AOP-014, LOSS OF COMPONENT COOLING WATER. The applicant will assume the watch at 100% power. Shortly afterwards the running CCW Pump will trip and the standby pump will fail to start. This will require RNO actions to isolate various components and eventually to initiate a MANUAL reactor trip and to stop all Reactor Coolant Pumps. This is a JPM from a previous AUDIT exam that is not in the facility bank. To be performed by RO and SROI applicants.

i. Inhibit both trains of SSPS IAW AOP-036, SAFE SHUTDOWN FOLLOWING A FIRE. The applicant will simulate disabling both protection trains by removing electrical power. Randomly selected JPM from the 2006 NRC Exam. Modified by adding operation of the Rod Drive MG set breakers. To be performed by RO and SROI applicants.

j. Locally close the MSIV's in accordance with EPP-14, FAULTED SG ISOLATION. The applicant will close one MSIV by simulating isolation and venting the instrument air line. Bank JPM IP-109. To be performed by all applicants.

k. Respond to a radiation alarm with a WG release in progress in accordance with OP-120.07, WASTE GAS PROCESSING. The applicant will simulate manual isolation of a waste gas release due to a related radiation monitor going into ALERT. Bank JPM IP-183. To be performed by all applicants.

Facility:	Shearon Harris	Task No.:	333003H101
Task Title:	Pull to criticality/Take Corrective Action For Less Than Minimum Tavg During A Reactor Startup	JPM No.:	2007 NRC JPM a
K/A Reference:	001 A1.07 (3.7)		

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X

Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

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

Initial Conditions:

- The unit is in Mode 2.
- The crew is performing GP-004, REACTOR STARTUP, and has completed Step 33.
- The estimated critical rod height is Control Bank "D" at 90 steps.
- Control Bank "D" withdrawal was halted at the third doubling when the RO became ill.
- Control Bank D is currently at 60 steps.

Task Standard:

- Criticality identified within specified band.
- Maintain stable SUR ≤ 1 DPM and block SRNIS.
- Reactor trip initiated within two minutes after Tave-Tref > 10 °F.

Required Materials: Floor Operator to silence, acknowledge and report alarms.

General References: GP-004, Reactor Startup, Revision 40
OP-104, Rod Control System, Revision 22

Handouts: OP-104, Section 5.4

GP-004, completed through Step 33

To expedite the examination schedule, the candidate should review the INITIAL CONDITIONS, INITIATING CUE, and the HANDOUT prior to entering the simulator to perform the JPM.

Initiating Cue: You have been directed to assume the RO position. For the purpose of this JPM, assume that the CRS has authorized the watch relief without a face-to-face turnover. Continue the reactor startup in accordance with GP-004, Step 31. A second operator will acknowledge, silence, and report any alarms other than those on ALB-10, ALB-11, ALB-12, and ALB-13.

Time Critical Task: N/A

Validation Time: 8 minutes

SIMULATOR SETUP

- IC-7 (Sub-critical, reactor startup in progress).
- ECP = D-90
- Adjust RCS boron concentration so that criticality is at D-82.
- GP-004 with Step 31 in progress and 32/33 completed.
- Withdraw rods and take associated actions until the third doubling.
- imf sgn04a on Trigger 1
- FREEZE and SNAP to an IC-161 as NRC JPM a
- After the candidate has established a stable SUR and the SRNIS is blocked, disable the main steam safety valve sound and activate Trigger 1.

PERFORMANCE INFORMATION

(Denote Critical Steps with a check mark)

START TIME: _____

GP-004, Step 5.33

Performance Step: 1 Position Rod Motion Switch to WITHDRAW.

Standard: Withdraws rods a few steps at a time while monitoring rod position and NIS response.

Evaluator Cue: **Provide 1/M feedback whenever requested: 1/M predicts criticality between D-80 and D-90 steps.**

Evaluator Note: **Applicant should maintain a steady-state SUR of ≤ 1 DPM at all times.**

Comment:

GP-004, Step 5.34

√ **Performance Step: 2** Record the time and approximate critical rod position.

Standard:

- Logs time and rod position in Step 34.
- Criticality determined at D ≥ 77 ≤ 87 steps. **(√)**

Evaluator Note: **The evaluator can elect to just have the applicant report the time and rod position.**

Comment:

PERFORMANCE INFORMATION

GP-004, Step 5.35

Performance Step: 3 Announce twice on the Public Address (PA) System:

Attention, the reactor is critical.

Standard: Using the PA, announces twice: Attention, the reactor is critical.

Evaluator's Cue: **Assume that the announcements have been made.**

Comment:

GP-004, Step 5.36

Performance Step: 4 Verify that ALB-010/6-4B, RCS TREF/TAVG HIGH-LOW, is clear or verify that RCS temperature is greater than or equal to 551 ˚F, once per 30 minutes with the RCS TREF/TAVG HIGH-LOW alarm not reset.

Standard: Verifies ALB-010/6-4B is clear and Tavg is >551 ˚F.

Comment:

PERFORMANCE INFORMATION

GP-004, Step 5.37/5.38

√ **Performance Step: 5**

- Establish a startup rate not to exceed one decade per minute, and allow power to increase to 10E-08 amps.
- **WHEN** the IR PWR > P-6 SOURCE RANGE BLOCK PERMISSIVE Bypass-Permissive Light is illuminated, **AND** there is at least one decade overlap between Source and Intermediate Ranges, **THEN PLACE** the following SOURCE RANGE TRIP BLOCK Switches to BLOCK:
  - SOURCE RANGE TRAIN A TRIP BLOCK
  - SOURCE RANGE TRAIN B TRIP BLOCK

Standard:

- Withdraws Control Bank D rods and establishes a SUR ≤ 1 DPM.
- Blocks Source Range NIS by placing Train A and Train B SOURCE RANGE TRIP BLOCK Switches in BLOCK after the P-6 Permissive actuates and before an automatic reactor trip initiates.

Booth Operator: **Disable the main steam safety valve sound and actuate Trigger 1 (IMF SGN04A) after a stable SUR is established and the SRNIS has been blocked.**

Comment:

√ **Performance Step: 6** Determines that RCS Tavg is dropping in an uncontrolled manner.

Standard: Initiates a MANUAL reactor trip no later than two minutes after Tavg lowers to >10 ˚F below Tref. (GP-004, SECTION 4.0, PRECAUTIONS AND LIMITATIONS 19 and/or 20)

Comment: **Candidate might initiate a trip because SUR is rising with no controlled reactivity change.**

Terminating Cue: **When the immediate actions of PATH-1 commence: Evaluation on this JPM is complete.**

STOP TIME: _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2007 NRC JPM a

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

JPM CUE SHEET

INITIAL CONDITIONS:

- The unit is in Mode 2.
- The crew is performing GP-004, REACTOR STARTUP, and has completed Step 33.
- The estimated critical rod height is Control Bank "D" at 90 steps.
- Control Bank "D" withdrawal was halted at the third doubling when the RO became ill.
- Control Bank D is currently at 60 steps.

INITIATING CUE:

You have been directed to assume the RO position. For the purpose of this JPM, assume that the CRS has authorized the watch relief without a face-to-face turnover. Continue the reactor startup in accordance with GP-004, Step 31. A second operator will acknowledge, silence, and report any alarms other than those on ALB-10, ALB-11, ALB-12, and ALB-13.

Facility:	Shearon-Harris	Task No.:	301150H601
Task Title:	TRANSFER TO HOT LEG RECIRCULATION	JPM No.:	2007 NRC JPM b
K/A Reference:	EPE011 EA1.11 (4.2)		Bank JPM CR-066 **ALTERNATE PATH**

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X

Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

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

Initial Conditions: The plant has experienced a large break LOCA and is presently aligned for cold leg recirculation per EPP-010, TRANSFER TO COLD LEG RECIRCULATION.

Task Standard:
- RHR and CSIP "A" aligned for HLR
- CSIP "B" running with a discharge flowpath.

Required Materials: None

General References: EPP-011, TRANSFER BETWEEN HOT LEG AND COLD LEG RECIRCULATION, Revision 14

Handout: Use simulator copy of EPP-011. Ensure it is cleaned after each use..

Initiating Cue: 6.5 hours have passed since Cold leg Recirculation was established. You have been directed to perform EPP-011, TRANSFER BETWEEN HOT LEG AND COLD LEG RECIRCULATION.

Time Critical Task: No

Validation Time: 7 minutes

SIMULATOR SETUP

- At power IC
- LBLOCA
- Perform PATH-1 to EPP-010 transition
- Perform EPP-010 when conditions are met
- Insert RFSIS079 – ENGAGED to disable 1SI-86
- FREEZE and SNAP with ECCS in proper CL alignment
- Snapped to IC-162 for 2007 NRC Exam JPM b
- Before applicant enters: go to RUN, silence and acknowledge alarms.

PERFORMANCE INFORMATION

START TIME: _____

	EPP-011, Step 1
Performance Step: 1	Check Charging System status: a. Check charging line - isolated
Standard:	Verifies at least one charging line isolation valve closed.
Comment:	

	EPP-011, Step 2
Performance Step: 2	Check SI systems - aligned for cold leg recirculation
Standard:	Determined from initial conditions.
Evaluator Cue:	**If applicant starts to perform SI system alignment verification: SI Systems are properly aligned for cold leg recirculation.**
Comment:	

PERFORMANCE INFORMATION

EPP-011, Step 3.a

√ **Performance Step: 3** Align RHR Pumps for hot leg recirculation:

a. Shut Low Head SI to Cold Leg valves:

- 1SI-340
- 1SI-341

Standard:

- Verifies 1SI-340 SHUT (GREEN light)
- Restores control power to 1SI-341
- Closes 1SI-341 (GREEN light)

Evaluator Note: **1SI-340 is already SHUT in CL Recirculation to prevent pump runout if one RHR Pump trips.**

Comment:

EPP-011, Step 3.b

√ **Performance Step: 4** b. Open Low Head SI to Hot Leg valve:

- 1SI-359

Standard:

- Restores control power to 1SI-359
- Opens 1SI-359 (RED light)

Comment:

EPP-011, Step 4.a

Performance Step: 5 Check CSIP injection flow path:

Check Alternate High Head SI to Cold Leg valve - OPEN:

- 1SI-52

Standard: Verifies 1SI-52 open (RED light)

Comment:

PERFORMANCE INFORMATION

EPP-011, Step 4.b

Performance Step: 6 Check any BIT Outlet valve - OPEN:

- 1SI-3
- 1SI-4

Standard:

- Verifies 1SI-3 open (RED light)
- Verifies 1SI-4 open (RED light)

Comment:

EPP-011, Step 5.a, b, c, d

√ **Performance Step: 7** Align both CSIPs for hot leg recirculation:

a. Stop Train "A" CSIP.

b. Shut Alternate High Head SI to Cold Leg valve:

- 1SI-52

c. Open Alternate High Head SI to Hot Leg valve:

- 1SI-107

d. Restart the Train "A" CSIP.

Standard:

- Places CSIP "A" in stop (GREEN light)
- Shuts 1SI-52 (GREEN light)
- Restores control power to 1SI-107
- Opens 1SI-107 (RED light)
- Places CSIP "A" in start (RED light)

Comment:

PERFORMANCE INFORMATION

EPP-011, Step 5.e, f, g **(ALTERNATE PATH)**

√ **Performance Step: 8**

e. Stop Train "B" CSIP.

f. Shut BIT Outlet valves: 1SI-3, 1SI-4

g. Open High Head SI to Hot Leg valve: 1SI-86

RNO g.1: Open BIT Outlet valves: 1SI-3, 1SI-4

Standard:

- Places CSIP "B" in stop (GREEN light) **[√]**
- Shuts 1SI-3 (GREEN light)
- Shuts 1SI-4 (GREEN light)
- Restores control power to 1SI-86
- Attempts to open 1SI-86
- Determines 1SI-86 has NOT opened and takes RNO
- Opens either 1SI-3 (RED light) or 1SI-4 (RED light) **[√]**

Comment:

EPP-011, RNO Step 5.g.2

Performance Step: 9

Consult with plant staff to evaluate use of Attachment 1 to open High Head SI to Hot Leg valve while continuing with this procedure.

Standard:

Makes report to USCO.

Evaluator Cue:

The USCO will initiate the contact. Continue with the procedure.

Comment:

EPP-011, Step 5.h

√ **Performance Step: 10**

h. Restart the Train "B" CSIP.

Standard:

Places CSIP "B" in start (RED light).

Comment:

PERFORMANCE INFORMATION

	EPP-011, Step 5.i and Step 7
Performance Step: 11	5.i: Go to Step 7 7: Change from Hot Leg to Cold Leg Recirculation in 6.5 hours using this procedure.
Standard:	Marks the time.
Comment:	

Terminating Cue: **After Step 7 is read: Evaluation on this JPM is complete.**

STOP TIME: _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2007 NRC JPM b

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

JPM CUE SHEET

INITIAL CONDITIONS: The plant has experienced a large break LOCA and is presently aligned for cold leg recirculation per EPP-010, TRANSFER TO COLD LEG RECIRCULATION.

INITIATING CUE: 6.5 hours have passed since Cold leg Recirculation was established. You have been directed to perform EPP-011, TRANSFER BETWEEN HOT LEG AND COLD LEG RECIRCULATION.

Facility: Shearon-Harris Task No.:

Task Title: Isolate SI Accumulators JPM No.: 2007 NRC JPM c

K/A Reference: 006 A4.02 (4.0) • **ALTERNATE PATH**

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X

Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

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

Initial Conditions: A small break LOCA has occurred. Actions have been taken in accordance with PATH-1, and EPP-009, LOCA COOLDOWN AND DEPRESSURIZATION. EPP-009 is in progress at Step 28 – Isolate ECCS Accumulators.

Task Standard:
- ECCS Accumulators "A" and "C" isolated.
- ECCS Accumulator "B" depressurizing to < RCS pressure.

Required Materials: None

General References:
- PATH-1
- EPP-009, LOCA COOLDOWN AND DEPRESSURIZATION, Revision 13
- OP-110, SAFETY INJECTION, Revision 24

Handout:
- EPP-09 marked through Step 27
- OP-110, Section 8.3

Initiating Cue: Starting at Step 28, perform EPP-009. For the purpose of expediting performance of this JPM, simulator time compression techniques will be utilized to perform any directed field tasks.

Time Critical Task: No

Validation Time: 11 minutes

SIMULATOR SETUP

- Initialize to IC-19 (100% power)
- Insert a small break LOCA (MALF RCS 18 2)
- Trip all RCPs
- Perform PATH-1
- Transition to EPP-8
- Transition to EPP-009
- Perform EPP-009 through Step 27
- Insert a malfunction to prevent 1SI-247 from closing (DI XAA1068)
- Place the following remote functions on a trigger to close the breakers for the SI Accumulator Isolation valves when requested:
    - SIS006 CLOSED (Trigger 1)
    - SIS007 CLOSED (Trigger 2)
    - SIS008 CLOSED (Trigger 3)
- FREEZE and SNAP to IC-163 for 2007 NRC JPM c
- Go to RUN, acknowledge and silence alarms before applicant assumes the watch.

PERFORMANCE INFORMATION

(Denote Critical Steps with a check mark)

START TIME: _____

	EPP-009, Step 28.a
Performance Step: 1	Isolate SI Accumulators: a. RCS subcooling greater than 10°F [40°F] – C 20°F [50°F] – M
Standard:	Verifies RCS subcooling requirements are met.
Evaluator Note:	**Adverse containment values are in effect [40°F].**
Comment:	

	EPP-009, Step 28.b
Performance Step: 2	PRZ level greater than 10% [30%]
Standard:	• Verifies PRZ level greater than 30%. • Proceeds to Step 28.e
Comment:	

PERFORMANCE INFORMATION

EPP-009, Step 28.e

Performance Step: 3

e. Locally unlock AND close both breakers for each SI accumulator discharge valve:
   - ISI-246 (MCC-IA21-SA-5C)
   - ISI-247 (MCC-IB21-SB-5C)
   - ISI-248 (MCC-IA21-SA-3D)

Standard: Contacts AO and directs closure of the breakers.

Booth Operator Cue:

- **Acknowledge order.**
- **Actuate the trigger(s) to close all the breakers and then make the report.**

Comment:

EPP-009, Step 28.f

√ **Performance Step: 4**

Shut SI accumulator discharge valves:

- 1SI-246 (√)
- 1SI-247
- 1SI-248 (√)

Standard:

- Places switches for 1SI-246, 1SI-247, 1SI-248 in CLOSE.
- Verifies 1SI-246, 1SI-248 go closed (GREEN light)
- Reports 1SI-247 did NOT close.
- Proceeds to EPP-009, Step 28.f RNO

Comment:

PERFORMANCE INFORMATION

EPP-009, Step 28.f RNO

Performance Step: 5 Vent any unisolable accumulator using OP-110, SAFETY INJECTION, Section 8.3.

Standard: Locates procedure.

Evaluator Cue: **Provide OP-110, Section 8.3 Handout if the correct procedure is located.**

Comment:

OP-110, 8.3.1

Performance Step: 6 Verify Initial Conditions.

Standard: Determines Initial Conditions are met.

Evaluator Cue: **If necessary: No personnel are in containment.**

Comment:

PERFORMANCE INFORMATION

OP-110, 8.3.2.1/8.3.2.2.a

PROCEDURE NOTE: To minimize any potential sluicing between Accumulators through leaking valves, accumulator pressures should be approximately equal (within 4 psid between lowest and highest ERFIS indications) at the completion of this Section. (Reference 2.7.4, AR 72818)

Performance Step: 7

- Perform the following Steps on only one Accumulator at a time. (Reference 2.7.4)
- At the MCB perform the following:

PROCEDURE NOTE: Nitrogen is the primary motive force to LTOPS. The impact on LTOPS operability should be determined prior to shutting 1SI-287 per Precaution and Limitation 4.0.0.06.

- If necessary initiate an EIR.

Standard:

- Determines first NOTE does NOT apply since only one accumulator is being depressurized.
- Informs CRS regarding PORV operability.
- Determines EIR is NOT necessary since this is an EOP directed action or refers it to the CRS.

Evaluator Cue: **Acknowledge any reports.**

Comment:

OP-110, 8.3.2.2.b

√ **Performance Step: 8** Shut 1SI-287, ACCUMULATORS & PRZ PORV N2 SUPPLY

Standard: Places 1SI-287 in SHUT and verifies indication change. (GREEN light ON)

Comment:

PERFORMANCE INFORMATION

OP-110, 8.3.2.2.c

Performance Step: 9 Declare the associated Accumulator inoperable per TS 3.5.1, due to being connected to Non-Safety piping (a one hour action statement in Modes 1 through 3 above 1000 psig).

Standard: Informs CRS.

Evaluator Cue: **Acknowledge report.**

Comment:

OP-110, 8.3.2.2.d

√ **Performance Step: 10** Open the ACCUMULATOR N2 SUPPLY & VENT for the Accumulator to be vented:

Standard: Places 1SI-296, ACCUMULATOR B N_2 SUPPLY & VENT, in OPEN. (RED light)

Comment:

PERFORMANCE INFORMATION

OP-110, 8.3.2.3

Procedure CAUTION: In modes 1, 2, and 3, ensure Accumulators are maintained within Technical Specification limits for pressure and level when venting SI Accumulators.

√ **Performance Step: 11** Slowly adjust HC-936, 1SI-298 ACCUM VENT PRESS CNTL, control potentiometer output signal to open 1SI-298 and vent the Accumulator.

Standard: Adjusts potentiometer slowly while observing pressure in SI Accumulator "B" (PI-925).

Evaluator Note: **Pressure will be dropping very slowly; even when HC-936 is fully open.**

Comment:

Terminating Cue: **When Accumulator "B" only pressure is lowering under control: Evaluation on this JPM is complete.**

STOP TIME: _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2007 NRC JPM c

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

JPM CUE SHEET

INITIAL CONDITIONS: A small break LOCA has occurred. Actions have been taken in accordance with PATH-1, and EPP-009, LOCA COOLDOWN AND DEPRESSURIZATION. EPP-009 is in progress at Step 28 – Isolate ECCS Accumulators.

INITIATING CUE: Starting at Step 28, perform EPP-009. For the purpose of expediting performance of this JPM, simulator time compression techniques will be utilized to perform any directed field tasks.

Facility:	Shearon-Harris	Task No.:	301170H601
Task Title:	Initiate RCS Feed and Bleed	JPM No.:	2007 NRC JPM d
K/A Reference:	E05 EA1.1 (4.1)	**ALTERNATE PATH**	

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

Simulated Performance: _____ Actual Performance: __X__

Classroom _____ Simulator __X__ Plant _____

READ TO THE EXAMINEE

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

Initial Conditions:

- The reactor tripped from 100% power due to a loss of off-site power.
- A SBLOCA occurred following the reactor trip.
- Adverse containment values are in effect.
- Bus 1A-SA is locked out on an electrical fault.
- Motor Driven AFW Pump "B" is partially disassembled for maintenance.
- The Turbine-Driven AFW Pump failed while starting.
- The crew is performing FRP-H.1, RESPONSE TO LOSS OF SECONDARY HEAT SINK.
- The Foldout criteria for initiation of RCS Bleed and Feed have just been met.

Task Standard: RCS feed established with maximum available bleed path.

Required Materials: Attach PATH-1 GUIDE Attachment 1 to this JPM for use by the evaluator.

General References: FRP-H.1, RESPONSE TO LOSS OF SECONDARY HEAT SINK, Revision 21

Handout: Use simulator copy of FRP-H.1. Ensure it is cleaned after each use.

Initiating Cue: Observe the procedure CAUTION prior to FRP-H.1, Step 12, then initiate RCS feed and bleed.

Time Critical Task: No

Validation Time: 8 minutes

SIMULATOR SETUP

- At power IC
- Tag MDAFW Pump "B"
- MALF for an electrical fault to lock out Bus 1A-SA
- MALF to trip TDAFW Pump during AUTO start
- Overrides to block MANUAL OPEN on PCV-445A and PCV-444B
- Loss of Off-site power
- Perform PATH-1
- Perform EPP-4
- SBLOCA after entering FRP-H.1 to get to adverse containment values.
- Perform FRP-H.1 without establishing any source of feed flow
- Allow SG levels to reach feed and bleed Foldout criteria
- Place shifting 1A and 1B Air Compressors to LOCAL Mode on a trigger
- FREEZE and SNAP to IC-164 for 2007 NRC JPM d.

PERFORMANCE INFORMATION

(Denote Critical Steps with a check mark)

START TIME: _____

FRP-H.1, Step 12

Procedure CAUTION: Perform Steps 12 through 21 quickly to establish RCS heat removal by RCS bleed and feed.

Performance Step: 1 Verify All RCPs - STOPPED

Standard: All RCP's stopped on LOOP.

Comment:

FRP-H.1, Step 13

Performance Step: 2 Actuate SI.

Standard: Verifies SI actuated.

Comment:

FRP-H.1, Step 14

Performance Step: 3 Verify RCS Feed Path:

VERIFY BOTH OF THE FOLLOWING:

- VERIFY CSIPs - AT LEAST ONE RUNNING.
- VERIFY SI VALVES - PROPERLY ALIGNED. (REFER TO PATH-1 GUIDE, ATTACHMENT 1)

Standard:

- Verifies both CSIP's running. (RED lights)
- Verifies valve alignment using Guide 1, Attachment 1, and/or verifies flow indication on the SI Flow meters.

Evaluator Note: **Only Train "B" is operable – no power to Train "A".**

Comment:

PERFORMANCE INFORMATION

FRP-H.1, Step 15

√ **Performance Step: 4** Reset SI.

Standard:

- Places both SI Train RESET Switches in RESET and releases. **(√)**
- Verifies RESET on Bypass Permissive Panel.

Comment:

FRP-H.1, Step 16

Performance Step: 5 MANUALLY REALIGN SAFE-GUARDS EQUIPMENT FOLLOWING A LOSS OF OFF-SITE POWER.

(REFER TO PATH-1 GUIDE, ATTACHMENT 2.)

Standard: Reads/acknowledges.

Comment:

FRP-H.1, Step 17

√ **Performance Step: 6** Reset Phase A AND Phase B Isolation Signals.

Standard:

- Places Train "A" and Train "B" Phase "A" RESET Switches in RESET and releases. **(√)**
- Places Train "A" and Train "B" Phase "B" RESET Switches in RESET and releases.

Comment:

FRP-H.1, Step 18

√ **Performance Step: 7** Energize AC Buses 1A1 AND 1B1.

Standard:

- Energizes Bus 1B1 by closing the cross-tie from the vital bus.
- No power available to 1A1.

Comment:

PERFORMANCE INFORMATION

FRP-H.1, Step 19

√ **Performance Step: 8**

Establish Instrument Air AND Nitrogen To CNMT:

a. Open the following valves:

- 1IA-819
- 1SI-287

b. Place air compressor 1A and 1B in the local control mode. (Refer to PATH-1 GUIDE, Attachment 5.)

Standard:

- Opens 1IA-819 (√)
- Opens 1SI-287 (√)
- Dispatches an AO to place 1A and 1B Air Compressors in the LOCAL Control Mode.

Booth Operator Cue:

Acknowledge assignment then actuate the ET to place 1A and 1B Air compressors in the LOCAL Mode and report back.

Comment:

PERFORMANCE INFORMATION

FRP-H.1, Step 20

√ **Performance Step: 9** ESTABLISH RCS BLEED PATH:

ESTABLISH TWO RCS BLEED PATHS LISTED IN TABLE 2 BY PERFORMING THE FOLLOWING FOR EACH BLEED PATH:

- VERIFY PRZ PORV BLOCK VALVE - OPEN.
- OPEN PRZ PORV.
- Evaluate EAL network using entry point U.

Standard:

- Verifies RC-115 and RC-117 indicate OPEN (RED light)
- No indication for RC-113
- Opens PCV-445B **(√)**
- Informs Shift Superintendent to evaluate EAL network using entry point U

Evaluator Cue:

- **The last known position for RC-113 was OPEN.**
- **As Shift Superintendent, acknowledge direction to evaluate the EAL network using entry point U.**

Evaluator Note: **Only PCV-445B will open. The applicant should attempt to open all PRZ PORV's.**

Comment:

FRP-H.1, Step 21.a **(ALTERNATE PATH begins)**

Performance Step: 10 Verify Adequate RCS Bleed Path:

Check PRZ PORVs AND associated block valves - TWO BLEED PATHS OPEN

RNO a. GO TO Step 21c.

Standard:

- Determines only one PRZ PORV is OPEN.
- Proceeds to RNO.

Comment:

PERFORMANCE INFORMATION

FRP-H.1, Step 21.c

√ **Performance Step: 11** Open all RCS vent valves to commence venting:

- 1RC-900
- 1RC-901
- 1RC-902
- 1RC-903
- 1RC-904
- 1RC-905

Standard: Opens:

- 1RC-901 ___
- 1RC-903 ___
- 1RC-905 ___

Evaluator Note: **There is no power available to 1RC-900, 1RC-902, 1RC-904.**

Comment:

Terminating Cue: **After RCS Vent Valves with power available are OPEN: Evaluation on this JPM is complete.**

STOP TIME: _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2007 NRC JPM d

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

JPM CUE SHEET

INITIAL CONDITIONS:

- The reactor tripped from 100% power due to a loss of off-site power.
- A SBLOCA occurred following the reactor trip.
- Adverse containment values are in effect.
- Bus 1A-SA is locked out on an electrical fault.
- Motor Driven AFW Pump "B" is partially disassembled for maintenance.
- The Turbine-Driven AFW Pump failed while starting.
- The crew is performing FRP-H.1, RESPONSE TO LOSS OF SECONDARY HEAT SINK.
- The Foldout criteria for initiation of RCS Bleed and Feed have just been met.

INITIATING CUE: Observe the procedure CAUTION prior to FRP-H.1, Step 12, then initiate RCS feed and bleed.

Attachment 2
Sheet 1 of 1

SAFEGUARDS EQUIPMENT REALIGNMENT FOLLOWING A LOSS OF OFFSITE POWER

IF a loss of offsite power occurs after SI reset, THEN the sequencer will provide a different equipment alignment than that provided by the SI sequencer program:

- RHR pumps and E-6 fans will NOT restart.
- Primary Shield and Reactor Support cooling fans (which were NOT running) will start.
- CNMT fan coolers (which were running in low speed) will restart in high speed.
- If CNMT Spray signal has been reset, the CNMT spray pumps will NOT restart.

These components should be realigned as required by plant conditions.

Facility: Shearon-Harris | Task No.:

Task Title: Control RCS temperature following a reactor trip | JPM No.: 2007 NRC JPM e

K/A Reference: 041 A2.02 (3.6) | **ALTERNATE PATH**

Examinee: | NRC Examiner:

Facility Evaluator: | Date:

Method of testing:

Simulated Performance: _____ | Actual Performance: X

Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

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

Initial Conditions:

- The reactor tripped from 100% power due to a technician error while testing the turbine protection system.
- The immediate actions of PATH-1 are complete.
- Both vital buses are energized from off-site power.
- The operating crew has just entered EPP-4, REACTOR TRIP RESPONSE.

Task Standard:

- All blowdown FCV's closed.
- MSIV's closed to isolate failed open Steam Dump Valve.

Required Materials: Floor operator to silence, acknowledge, and announce alarms.

General References: EPP-4, REACTOR TRIP RESPONSE, Revision 14

Handout: Use simulator copy of EPP-4. Ensure that it is cleaned after each use.

Initiating Cue: Perform the actions of EPP-4. A second operator is available to silence, acknowledge, and announce alarms not in your immediate vicinity.

Time Critical Task: No

Validation Time: 4 minutes

SIMULATOR SETUP

- 100% power IC.
- MALF for one stuck open steam dump valve (MS-109 @ 70 %).
- MALF for all six SG Blowdown Isolation valves fail to close.
- Manual trip Main Turbine.
- Perform PATH-1 immediate actions.
- Transition to EPP-4.
- FREEZE and SNAP to IC-165 for NRC Exam JPM e.
- RUN
- Setup computer screens for normal monitoring.

PERFORMANCE INFORMATION

(Denote Critical Steps with a check mark)

START TIME: _____

Performance Step: 1

EPP-4, NOTE
FOLDOUT applies

- SI Initiation
- AFW Suction Switchover

Standard: Verifies no actions required.

Comment:

Performance Step: 2

EPP-4, Step 1
Implement Function Restoration Procedures As Required.

Standard: Verifies no RED or ORANGE CSF.

Comment:

Performance Step: 3

EPP-4, Step 2
Evaluate EAL Network Using Entry Point X.

Standard: Informs SSO.

Evaluator Cue: **Acknowledge "Evaluate EAL Network Using Entry Point X for a reactor trip".**

Comment:

PERFORMANCE INFORMATION

EPP-4, Step 3

Performance Step: 4 Check SG blowdown isolation valves – SHUT

Standard:

- Determines all SG Blowdown Isolation valves are OPEN and answers NO.
- Refers to RNO column.

Comment:

EPP-4, Step 3 RNO **(ALTERNATE PATH)**

√ **Performance Step: 5** Shut SG blowdown FCVs

Standard: Closes each (3) SG Blowdown Flow Control Valve at the Main Control Board by unlocking each POT and adjusting it to ZERO.

Comment:

EPP-4, Table 1

Performance Step: 6 Stabilize AND maintain temperature between 555 ˚F AND 559 ˚F using TABLE 1: RCS TEMPERATURE CONTROL GUIDELINES FOLLOWING RX TRIP

Standard:

- Refers to Table 1.
- Determines RCS temperature < 557 ˚F and decreasing.

Comment:

PERFORMANCE INFORMATION

EPP-4, Table 1

Performance Step: 7 RCS temperature < 557 ˚F and decreasing.

- Stop dumping steam

Standard:

- May note the open steam dump valve and attempt to close it using Steam Dump controls in MANUAL or taking it to OFF.
- May skip over next two steps and begin closing MSIV's.

Evaluator Note: **If applicant begins closing the MSIV's then skip to that JPM Performance Step.**

Comment:

EPP-4, Table 1

Performance Step: 8 RCS temperature < 557 ˚F and decreasing.

- Control feed flow
- Maintain total feedwater flow greater than 210 KPPH until level greater than 25% in one SG.

Standard: Adjusts AFW flow according to NR SG level indication:

- One or more SG's NR level ≥ 25 %: Operator discretion.
- All SG's NR levels < 25%: ≥ 210 KPPH.

Comment:

PERFORMANCE INFORMATION

EPP-4, Table 1

√ **Performance Step: 9** RCS temperature < 557 ˚F and decreasing.

- If cooldown continues then shut MSIV's and Bypass Valves.

Standard: Using each individual control switch, SHUTS:

- MSIV "A" _____ (√)
- MSIV "B" _____ (√)
- MSIV "C" _____ (√)
- Verifies Bypass Valves SHUT

Comment:

Terminating Cue: **When the applicant has moved to the next step (RCP Status): Evaluation on this JPM is complete.**

STOP TIME: _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2007 NRC JPM e

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

JPM CUE SHEET

INITIAL CONDITIONS:

- The reactor tripped from 100% power due to a technician error while testing the turbine protection system.
- The immediate actions of PATH-1 are complete.
- Both vital buses are energized from off-site power.
- The operating crew has just entered EPP-4, REACTOR TRIP RESPONSE.

INITIATING CUE:

Perform the actions of EPP-4. A second operator is available to silence, acknowledge, and announce alarms not in your immediate vicinity.

Facility: Shearon-Harris | Task No.:

Task Title: Reduce Containment Spray flow | JPM No.: 2007 NRC JPM f

K/A Reference: 026 A4.01 (4.5)

Examinee: | NRC Examiner:

Facility Evaluator: | Date:

Method of testing:

Simulated Performance: _____ | Actual Performance: X

Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

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

Initial Conditions:

- A large break LOCA has occurred.
- Both RHR Pump breakers have tripped. Maintenance is investigating.
- The crew has transitioned to EPP-12, LOSS OF EMERGENCY COOLANT RECIRCULATION, and has completed Step 9.

Task Standard: Containment Spray Pump flow reduced to one pump running.

Required Materials: None

General References: EPP-12, LOSS OF EMERGENCY COOLANT RECIRCULATION, Revision 17

Handout: Use simulator copy of EPP-12. Ensure that it is cleaned after each use.

Initiating Cue: Beginning at Step 10, perform EPP-12.

Time Critical Task: No

Validation Time: 5 minutes

SIMULATOR SETUP

- 100% power
- LBLOCA
- Perform PATH-1
- Trip both RHR Pumps near the EPP-12 transition point
- Transition to EPP-12
- Perform EPP-12 through Step 9
- FREEZE and SNAP to IC-166 for 2007 NRC JPM f
- Prior to RUN: Place clearance tags on AH-4-1A and AH-4-1B.

PERFORMANCE INFORMATION

(Denote Critical Steps with a check mark)

START TIME: _____

EPP-12, Step 10

Performance Step: 1 Verify Containment Fan Coolers – one fan per unit running in SLOW speed.

Standard: Determines three Containment Fan Coolers are running with one fan in SLOW speed.

Evaluator Note: Fan Cooler AH-4 is tagged out-of-service.

Comment:

EPP-12, Step 11

Performance Step: 2 Check RWST level - greater than 3% (Empty alarm)

Standard: Verifies RWST level greater than 3% by level indication and/or alarm ALB-004-2-5 clear.

Comment:

EPP-12, Step 12.a

Performance Step: 3 Determine CNMT requirements.

- Spray Pump suction – aligned to RWST

Standard: Verifies RWST to CNMT Spray Pump suction valves 1CT-26 and 1CT-71 are aligned to RWST (RED lights).

Comment:

PERFORMANCE INFORMATION

EPP-12, Step 12.b

Performance Step: 4 Determine the required number of CNMT Spray Pumps from Table 1.

Standard:

- Applies existing RWST level (70%), CNMT Pressure (17 PSIG) and number of CNMT Fan Coolers running (3) to Table 1.
- Determines one CNMT Spray Pump is required.

Comment:

EPP-12, Step 12.c

√ **Performance Step: 5** Verify spray pumps – required number running.

Standard: Stops either Containment Spray Pump.

Comment:

EPP-12, Step 12.d

Performance Step: 6 Reset CNMT Spray signal.

Standard: Resets CNMT Spray signal (both trains).

Comment:

PERFORMANCE INFORMATION

	EPP-12, Step 12.e
Performance Step: 7	Align CNMT Spray Pumps stopped in 12.c for standby operation. • Shut CNMT Spray Discharge valves.
Standard:	• Shuts 1CT-50 ("A" CT Pump) • Shuts 1CT-88 ("B" CT Pump)
Evaluator Note:	**The discharge valves and chemical addition valves can be operated in any order.**
Comment:	
	EPP-12, Step 12.e
Performance Step: 8	Align CNMT Spray Pumps stopped in 12.c for standby operation. • Shut Chemical addition valves.
Standard:	• Shuts 1CT-12 ("A" CT Pump) • Shuts 1CT-11 ("B" CT Pump)
Comment:	
Terminating Cue:	**When the applicant proceeds to Step 13 (Align CNMT Spray for Recirculation): Evaluation on this JPM is complete.**

STOP TIME: _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2007 NRC JPM f

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

JPM CUE SHEET

INITIAL CONDITIONS:

- A large break LOCA has occurred.
- Both RHR Pump breakers have tripped. Maintenance is investigating.
- The crew has transitioned to EPP-12, LOSS OF EMERGENCY COOLANT RECIRCULATION, and has completed Step 9.

INITIATING CUE: Beginning at Step 10, perform EPP-12.

Facility:	Shearon Harris	Task No.:	062008H601
Task Title:	Restore Offsite Power to an Emergency Bus	JPM No.:	2007 NRC JPM g
K/A Reference:	062 A4.01 (3.3)		

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X

Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

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

Initial Conditions:

- A loss of off-site power occurred.
- Bus 1B SB is being carried by the EDG.
- EDG 1A-SA failed to start.
- The switchyard has been reenergized.

Task Standard: Bus 1A-SA energized from the SUT.

Required Materials: Board Operator to acknowledge/silence unrelated alarms.

General References: OP-156.02, AC Electrical Distribution, Revision 59

Handouts: OP-156.02 Section 8.17, Restoration of Off-site Power to Emergency Buses R, with Initial Conditions signed off.

Initiating Cue: The SCO has directed you to restore power to Bus 1A-SA from off-site power per OP-156.02, Section 8.17. The Initial Conditions have been verified. An extra operator has been assigned to deal with alarms that are unrelated to your assigned task.

Time Critical Task: No

Validation Time: 10 minutes

SIMULATOR SETUP

ALLOW TWO MINUTES TO PERFORM THIS SETUP FOR EACH CANDIDATE

- Initialize the simulator to 100% (IC-18/19/20).
- Insert malfunction for EDG 1A-SA failure to start <**IMF DSG01 1**>.
- Insert a SUT 1A lockout <**IMF EPS07 1**> and a loss of off-site power <**IMF EPS01 1**>.
- After the B Sequencer has run through, delete the SUT 1A lockout <**DMF EPS07 1**> and loss of off-site power <**DMF EPS01 1**>.
- Verify the A EDG output breaker, BKR 106, is open.
- Acknowledge annunciators.
- When the setup is complete, bring in the candidate..

PERFORMANCE INFORMATION

(Denote Critical Steps with a check mark)

START TIME: _____

Performance Step: 1 Obtain Procedure

Standard: Reviews procedure OP-156.02, Section 8.17.

Examiners Cue: **Provide the operator with the handout (OP-156.02, Section 8.17) with the Initial Conditions signed off.**

Examiners Note:

- **Closed breaker indication is RED.**
- **Open breaker indication is GREEN.**

Comment:

Step 8.17.1

Performance Step: 2 Initial Conditions:

Standard: Verifies Initial Conditions initialed.

Comment:

PERFORMANCE INFORMATION

8.17.2.1.a

Procedure Note: Step 8.17.2.11 energizes Bus 1A-SA, while Step 8.17.2.12 energizes Bus 1B-SB.

Procedure CAUTION: Tripping of a Start Up Transformer Lockout Relay indicates a major fault on the transformer. Re-energizing the transformer may cause additional damage and should NOT be done without Load Dispatcher permission.

√ **Performance Step: 3** RESTORE off-site Power to 6.9KV Emergency Bus A-SA by performing the following:

a. VERIFY the START UP XFMR 1A LOCKOUT SU 1A relay on SU XFMR PROTECTIVE RELAY PANEL 1A is reset.

Standard: Places the START-UP XFMR 1A LOCKOUT Relay Switch to RESET position.

Comment:

Step 8.17.2.1.b

√ **Performance Step: 4** CLOSE 52-2 and/or 52-3.

Standard: Places 52-2 and/or 52-3 control switches to the CLOSE position.

Comment:

PERFORMANCE INFORMATION

Step 8.17.2.1.c.1/2

Procedure Note: Steps 8.17.2.1.c through 8.17.2.1.p are performed at the MCB.

Procedure Caution: Do not attempt to manually reset the 6.9KV Undervoltage Relay Lockout Devices before energizing the 6.9KV buses, or severe damage may result to the relay devices.

Performance Step: 5 VERIFY the availability to SUT 1A, as indicated by the following voltmeters reading between 6.55 and 7.25KV across EACH phase:

(1) EI-503, X Winding Volts (EACH phase)

(2) EI-504, Y Winding Volts (EACH phase)

Standard: Verifies EI-503 and EI-504 reading between 6.55 and 7.25 KV across each phase.

Comment:

Step 8.17.2.1d

Procedure Caution: Lack of breaker lights does not mean that the breaker is open, only that control power is off.

Performance Step: 6 VERIFY that all load feeder breakers are open on Auxiliary Bus 1D as required per the Unit SCO.

Standard: Acknowledges.

Examiners Cue: **All load feeder breakers on Auxiliary Bus 1D have been verified OPEN by an AO.**

Comment:

Step 8.17.2.1.e

√ **Performance Step: 7** PLACE the START UP XFMR A TO AUX BUSES A & D SYNCHRONIZER switch in the BKR 101 position.

Standard: Places START-UP TRANSFORMER "A" Synchronizer Switch in the BKR 101 position.

Comment:

Step 8.17.2.1.f

√ **Performance Step: 8** PLACE BKR 101, START UP XFMR A TO AUX BUS D, in the CLOSE position.

Standard: Places Breaker 101 Control Switch in the CLOSE position.

Comment:

Step 8.17.2.1.g

Performance Step: 9 VERIFY voltage on EI-561, AUX BUS 1D VOLT, is between 6.55 to 7.25KV.

Standard: Verifies EI-561 is reading within the specified band.

Comment:

Step 8.17.2.1.h

Performance Step: 10 PLACE the START UP XFMR A TO AUX BUSES A & D SYNCHRONIZER switch in the OFF position.

Standard: Places the START UP XFMR A TO AUX BUSES A & D Synchronizer Switch in the OFF position.

Comment:

PERFORMANCE INFORMATION

Step 8.17.2.1.i

Procedure Caution:

- Do not attempt to manually reset the 6.9KV undervoltage relay lockout devices before energizing the 6.9KV buses, or severe damage may result to the relay devices.
- Lack of breaker lights does not mean that the breaker is open, only that control power is off.

√ **Performance Step: 11** PLACE BREAKER 104, AUX BUS D TO EMERGENCY BUS A-SA, in the CLOSE position.

Standard: Places Breaker 104 Control Switch in the CLOSE position.

Comment:

Step 8.17.2.1.j

Performance Step: 12 IF BREAKER 106 SA, DIESEL GEN A-SA, is closed with EDG energizing bus 1A-SA, THEN SYNCHRONIZE AND TRANSFER off-site power with EDG A-SA per OP-155 AND DISREGARD the following Steps 8.17.2.1.k through 8.17.2.1.p.

Standard: Verifies Breaker 106 SA OPEN and EDG 1A-SA not running and continues in the procedure.

Examiners Cue: **Per the Initial Conditions: EDG 1A-SA did not start.**

Comment:

Step 8.17.2.1.k

Performance Step: 13 IF BREAKER 106 SA, DIESEL GEN A-SA is open, THEN PERFORM Steps 8.17.2.1.l through 8.17.2.1.p below to energize Bus 1A-SA.

Standard: Proceeds to step 8.17.2.1.l

Comment:

PERFORMANCE INFORMATION

Step 8.17.2.1.l

√ **Performance Step: 14** PLACE EMERGENCY BUS A-SA TO AUX BUS D SYNCHRONIZER Switch in the SYNC position.

Standard: Places EMERGENCY Bus A-SA TO AUX BUS D SYNCHRONIZER Switch to SYNC position.

Comment:

Step 8.17.2.1.m

√ **Performance Step: 15** PLACE BREAKER 105 SA, EMERGENCY BUS A-SA TO AUX BUS D TIE, in the CLOSE position.

Standard: Places the Breaker 105 Control Switch in the CLOSE position.

Comment:

Step 8.17.2.1.n

Performance Step: 16 VERIFY EI-6956A1 SA, EMER BUS A VOLTS, indicates between 6.55 and 7.25KV across EACH phase.

Standard: Verifies EI-6956A1-SA voltage within the specified band across each phase.

Comment:

Step 8.17.2.1.o

Performance Step: 17 PLACE the EMERGENCY BUS A-SA TO AUX BUS D SYNCHRONIZER Switch in the OFF position.

Standard: PLACES the EMERGENCY BUS A-SA TO AUX BUS D SYNCHRONIZER Switch in the OFF position.

Comment:

PERFORMANCE INFORMATION

Step 8.17.2.1.p.1

Performance Step: 18 VERIFY the following breakers are closed:
(1) A3 B-SA, EMERGENCY BUS A3 SA SUPPLY BREAKER.

Standard: Verifies Breaker A3 B-SA indicates CLOSED.

Comment:

Step 8.17.2.1.p.2

√ **Performance Step: 19** VERIFY the following breakers are closed:
(2) A3 A-SA, EMERGENCY BUS A SA TO XFMR A3 SA.

Standard: Places Breaker A3 A-SA Control Switch in the CLOSE position.

Comment:

Step 8.17.2.1.p.3

Performance Step: 20 VERIFY the following breakers are closed:
(3) A2 B-SA, EMERGENCY BUS A2 SA SUPPLY BREAKER.

Standard: Verifies Breaker A2 B-SA CLOSED.

Comment:

Step 8.17.2.1.p.4

Performance Step: 21 VERIFY the following breakers are closed:
(4) A2 A-SA, EMERGENCY BUS A SA TO XFMR A2 SA.

Standard: Verifies Breaker A2 A-SA CLOSED.

Comment:

PERFORMANCE INFORMATION

Step 8.17.2.1.p.5

Performance Step: 22 VERIFY the following breakers are closed:
(5) A1 B, EMERGENCY BUS A1 SUPPLY BREAKER.

Standard: Verifies Breaker A1 B CLOSED.

Comment:

Step 8.17.2.1.p.6

Performance Step: 23 VERIFY the following breakers are closed:
(6) A1 A-SA, EMERGENCY BUS A SA TO XFMR A1.

Standard: Places Breaker A1 A-SA Control Switch in the CLOSE position.

Comment:

Terminating Cue: **When Section 8.17 is complete: Evaluation on this JPM is complete.**

STOP TIME: _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2007 NRC JPM g

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

JPM CUE SHEET

INITIAL CONDITIONS:

- A loss of off-site power occurred.
- Bus 1B-SB is being carried by the EDG.
- EDG 1A-SA failed to start.
- The switchyard has been reenergized.

INITIATING CUE:

The SCO has directed you to restore power to Bus 1A-SA from off-site power per OP-156.02, Section 8.17. The Initial Conditions have been verified. An extra operator has been assigned to deal with alarms that are unrelated to your assigned task.

Facility:	Shearon Harris	Task No.:	301058H401
Task Title:	Take corrective action for Loss of Both CCW Pumps	JPM No.:	2007 NRC JPM h
K/A Reference:	APE026 AA1.02 (3.2/3.3)	**ALTERNATE PATH**	

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X

Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

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

Initial Conditions:

- The plant is at 100 percent power.
- All controls are aligned for full power.
- The following equipment is under clearance:
  - Component Cooling Water Pump "B"
  - Heater Drain Pump "A"
  - Reactor Makeup Water Pump "B"

Task Standard:

- Specified CCW loads isolated.
- Charging isolated.
- Reactor tripped and all RCP's stopped (in that order).

Required Materials: None

General References: AOP-014, LOSS OF COMPONENT COOLING WATER, Rev. 29

Initiating Cue: You are the RO. Maintain current plant conditions.

Time Critical Task: NO

Validation Time: 6 minutes

SIMULATOR SETUP

- Initialize to a 100 percent steady-state condition (IC-18/19/20).
- IMF CCW01B to prevent AUTO/MANUAL start.
- Place IMF CCW01A on a trigger.
- Place clearance tags on the following to mask upcoming fault:
  - CCW Pump "B"
  - HD Pump "A"
  - RMUW Pump "B"
- FREEZE and SNAP to IC-168 for 2007 NRC JPM h.
- RUN
- When the operator has assumed the watch, actuate the trigger to "TRIP" the running CCW pump (IMF CCW01A).

PERFORMANCE INFORMATION

(Denote Critical Steps with a check mark)

START TIME: _____

Simulator Operator:	**Actuate trigger for IMF CCW01A 15-30 seconds after the candidate assumes the watch.**
Performance Step: 1	Responds to CCW alarms.
Standard:	Enters AOP-014, reads purpose and enters at Section 3.0.
Comment:	**May contact Maintenance for support in restoring CCW "B".**
	Step 3.1
Performance Step: 2	Refer to PEP-110, Emergency Classification and Protective Action Recommendations, and enter the EAL Network at Entry Point X.
Standard:	Informs SS-O.
Evaluator Cue:	**Acknowledge.**
Comment:	
	Step 3.2
Performance Step: 3	Evaluate Plant Conditions and go to appropriate section.
Standard:	Identifies condition as Loss of CCW Pump and goes to Section 3.3.
Comment:	

PERFORMANCE INFORMATION

Step 3.3.1

Performance Step: 4 Check the Standby CCW Pump has STARTED.

Standard: Determines no CCW Pump running and none available.

Comment:

PERFORMANCE INFORMATION

Step 3.3.2

Performance Step: 5 Check CCW Header Pressure GREATER THAN 52 psig.

Standard: Determines CCW header pressure is less than 52 PSIG and proceeds to RNO column.

Step 3.3.2.a RNO Column (ALTERNATE PATH begins)

Performance Step: 5a If CCW is lost, then perform the following:

Verify the following valves shut:

Evaluator Note: **Valve operation/verification may be performed in any order.**

√ **Performance Step: 5b**
- 1CS-7, 45 gpm Letdown Orifice A.

Standard: Shuts 1CS-7.

√ **Performance Step: 5c**
- 1CS-8, 60 gpm Letdown Orifice B.

Standard: Shuts 1CS-8.

Performance Step: 5d
- 1CS-9, 60 gpm Letdown Orifice C.

Standard: Verifies 1CS-9.

Performance Step: 5e
- 1CS-460, EXCESS LETDOWN

Standard: Verifies 1CS-460.

Performance Step: 5f
- 1CS-461, EXCESS LETDOWN

Standard: Verifies 1CS-461.

√ **Performance Step: 5g**
- 1SP-948, RCS LOOPS B&C HOT LEG CNMT ISOL

Standard: Shuts 1SP-948.

√ **Performance Step: 5h**
- 1SP-949, RCS LOOP B&C HOT LEG CNMT ISOL

Standard: Shuts 1SP-949.

Performance Step: 5i
- 1SP-40, SB PRESSURIZER LIQUID SAMPLE ISOL

Standard: Verifies 1SP-40 SB.

Performance Step: 5j • 1SP-41 SA, PRESSURIZER LIQUID SAMPLE CNMT ISOL

Standard: Verifies 1SP-41 SA.

Performance Step: 5k • 1SP-59 SB, PRESSURIZER STM SPACE SAMPLE ISOL

Standard: Verifies 1SP-59 SB.

Performance Step: 5l • 1SP-60 SA, PRESSURIZER STM SPACE SAMPLE ISOL

Standard: Verifies 1SP-60 SA.

Comment:

Step 3.3.2.b RNO Column

√ **Performance Step: 6** ISOLATE CHARGING FLOW AS FOLLOWS:

- Place controller FK-122.1 in MANUAL and shut.
- SHUT 1CS-235 SB, Charging Flow Line Isolation.
- SHUT 1CS-238 SA, Charging Flow Line Isolation.

Standard:

- Places FK-122.1 in MANUAL and adjusts to ZERO demand and/or SHUT light lit.
- Places 1CS-235 in SHUT.
- Places 1CS-238 in SHUT.

Comment:

Step 3.3.2.c RNO Column

Performance Step: 7 If the RCS is solid, then stop the running CSIP.

Standard: Determines RCS NOT solid.

Comment:

PERFORMANCE INFORMATION

Step 3.3.2.d RNO Column

Performance Step: 8 If RHR is in service, then shut 1CS-28, RHR LETDOWN (HC-142.1)

Standard: Determines RHR NOT in service.

Comment:

Step 3.3.2.e.1 RNO Column

Performance Step: 9 If CCW is expected to be lost for greater than or equal to 10 minutes, then perform the following:

- Check the reactor is tripped.

Standard: Reports/identifies reactor not tripped.

Evaluator Cue: **After the step "If CCW is expected to be lost for greater than or equal to 10 minutes, then perform the following" is read: No CCW Pump will be available for at least 15 minutes.**

Comment:

Step 3.3.2.e.2 RNO Column

√ **Performance Step: 10** If CCW is expected to be lost for greater than or equal to 10 minutes, then perform the following:

- If the reactor is not tripped, then trip the reactor and go to EOP PATH-1 (continue with this procedure as time permits).

Standard: Initiates a MANUAL reactor trip.

Evaluator Cue: **Another operator will perform EOP PATH-1 immediate actions. Continue performing AOP-014.**

Comment:

PERFORMANCE INFORMATION

Step 3.3.2.e.3 RNO Column

√ **Performance Step: 11** If CCW is expected to be lost for greater than or equal to 10 minutes, then perform the following:

- Stop all running RCP's.

Standard: Stops each RCP (3).

Comment:

Terminating Cue: **When the candidate reads AOP-014 "Go to Step 4": Evaluation on this JPM is complete.**

STOP TIME: _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2007 NRC JPM h

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

JPM CUE SHEET

INITIAL CONDITIONS:

- The plant is at 100 percent power.
- All controls are aligned for full power.
- The following equipment is under clearance:
  - Component Cooling Water Pump "B"
  - Heater Drain Pump "A"
  - Reactor Makeup Water Pump "B"

INITIATING CUE: You are the RO. Maintain current plant conditions.

Facility: Shearon Harris Task No.: 301116H401

Task Title: Inhibit Both Trains of SSPS JPM No.: 2007 NRC JPM i

K/A Reference: APE068 AK 3.18 (4.2/4.5)

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

Simulated Performance: X Actual Performance: _____

Classroom _____ Simulator _____ Plant X

READ TO THE EXAMINEE

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

Initial Conditions:

- A major fire has occurred on RAB 286' elevation in Cable Spread Room A (FIRE AREA 1-A-CSRA).
- The operating crew is implementing AOP-036, FIRE AREAS 1A-CSRA, 1A-CSRB.
- The reactor was shutdown by driving control rods but neither reactor trip breaker can be opened locally in accordance with AOP-036.05, Section 3.1, Step 1.a.

Task Standard: Control Rod Drive MG Set breakers OPEN and all listed fuses removed.

Required Materials:

- SSPS cabinet key
- Standard safety equipment
- Pictures of breaker cabinets to discuss removal of Rod Drive MG Set breaker control power fuses.

General References: AOP-036, SAFE SHUTDOWN FOLLOWING A FIRE, Rev. 39
AOP-036.05, Fire Areas 1A-CSRA, 1A-CSRB, Revision 4

Handout: AOP-036.05, Fire Areas 1A-CSRA, 1A-CSRB, Section 3.1, Step 1 (Pages 6 and 7)

Initiating Cue:	The SCO has directed you to complete the performance of AOP-036.05, Section 3.1, Step 1. Begin at Step 1.a RNO a (2) – Shutdown the Rod Drive MG sets. Report when Step 1 has been completed.
Time Critical Task:	No
Validation Time:	9 minutes

PERFORMANCE INFORMATION

(Denote Critical Steps with a check mark)

START TIME: _____

Performance Step: 1 Obtain procedure.

Standard: Reviews Section 3.1, Step 1.

Evaluator Cue: **Provide a copy of AOP-036.05, Fire Areas 1A-CSRA, 1A-CSRB, Step 1 (Pages 6 and 7).**

Comment:

Step 3.1.1.a

Procedure Caution:

- The following step will inhibit all automatic and manual safeguards functions since a fire in this area could cause spurious actuations as well as disable controls for resetting SI.
- Removal of Output Relay Power Fuses from both trains of SSPS will generate a Reactor Trip signal. The Reactor should be shut down prior to performing the following step.

Performance Step: 2 Defeat both trains of SSPS as follows:

- Verify Reactor Trip Breakers are OPEN.

Standard: NO - Information provided in Initial Conditions.

Evaluator Cue: **If necessary: Both Reactor Trip Breakers are SHUT.**

Comment:

PERFORMANCE INFORMATION

AOP-036.05, Step 1.a RNO a (2) (a)

√ **Performance Step: 3** TRIP the Rod Drive MG sets breakers:

• 1D2-6D, Rod Drive MG Set 1A

• 1E2-2A, Rod Drive MG Set 1B

Standard: Proceeds to Rod Drive MG Set breaker controls.

- Initiates trip on breaker 1D2-6D
- Initiates trip on breaker 1E2-2A

Evaluator Cue: **As each breaker trip mechanism is pointed out: 1D2-6D/1E2-2A indicates OPEN.**

Comment:

AOP-036.05, Step 1.a RNO a (2) (b)

Performance Step: 4 REMOVE Control Power Fuses from the Rod Drive MG sets breakers:

• 1D2-6D, Rod Drive MG Set 1A

• 1E2-2A, Rod Drive MG Set 1B

Standard: Discusses location and method for pulling the respective fuses.

Evaluator Cue: **Have the applicant explain the fuse removal process using a picture of the selected breaker cabinet. Provide feedback per the breaker cabinet selected.**

Comment:

PERFORMANCE INFORMATION

AOP-035.05, Step 3.1.1.b

Performance Step: 5 Obtain SSPS Key 40, 41, 94, 95, 96, or 97 (MCR or ACP Key Locker).

Standard: Describes the method/location for obtaining the key.

Evaluator Cue: **Provide SSPS Cabinet key.**

Comment:

AOP-035.05, Step 3.1.1.c

√ **Performance Step: 6** Remove the following fuses: (In the front of the SSPS Output cabinets).

- Train A, Output Cabinet No. 1, Output Relay Power Fuses.

Standard: Locates and simulates removal of the Train A Output Cabinet No. 1 Output Relay Power fuses.

Evaluator Cue: **Train A Output Cabinet No. 1 Output Relay Power fuses are removed.**

Comment: **Each cabinet should be closed and locked after the simulated action(s).**

PERFORMANCE INFORMATION

AOP-035.05, Step 3.1.1.c

√ **Performance Step: 7** Remove the following fuses: (In the front of the SSPS Output cabinets).

- Train A, Output Cabinet No. 2, Fuses 61 and 62.

Standard: Locates and simulates removal of Train A Output Cabinet No. 2 fuses 61 and 62.

Evaluator Cue: **Train A Output Cabinet No. 2 fuses 61 and 62 are removed.**

Comment:

AOP-035.05, Step 3.1.1.c

√ **Performance Step: 8** Remove the following fuses: (In the front of the SSPS Output cabinets).

- Train B, Output Cabinet No. 1 Output Relay Power Fuses.

Standard: Locates and simulates removal of Train B Output Cabinet No. 1 Output Relay Power fuses.

Evaluator Cue: **Train B Output Cabinet No. 1 Output Relay Power fuses are removed.**

Comment:

PERFORMANCE INFORMATION

AOP-035.05, Step 3.1.1.c

√ **Performance Step: 9** Remove the following fuses: (In front of the SSPS Output cabinets).

- Train B, Output Cabinet No. 2, Fuses 61 and 62.

Standard: Locates and simulates removal of Train B Output Cabinet No. 2 fuses 61 and 62.

Evaluator Cue: **Train B Output Cabinet No. 2 fuses 61 and 62 are removed.**

Comment:

Terminating Cue: **Control Room/SCO notified of step completion: Evaluation on this JPM is complete.**

STOP TIME: _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2007 NRC JPM i

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

JPM CUE SHEET

INITIAL CONDITIONS:

- A major fire has occurred on RAB 286' elevation in Cable Spread Room A (FIRE AREA 1-A-CSRA).
- The operating crew is implementing AOP-036, FIRE AREAS 1A-CSRA, 1A-CSRB.
- The reactor was shutdown by driving control rods but neither reactor trip breaker can be opened locally in accordance with AOP-036.05, Section 3.1, Step 1.a.

INITIATING CUE:

The SCO has directed you to complete the performance of AOP-036.05, Section 3.1, Step 1. Begin at Step 1.a RNO a (2) – Shutdown the Rod Drive MG sets. Report when Step 1 has been completed.

Facility: Shearon Harris | Task No.: 039102H104

Task Title: Shut MSIVs by Isolating Air | JPM No.: 2007 NRC JPM j

K/A Reference: APE040 AA1.04 (4.3/4.3)

Examinee: | NRC Examiner:

Facility Evaluator: | Date:

Method of testing:

Simulated Performance: X | Actual Performance: _____

Classroom _____ Simulator _____ Plant X

READ TO THE EXAMINEE

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

Initial Conditions: A steamline break caused a safety injection. The MSIVs will not shut from the control room. The operating crew transitioned from PATH-1 to EPP-014, FAULTED STEAM GENERATOR ISOLATION.

Task Standard: RAB 261' instrument air header has been isolated and depressurized.

Required Materials: EOP-EPP-014, Faulted Steam Generator Isolation

General References: EOP-EPP-014, Faulted Steam Generator Isolation, Rev. 15

Handouts: EOP-EPP-014, Page 3

Initiating Cue: The SCO has directed you to perform Step 2 RNO of EPP-014. The MSIV Bypasses are shut.

Time Critical Task: N/A

Validation Time: 7 minutes

SIMULATOR SETUP

N/A

PERFORMANCE INFORMATION

(Denote Critical Steps with a check mark)

START TIME: _____

Performance Step: 1 Obtain Procedure

Standard: Reviews EPP-014, Step 2.

Examiners Cue: **Provide the operator with a copy of EPP-014, Step 2.**

Examiner Note: **The evaluator has the option to have the applicant physically locate the equipment by pointing it out and then discussing operation without using a portable ladder.**

Comment:

Step 2.a

Performance Step: 2 Check MSIVs AND Bypass Valves:

a. Verify all MSIVs - SHUT

Standard: Answers NO - Initial Conditions indicate all MSIVs are OPEN.

Evaluator Note: **The applicant may start in the RNO column.**

Comment:

PERFORMANCE INFORMATION

Step 2.a.1 RNO Column

√ **Performance Step: 3** Check MSIVs AND Bypass Valves:

a. Perform the following:

1) Locally shut instrument air supply to RAB 261: 1IA-814 (north of AH-19 1A-SA)

Standard: Locates and simulates shutting 1IA-814 by rotating the handwheel in the clockwise direction.

Examiners Cue: **If performed properly:**

1IA-814 has stopped rotating in the clockwise direction.

Comment:

Step 2.a.2 RNO Column

√ **Performance Step: 4** 2. Check MSIVs AND Bypass Valves:

a. Perform the following:

2) Locally remove cap AND open drain valve: 1IA-1876 (located in corridor outside VCT valve gallery)

Standard: Locates 1IA-1876, discusses removing the pipe cap, and simulates opening the valve by rotating the handwheel in the counter-clockwise direction.

Examiners Cue: **If performed properly:**

1IA-1876 has stopped rotating in the counter-clockwise direction and the air header is blowing down.

Comment:

PERFORMANCE INFORMATION

Performance Step: 5 Notify the Control Room.

Standard: Simulates notifying the Control Room that instrument air is isolated to the MSIV's and the line has been depressurized.

Examiners Cue: **Respond as the Control Room Operator that all MSIVs have shut.**

Comment:

Terminating Cue: **After the control room has been notified: Evaluation on this JPM is complete.**

STOP TIME: _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2007 NRC JPM j

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

JPM CUE SHEET

INITIAL CONDITIONS: A steamline break caused a safety injection. The MSIVs will not shut from the control room. The operating crew transitioned from PATH-1 to EPP-014, FAULTED STEAM GENERATOR ISOLATION.

INITIATING CUE: The SCO has directed you to perform Step 2 RNO of EPP-014. The MSIV Bypasses are shut.

Facility:	Shearon Harris	Task No.:	071104H112
Task Title:	Respond to High Rad Alarm During a Waste Gas Decay Tank Release	JPM No.:	2007 NRC JPM k
K/A Reference:	071 G2.1.30 3.9		

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

Simulated Performance: X Actual Performance: _____

Classroom _____ Simulator _____ Plant X

READ TO THE EXAMINEE

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

Initial Conditions:
- "A" Waste Gas Decay Tank is being released.
- Monitors REM-3546 and RM-3546-1 are OPERABLE.

Task Standard: Waste Gas Decay Tank release is terminated per OP-120.07, Waste Gas Processing, Section 8.37.

Required Materials: **On the day of the IP JPM performance, notify the RadWaste Operator that applicants will be entering the area and may be accessing the reading for REM-3546 on the RM-11 Panel.**

General References: OP-120.07, Waste Gas Processing, Rev. 46

Handouts:
- A copy of OP-120.07, Waste Gas Processing, Attachment 3 completed through Item 23.
- A copy of OP-120.07, Waste Gas Processing, Section 8.37.

Initiating Cue: You relieved the operator who commenced the release. The control room has just directed you to implement OP-120.07, Section 8.37, Actions for a REM Monitor Alarm During a Waste Gas Decay Tank Release, because an ALERT alarm has been received on REM-3546.

Time Critical Task: N/A

Validation Time: 20 minutes

SIMULATOR SETUP

N/A

PERFORMANCE INFORMATION

(Denote Critical Steps with a check mark)

START TIME: _____

Performance Step: 1 Obtain Procedure

Standard: Reviews OP-120.07, Section 8.37.

Examiners Cue: **Provide the handout (OP-120.07, Attachment 3 signed off through Item 23 and OP-120.07, Section 8.37).**

Comment:

Step 8.37.1

Performance Step: 2 Verifies the Initial Conditions:

1. A Waste Gas Decay Tank is being released.
2. Monitors REM-3546 or RM-3546-1 are OPERABLE.
3. A REM Monitor Alert or High Alarm has been received.

Standard: Confirms the initial conditions apply.

Comment:

PERFORMANCE INFORMATION

Step 8.37.2.1

Procedure Note:

- If an Alert alarm is received, the WGDT release may continue provided the reading does not approach the High Alarm setpoint.
- This section contains steps which require independent verification.

Performance Step: 3 If the Monitor goes into an Alert Alarm, observe the reading to see if it continues to increase. Record the reading in the Radwaste Control Room AO logs.

Standard: Accesses the REM-3546 monitor reading on the RM-11 Panel.

Examiners Cue: **REM-3546 is rising and approaching the HIGH alarm setpoint.**

Comment: **To access the REM-3546 monitor reading the candidate should depress the appropriate GRID button and then enter the appropriate four digit monitor. After that he depresses the SEL key to select that monitor. The candidate should then use a TREND button to bring up historical data for that monitor. The candidate should not use any buttons other than the GRID buttons, the numerical keypad, the SEL button, the TREND buttons, and/or the CLEAR key if he/she enters a number incorrectly.**

Step 8.37.2.2

Performance Step: 4 If the Monitor reading continues to approach or goes into a High Alarm condition, the Waste Gas Decay Tank release must be secured. Continue to next step to secure the Gas Decay Tank Release.

Standard: Determines the release must be secured and continues to the next step.

Comment:

Step 8.37.2.3

√ **Performance Step: 5** Adjust HK-7392, PLANT VENT Controller until indicator reads 0 and record the Actual Stop Date/Time (Log Item 24).

Standard:

- Adjusts HK-7392 until indicator reads 0.
- Records the actual Stop Date/Time on Attachment 3.

Examiners Cue: **Controller HK-7392 reads 0.**

Examiner Note: **If the applicant incorrectly performs this step then correct performance of either Performance Step 6 or Performance Step 12 becomes critical.**

Comment:

Step 8.37.2.4

Performance Step: 6 Using key, place the WG DECAY TANKS E & F TO PLANT VENT VALVE switch 3WG-229 to KEYLOCKED SHUT and log on Attachment 3. (Log Item 25)

Standard:

- Selects WG DECAY TANKS E & F TO PLANT VENT VALVE 3WG-229 switch to KEYLOCKED SHUT.
- Records log entry on Attachment 3.

Examiners Cue: **3WG-229 is in the KEYLOCKED SHUT position.**

Comment:

Step 8.37.2.5

Procedure Note: Independent verification of 3WG-229 position in the next step can be performed out of sequence.

Performance Step: 7 Perform independent verification that 3WG-229 is locked shut and log on Attachment 3. (Log item 26)

Standard: Logs independent verification entry on Attachment 3 or delays action based on the Procedure Note.

Examiners Cue: **Independent verification will be performed out of sequence in accordance with the procedure note.**

Comment:

Step 8.37.2.6

Performance Step: 8 Notify the Superintendent - Shift Operations that Monitor REM-3546 has alarmed and the release has been stopped.

Standard: Notifies the Superintendent Shift Operations that monitor REM-3546 alarmed and the release has been stopped.

Examiners Cue: **Superintendent Shift Operations acknowledges the report.**

Comment:

PERFORMANCE INFORMATION

Step 8.37.2.7.a

Performance Step: 9 The release package must be closed out by performing the following steps:

- Record the Vent Stack 5 Flow Rate (Log Item 27).

Standard:

- Reads and records Vent Stack 5 Process Flow Rate on Attachment 3.

Comment:

Step 8.37.2.7.b

Performance Step: 10 The release package must be closed out by performing the following steps:

- Record the Final Gas Decay Tank Pressure (Log Item 28).

Standard:

- Locates "A" Gas Decay Tank pressure indication and records on Attachment 3.

Examiners Cue: **Final Gas Decay Tank pressure is 23 psig.**

Comment:

Step 8.37.2.7.c

Performance Step: 11 The release package must be closed out by performing the following steps:

- Calculate the Actual Gas Decay Tank ΔP and record. (Log Item 29).

Standard:

- Actual Gas Decay Tank ΔP calculated and recorded on Attachment 3.

Comment:

PERFORMANCE INFORMATION

Step 8.37.2.7.d

Performance Step: 12 The release package must be closed out by performing the following steps:

- Shut 3WG-230, Gas Decay Tanks to Plant Vent Manual Isolation Valve and log on Attachment 3. (Log Item 30)

Standard:

- Locates 3WG-230 and shuts valve by rotating the handwheel in the clockwise direction.
- Records 3WG-230 position on Attachment 3.

Examiners Cue: **3WG-230 is shut.**

Comment:

PERFORMANCE INFORMATION

Step 8.37.2.7.e

Procedure Note: Independent verification of 3WG-230 position in the next step can be performed out of sequence.

Performance Step: 13 The release package must be closed out by performing the following steps:

- Perform independent verification that 3WG-230 is shut and log on Attachment 3. (Log Item 31)

Standard: Logs independent verification entry on Attachment 3 or delays action based on the Procedure Note.

Evaluator Cue: **Independent verification will be performed out of sequence in accordance with the procedure note.**

Comment:

Terminating Cue: **After the independent verification of 3WG-230 step has been read: Evaluation on this JPM is complete.**

STOP TIME: _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2007 NRC JPM k

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

JPM CUE SHEET

INITIAL CONDITIONS:

- "A" Waste Gas Decay Tank is being released.
- Monitors REM-3546 and RM-3546-1 are OPERABLE.

INITIATING CUE:

You relieved the operator who commenced the release. The control room has just directed you to implement OP-120.07, Section 8.37, Actions for a REM Monitor Alarm During a Waste Gas Decay Tank Release, because an ALERT alarm has been received on REM-3546.