

Facility: TMI Unit 1 Task No.: 5001045008

Task Title: Given a set of conditions, determine the Emergency Action Level (EAL) and make a Protective Action Recommendation (PAR) IAW the facility Emergency Plan. JPM No.: 2007 NRC ADM JPM SRO A4

K/A Reference: 2.4.44 (4.0)

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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 large break LOCA caused an ESAS actuation and reactor trip.
- Reactor Building Pressure peaked at 30 psig.
- Subcooling Margin is ZERO °F.
- RM-G-22 reads 1.2 E+03 R/hr, rising slowly.
- RM-G-23 reads 1.28 E+03 R/hr, rising slowly.
- RM-G-24 (RB Purge) has failed.
- A SITE AREA EMERGENCY (FS1 – SAE) was declared 10 minutes ago.
- Accountability is in progress.
- The Technical Support Center (TSC) is manning but not activated.
- EP-AA-112-100-F-01, SHIFT EMERGENCY DIRECTOR CHECKLIST, has been implemented.
- Outside temperature is 49 °F.
- The wind is from 120° at 8 MPH.
- The CRS just reported that closed indication has been lost on the containment purge valves and efforts to re-close them have been unsuccessful. Reactor Building Pressure is lowering more rapidly with no change in running equipment.

Task Standard: Critical facility requirements for upgrading to a GE and making a PAR completed within the required time limit.

- Required Materials: Perform in a location with:
- EAL Matrix
 - Shift Emergency Director Book
- General References:
- EP-AA-111, EMERGENCY CLASSIFICATION AND PROTECTIVE ACTION RECOMMENDATIONS, Revision 11
 - EP-AA-111-F-09, TMI PLANT BASED PAR FLOWCHART, Revision C
 - EP-AA-112-100-F-01, SHIFT EMERGENCY DIRECTOR CHECKLIST, Revision F
 - EP-AA-112-F-09, EMERGENCY PUBLIC ADDRESS ANNOUNCEMENTS, Revision B
 - EP-MA-114-100-F-01, STATE/LOCAL EVENT NOTIFICATION FORM, Revision D
 - EAL Matrix
- Handouts:
- EP-AA-112-100-F-01, SHIFT EMERGENCY DIRECTOR CHECKLIST, completed for an SAE
 - EAL Matrix marked up for FS1 SAE Declaration
- Initiating Cue: You are the Shift Manager. Respond in accordance with the EP-AA-112-100-F-01, SHIFT EMERGENCY DIRECTOR CHECKLIST.
- Time Critical Task: Yes
- Validation Time: 12 minutes

SIMULATOR SETUP

N/A

Start Time: _____

(Denote Critical Steps with a check)

Performance Step: 1 Compare current conditions to the EAL Table.

Standard:

- Containment Barrier has been lost. Determines Primary
- conditions are met for upgrading EAL to a GENERAL EMERGENCY (GE). Determines

Evaluator Cue: Provide handout listed on the cover page.**Comment:**

EP-AA-112-100-F-01, SHIFT EMERGENCY DIRECTOR CHECKLIST

Performance Step: 2 Implement EP-AA-112-100-F-01 for GE.**Standard:** Refers to Section 1.4.**Comment:**

EP-AA-112-100-F-01, Section 1.4.A

√ **Performance Step: 3** Announce Event Classification to the facility staff.**Standard:** Discusses announcement of upgrade to GE.

Evaluator NOTE:

- **Mark the time of the announcement:** _____
- **JPM Start Time – Announcement Time must be < 15 minutes to satisfy critical task.**

Comment:

Performance Step: 4 EP-AA-112-100-F-01, Section 1.4.B
Use the Emergency Public Address Announcements form to select and direct the appropriate public address announcement for a GE.

Standard: Simulates announcement IAW with Tab 1, EMERGENCY PUBLIC ADDRESS ANNOUNCEMENTS.

Comment:

Performance Step: 5 EP-AA-112-100-F-01, Section 1.4.C
If the ERO has not been activated - - - .

Standard: N/A – activated at SAE declaration.

Comment:

Performance Step: 6 EP-AA-112-100-F-01, Section 1.4.D
Determine the correct plant-based PAR per the Emergency Classification and Protective Action Recommendations procedure and the appropriate site specific PAR flowchart.

Standard:

- Refers to Tab 6 - EMERGENCY CLASSIFICATION AND PROTECTIVE ACTION RECOMMENDATIONS
- Refers to Tab 7 – TMI PLANT BASED PAR FLOWCHART

Evaluator Note: Applicant may go directly to Tab 7.

Comment:

	EP-AA-112-100-F-01, Section 1.4.E
√ Performance Step: 7	Initiate required State/Local notifications within 15 minutes of the event classification as required per notifications procedure.
Standard:	Completes, approves and hands STATE/LOCAL EVENT EMERGENCY NOTIFICATION FORM to Communicator within 15 minutes.
Evaluator Note:	<ul style="list-style-type: none">• Minimum requirements on ENF to meet critical task:<ul style="list-style-type: none">3.a EMERGENCY CLASSIFICATION – GE3.d ESCALATION4.a EMERGENCY ACTION LEVEL NO. is – FG15.b AIRBORNE non-routine radiological release in-progress7.b PAR in the TMI Block: <u>EVACUATE</u> 360 DEGREES FROM 0 TO <u>10</u> MILES AND - - - -• Mark the time that the notification form is provided to the communicator: _____• Announcement Time – ENF Handover Time must be < 15 minutes to satisfy critical task.
Comment:	
Terminating Cue:	When the candidate hands the completed Emergency Notification Form to the Communicator: Evaluation on this JPM is complete.

Job Performance Measure No.: 2007 NRC ADM 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: _____

INITIAL CONDITIONS:

- A large break LOCA caused an ESAS actuation and reactor trip.
- Reactor Building Pressure peaked at 30 psig.
- Subcooling Margin is ZERO °F.
- RM-G-22 reads 1.2 E+03 R/hr, rising slowly.
- RM-G-23 reads 1.28 E+03 R/hr, rising slowly.
- RM-G-24 (RB Purge Monitor) has failed.
- A SITE AREA EMERGENCY (FS1 – SAE) was declared 10 minutes ago. Accountability is in progress.
- The Technical Support Center (TSC) is manning but not activated.
- EP-AA-112-100-F-01, SHIFT EMERGENCY DIRECTOR CHECKLIST, has been implemented.
- Outside temperature is 49 °F.
- The wind is from 120° at 8 MPH.
- The CRS just reported that closed indication has been lost on the containment purge valves and efforts to re-close them have been unsuccessful. Reactor Building Pressure is lowering more rapidly with no change in running equipment.

INITIATING CUE: You are the Shift Manager. Respond in accordance with the EP-AA-112-100-F-01, SHIFT EMERGENCY DIRECTOR CHECKLIST.

Facility: Three Mile Island Unit 1 Task No.: 0028010401

Task Title: Perform a transient RCS leak rate calculation in accordance with OS-24, CONDUCT OF OPERATIONS DURING ABNORMAL AND EMERGENCY EVENTS, ATTACHMENT F. JPM No.: 2007 NRC ADM JPM RO A1-2

K/A Reference: 2.1.19 (3.0)
2007 NRC ADM JPM RO A1-2

JPM 11.2.05.057, Modified
NUREG 1021, Revision 9

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 at 100% power.
- Makeup flow has been slowly rising for the past hour.
- There is no indication of Steam Generator tube leakage.
- RCDT level has been constant.

Task Standard: All critical tasks evaluated as SAT.

Required Materials: Calculator

General References:

- OS-24, CONDUCT OF OPERATIONS DURING ABNORMAL AND EMERGENCY EVENTS, Revision 13
- Technical Specifications, Section 3.1.6 (LEAKAGE)

Handout: OS-24, ATTACHMENT F

Initiating Cue: The CRS has directed you to perform and report the results of a Transient RCS Leak Rate Calculation in accordance with OS-24, CONDUCT OF OPERATIONS DURING ABNORMAL AND EMERGENCY EVENTS, ATTACHMENT F. The PPC leakrate calculation function is not available but the Plant Computer is available to gather data. For the purpose of the JPM, gather initial and final data at 5 minute intervals.

Time Critical Task: No

Validation Time: 12 Minutes

SIMULATOR SETUP

- 100% power IC 16
- MALF for RCS leak approximately 7.5 gpm to RB atmosphere. TH06 = 0.001
- Set up Plant Computer so that all OS-24 Attachment F related computer points must be added to scan/displayed.
- Ensure initial MUT level is such that no makeup will be required in the next 15 minutes.

(Denote Critical Steps with a check mark)

START TIME: _____

Performance Step: 1 Obtain procedure.

Standard: Reviews OS-24, Attachment F.

Evaluator Cue: **Provide handout after the procedure is located.**

Comment:

OS-24, ATTACHMENT F

Performance Step: 2 Set up Plant Computer to gather data.

OR

Uses computer group and console indications to gather data.

Standard: Adds the following points to a group:

- Pressurizer Level (PL): Computer Point C4017
- Makeup Tank Level (MTL): Computer Point A0498
- RCS Average Temperature (Tavg): Computer Point A5066

Comment:

PERFORMANCE INFORMATION

OS-24, ATTACHMENT F

Performance Step: 3 Gather Initial Data.

Standard: PL =
MTL =
Tavg =
Marks the time: _____

Comment:

OS-24, ATTACHMENT F

Performance Step: 4 Gather Final Data.

Standard: Waits at least 5 minutes.
PL =
MTL =
Tavg =
Marks the time: _____

Comment:

OS-24, ATTACHMENT F

√ **Performance Step: 5** Calculate RCS leak rate.

Standard:

- Plugs Δ values into ATTACHMENT F formula and performs calculation.
- Determines RCS leakage ≥ 5 gpm ≤ 10 gpm.

Comment:

Performance Step: 6 Inform CRS.

Standard: Oral report and/or provides form to the CRS.

Evaluator Cue: Acknowledge report.

Comment:

Terminating Cue: After RCS leak rate is provided to the CRS: Evaluation on this JPM is complete.

STOP TIME: _____

Job Performance Measure No.: 2007 NRC ADM JPM RO 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: _____

- INITIAL CONDITIONS:
- The unit is at 100% power.
 - Makeup flow has been slowly rising for the past hour.
 - There is no indication of Steam Generator tube leakage.
 - RCDD level has been constant.

INITIATING CUE: The CRS has directed you to perform and report the results of a Transient RCS Leak Rate Calculation in accordance with OS-24, CONDUCT OF OPERATIONS DURING ABNORMAL AND EMERGENCY EVENTS, ATTACHMENT F. The PPC leakrate calculation function is not available but the Plant Computer is available to gather data. For the purpose of the JPM, gather initial and final data at 5 minute intervals.

Facility: Three Mile Island Unit 1 Task No.:

Task Title: Perform "Shiftly Checks" of Decay Heat Removal Capability in accordance with Surveillance Procedure 1301-1, SHIFT AND DAILY CHECKS, Data Sheet 3 – Section C.2. JPM No.: 2007 NRC ADM JPM RO A-2

K/A Reference: 2.2.12 (3.0) **New JPM**

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:
- DHR Train "A" is in service for cooling.
 - RCS Boron Concentration is 2610 PPM.

- RCS Temperature band is 120 °F ± 20 °F.
- The RCS is drained down to 14 inches of water above centerline of the 28 inch pipe.
- DHR Pump “B” is under clearance due to increasing vibration during the previous shift.
- Plant is in “Plant Condition PC 5”.
- All Incore Thermocouples are operable.

Task Standard: All critical tasks evaluated as SAT.

Required Materials: Place OP-TM-212-000, Attachment 7.2 on the URO Work Station

General References:

- 1301-1, SHIFT AND DAILY CHECKS, Revision 154
- OP-TM-212-000, DECAY HEAT REMOVAL SYSTEM, Revision 7

Handout:

- 1301-1, DATA SHEET 3, Section C

Initiating Cue: You are the ARO on the night shift. Perform 1301-1, SHIFT AND DAILY CHECKS, DATA SHEET 3, Section C.2 – DECAY HEAT REMOVAL CAPABILITY.

Time Critical Task: No

Validation Time: 17 Minutes

SIMULATOR SETUP

- Cold Shutdown IC-1 (Modifications below saved under IC-210)
- RCS drained down per Initial Conditions or at a level with DHR flow such that conditions are in the UNACCEPTABLE region of OP-TM-212-000, Attachment 7.2.
- DHR cooling Train "A" in service
- Place DHR Pump "B" under clearance.
- Modify 05A3A3-ZAORC3PI = 0.25
- FREEZE and SNAP

When run reset into IC-210 and leave in freeze.

(Denote Critical Steps with a check mark)

START TIME: _____

Performance Step: 1 Obtain procedure.

Standard: Reviews applicable section.

Evaluator Cue: **Provide 1301-1, DATA SHEET 3, Pages 1-3.**

Comment:

Performance Step: 2 1301-1, C.2.1
Required RCS temperature band.

Standard: Logs 120 ± 20 °F as Required RCS temperature band.

Comment:

Performance Step: 3 1301-1, C.2.2
Are at least two incore T/C operable? (NA if Fuel Transfer Canal is flooded)
Record average of 5 highest
or
Two incore temps _____ // _____
Loc °F Loc °F

Standard:

- Circles "Y" for at least two incore T/C operable.
- Logs the value of C4006 on PPC for average of 5 highest.
- OR logs Backup Incore temperatures read on PLF and locations used.

Examiner Cue: If the BIRO is used for the Two Incore Temperatures: Record the "as read" value.

Comment: **Read 113.5 °F during validation, may be located at Area 12 Group 30.**

PERFORMANCE INFORMATION

- 1301-1, C.2.3
- Performance Step: 4** Decay heat suction temperature A / B
- Standard:**
- Circles "A" as the train.
 - Logs DH-6 TI-1 for Decay heat suction temperature.
- Comment:** **Read 102°F at validation, acceptable range ± 5 °F.**
- 1301-1, C.2.4
- Performance Step: 5** Decay heat cooler outlet temperature A / B
- Standard:**
- Circles "A" as the train.
 - Logs DH-2 TI-1 for Decay heat cooler outlet temperature.
- Comment:** **Read 90°F at validation, acceptable range ± 5 °F.**
- 1301-1, C.2.5
- Performance Step: 6** Decay Closed temperature out of DC-C-2 A (computer point A108)
- Standard:**
- Circles "A" as the train.
 - Logs As read on computer point A108 for Decay Closed temperature out of DC-C-2 A.
- Comment:** **Read 69.7°F at validation, acceptable range ± 2 °F.**

1301-1, C.2.6

PERFORMANCE INFORMATION

Performance Step: 7 If using Decay Heat Removal, is a RCS Pressure indicator operable?

Standard: Verifies at least one RCS Pressure indicator operable and circles "Y".

Evaluator Note: **The evaluated instrument should be RC3A-PT5/PI-2. Location PLF by clock.**

Comment:

1301-1, C.2.7

Performance Step: 8 If using OTSG for heat removal, are 2 RCS Pressure Indicators operable?

Standard:

- Determines OTSG not being used for heat removal due to RCS "drained-down" condition.
- Circles "N/A".

Comment:

1301-1, C.2.8

Performance Step: 9 Decay heat flow A / B (Circle A or B and record flow)

Standard:

- Circles "A" for train.
- Logs FI-802A value ± 20 gpm for Decay heat flow A.

Comment: **Read 3002 at validation.**

1301-1, C.2.9

PERFORMANCE INFORMATION

√ **Performance Step: 10** Decay heat flow is < vortex formation limit (OP-TM-212-000, Attachment 7.3)? (NA if RCS level is > 319 feet or DH system is secured).

Standard:

- Applies RCS level and DHR flow to Attachment 7.2.
- Determines DHR flow is in the UNACCEPTABLE region of the curve and circles "N".

Evaluator Cue:

- **OP-TM-212-000, Attachment 7.2 is on the URO Work Station. Attachment 7.2 is the Vortex Formation Limit Curve, not Attachment 7.3 as stated in 1301-1. A procedure change request has been submitted.**
- **After the applicant determines DHR flow is in the UNACCEPTABLE region of the curve: For the purpose of the JPM, do NOT correct the problem at this time. Complete the readings and then inform the CRS.**

Comment:

1301-1, C.2.10

PERFORMANCE INFORMATION

- √ **Performance Step: 11** Tech. Spec. 3.4.2
- Decay Heat Removal System "A" and all necessary support equipment. (√ if operable)
 - Decay Heat Removal System "B" and all necessary support equipment. (√ if operable)
 - Reactor Coolant System, "A" OTSG and its associated Emergency FW Flowpath, MS-V-4A. (√ if operable)
 - Reactor Coolant System, "B" OTSG and its associated Emergency FW Flowpath, MS-V-4B. (√ if operable)
 - Reactor is in refueling shutdown (RCS boron >2450 ppmB, RCS Temp. 140 °F) and FTC level >23' above reactor vessel flange (alarm PLB-4-9 is clear, and measured FTC level is <2 Ft. below floor). (√ if applicable)
- If in PC 13 are a, b, c, d operable in all other Plant Conditions. at least 2 of a, b, c, or d operable or at least one of a, b, c, or d, operable and e applies. (If the exceptions of T.S. 3.4.2.4 exist, then NA this step) (**Evaluator: See CUE on next page regarding the this statement**)
- Standard:**
- Checks only "a. Decay Heat Removal System "A" and all necessary support equipment" as operable. **May determine DH-P-1A is not operable based on being below vortex curve. This would be a conservative decision but will not alter the critical step outcome in that < 2 are still operable and "e" does not apply.**
 - Determines from Initial Conditions that the unit is NOT in PC 13.
 - Circles N because only one condition is checked. (√)
- Evaluator Notes:**
- DHR System "B" is inoperable because the pump is tagged.
 - ., d. "A" and "B" OTSG are inoperable due to RCS in a "drained-down" condition.
 - is N/A
- Evaluator Cue:**
- In the final statement of C.2.10, there should be a question mark after the first operable, the "l" in the next "in" should be capitalized, and the period after "Plant Conditions" should be deleted.
- The statement should actually read:
If in PC 13, are a, b, c, d operable? In all other Plant Conditions, at least 2 of a, b, c, d, operable or at least one of a, b, c, or d, operable and e applies. (If the exceptions of TS 3.4.2.4 exist, then NA this step) (Circle Y/N/NA)
A procedure change request will be submitted after the examination is completed.

Comment:**Performance Step: 12** Reports non-conforming conditions to CRS.**Standard:** Reports unacceptable results:
C.2. 9 – DHR flow is in the UNACCEPTABLE region of the curve.
C.2.10 – Conditions for satisfying TS 3.4.2 are NOT met.**Evaluator Cue:** **When the applicant proceeds to Step C.2.11: Report any current findings to the CRS.****Comment:****Terminating Cue:** **After findings are reported: Evaluation on this JPM is complete.****STOP TIME:** _____

Job Performance Measure No.: 2007 NRC ADM JPM RO A-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: _____

- INITIAL CONDITIONS:
- DHR Train "A" is in service for cooling.
 - RCS Boron Concentration is 2610 PPM.
 - RCS Temperature band is 120 °F ± 20 °F.
 - The RCS is drained down to 14 inches of water above centerline of the 28 inch pipe.
 - DHR Pump "B" is under clearance due to increasing vibration during the previous shift.
 - Plant is in "Plant Condition PC 5".
 - All Incore Thermocouples are operable.

INITIATING CUE: You are the ARO on the night shift. Perform 1301-1, SHIFT AND DAILY CHECKS, DATA SHEET 3, Section C.2 – DECAY HEAT REMOVAL CAPABILITY.

Facility: Three Mile Island Unit 1 Task No.:

Task Title: Perform a batch calculation in accordance with OP 1103-4, SOLUBLE BORON CONCENTRATION CONTROL, Enclosure 1. JPM No.: 2007 NRC ADM JPM RO-SRO A1-1

K/A Reference: 2.1.25 (2.8/3.1) **New JPM**

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 has been in COLD SHUTDOWN for 13 days.

- Core Burnup is 530 EFPD.
- Current RCS Boron concentration is 1950 ppmB.
- RCS level is being maintained at Elevation 321.
- The crew will be filling the RCS to 220" in the PZR this shift.

Task Standard: All critical calculations within acceptance criteria.

Required Materials:

- Calculator
- Straightedge

General References: OP-1103-4, SOLUBLE POISON CONCENTRATION CONTROL,
Revision 61

Handout: OP-1103-4, step 3.1.1 signed off

Initiating Cue: You have been assigned to perform OP-1103-4, SOLUBLE POISON
CONCENTRATION CONTROL, Step 3.1.2, to determine if DM Water
can be used for the fill.

Time Critical Task: No

Validation Time: 25 Minutes.

SIMULATOR SETUP

N/A

(Denote Critical Steps with a check mark)

START TIME: _____

Performance Step: 1 Obtain procedure.

Standard: Review Step 3.1.2.

Evaluator Cue(s):

- **Provide handout.**
- **Assume that the handout is the current revision of the procedure.**
- **Concern yourself only with Step 3.1.2; not the fill evolution.**

Comment:

PERFORMANCE INFORMATION

- √ **Performance Step: 2**
- Determine volume of DW required for filling. Enclosure 1 Page 1 of 3.
 - Calculate the final boron concentration from Enclosure 1 Page 1 of 3. If it is determined that the final boron concentration will be greater or equal to that required for 1 percent shutdown margin at 70 °F (see Figure 1), proceed with fill using demineralized water. If adding demin water only to fill the RCS would reduce RCS Boron Concentration below that required to maintain 1 percent cold shutdown boron (per Figure 1), then the method outlined in 3.1.3 must be used for fill.
- Standard:**
- Determines RC System Initial Volume (Vri) from Table 1: 54413
 - Performs Enclosure 1, Page 1 calculation for final boron concentration (Crf) after fill with DM Water:
 - $1950 \text{ ppmB}(60397/91353) = 1289 (\geq 1276 \text{ ppmB but } \leq 1302 \text{ ppmB}) (\checkmark)$
 - Signs and dates Enclosure 1, Page 1.
 - Compares calculated Crf to 1103-4 Figure 1, Cycle 16 1% Shutdown Boron Concentration.
 - Determines Crf would be below the minimum (1400 ppmB) if only DM Water is used for the fill. The method in Step 3.1.3 is required. (√)
- Evaluator Cue:**
- **If the applicant says NO - DM Water cannot be used, without performing the calculation, then direct them to: "Continue to Step 3.1.3. Perform the calculation for using the BAMT and DM Water."**
 - **After it has been determined that the method in Step 3.1.3 is required: "Continue to Step 3.1.3. Perform the calculation for using the BAMT and DM Water."**
- Comment:**

OP-1103-4, Step 3.1.3

PERFORMANCE INFORMATION

Performance Step: 3 Discussion:
The RCS can be filled to its total cold volume of 91,353 gallons, (which includes the MUT and MU and P piping) by either using 7 percent Boric Acid and demineralized water (Normally "A" RCBT) or 7 percent Boric Acid and Boric Acid solution (Normally "B" RCBT or "C" RCBT). The equations for using 7 percent BAMT and demineralized water for fill are outlined in Enclosure 1 Page 2 of 3 while the equations for using 7 percent BAMT and borated water for fill are outlined in Enclosure 1 Page 3 of 3.

Standard: Determines Enclosure 1, Page 2 of 3 calculation is required.

Comment:

OP-1103-4, Step 3.1.3.1

Performance Step: 4 Determine initial volume of RC System (see Table No. 1).

Standard: Determines RC System Initial Volume (V_{ri}) from Table 1: 54413

Comment:

OP-1103-4, Step 3.1.3.2

Performance Step: 5 Determine final concentration of boron required for the RCS (see Figure No. 1).

Standard: Determines 1400-1425 ppm B from Figure 1.

Comment:

OP-1103-4, Step 3.1.3.3

Performance Step: 6 Determine initial boron concentration of RCS.

Standard: Determines 1950 ppm B per Initial Conditions.

Comment:

OP-1103-4, Step 3.1.3.4

√ **Performance Step: 7** Determine the volume of boron (7 percent) required for fill.

Standard: Performs Enclosure 1, Page 2 calculation:
 $[(91353)(1400) - 60397(1950)]/18000 = \geq 560$ but ≤ 689 gallons

Evaluator Cue: The concentration in the BAMT is 18,000 ppmB.

Evaluator Note: The acceptable calculation range accounts for reading 1400-1425 ppmB from Figure 1.

Comment:

Performance Step: 8 Enclosure 2, Page 2
 B = _____ Gals. of concentrated BA solution required.

Standard: Enters a value ≥ 560 but ≤ 689 gallons in the blank indicating the Gals. of BA solution required.

Comment:

√ **Performance Step: 9** Enclosure 2, Page 2
 Demineralized water = Gal. for fill from Table 1 minus B = _____ Gals.

Standard: Determines "Volume to Fill" from Table 1 as 30,956.
 Subtracts gallons of BA solution required from "Volume to Fill":
 $30956 - (\geq 560 \text{ but } \leq 689 \text{ gallons}) = \leq 30396 \text{ but } \geq 30267$.

Comment:

Performance Step: 10 Enclosure 2, Page 2
 Completes Enclosure 2, Page 2

PERFORMANCE INFORMATION

Standard: Signs and dates Enclosure 2, Page 2.

Comment:

Terminating Cue: After Enclosure 2, Page 2 is signed and dated: Evaluation on this JPM is complete.

STOP TIME: _____

Job Performance Measure No.: 2007 NRC ADM JPM RO-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 has been in COLD SHUTDOWN for 13 days.
 - Core Burnup is 530 EFPD.
 - Current RCS Boron concentration is 1950 ppmB.
 - RCS level is being maintained at Elevation 321.
 - The crew will be filling the RCS to 220" in the PZR this shift.

INITIATING CUE: You have been assigned to perform OP-1103-4, SOLUBLE POISON CONCENTRATION CONTROL, Step 3.1.2, to determine if DM Water can be used for the fill.

Facility: Three Mile Island Unit 1 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 reactor trip and ESAS actuation has occurred.
 - The operating crew is performing in the EOP network.
 - DH-V-12A, RCS Drop Line To DH-P-1A Suct Hdr Isol, needs to be unlocked and closed.

- The following personnel are available to perform the task. Their 2007 accumulated TEDE dose follows their name:
 - Greg – 1705 millirem
 - Mark – 1555 millirem
 - Joe – 1910 millirem
 - Jim – 1665 millirem
 - Stephanie – 1800 millirem

Task Standard: All critical tasks evaluated as SAT.

Required Materials: Calculator

General References:

- RP-AA-203, EXPOSURE CONTROL AND AUTHORIZATION, Revision 2
- RWP Number 00050, OPERATIONS WORK GROUP ROUTINE RWP, Revision 00

Handout:

- RWP 00050
- Survey Map with DH-V-12A valve location identified.

Initiating Cue: This is not an emergency evolution. The task will be performed under the OPERATIONS WORK GROUP ROUTINE RWP. Identify which of the available personnel can be assigned to operate DH-V-12A and determine the maximum permissible stay time before the first facility limit requires an exit from the area. Assume that no dose is received in transit.

Time Critical Task: No

Validation Time: 10 Minutes

SIMULATOR SETUP

N/A

(Denote Critical Steps with a check mark)

START TIME: _____

√ **Performance Step: 1** Identify the personnel who meet the TEDE accumulated dose requirements to perform the task.

Standard:

- From RWP, determines that a TEDE Balance of ≥ 315 mrem is required for entry.
- Identifies Mark and Jim as the available personnel meeting the TEDE Balance requirements to be assigned to work under the RWP. (√)

Evaluator Cue:

- **Provide the handout.**
- **Inform applicant: The radiation levels on the survey map were written in for the purpose of this JPM and are not representative of the actual, current values in that area.**

Comment:

Performance Step: 2 Determine the valve location on the survey map.

Standard: Locates DH-V-12A on Survey Map.

Comment:

Performance Step: 3 Determine the radiation level in the area of the valve.

Standard: Determines general radiation level in the area to be 90 mr/hr.

Comment:

PERFORMANCE INFORMATION

Performance Step: 4 Determine earliest exit requirement.

Standard: Determines exit is required when Alarming Dosimeter actuates:
15 mr accumulated dose or 150 mr/hr dose rate.

Comment:

√ **Performance Step: 5** Calculate maximum stay time.

Standard: $(15 \text{ mr})(1\text{hr}/90 \text{ mr})(60 \text{ minutes}/1 \text{ hour}) = 10 \text{ minutes}$

Comment:

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

STOP TIME: _____

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 reactor trip and ESAS actuation has occurred.
 - The operating crew is performing in the EOP network.
 - DH-V-12A, RCS Drop Line To DH-P-1A Suct Hdr Isol, needs to be unlocked and closed.
 - The following personnel are available to perform the task. Their 2007 accumulated TEDE dose follows their name:
 - Greg – 1705 millirem
 - Mark – 1555 millirem
 - Joe – 1910 millirem
 - Jim – 1665 millirem
 - Stephanie – 1800 millirem

INITIATING CUE: This is not an emergency evolution. The task will be performed under the OPERATIONS WORK GROUP ROUTINE RWP. Identify which of the available personnel can be assigned to operate DH-V-12A and determine the maximum permissible stay time before the first facility limit requires an exit from the area. Assume that no dose is received in transit.

Facility: Three Mile Island Unit 1 Task No.: 0028010401

Task Title: Perform a transient RCS leak rate calculation in accordance with OS-24, CONDUCT OF OPERATIONS DURING ABNORMAL AND EMERGENCY EVENTS, ATTACHMENT F, and apply the Technical Specification/procedural requirements to the calculation.

JPM No.: 2007 NRC ADM JPM SRO A1-2

K/A Reference: 2.1.12 (4.0) **JPM 11.2.05.057, Modified**

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 at 100% power.
 - Makeup flow has been slowly rising for the past hour.
 - There is no indication of Steam Generator tube leakage.
 - RCDT level has been constant.

Task Standard: All critical tasks evaluated as SAT.

- Required Materials:
- Calculator
 - Technical Specifications

- General References:
- OS-24, CONDUCT OF OPERATIONS DURING ABNORMAL AND EMERGENCY EVENTS, Revision 13
 - Technical Specifications, Section 3.1.6 (LEAKAGE)
 - OP-TM-AOP-050, REACTOR COOLANT LEAKAGE, Revision 0

Handout: OS-24, ATTACHMENT F

Initiating Cue: The CRS has directed you to perform and report the results of a Transient RCS Leak Rate Calculation in accordance with OS-24, CONDUCT OF OPERATIONS DURING ABNORMAL AND EMERGENCY EVENTS, ATTACHMENT F. The PPC leak rate calculation function is not available but the Plant Computer is available to gather data. For the purpose of the JPM, gather initial and final data at 5 minute intervals.

Time Critical Task: No

Validation Time: 19 Minutes

SIMULATOR SETUP**Same setup as for ADM JPM RO A1-2**

- 100% power IC 16
- MALF for RCS leak approximately 7.5 gpm to RB atmosphere. TH06 = 0.001
- Set up Plant Computer so that all OS-24 Attachment F related computer points must be added to scan/displayed.
- Ensure initial MUT level is such that no makeup will be required in the next 15 minutes.

(Denote Critical Steps with a check mark)

START TIME: _____

Performance Step: 1 Obtain procedure.

Standard: Reviews OS-24, Attachment F.

Evaluator Cue: **Provide handout after the procedure is located.**

Comment:

OS-24, ATTACHMENT F

Performance Step: 2 Set up Plant Computer to gather data.

OR

Uses computer group and console indications to gather data.

Standard: Adds the following points to a group:

- Pressurizer Level (PL): Computer Point C4017
- Makeup Tank Level (MTL): Computer Point A0498
- RCS Average Temperature (Tavg): Computer Point A5066

Comment:

OS-24, ATTACHMENT F

Performance Step: 3 Gather Initial Data.

Standard: PL =
MTL =
Tavg =
Marks the time: _____

Comment:

OS-24, ATTACHMENT F

Performance Step: 4 Gather Final Data.

Standard: Waits at least 5 minutes.
PL =
MTL =
Tavg =
Marks the time: _____

Comment:

OS-24, ATTACHMENT F

√ **Performance Step: 5** Calculate RCS leak rate.

Standard:

- Plugs Δ values into ATTACHMENT F formula and performs calculation.
- Determines RCS leakage ≥ 5 gpm ≤ 10 gpm.

Comment:

Performance Step: 6 Inform CRS.

Standard: Oral report and/or provides form to the CRS.

Evaluator Cue:

- **Acknowledge report.**
- **Assume that you are now the CRS who has received this report. Specify actions required by this rate of RCS leakage.**

Comment:

Technical Specifications/AOP

√ **Performance Step: 7** Evaluate RCS leakage rate and apply facility requirements.

Standard:

- Enter TS Action Statement 3.1.6.2 (√)
If unidentified reactor coolant leakage (excluding normal evaporative losses) exceeds one gpm or if any reactor coolant leakage is evaluated as unsafe, the reactor shall be placed in hot shutdown within 24 hours of detection.
- Enter TS Action Statement 3.1.6.6
Action to evaluate the safety implication of reactor coolant leakage shall be initiated within four hours of detection. The nature, as well as the magnitude, of the leak shall be considered in this evaluation. The safety evaluation shall assure that the exposure of offsite personnel to radiation is within the dose rate limits of the ODCM. |
- Entry Conditions for AOP-050, REACTOR COOLANT LEAKAGE, are met.

Comment:

Terminating Cue: After at least the critical TS Action Statement has been entered: Evaluation on this JPM is complete.

STOP TIME: _____

Job Performance Measure No.: 2007 NRC ADM JPM 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: _____

- INITIAL CONDITIONS:
- The unit is at 100% power.
 - Makeup flow has been slowly rising for the past hour.
 - There is no indication of Steam Generator tube leakage.
 - RCDT level has been constant.

INITIATING CUE: The CRS has directed you to perform and report the results of a Transient RCS Leak Rate Calculation in accordance with OS-24, CONDUCT OF OPERATIONS DURING ABNORMAL AND EMERGENCY EVENTS, ATTACHMENT F. The PPC leakrate calculation function is not available but the Plant Computer is available to gather data. For the purpose of the JPM, gather initial and final data at 5 minute intervals.

Facility: Three Mile Island Unit 1 Task No.:

Task Title: Evaluate a proposed temporary procedure change. JPM No.: 2007 NRC ADM JPM SRO A-2

K/A Reference: 2.2.6 (3.3)

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:
- RCS temperature is 140 °F. Preparations for heating up following a refueling outage are underway. The Pressurizer is solid.
 - Post-maintenance testing is required on MU-V-16A.
 - An outage coordinator has prepared a temporary procedure change intended to allow MU-V-16A testing during the heatup.

Task Standard: All critical tasks evaluated as SAT.

Required Materials: Technical Specifications

General References:

- AD-AA-101, PROCESSING OF PROCEDURES AND T&RMs, Revision 17
- OP-TM-211-212, IST OF MU-V-16A AND MU-V-16B, Revision 0
- Technical Specification 3.1.12

Handout:

- OP-TM-211-212 with the following:
 - Revision number crossed out and TC 12345 inserted.
 - Line out "or Shutdown Mode" in Prerequisite 3.3.1.
 - Line out Prerequisite 3.3.2.
- AD-AA-101-1002 Attachment 1 completed for a Temporary Change with errors matching the JPM.

Initiating Cue: The Shift Manager has assigned you to do the SRO review to authorize the temporary change.

Time Critical Task: No

Validation Time: 15 Minutes

SIMULATOR SETUP

N/A

(Denote Critical Steps with a check mark)

START TIME: _____

Performance Step: 1 Review completed AD-AA-101-1002 Attachment 1, Procedure Approval Form

Standard: Determines procedure number and title are mismatched: Procedure number should be OP-TM-211-212.

Evaluator Cue:

- **Provide handout.**
- **If the error is discovered: Correct the error and initial the change. Continue your review.**

Comment:

√ **Performance Step: 2** Evaluate technical merit.

Standard: Determines lining out "or Shutdown Mode" in Prerequisite 3.3.1 results in the HPI Pumps being energized.

Evaluator Cue: **The applicant may address Performance Step: 2 and Performance Step: 3 as a combined issue.**

Comment:

PERFORMANCE INFORMATION

√ **Performance Step: 3** Evaluate technical merit.

Standard:

- Determines that Temporary Change acceptance criteria (no change of intent) are NOT met. In conjunction with the change to Prerequisite 3.3.1, eliminating Prerequisite 3.3.2 results in an inadvertent TS 3.1.12 violation when MU-V-16A is energized.
- Returns document unapproved and/or informs Shift Manager that it cannot be approved.

Comment:**Terminating Cue:**

After both the form and the proposed procedure change have been reviewed: Evaluation on this JPM is complete.

STOP TIME: _____

Job Performance Measure No.: 2007 NRC ADM JPM SRO A-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: _____

- INITIAL CONDITIONS:
- RCS temperature is 140 °F. Preparations for heating up following a refueling outage are underway. The Pressurizer is solid.
 - Post-maintenance testing is required on MU-V-16A.
 - An outage coordinator has prepared a temporary procedure change intended to allow MU-V-16A testing during the heatup.

INITIATING CUE: The Shift Manager has assigned you to do the SRO review to authorize the temporary change.