



**Northeast  
Nuclear Energy**

Rope Ferry Rd. (Route 156), Waterford, CT 06385

Millstone Nuclear Power Station  
Northeast Nuclear Energy Company  
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(860) 447-1791  
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The Northeast Utilities System

NOV 8 2000

Docket No. 50-336  
B18264

Mr. Richard J. Conte, Region I  
Chief, Operational Safety Branch  
U.S. Nuclear Regulatory Commission  
475 Allendale Road  
King of Prussia, PA 19406

Millstone Nuclear Power Station, Unit No. 2  
Reactor Operator Initial Examination Unit No. 2

In a letter dated October 31, 2000,<sup>(1)</sup> Northeast Nuclear Energy Company (NNECO) submitted materials to be used for the re-examination of a Reactor Operator candidate at Millstone Unit No. 2. The cover letter that was transmitted with the examination material contained an error. The letter cited the use of the guidelines contained in ES 401, Attachment 1, of NUREG 1021, in preparing the examination material, which was incorrect. The standard that was used in preparing the material contained in Attachment 1 of the October 31, 2000, letter was ES-301, "Preparing Initial Operating Tests," of NUREG 1021. We apologize for any inconvenience and additional burden this may have caused your staff.

There are no regulatory commitments contained within this letter.

Should you have any questions regarding this submittal, please contact Mr. Michael Wilson at (860) 437-2916.

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY

Robert G. Lizotte  
Master Process Owner - Assessment

cc: See next page

<sup>(1)</sup> R. G. Lizotte letter to R. J. Conte, U.S. Nuclear Regulatory Commission, "Millstone Unit No. 2, Reactor Operator Initial Examination Millstone Unit No. 2," dated October 31, 2000, (B18255).

U.S. Nuclear Regulatory Commission  
B18264/Page 2

cc: H. J. Miller, Region I Administrator  
J. I. Zimmerman, NRC Project Manager, Millstone Unit No. 2  
S. R. Jones, Senior Resident Inspector, Millstone Unit No.2

U. S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington, DC 20555



**Northeast  
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The Northeast Utilities System

OCT 31 2000

Docket No. 50-336  
B18255

RE: 10 CFR 55.40

Mr. Richard J. Conte, Region I  
Chief, Operational Safety Branch  
U.S. Nuclear Regulatory Commission  
475 Allendale Road  
King of Prussia, PA 19406

Millstone Nuclear Power Station, Unit No. 2  
Reactor Operator Initial Examination Millstone Unit No. 2

In support of our request dated October 6, 2000,<sup>(1)</sup> Northeast Nuclear Energy Company (NNECO) hereby submits material to be used for the re-examination of a Reactor Operator candidate at Millstone Unit No. 2.

Pursuant to 10 CFR 55.40(b)(3), an authorized representative of the facility has approved the examination material contained in Attachment 1 prior to submittal to the Nuclear Regulatory Commission. The written examination within Attachment 1 was developed in accordance with the guidelines contained in ES-401, Attachment 1, "Example Systematic Sampling Methodology," of NUREG 1021, Revision 8, Supplement 1. It is our belief that the enclosed materials are complete and ready-to-use.

Consistent with the guidance contained in NUREG-1021, Examiners Standard (ES) 201, Attachment 1, the examination material contained in Attachment 1 should be withheld from public disclosure until after the examination has been completed. No redacted versions are being supplied.

There are no regulatory commitments contained within this letter.

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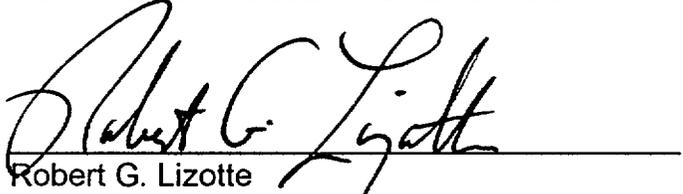
<sup>(1)</sup> S. E. Scace letter to R. J. Conte, U.S. Nuclear Regulatory Commission, "Millstone Nuclear Power Station Unit No. 2, Re-application for Operator License," dated October 6, 2000.

U.S. Nuclear Regulatory Commission  
B18255/Page 2

Should you have any questions regarding this submittal, please contact Mr. Michael Wilson at (860) 437-2916.

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY

  
Robert G. Lizotte  
Master Process Owner - Assessment

Attachment (1): Examination Material

cc: w/o attachment

H. J. Miller, Region I Administrator  
J. I. Zimmerman, NRC Project Manager, Millstone Unit No. 2  
S. R. Jones, Senior Resident Inspector, Millstone Unit No. 2

U. S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington, DC 20555

Docket No. 50-336  
B18255

Attachment 1

Millstone Nuclear Power Station, Unit No. 2

Reactor Operator Initial Examination  
Examination Material

# JOB PERFORMANCE MEASURE APPROVAL SHEET

I. JPM Title: Power Range Safety Channel and Delta T Power Channel Calibration

ID Number: JPM-97

Revision: 5

II. Initiated:



D. A. Pantalone

Developer

11-01-00

Date

III. Reviewed:



Steve Myers

Technical Reviewer

11-03-00

Date

IV. Approved:



User Department Supervisor

S. J. Baker

11-3-00

Date



Mike Jensen

Nuclear Training Supervisor

11-03-00

Date



## JOB PERFORMANCE MEASURE WORKSHEET

JPM Number: JPM-97

Rev. 5

Initiating Cues: You are the PPO. An I&C tech has just completed the incore/excore detector calibration on Channel "A" RPS.

The US has directed you to perform surveillance SP 2601D on Channel "A" of the RPS.

Initial Conditions:

- The plant is at 100% power.
- All systems are in a normal lineup.
- SP 2601D-1 has been authorized for use.

Simulator Requirements:

- Initialize the simulator at a normal 100% power IC and stable.
- Record the present setpoint for Channel 'A' "NUCLEAR PWR CALIBRATE" pot.
- Disengage the locking device for Channel 'A' "NUCLEAR PWR CALIBRATE" pot, and turn it 0.2 in the counter-clockwise direction.
- Record the present setpoint for Channel 'A' "Tcold CALABRATE" pot
- Disengage the locking device for Channel 'A' "Tcold CALIBRATE" pot and rotate 0.12 in the clockwise direction.
- Select "Tcold CAL" position on channels B, C & D and ensure they are all within 0.1 of each other.
- Place the displays on MON 1, 2 & 3 to the 100% pwr displays.

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\*\*\*\* NOTES TO EXAMINER \*\*\*\*

1. Critical steps for this JPM are indicated with an "X". For the examinee to achieve a satisfactory grade, ALL critical steps must be completed correctly.
2. When examinee states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question examinee for details of simulated actions / observations (i.e. "What are you looking at?" or "What are you observing?").
4. Under NO circumstances must the examinee be allowed to manipulate any devices during the performance of this JPM (in-plant only).



**PERFORMANCE INFORMATION**

JPM ID NUMBER: JPM-97      TITLE: Power Range Safety Channel and Delta-T Power Channel Calibration

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STEP 3      x Performance Steps: Check, Calibrate and Record Tc.

GRADE         x Standards:      Examinee performs the following:

1. Place the all the "METER INPUT" switches to 'Tcold'.
2. Record 'Tcold' indication from the DVD onto 2601D-1 .
3. Place 'METER INPUT' switch to 'Tcold cal'.
4. Compare Channel 'A' 'Tcold Cal' with the other maximum value obtained above.
5. Disengage the locking device and adjust Channel 'A' 'Tcold CALIBRATE' pot.
6. Obtain a 'Tcold Cal' indication on Channel 'A' DVM within 0.2° F of the maximum value.
7. Engage the pot.
8. If the 'Tcold cal' changed, disengage the pot, recalibrate and engage the pot.
9. Record 'As Left' pot settings on 2601D-1.

Cue:

Comments:      If Channel 'A' 'Tcold cal' is within .2°F of maximum value, there is no need to perform steps 5, 6, 7 & 8 above.

~~~~~

STEP 4         Performance Steps: Record the as found 'NUCLEAR PWR CALIBRATE' and 'DELTA T PWR CALIBRATE' potentiometer settings.

GRADE            Standards:      Examinee performs the following:

1. Record Channel 'A' 'NUCLEAR PWR' and 'DELTA T PWR' pot settings on 2601D-1
2. Notify the US to log into LCO .3.3.1.1.
3. Record date and time of LCO entry onto 2601D-1.

Cue:      As US, inform the examinee that the LCO has been logged.

Comments:      The LCO is logged for the first channel only and logged out after the last channel is completed.

~~~~~

**PERFORMANCE INFORMATION**

JPM ID NUMBER: JPM-97 TITLE: Power Range Safety Channel and Delta-T Power Channel Calibration

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STEP 5  Performance Steps: Record Calorimetric Power in percent.

GRADE  Standards: Examinee performs the following:  
1. *Examinee obtains thermal MW from PPC.*  
2. *Divides CV4CAL by 2700MWth.*  
3. *Record on 2601D-1*

Cue: 

Comments: The Ops PPC designation form that is on the roll-around cart may be used by the examinee for converting from calorimetric to percent power.

~~~~~

STEP 6  Performance Steps: Bypass the following trip units:  
• High Power Trip ('1')  
• TMLP Trip ('7')  
• Turbine Trip ('8')  
• Local Power Density trip ('11')

GRADE   Standards: Examinee performs the following:  
1. *Obtains the bypass keys for the above trip units.*  
2. *Places keys in the appropriate slots for Channel 'A',.*  
3. *Turns them to the right and observes the yellow bypass lights are lit for each.*

Cue: 

Comments:

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**PERFORMANCE INFORMATION**

JPM ID NUMBER: JPM-97      TITLE: Power Range Safety Channel and Delta-T Power Channel Calibration

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STEP 7         Performance Steps: Record "% Nuclear Power DVM" on 2601D-1.

GRADE         Standards:      The examinee performs the following.  
1. *Places the METER INPUT switch in the "NUCLEAR PWR" position.*  
2. *Records the (as found) "% Nuclear Power DVM" on 2601D-1.*

Cue: 

Comments:

~~~~~

STEP 8        x   Performance Steps: Calibrate Channel 'A' 'NUCLEAR POWER' and Record.

GRADE           x   Standards:      Examinee performs the following:  
1. *Determine if the 'Percent Nuclear Power' DVM is within 0.1% of the plant calorimetric.*  
2. *Disengage locking device on the 'NUCLEAR PWR CALIBRATE' pot.*  
3. *Adjust 'NUCLEAR PWR CALIBRATE' pot to equal the "% Calorimetric Power" recorded on 2601D-1.*  
4. *Engage the locking device on 'NUCLEAR PWR CALIBRATE' pot.*  
5. *If DVM changed, recalibrate per steps 2, 3, & 4.*  
6. *Record the (as left) 'NUCLEAR PWR CALIBRATE' pot setting on 2601D-1.*  
7. *Record the (as left) 'NUCLEAR PWR' DVM reading on 2601D-1.*  
8. *Check the DVM value is within 0.1% of the "%Calorimetric Power" recorded on 2601D-1.*

Cue:

Comments:      Steps 2, 3, 4, & 5 do not need to be performed if the DVM value is within 0.1% of the "%Calorimetric Power" recorded on 2601D-1.

~~~~~

**PERFORMANCE INFORMATION**

JPM ID NUMBER: JPM-97 TITLE: Power Range Safety Channel and Delta-T Power Channel Calibration

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STEP 9     Performance Steps: Record the following on 2601D-1

- Channel 'A' 'Delta-T PWR' (DVM)
- 'NUCLEAR PWR - DELTA-T PWR (%)'

GRADE  Standards: The examinee will perform the following:

1. Place the 'METER INPUT' switch to 'DELTA-T PWR'.
2. Record (as found) 'DELTA-T PWR' DVM and 'NUCLEAR PWR - DELTA-T PWR (%)' on 2601D-1.

Cue: *DELTA-T PWR*

Comments:

~~~~~

STEP 10     Performance Steps: Calibrate Channel 'A' 'Delta-T PWR'.

GRADE   Standards: The examinee will perform the following.

1. Disengage the locking device on 'DELTA-T PWR CALIBRATE' pot.
2. Adjust the 'DELTA-T PWR CALIBRATE' pot to obtain the 'DELTA-T PWR' (DVM), within 0.1% of 'Calorimetric Power %' as recorded on 2601D-1.
3. Ensure average deviation on 'NUCLEAR PWR - DELTA-T PWR (%)' is -0.5% to +0.5%.
4. Engage the locking device on the 'DELTA-T PWR CALIBRATE' pot.
5. If DVM indication changed, repeat steps 1, 2, 3 & 4 above.
6. Record the (as left) 'DELTA-T PWR CALIBRATE' pot setting on 2601D-1.

Cue:

Comments: This step is not required if; the (as found) 'DELTA-T PWR' (DVM) recorded in step 9 is within 0.1% of the 'Calorimetric Power (%)' recorded on 2601D-1 and 'NUCLEAR PWR - DELTA-T PWR (%)' average indication is within -0.5% to +0.5%.

~~~~~

**PERFORMANCE INFORMATION**

JPM ID NUMBER: JPM-97      TITLE: Power Range Safety Channel and Delta-T Power Channel Calibration

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STEP 11      x Performance Steps: Restore the following to normal:

- High Power Trip
- TMLP Trip
- Turbine Trip
- Local Power Density Trip

GRADE          x Standards:      The examinee will perform the following:

1. *Turn the 'Bypass Keys' to the left, for the above trips.*
2. *Observe the yellow lights no longer lit.*

Cue: 

Comments:      When Channel 'A' has been calibrated and the bypass keys are in normal, this JPM is complete.

STOP TIME: 

VERIFICATION OF JPM COMPLETION

Job Performance Measure No. JPM- 97

Rev. 5

Date Performed: \_\_\_\_\_

Operator: \_\_\_\_\_

Evaluator(s): \_\_\_\_\_

For examinee to achieve a satisfactory grade, **ALL** critical steps must be completed correctly. If task is Time Critical, it **MUST** be completed within the specified time to achieve a satisfactory grade.

Time Critical Task? Yes \_\_\_\_\_ No X

Validated Time (minutes): 20

Actual Time to Complete (minutes): \_\_\_\_\_

Result of JPM: \_\_\_\_\_ (Denote by an S for satisfactory or a U for unsatisfactory)

Areas for Improvement:

## EXAMINEE HANDOUT

JPM ID Number: 97

Initiating Cues:

You are the PPO. An I&C tech has just completed the incore/excore detector calibration on Channel 'A' RPS.

The US has directed you to perform surveillance SP 2601D on Channel 'A' of the RPS.

Initial Conditions:

- The plant is at 100% power.
- All systems are in a normal lineup.
- SP 2601D-1 has been authorized for use.

**Form Approval**

Approval Date 6-8-99

Effective Date 6-11-99

# Form Cover Sheet



**Generic Information**

Form Title Power Range Safety Channel and Delta T Power Channel Calibration Rev. No. 15

Reference Procedure  
SP 2601D

Applicable Tech. Spec.  
4.3.1.1.1, Table 4.3-1, items 2a and 2b

Frequency  
At least once every 24 hours or as required

**This form is being used for the following:**

- Tech Spec Surveillance
- System Alignment
- Other: \_\_\_\_\_
- Maintenance Restoration (Retest)
- Non-Tech Spec Surveillance (PM)

**Specific Information**

SCHEDULE DATE <u>N/A</u>	APPLICABLE MODE <u>See NOTE below</u>	TSAS 3.3.1.1 action 2 ENTERED AT (Date/Time) [+ Ref. 6.5]:
TEST AUTHORIZED BY <u>Training -</u>	DATE	
PREREQUISITES COMPLETED (INITIALS)	PRECAUTIONS NOTED (INITIALS)	
COMPLETED BY	DATE	TSAS 3.3.1.1 action 2 EXITED AT (Date/Time) [+ Ref. 6.5]:
ACCEPTED BY	DATE	
APPROVED BY (DEPARTMENT HEAD OR DESIGNEE)	DATE	ACCEPTANCE CRITERIA SATISFIED <input type="checkbox"/> YES <input type="checkbox"/> NO

**SURVEILLANCE INFORMATION**

**NOTE:** - Above 15% of RATED THERMAL POWER, "NUCLEAR PWR CALIBRATE" Pots must be adjusted to make nuclear power signals agree with the calorimetric calculation and "ΔT PWR CALIBRATE" Pots must be adjusted to null Nuclear Power - ΔT Power DVMs.

During PHYSICS TESTS, daily calibrations of nuclear power and ΔT power may be suspended provided these calibrations are performed upon reaching each major power plateau and prior to proceeding to the next major test plateau.

**COMMENTS**

If performed for Maintenance Restoration, indicate Work Order #, etc.:

List any additional comments:

## Power Range Safety Channel and Delta T Power Channel Calibration

### Voltage and Power Deviation Checks

Item	Acceptance Criteria	Channel			
		"A"	"B"	"C"	"D"
"ZERO"	-0.003 to 0.003 volts				
" +10V"	+9.997 to +10.003 volts				
" -10V"	-9.997 to -10.003 volts				
<b>Initials</b>					
No deviations in excess of 5% (in either direction) of RATED THERMAL POWER are observed between calorimetric and linear range NI indicated power ( <b>Initials</b> )					

### T<sub>C</sub> Check and Calibration

Item	Channel			
	"A"	"B"	"C"	"D"
"T <sub>COLD</sub> " indication (DVM)				
As Left "T <sub>COLD</sub> CALIBRATE" Pot setting				

### RPS Calibration

Item	Channel			
	"A"	"B"	"C"	"D"
As Found "NUCLEAR PWR CALIBRATE" Pot setting		N/A		
As Found "ΔT PWR CALIBRATE" Pot setting				
Calorimetric power (%)				
As Found "Percent Nuclear Power" (DVM)				
As Left "NUCLEAR PWR CALIBRATE" Pot setting				
As Left "Percent Nuclear Power" (DVM)				
Acceptance Criteria: As Left "Percent Nuclear Power" (DVM) indication is within ±0.1% of calorimetric power (%)	Initials			
As Found "ΔT PWR" (DVM)				
"NUCLEAR PWR - ΔT PWR (%)"				
As Left "ΔT PWR CALIBRATE" Pot setting				

### Power Range Control Channel Check and Calibration

Item	Channel "X"	Channel "Y"
"NUC PWR CAL POT" setting	N/A	
"POWER RANGE" indication (C-04)	N/A	

# JOB PERFORMANCE MEASURE APPROVAL SHEET

I. JPM Title: Manual Isolation of Steam Generator Blowdown

ID Number: JPM-T04

Revision: 0

II. Initiated:



Daniel A. Pantalone

Developer

11-02-00

Date

III. Reviewed:



Steve Myers

Technical Reviewer

11-03-00

Date

IV. Approved:

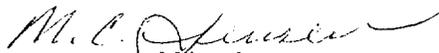


User Department Supervisor

S. A. Baker

11-3-00

Date



Mike Jensen

Nuclear Training Supervisor

11-03-00

Date

**JOB PERFORMANCE MEASURE WORKSHEET**

Facility: MP-2 Examinee: \_\_\_\_\_

JPM Number: JPM-T04 Rev. 0

Task Title: Manual Isolation of Steam Generator Blowdown

System: Steam Generator Blowdown

Time Critical Task: Yes      No   X  

Validated Time (minutes): 15

Task No.(s): NUTIMS #035-01-049 & 073-01-050

Applicable To: SRO   X   RO   X   PEO     

K/A No.: Generic 2.3.11 K/A Rating: 2.7/3.2

Method of Testing:

Simulated Performance:   X   Actual Performance:     

Location:

Classroom:      Simulator:   X   In-Plant:     

Task Standards:

At the completion of this JPM, the examinee will have manually isolated Steam Generator Blowdown.

Required Materials

(procedures, equipment):

- ARP 2590E C-06/7
- ARP 2590H RC-14

General References:

\*\*\*\* **READ TO THE EXAMINEE** \*\*\*\*

*I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied. You may use any approved reference materials normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgments, and log entries as if the evolution was actually being performed.*

**JOB PERFORMANCE MEASURE WORKSHEET**

JPM Number:           JPM-T04          

Rev.           0          

**Initiating Cues:**

You are the Secondary Plant Operator (SPO). As the SPO, respond to any plant conditions as you would in the plant.

I will act as your US.

**Initial Conditions:**

The plant is at 100% power, NOT/NOP. No equipment is out of service.

Simulator Requirements:

Ensure that RM5099 (SJAE RM) has a setpoint cal sticker and that Recorder RJR-9373 has paper.

1. Place the simulator in any 100% power IC.
2. On RC-14, place the ~~SJAE~~ Radmonitor (RM4262) in "TEST". *SG Blowdown*
3. When the lights on the RM go on, place the switch back to "OP"
4. On C-05 override open MS 220A&B by taking their hand-switches to close then back to open.
5. RMR-01 (Defeat) Defeat RM4262
6. Override Annunciator (C-06 DB24) to (OFF)
7. (IO – OFF) RIT4262 lights (DS-1, DS-2 & DS-3)
8. Check that all lights are off on RM4262 on RC-14.
9. Clear all Annunciators and any PPC alarms.
10. Place Mon. 1, 2 & 3 to their appropriate displays for 100% power.

After the examinee has reported that she has taken the watch, insert the following.

11. SG-01A (100%) S/G Tube Leak.

---

\*\*\*\* NOTES TO EXAMINER \*\*\*\*

1. Critical steps for this JPM are indicated with an "X". For the examinee to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
2. When examinee states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question examinee for details of simulated actions / observations (i.e. "What are you looking at?" or "What are you observing?").
4. Under **NO** circumstances must the examinee be allowed to manipulate any devices during the performance of this JPM (in-plant only).

**PERFORMANCE INFORMATION**

JPM ID NUMBER: JPM-T04      TITLE: Manual Isolation of Steam Generator Blowdown

---

START TIME: \_\_\_\_\_

STEP 1       Performance Steps: Examinee observes changes in plant status and reports same to the US.

GRADE   Standards:      Examinee performs the following.

1. *Informs the US of a "Process Rad Monitor HiHi/Fail" annunciator on C-07.*
2. *Informs the US of a "SJAE RAD MONITOR" alarm on MON 2.*
3. *Refers to the ARP for the C-07 DA-24 Annunciator.*

Cue: \_\_\_\_\_

Comments:      The examinee may suggest that the Blowdown Valves MS-220A & B be closed as a precautionary measure prior to carrying out the steps in the ARP.

~~~~~

STEP 2       Performance Steps: Determine which Radmonitor is in alarm.

GRADE   Standards:      The examinee performs the following.

1. *Verifies that RM 5099 (SJAE RM) is in alarm.*
2. *Refers to ARP 2590H for guidance.*
3. *Place RM5099 in alarm defeat.*

Cue: \_\_\_\_\_

Comments:      The examinee can verify RM 5099 by going to RM-14 and observing that the alarm light on RM 5099 is lit, or by accessing the PPC and verifying that RM 5099 is in alarm.

~~~~~

**PERFORMANCE INFORMATION**

JPM ID NUMBER: JPM-T04 TITLE: Manual Isolation of Steam Generator Blowdown

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STEP 3  Performance Steps: Observe and Compare radmonitor indication with the "SETPOINT" sticker on RM5099.

GRADE  Standards: The examinee will perform the following:  
1. *Check RM5099 reading on RC14.*  
2. *Compare the reading with the calibration sticker.*  
3. *Checks RJR-9373 for SJAE Radmonitor trend.*

Cue: 

Comments:

~~~~~

STEP 4  Performance Steps: Set S/G Blowdown flow to 0.0 in the PPC.

GRADE   Standards: The examinee will perform the following.  
1. *Display the appropriate screen on the PPC*  
2. *Reset blowdown flow to 0.0gpm. for both steam generators.*

Cue: 

Comments: Various PPC displays can be used to perform this step. As long as flow is set to 0.0 gpm, the task is accomplished.

~~~~~

**PERFORMANCE INFORMATION**

JPM ID NUMBER: JPM-T04 TITLE: Manual Isolation of Steam Generator Blowdown

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STEP 5       Performance Steps: Ensure all automatic functions have taken place.

GRADE \_\_\_\_  Standards:      The examinee performs the following:

1. *Places the switch for MS220A to close.*
2. *Places the switch for MS220B to close.*
3. *Observes that both valves have a Green Closed Light*
4. *Reports to the US that Blowdown has been isolated.*

Cue: 

Comments:      **After this step is completed, the JPM is considered complete.**

STOP TIME: \_\_\_\_\_

**VERIFICATION OF JPM COMPLETION**

Job Performance Measure No.    JPM-

Rev.

Date Performed: \_\_\_\_\_

Operator: \_\_\_\_\_

Evaluator(s): \_\_\_\_\_

For examinee to achieve a satisfactory grade, <b><u>ALL</u></b> critical steps must be completed correctly. If task is Time Critical, it <b><u>MUST</u></b> be completed within the specified time to achieve a satisfactory grade.
---

Time Critical Task?    Yes \_\_\_\_\_ No   X  

Validated Time (minutes): \_\_\_\_\_

Actual Time to Complete (minutes): \_\_\_\_\_

Result of JPM: \_\_\_\_\_ (Denote by an S for satisfactory or a U for unsatisfactory)

Areas for Improvement:

## EXAMINEE HANDOUT

JPM ID Number: T04

Initiating Cues:

You are the Secondary Plant Operator (SPO). As the SPO, respond to any plant conditions as you would in the plant.

I will act as your US.

Initial Conditions:

The plant is at 100% power, NOT/NOP. No equipment is out of service.

# JOB PERFORMANCE MEASURE APPROVAL SHEET

I. JPM Title: Trend Critical Data

ID Number: JPM-T02

Revision: 0

II. Initiated:

  
\_\_\_\_\_  
Daniel A. Pantalone  
Developer

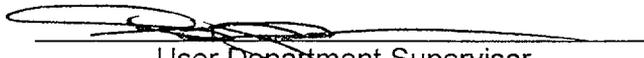
10/30/00  
Date

III. Reviewed:

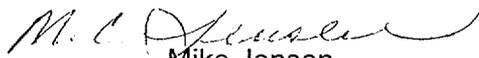
  
\_\_\_\_\_  
Steve Myers  
Technical Reviewer

11/03/00  
Date

IV. Approved:

  
\_\_\_\_\_  
User Department Supervisor  
S.S. Baker

11-3-00  
Date

  
\_\_\_\_\_  
Mike Jensen  
Nuclear Training Supervisor

11/03/00  
Date

**JOB PERFORMANCE MEASURE WORKSHEET**

Facility: MP-2 Examinee: \_\_\_\_\_

JPM Number: JPM-T02 Rev. 0

Task Title: Trend Critical Data

System: N/A

Time Critical Task: Yes  No \_\_\_\_\_

Validated Time (minutes): 15

Task No.(s): NUTIMS #083-01-050 Trend Parameters using the MMI.  
NUTIMS# 083-01-052 Print information using the MMI.

Applicable To: SRO \_\_\_\_\_ RO  PEO \_\_\_\_\_

K/A No.: Generic K/A 2.1.19 K/A Rating: 3.0

Method of Testing:

Simulated Performance:  Actual Performance: \_\_\_\_\_

Location:

Classroom: \_\_\_\_\_ Simulator:  In-Plant:

Task Standards:

At the completion of this JPM, the examinee will have completed a trend of the following data points: RXLVL-A, CALSAT-A & TCETHI-A

Required Materials

(procedures,equipment):

- Plant Process Computer Terminal

General References:

Skill of the trade.

**\*\*\*\* READ TO THE EXAMINEE \*\*\*\***

*I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied. You may use any approved reference materials normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgments, and log entries as if the evolution was actually being performed.*

## JOB PERFORMANCE MEASURE WORKSHEET

JPM Number: JPM-T02

Rev. 0

Initiating Cues:

- As the spare RO, the US has directed you to create a 3 trend graph of Reactor Vessel Level, Saturation Temperature and CET Temperature (CET high) using the "Train A" parameters from the "ICC SUMMARY" display. Trend these points over the course of the LOCA.

Initial Conditions:

- The plant has experienced a LOCA and was manually tripped.
- EOP 2525 has been completed and EOP 2532 is in progress.

Simulator Requirements:

1. IC-24 or equivalent; 100% PWR, NOT/NOP
2. RC-03A (100%) Cold Leg Loop 1A
3. Place the sim. in RUN
4. Complete 2525.
5. Trip all RCPs
6. Change MON-1, 2 & 3 to "FTP Display Set"
  - display the "Unit 2 PPC Top Menu"
  - click on the "SPDS" button
  - click on the "FPT Display Set" button.
7. Allow the simulator to run for 10min. then FREEZE.

The examinee may now enter the simulator.

---

\* \* \* \* NOTES TO EXAMINER \* \* \* \*

1. Critical steps for this JPM are indicated with an "X". For the examinee to achieve a satisfactory grade, ALL critical steps must be completed correctly.
2. When examinee states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question examinee for details of simulated actions / observations (i.e. "What are you looking at?" or "What are you observing?").
4. Under NO circumstances must the examinee be allowed to manipulate any devices during the performance of this JPM (in-plant only).

START TIME: \_\_\_\_\_

STEP 1       Performance Steps: Determine the "PPC Point" for the three data points to be trended: Rx Vessel Level, Saturation Temperature and CET Temperature (CET high).

GRADE \_\_\_     Standards:      *The examinee determines that the "PPC Points" for the requested data is as follows.*

- *Rx Vessel Level = RXLVL-A*
- *Saturation Temperature = CALSAT-A*
- *CET Temperature (CET high) = TCETHI-A*

Cue: **None**

Comments:    *Examinee can determine these points in various ways.*

1. *Directly from the "ICC SUMMARY" Display.*
  - a. *Access the "ICC SUMMARY" display.*
  - b. *Place the cursor over each of the above data points.*
  - c. *Record the "PPC Point" as displayed at the bottom of the "ICC SUMMARY" display or on the "ANALOG POINT DISPLAY".*
2. *Searching via the "Data Point Selection" display.*
  - a. *Open the "Data Point Selection" display.*
  - b. *Place the noun name into the "Point Search Text" box.*
  - c. *Click on "Find or Find Next" until the point is found.*

~~~~~

STEP 2       Performance Steps: Display the "ONE THREE-VARIABLE TREND".

GRADE \_\_\_     Standards:      The examinee performs the following:

- *Display the "Unit 2 PPC Top Menu".*
- *Click the cursor on "TREND 3" at the bottom of the display.*

Cue: **None**

Comments:    It is not critical that the "TREND 3" be selected. Any trend display that will accommodate at least 3 data points will be permissible.

~~~~~

**PERFORMANCE INFORMATION**

JPM ID NUMBER: JPM- TITLE:

- 
- STEP 3       Performance Steps: Insert the three "PPC Data Points" into the Trend Screen.
1. Click the cursor in the "Point Selection Field" at the bottom left of the TREND display
  2. For the three "Data Points" do the following.
    - a) Insert the three "Data Points" into the "Point Search Text" field.
    - b) Click on "Find" or "Find Next".
    - c) Click on "Add"
  3. Click on "OK".

- GRADE \_\_\_       Standards:
1. *A three point trend is apparent on the monitor, and*
  2. *The three "Point Selection Fields" on the bottom left of the "TREND" screen contain the following "Data Points"*
    - RXLVL-A
    - CALSAT-A
    - TCETHI-A

Cue: \_\_\_\_\_

Comments: The "Data Points" can be in any order. If the examinee selects "Data Points" other than those specified, these "Data Points" must display comparable data.

Comments: **After this step is completed, the JPM is considered complete.**

STOP TIME: \_\_\_\_\_

VERIFICATION OF JPM COMPLETION

Job Performance Measure No. JPM-

Rev.

Date Performed: \_\_\_\_\_

Operator: \_\_\_\_\_

Evaluator(s): \_\_\_\_\_

For examinee to achieve a satisfactory grade, **ALL** critical steps must be completed correctly. If task is Time Critical, it **MUST** be completed within the specified time to achieve a satisfactory grade.

Time Critical Task? Yes \_\_\_\_\_ No X

Validated Time (minutes): \_\_\_\_\_ 15 \_\_\_\_\_

Actual Time to Complete (minutes): \_\_\_\_\_

Result of JPM: \_\_\_\_\_ (Denote by an S for satisfactory or a U for unsatisfactory)

Areas for Improvement:

## EXAMINEE HANDOUT

JPM ID Number: T02

### Initiating Cues:

- As the spare RO, the US has directed you to create a 3 trend graph of Reactor Vessel Level, Saturation Temperature and CET Temperature (CET high) using the "Train A" parameters from the "ICC SUMMARY" display. Trend these points over the course of the LOCA.

### Initial Conditions:

- The plant has experienced a LOCA and was manually tripped.
- EOP 2525 has been completed and EOP 2532 is in progress.

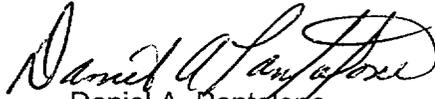
JOB PERFORMANCE MEASURE APPROVAL SHEET

I. JPM Title: Calculate Boration/Dilution Volume

ID Number: JPM-T01

Revision: 0

II. Initiated:

  
Daniel A. Pantalone

Developer

11/02/00

Date

III. Reviewed:



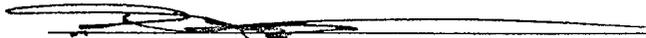
Steve Myers

Technical Reviewer

11/03/00

Date

IV. Approved:



User Department Supervisor

S. J. Balcar

11-3-00

Date



Mike Jensen

Nuclear Training Supervisor

11/03/00

Date

**JOB PERFORMANCE MEASURE WORKSHEET**

Facility: MP-2 Examinee: \_\_\_\_\_

JPM Number: JPM-T01 Rev. 0

Task Title: Calculate Boration/Dilution Volume

System: N/A

Time Critical Task: Yes \_\_\_\_\_ No X

Validated Time (minutes): 20

Task No.(s): NUTIMS #121-01-145

Applicable To: SRO X RO X PEO \_\_\_\_\_

K/A No.: Generic 2.1.25 K/A Rating: 2.8/3.1  
192002 K1.13 3.5/3.7

Method of Testing:

Simulated Performance: \_\_\_\_\_ Actual Performance: X

Location:

Classroom: X Simulator: X In-Plant: X

Task Standards:

At the completion of this JPM, examinee has determined the required shutdown boron concentration within +50/-15 ppm and the amount of Boric Acid that must be added to meet that concentration.

Required Materials

(procedures,equipment):

- OP 2208 (and all associated OPS Forms)
- Calculator

General References:

OP 2208, Section 4.3 (Rev. 12, Ch. 3)  
OP 2208, Attachment 4

\*\*\* READ TO THE EXAMINEE \*\*\*

*I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied. You may use any approved reference materials normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgments, and log entries as if the evolution was actually being performed.*

## JOB PERFORMANCE MEASURE WORKSHEET

JPM Number: JPM-A08

Rev. 0

### Initiating Cues:

Shutdown Margin for the present condition is me<sup>t</sup> using Xenon. The Unit Supervisor has directed you to do the following:

1. Determine Boron Concentration for adequate SDM 80 hours after the trip.
2. Determine the volume of PMW or Boric Acid that must be added to meet that SDM, in accordance with OP 2208.

### Initial Conditions:

- The plant has tripped from 100% steady-state equilibrium power. It is expected to startup in approximately 4 days.
- The trip was uncomplicated and normal temperature and pressure are being maintained until startup.
- Chemistry Department has sampled the RCS and determined the boron concentration to be 1176 ppm.
- Reactor Engineering has indicated core average burnup is 2000 MWD/MTU.
- The PPC is not available.

Simulator Requirements:

If this JPM is being performed on the Simulator do the following:

1. Place the Simulator in a post trip condition at 532 °F
2. Blank or obstruct all PPC screens as if it were out of service.

---

\*\*\*\* NOTES TO EXAMINER \*\*\*\*

1. Critical steps for this JPM are indicated with an "X". For the examinee to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
2. When examinee states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question examinee for details of simulated actions / observations (i.e. "What are you looking at?" or "What are you observing?").
4. As necessary use Data Sheet to verify parameters used.

PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-A08      TITLE: Determine Shutdown Margin

---

START TIME: 

- STEP 1       Performance Steps: 1. OBTAIN present burnup from one of the following and RECORD:
- "CVBURNUP" (PPC)
  - Reactor Engineering
2. RECORD RCS temperature ( $T_{AVG}$ ).

GRADE           Standards:      *Examinee obtains a copy of OPS Form 2208-13, "SDM Determination in MODES 3, 4, and 5" and records burnup and  $T_{avg}$ .*

Cue:

Comments:      Burnup was provided and  $T_{avg}$  used should be 532 °F.

~~~~~

- STEP 2       Performance Steps: Refer To OPS Form 2208-12 and DETERMINE required shutdown boron concentration for existing core burnup and  $T_{AVG}$  and RECORD.
- If any untrippable CEA(s) *not* fully inserted, ADD 350 ppm for *each* CEA *not* fully inserted, to the required shutdown boron concentration.

GRADE            Standards:      *Examinee uses burnup and  $T_{avg}$  and determines required boron on OPS Form 2208-12 and records on OPS Form 2208-13. Since trip was uncomplicated, examinee determines it is not necessary to add 350 ppm. **Tolerance is +50/-15 ppm.***

Cue:

Comments:      As necessary Refer to Data Sheet for value.

**PERFORMANCE INFORMATION**

JPM ID NUMBER: JPM-A08      TITLE: Determine Shutdown Margin

---

STEP 3       Performance Steps: RECORD present RCS boron concentration, date, and time and SIGN "Determined By" section.

GRADE  Standards: *Examinee records present RCS boron concentration, date, and time on OPS Form 2208-13 and signs form.*

Cue:

Comments:

~~~~~

STEP 4       Performance Steps: If xenon worth modification is applicable (i.e., post trip or shutdown), PERFORM the following once every hour for a maximum of 24 hours:  
a) RECORD date and time  
b) Refer To OPS Form 2208-5 and DETERMINE Inverse Boron Worth at present burnup.  
c) RECORD Inverse Boron Worth in column "A."

GRADE   Standards: *Examinee identifies that xenon worth modification is applicable and uses burnup to determine inverse boron worth on OPS Form 2208-5 and records in column "A" on OPS Form 2208-13 (also date and time).  
**Tolerance is  $\pm 0.2$  ppm/% $\Delta K/K$ .***

Cue:

Comments: If the examinee decides that the Xenon worth after 80 hours is negligible, steps 4, 5, 6 & 7 are not required.

## PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-A08      TITLE: Determine Shutdown Margin

---

- STEP 5       Performance Steps: NOTE: When determining the smallest xenon reactivity worth expected to occur at any time during the next 1 hour periods, the following should be considered:
- If xenon is building in, the value at the beginning of the hour should be used.
  - If xenon is decaying, the value at the end of the hour should be used.
1. Refer To one of the following and DETERMINE the *smallest* xenon reactivity worth expected within the hour being evaluated:
    - "Xenon-Samarium Post Trip Report" (printed automatically on special typer following trips)
    - OPS Form 2208-4
    - "XENON-SAMARIUM DEMAND" PPC program
    - Reactor Engineering
  2. RECORD xenon reactivity worth in column "B."

GRADE \_\_\_\_       Standards:      *Examinee reads note and determines that xenon is decaying. Using OPS Form 2208-4, examinee determines the xenon reactivity worth value at the end of the 80 hours and records in column "B" on OPS Form 2208-13.*  
***Tolerance is  $\pm 0.1\% \Delta K/K$ .***

Cue:    If asked which source to use, suggest OPS Form 2208-4.

Comments:    Xenon value will be from the 100% power column of 2208-004. Time after Shutdown = 80 hours.

The examinee may elect to enter  $0\% \Delta \rho$  instead of  $.051\% \Delta \rho$ .  
As necessary Refer to Data Sheet for value.

**PERFORMANCE INFORMATION**

JPM ID NUMBER: JPM-A08      TITLE: Determine Shutdown Margin

---

STEP 6       Performance Steps: CALCULATE Boron Equivalent of Xenon Reactivity Worth as follows and RECORD in column "C":  
*Boron Equivalent of Xenon Reactivity Worth = (Inverse Boron Worth) x (Xenon Reactivity Worth)*

GRADE \_\_\_\_  Standards: *Examinee multiplies column "A" (Inverse Boron Worth) times column "B" (Xenon Reactivity Worth) and records Boron Equivalent of Xenon in column "C" on OPS Form 2208-13.*

Cue:

Comments: As necessary Refer to Data Sheet for value.

~~~~~

STEP 7       Performance Steps: CALCULATE Xenon Corrected Required Shutdown Boron Concentration as follows:  
1. RECORD the *lowest expected* RCS  $T_{AVG}$  in the next hour.  
2. Refer To OPS Form 2208-12 and DETERMINE required shutdown boron concentration.  
3. RECORD required shutdown boron concentration in column "D."  
4. CALCULATE and RECORD in column "E":  
    • *Xenon Corrected Required Shutdown Boron Concentration = Required Shutdown Boron Concentration - Boron Equivalent of Xenon Reactivity Worth*  
5. SIGN "Calculated By" column.

GRADE \_\_\_\_  Standards: *Examinee records data ( $T_{avg}$  as 532°F), subtracts Boron Equivalent of Xenon Reactivity Worth determined in step 6 from the Required Shutdown Boron Concentration determined in step 2 and signs OPS Form 2208-13. **Tolerance is +50/-15 ppm.***

Cue:

Comments: As necessary Refer to Data Sheet for value.

**PERFORMANCE INFORMATION**

JPM ID NUMBER: JPM-A08 TITLE: Determine Shutdown Margin

---

STEP 8       Performance Steps: The examinee determines that the present boron concentration of 1176 ppm is 133 ppm short of the concentration needed 80 hours post trip..

GRADE \_\_\_\_  Standards:      *Examinee states that we must raise Boron Concentration by about 133 ppm.*

Cue: Acknowledge report.

Comments: ***Tolerance is +50/-15 ppm.***

~~~~~

STEP 9       Performance Steps: Examinee locates the "Boration and Dilution" formulas.

GRADE \_\_\_\_  Standards:      *Examinee references 2208 Attachment 4, "Manual Calculations With PPC Not Available".*

Cue:

Comments: The examinee can use any equivalent reference that supplies a formula for Boration or Dilution.

STEP 10      Performance Steps: The examinee uses the "Boration" formula to calculate the volume of boric acid that needs to be added.

GRADE \_\_\_\_  Standards:      The examinee will manually calculate the following:  
1.  $62,490 \times \ln [1176 - 5943] / 1309 - 5943]$   
2. *1768 gal of boric acid*

Cue:

Comments: Any number between 2446 gal to 1566 gal is acceptable. This deviation is based on +50/-15 ppm from the previous step.

~~~~~

Comments: **WHEN THE EXAMINEE HAS COMPLETED THE CALCULATIONS, THIS JPM IS COMPLETE.**

**PERFORMANCE INFORMATION**

JPM ID NUMBER: JPM-A08      TITLE: Determine Shutdown Margin

---

STOP TIME: 

JPM ID NUMBER: JPM-A08 TITLE: Determine Shutdown Margin

**DATA SHEET**

The values for this data sheet must be determined and verified using the current OPS Forms in OP 2208. The data on this sheet may be updated as necessary if the data in OP 2208 changes.

RCS Boron Concentration: 1176 ppm

| <u>PERFORMANCE STEP</u>                       | <u>VALUE</u>                                               | <u>FORM AND REV. #</u>        |
|-----------------------------------------------|------------------------------------------------------------|-------------------------------|
| Step 2: Required Shutdown Boron Concentration | 1309 ppm                                                   | OPS Form 2208-12<br>(Rev. 19) |
| Step 4: Inverse Boron Worth                   | 123.9 ppm/% $\Delta K/K$                                   | OPS Form 2208-5<br>(Rev.17)   |
| Step 5: Xenon Reactivity Worth                | .051 to 0.0 % $\Delta K/K$                                 | OPS Form 2208-4<br>(Rev. 37)  |
| Step 6: Boron Equivalent of Xenon             | Value in step 4 times value in step 5 = 5.32 to 0.0 ppm    | N/A                           |
| Step 7: Required Shutdown Boron Concentration | Value in step 2 minus value in step 6 = 1303.7 to 1309 ppm | N/A                           |

Values Determined by: Daniel A. Pantalone Values Verified by: Rich Cox  
Date 11/02/2000 Date 11-03-2000

**VERIFICATION OF JPM COMPLETION**

Job Performance Measure No. JPM-A08

Rev. 0

Date Performed: \_\_\_\_\_

Operator: \_\_\_\_\_

Evaluator(s): \_\_\_\_\_

For examinee to achieve a satisfactory grade, **ALL** critical steps must be completed correctly. If task is Time Critical, it **MUST** be completed within the specified time to achieve a satisfactory grade.

Time Critical Task? Yes \_\_\_\_\_ No X

Validated Time (minutes): 20

Actual Time to Complete (minutes): \_\_\_\_\_

Result of JPM: \_\_\_\_\_ (Denote by an S for satisfactory or a U for unsatisfactory)

Areas for Improvement:

## EXAMINEE HANDOUT

JPM ID Number: A08

### Initiating Cues:

The Unit Supervisor has directed you to do the following:

1. Determine Boron Concentration for adequate SDM 80 hours after the trip.
2. Determine the volume of PMW or Boric Acid that must be added to meet the that SDM, in accordance with OP 2208.

### Initial Conditions:

- The plant has tripped from 100% steady-state equilibrium power. It is expected to startup in approximately 4 days.
- The trip was uncomplicated and normal temperature and pressure are being maintained until startup.
- Chemistry Department has sampled the RCS and determined the boron concentration to be 1176 ppm.
- Reactor Engineering has indicated core average burnup is 2000 MWD/MTU.
- The PPC is not available.

*[Signature]*  
Form Approved by Director - Millstone Unit 2

10/21/96  
Effective Date

2-96-246  
PORC Mtg. No.

**SDM Determination in MODES 3, 4, and 5**

|                        |                                                                 |      |
|------------------------|-----------------------------------------------------------------|------|
| Burnup<br>MWD/MTU      | Required Shutdown Boron Concentration (OPS Form 2208-12)<br>ppm | Date |
| T <sub>AVG</sub><br>°F | Present RCS Boron Concentration<br>ppm                          | Time |
| Determined By:         |                                                                 |      |

**Xenon Worth Modification of Required Shutdown Boron Concentration:**

- A - Inverse Boron Worth (OPS Form 2208-5)
- B - Xenon Reactivity Worth (OPS Form 2208-4)
- C - Boron Equivalent of Xenon Reactivity Worth
- D - Required Shutdown Boron Concentration (OPS Form 2208-12)
- E - Xenon Corrected Required Shutdown Boron Concentration

| Date/Time | A<br>(ppm/%Δρ) | B<br>(%Δρ) | C<br>(ppm) | RCS T <sub>AVG</sub><br>(°F) | D<br>(ppm) | C<br>(ppm) | E<br>(ppm) | Calculated By |
|-----------|----------------|------------|------------|------------------------------|------------|------------|------------|---------------|
|           |                | X          | =          |                              |            | -          | =          |               |
|           |                | X          | =          |                              |            | -          | =          |               |
|           |                | X          | =          |                              |            | -          | =          |               |
|           |                | X          | =          |                              |            | -          | =          |               |
|           |                | X          | =          |                              |            | -          | =          |               |
|           |                | X          | =          |                              |            | -          | =          |               |
|           |                | X          | =          |                              |            | -          | =          |               |
|           |                | X          | =          |                              |            | -          | =          |               |
|           |                | X          | =          |                              |            | -          | =          |               |
|           |                | X          | =          |                              |            | -          | =          |               |
|           |                | X          | =          |                              |            | -          | =          |               |
|           |                | X          | =          |                              |            | -          | =          |               |
|           |                | X          | =          |                              |            | -          | =          |               |
|           |                | X          | =          |                              |            | -          | =          |               |
|           |                | X          | =          |                              |            | -          | =          |               |
|           |                | X          | =          |                              |            | -          | =          |               |
|           |                | X          | =          |                              |            | -          | =          |               |
|           |                | X          | =          |                              |            | -          | =          |               |
|           |                | X          | =          |                              |            | -          | =          |               |
|           |                | X          | =          |                              |            | -          | =          |               |

Completed form should be attached to applicable Control Room Daily Surveillance.

**NOTE:** If any untrippable CEA(s) not fully inserted, for each CEA not fully inserted 350 ppm must be added, to the required shutdown boron concentration.

**Attachment 4**  
**Manual Calculations With PPC Not Available**  
 (Sheet 1 of 1)

**Blended Makeup Flowrate Determination Formula:**

PMW flowrate = "K" x (boric acid flowrate)

Where, "K" = 
$$\frac{(\text{ppm boron in BAST}) - (\text{ppm boron in makeup})}{\text{ppm boron in makeup}}$$

**Boration and Dilution Formulas:**

**NOTE**

The boration and dilution formulas used in this worksheet assume the RCS is at 532°F, 2,250 psia, and pressurizer level is at 40%.

|                                                |                                                        |
|------------------------------------------------|--------------------------------------------------------|
| BAST Boron Concentration ( $C_{BAST}$ )<br>ppm | Initial RCS Boron Concentration ( $C_I$ )<br>ppm       |
| RCS <sup>T</sup> <sub>AVG</sub><br>°F          | Desired Final RCS Boron Concentration ( $C_F$ )<br>ppm |

**Boration Formula ( $C_F > C_I$ ):**

$$\text{Volume of boric acid (gal)} = 62,490 \times \text{Ln} \left[ \frac{(C_I - C_{BAST})}{(C_F - C_{BAST})} \right]$$

**Dilution Formula ( $C_F < C_I$ ):**

$$\text{Volume of PMW (gal)} = 61,480 \times \text{Ln} \frac{(C_I)}{(C_F)}$$

| Natural Logarithmic Values for Selected Points |                |                |
|------------------------------------------------|----------------|----------------|
| Ln 1.0 = 0.000                                 | Ln 1.5 = 0.405 | Ln 2.0 = 0.693 |
| Ln 1.1 = 0.095                                 | Ln 1.6 = 0.470 | Ln 2.1 = 0.742 |
| Ln 1.2 = 0.182                                 | Ln 1.7 = 0.531 | Ln 2.2 = 0.788 |
| Ln 1.3 = 0.262                                 | Ln 1.8 = 0.588 | Ln 2.3 = 0.833 |
| Ln 1.4 = 0.336                                 | Ln 1.9 = 0.642 | Ln 2.4 = 0.875 |

Level of Use  
Information

STOP      THINK      ACT      REVIEW

OP 2268  
Rev. 012-03  
29 of 30

**RO EXAM**  
**Administrative Topic A.4**

Administrative Topics Outline Statement: Evaluates the applicant's knowledge of the emergency plan for the facility, including, as appropriate, the responsibility of the RO or SRO to decide whether the plan should be executed and the duties assigned under the plan.

**QUESTION:**

What is the lowest NRC Classification that requires full activation of the Site Emergency Response Organization?

**Answer:**

Alert

The examinee's response may also include, the State of Connecticut's Posture Code.

Charlie 1

Reference: SERO Overview CBT

K/A Generic 2.4.29 2.6/4.0

**RO EXAM**  
**Administrative Topic A.4**

Administrative Topics Outline Statement: Evaluates the applicant's knowledge of the emergency plan for the facility, including, as appropriate, the responsibility of the RO or SRO to decide whether the plan should be executed and the duties assigned under the plan.

**QUESTION:**

You are an extra operator on shift. You have been sent to Bldg. 475 to discuss outage planning with the Maintenance Supervisor when the SERO is activated.

Who becomes your immediate supervisor while the SERO is activated?

**Answer:**

DSEO or MCRO or SM

The examinee's response may include any one or all of the above.

Reference: EPAP 1.15 Rev 6 Pg.36

K/A Generic 2.4.29 2.6/4.0

Facility: MILLSTONE UNIT 2 Date of Examination: 11/13/2000 Operating Test Number: 1

| 1. GENERAL CRITERIA                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Initials |     |   |
|-------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-----|---|
|                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | a        | b   | c |
| a.                                        | The operating test conforms with the previously approved outline; changes are consistent with sampling requirements (e.g., 10 CFR 55.45, operational importance, safety function distribution).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Def      | MEP |   |
| b.                                        | There is no day-to-day repetition between this and other operating tests to be administered during this examination.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Def      | MEP |   |
| c.                                        | The operating test shall not duplicate items from the applicants' audit test(s) (see Section D.1.a).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Def      | MEP |   |
| d.                                        | Overlap with the written examination and between operating test categories is within acceptable limits.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Def      | MEP |   |
| e.                                        | It appears that the operating test will differentiate between competent and less-than-competent applicants at the designated license level.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Def      | MEP |   |
| 2. WALK-THROUGH (CATEGORY A & B) CRITERIA |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | -        | -   | - |
| a.                                        | Each JPM includes the following, as applicable: <ul style="list-style-type: none"> <li>• initial conditions</li> <li>• initiating cues</li> <li>• references and tools, including associated procedures</li> <li>• validated time limits (average time allowed for completion) and specific designation if deemed to be time critical by the facility licensee</li> <li>• specific performance criteria that include:                             <ul style="list-style-type: none"> <li>- detailed expected actions with exact criteria and nomenclature</li> <li>- system response and other examiner cues</li> <li>- statements describing important observations to be made by the applicant</li> <li>- criteria for successful completion of the task</li> <li>- identification of critical steps and their associated performance standards</li> <li>- restrictions on the sequence of steps, if applicable</li> </ul> </li> </ul> | Def      | MEP |   |
| b.                                        | The prescribed questions in Category A are predominantly open reference and meet the criteria in Attachment 1 of ES-301.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Def      | MEP |   |
| c.                                        | Repetition from operating tests used during the previous licensing examination is within acceptable limits (30% for the walk-through) and do not compromise test integrity.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Def      | MEP |   |
| d.                                        | At least 20 percent of the JPMs on each test are new or significantly modified.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Def      | MEP |   |
| 3. SIMULATOR (CATEGORY C) CRITERIA        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | -        | -   | - |
| a.                                        | The associated simulator operating tests (scenario sets) have been reviewed in accordance with Form ES-301-4 and a copy is attached.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | N/A      | N/A |   |

|                           | Printed Name / Signature | Date              |
|---------------------------|--------------------------|-------------------|
| a. Author                 | <u>Daniel A. Taylor</u>  | <u>11/29/2000</u> |
| b. Facility Reviewer(*)   | <u>M.C. Jensen</u>       | <u>11/23/2000</u> |
| c. NRC Chief Examiner (*) | _____                    | _____             |
| d. NRC Supervisor (*)     | _____                    | _____             |

(\*) The facility signature is not applicable for NRC-developed tests; two independent NRC reviews are required.

| Facility: <u>Millstone Unit 2</u>                          |                                                                                                    | Date of Examination: <u>11-13-2000</u>                                                                                                                                                                                                                        |
|------------------------------------------------------------|----------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Examination Level (circle one): <u>RO</u> / <del>SRQ</del> |                                                                                                    | Operating Test Number: <u>1</u>                                                                                                                                                                                                                               |
| Administrative Topic/Subject Description                   | Describe method of evaluation:<br>1. ONE Administrative JPM, OR<br>2. TWO Administrative Questions |                                                                                                                                                                                                                                                               |
| A.1                                                        | 2.1.25                                                                                             | JPM - Calculate how much Boric Acid must be added to the core to satisfy SDM, 80 hours after a plant trip. The Plant Process Computer is not available.                                                                                                       |
|                                                            | 2.1.19                                                                                             | JPM - The plant has experienced a LOCA. Use the Plant Process Computer to graph Rx Vessel Level, Saturation Margin (CET Max) and CET High over the time of the event.                                                                                         |
| A.2                                                        | 2.2.12                                                                                             | JPM - I&C has completed calibrating the X-Core Detectors on Channel "A". You have been directed to perform the Pwr Range & Delta T Power Calibration surveillance (SP-2601D) on the "A" Channel of RPS.                                                       |
| A.3                                                        | 2.3.11                                                                                             | JPM - While performing the duties of the BOP operator the Blowdown Radmonitor alarms. The BOP operator must monitor plant parameters and determine that Blowdown should have isolated but didn't. The BOP operator must then take action to isolate Blowdown. |

|     |        |                                                                                                                                                                                                                                        |
|-----|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| A.4 | 2.4.29 | What is the lowest Emergency Plan classification that requires activating the SERO?                                                                                                                                                    |
|     | 2.4.29 | You have been temporarily assigned to work for the Maintenance Supervisor to assist in outage planning. You are in the Bldg. 475 when the SERO is activated.<br><br>Who becomes your immediate supervisor while the SERO is activated? |