

Facility: Millstone 3Date of Examination: January 7-10, 2002Examination Level (circle one): SROOperating Test Number: A-1

Administrative Topic/Subject Description		Describe method of evaluation: 1. ONE Administrative JPM, OR 2. TWO Administrative Questions
A.1.1	Execute Procedure Steps (GEN 2.1.20)	JPM Determine the effect and response to degrading Intake conditions using OP 3215, Response to Intake Structure Degraded Conditions. (41.10/43.5/45.12)
A.1.2	Review an Estimated Critical Position (Sys:001, A4.10)	JPM Review an Estimated Critical Position. SRO: 3.9
A.2	Tagging and Clearance Procedures (GEN 2.2.13)	JPM Given a completed clearance boundary and reference material, review, amend and approve the clearance boundary. (41.10/45.13)
A.3	Review and Approve Release Permits (GEN 2.3.6)	JPM Review and Approve a Radioactive Liquid Waste discharge permit. (43.4/45.10)
A.4	E-Plan Actions (GEN 2.4.44)	JPM Emergency Plan Responsibilities as Shift Manager. (43.5/45.11)

JOB PERFORMANCE MEASURE APPROVAL WORKSHEET

- I. JPM Title: Determine the effect of changing intake conditions and respond to degrading intake conditions using OP 3215, Response to Intake Structure Degraded Conditions.

JPM ID Number: SRO-A1.1

Revision: 1

- II. Initiated:


Steve Jackson
Developer

10/31/01
Date

- III. Reviewed:



Ray Martin
Technical Reviewer

11/15/01
Date

- IV. Approved:

Cognizant Plant Supervisor (optional)

Date


Nuclear Training Supervisor

12/18/01
Date

ADMIN JPM SRO-A1.1

SUMMARY OF CHANGES RE: NRC VALIDATION

Removed steps 2-10 as they related to a YELLOW/YELLOW condition.

Moved step 11 to the step 2 position.

Deleted cue at old step 10 as the Circ Water pump trip follows immediately.

Deleted the "Initial" initiating cue

Changed validated time to 5 minutes.

Made OP 3215, Response to Intake Structure Degraded Conditions, a required material

Added OP 3325A, Circulating Water, as a General Reference

JOB PERFORMANCE MEASURE GUIDE

Facility: Millstone Unit 3

JPM ID Number: SRO-A1.1

Revision: 1

Task Title: Determine the effect of changing intake conditions and respond to degrading intake conditions using OP 3215, Response to Intake Structure Degraded Conditions.

System: Intake Structure

Time Critical Task: () YES (X) NO

Validated Time (minutes): 5 min

Task Number(s): 341-01-107, Response to degrading intake conditions.

Applicable To: SRO X RO PEO

K/A Number: GEN.2.1.20, Ability to execute procedure steps K/A Rating: 4.3/4.2

Method of Testing: Simulated Performance: Actual Performance: X

Location: Classroom: X Simulator: In-Plant:

Task Standards: Response to degrading intake conditions

Required Materials: SP 3665.2, Intake Structure Condition Determination, Rev. 7
OP 3215, Response to Intake Structure Degraded Conditions, Rev. 7

General References: OP 3325A, Circulating Water

READ TO THE STUDENT

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

JOB PERFORMANCE MEASURE GUIDE (Continued)

JPM Number: SRO-A1.1

Revision: 1

Simulator Requirements: NONE

Initial Conditions: You are the Shift Manager and the unit is experiencing degrading conditions at the intake structure. The Shift Technical Advisor (STA) is keeping SP 3665.2, Intake Structure Condition Determination current. The last surveillance was done at 0800 and indicated a plant factor condition of YELLOW, an environmental factor condition of YELLOW.

Initiating Cues: The "B" Screen Wash pump has just tripped due to an electrical fault. Maintenance estimates 4 hours to restore the pump to operability.

Wind speed, from Met. Tower data, has increased to a steady 27 mph.

The re-calculated surveillance indicated a plant factor condition of RED, an environmental factor condition of RED.

**** NOTES TO EVALUATOR ****

1. Critical steps for this JPM are indicated by an "X" after the step number. For the student to achieve a satisfactory grade, **ALL** critical steps must be completed correctly. The students performance is graded by an "S" for satisfactory or a "U" for unsatisfactory on each step.
2. When the student states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question the student for details of simulated actions/observations (i.e. "What are you looking at?" or "What are you observing?").

PERFORMANCE INFORMATION

JPM Number: SRO-A1.1

Revision: 1

Task Title: Determine the effect of changing intake conditions and respond to degrading intake conditions using OP 3215, Response to Intake Structure Degraded Conditions.

Start Time: _____

EXAMINER: Give candidate the completed copy of SP 3665.2 & the MB6 sheet.

STEP 1 _____

Performance Step: Review SP 3665.2, Intake Structure Condition Determination (0800).

GRADE _____

Standards: Review SP 3665.2, Intake Structure Condition Determination relative to the description of plant and environmental conditions and understand the current condition.

Grade:

SAT _____ **UNSAT** _____

STEP 2 X

Performance Step: REVIEW OP 3215 procedure steps and determine which are applicable with the plant factor condition "RED", OR the environmental factor condition "RED". (step 4.5)

GRADE _____ X

Standards: Evaluate factor conditions and returns to procedure section 4.5 Discuss the following:

- NOTIFY Intake Structure Coordinator and Operations management of the conditions affecting the Intake Structure
- RESTORE maximum steam dumps and atmospheric dumps to service
- COMMENCE continuous trash rack cleaning
- OPEN trash trough trap door if necessary
- OPEN Plexiglas inspection doors at backside debris trough to monitor debris spray and carryover
- EVALUATE the condition of the following systems
 - Steam Dump System

PERFORMANCE INFORMATION

JPM Number: SRO-A1.1

Revision: 1

Task Title: Determine the effect of changing intake conditions and respond to degrading intake conditions using OP 3215, Response to Intake Structure Degraded Conditions.

- Condenser Vacuum Systems
- Screenwash Systems
- Service Water Systems
- Circulating Water Systems

			Grade:	SAT _____	UNSAT _____
STEP	<u>3</u>	<u>X</u>	Performance Step:	Monitor conditions in the following systems (step 4.6)	

- Steam Dump System
- Condenser Vacuum Systems
- Screenwash Systems
- Service Water Systems
- Circulating Water Systems

GRADE	_____	_____	Standards:	Discusses the need to monitor systems affected by intake challenges	
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			Grade:	SAT	UNSAT
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STEP	<u>4</u>	_____	Performance Step:	IF circ pump amps, discharge pressure, and condenser delta T indicate the waterbox is fouling, Refer To OP 3325A, "Circulating Water," and PERFORM backwashes (setp 4.7)	
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GRADE	_____	_____	Standards:	Discusses the need to perform backwashes during intake challenges	
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			Grade:	SAT	UNSAT
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Cue: "The A & B Circulating Water pumps have just tripped."

STEP	<u>5</u>	<u>X</u>	Performance Step:	IF the circulating pumps in the same condenser bay are lost, TRIP the reactor and Go To EOP 35 E-0, "Reactor Trip or Safety Injection" (step 4.9)	
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PERFORMANCE INFORMATION

JPM Number: SRO-A1.1

Revision: 1

Task Title: Determine the effect of changing intake conditions and respond to degrading intake conditions using OP 3215, Response to Intake Structure Degraded Conditions.

GRADE X

Standards:

Candidate determines that A & B Circ Pumps ARE in the same condenser bay and decides to trip the reactor.

Grade:

SAT

UNSAT

Termination Cue: The Evaluation For This JPM is Complete.

Stop Time:

VERIFICATION OF JPM COMPLETION

JPM Number: SRO-A1.1

Revision: 1

Date Performed: _____

Student: _____

Evaluator: _____

For the student 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): 5

Actual Time to Complete (minutes): _____

Result of JPM: _____ ("S" for satisfactory, "U" for unsatisfactory)

Result of oral questions (if applicable):

Number of Questions: _____

Number of Correct Responses: _____

Score: _____

Areas for Improvement:

STUDENT HANDOUT

JPM Number:

SRO-A1.1

Initial Conditions:

You are the Shift Manager and the unit is experiencing degrading conditions at the intake structure. The Shift Technical Advisor (STA) is keeping SP 3665.2, Intake Structure Condition Determination current. The last surveillance was done at 0800 and indicated a plant factor condition of YELLOW, an environmental factor condition of YELLOW.

Initiating Cues:

The “B” Screen Wash pump has just tripped due to an electrical fault. Maintenance estimates 4 hours to restore the pump to operability.

Wind speed, from Met. Tower data, has increased to a steady 27 mph.

The re-calculated surveillance indicated a plant factor condition of RED, an environmental factor condition of RED.

Form Approval

Approval Date

OCT 26 2001

Effective Date

NOV 19 2001

Surveillance Form

**Generic Information**

Form Title

Intake Structure Condition Determination

Rev. No.

008

Reference Procedure

SP 3665.2

Applicable Tech. Spec.

N/A

Applicability (Tech. Spec.)

N/A

Frequency

S

This form is being used for the following:

☐

Tech Spec Surveillance

☐

System Alignment

☐

Other: _____

☐Maintenance Restoration
(Retest)☒Non-Tech Spec
Surveillance (PM)**Specific Information**

AWO Number	Late Date	Schedule Start Date	
Performance Modes 1, 2*, 3*, and 4*	Prerequisites Completed (Initials)	Precautions Noted (Initials)	
Test Authorized By	Date	Partial Surveillance <input type="checkbox"/> Yes <input type="checkbox"/> No	
Performed By	Date / Time		
Accepted By	Date / Time	Acceptance Criteria Satisfied N/A <input type="checkbox"/> Yes <input type="checkbox"/> No	
Approved By (Department Head or Designee)	Date		
Shift Manager Notified of Failed Test	Date	CR#:	

Surveillance Information

Test Equipment Type	QA Number	Cal Due Date
N/A	N/A	N/A

Comments

*With vacuum in condenser

SP 3665.2-001

Rev. 008

Page 1 of 5

Intake Structure Condition Determination

Each shift: CIRCLE the applicable box in each section, then TOTAL.	08	08*	20	20*
Plant Factors				
1. Circulating Water Pumps and Screens				
All bays, circulating pumps, and screens operating properly <u>or</u> are available for operation	(0)	(0)	0	0
1 bay out of service (C, D, E, or F)	3	3	3	3
1 bay out of service (A or B)	6	6	6	6
2 bays out of service	9	9	9	9
3 bays out of service	25	25	25	25
2. Screen Wash Pumps				
Two pumps available	0	0	0	0
1 pump out of service	(8)	(8)	8	8
2 pumps out of service	25	25	25	25
3. Trash Racks				
< 6 inches dp on all racks	0	0	0	0
≥ 6 inches dp on one rack	1	1	1	1
≥ 6 inches dp on two racks	3	3	3	3
≥ 6 inches dp on three racks	(6)	(6)	6	6
≥ 6 inches dp on four or more racks	12	12	12	12
≥ 10 inches on two or more racks	20	20	20	20
4. Trash Rakes				
Two rakes available	(0)	(0)	0	0
One rake out of service	8	8	8	8
Two rakes out of service	25	25	25	25
5. Traveling Screens				
≤ 6 inches dp, in either automatic or manual Slow 1	(0)	(0)	0	0
> 6 inches dp with screens in Slow 1	6	6	6	6
Screens frequently shifting to Fast 1 (once/hour over 3 hours)	12	12	12	12
Plant Factors Section Total (1. + 2. + 3. + 4. + 5.)	14	14		

* 24 hour look ahead

Intake Structure Condition Determination

Each shift: CIRCLE the applicable box in each section, then TOTAL.	08	08*	20	20*
Environmental Factors				
1. Predicted Height of Next Tide (local tide chart)				
Next high tide is < 3.0 feet	0	0	0	0
Next high tide is \geq 3.0 feet but < 3.5 feet	(2)	(2)	2	2
Next high tide is \geq 3.5 feet	4	4	4	4
2. Height of Tide in Last 48 Hours (local tide chart)				
All high tides < 3.5 feet	0	0	0	0
Any high tide \geq 3.5 feet	(2)	(2)	2	2
3. Wind Direction (actual from MET tower or other source as noted below)				
From 271 to 119 (\geq 271 or \leq 119)	1	1	1	1
From 120 to 270	(2)	(2)	2	2
4. Wind Speed (actual from MET tower or other source as noted below)				
Sustained speed < 10 mph	1	1	1	1
Sustained speed \geq 10 mph but < 20 mph	2	2	2	2
Sustained speed \geq 20 mph but < 25 mph	3	3	3	3
Sustained speed \geq 25 mph but < 30 mph	(5)	(5)	5	5
Sustained speed \geq 30 mph or gusts \geq 45 mph	7	7	7	7
5. Historical Wind Speed (PPC (BOP-F11-F11), (OFIS, computer priority alarms, or EDAN)				
Sustained wind < 20 mph in last 24 hours <u>or</u> Sustained wind \geq 20 mph for less than any 4-hour period in last 24 hours	0	0	0	0
Sustained wind \geq 20 mph for any 4-hour period in last 24 hours	(2)	(2)	2	2
6. Wind Correction: (3.) \times (4.+ 5.)	10	10		

* 24 hour look ahead

Intake Structure Condition Determination

Each shift: CIRCLE the applicable box in each section, then TOTAL.	08	08*	20	20*
7. Predicted Wave Height/Seas (from internet)				
Wave height < 1 foot	1	1	1	1
Wave height ≥ 1 foot but < 3 feet	2	2	2	2
Wave height ≥ 3 feet but < 5 feet	(4)	(4)	4	4
Wave height ≥ 5 feet	6	6	6	6
8. Historical Wave Height/Seas (as seen at Intake Structure)				
Wave height < 3.5 feet in last 48 hours	1	1	1	1
Wave height ≥ 3.5 feet in last 48 hours	(2)	(2)	2	2
9. Wave Correction Subtotal: (7.) × (8.)	(8)	(8)		
10. Barometric Pressure (internet or local on site if available)				
Pressure > 29.5" (> 750 mm), steady/rising	1	1	1	1
Pressure > 29.5" (> 750 mm), falling	2	2	2	2
Pressure ≤ 29.5" (≤ 750 mm), steady/rising	2	2	2	2
Pressure ≤ 29.5" (≤ 750 mm), falling	(4)	(4)	4	4
11. Season				
January or July	(0)	(0)	0	0
February or December	2	2	2	2
March, June, August, November or May 16–31	4	4	4	4
April, May 1–15, September or October	6	6	6	6
12. Historical Environmental Factor				
Last environmental factor < 25	(0)	(0)	0	0
Last environmental factor ≥ 25	4	4	4	4
Environmental Factors Section Total (1. + 2. + 6. + 9. + 10. + 11. + 12.)	26	26		

* 24 hour look ahead

Intake Structure Condition Determination

Determination of Factors					
Parameter	Action Level	08	08*	20	20*
Plant Factors Section Total	> 3 points	14	14		
Environmental Factors Section Total	> 17 points	26	26		
Intake Condition Total (Plant + Environmental)		40	40		
Sustained wind speed from 72 hour weather forecast (note 1)	Predicted sustained speed >20 mph	yes 27 mph			
SM Review (Note 2)					

* 24 hour look ahead

Note 1 If predicted wind speed is expected to be greater than 20 MPH make notifications per 3215, "Response to Intake Structure Degraded Conditions," step 4.1

Note 2 If any Action Level is exceeded, Refer To OP 3215, "Response to Intake Structure Degraded Conditions," and PERFORM applicable actions.

INTAKE STRUCTURE STATUS

PLANT

FACTORS

RED

ENVIRONMENTAL

FACTORS

RED

JOB PERFORMANCE MEASURE APPROVAL WORKSHEET

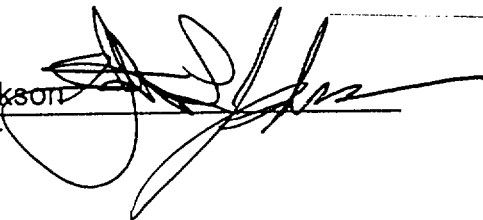
I. JPM Title: Review Reactivity Calculations - Estimated Critical Conditions

JPM ID Number: SRO-A1.2

Revision: 0

II. Initiated:

Steve Jackson
Developer



10/31/01
Date

III. Reviewed:

Martin
Technical Reviewer

11/19/01
Date

IV. Approved:

Cognizant Plant Supervisor (optional)

Date

M. Hest
Nuclear Training Supervisor

11/20/01
Date

JOB PERFORMANCE MEASURE APPROVAL WORKSHEET

I. JPM Title: Review Reactivity Calculations - Estimated Critical Conditions

JPM ID Number: SRO-A1.2

Revision: 0

II. Initiated:

Steve Jackson
Developer

10/31/01
Date

III. Reviewed:

Technical Reviewer

Date

IV. Approved:

Cognizant Plant Supervisor (optional)

Date

Nuclear Training Supervisor

Date

JOB PERFORMANCE MEASURE GUIDE

Facility: Millstone Unit 3

JPM ID Number: SRO-A1.2

Revision: 0

Task Title: Review Reactivity Calculations - Estimated Critical Conditions

System: Reactor Core

Time Critical Task: () YES (X) NO

Validated Time (minutes): 20 min

Task Number(s): 341-01-175, Perform a reactivity balance to determine estimated critical condition.

Applicable To: SRO X RO PEO

K/A Number: Sys: 001.A4.10, Determination of an ECP K/A Rating: 3.5/3.9

Method of Testing: Simulated Performance: Actual Performance: X

Location: Classroom: X Simulator: In-Plant::

Task Standards: Perform a reactivity balance to determine estimated critical condition.

Required Materials: 0P 3209A, Reactivity Calculations - Estimated Critical Conditions

General References: MP3 Reactor Engineering Curve and Data Book

READ TO THE STUDENT

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

JOB PERFORMANCE MEASURE GUIDE (Continued)

JPM Number: SRO-A1.2

Revision: 0

Simulator Requirements: NONE

Initial Conditions: You are an on-shift Senior Licensed Operator. Your shift is preparing to perform a reactor startup. Reactor Engineering has presented you with two independently performed Estimated Critical Condition (ECC) reactivity calculations for your review.

Initiating Cues: Using the two independently performed Estimated Critical Condition (ECC) reactivity calculations review the ECC in accordance with OP 3209A, Reactivity Calculations - Estimated Critical Condition, Section 4.20. Inform the examiner of the results of your comparison and when you are complete.

**** NOTES TO EVALUATOR ****

1. Critical steps for this JPM are indicated by an "X" after the step number. For the student to achieve a satisfactory grade, **ALL** critical steps must be completed correctly. The students performance is graded by an "S" for satisfactory or a "U" for unsatisfactory on each step.
2. When the student states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question the student for details of simulated actions/observations (i.e. "What are you looking at?" or "What are you observing?").

PERFORMANCE INFORMATION

JPM Number: SRO-A1.2

Revision: 0

Task Title: Review Reactivity Calculations - Estimated Critical Conditions

Start Time: _____

Note to Examiner: approximate values are acceptable, since visual interpolation between curves on a graph may be employed

STEP 1 _____

Performance Step: Reviews procedure sections. Determines if second, independent ECC has been performed (step 4.20.1)

GRADE _____

Standards: Locate and review procedure section. Obtains both ECC reactivity calculations.

Grade: SAT _____ UNSAT _____

STEP 2 X

Performance Step: COMPARE the two independent ECC calculations and RESOLVE the differences (step 4.20.2)

GRADE _____ X

Standards: Compares the two ECCs and discovers the following differences:

- differences in ECC 2 hour Administrative Time Period
- differences in boron worth

Grade: SAT _____ UNSAT _____

STEP 3 X

Performance Step: Resolve differences in Estimated Conditions at Criticality between the two ECCs. (steps 4.4.2, 4.4.3)

GRADE _____ X

Standards: ECC B is incorrect. Administrative time period must start when T/S time period starts. Resolve by confirming ECC A Estimated Conditions at Criticality are correct.

Grade: SAT _____ UNSAT _____

PERFORMANCE INFORMATION

JPM Number: SRO-A1.2

Revision: 0

Task Title: Review Reactivity Calculations - Estimated Critical Conditions

STEP 4 X **Performance Step:** Resolve differences in boron worth between the two ECCs. (steps 4.12.1, 4.12.2)

GRADE X **Standards:** ECC B is incorrect. Incorrect boron worth chosen from curve RE-F-02. Resolve by confirming ECC A Boron Defect parameters are correct.

Comment: There are no other errors in the ECC. It is not required for the candidate to recalculate values that are in close agreement.

Cue: If asked by candidate: "It is not required to recalculate values that are in close agreement."

Grade: **SAT** **UNSAT**

STEP 5 X **Performance Step:** Determine or Prepare the final OPS form 3209A-1. (step 4.20.3)

GRADE X **Standards:** ECC A is correct and should be used as the final OPS form 3209A-1.

Grade: **SAT** **UNSAT**

Termination Cue: The Evaluation For This JPM is Complete.

Stop Time:

VERIFICATION OF JPM COMPLETION

JPM Number: SRO-A1.2

Revision: 0

Date Performed: _____

Student: _____

Evaluator: _____

For the student 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: _____ ("S" for satisfactory, "U" for unsatisfactory)

Result of oral questions (if applicable):

Number of Questions: _____

Number of Correct Responses: _____

Score: _____

Areas for Improvement:

STUDENT HANDOUT

JPM Number:

SRO-A1.2

Initial Conditions:

You are an on-shift Senior Licensed Operator. Your shift is preparing to perform a reactor startup. Reactor Engineering has presented you with two independently performed Estimated Critical Condition (ECC) reactivity calculations for your review.

Initiating Cues:

Using the two independently performed Estimated Critical Condition (ECC) reactivity calculations review the ECC in accordance with OP 3209A, Reactivity Calculations - Estimated Critical Condition, Section 4.20. Inform the examiner of the results of your comparison and when you are complete.

Form Approval

Approval Date

JUL 01 1999

Effective Date

JUL 06 1999

Form Cover Sheet

**Generic Information**

Form Title

Estimated Critical Conditions

Rev. No.

6

Reference Procedure

OP 3209A

Applicable Tech. Spec.

4.1.1.1.c

Frequency

AR*

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

N/A

Applicable Mode

2

Partial
Surveillance☐

Test Authorized By

Date

Baseline
Test☐

Prerequisites Completed (Initials)

Precautions Noted (Initials)

Performed By

Date

Time

Accepted By

Date

Time

Acceptance Criteria
Satisfied

Approved By (Department Head or Designee)

Date

Shift Manager Notified of Failed Test

Date

☐ Yes☐ No**Surveillance Information**

Test Equipment Type

QA Number

Cal Due Date

N/A

* This calculation may be performed at any time but must be verified within 4 hours prior to achieving reactor criticality.

Send completed Form to Reactor Engineering.

Estimated Critical Conditions

Step No.	Name	Date	Time
4.2	Performed By: _____		0200

Reference Critical Data

Step No.	Parameter	Value
4.3	Date	10-15-01
	Time	0625
	Power Level	100 %
	Burnup	7603.5 MWD/MTU
	RCS Pressure	2248.6 psia
	T _{avg}	586.6 °F
	T _{ref}	586.9 °F
	Boron Concentration	1191 ppm
	Xenon	(-) 2679.4 pcm
	Samarium	(-) 961.5 pcm
	Control Bank C	222 steps
	Control Bank D	217 steps

Estimated Conditions At Criticality

Step No.	Parameter	Value
4.4.1	Date	
4.4.2	Administrative Time Period (2 hours)	From : 0800 To: 1000
4.4.3	T/S Time Period (4 hours)	From : 0800 To: 1200
4.4.4	Present Burnup	8000 MWD/MTU
4.4.5	T _{avg}	557 °F
4.4.6	RCS Pressure	2250 psia
4.4.7.b.	Xenon	(-) 0 pcm
4.4.8.b.	Samarium	(-) 1300 pcm
4.4.9.b. or 4.4.10	Desired Critical Rod Height	Control Bank C @ 215 Steps Control Bank D @ 100 Steps

Boron Concentration

Step No.	Parameter	Value
4.5	Present Boron Concentration	1600 ppm

Estimated Critical Conditions

Defects

POWER DEFECT

Step No.	Parameter and/or Calculation	Value
4.6.1	Power Defect @ Reference Power =	(-) <u>1956.5</u> pcm Defect @ Ref Power
4.6.2	$[(-) \underline{1956.5} \text{ pcm}] \times (-1) =$ Defect @ Ref Pwr	(+) <u>1956.5</u> pcm Power Defect

REFERENCE MODERATOR DEFECT

Step No.	Parameter and/or Calculation	Value
4.7.2	Magnitude of MTC @ T_{ref} =	_____ pcm/°F (no sign) Magnitude of MTC @ T_{ref}
4.7.3	Difference Between T_{ref} and T_{avg} =	_____ °F (no sign) $T_{ref}/T_{avg} \Delta$
4.7.4	$(\frac{\text{_____}}{T_{ref}/T_{avg} \Delta} \text{ °F}) \times (\frac{\text{_____}}{\text{MTC @ } T_{ref}} \text{ pcm/°F}) =$	_____ pcm (no sign) Ref Mod Defect
4.7.5	Sign of Reference Moderator Defect =	_____ (+ or -) Sign
4.7.1 or 4.7.6	Value and Sign of Reference Moderator Defect =	() _____ <u>0</u> pcm Ref Mod Defect

ESTIMATED MODERATOR DEFECT

Step No.	Parameter and/or Calculation	Value
4.8.2	Magnitude of ITC @ 557°F =	_____ pcm/°F (no sign) Magnitude of ITC @ 557°F
4.8.3	Difference Between Estimated T_{avg} and 557°F =	_____ °F (no sign) $T_{avg}/557^\circ\text{F} \Delta$
4.8.4	$(\frac{\text{_____}}{T_{avg}/557^\circ\text{F} \Delta} \text{ °F}) \times (\frac{\text{_____}}{\text{ITC @ } 557^\circ\text{F}} \text{ pcm/°F}) =$	_____ pcm (no sign) Est Mod Defect
4.8.5	Sign of Estimated Moderator Defect =	_____ (+ or -) Sign
4.8.1 or 4.8.6	Value and Sign of Estimated Moderator Defect =	() _____ <u>0</u> pcm Est Mod Defect

Estimated Critical Conditions

Defects (Continued)

XENON DEFECT

Step No.	Parameter and/or Calculation	Value
4.9	$\left[(-) \frac{0}{\text{Estimated Xe}} \text{ pcm} \right] - \left[(-) \frac{2679.4}{\text{Reference Xe}} \text{ pcm} \right] =$	$(-) \frac{2679.4}{\text{Xenon Defect}} \text{ pcm}$

SAMARIUM DEFECT

Step No.	Parameter and/or Calculation	Value
4.10	$\left[(-) \frac{1300}{\text{Estimated Sm}} \text{ pcm} \right] - \left[(-) \frac{961.5}{\text{Reference Sm}} \text{ pcm} \right] =$	$(-) \frac{338.5}{\text{Samarium Defect}} \text{ pcm}$

ROD WORTH DEFECT

Step No.	Parameter and/or Calculation	Value
4.11.2.a. or 4.11.3.a.	Integral Rod Worth @ Reference Conditions =	$(-) \frac{10.7}{\text{Reference RW}} \text{ pcm}$
4.11.2.b. or 4.11.3.b.	Integral Rod Worth @ Estimated Conditions =	$(-) \frac{513}{\text{Estimated RW}} \text{ pcm}$
4.11.1 or 4.11.4	$\left[(-) \frac{513}{\text{Estimated RW}} \text{ pcm} \right] - \left[(-) \frac{10.7}{\text{Reference RW}} \text{ pcm} \right] =$	$(-) \frac{502.3}{\text{RW Defect}} \text{ pcm}$

BORON DEFECT

Step No.	Parameter and/or Calculation	Value
4.12.1	Differential Boron Worth @ Reference Burnup =	$(-) \frac{6.76}{\text{Reference BW}} \text{ pcm/ppm}$
4.12.2	Differential Boron Worth @ Present Burnup =	$(-) \frac{6.80}{\text{Present BW}} \text{ pcm/ppm}$
4.12.3	$\left[\left(- \frac{6.76}{\text{Reference BW}} \text{ pcm/ppm} \right) + \left(- \frac{6.80}{\text{Present BW}} \text{ pcm/ppm} \right) \right] \div 2 =$	$(-) \frac{6.78}{\text{Avg Diff BW}} \text{ pcm/ppm}$
4.12.4	$\left[\left(\frac{1600}{\text{Present } C_B(4.5)} \text{ ppm} \right) - \left(\frac{1191}{\text{Reference } C_B(4.3)} \text{ ppm} \right) \right] \times \left[(-) \frac{6.78}{\text{Avg Diff BW}} \text{ pcm/ppm} \right] =$	$(-) \frac{2773}{\text{Boron Defect}} \text{ pcm}$

Estimated Critical Conditions

Defects (Continued)

VOID DEFECT

Step No.	Parameter and/or Calculation	Value
4.13.2	Value of Void Correction Factor (Void Defect) =	(+) <u>0</u> pcm Void Defect

TOTAL REACTIVITY DEFECT

Step No.	Parameter and/or Calculation	Value
4.14.1 and 4.14.2	Power Defect (step 4.6.2) = (+) <u>1956.5</u> pcm	(+) <u>1022.1</u> pcm Total ρ Defect
	Ref Mod Defect (step 4.7.6) = () <u>0</u> pcm	
	Est Mod Defect (step 4.8.6) = () <u>0</u> pcm	
	Xe Defect (step 4.9) = (+) <u>2679.4</u> pcm	
	Sm Defect (step 4.10) = (-) <u>338.5</u> pcm	
	RW Defect (step 4.11.4) = (-) <u>502.3</u> pcm	
	Boron Defect (step 4.12.4) = (-) <u>2773</u> pcm	
	Void Defect (step 4.13.2) = (+) <u>0</u> pcm + _____	
	Combined Total = (+) <u>1022.1</u> pcm =	

Burnup Correction

Step No.	Parameter and/or Calculation	Value
4.15.2.a.	Critical Boron Concentration @ Reference Burnup =	<u>1771</u> ppm Ref Critical C_B
4.15.2.b.	Critical Boron Concentration @ Present Burnup =	<u>1742</u> ppm Present Critical C_B
4.15.1 or 4.15.3	(<u>1771</u> ppm) - (<u>1742</u> ppm) = Ref Critical C_B Present Critical C_B	(+) <u>29</u> ppm Burnup Correction

Estimated Critical Conditions

Critical Boron Concentration Calculation

Step No.	Parameter and/or Calculation	Value
4.16.2	$\left[(+) \frac{1022.1}{\text{Total } \rho \text{ Defect}} \text{ pcm} \right] \div \left[(-) \frac{6.80}{\text{Present BW}} \text{ pcm/ppm} \right] =$ 4.14.2 4.12.2	$(-) \frac{150}{\text{Boron Equivalent of } \rho \text{ Defect}} \text{ ppm}$
4.16.3	$\left[(+) \frac{29}{\text{Burnup Correction}} \text{ ppm} \right] + \left[(-) \frac{150}{\text{Boron Equivalent of } \rho \text{ Defect}} \text{ ppm} \right] =$ 4.15.3 4.16.2	$(-) \frac{121}{\text{Corrected Boron Equivalent}} \text{ ppm}$
4.16.4	$\left[(-) \frac{121}{\text{Corrected Boron Equivalent}} \text{ ppm} \right] \times (-1) =$	$(+)\frac{121}{\text{Required Boron } \Delta} \text{ ppm}$
4.16.5	$\left(\frac{1600}{\text{Present } C_B} \text{ ppm} \right) + \left[(+) \frac{121}{\text{Required Boron } \Delta} \text{ ppm} \right] =$ 4.5 4.16.4	$\frac{1721}{\text{Calculated } C_B} \text{ ppm}$
4.16.7.a.	Magnitude of ITC @ 557°F =	$\frac{\text{pcm}}{^\circ\text{F}} \text{ (no sign)}$ Magnitude of ITC @ 557°F
4.16.7.b.	Difference Between Estimated Tavg and 557°F =	$\frac{\text{ } ^\circ\text{F}}{\text{Tavg/ 557}^\circ\text{F } \Delta} \text{ (no sign)}$
4.16.7.c.	$\left(\frac{\text{ } ^\circ\text{F}}{\text{Tavg/557}^\circ\text{F } \Delta} \right) \times \left(\frac{\text{ } \text{pcm/}^\circ\text{F}}{\text{ITC @ 557}^\circ\text{F}} \right) =$ 4.16.7.b. 4.16.7.a.	$\frac{\text{ } \text{pcm}}{\text{Magnitude of Mod CF}} \text{ (no sign)}$
4.16.7.d.	Sign of Moderator Correction Factor =	$\frac{\text{ } }{\text{Sign}} \text{ (+ or -)}$
4.16.7.e.	Value and Sign of Moderator Correction Factor =	$\left(\text{ } \right) \frac{\text{ } \text{pcm}}{\text{Moderator CF}}$
4.16.7.f.	Differential Boron Worth @ for Present Burnup = 4.12.2	$(-) \frac{\text{ } \text{pcm/ppm}}{\text{Diff BW}}$
4.16.7.g.	$\left[\left(\text{ } \right) \frac{\text{ } \text{pcm}}{\text{Mod CF}} \right] \div \left[(-) \frac{\text{ } \text{pcm/ppm}}{\text{Diff BW}} \right] =$ 4.16.7.e. 4.16.7.f.	$\left(\text{ } \right) \frac{\text{ } \text{ppm}}{\text{Boron Equivalent of Moderator CF}}$
4.16.6.a.	Calculated Boron Concentration = Critical Boron Concentration = 4.16.5	$\frac{1721}{\text{Critical } C_B} \text{ ppm}$
4.16.1 or 4.16.7.h.	$\left(\frac{\text{ } \text{pcm}}{\text{Boron Equivalent of Mod CF}} \right) + \left(\frac{\text{ } \text{pcm}}{\text{Calculated } C_B} \right) =$ 4.16.7.g. 4.16.5	

Estimated Critical Conditions

Critical Rod Height Calculation

Step No.	Parameter and/or Calculation	Value
4.17.1	$\left[\begin{array}{c} (+) \text{ ppm} \\ \text{Burnup Correction} \\ 4.15.3 \end{array} \right] \times \left[\begin{array}{c} (-) \text{ pcm/ppm} \\ \text{Present BW} \\ 4.12.2 \end{array} \right] =$	$(-) \text{ pcm} \\ \rho \text{ Equivalent of BC}$
4.17.2	$\left[\begin{array}{c} (-) \text{ pcm} \\ \rho \text{ Equivalent of BC} \\ 4.17.1 \end{array} \right] + \left[\begin{array}{c} () \text{ pcm} \\ \text{Total } \rho \text{ Defect} \\ 4.14.2 \end{array} \right] =$	$() \text{ pcm} \\ \text{Corrected Total} \\ \rho \text{ Defect}$
4.17.3.a. or 4.17.4	Integral Rod Worth @ Reference Conditions =	$(+) \text{ pcm} \\ \text{RW @ Ref}$
4.17.5	$\left[\begin{array}{c} () \text{ pcm} \\ \text{Corrected } \rho \text{ Defect} \\ 4.17.2 \end{array} \right] + \left[\begin{array}{c} (+) \text{ pcm} \\ \text{RW @ Reference} \\ 4.17.4 \end{array} \right] =$	$() \text{ pcm} \\ \text{Net } \rho \text{ Defect}$
4.17.6.a. or 4.17.6.b.	Critical Rod Position Corresponding to Net ρ Defect =	Bank _____ @ _____ Steps Critical Rod Position

Rod Withdrawal Limits

Step No.	Parameter and/or Calculation	Value
4.18.1.a. or 4.18.2	Integral Rod Worth @ Estimated Critical Position =	$(+) \text{ 513 pcm} \\ \text{RW @ ECP}$
4.18.3	$\left[\begin{array}{c} (+) \text{ 513 pcm} \\ \text{RW @ ECP} \end{array} \right] - (500 \text{ pcm}) =$	$(+) \text{ 13 pcm} \\ \text{RW for D @ 57 Steps} \\ \text{W/D Limit}$
4.18.4 or 4.18.5	Rod Position Corresponding to the RW for the D @ 57 Steps Withdrawal Limit or the Control Bank D Full Out Position =	Bank <u>D</u> @ <u>219</u> Steps D @ 57 Steps Withdrawal Limit
4.18.6	$\left[\begin{array}{c} (+) \text{ 513 pcm} \\ \text{RW @ ECP} \end{array} \right] - (750 \text{ pcm}) =$	$(-) \text{ 237 pcm} \\ \text{RW for C @ 57 Steps} \\ \text{W/D Limit}$
4.18.5 or 4.18.7 or 4.18.8	Rod Position Corresponding to the RW for the C @ 57 Steps Withdrawal Limit or the Control Bank D Full Out Position =	Bank <u>D</u> @ <u>217</u> Steps C @ 57 Steps Withdrawal Limit

Estimated Critical Conditions

Step No.	Parameter and/or Calculation	Value
4.19.1	$[(+)\frac{513}{\text{RW @ ECP}} \text{ pcm}] + (500 \text{ pcm}) =$	$(+)\frac{1013}{\text{RW for D @ 57 Steps Insertion Limit}} \text{ pcm}$
4.19.2.a. or 4.19.3	Rod Position Corresponding to the RW for the D @ 57 Step Insertion Limit =	Bank $\frac{D}{@ \frac{43}{\text{Steps}}}$ Rod Position for D @ 57 Steps Limit
4.19.4	Zero Power Rod Insertion Limit (RIL) =	Bank $\frac{C}{@ \frac{51}{\text{Steps}}}$ 0% RIL
4.19.5 or 4.19.6	Rod Position Corresponding to the RW for the D @ 57 Step Insertion Limit or the 0% RIL =	Bank $\frac{D}{@ \frac{43}{\text{Steps}}}$ D @ 57 Steps Insertion Limit
4.19.7	$[(+)\frac{513}{\text{RW @ ECP}} \text{ pcm}] + (750 \text{ pcm}) =$	$(+)\frac{1263}{\text{RW for C @ 57 Steps Insertion Limit}} \text{ pcm}$
4.19.8.a. or 4.19.9	Rod Position Corresponding to the RW for the C @ 57 Step Insertion Limit =	Bank $\frac{D}{@ \frac{12}{\text{Steps}}}$ Rod Position for C @ 57 Steps Limit
4.19.6.a. or 4.19.10 or 4.19.11	Rod Position Corresponding to the RW for the C @ 57 Step Insertion Limit or the 0% RIL =	Bank $\frac{D}{@ \frac{12}{\text{Steps}}}$ C @ 57 Steps Insertion Limit

Estimated Critical Conditions

Review

Step No.	Name	Date	Time
4.20.4	Independent Calculation By: _____		
4.20.6	Licensed Operator Review By: _____		

T/S Acceptance Criteria

Step No.	Acceptance Criteria	Yes	No
OP 3202 Step 4.8.1	Predicted Critical Rod Position Greater Than the RIL		
OP 3202 Step 4.8.2	Criticality Predicted Within the T/S 4 Hour Time Period (4.4.3)		
OP 3202 Step 4.19.7.b	Plant is in MODE 2 @ the RIL <u>AND</u> Reactor <u>NOT</u> Critical		
OP 3202 Step 4.22	Criticality Achieved Within the T/S 4 Hour Time Period (4.4.3)		

Actual Critical Data

Parameter	Source	Value
Date		
Time		
Intermediate Range Current	NMI-NI35B	amps
Intermediate Range Current	NMI-NI36B	amps
NR Pressure	3RCS-PI455A	psia
NR Pressure	3RCS-PI456A	psia
NR Pressure	3RCS-PI457	psia
NR Pressure	3RCS-PI458	psia
Loop T _{avg}	3RCS-TI412	°F
Loop T _{avg}	3RCS-TI422	°F
Loop T _{avg}	3RCS-TI432	°F
Loop T _{avg}	3RCS-TI442	°F
Boron Concentration	Chemistry	ppm
Control Bank C	Rod Step Counters	steps
Control Bank D	Rod Step Counters	steps

Form Approval

Approval Date

JUL 01 1999

Effective Date

JUL 06 1999

Form Cover Sheet

**Generic Information**

Form Title

Estimated Critical Conditions

Rev. No.

6

Reference Procedure

OP 3209A

Applicable Tech. Spec.

4.1.1.1.c

Frequency

AR*

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

N/A

Applicable Mode

2

Partial Surveillance

☐

Test Authorized By

Date

Baseline Test

☐

Prerequisites Completed (Initials)

Precautions Noted (Initials)

Performed By

Date

Time

Accepted By

Date

Time

Acceptance Criteria Satisfied

Approved By (Department Head or Designee)

Date

Shift Manager Notified of Failed Test

Date

☐ Yes☐ No**Surveillance Information**

Test Equipment Type

QA Number

Cal Due Date

N/A

* This calculation may be performed at any time but must be verified within 4 hours prior to achieving reactor criticality.

Send completed Form to Reactor Engineering.

Estimated Critical Conditions

Step No.	Name	Date	Time
4.2	Performed By: _____		0600

Reference Critical Data

Step No.	Parameter	Value
4.3	Date	10/15/01
	Time	0625
	Power Level	100 %
	Burnup	7603.5 MWD/MTU
	RCS Pressure	2248.6 psia
	T _{avg}	586.6 °F
	T _{ref}	586.9 °F
	Boron Concentration	1191 ppm
	Xenon	(-) 2679.4 pcm
	Samarium	(-) 961.5 pcm
	Control Bank C	222 steps
	Control Bank D	217 steps

Estimated Conditions At Criticality

Step No.	Parameter	Value
4.4.1	Date	
4.4.2	Administrative Time Period (2 hours)	From : 1000 To: 1200
4.4.3	T/S Time Period (4 hours)	From : 0800 To: 1200
4.4.4	Present Burnup	8000 MWD/MTU
4.4.5	T _{avg}	557 °F
4.4.6	RCS Pressure	2250 psia
4.4.7.b.	Xenon	(-) 0 pcm
4.4.8.b.	Samarium	(-) 1300 pcm
4.4.9.b. or 4.4.10	Desired Critical Rod Height	Control Bank C @ 215 Steps Control Bank D @ 100 Steps

Boron Concentration

Step No.	Parameter	Value
4.5	Present Boron Concentration	1600 ppm

Defects

Estimated Critical Conditions

POWER DEFECT

Step No.	Parameter and/or Calculation	Value
4.6.1	Power Defect @ Reference Power =	(-) <u>1960</u> pcm Defect @ Ref Power
4.6.2	$[(-) \text{ _____ pcm}] \times (-1) =$ Defect @ Ref Pwr	(+) <u>1960</u> pcm Power Defect

REFERENCE MODERATOR DEFECT

Step No.	Parameter and/or Calculation	Value
4.7.2	Magnitude of MTC @ T_{ref} =	_____ pcm/°F (no sign) Magnitude of MTC @ T_{ref}
4.7.3	Difference Between T_{ref} and T_{avg} =	_____ °F (no sign) $T_{ref}/T_{avg} \Delta$
4.7.4	$(\text{ _____ } ^\circ\text{F}) \times (\text{ _____ } \text{ pcm}/^\circ\text{F}) =$ $T_{ref}/T_{avg} \Delta$ MTC @ T_{ref}	_____ pcm (no sign) Ref Mod Defect
4.7.5	Sign of Reference Moderator Defect =	_____ (+ or -) Sign
4.7.1 or 4.7.6	Value and Sign of Reference Moderator Defect =	() <u>0</u> pcm Ref Mod Defect

ESTIMATED MODERATOR DEFECT

Step No.	Parameter and/or Calculation	Value
4.8.2	Magnitude of ITC @ 557°F =	_____ pcm/°F (no sign) Magnitude of ITC @ 557°F
4.8.3	Difference Between Estimated T_{avg} and 557°F =	_____ °F (no sign) $T_{avg}/557^\circ\text{F} \Delta$
4.8.4	$(\text{ _____ } ^\circ\text{F}) \times (\text{ _____ } \text{ pcm}/^\circ\text{F}) =$ $T_{avg}/557^\circ\text{F} \Delta$ ITC @ 557°F	_____ pcm (no sign) Est Mod Defect
4.8.5	Sign of Estimated Moderator Defect =	_____ (+ or -) Sign
4.8.1 or 4.8.6	Value and Sign of Estimated Moderator Defect =	() <u>0</u> pcm Est Mod Defect

Estimated Critical Conditions

Defects (Continued)

XENON DEFECT

Step No.	Parameter and/or Calculation	Value
4.9	$\left[(-) \frac{\text{Estimated Xe}}{\text{Reference Xe}} \text{ pcm} \right] - \left[(-) \frac{\text{Reference Xe}}{\text{Reference Xe}} \text{ pcm} \right] =$	$(+) \underline{2679.4} \text{ pcm}$ Xenon Defect

SAMARIUM DEFECT

Step No.	Parameter and/or Calculation	Value
4.10	$\left[(-) \frac{\text{Estimated Sm}}{\text{Reference Sm}} \text{ pcm} \right] - \left[(-) \frac{\text{Reference Sm}}{\text{Reference Sm}} \text{ pcm} \right] =$	$(-) \underline{338.5} \text{ pcm}$ Samarium Defect

ROD WORTH DEFECT

Step No.	Parameter and/or Calculation	Value
4.11.2.a. or 4.11.3.a.	Integral Rod Worth @ Reference Conditions =	$(-) \underline{10} \text{ pcm}$ Reference RW
4.11.2.b. or 4.11.3.b.	Integral Rod Worth @ Estimated Conditions =	$(-) \underline{510} \text{ pcm}$ Estimated RW
4.11.1 or 4.11.4	$\left[(-) \frac{\text{Estimated RW}}{\text{Reference RW}} \text{ pcm} \right] - \left[(-) \frac{\text{Reference RW}}{\text{Reference RW}} \text{ pcm} \right] =$	$(-) \underline{500} \text{ pcm}$ RW Defect

BORON DEFECT

Step No.	Parameter and/or Calculation	Value
4.12.1	Differential Boron Worth @ Reference Burnup =	$(-) \underline{6.21} \text{ pcm/ppm}$ Reference BW
4.12.2	Differential Boron Worth @ Present Burnup =	$(-) \underline{6.25} \text{ pcm/ppm}$ Present BW
4.12.3	$\left[\left(- \frac{\text{Reference BW}}{\text{Reference BW}} \text{ pcm/ppm} \right) + \left(- \frac{\text{Present BW}}{\text{Present BW}} \text{ pcm/ppm} \right) \right] \div 2 =$	$(-) \underline{6.23} \text{ pcm/ppm}$ Avg Diff BW
4.12.4	$\left[\left(\frac{\text{Present } C_B (4.5)}{\text{Reference } C_B (4.3)} \text{ ppm} \right) - \left(\frac{\text{Reference } C_B (4.3)}{\text{Reference } C_B (4.3)} \text{ ppm} \right) \right] \times \left[(-) \frac{\text{Avg Diff BW}}{\text{Avg Diff BW}} \text{ pcm/ppm} \right] =$	$(-) \underline{25.48} \text{ pcm}$ Boron Defect

Estimated Critical Conditions

Defects (Continued)

VOID DEFECT

Step No.	Parameter and/or Calculation	Value
4.13.2	Value of Void Correction Factor (Void Defect) =	(+) <u>0</u> pcm Void Defect

TOTAL REACTIVITY DEFECT

Step No.	Parameter and/or Calculation	Value
4.14.1 and 4.14.2	Power Defect (step 4.6.2) = (+) <u>1960</u> pcm	(+) <u>1252.9</u> pcm Total ρ Defect
	Ref Mod Defect (step 4.7.6) = () <u>0</u> pcm	
	Est Mod Defect (step 4.8.6) = () <u>0</u> pcm	
	Xe Defect (step 4.9) = (+) <u>2679.4</u> pcm	
	Sm Defect (step 4.10) = (-) <u>338.5</u> pcm	
	RW Defect (step 4.11.4) = (-) <u>500</u> pcm	
	Boron Defect (step 4.12.4) = (-) <u>2548</u> pcm	
	Void Defect (step 4.13.2) = (+) <u>0</u> pcm + _____	
	Combined Total = (+) <u>1252.9</u> pcm =	

Burnup Correction

Step No.	Parameter and/or Calculation	Value
4.15.2.a.	Critical Boron Concentration @ Reference Burnup =	<u>1170</u> ppm Ref Critical C_B
4.15.2.b.	Critical Boron Concentration @ Present Burnup =	<u>1740</u> ppm Present Critical C_B
4.15.1 or 4.15.3	(_____ ppm) - (_____ ppm) = Ref Critical C_B Present Critical C_B	(+) <u>30</u> ppm Burnup Correction

Estimated Critical Conditions

Critical Boron Concentration Calculation

Step No.	Parameter and/or Calculation	Value
4.16.2	$\frac{[(+) \frac{1252.9}{\text{Total } \rho \text{ Defect}} \text{ pcm}]}{4.14.2} \div [(-) \frac{6.25}{\text{Present BW}} \text{ pcm/ppm}] =$	$(-) \frac{200}{\text{Boron Equivalent of } \rho \text{ Defect}} \text{ ppm}$
4.16.3	$[(+) \frac{30}{\text{Burnup Correction}} \text{ ppm}] + [(-) \frac{200}{\text{Boron Equivalent of } \rho \text{ Defect}} \text{ ppm}] =$	$(-) \frac{170}{\text{Corrected Boron Equivalent}} \text{ ppm}$
4.16.4	$[(-) \frac{170}{\text{Corrected Boron Equivalent}} \text{ ppm}] \times (-1) =$	$(+) \frac{170}{\text{Required Boron } \Delta} \text{ ppm}$
4.16.5	$(\frac{1600}{\text{Present } C_B} \text{ ppm}) + [(+) \frac{170}{\text{Required Boron } \Delta} \text{ ppm}] =$	$\frac{1770}{\text{Calculated } C_B} \text{ ppm}$
4.16.7.a.	Magnitude of ITC @ 557°F =	$\frac{\text{pcm}}{^\circ\text{F}} \text{ (no sign)}$ Magnitude of ITC @ 557°F
4.16.7.b.	Difference Between Estimated Tavg and 557°F =	$^\circ\text{F (no sign)}$ Tavg/ 557°F Δ
4.16.7.c.	$(\frac{\text{ }^\circ\text{F}}{\text{Tavg/557}^\circ\text{F } \Delta} \times (\frac{\text{pcm}}{^\circ\text{F}} \text{ ITC @ 557}^\circ\text{F}) =$	$\frac{\text{pcm}}{\text{Magnitude of Mod CF}} \text{ (no sign)}$
4.16.7.d.	Sign of Moderator Correction Factor =	Sign (+ or -)
4.16.7.e.	Value and Sign of Moderator Correction Factor =	$(\text{ }) \frac{\text{pcm}}{\text{Moderator CF}}$
4.16.7.f.	Differential Boron Worth @ for Present Burnup =	$(-) \frac{\text{pcm/ppm}}{\text{Diff BW}}$
4.16.7.g.	$[(\text{ }) \frac{\text{pcm}}{\text{Mod CF}}] \div [(-) \frac{\text{pcm/ppm}}{\text{Diff BW}}] =$	$(\text{ }) \frac{\text{ppm}}{\text{Boron Equivalent of Moderator CF}}$
4.16.6.a.	Calculated Boron Concentration = Critical Boron Concentration =	$\frac{1770}{\text{Critical } C_B} \text{ ppm}$
4.16.1 or 4.16.7.h.	$(\frac{\text{pcm}}{\text{Boron Equivalent of Mod CF}}) + (\frac{\text{pcm}}{\text{Calculated } C_B}) =$	

Estimated Critical Conditions

Critical Rod Height Calculation

Step No.	Parameter and/or Calculation	Value
4.17.1	$\left[(+) \frac{\text{Burnup Correction}}{4.15.3} \text{ ppm} \right] \times \left[(-) \frac{\text{Present BW}}{4.12.2} \text{ pcm/ppm} \right] =$	$(-) \frac{\text{pcm}}{\rho \text{ Equivalent of BC}}$
4.17.2	$\left[(-) \frac{\text{pcm}}{\rho \text{ Equivalent of BC}} \right] + \left[() \frac{\text{Total } \rho \text{ Defect}}{4.14.2} \text{ pcm} \right] =$	$() \frac{\text{pcm}}{\text{Corrected Total } \rho \text{ Defect}}$
4.17.3.a. or 4.17.4	Integral Rod Worth @ Reference Conditions =	$(+) \frac{\text{pcm}}{\text{RW @ Ref}}$
4.17.5	$\left[() \frac{\text{pcm}}{\text{Corrected } \rho \text{ Defect}} \right] + \left[(+) \frac{\text{pcm}}{\text{RW @ Reference}} \right] =$	$() \frac{\text{pcm}}{\text{Net } \rho \text{ Defect}}$
4.17.6.a. or 4.17.6.b.	Critical Rod Position Corresponding to Net ρ Defect =	Bank _____ @ _____ Steps Critical Rod Position

Rod Withdrawal Limits

Step No.	Parameter and/or Calculation	Value
4.18.1.a. or 4.18.2	Integral Rod Worth @ Estimated Critical Position =	$(+) \frac{510 \text{ pcm}}{\text{RW @ ECP}}$
4.18.3	$\left[(+) \frac{510 \text{ pcm}}{\text{RW @ ECP}} \right] - (500 \text{ pcm}) =$	$(+) \frac{10 \text{ pcm}}{\text{RW for D @ 57 Steps W/D Limit}}$
4.18.4 or 4.18.5	Rod Position Corresponding to the RW for the D @ 57 Steps Withdrawal Limit or the Control Bank D Full Out Position =	Bank <u>D</u> @ <u>220</u> Steps D @ 57 Steps Withdrawal Limit
4.18.6	$\left[(+) \frac{510 \text{ pcm}}{\text{RW @ ECP}} \right] - (750 \text{ pcm}) =$	$(-) \frac{240 \text{ pcm}}{\text{RW for C @ 57 Steps W/D Limit}}$
4.18.5 or 4.18.7 or 4.18.8	Rod Position Corresponding to the RW for the C @ 57 Steps Withdrawal Limit or the Control Bank D Full Out Position =	Bank <u>D</u> @ <u>217</u> Steps C @ 57 Steps Withdrawal Limit

Estimated Critical Conditions

Step No.	Parameter and/or Calculation	Value
4.19.1	$[(+)\frac{510}{\text{RW @ ECP}} \text{ pcm}] + (500 \text{ pcm}) =$	$(+)\frac{1010}{\text{RW for D @ 57 Steps Insertion Limit}} \text{ pcm}$
4.19.2.a. or 4.19.3	Rod Position Corresponding to the RW for the D @ 57 Step Insertion Limit =	Bank $\frac{D}{44}$ Steps Rod Position for D @ 57 Steps Limit
4.19.4	Zero Power Rod Insertion Limit (RIL) =	Bank $\frac{C}{51}$ Steps 0% RIL
4.19.5 or 4.19.6	Rod Position Corresponding to the RW for the D @ 57 Step Insertion Limit or the 0% RIL =	Bank $\frac{D}{44}$ Steps D @ 57 Steps Insertion Limit
4.19.7	$[(+)\frac{\quad}{\text{RW @ ECP}} \text{ pcm}] + (750 \text{ pcm}) =$	$(+)\frac{1260}{\text{RW for C @ 57 Steps Insertion Limit}} \text{ pcm}$
4.19.8.a. or 4.19.9	Rod Position Corresponding to the RW for the C @ 57 Step Insertion Limit =	Bank $\frac{D}{13}$ Steps Rod Position for C @ 57 Steps Limit
4.19.6.a. or 4.19.10 or 4.19.11	Rod Position Corresponding to the RW for the C @ 57 Step Insertion Limit or the 0% RIL =	Bank $\frac{D}{13}$ Steps C @ 57 Steps Insertion Limit

Estimated Critical Conditions

Review

Step No.	Name	Date	Time
4.20.4	Independent Calculation By: _____		
4.20.6	Licensed Operator Review By: _____		

T/S Acceptance Criteria

Step No.	Acceptance Criteria	Yes	No
OP 3202 Step 4.8.1	Predicted Critical Rod Position Greater Than the RIL		
OP 3202 Step 4.8.2	Criticality Predicted Within the T/S 4 Hour Time Period (4.4.3)		
OP 3202 Step 4.19.7.b	Plant is in MODE 2 @ the RIL <u>AND</u> Reactor <u>NOT</u> Critical		
OP 3202 Step 4.22	Criticality Achieved Within the T/S 4 Hour Time Period (4.4.3)		

Actual Critical Data

Parameter	Source	Value
Date		
Time		
Intermediate Range Current	NMI-NI35B	amps
Intermediate Range Current	NMI-NI36B	amps
NR Pressure	3RCS-PI455A	psia
NR Pressure	3RCS-PI456A	psia
NR Pressure	3RCS-PI457	psia
NR Pressure	3RCS-PI458	psia
Loop T _{avg}	3RCS-TI412	°F
Loop T _{avg}	3RCS-TI422	°F
Loop T _{avg}	3RCS-TI432	°F
Loop T _{avg}	3RCS-TI442	°F
Boron Concentration	Chemistry	ppm
Control Bank C	Rod Step Counters	steps
Control Bank D	Rod Step Counters	steps

JOB PERFORMANCE MEASURE APPROVAL WORKSHEET

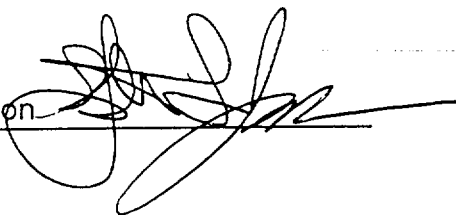
- I. JPM Title: Given a completed clearance boundary and reference material, review, amend and approve the clearance boundary.

JPM ID Number: SRO-A2

Revision: 0

- II. Initiated:

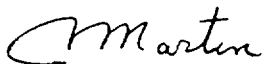
Steve Jackson
Developer



10/31/01
Date

- III. Reviewed:

Technical Reviewer



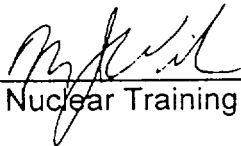
11/19/01
Date

- IV. Approved:

Cognizant Plant Supervisor (optional)

Date

Nuclear Training Supervisor



11/20/01
Date

JOB PERFORMANCE MEASURE GUIDE

Facility: Millstone Unit 3

JPM ID Number: SRO-A2

Revision: 0

Task Title: Given a completed clearance boundary and reference material, review, amend and approve the clearance boundary.

System: Tagging and Clearance

Time Critical Task: () YES (☒) NO

Validated Time (minutes): 10 min

Task Number(s): 341-01-079, Develop and/or modify, review, authorize, install, verify, and clear a tag clearance in accordance with plant and/or site procedural and safety requirements

Applicable To: SRO ☒ RO ☐ PEO ☐

K/A Number: GEN.2.2.13, Knowledge of Tagging and Clearance Procedures K/A Rating: 3.6/3.8

Method of Testing: Simulated Performance: ☐ Actual Performance: ☒

Location: Classroom: ☒ Simulator: ☐ In-Plant: ☐

Task Standards: Review and approve a tag clearance boundary

Required Materials: Completed work package boundary sheet
P&IDs
EE One-Line Electrical Drawings
OP 3300 series procedures

General References: WC 2, Tagging
OP 3250, Removing Equipment from Service for Maintenance

READ TO THE STUDENT

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

JOB PERFORMANCE MEASURE GUIDE (Continued)

JPM Number: SRO-A2

Revision: 0

Simulator Requirements: NONE

Initial Conditions: You are a licensed SRO. A tagout clearance boundary for the shaft mechanical seal replacement for the "B" Reactor Plant Component Cooling Water (CCP) pump has been developed.

Initiating Cues: Your task is to review the recommended tagout clearance boundary using available references so that the work package boundary sheet is ready for approval.

**** NOTES TO EVALUATOR ****

1. Critical steps for this JPM are indicated by an "X" after the step number. For the student to achieve a satisfactory grade, **ALL** critical steps must be completed correctly. The students performance is graded by an "S" for satisfactory or a "U" for unsatisfactory on each step.
2. When the student states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question the student for details of simulated actions/observations (i.e. "What are you looking at?" or "What are you observing?").

PERFORMANCE INFORMATION

JPM Number: SRO-A2

Revision: 0

Task Title: Given a completed clearance boundary and reference material, review, amend and approve the clearance boundary.

Start Time: _____

STEP	<u>1</u>		Performance Step:	Reviews the Work Package Boundary Sheet and selects appropriate reference materials
GRADE			Standards:	Selects: P&ID EM-121A, (CCP), EE Drawing. 1M, OP 3330A, Rev. 15-02
			Grade:	SAT _____ UNSAT _____
STEP	<u>2</u>		Performance Step:	Reviews 3CCP-P1B-CS, "B" RPCCW Pump Control Switch
GRADE			Standards:	Uses selected references and determines the Pump Control Switch tagging is correct .
			Grade:	SAT _____ UNSAT _____
STEP	<u>3</u>	<u>X</u>	Performance Step:	Reviews power supply 34D9-2, 3CCP*P1B breaker racked down and red tagged.
GRADE		<u>X</u>	Standards:	Uses selected references and determines power supply 34D9-2 is INCORRECT . 34D8-2 is the correct breaker (EE Drawing. 1M,). Tag and tagged position are correct.
			Grade:	SAT _____ UNSAT _____

Cue:	When error is identified: "What would you do to if you found this error?"
Cue:	If the response is correct it then: "Correct the error."

PERFORMANCE INFORMATION

JPM Number: SRO-A2

Revision: 0

Task Title: Given a completed clearance boundary and reference material, review, amend and approve the clearance boundary.

STEP 4 X **Performance Step:** Reviews 3CCP*V91, RPCCW Pump P1B Suction Isolation, red tagged closed.

GRADE _____ X **Standards:** Uses selected references and determines that 3CCP*V91 selection, position and tagging is **correct**.

Grade: **SAT** _____ **UNSAT** _____

STEP 5 X **Performance Step:** Reviews 3CCP*V8, RPCCW Pump P1B Discharge Isolation, red tagged closed.

GRADE _____ X **Standards:** Uses selected references and determines that 3CCP*V8 selection is **INCORRECT**.
3CCP*V6 is the correct boundary (P&ID EM-121A)
CLOSED position and RED tagging is **correct**.

Grade: **SAT** _____ **UNSAT** _____

Cue: When error is identified: "What would you do to if you found this error?"
Cue: If the response is correct it then: "Correct the error."

STEP 6 X **Performance Step:** Reviews 3CCP*V649, RPCCW Pump P1B Vent valve, red tagged open.

GRADE _____ X **Standards:** Uses selected references and determines that 3CCP V649 selection, position and tagging is **correct**.

Grade: **SAT** _____ **UNSAT** _____

PERFORMANCE INFORMATION

JPM Number: SRO-A2

Revision: 0

Task Title: Given a completed clearance boundary and reference material, review, amend and approve the clearance boundary.

STEP 7 X **Performance Step:** Reviews 3CCP*V314, RPCCW Pump P1B Drain Valve, red tagged open.

GRADE X **Standards:** Uses selected references and determines that 3CCP*V314 selection, position and tagging is **correct**.

Grade: **SAT** **UNSAT**

STEP 8 **Performance Step:** Amend and approve the clearance boundary

GRADE **Standards:** Makes indicated changes to the clearance boundary, and recommends approval as amended.

Grade: **SAT** **UNSAT**

Cue: "Are you recommending the tagout clearance boundary?"

Termination Cue: The Evaluation For This JPM is Complete.

Stop Time:

VERIFICATION OF JPM COMPLETION

JPM Number: SRO-A2

Revision: 0

Date Performed: _____

Student: _____

Evaluator: _____

For the student 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): 10

Actual Time to Complete (minutes): _____

Result of JPM: _____ ("S" for satisfactory, "U" for unsatisfactory)

Result of oral questions (if applicable):

Number of Questions: _____

Number of Correct Responses: _____

Score: _____

Areas for Improvement:

STUDENT HANDOUT

JPM Number:

SRO-A2

Initial Conditions:

You are a licensed SRO. A tagout clearance boundary for the shaft mechanical seal replacement for the “B” Reactor Plant Component Cooling Water (CCP) pump has been developed.

Initiating Cues:

Your task is to review the recommended tagout clearance boundary using available references so that the work package boundary sheet is ready for approval.

WORK PACKAGE BOUNDARY SHEET

**Clearance
Number:**

AWO Number:
M30110525

**Clearance Adequate for Personnel Safety:
Contact Person / Designee Sign**

Date:

[illegible]

**Clearance
Number:**

**Clearance Adequate for Personnel Safety:
Contact Person / Designee Sign**

[illegible]

JOB PERFORMANCE MEASURE APPROVAL WORKSHEET

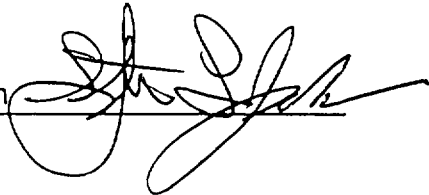
I. JPM Title: Review and Approve a Radioactive Liquid Waste Discharge Permit

JPM ID Number: SRO-A3

Revision: 0

II. Initiated:

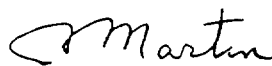
Steve Jackson
Developer



11/01/01
Date

III. Reviewed:

Ray Martin
Technical Reviewer



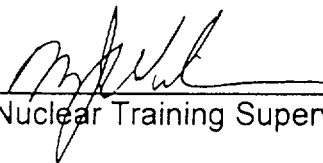
11/15/01
Date

IV. Approved:

Cognizant Plant Supervisor (optional)

Date

Nuclear Training Supervisor



11/20/01
Date

JOB PERFORMANCE MEASURE GUIDE

Facility: Millstone Unit 3

JPM ID Number: SRO-A3

Revision: 0

Task Title: Review and Approve a Radioactive Liquid Waste Discharge Permit

System: Radioactive Liquid Waste System

Time Critical Task: () YES (X) NO

Validated Time (minutes): _____

Task Number(s): 068-01-064, Discharge the contents of a Low Level Waste
Drain Tank
068-03-001, Adhere to the requirements of the Radwaste
Management Program

Applicable To: SRO X RO _____ PEO _____

K/A Number: GEN- 2.3.6 K/A Rating: 2.1/3.1

Method of Testing: Simulated Performance: X Actual Performance: X

Location: Classroom: _____ In-Plant:: X Simulator: X

Task Standards: Review and Approve a Radioactive Liquid Waste Discharge Permit

Required Materials: OP 3335D, Radioactive Liquid Waste System
Liquid Discharge Permit
Screen Print of Rad Monitor LWS70-1

General References: None

READ TO THE STUDENT

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

JOB PERFORMANCE MEASURE GUIDE (Continued)

JPM Number: SRO-A3

Revision: 0

Simulator Requirements: None

Initial Conditions: The unit is at 100% power with all systems in normal line-ups. The "A" and "B" Service Water pumps and all Circulating Water pumps are running.

Initiating Cues: The Radwaste PEO has presented OP 3335D sign off copy and a Liquid Discharge Permit for discharging the "A" Waste Test Tank to the Circulating Water discharge tunnel for your approval. Review and approve the permit and report to the examiner when complete.

**** NOTES TO EVALUATOR ****

1. Critical steps for this JPM are indicated by an "X" after the step number. For the student to achieve a satisfactory grade, **ALL** critical steps must be completed correctly. The students performance is graded by an "S" for satisfactory or a "U" for unsatisfactory on each step.
2. When the student states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question the student for details of simulated actions/observations (i.e. "What are you looking at?" or "What are you observing?").

PERFORMANCE INFORMATION

JPM Number: SRO-A3

Revision: 0

1

Task Title: Review and Approve a Radioactive Liquid Waste Discharge Permit

Start Time: _____

STEP 1 X

Performance Step: Go to the correct procedure step, OP3335D, Section 4.25.4.j

GRADE _____ X

Standards: Locates the correct procedure step. Candidate may review previous steps.

Grade: SAT _____ UNSAT _____

Cue: Steps 4.25.1, 2, & 3 and step 4.25.4.a through I have been completed.

STEP 2 X

Performance Step: PERFORM Independent Verification of liquid effluent monitor alarm and alert settings. [step 4.25.4.j.1)]

GRADE _____ X

Standards: Locates liquid effluent monitor alarm and alert settings on Liquid Discharge Permit.

GRADE _____ X

Standards: Locates liquid effluent monitor alarm and alert current settings on RMS Console.

Comments: Since this JPM is done in a classroom setting the RMS Console is not available. When candidate requests information and specifies that he would access the RMS screen for LWS70-1, Liquid Waste discharge process radiation monitor, exercise the cue.

Cue: This is the screen for LWS70-1 (hand candidate screen printout).

GRADE _____ X

Standards: Compares permit settings and RMS information and identifies that RMS is incorrect. Recommends changing RMS to match the permit.

PERFORMANCE INFORMATION

JPM Number: SRO-A3

Revision: 0

1

Task Title: Review and Approve a Radioactive Liquid Waste Discharge Permit

Initials permit after receiving the cue.

Cue: IF candidate identifies error, state that the setpoints have been corrected.

Grade: SAT UNSAT

STEP 3 X

Performance Step: Refer to CHEM Form 3800P-001 and CHECK "EST Activity this Discharge (Ci) on Liquid Discharge Permit is less than action level specified. [step 4.25.4.j.2)]

GRADE X

Standards: COMPARE CHEM Form 3800P-001 and CHECK "EST Activity this Discharge (Ci) to Discharge permit "Estimated activity this discharge (Ci)". Determines that values are below the limits. Initials permit.

Grade: SAT UNSAT

Cue: Step 4.25.4.j.3) is N/A since no limits are exceeded.

STEP 4 X

Performance Step: CHECK required dilution flowrate is met. [step 4.25.4.j.4)]

GRADE X

Standards: COMPARES permit requirement of 2 SWP and 3 CWP to actual plant condition of 2 SWP and 6 CWP. Determines that dilution flow is met. Initials permit.

Grade: SAT UNSAT

Termination Cue: The Evaluation of this JPM is Complete

Stop Time:

VERIFICATION OF JPM COMPLETION

JPM Number: SRO-A3

Revision: 0

Date Performed: _____

Student: _____

Evaluator: _____

For the student 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): 10

Actual Time to Complete (minutes): _____

Result of JPM: _____ ("S" for satisfactory, "U" for unsatisfactory)

Result of oral questions (if applicable):

Number of Questions: _____

Number of Correct Responses: _____

Score: _____

Areas for Improvement:

STUDENT HANDOUT

JPM Number:

SRO-A3

Initial Conditions:

The unit is at 100% power with all systems in normal line-ups. The "A" and "B" Service Water pumps and all Circulating Water pumps are running.

Initiating Cues:

The Radwaste PEO has presented OP 3335D sign off copy and a Liquid Discharge Permit for discharging the "A" Waste Test Tank to the Circulating Water discharge tunnel for your approval. Review and approve the permit and report to the examiner when complete.

FORM APPROVED.: C. J. Schwarz DATE.: 5/16/97 PORC MTG NO.: 3-97-105

MILLSTONE UNIT #3 LIQUID DISCHARGE PERMIT NO. 4463 (2001-69338)

ank.....: WTT-A Date/time sampled...: 9-NOV-2001 17:35
Sampled by.....: Date/time on recirc.: 9-NOV-2001 14:00
TSS (ppm)..: (tank limit = 45 ppm) pH.: 4.7
Boric acid conc (ppm): 4330.0

<<< 2 circulators must be in operation during a discharge >>>

Independent samples taken >>> yes no (circle one)

Isotope	Activity (uCi/ml)	MPC (uCi/ml)	Activity/MPC
CO-58	3.522E-07	1.000E-04	3.522E-03
CO-60	4.720E-07	5.000E-05	9.441E-03
SB-125	4.779E-06	1.000E-04	4.779E-02
XE-133	4.240E-07		
XE-135	1.920E-07		
CS-137	1.268E-07	2.000E-05	6.342E-03
H-3	1.720E-01	3.000E-03	5.733E+01
Totals	6.346E-06 (@)		5.740E+01

Dissolved gas conc (uCi/ml) = 6.161E-07 (limit = 4.0E-1)

Minimum recirc time using 1 pump is 175. (min)

Sample saved for composite.....: Date Tech

Release limit (Ci).....: 6.700E-03

Total activity released to date (Ci).....: 1.613E-03

Estimated volume this discharge (gal).....: 21000.

Estimated activity this discharge (Ci).....: 5.044E-04 (@)

Estimated total activity released (Ci).....: 2.117E-03 (@)

(@) these values do not include activity due to tritium

(1) Reduction factor.....: 1.742E-02 SM/US init

(2) Required dilution flow rate.....: 480000. (gpm)
3 circ water, 2 service water pump(s)

(3) Normal rate limit (flow rate=#1*#2*0.1)...: 150. (gpm)

(4) Liquid effluent monitor alert setting....: 1.500E-04 (uCi/ml)

(5) Liquid effluent monitor alarm setting....: 2.000E-04 (uCi/ml)

(6) Rad monitor source check completed at....: Oper

Maximum approved rate.....: (gpm)
(Authorization required to exceed normal rate limit.)

Dual verification of release rate calculation --->>> yes no (circle one)

*** DISCHARGE ***

DATE	TIME	DILUTION FLOW RATE (gpm)	TANK LEVEL (gallons)	DISCHARGE RATE (gpm)	OPERATOR
------	------	--------------------------------	----------------------------	-------------------------	----------

James Matthews
Approval

10/28/97

Approval Date

10/29/97

Effective Date

N/A

PORC Mtg. No.

Unit 3 Liquid Radwaste Discharge Goals

Year: 2000

COPY

	Normal at Power Operations		Refueling and Cold Shutdown Outages		Annual Goal
	Action Level	Monthly Goal	Action Level	Monthly Goal	
Volume	200,000 gal/month	250,000 gal/month	200,000 gal/month	250,000 gal/month	3,000,000 gal
Activity	6.7E-03 Ci/month	6.7E-03 Ci/month	6.7E-03 Ci/month	6.7E-03 Ci/month	0.08 Ci
	1.4E-03 Ci/discharge		3.6E-03 Ci/discharge		

W. Sullivan 11/2/01
Radwaste Coordinator / Date

Tank Limits: using Ci/discharge limit of 1.4E-03

Mode 1-3 LLWDT = 9.2E-05 μ Ci/ml

WTT = 1.8E-05 μ Ci/ml

using Ci/disch limit of 3.6E-03

Mode 4-6 LLWDT = 2.4E-04 μ Ci/ml

WTT = 4.5E-05 μ Ci/ml

received

9/12/01 11/02/01

U3 SM Log

received

Radwaste PEO

Verified Revision 0
Initial gms Date 10-29-97

[illegible]

JOB PERFORMANCE MEASURE APPROVAL WORKSHEET

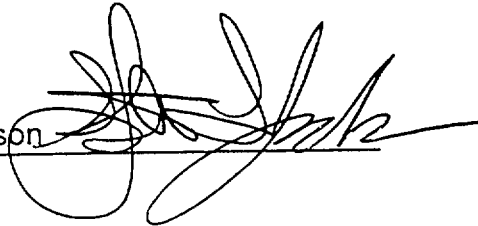
I. JPM Title: Emergency Plan Responsibilities as Shift Manager

JPM ID Number: SRO-A4

Revision: 0

II. Initiated:

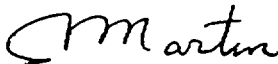
Steve Jackson
Developer



9/28/01
Date

III. Reviewed:

Technical Reviewer



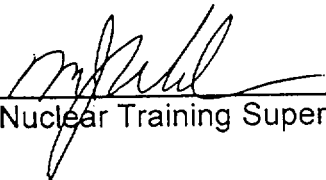
11/19/01
Date

IV. Approved:

Cognizant Plant Supervisor (optional)

Date

Nuclear Training Supervisor



11/20/01
Date

JOB PERFORMANCE MEASURE GUIDE

Facility: Millstone Unit 3

JPM ID Number: SRO-A4

Revision: 0

Task Title: Emergency Plan Responsibilities as Shift Manager

System: Admin, SERO

Time Critical Task: (☒) YES (☐) NO

Validated Time (minutes): 10

Task Number(s): 301-05-578, Assume command of the SERO

Applicable To: SRO ☒ RO ☐ PEO ☐

K/A Number: GEN.2.4.44 K/A Rating: 4.0

Method of Testing: Simulated Performance: ☐ Actual Performance: ☒

Location: Classroom: ☒ Simulator: ☒ In-Plant: ☒

Task Standards: Assume command of the SERO

Required Materials: MP-26-EPI-FAP01-001, Control Room DSEO, Rev. 000
MP-26-EPI-FAP06, Classification and PARs, Rev. 000
MP-26-EPI-FAP06-005, Control Room PARs, Rev. 000
MP-26-EPI-FAP08, Evacuation and Assembly, Rev. 000
EPUG-08B, Millstone Emergency Preparedness Resource Book

General References: MP-26-EPI-FAP06-001, EAL Tables, Rev. 000

READ TO THE STUDENT

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

JOB PERFORMANCE MEASURE GUIDE (Continued)

JPM Number: SRO-A4

Revision: 0

Simulator Requirements: none

Initial Conditions: The Initial Conditions are covered in the Event Description.

Cue: Give the candidate the form
"Student Handout"

Initiating Cues: You are the Shift Manager. You have assumed responsibility in the Control Room DSEO (CR-DSEO) role during an Inter-System LOCA event. You are implementing EPI-FAP01-001, Control Room DSEO, and have completed all actions in Section A and are ready to Go To Section E. You have classified the event as a General Emergency - Alpha (GE-A) based on events in progress and the Incident Report Form (IRF) has been reviewed, approved and transmitted. Your task is to complete all actions in Section E, General Emergency Immediate Actions. Discuss with the examiner any actions that cannot be performed or simulated.

The examiner will act as all persons or agencies with whom you must communicate. Inform the examiner when you have completed the task.

**** NOTES TO EVALUATOR ****

1. Critical steps for this JPM are indicated by an "X" after the step number. For the student to achieve a satisfactory grade, **ALL** critical steps must be completed correctly. The students performance is graded by an "S" for satisfactory or a "U" for unsatisfactory on each step.
2. When the student states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question the student for details of simulated actions/observations (i.e. "What are you looking at?" or "What are you observing?").

PERFORMANCE INFORMATION

JPM Number: SRO-A4

Revision: 0

Task Title: Emergency Plan Responsibilities as Shift Manager

Record Start Time: _____

STEP 1 _____

Performance Step: Locate Section E of FAP01-001, and review notes.

GRADE _____

Standards:

Reviews notes:

- Consideration of shelter versus evacuation during hazardous events
- Advisability of not making PA announcements during security events

Grade:

SAT _____ **UNSAT** _____

STEP 2 _____

Performance Step: Notify the unaffected unit control rooms of the event

GRADE _____

Standards:

Discusses with examiner contacting MP1 and MP2 control rooms. Includes methods of communicating in discussion.

Comments:

Ask candidate how this is accomplished if not volunteered during discussion.

Grade:

SAT _____ **UNSAT** _____

STEP 3 _____

Performance Step: Request Security to restrict site access

GRADE _____

Standards:

Discusses with examiner the following items:

- all personnel called on site must process through EOF

Comments:

Ask candidate how this is accomplished if not volunteered during discussion.

Grade:

SAT _____ **UNSAT** _____

PERFORMANCE INFORMATION

JPM Number: SRO-A4

Revision: 0

Task Title: Emergency Plan Responsibilities as Shift Manager

STEP 4

Performance Step: Make station page.

GRADE

Standards:

Discusses with examiner the following items:

- how to active the outside speakers
- the need to expedite evacuation after site page
- the PA message
- where to log time of announcement

Comments:

Ask candidate how this is accomplished if not volunteered during discussion.

- Outside speakers activated at US desk.
- Expedited evacuation precludes spontaneous evacuation.
- Message should be clear and brief
- Autolog or SERO logsheet FAP15-012 acceptable

Grade:

SAT

UNSAT

STEP 5

Performance Step: Review and approve IRF

Comments:

For this JPM IRF has already been approved and transmitted.

Cue:

The Incident Report Form has already been approved and transmitted. Continue on.

STEP 6 X

Performance Step: Refer to EPI-FAP06-005, Section B: Control Room PAR Process Flowchart and determine the appropriate PAR

GRADE X

Standards:

Reviews flowchart and diagnoses that 5 mile doses exceed Table 2 values of $TEDE \geq 1$ Rem and transitions down to "EVACUATE 5 MILE RADIUS and 10 MILE DOWNWIND, SHELTER REMAINING EPZ." Protective action

PERFORMANCE INFORMATION

JPM Number: SRO-A4

Revision: 0

Task Title: Emergency Plan Responsibilities as Shift Manager

recommendation

			Grade:	SAT _____	UNSAT _____
STEP	<u>7</u>	<u>X</u>	Performance Step:	If PARs are warranted out to 10 miles: 1. Record the current wind direction in degrees (from): 2. Check the appropriate row on the PAR table	

GRADE	_____	<u>X</u>	Standards:	Records 270° Identifies correct zones to evacuate as A and B and F and Groton City & town in E , and shelter ALL other zones	
--------------	-------	----------	-------------------	--	--

Grade:	SAT _____	UNSAT _____
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Comments:	<u>Evacuate</u> and <u>Shelter</u> recommendations must both be identified
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STEP	<u>8</u>	<u>X</u>	Performance Step:	Contact the DEP Dispatcher in Hartford
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GRADE	_____	<u>X</u>	Standards:	Obtains telephone number from EPUG-08B and attempts to call
--------------	-------	----------	-------------------	---

Grade:	SAT _____	UNSAT _____
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Cue:	Examiner acts as DEP Dispatcher
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STEP	<u>9</u>	<u>X</u>	Performance Step:	Identify self and read <u>Evacuate</u> and <u>Shelter</u> recommendations
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GRADE	_____	<u>X</u>	Standards:	Identifies self and state recommended zones to evacuate as A and B and F and Groton City & town in E , and shelter ALL other zones
--------------	-------	----------	-------------------	--

Grade:	SAT _____	UNSAT _____
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Cue:	Acknowledge receipt of PARs
-------------	-----------------------------

PERFORMANCE INFORMATION

JPM Number: SRO-A4

Revision: 0

Task Title: Emergency Plan Responsibilities as Shift Manager

STEP 10 X **Performance Step:** Request the dispatcher inform the DEP Duty Officer that a PAR has been issued

GRADE _____ X **Standards:** Requests the dispatcher inform the DEP Duty Officer that a PAR has been issued

Grade: **SAT** _____ **UNSAT** _____

Cue: Acknowledge receipt of request

STEP 11 X **Performance Step:** Log date and time of notification

GRADE _____ X **Standards:** Uses either Auto-Log, SERO Log Sheet from EPI-FAP15-012 or other means to log date and time of DEP notification

Grade: **SAT** _____ **UNSAT** _____

STEP 12 _____ **Performance Step:** If necessary, refer to and review EPI-FAP06, Att. 4, PAR Zone Descriptions

GRADE _____ _____ **Standards:** Refers to EPI-FAP06 for PAR Zone Descriptions

Grade: **SAT** _____ **UNSAT** _____

STEP 13 _____ **Performance Step:** Refer to EPI-FAP08, "Evacuation and Assembly", and conduct evacuation.

GRADE _____ _____ **Standards:** Refers to EPI-FAP08, Section 2.2
Discusses SSS/MOS interaction

- Inform Waterford PD of evacuation
- Establish traffic control with Waterford PD and CT State Police

Comments: Ask candidate how this is

PERFORMANCE INFORMATION

JPM Number: SRO-A4

Revision: 0

Task Title: Emergency Plan Responsibilities as Shift Manager

accomplished if not volunteered during discussion.

Grade: SAT _____ UNSAT _____

STEP 14 _____

Performance Step: Perform announcement over Site PA

GRADE _____

Standards:

Discuss site notification

- Activate outside speakers
- Sound Evacuation alarm for 30 seconds
- Select station public address system
- Make announcement
- log time of the announcement and contingencies:
- Security sweeps using bullhorns
- HP personnel
- O&M radios

Comments:

Ask candidate how this is accomplished if not volunteered during discussion.

Grade: SAT _____ UNSAT _____

STEP 15 _____

Performance Step: Discuss SSS/MOS responsibilities to Shift Manager

GRADE _____

Standards:

- Security sweeps to cover areas PA does not cover
- Verify personnel responding to evacuation order
- Provide accountability to SM with 30 minutes

Comments:

Ask candidate how this is accomplished if not volunteered during discussion.

Grade: SAT _____ UNSAT _____

PERFORMANCE INFORMATION

JPM Number: SRO-A4

Revision: 0

Task Title: Emergency Plan Responsibilities as Shift Manager

STEP 15 **Performance Step:** Refer to EPI-FAP15-001,
"DSEO/ADTS Briefing Sheet" and
complete.

GRADE **Standards:** Obtain sheet
Using Unit Status handout, complete
to substantially match the
DSEO/ADTS Briefing Sheet - Master

Grade: **SAT** **UNSAT**

Termination Cue: The evaluation for this JPM is complete

Record Stop Time:

VERIFICATION OF JPM COMPLETION

JPM Number: SR0-A4

Revision: 0

Date Performed: _____

Student: _____

Evaluator: _____

For the student 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 _____

Validated Time (minutes): 15

Actual Time to Complete (minutes): _____

Result of JPM: _____ ("S" for satisfactory, "U" for unsatisfactory)

Result of oral questions (if applicable):

Number of Questions: _____

Number of Correct Responses: _____

Score: _____

Areas for Improvement:

STUDENT HANDOUT

JPM Number:

SRO-A4

Initial Conditions:

The Initial Conditions are covered in the Event Description.

Initiating Cues:

You are the Shift Manager. You have assumed responsibility in the Control Room DSEO (CR-DSEO) role during an Inter-System LOCA event. You are implementing EPI-FAP01-001, Control Room DSEO, and have completed all actions in Section A and are ready to Go To Section E. You have classified the event as a General Emergency - Alpha (GE-A) based on events in progress and the Incident Report Form (IRF) has been reviewed, approved and transmitted. Your task is to complete all actions in Section E, General Emergency Immediate Actions. Discuss with the examiner any actions that cannot be performed or simulated. The examiner will act as all persons or agencies with whom you must communicate. Inform the examiner when you have completed the task.

STUDENT HANDOUT

INITIATING CUE:

The plant was at 100% power. At 0530 the reactor was tripped and Safety Injection was actuated due to an **Inter-System LOCA**. The following conditions exist.

CRITICAL PARAMETERS			
TIME	INFORMATION		SOURCE
	The following parameters exist:		MB indications
	RCS pressure	1900 psia and rising	
	PZR level	20% and rising	
	CTMT Pressure	Normal	
	CETCs Subcooling	40°F	
	CTMT temperature	110°F and stable	
	CTMT radiation histogram	Increasing levels	
	Rx Tripped/SI Actuated	Operating normally	
	Chemistry Tech reports that the Initial Dose Assessment (IDA) calculated offsite dose is 1.1 Rem TEDE.		Chemistry report
	Met Tower- All levels of the Met Tower indicate the wind is from the North West (270°) at 4 mph		PPC indication

Classification: NRC: GENERAL EMERGENCY State Posture Code: ALPHA

EAL Table Designation: OG1.6, Integrated Offsite Dose > 1 Rem TEDE

Facility: Millstone 3Date of Examination: January 7-10, 2002Examination Level (circle one): ROOperating Test Number: A-1

Administrative Topic/Subject Description		Describe method of evaluation: 1. ONE Administrative JPM, OR 2. TWO Administrative Questions
A.1.1	Execute Procedure Steps (GEN 2.1.20)	JPM Complete a Shutdown Safety Assessment Checklist (OP 3260A, Conduct of Outages, Section 1.2) (41.10/43.5/45.12)
A.1.2	Use the Plant Process Computer (GEN 2.1.19)	JPM Use the plant process computer to determine current Quadrant Power Tilt Ratio ,analyze results, and recommend actions to Unit Supervisor. (bundled with SIM JPM #130) (45.12)
A.2	Tagging and Clearance Procedures (GEN 2.2.13)	JPM Given a maintenance repair recommendation and reference material, recommend a clearance boundary. (41.10/45.13)
A.3	Review RWP and Survey Maps (GEN 2.3.10)	JPM Review RWP and Survey Maps concerning a potential entry into a contaminated area (RHR Cubicles). (43.4/45.10)
A.4	RO Responsibility in E-Plan (GEN 2.4.39)	Question #1: Reporting location during an evacuation alarm?
		Question #2: Where to report in when called in during an emergency event? (45.11)

JOB PERFORMANCE MEASURE APPROVAL WORKSHEET

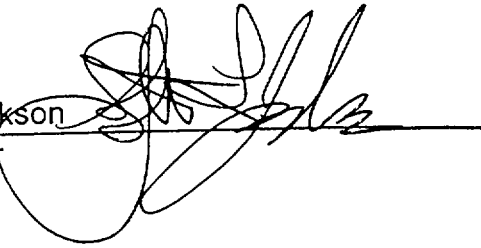
I. JPM Title: COMPLETE A SHUTDOWN SAFETY ASSESSMENT CHECKLIST

JPM ID Number: RO-A1.1

Revision: 0

II. Initiated:

Steve Jackson
Developer



10/25/01
Date

III. Reviewed:

Martin
Technical Reviewer

11/15/01
Date

IV. Approved:

Cognizant Plant Supervisor (optional)

Date

mpil
Nuclear Training Supervisor

11/26/01
Date

JOB PERFORMANCE MEASURE GUIDE

Facility: Millstone Unit 3

JPM ID Number: RO-A1.1

Revision: 0

Task Title: COMPLETE A SHUTDOWN SAFETY ASSESSMENT CHECKLIST

System: Conduct of Outages

Time Critical Task: () YES (X) NO

Validated Time (minutes): 10 min

Task Number(s): 341-01-162, Perform a Shutdown Safety Assessment Checklist

Applicable To: SRO RO X PEO

K/A Number: GEN.2.1.20, Ability to execute procedure steps K/A Rating: 4.3/4.2

Method of Testing: Simulated Performance: Actual Performance: X

Location: Classroom: X Simulator: X In-Plant:

Task Standards:

Required Materials: OP 3260A, Conduct of Outages
Current Equipment Status Worksheet

General References: None

READ TO THE STUDENT

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

JOB PERFORMANCE MEASURE GUIDE (Continued)

JPM Number: RO-A1.1

Revision: 0

Simulator Requirements: None

Initial Conditions: The unit is shutdown in Mode 5 after a refueling outage.

Initiating Cues: Plant conditions have just changed. An electrical fault has rendered the "A" SIH pump inoperable. The Shift Manager has directed you to complete a Shutdown Safety Assessment Checklist. Current equipment and unit are listed on the handout. Report to the examiner, as Shift Manager, any conditions that would require compensatory actions.

**** NOTES TO EVALUATOR ****

1. Critical steps for this JPM are indicated by an "X" after the step number. For the student to achieve a satisfactory grade, ALL critical steps must be completed correctly. The students performance is graded by an "S" for satisfactory or a "U" for unsatisfactory on each step.
2. When the student states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question the student for details of simulated actions/observations (i.e. "What are you looking at?" or "What are you observing?").

PERFORMANCE INFORMATION

JPM Number: RO-A1.1

Revision: 0

Task Title: **COMPLETE A SHUTDOWN SAFETY ASSESSMENT CHECKLIST**

Start Time: _____

STEP 1 _____

Performance Step: Obtain materials, locate correct procedure step

GRADE _____

Standards: Candidate obtains handout from examiner, copy of OP 3260A, Conduct of Outages, and form 004 the Shutdown Safety Assessment Checklist. Locates section 1.2 of OP 3260A.

Grade: SAT _____ UNSAT _____

STEP 2 X

Performance Step: CIRCLE appropriate Train Designator

GRADE _____ X

Standards: Candidate circles "A" on Form 004

Grade: SAT _____ UNSAT _____

STEP 3 X

Performance Step: CHECK appropriate boxes for conditions supporting "key safety function" for:
• RCS Decay Heat Removal

GRADE _____ X

Standards: Using handout, candidate checks appropriate boxes.
• RHR Train A
• All conditions to support natural circulation

Comment: Natural Circulation: Candidate should refer to section 1.3.3 to make this determination.

Grade: SAT _____ UNSAT _____

PERFORMANCE INFORMATION

JPM Number: RO-A1.1

Revision: 0

Task Title: **COMPLETE A SHUTDOWN SAFETY ASSESSMENT CHECKLIST**

STEP 4 X **Performance Step:** CHECK appropriate boxes for conditions supporting "key safety function" for:

- SFC Decay Heat Removal

GRADE _____ X **Standards:** Using handout, candidate checks appropriate boxes.

- SFC Train A
- >23' pool level

Comment: Fuel Offload Required Equipment should not be checked. Only for Mode 6.

Grade: **SAT** _____ **UNSAT** _____

STEP 5 X **Performance Step:** CHECK appropriate boxes for conditions supporting "key safety function" for:

- Inventory

GRADE _____ X **Standards:** Using handout, candidate checks appropriate boxes.

- Train A CHS PP & flow path

Comment: Candidate should also check RWST level >250,000 gallons and V43 tagged. However failure to do so will not effect the Safety Status.

Grade: **SAT** _____ **UNSAT** _____

STEP 6 X **Performance Step:** CHECK appropriate boxes for conditions supporting "key safety function" for:

- Power Availability

GRADE _____ X **Standards:** Using handout, candidate checks appropriate boxes.

- A EDG
- RSST
- NSST/Main

PERFORMANCE INFORMATION

JPM Number: RO-A1.1

Revision: 0

Task Title: **COMPLETE A SHUTDOWN SAFETY ASSESSMENT CHECKLIST**

- Station Blackout EDG

Grade:

SAT _____

UNSAT _____

STEP 7 X

Performance Step:

CHECK appropriate boxes for conditions supporting "key safety function" for:

- Reactivity

GRADE _____ X

Standards:

Using handout, candidate checks appropriate boxes.

- RCS Boron > required SDM
- Inventory Flow Paths (1)
- One SDM Train Operable
- Dilution paths tagged

Comment:

Inventory flow paths: Connected to the RWST and capable of injecting into the RCS. In the current plant status only the "A" CHS pump and line-up meets this criteria.

Grade:

SAT _____

UNSAT _____

STEP 8 X

Performance Step:

CHECK appropriate boxes for conditions supporting "key safety function" for:

- Containment

GRADE _____ X

Standards:

Using handout, candidate checks appropriate boxes.

- Containment Closure set

Grade:

SAT _____

UNSAT _____

STEP 9 X

Performance Step:

INITIAL appropriate boxes for conditions supporting "key safety function" for:

- PZR Surge Line Flooding

GRADE _____ X

Standards:

Using handout, candidate initials appropriate boxes.

PERFORMANCE INFORMATION

JPM Number: RO-A1.1

Revision: 0

Task Title: **COMPLETE A SHUTDOWN SAFETY ASSESSMENT CHECKLIST**

- Reactor Core refueled
- PZR vent path < 6 sq. in.

Grade: **SAT** _____ **UNSAT** _____

STEP 10 X **Performance Step:** To obtain each Key Safety Function Total, SUM the points allotted for each credited component or condition supporting the Key Safety Function and ENTER in the box

GRADE _____ X **Standards:** Candidate sums the points for each credited component or condition supporting the Key Safety Function

- RCS Decay Heat Removal **2**
- SFC Decay Heat Removal **2**
- Inventory **1**
- Power Availability **4**
- Reactivity **4**
- Containment **1**

Grade: **SAT** _____ **UNSAT** _____

STEP 11 X **Performance Step:** Using the Key Safety Function total, CIRCLE the associated color condition.

GRADE _____ X **Standards:** see examiner's copy)
Candidate circles the associated color condition for each Key Safety Function

- RCS Decay Heat Removal
 Yellow
- SFC Decay Heat Removal
 Yellow
- Inventory
 Orange
- Power Availability
 Green
- Reactivity
 Yellow
- Containment
 Green

PERFORMANCE INFORMATION

JPM Number: RO-A1.1

Revision: 0

Task Title: **COMPLETE A SHUTDOWN SAFETY ASSESSMENT CHECKLIST**

Grade: **SAT** _____ **UNSAT** _____

Comment: If the candidate attempts to continue on in the procedure beyond step 1.2.1.j, prompt him to evaluate the checklist and make recommendations to Shift Manager

STEP 12 _____

Performance Step: Report to the Unit Supervisor any conditions requiring compensatory actions

GRADE _____

Standards: Reports that all Key Safety Functions are yellow or green except INVENTORY which is **orange** and requires compensatory actions.

Comment: No further recommendations are required beyond that some compensatory actions are required.

Grade: **SAT** _____ **UNSAT** _____

Termination Cue: The Evaluation For This JPM is Complete.

Stop Time: _____

VERIFICATION OF JPM COMPLETION

JPM Number: RO-A1.1

Revision: 0

Date Performed: _____

Student: _____

Evaluator: _____

For the student 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): 5

Actual Time to Complete (minutes): _____

Result of JPM: _____ ("S" for satisfactory, "U" for unsatisfactory)

Result of oral questions (if applicable):

Number of Questions: _____

Number of Correct Responses: _____

Score: _____

Areas for Improvement:

STUDENT HANDOUT

JPM Number:

RO-A1.1

Initial Conditions:

The unit is shutdown in Mode 5 after a refueling outage.

Initiating Cues:

Plant conditions have just changed. An electrical fault has rendered the "A" SIH pump inoperable. The Shift Manager has directed you to complete a Shutdown Safety Assessment Checklist. Current equipment and unit are listed on the handout. Report to the examiner, as Shift Manager, any conditions that would require compensatory actions.

RO-A1.1 PLANT CONDITION HANDOUT

INITIAL CONDITIONS

- MODE 5
- RCS 200 psia
- PZR LEVEL 60% LEVEL COLD CAL
- "A" TRAIN PROTECTED
- "B" TRAIN ELECTRICAL OUTAGE; 34D DE-ENERGIZED
- "A" + "D" STEAM GENERATOR 50% WITH STEAM RELEASE AND FEEDING CAPABILITY
- "A" TRAIN RHR IN THE COOLDOWN MODE
- "A" TRAIN SFC RUNNING
- SFP NORMAL LEVEL
- "A" CHS IN PTL
- BOTH OFFSITE SOURCES ARE AVAILABLE
- SBO DIESEL IS AVAILABLE
- SDM MONITOR OPERABLE
- CTMT CLOSURE IS SET
- RCS BORON CONCENTRATION IS > SHUTDOWN MARGIN
- DILUTION PATHS TAGGED PER SP3604C.6
- THE RWST LEVEL IS > 1,000,000 GALLONS
- 3RHS*V43 IS TAGGED AND LOCKED CLOSED

**AN ELECTRICAL FAULT HAS RENDERED
THE "A" SIH PUMP INOPERABLE**

JOB PERFORMANCE MEASURE APPROVAL WORKSHEET

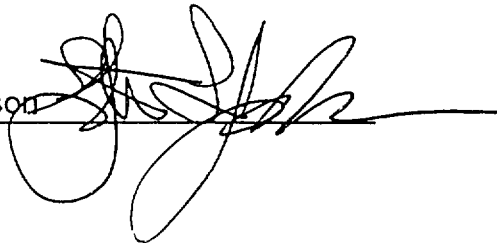
I. JPM Title: DETERMINE QPTR, ANALYZE RESULTS, AND MAKE RECOMMENDATIONS

JPM ID Number: RO-A1.2

Revision: 0

II. Initiated:

Steve Jackson
Developer



10/25/01
Date

III. Reviewed:

Ray Martin
Technical Reviewer



11/15/01
Date

IV. Approved:

Cognizant Plant Supervisor (optional)

Date


Nuclear Training Supervisor

11/20/01
Date

ADMIN JPM RO-A1.2

NOTE ON SCHEDULING OF JPM

This JPM is planned to be performed "within" SIM JPM-130, Control Rod Out of Alignment, since it flows naturally from the planned procedure path and JPM-130 establishes all of the conditions for ADMIN JPM RO-A1.2, Determine QPTR.

JOB PERFORMANCE MEASURE GUIDE

Facility: Millstone Unit 3

JPM ID Number: RO-A1.2

Revision: 0

Task Title: DETERMINE QPTR, ANALYZE RESULTS, AND MAKE RECOMMENDATIONS

System: Admin, Rod Control

Time Critical Task: () YES (X) NO

Validated Time (minutes): 5 min

Task Number(s): 341-01-788, Perform a QPTR

Applicable To: SRO RO X PEO

K/A Number: GEN.2.1.19, Ability to use plant computer to obtain and evaluate parametric information on system or component status K/A Rating: 3.0/3.0

Method of Testing: Simulated Performance: Actual Performance: X

Location: Classroom: Simulator: X In-Plant:

Task Standards:

Required Materials: Plant Process Computer
SP 31012, Quadrant Power Tilt Ratio, Rev. 4
Reactor Engineering Curve and Data Book

General References: MP3 Tech Specs
AOP 3552, Malfunction of the Rod Drive System, Rev. 3

*****READ TO THE STUDENT*****

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

JOB PERFORMANCE MEASURE GUIDE (Continued)

JPM Number: RO-A1.1

Revision: 0

Simulator Requirements: Set-Up for JPM-130, Control Rod Out of Alignment; at step 3.b of Attachment A.
On Plant Process Computer substitute values for the following instruments:
NMP-NM43C and NMP-NM43D substitute "0"

Initial Conditions: You are realigning a misaligned rod IAW AOP 3552, Malfunction of the Rod Drive System, Attachment A; Misaligned Rod. You are at step 3.b having just determined that reactor power is greater than 50%.

Initiating Cues: Complete AOP 3552, step 3.b through step 3.d and Determine QPTR.

**** NOTES TO EVALUATOR ****

1. Critical steps for this JPM are indicated by an "X" after the step number. For the student to achieve a satisfactory grade, ALL critical steps must be completed correctly. The students performance is graded by an "S" for satisfactory or a "U" for unsatisfactory on each step.
2. When the student states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question the student for details of simulated actions/observations (i.e. "What are you looking at?" or "What are you observing?").

PERFORMANCE INFORMATION

JPM Number: RO-A1.2

Revision: 0

Task Title: DETERMINE QPTR, ANALYZE RESULTS, AND MAKE
RECOMMENDATIONS

Start Time: _____

STEP 1 X

Performance Step: Candidate uses Plant Process
Computer, Tilting Factors, determine
QPTR

GRADE _____ X

Standards: At PPC monitor or Real Time MMI,
locates and calls up Tilting Factors

Grade: SAT _____ UNSAT _____

STEP 2 X

Performance Step: Determine Tilting Factors using Plant
Process Computer.

GRADE _____ X

Standards: Candidate determines that 3 of the NI
channels are valid information and
records that information, but should
determine that one channel is NOT
providing good QPTR information via
the Plant Process Computer.

- NI 41: ~1.03
- NI 42: ~1.03
- NI 43: **FAILED**
- NI 44: ~1.03

Grade: SAT _____ UNSAT _____

Comments: Candidate should record "good" data
and proceed to SP 31012

PERFORMANCE INFORMATION

JPM Number: RO-A1.2

Revision: 0

Task Title: DETERMINE QPTR, ANALYZE RESULTS, AND MAKE RECOMMENDATIONS

STEP	<u>3</u>		Performance Step:	Go To SP31012, QPTR, Step 4.2: QPTR by measurement
GRADE			Standards:	Locates copy of SP31012 and correct section
			Grade:	SAT <u> </u> UNSAT <u> </u>
STEP	<u>4</u>	<u>X</u>	Performance Step:	RECORD average percent reactor power from NI cabinet meters NMP-NM43F on Attachment 1 (step 4.2.1)
GRADE		<u>X</u>	Standards:	Locates NMP-NM43F and records average percent reactor using Attachment 1
			Grade:	SAT <u> </u> UNSAT <u> </u>
STEP	<u>5</u>	<u>X</u>	Performance Step:	RECORD upper and lower detector digital meter reading for NMP-NM43C and NMP-NM43D on Attachment 1. (step 4.2.3.a.1)
GRADE		<u>X</u>	Standards:	Locates NMP-NM43C and NMP-NM43D and upper and lower detector digital meter reading using Attachment 1
			Grade:	SAT <u> </u> UNSAT <u> </u>
STEP	<u>6</u>	<u>X</u>	Performance Step:	RECORD data source in "Remarks" section on Attachment 1 (step 4.2.3.b)
GRADE		<u>X</u>	Standards:	Locates Remarks" section on Attachment 1 and records at least that Channel 43 data came from NMP-NM43C and NMP-NM43D, upper and lower detector digital meter.

PERFORMANCE INFORMATION

JPM Number: RO-A1.2

Revision: 0

Task Title: DETERMINE QPTR, ANALYZE RESULTS, AND MAKE RECOMMENDATIONS

			Grade:	SAT _____	UNSAT _____
STEP	<u>7</u>	<u>X</u>	Performance Step:	On Attachment 1, RECORD 100% NI upper and lower currents from Attachment 2. (step 4.2.4.a)	
GRADE	_____	<u>X</u>	Standards:	Locates current Attachment 2 in Reactor Engineering Curve Book and records 100% NI upper and lower currents on Attachment 1.	
			Grade:	SAT _____	UNSAT _____
STEP	<u>8</u>	<u>X</u>	Performance Step:	RECORD data source and date of Attachment 2 entry in "Remarks" section on Attachment 1 (step 4.2.4.b)	
GRADE	_____	<u>X</u>	Standards:	Locates Remarks" section on Attachment 1 and records data source and date of Attachment 2 entry.	
			Grade:	SAT _____	UNSAT _____
STEP	<u>9</u>	<u>X</u>	Performance Step:	CALCULATE the detector ratio for each detector by dividing each detectors reading by that detectors 100% current and RECORD on Attachment 1. (step 4.2.4.c)	
GRADE	_____	<u>X</u>	Standards:	Uses step instructions and calculates detector ratio for AT LEAST channel 43.	
			Grade:	SAT _____	UNSAT _____

PERFORMANCE INFORMATION

JPM Number: RO-A1.2

Revision: 0

Task Title: DETERMINE QPTR, ANALYZE RESULTS, AND MAKE RECOMMENDATIONS

STEP 10 X **Performance Step:** CALCULATE the average upper and lower ratio and RECORD on Attachment 1. (step 4.2.4.d)

GRADE X **Standards:** Uses step instructions and calculates average upper and lower detector ratio.

Grade: SAT UNSAT

STEP 11 X **Performance Step:** CALCULATE power tilt for each detector and RECORD in QPTR section of Attachment 1. (step 4.2.4.e)

GRADE X **Standards:** Uses formulae in step 4.2.4.e and calculates power tilt for AT LEAST channel 43.

Grade: SAT UNSAT

STEP 12 X **Performance Step:** RECORD maximum upper and lower QPTR and associated channel on Attachment 1. (step 4.2.4.f)

GRADE X **Standards:** DETERMINES maximum upper and lower QPTR and associated channel and records on Attachment 1

Grade: SAT UNSAT

STEP 13 X **Performance Step:** VERIFY maximum QPTR does not exceed 1.02 (step 4.2.6.a)

GRADE X **Standards:** Determines QPTR is >1.02

Grade: SAT UNSAT

PERFORMANCE INFORMATION

JPM Number: RO-A1.2

Revision: 0

Task Title: DETERMINE QPTR, ANALYZE RESULTS, AND MAKE
RECOMMENDATIONS

STEP 14 X **Performance Step:** IF QPTR is greater than 1.02 and power is above 50% RTP, NOTIFY Shift Manager that Technical Specification 3/4.2.4, "Quadrant Power Tilt Ratio," action statement applies (step 4.2.6.b)

GRADE X **Standards:** Determines QPTR is >1.02 and notifies the examiner acting as Shift Manager that Technical Specification 3/4.2.4, "Quadrant Power Tilt Ratio," action statement applies.

Grade: SAT UNSAT

Termination Cue: The Evaluation For This JPM is Complete. Return to AOP 3552, Attachment A, Step 3.e, and continue your actions with the Misaligned Rod.

Stop Time:

VERIFICATION OF JPM COMPLETION

JPM Number: RO-A1.2

Revision: 0

Date Performed: _____

Student: _____

Evaluator: _____

For the student 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): 5

Actual Time to Complete (minutes): _____

Result of JPM: _____ ("S" for satisfactory, "U" for unsatisfactory)

Result of oral questions (if applicable):

Number of Questions: _____

Number of Correct Responses: _____

Score: _____

Areas for Improvement:

STUDENT HANDOUT

JPM Number:

RO-A1.2

Initial Conditions:

You are realigning a misaligned rod IAW AOP 3552, Malfunction of the Rod Drive System, Attachment A; Misaligned Rod. You are at step 3.b having just determined that reactor power is greater than 50%.

Initiating Cues:

Complete AOP 3552, step 3.b through step 3.d and Determine QPTR.

JOB PERFORMANCE MEASURE APPROVAL WORKSHEET

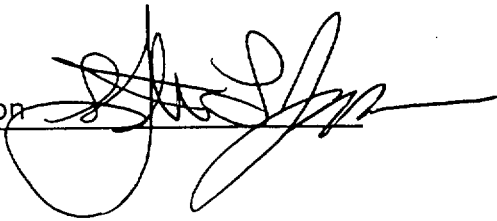
- I. JPM Title: Given a maintenance repair recommendation and reference material, recommend a clearance boundary.

JPM ID Number: RO-A2

Revision: 0

- II. Initiated:

Steve Jackson
Developer



10/31/01
Date

- III. Reviewed:

Ray Martin
Technical Reviewer



11/15/01
Date

- IV. Approved:

Cognizant Plant Supervisor (optional)

Date


Nuclear Training Supervisor

11/20/01
Date

JOB PERFORMANCE MEASURE GUIDE

Facility: Millstone Unit 3

JPM ID Number: RO-A2

Revision: 0

Task Title: Given a maintenance repair recommendation and reference material, recommend a clearance boundary.

System: Tagging and Clearance

Time Critical Task: () YES (X) NO

Validated Time (minutes): 10 min

Task Number(s): 341-01-079, Develop and/or modify, review, authorize, install, verify, and clear a tag clearance in accordance with plant and/or site procedural and safety requirements

Applicable To: SRO RO X PEO

K/A Number: GEN.2.2.13, Knowledge of Tagging and Clearance Procedures K/A Rating: 3.6/3.8

Method of Testing: Simulated Performance: Actual Performance: X

Location: Classroom: X Simulator: In-Plant:

Task Standards: Develop and review a tag clearance

Required Materials: Team Lead recommendation
P&IDs, EM-109A
EE One-Line diagrams
OP 3337, Radioactive Gaseous Waste System

General References: WC 2, Tagging
OP 3250, Removing Equipment from Service for Maintenance

READ TO THE STUDENT

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

JOB PERFORMANCE MEASURE GUIDE (Continued)

JPM Number: RO-A2

Revision: 0

Simulator Requirements: NONE

Initial Conditions: The pump impeller on the "B" Degasifier Recirculation Pump, 3GWS-P1B, has seized. Repair efforts are planned and the maintenance Team Lead has made work package recommendations for the clearance boundary.

Initiating Cues: Your task is to develop a clearance boundary for this repair activity based on the maintenance Team Lead recommendations. .

**** NOTES TO EVALUATOR ****

1. Critical steps for this JPM are indicated by an "X" after the step number. For the student to achieve a satisfactory grade, ALL critical steps must be completed correctly. The students performance is graded by an "S" for satisfactory or a "U" for unsatisfactory on each step.
2. When the student states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question the student for details of simulated actions/observations (i.e. "What are you looking at?" or "What are you observing?").

PERFORMANCE INFORMATION

JPM Number: RO-A2

Revision: 0

Task Title: Given a maintenance repair recommendation and reference material, recommend a clearance boundary.

Start Time: _____

			Comments:	Electrical and mechanical isolation of the pump can be done in any order
STEP	<u>1</u>	<u>X</u>	Performance Step:	Identifies correct piping isolation boundary for the "B" Degasifier Recirculation Pump, 3GWS-P1B
GRADE	_____	<u>X</u>	Standards:	Uses P&ID EM-109A or OP3337-001 and other appropriate references and identifies the correct boundary: <ul style="list-style-type: none">• Pump Discharge (V010) CLOSED• Pump Suction (V006) CLOSED• Casing Drain (V107) OPEN• Discharge Vent (V972) OPEN
			Grade:	SAT _____ UNSAT _____
STEP	<u>2</u>	<u>X</u>	Performance Step:	Identifies correct electrical isolation boundary for the "B" Degasifier Recirculation Pump, 3GWS-P1B
GRADE	_____	<u>X</u>	Standards:	Uses OP3337-004, electrical line-up, or EE-1AC and other appropriate references and identifies the correct boundary: <ul style="list-style-type: none">• At MCC 32-3H(2M) OFF• Pump Control Switch OFF
			Grade:	SAT _____ UNSAT _____
			Comments:	Submits completed tagout to examiner as the Shift Manager. Tagout should substantially match the JPM attachment.

Termination Cue: The Evaluation For This JPM is Complete.

Stop Time: _____

VERIFICATION OF JPM COMPLETION

JPM Number: RO-A2

Revision: 0

Date Performed: _____

Student: _____

Evaluator: _____

For the student 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): 10

Actual Time to Complete (minutes): _____

Result of JPM: _____ ("S" for satisfactory, "U" for unsatisfactory)

Result of oral questions (if applicable):

Number of Questions: _____

Number of Correct Responses: _____

Score: _____

Areas for Improvement:

STUDENT HANDOUT

JPM Number:

RO-A2

Initial Conditions:

The pump impeller on the “B” Degasifier Recirculation Pump, 3GWS-P1B, has seized. Repair efforts are planned and the maintenance Team Lead has made work package recommendations for the clearance boundary.

Initiating Cues:

Your task is to develop a clearance boundary for this repair activity based on the maintenance Team Lead recommendations.

Attachment 7
Tagout Request
(Sheet 1 of 1)

NOTE: When this request is used, all sections should be filled out in detail.		
Brief Job Description: <i>Replace impellar on 3 GWS-PIB</i>		
Work Package Number: <i>M3 0110525</i>		
Component to be Isolated⁽¹⁾: <i>3 GWS-PIB</i>		
Multiple isolation points or non-component (i.e.: pipe/tube section): Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> (If yes, walkdown required by Tagging Authority)		
Recommended Tags		
Color	Isolation Point	Position⁽¹⁾
(1) For Blue Tags indicate initial position or if initial position is <i>not</i> required enter N/A.		
Amplifying Instructions:		
Contact Person (for multiple shifts, Contact Person is required for each shift) <i>J. Smith</i>		phone: <i>0123</i>
Approved By: <div style="text-align: center;"><i>J. Smith</i> Team Leader / Planner / Engineering</div>		Date:

Level of Use
Information

STOP

THINK

ACT

REVIEW

WC 2
Rev. 006-02
68 of 81

WORK PACKAGE BONDARY SHEET

KEY

11/06/2001 20:11
Sheet 1 Of 1

Clearance 3C08 - GWS06-0006 Number:	
--	--

AWO Number: M30110525	Clearance Adequate for Personnel Safety: Contact Person/Designee Sign	Date:
--------------------------	--	-------

Step Number	Tag Type	Tagged Position	Tag Serial Number	Equipment ID	Equipment Description	Equipment Location	Notes	Tag Placed:	Tag Verified:	Worker Verified
1	YEL		2461	3GWS-P1B-CS	B DEGASIFIER RECIRCULATION PUMP; CNTRL SWITCH	3_AB _04306_ GWS PANEL	POWER IS RED TAGGED OFF	06/18/2001 07:27	06/18/2001 07:27	
2	RED	OFF	2462	32-3H(2M)	3GWS-P1B DEGASIFIER RECIRCULATION PUMP	3_AB _02406_ NORTHWEST		06/18/2001 07:27	06/18/2001 07:27	
3	RED	CLOSED	6901	3GWS-V010	DEGASIFIER RECIRC PUMP (B) DISCHARGE	3_AB _00406_DEGAS		11/06/2001 16:17	11/06/2001 16:51	
4	RED	CLOSED	6902	3GWS-V006	DEGASIFIER RECIRC PUMP "B" SUCTION	3_AB _00406_DEGAS		11/06/2001 16:17	11/06/2001 16:51	
5	RED	OPEN	6903	3GWS-V107	DEGASIFIER RECIRC PUMP (B) CASING DRAIN	3_AB _00406_DEGAS		11/06/2001 16:17	11/06/2001 16:51	
6	RED	OPEN	6904	3GWS-V972	DEGASIFIER RECIRC PUMP (B) DISCHARGE VENT	3_AB _00406_DEGAS		11/06/2001 16:17	11/06/2001 16:51	

JOB PERFORMANCE MEASURE APPROVAL WORKSHEET

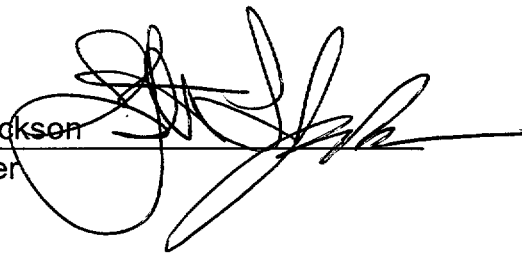
I. JPM Title: Review an RWP and Survey Maps concerning a potential entry into a Contaminated Area (RHR Cubicles)

JPM ID Number: RO-A3

Revision: 1

II. Initiated:

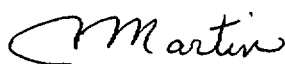
Steve Jackson
Developer



11/28/01
Date

III. Reviewed:

CMartin
Technical Reviewer



12/14/01
Date

IV. Approved:

Cognizant Plant Supervisor (optional)

Date

Nuclear Training Supervisor



12/18/01
Date

ADMIN JPM RO-A3

SUMMARY OF CHANGES RE: NRC VALIDATION

Added, "ALARA considerations for this task" to the initiating cue.

Added, "and ALARA considerations" to step 4, performance step area and standards

JOB PERFORMANCE MEASURE GUIDE

Facility: Millstone Unit 3

JPM ID Number: RO-A3

Revision: 1

Task Title: Review an RWP and Survey Maps concerning a potential entry into a Contaminated Area (RHR Cubicles)

System: Rad worker

Time Critical Task: () YES (X) NO

Validated Time (minutes): 5 min

Task Number(s): 119-03-070, Approve entry and/or enter/exit the various radiation areas located within Millstone Station

Applicable To: SRO X RO X PEO X

K/A Number: GEN.2.3.10, Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposure K/A Rating: 2.9/3.3

Method of Testing: Simulated Performance: _____ Actual Performance: X

Location: Classroom: X Simulator: _____ In-Plant: X

Task Standards: Reviews RWP per RPM 5.2.2 to support the ALARA Program

Required Materials: RWP for A RHR Cubicle (040) and Rad Survey Figure #30

General References: Radiation Work Permits and Radiation Survey Maps
RPM 5.2.2, Basic Radiation Worker Responsibilities

READ TO THE STUDENT

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

JOB PERFORMANCE MEASURE GUIDE (Continued)

JPM Number: RO-A3

Revision: 1

Simulator Requirements: NONE

Initial Conditions: You have been directed to vent piping in the A RHR pump cubicle. HP has directed you to use the maintenance RWP 0040, Task 2 for this job. **(Give candidate RWP 0040 and survey map #30)**

Initiating Cues: Review and discuss your preparations for entering this area and what special precautions you would have to observe. Include in your discussion:

- ALARA considerations for this task
- Highest contamination level in the cubicle
- Highest radiation level in the cubicle
- Special radiological hazards
- Longest possible stay time assuming highest general area rad level
- Personnel protective equipment required in the cubicle

The examiner will act as Health Physics for any related questions.

**** NOTES TO EVALUATOR ****

1. Critical steps for this JPM are indicated by an "X" after the step number. For the student to achieve a satisfactory grade, **ALL** critical steps must be completed correctly. The student's performance is graded by an "S" for satisfactory or a "U" for unsatisfactory on each step.
2. When the student states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question the student for details of simulated actions/observations (i.e. "What are you looking at?" or "What are you observing?").

PERFORMANCE INFORMATION

JPM Number: RO-A3

Revision: 1

Task Title: Review an RWP and Survey Maps concerning a potential entry into a Contaminated Area (RHR Cubicles)

Start Time: _____

Ensure candidate has RWP 0040 and survey map #30

STEP	<u>1</u>	<u> </u>	Performance Step:	Refers to RWP #40 (A RHR Cubicle)
GRADE	<u> </u>	<u> </u>	Standards:	Locates Task 2, RHR Cubicle walkdowns and inspections, covered under RWP #40
			Grade:	SAT <u> </u> UNSAT <u> </u>
STEP	<u>2</u>	<u>X</u>	Performance Step:	Locates specific requirements on RWP for at least: <ul style="list-style-type: none"> • Protective clothing • Dosimetry • Dose Limit Alarms • Dose Rate Alarms
GRADE	<u> </u>	<u>X</u>	Standards:	Reviews RWP for specific requirements including: <ul style="list-style-type: none"> • Protective clothing -for this task full-PCs • Dosimetry -TLD & electronic dosimeter • Dose Limit & Dose Rate Alarms • -75 mrem & 200 mr/hr

Cue:	<p>If candidate does not discuss an individual item:</p> <p>"What are the protective clothing requirements for this area?</p> <p>"What are the dosimetry requirements for this area?</p> <p>"What are the Dose Limit & Dose Rate Alarms requirements for this area?</p>
-------------	---

PERFORMANCE INFORMATION

JPM Number: RO-A3

Revision: 1

Task Title: Review an RWP and Survey Maps concerning a potential entry into a Contaminated Area (RHR Cubicles)

Cue: If candidate asks HP for area protective clothing requirements for this area respond:
 "What would you expect them to be?
 And then
 "Full PCs are required in this area for the task you are performing."

Grade: SAT _____ UNSAT _____

STEP 3 X

Performance Step: Reviews the survey map for ESF Building 4' - 6" Elev. proposed to be entered

GRADE _____ X

Standards: Reviews survey map for specific radiation and contamination hazards in the A RHR Cubicle including:

- Smear results
 - Smear results #18, #19, #20
- Gamma Surveys
 - 280 mrem/hr gamma on contact at RHR pump and HX
 - 40 mrem/hr highest general area gamma
- Contaminated areas
 - No. 18 highest, 15K
- Hot Spots
 - locates on RHR piping (280 mrem/hour)

Grade: SAT _____ UNSAT _____

Cue: If candidate does not discuss an individual item:
 "What are the **smear results** requirements for this area?
 "What are the results of the **gamma surveys** of this area?
 "Where are the **contaminated** areas?"
 "Where are the **hot spots**?"

PERFORMANCE INFORMATION

JPM Number: RO-A3

Revision: 1

Task Title: Review an RWP and Survey Maps concerning a potential entry into a Contaminated Area (RHR Cubicles)

STEP 4 X **Performance Step:** Analyze survey map and RWP to determine preparations for entering this area and what special precautions and ALARA considerations they would have to observe.

GRADE _____ X **Standards:** Analyze survey map and RWP to determine the following:

- Highest contamination level in the cubicle
 - Pt. 19: 15K
- Highest radiation level in the cubicle
 - 80mrem/hr on contact (A RHR Pump)
- Special radiological hazards
 - Wet/Boron near pump
 - Hot Spot
- Longest possible stay time assuming highest rad level
 - Dose Limit Alarm (**Stay Time**) is 125 mrem
 - Highest general area rad level is 40mrem/hr
 - = about 3.125 hours**
 - (figuring in approaching Hot Spots **may** reduce this time).
- Personnel protective equipment required in the cubicle
 - Full PC's
- ALARA considerations
 - Avoidance of Hot Spot*
 - Minimize wait/rest time in higher radiation areas
 - Prepare for task (pre-stage tools)

Grade:

SAT _____

UNSAT _____

PERFORMANCE INFORMATION

JPM Number: RO-A3

Revision: 1

Task Title: Review an RWP and Survey Maps concerning a potential entry into a Contaminated Area (RHR Cubicles)

Comment::

*Definition of Hot Spot: >100 mr AND
5 times highest background/general
area

Termination Cue: The Evaluation For This JPM is Complete.

Stop Time: _____

VERIFICATION OF JPM COMPLETION

JPM Number: RO-A3

Revision: 1

Date Performed: _____

Student: _____

Evaluator: _____

For the student 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): 5

Actual Time to Complete (minutes): _____

Result of JPM: _____ ("S" for satisfactory, "U" for unsatisfactory)

Result of oral questions (if applicable):

Number of Questions: _____

Number of Correct Responses: _____

Score: _____

Areas for Improvement:

STUDENT HANDOUT

JPM Number:

RO-A3

Initial Conditions:

You have been directed to vent piping in the A RHR pump cubicle. HP has directed you to use the maintenance RWP 0040, Task 2 for this job.

Initiating Cues:

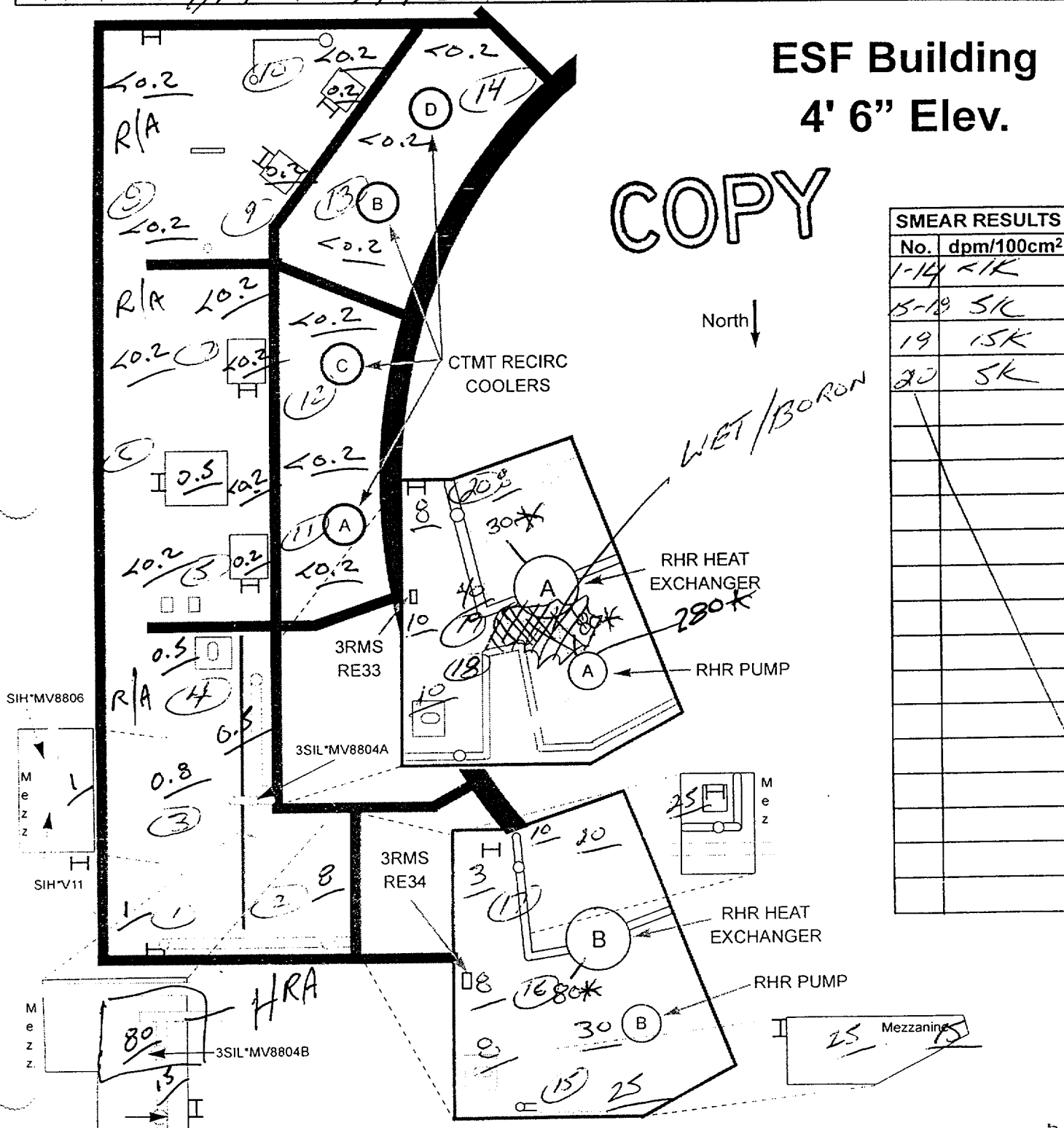
Review and discuss your preparations for entering this area and what special precautions you would have to observe. Include in your discussion:

- ALARA considerations for this task
- Highest contamination level in the cubicle
- Highest radiation level in the cubicle
- Special radiological hazards
- Longest possible stay time assuming highest general area rad level
- Personnel protective equipment required in the cubicle

The examiner will act as Health Physics for any related questions.

CR

Date 10/2/01	Survey By Signature C. Mah		Reviewed By J. Mah		Type Of Survey <input checked="" type="checkbox"/> Routine <input type="checkbox"/> Special	
Time 1130	Print Name C. Mah		% Reactor Power 100		<input type="checkbox"/> RWP # _____	
Type	Instrument Type	Serial Number	1/Efficiency	Background	Calibration Due Date	
Y	R02	2886	N/A	N/A	1-02	
oH ¹			N/A	N/A		
α						
β+γ	RM14	1948	10	100	1-02	



100 - gamma(γ) at waist level in mrem/hr
 (2) - contamination survey point

100* - gamma(γ) contact in mrem/hr
50 mrad - beta(β) reading in mrad/hr

25η - neutron(₀η¹) in mrem/hr

RADIATION WORK PERMIT - 40

Plant Code	Year	RWP Number	Rev.	RWP Start	RWP Type	RWP Category	RWP Expiration
3	1	0040	03	01-jan-2001	S	POWER	02-jan-2002

RWP DESCRIPTION

ESF Building Component & System Modification, Repair

TASK SUMMARY

Job	Description
1	3DAS-P11 - Replace discharge piping.
2	RHR Cubicle-ESF north pipechase preventive and correc
3	RHR Heat Exchanger bolting inspection; remove, instal
4	RHR valve work; 3RHS*HCV607, 3RHS*FCV619 preventive a

ALARA INFORMATION

ALARA Review	Hours- Estimated Authorized	Internal(DAC)- Estimated Authorized	External (mRem)-Estimated Authorized
	01900 00000	0000 0000	001900 001900

SPECIAL INSTRUCTIONS

General access to RCAs to perform repairs and modification to ESF Building components, including walkdowns, inspections, and necessary support activities.

Entry on this RWP requires the worker to understand and comply with the following:

- ** Be knowledgeable of radiological conditions of the work area
- ** Adhere to the requirements of the RWP
- ** Notify HP before entering overhead areas
- ** Monitor electronic dosimeter frequently, especially in high noise areas
- ** Unless specifically briefed otherwise, if DOSE RATE alarm sounds, move to a lower dose area and notify HP
- ** If DOSE alarm sounds, leave the area and notify HP
- ** If electronic dosimeter malfunctions, notify HP BEFORE logging out
- ** Modesty garments will be worn whenever PCs are worn

Health Physics Representative Date

COPY

RWP Term/Rev Date/Time

Terminated/Rev by

John J. S. 11/14/01

RADIATION WORK PERMIT - (40) JOB STEP - 2 OF 4

Plant Code 3	Year 1	RWP Number 0040	Rev. 03	RWP Start 01-jan-2001	RWP Type S	RWP Category POWER	RWP Expiration 02-jan-2002
Responsible Individual/Extension THOMAS BURNS/4326				Department/Company AD/DNC		Job Supervisor/Extension THOMAS BURNS/4326	
Building 3ESF		Floor 4'6"	Zone		Location ESF 4'6" GEN/UNIDENTIFIED AREA		Plant Equipment MISCELLANEOUS
							Rad. Area Type

WRITTEN DESCRIPTION OF JOB (MATERIALS & METHODS)

RHR Cubicle-ESF north pipechase preventive and corrective maintenance to components, walkdowns, inspections, necessary support activities.

ALARA INFORMATION

ALARA Review No	Hours- Estimated Authorized 00900 00000	Internal (DAC)- Estimated Authorized 00000 00000	External (mRem)-Estimated Authorized 000900 000900
System Code 3305	Component Code MISC	Task REPLACE	NRC Task SP
Alara Zone 3CMAI		Location. 3720	
Plant Equipment 3000			

SURVEY MEASUREMENTS

RADIATION (MR/HR)

CONTAMINATION (DPM/100CM2)

AIRBORNE (DAC)

RHR Cubicle	40 - 200	5K - 20K	<.3
4" Pipe Chase Platform Area	5 - 50	<1K	<.3

SPECIAL INSTRUCTIONS

entry to Tech Spec Locked High Radiation Areas
permitted using this Job Step.

PCs required in contaminated areas.

HP supervision may adjust protective clothing
requirements based on any of the followig:

- * TEDE ALARA reviews
- * Heat stress evaluations
- * FME controls

Requirements for entry to High Radiation Areas:

- * Dose rate meter or alarming dosimeter AND
knowledge of area dose rates, OR
continuous HP coverage
- * Health Physics briefing for High Radiation Areas

Dose Limit Alarm(Stay Time)= 0125 mrem Dose Rate Alarm= 0200 mr/hr
Elapsed Time Alarm= 0000 min.

REQUIREMENTS

Protective clothing: * Cotton liners * Booties * Coveralls * Shoe covers * Rubber gloves * Modesty garments	Lab coat Surgeon's gloves Electronic dosimeter TLD	Health Physics Coverage Periodic Minimum Margin: 0175 mrem
---	---	---

Health Physics Representative Date

RWP Term/Rev Date/Time

Terminated/Rev by

COPY

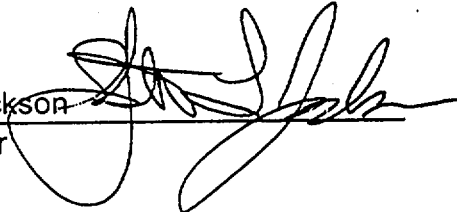
[Signature] 11/19/01

I. JPM Title: Reactor Operator E-Plan Responsibilities

JPM ID Number: RO-A.4

Revision: 0

II. Initiated:


Steve Jackson
Developer

10/05/01
Date

III. Reviewed:



Technical Reviewer

11/19/01
Date

IV. Approved:

Cognizant Plant Supervisor (optional)

Date


Nuclear Training Supervisor

11/20/01
Date

Questions for Admin RO A.4

Topic: RO responsibilities during an E-Plan

GEN. 2.4. 39 K/A: 3.3/3.1

Question 1:

You are a qualified Control Operator currently working with the Outage Planning Group. You are eating lunch in the building 475 cafeteria when you hear the evacuation alarm sound. The message following the siren states that an ALERT C-1 has been declared and all non essential personnel evacuate the site via the North Access Point. Where do you go?

Question 2:

You are a qualified Control Operator currently working with the Outage Planning Group. You receive a call at home from the Manager of Resources. He states that a SERO activation has occurred, site access has been restricted and you are requested to report to provide shift relief coverage. Where do you report and to whom do you report?

ANSWER KEY

Questions for Admin RO A.4

Topic: RO responsibilities during an E-Plan

GEN. 2.4. 39 K/A: 3.3/3.1

Question 1:

You are a qualified Control Operator currently working with the Outage Planning Group. You are eating lunch in the building 475 cafeteria when you hear the evacuation alarm sound. The message following the siren states that an ALERT C-1 has been declared and all non essential personnel evacuate the site via the North Access Point. Where do you go?

Answer: In accordance with EPI-FAP08, Evacuation and Assembly, non on-duty/on-call SERO personnel within the protected area will report to the **OSC Assembly Area** in the Bldg. 475 Cafeteria.

Question 2:

You are a qualified Control Operator currently working with the Outage Planning Group. You receive a call at home from the Manager of Resources. He states that a SERO activation has occurred, site access has been restricted and you are requested to report to provide shift relief coverage. Where do you report and to whom do you report?

Answer: Since site access has been restricted, the qualified Control Operator should report to the **EOF** and **the Manager of Resources**. The Manager of Resources then will contact the requesting party and arrange access to the site for the individual.