JOB PERFORMANCE MEASURE APPROVAL SHEET

I. JPM Title: **Validate an ECP (Faulted)**

ID Number: JPM-A1RO Revision: 0

II. Initiated:

Richard J. Ashey — Developer — 1/16/2005 Date

III. Reviewed:

Technical Reviewer — 1/26/05 Date

IV. Approved:

User Department Supervisor — Date

Nuclear Training Supervisor — 1/26/05 Date

JOB PERFORMANCE MEASURE WORKSHEET

Facility: MP-2 Examinee: _____

JPM Number: JPM-A1RO Rev. 0

Task Title: **Validate an ECP (Faulted)**

System: Administrative

Time Critical Task: Yes ____ No X

Validated Time (minutes): 35

Task No.(s): NUTIMS #121-09-195

Applicable To: SRO X RO X PEO ____

K/A No.: 2.1.25 K/A Rating: 2.8/3.1

Method of Testing:

Simulated Performance: ____ Actual Performance: X

Location:

Classroom: X Simulator: X In-Plant: X

Task Standards:	The examinee reviews the completed ECP and determines that there is an error.
Required Materials (procedures,equipment):	OP 2208, Reactivity Calculations, Rev. 13-05 Completed ECP Data and Analysis Sheet, OP 2208-001 ECP Reference Data Sheet, Attachment 1
General References:	OP 2208, Reactivity Calculations, Rev. 13-05

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

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

JOB PERFORMANCE MEASURE WORKSHEET

JPM Number: JPM-A1RO Rev. 0

Initiating Cues: The US has directed you to validate a completed ECP in accordance with OP 2208, Reactivity Calculations, without the use of the PPC.

Initial Conditions:

- A Reactor startup is planned to begin within the next 30 minutes with criticality anticipated 2 hours from now.
- The PPC is presently unavailable, but will be returned to service prior to the startup.
- An ECP was completed 5 minutes ago.
- Desired critical position is group 7 at 55 steps
- The following conditions exist:
  - The plant tripped from 100% power 18 hours ago.
  - The plant had been at 100% for the past 220 days.
  - Present RCS Boron is 460
  - Present Burnup provided by Reactor Engineering is 12,988 MWD/MTU
  - RCS Tavg is being maintained constant at 532°F.
- Reference data taken at 0900 on 03/15/05 at 100% power is as follows:
  - 572° Tavg
  - 2.794 %$\Delta\rho$ Xenon
  - 0.900 %$\Delta\rho$ Samarium
  - 12,850 MWD/MTU Burnup
  - 340 ppm RCS Boron
  - Group 7 CEAs at 180 steps
- Data is good until 14,000 MWD/MTU

Simulator Requirements: N/A

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

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

PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-A1RO TITLE: Validate an ECP (Faulted)

START TIME: _____

STEP **1** ___ Performance Steps: Verify the following:

- Reactor Engineering has completed and provided reference critical position data on Attachment 1, "ECP Reference Data Sheet" (ECP Data Book)
- Chemistry Department has been requested to sample and determine present RCS boron concentration.

GRADE ___ ___ Standards: *Examinee obtains and/or asks for Attachment 1, ECP Reference Data Sheet and the RCS Boron concentration.*

Cue:
- **Provide the filled out copy of OP 2208-001, ECP Reference Data Sheet and Attachment 1, ECP Reference Data Sheet.**
- **If requested, as chemistry, report that the RCS Boron concentration was reported 30 minutes ago.**

Comments:

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STEP **2** _X_ Performance Steps: Refer To Attachment 1 and TRANSFER Reference Critical Data.

GRADE ___ _X_ Standards: *Examinee verifies the critical data on OP 2208-001, ECP Data and Analysis Sheet is the same as the Reference Critical Data on Attachment 1.*

Cue:

Comments:

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PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-A1RO TITLE: Validate an ECP (Faulted)

STEP **3** _X_ Performance Steps: RECORD the following Estimated Status at Criticality data:
- Date and time
- RCS temperature (T_{AVG})

GRADE ___ _X_ Standards: *Examinee ensures the Estimated Status at Criticality is as follows:*
- *The date is today*
- *The time is two hours from now*
- *T_{AVG} is 532°F.*

Cue:

Comments:

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STEP **4** _X_ Performance Steps: OBTAIN present burnup from one of the following and RECORD:
- "CVBURNUP" (PPC)
- Reactor Engineering.

GRADE ___ _X_ Standards: *Examinee obtains Burnup from the initial data sheet and verifies 12,988 MWD/MTU is entered on the ECP Data and Analysis Sheet.*

Cue:

Comments:

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PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-A1RO TITLE: Validate an ECP (Faulted)

STEP **5** _X_ Performance Steps: Unless otherwise specified by Reactor Engineering, CHECK core burnup *change* from reference data specified on Attachment 1, to present burnup, does *not* exceed 1,000 MWD/MTU.

GRADE ___ _X_ Standards: *Examinee determines the change in burnup is less than 1000 MWD/MTU.*

Cue: **If asked, as Reactor Engineering, there are no additional requirements for the core burnup change.**

Comments:

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STEP **6** _X_ Performance Steps: WHEN sample results are obtained, RECORD present boron concentration.

GRADE ___ _X_ Standards: *Examinee verifies the recorded present boron concentration on OP 2208-001, ECP Data and Analysis Sheet is 4600 ppm.*

Cue: **If asked, as chemistry, report that the RCS Boron concentration was reported 30 minutes ago.**

Comments:

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PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-A1RO TITLE: Validate an ECP (Faulted)

STEP **7** _X_ Performance Steps: Refer to Attachment 1 and RECORD Desired Critical CEA Position.

GRADE ___ _X_ Standards: *Examinee verifies the Desired Critical CEA Position on OP 2208-001, ECP Data and Analysis Sheet is the same as the value on the* ECP Reference Data Sheet *(group 7 at 55 steps).*

Cue:

Comments:

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STEP **8** _X_ Performance Steps: DETERMINE Power Defect as follows:

a. RECORD Reference Critical Data power value.
b. Refer to OP 2208-018 and DETERMINE Power Defect at Reference Critical power value.
c. Record Power Defect

GRADE ___ _X_ Standards:

- *Examinee verifies the Reference Critical Data power value is correctly recorded on the ECP Data and Analysis Sheet*
- *Examinee refers to OP 2208-018 and determines that the Power Defect at Reference Critical Power is correctly recorded on the ECP Data and Analysis Sheet.*

Cue:

Comments:

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PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-A1RO TITLE: Validate an ECP (Faulted)

STEP **9** _X_ Performance Steps: DETERMINE Xenon Defect as follows:

a. RECORD Reference Critical Data Xenon worth.
b. Refer To one of the following and DETERMINE estimated Xenon worth at criticality:
   - "Xenon-Samarium Post Trip Report" (printed automatically on Control Room special typer following reactor trips)
   - OP 2208-004
   - "XENON-SAMARIUM DEMAND" program on PPC
   - Reactor Engineering
c. RECORD estimated Xenon worth at criticality
d. CALCULATE Xenon Defect as follows and RECORD:

Reference Critical Data Xenon worth - Estimated Xenon worth = Xenon Defect

GRADE ___ _X_ Standards:

- *Examinee verifies the Reference Critical Data for Xenon worth on the ECP Data and Analysis Sheet is the same as the ECP Reference Data Sheet.*
- *Examinee refers to OP 2208-004 to obtain the estimated Xenon worth at criticality and verifies the value recorded on the ECP Data and Analysis Sheet is the same.*
- *Examinee verifies the calculated Xenon Defect is correct.*

Cue: **The Xenon-Samarium Post Trip Report is NOT available.**

Comments:

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PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-A1RO TITLE: Validate an ECP (Faulted)

STEP **10** _X_ Performance Steps: DETERMINE Samarium Defect as follows:

a. RECORD Reference Critical Data Samarium worth.
b. Refer To one of the following and DETERMINE estimated Samarium worth at criticality:
   - "Xenon-Samarium Post Trip Report" (printed automatically on Control Room special typer following reactor trips)
   - OP 2208-011
   - "XENON-SAMARIUM DEMAND" program on PPC
   - Reactor Engineering
c. RECORD estimated Samarium worth at criticality.
d. CALCULATE Samarium Defect as follows and RECORD:

Reference Critical Data Samarium worth - Estimated Samarium worth = Samarium Defect

GRADE ___ _X_ Standards:

- *Examinee verifies the Reference Critical Data for Samarium worth on the ECP Data and Analysis Sheet is the same as the ECP Reference Data Sheet.*
- *Examinee refers to OP 2208-011 to obtain the estimated Samarium worth at criticality and verifies the value recorded on the ECP Data and Analysis Sheet is the same.*
- *Examinee verifies the calculated Samarium Defect is correct.*

Cue: **The Xenon-Samarium Post Trip Report is NOT available.**

Comments:

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PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-A1RO TITLE: Validate an ECP (Faulted)

STEP **11** X Performance Steps: DETERMINE CEA Worth Defect as follows:

a. Refer To OP 2208-007 and DETERMINE CEA Worth for the following and RECORD
   - Reference Critical Data CEA Position
   - Desired Critical CEA Position

b. CALCULATE CEA Worth Defect as follows and RECORD:

Reference Critical Data CEA Position worth - Desired Critical CEA Position worth = CEA Worth Defect

GRADE ___ X Standards:

- *Examinee refers to OP 2208-007 to obtain the CEA worth for the Reference Critical Data CEA Position and the Desired Critical CEA Position.*
- *Examinee verifies the value recorded on the ECP Data and Analysis Sheet is the same as the values determined from OP 2208-007.*
- *Examinee verifies the calculated CEA Worth Defect is correct.*

Cue:

Comments:

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PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-A1RO TITLE: Validate an ECP (Faulted)

STEP **12** _X_ Performance Steps: DETERMINE Boron Defect as follows:

a. RECORD Reference Critical Data boron concentration.
b. RECORD present boron concentration.
c. Refer To OP 2208-005 and DETERMINE the Inverse Boron Worth at present burnup.
d. RECORD Inverse Boron Worth.
e. CALCULATE Boron Defect as follows and RECORD:

(Reference Critical Data boron concentration - Present boron concentration) / - Inverse Boron Worth = Boron Defect

GRADE ___ _X_ Standards:

- *Examinee verifies the Reference Critical Data for Boron concentration on the ECP Data and Analysis Sheet is the same as the ECP Reference Data Sheet.*
- *Examinee verifies the present Boron concentration on the ECP Data and Analysis Sheet is 460 ppm.*
- *Examinee refers to OP 2208-051 to obtain the Inverse Boron Worth at present burnup and verifies the value recorded on the ECP Data and Analysis Sheet is the same.*
- *Examinee verifies the calculated Boron Defect is correct.*

Cue:

Comments:

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PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-A1RO TITLE: Validate an ECP (Faulted)

STEP **13** _X_ Performance Steps: DETERMINE Plutonium Buildup as follows:
a. Refer To OP 2208-019 and DETERMINE Plutonium Buildup worth at criticality.
b. RECORD Plutonium Buildup worth at criticality

GRADE ___ _X_ Standards:
- *Examinee refers to OP 2208-019 to obtain the Plutonium worth at criticality.*
- *Examinee verifies the value recorded on the ECP Data and Analysis Sheet is the same as the value determined from OP 2208-019.*

Cue:

Comments:

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STEP **14** _X_ Performance Steps: DETERMINE the sum of all defects as follows:
a. ENTER *all* previously calculated reactivity defects.
b. CALCULATE the sum of all reactivity defects and RECORD.

GRADE ___ _X_ Standards:
- *Examinee verifies that each of the defects entered on the ECP Data and Analysis Sheet is correct.*
- *Examinee adds the defects and determines that the total matches the total on the ECP Data and Analysis Sheet.*

Cue:

Comments:

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PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-A1RO TITLE: Validate an ECP (Faulted)

STEP **15** _X_ Performance Steps: DETERMINE Boron Equivalent of Defects as follows:

a. Record the following:
   - Sum of defects
   - Inverse Boron Worth at present burnup

b. Calculate Boron Equivalent of Defects as follows and record:

Sum of Defects x Inverse Boron Worth = Boron Equivalent of Defects

GRADE ___ _X_ Standards:

- *Examinee verifies that the sum of defects and the inverse Boron worth entered on the ECP Data and Analysis Sheet are correct.*
- *Examinee determines that the value of Boron Equivalent of Defects entered on ECP Data and Analysis Sheet is correct.*

Cue:

Comments:

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STEP **16** _X_ Performance Steps: DETERMINE Boron Equivalent of Reactivity Change Due to Burnup as follows:

a. If the difference between present burnup and Reference Critical Data burnup is less than or equal to 200 MWD/MTU, record N/A in this section and go to step 4.1.17.

GRADE ___ _X_ Standards: *Examinee determines that this step is Not Applicable and is correctly marked on ECP Data and Analysis Sheet.*

Cue:

Comments:

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PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-A1RO TITLE: Validate an ECP (Faulted)

STEP **17** _X_ Performance Steps: DETERMINE Determine Required Boron Change for Criticality as follows:

a. Record the following:
   - Boron Equivalent of Defects
   - If any, Boron Equivalent of Reactivity Cahnge Due to Burnup.

b. Calculate critical boron concentration as follows and record:

Present Equivalent of Defects + Boron Equivalent of Reactivity Change Due to Burnup = Required Boron Change.

GRADE ___ _X_ Standards:

- *Examinee observes that an incorrect value for Boron Equivalent of Defects has been entered on the ECP Data And Analysis Sheet. (-18 should be entered.)*
- *Examinee informs Reactor Engineering of the error on the ECP Data and Analysis Sheet.*

Cue: **As Reactor Engineering, acknowledge the error on the ECP Data and Analysis Sheet.**

Comments: The examinee may NOT find the error until he/she calculates Critical Boron Concentration.

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Comments: **When Reactor Engineering is informed of the error on the ECP, the JPM is complete.**

STOP TIME: _____
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VERIFICATION OF JPM COMPLETION

Job Performance Measure No. JPM-A1RO Rev. 0

Date Performed: _____

Operator: _____

Evaluator(s): _____

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

Time Critical Task? Yes _____ No **X**

Validated Time (minutes): 35

Actual Time to Complete (minutes): _____

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

Areas for Improvement:

EXAMINEE HANDOUT

JPM ID Number: JPM-A1RO

Initiating Cues: The US has directed you to validate a completed ECP in accordance with OP 2208, Reactivity Calculations, without the use of the PPC.

Initial Conditions:

- A Reactor startup is planned to begin within the next 30 minutes with criticality anticipated 2 hours from now.
- The PPC is presently unavailable, but will be returned to service prior to the startup.
- An ECP was completed 5 minutes ago.
- Desired critical position is group 7 at 55 steps
- The following conditions exist:
  - The plant tripped from 100% power 18 hours ago.
  - The plant had been at 100% for the past 220 days.
  - Present RCS Boron is 460
  - Present Burnup provided by Reactor Engineering is 12,988 MWD/MTU
  - RCS Tavg is being maintained constant at 532°F.
- Reference data taken at 0900 on 03/15/05 at 100% power is as follows:
  - 572° Tavg
  - 2.794 $\%\Delta\rho$ Xenon
  - 0.900 $\%\Delta\rho$ Samarium
  - 12,850 MWD/MTU Burnup
  - 340 ppm RCS Boron
  - Group 7 CEAs at 180 steps
- Data is good until 14,000 MWD/MTU

Attachment 1
ECP Reference Data Sheet
(Sheet 1 of 1)

The following is recommended for use as reference data in support of OP 2208–001, "ECP Data and Analysis Sheet," up to an exposure of 14,000 MWD/MTU:

Date/Time 3/15/05 / 0900

Power 100 %

T_{AVG} 572 °F

Burnup 12,850 MWD/MTU

RCS Boron 340 ppm

Xenon 2.794 %Δρ

Samarium 0.900 %Δρ

Controlling Regulating Group 7 at 180 steps

Current version of ECP software 2.01A (04)

Desired Critical Position: CEA group 7 at 55 steps

Reactivity Bias following Hot Zero Power Shutdown -222 pcm (3)

Reactivity Bias following Cold Shutdown -273 pcm

Performed By: R. Engineer 3/15/05 Date

Reviewed By: R.E. Supervisor 3/15/05 Date

The most recently completed attachment is retained in ECP Data Book.

Form Approval			
Approval Date	10/18/04	Effective Date	12/16/04

ECP Data and Analysis Sheet

Reference Critical Data			
Date: 3/15/05	Time: 0900	Power: 100 %	Xenon: 2.794 %Δρ
T_{AVG}: 572 °F	Burnup: 12,850 MWD/MTU	Boron: 340 ppm	Samarium: 0.900 %Δρ
Controlling Regulating Group: 7 at 180 steps			

Estimated Status at Criticality		
Date/Time: Today in 2 hours	T_{AVG}: 532 °F	Burnup (present): 12,988 MWD/MTU
Desired Critical CEA Position: CEA Group 7 at 55 steps		Boron (present): 460 ppm

Power Defect

Reference Critical Data power value	Power Defect at Reference Critical Data power value (OP 2208–018)	Power Defect
100 %		2.029 %Δρ

Xenon Defect

Reference Critical Data xenon worth		Estimated xenon worth at criticality (PPC, OP 2208–004, or Rx. Eng.)		Xenon Defect
2.794 %Δρ	–	3.078 %Δρ	=	-0.284 %Δρ

Samarium Defect

Reference Critical Data samarium worth		Estimated samarium worth at criticality (PPC, OP 2208–011, or Rx. Eng.)		Samarium Defect
0.900 %Δρ	–	0.997 %Δρ	=	-0.097 %Δρ

CEA Worth Defect (OP 2208–007)

Reference Critical Data CEA Position worth		Desired Critical CEA Position worth		CEA Worth Defect
0 %Δρ	–	0.710 %Δρ	=	-0.710 %Δρ

Boron Defect

Reference Critical Data boron concentration		Present boron concentration		Inverse Boron Worth (OP 2208–005)		Boron Defect
340 ppm	–	460 ppm	÷	104 ppm/%Δρ	=	-1.154 %Δρ

ECP Data and Analysis Sheet

Plutonium Buildup Worth

Plutonium Buildup Worth at Criticality (OP 2208–019)	Pu Buildup Worth
0.043	0.043 %Δρ

Sum of Defects

Power Defect		Xenon Defect		Samarium Defect		CEA Worth Defect		Boron Defect		Plutonium Buildup Worth		Sum of Defects
2.029 %Δρ	+	-.284 %Δρ	+	-.097 %Δρ	+	-.710 %Δρ	+	-1.154 %Δρ	+	.043 %Δρ	=	-0.173 %Δρ

Boron Equivalent of Defects

Sum of Defects		Inverse Boron Worth (OP 2208–005)		Boron Equivalent of Defects
-0.173 %Δρ	X	104 ppm/%Δρ	=	-17.992 ppm

Boron Equivalent of Reactivity Change Due to Burnup (SP 21018–002)
(N/A if present burnup minus Reference Critical Data burnup is ≤ 200 MWD/MTU)

Critical Boron Concentration at present burnup		Critical Boron Concentration at Reference Critical Data burnup		Boron Equivalent of Reactivity Change Due to Burnup
NA ppm	–	NA ppm	=	NA ppm

Required Boron Change For Criticality

Boron Equivalent of Defects		Boron Equivalent of Reactivity Change Due to Burnup (if any)		Required Boron Change
-18 ppm	+	NA ppm	=	18 ppm

Critical Boron Concentration

Present boron concentration		Required Boron Change		Critical Boron Concentration
460 ppm	+	18 ppm	=	478 ppm

Limits on CEA Position at Criticality

Desired Critical CEA Position worth				CEA Worth	Insertion	CEA Position (OP 2208–007) Group	Steps
0.710 %Δρ	–	0.5 %Δρ or 0.9 %Δρ*	=	0.21 %Δρ	*Minimum*	7	150
	+			1.21 %Δρ	*Maximum* **	6	85

* – Limits for initial criticality after refueling are +/– 0.9 %Δρ. For all subsequent reactor startups, the limits are +/– 0.5 %Δρ.

** – Insertion must be above 0% PDIL, IF below 0% PDIL, CEA group 4 at 72 steps. is entered.

(1)

ECP Data and Analysis Sheet

ECP Calculated By (signature): R. Engineering	Date: Today	Time: 15 min. ago
Approved By SM/US/RE:	Date:	Time:

Actual Critical Data (power at approximately 1 x 10^{-3}%)		
Date/Time	T_{AVG} °F	Critical Number
CEA Position CEA Group ____ at _____ steps		Boron ppm

Remarks:

Reviewed By Reactor Engineer:	Date:

Attachment 1
ECP Reference Data Sheet
(Sheet 1 of 1)

The following is recommended for use as reference data in support of OP 2208–001, "ECP Data and Analysis Sheet," up to an exposure of 14,000 MWD/MTU:

Date/Time 3/15/05 / 0900

Power 100 %

T_{AVG} 572 °F

Burnup 12,850 MWD/MTU

RCS Boron 340 ppm

Xenon 2.794 %Δρ

Samarium 0.900 %Δρ

Controlling 7 at 180 steps
Regulating Group

Current version of ECP software 2.01A (04)

Desired Critical Position: CEA group 7 at 55 steps

Reactivity Bias following Hot Zero Power Shutdown -222 pcm (3)

Reactivity Bias following Cold Shutdown -273 pcm

Performed By: R. Engineer 3/15/05
Date

Reviewed By: R E. Supervisor 3/15/05
Date

The most recently completed attachment is retained in ECP Data Book.

Form Approval			
Approval Date	10/18/04	Effective Date	12/16/04

ECP Data and Analysis Sheet

Reference Critical Data

Date	Time	Power	Xenon
3/15/05	0900	100 %	2.794 %Δρ
T_{AVG}	Burnup	Boron	Samarium
572 °F	12,850 MWD/MTU	340 ppm	0.900 %Δρ
Controlling Regulating Group 7 at 180 steps			

Estimated Status at Criticality

Date/Time	T_{AVG}	Burnup (present)
Today in 2 hours	532 °F	12,988 MWD/MTU
Desired Critical CEA Position		Boron (present)
CEA Group 7 at 55 steps		460 ppm

Power Defect

Reference Critical Data power value	Power Defect at Reference Critical Data power value (OP 2208–018)	Power Defect
100 %		2.029 %Δρ

Xenon Defect

Reference Critical Data xenon worth		Estimated xenon worth at criticality (PPC, OP 2208–004, or Rx. Eng.)		Xenon Defect
2.794 %Δρ	–	3.078 %Δρ	=	-0.284 %Δρ

Samarium Defect

Reference Critical Data samarium worth		Estimated samarium worth at criticality (PPC, OP 2208–011, or Rx. Eng.)		Samarium Defect
0.900 %Δρ	–	0.997 %Δρ	=	-0.097 %Δρ

CEA Worth Defect (OP 2208–007)

Reference Critical Data CEA Position worth		Desired Critical CEA Position worth		CEA Worth Defect
0 %Δρ	–	0.710 %Δρ	=	-0.710 %Δρ

Boron Defect

Reference Critical Data boron concentration		Present boron concentration		Inverse Boron Worth (OP 2208–005)		Boron Defect
340 ppm	–	460 ppm	÷	104 ppm/%Δρ	=	-1.154 %Δρ

ECP Data and Analysis Sheet

Plutonium Buildup Worth

Plutonium Buildup Worth at Criticality (OP 2208–019)	Pu Buildup Worth
0.043	0.043 %Δρ

Sum of Defects

Power Defect		Xenon Defect		Samarium Defect		CEA Worth Defect		Boron Defect		Plutonium Buildup Worth		Sum of Defects
2.029 %Δρ	+	-.284 %Δρ	+	-.097 %Δρ	+	-.710 %Δρ	+	-1.154 %Δρ	+	.043 %Δρ	=	-0.173 %Δρ

Boron Equivalent of Defects

Sum of Defects		Inverse Boron Worth (OP 2208–005)		Boron Equivalent of Defects
-0.173 %Δρ	X	104 ppm/%Δρ	=	-17.992 ppm

Boron Equivalent of Reactivity Change Due to Burnup (SP 21018–002)
(N/A if present burnup minus Reference Critical Data burnup is ≤ 200 MWD/MTU)

Critical Boron Concentration at present burnup		Critical Boron Concentration at Reference Critical Data burnup		Boron Equivalent of Reactivity Change Due to Burnup
NA ppm	–	NA ppm	=	NA ppm

Required Boron Change For Criticality

Boron Equivalent of Defects		Boron Equivalent of Reactivity Change Due to Burnup (if any)		Required Boron Change
-18 ppm	+	NA ppm	=	18 ppm

Critical Boron Concentration

Present boron concentration		Required Boron Change		Critical Boron Concentration
460 ppm	+	18 ppm	=	478 ppm

Limits on CEA Position at Criticality

Desired Critical CEA Position worth				CEA Worth	Insertion	CEA Position (OP 2208–007) Group	CEA Position (OP 2208–007) Steps
0.710 %Δρ	–	0.5 %Δρ or 0.9 %Δρ*	=	0.21 %Δρ	*Minimum*	7	150
	+			1.21 %Δρ	*Maximum* **	6	85

(1)

* – Limits for initial criticality after refueling are +/– 0.9 %Δρ. For all subsequent reactor startups, the limits are +/– 0.5 %Δρ.

** – Insertion must be above 0% PDIL, IF below 0% PDIL, CEA group 4 at 72 steps, is entered.

ECP Data and Analysis Sheet

ECP Calculated By (signature): R. Engineering	Date: Today	Time: 15 min. ago
Approved By SM/US/RE:	Date:	Time:

Actual Critical Data (power at approximately 1 x 10^{-3}%)		
Date/Time	T_{AVG} °F	Critical Number
CEA Position CEA Group ____ at _____ steps		Boron ppm

Remarks:

Reviewed By Reactor Engineer:	Date:

Form Approval			
Approval Date	10/18/04	Effective Date	12/16/04

ECP Data and Analysis Sheet

Reference Critical Data			
Date	Time	Power %	Xenon %Δρ
T_{AVG} °F	Burnup MWD/MTU	Boron ppm	Samarium %Δρ
Controlling Regulating Group _____ at _____ steps			

Estimated Status at Criticality		
Date/Time	T_{AVG} °F	Burnup (present) MWD/MTU
Desired Critical CEA Position CEA Group ____ at _____ steps		Boron (present) ppm

Power Defect		
Reference Critical Data power value	Power Defect at Reference Critical Data power value (OP 2208–018)	Power Defect
%		%Δρ

Xenon Defect				
Reference Critical Data xenon worth		Estimated xenon worth at criticality (PPC, OP 2208–004, or Rx. Eng.)		Xenon Defect
%Δρ	–	%Δρ	=	%Δρ

Samarium Defect				
Reference Critical Data samarium worth		Estimated samarium worth at criticality (PPC, OP 2208–011, or Rx. Eng.)		Samarium Defect
%Δρ	–	%Δρ	=	%Δρ

CEA Worth Defect (OP 2208–007)				
Reference Critical Data CEA Position worth		Desired Critical CEA Position worth		CEA Worth Defect
%Δρ	–	%Δρ	=	%Δρ

Boron Defect						
Reference Critical Data boron concentration		Present boron concentration		Inverse Boron Worth (OP 2208–005)		Boron Defect
ppm	–	ppm	÷	ppm/%Δρ	=	%Δρ

ECP Data and Analysis Sheet

Plutonium Buildup Worth

Plutonium Buildup Worth at Criticality (OP 2208–019)	Pu Buildup Worth
	%Δρ

Sum of Defects

Power Defect		Xenon Defect		Samarium Defect		CEA Worth Defect		Boron Defect		Plutonium Buildup Worth		Sum of Defects
%Δρ	+	%Δρ	+	%Δρ	+	%Δρ	+	%Δρ	+	%Δρ	=	%Δρ

Boron Equivalent of Defects

Sum of Defects		Inverse Boron Worth (OP 2208–005)		Boron Equivalent of Defects
%Δρ	x	ppm/%Δρ	=	ppm

Boron Equivalent of Reactivity Change Due to Burnup (SP 21018–002)
(N/A if present burnup minus Reference Critical Data burnup is ≤ 200 MWD/MTU)

Critical Boron Concentration at present burnup		Critical Boron Concentration at Reference Critical Data burnup		Boron Equivalent of Reactivity Change Due to Burnup
ppm	–	ppm	=	ppm

Required Boron Change For Criticality

Boron Equivalent of Defects		Boron Equivalent of Reactivity Change Due to Burnup (if any)		Required Boron Change
ppm	+	ppm	=	ppm

Critical Boron Concentration

Present boron concentration		Required Boron Change		Critical Boron Concentration
ppm	+	ppm	=	ppm

Limits on CEA Position at Criticality

Desired Critical CEA Position worth				CEA Worth	Insertion	CEA Position (OP 2208–007)	
						Group	Steps
%Δρ	–	0.5 %Δρ or 0.9 %Δρ*	=	%Δρ	*Minimum*		
	+			%Δρ	*Maximum* **		

* – Limits for initial criticality after refueling are +/– 0.9 %Δρ. For all subsequent reactor startups, the limits are +/– 0.5 %Δρ.

** – Insertion must be above 0% PDIL, IF below 0% PDIL, CEA group 4 at 72 steps, is entered.

(1)

ECP Data and Analysis Sheet

ECP Calculated By (signature):	Date:	Time:
Approved By SM/US/RE:	Date:	Time:

Actual Critical Data (power at approximately 1 x 10^{-3}%)		
Date/Time	T_{AVG} °F	Critical Number
CEA Position CEA Group ____ at _____ steps		Boron ppm

Remarks:

Reviewed By Reactor Engineer:	Date:

JOB PERFORMANCE MEASURE APPROVAL SHEET

I. JPM Title: **RO Tag Clearance Preparation**

ID Number: JPM-A2RO Revision: 0

II. Initiated:

Daniel A. Pantalone — Developer — 1/28/05 — Date

III. Reviewed:

Technical Reviewer — 1/28/05 — Date

IV. Approved:

N/A — User Department Supervisor — Date

Nuclear Training Supervisor — 1/28/05 — Date

SUMMARY OF CHANGES

A/I & Date	DESCRIPTION	REV/CHANGE
11-15-2005 (DAP)	Developed new JPM	0

JOB PERFORMANCE MEASURE WORKSHEET

Facility: MP-2 Examinee: _____

JPM Number: JPM-A2RO Rev. 0

Task Title: **Perform Tagging Operations**

System: Administrative

Time Critical Task: Yes ____ No X

Validated Time (minutes): 25

Task No.(s): NUTIMS #119-03-170

Applicable To: SRO X RO X PEO X

K/A No.: 2.2.13 K/A Rating: 3.6/3.8

Method of Testing:

Simulated Performance: X Actual Performance: ____

Location:

Classroom: X Simulator: X In-Plant: X

Task Standards: At the completion of this JPM, the examinee will present a recommended tagging clearance to the tagging authority.
- The clearance must be similar to the ANSWER KEY attached to this JPM except for the exceptions as noted in the step 3 of this JPM.

Required Materials (procedures, equipment):
- WC 2 "Tagging"
- P&ID 25203-26027 sheet 2 of 4
- P&ID 25203-30011 sheet 12F
- OP-2330C-001

General References: WC 2, Section 1.3 (Rev. 6-06)

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

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

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: Repair valve seat for 2-CHW-123, Chilled Water Pump D.sch.

Work Package Number: M2-04-03686

Component to be Isolated(1): 2-CH-123

Multiple isolation points or non-component (i.e.: pipe/tube section): Yes ☑ No ☐
(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 *not* required enter N/A.

Amplifying Instructions:
Isolate component for work

Contact Person (for multiple shifts, Contact Person is required for each shift) **phone:**
V. Team 2000

Approved By: _____ **phone:** 2100
Team Leader / Planner / Engineering

Date: Today

Level of Use Information

STOP THINK ACT REVIEW

JOB PERFORMANCE MEASURE WORKSHEET

JPM Number: JPM-A2RO Rev. 0

Initiating Cues:

- The WC-SRO has reviewed the work package and has directed you to prepare a tagout for 2-CHW-123 "Chill Water Pump (P-149C) Discharge Isolation" valve.
- The valve must be replaced due to leakage past the seat.
- Restoration information is not required.
- The Tagout Number (Section Number) is 2330C62-003
- The AWO number is M2-04-03686
- The contact person is V. Team
- Chemistry will advise as to the disposal of water per NPDES.
- All drawings have been verified "Controlled, Approved, and Up to Date".
- The examiner will review and approve the tagout.

Initial Conditions:

- 2-CHW-123 "Chill Water Pump (P-149C) Discharge Isolation" valve is leaking by it's seat.
- Maintenance advised removal and replacement of the valve.
- The Station Tagging Computer Program is unavailable.
- The need for a manual tagout has been evaluated and approved by all required personnel.
- The tagout will be entered into the computer as soon as the computer is available.

Simulator Requirements: None

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

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

PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-A2RO TITLE: **RO Tag Clearance Preparation**

START TIME: _____

STEP 1 _X_ Performance Steps:

Per WC-2, Attachment 8, "Manual Tagouts"
- Prepare a Manual Tagout using (Attachment 9), "Manual Tagout Sheet", and appropriate sections in this procedure.

GRADE ___ _X_ Standards:

The examinee obtains a copy of WC-2, "Tagging", and WC-2 Attachment 9 "Manual Tagout Sheet".

Using the following references:
- *P&ID 25203-26027 sheet 2 of 4*
- *P&ID 25203-30011 sheet 12F*
- *OP-2330C-001 "Chilled Water System Valve Alignment"*

The examinee determines the:
- *Components being tagged.*
- *Colors for each tag.*

Cue:
- **When requested, provide the examinee with the required documentation, including the enclosed WC2, Tagging.**
- **If requested, provide examinee with Attachment 7, Tagout Request.**

Comments: The examinee may use equivalent documentation for determining components to be tagged.

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PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-A2RO TITLE: **RO Tag Clearance Preparation**

STEP **2** X Performance Steps: Enter the sequential steps for establishing a safe working area to include:
- Components
- Equipment ID
- Tag color
- Appropriate instructions
- Appropriate Tag Position

GRADE ___ X Standards: *On attachment 9, enter the following:*
- *Tagout number*
- *Date*
- *AWO number*
- *Contact person*
- *Equipment*
- *Reason Tagged*
- *Special instructions*

Cue:

Comments: Special Instructions may reference chemistry's involvement in draining fluids and/or NPDES.

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PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-A2RO TITLE: **RO Tag Clearance Preparation**

STEP **3** X Performance Steps: Enter the component name, identification number, location, tag type, and required position on Attachment 9.

GRADE Standards: *Examinee enters the following information on Attachment 9:*

___	___	1. *Yellow, "P149C-HS", Non-Vital Chilled Water Pump C" Turbine Building 14'6". (Optional)*
___	X	2. *Red, B2175 "P149C Non-Vital Chilled Water Pump C" Turbine Building 31'6", (Open)*
___	X	3. *Red, B2174, "X196B Vital Chiller Supplemental" Turbine Building 31'6", (Open)*
___	X	4. *Red; 2-CHW-116, "Chill Water Pump (P-149C) Suction Isolation", Turbine Building 14'6" (Closed)*
___	X	5. *Red; 2-CHW-125, "P-149B Cross Tie to X-196B" Turbine Building 14'6" (Closed)*
___	X	6. *Red; 2-CHW-126, "X-196B Outlet Isolation" Turbine Building 14'6" (Closed)*
___	___	7. *No Tag; 2-CHW-123, "Chill Water Pump (P-149C) Discharge Isolation" Turbine Building 14'6: (Open)*
___	X	8. *Red; 2-CHW-147, "Chill Water Pump (P-149C) Discharge Drain" Turbine Building 14'6" (Open)*
___	X	9. *Red; 2-CHW-174, "P149C Crosstie Header Vent", Turbine Building 14'6" (Open)*

Cue:

Comments: The component order may differ slightly provided:

- Breakers, B2175 and B2174, are tagged open before the boundary valves are closed, (i.e., the pump & compressor breakers must be opened prior to closing the pump discharge and suction valves).
- The boundary valves are closed before opening the vent and drain valves.

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PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-A2RO TITLE: **RO Tag Clearance Preparation**

STEP **4** ___ Performance Steps: Complete block number 11, "Prepared by:"

GRADE ___ ___ Standards: *Examinee enters his (her) name in block 11 of Attachment 9.*

Cue:

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

~~~~~~

STOP TIME: _____
~~~~~~

VERIFICATION OF JPM COMPLETION

Job Performance Measure No. JPM-A2RO Rev. 0

Date Performed: _____

Operator: _____

Evaluator(s): _____

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

Time Critical Task? Yes _____ No _____

Validated Time (minutes): 25

Actual Time to Complete (minutes): _____

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

Areas for Improvement:

EXAMINEE HANDOUT

JPM Number: JPM-A2RO Rev. 0

Initiating Cues:

- The WC-SRO has reviewed the work package and has directed you to prepare a tagout for 2-CHW-123 "Chill Water Pump (P-149C) Discharge Isolation" valve.
- The valve must be replaced due to leakage past the seat.
- Restoration information is not required.
- The Tagout Number (Section Number) is 2330C62-003
- The AWO number is M2-04-03686
- The contact person is V. Team
- Chemistry will advise as to the disposal of water per NPDES.
- All drawings have been verified "Controlled, Approved, and Up to Date".
- The examiner will review and approve the tagout.

Initial Conditions:

- 2-CHW-123 "Chill Water Pump (P-149C) Discharge Isolation" valve is leaking by its seat.
- Maintenance advised removal and replacement of the valve.
- The Station Tagging Computer Program is unavailable.
- The need for a manual tagout has been evaluated and approved by all required personnel.
- The tagout will be entered into the computer as soon as the computer is available.

FOR TRAINING ONLY

Attachment 9
Manual Tagout Sheet

(Sheet 1 of 1)

ANSWER KEY

This form is for manual use only, it is not intended to match a computer generated form.

1. Tagout Number	2. Date	3. AWO Number ("or Multiple")	4. Contact Person	Tagout Number
2330C62-003	Today	M2-04-03686	V. Team	

5. Equipment
2-CHW-123 "Chill Water Pump (P-149C) Discharge Isolation"

6. Reason Tagged
Replace 2-CHW-123. Leaks past its seat.

7. Special Instructions/Caution
Contact chemistry for draining instructions and NPDES considerations.

8. Tag Lift Sheet Attached [Comm. 3.4] ___ Yes
9. Additional AWOs under this tagout ___ Yes
10. Partial Restoration ___ Yes

11. Prepared by
Examinees Name

12a Step No.	*Note: Initial position for Blue Tags. N/A if position not required* 12b. Equipment identification and nomenclature and location	12c. Tag Placed Action complete		Independent Verification	
		Date	Init	Date	Init
1	Yellow, "P149C-HS", Non-Vital Chilled Water Pump C" Turbine Building 14'6", (Optional)				
2	Red, B2175 "P149C Non-Vital Chilled Water Pump C" Turbine Building 31'6", (Open)				
3	Red, B2174, "X196B Vital Chiller Supplemental" Turbine Building 31'6", (Open)				
4	Red; 2-CHW-116, "Chill Water Pump (P-149C) Suction Isolation", Turbine Building 14'6" (Closed)				
5	Red; 2-CHW-125, "P-149B Cross Tie to X-196B" Turbine Building 14'6" (Closed)				
6	Red; 2-CHW-126, "X-196B Outlet Isolation" Turbine Building 14'6" (Closed)				
7	No Tag; 2-CHW-123, "Chill Water Pump (P-149C) Discharge Isolation" Turbine Building 14'6; (Open)				
8	Red; 2-CHW-147, "Chill Water Pump (P-149C) Discharge Drain" Turbine Building 14'6" (Open)				
9	Red; 2-CHW-174, "P149C Crosstie Header Vent", Turbine Building 14'6" (Open)				

13a. Tagout correct and equipment may be isolated
SM/US notified for power block

Boundary approved by: _____
Authorized to be hung by:

Level of Use Information

STOP THINK ACT REVIEW

JOB PERFORMANCE MEASURE APPROVAL SHEET

I. JPM Title: **Review RWP and Survey Map**

ID Number: JPM-A3RO Revision: 0

II. Initiated:

R. J. Ashey — Developer — 10/29/04 Date

III. Reviewed:

Technical Reviewer — 01/28/05 Date

IV. Approved:

N/A
User Department Supervisor — Date

Nuclear Training Supervisor — 1/28/05 Date

JOB PERFORMANCE MEASURE WORKSHEET

Facility: MP-2 Examinee: _____

JPM Number: JPM-A3RO Rev. 0

Task Title: **Review RWP and Survey Map**

System: Radiation Control

Time Critical Task: Yes ____ No X

Validated Time (minutes): 10

Task No.(s): NUTIMS # 404-01-004

Applicable To: SRO ____ RO X PEO ____

K/A No.: 2.3.1 K/A Rating: 2.6/3.0

Method of Testing:

Simulated Performance: ____ Actual Performance: X

Location:

Classroom: X Simulator: X In-Plant: X

Task Standards:	At the completion of this JPM the examinee has reviewed the applicable RWP and survey map to determine the radiological requirements to perform the assigned task.
Required Materials (procedures,equipment):	Operations blanket RWP No. 5. Survey map for -45' 6" elevation of the Auxiliary Building
General References:	RPM 5.2.2, Basic Radiation Worker Responsibilities, Rev. 009-03

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

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

JOB PERFORMANCE MEASURE WORKSHEET

JPM Number: JPM-A3RO Rev. 0

Initiating Cues:

- You have been directed to align 2-SI-306, SDC Total Flow Control Valve, for remote operation and to perform the position indication surveillance.
- Based on previous experience, it is estimated that this task will take 40 minutes.
- State the radiological requirements for entering this area. Include in your discussion:
  * Which RWP task (job step) is appropriate for this assignment
  * Protective clothing required in the work area
  * Highest radiation level in the work area
  * Expected dose for this assignment
  * Dose rate alarm
- The examiner will act as Health Physics (HP) for any related questions.

Initial Conditions:

- The plant is in MODE 3 and cooling down in preparation for a refueling outage.
- The crew is preparing the Shutdown Cooling System for operation in accordance with OP 2207, Plant Cooldown.

Simulator Requirements: N/A

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

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

PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-A3RO TITLE: **Review RWP and Survey Map**

START TIME: _____

STEP **1** ___ Performance Steps: Review Operations Blanket RWP No. 5 and Radiation Survey Figure 2

GRADE ___ ___ Standards: *Examinee reviews Operations Blanket RWP No. 5 and Radiation Survey Figure 2*

Cue:
- **Provide examinee with Operations Blanket RWP No. 5 and Radiation Survey Figure 21A.**
- **If required, state that the HP brief is complete.**

Comments:
- Examinee may state that a briefing with HP is required prior to entry into the work area.
- The examinee may perform the following steps in any order.

~~~~~~

STEP **2** _X_ Performance Steps: Review survey map and determine the following:
- Contamination level in the work area
- Highest radiation level in the work area

GRADE ___ _X_ Standards: *Examinee reviews the survey map and states:*
- *The work area is NOT contaminated.*
- *The highest radiation level in the work area is 90 mr/hr.*

Cue:

Comments: The examinee may point out the 200 mr/hr hot spot on the SDC Heat Exchanger, but the assigned task does NOT require him/her to approach that area.

~~~~~~

PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-A3RO TITLE: **Review RWP and Survey Map**

STEP 3 X Performance Steps: Review the RWP and determine the following:

- Which RWP task (job step) is appropriate for this assignment
- Protective clothing required in the area
- Expected dose for this assignment
- Dose rate alarm

GRADE Standards: *Examinee reviews the RWP and states that:*

___ X • *Task (job step) No. 1 is appropriate for this task*

___ X • *There is NO contamination in the work area; therefore, NO additional protective clothing is required.*

___ X • *Expected dose is 60 mr.*

___ X • *Dose rate alarm is 100 mr/hr.*

Cue: **If required, ask examinee what protective clothing he/she thinks should be worn.**

Comments:

- Although NO protective clothing is required, the examinee may opt to don PCs due to the potential for contamination.
- Examinee may also state the need to obtain a key for the locked high rad area door.

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

STOP TIME: _____

VERIFICATION OF JPM COMPLETION

Job Performance Measure No. JPM-A3RO Rev. 0

Date Performed: _____

Operator: _____

Evaluator(s): _____

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

Time Critical Task? Yes _____ No **X**

Validated Time (minutes): 10

Actual Time to Complete (minutes): _____

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

Areas for Improvement:

EXAMINEE HANDOUT

JPM ID Number: JPM-A3RO

Initiating Cues:

- You have been directed to align 2-SI-306, SDC Total Flow Control Valve, for remote operation and to perform the position indication surveillance.
- Based on previous experience, it is estimated that this task will take 40 minutes.
- State the radiological requirements for entering this area. Include in your discussion:
  * Which RWP task (job step) is appropriate for this assignment
  * Protective clothing required in the work area
  * Highest radiation level in the work area
  * Expected dose for this assignment
  * Dose rate alarm
- The examiner will act as Health Physics (HP) for any related questions.

Initial Conditions:

- The plant is in MODE 3 and cooling down in preparation for a refueling outage.
- The crew is preparing the Shutdown Cooling System for operation in accordance with OP 2207, Plant Cooldown.

RADIATION WORK PERMIT - 5

Plant Code	Year	RWP Number	Rev.	RWP Start	RWP Type	RWP Category	RWP Expiration
2	5	0005	00	01-jan-2005	G	POWER	05-jan-2006

RWP DESCRIPTION

Operations General RWP

TASK SUMMARY

Job	Description
1	Operations activities in RCAs, Radiation Areas, and H
2	(TSLHRA) Operations activities in Tech Spec Locked Hi
3	Operations Training classes activities in RCAs, Radia
4	Charging System activities by Operations; walkdowns,

ALARA INFORMATION

ALARA Review	Hours- Estimated	Authorized	Internal(DAC)- Estimated	Authorized	External(mRem)-Estimated	Authorized
No	26000	00000	0000	0000	026000	026000

SPECIAL INSTRUCTIONS

General access to RCAs to perform routine and special rounds, inspections, tagging, surveillances, and training and qualifications during Power Operations.

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		RWP Term/Rev Date/Time	Terminated/Rev by
12/22/04			

RADIATION WORK PERMIT - (5) JOB STEP - 1 OF 4

Plant Code	Year	RWP Number	Rev.	RWP Start	RWP Type	RWP Category	RWP Expiration
2	5	0005	00	01-jan-2005	G	POWER	05-jan-2006

Responsible Individual/Extension	Department/Company	Job Supervisor/Extension	Department/Company
WILLIAM HOFFNER/6200	OP/DNC	WILLIAM HOFFNER/6200	OP/DNC

Building	Floor	Zone	Location	Plant Equipment	Rad. Area Type
2AUX			LEVELS/MULTIPLE AREAS	MISCELLANEOUS U-2 EQUIPMENT	

WRITTEN DESCRIPTION OF JOB (MATERIALS & METHODS)

Operations activities in RCAs, Radiation Areas, and High Radiation Areas.

ALARA INFORMATION

ALARA Review	Hours- Estimated	Authorized	Internal(DAC)- Estimated	Authorized	External(mRem)-Estimated	Authorized
No	10000	00000	00000	00000	010000	010000

System Code	Component Code	Task	NRC Task	Alara Zone	Location	Plant Equipment
2000	MISC	OPS	RO	2MISC	2200	2MISC

SURVEY MEASUREMENTS

	RADIATION (MR/HR)	CONTAMINATION(DPM/100CM2)	AIRBORNE (DAC)
Review latest radiological surveys or historical data prior to entering RCA.			

SPECIAL INSTRUCTIONS

NO 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 following:
- TEDE ALARA reviews
- Heat stress evaluations
- FME controls

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

Lab coats may be worn for inspection-related tasks only; no physical work in contaminated areas may be performed.

Notify HP before venting or draining any contaminated systems.

Dose Limit Alarm(Stay Time)= 0025 mrem Dose Rate Alarm= 0100 mr/hr
Elapsed Time Alarm= 0000 min.

REQUIREMENTS

Protective clothing:
- Cotton liners
- Booties
- Coveralls
- Shoe covers
- Rubber gloves
- Modesty garments

Lab coat

Electronic dosimeter
TLD

Health Physics Coverage
Routine

Minimum Margin:
0125 mrem

Health Physics Representative	Date		RWP Term/Rev Date/Time	Terminated/Rev by

RADIATION WORK PERMIT - (5) JOB STEP - 2 OF 4

Plant Code	Year	RWP Number	Rev.	RWP Start	RWP Type	RWP Category	RWP Expiration
2	5	0005	00	01-jan-2005	G	POWER	05-jan-2006

Responsible Individual/Extension	Department/Company	Job Supervisor/Extension	Department/Company
WILLIAM HOFFNER/6200	OP/DNC	WILLIAM HOFFNER/6200	OP/DNC

Building	Floor	Zone	Location	Plant Equipment	Rad. Area Type
2AUX			LEVELS/MULTIPLE AREAS	MISCELLANEOUS U-2 EQUIPMENT	

WRITTEN DESCRIPTION OF JOB (MATERIALS & METHODS)

(TSLHRA) Operations activities in Tech Spec Locked High Radiation Areas.

ALARA INFORMATION

ALARA Review	Hours- Estimated	Authorized	Internal(DAC)- Estimated	Authorized	External(mRem)-Estimated	Authorized
No	05000	00000	00000	00000	005000	005000

System Code	Component Code	Task	NRC Task	Alara Zone	Location	Plant Equipment
2000	MISC	OPS	RO	2MISC	2200	2MISC

SURVEY MEASUREMENTS	RADIATION (MR/HR)	CONTAMINATION(DPM/100CM2)	AIRBORNE (DAC)
Solid Rad Waste	5 - 1500	<1K	<.3
-5' West Penetration	10 - 2000	<1K	<.3
Letdown Heat Exchanger	10 - 1200	<1K	<.3

SPECIAL INSTRUCTIONS

PCs required in contaminated areas.

HP supervision may adjust protective clothing requirements based on any of the following:
- TEDE ALARA reviews
- Heat stress evaluations
- FME controls

Requirements for Tech Spec Locked High Radiation Area entry:
- Dose rate meter, or alarming dosimeter AND knowledge of area dose rates OR continuous HP coverage
- Review most current survey results of the specific work area
- Area MUST be locked or guarded at ALL times
- Health Physics briefing for Tech Spec Locked High Radiation Areas
- Refer to RPM 2.5.8 and determine Stay Time

Notify HP before venting or draining any contaminated systems.

Lab coats may be worn for inspection-related tasks only; no physical work in contaminated areas may be performed.

Dose Limit Alarm(Stay Time)= 0050 mrem Dose Rate Alarm= 0500 mr/hr
Elapsed Time Alarm= 0000 min.

REQUIREMENTS

Protective clothing:
- Cotton liners
- Booties
- Coveralls
- Shoe covers
- Rubber gloves
- Modesty garments

Lab coat

Electronic dosimeter
TLD

Health Physics Coverage
Periodic

Minimum Margin:
0225 mrem

Health Physics Representative	Date		RWP Term/Rev Date/Time	Terminated/Rev by

RADIATION WORK PERMIT - (5) JOB STEP - 3 OF 4

Plant Code	Year	RWP Number	Rev.	RWP Start	RWP Type	RWP Category	RWP Expiration
2	5	0005	00	01-jan-2005	G	POWER	05-jan-2006

Responsible Individual/Extension	Department/Company	Job Supervisor/Extension	Department/Company
WILLIAM HOFFNER/6200	OP/DNC	WILLIAM HOFFNER/6200	OP/DNC

Building	Floor	Zone	Location	Plant Equipment	Rad. Area Type
2AUX			LEVELS/MULTIPLE AREAS	MISCELLANEOUS U-2 EQUIPMENT	

WRITTEN DESCRIPTION OF JOB (MATERIALS & METHODS)

Operations Training classes activities in RCAs, Radiation Areas, and High Radiation Areas.

ALARA INFORMATION

ALARA Review	Hours- Estimated	Authorized	Internal(DAC)- Estimated	Authorized	External(mRem)-Estimated	Authorized
No	01000	00000	00000	00000	001000	001000

System Code	Component Code	Task	NRC Task	Alara Zone	Location	Plant Equipment
2000	MISC	OPS	RO	2MISC	2200	2MISC

SURVEY MEASUREMENTS	RADIATION (MR/HR)	CONTAMINATION(DPM/100CM2)	AIRBORNE (DAC)
Review latest radiological surveys or historical data prior to entering RCA.			

SPECIAL INSTRUCTIONS

NO 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 following:
- TEDE ALARA reviews
- Heat stress evaluations
- FME controls

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

Lab coats may be worn for inspection-related tasks only; no physical work in contaminated areas may be performed.

Dose Limit Alarm(Stay Time)= 0025 mrem Dose Rate Alarm= 0100 mr/hr
Elapsed Time Alarm= 0000 min.

REQUIREMENTS

Protective clothing:
- Cotton liners
- Booties
- Coveralls
- Shoe covers
- Rubber gloves
- Modesty garments

Lab coat

Electronic dosimeter
TLD

Health Physics Coverage
Routine

Minimum Margin:
0125 mrem

Health Physics Representative Date		RWP Term/Rev Date/Time	Terminated/Rev by

RADIATION WORK PERMIT - (5) JOB STEP - 4 OF 4

Plant Code	Year	RWP Number	Rev.	RWP Start	RWP Type	RWP Category	RWP Expiration
2	5	0005	00	01-jan-2005	G	POWER	05-jan-2006

Responsible Individual/Extension	Department/Company	Job Supervisor/Extension	Department/Company
WILLIAM HOFFNER/6200	OP/DNC	WILLIAM HOFFNER/6200	OP/DNC

Building	Floor	Zone	Location	Plant Equipment	Rad. Area Type
2AUX	-25'		CHARGING PUMP CUBICLES	MISCELLANEOUS	

WRITTEN DESCRIPTION OF JOB (MATERIALS & METHODS)

Charging System activities by Operations; walkdowns, inspections, necessary support activities.

ALARA INFORMATION

ALARA Review	Hours- Estimated Authorized	Internal(DAC)- Estimated Authorized	External(mRem)-Estimated Authorized
No	10000 00000	00000 00000	010000 010000

System Code	Component Code	Task	NRC Task	Alara Zone	Location	Plant Equipment
2000	PUMP	OPS	RO	2226	2226	2300

SURVEY MEASUREMENTS	RADIATION (MR/HR)	CONTAMINATION(DPM/100CM2)	AIRBORNE (DAC)
Review latest radiological surveys or historical data before entering RCA.			

SPECIAL INSTRUCTIONS

NO 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 following:
- TEDE ALARA reviews
- Heat stress evaluations
- FME controls

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

Lab coats may be worn for inspection-related tasks only; no physical work in contaminated areas may be performed.

HP will establish dosimetry placement based on intended tasks and work area surveys.

Notify HP before disassembling components.

Notify HP before entering overhead areas.

Dose Limit Alarm(Stay Time)= 0025 mrem Dose Rate Alarm= 0100 mr/hr
Elapsed Time Alarm= 0000 min.

REQUIREMENTS

Protective clothing:
- Cotton liners
- Booties
- Coveralls
- Shoe covers
- Rubber gloves
- Modesty garments

Lab coat

Electronic dosimeter
TLD

Health Physics Coverage
Routine

Minimum Margin:
0125 mrem

Health Physics Representative Date		RWP Term/Rev Date/Time	Terminated/Rev by

MILLSTONE NUCLEAR POWER STATION- RADIATION SURVEY FIGURE NO. 27

UNIT 2

DATE 2/20/05	SURVEY BY SIGNATURE H.P. Technician	REVIEWED BY T. Shyman	Type Of Survey ☒ Routine ☐ Special ☐ RWP # 1
TIME 0145	PRINT NAME H.P. Technician	% REACTOR POWER 0	

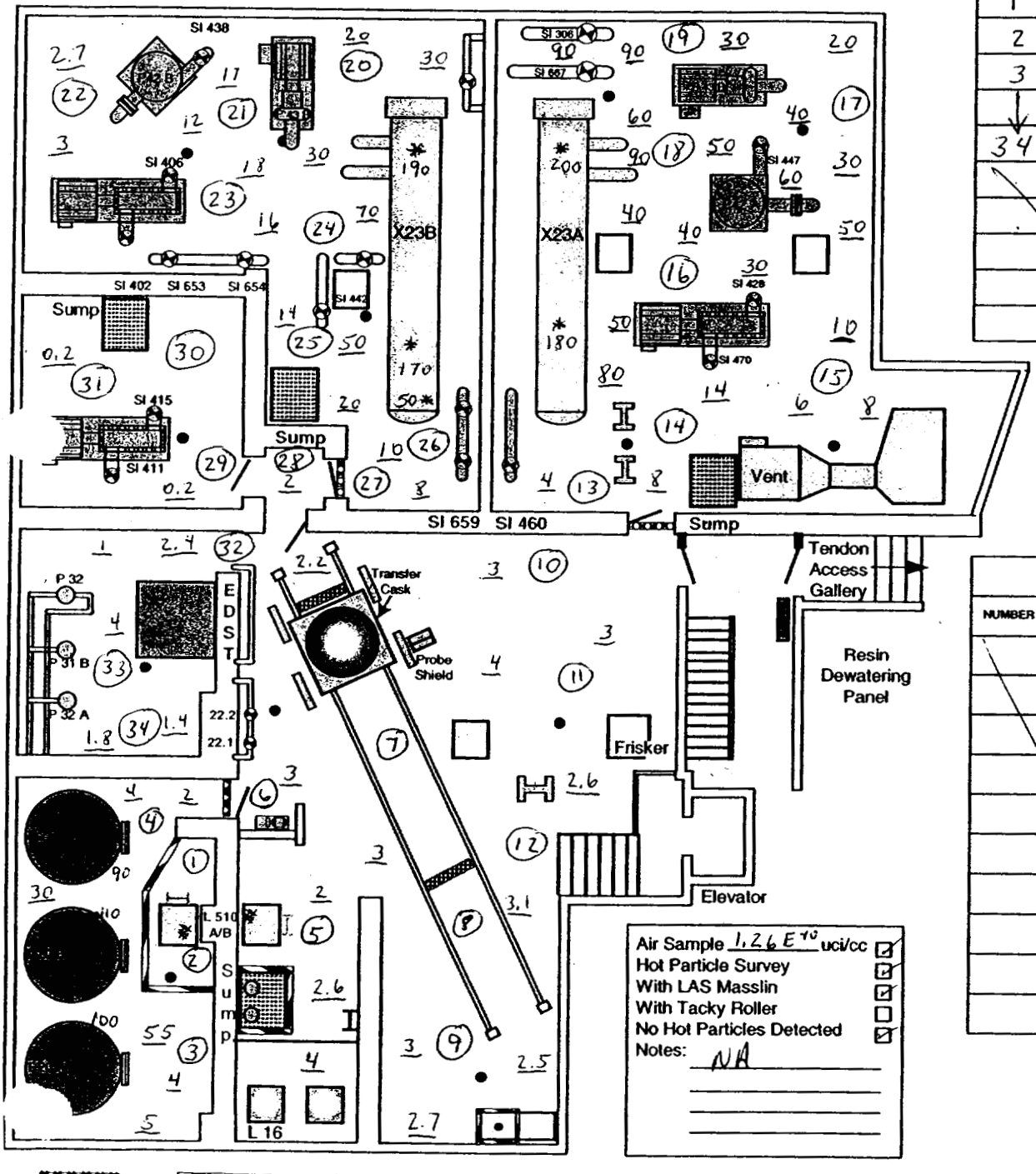
Type	Instrument Type		Serial Number	1/Efficiency	Background	Calibration Due Date
γ	RO2		0001	N/A	N/A	2/24/05
β+γ	RM 14		0002	10	200	2/27/05
α	Ludlum 177	43-2				
n^1	REM 500			N/A	N/A	

-45 Safeguards, Aerated Waste Tank and Pump Rooms

N

Smear Results	
NUMBER	DPM/100cm²
1	2K
2	25K
3	< 1K
↓	↓
34	< 1K

Smear Results	
NUMBER	DPM/100cm²



Air Sample 1.26 E-10 uci/cc ☑
Hot Particle Survey ☑
With LAS Masslin ☑
With Tacky Roller ☐
No Hot Particles Detected ☑
Notes: NA

RAD CONTRL. AREA | RAD MAT. AREA | CONTAMINATED AREA | RAD AREA | HIGH RAD AREA | TECH SPEC HRA | GRAVE DANGER AREA | NEUTRON

100 - *gamma(γ) at waist level in mrem/hr*

100* - *gamma(γ) contact in mrem/hr*

25n - *neutron($_0n^1$) in mrem/hr*

(1) - *contamination survey point*

50 mrad - beta (β) reading in mrad/hr

JOB PERFORMANCE MEASURE APPROVAL SHEET

I. JPM Title: **Use RATS to Determine and Prioritize the Safety Functions**

ID Number: JPM-A4RO Revision: 0

II. Initiated:

Daniel A. Pantalone — 1/21/05
Developer — Date

III. Reviewed:

Technical Reviewer — 1/28/05
Date

IV. Approved:

N/A
User Department Supervisor — Date

Nuclear Training Supervisor — 1/28/05
Date

SUMMARY OF CHANGES

A/I & Date	DESCRIPTION	REV/CHANGE
11/19/2004 (DAP)	Developed new JPM	0

JOB PERFORMANCE MEASURE WORKSHEET

Facility: MP-2 Examinee: _____

JPM Number: JPM-A4RO Rev. 0

Task Title: **Use RATS to Determine and Prioritize the Safety Functions**

System: Administrative

Time Critical Task: Yes ____ No X

Validated Time (minutes): 20

Task No.(s): NUTIMS #000-05-226

Applicable To: SRO X RO X PEO ____

K/A No.: 2.4.21 K/A Rating: 3.7/4.3

Method of Testing:

Simulated Performance: X Actual Performance: ____

Location:

Classroom: X Simulator: X In-Plant: X

Task Standards:	The examinee will correctly identify and prioritize the Safety Function Success Paths.
Required Materials (procedures,equipment):	Form 2540-002 rev. 001, "Functional Recovery Resource Assessment Tree" 2540 rev-21 page 8, "Safety Function Status Checklist"
General References:	EOP 2540, Functional Recovery

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

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

JOB PERFORMANCE MEASURE WORKSHEET

JPM Number: JPM-A4RO Rev. 0

Initiating Cues: The crew has just transitioned to 2540. You are an extra license on shift. The SM has directed you to:

- Determine the Safety Function Success Paths
- Prioritize all nine safety functions
- Submit your determination to the SM for comparison.

The plant conditions are as follows.

Initial Conditions: At the completion of EOP 2525, the following conditions exist:

- CEAs 45 and 46 are fully withdrawn, all other CEAs are fully inserted
- Power is at 2 x 10^{-5}% and stable
- 'A' and 'B' Charging Pumps are operating
- Both 6.9 kV buses are de-energized
- Bus 24C is energized from the 'A' D/G (RSST is de-energized)
- Bus 24D is de-energized ('B' D/G will not start)
- Both DC buses are energized
- VA-10 and VA-20 are energized
- Facility 1 RBCCW and Service Water Pumps are operating
- 'A' Auxiliary Feed Pump tripped when started
- The Terry Turbine will not start
- #1 SG level is 95 inches and lowering
- #2 SG level is 280 inches and slowly lowering
- #1 SG pressure is 485 psia and lowering
- #2 SG pressure is 820 psia and stable
- Pressurizer pressure is 1700 psia and slowly rising (Pressurizer level is 9% and rising very slowly)
- CETs are reading 475 deg. F and slowly lowering (CET subcooling is 138 deg F and rising)
- Loop delta-T is 36 deg F and stable
- Containment pressure is 27 psig and lowering
- Containment rad monitors are not in alarm and stable
- SJAE and blowdown rad monitors are not in alarm and stable
- Enclosure Building D/P is normal.
- SIAS, CIAS, EBFAS, MSI, and CSAS have actuated
- "A" Containment Spray Pump flow is 1450 gpm.
- RVLMS is 100%
- RWST is 97% and lowering slowly
- Total SI flow is 0 gpm

Simulator Requirements: None

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

1. Critical steps for this JPM are indicated with an "X". For the examinee to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.

2. When examinee states what his/her simulated action/observation would be, read the appropriate "Cue".

3. If necessary, question examinee for details of simulated actions / observations (i.e. "What are you looking at?" or "What are you observing?").

4. Under **NO** circumstances must the examinee be allowed to manipulate any devices during the performance of this JPM (in-plant only).

PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-A4RO TITLE: **Use RATS to Determine and Prioritize the Safety Functions**

START TIME: _____

STEP **1** _X_ Performance Steps: *Identify success paths to be used to satisfy each safety function using both of the following:*

- *Resource Assessment Trees*
- *Safety Function Tracking Page*

GRADE ___ _X_ Standards: *The examinee identifies the Safety Function Success Paths for the given plant conditions per attached Safety Function Status Checklist.*

Cue:

Comments: Give the examinee a copy of the Resource Assessment Trees and the Safety Function Tracking Page.

~~~~~~

STEP **2** _X_ Performance Steps: Prioritize safety functions to be addressed first based on ALL of the following:

_X_ - Safety functions which do not meet the Safety Function Status Checklist for the selected success path.

_X_ - Safety functions for which the equipment to support the success path is not operating.

_X_ - Safety functions for which success path three has been selected.

_X_ - Safety functions for which success path two has been selected.

_X_ - Safety functions for which success path one has been selected.
~~~~~~

PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-A4RO TITLE: **Use RATS to Determine and Prioritize the Safety Functions**

GRADE ___ X Standards: *The examinee prioritizes the Safety Function Success Paths for the given plant conditions per attached Safety Function Status Checklist.*

Cue:

Comments: **When the examinee submits the completed Safety Function Status Checklist, this JPM is complete.**

~~~~~~

STOP TIME: _____
~~~~~~

VERIFICATION OF JPM COMPLETION

Job Performance Measure No. JPM-A4RO Rev. 0

Date Performed: _____

Operator: _____

Evaluator(s): _____

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

Time Critical Task? Yes _____ No _____

Validated Time (minutes): 20

Actual Time to Complete (minutes): _____

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

Areas for Improvement:

Safety Function	Success Path		Equipment Operating	SFSC Met	Priority
Reactivity Control	**RC-2**		**Y**	**Y**	**3**
Maintenance of Vital DC Power	**MVA-DC-1**		**Y**	**Y**	**6**
Maintenance of Vital AC Power	**MVA-AC-2**		**Y**	**Y**	**4**
RCS Inventory Control	**IC-2**		**Y**	**Y**	**5**
RCS Pressure Control	**PC-1**		**Y**	**Y**	**7**
RCS and Core Heat Removal	**HR-3**		**Y OR N**	**N**	**1**
Containment Isolation	**CI-1**		**Y**	**Y**	**8**
Containment Temperature and Pressure Control	**CTPC-3**		**Y**	**Y**	**2**
Containment Combustible Gas Control	**CCGC-1**		**Y**	**Y**	**9**

EXAMINEE HANDOUT

JPM Number: JPM-A4RO Rev. 0

Initiating Cues: The crew has just transitioned to 2540. You are an extra license on shift. The SM has directed you to:

- Determine the Safety Function Success Paths
- Prioritize all nine safety functions
- Submit your determination to the SM for comparison.

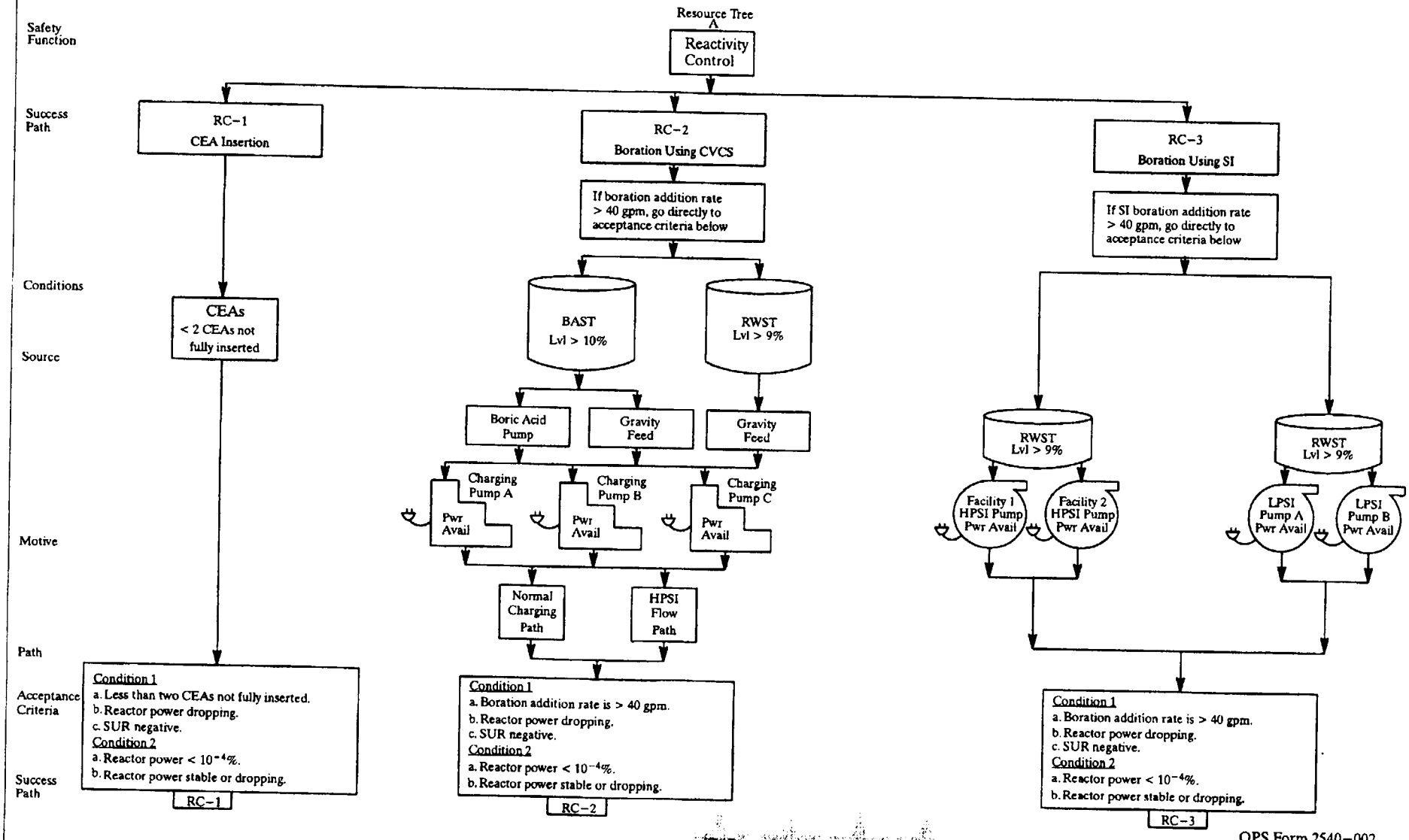
The plant conditions are as follows.

Initial Conditions: At the completion of EOP 2525, the following conditions exist:

- CEAs 45 and 46 are fully withdrawn, all other CEAs are fully inserted
- Power is at 2 x 10^{-5}% and stable
- 'A' and 'B' Charging Pumps are operating
- Both 6.9 kV buses are de-energized
- Bus 24C is energized from the 'A' D/G (RSST is de-energized)
- Bus 24D is de-energized ('B' D/G will not start)
- Both DC buses are energized
- VA-10 and VA-20 are energized
- Facility 1 RBCCW and Service Water Pumps are operating
- 'A' Auxiliary Feed Pump tripped when started
- The Terry Turbine will not start
- #1 SG level is 95 inches and lowering
- #2 SG level is 280 inches and slowly lowering
- #1 SG pressure is 485 psia and lowering
- #2 SG pressure is 820 psia and stable
- Pressurizer pressure is 1700 psia and slowly rising (Pressurizer level is 9% and rising very slowly)
- CETs are reading 475 deg. F and slowly lowering (CET subcooling is 138 deg F and rising)
- Loop delta-T is 36 deg F and stable
- Containment pressure is 27 psig and lowering
- Containment rad monitors are not in alarm and stable
- SJAE and blowdown rad monitors are not in alarm and stable
- Enclosure Building D/P is normal.
- SIAS, CIAS, EBFAS, MSI, and CSAS have actuated
- "A" Containment Spray Pump flow is 1450 gpm.
- RVLMS is 100%
- RWST is 97% and lowering slowly
- Total SI flow is 0 gpm

Approval Date	Effective Date
10/3/02	10/10/02

Functional Recovery Resource Assessment Trees



STOP THINK ACT REVIEW

Resource Tree
B-1

Safety Function

Maintenance of Vital DC Power

Success Path

MVA-DC-1 Battery Chargers/ Station Batteries

Conditions

480V Bus 22E

480V Bus 22F

Source

Battery Charger A

Battery Charger B

Station Battery A

Station Battery B

Motive

Path

Vital DC Bus 201 A

Vital DC Bus 201B

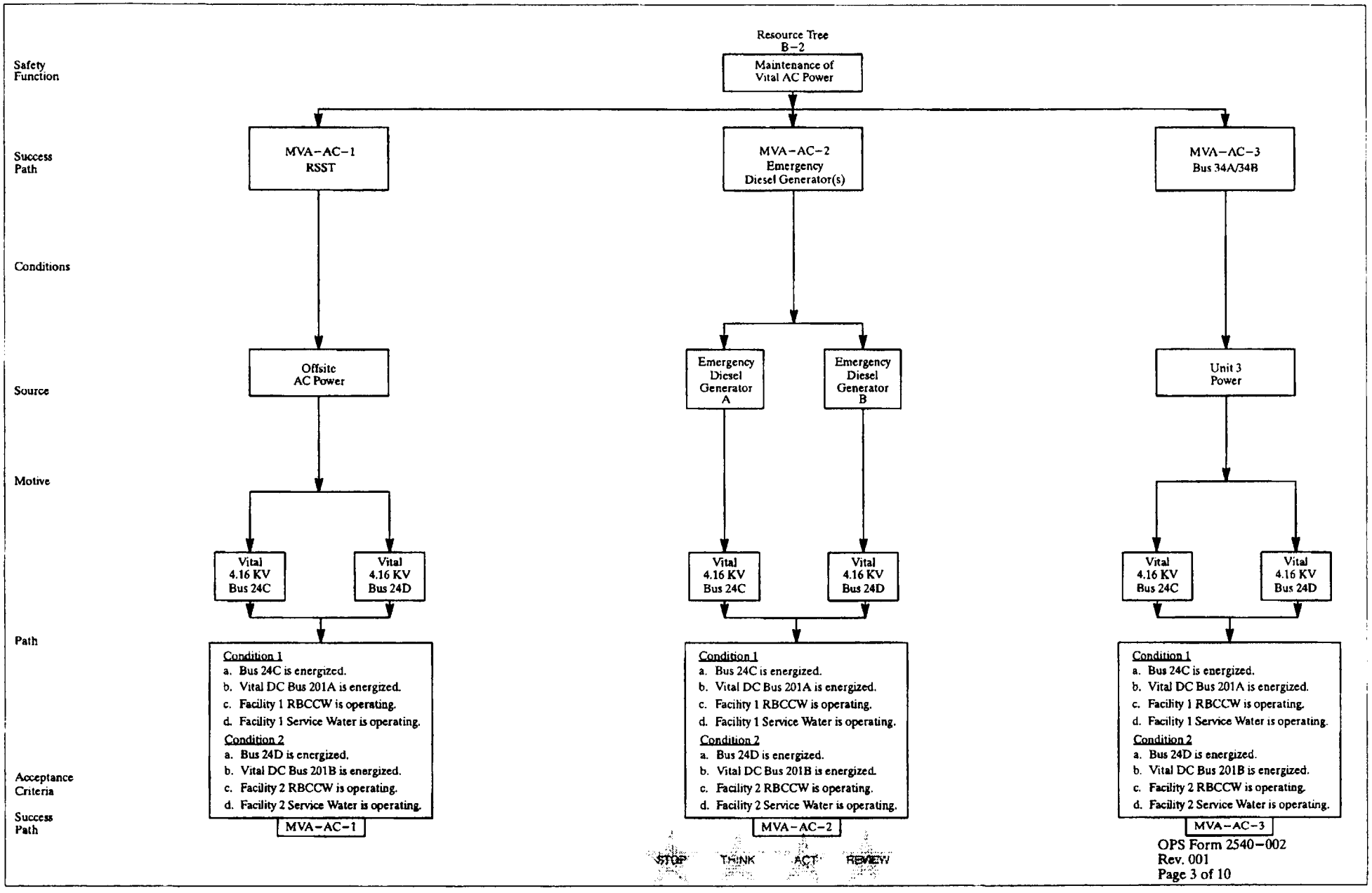
Acceptance Criteria

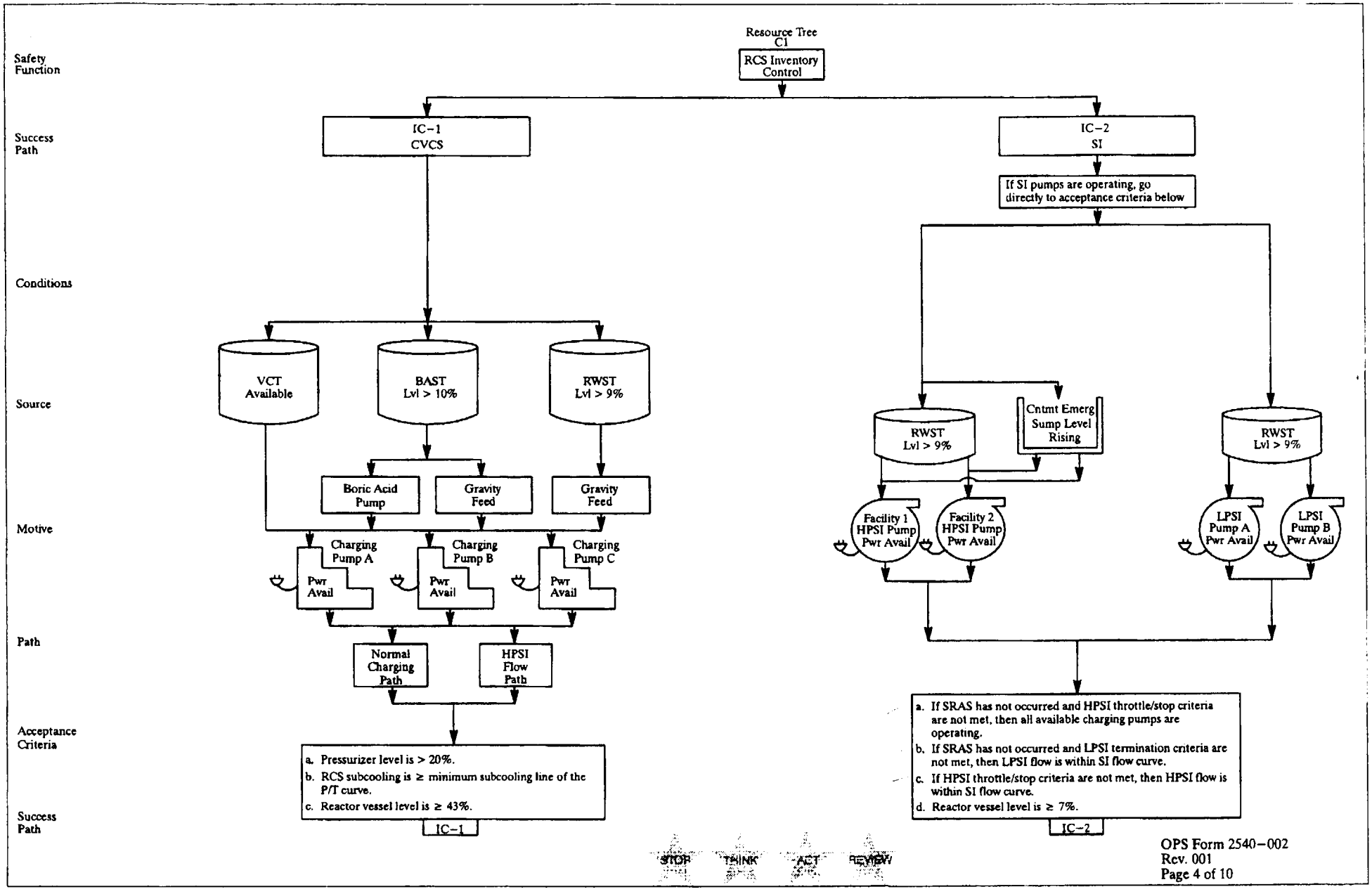
Condition 1
a. Vital DC Bus 201A is energized.
b. 120V AC Bus VA10 is energized.
Condition 2
a. Vital DC Bus 201B is energized.
b. 120V AC Bus VA20 is energized.

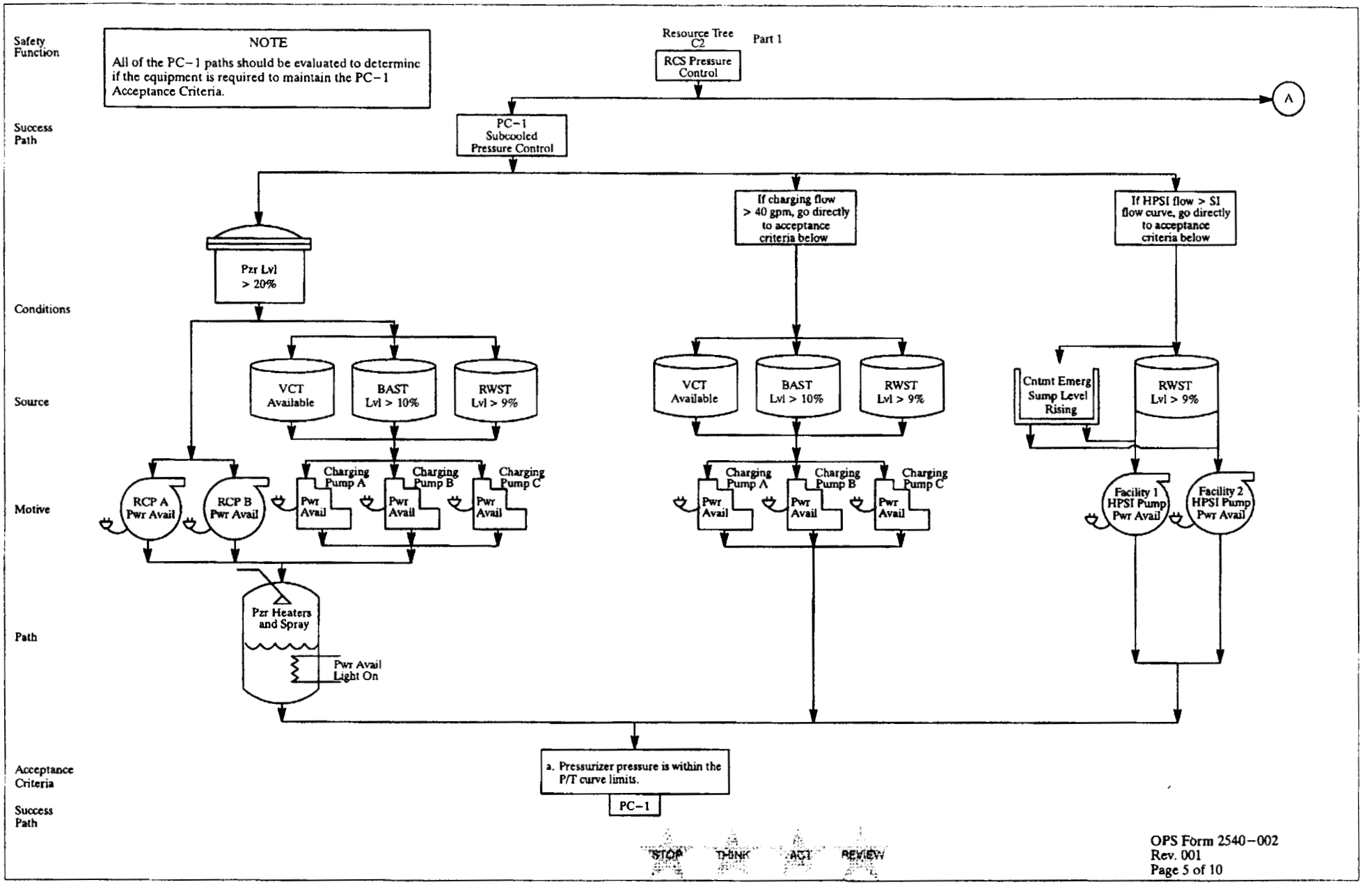
Success Path

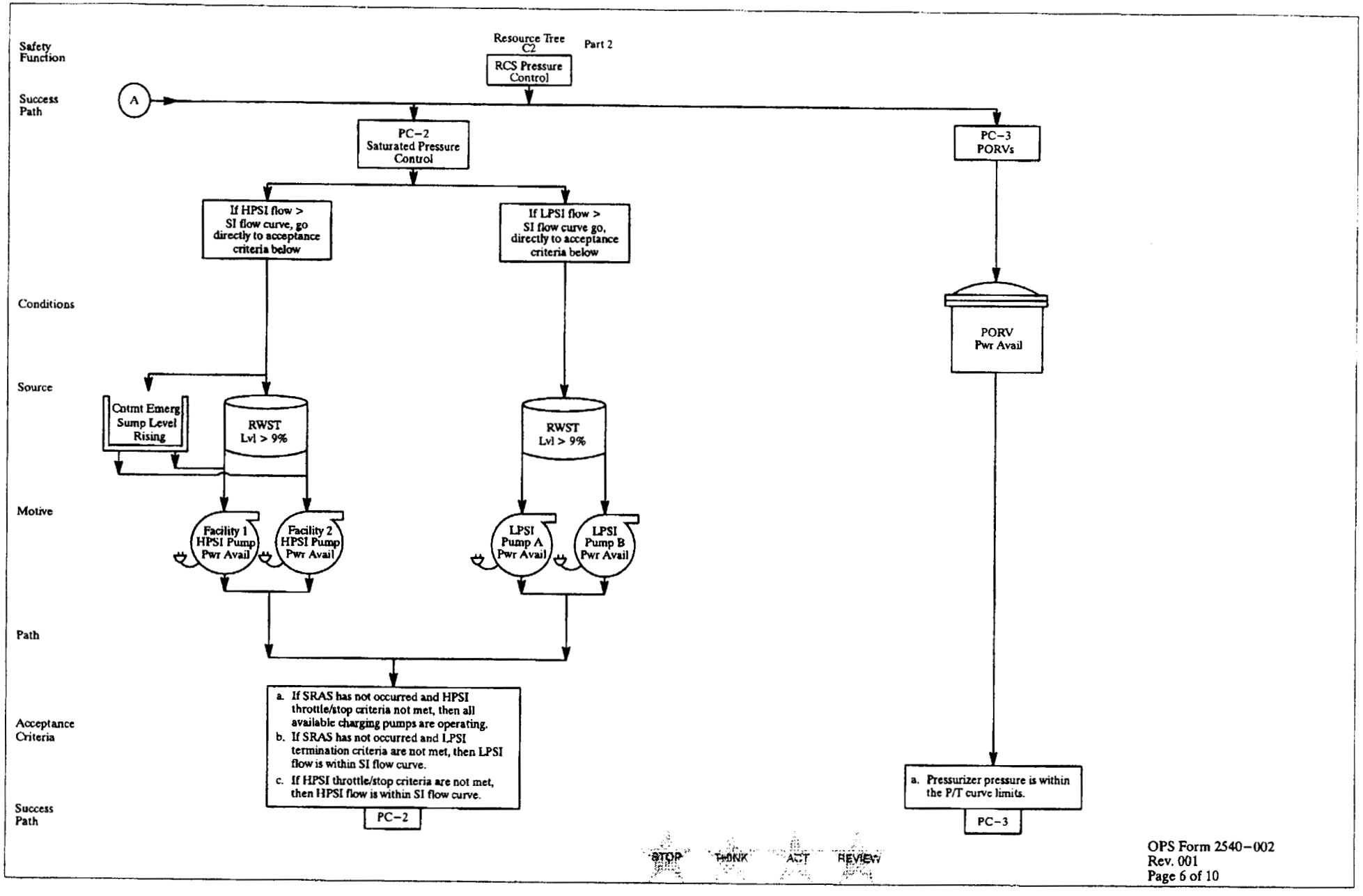
MVA-DC-1

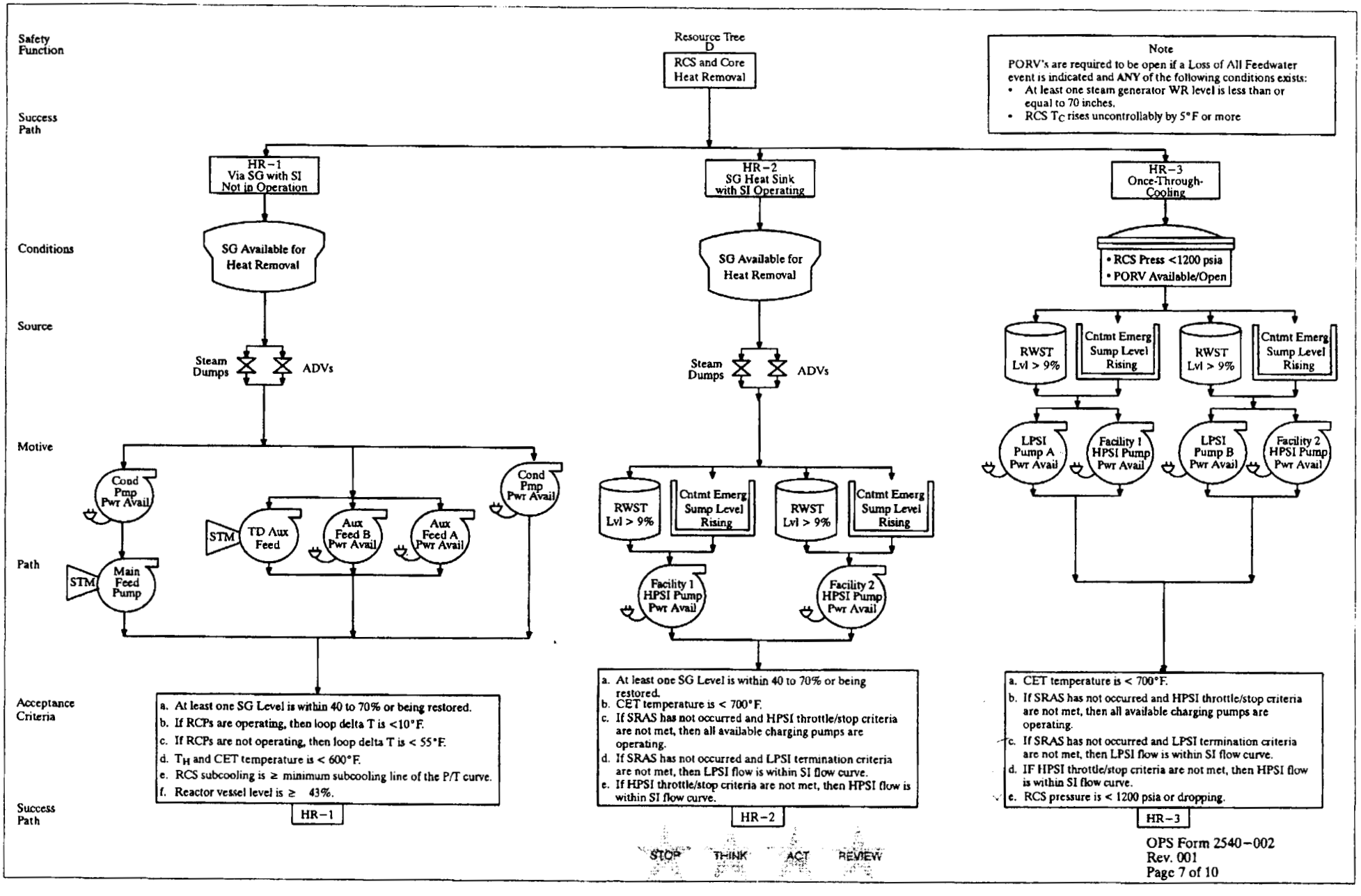
STOP THINK ACT REVIEW


Safety Function
Success Path
Conditions
Source
Motive
Path
Acceptance Criteria
Success Path
Resource Tree
B-2
Maintenance of Vital AC Power
MVA-AC-1
RSST
MVA-AC-2
Emergency Diesel Generator(s)
MVA-AC-3
Bus 34A/34B
Offsite AC Power
Emergency Diesel Generator A
Emergency Diesel Generator B
Unit 3 Power
Vital 4.16 KV Bus 24C
Vital 4.16 KV Bus 24D
Vital 4.16 KV Bus 24C
Vital 4.16 KV Bus 24D
Vital 4.16 KV Bus 24C
Vital 4.16 KV Bus 24D
Condition 1
a. Bus 24C is energized.
b. Vital DC Bus 201A is energized.
c. Facility 1 RBCCW is operating.
d. Facility 1 Service Water is operating.
Condition 2
a. Bus 24D is energized.
b. Vital DC Bus 201B is energized.
c. Facility 2 RBCCW is operating.
d. Facility 2 Service Water is operating.
MVA-AC-1
Condition 1
a. Bus 24C is energized.
b. Vital DC Bus 201A is energized.
c. Facility 1 RBCCW is operating.
d. Facility 1 Service Water is operating.
Condition 2
a. Bus 24D is energized.
b. Vital DC Bus 201B is energized.
c. Facility 2 RBCCW is operating.
d. Facility 2 Service Water is operating.
MVA-AC-2
Condition 1
a. Bus 24C is energized.
b. Vital DC Bus 201A is energized.
c. Facility 1 RBCCW is operating.
d. Facility 1 Service Water is operating.
Condition 2
a. Bus 24D is energized.
b. Vital DC Bus 201B is energized.
c. Facility 2 RBCCW is operating.
d. Facility 2 Service Water is operating.
MVA-AC-3
STOP
THINK
ACT
REVIEW


Resource Tree
C1
RCS Inventory Control
Safety Function
Success Path
Conditions
Source
Motive
Path
Acceptance Criteria
Success Path
IC-1
CVCS
IC-2
SI
If SI pumps are operating, go directly to acceptance criteria below
VCT Available
BAST Lvl > 10%
RWST Lvl > 9%
Boric Acid Pump
Gravity Feed
Gravity Feed
Charging Pump A
Pwr Avail
Charging Pump B
Pwr Avail
Charging Pump C
Pwr Avail
Normal Charging Path
HPSI Flow Path
a. Pressurizer level is > 20%.
b. RCS subcooling is ≥ minimum subcooling line of the P/T curve.
c. Reactor vessel level is ≥ 43%.
IC-1
RWST Lvl > 9%
Cntmt Emerg Sump Level Rising
Facility 1 HPSI Pump Pwr Avail
Facility 2 HPSI Pump Pwr Avail
RWST Lvl > 9%
LPSI Pump A Pwr Avail
LPSI Pump B Pwr Avail
a. If SRAS has not occurred and HPSI throttle/stop criteria are not met, then all available charging pumps are operating.
b. If SRAS has not occurred and LPSI termination criteria are not met, then LPSI flow is within SI flow curve.
c. If HPSI throttle/stop criteria are not met, then HPSI flow is within SI flow curve.
d. Reactor vessel level is ≥ 7%.
IC-2
STOP
THINK
ACT
REVIEW


Safety Function
NOTE
All of the PC-1 paths should be evaluated to determine if the equipment is required to maintain the PC-1 Acceptance Criteria.
Resource Tree C2
Part 1
RCS Pressure Control
A
Success Path
PC-1 Subcooled Pressure Control
Conditions
Pzr Lvl > 20%
If charging flow > 40 gpm, go directly to acceptance criteria below
If HPSI flow > SI flow curve, go directly to acceptance criteria below
Source
VCT Available
BAST Lvl > 10%
RWST Lvl > 9%
VCT Available
BAST Lvl > 10%
RWST Lvl > 9%
Cntmt Emerg Sump Level Rising
RWST Lvl > 9%
Motive
RCP A Pwr Avail
RCP B Pwr Avail
Charging Pump A
Charging Pump B
Charging Pump C
Pwr Avail
Pwr Avail
Pwr Avail
Charging Pump A
Charging Pump B
Charging Pump C
Pwr Avail
Pwr Avail
Pwr Avail
Facility 1 HPSI Pump Pwr Avail
Facility 2 HPSI Pump Pwr Avail
Path
Pzr Heaters and Spray
Pwr Avail Light On
Acceptance Criteria
a. Pressurizer pressure is within the P/T curve limits.
Success Path
PC-1
STOP
THINK
ACT
REVIEW


Safety Function
Resource Tree C2
Part 2
RCS Pressure Control
Success Path
A
PC–2 Saturated Pressure Control
PC–3 PORVs
If HPSI flow > SI flow curve, go directly to acceptance criteria below
If LPSI flow > SI flow curve go, directly to acceptance criteria below
Conditions
PORV Pwr Avail
Source
Cntmt Emerg Sump Level Rising
RWST Lvl > 9%
RWST Lvl > 9%
Motive
Facility 1 HPSI Pump Pwr Avail
Facility 2 HPSI Pump Pwr Avail
LPSI Pump A Pwr Avail
LPSI Pump B Pwr Avail
Path
Acceptance Criteria
a. If SRAS has not occurred and HPSI throttle/stop criteria not met, then all available charging pumps are operating.
b. If SRAS has not occurred and LPSI termination criteria are not met, then LPSI flow is within SI flow curve.
c. If HPSI throttle/stop criteria are not met, then HPSI flow is within SI flow curve.
a. Pressurizer pressure is within the P/T curve limits.
Success Path
PC–2
PC–3
STOP
THINK
ACT
REVIEW


Safety Function
Success Path
Conditions
Source
Motive
Path
Acceptance Criteria
Success Path
Resource Tree D
RCS and Core Heat Removal
Note
PORV's are required to be open if a Loss of All Feedwater event is indicated and ANY of the following conditions exists:
• At least one steam generator WR level is less than or equal to 70 inches.
• RCS T_C rises uncontrollably by 5°F or more
HR-1 Via SG with SI Not in Operation
SG Available for Heat Removal
Steam Dumps
ADVs
Cond Pmp Pwr Avail
STM
TD Aux Feed
Aux Feed B Pwr Avail
Aux Feed A Pwr Avail
Cond Pmp Pwr Avail
STM
Main Feed Pump
a. At least one SG Level is within 40 to 70% or being restored.
b. If RCPs are operating, then loop delta T is <10°F.
c. If RCPs are not operating, then loop delta T is < 55°F.
d. T_H and CET temperature is < 600°F.
e. RCS subcooling is ≥ minimum subcooling line of the P/T curve.
f. Reactor vessel level is ≥ 43%.
HR-1
HR-2 SG Heat Sink with SI Operating
SG Available for Heat Removal
Steam Dumps
ADVs
RWST Lvl > 9%
Cntmt Emerg Sump Level Rising
RWST Lvl > 9%
Cntmt Emerg Sump Level Rising
Facility 1 HPSI Pump Pwr Avail
Facility 2 HPSI Pump Pwr Avail
a. At least one SG Level is within 40 to 70% or being restored.
b. CET temperature is < 700°F.
c. If SRAS has not occurred and HPSI throttle/stop criteria are not met, then all available charging pumps are operating.
d. If SRAS has not occurred and LPSI termination criteria are not met, then LPSI flow is within SI flow curve.
e. If HPSI throttle/stop criteria are not met, then HPSI flow is within SI flow curve.
HR-2
HR-3 Once-Through-Cooling
• RCS Press <1200 psia
• PORV Available/Open
RWST Lvl > 9%
Cntmt Emerg Sump Level Rising
RWST Lvl > 9%
Cntmt Emerg Sump Level Rising
LPSI Pump A Pwr Avail
Facility 1 HPSI Pump Pwr Avail
LPSI Pump B Pwr Avail
Facility 2 HPSI Pump Pwr Avail
a. CET temperature is < 700°F.
b. If SRAS has not occurred and HPSI throttle/stop criteria are not met, then all available charging pumps are operating.
c. If SRAS has not occurred and LPSI termination criteria are not met, then LPSI flow is within SI flow curve.
d. IF HPSI throttle/stop criteria are not met, then HPSI flow is within SI flow curve.
e. RCS pressure is < 1200 psia or dropping.
HR-3
STOP
THINK
ACT
REVIEW

Safety Function

Success Path

Conditions

Source

Motive

Path

Acceptance Criteria

Success Path

Resource Tree
E

Containment Isolation

CI-1 Automatic/Manual Containment Isolation

Normal Containment

Abnormal Containment

ALL of the following:
1. Cntmt pressure < 4.42 psig.
2. Radiation monitors inside cntmt have no unexplained alarms and no unexplained rises.
3. Radiation monitoring outside cntmt have no unexplained alarms and no unexplained rises.
4. Steam plant radiation monitors have no unexplained alarms and no unexplained rises.

LOCA/ESDE
ANY of the following:
1. Cntmt pressure ≥ 4.42 psig.
2. Radiation monitors inside cntmt have unexplained alarms or unexplained rises.
3. Radiation monitoring outside cntmt have unexplained alarms or unexplained rises.

SGTR
1. Steam plant radiation monitors have unexplained alarms and unexplained rises.

Normal Containment Conditions

CIAS

Remote Manual Valve Operation

Local Valve Operation

Most Affected SG is Isolated

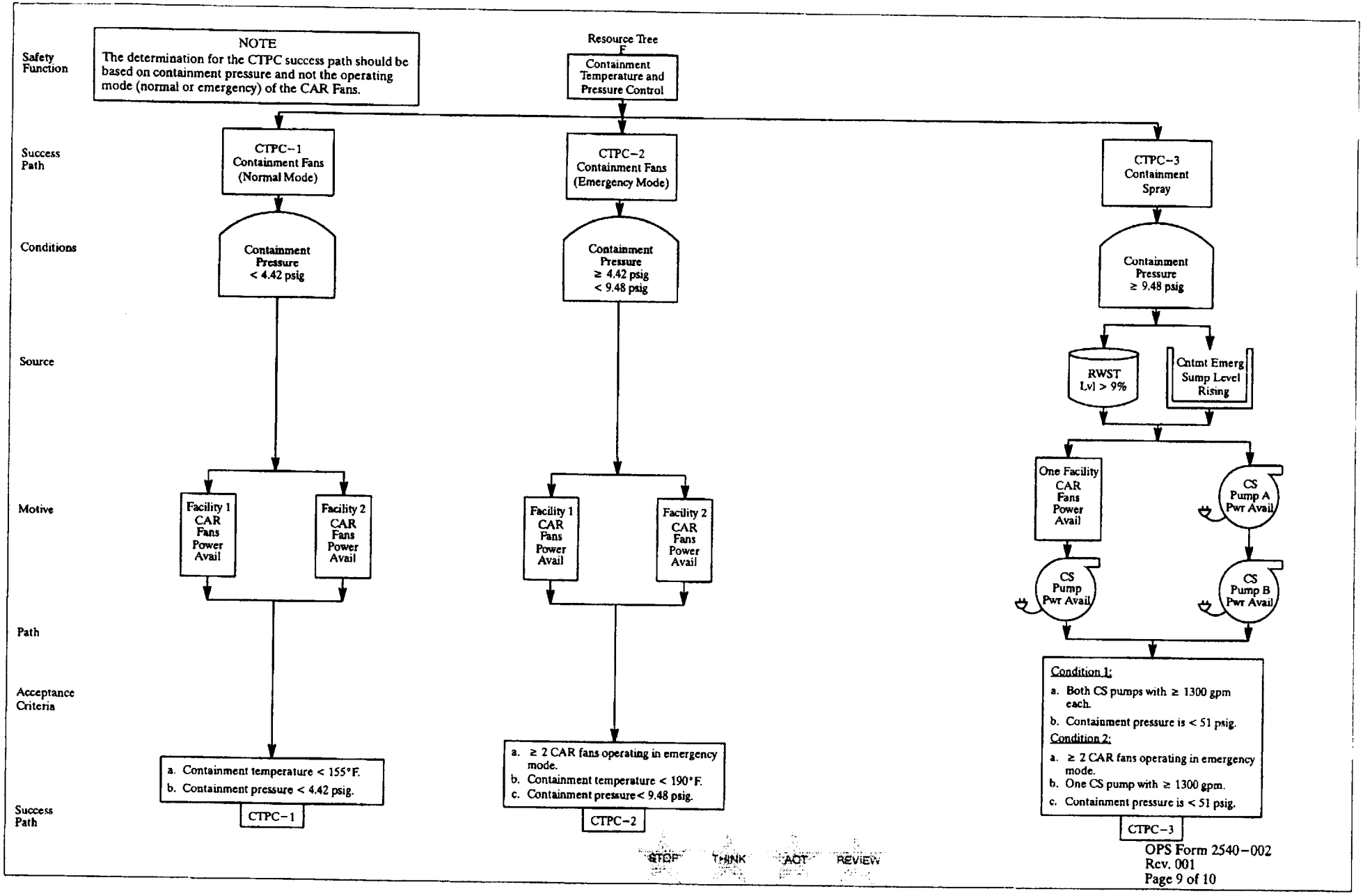
Condition 1:
a. **ONE** of the following:
   - Steam plant radiation monitors have no unexplained alarms and no unexplained rises.
   - If a SGTR exists, all release paths from most affected SG to the environment not being used for planned release are isolated
b. Containment pressure < 4.42 psia.
c. Radiation monitors inside containment have no unexplained alarms and no unexplained rises.
d. Radiation monitors outside containment have no unexplained alarms and no unexplained rises.
e. SG pressure < 920 psia.

Condition 2:
a. **ONE** of the following:
   - Steam plant radiation monitors have no unexplained alarms and no unexplained rises.
   - If a SGTR exists, all release paths from most affected SG to the environment not being used for planned release are isolated
b. Each containment penetration required to be closed for current plant conditions has an isolation valve closed.

CI-1

STOP THINK ACT REVIEW

NOTE
Both of the Abnormal Containment conditions should be evaluated to determine if the equipment is required to maintain the CI-1 Acceptance Criteria.


Safety Function
NOTE
The determination for the CTPC success path should be based on containment pressure and not the operating mode (normal or emergency) of the CAR Fans.
Resource Tree F
Containment Temperature and Pressure Control
Success Path
CTPC-1 Containment Fans (Normal Mode)
CTPC-2 Containment Fans (Emergency Mode)
CTPC-3 Containment Spray
Conditions
Containment Pressure < 4.42 psig
Containment Pressure ≥ 4.42 psig < 9.48 psig
Containment Pressure ≥ 9.48 psig
Source
RWST Lvl > 9%
Cntmt Emerg Sump Level Rising
Motive
Facility 1 CAR Fans Power Avail
Facility 2 CAR Fans Power Avail
Facility 1 CAR Fans Power Avail
Facility 2 CAR Fans Power Avail
One Facility CAR Fans Power Avail
CS Pump A Pwr Avail
CS Pump Pwr Avail
CS Pump B Pwr Avail
Path
Acceptance Criteria
a. Containment temperature < 155°F.
b. Containment pressure < 4.42 psig.
a. ≥ 2 CAR fans operating in emergency mode.
b. Containment temperature < 190°F.
c. Containment pressure< 9.48 psig.
Condition 1:
a. Both CS pumps with ≥ 1300 gpm each.
b. Containment pressure is < 51 psig.
Condition 2:
a. ≥ 2 CAR fans operating in emergency mode.
b. One CS pump with ≥ 1300 gpm.
c. Containment pressure is < 51 psig.
Success Path
CTPC-1
CTPC-2
CTPC-3
STOP
THINK
ACT
REVIEW

Safety Function

NOTE

Containment Combustible Gas Control Safety Function is considered satisfied until the hydrogen analyzer can be placed in service and the warm up is complete.

Resource Tree G

Containment Combustible Gas Control

Success Path

CCGC–1 Passive/Hydrogen Recombiners

CCGC–2 Hydrogen Purge System

Conditions

$H_2 < 1.4\%$

$H_2 \geq 1.4\%$

H_2 Purge Recommended By TSC

Source

H_2 Recombiner A

H_2 Recombiner B

Motive

Hydrogen Purge System

Path

Acceptance Criteria

Condition 1:

a. Containment hydrogen concentration < 1.4%.

Condition 2:

a. All available hydrogen recombiners energized.

b. Containment hydrogen concentration < 3.8%.

a. Hydrogen purge system operating.

Success Path

CCGC–1

CCGC–2

STOP THINK ACT REVIEW

4.0 SAFETY FUNCTION STATUS CHECKLIST

SAFETY FUNCTION TRACKING PAGE **EOP ENTRY TIME** _____

Safety Function	Success Path		Equipment Operating	SFSC Met	Priority
Reactivity Control	RC-1	CEA Insertion			
	RC-2	Boration using CVCS			
	RC-3	Boration using SI			
Maintenance of Vital DC Power	MVA-DC-1	Battery Chargers/ Station Batteries			
Maintenance of Vital AC Power	MVA-AC-1	RSST			
	MVA-AC-2	EDG			
	MVA-AC-3	Bus 34A/34B			
RCS Inventory Control	IC-1	CVCS			
	IC-2	Safety Injection			
RCS Pressure Control	PC-1	Subcooled			
	PC-2	Saturated			
	PC-3	PORVs			
RCS and Core Heat Removal	HR-1	SI not operating			
	HR-2	SI operating			
	HR-3	O-T-C			
Containment Isolation	CI-1	Automatic/Manual			
Containment Temperature and Pressure Control	CTPC-1	CARs (Normal)			
	CTPC-2	CARs (Emerg)			
	CTPC-3	Containment Spray			
Containment Combustible Gas Control	CCGC-1	Hydrogen Recombiners			
	CCGC-2	Hydrogen Purge			

4.0 SAFETY FUNCTION STATUS CHECKLIST

SAFETY FUNCTION TRACKING PAGE **EOP ENTRY TIME** _____

Safety Function	Success Path		Equipment Operating	SFSC Met	Priority
Reactivity Control	RC-1	CEA Insertion			
	RC-2	Boration using CVCS			
	RC-3	Boration using SI			
Maintenance of Vital DC Power	MVA-DC-1	Battery Chargers/ Station Batteries			
Maintenance of Vital AC Power	MVA-AC-1	RSST			
	MVA-AC-2	EDG			
	MVA-AC-3	Bus 34A/34B			
RCS Inventory Control	IC-1	CVCS			
	IC-2	Safety Injection			
RCS Pressure Control	PC-1	Subcooled			
	PC-2	Saturated			
	PC-3	PORVs			
RCS and Core Heat Removal	HR-1	SI not operating			
	HR-2	SI operating			
	HR-3	O-T-C			
Containment Isolation	CI-1	Automatic/Manual			
Containment Temperature and Pressure Control	CTPC-1	CARs (Normal)			
	CTPC-2	CARs (Emerg)			
	CTPC-3	Containment Spray			
Containment Combustible Gas Control	CCGC-1	Hydrogen Recombiners			
	CCGC-2	Hydrogen Purge			

JOB PERFORMANCE MEASURE APPROVAL SHEET

I. JPM Title: **SRO Review and Approve a Radioactive Liquid Waste Release Permit**

ID Number: JPM-A3SRO Revision: 0

II. Initiated:

R. J. Ashey — Developer — 01/27/05 — Date

III. Reviewed:

Daniel A. Pantalone — Technical Reviewer — 01/31/05 — Date

IV. Approved:

N/A — User Department Supervisor — Date

Nuclear Training Supervisor — 1/31/05 — Date

JOB PERFORMANCE MEASURE WORKSHEET

Facility: MP-2 Examinee: _____

JPM Number: JPM-A3SRO Rev. 0

Task Title: **SRO Review and Approve a Radioactive Liquid Waste Release Permit**

System: Radiation Control

Time Critical Task: Yes ____ No X

Validated Time (minutes): 10

Task No.(s): NUTIMS # 119-02-026

Applicable To: SRO X RO ____ PEO ____

K/A No.: 2.3.6 K/A Rating: 2.1/3.1

Method of Testing:

Simulated Performance: X Actual Performance: ____

Location:

Classroom: X Simulator: X In-Plant: X

Task Standards: At the completion of this JPM, the examinee will have discovered a plant operating condition that will NOT allow authorizing a radioactive liquid waste discharge.

Required Materials (procedures,equipment):
- SP 2617A Aerated and Clean Radioactive Liquid Waste Discharges
- Chem Form 2864-1, Millstone Unit 2 Liquid Discharge Permit Number 2000

General References: SP 2617A, Steps 4.2.6 and 4.2.7 (Rev. 027-05)

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

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

JOB PERFORMANCE MEASURE WORKSHEET

JPM Number: JPM-A3S Rev. 0

Initiating Cues: As the SM, you have directed the Radwaste PEO to make preparations to discharge the AWMT. Perform the required actions to authorize the discharge.

Initial Conditions:

- No other radioactive discharges are in progress.
- SP 2617A, section 4.2; steps 4.2.1 through 4.2.5 have been completed.
- Chemistry sample results are acceptable.
- RM-9116 is operable.
- AWMT level is 89%.
- The plant is in MODE 5 preparing the RCS for refueling.
- 2 Circulating Water Pumps operating, 2 Service Water Pumps operating.
- It is one hour past high tide.

Simulator Requirements: N/A

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

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

PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-A3SRO TITLE: **SRO Approve a Radioactive Liquid Waste Release Permit**

START TIME: _____

STEP **1** __ Performance Steps: When Chem. Form 2864-001 (Discharge Permit) is obtained from Chemistry Department, SM review and authorize Chem. Form 2864-1, "Millstone Unit #2 Liquid Discharge Permit No. 2005," for discharge.

GRADE ___ __ Standards: *SM should review and initial Chem Form 2864-001. If examinee determines that the discharge should NOT be made at this point, he may elect NOT to initial the permit.*

Cue:
- **Provide Chem. Form 2864-1 to the examinee.**
- **If the examinee determines that the discharge CANNOT be authorized, ask, "Why?"**

Comments:

~~~~~~

STEP **2** X Performance Steps: When Chem. Form 2864-001(Discharge Permit) is authorized, refer to OPS Form 2617A-001 and perform the following:
- Review plant conditions and authorize discharge.
- Ensure no other radioactive discharges are in progress (other than SG blowdown) and initial.
- If discharge is to be performed with radiation monitor *not* OPERABLE, Ensure 2 independent samples have been analyzed for AWMT, as specified on Chem Form 2852-1, "Unit 2 Liquid Radwaste Effluent Rad Monitor Inoperative", and Initial.

GRADE Standards: *Examinee reviews plant conditions and:*

___ X - *determines that the discharge CANNOT be authorized*

___ X - *because the actual dilution flow rate (with 2 circ Water and 2 Service Water Pumps operating) is less than the Required Dilution Flow Rate on the Discharge Permit.*

Cue: **If the examinee determines that the discharge CANNOT be authorized and does NOT provide a reason, ask, "Why?"**

Comments:

~~~~~~

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

STOP TIME: _____

VERIFICATION OF JPM COMPLETION

Job Performance Measure No. JPM-A3SRO Rev. 0

Date Performed: _____

Operator: _____

Evaluator(s): _____

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

Time Critical Task? Yes _____ No **X**

Validated Time (minutes): 10

Actual Time to Complete (minutes): _____

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

Areas for Improvement:

EXAMINEE HANDOUT

JPM ID Number: JPM-A3SRO

Initiating Cues: As the SM, you have directed the Radwaste PEO to make preparations to discharge the AWMT. Perform the required actions to authorize the discharge.

Initial Conditions:

- No other radioactive discharges are in progress.
- SP 2617A, section 4.2; steps 4.2.1 through 4.2.5 have been completed.
- Chemistry sample results are acceptable.
- RM-9116 is operable.
- AWMT level is 89%.
- The plant is in MODE 5 preparing the RCS for refueling.
- 2 Circulating Water Pumps operating, 2 Service Water Pumps operating.
- It is one hour past high tide.

SIGNATURE ON FILE	09-05-03	09-12-03
Approved	Approval Date	Effective Date

MILLSTONE UNIT #2 LIQUID DISCHARGE PERMIT NO. 2000 (SP43075)

Tank .....: AWMT
Sampled by.....: C
Date/time sampled ..... : [Today] 07:15
Date/time on recirc ..... : [Today] 06:25
Minimum Recirc Time.....: 0.5 hr w/ mixer; 4.0 hr w/ pump
TSS (ppm) .....: 8.8 (AWMT limit = 45 ppm; CWMT limit = 22.5 ppm)
Boric acid conc (ppm).....: 237 pH (>2 pH <12.5) : 8.8
Eff. Monitor Bkg = (cpm)..: 1.65E+04

<<< 2 circulating water pumps must be in operation during this discharge >>>
During Unit 2 shutdown a minimum dilution flow rate of 20,000 gpm is allowable with the discharge rate limited to 30.5 gpm.

Isotope	Activity (uCi/ml)		MPC (uCi/ml)	Activity/MPC
MN-54	4.766E-06		1.000E-04	4.766E-02
CO-57	3.166E-07		4.000E-04	7.914E-04
CO-58	4.451E-06		9.000E-05	4.945E-02
CO-60	1.032E-04		3.000E-05	3.442E+00
AG110M	9.981E-06		3.000E-05	3.327E-01
SB-125	7.137E-06		1.000E-04	7.137E-02
XE-133	3.095E-06			
CS-134	7.431E-07		9.000E-06	8.257E-02
CS-137	2.167E-06		2.000E-05	1.084E-01
H-3	3.780E-02		3.000E-03	1.260E+01
Totals	1.328E-04	(@)		1.673E+01

(@) No gasses or H-3 included in totals, however, H-3 is in Activity/MPC col.

Diluted gas concentration (uCi/ml) = 3.517E-09c lmm INIT _____

Minimum recirc time is .....: 0.5 hr w/mixer; 4.0 hr w/pump
Administrative quarterly release limit (Ci).....: 5.000E-02
Total activity released this quarter (Ci) .....: 3.490E-03
Estimated volume this discharge.....: 4000.
Estimated activity this discharge.....: 2.011E-03
Est total activity released this quarter (Ci).....: 5.501E-03

(1)	Reduction factor.....:	5.976E-02		S.M. init
(2)	Required dilution flow rate.....: 3 circ water, 2 service water pump(s)	308000.	(gpm)	_____
(3)	Normal rate limit (flow rate =#1*#2*0.1).....:	350	(gpm)	_____
(5)	Liquid effluent monitor alarm setting (ALARM)....:	_____	(cpm)	_____
	Maximum approved rate.....: (Authorization required to exceed normal rate limit.)	_____	(gpm)	_____
	Source check performed.....:	_____		_____

DISCHARGE DILUTION INTEGRATOR

	DATE/TIME	FLOW RATE (gpm)	READING (4*DIFF=gal)	DISCHARGE RATE (gpm)	OPERATOR
Start	_____	_____	_____	_____	_____
End	_____	_____	_____	_____	_____

Liquid eff monitor reading 15 min after start of discharge _____ (cpm)

Total liquid waste discharged = _____ (gal) * 3785 = _____ (ml)

Liquid eff monitor Bkg reading after flush _____ (cpm)

SM/US _____ Date _____ Time _____

Chem Form 2864-1
Rev. 1

Attachment 2
Evaluation of Rad Monitor Response Based on Isotopic Mix
(Sheet 1 of 1)

Discharge Permit #: 2000 Date: Today

Total Tank Activity: 1.36 E -4 (µCi/cc) Tank Being Discharged: AWMT

Isotope	Activity (µCi/cc)	% of Total Activity
Co-60	1.032E-4	75.9

NOTE

Consider gamma yield of each isotope before calculating response factor.

Latest RM response during Cs-137 calibration: 1.90 E+08 cpm/µCi/cc

Current RM response factor based on isotopic mix:

= [1+(%C0-60/100)]X[RM response to Cs-137]
= [1+ 75.9 /100)]X[1.90E8 cpm/µCi/cc]

Current RM response factor based on isotopic mix = 3.34 E 8 cpm/µCi/cc

Performed By: T Chen

Reviewed By: W. S. Monger

Level of use Information

09/05/03 — Approval Date

09/12/03 — Effective Date

Millstone Unit 2 Liquid Discharge Permit Number _____

Tank.....: _____ Date/time sampled: _____
Sampled by....: _____ Date/time on recirc: _____
Minimum recirc time is .:2.0 hr w/mixer; 7.7 hr w/pump (CWMT) 0.5 hr w/mixer; 4.0 hrw/pump (AWMT)
TSS (ppm).:_____ (AWMT limit = 45 ppm: CWMT limit = 22.5 ppm) pH.: _____ (2<pH <12.5)
Boric acid concentration (ppm) = _____
Eff. Monitor Bkg _____

2 circulators must be in operation during this discharge

During Unit 2 shutdown a minimum dilution flow of 20,000 gpm is allowable with the discharge rate limited to 30.5 gpm.

Isotopic Data found on attached form "Manual Discharge Calculation Worksheet

Diluted gas concentration (μCi/ml) = _____ INIT (limit : 1.100E−2)

Administrative Quarterly Release limit (Ci).....: 5.0E−02
Total activity released this quarter (Ci).....: _____
Estimated volume this discharge (gal).....: _____
*Estimated activity this discharge (Ci).....: _____
*Estimated total activity released this Quarter (Ci).: _____

*Estimated Activity values do not include tritium

S.M. Init.

(1) Reduction factor.....: _____
(2) Required dilution flow rate.....: _____ (gpm) _____
_____Circ water , _____Service water _____
(3) Flow rate limit...(#1 * #2 * 0.1).....: _____ (gpm) _____
(4) Liquid effluent monitor alert setting:.....: _____ (cpm) _____
(5) Liquid effluent monitor alarm setting:.....: _____ (cpm)

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

Source check performed.....(yes/no).....: _____ Oper.

DISCHARGE**

	DATE	TIME	DILUTION FLOW RATE (gpm)	INTEGRATOR READING (4*DIFF=gal)	DISCHARGE RATE (gpm)	OPERATOR
Start	_____	_____	_____	_____	_____	_____
End	_____	_____	_____	_____	_____	_____

Liquid eff. monitor reading 15 min. after start of discharge _____ (cpm)

Total liquid waste discharged = _____ (gal) * 3785 = _____ (ml)

Liquid effluent monitor reading after flush = _____ (cpm)

SM/US: _____ Date:_____ Time:

JOB PERFORMANCE MEASURE APPROVAL SHEET

I. JPM Title: **Classify the Event**

ID Number: JPM-A4SRO Revision: 0

II. Initiated:

Richard J. Ashey

R. J. Ashey
Developer

1/21/05
Date

III. Reviewed:

Daniel A. Lashua

Technical Reviewer

01/28/05
Date

IV. Approved:

N/A

User Department Supervisor

Date

Nuclear Training Supervisor

1/28/05
Date

SUMMARY OF CHANGES

A/I & Date	DESCRIPTION	REV/CHANGE
12/06/2004 (SRM)	Developed new JPM	0

PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-A4SRO TITLE: Classify The Event

JOB PERFORMANCE MEASURE WORKSHEET

Facility: MP-2 Examinee: _____

JPM Number: JPM-A4SRO Rev. 0

Task Title: **Classify the Event**

System: Admin

Time Critical Task: Yes ____ No X

Validated Time (minutes): 20

Task No.(s): NUTIMS # 303-05-091

Applicable To: SRO X RO ____ PEO ____

K/A No.: 2.4.41 K/A Rating: 2.3/4.1

Method of Testing:

Simulated Performance: ____ Actual Performance: X

Location:

Classroom: X Simulator: X In-Plant: X

Task Standards:	At the completion of this JPM the examinee will determine the classification of the scenario to be an Alert/C1.
Required Materials (procedures, equipment):	MP-26-EPI-FAP06-002, Rev. 003 "EAL Tables" MP-26-EPI-FAP01-001 "Control Room-Director of Station Emergency Operations (CR DSEO)" MP-26-EPA-REF02 "MP2 EAL Technical Basis Document"
General References:	EP-MP-26-EPI-FAP06 Rev. 006 "Classification PAR"

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

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

PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-A4SRO TITLE: Classify The Event

JOB PERFORMANCE MEASURE WORKSHEET

JPM Number: JPM-A4SRO Rev. 0

Initiating Cues:

- You are the Shift Manager.
- Classify the event you have just completed on the simulator.
  - You are to consider all plant conditions during the scenario.
  - Your classification should reflect the most severe classification level reached.

Initial Conditions: As observed during the previous simulator session.

Simulator Requirements: Simulator scenario that was run for the evaluation. (ES04LI1)

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

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

PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-A4SRO TITLE: Classify The Event

START TIME: _____

STEP **1** _X_ Performance Steps: Examinee utilizes EPI-FAP02 "EAL Tables" and classifies the simulator event that was just completed.

GRADE ___ _X_ Standards:
- *Examinee determines the classification is Barrier Failure, BA1; Alert C-1.*

___ _X_
- *Based on RCS Barrier, RCB4, Reactor Coolant leak > CVCS capacity AND entry into EOP-2534, Steam Generator Tube Rupture or EOP 2540, Functional Recovery, to address Steam Generator Tube Rupture.*

Cue: **When asked, provide requested reference material.**

Comments: Examinee will have the use of the other reference material, including: MP-26-EPI-FAP01 "Control Room - Director of Station Emergency Operations (CR DSEO)", MP-26-EPA-REF02 "MP2 EAL Technical Basis Document".

~~~~~~

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

STOP TIME: _____
~~~~~~

VERIFICATION OF JPM COMPLETION

Job Performance Measure No. JPM-A4SRO Rev. 0

Date Performed: _____

Operator: _____

Evaluator(s): _____

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

Time Critical Task? Yes _____ No _____

Validated Time (minutes): 20

Actual Time to Complete (minutes): _____

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

Areas for Improvement:

EXAMINEE HANDOUT

JPM ID Number: JPMA4SRO Classify the Event Rev. 0

Initiating Cues:

- You are the Shift Manager.
- Classify the event you have just completed on the simulator and provide the basis for your answer.
  - You are to consider all plant conditions during the scenario.
  - Your classification should reflect the most severe classification level reached.

Initial Conditions: As observed during the previous simulator session.

Classification Level NRC: _____

State: _____

Basis: _____

_____

_____

MILLSTONE UNIT 2 EMERGENCY ACTION LEVELS

12/16/04
APPROVAL DATE

12/23/04
EFFECTIVE DATE

☐ GENERAL EMERGENCY ALPHA ■ GENERAL EMERGENCY BRAVO ▨ SITE AREA EMERGENCY CHARLIE-TWO ☐ ALERT CHARLIE-ONE ▨ UNUSUAL EVENT DELTA-TWO ☐ UNUSUAL EVENT DELTA-ONE

BARRIER FAILURE

BG1 ALL THREE BARRIERS — Mode 1, 2, 3, 4

See Barrier Failure Reference Table

BS1 ANY TWO BARRIERS — Mode 1, 2, 3, 4

See Barrier Failure Reference Table

BA1 FUEL CLAD OR RCS BARRIER — Mode 1, 2, 3, 4

See Barrier Failure Reference Table

BA2 STEAM LINE BREAK — Mode 1, 2, 3, 4

Unisolable Steam Line Break Outside CTMT

BU1 CTMT BARRIER — Mode 1, 2, 3, 4

See Barrier Failure Reference Table

BU2 RCS LEAKAGE — Mode 1, 2, 3, 4

1. Pressure Boundary Leakage > 10 GPM
2. Unidentified Leakage > 10 GPM
3. Identified Leakage > 25 GPM
4. Primary to Secondary Leakage > 25 GPM

BU3 FUEL CLAD DEGRADATION — Mode ALL

1. RCS Activity > 60 µCi/gm I-131 DEQ
2. Dose Rate at One Foot from Unpressurized RCS Sample > 2 mR/hr/mi

LOSS OF POWER

PG1 STATION BLACKOUT — Mode 1, 2, 3, 4

Loss of Voltage on Buses 24C AND 24D > 15 Minutes

Loss of Voltage on DC Buses 201A AND 201B > 15 Minutes

PS1 STATION BLACKOUT — Mode 1, 2, 3, 4

Loss of Voltage on Buses 24C AND 24D > 15 Minutes

PS2 LOSS OF DC — Mode 1, 2, 3, 4

Loss of Voltage on DC Buses 201A AND 201B > 15 Minutes

PA1 STATION BLACKOUT — Mode 5, 6

Loss of Voltage on Buses 24C AND 24D > 15 Minutes

PA2 SINGLE AC POWER SOURCE — Mode 1, 2, 3, 4

Only One AC Power Source Available to Supply Buses 24C AND/OR 24D > 15 Minutes Such That Loss of That Power Source Would Result in a Station Blackout (Unit 3 Buses 34A/B CANNOT be Credited)

PU1 LOSS OF OFFSITE POWER — Mode ALL

Buses 24C AND 24D Are Powered from Emergency Generators AND Offsite Power NOT Restored Within 15 Minutes

PU2 LOSS OF DC — Mode 5, 6

Loss of Voltage on DC Buses 201A AND 201B > 15 Minutes

EQUIPMENT FAILURE

EG1 ATWS/INADEQUATE COOLING — Mode 1

ES1 ATWS — Mode 1

Manual Reactor Trip Attempted At Panel C04 AND Reactor Is NOT Shutdown

ES2 INABILITY TO MAINTAIN HOT S/D — Mode 1, 2, 3, 4

1. No RCS Heat Removal Method Meets EPRI Criteria > 15 Minutes AND Shutdown Cooling Is NOT In Service
2. RCS Boration Capability Unable to Eliminate Inadvertent Criticality

ES3 IN-VESSEL FUEL UNCOVERY — Mode 5, 6

Shutdown Cooling Has Been Lost AND ANY of the Following Conditions Exist:

- Alternate Methods for Restoring RCS Inventory are NOT Effective
- RVLMS Reading = 0%
- Core Exit TC Temperature Readings Indicate Superheat

ES4 LOSS OF ANNUNCIATORS/TRANSIENT — Mode 1, 2, 3, 4

Loss of Most (75%) MCB Annunciators AND BOTH of the Following:

- Significant Transient in Progress
- Loss of SPDS AND ICC Instrumentation

EA1 AUTOMATIC Rx TRIP FAILURE — Mode 1, 2

Failure of Automatic Reactor Trip AND Manual Trip Was Successful

EA2 INABILITY TO MAINTAIN COLD S/D — Mode 5, 6

1. Uncontrolled RCS Temperature Increase > 10°F That Results in RCS Temperature > 200°F
2. Inadvertent Criticality

EA3 LOSS OF ANNUNCIATORS/TRANSIENT — Mode 1, 2, 3, 4

Loss of Most (75%) MCB Annunciators > 15 Minutes AND EITHER of the Following:

- Significant Transient in Progress
- Loss of SPDS AND ICC Instrumentation

EU1 LOSS OF COLD S/D FUNCTION — Mode 5, 6

1. Loss of Shutdown Cooling > 15 Minutes AND Refuel Pool Water Level < 35 Ft., 6 in
2. Uncontrolled RCS Temperature Increase > 10°F
3. RCS Boron Concentration < Minimum Required

EU2 REFUEL/SPENT FUEL POOL LEVEL — Mode 6

1. Uncontrolled Spent Fuel Pool Water Level Decrease Causing Loss of Cooling Suction Flow
2. Uncontrolled Refuel Pool Water Level Decrease Requiring Containment Evacuation AND All Spent Fuel Assemblies in Safe Storage Locations

EU3 LOSS OF ANNUNCIATORS — Mode 1, 2, 3, 4

Loss of Most (75%) MCB Annunciators > 15 Minutes AND SPDS OR ICC Instrumentation Available

EU4 LOSS OF COMMUNICATIONS — Mode ALL

1. Loss of ALL Onsite Electronic Communications Methods
2. Loss of ALL Electronic Communications Methods With Government Agencies

EU5 SHUTDOWN LCO EXCEEDED — Mode 1, 2, 3, 4

Unit NOT Brought To Required Mode Within Applicable LCO Action Statement Time Limits

OFFSITE RELEASES

OG1 OFFSITE DOSE — Mode ALL

1. MP2 Kaman Vent Monitor (RM-8168) Reading ≥ 4.2 mR/hr for > 15 Minutes
2. MP2 WRGM Site Stack Effluent Activity (RM-8169) Reading ≥ 10 µCi/cc for > 15 Minutes
3. MSL Monitor (RM-4299A/B/C) Reading ≥ 0.3 R/hr for > 15 Minutes
4. Measured Plume Dose Rate Onsite ≥ 50 mR/hr for > 15 Minutes
5. Rad Assessment Determines Integrated Dose Offsite ≥ 0.05 Rem TEDE OR ≥ 0.25 Rem CDE Thyroid

OS1 OFFSITE DOSE — Mode ALL

1. MP2 Kaman Vent Monitor (RM-8168) Reading ≥ 0.42 mR/hr for > 15 Minutes
2. MP2 WRGM Site Stack Effluent Activity (RM-8169) Reading ≥ 10 µCi/cc for > 15 Minutes
3. MSL Monitor (RM-4299A/B/C) Reading ≥ 0.03 R/hr for > 15 Minutes
4. Measured Plume Dose Rate Onsite ≥ 50 mR/hr for > 15 Minutes
5. Rad Assessment Determines Integrated Dose Offsite ≥ 0.05 Rem TEDE OR ≥ 0.25 Rem CDE Thyroid

OA1 OFFSITE DOSE — Mode ALL

1. MP2 Kaman Vent Monitor (RM-8168) Reading ≥ 0.02 µCi/cc for > 15 Minutes
2. MP2 WRGM Site Stack Effluent Activity (RM-8169) Reading ≥ 1 µCi/cc for > 15 Minutes
3. MSL Monitor (RM-4299A/B/C) Reading ≥ 0.03 R/hr for > 15 Minutes
4. Measured Plume Dose Rate Onsite ≥ 5 mR/hr for > 15 Minutes
5. Rad Assessment Determines Integrated Dose Offsite ≥ 0.005 Rem TEDE OR ≥ 0.025 Rem CDE Thyroid

OU1 UNPLANNED RELEASE — Mode ALL

Effluent Monitors in Alarm OR Unplanned, Unmonitored or Uncontrolled Offsite Release AND DELTA-TWO Posture Code Limits as Determined from EPI-FAP06, "Classification and PARs," Exceeded.

Note: Effluent Monitors Indicate Release Above Alarm Setpoint Continuing > 60 minutes and Reportability Evaluations NOT Complete

CLASSIFICATION

GENERAL EMERGENCY

SITE AREA EMERGENCY

CHARLIE-TWO

Events In Progress or Have Occurred Which Involve Actual or Likely Major Failures of Plant Functions Needed for Protection of the Public

ALERT

CHARLIE-ONE

Events in Progress or Have Occurred Which Involve an Actual or Potential Substantial Degradation of the Level of Safety of the Plant

UNUSUAL EVENT

DELTA-TWO

OR

DELTA-ONE

Events in Progress or Have Occurred Which Indicate a Potential Degradation of the Level of Safety of the Plant

NOTE: When two or more EALs apply, always choose the EAL of the highest emergent classification, also always read from top to bottom in each category.

2
Millstone

MILLSTONE UNIT 2 EMERGENCY ACTION LEVELS

GENERAL EMERGENCY ALPHA | GENERAL EMERGENCY BRAVO | SITE AREA EMERGENCY CHARLIE-TWO | ALERT CHARLIE-ONE | UNUSUAL EVENT DELTA-TWO | UNUSUAL EVENT DELTA-ONE

IN–PLANT RADIATION	SECURITY THREAT/ DESTRUCTIVE PHENOMENA	FIRE/GASES	JUDGEMENT	CLASSIFICATION
RG1 MAJOR FUEL DAMAGE — Mode ALL	**TG1** SECURITY EVENT — Mode ALL		**JG1** JUDGEMENT — Mode ALL	GENERAL EMERGENCY
RS1 SPENT FUEL DAMAGE — Mode ALL Spent Fuel is Exposed from Open Vessel, Cavity, or SF Pool and One of the Following: • Spent Fuel Has Decayed < 30 Days • CTMT Integrity Established	**TS1** SECURITY EVENT — Mode ALL Intrusion Into Vital Area OR Bomb Found	**GS1** CONTROL ROOM EVACUATION — Mode ALL Unit Control From Unit Shutdown Panel C-10 Or Other Location NOT Established Within 15 Minutes After Control Room Evacuation	**JS1** JUDGEMENT — Mode ALL Offsite Conditions Through Judgement Indicate Actual Or Likely Major Failures Of Plant Functions Needed For Resident Or Public Protection	SITE AREA EMERGENCY CHARLIE–TWO Events In Progress or Have Occurred Which Involve Actual or Likely Major Failures of Plant Functions Needed for Protection of the Public
RA1 SPENT FUEL ASSEMBLY DAMAGE — Mode ALL 1. Spent Fuel is Exposed from Open Vessel, Cavity, or SF Pool AND Spent Fuel Has Decayed ≥ 30 Days 2. Fuel Handling Accident Causing Damage to Spent Fuel, Indicated by Fuel Building OR Containment Radiation Monitors Increasing	**TA1** SECURITY EVENT — Mode ALL 1. Any on–going or imminent security compromise to the safety of the plant.	**GA1** CONTROL ROOM EVACUATION — Mode ALL Control Room Evacuation Initiated	**JA1** JUDGEMENT — Mode ALL Any Condition For Which Judgement Indicates That Safety Systems May Be Degraded AND Which Requires Emergency Response Organization Staffing	ALERT CHARLIE–ONE Events in Progress or Have Occurred Which Involve an Actual or Potential Substantial Degradation of the Level of Safety of the Plant
RA2 PLANT RADIATION — Mode ALL 1. Radiation Readings > 15 mR/hr in Control Room OR Central Alarm Station OR Secondary Alarm Station 2. Radiation Reading > 5 R/hr in Areas Requiring Access for Safe Shutdown	**TA2** DESTRUCTIVE PHENOMENA — Mode ALL 1. Seismic Event > 0.09g ZPA 2. Onsite Sustained Windspeed > 90 MPH 3. Visible Damage to Structures or Equipment AND Affecting Safe Shutdown 4. Vessel or Vehicle Collision AND Affecting Safe Shutdown 5. Missiles Affecting Safe Shutdown 6. Flooding Affecting Safe Shutdown	**GA2** FIRE/EXPLOSION — Mode ALL Fire or Explosion Affecting Safe Shutdown Area AND Damage to Structures OR Equipment Indicated **GA3** TOXIC/FLAMMABLE GASES — Mode ALL Life Threatening Toxic Gases OR Flammable Gas Concentrations as Identified in C–OP 200.5, "Oil, Hazardous Material, Hazardous Waste and Mixed Waste Contingency Plan" Affecting Areas for Safe Shutdown	**JU1** JUDGEMENT — Mode ALL Any Condition For Which Judgement Indicates Potential Degradation in the Level of Safety of the Plant	UNUSUAL EVENT DELTA–TWO OR DELTA–ONE Events in Progress or Have Occurred Which Indicate a Potential Degradation of the Level of Safety of the Plant
RU1 RAD MONITORS — Mode ALL 1. Uncontrolled Refuel Pool Water Level Decrease AND Rad Levels Require Evacuation of CTMT Or Spent Fuel Pool Area 2. Unexpected Area Rad Monitor Reading Offscale High OR > 1000 Times Normal Reading	**TU1** SECURITY EVENT — Mode ALL 1. Security events as determined for Station Safeguards Contingency Plan and reported by Security Shift Supervision 2. A credible site specific security threat notification **TU2** DESTRUCTIVE PHENOMENA — Mode ALL 1. Seismic Activity Detected Per AOP-2562, Earthquake 2. Report by Plant Personnel of Tornado Striking Within Protected Area 3. Visible Damage to Structures or Equipment Within the Protected Area 4. Onsite Sustained Windspeed > 75 MPH 5. Explosion Within the Protected Area 6. Turbine Failure Causing Observable Casing Damage 7. Vessel or Vehicle Collision With Structures OR Equipment Required for Safe Shutdown or a loaded ISFSI Confinement Boundary 8. Flood Level > 19 Feet Mean Sea Level 9. Flooding in Areas Containing Safe Shutdown Equipment	**GU1** FIRE — Mode ALL 1. Fire in Building OR Areas Adjacent to Areas Needed for Safe Shutdown NOT Extinguished Within 15 Minutes of Notification OR Verification of Control Room Alarms 2. Fire Affecting a Loaded ISFSI Confinement Boundary NOT Extinguished Within 15 Minutes of Notification **GU2** TOXIC/FLAMMABLE GASES — Mode ALL 1. Life Threatening Toxic Gases OR Flammable Gas Concentrations as Identified in C–OP 200.5, "Oil, Hazardous Material, Hazardous Waste and Mixed Waste Contingency Plan" Affecting Normal Operation 2. Notification of a Near-Site Release That May Require Evacuation		

AREAS OF CONCERN FOR SAFE SHUTDOWN

Control Room	Switchgear Rooms
Cable Vaults	Intake Structure
Turbine Building	Switchgear Area
Penetration Areas	Coolant Tanks Area
RBCCW Rooms	Containment
Diesel Generator Room	DC Equipment and Battery Rooms
Charging Pump Cubicles	Safety Injection Pump Rooms
Switchyard	

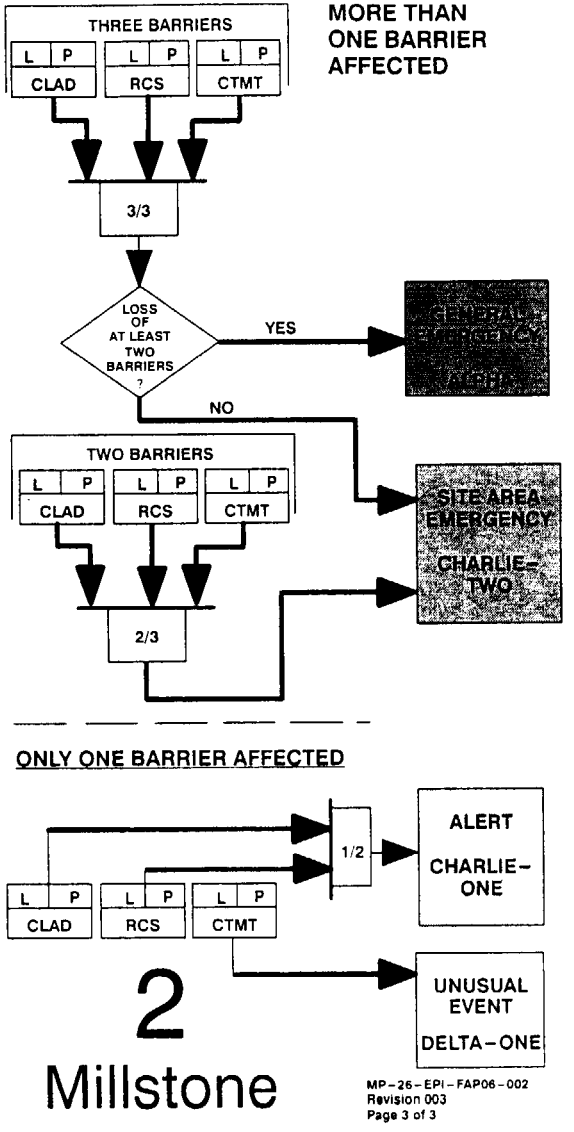
NOTE: When two or more EALs apply, always choose the EAL of the highest incident classification; also always read from top to bottom in each category.

2
Millstone

MILLSTONE 2 EMERGENCY ACTION LEVELS BARRIER FAILURE REFERENCE TABLE

IMMINENT - No Turnaround in Safety System Performance is Expected AND Escalation to General Emergency Conditions Will Occur Within 2 Hours

INDICATORS	FUEL CLAD BARRIER	RCS BARRIER	CTMT BARRIER
SAFETY FUNCTION STATUS/ FUNCTIONAL RECOVERY	FCB1 LOSS Not Applicable POTENTIAL LOSS P NO RCS Heat Removal Method Meets SFSC Criteria > 15 Minutes AND Shutdown Cooling System Is NOT In Service	RCB1 LOSS Not Applicable POTENTIAL LOSS P Uncontrolled RCS Cooldown AND RCS Pressure-Temperature To the Left Of the PTS Limit 200°F Subcooling Maximum Curve P NO RCS Heat Removal Method Meets SFSC Criteria > 15 Minutes AND Shutdown Cooling System Is NOT In Service	
CORE EXIT TC TEMPERATURES	FCB2 LOSS L Core Exit Thermocouple Readings > 1300 °F POTENTIAL LOSS P Core Exit Thermocouple Readings > 800 °F	RCB2 LOSS L RCS Subcooling < 30°F POTENTIAL LOSS Not Applicable	CNB1 LOSS Not Applicable POTENTIAL LOSS P Core Exit TC Temperature Readings >1300°F AND Do NOT Decrease Within 15 Minutes
PRESSURE		RCB3 LOSS Not Applicable POTENTIAL LOSS P Uncontrolled RCS Pressure Decrease and Increasing Containment Radiation Monitors	CNB2 LOSS L Rapid Unexplained CTMT Pressure Decrease Following Initial Increase L No CTMT Pressure Increase When Expectation Exists POTENTIAL LOSS P CTMT Pressure > 10 PSIG AND Increasing AND No Containment Spray Pump P CTMT H_2 Concentration ≥ 4%
COOLANT LEAKAGE		RCB4 LOSS L Reactor Coolant Leak > CVCS Capacity AND Entry Into EOP-2534, Steam Generator Tube Rupture or EOP 2540, Functional Recovery, to Address Steam Generator Tube Rupture POTENTIAL LOSS P Reactor Coolant Leak > CVCS Capacity AND Entry Into EOP-2525, Standard Post Trip Actions P Reactor Coolant Leak Rate >capacity of one (1) charging pump AND ≤ CVCS Capacity AND ANY of the following: • Entry Into EOP 2534, Steam Generator Tube Rupture • Entry Into AOP 2569, Steam Generator Tube Leak • Entry Into EOP 2540, Functional Recovery, to Address Steam Generator Tube Rupture	CNB3 LOSS L Primary to Secondary > Tech Spec Limits and EITHER exists: • Nonisolable Steam Release from Affected S/G to environment. • Prolonged Release From Affected S/G to Environment When Used for Cooldown. (see basis for description of prolonged release) L Failure of BOTH Isolation Valves AND a Pathway to the Environment Exists POTENTIAL LOSS P Entry Into EOP-2532, Loss of Primary Coolant, AND Leakage Exists Outside CTMT Requiring Local Isolation
RADIATION	FCB3 LOSS L RM-8240/8241 Reading > 300 R/hr L RM-8240/8241 Reading > 5 R/hr Without RCS Release Inside CTMT L At Least 5% Fuel Clad Damage As Determined By Core Damage Estimate L Dose Rate at One Foot from Unpressurized RCS Sample ≥ 28 mR/hr/ml POTENTIAL LOSS Not Applicable	RCB5 LOSS L RM-8240/8241 Reading > 5 R/hr Without Fuel Clad Barrier Loss POTENTIAL LOSS Not Applicable	CNB4 LOSS L Offsite Dose Plume Rate ≥ 10^{-6} Times RM-8240/8241 Reading if Release is to CTMT POTENTIAL LOSS P RM-8240/8241 Reading > 1,200 R/hr P At Least 20% Fuel Clad Damage As Determined By Core Damage Estimate
WATER LEVEL	FCB4 LOSS Not Applicable POTENTIAL LOSS P RVLMS Reading = 0%		CNB5 LOSS L No CTMT Sump Level Increase When Expectation Exists POTENTIAL LOSS Not Applicable
JUDGEMENT	FCB5 Any Condition For Which Judgement Indicates Loss or Potential Loss of Fuel Clad Barrier Due to: • Imminent Barrier Degradation Based On Current Safety System Performance • Degraded Fission Barrier Monitoring Capability Making Barrier Status Indeterminate	RCB6 Any Condition For Which Judgement Indicates Loss or Potential Loss of RCS Barrier Due to: • Imminent Barrier Degradation Based On Current Safety System Performance • Degraded Fission Barrier Monitoring Capability Making Barrier Status Indeterminate	CNB6 Any Condition For Which Judgement Indicates Loss or Potential Loss of CTMT Barrier Due to: • Imminent Barrier Degradation Based On Current Safety System Performance • Degraded Fission Barrier Monitoring Capability Making Barrier Status Indeterminate



1/14/04	1/20/04
Approval Date	Effective Date

Control Room - Director of Station Emergency Operations (CR-DSEO)

NOTE

If the applicable unit is Unit 1, the Unit 2 SM/CFH will classify the event and become the CR-DSEO.

Section A: Emergency Response Immediate Actions

1. Evaluate the conditions using EPI-FAP06, "Classification and PARs."
   - ☐ Notify the SDO and Emergency Communicator to report to the control room and provide a briefing.
   - ☐ Review the EAL tables:
     - For Unit 1, EPI-FAP06-001
     - For Unit 2, EPI-FAP06-002
     - For Unit 3, EPI-FAP06-003
   - ☐ Evaluate the status of the fission product barriers.
2. Declare the emergency.
   - ☐ Announce the emergency declaration level and time to the CR staff and assume the role of CR-DSEO.

NOTE

Offsite notification shall be accomplished within 15 minutes of an emergency event classification.

   - ☐ Direct the Emergency Communicator to initiate offsite notifications per EPI-FAP07, "Notifications and Communications."

3. Go To the applicable section and perform the immediate actions.
   - ☐ Unusual Event.....Section B
   - ☐ Alert.....Section C
   - ☐ Site Area Emergency .....Section D
   - ☐ General Emergency.....Section E

Section B: Unusual Event Immediate Actions

1. Notifications

- ❑ Notify the unaffected unit control room of the event.

NOTE

1. During a security event, it may *not* be advisable to sound an alarm or make a PA announcement.
2. State/local authorities may deploy offsite responders such as the National Guard or State/local police to the Millstone Station in response to a security-related threat. The State of CT and Waterford Police will be responsible for protective measures for these forces, as necessary (i.e., providing and issuing potassium iodide (KI) in a timely manner, maintaining doses ALARA, and upgrading exposures, issuing and tracking dosimetry). The SSS will notify the control room of any protective actions put in place.
3. For an emergency event, radiological or non-radiological, that does *not* involve a security threat, the station would consider offsite responders located onsite as "non-essential" to the event and evacuate them from the site. However, they are still under the State's authority and the State may require they stay on site.

- ❑ IF the event involves a situation where site personnel should be sheltered, Refer To EPI-FAP08, "Evacuation and Assembly," Sheltering, and perform actions.
- ❑ IF sheltering actions are not being conducted, perform the following:
  - ❑ Activate the outside speakers.

NOTE

The CR-DSEO may choose to activate or partially activate the Emergency Response Facility (Facilities) for an Unusual Event. This can be done via individual pager notification, phone call, etc.

  - ❑ Review the wording for the station notification message and announce the following over the station PA system:

Attention all personnel; attention all personnel. An Unusual Event has been declared at (*Unit # ___*) due to (*brief description of event ____________ ____________*). Members of the SERO monitor your radiopager for further instructions and information. All other personnel continue with your present duties.

Section B: Unusual Event Immediate Actions

- ❑ IF a partial activation is being conducted, announce the following:

  A partial activation of SERO is being conducted. All (EOF)(TSC)(OSC) members report to your designated facilities.

- ❑ Repeat the PA message.

❑ Log time of announcement on EPI-FAP15-012, "SERO Log Sheet."

❑ Review and approve the Incident Report Form (IRF) for transmittal.

❑ Refer To EPI-FAP15-001, "DSEO/ADTS Briefing Sheet," and complete.

- ❑ Obtain information from the SSS of offsite responders (i.e., National Guard) reporting to the site.

❑ IF the emergency event occurs off-hours (6:00pm to 4:00am) or on weekends, direct SDO to voice-record EPI-FAP15-001 information and fax completed form to EOF and TSC.

2. NRC Notification

   ❑ Direct the SDO to notify the NRC via the ENS.

   ❑ Verify the Emergency Communicator or SDO has contacted the resident inspector.

3. Loss of Power

   ❑ IF event is Loss of Off-Site Power (LOP), evaluate what loads are being carried and what loads are necessary.

   ❑ Within 4 hours of the LOP, evaluate the need to order emergency diesel generator fuel to extend on-site capacity and direct on-shift Ops Procurement Coordinator or Motor Pool Coordinator to order fuel, as required.

4. IF no upgrade to classification is warranted, Go To Section F, "Routine and Follow-up Actions."

Section C: Alert Immediate Actions

1. Notifications

- ☐ Notify the unaffected unit control room of the event.
- ☐ Request Security to restrict site access and have them notify Waterford Police and CT State Police to prepare for a precautionary dismissal, as appropriate.

NOTE

1. Hazardous conditions or Security-related events may impact the ability to move personnel. If these conditions exist, it may be better to shelter personnel on site. During a security event, it may *not* be advisable to sound an alarm or make a PA announcement.
2. State/local authorities may deploy offsite responders such as the National Guard or State/local police to the Millstone Station in response to a security-related threat. The State of CT and Waterford Police will be responsible for protective measures for these forces, as necessary (i.e., providing and issuing potassium iodide (KI) in a timely manner, maintaining doses ALARA, and upgrading exposures, issuing and tracking dosimetry). The Manager of Security (MOS)/SSS will notify the CR DSEO of any protective actions put in place.
3. For an emergency event, radiological or non-radiological, that does *not* involve a security threat, the station would consider offsite responders located onsite as "non-essential" to the event and evacuate them from the site. However, they are still under the State's authority and the State may require they stay on site.

- ☐ IF the event involves a situation where site personnel should be sheltered, Refer To EPI-FAP08, "Evacuation and Assembly," Sheltering, and perform actions.
  - ☐ WHEN appropriate, announce termination of sheltering.
  - ☐ WHEN appropriate, conduct full SERO activation and precautionary dismissal, as applicable.
- ☐ IF sheltering actions are not being conducted, perform the following:
  - ☐ Activate the outside speakers.
  - ☐ Review the wording for the station notification message and announce the following over the station PA system:

    Attention all personnel; attention all personnel. An Alert has been declared at (*Unit #* ___) due to (*brief description of event* _____ _____).

Section C: Alert Immediate Actions

- ❑ IF the designated emergency response facilities are available, announce the following:

  All on-duty SERO members report to your designated emergency response facility. All off-duty SERO members report to your designated Assembly Area.

- ❑ IF either the EOF OR the TSC is unavailable, announce the following:

  The (EOF) (TSC) is unavailable at this time. All on-duty SERO members who report to the (EOF) (TSC), report to your backup locations. All off-duty SERO members report to your backup Assembly Area.

- ❑ Repeat the PA message(s).

❑ Log time of announcement on EPI-FAP15-012.

❑ Review and approve the Incident Report Form (IRF) for transmittal.

❑ Refer To EPI-FAP15-001, "DSEO/ADTS Briefing Sheet," and complete.

- ❑ Inform the DSEO/ADTS of offsite responders (i.e., National Guard) responding to the site.

❑ IF the emergency event occurs off-hours (6:00pm to 4:00am) or on weekends, direct SDO to voice-record EPI-FAP15-001 information and fax completed form to EOF and TSC.

2. NRC Notification

- ❑ Direct the SDO to notify the NRC via the ENS.

- ❑ Verify the Emergency Communicator or SDO has contacted the resident inspector.

3. Precautionary Dismissal

CAUTION

Precautionary dismissal may **NOT** be desired during certain events (e.g., Security-related). These actions should be reviewed periodically and implemented as quickly as possible after the threat has been resolved.

- ❑ IF precautionary dismissal is not desired due to the nature of the event (e.g., Security-related, weather), consider postponing until threat has been resolved.

- ❑ IF no constraints exist, Refer To EPI-FAP08, "Evacuation and Assembly," and conduct a precautionary dismissal, as events warrant.

Section C: Alert Immediate Actions

- ☐ IF offsite responders (i.e., National Guard) are onsite and considered non-essential to the event, request the SSS/MOS evacuate them also.

4. IF no upgrade to classification is warranted, Go To Section F, "Routine and Follow-up Actions."

Section D: Site Area Emergency Immediate Actions

1. Notifications

   ☐ Notify the unaffected unit control room of the event.

   ☐ Request Security to restrict site access and have them notify Waterford Police and CT State Police of the restriction.

NOTE

1. Hazardous conditions or Security-related events may impact the ability to move personnel. If these conditions exist, it may be better to shelter personnel on site. During a security event, it may *not* be advisable to sound an alarm or make a PA announcement.
2. State/local authorities may deploy offsite responders such as the National Guard or State/local police to the Millstone Station in response to a security-related threat. The State of CT and Waterford Police will be responsible for protective measures for these forces, as necessary (i.e., providing and issuing potassium iodide (KI) in a timely manner, maintaining doses ALARA, and upgrading exposures, issuing and tracking dosimetry). The Manager of Security (MOS)/SSS will notify the CR DSEO of any protective actions put in place.
3. For an emergency event, radiological or non-radiological, that does *not* involve a security threat, the station would consider offsite responders located onsite as "non-essential" to the event and evacuate them from the site. However, they are still under the State's authority and the State may require they stay on site.

☐ IF the event involves a situation where site personnel should be sheltered, Refer To EPI-FAP08, "Evacuation and Assembly," Sheltering, and perform actions.

   ☐ WHEN appropriate, announce termination of sheltering.

   ☐ WHEN appropriate, conduct full SERO activation and evacuation, as applicable.

Section D: Site Area Emergency Immediate Actions

- ☐ IF sheltering actions are not being conducted, perform the following:
  - ☐ Activate the outside speakers.

CAUTION

Implementation of station evacuation shall not be delayed unless constraints are in place (e.g., Security-related) and doing so creates a threat to personnel safety.

- ☐ Review the wording for the station notification message and announce the following over the station PA system:

  Attention all personnel; attention all personnel. A Site Area Emergency has been declared at (*Unit #* ___) due to (*brief description of event* _____ _____).

- ☐ IF the designated emergency response facilities are available, announce the following:

  All on-duty SERO members report to your designated emergency response facility. All off-duty SERO members report to your designated Assembly Area.

- ☐ IF the EOF OR TSC is unavailable, announce the following over the station PA system:

  The (EOF)(TSC) is unavailable at this time. All on-duty SERO members who report to the (EOF)(TSC), report to your backup locations. All off-duty SERO members report to your backup Assembly Area.

- ☐ Repeat the PA message(s).

- ☐ Log time of announcement on EPI-FAP15-012.
- ☐ Review and approve the Incident Report Form (IRF) for transmittal.

CAUTION

Station evacuation may not be desired during certain events (e.g., Security-related).

- ☐ IF station evacuation could endanger plant personnel, consider the following:
  - Defer actions until the threat has been resolved.
  - WHEN threat has been resolved, perform evacuation and accountability as quickly as possible.

Section D: Site Area Emergency Immediate Actions

- ❑ Refer To EPI-FAP08, "Evacuation and Assembly," and conduct evacuation.
  - ❑ IF offsite responders (i.e., National Guard) are onsite and considered non-essential to the event, request the SSS/MOS evacuate them also.

NOTE

The State of CT is responsible for issuing KI to offsite responders located onsite supporting the event.

- ❑ Obtain information from the SSS/MOS on protective actions (issuance of KI) being implemented by offsite responders located at the site and log.
- ❑ Refer To EPI-FAP15-001, "DSEO/ADTS Briefing Sheet," and complete.
  - ❑ Inform the DSEO/ADTS of offsite responders (i.e., National Guard) responding to the site.
- ❑ IF the emergency event occurs off-hours (6:00pm to 4:00am) or on weekends direct SDO to voice-record EPI-FAP15-001 information and fax completed form to EOF and TSC.

2. NRC Notification
   - ❑ Direct the SDO to notify the NRC via the ENS.
   - ❑ Verify the Emergency Communicator or SDO has contacted the resident inspector.
3. IF no upgrade to classification is warranted, Go To Section F, "Routine and Follow-up Actions."

Section E: General Emergency Immediate Actions

1. Notifications

- ❑ Notify the unaffected unit control room of the event.
- ❑ Request Security to restrict site access and have them notify Waterford Police and CT State Police of the restriction.

NOTE

1. Hazardous conditions or Security-related events may impact the ability to move personnel. If these conditions exist, it may be better to shelter personnel on site. During a security event, it may *not* be advisable to sound an alarm or make a PA announcement.
2. State/local authorities may deploy offsite responders such as the National Guard or State/local police to the Millstone Station in response to a security-related threat. The State of CT and Waterford Police will be responsible for protective measures for these forces, as necessary (i.e., providing and issuing potassium iodide (KI) in a timely manner, maintaining doses ALARA, and upgrading exposures, issuing and tracking dosimetry). The Manager of Security (MOS)/SSS will notify the CR DSEO of any protective actions put in place.
3. For an emergency event, radiological or non-radiological, that does *not* involve a security threat, the station would consider offsite responders located onsite as "non-essential" to the event and evacuate them from the site. However, they are still under the State's authority and the State may require they stay on site.

- ❑ IF the event involves a situation where site personnel should be sheltered, Refer To EPI-FAP08, "Evacuation and Assembly," Sheltering, and perform actions.
  - ❑ WHEN appropriate, announce termination of sheltering.
  - ❑ WHEN appropriate, conduct full SERO activation and evacuation, as applicable.

Section E: General Emergency Immediate Actions

- ❑ IF sheltering actions are not being conducted, perform the following:
  - ❑ Activate the outside speakers.

CAUTION

Implementation of station evacuation shall not be delayed unless constraints are in place (e.g., Security-related) and doing so creates a threat to personnel safety.

- ❑ Review the wording for the station notification message and announce the following over the station PA system:

  Attention all personnel; attention all personnel. A General Emergency has been declared at (*Unit #___*) due to (*brief description of event*_____).

- ❑ IF the designated emergency response facilities are available, announce the following:

  All on-duty SERO members report to your designated emergency response facility. All off-duty SERO members report to your designated Assembly Area.

- ❑ IF the EOF OR TSC is unavailable, announce the following over the station PA system:

  The (EOF)(TSC) is unavailable at this time. All on-duty SERO members who report to the (EOF)(TSC), report to your backup locations. All off-duty SERO members report to your backup Assembly Area.

- ❑ Repeat the PA message(s).

- ❑ Log time of announcement on EPI-FAP15-012.

- ❑ Review and approve the Incident Report Form (IRF) for transmittal.

NOTE

The State must be notified within 15 minutes after a decision is made to issue a PAR.

- ❑ Review and develop PARs in accordance with EPI-FAP06, "Classification and PARs."
- ❑ IF PARs are warranted, issue them in accordance with EPI-FAP06-005, "Control Room Protective Action Recommendations."

Section E: General Emergency Immediate Actions

- ❑ IF the status of the fission product barriers or offsite radiological or meteorological conditions change, perform the following:
  - Evaluate the impact on PARs per EPI-FAP06, "Classification and PARs."
  - IF PARs change, provide changes to PARs to the State, as appropriate (non-delegable).

CAUTION

Station evacuation may not be desired during certain events (e.g., Security-related).

- ❑ IF station evacuation could endanger plant personnel, consider the following:
  - Defer actions until the threat has been resolved.
  - WHEN threat has been resolved, perform evacuation and accountability as quickly as possible.
- ❑ Refer To EPI-FAP08, "Evacuation and Assembly," and conduct evacuation.
  - ❑ IF offsite responders (i.e., National Guard) are onsite and considered non-essential to the event, request the SSS/MOS evacuate them also.

NOTE

If emergency exposure upgrades are needed, the State of CT will authorize limits in accordance with EPA-400 guidelines.

- ❑ Obtain information from the SSS/MOS on protective actions being implemented by offsite responders located at this site and log.
- ❑ Refer To EPI-FAP15-001, "DSEO/ADTS Briefing Sheet," and complete.
  - ❑ Inform the DSEO/ADTS of offsite responders (i.e., National Guard) responding to the site.
- ❑ IF the emergency event occurs off-hours (6:00pm to 4:00am) or on weekends, direct SDO to voice-record EPI-FAP15-001 information and fax completed form to EOF and TSC.

2. NRC Notification
   - ❑ Direct the SDO to notify the NRC via the ENS.
   - ❑ Verify the Emergency Communicator or SDO has contacted the resident inspector.

Section F: Routine and Follow-up Activities

NOTE

The initial stages of any emergency may require CR personnel to perform several required tasks. If necessary, the CR-DSEO has the authority to reassign tasks (other than classification, PARs, and emergency exposure dose extensions) to other available CR individuals.

☐ 1. Ensure SAS has activated the Community Alert Network (CAN).

☐ 2. Log all activities and decisions on EPI-FAP15-012, "SERO Log Sheet."

☐ 3. IF a release of radioactive material is in progress or is imminent, direct the Chemistry Technician to perform initial on-shift dose assessment.

☐ 4. IF any of the following was deferred, consider performing at this time:

- SERO activation and/or facility activation
- Precautionary dismissal
- Evacuation
- Accountability

☐ 5. Continuously evaluate or direct the evaluation of the EAL tables and fission product barriers for changes in event status.

☐ 6. Ensure the NRC is notified within 60 minutes of any event classification and whenever significant changes in conditions occur during the emergency.

☐ 7. Ensure follow-up notifications are routinely provided to the State and local agencies as appropriate.

☐ 8. IF the status of the fission product barriers or offsite radiological or meteorological conditions change, perform the following:

- Evaluate the impact on PARs per EPI-FAP06, "Classification and PARs."
- Provide changes to PARs to the State, as appropriate (non-delegable).

NOTE

The State of CT/local agencies are responsible for upgrading exposures of offsite responders assigned to the station.

☐ 9. IF necessary, authorize extended emergency exposure limits (dose > 5 Rem is expected) in accordance with EPI-FAP09-001, "Increased Radiation Exposure Authorization," and log any extensions on SERO Log Sheet (non-delegable).

Section F: Routine and Follow-up Activities

- ☐ 10. WHEN appropriate, announce termination of sheltering.
- ☐ 11. IF §50.54(x) action is invoked (such as suspension of safeguards) ensure that the NRC is notified of the departure as soon as possible (but within one hour) using the ENS.
- ☐ 12. Direct the RMT #1 to perform control room and plant habitability surveys and sampling.

NOTE

The State of CT/local agencies are responsible for issuing KI to offsite responders assigned to the station.

- ☐ 13. IF necessary, issue KI tablets to control room staff in accordance with EPI-FAP09-003, "KI Tablet Issue Authorization and Tracking Sheet," and log time of issue on SERO Log Sheet (non-delegable).
- ☐ 14. Conduct periodic briefings with the control room staff.
- ☐ 15. IF events have been controlled to the point where termination of the emergency can be considered, Refer To EPI-FAP06, "Classification and PARs," for guidance.

Section G: Transfer of Command and Control

NOTE

Activation of the EOF and TSC/OSC should occur within 60 minutes of SERO notification.

During certain events (e.g., Security-related, toxic gases) immediate SERO activation may be deferred because of the threat to plant personnel. This could prevent activation of facilities within 60 minutes.

The control room may transfer certain response functions (such as team dispatch, exposure upgrade, accident mitigation, etc.) to TSC or EOF individuals before the facilities are declared activated, provided command and control is maintained by the CR-DSEO. (These functions cannot be the non-delegable ones unless the EOF DSEO responder assumes command and control of the event and becomes the DSEO.)

It is preferred that turnover with the ADTS and the EOF DSEO be conducted at the same time but events may occur which require separate turnovers to be completed.

☐ 1. IF precautionary dismissal, and/or evacuation and accountability have been deferred due to certain constraints (e.g., Security-related, weather), perform the following:

- Discuss constraints with the EOF DSEO and the ADTS.
- Consider whether deferred actions can be performed.

☐ 2. Conduct turnover with the EOF DSEO and the ADTS.

NOTE

For a Unit 1 event, the Unit 2 CR-DSEO becomes the MCRO.

☐ 3. Upon formal relief by the DSEO, record turnover date and time in the logbook.

☐ 4. Conduct a briefing with the EOF DSEO and ADTS using EPI-FAP15-001, "DSEO/ADTS Briefing Sheet."

☐ 5. Go To EPI-FAP01-002, "Manager of Control Room Operations."

Prepared by: _____ _____ _____
Signature Print Date

JOB PERFORMANCE MEASURE APPROVAL SHEET

I. JPM Title: **SRO Tag Clearance Approval**

ID Number: JPM-A5SRO Revision: 0

II. Initiated:

Daniel A. Pantalone — 01/27/05
Developer — Date

III. Reviewed:

R. J. Ashey — 1/27/05
Technical Reviewer — Date

IV. Approved:

N/A — ____
User Department Supervisor — Date

____ — 1/31/05
Nuclear Training Supervisor — Date

SUMMARY OF CHANGES

A/I & Date	DESCRIPTION	REV/CHANGE
11-23-2005 (SRM)	Developed new JPM	0

JOB PERFORMANCE MEASURE WORKSHEET

Facility: MP-2 Examinee: _____

JPM Number: JPM-A5SRO Rev. 0

Task Title: **Perform Tagging Operations**

System: Administrative

Time Critical Task: Yes ____ No X

Validated Time (minutes): 15

Task No.(s): NUTIMS #119-03-170

Applicable To: SRO X RO ____ PEO ____

K/A No.: 2.2.13 K/A Rating: 3.6/3.8

Method of Testing:

Simulated Performance: ____ Actual Performance: X

Location:

Classroom: X Simulator: X In-Plant: X

Task Standards:
- At the completion of this JPM, the examinee will have discovered that the tag out is in error. He will recommend the clearance not be approved until the Cross tie valve 2-CHW-125 is added to the clearance and the other Cross tie valve 2-CHW-124 is removed.

Required Materials (procedures, equipment):
- WC 2 "Tagging"
- Attachment 7 Tagout Request
- Attachment 10, Work Package Tagout Verification/Boundary Sheet
- P&ID 25203-26027 sheet 2 of 4
- P&ID 25203-30011 sheet 12F
- OP-2330C-001 *"Chilled Water System Valve Alignment"*

General References: WC 2, Section 1.4, 1.5. (Rev. 6-06)

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

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

JOB PERFORMANCE MEASURE WORKSHEET

JPM Number: JPM-A5SRO Rev. 0

Initiating Cues:

- You are the WC-SRO, the work package for 2-CHW-123 "Chill Water Pump (P-149C) Discharge Isolation" valve has been reviewed. Approve the prepared tagout.

- The valve must be replaced due to leakage past the seat.
- Restoration information is not required.
- All drawings have been verified "Controlled, Approved and up to date".
- Tags are going to be made up by the PEOs.

Initial Conditions:

- 2-CHW-123 "Chill Water Pump (P-149C) Discharge Isolation" valve is leaking by it's seat.
- Maintenance advised removal and replacement of the valve.
- The Station Tagging Computer Program is unavailable.
- The need for a manual tagout was evaluated and approved by all required personnel.
- The tagout will be entered into the computer as soon as the computer is available.

Simulator Requirements: None

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

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

PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-A5SRO TITLE: **SRO Tag Clearance Approval**

START TIME: _____

STEP **1** X Performance Steps: - Review prepared Manual tag out, referring to appropriate sections of WC-2, the P&ID drawings, and the valve alignment OP2330C-001.

GRADE ___ X Standards: *The examinee reviews Manual tag out sheet using WC-2, "Tagging", Attachments 9, 10, & 16 as necessary*

The examinee also refers to the P&IDs for the Chill Water system, and the valve alignment OP 2330C-001. Using the following references:

X
X
___
___

- *P&ID 25203-26027 sheet 2 of 4*
- *P&ID 25203-30011 sheet 12F*
- *OP-2330C-001 "Chilled Water System Valve Alignment"*
- *WC-2 "Tagging" Att. 9,10,&16.*

Cue: **When requested, provide the examinee with the required documentation, including WC2, "Tagging".**

Comments:

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PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-A5SRO TITLE: **SRO Tag Clearance Approval**

STEP **2**	X	Performance Steps:	- Review Tagout for the following:
	X		- VERIFY tagout provides personnel and equipment safety for the tasks and hazards involved.
	___		- REFER to Attachment 4 and VERIFY all energy sources and isolation points have been considered.
	___		- VERIFY tagout does not compromise the operability of other components.
	___		- IF tagout is a blue tag tagout, ENSURE all work is assigned to a single contact Person.
	___		- REVIEW effects of tagout on indications, instruments or controls and need for compensatory actions.
	___		- VERIFY completeness and sequencing of steps.
	___		- VERIFY correct tag selection for all work packages.
	___		- Unless required by procedure, ENSURE blue tags are not hung on redundant trains of operable safety related equipment.
GRADE ___	X	Standards:	- *Examinee refers to the P&IDs for the Chilled Water System, OP 2330C-001 "Chilled Water Valve Alignment" and discovers that the tag out is in error.*
	___		- *He also refers to WC-2 "Tagging" section 1.4 & 1.5*

Cue: **If requested, provide Attachment 7, Tagout Request.**

Comments:

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STEP **3**	___	Performance Steps:	IF tag out indicates a deficiency, PERFORM one of the following:
	___		a. NOTIFY a Tag Control Coordinator and RESOLVE the problem.
	X		b. RETURN tagout to a Tag Control Coordinator for resolution.
GRADE ___		Standards:	*Examinee states that he would:*
	___		- *notify the Tag Control Coordinator (PEO) of the issue.*
	X		- *Recommend adding tag for 2-CHW-125, removing tag for 2-CHW-124.*
~~~~~~

PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-A5SRO TITLE: **SRO Tag Clearance Approval**

Cue: If examine does not recommend the tag out be modified then, ask the examinee for his recommendations.

Comments: - The order may differ slightly provided the examinee ensures the tag out is changed.

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

~~~~~~

STOP TIME: _____
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VERIFICATION OF JPM COMPLETION

Job Performance Measure No. JPM-A5SRO Rev. 0

Date Performed: _____

Operator: _____

Evaluator(s): _____

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

Time Critical Task? Yes _____ No _____

Validated Time (minutes): 15

Actual Time to Complete (minutes): _____

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

Areas for Improvement:

EXAMINEE HANDOUT

JPM Number: JPM-A5SRO Rev. 0

Initiating Cues:

- You are the WC-SRO, the work package for 2-CHW-123 "Chill Water Pump (P-149C) Discharge Isolation" valve has been reviewed. Approve the prepared tagout.

- The valve must be replaced due to leakage past the seat.
- Restoration information is not required.
- All drawings have been verified "Controlled, Approved and up to date".

Initial Conditions:

- 2-CHW-123 "Chill Water Pump (P-149C) Discharge Isolation" valve is leaking by it's seat.
- Maintenance advised removal and replacement of the valve.
- The Station Tagging Computer Program is unavailable.
- The need for a manual tagout was evaluated and approved by all required personnel.
- The tagout will be entered into the computer as soon as the computer is available.

ANSWER KEY

Attachment 10
Work Package Tagout Verification/Boundary Sheet

ANSWER KEY

(Sheet 1 of 1)

This form is for Manual use only, it is not intended to match a computer generated form.

1. Tagout Number	2. Date	3. AWO Number ("or Multiple")	
4. Contact Person		5a. *Tagout adequate for personnel safety/Blue tag restrictions satisfactory* Contact Person	5b. Date

6a Step No.	6b. Equipment identification and nomenclature and location	6c. Tag hung		Verification	
		Date	Init	Date	Init
1.	P149C-HS "CHILLED WTR. PP C" HAND SW (C-80) YELLOW				
2.	B2175 "NON-VITAL CHILLED WATER PUMP C" (MCC B21) RED, OFF				
3.	B2174 "VITAL CHILLER SUPPLEMENTAL" (MCC B21) RED, OFF				
4.	2-CHW-116 "CHILL WATER PUMP (P-149C) SUCTION ISOLATION" RED, CLOSED				
5.	2-CHW-125 "P149B CROSS TIE TO X-196B" RED, CLOSED ← EXAMINEE MUST FIND ERROR & CORRECT THIS NUMBER.				
6.	2-CHW-126 "X-196B OUTLET ISOLATION" RED, CLOSED				
7.	2-CHW-123 "CHILL WATER PUMP (P149C) DISCHARGE ISOLATION" NO TAG, OPEN				
8.	2-CHW-174 "P-149C CROSS TIE HEADER VENT" RED, OPEN				
9.	2-CHW-147 "CHILL WATER PUMP (P149C) DISCHARGE DRAIN" RED, OPEN				

TRAINING USE ONLY

Attachment 10
Work Package Tagout Verification/Boundary Sheet

(Sheet 1 of 1)

This form is for Manual use only, it is not intended to match a computer generated form.

1. Tagout Number	2. Date	3. AWO Number ("or Multiple")
2330C62-003	Today	M2-04-03686

4. Contact Person	5a. *Tagout adequate for personnel safety/Blue tag restrictions satisfactory* Contact Person	5b. Date
V. TEAM		Today

6a Step No.	6b. Equipment identification and nomenclature and location	6c. Tag hung		Verification	
		Date	Init	Date	Init
1.	A149C-HS "CHILLED WTR. PP C" HAND SW (C-80) YELLOW				
2.	B2175 "NON-VITAL CHILLED WATER PUMP C" (MCC 821) RED, OFF				
3.	B2174 "VITAL CHILLER SUPPLEMENTAL" (MCC 821) RED, OFF				
4.	2-CHW-116 "CHILLED WATER PUMP (P-149C) SUCTION ISOLATION" RED, CLOSED				
5.	2-CHW-124 "A149B CROSS TIE TO X-196B" RED, CLOSED				
6.	2-CHW-126 "X-196B OUTLET ISOLATION" RED, CLOSED				
7.	2-CHW-123 "CHILLED WATER PUMP (A149C) DISCHARGE ISOLATION" NO TAG, OPEN				
8.	2-CHW-174 "A149C CROSS TIE HEADER VENT" RED, OPEN				
9.	2-CHW-147 "CHILLED WATER PUMP (P-149C) DISCHARGE DRAIN" RED, OPEN				

Level of Use Information

STOP THINK ACT REVIEW

JPM-ASSRO

TRAINING USE ONLY

Attachment 10
Work Package Tagout Verification/Boundary Sheet

(Sheet 1 of 1)

This form is for Manual use only, it is not intended to match a computer generated form.

1. Tagout Number	2. Date	3. AWO Number ("or Multiple")
2330662-003	Today	M2-04-03686

4. Contact Person	5a. *Tagout adequate for personnel safety/Blue tag restrictions satisfactory* Contact Person	5b. Date
V. TEAM		Today

6a Step No.	6b. Equipment identification and nomenclature and location	6c. Tag hung		Verification	
		Date	Init	Date	Init
1.	A149C-HS "CHILLED WTR. PP C" HAND SW (C-80) YELLOW				
2.	82175 "NON-VITAL CHILLED WATER PUMP C" (MCC 821) RED, OFF				
3.	82174 "VITAL CHILLER SUPPLEMENTAL" (MCC 821) RED, OFF				
4.	2-CHW-116 "CHILLED WATER PUMP (A-149C) SUCTION ISOLATION" RED, CLOSED				
5.	2-CHW-124 "A149B CROSS TIE TO X-196B" RED, CLOSED				
6.	2-CHW-126 "X-196B OUTLET ISOLATION" RED, CLOSED				
7.	2-CHW-123 "CHILLED WATER PUMP (A149C) DISCHARGE ISOLATION" NO TAG, OPEN				
8.	2-CHW-174 "A149C CROSS TIE HEADER VENT" RED, OPEN				
9.	2-CHW-147 "CHILLED WATER PUMP (A149C) DISCHARGE DRAIN" RED, OPEN				

Level of Use Information

STOP THINK ACT REVIEW

JPM-ACSVD

Attachment 10
Work Package Tagout Verification/Boundary Sheet

(Sheet 1 of 1)

TRAINING US ONLY

This form is for Manual use only, it is not intended to match a computer generated form.

1. Tagout Number	2. Date	3. AWO Number ("or Multiple")
233062-003	Today	M2-04-03686

4. Contact Person	5a. *Tagout adequate for personnel safety/Blue tag restrictions satisfactory* Contact Person	5b. Date
V. TEAM		Today

6a Step No.	6b. Equipment identification and nomenclature and location	6c. Tag hung		Verification	
		Date	Init	Date	Init
1.	A149C-HS "CHILLED WTR. PP C" HAND SW (C-80) YELLOW				
2.	B2175 "NON-VITAL CHILLED WATER PUMP C" (MCC B21) RED, OFF				
3.	B2174 "VITAL CHILLER SUPPLEMENTAL" (MCC B21) RED, OFF				
4.	2-CHW-116 "CHILLED WATER PUMP (P-149C) SUCTION ISOLATION" RED, CLOSED				
5.	2-CHW-124 "A149B CROSS TIE TO X-196B" RED, CLOSED				
6.	2-CHW-126 "X-196B OUTLET ISOLATION" RED, CLOSED				
7.	2-CHW-123 "CHILLED WATER PUMP (A149C) DISCHARGE ISOLATION" NO TAG, OPEN				
8.	2-CHW-174 "A149C CROSS TIE HEADER VENT" RED, OPEN				
9.	2-CHW-147 "CHILLED WATER PUMP (P-149C) DISCHARGE DRAIN" RED, OPEN				

JOB PERFORMANCE MEASURE APPROVAL SHEET

I. JPM Title: **SRO Shift Turnover**

ID Number: JPM-A1SRO Revision: 0

II. Initiated:

R. J. Ashey — 1/28/05
Developer — Date

III. Reviewed:

Technical Reviewer — 01/28/05
Date

IV. Approved:

N/A
User Department Supervisor — Date

Nuclear Training Supervisor — 1/28/05
Date

JOB PERFORMANCE MEASURE WORKSHEET

Facility: MP-2 Examinee: _____

JPM Number: JPM-A1SRO Rev. 0

Task Title: **SRO Shift Turnover**

System: Conduct of Operations

Time Critical Task: Yes ____ No X

Validated Time (minutes): 20

Task No.(s): NUTIMS # 119-02-034

Applicable To: SRO X RO ____ PEO ____

K/A No.: 2.1.3 K/A Rating: 3.0/3.4

Method of Testing:

Simulated Performance: X Actual Performance: ____

Location:

Classroom: X Simulator: X In-Plant: X

Task Standards: At the completion of this JPM, the SRO has performed a review of turn over documents and found incorrect information related to a shift turnover

Required Materials (procedures, equipment):
- Shift Manager Log (eSOMS)
- MP-14-OPS-GDL200, Attachment 2, MP2/3 Shift Turnover Report
- MP-14-OPS-GDL200, Operations Standards, Section 3.6 and Section 3.7 (Rev. 009)
- DNOS-0306, Dominion Nuclear Standards, "Shift Turnover"

General References:
- MP-14-OPS-GDL200, Operations Standards, Section 3.6 and Section 3.7 (Rev. 009)
- DNOS-0306, Dominion Nuclear Standards, "Shift Turnover"

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

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

JOB PERFORMANCE MEASURE WORKSHEET

JPM Number: JPM-A1SRO Rev. 0

Initiating Cues:

- Review the required documents prior to assuming shift duties.
- I will act as the off going US.

Initial Conditions:

- You are the oncoming US and have just arrived in the control room for the beginning of your shift.
- The eSOMS program is NOT available; however, a hard copy of the Narrative Log for the off-going shift has been printed out. The IT Department is presently working to restore the program.

Simulator Requirements: N/A

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

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

PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-A1SRO TITLE: **SRO Shift Turnover**

START TIME: _____

STEP 1 X Performance Steps: Obtain the documents that need to be reviewed prior to assuming shift duties.

GRADE ___ X Standards: *Examinee requests the documents that he/she would review. As a minimum, the list should include the following:*

- *MP-14-OPS-GDL200, Attachment 2, MP2/3 Shift Turnover Report*
- *Control Room Log book (ie. eSOMS Narrative Log)*

The examinee may include additional documents for review [i.e., Surveillance Schedule, Temporary Modifications, Red Tag Index, Night Order Log (for any new night orders), Radwaste Log Book (eSOMS), Radwaste Night Order Book, or Control Room Daily Surveillance MODES 1 & 2, SP 2619A-001 (NOT required)].
(There is NO requirement to review these documents prior to assuming the shift, but they may be utilized in a turnover.)

Cue:
- **Provide the MP2/3 Shift Turnover Report and the SM Log (eSOMS Narrative Log).**
- **Inform the examinee that NO surveillances are scheduled for his/her shift.**
- **If requested, provide MP-14-OPS-GDL200, Operations Standards, and /or DNOS-0306, Shift Turnovers**

(The above listed additional documents will NOT be available to the examinee. If the examinee does request them, state that they are in use by other individuals, but will be provided prior to the completion of shift turnover.)

Comments:
- MP-14-OPS-GDL200, Attachment 2, MP2/3 Shift Turnover Report lists items that should be reviewed prior to assuming shift duties.
- The examinee may also refer to MP-14-OPS-GDL200, Operations Standards, Attachment 3, Operating Practices, and/or DNOS-0306, Shift Turnovers, for any additional requirements.

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PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-A1SRO TITLE: **SRO Shift Turnover**

STEP **2** X Performance Steps: Review the MP2/3 Shift Turnover Report and the SM Log (eSOMS Narrative Log) and ask the off-going operator about anything out of the ordinary.

GRADE ___ X Standards:

- *During the review of the SM log (eSOMS Narrative log) and the MP2/3Shift Turnover Report, the examinee should recognize that there is a problem with taking the 'B' LPSI out of service while Facility 2 is protected.*
- *The examinee should also note that there is NO entry on the MP2/3 Turnover Sheet for the "B" LPSI Pump under either the TS LCO and TRM ACTION Statements or Plant Systems And Alternate Plant Configurations.*

Cue:

- **If necessary, review equipment out of service.**
- **The 'B' LPSI Pump is being removed from service to perform the scheduled PMs.**

Comments:

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

STOP TIME: _____
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VERIFICATION OF JPM COMPLETION

Job Performance Measure No. JPM-A1SRO Rev. 0

Date Performed: _____

Operator: _____

Evaluator(s): _____

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

Time Critical Task? Yes _____ No **X**

Validated Time (minutes): 20

Actual Time to Complete (minutes): _____

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

Areas for Improvement:

EXAMINEE HANDOUT

JPM ID Number: JPM-1ASRO

Initiating Cues:

- Review the required documents prior to assuming shift duties.
- I will act as the off going US.

Initial Conditions:

- You are the oncoming US and have just arrived in the control room for the beginning of your shift.
- The eSOMS program is NOT available; however, a hard copy of the Narrative Log for the off-going shift has been printed out. The IT Department is presently working to restore the program.

Attachment 2 **TRAINING ONLY**

MP②/3 Shift Turnover Report

(Sheet 1 of 8)

DATE-TIME	PREPARED BY	SHIFT
02/21/05 0520	W. Wooley / "NIGHTS" Shift	18:00 - 06:00

PLANT STATUS:

MODE: 1 *RX POWER:* 100%

MEGAWATTS: Thermal: 2698MWTH *PZR PRESS:* 2250 psia

Electric: 917 MWe *RCS T-AVE:* 572 degrees F

RCS LEAKAGE: Identified: 0.110gpm *PROTECTED:* Train/Facility:

Unidentified: 0.012gpm Z2 (YELLOW)

Date/Time:02/21/05 0415

TS LCO and TRM ACTION Statements Coming Due (if more than one ACTION requirement per LCO, list each separately)

Date	Time	LCO	Action	Action Requirement	Equipment	Reason

Continuous TS LCO and TRM ACTION Statements in effect (if more than one ACTION requirement per LCO, list each separately)

Action Requirement	LCO	Action	Equipment	Reason
Infinite action: Establish hourly fire watch.	TRMAS 3.7.10	1	See AIL	See Active Impairment List.
Infinite action: Notify U2 US/SM	U1TRMAS 6.7	1	See AIL	M2-04-09986, Security Mods
Infinite action: 2619A-1 shift logs	TSAS 3.3.3.8a	3	RC-200	AVMS Failed 2410A

OD COMPENSATORY ACTIONS / Temp LOGS (Bold: Tech Spec, Italics: TRM)	**Start Date**
Record Spent Fuel Pool level twice per shift in the narrative log. **(Aux PEO)**	09/02/04
While the EHC MONITOR PANEL TROUBLE alarm is disabled, check EHC Monitor Panel for new alarms 2 times per shift and log in the narrative log. Existing lights are: 30VDC/420Hz Supply Hi Limit/Low Limit and –22VDC/60Hz Supply Low Limit (total of 3 lights lit). **(Aux PEO)**	09/24/04
With NSST Nitrogen supply bottle low-pressure alarm defeated, document bottle pressure on the outside rounds once per shift. **(Outside PEO)**	08/11/04
Once per shift, cycle 2-MS-100C/D to drain condensate from A SGFP HP steam supply line (ST-116 isolated due to leak) with PEO at feed pump in case valve(s) fail to close (see compensatory action). **(SPO & TB PEO)**	04/12/04
Once per shift, record lower 4,160 VAC Switchgear Room temperature (TI-6429) ON peo ROUNDS 2669-1: see temporary log for details regarding actions required upon exceeding 95°F. 24E on 24D , record temperature per OP 2343. **(TB PEO)**	07/25/04
Monitor positioner air pressures on 2-FW 51A, #1 SG Feed Regulating Valve, once per shift and log readings in the narrative log (see photo of positioner gauges.) Immediately report any sustained air pressure less than 20 psig. **(TB PEO)**	11/01/04
Check oil absorbent pads at the turbine front standard and change out as required. Perform weekly, concurrent with Turbine Overspeed Trip Test. (usually Fridays.)	12/15/04
Check Unit 1 Spent Fuel Pool leak detection outlet valve once per Day Shift and document no leakage found in the narrative log.	10/09/04

PLANT SYSTEMS AND ALTERNATE PLANT CONFIGURATIONS:

LIST the following information: (Provide procedure references as applicable.)

- Systems, components out of service.
- Deviations from required system alignments.
- The need for valve lineups or other restoration activities.
- Temporary Mod installation and removals
- Compensatory measures

Attachment 2
MP②/③ Shift Turnover Report
(Sheet 2 of 8)

Boron Samples	1. RCS: 249 ppm Boron, 03/20/05 @ 0745 2. SFP: 2113 ppm Boron, 03/19/05 @ 0650 3. RWST: 2187 ppm Boron, 03/18/05 @ 0100
120 VAC	None.
125 VDC	None.
480 VAC	Ref Night Order 10-07-04-01. Do not crosstie non-vital load centers in Modes 1-4. CR-04-09083. A/R 04005973 (10/17/04)
4160 V	1. Ref.: Night Order 7-30-04-01, Swapping 24E Supply Bus (7/30/04) 2. 24E on 24D (2/21/05)
345 Kv	None.
ALRW	1. See Rad Waste Night Letter. Also see "Sumps".
Annunciators	1. **Procedural Temp Mod:** "Radiation Monitor Flow Lo" (C02-3, D-9) alarm defeated with a half card per WC-10, Attachment 2. WC-10, Attachment 3 in Temp Mod book (to be retired in place. Ref. EWR M2-98106). Due for abandonment on 2/28/05. 2. **Procedural Temp Mod:** Jumper to defeat the lower seal temp hi alarm due to failure of T-171*. Temporary PPC alarms established for T6107, T174*, M2-03-14181 SSD 2R16. 3. **Procedural Temp Mod:** "Letdwon Line Radiation Hi/Failure" (C02/3, B-9) alarm defeated with a half card per OP 2387A, Attachment 2. Attachment 2 in Temp Mod book. To be retired as parta of EWR M2-98106 for replacing Letdown Line Rad Monitor. Due for abandonment on 2/28/05. 4. **Procedural Temp Mod:** "SGFP Turbine 'A' Oil Cooler Discharge Temp Hi" (C-06/7, D-39) alarm defeated with a half card per OP 2387A. (7/21/04) AWO M2-04-07353, scheduled for 2R16.
Aux Feed	Ref.: Night Order 8-19-04-1, Resetting the Terry Turbine Trip Throttle lever and trip hook.
Aux Steam	None.
Battery Chargers	**Alternate Plant Configuration:** Lighting panel L51, breaker 18 has separation issues.(VS2). Breaker 18 is RTO. M2-02-03507 (ELEC) status '1' SSD 2R16. **Initiation Date:** 11-17-01 **CR#** 01-11279 **Clearance:** 2C15-2344C99-0001.
Boric Acid	Refer to and enter action statement for 3.1.2.8 & 3.5.2 if loss of both Boric Acid Pumps or Gravity Feed valves is experienced. See night order 03-04-04-1 pending Tech Spec change.
CAR's	None.
CEDS	'B' MG set flywheel outboard bearing exhibits increased vibration. (See CR-04-09572)
Circ Water	1. 'B' & 'C' CW pump motor temperatures are elevated (210 deg. Peak on 7/6). Two portable fans are in place to aid in cooling the 'C' pump. 2. Circ Pump Amp Guidance form Engineering: If Circ Pump amps ≥ 200 amps, then backwashing should be done. PPC Temperature alarms set for 198 amps for all pumps. (10/26/04) 3. 'A' Circ Pump amps were reduced form 198 amps to 175 amps after backwashing. 4. 'C' Circ Pump amps increased from 193 to 200 amps during night shift. Engineering recommends backwashing as soon possible after shift turnover. 02/21/05.
CLRW	**Procedural Temp Mod:** CLRW Temporary Filter Skid installed.
Condensate	None.
Condenser	1. Continuous fill to the 'A' Condenser Expansion Joint water seal though (boot seal), IAW Design Change Notice DM2-00-0245-02, under AWO M20206218 & Tag Section 2LT1-2319A99-002, hung 1/5/04. Temp Mod to be removed under the same AWO in 2R16. 2. The 'B' Condenser Expansion joint has been filled about once every 4 days for the last few weeks. Continuing to trend. 10/20/04
Condenser Air Removal	1. SJAE steam supply PCV would not respond to lowering stem pressure or changes in its setpoint. DCN for actuator replacement M2-04-03599.Status 'E'. SSD 2R16 or SDH3, SERT item 'A' SJAE water trap needs to be bypassed to operate the SJAE properly. CR 04-02229. AWO M2-04-02322, status 'S', SSD 2R16 or SDH3. 2. Both sets of SJAEs are in service to support backwash activities. 2/20 – 2/21/05
Containment	None.
CPF	'D' Demin is currently in the amine form, in service IAW Chemistry SPROC.
CRAC	None.
CST	None.

CTMT Spray	None.	
CVCS	1) 'A' Charging Pump determined to be leaking approximately 5 gph (~2% in AWDT/shift) M2-03-01107. (9/27/04) 2) RWP for non-rounds CVCS activities is RWP 5, Task 4.	
CVCS Ltdn	**Alternate Plant Configuration:** CH-521 is closed. Ltdn rad monitor is isolated. NMOD for abandonment due 2/28/05	**Initiation Date:** 3-31-01 **AWO:** M2-01-06639 **Clearance:** 2C15-2304AA02-0002
CVCS - Bleedoff	**Alternate Plant Configuration:** PIC-215 in manual. Maintaining pressure between 60 and 75 psig IAW 2201, step 4.10.11.b.	**Initiation Date:** 12/6/02 **CR:** CR-02-09747 **AWO:** M2-01-03686
Doors	None.	
EBFS	None.	
EDG	SW-231A is replaced with a blank spool piece, documented in Temp Mod 2-04-003 (5/23), M2-04-05033 with valve team to overhaul ('D' status, 10/16/04), M2-04-05057 to replace valve and remove Temp Mod ('S' status). Both SW-231A and 231B are scheduled to be replaced in October 2005. (10/28/04)	
EHC	Shortly following Fuller Earth Filter replacement, flow through the filter trailed off to zero. CR-04-06570 (7/9/04) Per system engineer, placed system on recirc with the transfer pump. System should be left in this condition until directed. (7/15/04) M20407009 Status "P" SSD 2/28/05	
EHC Power Supplies	**Alternate Plant Configuration:** EHC-P/S-2B failed during adjustment of the other -22 VDC power supply, and was turned off.	**Initiation Date:** 9/24/04 **AWO:** M2-04-09807 **Clearance:** 2C16-2323A99-0003
EHC Power Supplies	PMG malfunction occurred due to failure of the power supply. Added to hot shutdown work list. (CR 04-07955). M2-04-08885, Status '1'. I&C completed attempts to adjust the output of power supply EHC-P/S-2B. Voltage could not be restored, fuses were good. ((/30/04)	
ESAS/ATI	None.	
Fire System	OD MP2-065-04, Three sprinkler heads in 31'6" TB are oriented incorrectly. (CR-04-02546)	
Flanders Line	Ref. : Night Order 9-21-04-1. Brief interruptions on Flanders Line cause instrumentation problems. CR-04-08580. (9/21/04)	
Gland Seal	'A' Exhauster has high vibrations. For emergency use only. M2-03-14919, Status 'D' for 2R16.	
H_2 Analyzers	None.	
H_2 Seal Oil	None.	
Heater Drains	1. The "B" Heater Drains Pump has leaking seal cooling lines. (M2-03-14572), Status 'D' for 2R16. 2. The Heater Drains common discharge check valve, 2-HD-12, leaks by. (M2-03-13692) Status 'S' for 2R16. 3. The 3B feed heater sightglass has a stem leak. Isolated and tagged by FIN Team on 6/11/04. M2-04-05878.	
HPSI	P41A, "A" HPSI Pump is in 'alert' status. Also pump had Fe material found in inboard bubbler. M2-01-01105, Status '1', SSD 2/28/05	
ICC	**Procedural Temp Mod:** The following CETs are bypassed by OP 2387G: HJCT Probe 7A UJTEM7-A, HJCT Probe 7A Heated HJCT, HJCT Probe 5 HJCT 5B, HJCT Probe 5 UJTEM5-B, HJCT Probe A #24H, CET Probe T330 (Y-14), CET Probe F19, CET Probe J16, CET Probe S11, CET Probe X11, HJCT 2A heated and unheated, CET Probe L6.	
Inst/Stat Air	1. **Procedural Temp Mod:** Temporary air compressor is installed. Procedure for operation of the temporary air compressor is in the blue folder on the US desk. 2. Numerous oil leaks have been found on "C" IAC. (CR-04-09396) Operate compressor as scheduled and monitor for additional oil leaks. Document accordingly. 3. Small air on flange on "A IAC (CR-04-0882), M2-04-09937 SSD 2/28/05	
Intake Structure	**Procedural Temp Mod:** Thermal barriers installed IAW OP 2335D. Attachment in SM office. (5/7/04)	
Isophase Bus Duct Cooling	None.	
LPSI	None.	
Lube Oil	None.	

Main Feed	1. The turning gear for the "A" SGFP does not properly engage or disengage. M2-04-00648 (2R16) 2. "B" SGFP oil leak on steam side, Turbine inboard bearing. Changing oil absorbent once/shift. AWO M20001377 (2R16)
Main Generator	Removed the following Stator Bar Outlet Temperature alarms (Deviation from average) from ALARM-SCAN: T9565 thru T9572, inclusive due to low from average temperatures. All actions of OP 2324D, step 4.5, that can be performed, have been. Possible loose connection. CR-04-09999. (2R16)
Main Steam	1. 2-MS-297 has body to bonnet leak. 1/4/04 M2-04-00106 (2R16) 2. 2-MS-110, ST-129 ("A" SGFP) Inlet Isolation, is on the backseat due to packing leakage. 1/6/04 M2-04-01379 3. 2-MS-367 has body to bonnet leak. M2-04-04646 (2R16) 4. 2-MS-64B PPC digital point is failed. Removed form scan. M2-04-00620, Status 'D', SSD 2/28/05 5. 2-MS-64B indications: When valve is closed, green light may not function reliably due to sticky upper limit switch. If red light is out or blue light is on, valve is confirmed to be closed. AWO M2-04-02145 to bwe worked during HOT SHUTDOWN. (3/15/04) 6. ST-116 ("A" SGFP HP Stream Supply) has leak and is isolated. On hot shutdown work list. See comp measures. 4/12/04 M2-04-03516, Status '1'.
Main Turbine	1. No. 3 CIV steam leak is directed outdoors via hard pipe in 31'6" of Turbine Building. (C OP 200.4) Areas around the Turbine Building truck access have been posted as high niose level areas due to the steam noise from the discharge of the hard pipe. M20402584 (2R16). Muffler installed 10/21/04 2. Master Trip Solenoid "A" voltage does not have the proper voltage causing the solenoid to stick during surveillance testing. M2-04-00652, Status 'E', to be worked during 2R16. 3. Turbine turning gear light does not light when on gear. Bulb is OK, socket is loose. Also, gear does not shift to fast. 3/16/04 AWO M2-04-02478. HSD work.
NaOCl	1. Per Chemistry Supervisor notes: Verify injection flow rate with Chem until further notice. Chemistry will no longer sample each night, they have resumed weekly sampling per NPDES requirements. (12/2/04) 2. Engineering requested NaOCl injection time to be raised to 15 min/bay. 11/17/04
NI's	None.
Nitrogen	1. Nitrogen tagged to the "A" RCP SEXA8, tube #1, electrical penetration. M2-03-02521, Status 'E', 2C15-2333X99-0002 (2R16) Verified 4/23/04 2. Nitrogen isolated to "D" RCP electracal penetration SWXA8, Tube #2, M20305969, Status 'E', 2R16 (4/24/04) 3. Nitrogen isolated to SEXA4, tube #2. M2-04-03661, Status 'E', 2C16-2333X00-001 (5/26/04)
Non-Vital Chillers	X196A secured due to Freon and oil leakage, 2/18/05, CR#-0500107. Blue tagged to prevent use but keep oil/Freon separated.
NSST	Nitrogen supply bottle low-pressure alarm defeated. 8/11/04 M2-03-14569 (WW503)
PMW	Dual indication for "B" pump when running. FIN team minor maintenance. 2/20/05
PPC	If 2 PPC monitors "lock up", do not open any new PPC windows on any PPC terminal. Ensure other PPC screens are updating, call Jim Themig, who will fail over the PPC. DO NOT attempt to use OP 2349B, Manual Failover, as this will NOT work. AR 0300841321
Purification	Purification is aligned to the Spent Fuel Pool. 02/16/05. Demin removed from service per Chemistry request 9/3/04.
Rad Monitor	RM-8168, CR-04-03736 documents a condition where the alarm setpoint defaults to a value of >2μCi/cc under certain faulted conditions. If RM-8168 is declared INOP due to an instrument failure, do not return to OPERABLE status until I&C has declared the alarm setpoint to be correct.
RBCCW	"B" RBCCW Heat Exchanger isolated and drained for maintenance. (2/20/05)
RCS	None
RPS	None.
RWST	RWST HX on recirc with AS-76, Temperature Control Valve, closed. OP 2350 marked up in Blue Folders. Procedure Change submitted 2/23/05
Screenwash/Screens	None.

Service Water	1. 2-SW-12C, "B" SW Header Supply to "B" EDG, has an active leak. Scheduled for repair 2R16. M2-02-04963, Status 'B'. 2. 2-SW-8.1A is CR/TR's for erratic flow control. M2-04-07731, Status '4' (10/4/04) 3. When performing SW Pump testing using FIT-6471 or FIT-6472, have IST Coordinator or qualified CBM support to ensure the flow meter is using a correct value for sonic velocity. This check should be performed prior to each pump test that follows swapping of pumps. AR# 04005525, due 3/15/05 to replace flow transmitters with a new model. 4. Ref.: OD MP2-071-04. 2-SW-8.1A and 2-SW8.1B solenoids are beyond their qualified service lives. CR-04-08085. 5. Ref.: OD MP2-074-04. Relief discharge line (2-SW-189) is not adequately supported for a design based seismic event. CR-04-09446.
Stator Cooling	Ref.: Night Order 10-14-04-01, received "Generator Protection Circuit Energized" alarm during retest. CR-04-09208. TR 15M22120830. AWO M2-04-01597. (12/28/04)
SIT's	1. #1 & #3 SIT levels slowly lowering. TR 21M22123655 / CR-04005253. Repair 2R16. 2. PDT sampled for Boron. Contained 2119 ppm. (6/13/04) 3. #3 SIT last filled on 1/17/05 4. #1 SIT last filled on 2/19/05 @ 0939
Sumps	RBCCW Sump aligned to LIS through filter to support "B" RBCCW HX work. (2/20/05)
TBCCW	Ref.: Night Order 5-05-04-01. TBCCW is contaminated with Freon 22 at 6.8 ppb. Significant leakage and intentional drainage must be collected and disposed of properly in barrels labeled as Freon contaminated. (AR# 04000027-30)
Ventilation	TB Exhaust Fan, F111I is tagged for motor replacement. 6/20/04 (AWO M2-03-10908, 'WP', 12/7/04)
Vital Chillers	None.

Cross Unit System Status: List status of unit's equipment/alignments that impact this unit, i.e., fire protection, electrical, Circulating Water (dilution flow)

SYSTEM	NOTES
U3 Aux Steam	In service
U3 power to 24E	34B aligned to 24E
U 3 Service Air	None.
Switchyard	Ensure nobody enters the switchyard until Unit 3 authorizes the entry. This is athe case at all times, not just during S/D. All entries into the switchyard should be scheduled. NUC WC 12. page 5.

UNIT 1 PLANT SYSTEMS AND ALTERNATE PLANT CONFIGURATIONS:
LIST the following information: (Provide procedure references as applicable.)

- Systems, components out of service.
- Deviations from required system alignments.
- The need for valve lineups or other restoration activities.
- Temporary Mod installation and removals
- Compensatory measures

BOP Ventilation	Check ventilation after "blips" on Flanders Line, it trips even when other equipment stays running. The evaporator continues to run after power blip.
Fire	1-Fire-101 tagged closed to isolate leak on 1-Fire-362 (Rx Bldg Airlock Sprinler Drain) ADM?IN-33210-0010 (1/26/05)
SFPI Garage Doors	None.
Electrical	GTS looking for a ground on MCC SFPI-M3, Bkr 2A. Ground suspected to exist on 1 opf 3 heaters powered by this breaker. (2/18/05)
Evaporator	To prevent inadvertent filling of staging tank during recirc or during evaporator processing, open FAC-DP-11, Bkr 5 (Rx Bldg Floor Drain Sump Pump 'A', M8-18)

Misc.	1. Change to SC-1 (effective 9/30/04) requires at least 2 people to be present when performing non-routine maintenance or operational activities. Additionally, work activities performed near the SFP require additional security measures and must be scheduled prior to start of work. 2. Safety Dept. requires respirators for Dry Well entry due to high mold readings. (9/23/04) 3. If entering Mold Posted areas, must wear Tyvek suit, Latex/Vinal gloves and coordinate with HP to determine proper respirator to wear prior to entering area. Unit 1 radwaste building recently posted as Respirator Required due to mold. (03/11/04) 4. Torus Room posted as Mold and Radiation Area. SE corner is still clean. (8/13/04)
PLC	None.
SFPI DHR	Temp Mod 1-01-3, Temporary Demion for clean up of DHR system. (10/28/04)
SFPI Fuel Pool Cooling	Inform NRC (Bob Prince @ 610-337-5376) of any 'planned' or 'unplanned' loss of SFP cooling anticipated to last >8 hour, or any unanticipated rise of 5°F in a 24 hour period. See CR-04-00218 and CR-04-00344.
SFPI Ventilation	Breaker open on pre-heater due to ground isolation/troubleshooting.

SURVEILLANCES IN PROGRESS	*Drop Dead Date*	*Form Location*	*Lead Dept*

EVOLUTIONS IN PROGRESS & NOTES	*Reference /Date*
MP-20-WP-GDL20, Att. 13, Drainage Review and Permit, for routing cleaning/washdown of Intake.	Blue Folder 2/19/04
SPROC CH03-2-01, Air Injection of the Condensate System for Corrosion Control. Mike Lunny is lead.	Blue Folder 4/2/04
Entered C-OP-200.4, Response to Significant Plant Leaks due to #3 CIV leak in Turbine Building. MP-20-WP-GDL20, Att. 13, Drainage Review and Permit, with procedure.	Blue Folder 3/22/04
OP 2332B, Temporary Air Compressor Operation	Blue Folder 7/12/04
Chemistry SPROC CH03-2-02, Amine Form Operation. Hi Effluent Conductivity alarm defeated at C05 during this test. Chemistry is monitoring conductivity. (9/2/04)	Blue Folder 8/30/04
Any suspicious incidents such as actual or suspected surveillance, physical or communication attacks that could impact our facility will be re[ported to local, federal agencies, and ISO NE IAW NEPOOL OP #10.	Blue Folder 10/19/04
OP 2343, Transferring Bus 24E Supply from Bus 24C to Bus 24D.	Blue Folder 2/19/05

Attachment 2
MP②/3 Shift Turnover Report
(Sheet 7 of 8)

♠ **Signature is not required when using electronic signature via ESOMs Narrative Log.**
My signature indicates that I have completed all requirements of "Shift Relief and Turnover," required to assume my watch station.

SHIFT TURNOVER REPORT SIGNATURE PAGE		
ON COMING:	**SIGNATURE**	**ADDITIONAL ONCOMING WATCHSTATION REQUIREMENTS:**
Shift Manager	♠	The following log books have been reviewed prior to assuming shift duties: • Control Room The following have been, or will be, performed: • Temp. Modification (Outstanding Clearance) log book review. • Key control for Shift Manager keys (SM locker set #172, includes one (1) MEDCO key) • Night Orders • Conduct Shift Brief
Unit Supervisor	♠	The following log books have been reviewed prior to assuming shift duties: • Control Room The following have been, or will be, performed: • Review surveillance schedule to determine which tests your shift will perform (Tech. Spec., non Tech. Spec., ISI) • Temp. Modification (Outstanding Clearance)log book review. • Red Tag (issued since last watch) review (ON LINE ONLY). • Key control for Unit Supervisor keys (SM key locker set #168, includes one (1) MEDCO key). • Night Orders
STA	♠	Reviewed IAW COP 200.7.
CO-Primary	♠	The following log books have been reviewed prior to assuming shift duties: • Control Room • Night Orders
CO-Secondary	♠	The following log books have been reviewed prior to assuming shift duties: • Control Room • Night Order
PEO-Aux Bldg.	♠	Performed Key control for PEO- Aux Bldg. Keys (Control Room key locker set #197).
PEO-Turb Bldg	♠	Performed Key control for PEO- Turb Bldg Keys (Control Room key locker set #196).
PEO-Float	♠	Performed Key control for PEO-Float Keys (Control Room key locker set #198).
PEO-U1 Rounds		Performed Key control for Unit 1 Rounds Keys (Control Room key locker set #S-1)
FTA	♠	
Work Control Supv./ Emergency Communicator	♠	Position is manned. If unmanned, SM has verified opposite unit is manned.

TRAINING ONLY

Reactivity Briefing Sheet

Off Going Shift

RCS Make-Up

Gallons per Dilution	90
Total Amount Diluted	1165.1
Time of Last Dilution	05:00
Gallons per Boration	N/A
Total Amount Borated	N/A
Time of Last Boration	N/A
Gallons Blended M/U	N/A
Boron Pot Setting/Blend Ratio	30.6:1

Control Rod Movement

Current Rod Height	7 @ 180
Number of Steps Moved	0
Control Rod Status	OFF

Axial Flux Trend — Stable

Xenon Trend — Stable

Turbine Load Changes

Initial Pot Setting	841
Current Pot Settiing	841

Current Shift

RCS Make-Up

Gallons per Dilution	N/A
Total Amount Diluted	N/A
Time of Last Dilution	N/A
Gallons per Boration	N/A
Total Amount Borated	N/A
Time of Last Boration	N/A
Gallons Blended M/U	N/A
Boron Pot Setting/Blend Ratio	N/A

Control Rod Movement

Current Rod Height	N/A
Number of Steps Moved	N/A
Control Rod Status	N/A

Axial Flux Trend — Stable

Xenon Trend — Stable

Turbine Load Changes

Initial Pot Setting	N/A
Current Pot Settiing	N/A

Notes:

Received NE-04-F-090 Equilibrium Shape Index Value memo from Reactor Engineering. The memo specifies an ESI of +0.01.

RX Thumb Rules for:

1% Power Change:

3.7 steps on rods

633 gallons of PMW

7 gallons of B.A.

Maintaining 100% Power:

2130 gal/day PMW

✓	2/20/05	19:20	Held pre-job brief to support Backwashing the "A" CW Bay IAW OP 2325D. (WOOLEY, WAYNE – MISC)
✓	2/20/05	19:22	Held Risk review meeting. Added backwash of the "A" Circ Bay to the work. 24E will be swapped back to 24D sometime prior to backwash of the "D" Bay on Monday AM. See previous shift log entries for CDF values. PRA Condition remains GREEN. (STROLL, MARK – MISC)
✓	2/20/05	19:26	Diluted 35.0 gallons of PMW to the VCT to maintain reactor power. (HARROD, ANDREW B – CO PPO)
✓	2/20/05	20:38	Pumped Containment Normal Sump 32% to 10% to support SP 2605G. (MILLS, WILLIAM R – CO SPO)
✓	2/20/05	20:53	Received C-03/03 B35 "PRIMARY DRAIN TANK PRESS HI/LO" alarm. Pressure is 5 psig. Pressure increase is due to leakage from #1 SIT to PDT. Vented PDT to 3 psig to clear alarm. (HARROD, ANDREW B – CO PPO)
✓	2/20/05	21:12	Completed Aux Building Compensatory Actions: Verified no new alarms on EHC panel. SFP level is 36'6". (JOBBS, KEVIN M. - PEO AB)
✓	2/20/05	21:25	Entered Unit: 2 type: TS Section: 3.7.4.1 Action Statement: _(0), Service Water swaps for backwashing operations per OP-2325D. Started 'B' SW Pump, Secured 'A' SW Pump to PTL 2-P-2326A -05-02-0016 (WOOLEY, WAYNE – MISC)
✓	2/20/05	21:28	Started 'B" Service Water pump, secured 'A' Service Water Pump to support 'A' circ bay backwash. (MILLS, WILLIAM R – CO PPO)
✓	2/20/05	21:31	Diluted 35.0 gallons of PMW to the VCT to maintain reactor power. (HARROD, ANDREW B – CO PPO)
✓	2/20/05	21:37	Exited Unit: 2 type: TS Section: 3.7.4.1 Action Statement: _(0), Service Water swaps for backwashing operations per OP-2325D. Started 'B' SW Pump, Secured 'A' SW Pump to PTL, is restored and operable. 2-P-2326A -05-02-0016 (WOOLEY, WAYNE – MISC)
✓	2/20/05	21:42	Intake Structure Condition Determination Surveillance complete. Plant Factor is 0, GREEN. Environmental Factor is 16, GREEN. 24Hour forecast: Plant Factor is 0, Environmental Factor is 14. (STROLL, MARK – MISC)
✓	2/20/05	21:45	Commenced educting 'A' Circ Bay. (WOOLEY, WAYNE – MISC)
✓	2/20/05	21:47	Completed Turbine Building Compensatory Actions: Lower 4160 Volt Swgr temperature = 83 degrees F. Stroked MS-100C/D to drain condensation because ST-116 is isolated. 2-FW-51A positioner air pressures 30 & 38. (MORRIS, MATTHEW L – PEOTB)
✓	2/20/05	22:08	Shift Manager reviewed and accepted Unit 1 and Unit 2 electronic logs. (PAIN, MICHAEL P - SM)
✓	2/20/05	22:22	Secured 'A' Circ Water Pump to support backwash of 'A" bay. (MILLS, WILLIAM R – CO SPO)
✓	2/20/05	22:30	Started 'A' Circ Water Pump. Completed backwash of 'A" bay. (MILLS, WILLIAM R – CO SPO)
✓	2/20/05	22:41	Completed 18-24 portion of SP-2619A-1, Control Room Daily Surveillance. Acceptance Criteria satisfied. (HARROD, ANDREW B – CO PPO)
✓	2/20/05	22:45	Secured educting 'A' Circ Water Bay. (WOOLEY, WAYNE – MISC)
✓	2/20/05	22:46	Reviewed and accepted 2651K-001, Emergency Seal Oil Pump Automatic Start Test, SAT. (WOOLEY, WAYNE – MISC)

✓	2/20/05	22:47	Reviewed and accepted 2651G-001, Motor Suction Pump Automatic Start Test, SAT. (WOOLEY, WAYNE – MISC)
✓	2/20/05	23:00	Entered Unit: 2 type: TS Section: 3.7.4.1 Action Statement: _(0), Service Water swaps for backwashing operations per OP-2325D. Started 'A' SW Pump, Secured 'B' SW Pump to PTL 2-P-2326A -05-02-0017 (WOOLEY, WAYNE – MISC)
✓	2/20/05	23:06	Shift Manager reviewed and accepted OPS Form 2619A-1, Control Room Daily Surveillance, Modes 1 & 2, (18-24). (PAIN, MICHAEL P - SM)
✓	2/20/05	23:08	Started 'A' Service Water pump, secured 'B' Service Water. (MILLS, WILLIAM R – CO SPO)
✓	2/20/05	23:10	Exited Unit: 2 type: TS Section: 3.7.4.1 Action Statement: _(0), Service Water swaps for backwashing operations per OP-2325D. Started 'A' SW Pump, Secured 'B' SW Pump to PTL, is restored and operable. 2-P-2326A -05-02-0017 (WOOLEY, WAYNE – MISC)
✓	2/21/05	00:15	Sampled RBCCW Sump. Results: Temp 71.4 degrees F, FAC <0.03 ppm, Act. <MDA, H-3 9.78E-06 μc/ml. All parameters within limits for alignment to LIS. [This Entry Copied From Unit 2 Chemistry – Night Shift – 02/20/2005 by NORTON, JEFFERY< On duty Chem Tech] (NORTON, JEFFERY< On duty Chem Tech)
✓	2/21/05	00:20	Sampled B-RBCCW HX prior to draining. Results: FAC <0.03 ppm, Act <MDA. Draining to sump is permitted. [This Entry Copied From Unit 2 Chemistry – Night Shift – 02/20/2005 by NORTON, JEFFERY< On duty Chem Tech] (NORTON, JEFFERY< On duty Chem Tech)
✓	2/21/05	00:25	Diluted 35.0 gallons of PMW to the VCT to maintain reactor power. (HARROD, ANDREW B – CO PPO)
✓	2/21/05	00:33	Held Risk review meeting. No changes to scheduled activities are expected. PRA Condition remains GREEN as planned. (Barnett, Terry L - STA)
✓	2/21/05	00:35	Aligned RBCCW area sump to LIS with filter bypassed for draining 'B' RBCCW HX. FQI-9144 reading 197392. (JOBBS, KEVIN M. - PEO AB)
✓	2/21/05	00:39	Secured X169B, B DC SWITCHGEAR ROOM CHILLER (VITAL CHILLER)," and P122B, "B DC SWITCHGEAR ROOM CHILLER (169B) CHILLED WATER PUMP" following extended run post-maintenance. (SEAMAN, EDWARD R – WC SRO)
✓	2/21/05	01:00	Reviewed and accepted SP 2651R-001 Turbine Bearing Lift Pump Operational Test Sat. (WOOLEY, WAYNE – MISC)
✓	2/21/05	01:01	Reviewed and accepted SP 2605G-007, Containment Isolation System CIV Stroke and Timing IST. (WOOLEY, WAYNE – MISC)
✓	2/21/05	01:02	Reviewed and accepted SP 2605G-004, RCS CIV Stroke and Timing IST. (WOOLEY, WAYNE – MISC)
✓	2/21/05	01:08	Swapped protected facilities: Facility 2 is now protected. (WOOLEY, WAYNE – MISC)
✓	2/21/05	01:18	Completed 2619G-005, AC Sources Daily Surveillance, SAT. (HARROD, ANDREW B – CO PPO)
✓	2/21/05	01:19	Started 'A' Condenser Air Removal Fan, F-55A, secured 'B' Condenser Air Removal Fan, F-55B to support maintenance activities. (MILLS, WILLIAM R – CO SPO)

✓	2/21/05	01:25	Reviewed and Accepted 2619G-005, AC Sources Daily Surveillance, SAT. (WOOLEY, WAYNE – MISC)
✓	2/21/05	01:33	Performed Risk Review using EOOS to determine the impact associated with swapping electrical buses 24E to 24D. Risk is GREEN. (Barnett, Terry L - STA)
✓	2/21/05	01:37	Completed Auxiliary Building Compensatory Actions: Verified no new alarms on EHC panel. SFP level is 36'6". (JOBBS, KEVIN M. - PEO AB)
✓	2/21/05	01:41	Entered Unit: 2 type: TRM Section: 2TRM-7.1.20 Action Statement: a (1), Transferring bus 24E Supply from Bus 24C to Bus 24D. 2-P-2343 -05-02-0009 (WOOLEY, WAYNE – MISC)
✓	2/21/05	01:41	Entered Unit: 2 type: TRM Section: 2TRM-7.1.20 Action Statement: b1 (2), Transferring bus 24E Supply from Bus 24C to Bus 24D. 2-P-2343 -05-02-0009 (WOOLEY, WAYNE – MISC)
✓	2/21/05	01:41	Entered Unit: 2 type: TRM Section: 2TRM-7.1.20 Action Statement: b2 (3), Transferring bus 24E Supply from Bus 24C to Bus 24D. 2-P-2343 -05-02-0009 (WOOLEY, WAYNE – MISC)
✓	2/21/05	01:00	Entered Unit: 2 type: TS Section: 3.8.1.1 Action Statement: a (0), Transferring bus 24E Supply from Bus 24C to Bus 24D. 2-P-2343 -05-02-0009 (WOOLEY, WAYNE – MISC)
✓	2/21/05	01:46	Diluted 35.0 gallons of PMW to the VCT to maintain reactor power. (HARROD, ANDREW B – CO PPO)
✓	2/21/05	01:50	Completed 2619G-001, AC Sources Surveillance, SAT. (MILLS, WILLIAM R – CO SPO)
✓	2/21/05	01:52	Reviewed and Accepted 2619G-001, T/S 3.8.1.1 Action a. – One Offsite Circuit Inoperable, SAT. (WOOLEY, WAYNE – MISC)
✓	2/21/05	01:54	Diverted Letdown to Clean Waste to lower VCT level from 86.7% and 23.7 psig to 78.7% and 15.0 psig. (HARROD, ANDREW B – CO PPO)
✓	2/21/05	01:55	Completed Unit: 2 type: TS Section: 3.8.1.1 Action Statement: a (0), Perform Surveillance Requirement 4.8.1.1. 2-P-2343 -05-02-0009 (WOOLEY, WAYNE – MISC)
✓	2/21/05	01:57	Processed 176.9 gallons from the PDT to Clean Waste. (HARROD, ANDREW B – CO PPO)
✓	2/21/05	01:58	Completed alignment of Bus 24E to Bus 24D. (MILLS, WILLIAM R – CO SPO)
✓	2/21/05	02:09	Exited Unit: 2 type: TRM Section: 2TRM-7.1.20 Action Statement: a (1), Transferring bus 24E Supply from Bus 24C to Bus 24D, is restored and operable. 2-P-2343 -05-02-0009 (WOOLEY, WAYNE – MISC)
✓	2/21/05	02:09	Exited Unit: 2 type: TRM Section: 2TRM-7.1.20 Action Statement: b1 (2), Transferring bus 24E Supply from Bus 24C to Bus 24D, is restored and operable. 2-P-2343 -05-02-0009 (WOOLEY, WAYNE – MISC)
✓	2/21/05	02:09	Exited Unit: 2 type: TRM Section: 2TRM-7.1.20 Action Statement: b2 (3), Transferring bus 24E Supply from Bus 24C to Bus 24D, is restored and operable. 2-P-2343 -05-02-0009 (WOOLEY, WAYNE – MISC)

✓	2/21/05	02:09	Exited Unit: 2 type: TS Section: 3.8.1.1 Action Statement: a (0), Transferring bus 24E Supply from Bus 24C to Bus 24D, is restored and operable. 2-P-2343 -05-02-0009 (WOOLEY, WAYNE – MISC)
✓	2/21/05	02:10	Established augmented sampling of RBCCW sump on a daily basis while aligned to LIS for "B" RBCCW HX scheduled work (SP 2617A-007). Sump will be sampled for activity and required NPDES parameters, as required by OP 2336C. Next sample is required on 2/22/05 at 0000. Chemistry has been notified. (SEAMAN, EDWARD R – WC SRO)
✓	2/21/05	03:27	Diluted 35.0 gallons of PMW to the VCT to maintain reactor power. (HARROD, ANDREW B – CO PPO)
✓	2/21/05	03:31	Reviewed and Accepted 2343A-002, Component Alignment for Shifting Bus 24E to Bus 24D. (WOOLEY, WAYNE – MISC)
✓	2/21/05	03:33	Reviewed and Accepted 2619C-001, Control Room Weekly Checks, SAT. (WOOLEY, WAYNE – MISC)
✓	2/21/05	04:06	Reviewed and Accepted 2601D-001, Power Range Safety and Channel Delta T Power Channel Calibration, SAT. (WOOLEY, WAYNE – MISC)
✓	2/21/05	04:10	NRC phone check – SAT. (HARROD, ANDREW B – CO PPO)
✓	2/21/05	04:24	Completed 00-06 portion of SP 2619A-1, Control Room Daily Surveillance. Acceptance Criteria satisfied. (HARROD, ANDREW B – CO PPO)
✓	2/21/05	04:24	Latest CTMT grab sample results from 02/19/0718 are : CVR8123A: 4639 cpm, CVR8123B: 2275 cpm CVR8262A: 3339 cpm, CVR8262B: 2105 cpm Current CTMT RM readings are: CVR8123A: 4521 cpm, CVR8123B: 2270 cpm CVR8262A: 3378 cpm, CVT8262B: 2132 cpm. Per 2314B, no grab sample is required to vent Containment. (MILLS, WILLIAM R – CO SPO)
✓	2/21/05	04:30	"B" RBCCW HX has completed draining. Aligned RBCCW Sump discharge filter, L-774, in service for hydrolazing HX. (SEAMAN, EDWARD R – WC SRO)
✓	2/21/05	04:34	Shift Manager Reviewed and Accepted Ops Form 2619A-001, Control Room Daily Surveillance, Modes 1 & 2, (00-06) (PAIN, MICHAEL P - SM)
✓	2/21/05	04:36	Added 10 cu ft H2 to VCT. (HARROD, ANDREW B – CO PPO)
✓	2/21/05	04:37	Stopped F23, EB Purge Supply Fan and F34C, Main Exhaust Fan; enclosure building purge is secured. (MILLS, WILLIAM R – CO SPO)
✓	2/21/05	04:39	Started F25A, 'A' EBFS Fan. Run hours = 15.58 (MILLS, WILLIAM R – CO SPO)
✓	2/21/05	04:40	Commenced venting Containment, initial pressure 20" H2O and Chemistry has been notified. (MILLS, WILLIAM R – CO SPO)
✓	2/21/05	04:53	Diverted Letdown to Clean Waste to lower VCT level from 80.5% and 22.6 psig to 73.3% and 16.2psig. (HARROD, ANDREW B – CO PPO)
✓	2/20/05	05:02	Entered Unit: 2 type: TS Section: 3.7.4.1 Action Statement: _(0), Service Water swaps for backwashing "C" Circ Bay per OP-2325D. Started 'B' SW Pump, Secured 'C' SW Pump to PTL. 2-P-2326A -05-02-0017 (WOOLEY, WAYNE – MISC)
✓	2/20/05	05:03	Started 'B' Service Water pump, secured 'C' Service Water. (MILLS, WILLIAM R – CO SPO)

✓	2/20/05	05:04	Exited Unit: 2 type: TS Section: 3.7.4.1 Action Statement: _(0), Service Water swaps for backwashing "C" Circ Bay per OP-2325D. Started 'B' SW Pump, Secured 'C' SW Pump to PTL, is restored and operable. 2-P-2326A -05-02-0017 (WOOLEY, WAYNE – MISC)
✓	2/21/05	05:22	Entered Unit: 2 type: TS Section: 3.5.2 Action Statement: a (0), Removed "B" LPSI Pump from service for preventative maintenance. 2-P-2307 -05-02-0001 (WOOLEY, WAYNE – MISC)
✓	2/21/05	05:37	Reduced turbine load ½ of a minor division on "Load Limit Pot". (HARROD, ANDREW B – CO PPO)

JOB PERFORMANCE MEASURE APPROVAL SHEET

I. JPM Title: **SRO AWO Acceptance**

ID Number: JPM-A2SRO Revision: 0

II. Initiated:

R. J. Ashey — Developer — 1/28/05 Date

III. Reviewed:

Technical Reviewer — 1/31/05 Date

IV. Approved:

N/A
User Department Supervisor — Date

Nuclear Training Supervisor — 1/31/05 Date

SUMMARY OF CHANGES

A/I & Date	DESCRIPTION	REV/CHANGE
11-30-2004	Developed new JPM	0

JOB PERFORMANCE MEASURE WORKSHEET

Facility: MP-2 Examinee: _____

JPM Number: JPM-A2SRO Rev. 0

Task Title: SRO AWO Acceptance

System: Equipment Control

Time Critical Task: Yes ____ No X

Validated Time (minutes): 20

Task No.(s): NUTIMS #119-01-098

Applicable To: SRO X RO ____ PEO ____

K/A No.: 2.2.21 K/A Rating: 2.3/3.5

Method of Testing:

Simulated Performance: X Actual Performance: ____

Location:

Classroom: X Simulator: ____ In-Plant: ____

Task Standards:
- At the completion of this JPM, the examinee will recommend the correct PMT, HPSI Pump IST (SP2604AO-001).

Required Materials (procedures, equipment):
- MP-20-WP-GDL40 "Pre and Post Maintenance Testing"
- MP-20-WP-GDL30 "Work Performance"
- MP-20-WP-GDL20 "Work Order Preparation"
- SP2604AO "HPSI Pump Inservice Testing, ≥ 1,750 psia, Facility 1"
- Training AWO

General References: MP-20-WP-GDL20, MP-20-WP-GDL40, MP-20-WP-GDL30

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

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

JOB PERFORMANCE MEASURE WORKSHEET

JPM Number: JPM-A2SRO Rev. 0

Initiating Cues:

- You are the WC-SRO, the AWO for "A" HPSI pump bearing replacement has been returned you, determine what must be accomplished to close out the AWO.
- Inform the examiner of your completion of this JPM by discussing the conclusions of your evaluation of the work package and your recommendations.

Initial Conditions:

- The "A" HPSI Pump bearing replacement was done as on line maintenance, with the plant at 100% power.
- Tagging clearing and restoration activities are being done by other members of the crew.

Simulator Requirements: None

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

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

PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-A2SRO TITLE: **SRO AWO Acceptance**

START TIME: _____

STEP **1** ___ Performance Steps: Review the AWO using guidance in GDL20, GDL30, and GDL40.

GRADE ___ ___ Standards: *The examinee reviews the AWO and requests the following references:*

- *MP-20-WP-GDL40 "Pre and Post Maintenance Testing"*
- *MP-20-WP-GDL30 "Work Performance"*
- *MP-20-WP-GDL20 "Work Order Preparation"*

Cue: **When requested, provide the examinee with the required documentation, including the enclosed GDL40, GDL30 and GDL20.**

Comments:

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STEP **2** _X_ Performance Steps: PMT for replacing HPSI pump bearings requires Tech Spec surveillance and IST to be performed, per GDL40 Att. # 3.6.

GRADE ___ ___ Standards:
___ _X_

- *Examinee refers to GDL40, and SP 2604AO.*
- *Examinee determines that Tech Spec surveillance SP 2604AO-001 should be done in it's entirety.*

Cue:

Comments: The examinee may also specify that the motor running and starting amperage be taken during the surveillance. (This would be the retest for disconnecting/reconnecting the motor)

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PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-A2SRO TITLE: **SRO AWO Acceptance**

STEP **3** _X_ Performance Steps: Recommendation given to add Tech Spec surveillance SP2604AO "HPSI Pump Inservice Testing, ≥ 1,750 psia, Facility 1"

GRADE ___ _X_ Standards: *Examinee makes recommendation to add Tech Spec surveillance SP2604AO "HPSI Pump Inservice Testing, ≥ 1,750 psia, Facility 1" to the AWO.*

___ ___ *(Examinee may add the motor current requirement, also.)*

Cue:

Comments:

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

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STOP TIME: _____
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VERIFICATION OF JPM COMPLETION

Job Performance Measure No. JPM-A2SRO Rev. 0

Date Performed: _____

Operator: _____

Evaluator(s): _____

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

Time Critical Task? Yes _____ No **X**

Validated Time (minutes): _____

Actual Time to Complete (minutes): 20

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

Areas for Improvement:

EXAMINEE HANDOUT

JPM Number: JPM-A2RO Rev. 0

Initiating Cues:

- You are the WC-SRO, the AWO for "A" HPSI pump bearing replacement has been returned you, determine what must be accomplished to close out the AWO.
- Inform the examiner of your completion of this JPM by discussing the conclusions of your evaluation of the work package and your recommendations.

Initial Conditions:

- The "A" HPSI Pump bearing replacement was done as on line maintenance, with the plant at 100% power.
- Tagging clearing and restoration activities are being done by other members of the crew.