FPL Energy

Seabrook Station

JOB PERFORMANCE MEASURE
2009 RO-ADMIN#1-- L0027J Rev. 6 Modified

QPTR CALCULATION

Student Name: _____ LMS #: _____

Evaluator Name: _____ LMS #: _____

Student Signature: _____ Date: _____
(optional)

Evaluator Signature: _____ Date: _____

SAT UNSAT

PREPARED BY: _____ DATE: _____
INSTRUCTOR

REVIEWED BY: _____ DATE: _____
SUBJECT MATTER EXPERT (OPTIONAL)

APPROVED BY: Signature/Date On File DATE: _____
TRAINING SUPERVISOR

JOB PERFORMANCE WORKSHEET

1.0 Task Number and Description:

Position: RO

0150200501 Perform A Manual QPTR Calculation

2.0 Conditions:

A Plant is now at 100% power after recovering from a dropped rod at EOL.
B. The main plant computer has been inoperable since yesterday (It was inoperable when the rod dropped).
C. The Detector Current Comparator upper section deviation alarm is lit.
D. The seven day QPTR surveillance is scheduled to be done this shift.
E. Incore/Excore calibration was performed yesterday (before the rod dropped).

3.0 Standards:

Perform the manual QPTR surveillance per RX1703, QPTR Surveillance.

4.0 Student Materials:

Copy of the Directions Tear-Off Sheet
Calculator
RX1703, QPTR Surveillance, Rev. 7, Chg. 2.

5.0 Limitations on performance:

Simulate/Perform all steps. Verbalize all actions to the evaluator.
Even if requested, no Peer Checks will be provided during the JPM.

6.0 References:

Procedures

RX1703, QPTR Surveillance.
OS1000.05, Power Increase.
ON1251.01, Loss Of Plant Computer.

Sys	KA	Description	Value RO/SRO
015	A1.04	Ability to monitor changes in QPTR.	3.5/3.7
015	K5.12	Knowledge of QPTR.	3.2/3.6
015	K5.16	Definition and calculation of QPTR.	2.9/3.4

7.0 Setting:

Classroom

1. Give the student a copy of 100% power NI cabinet values.
2. Examiner must prepare a completed RX1703A in advance. It shall reflect the JPM values for NI cabinet detector currents and the RE-17 100% power, 0% AFD values.
3. Use values listed in RE-17.

8.0 Safety Considerations:

None

9.0 Approximate Completion Time:

20 minutes

10.0 Directions to the Student(s):

Evaluator gives Tear-Off sheet to the student
Evaluator reads the following to the student (Optional for multiple JPMs)

Student:

1. Ensures task is done correctly.
2. May be asked follow-up questions to confirm knowledge of task.

A. You are the Primary Operator. You are going to perform the QPTR surveillance.

B. The following information is provided to you:

1. Plant is now at 100% power following the recovery of a dropped rod at EOL.
2. The main plant computer has been inoperable since yesterday.
3. The Detector Current Comparator upper section deviation alarm is lit.
4. The QPTR surveillance is scheduled to be done this shift.
5. Incore/Excore calibration was performed yesterday (before the rod dropped).
6. Detector current readings have been taken by the Control Board Monitor.
7. The time is 0800, today's date.

	TOP (A) DETECTORS			
	N41	N42	N43	N44
Detector Current micoamps	179	182	186	179
	BOTTOM (B) DETECTORS			
	N41	N42	N43	N44
Detector Current micoamps	177	199	191	183

C. This JPM will be administered in a classroom setting. Complete the required forms and return them to me when you are complete.

D. We will begin after the Initiating Cue is read.

11.0 Initiating Cue:

US to Primary Operator, **"Primary Operator (or student's name), perform the QPTR Surveillance per RX1703. The QPTR alarm surveillance has been entered and the Work Order is generated.**

All independent verifications of calculations will be performed after you are completed. Provide your results to me."

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP *denotes a critical step	STANDARD *denotes critical standard	EVALUATION SAT UNSAT	INITIALS/DATE
1. P	Start time _____	Initiating cue read.		

CUE: If the student requests a Peer Check at any time during the JPM, respond: **"No one is available to peer check your actions. Please continue with the task".**

NOTE: For performance of JPM in classroom setting the student is provided with a copy of RX1703, Quadrant Power Tilt Ratio Surveillance from the JPM. Student should refer to section 4.1 Surveillance With QPTR Alarm Inoperable.

NOTE: Detector current data for upper & lower detectors are provided. Detector Current value units are microamps. Student should be able to determine that all Power Range Detectors are operable when given the detector current data.

2. P — RECORD the current output from the top (A) and bottom (B) detector of each channel on Form A, Quadrant Power Tilt Calculation Sheet Row 1. — Records detector outputs.

N41 top (A) detector	_____	_____	_____
N42 top (A) detector	_____	_____	_____
N43 top (A) detector	_____	_____	_____
N44 top (A) detector	_____	_____	_____
N41 bottom (B) detector	_____	_____	_____
N42 bottom (B) detector	_____	_____	_____
N43 bottom (B) detector	_____	_____	_____
N44 bottom (B) detector	_____	_____	_____

D=Discuss P=Perform S=Simulate	ELEMENT/STEP *denotes a critical step	STANDARD *denotes critical standard	EVALUATION SAT	EVALUATION UNSAT	INITIALS/DATE

CUE: If the student asks for independent verification of the values recorded in Row 1 of Form A, cue, evaluator to student, **" Form A Detector currents have been independently verified."**

NOTE: The student is provided with a copy of RE-17.

3. P Using data from Technical Data Book Figure RE-17, RECORD the 100% power, 0% AFD detector current, for the top (A) and bottom (B) detector of each channel on Form A, Quadrant Power Tilt Calculation Sheet Row 2.

   a. From Technical Data Book fig RE-17, Records 100% power, 0% AFD values: _____ _____ _____

   4 Top (A) Detectors

   b. From Technical Data Book fig RE-17, Records 100% power, 0% AFD values: _____ _____ _____

   4 Bottom (B)Detectors

4. P CALCULATE the normalized detector current by dividing each detector current by its 100% power, 0% AFD current. RECORD the results on Form A, Quadrant Power Tilt Calculation Sheet Row 3.

D=Discuss P=Perform S=Simulate	ELEMENT/STEP *denotes a critical step	STANDARD *denotes critical standard	EVALUATION SAT	EVALUATION UNSAT	INITIALS/DATE
		a. Calculates and records Normalized Detector Currents: 4 Top (A) Detectors	_____	_____	_____
		b. Calculates and records Normalized Detector Currents: 4 Bottom (B)Detectors	_____	_____	_____
5.	P	CALCULATE the average normalized detector current for the top detectors and for the bottom detectors. RECORD the results on Form A, Quadrant Power Tilt Calculation Sheet Row 4.			
		a. Calculates and records average normalized detector currents: Top (A) Detectors	_____	_____	_____
		b. Calculates and records average normalized detector currents: Bottom (B) Detectors	_____	_____	_____

D=Discuss P=Perform S=Simulate	ELEMENT/STEP *denotes a critical step	STANDARD *denotes critical standard	EVALUATION SAT	EVALUATION UNSAT	INITIALS/DATE
*6. P	CALCULATE the Quadrant Power Tilt Ratio for each detector by dividing each normalized detector current by its associated average normalized detector current. COMPLETE Form A, Quadrant Power Tilt Calculation Sheet.				
		*a. Calculates and records QPTR for each detector: 4 Top (A) Detectors	_____	_____	_____
		*b. Calculates and records QPTR for each detector: 4 Bottom (B)Detectors	_____	_____	_____

NOTE: If the student expresses a rounded off value, then that value shall be compared against the standard. The only value that is "critical" is the out of tolerance (asterisked) QPTR value.

*7. P	Indicate the maximum QPTR by circling on Form A Row 5.	Identifies (circles) the maximum power tilt ratio on Form A Row 5.	_____	_____	_____

CUE: If the student asks for independent verification of the Form A calculations, cue, evaluator to student, " **Form A calculations have been independently verified."**

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP *denotes a critical step	STANDARD *denotes critical standard	EVALUATION SAT	 UNSAT	INITIALS/DATE
*8. P	Determine if LCO3.2.4 is/is not met based on maximum QPTR.				
		*a. Identify in step 6 of Form A that LCO 3.2.4 is/is not met	_____	_____	_____
		*b. In Row 6 Form A circle YES/NO	_____	_____	_____

NOTE: See answer key for the correct item to circle in row 6 on Form A

CUE: "The JPM is complete."

9.	Stop time_____ Evaluator calculates the time to complete the task.	Time to complete the task ≤ 20 minutes.			
10	Obtain from student: Tear Off Sheets and any other training materials used in the performance of the JPM				_____

PERFORMANCE SUMMARY

Provide comments on unsatisfactory performance of an element/step or for deviation from performance as stated. Record interruptions in performance such as retraining, shift change, and processing of procedure changes. Recommend remedial training, if necessary.

TEAR-OFF SHEET FOR JPM
2009 RO-ADMIN#1 - L0027J

Directions to the Student:

A. You are the Primary Operator. You are going to perform the QPTR surveillance.

B. The following information is provided to you:

1. Plant is now at 100% power following the recovery of a dropped rod at EOL.
2. The main plant computer has been inoperable since yesterday.
3. The Detector Current Comparator upper section deviation alarm is lit.
4. The QPTR surveillance is scheduled to be done this shift.
5. Incore/Excore calibration was performed yesterday (before the rod dropped).
6. Detector current readings have been taken by the Control Board Monitor.
7. The time is 0800, today's date.

	TOP (A) DETECTORS			
	N41	N42	N43	N44
Detector Current micoamps	179	182	186	179
	BOTTOM (B) DETECTORS			
	N41	N42	N43	N44
Detector Current micoamps	177	199	191	183

C. This JPM will be administered in a classroom setting. Complete the required forms and return them to me when you are complete.

D. We will begin after the Initiating Cue is read.

1.0 Initiating Cue:

US to Primary Operator, **"Primary Operator (or student's name), perform the QPTR Surveillance per RX1703. The QPTR alarm surveillance has been entered and the Work Order is generated.**

All independent verifications of calculations will be performed after you are completed. Provide your results to me."

Key RO Admin #1

RE-17 NIS CHANNEL and LOOP DELTA-T SCALING

Values Shown Below Indicate 100% Values

Channel	Top (μamps)	Bottom (μamps)	MPCS Constant	Amp. Gain (C*-0231)
N41	155.53	167.83	18.04	2.000
N42	151.96	188.93	18.04	2.000
N43	167.43	189.10	18.04	2.000
N44	162.61	177.77	18.04	2.000

Loop	Full Power ΔT	ΔT Gain (C*-0223)	ΔT Alarm Time Delay	T_{AVG} Dev. Alarm Time Delay
1	61.595	1.2988	60 sec.	60 sec.
2	62.093	1.2884	60 sec.	60 sec.
3	60.178	1.3294	60 sec.	60 sec.
4	60.386	1.3248	60 sec.	60 sec.

Channel	IR Full Power Current (μamps)
N35	357.272
N36	346.204

RE Dept. Supervisor — for PVG — 5/2/08

Operations Manager — for OM — 5/3/08

Signature — Date

Revision 01-13-01

Revision Summary:

Update for BOC13 based on RECALC 08-006-01

Key RO-ADMIN #1

Form A: Quadrant Power Tilt Calculation Sheet

Detector Current at: TIME _____ DATE _____ RE-17 Revision _____

CAUTION

Record all detector currents in units of microamps.

	TOP (A) DETECTORS				BOTTOM (B) DETECTORS			
	N41	N42	N43	N44	N41	N42	N43	N44
(1) DETECTOR CURRENT 0-500 MICRO	179	182	186	179	177	199	191	183
(2) 100% RTP, 0% AFD DETECTOR CURRENT FROM RE-17	155.53	151.96	167.43	162.61	167.83	188.93	189.16	177.77
(3) NORMALIZED DETECTOR CURRENT = (1)/(2)	1.15	1.20	1.11	1.10	1.05	1.05	1.01	1.03
(4) AVE. NORMALIZED DETECTOR CURRENT	1.14				1.04			
(5) QUADRANT POWER TILT RATIO (QPTR) = (3)/(4)	1.01	1.05	.97	.96	1.01	1.01	.97	.99
(6) LCO 3.2.4 Met? YES / (NO)								

Detector Current Obtained by: _____ Date: _____

Detector Current Independently Verified by: _____ Date: _____

Calculations Performed by: _____ Date: _____

Calculations Independently Verified by: _____ Date: _____

Form A: Quadrant Power Tilt Calculation Sheet

Detector Current at: TIME _____ DATE _____ RE-17 Revision _____

CAUTION

Record all detector currents in units of microamps.

	TOP (A) DETECTORS				BOTTOM (B) DETECTORS			
	N41	N42	N43	N44	N41	N42	N43	N44
(1) DETECTOR CURRENT 0-500 MICRO								
(2) 100% RTP, 0% AFD DETECTOR CURRENT FROM RE-17								
(3) NORMALIZED DETECTOR CURRENT = (1)/(2)								
(4) AVE. NORMALIZED DETECTOR CURRENT								
(5) QUADRANT POWER TILT RATIO (QPTR) = (3)/(4)								
(6) LCO 3.2.4 Met? YES / NO								

Detector Current Obtained by: _____ Date: _____

Detector Current Independently Verified by: _____ Date: _____

Calculations Performed by: _____ Date: _____

Calculations Independently Verified by: _____ Date: _____

RE-17 NIS CHANNEL and LOOP DELTA-T SCALING

Values Shown Below Indicate 100% Values

Channel	Top (μamps)	Bottom (μamps)	MPCS Constant	Amp. Gain (C*-0231)
N41	155.53	167.83	18.04	2.000
N42	151.96	188.93	18.04	2.000
N43	167.43	189.10	18.04	2.000
N44	162.61	177.77	18.04	2.000

Loop	Full Power ΔT	ΔT Gain (C*-0223)	ΔT Alarm Time Delay	T_{AVG} Dev. Alarm Time Delay
1	61.595	1.2988	60 sec.	60 sec.
2	62.093	1.2884	60 sec.	60 sec.
3	60.178	1.3294	60 sec.	60 sec.
4	60.386	1.3248	60 sec.	60 sec.

Channel	IR Full Power Current (μamps)
N35	357.272
N36	346.204

RE Dept. Supervisor _____ Ser PVG _____ 5/2/08

Operations Manager _____ for OM _____ 5/3/08

Signature Date

Revision 01-13-01

Revision Summary:

Update for BOC13 based on RECALC 08-006-01

FPL Energy

Seabrook Station

JOB PERFORMANCE MEASURE
2009 RO-ADMIN#2 - L0082J Rev. 05 Modified

PERFORM RCS STEADY STATE LEAK RATE CALCULATION

Student Name: _____ LMS #: _____

Evaluator Name: _____ LMS #: _____

Student Signature: _____ Date: _____
(optional)

Evaluator Signature: _____ Date: _____

SAT UNSAT

PREPARED BY: _____ DATE: _____
INSTRUCTOR

REVIEWED BY: _____ DATE: _____
SUBJECT MATTER EXPERT (OPTIONAL)

APPROVED BY: Signature/Date on file DATE: _____
TRAINING SUPERVISOR

JOB PERFORMANCE WORKSHEET

1.0 Task Number and Description:

Position: RO

0020200201 Perform RC Steady Leak Rate Calculation

2.0 Conditions:

A. The plant is in Mode 1, 100% steady state power.
B. Your shift started the manual RCS leak rate 72-hour surveillance at 0030 with the computer out of service.
C. Chemistry reports that there is no SG tube leakage.

3.0 Standards:

Calculate the manual steady state leak rate.
Time for completion is 30 minutes.

4.0 Student Materials:

Copy of the Tear-Off Sheet.
Copy of OX1401.02, RCS Steady State Leak Rate Calculation
Attached RCS Leak Rate Data sheet (JPM tear-off sheet).
Calculator

5.0 Limitations On Performance:

Simulate/Perform all steps. Verbalize all actions to the evaluator.
Even if requested, no Peer Checks will be provided during the JPM

6.0 References:

Procedures:

- OX1401.02, RCS Steady State Leak Rate Calculation

Technical Specifications:

- 4.4.6.2.1.b, RCS Operational Leakage
- 4.4.6.2.1.d, RCS Operational Leakage

Sys	KA	Description	Value RO/SRO
002	K4.05	Detection of RCS leakage.	3.8/4.2
002	A3.01	Reactor coolant leak detection system.	3.7/3.9

7.0 Setting:

Simulator or classroom.

8.0 Safety Considerations:

None

9.0 Approximate Completion Time:

30 minutes

10.0 Directions To The Student(s):

1. Ensure task is done correctly.
2. You may be asked follow-up questions to confirm knowledge of the task.

Evaluator gives Tear-Off sheet to the student.
Evaluator reads the following to student (Optional for multiple JPMs):

A. You are the Primary Operator, and you are going to perform a manual RCS steady state leak rate calculation.

B. The following information is provided to you:

1. The plant is in Mode 1 at 100% steady state power.
2. Your shift started the manual RCS leak rate 72-hour surveillance at 0030 with the computer out of service.

C. This JPM will be administered in a classroom setting. Complete the required forms and return them to me when you are complete.

D. We will begin after the Initiating Cue is read.

11.0 Initiating Cue:

US to Primary Operator, **"Primary Operator (or student's name), the time is 0630. Complete the manual steady state leak rate calculation using OX1401.02 and the following collected data. There is no SG tube leakage. Report the results to me when you are through."**

"Start" Data @0030:		"Finish" Data @0630:	
Tavg	587.6 °F	Tavg	587.7 °F
PRZ Level	60 %	PRZ Level	60 %
VCT Level	50 %	VCT Level	55 %
INTEGRATED MAKEUP	15 gal	INTEGRATED MAKEUP	176 gal
PRT Level	60 %	PRT Level	60 %
RCDT Level	46 %	RCDT Level	48 %

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP	STANDARD	EVALUATION		INITIALS/DATE
	* denotes a critical step	* denotes a critical step	SAT	UNSAT	

NOTE: 1. The completed Manual RCS Leak Rate worksheet OX1401.02 Form B can be used to show satisfactory completion of the JPM.
2. The evaluator will act as the US to complete communications with the candidate.

1. P Start time _____ Initiating cue read.

CUE: If the student requests a Peer Check at any time during the JPM, respond: **"No one is available to peer check your actions. Please continue with the task".**

NOTE: Student should obtain a copy of OX1401.02 and begin at step 4.2.3. Main plant computer is not available.

2. P Verify that prerequisites are complete — Reviews prerequisites and verifies all requirements are complete

CUE: If the student inquires about chemistry notification, provide the cue, **"All prerequisites of section 2 were met at 0030 this morning."**

*3.	P	b. CALCULATE and RECORD data as shown on Form B:	b. Records and calculates required data on FORM B of OX1401.02 as follows:			
		• TIME	• Time (+360 mins).	_____	_____	_____
		• T_{AVG}	• T_{avg} (+8.396 gals).	_____	_____	_____
		• PZR LEVEL	• PZR Lvl (0 gals).	_____	_____	_____
		• VCT LEVEL	• VCT Lvl (+155.7 gals).	_____	_____	_____
		• BAB TOTAL	• BAB Total (+161 gals).	_____	_____	_____
		• PRT LEVEL	• PRT Lvl (+0 gals).	_____	_____	_____
		• RCDT LEVEL	• RCDT Lvl (+7.0 gals).	_____	_____	_____

NOTE: IAW Note 1 of Form B SG tube leakage should be included in the next section

*4.	P	OBTAIN THIS DATA FROM ANY KNOWN SOURCE AND RECORD GALLONS.	Records S/G tube leakage 0.0 gals).	_____	_____	_____

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT	EVALUATION UNSAT	INITIALS/DATE
*5. P	Calculate IDENTIFIED LEAKAGE	Determines **identified** leakage within ± 10% of answer key.	_____	_____	_____
*6. P	Calculate UNIDENTIFIED LEAKAGE	Determines **unidentified** leakage within ± 10% of answer key.	_____	_____	_____
*7.	Determine if RCS leak rate results are SAT.	Determines RCS Leak Rate results SAT.	_____	_____	_____
CUE:	**"The JPM is complete."**				
13.	Stop time _____ Evaluator calculates the time to complete the task.	Time to complete the task ≤ 30 minutes.			
14.	Obtain from student: Tear Off Sheets and any other training materials used in the performance of the JPM				_____

PERFORMANCE SUMMARY

Provide comments on unsatisfactory performance of an element/step or for deviation from performance as stated. Record interruptions in performance such as retraining, shift change, and processing of procedure changes. Recommend remedial training, if necessary.

TEAR-OFF SHEET FOR JPM
2009 RO- ADMIN #2

Directions to the Student:

A. You are the Primary Operator, and you are going to perform a manual RCS steady state leak rate calculation.

B. The following information is provided to you:

1. The plant is in Mode 1 at 100% steady state power.
2. Your shift started the manual RCS leak rate 72-hour surveillance at 0030 with the computer out of service.

C. This JPM will be administered in a classroom setting. Complete the required forms and return them to me when you are complete.

D. We will begin after the Initiating Cue is read.

Initiating Cue:

US to Primary Operator, **"Primary Operator (or student's name), the time is 0630. Complete the manual steady state leak rate calculation using OX1401.02 and the following collected data. There is no SG tube leakage. Report the results to me when you are through."**

"Start" Data @0030:		"Finish" Data @0630:	
Tavg	587.6 °F	Tavg	587.7 °F
PRZ Level	60 %	PRZ Level	60 %
VCT Level	50 %	VCT Level	55 %
INTEGRATED MAKEUP	15 gal	INTEGRATED MAKEUP	176 gal
PRT Level	60 %	PRT Level	60 %
RCDT Level	46 %	RCDT Level	48 %

RO-ADMIN #2

KEY

Form B: PM Number 1-LEAK-OT002-000
Test Data Sheet
(Sheet 2 of 4)

MANUAL RCS LEAK RATE						
PARAMETER	INSTRUMENT USED	FINISH	START	CHANGE FINISH-START	CONVERSION	GALLONS OR MINUTES
TIME	MCB CLOCK	0630	0030	6 hrs	60 min/hr	360 min (1)
OBTAIN DATA FROM THE MAIN CONTROL BOARD AND CP-38A						
TAVG	DIGITAL	587.7 °F	587.6 °F	+0.1 °F	83.96 gal/°F (Note 2)	+8.4 gal (2)
PZR LEVEL	(Note 4)	60 %	60 %	0 %	61.31 gal/% (Note 2)	0 gal (3)
VCT LEVEL	LI-185	55 %	50 %	+5 %	31.14 gal/%	+155.7 gal (4)
INTEGRATED MAKEUP	CS-FIQ-111 (Note 5)	176 gal	15 gal	+161 gal	N/A	+161 gal (5)
PRT LEVEL	LI-470	85 gal (Note 3)	85 gal (Note 3)	0 gal	N/A	0 gal (6)
RCDT LEVEL	LI-1403 (at CP-38A)	167 gal (Note 3)	160 gal (Note 3)	+7 gal	N/A	+7 gal (7)
OBTAIN THIS DATA FROM ANY KNOWN SOURCE AND RECORD GALLONS (Note 1)						
					0	0 gal (8)
					0	0 gal (8)

IDENTIFIED LEAKAGE

$$\frac{(^{8}\,0) + (^{7}\,7) + (^{6}\,0)}{(360)/1} = (0.02)\ \text{gpm}^{(9)}$$

Identified Leakage Acceptance Criteria ≤ 10 gpm

UNIDENTIFIED LEAKAGE

$$\frac{(^{5}\,161) + (^{2}\,8.4) - (^{3}\,0) - (^{4}\,155.7)}{(360)/1} - (^{9}\,0.02)\ \text{gpm} = +0.018\ \text{gpm}$$

+0.010 to +0.024

Unidentified Leakage Acceptance Criteria ≤ 1 gpm

Note 1: This is for sampling losses, accumulator leaks, steam generator tube leakage, etc.
Note 2: These conversion factors are only valid for normal operating temperature and pressure. If the plant is stable at a reduced pressure and temp and the computer is **not** available, use the conversion factors from Figure 2.
Note 3: Obtain tank volume from the Primary Technical Data Book and record gallons for calculation. Do **not** use % due to nonlinearity of the tank volume.
Note 4: Record the instrument number and use the same hot calibrated level indicator for both start and finish.
Note 5: Any RWST, BWST, or SF Pool makeups must be subtracted from the integrated makeup total.

Calculations checked by: _____

Form B: PM Number 1-LEAK-OT002-000
Test Data Sheet
(Sheet 2 of 4)

MANUAL RCS LEAK RATE						
PARAMETER	INSTRUMENT USED	FINISH	START	CHANGE FINISH-START	CONVERSION	GALLONS OR MINUTES
TIME	MCB CLOCK				60 min/hr	min (1)
OBTAIN DATA FROM THE MAIN CONTROL BOARD AND CP-38A						
TAVG	DIGITAL	°F	°F	°F	83.96 gal/°F **(Note 2)**	gal (2)
PZR LEVEL	**(Note 4)**	%	%	%	61.31 gal/% **(Note 2)**	gal (3)
VCT LEVEL	LI-185	%	%	%	31.14 gal/%	gal (4)
INTEGRATED MAKEUP	CS-FIQ-111 **(Note 5)**	gal	gal	gal	N/A	gal (5)
PRT LEVEL	LI-470	gal **(Note 3)**	gal **(Note 3)**	gal	N/A	gal (6)
RCDT LEVEL	LI-1403 **(at CP-38A)**	gal **(Note 3)**	gal **(Note 3)**	gal	N/A	gal (7)
OBTAIN THIS DATA FROM ANY KNOWN SOURCE AND RECORD GALLONS **(Note 1)**						
						gal (8)
						gal (8)

IDENTIFIED LEAKAGE

$$\frac{(8) + (7) + (6)}{(1)} = (\quad) \text{ gpm}^{(9)}$$

Identified Leakage Acceptance Criteria ≤ 10 gpm

UNIDENTIFIED LEAKAGE

$$\frac{(5) + (2) - (3) - (4)}{(1)} - (9) \text{ gpm} = \_\_\_\_\_ \text{gpm}$$

Unidentified Leakage Acceptance Criteria ≤ 1 gpm

Note 1: This is for sampling losses, accumulator leaks, steam generator tube leakage, etc.
Note 2: These conversion factors are only valid for normal operating temperature and pressure. If the plant is stable at a reduced pressure and temp and the computer is **not** available, use the conversion factors from Figure 2.
Note 3: Obtain tank volume from the Primary Technical Data Book and record gallons for calculation. Do **not** use % due to nonlinearity of the tank volume.
Note 4: Record the instrument number and use the same hot calibrated level indicator for both start and finish.
Note 5: Any RWST, BWST, or SF Pool makeups must be subtracted from the integrated makeup total.

Calculations checked by: _____

FPL Energy

Seabrook Station

JOB PERFORMANCE MEASURE
2009 RO-ADMIN #3

INITIATE A LIQUID EFFLUENT WASTE SAMPLE REQUEST

Student Name: _____ Badge #: _____

Evaluator Name: _____ Badge #: _____

Student Signature: _____ Date: _____
(optional)

SAT UNSAT

PREPARED BY: _____ DATE: _____
INSTRUCTOR

REVIEWED BY: _____ DATE: _____
SUBJECT MATTER EXPERT (OPTIONAL)

APPROVED BY: _____ DATE: _____
TRAINING SUPERVISOR

JOB PERFORMANCE WORKSHEET

1.0 Task Number and Description:

0690301502 Authorize a release of liquid waste.

2.0 Conditions:

1) The plant is in MODE 1 with two Ocean Service Water Pumps and three Circulating Water pumps running with no expected change of configuration.
2) BRS-TK-58B, "B" Recovery Test Tank has been filled to 12 feet.
3) The tank will be discharged so a Liquid Effluent Waste Sample Requests per CP 4.1A need to be generated for a release to the transition Structure.
4) Complete Section 1 of CP 4.1A, Liquid Effluent Waste Sample Requests.

3.0 Standards:

Perform verification of CP4.1A, Liquid Effluent Waste Sample Requests.

4.0 Student Materials:

Copy of the Tear-Off Sheet.
ON1018.07, Waste Test Tank Recirculation.
CP-4.1, Effluent Sampling Program.

5.0 Limitations On Performance:

Perform all steps. Verbalize all actions to the evaluator. Even if requested, no peer checks will be provided during the JPM.

6.0 References:

SSCP, Station Chemistry Manual
CP-4.1, Effluent Sampling Program.

Sys	KA	Description	Value RO/SRO
	2.3.10	Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposure.	2.9/3.3

7.0 Setting:

Classroom

8.0 Safety Considerations:

None

9.0 Approximate Completion Time:

15 minutes

10.0 Directions To The Student(s):
Evaluator gives Tear-Off sheet to the student.

A. You are going to Initiate a Liquid Effluent Waste Sample Request, using the information provided.

B. The following information is provided to you:

1. The plant is in MODE 1 with two Ocean Service Water and Three Circulating Water pumps running with no expected change of configuration.
2. BRS-TK-58A, "B" Recovery Test Tank has been filled to 12 feet.
3. The tank will be discharged so a Liquid Effluent Waste Sample Requests per CP 4.1A needs to be generated for a release to the transition Structure.
4. Complete Section 1 of CP 4.1A, Liquid Effluent Waste Sample Requests.

C. This JPM will be administered in a classroom setting. Complete the required forms and return them to me when you are complete.

D. We will begin after the Initiating Cue is read

11.0 Initiating Cue:

Evaluator to Student: **"Primary Board operator (or student's name) complete Section 1 of Form CP 4.1A to allow a sample of the "B" RTT for release. The tank will be recirculated at 75 gpm. The Waste NSO will place the tank on recirc at 1200. The Tank will be discharged at 2200 tonight. Return the completed form to me for approval when complete."**

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT	EVALUATION UNSAT	INITIALS/DATE
1. P	Start time	Initiating cue read. Form 4.1A given to student.			_____

Evaluator CUE: Give the student a copy of the working procedures after they have identified the procedures required.

NOTE: It is assumed that the student will use CP 4.1 to process through the verification and check ON1018.07 to verify the tank volumes and recirculation flow rate. The student may choose to verify the tank volume and recirculation rate prior to referring to CP 4.1. These steps can be performed in any order as long as all steps are completed correctly.

*2	P	Section 1 of CP 4.1A is completed by Operations and provides the following information:			
		a. Name of tank, sump, or SG demin. vessel to be sampled.	*a. Enters "B" RTT .	_____	_____ _____
		b. Total tank or sump volume to be discharged or transferred.	*b. Uses Tank curve to determine that Tank volume for 12 feet is 15864 gallons.	_____	_____ _____
		c. Recirculation rate.	*c. Enters recirc. rate of 75 gpm.	_____	_____ _____
		d. Recirculation time	d. Calculates recirculation time of 423 minutes.		
		e. Recirculation starting time and date.	*e. Enters Recirculation start time of today at 1200.	_____	_____ _____
		f. Sample date and time	*f. Enters sample time of greater than 1905 today.	_____	_____ _____

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT	EVALUATION UNSAT	INITIALS/DATE
	g. The projected CW and SW pump combination for the discharge.	g. Enters 3 CW pumps and 2 Ocean SW pumps.	_____	_____	_____
	h. Projected release start date and time.	h. Enters 2200 for today's date.	_____	_____	
	i. Date, time of request, and signature of originator.	i. Enters time, date and signature are entered.	_____	_____	_____
Evaluator CUE: "The JPM is complete".					
4	Stop time_____	Start-Stop time is ≤ 15 minutes.	_____	_____	_____

PERFORMANCE SUMMARY

Provide comments on unsatisfactory performance of an element/step or for deviation from performance as stated. Record interruptions in performance such as retraining, shift change, and processing of procedure changes. Recommend remedial training, if necessary.

TEAR-OFF SHEET FOR JPM
2009 RO-ADMIN #3

Directions to the Student:

A. You are going to Initiate a Liquid Effluent Waste Sample Request, using the information provided.

B. The following information is provided to you:

1. The plant is in MODE 1 with two Ocean Service Water and Three Circulating Water pumps running with no expected change of configuration.
2. BRS-TK-58A, "B" Recovery Test Tank has been filled to 12 feet.
3. The tank will be discharged so a Liquid Effluent Waste Sample Requests per CP 4.1A needs to be generated for a release to the transition Structure.
4. Complete Section 1 of CP 4.1A, Liquid Effluent Waste Sample Requests.

C. This JPM will be administered in a classroom setting. Complete the required forms and return them to me when you are complete.

D. We will begin after the Initiating Cue is read

11.0 Initiating Cue:

Evaluator to Student: **"Primary Board operator (or student's name) complete Section 1 of Form CP 4.1A to allow a sample of the "B" RTT for release. The tank will be recirculated at 75 gpm. The Waste NSO will place the tank on recirc at 1200. The Tank will be discharged at 2200 tonight. Return the completed form to me for approval when complete."**

KEY RO ADMIN #3

Liquid Effluent Waste Sample Request

Section I — Operational Data (Completed by Operations Department)

Tank, Sump, S/G, CPS or SG Demin. Vessel: BRS-TK-58B

Disposition: X Discharge ____ Recycle

Tank, Sump, or S/G Volume: 15864 gallons (14277 to 17450 gallons)

Recirculate Rate: 75 gpm

Minimum Recirc. Time* = 2 x Tank Vol. / Recirc. Rate = 423 min. (380 mins to 465 mins)

Recirc. Start Date and Time: today's date / 1200

Sample Date and Time: today's date / 1983 (1820 to 1945)

NOTE

CW-V-40 position cannot change once this form is submitted to Chemistry.

Project CW and SW pump combination for discharge: CW 3 SW 2

Project Release Start Date and Time: today's date / 2200

Originator ____ Date ____ Time ____

Verified By ____ Date ____ Time ____

Section II — Chemistry Data (Completed by Chemistry Department)

____ / ____ ____

Sample Date / Sample Time / Sample Collected by (Initials)

Sample Identification No. ____

LEW Permit Number: ____

Dilution Water Flow Rate: ____ gpm

Volume Discharged: ____ gallons

Composite Volume: ____ mls

Composite Updated by: ____ (Initials)

* or as directed by supervision

Key RO ADMIN #3

FPL Energy

Seabrook Station

JOB PERFORMANCE MEASURE
2009 RO–ADMIN #4 L0033J Rev. 09

ECP CALCULATION

Student Name: _____ LMS #: _____

Evaluator Name: _____ LMS #: _____

Student Signature: _____ Date: _____
(optional)

Evaluator Signature: _____ Date: _____

SAT UNSAT

PREPARED BY: _____ DATE: _____
INSTRUCTOR

REVIEWED BY: _____ DATE: _____
SUBJECT MATTER EXPERT (OPTIONAL)

APPROVED BY: Signature/Date on file DATE: _____
TRAINING SUPERVISOR

JOB PERFORMANCE WORKSHEET

1.0 Task Number and Description:

Position: RO

0010100201 Perform Estimated Critical Position (ECP) Calculations

2.0 Conditions:

A. The plant is preparing for a startup after a 2 day outage following an inadvertent reactor trip.

B. Plant condition/history is as follows:

1. Shift turnover has been completed and no surveillance's are planned or in progress.
2. Mode 3 with RCS at 557°F and 2235 psig.
3. RE has given the US an ECP.
4. The plant has been shutdown for two days as of 0000 today. It is now 0100.
5. Criticality planned for today at 0500, 100 steps, Control Bank D.

3.0 Standards:

A. Determine the critical boron concentration within ± 30 ppm using RS-1735 Form A, Block 6.

B. Determine the zero power rod insertion limit per RS-1735 Form A, Block 9, item "A".

4.0 Student Materials:

Copy of the Tear-Off Sheet.

Calculator

Copy of RS-1735, Rev. 4, Chg.7.

Figures from the Primary Tech Data Book:

RE-1, Critical Boron Concentration (RE Revision #01-13-00)
RE-3, Differential Boron Worth (RE Revision #01-13-00)
RE-5, Overlap Integral Rod Worth vs Rod Position (RE Revision #01-13-00)
RE-16, Control Bank D Operating Band (RE Revision #01-13-01)
Core Operating Limits Report (SSTR Rev.110)

5.0 Limitations On Performance:

Simulate/Perform all steps. Verbalize all actions to the evaluator.

Even if requested, no Peer Checks will be provided during the JPM.

6.0 References:

Procedures:

OS1000.07, Approach to Criticality.

RS-1735, Reactivity Calculations.

Primary Technical Data Book.

Technical Specifications:

3.1.1.4, Minimum Temp for Criticality

3.1.3.6, Control Rod Insertion Limits

Sys	KA	Description	Value RO/SRO
192008	K1.07	Calculate ECP using procedures and given plant procedures.	3.5/3.6

7.0 Setting:

Simulator, Plant or Classroom

A. The Examiner must refer to the key to determine satisfactory completion of the JPM. The key is calculated based on the figures listed in section 4.0 and values specified in the body of the JPM.

B. The JPM must be performed with the procedure and figures listed in section 4.0. DO NOT USE OTHER FIGURES such as those found in a current Primary Technical Data Book.

C. The evaluator will act as the US and/or RE Engineer to complete communications with the candidate.

8.0 Safety Considerations:

None

9.0 Approximate Completion Time:

20 Minutes

10.0 Directions To The Student(s):

1. Ensure task is done correctly.
2. You may be asked follow-up questions to confirm knowledge of the task.

Evaluator gives Tear-Off sheet to the student.

A. You are the Primary Operator. You are going to calculate an ECP.

B. The following information is provided to you:

1. The plant is preparing for a startup after a 2 day outage following an inadvertent reactor trip.
2. Plant condition/history is as follows:
   a. Shift turnover has been completed and no surveillance's are planned or in progress.
   b. MODE 3 with RCS at 557°F and 2235 psig.
   c. RE has given the US an ECP.
   d. The plant has been shutdown for two days as of 0000 today. It is now 0100.
   e. Criticality planned for today at 0500, 100 steps, Control Bank D.
   f. RCS boron concentration (C_B), 1459 ppm. Sample time 0030 today.
   g. Full Out Position is presently CBD @ 225 steps.
   h. Core burnup is 12,000 MWD/MTU.
   i. Net Poison worth will be 500 pcm at 0500 today.
   j. There is no boron depletion.

C. This JPM will be administered in a classroom setting. Complete the required forms and return them to me when you are complete..

D. We will begin after the Initiating Cue is read

11.0 Initiating Cue:

US to Primary Operator, **"Primary Operator (or student's name), using RS1735, perform an Estimated Critical Position (ECP) calculation. We will compare your results with the ECP calculation that RE has performed."**

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT	EVALUATION UNSAT	INITIALS/DATE
1. P	Start time _____	Initiating cue read.			

NOTE: Give the student a copy of procedure RS1735.

CUE: If the student requests a Peer Check at any time during the JPM, respond: **"No one is available to peer check your actions. Please continue with the task".**

NOTE: All values should be entered as positive values.

2.	P	Refer to section 4.1, of ECP Procedure (ECP Data & Analysis Form A RS 1735):	Performs the following:			
		a. ENTER the Estimated Condition for Criticality in Section 1. Include the Date, Time, Burnup and Desired Rod Position for the next criticality.	a. Enters Section 1 conditions: • Criticality date • Criticality time • Core burnup • Bank D desired rod position	_____	_____	_____

CUE: If the student asks RE for alternative data as mentioned in NOTE prior to step 4.1.2: **"RE has no alternative data available. Use Figure RE-1 for Critical Boron Concentration".**

		b. RECORD in Section 2 the value of Hot Zero Power, No Xenon, Critical Boron Concentration (C_o), from Figure RE-1, for the Burnup listed in Section 1.	b. Records C_o (Critical Boron Concentration) from Figure RE-1. **(See key)**	_____	_____	_____

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT	 UNSAT	INITIALS/DATE
	c. RECORD in Section 3 the value of the Net Poison Worth at the expected Time of Criticality (ρ_I) as determined by Reactor Engineering or computer prediction.	c. Records ρ_I (Net Poison Worth).	_____	_____	_____
	d. RECORD in Section 4 the value of inserted rod worth (ρ_R), from Figure RE-5, for the desired Rod Position listed in Section 1.	d. Records ρ_R (Inserted Rod Worth) from TDB Figure RE-5 **(See key)**	_____	_____	_____
	e. RECORD in Section 5 the Differential Boron Worth (DBW) at HZP, from Figure RE-3, for the Burnup listed in Section 1.	e. Records DBW (Differential Boron Worth) from TDB Figure RE-3 for the Burnup listed in Section 1. **(See key)**	_____	_____	_____
	f. COMPLETE the calculation in Section 6 to determine the estimated Critical Boron Concentration (CB) as follows: $C_B = C_O - [(\rho_I + \rho_R) / DBW]$	*f. Calculates C_B (Est. Critical Boron Conc.) **(See key)**	_____	_____	_____
	g. COMPLETE the calculation in Section 7 to determine the corrected Critical Boron Concentration C_{CB}.	g. Calculates C_{CB} within ± 20 ppm of RE ECP. **(See key)**	_____	_____	_____

D=Discuss P=Perform S=Simulate	ELEMENT/STEP	STANDARD	EVALUATION		INITIALS/DATE
	* denotes a critical step	* denotes a critical step	SAT	UNSAT	

CUE: If asked about any changes to boron concentration then respond with, **"No dilutions or borations have been performed since the sample was taken at 0030 this morning."**

h. COMPLETE Section 8 of Form A to determine the ECP administrative rod insertion limit (AIL).	*h. RECORD in block A, from COLR the RIL for Control Bank C at Hot Zero Power. A. Inserts value for Zero Power RIL. **(See key)**	_____	_____	_____	

NOTE: Recording the Zero Power Insertion Limit is considered a "critical step". Since it can be read directly off COLR Figure 1, there is no tolerance. The remaining steps are not critical.

	RECORD in block B, ρ_R from Form A Section 4 and calculate ρ_{AIL}. **(See key)**	_____	_____	_____
	In block C RECORD Rod Position at ρ_{AIL} using RE-5. **(See key)**	_____	_____	_____
	In block D RECORD ECP administrative Insertion Limit. Highest bank/step of block A and C above. **(See key)**	_____	_____	_____
i. COMPLETE Section 9 of Form A to determine the ECP administrative rod withdrawal limit (AWL).	i. In block A RECORD Rod Withdrawal Limit using RE-16. **N/A for current cycle.**	_____	_____	_____

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT	 UNSAT	INITIALS/DATE
		RECORD in block B, ρ_R from Form A Section 4 and calculate ρ_{AWL}. **(See key)**	_____	_____	_____
		In block C RECORD Rod Position at ρ_{AWL} using RE-5. **(See key)**	_____	_____	_____
		In block D RECORD ECP Administrative Withdrawal Limit. Lowest bank/step of A and C above. **(See key)**	_____	_____	_____

CUE: "The JPM is complete."

3.	Stop time _____ Evaluator calculates the time to complete the task.	Time to complete the task ≤ 20 minutes.			
4.	Obtain from student: Tear Off Sheets and any other training materials used in the performance of the JPM				_____

PERFORMANCE SUMMARY

Provide comments on unsatisfactory performance of an element/step or for deviation from performance as stated. Record interruptions in performance such as retraining, shift change, and processing of procedure changes. Recommend remedial training, if necessary.

TEAR-OFF SHEET FOR JPM
2009 RO-ADMIN#4

Directions to the Student:

A. You are the Primary Operator. You are going to calculate an ECP.

B. The following information is provided to you:

1. The plant is preparing for a startup after a 2 day outage following an inadvertent reactor trip.
2. Plant condition/history is as follows:
    a. Shift turnover has been completed and no surveillance's are planned or in progress.
    b. MODE 3 with RCS at 557°F and 2235 psig.
    c. RE has given the US an ECP.
    d. The plant has been shutdown for two days as of 0000 today. It is now 0100.
    e. Criticality planned for today at 0500, 100 steps, Control Bank D.
    f. RCS boron concentration (C_B), 1459 ppm. Sample time 0030 today.
    g. Full Out Position is presently CBD @ 225 steps.
    h. Core Burnup is 12,000 MWD/MTU.
    i. Net Poison worth will be 500 pcm at 0500 today.
    j. There is no boron depletion.

C. This JPM will be administered in a classroom setting. Complete the required forms and return them to me when you are complete..

D. We will begin after the Initiating Cue is read

Initiating Cue:

US to Primary Operator, **"Primary Operator (or student's name), using RS1735, perform an Estimated Critical Position (ECP) calculation. We will compare your results with the ECP calculation that RE has performed."**

KEY L0033J

Form A: Estimated Critical Position Data & Analysis Form

(Sheet 1 of 3)

NOTE: Enter all input data as positive values.

1) Estimated Condition for Criticality

Date: TODAY'S DATE Time: 0500 Burnup: 12,000 MWD/MTU

Desired Rod Position: D (Bank) @ 100 (Steps)

2) Design Critical Boron Concentration @ Current Burnup (HZP, ARO, No Xenon)

C_0 = 1600 ppm from TDB Figure RE-01 1580 - 1620 ACCEPTABLE

3) Net Poison Worth @ Expected Time of Criticality

ρ_I = 500 pcm from computer prediction or Reactor Engineering

4) Inserted Rod Worth @ Criticality

ρ_R = 450 pcm from TDB Figure RE-05 430 - 470 ACCEPTABLE

5) Differential Boron Worth @ Current Burnup (HZP)

DBW = 6.75 pcm/ppm from TDB Figure RE-03 6.70 - 6.80 ACCEPTABLE

6) Estimated Critical Boron Concentration

$$C_B = C_0 - \left(\frac{\rho_I + \rho_R}{DBW}\right)$$

$$C_B = 1600 \text{ ppm} - \left(\frac{500 \text{ pcm} + 450 \text{ pcm}}{6.75 \text{ pcm/ppm}}\right)$$

C_B = 1459 ppm 1440 - 1480 ACCEPTABLE

KEY L0033J

Form A: Estimated Critical Position Data & Analysis Form

(Sheet 2 of 3)

7) Corrected Critical Boron Concentration

A) C_B = 1459 ppm From Form A Section 6

B) ΔC_B = 0 ppm From Form B Section 4 or use 0 if no B^{10} depletion

C_{CB} = $C_B + \Delta C_B$ ppm

C) C_{CB} = 1459 ppm + 0 ppm

D) C_{CB} = 1459 ppm

8) ECP Administrative Control Rod Insertion Limit (AIL)

A) Rod Insertion Limit (RIL) = Bank: C @ 71 steps From COLR

B) ρ_{AIL} = 450 pcm + 500 pcm = 950 pcm From Form A Section 4
ρ_R

C) Rod Position at ρ_{AIL} = Bank: C @ 152 steps From TDB Figure RE-05 ±5 STEPS

D) ECP Administrative Insertion Limit = Bank: C @ 152 steps Higher bank/step of A and C ±5 STEPS
OR BANK D @ 35 STEPS

9) ECP Administrative Control Rod Withdrawal Limit (AWL)

A) Rod Withdrawal Limit = Bank N/A @ N/A steps From TDB Figure RE-16

B) ρ_{AWL} = 450 pcm − 500 pcm = 0 pcm From Form A Section 4
ρ_R

C) Rod Position at ρ_{AWL} = Bank: D @ 225 steps From TDB Figure RE-05 FULL OUT

D) ECP Administrative Withdrawal Limit = Bank: D @ 225 steps Lower bank/steps of A and C FULL OUT

Completed By: _____ Date/Time: _____

Independently Verified By: _____ Date/Time: _____

Approved By SM: _____ Date/Time _____

KEY L0033J

Form A: Estimated Critical Position Data & Analysis Form

(Sheet 3 of 3)

10) Reference Data to be Taken After Criticality @ 10^{-8} Amps IR

Reference Data Time & Date _____ Hrs. _____

Rod Position CBD @ _____ Steps & CBC @ _____ Steps

Net Poison Worth, ρ_I = _____ pcm from MPCS C0036

T_{AVG} = _____ °F from MCB

IR Channel N35 = _____ amps IR Channel N36 = _____ amps

Measured Critical Boron Concentration C_M _____ ppm

NOTE: Return this completed form to Reactor Engineering

FPL Energy

Seabrook Station

JOB PERFORMANCE MEASURE
2009 SRO-ADMIN #1

VERIFY A BLENDED MAKEUP 2000 GALLON FLUSH OF REACTOR COOLANT MIXED BED DEMINERALIZER

Student Name: _____ Badge #: _____

Evaluator Name: _____ Badge #: _____

Student Signature: _____ Date: _____
(optional)

Evaluator Signature: _____ Date: _____

SAT UNSAT

PREPARED BY: _____ DATE: _____
INSTRUCTOR

REVIEWED BY: _____ DATE: _____
SUBJECT MATTER EXPERT (OPTIONAL)

APPROVED BY: _____ DATE: _____
TRAINING SUPERVISOR

JOB PERFORMANCE WORKSHEET

1.0 Task Number and Description:

Position: RO

0040100601 Perform a boron change calculation.

Position: SRO

2.1.25 Ability to interpret reference materials, such as graphs, tables, etc.

2.0 Conditions:

A. A manual blended makeup for flush of the reactor coolant mixed bed demineralizer.

3.0 Standards:

Verify the calculated required flow controller and totalizer setpoints for a 2000 gallon flush of the Reactor Coolant Mixed Bed Demineralizer.

4.0 Student Materials:

Copy of the Tear-Off Sheet.
RS1735, REACTIVITY CALCULATIONS
OS1008.01, CVCS MAKEUP OPERATIONS

5.0 Limitations On Performance:

Perform all steps. Verbalize all actions to the evaluator. Even if requested, no peer checks will be provided during the JPM.

6.0 References:

Procedures:

- RS1735, REACTIVITY CALCULATIONS
- OS1008.01, CVCS MAKEUP OPERATIONS

Sys	KA	Description	Value RO/SRO
	2.2.1	2.2.1 Ability to perform pre-startup procedures for the facility, including operating those controls associated with plant equipment that could affect reactivity.	3.7/3.6

7.0 Setting:

Classroom

8.0 Safety Considerations:

None

9.0 Approximate Completion Time:

15 minutes

10.0 Directions To The Student(s):
Evaluator gives Tear-Off sheet to the student.

A. You are the Unit Supervisor. You are going to verify a calculation for a 2000 gallon flush of the Reactor Coolant Mixed Bed Demineralizer.

B. The following information is provided to you:

1) A 2000 gallon flush of the Reactor Coolant Mixed Bed Demineralizer is required prior to placing the demineralizer in service.
2) Makeup total flow rate should be 80 gallons per minute.
3) Current reactor Coolant boron concentration is 761 ppm.
4) The "A" Boric Acid tank is in service and the boron concentration is 7321 ppm.

C. This JPM will be administered in a classroom setting. Complete the required forms and return them to me when you are complete.

D. We will begin after the Initiating Cue is read:

11.0 Initiating Cue:

Evaluator to Student: **"Unit Supervisor (or student name) the Primary Operator has determined the required flow controller and totalizer setpoints for a 2000 gallon flush of the Reactor Coolant Mixed Bed Demineralizer prior to placing the demineralizer in service. Verify the calculation prior to commencing the flush. "**

PERFORMANCE CHECKLIST

	D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT	EVALUATION UNSAT	INITIALS/DATE
1.	P	Start time	Initiating cue read. Student given copy of RS1735 REACTIVITY CALCULATIONS and completed Form E for verification.			_____
*2.	P	Verifies the desired flows and quantities of boric acid and total makeup from RS1735, REACTIVITY CALCULATIONS				
		a. On Form E, Item 1, VERIFY the desired makeup boron concentration.	Verifies the desired makeup boron concentration. **(761 ppm)**	_____	_____	_____
		b. On Form E, Item 2, VERIFY the desired flowrate makeup setpoint.	Verifies the desired flowrate makeup setpoint. **(80 gpm)**	_____	_____	_____
		c. On Form E, Item 3, VERIFY the actual Boric Acid Storage Tank concentration.	Verifies the actual Boric Acid Storage Tank concentration. **(7321 ppm)**	_____	_____	_____
		d. On Form E, Item 4, VERIFY the desired makeup quantity target.	Verifies the desired makeup quantity target. **(2000 gallons)**	_____	_____	_____

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP	STANDARD	EVALUATION		INITIALS/DATE
	* denotes a critical step	* denotes a critical step	SAT	UNSAT	

NOTE Given Boric Acid Flow rate is incorrect. Student should identify correct values within given range of answer key.

*e. On Form E, VERIFY the boric acid flowrate SETPOINT, (F_{BA}).	* IDENTIFIES given boric acid flowrate SETPOINT, (F_{BA}) is incorrect. **(8.3 gpm, acceptable range: 8.2 to 8.4 gpm)**	_____	_____	_____

NOTE Given Boric Acid quantity target is incorrect. Student should identify correct values within given range of answer key.

*f. On Form E, VERIFY the boric acid quantity target, (G_{BA}).	* IDENTIFIES given boric acid quantity target, (G_{BA}) is incorrect. **(206 gallons, acceptable range:201 to 211 gpm)**	_____	_____	_____

Evaluator Cue: Student may ask for an Independent Verification of Form E. If student asks, say **"An independent verification will be performed by a second operator."**

CUE: **"The JPM is complete."**

15.	Stop time _____ Evaluator calculates time to complete task if desired.	_____	_____	_____

PERFORMANCE SUMMARY

Provide comments on unsatisfactory performance of an element/step or for deviation from performance as stated. Record interruptions in performance such as retraining, shift change, and processing of procedure changes. Recommend remedial training, if necessary.

TEAR-OFF SHEET FOR JPM
2009 SRO-ADMIN #1

Directions to the Student:

Evaluator gives Tear-Off sheet to the student.

A. You are the Unit Supervisor. You are going to verify a calculation for a 2000 gallon flush of the Reactor Coolant Mixed Bed Demineralizer.

B. The following information is provided to you:

1) A 2000 gallon flush of the Reactor Coolant Mixed Bed Demineralizer is required prior to placing the demineralizer in service.

2) Makeup total flow rate should be 80 gallons per minute.

3) Current reactor Coolant boron concentration is 761 ppm.

4) The "A" Boric Acid tank is in service and the boron concentration is 7321 ppm.

C. This JPM will be administered in a classroom setting. Complete the required forms and return them to me when you are complete.

D. We will begin after the Initiating Cue is read:

Initiating Cue:

Evaluator to Student: **"Unit Supervisor (or student name) the Primary Operator has determined the required flow controller and totalizer setpoints for a 2000 gallon flush of the Reactor Coolant Mixed Bed Demineralizer prior to placing the demineralizer in service. Verify the calculation prior to commencing the flush. "**

Form E: Blended Makeup Worksheet

(Sheet 1 of 1)

1. Desired Makeup Boron Concentration (C_{MU}) 761 ppm
2. Desired Makeup Flow Rate SETPOINT: FIQ-111 (F_{TOT}) 80 gpm
3. Boric Acid Storage Tank Concentration (C_{BAST}) 7321 ppm
4. Desired Makeup Quantity TARGET: FIQ-111 (G_{TOT}) 2000 gals
5. Boric Acid Flow Rate SETPOINT: FIQ-111 (F_{BA})

$$F_{BA} = \frac{(C_{MU})(F_{TOT})}{C_{BAST}} = \frac{(\ 761\ )(\ 80\ )}{(\ 7321\ )} = 6.3 \text{ gpm}$$

6. Boric Acid Quantity TARGET: FIQ-111 (G_{BA})

$$G_{BA} = \frac{(C_{MU})(G_{TOT})}{C_{BAST}} = \frac{(\ 761\ )(\ 2000\ )}{(\ 200\ )} = 157.5 \text{ gal}$$

Calculated By: Bob Hanley Date: 5.15.09

Independently Verified By: Bob White Date: 5.15.09

SRO-ADMIN #1

Form E: Blended Makeup Worksheet

KEY

(Sheet 1 of 1)

1. Desired Makeup Boron Concentration (C_{MU}) 761 ppm
2. Desired Makeup Flow Rate SETPOINT: FIQ-111 (F_{TOT}) 80 gpm
3. Boric Acid Storage Tank Concentration (C_{BAST}) 7321 ppm
4. Desired Makeup Quantity TARGET: FIQ-111 (G_{TOT}) 2800 gals
5. Boric Acid Flow Rate SETPOINT: FIQ-111 (F_{BA})

$$F_{BA} = \frac{(C_{MU})(F_{TOT})}{C_{BAST}} = \frac{(761)(80)}{(7321)} = 6.3 \text{ (actual 8.3)} \text{ gpm}$$

6. Boric Acid Quantity TARGET: FIQ-111 (G_{BA})

$$G_{BA} = \frac{(C_{MU})(G_{TOT})}{C_{BAST}} = \frac{(761)(2800)}{(200)} = 157.5 \text{ gal}$$

(actual 200)

↑ 6.3 gpm x 25 min

Calculated By: _____ Date: _____

Independently Verified By: _____ Date: _____

Form E: Blended Makeup Worksheet

(Sheet 1 of 1)

1. Desired Makeup Boron Concentration (C_{MU}) 761 ppm
2. Desired Makeup Flow Rate SETPOINT: FIQ-111 (F_{TOT}) 80 gpm
3. Boric Acid Storage Tank Concentration (C_{BAST}) 7321 ppm
4. Desired Makeup Quantity TARGET: FIQ-111 (G_{TOT}) 2000 gals
5. Boric Acid Flow Rate SETPOINT: FIQ-111 (F_{BA})

$$F_{BA} = \frac{(C_{MU})(F_{TOT})}{C_{BAST}} = \frac{(761)(80)}{(7321)} = 6.3 \text{ gpm}$$

6. Boric Acid Quantity TARGET: FIQ-111 (G_{BA})

$$G_{BA} = \frac{(C_{MU})(G_{TOT})}{C_{BAST}} = \frac{(761)(2000)}{(200)} = 157.5 \text{ gal}$$

Calculated By: Bob Hanley Date: 5.15.09

Independently Verified By: Bob White Date: 5.15.09

FPL Energy

Seabrook Station

JOB PERFORMANCE MEASURE
2009 SRO–ADMIN #2 L0033J Rev. 09

ECP CALCULATION

Student Name: _____ LMS #: _____

Evaluator Name: _____ LMS #: _____

Student Signature: _____ Date: _____
(optional)

Evaluator Signature: _____ Date: _____

SAT UNSAT

PREPARED BY: _____ DATE: _____
INSTRUCTOR

REVIEWED BY: _____ DATE: _____
SUBJECT MATTER EXPERT (OPTIONAL)

APPROVED BY: Signature/Date on file DATE: _____
TRAINING SUPERVISOR

JOB PERFORMANCE WORKSHEET

1.0 Task Number and Description:

Position: RO

0010100201 Perform Estimated Critical Position (ECP) Calculations

2.0 Conditions:

A. The plant is preparing for a startup after a 2 day outage following an inadvertent reactor trip.

B. Plant condition/history is as follows:

1. Shift turnover has been completed and no surveillance's are planned or in progress.
2. Mode 3 with RCS at 557°F and 2235 psig.
3. RE has given the US an ECP.
4. The plant has been shutdown for two days as of 0000 today. It is now 0100.
5. Criticality planned for today at 0500, 100 steps, Control Bank D.

3.0 Standards:

A. Determine the critical boron concentration within ± 30 ppm using RS-1735 Form A, Block 6.

B. Determine the zero power rod insertion limit per RS-1735 Form A, Block 9, item "A".

4.0 Student Materials:

Copy of the Tear-Off Sheet.

Calculator

Copy of RS-1735, Rev. 4, Chg.7.

Figures from the Primary Tech Data Book:

RE-1, Critical Boron Concentration (RE Revision #01-13-00)
RE-3, Differential Boron Worth (RE Revision #01-13-00)
RE-5, Overlap Integral Rod Worth vs Rod Position (RE Revision #01-13-00)
RE-16, Control Bank D Operating Band (RE Revision #01-13-01)
Core Operating Limits Report (SSTR Rev.110)

5.0 Limitations On Performance:

Simulate/Perform all steps. Verbalize all actions to the evaluator.

Even if requested, no Peer Checks will be provided during the JPM.

6.0 References:

Procedures:

OS1000.07, Approach to Criticality.

RS-1735, Reactivity Calculations.

Primary Technical Data Book.

Technical Specifications:

3.1.1.4, Minimum Temp for Criticality

3.1.3.6, Control Rod Insertion Limits

Sys	KA	Description	Value RO/SRO
192008	K1.07	Calculate ECP using procedures and given plant procedures.	3.5/3.6

7.0 Setting:

Simulator, Plant or Classroom

A. The Examiner must refer to the key to determine satisfactory completion of the JPM. The key is calculated based on the figures listed in section 4.0 and values specified in the body of the JPM.

B. The JPM must be performed with the procedure and figures listed in section 4.0. DO NOT USE OTHER FIGURES such as those found in a current Primary Technical Data Book.

C. The evaluator will act as the US and/or RE Engineer to complete communications with the candidate.

8.0 Safety Considerations:

None

9.0 Approximate Completion Time:

20 Minutes

JOB PERFORMANCE WORKSHEET

10.0 Directions To The Student(s):

1. Ensure task is done correctly.
2. You may be asked follow-up questions to confirm knowledge of the task.

Evaluator gives Tear-Off sheet to the student.

Evaluator reads the following to student (Optional for multiple JPMs):

A. You are the Work Control Supervisor. You are going to calculate an ECP.

B. The following information is provided to you:

   1. The plant is preparing for a startup after a 2 day outage following an inadvertent reactor trip.
   2. Plant condition/history is as follows:
      a. Shift turnover has been completed and no surveillance's are planned or in progress.
      b. MODE 3 with RCS at 557°F and 2235 psig.
      c. RE has given the US an ECP.
      d. The plant has been shutdown for two days as of 0000 today. It is now 0100.
      e. Criticality planned for today at 0500, 100 steps, Control Bank D.
      f. RCS boron concentration (C_B), 1459 ppm. Sample time 0030 today.
      g. Full Out Position is presently CBD @ 225 steps.
      h. Core burnup is 12,000 MWD/MTU.
      i. Net Poison worth will be 500 pcm at 0500 today.
      j. There is no boron depletion.

C. This JPM will be administered in a classroom setting. Complete the required forms and return them to me when you are complete..

D. We will begin after the Initiating Cue is read

11.0 Initiating Cue:

US to Work Control Supervisor, **"Work Control Supervisor (or student's name), using RS1735, perform an Estimated Critical Position (ECP) calculation. We will compare your results with the ECP calculation that RE has performed."**

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT	EVALUATION UNSAT	INITIALS/DATE
1. P	Start time _____	Initiating cue read.			

NOTE: Give the student a copy of procedure RS1735.

CUE: If the student requests a Peer Check at any time during the JPM, respond: **"No one is available to peer check your actions. Please continue with the task".**

NOTE: All values should be entered as positive values.

2.	P	Refer to section 4.1, of ECP Procedure (ECP Data & Analysis Form A RS 1735):	Performs the following:			
		a. ENTER the Estimated Condition for Criticality in Section 1. Include the Date, Time, Burnup and Desired Rod Position for the next criticality.	a. Enters Section 1 conditions: • Criticality date • Criticality time • Core burnup • Bank D desired rod position	_____	_____	_____

CUE: If the student asks RE for alternative data as mentioned in NOTE prior to step 4.1.2: **"RE has no alternative data available. Use Figure RE-1 for Critical Boron Concentration".**

		b. RECORD in Section 2 the value of Hot Zero Power, No Xenon, Critical Boron Concentration (C_o), from Figure RE-1, for the Burnup listed in Section 1.	b. Records C_o (Critical Boron Concentration) from Figure RE-1. **(See key)**	_____	_____	_____

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT	EVALUATION UNSAT	INITIALS/DATE
	c. RECORD in Section 3 the value of the Net Poison Worth at the expected Time of Criticality (ρ_I) as determined by Reactor Engineering or computer prediction.	c. Records ρ_I (Net Poison Worth).	_____	_____	_____
	d. RECORD in Section 4 the value of inserted rod worth (ρ_R), from Figure RE-5, for the desired Rod Position listed in Section 1.	d. Records ρ_R (Inserted Rod Worth) from TDB Figure RE-5 **(See key)**	_____	_____	_____
	e. RECORD in Section 5 the Differential Boron Worth (DBW) at HZP, from Figure RE-3, for the Burnup listed in Section 1.	e. Records DBW (Differential Boron Worth) from TDB Figure RE-3 for the Burnup listed in Section 1. **(See key)**	_____	_____	_____
	f. COMPLETE the calculation in Section 6 to determine the estimated Critical Boron Concentration (CB) as follows: $C_B = C_O - [(\rho_I + \rho_R) / DBW]$	*f. Calculates C_B (Est. Critical Boron Conc.) **(See key)**	_____	_____	_____
	g. COMPLETE the calculation in Section 7 to determine the corrected Critical Boron Concentration C_{CB}.	g. Calculates C_{CB} within ± 20 ppm of RE ECP. **(See key)**	_____	_____	_____

D=Discuss P=Perform S=Simulate	ELEMENT/STEP	STANDARD	EVALUATION SAT	EVALUATION UNSAT	INITIALS/DATE
	* denotes a critical step	* denotes a critical step			

CUE: If asked about any changes to boron concentration then respond with, "**No dilutions or borations have been performed since the sample was taken at 0030 this morning.**"

h. COMPLETE Section 8 of Form A to determine the ECP administrative rod insertion limit (AIL).	*h. RECORD in block A, from COLR the RIL for Control Bank C at Hot Zero Power. A. Inserts value for Zero Power RIL. **(See key)**				

NOTE: Recording the Zero Power Insertion Limit is considered a "critical step". Since it can be read directly off COLR Figure 1, there is no tolerance. The remaining steps are not critical.

	RECORD in block B, ρ_R from Form A Section 4 and calculate ρ_{AIL}. **(See key)**			
	In block C RECORD Rod Position at ρ_{AIL} using RE-5. **(See key)**			
	In block D RECORD ECP administrative Insertion Limit. Highest bank/step of block A and C above. **(See key)**			
i. COMPLETE Section 9 of Form A to determine the ECP administrative rod withdrawal limit (AWL).	i. In block A RECORD Rod Withdrawal Limit using RE-16. **N/A for current cycle.**			

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT	 UNSAT	INITIALS/DATE
		RECORD in block B, ρ_R from Form A Section 4 and calculate ρ_{AWL}. **(See key)**	_____	_____	_____
		In block C RECORD Rod Position at ρ_{AWL} using RE-5. **(See key)**	_____	_____	_____
		In block D RECORD ECP Administrative Withdrawal Limit. Lowest bank/step of A and C above. **(See key)**	_____	_____	_____

CUE: "The JPM is complete."

3.	Stop time _____ Evaluator calculates the time to complete the task.	Time to complete the task ≤ 20 minutes.			
4.	Obtain from student: Tear Off Sheets and any other training materials used in the performance of the JPM				_____

PERFORMANCE SUMMARY

Provide comments on unsatisfactory performance of an element/step or for deviation from performance as stated. Record interruptions in performance such as retraining, shift change, and processing of procedure changes. Recommend remedial training, if necessary.

TEAR-OFF SHEET FOR JPM
2009 SRO-ADMIN#2

Directions to the Student:

A. You are the Work Control Supervisor. You are going to calculate an ECP.

B. The following information is provided to you:

1. The plant is preparing for a startup after a 2 day outage following an inadvertent reactor trip.
2. Plant condition/history is as follows:
    a. Shift turnover has been completed and no surveillance's are planned or in progress.
    b. MODE 3 with RCS at 557°F and 2235 psig.
    c. RE has given the US an ECP.
    d. The plant has been shutdown for two days as of 0000 today. It is now 0100.
    e. Criticality planned for today at 0500, 100 steps, Control Bank D.
    f. RCS boron concentration (C_B), 1459 ppm. Sample time 0030 today.
    g. Full Out Position is presently CBD @ 225 steps.
    h. Core Burnup is 12,000 MWD/MTU.
    i. Net Poison worth will be 500 pcm at 0500 today.
    j. There is no boron depletion.

C. This JPM will be administered in a classroom setting. Complete the required forms and return them to me when you are complete..

D. We will begin after the Initiating Cue is read

Initiating Cue:

US to Work Control Supervisor, **"Work Control Supervisor (or student's name), using RS1735, perform an Estimated Critical Position (ECP) calculation. We will compare your results with the ECP calculation that RE has performed."**

KEY L0033J

Form A: Estimated Critical Position Data & Analysis Form

(Sheet 1 of 3)

NOTE: Enter all input data as positive values.

1) Estimated Condition for Criticality

Date: TODAY'S DATE Time: 0500 Burnup: 12,000 MWD/MTU

Desired Rod Position: D (Bank) @ 100 (Steps)

2) Design Critical Boron Concentration @ Current Burnup (HZP, ARO, No Xenon)

C_0 = 1600 ppm from TDB Figure RE-01 1580 - 1620 ACCEPTABLE

3) Net Poison Worth @ Expected Time of Criticality

ρ_I = 500 pcm from computer prediction or Reactor Engineering

4) Inserted Rod Worth @ Criticality

ρ_R = 450 pcm from TDB Figure RE-05 430 - 470 ACCEPTABLE

5) Differential Boron Worth @ Current Burnup (HZP)

DBW = 6.75 pcm/ppm from TDB Figure RE-03 6.70 - 6.80 ACCEPTABLE

6) Estimated Critical Boron Concentration

$$C_B = C_0 - \left(\frac{\rho_I + \rho_R}{DBW} \right)$$

$$C_B = 1600 \text{ ppm} - \left(\frac{500 \text{ pcm} + 450 \text{ pcm}}{6.75 \text{ pcm/ppm}} \right)$$

C_B = 1459 ppm 1440 - 1480 ACCEPTABLE

KEY L0033J

Form A: Estimated Critical Position Data & Analysis Form

(Sheet 2 of 3)

7) Corrected Critical Boron Concentration

A) C_B = 1459 ppm From Form A Section 6

B) ΔC_B = 0 ppm From Form B Section 4 or use 0 if no B^{10} depletion

C_{CB} = $C_B + \Delta C_B$ ppm

C) C_{CB} = 1459 ppm + 0 ppm

D) C_{CB} = 1459 ppm

8) ECP Administrative Control Rod Insertion Limit (AIL)

A) Rod Insertion Limit (RIL) = Bank: C @ 71 steps From COLR

B) ρ_{AIL} = 450 / ρ_R pcm + 500 pcm = 950 pcm From Form A Section 4

C) Rod Position at ρ_{AIL} = Bank: C @ 152 steps From TDB Figure RE-05 ± 5 STEPS

D) ECP Administrative Insertion Limit = Bank: C @ 152 steps Higher bank/step of A and C ± 5 STEPS of Bank D @ 35 steps

9) ECP Administrative Control Rod Withdrawal Limit (AWL)

A) Rod Withdrawal Limit = Bank N/A @ N/A steps From TDB Figure RE-16

B) ρ_{AWL} = 450 / ρ_R pcm – 500 pcm = 0 pcm From Form A Section 4

C) Rod Position at ρ_{AWL} = Bank: D @ 225 steps From TDB Figure RE-05 FULL OUT

D) ECP Administrative Withdrawal Limit = Bank: D @ 225 steps Lower bank/steps of A and C FULL OUT

Completed By: _____ Date/Time: _____

Independently Verified By: _____ Date/Time: _____

Approved By SM: _____ Date/Time _____

KEY L0033J

Form A: Estimated Critical Position Data & Analysis Form

(Sheet 3 of 3)

10) Reference Data to be Taken After Criticality @ 10^{-8} Amps IR

Reference Data Time & Date _____ Hrs. _____

Rod Position CBD @ _____ Steps & CBC @ _____ Steps

Net Poison Worth, ρ_I = _____ pcm from MPCS C0036

T_{AVG} = _____ °F from MCB

IR Channel N35 = _____ amps IR Channel N36 = _____ amps

Measured Critical Boron Concentration C_M _____ ppm

NOTE: Return this completed form to Reactor Engineering

FPL Energy

Seabrook Station

JOB PERFORMANCE MEASURE
2009 SRO-ADMIN #3 - L0082J Rev. 05 Modified

VERIFY RCS STEADY STATE LEAK RATE CALCULATION

Student Name: _____ LMS #: _____

Evaluator Name: _____ LMS #: _____

Student Signature: _____ Date: _____
(optional)

Evaluator Signature: _____ Date: _____

SAT UNSAT

PREPARED BY: _____ DATE: _____
INSTRUCTOR

REVIEWED BY: _____ DATE: _____
SUBJECT MATTER EXPERT (OPTIONAL)

APPROVED BY: Signature/Date on file DATE: _____
TRAINING SUPERVISOR

JOB PERFORMANCE WORKSHEET

1.0 Task Number and Description:

Position: SRO

0020200201 Verify RC Steady Leak Rate Calculation

2.0 Conditions:

A. The plant is in Mode 1, 100% steady state power.
B. Your shift started the manual RCS leak rate 72-hour surveillance at 0030 with the computer out of service.
C. Chemistry reports that there is no SG tube leakage.

3.0 Standards:

Calculate the manual steady state leak rate.
Time for completion is 30 minutes.

4.0 Student Materials:

Copy of the Tear-Off Sheet.
Copy of OX1401.02, RCS Steady State Leak Rate Calculation
Attached RCS Leak Rate Data sheet (JPM tear-off sheet).
Calculator

5.0 Limitations On Performance:

Simulate/Perform all steps. Verbalize all actions to the evaluator.
Even if requested, no Peer Checks will be provided during the JPM

6.0 References:

Procedures:

- OX1401.02, RCS Steady State Leak Rate Calculation

Technical Specifications:

- 4.4.6.2.1.b, RCS Operational Leakage
- 4.4.6.2.1.d, RCS Operational Leakage

Sys	KA	Description	Value RO/SRO
002	K4.05	Detection of RCS leakage.	3.8/4.2
002	A3.01	Reactor coolant leak detection system.	3.7/3.9

7.0 Setting:

Simulator or classroom.

8.0 Safety Considerations:

None

9.0 Approximate Completion Time:

30 minutes

10.0 Directions To The Student(s):

1. Ensure task is done correctly.
2. You may be asked follow-up questions to confirm knowledge of the task.

Evaluator gives Tear-Off sheet to the student.
Evaluator reads the following to student (Optional for multiple JPMs):

A. You are the Unit Supervisor. The Primary Operator has performed a manual RCS steady state leak rate calculation. You are going to verify the surveillance is correct.

B. The following information is provided to you:

1. The plant is in Mode 1 at 100% steady state power.
2. Your shift started the manual RCS leak rate 72-hour surveillance at 0030 with the computer out of service.

C. This JPM will be administered in a classroom setting. Complete the required forms and return them to me when you are complete.

D. We will begin after the Initiating Cue is read.

11.0 Initiating Cue:

Evaluator to Student , **"Unit Supervisor (or student's name), the time is 0630. Verify the completed manual steady state leak rate calculation using OX1401.02 and the following collected data. There is no SG tube leakage. Report the results to me when you are through."**

"Start" Data @0030:		"Finish" Data @0630:	
Tavg	587.6 °F	Tavg	588.7 °F
PRZ Level	60 %	PRZ Level	61.5 %
VCT Level	50 %	VCT Level	47 %
INTEGRATED MAKEUP	15 gal	INTEGRATED MAKEUP	176 gal
PRT Level	60 %	PRT Level	60 %
RCDT Level	46 %	RCDT Level	48 %

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT	EVALUATION UNSAT	INITIALS/DATE

NOTE: 1. The completed Manual RCS Leak Rate worksheet OX1401.02 Form B can be used to show satisfactory completion of the JPM.
2. The evaluator will act as the US to complete communications with the candidate.

1. P Start time _____ Initiating cue read.

CUE: If the student requests a Peer Check at any time during the JPM, respond: **"No one is available to peer check your actions. Please continue with the task".**

NOTE: Student should obtain a copy of OX1401.02 and begin at step 4.2.3. Main plant computer is not available.

2. P Verify that prerequisites are complete — Reviews prerequisites and verifies all requirements are complete

CUE: If the student inquires about chemistry notification, provide the cue, **"All prerequisites of section 2 were met at 0030 this morning."**

*3. P b. CALCULATE and RECORD data as shown on Form B:

b. Records and calculates required data on FORM B of OX1401.02 as follows:

• TIME	• Time (+360 mins).	_____	_____	_____
• T_{AVG}	• T_{avg} (+92.4 gals).	_____	_____	_____
• PZR LEVEL	• PZR Lvl (+92 gals).	_____	_____	_____

NOTE: Actual VCT level change is negative, but an error carries this number forward as a positive. Student should identify given increase in volume is incorrect.

• VCT LEVEL	• VCT Lvl (given as 93.42 gals, actual level used in calculation as (-)93.42 gals.).	_____	_____	_____

NOTE: Actual make up should be 176 gallons MINUS 15 gallons. Given change is expressed as 176 gallons PLUS 15 gallons. Student should identify this as an error.

• BAB TOTAL	• BAB Total (+25 gals).	_____	_____	_____
• PRT LEVEL	• PRT Lvl (+0 gals).	_____	_____	_____
• RCDT LEVEL	• RCDT Lvl (+7.0 gals).	_____	_____	_____

NOTE: IAW Note 1 of Form B, SG tube leakage should be included in the next section

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP * denotes a critical step	STANDARD * denotes a critical step	EVALUATION SAT	EVALUATION UNSAT	INITIALS/DATE
*4. P	OBTAIN THIS DATA FROM ANY KNOWN SOURCE AND RECORD GALLONS.	Records S/G tube leakage 0.0 gals).	_____	_____	_____
*5. P	Calculate IDENTIFIED LEAKAGE	Determines **identified** leakage within ± 10% of answer key.	_____	_____	_____
*6. P	Calculate UNIDENTIFIED LEAKAGE	Determines **unidentified** leakage within ± 10% of answer key.	_____	_____	_____
*7.	Determine if RCS leak rate results are SAT.	Determines RCS Leak Rate results SAT.	_____	_____	_____
CUE:	**"The JPM is complete."**				
13.	Stop time _____ Evaluator calculates the time to complete the task.	Time to complete the task ≤ 30 minutes.			
14.	Obtain from student: Tear Off Sheets and any other training materials used in the performance of the JPM				_____

PERFORMANCE SUMMARY

Provide comments on unsatisfactory performance of an element/step or for deviation from performance as stated. Record interruptions in performance such as retraining, shift change, and processing of procedure changes. Recommend remedial training, if necessary.

TEAR-OFF SHEET FOR JPM
SRO ADMIN #3

Directions to the Student:

A. You are the Unit Supervisor. The Primary Operator has performed a manual RCS steady state leak rate calculation. You are going to verify the surveillance is correct.

B. The following information is provided to you:

1. The plant is in Mode 1 at 100% steady state power.
2. Your shift started the manual RCS leak rate 72-hour surveillance at 0030 with the computer out of service.

C. This JPM will be administered in a classroom setting. Complete the required forms and return them to me when you are complete.

D. We will begin after the Initiating Cue is read.

Initiating Cue:

Evaluator to Student , **"Unit Supervisor (or student's name), the time is 0630. Verify the completed manual steady state leak rate calculation using OX1401.02 and the following collected data. There is no SG tube leakage. Report the results to me when you are through."**

"Start" Data @0030:		"Finish" Data @0630:	
Tavg	587.6 °F	Tavg	588.7 °F
PRZ Level	60 %	PRZ Level	61.5 %
VCT Level	50 %	VCT Level	47 %
INTEGRATED MAKEUP	15 gal	INTEGRATED MAKEUP	176 gal
PRT Level	60 %	PRT Level	60 %
RCDT Level	46 %	RCDT Level	48 %

Form B: PM Number 1-LEAK-OT002-000
Test Data Sheet
(Sheet 2 of 4)

MANUAL RCS LEAK RATE						
PARAMETER	INSTRUMENT USED	FINISH	START	CHANGE FINISH-START	CONVERSION	GALLONS OR MINUTES
TIME	MCB CLOCK	0630	0030	6 hr	60 min/hr	360 min (1)
OBTAIN DATA FROM THE MAIN CONTROL BOARD AND CP-38A						
TAVG	DIGITAL	588.7 °F	587.6 °F	1.1 °F	83.96 gal/°F (Note 2)	92.4 gal (2)
PZR LEVEL	(Note 4)	61.5 %	60 %	1.5 %	61.31 gal/% (Note 2)	92 gal (3)
VCT LEVEL	LI-185	47 %	50 %	3 %	31.14 gal/%	93.4 gal (4)
INTEGRATED MAKEUP	CS-FIQ-111 (Note 5)	176 gal	15 gal	191 gal	N/A	191 gal (5)
PRT LEVEL	LI-470	8150 gal (Note 3)	8150 gal (Note 3)	0 gal	N/A	0 gal (6)
RCDT LEVEL	LI-1403 (at CP-38A)	167 gal (Note 3)	160 gal (Note 3)	7 gal	N/A	7 gal (7)
OBTAIN THIS DATA FROM ANY KNOWN SOURCE AND RECORD GALLONS (Note 1)						
					0	gal (8)
					0	gal (8)

IDENTIFIED LEAKAGE

$$\frac{(8:\ 0) + (7:\ 7) + (6:\ 0)}{(360)/1} = (0.02)\ \text{gpm}^{(9)}$$

Identified Leakage Acceptance Criteria ≤ 10 gpm

UNIDENTIFIED LEAKAGE

$$\left[\frac{(5:\ 191) + (2:\ 92.4) - (3:\ 92) - (4:\ 93.4)}{(360)/1}\right] - (9:\ 0.02)\ \text{gpm} = 0.25\ \text{gpm}$$

Unidentified Leakage Acceptance Criteria ≤ 1 gpm

Note 1: This is for sampling losses, accumulator leaks, steam generator tube leakage, etc.
Note 2: These conversion factors are only valid for normal operating temperature and pressure. If the plant is stable at a reduced pressure and temp and the computer is **not** available, use the conversion factors from Figure 2.
Note 3: Obtain tank volume from the Primary Technical Data Book and record gallons for calculation. Do **not** use % due to nonlinearity of the tank volume.
Note 4: Record the instrument number and use the same hot calibrated level indicator for both start and finish.
Note 5: Any RWST, BWST, or SF Pool makeups must be subtracted from the integrated makeup total.

Calculations checked by: Larry Walsh

SRO ADMIN 3 KLY

Form B: PM Number 1-LEAK-OT002-000
Test Data Sheet
(Sheet 2 of 4)

MANUAL RCS LEAK RATE						
PARAMETER	INSTRUMENT USED	FINISH	START	CHANGE FINISH-START	CONVERSION	GALLONS OR MINUTES
TIME	MCB CLOCK	0630	0330	6hr	60 min/hr	+360 min (1)
OBTAIN DATA FROM THE MAIN CONTROL BOARD AND CP-38A						
TAVG	DIGITAL	588.7 °F	587.6 °F	+1.1 °F	83.96 gal/°F (Note 2)	+92.4 gal (2)
PZR LEVEL	(Note 4)	61.5 %	60 %	+1.5 %	61.31 gal/% (Note 2)	+92 gal (3)
VCT LEVEL	LI-185	47 %	50 %	-3 %	31.14 gal/%	-93.4 gal (4)
INTEGRATED MAKEUP	CS-FIQ-111 (Note 5)	176 gal	15 gal	161 gal	N/A	+161 gal (5)
PRT LEVEL	LI-470	8150 gal (Note 3)	8150 gal (Note 3)	0 gal	N/A	0 gal (6)
RCDT LEVEL	LI-1403 (at CP-38A)	167 gal (Note 3)	160 gal (Note 3)	7 gal	N/A	7 gal (7)
OBTAIN THIS DATA FROM ANY KNOWN SOURCE AND RECORD GALLONS (Note 1)						
					0	gal (8)
					0	gal (8)

IDENTIFIED LEAKAGE

$$\frac{(^{8}\,0) + (^{7}\,7.0) + (^{6}\,0)}{(360)/1} = (+0.02)\ \text{gpm}^{(9)}$$

Identified Leakage Acceptance Criteria ≤ 10 gpm

UNIDENTIFIED LEAKAGE

0.61 to 0.75

$$\frac{(^{5}\,161) + (^{2}\,+92.4) - (^{3}\,+92) - (^{4}\,-93.4)}{(360)/1} - (^{9}\,+0.02)\ \text{gpm} = 0.68\ \text{gpm}$$

Unidentified Leakage Acceptance Criteria ≤ 1 gpm

Note 1: This is for sampling losses, accumulator leaks, steam generator tube leakage, etc.
Note 2: These conversion factors are only valid for normal operating temperature and pressure. If the plant is stable at a reduced pressure and temp and the computer is **not** available, use the conversion factors from Figure 2.
Note 3: Obtain tank volume from the Primary Technical Data Book and record gallons for calculation. Do **not** use % due to nonlinearity of the tank volume.
Note 4: Record the instrument number and use the same hot calibrated level indicator for both start and finish.
Note 5: Any RWST, BWST, or SF Pool makeups must be subtracted from the integrated makeup total.

Calculations checked by: _____

Form B: PM Number 1-LEAK-OT002-000
Test Data Sheet
(Sheet 2 of 4)

MANUAL RCS LEAK RATE						
PARAMETER	INSTRUMENT USED	FINISH	START	CHANGE FINISH-START	CONVERSION	GALLONS OR MINUTES
TIME	MCB CLOCK	0630	0030	6 hr	60 min/hr	360 min (1)
OBTAIN DATA FROM THE MAIN CONTROL BOARD AND CP-38A						
TAVG	DIGITAL	588.7 °F	587.6 °F	1.1 °F	83.96 gal/°F (Note 2)	92.4 gal (2)
PZR LEVEL	(Note 4)	61.5 %	60 %	1.5 %	61.31 gal/% (Note 2)	92 gal (3)
VCT LEVEL	LI-185	47 %	50 %	3 %	31.14 gal/%	93.4 gal (4)
INTEGRATED MAKEUP	CS-FIQ-111 (Note 5)	176 gal	15 gal	191 gal	N/A	191 gal (5)
PRT LEVEL	LI-470	8150 gal (Note 3)	8150 gal (Note 3)	0 gal	N/A	0 gal (6)
RCDT LEVEL	LI-1403 (at CP-38A)	167 gal (Note 3)	160 gal (Note 3)	7 gal	N/A	7 gal (7)
OBTAIN THIS DATA FROM ANY KNOWN SOURCE AND RECORD GALLONS (Note 1)						
					0	gal (8)
					0	gal (8)

IDENTIFIED LEAKAGE

$$\frac{(8:\ 0) + (7:\ 7) + (6:\ 0)}{(360)/1} = (0.02)\ \text{gpm}^{(9)}$$

Identified Leakage Acceptance Criteria ≤ 10 gpm

UNIDENTIFIED LEAKAGE

$$\left[\frac{(5:\ 191) + (2:\ 92.4) - (3:\ 92) - (4:\ 93.4)}{(360)/1}\right] - (9:\ 0.02)\ \text{gpm} = 0.25\ \text{gpm}$$

Unidentified Leakage Acceptance Criteria ≤ 1 gpm

Note 1: This is for sampling losses, accumulator leaks, steam generator tube leakage, etc.
Note 2: These conversion factors are only valid for normal operating temperature and pressure. If the plant is stable at a reduced pressure and temp and the computer is **not** available, use the conversion factors from Figure 2.
Note 3: Obtain tank volume from the Primary Technical Data Book and record gallons for calculation. Do **not** use % due to nonlinearity of the tank volume.
Note 4: Record the instrument number and use the same hot calibrated level indicator for both start and finish.
Note 5: Any RWST, BWST, or SF Pool makeups must be subtracted from the integrated makeup total.

Calculations checked by: Larry Walsh

FPL Energy

Seabrook Station

JOB PERFORMANCE MEASURE
2009 SRO-ADMIN#4 NEW

EMERGENCY DOSE LIMIT EXTENSION

Student Name: _____ LMS #: _____

Evaluator Name: _____ LMS #: _____

Student Signature: _____ Date: _____
(optional)

Evaluator Signature: _____ Date: _____

SAT UNSAT

PREPARED BY: _____ DATE: _____
INSTRUCTOR

REVIEWED BY: _____ DATE: _____
SUBJECT MATTER EXPERT (OPTIONAL)

APPROVED BY: Signature/Date On File DATE: _____
TRAINING SUPERVISOR

JOB PERFORMANCE WORKSHEET

1.0 Task Number and Description:

Position: SRO

SBK 1190402303 Direct Emergency Response as Short Term Emergency Director.

2.0 Conditions:

A. The plant has suffered a LOP due to a Winter Storm.

B. Emergency Diesel Generator "A" and "B" failed to start.

C. Bus 6 has been energized using the SEPS Diesels.

D. The seal of the "D" Reactor Coolant pump has failed completely causing a LOCA in containment.

E. COP Valves COP-V-3 and COP-V-4 have lost indication.

F. Local Airborne radiation readings in the PAB are elevated.

G. The TSC is dispatching a team to the PAB Mechanical Penetration Area to determine if COP-DP-4 can be closed.

H. Radiation readings taken at the doorway to the Mechanical Penetration Area are 2 REM/Hr. Dose at COP-V-4 is conservatively estimated at 15 REM/Hr

I. The OSC conservatively estimates 1.5 hours to assess any damage to the valve and make repairs.

3.0 Standards:

Authorize an Emergency Dose Limit Extension per ER 4.3, Radiation Protection During Emergency Conditions.

4.0 Student Materials:

Copy of the Directions Tear-Off Sheet
Calculator
ER 4.3, Radiation Protection During Emergency Conditions

5.0 Limitations on performance:

Even if requested no Peer Checks will be provided during the JPM.

6.0 References:

Procedures

ER 4.3, Radiation Protection During Emergency Conditions.

Sys	KA	Description	Value RO/SRO
103	K1.02	Containment Isolation/Containment integrity	3.9/4.1
Generic	2.3.4	Knowledge of radiation exposure limits under normal or emergency conditions	3.2/3.7

7.0 Setting:

Classroom

1. Give the students a copy of the completed ER 4.3, Figure 4, Emergency Dose Limit Extension and a copy of ER 4.3, Radiation Protection During Emergency Conditions.

8.0 Safety Considerations:

None

9.0 Approximate Completion Time:

20 minutes

10.0 Directions to the Student(s):

Evaluator gives Tear-Off sheet to the student
Evaluator reads the following to the student (Optional for multiple JPMs)

Student:

1. Ensures task is done correctly.
2. May be asked follow-up questions to confirm knowledge of task.

A. You are the STED. You are going to authorize an Emergency Dose Limit Extension using ER 4.3, Radiation Protection During Emergency Conditions.

B. The following information is provided to you:

1) The plant has suffered a LOP due to a Winter Storm.

2) Emergency Diesel Generator "A" and "B" failed to start.

3) Bus 6 has been energized using the SEPS Diesels.

4) The seal of the "D" Reactor Coolant pump has failed completely causing a LOCA in containment.

5) The core has uncovered.

6) COP Valves COP-V-3 and COP-V-4 have lost indication.

7) Local Airborne radiation readings in the PAB are elevated.

8) A General Emergency has been declared on EAL: AG1; Actual or projected offsite dose > 1,000 mRem TEDE or 5,000 mRem Thyroid CDE.

9) The TSC is dispatching a team to the PAB Mechanical Penetration Area to determine if COP-DP-4 can be closed.

10) Radiation readings taken at the doorway to the Mechanical Penetration Area are 2 REM/Hr. Dose at COP-V-4 is conservatively estimated at 15 REM/Hr

11) The OSC conservatively estimates 1.5 hours to assess any damage to the valve and make repairs.

C. This JPM will be administered in a classroom setting. Complete the required forms and return them to me when you are complete.

D. We will begin after the Initiating Cue is read.

11.0 Initiating Cue:

Evaluator to Student: **"Short Term Emergency Director (or student's name) Emergency Dose Limit Extensions have been requested for a three person team to enter the Mechanical penetration area to attempt closing COP-V-4. Review the Emergency Dose limit Extensions and provide approval if appropriate. Provide the completed Forms to me."**

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP *denotes a critical step	STANDARD *denotes critical standard	EVALUATION SAT	EVALUATION UNSAT	INITIALS/DATE
1. P	Start time _____	Initiating cue read.			

CUE: If the student requests a Peer Check at any time during the JPM, respond: **"No one is available to peer check your actions. Please continue with the task".**

NOTE: Provide the student with the 3 completed Emergency Dose Limit Extension sheets and a copy ER 4.3, Radiation Protection During Emergency Conditions. Students will evaluate and authorize the completed dose extensions.

NOTE: JPM task is approval of a task that is administrative in nature. Student may perform steps in any order, provided that critical tasks are all accomplished.

2	P	ER 4.3, step 5.1.2, 2a: Verifies dose extension for all workers exceeds 4500 mrem/yr (minimum level requiring STED approval)	*a	Dose extension for NSO 24000 mrem	_____	_____	_____
			*b	Dose extension for Maintenance Mechanic 24000 mrem	_____	_____	_____
			*c	Dose extension for HP Technician 24000 mrem	_____	_____	_____
3	P	ER 4.3, Step 5.1.2, 2b, and Figure 2 Verifies dose extension is 25 rem or less for "Protection of large Populations" category	*a	Dose extension for NSO 24000 mrem	_____	_____	_____
			*b	Dose extension for Maintenance Mechanic 24000 mrem	_____	_____	_____
			*c	Dose extension for HP Technician 24000 mrem	_____	_____	_____

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate		ELEMENT/STEP *denotes a critical step	STANDARD *denotes critical standard	EVALUATION SAT	EVALUATION UNSAT	INITIALS/DATE
4	P	ER 4.3, Step 5.1.2, 2c, and Figure 3 Verifies dose extension is up to 25 rem only for Volunteers fully aware of risks for "Protection of large Populations" category, and signified by employee signature on figure 4.	*a NSO has signed figure 4.	_____	_____	_____
			*b Maintenance Mechanic has signed figure 4.	_____	_____	_____
			*c HP Technician has signed figure 4.	_____	_____	_____
5	P	Authorizes Dose Extensions	*a Dose extensions signed.	_____	_____	_____

CUE: "The JPM is complete."

6.	Stop time_____ Evaluator calculates the time to complete the task.	Time to complete the task ≤ 20 minutes.	
7	Obtain from student: Tear Off Sheets and any other training materials used in the performance of the JPM		_____

PERFORMANCE SUMMARY

Provide comments on unsatisfactory performance of an element/step or for deviation from performance as stated. Record interruptions in performance such as retraining, shift change, and processing of procedure changes. Recommend remedial training, if necessary.

TEAR-OFF SHEET FOR JPM
2009 SRO-ADMIN #4

Directions to the Student:

A. You are the STED. You are going to authorize an Emergency Dose Limit Extension using ER 4.3, Radiation Protection During Emergency Conditions.

B. The following information is provided to you:

1) The plant has suffered a LOP due to a Winter Storm.

2) Emergency Diesel Generator "A" and "B" failed to start.

3) Bus 6 has been energized using the SEPS Diesels.

4) The seal of the "D" Reactor Coolant pump has failed completely causing a LOCA in containment.

5) The core has uncovered.

6) COP Valves COP-V-3 and COP-V-4 have lost indication.

7) Local Airborne radiation readings in the PAB are elevated.

8) A General Emergency has been declared on EAL: AG1; Actual or projected offsite dose > 1,000 mRem TEDE or 5,000 mRem Thyroid CDE.

9) The TSC is dispatching a team to the PAB Mechanical Penetration Area to determine if COP-DP-4 can be closed.

10) Radiation readings taken at the doorway to the Mechanical Penetration Area are 2 REM/Hr. Dose at COP-V-4 is conservatively estimated at 15 REM/Hr

11) The OSC conservatively estimates 1.5 hours to assess any damage to the valve and make repairs.

C. This JPM will be administered in a classroom setting. Complete the required forms and return them to me when you are complete.

D. We will begin after the Initiating Cue is read.

Initiating Cue:

Evaluator to Student: **"Short Term Emergency Director (or student's name) Emergency Dose Limit Extensions have been requested for a three person team to enter the Mechanical Penetration Area to attempt closing COP-V-4. Review the Emergency Dose limit Extensions and provide approval if appropriate. Provide the completed Forms to me."**

Figure 4
Emergency Dose Limit Extension

1) Name H.P. Technician Age 38 2) Badge Number 0001

3) Reason for Dose Extension Request (Be specific):
Support closure of COP-V4 to prevent release to public from failed Containment Boundary valve

I understand the consequences of the proposed exposure: (See Note 1)

H.P. Technician
Employee's Signature

Note 1: The signature of the employee may be authorized by verbal reply.

RADIATION PROTECTION USE

4) Current TEDE: YTD - 870 mrem.

5) Individual dose estimate for required work: 22,500 mrem.

6) Emergency Dose Limit Requested: 24,000 mrem.

SHORT TERM EMERGENCY DIRECTOR/SITE EMERGENCY DIRECTOR

A. Individual Extension

I authorize the above-named individual an emergency dose extension not to exceed 24,000 mrem.

This extension is necessary to perform emergency functions for plant/personnel safety, and is valid only for the task specified above.

Short Term Emergency Director/Site Emergency Director

B. Blanket Extension

All emergency center personnel are authorized a blanket extension, not to exceed _____ mrem.

Short Term Emergency Director/Site Emergency Director

Figure 4
Emergency Dose Limit Extension

1) Name Maintenance Mechanic Age 51 2) Badge Number 0002

3) Reason for Dose Extension Request (Be specific):

Closure of COP-V-4 to prevent release to public from Failed Containment Boundary valve

I understand the consequences of the proposed exposure: (See Note 1)

Maintenance Mechanic,
Employee's Signature

Note 1: The signature of the employee may be authorized by verbal reply.

RADIATION PROTECTION USE

4) Current TEDE: YTD - 756 mrem.

5) Individual dose estimate for required work: 22500 mrem.

6) Emergency Dose Limit Requested: 24000 mrem.

SHORT TERM EMERGENCY DIRECTOR/SITE EMERGENCY DIRECTOR

A. Individual Extension

I authorize the above-named individual an emergency dose extension not to exceed 24000 mrem.

This extension is necessary to perform emergency functions for plant/personnel safety, and is valid only for the task specified above.

Short Term Emergency Director/Site Emergency Director

B. Blanket Extension

All emergency center personnel are authorized a blanket extension, not to exceed _____ mrem.

Short Term Emergency Director/Site Emergency Director

Figure 4
Emergency Dose Limit Extension

1) Name Nuclear System Operator Age 48 2) Badge Number 0063

3) Reason for Dose Extension Request (Be specific):

Closure of CSP-V-4 to prevent release to public from failed containment Boundary Valve

I understand the consequences of the proposed exposure: (See Note 1)

Employee's Signature

Note 1: The signature of the employee may be authorized by verbal reply.

RADIATION PROTECTION USE

4) Current TEDE: YTD - 103 mrem.

5) Individual dose estimate for required work: 22,500 mrem.

6) Emergency Dose Limit Requested: 24,000 mrem.

SHORT TERM EMERGENCY DIRECTOR/SITE EMERGENCY DIRECTOR

A. Individual Extension

I authorize the above-named individual an emergency dose extension not to exceed 24,000 mrem.

This extension is necessary to perform emergency functions for plant/personnel safety, and is valid only for the task specified above.

Short Term Emergency Director/Site Emergency Director

B. Blanket Extension

All emergency center personnel are authorized a blanket extension, not to exceed _____ mrem.

Short Term Emergency Director/Site Emergency Director

FPL Energy

Seabrook Station

JOB PERFORMANCE MEASURE
2009 SRO-ADMIN #5 New

(GE PARS) E-PLAN ACTIONS

Student Name: _____ Badge #: _____

Evaluator Name: _____ Badge #: _____

Student Signature: _____ Date: _____
(optional)

SAT UNSAT

PREPARED BY: _____ DATE: _____
INSTRUCTOR

REVIEWED BY: _____ DATE: _____
SUBJECT MATTER EXPERT (OPTIONAL)

APPROVED BY: _____ DATE: _____
TRAINING SUPERVISOR

JOB PERFORMANCE WORKSHEET

1.0 Task Number and Description:

Position: SS

3450504203 Classify/reclassify an emergency condition

2.0 Conditions:

1. The plant has tripped from 100% power due to a LOP today at 1300.
2. US has transitioned from E-0 to ECA-0.0.
3. No Emergency Diesel Generator or SEPS Diesel is available.
4. The Event has been classified as a General Emergency based on EAL SG1, Prolonged Loss of Both AC emergency buses. Restoration of either emergency bus is not expected within 4 hours.
5. The time of E-plan declaration was 1323.
6. A release has NOT occurred.
7. Schiller Station has NOT been activated.
8. The States have been notified.
9. There is a 10 MPH wind coming FROM 285 degrees.
10. The appropriate PAR GROUP A has been recommended to the States.
11. At 1355 the Shift Manager is re-assessing plant conditions in accordance with ER 1.2D, General Emergency Checklist – STED, Step 9, Follow-Up PAR ASSESSMENT.
12. Critical Safety Functions have been verified. CSF status indicates:
    1. RED path on (H) recommendation FR-H1.
    2. ORANGE path on (C) recommendation FR-C.2
    3. RED path on (Z) recommendation FR-Z.1.
    4. YELLOW path on (I) recommendation FR-1.2.
13. A new copy of ER 2.0D will be filled out for this JPM.

3.0 Standards:

Determine Protective Action Recommendations (PAR)

4.0 Student Materials:

Copy of completed ER 2.OB State Notification Fact Sheet.
ER 1.1 and 1.2 E-Plan packages
Copy of the Tear-Off Sheet

5.0 Limitations on performance:

Simulate/Perform all steps. Verbalize all actions to the evaluator.

6.0 References:

Procedures

ER 1.1, Classification of Emergencies.
ER 1.2 Emergency Plan Activation

Sys-Mode	KA	Description	Value RO/SRO
194001	A1.16	Ability to take actions...E-Plan as E Coordinator	3.1-4.4

7.0 Setting:

Classroom.

8.0 Safety Considerations:

None

9.0 Approximate Completion Time:

15 minutes

10.0 Directions to the Student:

Evaluator gives Tear-Off sheet to the student
Evaluator reads the following to the student (Optional for multiple JPMs):

Student:
1. Ensures task is done correctly.
2. May be asked follow-up questions to confirm knowledge of task.

A. You are the SM. You are going to determine recommended Protective Actions per ER 1.2A in accordance with the Seabrook Station Radiological Emergency Plan.

B. The following information is provided to you:

1. The plant has tripped from 100% power due to a LOP today at 1300.
2. US has transitioned from E-0 to ECA-0.0.
3. No Emergency Diesel Generator or SEPS Diesel is available.
4. The Event has been classified as a General Emergency based on EAL SG1, Prolonged Loss of Both AC emergency buses. Restoration of either emergency bus is not expected within 4 hours.
5. The time of E-plan declaration was 1323.
6. A release has NOT occurred.
7. Schiller Station has NOT been activated.
8. The States have been notified.
9. There is a 10 MPH wind
10. LOWER Wind Direction is coming FROM 285 degrees.

11. UPPER Wind Direction is coming FROM 305 degrees.

12. The appropriate PAR GROUP A has been recommended to the States.

13. At 1355 the Shift Manager is re-assessing plant conditions in accordance with ER 1.2D, General Emergency Checklist – STED, Step 9, Follow-Up PAR ASSESSMENT.

14. Critical Safety Functions have been verified. CSF status indicates:

    a. RED path on (H) recommendation FR-H1.
    b. ORANGE path on (C) recommendation FR-C.2
    c. RED path on (Z) recommendation FR-Z.1.
    d. YELLOW path on (I) recommendation FR-1.2.

C. This JPM will be administered in a classroom setting. Complete the required forms and return them to me when you are complete.

D. We will begin after the Initiating Cue is read:

11.0 Initiating Cue:

Evaluator to student:

STED (or student's name), evaluate current plant conditions to determine if upgraded PARs are warranted.

If an upgrade is required then fill out a new ER 2.0B, State Notification Fact Sheet.

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP *denotes a critical step	STANDARD *denotes critical standard	EVALUATION SAT	EVALUATION UNSAT	INITIALS/DATE
1. P	Start time _____	Initiating cue is read.			
Step 9 of "General Emergency Checklist – Short Term Emergency Director"					
P	Using Form ER 1.2G, General Emergency PAR Worksheet, determine if upgraded protective action recommendations are warranted.	a. Student transitions to ER 1.2G			
ER 1.2G, "General Emergency PAR Worksheet".					
P	Block 1: GENERAL EMERGENCY	b. Student recognizes plant is in a GENERAL EMERGENCY.			
P	Block 2: "IS THE CORE COOLING CSFST PROCEEDING ALONG A RED PATH?	c. Student recognizes that NO, Core Cooling CSFST is ORANGE.			
P	Block 3: IS THE CONTAINMENT CSFST PROCEEDING ALONG A RED PATH?	d Student recognizes that YES, Containment CSFST is RED.			
P*	Transitions to "PAR GROUP B GO TO PAGE 2 OF THIS FORM.	e* IDENTIFIES transition to PAR 'B' and Continues on next page.			
	1. IF a release is in progress from the plant vent then enter upper wind direction.	f. No release is in progress, student proceeds to step 2.			
	2. IF a release is NOT in progress from the plant vent then enter lower wind direction.	g. Student enters 285 degrees.			
	3. Identify appropriate PAR GROUP B column based on wind direction to determine the towns to be evacuated	h*. IDENTIFIES last column (259 degrees to 302.9 degrees).			

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP *denotes a critical step	STANDARD *denotes critical standard	EVALUATION SAT	EVALUATION UNSAT	INITIALS/DATE
	and sheltered				
	4. Check off "Implement KI plans for the General Public" on form ER 2.0B, Block 4.	i.* Checks of "Implement KI plan" block	____	____	_____
	5. Return to form ER 1.2D, Step 7(e)		____	____	_____
CUE:	Makes out a new ER2.OB.				
		1 Block 1 Name & Date.	____	____	_____
		2*. Block 2 time declared (Same as before 1323).			
		3*. Block 3 Initiating Condition is SG1.	____	____	_____
		4* Block 4 CHECKS OFF towns status on Form ER2.OB:	____	____	_____
		1. Evacuates: Seabrook, H. Falls, Amesbury, Salisbury, Kensington, South Hampton, N. Hampton and Hampton.			
		2. Shelters: All the other towns.	____	____	_____
		3. Evacuates: New Hampshire beaches.	____	____	_____
		4. Closes Massachusetts beaches and Parker River National Wildlife Refuge.	____	____	_____
		5. Potassium Iodide: "Implement KI plans for the General Public.	____	____	_____

PERFORMANCE CHECKLIST

D=Discuss P=Perform S=Simulate	ELEMENT/STEP *denotes a critical step	STANDARD *denotes critical standard	EVALUATION SAT	 UNSAT	INITIALS/DATE
		5*. Block 5 Rad release has not occurred.	_____	_____	_____

CUE: <WRGM not in alarm, MSL monitor not in alarm, and Site boundary WB dose has not been done>

		6*. Block 6. Authorized by Name/STD/Date/Time.	_____	_____	_____

CUE: "The JPM is complete."

3.	NA	Stop time _____ Evaluator calculates the time to complete the task	_____	_____	_____

PERFORMANCE SUMMARY

Provide comments on unsatisfactory performance of an element/step or for deviation from performance as stated. Record interruptions in performance such as retraining, shift change, and processing of procedure changes. Recommend remedial training, if necessary.

TEAR-OFF SHEET FOR JPM
2009 SRO-ADMIN #5

Directions to the Student:

Student:

Evaluator gives Tear-Off sheet to the student
Evaluator reads the following to the student (Optional for multiple JPMs):

Student:

1. Ensures task is done correctly.
2. May be asked follow-up questions to confirm knowledge of task.

A. You are the SM. You are going to determine recommended Protective Actions per ER 1.2A in accordance with the Production Emergency Response.

B. The following information is provided to you:

1. The plant has tripped from 100% power due to a LOP today at 1300.
2. US has transitioned from E-0 to ECA-0.0.
3. No Emergency Diesel Generator or SEPS Diesel is available.
4. The Event has been classified as a General Emergency based on EAL SG1, Prolonged Loss of Both AC emergency buses. Restoration of either emergency bus is not expected within 4 hours.
5. The time of E-plan declaration was 1323.
6. A release has NOT occurred.
7. Schiller Station has NOT been activated.
8. The States have been notified.
9. There is a 10 MPH wind
10. LOWER Wind Direction is coming FROM 285 degrees.
11. UPPER Wind Direction is coming FROM 305 degrees.
12. The appropriate PAR GROUP A has been recommended to the States.
13. At 1355 the Shift Manager is re-assessing plant conditions in accordance with ER 1.2D, General Emergency Checklist – STED, Step 9, Follow-Up PAR ASSESSMENT.
14. Critical Safety Functions have been verified. CSF status indicates:
    e. RED path on (H) recommendation FR-H1.
    f. ORANGE path on (C) recommendation FR-C.2
    g. RED path on (Z) recommendation FR-Z.1.
    h. YELLOW path on (I) recommendation FR-1.2.

C. This JPM will be administered in a classroom setting. Complete the required forms and return them to me when you are complete.

D. We will begin after the Initiating Cue is read:

Initiating Cue:

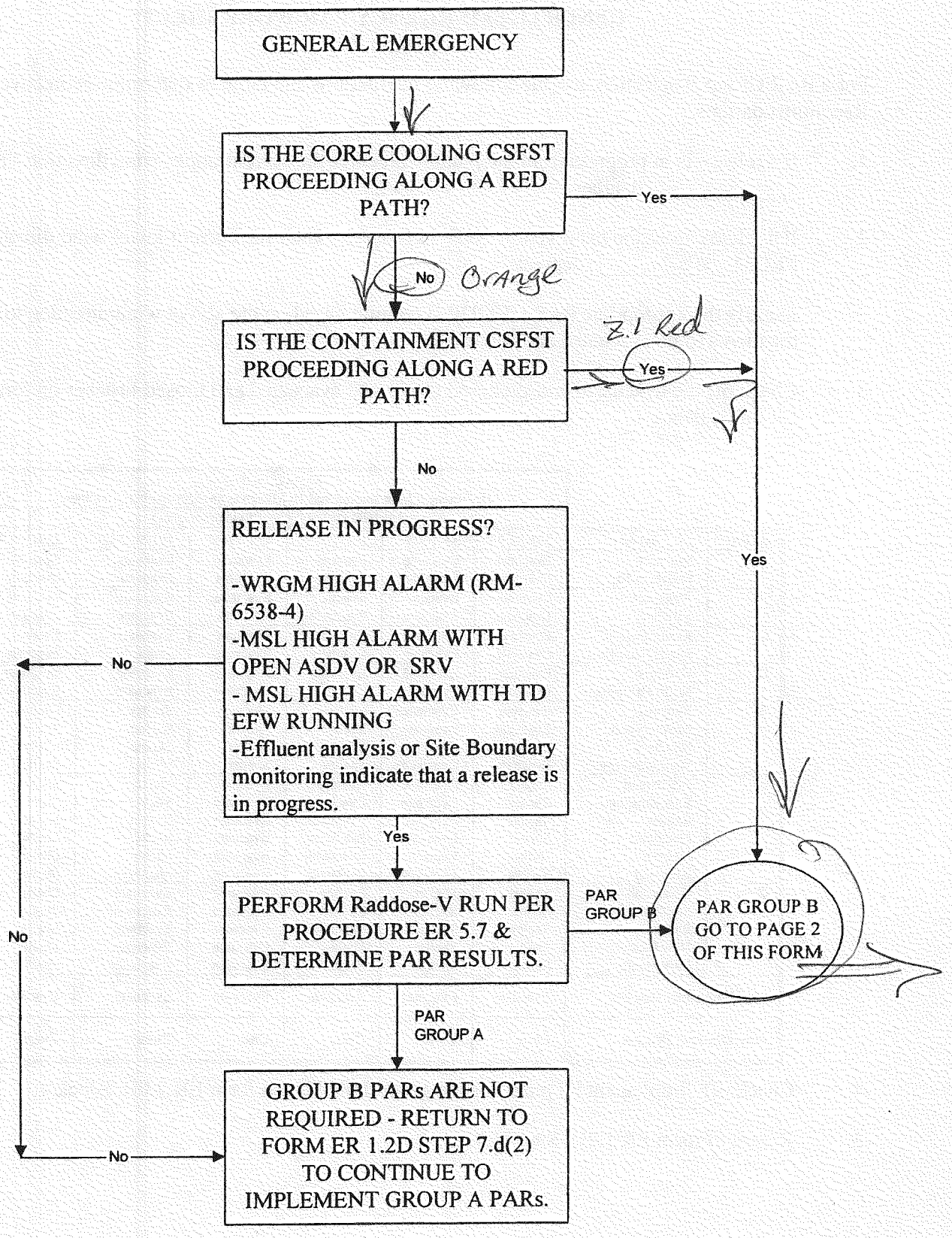
Evaluator to student:

"STED (or student's name), evaluate current plant conditions to determine if upgraded PARs are warranted.

If an upgrade is required then fill out a new ER 2.0B, State Notification Fact Sheet. "

Key SRO - ADMIN #5

GENERAL EMERGENCY PAR WORKSHEET



Key

SRO ADMIN #5 Key

Seabrook Station State Notification Fact Sheet

Time Notification Initiated: _____

NH
MA

Block 1: This is : Student Name – Ltr (Name / Title) at Seabrook Station.

Block 2: We have (declared) / terminated a(n): (circle one)

Time Declared 1323

Time Terminated _____

- [ ] Unusual Event
- [ ] Alert
- [ ] Site Area Emergency
- [X] General Emergency

Block 3: The emergency initiating condition is SG2.

Block 4: We recommend the following protective actions:

[ ] None [X] As follows

New Hampshire

ERPA	Town	Shelter	Evacuate
A.	Seabrook	[ ]	[X]
	Hampton Falls	[ ]	[X]
C.	Kensington	[ ]	[X]
	S. Hampton	[ ]	[X]
D.	Hampton	[ ]	[X]
	N. Hampton	[ ]	[X]
F.	Brentwood	[X]	[ ]
	E. Kingston	[X]	[ ]
	Exeter	[X]	[ ]
	Newfields	[X]	[ ]
	Newton	[X]	[ ]
	Kingston	[X]	[ ]
G.	Greenland	[X]	[ ]
	Stratham	[X]	[ ]
	Rye	[X]	[ ]
	New Castle	[X]	[ ]
	Portsmouth	[X]	[ ]

Massachusetts

ERPA	Town	Shelter	Evacuate
B.	Amesbury	[ ]	[X]
	Salisbury	[ ]	[X]
E.	Merrimac	[X]	[ ]
	Newburyport	[X]	[ ]
	Newbury	[X]	[ ]
	West Newbury	[X]	[ ]

Beaches

Evacuate

- [X] Seabrook Beach
- [X] Hampton Beach

Close

- [X] Parker River National Wildlife Refuge
- [X] Plum Island Beach
- [ ] Salisbury Beach

Potassium Iodide (General Emergency only)

- [X] Implement KI plans for the general public

Block 5: A radiological release

- [X] Has not occurred
- [ ] Has occurred and is continuing
- [ ] Occurred but has been terminated

Block 6: Authorized by: _____ (STED/SED/RM) _____ (Date/Time)

Block 7: Acknowledge receipt of this message with your name.

New Hampshire: _____ (Name of Dispatcher) _____ (Date/Time)

Massachusetts: _____ (Name of Dispatcher) _____ (Date/Time)