NUCLEAR POWER BUSINESS UNIT   JPM P000.002COT
TRAINING JOB PERFORMANCE MEASURES   Revision 0 DRAFT
July 19, 2000

PERFORM SHUTDOWN MARGIN CALCULATION FOR AN OPERATING REACTOR

K/A REFERENCE:	004 K5.19 (2.8/3.3)
(NUREG-1122)	003 AK1.07 (3.1/3.9)
	003 AK3.04 (3.8/4.1)

ALTERNATE PATH JPM   YES   __X__   NO

PERFORMANCE CHECKLIST:

SATISFACTORY - Properly performed critical step(s) and/or in sequence (if applicable)

UNSATISFACTORY - Improperly performed critical step(s) and/or out of sequence (if applicable)

__X__   Procedure adequately addresses task elements.
               Enter identifier here: __PBF-2513, "Shutdown Margin for an Operating Reactor", Rev. 0__

_____   Other document adequately describes necessary task elements.
               Enter identifier here: _____

__X__   Task elements described as attached.

DESIRED MODE OF EVALUATION: APPLICABLE EVALUATION SETTING:

SIMULATE/WALKTHROUGH __X__ DISCUSSION _____ PERFORM __X__ IN-PLANT _____ CONTROL ROOM __X__

VALIDATED TIME FOR COMPLETION: __15__ MINUTES

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EXAMINEE _____ EVALUATOR _____

START TIME _____ FINISH TIME _____

PERFORMANCE ☐ SAT ☐ UNSAT

JOB TITLE: ☐ AOT ☒ COT ☐ SRO ☐ STA

TOOLS/EQUIPMENT/REFERENCES:

PBF-2513, "Shutdown Margin for an Operating Reactor"
Unit 2 ROD book
Calculator

TASK STANDARDS:

Required Shutdown Margin calculated within the specified tolerance (1100-1140 pcm) and time (<30 minutes).

SIMULATOR INFORMATION:

Not Applicable to this JPM

NOTE: If this JPM is performed on the simulator, the JPM administrator should only give cues that are not indicated on the simulator. If simulator indication is sufficient to indicate the completion of a step, the JPM administrator should not have to give a cue to the trainee to continue the evolution.

NOTE: Only this page needs to be retained in examinee's record if completed satisfactorily. If unsatisfactory performance is demonstrated, the entire JPM should be retained.

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READ AND PROVIDE TO THE EXAMINEE

****

THIS SECTION IS READ ONCE FOR THE ENTIRE PACKAGE OF JPMS. IT IS NOT REQUIRED TO REVIEW
THIS SECTION FOR EVERY JPM BEING PERFORMED IN THE PACKAGE. THE INITIAL CONDITIONS
AND INITIATING CUE(S)/TASKS TO BE PERFORMED SHOULD BE READ AND THEN PROVIDED TO THE
EXAMINEE.

> After I read you the initial conditions and initiating cue(s)/task to be performed for this JPM and provide you
> a copy of the same, you may review and begin. Once you have completed the task, indicate completion by
> handing back this form to the evaluator unless otherwise told.

> You may use any approved reference materials normally available including logs. Make all written reports,
> oral reports, and log entries as if the evolution is actually being performed.

> EOP Immediate Actions are required to be performed from memory. After completing immediate action
> steps without using the procedure, you may then use any approved reference materials.

> For all two and three-way communications, make your report to me, the JPM evaluator. I will reply to your
> reports with the statement, "acknowledge." All actions in the plant are to be simulated and all actions in the
> simulator will be performed. Ensure you make it clear to me, the evaluator, of all actions you are taking so
> that credit may be given for completing each step of the task.

> DURING THE JPM, ENSURE PROPER SAFETY PRECAUTIONS, FME, AND/OR RADIOLOGICAL
> CONCERNS AS APPLICABLE ARE FOLLOWED.

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INITIAL CONDITIONS:

Unit 2 has been operating at 100% power for the last 30 days.

Rod H-2 in Shutdown Bank "A" has dropped to the bottom of the core 30 minutes ago. The crew is responding in accordance
with AOP-6A, "Dropped Rod".

INITIATING CUE(S) / TASK TO BE PERFORMED (SIMULATED):

The DSS has directed you to calculate the required shutdown margin in accordance with PBF-2513, "Shutdown Margin for an
Operating Reactor", per Step 9 of AOP-6A within 30 minutes.

The following Unit 2 conditions currently exist:

- Boron Concentration – 1309 ppm
- Rx Power – 90%
- T_{ave} - 567°
- T_{ref} – 568°
- Control Bank D @ 220 steps.
- All other banks @ 228 steps.

PERFORMANCE INFORMATION

NOTE: CRITICAL STEPS ARE DENOTED WITH A "Y". FAILURE TO MEET THE STANDARDS FOR THIS ITEM CONSTITUTES FAILURE.

START TIME	_____	STEP/SEQUENCE/CRITICAL			SAT	_____
		1	1	N	UNSAT	_____

ELEMENT: Obtain PBF-2513 from the form drawer behind DSS chair in Control Room.

STANDARD: As above.

CUE:

COMMENTS:

		STEP/SEQUENCE/CRITICAL			SAT	_____
		2	2	N	UNSAT	_____

ELEMENT: Verifies T_{AVG} within 1.5°F of T_{REF}.

STANDARD: Verifies T_{AVG} within 1.5°F of T_{REF} based on initial conditions given and circles YES on PBF-2513.

CUE: T_{AVG} is within T_{REF} by <1.5°F (or as indicated on simulator).

COMMENTS:

		STEP/SEQUENCE/CRITICAL			SAT	_____
		3	3	Y	UNSAT	_____

ELEMENT: Obtains core burn-up from ROD 1.1.

STANDARD: As above and records on PBF-2513.

CUE:

NOTE: ROD 1.1 should be updated to read 1500 mwd/mtu.

COMMENTS:

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PERFORMANCE INFORMATION

NOTE: *CRITICAL STEPS ARE DENOTED WITH A "Y". FAILURE TO MEET THE STANDARDS FOR THIS ITEM CONSTITUTES FAILURE.*

STEP	SEQUENCE	CRITICAL		
4	4	N	SAT	_____
			UNSAT	_____

ELEMENT: Obtains data and calculates % burn-up.

STANDARD: Obtains data, calculates % burn-up and records on PBF-2513.

CUE:

COMMENTS:

STEP	SEQUENCE	CRITICAL		
5	5	N	SAT	_____
			UNSAT	_____

ELEMENT: Obtains reactor power level.

STANDARD: Obtains reactor power level from initial conditions given and records on PBF-2513.

CUE:

COMMENTS:

STEP	SEQUENCE	CRITICAL		
6	6	N	SAT	_____
			UNSAT	_____

ELEMENT: Obtains control rod position for Bank C and D.

STANDARD: Obtains Bank C and D control rod position from initial conditions given and records on PBF-2513.

CUE:

COMMENTS:

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PERFORMANCE INFORMATION

NOTE: *CRITICAL STEPS ARE DENOTED WITH A "Y". FAILURE TO MEET THE STANDARDS FOR THIS ITEM CONSTITUTES FAILURE.*

STEP	SEQUENCE	CRITICAL		
7	7	N	SAT	_____
			UNSAT	_____

ELEMENT: Obtains power defect from Rod 7.

STANDARD: As above and records on PBF-2513.

CUE:

COMMENTS:

STEP	SEQUENCE	CRITICAL		
8	8	N	SAT	_____
			UNSAT	_____

ELEMENT: Obtains control rod worth (Bank D, C, B, A, S in , HZP) from Rod 5.

STANDARD: As above and records on PBF-2513.

CUE:

COMMENTS:

STEP	SEQUENCE	CRITICAL		
9	9	N	SAT	_____
			UNSAT	_____

ELEMENT: Obtains stuck rod worth from Rod 5.

STANDARD: Above and records on PBF-2513.

CUE:

COMMENTS:

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PERFORMANCE INFORMATION

NOTE: *CRITICAL STEPS ARE DENOTED WITH A "Y". FAILURE TO MEET THE STANDARDS FOR THIS ITEM CONSTITUTES FAILURE.*

	STEP/SEQUENCE/CRITICAL			SAT	
	10	10	N	UNSAT	

ELEMENT: Obtain stuck rod worth minus control rod worth.

STANDARD: Subtracts values of Step 8 from Step 7 and records on PBF-2513.

CUE:

COMMENTS:

	STEP/SEQUENCE/CRITICAL			SAT	
	11	11	N	UNSAT	

ELEMENT: Obtains bank worth to ARO from Rod 3.1 using Step 2 and Step 5 data.

STANDARD: As above and records on PBF-2513.

CUE:

COMMENTS:

	STEP/SEQUENCE/CRITICAL			SAT	
	12	12	N	UNSAT	

ELEMENT: Obtains stuck rod worth found in Rod 5 (same as value in Step 8).

STANDARD: As above and records on PBF-2513.

CUE:

COMMENTS:

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PERFORMANCE INFORMATION

NOTE: ***CRITICAL STEPS ARE DENOTED WITH A "Y". FAILURE TO MEET THE STANDARDS FOR THIS ITEM CONSTITUTES FAILURE.***

STEP	SEQUENCE	CRITICAL		
13	13	N	SAT	_____
			UNSAT	_____

ELEMENT: Obtains total available control rod and negative reactivity by adding Step 9, 10, 11 and 250 pcm.

STANDARD: As above and records on PBF-2513.

CUE:

COMMENTS:

STEP	SEQUENCE	CRITICAL		
14	14	Y	SAT	_____
			UNSAT	_____

ELEMENT: Calculates shutdown margin by adding Steps 12 and 6.

STANDARD: As above and records on PBF-2513.

CUE:

NOTE: ***It is critical that this value falls within the range on the examiner key.***

COMMENTS:

STEP	SEQUENCE	CRITICAL		
15	15	N	SAT	_____
			UNSAT	_____

ELEMENT: Determine the required shutdown margin using T.S. Figure 15.3.10-2 using Step 3 data.

STANDARD: As above and records on PBF-2513.

CUE:

COMMENTS:

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PERFORMANCE INFORMATION

NOTE: *CRITICAL STEPS ARE DENOTED WITH A "Y". FAILURE TO MEET THE STANDARDS FOR THIS ITEM CONSTITUTES FAILURE.*

STEP	SEQUENCE	CRITICAL		SAT
16	16	Y		UNSAT

ELEMENT: Determines if calculated shutdown margin in more negative than required shutdown margin.

STANDARD: As above and circles Yes on PBF-2513.

CUE:

COMMENTS:

STEP	SEQUENCE	CRITICAL		SAT
17	17	Y		UNSAT

ELEMENT: Completes PBF-2513 within 30 minutes.

STANDARD: Not more than 30 minutes has elapsed since beginning JPM (start time).

CUE: This completes this JPM.

COMMENTS:

TERMINATION CUE: THIS COMPLETES THIS JPM.   **COMPLETION TIME:** _____