OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

STATION: SALEM

SYSTEM: Conduct of Operations - Administrative

TASK: Perform a Manual AFD Calculation IAW S2.OP-ST.NIS-0001

TASK NUMBER: N0150010201

JPM NUMBER: 16-01 NRC RO-A1

ALTERNATE PATH: [ ] **K/A NUMBER:** G 2.1.25

IMPORTANCE FACTOR: 3.9 (RO) ____ (SRO)

APPLICABILITY:
EO [ ] **RO** [X] **STA** [ ] **SRO** [ ]

EVALUATION SETTING/METHOD: Classroom

REFERENCES: S2.OP-ST.NIS-0001, Rev. 13
Salem Unit 2 Core Operating Limits Report Cycle 23, Rev. 7
Salem 2 Cycle 23 REM, Rev 17 (checked 10-6-17)

TOOLS AND EQUIPMENT: Calculator

VALIDATED JPM COMPLETION TIME: 10 min

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: N/A

Developed By: R. Chan Rudolph Chan **Date: 12-11-17**
Instructor

Validated By: N/A R 12-11-17 **Date:** N/A
SME or Instructor

Approved By: McHugh **Date:** 12/15/17
Training Department

Approved By: Myers **Date:** 12/15/17
Operations Department

ACTUAL JPM COMPLETION TIME:

ACTUAL TIME CRITICAL COMPLETION TIME:

PERFORMED BY: _____
GRADE: [ ] **SAT** [ ] **UNSAT**

REASON, IF UNSATISFACTORY:

EVALUATOR'S SIGNATURE: **DATE:**

OPERATOR TRAINING PROGRAM
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JPM NUMBER: 16-01 NRC RO-A1

Rev #	Date	Description	Validation Required
00	10-6-17	Added revision history and simulator setup pages. Updated NI currents from Rev. 5 of REM dated 6/4/17. Editorial comments from IP 71111.11 FASA.	Yes
01	12-11-17	Incorporated comments from NRC Prep week.	No

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SIMULATOR SETUP INSTRUCTIONS

SYSTEM: Conduct of Operations - Administrative

TASK: Perform a Manual AFD Calculation IAW S2.OP-ST.NIS-0001

TASK NUMBER: N0150010201

SIMULATOR IC: N/A

MALFUNCTIONS / REMOTES: N/A

OVERRIDES: N/A

SPECIAL INSTRUCTIONS: None

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____

DATE: _____

SYSTEM: Conduct of Operations - Administrative

TASK: Perform a Manual AFD Calculation IAW S2.OP-ST.NIS-0001

TASK NUMBER: N0150010201

INITIAL CONDITIONS:

- Salem Unit 2 completed a down power to 73% power today at 0830 IAW TSAS 3.1.3.1.c.3.d due to a single control rod being declared inoperable.
- The AFD Monitor Alarm for the Auxiliary Annunciator was determined to be inoperable at 0840.

INITIATING CUE:

- You are the Reactor Operator.
- The CRS directs you to perform a manual AFD calculation IAW Section 5.3 of S2.OP-ST.NIS-0001(Q), Power Distribution – Axial Flux Difference.
- Current AFD Channel Console Readings are:

  Channel I: -9.8

  Channel II: -9.7

  Channel III: -10.3

  Channel IV: -10.5

- All prerequisites are completed SAT.
- **NOTIFY** the CRS of the results of the surveillance after completing Step 5.3.1.F.

Successful Completion Criteria:

1. All critical steps completed.
2. All sequential steps completed in order.
3. All time-critical steps completed within allotted time.
4. JPM completed within validated time. Completion time may exceed the validated time if satisfactory progress is being made.

Task Standard for Successful Completion:

1. **Completes applicable portion of Attachment 3 of S2.OP-ST.NIS-0001, and determines Channel III and IV is outside the AFD Target Band.**

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* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step) (# Sequential Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
		Provide the following materials: ▪ S2.OP-ST.NIS-0001, Power Distribution – Axial Flux Difference, ▪ Salem Unit 2 Core Operating Limits Report (COLR), and ▪ S2.RE-RA.ZZ-0011 (Salem 2 Cycle 23 REM, Rev 17, **DATE TAKEN: 07-31-17**)	**Note:** The data tables from S2.RE-RA.ZZ-0011(Q), TABLES have been removed. The data tables from this procedure are now on Sharepoint and are located as follows: Main Nuclear Webpage→Quick Links→Operations–Salem→Reactor Engineering Manual→Salem Unit 2→REM Data Salem Unit 2 Cycle ## Rev #.pdf		
	CUE	Fill in the JPM Start Time when the student acknowledges the Initiating Cue. **START TIME**:_____			
	3.0	Precautions and Limitations	Operator reviews and initials Precautions and Limitations.		

OPERATOR TRAINING PROGRAM NAME:_____

JOB PERFORMANCE MEASURE DATE:_____

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* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step) (# Sequential Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	5.3.1	IF AFD Monitor (XA-8740), OR Monitor Alarm (Auxiliary Annunciator) is inoperable, THEN **COMPLETE** Attachment 3, AFD Data Log Sheet as follows:	Operator uses Attachment 3 to determine AFD.		
	5.3.1.A	**ENTER** present Reactor Power	Operator enters 73% power		
	5.3.1.B	**ENTER** AFD Target from S2.RE-RA.ZZ-0011, Tables, Table 3	Operator enters **(-1.5)** for AFD Target using the Salem 2 Cycle 23 REM, Table 3		
*	5.3.1.C	**CALCULATE** the AFD Target Value IAW the following: (A) x (B) = AFD Target Value (present power) = (C) 100% Where: (A)= Present Reactor Power (B)= AFD Target (100% Value) (C)= AFD Target (present power)	**Calculates AFD Target for present power level as:** $\frac{(73) \times (-1.5)}{(100)} = -1.095$ **IAW P&L 3.2, round value to first decimal place (-1.1)**		
	NOTE	The Target Band Upper and Lower Limit shall be the more restrictive of the limits defined in the Core Operating Limits Report (COLR) OR S2.RE-RA.ZZ-0011 (Q), Tables.	Operator reads the Note and continues on.		

OPERATOR TRAINING PROGRAM **NAME:**_____

JOB PERFORMANCE MEASURE **DATE:**_____

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* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step) (# Sequential Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
* *	5.3.1.D	**DETERMINE** AFD Target Band Upper and Lower Limits as follows: ___ +(C)= Upper Limit ___ +(C)= Lower Limit	**Determines Upper Limit using Target Band values from Salem 2 REM Table 3:** **+6.0 +(-1.1)= +4.9** **Determines Lower Limit is:** **-9.0 + (-1.1)= -10.1**		
	NOTE	When the AXIAL FLUX DIFFERENCE (AFD) Monitor is inoperable, the logged values shall be assumed to exist during the interval preceding each logging. (4.2.1.1.b)	Operator reads Note and continues on.		
	5.3.1.E	**ENTER** AFD Channel Readings.	Enters AFD values from initial conditions on Attachment 3.		

OPERATOR TRAINING PROGRAM **NAME:**_____

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*	5.3.1.F	**DETERMINE** if any Channel is operating outside of the Target Band Upper or Lower Limits (inclusive)	**Determines Channels III and IV (-10.3 and 10.5) is operating outside the Lower Target Band.** **JPM is Complete once the operator determines status of channels.** **Cue**: IF operator does not verbalize the results, **THEN** state: CRS requests the results of the calculation. **Possible Cue**: With two AFD channels outside the target band, the operator may state that action is needed to reduce Rx power (also see Note on page 7 of procedure that states the TS action required with 2 channels outside the band). **State to operator that CRS will refer Tech Specs for required action.**		
	CUE:	**JPM is Complete.** **RECORD** the STOP TIME. **STOP TIME**:_____	**Terminate JPM when operator performs Step 5.3.1.F**		

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

JPM #: 16-01 NRC RO-A1

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

NOTE: All steps of this checklist should be performed upon initial validation. Prior to JPM usage, revalidate JPM using steps 8 and 11 below.

_____ 1. Task description and number, JPM description and number are identified.

_____ 2. Knowledge and Abilities (K/A) references are included.

_____ 3. Performance location specified. (in-plant, control room, or simulator)

_____ 4. Initial setup conditions are identified.

_____ 5. Initiating and terminating Cues are properly identified.

_____ 6. Task standards identified and verified by SME review.

_____ 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (*).

_____ 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure: Procedure Rev. _____ Date _____

_____ 9. Pilot test the JPM:
a. verify Cues both verbal and visual are free of conflict, and
b. ensure performance time is accurate.

_____ 10. If the JPM cannot be performed as written with proper responses, then revise the JPM.

_____ 11. When JPM is revalidated, SME or Instructor sign and date JPM cover page.

SME/Instructor:_____ Date: _____

SME/Instructor:_____ Date: _____

SME/Instructor:_____ Date: _____

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