NAME: _____

DATE: _____

SYSTEM: Generic Admin – Conduct of Operations

TASK: Perform manual QPTR calculation surveillance IAW S2.OP-ST.NIS-0002

TASK NUMBER: N0150020201

INITIAL CONDITIONS:

- Unit 2 was operating at 100% power when rod 2D4 dropped fully into the core. OHAs E-46, LOWER SECT DEV ABV 50% PWR, and E-38 UPPER SECT DEV ABV 50% PWR, annunciated, cleared and continue to annunciate then clear.
- Operators have not yet started reducing power to 74% to comply with TSAS 3.1.3.1.c.3.d IAW S2.OP-AB.ROD-0002, Dropped Rod.

INITIATING CUE:

- The CRS has directed you to perform a Manual QPTR Calculation IAW S2.OP-ST.NIS-0002. Maintain all calculations at three significant digits to the right of the decimal point (Thousandths) unless otherwise directed by procedure.
- All pre-requisites are completed SAT.
- Notify CRS of test results after Step 5.3 is complete and compliance with Technical Specification.

NI currents are:

	Upper Detectors	Lower Detectors
N41	**189**	**188**
N42	**206**	**221**
N43	**192**	**193**
N44	**135**	**151**

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. **Manually calculates the highest QPTR as UNSAT (highest N42T AND N42B) with a value of 1.041 and 1.032 respectively (+/- 0.002).**
2. **Identifies Maximum Power Tilt exceeds 1.02 and identifies T/S LCO 3.2.4 is NOT met.**

OPERATOR TRAINING PROGRAM NAME: _____

JOB PERFORMANCE MEASURE DATE: _____

SYSTEM: **Generic Admin – Conduct of Operations**

TASK: **Perform manual QPTR calculation surveillance IAW S2.OP-ST.NIS-0002**

* #	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)
	CUE:	Provide the following: ▪ Markup copy of S2.OP-ST.NIS-0002, Power Distribution - Quadrant Power Tilt Ratio, ▪ **REM Tables Salem 2 Cycle 25, Rev. 33**, and ▪ Salem Unit 2 Tech Spec 3.2.4.			
	CUE:	Fill in the JPM Start Time when the student acknowledges the Initiating Cue. **START TIME**:_____			
	3.0	**PRECAUTIONS AND LIMITATIONS**	Reads PRECAUTIONS AND LIMITATIONS 3.1-3.5		
	5.1.2	**RECORD** the following data on Attachment 2 • Date • Time • Reactor Power • Reason for performing QPTR Calculation	Records current date, current time, 100% reactor power and checks OHA E-46 as reason for performance in Attachment 2.		

OPERATOR TRAINING PROGRAM NAME: _____

JOB PERFORMANCE MEASURE DATE: _____

SYSTEM: **Generic Admin – Conduct of Operations**

TASK: **Perform manual QPTR calculation surveillance IAW S2.OP-ST.NIS-0002**

* #	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)
	5.1.3	**RECORD** the following data on Attachment 1: • NI Channels N-41, N-42, N43 and N-44 Upper Detector current readings • NI Channels N-41, N-42, N43 and N-44 Lower Detector current readings • Respective 100% NI Current Values for Channels N-41, N-42, N43 and N-44 Detectors from S2.RE-RA.ZZ-0011, Table 2	Records on Attachment 1: (From initial conditions) • NI channels N41-44 Upper Detector Current Readings • NI channels N41-44 Lower Detector Current Readings • 100% NI Current Values from S2.RE-RA.ZZ-0011, TABLES **NOTE:** Attachment 1, Section 3 is NOT required to be performed to determine detector currents. It was added at Rev. 12 to use "when any NIS meter is suspect." If asked, **CUE** that all Power Range Detectors are Operable.		

OPERATOR TRAINING PROGRAM NAME: _____

JOB PERFORMANCE MEASURE DATE: _____

SYSTEM: **Generic Admin – Conduct of Operations**

TASK: **Perform manual QPTR calculation surveillance IAW S2.OP-ST.NIS-0002**

* #	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)
*	5.1.4	**COMPLETE** Attachment 1 calculations.	**For Top and Bottom Detectors: (numbers as per key for evaluator)** • Calculates Detector Ratio for each top and bottom detector. • Adds detector ratios to get Sum of detector ratios. • Divides Sum by number of operable detectors (4) to get Average Detector Ratios. • Places Average Detector Ratios in 4th column of Att. 1 • Divides each detector ratio by the average ratio to get the power tilt for each detector. **CUE:** IV is complete when asked for IV of calculations		
*	5.1.5	**RECORD** the following on Attachment 2 1. "Power Tilt" for each detector. 2. "Maximum Power Tilt" and applicable detector identification information. 3. Test Results by initialing SAT or UNSAT column IAW stated Acceptance Criteria.	**Records information on Attachment 2 (as per key for evaluator)** **Maximum Power Tilt for N42T OR N42B will be marked UNSAT at 1.041 and 1.032 respectively (+/- 0.002).**		
	5.1.6	**DIRECT** a second Operator to perform Independent Verification of calculations in Attachment 1, Sections 1.0, 2.0 and 3.0 as applicable.	**CUE:** IV is complete SAT.		

OPERATOR TRAINING PROGRAM NAME: _____

JOB PERFORMANCE MEASURE DATE: _____

SYSTEM: **Generic Admin – Conduct of Operations**

TASK: **Perform manual QPTR calculation surveillance IAW S2.OP-ST.NIS-0002**

* #	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)
*	5.1.7	IF the Maximum Power Tilt for any detector exceeds 1.02, THEN **REFER** to T/S 3.2.4 for corrective actions.	**Determines maximum power tilt exceeds 1.02 and determines Tech Spec LCO 3.2.4 is NOT MET.**		
	5.3.1	This surveillance is satisfactory when Attachment 2 or 3 is completed with the Test data meeting the Acceptance Criteria stated.	Determines surveillance is UNSAT and marks step N/A.		
*	5.3.2	This surveillance is unsatisfactory. A. **INITIATE** NOTF(s) to correct the unsatisfactory condition(s). B. **RECORD** the NOTF number(s) AND the reason for unsatisfactory completion on Attachment 4 in the Comments Section. C. **NOTIFY** Reactor Engineering.	**Records surveillance as UNSAT.** **CUE:** The CRS will initiate the NOTF and Notify Reactor Engineering.		
	CUE:	WHEN operator informs you the task is complete, OR the JPM has been terminated for other reasons, THEN **RECORD** the STOP TIME. **STOP TIME**:_____	**Terminate JPM when operator completes Step 5.3.**		

TABLE 2
100% N.I. CURRENTS 0% AXIAL, RADIAL TILT

NOTE

1. The expiration date and time is the date and time by which the circuitry must be recalibrated with the new values. The expiration date is 14 days after the measurement date.
2. The new values will take effect as soon as I&C recalibrates the first NIS channel; the alarm must be declared inoperable. Refer to TS 4.2.4 for surveillance requirements. Ensure that all new values are used to perform the surveillance.
3. If the expiration date and time is reached prior to the circuitry recalibration, the alarm must be declared INOPERABLE.
4. The Alarm can be declared INOPERABLE when new Currents are issued.

Date	N41		N42		N43		N44		Expiration	
Measured	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Date	Time
BOC	214.7	221.0	217.7	234.5	190.4	189.5	160.8	170.4	05/26/20	22:00
05/12/20	186.4	192.1	197.1	213.7	191.8	191.5	141.5	150.8	06/08/20	15:28
05/25/20	195.6	198.7	206.7	220.4	202.3	198.9	148.1	155.2	08/31/20	9:07
08/17/20	184.0	188.8	193.6	207.7	189.3	188.5	138.2	146.3	11/03/20	8:56
10/20/20	184.4	187.6	192.9	204.3	186.4	182.7	137.9	144.6	01/04/21	0:02
12/21/20	189.4	192.2	197.3	208.1	188.9	184.1	141.1	147.3	04/05/21	6:00
03/22/21	203.1	207.6	209.3	222.6	200.2	196.9	150.5	158.0	07/05/21	6:51
06/21/21	221.1	226.0	229.1	243.8	218.6	215.6	163.7	172.1		

ANSWER KEY

	Manual Calculation				
		100% value	Detector ratio	Average upper detector ratio	Power Tilt
N41T	189	221.1	0.855	0.864	0.990
N42T	206	229.1	0.899	0.864	1.041
N43T	192	218.6	0.878	0.864	1.016
N44T	135	163.7	0.825	0.864	0.955
		Sum	3.457		
		# oper	4.000		
		AUDR	0.864		
		100% value	Detector ratio	Average upper detector ratio	Power Tilt
N41B	188	226	0.832	0.878	0.948
N42B	221	243.8	0.906	0.878	1.032
N43B	193	215.6	0.895	0.878	1.019
N44B	151	172.1	0.877	0.878	0.999
		Sum	3.510		
		# oper	4.000		
		AUDR	0.878		

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

JPM#: 20-01 ILOT RO-A3

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

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

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

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

____RC__ 4. Initial setup conditions are identified.

____RC__ 5. Initiating and terminating Cues are properly identified.

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

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

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

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

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

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

SME/Instructor:	R. Chan	Date:	1-10-22
SME/Instructor:	M. Wilcox	Date:	1-10-22
SME/Instructor:	S. Pompper	Date:	1-10-22

Applicant Name: _____

INITIAL CONDITIONS:

- Unit 2 was operating at 100% power when rod 2D4 dropped fully into the core. OHAs E-46, LOWER SECT DEV ABV 50% PWR, and E-38 UPPER SECT DEV ABV 50% PWR, annunciated, cleared and continue to annunciate then clear.
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