OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

STATION: SALEM

SYSTEM: Equipment Control - Administrative

TASK: Perform a Manual QPTR

TASK NUMBER: N0150020201

JPM NUMBER: 16-01 NRC RO-A3

ALTERNATE PATH: [X]

K/A NUMBER: G 2.1.43

IMPORTANCE FACTOR: RO 4.1 SRO

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

EVALUATION SETTING/METHOD: Classroom

REFERENCES: S2.OP-ST.NIS-0002 Rev. 14 (checked 10-11-17)
S2 Reactor Engineering Manual Data, Cycle 23 Rev .17
Tech Spec 3.2.4 (QPTR)

TOOLS AND EQUIPMENT: Calculator

VALIDATED JPM COMPLETION TIME: 20 min

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: N/A

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

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

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

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

ACTUAL JPM COMPLETION TIME:

ACTUAL TIME CRITICAL COMPLETION TIME:

PERFORMED BY:

GRADE: [ ] SAT [ ] UNSAT

REASON, IF UNSATISFACTORY:

EVALUATOR'S SIGNATURE: **DATE:**

REVISION HISTORY

JPM NUMBER: 16-01 NRC RO-A3

Rev #	Date	Description	Validation Required
00	10-11-17	Added revision history and simulator setup pages. Editorial comments from IP 71111.11 FASA. Added pre-determined 100% NI Current Values.	Yes
01	12-11-17	Incorporated NRC Prep week comments. Removed 100% NI current values from Initial Conditions, operator to use provided REM sheets.	No

SIMULATOR SETUP INSTRUCTIONS

SYSTEM: Equipment Control - Admin

TASK: Perform a QPTR

TASK NUMBER: N0150020201

SIMULATOR IC: **N/A**

MALFUNCTIONS / REMOTES: N/A

OVERRIDES: N/A

SPECIAL INSTRUCTIONS:

1. **PROVIDE** operator a copy of the REM ensuring the Date Taken date of **7-31-17**. **DO NOT USE** the REM in the simulator or classroom.

NAME: _____

DATE: _____

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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, are both illuminated.
- The crew has entered S2.OP-AB.ROD-0002, Dropped Rod, and is making preparations to perform a load reduction to < 75% Rated Thermal Power to comply with Tech Spec 3.1.3.1, Action c.3.d.

INITIATING CUE:

- The CRS has directed you to **PERFORM** a Manual QPTR Calculation IAW S2.OP-ST.NIS-0002, Power Distribution – Quadrant Power Tilt Ratio.
- The Lower and Upper NI Detector current readings are:

	Upper Detectors	Lower Detectors
N41	**184**	**181**
N42	**192**	**198**
N43	**182**	**174**
N44	**139**	**142**

- **NOTIFY** the CRS with the results of the surveillance.

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. **Perform the QPTR and calculates the highest QPTR as UNSAT (highest N42T AND N42B) with a value of 1.025 and 1.023 respectively (acceptable range +/- 0.002).**
2. **Identifies Maximum Power Tilt exceeds 1.02 and enters T/S 3.2.4.**

OPERATOR TRAINING PROGRAM NAME: _____

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SYSTEM: **Equipment Control - Administrative**

TASK: **Perform a QPTR**

* #	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: • S2.OP-ST.NIS-0002, Power Distribution - Quadrant Power Tilt Ratio. • Reactor Engineering Manual Data, Salem 2 Cycle 23, Rev. 17, **DATE TAKEN: 07-31-17**	**Evaluator's Note**: The operator will NOT be given the current REM document. All data required to perform this task is provided on the Initial Condition Sheet provided to the operator.		
	CUE:	Fill in the JPM Start Time when the student acknowledges the Initiating Cue. **START TIME:**_____			
	2.1	**IDENTIFY** sections of this procedure that are NOT to be performed with "N/A".	**Cue:** CRS has already removed sections of the procedure not related to your task.		
	3.0	**PRECAUTIONS AND LIMITATIONS**	Reads and initials PRECAUTIONS AND LIMITATIONS 3.1-3.5		
	5.1.1	IF one PR channel is inoperable, AND RTP is >75%, THEN...	Determines all PR channel are operable and step is N/A.		
	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.		

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TASK: **Perform a QPTR**

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	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.		

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*	5.1.4	**COMPLETE** Attachment 1 calculations.	**Correctly performs calculations using Attachment 1 (numbers as per ANSWER KEY)** • 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 ANSWER KEY)** **Maximum Power Tilt for N42T OR N42B will be marked UNSAT at 1.025 and 1.023 respectively (acceptable range of +/- 0.002 was provided to allow for rounding in calculation and Excel).**		
	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.		

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*	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 entry into Tech Spec 3.2.4 IS required.**		
	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.	**Determines surveillance is UNSAT.** **Cue:** The CRS will initiate the NOTF and Notify Reactor Engineering. **JPM is Complete.**		
	CUE:	**JPM is Complete.** **REPEAT BACK** any message from the operator on the status of the JPM, and then state "**This JPM is complete**". **STOP TIME:**_____	**Terminate JPM when operator notifies evaluator results of surveillance.**		

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

JPM#: 16-01 NRC 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.

_____ 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: _____

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