OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

STATION: SALEM

SYSTEM: Reactivity Control (SF-1) – Control Rod Drive System (CRDS)

TASK: Perform Control Rod System Surveillance IAW S2.OP-ST.RCS-0001

TASK NUMBER: 50638

JPM NUMBER: 20-01 NRC Sim-a

ALTERNATE PATH: [X]

K/A NUMBER: 001 A2.11

IMPORTANCE FACTOR: 4.4 (RO) 4.7 (SRO)

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

EVALUATION SETTING/METHOD: Simulator / Perform

REFERENCES: S2.OP-ST.RCS-0001 Rev. 25 (checked 8-2-21)

TOOLS AND EQUIPMENT: None

VALIDATED JPM COMPLETION TIME: 15 Minutes

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: N/A

Developed By:	**K. Hantho** **Instructor**	**Date: 8-2-21**
Validated By:	**Rydell/Zirkle** **SME or Instructor**	**Date: 8-12-21**
Approved By:	**M. Wadusky (signature on file)** **Training Department**	**Date: 2-10-22**
Approved By:	**W. Hargrave** **Operations Department**	**Date: 1-10-22**

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: 20-01 NRC Sim-a

Rev #	Date	Description	Validation Required
00	8-13-19	**Modified JPM**. Added Alternate Path for continuous rod motion when rod bank selected to Auto or Manual requiring operator to Manually trip the reactor. 001 K/A A2.11: Ability to (a) predict the impacts of the following malfunction or operation on the CRDS and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: situations requiring a reactor trip	Yes
01	8-2-21	Updated revision of procedures, added new steps for the three steps cycling prior to large rod movement.	
02	1-10-22	Incorporated NRC comments from ES-301-7 and Prep week.	Yes

SIMULATOR SETUP INSTRUCTIONS

SYSTEM: Reactivity Control (SF-1) – Control Rod Drive System (CRDS)

TASK: Perform Control Rod System Surveillance IAW S2.OP-ST.RCS-0001

TASK NUMBER: 50638

SIMULATOR IC: IC-250

MALFUNCTIONS:

1. Reset the simulator to the above IC #.
2. Verify the following events on the Summary/ET Trigger Lists:

MALF ID #	Description	Delay Time	Initial Value	Ramp Time	Trigger	Severity
01	RD0045, Uncontrolled Rod Insert in Auto	N/A	N/A	N/A	ET-1	TRUE
02						

3. These malfunctions will simulate failure of rod control system when rods are selected to Auto or Manual (Alt Path) resulting in continuous rod insertion. The operator will mitigate the event by manually tripping the reactor.

OVERRIDES / REMOTES:

ID #	Description	Delay Time	Initial Value	Ramp Time	Trigger	Condition/ Severity
01	KB433W1D, Rod Bank Selector Sw in Auto				ET-1	ON
02						
03						
04						

EVENT TRIGGERS:

ET#	Description	Command
1	KB433W1D, Rod bank Selector SW to Auto	

SPECIAL INSTRUCTIONS:

- Rod bank selector switch selected to **CBC position**
- **Ensure** ARPI screen is up on P-250.
- For efficiency, provide the procedures to the operators up front to allow time to read and review.

NAME: _____

DATE: _____

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TASK: Perform Control Rod System Surveillance IAW S2.OP-ST.RCS-0001

TASK NUMBER: 50638

INITIAL CONDITIONS:

- Unit 2 is at 100% power BOL.
- No major equipment is out of service and no Tech Specs are active.
- The rod control system surveillance is in progress. All sections are complete, except for exercising Control Bank D.

INITIATING CUE:

- You are the Reactor Operator.
- The CRS directs you to complete the rod control system surveillance IAW S2.OP-ST.RCS-0001, Reactivity Control System Rod Control Assemblies.
- A Maintenance Technician is stationed at the Rod Control Power Cabinets (Relay Room)
- CRS directs that 15 steps of rod insertion will be performed to ensure each rod moves at least 10 steps.
- Notify the CRS when the testing is complete.
- Your evaluator will take care of all alarms not related to your task.

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. **Exercises Control Bank D at least 10 steps and upon completion of the test recognizes unexpected continuous rod movement requiring a manual reactor trip.**

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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)
		♦ **ENSURE** marked up copy of S2.OP-ST.RCS-0001 is open and marked up on console. ♦ Provide copy of OP-AP-300-1001, PWR Control Rod Movement Requirements.			
		Operator reads and reviews procedures prior to start.	Operator reads P&Ls and reviews OP-AP-300-1001 prior to start		
	CUE:	Fill in the JPM Start Time when the student acknowledges the Initiating Cue. **START TIME**:_____			
	4.1.10.1	1. IF the reactor is critical, THEN **ENSURE** TAVG is within ±1°F of TREF.	Operator checks Tave/Tref recorder on 2RP4 and determines Tavg is within +/-1 F of Tref.		
*	4.1.10.2	2. **PLACE** Bank Selector Switch in the "CBD" position.	**Operator rotates selector switch clockwise to the CBD position**		

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	4.1.10.3	3. **ENSURE** GRP. SELECT "B" lights are illuminated on Rod Control System Power Cabinets 21BD and 22BD.	Contacts Maint Technician at Power Cabinets. **CUE**: *Technician reports GRP SELECT 'B' lights are illuminated on Cabinets 21 BD and 22BD*.		
		Evaluators Note: Steps 4.1.10.4 and 4.1.10.5 will be performed three times consecutively prior to the 15 step insertion in step 6. **Evaluators Note:** IF the applicant moves the rods only one and a half a steps, THEN instruct the applicant to move the rods in the same direction then come back two full steps prior to reversing direction.			
	4.1.10.4	Insert Control Bank D 1 step.	**Operator inserts one step.**		
	4.1.10.5	Withdraw Control Bank D 1 step.	**Operator withdraws one step.**		
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	4.1.10.5	Withdraw Control Bank D 1 step.	**Operator withdraws one step.**		

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*	4.1.10.6	6. **MANEUVER** Control Bank **D** at least 10 steps in any one direction.	**Operator inserts Control Bank D 15 steps.**		
	4.1.10.7	7. **ENSURE** each rod in Control Bank **D** indicated rod movement of at least 10 steps.	**Evaluator's Note:** Operator may request to insert rods additional steps, IF so, just restate the request. Operator monitors rod position on P-250 and determines D bank rods all moved at least 10 steps. **Optional CUE**: *Reactor Engineer reports rods indicate 10 step movement.*		
*	4.1.10.8	8. **RECORD** CONTROL BANK **D** "Test Results" by initialing the SAT or UNSAT column using the Acceptance Criteria in Attachment 1, Rod Control Assembly Data.	**Operator records test results as SAT.**		
*	4.1.10.9	9. **RESTORE** Control Bank **D** to the pre-test position.	**Operator withdraws Bank D to previous position (ARO)**		
	4.1.11	**ALIGN** the Rod Control System as follows:			
		ALTERNATE PATH STARTS HERE:	**Continuous rod movement when rod bank is selected to Auto or Manual**		

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	4.1.11.1	A. IF the reactor is critical, THEN **ENSURE** TAVG is within ±1°F of TREF.	Operator checks Tave/Tref recorder on 2RP4 and determines Tavg is within 1 F of Tref**.**		
	4.1.11.2	2. IF Turbine Power is ≤15%, THEN **PLACE** Bank Selector Switch in the "MAN" position. **Simulator Operator**: **ENSURE ET-1** is TRUE when rods selected to Auto. This will insert **MALF: RD0045, Uncontrolled Rod Insertion in AUTO AND MANUAL.**	N/A		

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*	4.1.11.3	3. IF Turbine Power is >15%, THEN **PLACE** Bank Selector Switch in the "AUTO" OR "MAN" position as directed by the SM/CRS.	**CUE:** IF asked, *CRS directs rod bank selected to AUTO*. Operator determines that Rx power is > 15% and rotates selector switch counterclockwise to the AUTO position. Operator announces that rods are stepping in and no runback in progress. **CUE:** IF operator recommends to CRS to place rods in Manual, THEN state; ***understand placing rods to manual.*** Operator places rod bank switch to Manual and reports rod motion has NOT stopped. **Operator Manually trips the Reactor.** **JPM Complete once Reactor is Tripped.**		
		Examiner's Note: **The operator may refer to S2.OP-AB.ROD-0003, Continuous Rod Motion and take the actions in the AB to manually trip the reactor.**			

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	CUE:	**JPM is Complete** **RECORD** the STOP TIME. **STOP TIME**:_____	**Terminate the JPM when Reactor is tripped.**		

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

JPM#: 20-01 NRC Sim-a

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

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

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

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

KH 4. Initial setup conditions are identified.

KH 5. Initiating and terminating cues are properly identified.

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

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

KH 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure: Procedure Rev. __25___ Date ____7-22-21_____

KH 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.

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

SME/Instructor: Date:

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