OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

STATION: SALEM

SYSTEM: Heat Removal From Reactor Core (SF 4P) – Reactor Coolant Pump System

TASK: Respond to low standpipe level on 21 RCP IAW S2.OP-AR.ZZ-0011

TASK NUMBER: N0020160101

JPM NUMBER: 20-01 NRC Sim-d

ALTERNATE PATH: [ ]

K/A NUMBER: 003 A1.10

	RO	SRO
IMPORTANCE FACTOR:	2.5	2.7

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

EVALUATION SETTING/METHOD: Simulator / Perform

REFERENCES: S2.OP-AR.ZZ-0011, Rev 63 (checked 10-6-21)

TOOLS AND EQUIPMENT: None

VALIDATED JPM COMPLETION TIME: 6 min

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: N/A

Developed By: **R. Chan** **Instructor** **Date: 10-6-21**

Validated By: **Stokes / Militti** **SME or Instructor** **Date: 10-14-21**

Approved By: **M. Wadusky(Signature On file)** **Training Department** **Date: 2-11-22**

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:**

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

REVISION HISTORY

JPM NUMBER: 20-01 NRC Sim-d

Rev #	Date	Description	Validation Required
00	9-18-18	**NEW JPM**. Added revision history and simulator setup pages. Editorial comments from IP 71111.11 FASA.	Yes
01	10-6-21	Changed ET-1 to use 2WR62 open light to trigger deleting malfunction for better reliability (QAJ02PRH).	Yes
02	1-3-22	Incorporated NRC comments from ES-301-7.	No

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

SIMULATOR SETUP INSTRUCTIONS

SYSTEM: Heat Removal From Reactor Core (SF 4) – Reactor Coolant Pump System

TASK: Respond to low standpipe level on RCP IAW S2.OP-AR.ZZ-0011

TASK NUMBER: N0020160101

SIMULATOR IC: **IC-258**

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	RC009A, 21 RCP #3 seal fails					100
02						
03						
04						

3. These malfunctions will simulate a leak on #3 RCP seal resulting in the low level in the standpipe. The operator will be required to fill the standpipe IAW the 2CC1 console alarm ARP.

OVERRIDES / REMOTES:

ID #	Description	Delay Time	Initial Value	Ramp Time	Trigger	Condition/ Severity
01						
02						
03						

EVENT TRIGGERS:

ET#	Description	Command
ET-1	QAJ02PRH, 21WR62 RCP standpipe open light	DMF RC009A

SPECIAL INSTRUCTIONS:

- None

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____

DATE: _____

SYSTEM: Heat Removal From Reactor Core (SF 4) – Reactor Coolant Pump System

TASK: Respond to low standpipe level on RCP IAW S2.OP-AR.ZZ-0011

TASK NUMBER: N0020160101

INITIAL CONDITIONS:

- Unit 2 is 100% power.
- No major equipment is out of service and no Tech Specs are active.

INITIATING CUE:

- You are the Reactor Operator.
- Respond to all alarms and indications.
- Your evaluator will respond to 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 (and NRC concurrence is obtained).

Task Standard for Successful Completion:

1. **Upon receipt of a RCP standpipe low level alarm, the operator aligns valves to fill the standpipe with primary water, and terminates the fill when the high level alarm is received.**

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

SYSTEM: **Heat Removal From Reactor Core (SF 4) – Reactor Coolant Pump System**
TASK: **Respond to low standpipe level on RCP IAW S2.OP-AR.ZZ-0011**

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
		Fill in the JPM Start Time when the student acknowledges the Initiating Cue. **START TIME**:_____			
	CUE	**Simulator Operator**: **INSERT RT-1** for malfunction RC0009A, Value = 100 for : 21 RCP #3 seal fails			
		21 RCP standpipe low console alarms illuminated.	Operator reports that standpipe level low console alarm for 21 RCP		
		The following steps are from S2.OP-AR.ZZ-0011, 2CC1 Console Alarm Response (**Page 138**)			
	1.0	CAUSES: Low level in the affected RCP standpipe (likely causes are listed beloew): ♦ Low seal flow across #2 seal ♦ Excessive flow through #3 seal	Operator reads likely causes and continues on.		
	2.0	AUTOMATIC ACTIONS: NONE	Operator continues on		
	3.0	OPERATOR ACTIONS:			

SYSTEM: **Heat Removal From Reactor Core (SF 4) – Reactor Coolant Pump System**

TASK: **Respond to low standpipe level on RCP IAW S2.OP-AR.ZZ-0011**

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	NOTE	Since standpipe level establishes the head across #3 seal, low level could result in #3 seal running dry.	Operator reads note and continues on		
	3.1	IF AT ANY TIME, standpipe low level occurs AND Seal water leakoff flow alarm occur together, THEN **GO TO** S2.OP-AB.RCP-0001(Q), Reactor Coolant Pump Abnormality.	Operator determines no seal leakoff flow alarm concurrent with standpipe level low. Marks step as N/A		
	3.2	**PERFORM** the following to fill the affected standpipe:			
	3.2.A	A. IF required, **START** 21 or 22 Primary Water Pump.	Operator selects one Primary Water pump in Manual and depresses START PB. Verifies start PB illuminates **OR** acceptable to not start a Primary Water pump and continue on. **Evaluator's Note:** This is a conditional step; the operator can still fill the standpipe without starting a Primary Water pump the fill will just take a little longer.		
*	3.2.B	B. **OPEN** 2WR80, PW TO CONTMT STOP V.	**Operator depresses OPEN PB for 2WR80 and verifies OPEN PB illuminates.** **Location: 2CC2 on the PRT bezels**		

SYSTEM: **Heat Removal From Reactor Core (SF 4) – Reactor Coolant Pump System**

TASK: **Respond to low standpipe level on RCP IAW S2.OP-AR.ZZ-0011**

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	3.2.C	C. IF desired, **ADJUST** applicable WR63 valve to maintain standpipe level.	**Evaluator's Note**: This valve is not located in Control Room and is not needed to accomplish the task. **CUE**: ***CRS states adjustments to WR63 is NOT required***. Operator marks step as N/A		
*	3.2.D	D. **OPEN** the Standpipe Supply Valve for the affected RCP: 21RCP – 21WR62 22RCP – 22WR62 23RCP – 23WR62 24RCP – 24WR62 **Simulator Operator**: **ENSURE ET-1** is TRUE when 21WR62 is open. This will delete MALF RC009A and allow the standpipe to refill and clear the low level alarm.	**Operator depresses the OPEN PB for 21WR62 and verifies OPEN PB illuminates.** **Location: on 21 RCP bezel**		
	3.2.E	E. **LOG** the RCP Standpipe fill IAW SH.OP-DL.ZZ-0027(Q), Temporary Reading Log and Log Supplement.	**CUE**: ***The PO will log the standpipe fill***.		

SYSTEM: **Heat Removal From Reactor Core (SF 4) – Reactor Coolant Pump System**

TASK: **Respond to low standpipe level on RCP IAW S2.OP-AR.ZZ-0011**

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	3.3	WHEN low level alarm clears and hi level alarm comes in, THEN ;	**Evaluator's Note:** The standpipe low level will clear in a short period of time followed by receiving standpipe level high console alarm which is expected.		
*		A. **STOP** the Primary Water Pump.	**Operator depresses the STOP PB for the running Primary Water pump, if previously started, and verifies STOP PB illuminates.**		
*		B. **CLOSE** 2WR80, PW TO CONTMT STOP V.	**Operator depresses the CLOSED PB for 2WR80 and verifies CLOSED PB is illuminated.**		
*		C. **CLOSE** the previously opened STANDPIPE SUPPLY VALVE.	**Operator depresses the CLOSED PB for 21WR62 and verifies CLOSED PB illuminates.**		
			JPM complete once 21WR62 is closed		
	CUE:	**JPM is Complete** **RECORD** the STOP TIME. **STOP TIME**:_____	**Terminate the JPM when the operator CLOSES 21WR62.**		

SYSTEM: **Heat Removal From Reactor Core (SF 4) – Reactor Coolant Pump System**

TASK: **Respond to low standpipe level on RCP IAW S2.OP-AR.ZZ-0011**

SYSTEM	21 (22, 23, 24) REACTOR COOLANT PUMP Alarms	STANDPIPE LEVEL LO
	BEZEL 2-5 (2-6, 2-7, 2-8)	
BEZEL	N/A	

	21 RCP	22 RCP	23 RCP	24 RCP
DEVICES:	2LC-487	2LC-489	2LC-491	2LC-493
SETPOINT:	1 ft below normal			

1.0 **CAUSE(S)**:

1.1 Low level in the affected RCP standpipe (likely causes are listed below):

- Low seal flow across #2 seal.
- Excessive flow through #3 seal.

2.0 **AUTOMATIC ACTIONS**:

2.1 None

3.0 **OPERATOR ACTIONS**:

NOTE

Since standpipe level establishes the head across #3 seal, low level could result in #3 seal running dry.

3.1 IF AT ANY TIME, standpipe low level occurs
AND Seal water leakoff flow alarm occur together,
THEN **GO TO** S2.OP-AB.RCP-0001(Q), Reactor Coolant Pump Abnormality.

3.2 **PERFORM** the following to fill the affected standpipe:

A. IF required, **START** 21 or 22 Primary Water Pump.

(Continued)

3.2 (continued)

B. **OPEN** 2WR80, PW TO CONTMT STOP V.

C. IF desired, **ADJUST** applicable WR63 valve to maintain standpipe level.

D. **OPEN** the Standpipe Supply Valve for the affected RCP:

21 RCP	22 RCP	23 RCP	24 RCP
21WR62	22WR62	23WR62	24WR62

E. **LOG** the RCP Standpipe fill IAW SH.OP-DL.ZZ-0027(Q), Temporary Reading Log and Log Supplement.

3.3 WHEN low level alarm clears and hi level alarm comes in, THEN ;

A. **STOP** the Primary Water Pump.

B. **CLOSE** 2WR80, PW TO CONTMT STOP V.

C. **CLOSE** the previously opened STANDPIPE SUPPLY VALVE.

3.4 **MONITOR** the following RCP seal indications for excessive #3 seal leakage:

Indication	21 RCP	22 RCP	23 RCP	24 RCP
Seal water flow	2FI-144	2FI-143	2FI-116	2FI-115
Seal Water Outlet Temperature	2TI-148	2TI-146	2TI-132	2TI-125
#1 Seal Differential Pressure	2PI-188	2PI-187	2PI-186	2PI-183
Seal Leakoff Flow	2FA-5241	2FA-5242	2FA-5243	2FA-5244

3.5 IF excessive #3 seal leakage is suspected, THEN:

A. **INITIATE** S2.OP-ST.RC-0008(Q), Reactor Coolant System Water Inventory Balance.

B. **NOTIFY** the CRS/SM.

References: Dwg. 211539, 211540, 211542, 211543, 211545, 211546, 211548, 211549

JPM: 20-01 NRC Sim-d

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.

____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. __63___ Date __10-14-21_____

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

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

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

SME/Instructor:___R. Chan_____ Date: __10-14-21_____

SME/Instructor:___P. Stokes_____ Date: __10-14-21_____

SME/Instructor:___J. Militti_____ Date: ___10-121_____

INITIAL CONDITIONS:

- Unit 2 is 100% power.
- No major equipment is out of service and no Tech Specs are active.

INITIATING CUE:

- You are the Reactor Operator.
- Respond to all alarms and indications.
- Your evaluator will respond to all alarms not related to your task.