OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

STATION: SALEM

SYSTEM: Control Rod Drive System (CRDS)

TASK: Respond to Loss of All Control Rod Drive Vent Fans IAW S2.OP-AR.ZZ-0011

TASK NUMBER: 0220040101

JPM NUMBER: 16-01 NRC Sim-a

ALTERNATE PATH: [X]

K/A NUMBER: 001 A2.01

IMPORTANCE FACTOR: RO 3.1 SRO 3.7

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

EVALUATION SETTING/METHOD: Simulator / Perform

REFERENCES: S2.OP-AR.ZZ-0011, Rev 60 (checked 9-10-17)
S2.OP-SO.CBV-0001, Rev 33

TOOLS AND EQUIPMENT: None

VALIDATED JPM COMPLETION TIME: R 9-18-17 5 / min

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: N/A

Developed By: R. Chan Instructor Rudolph Chan **Date: 9-15-17**

Validated By: R. Evans SME or Instructor **Date:** 9/18/17

Approved By: Frank Rossetti Training Department **Date:** 11/13/17

Approved By: Operations Department MYERS **Date:** 11/13/17

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: 16-01 NRC Sim-a

Rev #	Date	Description	Validation Required
00	9-15-17	Added revision history and simulator setup pages. Editorial comments from IP 71111.11 FASA.	Yes

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

SIMULATOR SETUP INSTRUCTIONS

SYSTEM: Control Rod Drive System (CRDS)

TASK: Respond to Loss of All Control Rod Drive Vent Fans IAW S2.OP-AR.ZZ-0011

TASK NUMBER: 0220040101

SIMULATOR IC: IC-240

MALFUNCTIONS / REMOTES:

1. Reset the simulator to IC-240
2. Ensure 21 and 22 CRDM vent Fans are running.
3. Verify the following events on the Summary/ET Trigger Lists:
   - **RT-1 MALF: RD0316A CRD Vent Fan damper fails close.**
   - **ET-1 KAB05PBR: Inserts MALF VC0316B: 22 CRD Fan Trip with 01:10 second delay; MALF VC0316C: 23 CRD Fan Trip with 01:00 second delay.**
4. These malfunctions will simulate the running CRDM Vent Fan dampers closing resulting in air flow lo console alarm. IAW ARP, the standby fan will be started. Seconds later the standby fan trips followed by the last remaining running fan (no CRDM Fans running). IAW ARP, the operator is required to TRIP the Reactor.
5. This completes the setup for this JPM.

OVERRIDES: None

SPECIAL INSTRUCTIONS:

- **None.**

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____

DATE: _____

SYSTEM: Control Rod Drive System (CRDS)

TASK: Respond to Loss of All Control Rod Drive Vent Fans IAW S2.OP-AR.ZZ-0011.

TASK NUMBER: 0220040101

INITIAL CONDITIONS:

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

INITIATING CUE:

- You are the Reactor Operator.
- Respond to all alarms and indications.

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. **STARTS Standby CRDM Vent Fan IAW ARP based on abnormal console indications.**
2. **TRIPs the Reactor IAW ARP based on NO CRDM Vent Fans running.**

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SYSTEM: Control Rod Drive System (CRDS)

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* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	CUE	Fill in the JPM Start Time when the student acknowledges the Initiating Cue. **START TIME:**_____			
	CUE	**Simulator Operator**: **INSERT** RT-1 when the operator assumes the watch. **MALF: RD0361A 21 CRD Vent Fan Damper Failure**			
		The following alarm and indication will come in following RT-1 for 21 CRDM Vent Fan: ▪ AIR FLOW LO ▪ SEQUENCE COMPLETE bezel extinguished (NOT Illuminated)	Operator reports receipt of unexpected console alarm on 21 CRD Vent Fan for AIR FLOW LO and the SEQUENCE COMPLETE bezel extinguished. Operator refers to 2CC1 ARP. **Cue**: IF operator reports to you as CRS the following alarms AND is waiting for direction; **THEN state**: CRS directs you to respond to alarms and indications IAW applicable Alarm Response Procedures.		
	CUE	The following steps are from Alarm Response Procedure (ARP) S2.OP-AR.ZZ-0011, CONTROL CONSOLE 2CC1	**Evaluator's Note**: The operator may also refer to S2.OP-SO.CBV-0001, Containment Ventilation Operation, section 5.4 for starting/stopping CRDM Vent Fans. However, this procedure provides NO direction for a loss of all CRDM Vent Fans.		

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

SYSTEM: Control Rod Drive System (CRDS)

TASK: Respond to Loss of All Control Rod Drive Vent Fans 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)
	2CC1 ARP pg 13	CONTAINMENT VENTILATION SYSTEM Rod Drive Vent Fans **AIR FLOW LO**	Operator responds to console alarm for AIR FLOW LO and refers to 2CC1 ARP S2.OP-AR.ZZ-0011 page 13.		
	1.0	**CAUSE(S):** Fan discharge pressure < 2.0 INWC.	Operator reads the step and continues on.		
	2.0	**AUTOMATIC ACTIONS**: None	Operator reads the step and continues on.		
	3.0	**OPERATOR ACTIONS:**			
	NOTE	Low flow alarm may result from erratic flow during fan start. Illumination of control console SEQUENCE COMPLETE light indicates flow through fan outlet damper. Alarm should clear when fan is up to speed.	Operator reads the Note and continues on.		
	CAUTION	Operating with less than two Rod Drive Vent Fans in service could degrade the Rod Drive Coils. An Operability Determination should be performed when operating with one Rod Drive Vent Fan. Operating with more than two Rod Drive Vent Fans in service could damage the fan blades.	Operator reads the Caution and determines this is not applicable at this time, unless the standby fan does not start. Operator continues on. **Cue:** IF operator informs CRS of Caution, **THEN state**: the CRS will review this Caution for potential Operability Determination requirements.		

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* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	3.1	IF Rod Drive Vent Fan has just been started, AND SEQUENCE COMPLETE indication is illuminated, THEN **MONITOR** both running Rod Drive Hdr Outlet temperatures. Fan Comp Pt / Alrm Description 21 T2602A / 160°F 21 Rod Drive Hdr Outlet Temp 22 T2603A / 160°F 22 Rod Drive Hdr Outlet Temp 23 T2604A / 160°F 23 Rod Drive Hdr Outlet Temp	Operator reads the step and determines that a Vent Fan has NOT been started. Marks step N/A and continues on.		
*	3.2	IF SEQUENCE COMPLETE indication for affected fan is extinguished THEN immediately **SWAP** to the standby Rod Drive Vent Fan, (**Evaluator's Note**: Steps A-E are below)	**Operator determines these steps are applicable based on the SEQUENCE COMPLETE indication bezel is extinguished.** Operator continues on and PERFORMs the applicable steps. **Evaluator's Note**: It is acceptable for the operator to Stop and Start CRD Vent Fans using S2.OP-SO.CBV-0001.		
*	3.2.A	**PRESS** STOP for affected Rod Drive Vent Fan	**Operator depresses STOP PB for 21 Fan and verifies STOP bezel illuminates Green.**		
*	3.2.B	**PRESS** START for standby Rod Drive Vent Fan	**Operator depresses START PB for standby vent fan and verifies START bezel illuminates RED. Operator reports SEQUENCE COMPLETE bezel is illuminated and AIR FLOW LO is extinguished as expected.**		

OPERATOR TRAINING PROGRAM
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SYSTEM: Control Rod Drive System (CRDS)

TASK: Respond to Loss of All Control Rod Drive Vent Fans 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)
	CUE	**Simulator Operator**: ENSURE **ET-1 is TRUE** when the standby fan is started. This will INSERT **VC0316C and VC0316B** to Trip the two (2) running Vent Fans after a time delay. **MALF VC0316C 23 CRD Fan Trip** **Delay = 01:00 seconds** **MALF VC0316B 22 CRD Fan Trip** **Delay = 01:10 seconds.**			
	3.2.C	IF the standby fan can NOT be started, AND at least one Rod Drive Vent Fan is in operation, THEN **PERFORM** an Operability Determination to determine continued plant operation [80083830].	Operator marks step as N/A based on standby fan starting.		
		ALTERNATE PATH STARTS HERE:			
*	3.2.D	IF there are NO Rod Drive Vent Fans in operation, THEN:	Operator initially marks this step as N/A based on standby fan starting. This step will become applicable when the two (2) running vent fans trip shortly after.		
*		1. **TRIP** the Reactor	**Operator TRIPs the Reactor when NO Vent Fans are in operation.**		
		2. **GO TO** 2-EOP-TRIP-1, Reactor Trip or Safety Injection	**Terminate the JPM when Rx is Tripped** **Evaluator's Note:** Performing EOP-TRIP-1 immediate actions is not required to complete this JPM.		

OPERATOR TRAINING PROGRAM
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SYSTEM: Control Rod Drive System (CRDS)

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* #	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.E	IF at least one Rod Drive Vent Fan is in operation, THEN **INITIATE** a NOTF to determine and correct the cause of the low flow.	Operator determines this step is N/A and continues on.		
	3.3	**SEND** an operator to check the main and backup breakers closed for the affected fan.	**Cue:** CRS will dispatch an operator to check the breaker positions for the main and backup breakers for 21 CRD Vent Fan.		
	NOTE	Main breakers are on 84', 460/230V Switchgear Room	Operator reads the Note and continues on.		
	3.3.A	IF a breaker is found tripped, THEN **INFORM** the Unit 2 Control Room. 21 Fan Main Bkr 2EX1AX5X Backup Bkr 2EX1AX5X-1	Operator awaits report from field operator and continues on.		
	3.3.B	**INITIATE** a NOTF to determine and correct cause of the breaker trip.	Operator awaits report from field operator and continues on.		
	3.4	**MONITOR** running Rod Drive Hdr Outlet temperature(s). Fan Comp Pt / Alrm Description 21 T2602A / 160°F 21 Rod Drive Hdr Outlet Temp 22 T2603A / 160°F 22 Rod Drive Hdr Outlet Temp 23 T2604A / 160°F 23 Rod Drive Hdr Outlet Temp	Operator monitors running Vent Fan Outlet temperatures on the P250 computer.		
	3.5	**INITIATE** a NOTF to determine and correct cause of the of the low flow alarm	Operator informs CRS to initiate NOTF. **Cue:** CRS will initiate the notification.		

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SYSTEM: Control Rod Drive System (CRDS)

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* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	CUE:	JPM is complete when the task is complete OR at the direction from the Lead Evaluator. **RECORD** the STOP TIME. **STOP TIME:**_____	**Terminate the JPM when the operator TRIPs the Reactor.** **Evaluator's Note:** Operator performing immediate actions of EOP-TRIP-1 is not required for this task.		

OPERATIONS DEPARTMENT
JOB PERFORMANCE MEASURE

TQ-AA-106-0303

JPM: 16-01 NRC Sim-a

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. 60A Date 9/18/17

✓ 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.

N/A 11. When JPM is revalidated, SME or Instructor sign and date JPM cover page.

SME/Instructor: Frank Rossetti Rossetti Date: 9/18/17

SME/Instructor: R. Evans Date: 9/18/17

SME/Instructor: _____ Date: _____

INITIAL CONDITIONS:

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

INITIATING CUE:

- You are the Reactor Operator.
- Respond to all alarms and indications.