OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

STATION: SALEM

SYSTEM: Instrumentation (SF 7) – Reactor Protection System

TASK: Startup and parallel a RDMG set

TASK NUMBER: N0015010104

JPM NUMBER: 17-01 NRC IP-j

ALTERNATE PATH: [ ] **K/A NUMBER:** 012 A4.07

IMPORTANCE FACTOR: 3.9 (RO) 3.9 (SRO)

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

EVALUATION SETTING/METHOD: In-Plant / Simulate

REFERENCES: S1.OP-SO.RCS-0001, Rev. 32 (checked 8-23-18)
OTSC No. 32A

TOOLS AND EQUIPMENT: None

VALIDATED JPM COMPLETION TIME: 15 min

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: N/A

Developed By: R. Chan Rudolph Chan **Date:** 8-23-18
Instructor

Validated By: Harris / Bates **Date:** 4-10-18
SME or Instructor

Approved By: ~~Marshall~~ McHugh **Date:** ~~8-16-18~~ 10/30/18 D 10/30/18
Training Department

Approved By: Myers **Date:** 10/23/18
~~Operations Department~~

ACTUAL JPM COMPLETION TIME:

ACTUAL TIME CRITICAL COMPLETION TIME:

PERFORMED BY:

GRADE: [ ] **SAT** [ ] **UNSAT**

REASON, IF UNSATISFACTORY:

EVALUATOR'S SIGNATURE: **DATE:**

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INITIAL CONDITIONS:

- Unit 1 is operating at 75% power.
- 11 Rod Drive MG (RDMG) set tripped 3 days ago.
- Maintenance has completed repairs and is ready to start.

INITIATING CUE:

- Start up 11 RDMG set and parallel it to 12 RDMG set IAW S1.OP-SO.RCS-0001, section 5.4.
- Maintenance personnel are standing by to take the required voltage readings.

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. **Simulate starting and paralleling 11 RDMG set with 12 RDMG set IAW approved procedures.**

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*	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT Evaluation)
		Provide marked up copy of S1.OP-SO.RCS-0001.	Reviews P&Ls and Prequisites. Enters the proper section of the procedure. (5.4)		
	CUE:	Fill in the JPM Start Time when the student acknowledges the Initiating Cue. **START TIME:**_____			
	5.4.1	**ENSURE** the following: A. A AND B REACTOR TRIP BREAKERS are CLOSED B. Running Rod Drive Motor Generator Set GENERATOR LINE VOLTS is 260V (247V - 273V) AND GENERATOR LINE AMPS is ~80 DC AMPS.	Locates A AND B REACTOR TRIP BREAKERS and verifies closed. **CUE**: RTB's are closed Locates 12 Rod Drive Motor Generator Set GENERATOR LINE VOLT AND GENERATOR LINE AMPS meters and checks readings. **CUE**: 12 RDMG set volts is reading 260V and Generator Line Amps is ~ 80 DC amps.		

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	5.4.2	**ALIGN** MG Set Controls for MG Set to be started IAW Attachment 1.	Using attachment 1, determines 11 MG Set controls are aligned correctly **CUE the following for each component:** ▪ Voltmeter selector switch is on 'A-B' position ▪ Voltage adjust is in 'Vertical' position ▪ Ammeter selector switch is in 'A' position ▪ Motor Breaker Control Switch target is 'GREEN' ▪ Motor Breaker is 'OPEN'. ▪ Synchronize switch is in 'OFF' position ▪ Generator Breaker Control Switch target is 'GREEN'. ▪ Generator Breaker is 'OPEN'.		
*	5.4.3	**CLOSE** MOTOR Breaker AND **ALLOW** at least 20 seconds for MG Set to reach rated speed.	**Simulates rotating motor breaker control switch and waits at least 20 seconds before proceeding.** **CUE**: You hear 11 MG set motor breaker close.		

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*	5.4.4	**PRESS** GEN FIELD FLASH pushbutton until Generator voltage stops rising (GENERATOR LINE VOLTS should indicate ~260V).	**Simulates pressing GEN FIELD FLASH pushbutton until Generator voltage stops rising.** **CUE:** Generator Lines Volts indicates 260 Volts.		
	5.4.5	**CHECK** VOLTAGE ADJUST range of adjustment as follows:			
	5.4.5A	**ADJUST** VOLTAGE ADJUST full counterclockwise to LOW. (GENERATOR LINE VOLTS meter should indicate ~220V.)	Simulates adjusting VOLTAGE ADJUST full counterclockwise to LOW. **CUE**: Generator Line Volts is 220 volts.		
	5.4.5.B	**ADJUST** VOLTAGE ADJUST full clockwise to HIGH. (GENERATOR LINE VOLTS meter should indicate ~300V)	Simulates adjusting VOLTAGE ADJUST full clockwise to HIGH. **CUE**: Generator Line Volts is 295 volts.		
	5.4.5.C	**ADJUST** VOLTAGE ADJUST until GENERATOR LINE VOLTS meter indicates ~260V.	Simulates adjusting VOLTAGE ADJUST (counterclockwise) until GENERATOR LINE VOLTS meter indicates ~260V. **CUE**: Generator Line Volts is 260 volts		
	NOTE	DMM (OR equivalent, set to voltage) voltage readings will be less (by ≈ ½) than installed voltmeter readings.	Operator reads the Note and continues		

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	5.4.5.D	Direct Maintenance to **OBTAIN** voltage reading on Running MG Set using a DMM OR equivalent, set to voltage, at back of installed voltmeter.	Directs Maintenance to Perform IV and **OBTAIN** voltage reading on Running MG Set using a DMM at back of installed voltmeter. **CUE**: IV is completed SAT AND Maintenance reports voltage reading on Running MG Set is 130 V.		
	5.4.5.E	Direct Maintenance to **MONITOR** voltage reading on In-coming MG Set using a DMM OR equivalent, set to voltage, at back of installed voltmeter.	Directs Maintenance to Perform IV and monitor voltage reading on In-coming MG Set using a DMM at back of installed voltmeter. **CUE**: IV is completed SAT AND Maintenance reports voltage reading on In-coming MG Set is 129 V.		
*	5.4.5.F	**ADJUST** the VOLTAGE ADJUST until indicated voltage on DMM OR equivalent, set to voltage, is 0-2.5 volts higher than the reading obtained in Step 5.4.5.D.	**Simulates adjusting the VOLTAGE ADJUST (clockwise to raise voltage) until indicated voltage on DMM is 0-2.5 volts higher than the reading obtained in Step 5.4.5.D (Running MG Set)** **CUE:** Maintenance reports voltage reading on In-coming MG Set is 130.25 V.		

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	5.4.5.G	Direct Maintenance to **REMOVE** DMM OR equivalent, set to voltage, AND **CLOSE** panel doors.	Directs Maintenance to remove DMM AND close panel doors. **CUE:** Maintenance has removed DMM AND closed panel doors.		
	CAUTION	**Do NOT attempt to manually close generator output breaker. Manually closing generator output breaker could result in both MG Sets tripping. If the MG Sets are not closely synchronized, automatic breaker closure could take as long as 60 seconds**	Operator reads the CAUTION is proceeds on.		
	NOTE	A single handle is shared between both MG set SYNCHRONIZE switches. The handle can only be removed when the switch is in the OFF position. The Generator Pistol Grip indication will remain GREEN when the Generator Breaker auto closes. This indicates a neutral position and is expected since the Pistol Grip has not been physically turned to the CLOSED position.	Operator reads the Note and proceeds on.		

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*	5.4.6	**PLACE** MG Set SYNCHRONIZE Switch to ON, AND **OBSERVE** following: • GENERATOR Breaker automatically closes • Load is divided equally between MG Sets (~40 DC Amps each)	**IF necessary; Simulates moving the Synchronize Switch from 12 MG set and inserting into 11 MG set and places it in ON.** **CUE**: 11 MG set generator breaker is closed and load stabilizes at 40 amps on each generator.		
	5.4.7	**PLACE** MG Set SYNCHRONIZE Switch to OFF.	Simulates placing 11 MG Set SYNCHRONIZE Switch to OFF. **JPM Complete.**		
	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 5.4.7.**		

TQ-AA-106-0303
Revision 4

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.

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

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

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

R 4. Initial setup conditions are identified.

R 5. Initiating and terminating Cues are properly identified.

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

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

R 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure: Procedure Rev. 32A Date 8-23-18

* NA 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 Rudolf Chan Date: 8-23-18

SME/Instructor: _____ Date: _____

SME/Instructor: _____ Date: _____

* Previously validated during 2018 Annual exam development. See 2018 Annual IP-12 for validation documentation.

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