

PSEG Nuclear LLC

Job Performance Measure

START UP AND PARALLEL A ROD DRIVE M-G SET

JPM Number: 21-01 NRC IP-j

Revision Number: 0

Date: 07/26/2022

Developed By:	<u>R. Chan</u> Instructor	Date:	<u>7/26/22</u>
Validated By:	<u>Shetrone/Militti/Westlake</u> SME or Instructor	Date:	<u>8/18/22</u>
Reviewed By:	<u>Winkelspecht</u> Operations Representative	Date:	<u>11/29/22</u>
Approved By:	<u>Wadusky</u> Training Department (Print/Sign)	Date:	<u>11/29/22</u>

REVISION RECORD (Summary)

Revision Number	Date	Reason
00	7/26/22	Converted to new JPM template.

SIMULATOR SETUP INSTUCTIONS

1. None, this is an In-plant JPM.

SPECIAL INSTRUCTIONS

1. Marked up copies of S1.OP-SO.RCS-0001.
2. This JPM is located in the 84 ft. Unit 1 Switchgear Room (No RCA entry).

INITIAL CONDITIONS

- Salem Unit 1 is at 75% power.
- 12 Rod Drive M-G set is in service.
- 11 Rod Drive M-G Set tripped 3 days ago.
- Maintenance has completed repairs and is requesting 11 M-G set be placed in service.

INITIATING CUE

The CRS directs you to place 11 Rod Drive M-G set in service and parallel with 12 M-G set using section 4.4 of S1.OP-SO.RCS-0001, Rod Control System Operation.

TASK STANDARD:

The task is satisfactorily met when the applicant has started and paralleled 11 Rod Drive M-G set IAW S1.OP-SO-RCS-0001 section 4.4.

Information for Evaluators Use:

UNSAT requires written comments on the respective step.

(*) Denotes critical steps

If Time Critical, estimated time is the Time Critical time.

The comment section should be used to document the reason that a step is marked as unsatisfactory and to document unsatisfactory performance relating to management expectations.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The time clock starts when the candidate acknowledges the initiating cue.

ANSWER KEY (optional):

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RECORD JPM Start Time: _____

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
N/A		RECORD the JPM Start Time when the operator acknowledges READY TO START JPM.		N/A

Cue #1: Provide candidate MARKED UP copy of S1.OP-SO-RCS-0001.

Cue #2: READ TO APPLICANT: No plant controls or equipment are to be operated during the performance of this JPM. All actions taken by the examinee should be clearly demonstrated and verbalized to the evaluator.

Examiners Note: The candidate may wish to review all P&Ls prior to start.

Comments: N/A

4.4.1		<p>ENSURE the following:</p> <ol style="list-style-type: none"> 1. A <u>AND</u> B REACTOR TRIP BREAKERS are CLOSED. 2. Running Rod Drive Motor Generator Set GENERATOR LINE VOLTS is 260V (247V - 273V) AND GENERATOR LINE AMPS is ~80 DC AMPS. 	<p>Operator locates A AND B REACTOR TRIP BREAKERS and verifies the CLOSED indicator on each breaker.</p> <p>Operator locates 12 Rod Drive Motor Generator Set GENERATOR LINE VOLT AND GENERATOR LINE AMPS meters and check readings.</p>	
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Cue #1: A and B Reactor Trip Breakers indicate CLOSED.

Cue #2: 12 M-G set volts is reading 260V and Generator Line Amps is 80 DC amps.

Examiners Note: 11 and 12 Rod Drive M-G sets are located in the 84 ft. Switchgear Room.

Comments:

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
4.4.2		ALIGN MG Set Controls for MG Set to be started IAW Attachment 1.	Operator aligns M-G set controls per Attachment 1.	

Cue:

Cue the following for each component alignment when performed:

- 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'.

Examiners Note: None

Comments:

4.4.3	*	CLOSE MOTOR Breaker <u>AND ALLOW</u> at least 20 seconds for MG Set to reach rated speed.	Operator simulates closing 11 M-G set breaker by rotating the MOTOR Breaker switch to CLOSE.	
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Cue: 11 M-G set MOTOR Breaker is CLOSED.

Examiners Note: None

Comments:

4.4.4	*	PRESS AND HOLD GEN FIELD FLASH pushbutton <u>UNTIL</u> Generator voltage stops rising (GENERATOR LINE VOLTS should indicate ~260V).	Operator simulates pressing <u>and</u> holding the GEN FIELD FLASH pushbutton until Generator voltage stops rising.	
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Cue: Generator Lines Volts indicates 260 Volts

Examiners Note: None

Comments:

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
4.4.5		CHECK VOLTAGE ADJUST range of adjustment as follows:		
<p>Cue: None</p> <p>Examiners Note: None</p> <p><u>Comments:</u></p>				
4.4.5.1		ADJUST VOLTAGE ADJUST full counterclockwise to LOW. (GENERATOR LINE VOLTS meter should indicate ~220V.)	Operator simulates adjusting VOLTAGE ADJUST full counterclockwise to LOW	
<p>Cue: Generator Line Volts is 220 volts</p> <p>Examiners Note: None</p> <p><u>Comments:</u></p>				
4.4.5.2		ADJUST VOLTAGE ADJUST full clockwise to HIGH. (GENERATOR LINE VOLTS meter should indicate ~300V)	Operator simulates adjusting VOLTAGE ADJUST full clockwise to HIGH.	
<p>Cue: Generator Line Volts is 295 volts</p> <p>Examiners Note: None</p> <p><u>Comments:</u></p>				
4.4.5.3		ADJUST VOLTAGE ADJUST UNTIL GENERATOR LINE VOLTS meter indicates ~260V.	Operator simulates adjusting VOLTAGE ADJUST (counterclockwise) until GENERATOR LINE VOLTS meter indicates ~260V.	
<p>Cue: Generator Line Volts is 260 volts.</p> <p>Examiners Note: Adjusting VOLTAGE ADJUST in the COUNTERCLOCKWISE direction will LOWER the voltage.</p> <p><u>Comments:</u></p>				

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
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		<p align="center">NOTE</p> <p>DMM (<u>OR</u> equivalent, set to voltage) voltage readings will be less (by $\approx \frac{1}{2}$) than installed voltmeter readings.</p>		
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4.4.5.4		Direct Maintenance to obtain voltage reading on Running MG Set using a DMM (<u>OR</u> equivalent, set to voltage), at back of installed voltmeter.	Operator directs Maintenance to obtain voltage reading on Running MG Set using a DMM at back of installed voltmeter.	
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Cue: Maintenance reports voltage reading on Running MG Set is 130 V.

Examiners Note: None

Comments:

4.4.5.5		Direct Maintenance to monitor voltage reading on In-coming MG Set using a DMM (<u>OR</u> equivalent, set to voltage), at back of installed voltmeter.	Operator directs Maintenance to monitor voltage reading on In-coming MG Set using a DMM at back of installed voltmeter.	
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Cue: Maintenance is monitoring voltage reading on In-coming M-G set and reports value of 129.5V.

Examiners Note: None

Comments:

4.4.5.6	*	ADJUST the VOLTAGE ADJUST UNTIL indicated voltage on DMM (<u>OR</u> equivalent, set to voltage), is 0-2.5 volts higher than the reading obtained in Step 4.4.5.4.	Operator simulates adjusting the VOLTAGE ADJUST in the CLOCKWISE direction until indicated voltage on DMM is 0-2.5 volts higher than the reading obtained in step 4.4.5.4.	
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Cue: Maintenance reports voltage reading on In-coming MG Set is now **130.25 V**

Examiners Note: Voltage from step 4.4.5.4 was **130 V**. Range is 0-2.5V higher than 130 V.

IF OPERATOR DOES NOT ADJUST, THEN DIRECT OPERATOR TO ADJUST VOLTAGE ABOVE 130 V (0-2.5V). Adjusting the VOLTAGE ADJUST switch in the CLOCKWISE direction will raise voltage.

Comments:

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
4.4.5.7		DIRECT Maintenance to REMOVE DMM (OR equivalent, set to voltage), AND CLOSE panel doors.	Operator directs Maintenance to remove DMM AND close panel doors.	
<p>Cue: Maintenance has removed DMM AND closed panel doors.</p> <p>Examiners Note: None.</p> <p><u>Comments:</u></p>				
		<p style="text-align: center;">NOTE</p> <p>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.</p> <p>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.</p>		
		<p style="text-align: center;">CAUTION</p> <p>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</p>		

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
4.4.6	*	PLACE MG Set SYNCHRONIZE Switch to ON, AND OBSERVE following: <ul style="list-style-type: none"> • GENERATOR Breaker automatically closes • Load is divided equally between MG Sets (~40 DC Amps each) 	IF required, operator simulates moving the Synchronize Switch from 12 MG set and inserting into 11 MG set and places it in ON.	
<p>Cue: 11 MG set generator breaker is closed and load stabilizes at 40 amps on each generator.</p> <p>Examiners Note: None.</p> <p><u>Comments:</u></p>				
4.4.7		PLACE MG Set SYNCHRONIZE Switch to OFF.	Operator simulates rotating the SYNCHRONIZE Switch to the OFF position.	
<p>Cue: SYNCHRONIZE Switch is in the OFF position.</p> <p>Examiners Note: None.</p> <p><u>Comments:</u></p>				
Terminating Cue	JPM COMPLETE			

RECORD JPM Stop Time: _____

Operator's Name: _____ Job Title: RO _____ SRO _____

Facility: Salem JPM No.: 21-01 NRC IP-j Revision No.: 0

Task Title: Start Up and Parallel a Rod Drive M-G Set

Task No.: N0015010104 Source: Bank New _____ Mod _____

System: 012 Reactor Protection System (SF7)

K/A Number / Description: A4.07 Ability to manually operate and/or monitor in the control room: M/G set breakers

K/A Rating RO 3.8 SRO N/A

Task Applicability: SRO Only _____ RO/SRO _____ AO/RO/SRO Other _____

Time-Critical: Yes _____ No Alternate Path: Yes _____ No

Estimated Time to Complete: 15 Minutes

Actual Time Used: _____ Minutes

Method of Testing: Simulated Performance Actual Performance _____

Location: Classroom _____ Simulator _____ In-Plant RCA _____

Required Materials: S1.OP-SO.RCS-0001

Reference(s): S1.OP-SO.RCS-0001

EVALUATION SUMMARY:

Were all the Critical Elements (steps) performed satisfactorily? Yes _____ No _____

The operator's performance was evaluated against the standards contained in this JPM, and has been determined to be: Satisfactory _____ Unsatisfactory _____

Comments:

Evaluator's Name: _____

Evaluator's Signature: _____ Date: _____

STUDENT HANDOUT

INITIAL CONDITIONS

- Salem Unit 1 is at 75% power.
- 12 Rod Drive M-G set is in service.
- 11 Rod Drive M-G Set tripped 3 days ago.
- Maintenance has completed repairs and is requesting 11 M-G set be placed in service.

INITIATING CUE

The CRS directs you to place 11 Rod Drive M-G set in service and parallel with 12 M-G set using Section 4.4 of S1.OP-SO.RCS-0001, Rod Control System Operation.