

NRC SIM JPM S6

PERFORMANCE INFORMATION

NUCLEAR PLANT OPERATOR JOB PERFORMANCE MEASURE
(RO/SRO)**TITLE:** EMERGENCY DIESEL GENERATOR MONTHLY SURVEILLANCE
ATERNATE PATH**OPERATOR:** _____ **DATE:** _____**EVALUATOR:** _____ **EVALUATOR SIGNATURE:** _____

CRITICAL TIME FRAME:	Required Time (min):	N/A	Actual Time (min):	N/A
PERFORMANCE TIME:	Average Time (min):	15	Actual Time (min):	

JPM RESULTS*: SAT UNSAT NEEDS IMPROVEMENT
(Circle one) *Refer to Grading
Instructions at end of JPM**COMMENT SHEET ATTACHED:** Yes / No (circle one) (Required for UNSAT, Needs
Improvement or Follow-Up Questions)

SYNOPSIS: The reactor is at power with all house loads aligned to the Unit Aux Transformer. The monthly operability run of the "A" EDG is in progress. The "A" EDG has already been started and the Operator will commence the EDG run. As KW loading is increased, the EDG governor will become unstable as indicated by KW swings on the engine. The operator is expected to recognize indications of unstable operation and IAW the precautions of procedure 8.9.1 unload the engine and open its output breaker.

TASK STANDARD: The EDG surveillance will be performed IAW procedure 8.9.1. The diesel will be successfully paralleled to the bus and load increased. When the governor becomes unstable the operator will unload the engine and open its output breaker. There shall be no failure of critical elements.

EVALUATION METHOD:

☒ Perform
☐ Simulate

EVALUATION LOCATION:

☐ Plant
☒ Simulator
☐ Control Room

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Prepared: Mark Santiago**Date:** 02/08/14**Reviewed:** _____**Date:** _____**Approved:** _____
Superintendent, Operations Training (or
Designee)**Date:** _____**REVISION LOG**

Revision Number	Date	Description
0	10/15/07	New JPM to support the 2007 Annual Operating Exam
1	11/21/13	Updated JPM for 2014 NRC exam. Removed several non-critical steps to both shorten the JPM and which did not add any value to the evaluation of the operator.
2	02/08/14	Revised JPM following NRC Prep week.

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TASK Title:	<u>Task Number</u>	<u>K&A SYSTEM:</u>	<u>K&A RATING:</u>
RESPOND TO A DIESEL GENERATOR SPEED CONTROL GOVERNOR MALFUNCTION.	264-04-01-004	264000	A3.04 3.1/3.1

REFERENCES:

PNPS 8.9.1, EMERGENCY DIESEL GENERATOR SURVEILLANCE

SIMULATOR CONDITIONS:

1. Initialize the simulator to any IC where the UAT is supplying the 4160 VAC distribution system.
2. Place the DIESEL GEN A TEST switch to "TEST" on Panel C3.
3. Place the DIESEL GEN A GOVERNOR MODE SELECTOR switch to "DROOP" on Panel C3.
4. Start the EDG
5. Acknowledge the EDG trouble alarm
6. Create a lesson plan that will perform the following when KW load is > 1300 KW:
 - a) Using local controls Increase and then decrease KW loading so that ~ 300 KW oscillations are seen on the EDG.
 - b) Be prepared to execute the step repeatedly so that continuous oscillations are evident until the EDG output breaker is opened.
7. An IOS operator is standing by to support the operator in responding to the JPM.

GENERAL TOOLS AND EQUIPMENT:

1. Key for the "A" EDG Test Switch
2. Copy of 8.9.1, completed Section 7.0 Prerequisites and Attachment 1 up through section 1.3, Diesel Start Local. Section 1.3 is to be signed off in its entirety.

CRITICAL ELEMENTS:

Critical elements are shaded in gray within the body of this document.

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OPERATOR BRIEF:

1. State the following paragraph IF this is the first performance in this setting:
 - a) "All actions associated with this job performance measure are to be performed. You will be provided access to any tools or equipment you determine necessary to perform the task. When a second checker is called for, the evaluator will perform the role of second checker and will always be in agreement with your actions. Before you start, the evaluator will state the task conditions and answer any questions, then provide a cue to begin".
2. **Provide Candidate with Initial Conditions/Cue sheet of this JPM (Last page of this JPM).**
3. "The task conditions are as follows:
 - a) The UAT is supplying all the electrical buses
 - b) The monthly operability run of the "A" EDG is in progress IAW procedure 8.9.1
 - c) The diesel has been started and is running unloaded.
 - d) The procedure has been completed through Attachment 1, Section 1.3 – Diesel Start - Local.
 - e) The diesel is ready to be paralleled to the bus.
 - f) An operator is standing by in the diesel room.
 - g) No other testing or surveillances are currently being performed."
4. Allow the operator time to review the prepared copy of 8.9.1 prior to commencing and solicit and answer any questions the operator may have.

INITIATING CUE:

State the following:

"[State the operator's name], continue the operability run of the "A" EDG commencing with Attachment 1, Section 1.4, Diesel Start – Local, commencing at step [1].

This Task is not Time Critical

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PERFORMANCE:

Notes This task is covered in procedure 8.9.1.

All controls are located on panel C3.

All critical steps must be performed in order written unless otherwise noted

START TIME: _____

1.	Procedure Step:	[1] RECORD start initiation time on Attachment 1C. (a) RECORD diesel VOLTAGE and FREQUENCY as indicated on Panel C3.
	Standard	Records start time on Attachment 1C Records Voltage and frequency in the spaces provided on step [1].
	Cue	If asked, Cue that the EDG was started 5 minutes ago.
	Notes	
	Performance:	SATISFACTORY _____ UNSATISFACTORY _____
	Comments:	

2.	Procedure Step:	(b) Using the DIESEL GEN A VOLTAGE REGULATOR SETPOINT ADJUSTER, ADJUST the diesel generator output voltage to 4200 volts.
	Standard	Operator adjusts the output voltage to 4200 volts
	Cue	None
	Notes	
	Performance:	SATISFACTORY _____ UNSATISFACTORY _____
	Comments:	

3.	Procedure Step:	[2] VERIFY diesel generator voltage and speed vary on demand. (a) Using the DIESEL GEN A VOLTAGE REGULATOR SETPOINT ADJUSTER, RAISE the voltage regulator setpoint until the upper limit white light illuminates.

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	Standard	Voltage is raised until the upper limit white light illuminates (light above the switch)
	Cue	None
	Notes	
	Performance:	SATISFACTORY _____ UNSATISFACTORY _____
	Comments:	

4.	Procedure Step:	(b) LOWER the voltage regulator setpoint until diesel generator output voltage is approximately 4100 volts.
	Standard	Voltage is lowered to 4100 volts
	Cue	None
	Notes	
	Performance:	SATISFACTORY _____ UNSATISFACTORY _____
	Comments:	

5.	Procedure Step:	[3] SET the DIESEL GEN A TO BUS A5 synchronizing switch to "ON".
	Standard	Switch placed to on. Synchronizing meter will turn on.
	Cue	None
	Notes	
	Performance:	SATISFACTORY _____ UNSATISFACTORY _____
	Comments:	

6.	Procedure Step:	(a) SET incoming voltage slightly above the running voltage.
	Standard	Using incoming and running meters associated with the Synchronizing meter, incoming voltage is adjusted to be above running voltage
	Cue	None
	Notes	
	Performance:	SATISFACTORY _____ UNSATISFACTORY _____

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	Comments:	
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7.	Procedure Step:	(b) Using the DIESEL GEN A GOVERNOR SPEEDCONTROL, RAISE frequency approximately 1 Hz.
	Standard	Frequency is raised ~ 1 Hz as indicated on the frequency meter.
	Cue	None
	Notes	
	Performance:	SATISFACTORY _____ UNSATISFACTORY _____
	Comments:	

8.	Procedure Step:	(c) LOWER frequency by approximately 2 Hz.
	Standard	Frequency is lowered ~ 2 Hz as indicated on the frequency meter.
	Cue	None
	Notes	
	Performance:	SATISFACTORY _____ UNSATISFACTORY _____
	Comments:	

9.	Procedure Step:	<div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p style="text-align: center;"><u>NOTE</u></p> <p>If EDG "A" is to be paralleled with the Startup Transformer, then the degraded voltage protection for both A5 and A6 is to be declared inoperable in accordance with Technical Specifications Table 3.2.B.</p> </div>
	Standard	Operator reads the note and proceeds to the next step.
	Cue	None
	Notes	
	Performance:	SATISFACTORY _____ UNSATISFACTORY _____
	Comments:	

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10.	Procedure Step:	[4] PARALLEL Diesel Generator "A" to Bus A5. (a) ADJUST DIESEL GEN A GOVERNOR SPEED CONTROL to produce a slow rotation in the FAST direction.
	Standard	Synchronizing meter is rotating slowly in the fast direction.
	Cue	None
	Notes	
	Performance:	SATISFACTORY _____ UNSATISFACTORY _____
	Comments:	
11.	Procedure Step:	(b) SLIGHTLY BEFORE an "in phase" indication, CLOSE Breaker A509, DIESEL GEN A TO BUS A5.
	Standard	Breaker A509 is closed and remains closed.
	Cue	None
	Notes	
	Performance:	SATISFACTORY _____ UNSATISFACTORY _____
	Comments:	
12.	Procedure Step:	(c) IMMEDIATELY INCREASE load to 500kW (450 to 550kW) with the DIESEL GEN A GOVERNOR SPEED CONTROL.
	Standard	KW meter indicates ~ 500 KW
	Cue	None
	Notes	
	Performance:	SATISFACTORY _____ UNSATISFACTORY _____
	Comments:	
13.	Procedure Step:	[5] SET the DIESEL GEN A TO BUS A5 synchronizing switch to "OFF".
	Standard	Synchronizing meter de-energizes when switch is placed to OFF.
	Cue	None
	Notes	

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	Performance:	SATISFACTORY _____ UNSATISFACTORY _____
	Comments:	

14.	Procedure Step:	[6] INCREASE reactive load to 250kVAR (200 to 300kVAR) with the DIESEL GEN A VOLTAGE REGULATOR SETPOINT ADJUSTER. (a) RECORD time:
	Standard	KVAR meter indicates ~ 250 KVAR. Operator records time in the space provided
	Cue	None
	Notes	Recording the time is not a critical element of this critical step.
	Performance:	SATISFACTORY _____ UNSATISFACTORY _____
	Comments:	

15.	Procedure Step:	[7] AFTER the diesel has run for at least 8 minutes: (a) INCREASE load to 1000kW (950 to 1050kW) using the DIESEL GEN A GOVERNOR SPEED CONTROL.
	Standard	KW meter indicates ~ 1000 KW
	Cue	Cue the operator that eight minutes has elapsed.
	Notes	
	Performance:	SATISFACTORY _____ UNSATISFACTORY _____
	Comments:	

16.	Procedure Step:	(b) INCREASE reactive load to 500kVAR (450 to 550kVAR) using the DIESEL GEN A VOLTAGE REGULATOR SETPOINT ADJUSTER. (c) RECORD time:
	Standard	KVAR mater indicates ~ 500 KVAR. Operator records time in the space provided
	Cue	None

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	Notes	Recording the time is not a critical element of this critical step. KW oscillations will begin in the next step when KW loading exceeds 1300KW.
	Performance:	SATISFACTORY _____ UNSATISFACTORY _____
	Comments:	

17.	Procedure Step:	[8] AFTER the diesel has run for at least 8 minutes: (a) INCREASE load to 1800kW (1750 to 1850kW) using the DIESEL GEN A GOVERNOR SPEED CONTROL.
	Standard	Operator observes and reports KW oscillations (ALTERNATIVE PATH).
	Cue	Role Play as required as CRS and acknowledge the report.
	Notes	The operator may just respond to this indication. This step is to be evaluated based on the operator's actions and not solely on any single report. Precaution 10 of this procedure states: "The surveillance shall be aborted by immediately unloading the EDG and opening diesel generator Circuit Breaker A609 or A509 if any of the following parameters exist: (a) Oscillations in kVAR greater than 200 when at steady state. (b) Oscillations in kW greater than 200 when at steady state."
	Performance:	SATISFACTORY _____ UNSATISFACTORY _____
	Comments:	

NOT CRITICAL

18.	Procedure Step:	[9] Operator unloads the diesel
	Standard	Using the Diesel Generator, Governor Control switch, lowers the KW of the diesel.
	Cue	None
	Notes	
	Performance:	SATISFACTORY _____ UNSATISFACTORY _____
	Comments:	

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19.	Procedure Step:	[10] Operator opens the Diesel output breaker
	Standard	Breaker A509 is opened
	Cue	None
	Notes	
	Performance:	SATISFACTORY _____ UNSATISFACTORY _____
	Comments:	

Cue: This completes this JPM.

STOP TIME: _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2014 Systems - Control Room JPM S6

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS:

- The UAT is supplying all the electrical buses
- The monthly operability run of the "A" EDG is in progress IAW procedure 8.9.1
- The diesel has been started and is running unloaded.
- The procedure has been completed through Attachment 1, Section 1.3 – Diesel Start - Local.
- The diesel is ready to be paralleled to the bus.
- An operator is standing by in the diesel room.
- No other testing or surveillances are currently being performed.

INITIATING CUE:

Continue the operability run of the "A" EDG commencing with Attachment 1, Section 1.4, Diesel Start – Local, commencing at step [1]].

This Task is not Time Critical