

**ORDER**

DEPARTMENT OF TRANSPORTATION  
FEDERAL AVIATION ADMINISTRATION  
GREAT LAKES REGION

GL 6980.19

3/3/75

Replacement of Selenium Rectifiers in the Engine-Generator  
SUBJ: Transfer Circuitry

1. PURPOSE. This Order authorizes the replacement of selenium rectifiers with silicon rectifiers in the engine-generator circuitry for better reliability.
2. DISTRIBUTION. This Order is distributed to Section level and above in the Airway Facilities Division and to all Airway Facilities Field Offices.
3. REFERENCES. Instruction Manual issued for each respective engine-generator.
4. BACKGROUND. Deterioration of selenium rectifiers has caused numerous engine-generator transfer malfunctions and in several instances fires have been directly attributed to this cause. As the selenium rectifier ages, its forward resistance increases, reducing the voltage across the TR relay, causing it to operate sluggishly with ultimate failure.
5. APPLICATION. This modification applies to all engine generators having selenium diodes installed in their TR circuit.
6. MATERIAL REQUIRED. On most engine-generators only one silicon diode, IN 3487, NSN 5961-00953-4538, is required. With certain engine-generator plants, however, a higher rated capacitor rated at 15-16 mfd 450 WVDC and an additional 1000 ohm 3-5 watt variable type resistor also will be required. DO NOT USE A CAPACITOR WHOSE CASE IS CONNECTED TO A LEAD SINCE IT WILL BE INSTALLED ACROSS AN UNGROUNDED 208 VOLT SOURCE.
7. SOURCE OF MATERIAL. Obtain diode from facility stock or the FAA Depot. When necessary obtain capacitor and resistor from station stock or procure locally.

Distribution: RAF-4; FAF-O (Normal)

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8. SPECIAL TOOLS AND TEST EQUIPMENT REQUIRED. None.

9. SCHEDULE. To be performed by field maintenance personnel as soon as practicable, but not to exceed 60 days from date of this Order.

10. ESTIMATED TIME REQUIRED. 4 manhours.

11. DISPOSITION OF SURPLUS PARTS. None.

12. INSTALLATION PROCEDURES.

a. Lock out the engine-generator.

b. Remove a lead from the battery supply.

c. Isolate the engine-generator panelboard by the use of the bypass switch.

d. Replace the existing selenium diode with the silicon diode.

e. Return the engine-generator to its normal operating position and measure the voltage across the capacitor and relay coil in the TR circuit.

f. If the measured voltage is below the voltage rating of the capacitor and coil, modification is complete.

g. If the measured voltage is above their ratings, isolate the plant, remove the battery lead, and replace the capacitor with one having a higher voltage rating, and/or install the variable resistor in series with the relay coil. Adjust the resistor so that the voltage drop across the coil does not exceed its rating.

h. Replace the battery lead and return the engine to normal standby status.

13. TEST AFTER INSTALLATION. Test the engine-generator to determine that its transfer operation is satisfactory.

14. RESULTS AFTER INSTALLATION. Replacing the selenium diode with a silicon diode will provide better reliability to engine-generator plants.

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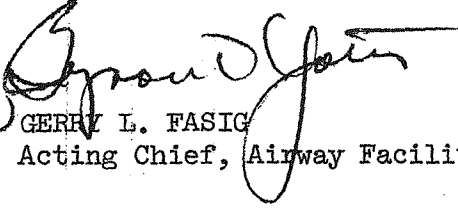
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15. CORRECTIONS TO INSTRUCTION MANUAL. Correct wiring diagram and parts list as required.
16. CORRECTIONS TO INSTALLATION DRAWINGS. None.

*for*    
 GERRY L. FASIG

Acting Chief, Airway Facilities Division, AGL-400