MULTIFREQUENCY CURRENT SUPPLY AND DISTRIBUTION CIRCUIT SD-95391-01 ALARM ROUTINE

1. GENERAL

1.01 This section outlines the procedure to be followed when responding to an alarm at the multifrequency pulsing supply equipment J98609 (SD-95391-01).

1.02 This section is reissued to expand procedure C, Alarm for Grounds on Output Leads, and to add procedure D, Alarm for Ground on Transfer Leads to Senders. The section title is changed to agree with the circuit title.

1.03 The alarms covered are:

1.04 Because of the importance of the equipment affected and the possibilities of causing delays on multifrequency pulsing circuits, these alarms should receive prompt attention and any trouble which causes the alarms should be cleared immediately.

2. METHOD

A. Switching Battery Alarm

2.01 If, in response to a major alarm, a B OFF (red) alarm lamp is lighted, it indicates failure of a fuse from battery A, B, C, or D or the opening of a circuit through relays TO1 and TO2, TO3 and TO4, TE1 and TE2, or TE3 and TE4.

2.02 Operate the B ALM key to silence the alarm. The operation of the key lights the B ALM lamp.

2.03 Observe the BO and BE relays. If the BO relay is operated, the trouble is in the circuit through the TO1 and TO2 relays or the circuit through the TO3 and TO4 relays. If the BE relay is operated the trouble is in the circuit through the TE1 and TE2 relays or the circuit through the TE3 and TE4 relays.

2.04 Observe the fuses in the circuit in trouble and if operated, the cause should be eliminated and the fuse replaced.

2.05 If the fuses are satisfactory, inspect the wiring to the relay windings and eliminate the cause of the trouble.

2.06 After the trouble has been cleared, restore the B ALM key to normal.

B. Plate Battery or Voltage Alarm

2.07 If, in response to a major alarm, a VO or VE (red) lamp is lighted, it indicates failure of either the 48V E or F battery, respectively, or the 130V plate battery, trouble with the F1 or F2 condensers or an abnormal change in output voltage of one or more oscillators.

2.08 If the LO, VO, and VE (red) lamps are all lighted at the same time, the trouble is on the line side of the odd transfer relays.

2.09 If the LE, VE, and VO (red) lamps are all lighted at the same time the trouble is on the line side of the even transfer relays.

2.10 If only the VO and TO or the VE and TE lamps are lighted, operate the SWO (switch odd) or SWE (switch even) key, respectively, to silence the alarm.

2.11 If the LO, VO, and VE lamps or the LE, VE, and VO lamps are lighted together, operate the CO ALM (cut-off alarm) key to silence the alarm.

2.12 Observe the voltmeter relays and if a relay is operated, the output voltage of one of the corresponding pair of oscillators is outside its limits. If no voltmeter relay is operated, observe the PL and PL1 relays. If the PL relay is released, the trouble is in the plate battery supply or in the E or F 48-volt battery supply or in the vacuum tube plate or cathode circuits. If the PL1 relay is operated, the trouble is in the F1 or F2 condenser or is caused by a ground in the cathode circuit.

2.13 When a trouble on the line side of the transfer relays has been cleared, momentarily operate the CO RLS (cut-off release) key and then restore the CO ALM key to normal.

Output Voltage

2.14 If the trouble is determined to be in the oscillator, adjust the voltage of the oscillator in trouble by changing the connection to taps on the L coil. If this does not correct the voltage, remove the vacuum tube and have it checked. If the tube is in proper condition, restore it to the circuit and replace the varistor unit.

> ***Note:*** A defective tube will usually give a low output voltage, while a defective or open circuited varistor will usually give a high voltage. Defects in the tuning inductance L and condenser A will usually cause a change in output frequency as well as amplitude.

2.15 After the voltage has been adjusted reset the voltmeter relay pointer and restore the SWO or SWE key to normal.

Plate Battery or Condensers

2.16 If the PL relay is released, observe the plate battery fuses and if operated, remove the cause and replace the fuse.

2.17 If the PL1 relay is operated, inspect the F1 and F2 condensers for a short circuit and inspect the cathode circuit for a trouble ground. Remove trouble found in wiring or replace the condensers.

2.18 After the trouble has been cleared, restore the SWO or SWE key to normal.

C. Alarm for Grounds on Output Leads

2.19 If, in response to a major alarm, a GO or GE (red) alarm lamp is lighted, it indicates a ground on one or more of the output leads from the odd or even oscillator, respectively. Operate the G ALM key. The operation of this key lights the G ALM (white) lamp, disconnects the major alarm signal and connects a buzzer which will be heard as long as the trouble is present or until the BUZ key is operated.

2.20 Operate the SWO key if the GO lamp is lighted and operate the SWE key if the GE lamp is lighted. If the GO or GE lamp remains lighted the trouble is on the supply circuit side of the transfer relays. If the GO or GE lamp is extinguished and the GO or GE lamp not lighted before, now lights, the trouble is on the switchboard or sender side of the transfer relays.

2.21 Restore the SWO and SWE key to normal.

2.22 ▶If the trouble is on the switchboard or sender side of the transfer relays, the following procedure may be employed to isolate a trouble ground on one of the tone distributing leads: Block relay CO operated to prevent a transfer from operation of the voltage alarm relays. The alarm may be silenced by operating the CO ALM key and CO lamp lights. Connect a voltmeter from −48 volts to 5T of the operated GE or GO relay. Insulate the break contacts of relays T01 to T03 or TE1 to TE3 one at a time until a large change in voltage occurs. This will identify the particular T0 through T10 or R0 through R10 lead which is grounded. A voltmeter check on the other side of the distributing resistors supplied by the particular T_ or R_ lead will be necessary to determine the particular connecting circuit in trouble. After the T_ or R_ lead in trouble has been identified, the voltage alarm relays must be reset, the CO relay unblocked and the CO ALM key restored to normal.◀

2.23 After the trouble has been cleared, restore the G ALM key to normal.

D. ▶Alarm for Ground on Transfer Leads to Senders

2.24 If, in response to a major alarm, a O123, O456 or E123 or E456 (red) lamp is lighted; it indicated a ground on any lead G1 to G6 or TR, the associated E or F relay will be operated to battery on one of the contact of keys 1-4, 2-5 or 3-6.

2.25 The operation of the E or F relay lights the associated lamp to indicate that the ground is on one of the three leads associated with that relay. Operation of relay E1 lights lamp O123 and indicates ground on leads G1, G2, G3, or TR; operation of relay F1 lights lamp O456 and indicates ground on leads G4, G5, G6, or TR to odd sender frames or sub-groups. The operation of relay E2 lights lamp E123 and indicates ground on leads G1, G2, G3, or TR; operation of relay F2 lights lamp E456 and indicates ground on leads G4, G5, G6, or TR to even sender frames or sub-groups.

2.26 The particular lead in trouble may be identified by operating key 1-4, 2-5, and 3-6 one at a time. The key operation which extinguishes the lamp is the number of the lead which is grounded; ie, if key 2-5 in operation extinguishes lamp E456, the lead in trouble is the even 5 lead.◀

3. REPORTS

3.01 The required report of these alarms should be entered on the proper form.