L4S CARRIER
OVERALL SYSTEM
OPERATING PROCEDURES

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1. GENERAL

1.01 This section explains procedures for manual operations performed at an L4S main station to accomplish two functions: line protection patching and monitoring oscillator control.

1.02 The jacks for line patching and the pushbuttons for monitoring oscillator control are mounted on line protection patch and monitoring oscillator control panel J68877EH (Fig. 1) in the control connecting bay.

2. LINE PATCHING

2.01 Line patching arrangements are shown in Fig. 2 and 3.

A. Transmit Line Patching

2.02 Signals on a regular transmit line are patched to the standby line as shown in Fig. 2.

(1) Connect patch cord A between the regular line TRMTG HYB OUT TRK jack and the standby line dual SP AMPL IN jack.

(2) Remove patch plug B between the standby line TRMTG HYB OUT TRK and SP AMPL IN jacks.

(3) Perform the reverse procedure to restore the regular line to service.

B. Receive Line Patching

2.03 Signals on the standby receive line are patched to the line connecting circuit for a regular receive line as shown in Fig. 3.

(1) Remove patch plug C between the standby line PIL HYB OUT and RCVG CONN IN jacks.

(2) Connect patch cord D between the standby line dual PIL HYB OUT jack and the regular line dual RCVG CONN IN jack. Patching a working line is not recommended unless absolutely necessary because a hit occurs during patching. In such cases, connect cord D and ***immediately*** remove patch plug E.

(3) Remove patch plug E between the regular line dual PIL HYB OUT and RCVG CONN IN jacks.

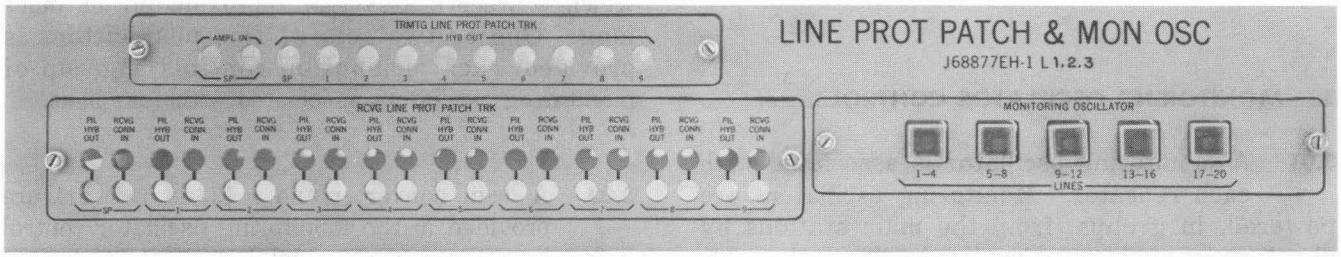

Fig. 1—Line Protection Patch and Monitoring Oscillator Control Panel J68877EH

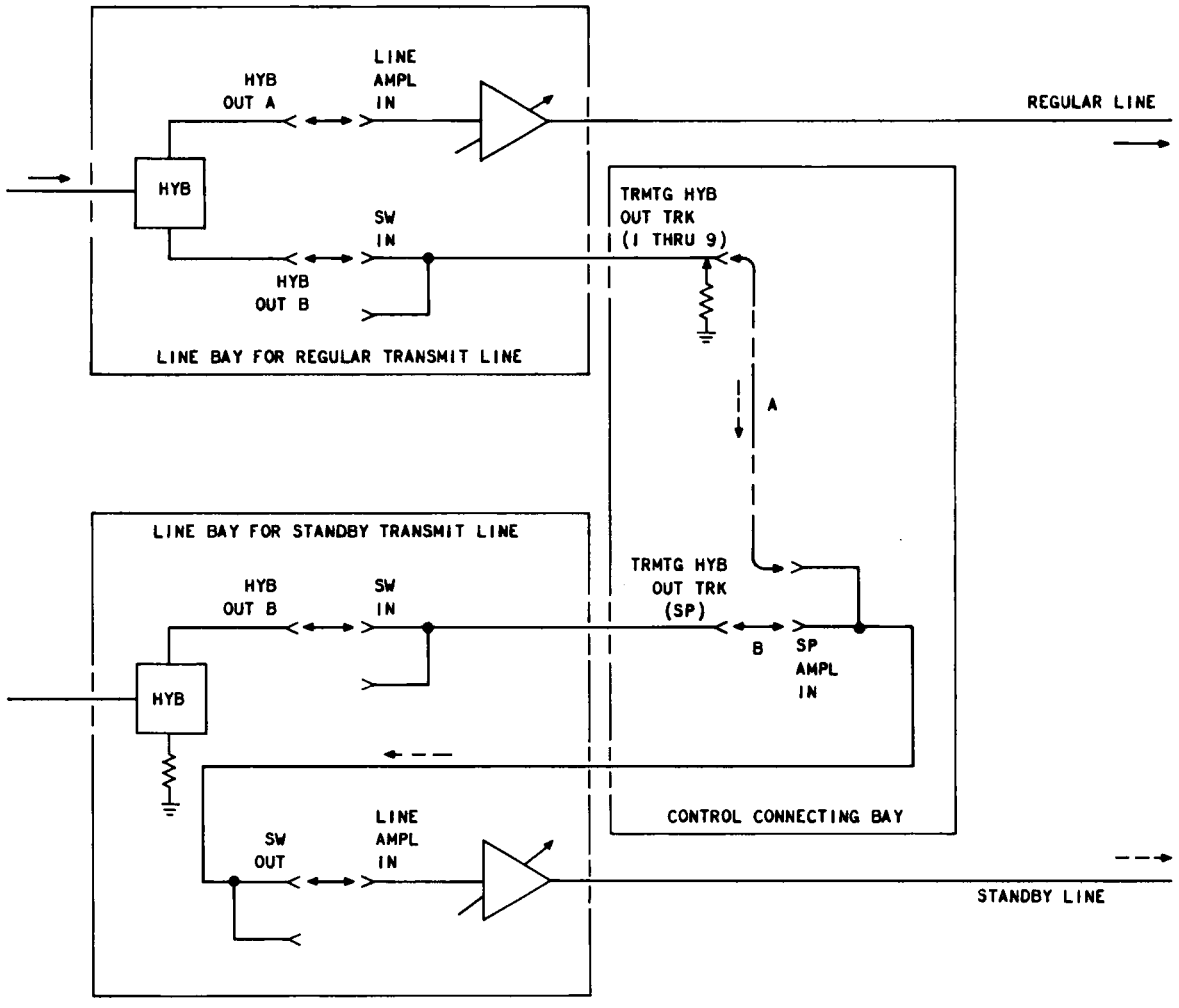

Fig. 2—Line Protection Patch for Transmit Line

(4) Perform the reverse procedure to restore the regular line to service. Replace patch plug E and ***immediately*** remove patch cord D from the RCVG CONN IN jack so the signals are double fed for a minimum time.

3. MONITORING OSCILLATOR CONTROL

3.01 A monitoring oscillator is associated with each repeater. Monitoring oscillators are powered, in groups, from the main stations by direct current sent over insulated pairs in the cable (Fig. 4). A group may contain up to 21 oscillators which operate at frequencies 3 kHz apart from 18.500 to 18.560 MHz.

3.02 Monitoring oscillator signals are applied to four lines at a time, two lines in each direction. One or two groups of monitoring oscillators is provided, depending on the length of the L4S system. There are 21 oscillator frequencies which will serve a system approximately 38 miles long. One or two sets of five pushbuttons is provided; each pushbutton controls a group of monitoring oscillators associated with four lines.

3.03 A dc-dc converter and a 4234A network are provided in the monitoring oscillator control network and converter panel ED-52247 at the top of a line bay. This panel is provided at the near main station and serves one monitoring oscillator group which applies signals to four lines. Power

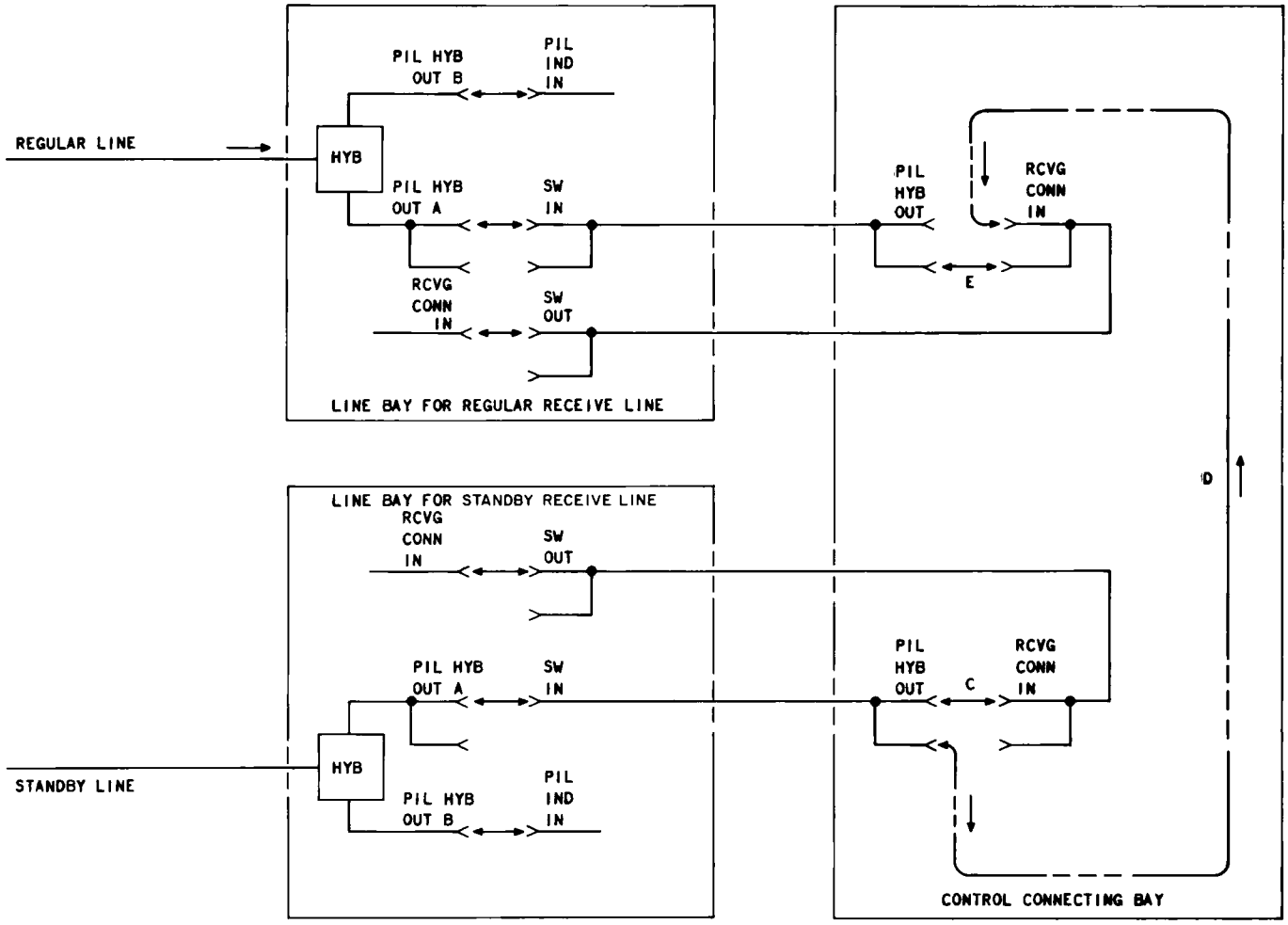

Fig. 3—Line Protection Patch for Receive Line

is applied to a group of monitoring oscillators as follows:

(a) At the ***near*** main station, the appropriate one of five pushbuttons in the control connecting bay is depressed to close the power loop to the associated group of monitoring oscillators

or

(b) At the ***far*** main station, the appropriate one of five pushbuttons in the control connecting bay is depressed to open the control pair to the 4234A network at the near main station. This network detects the open and closes the power loop to the associated group of monitoring oscillators.

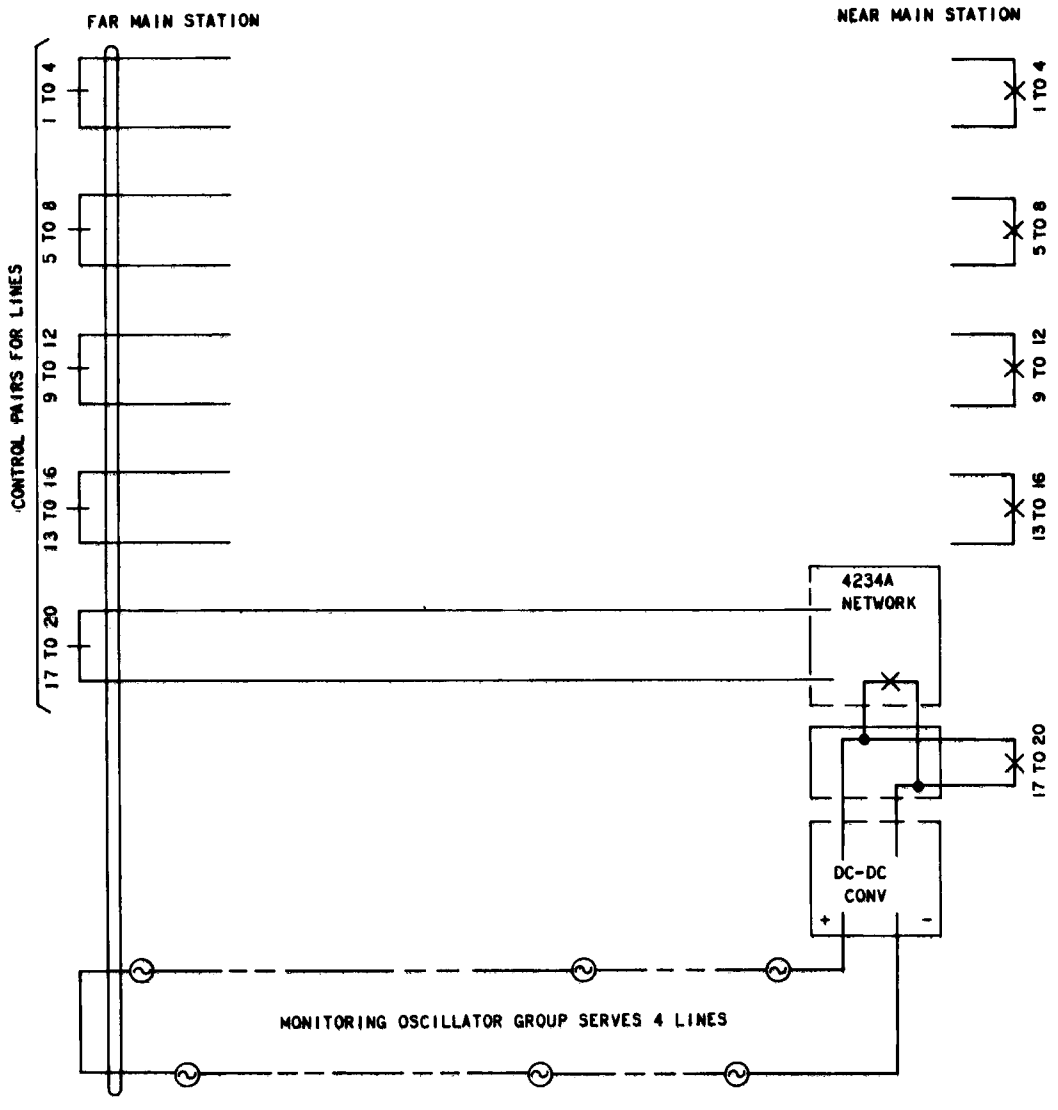

Fig. 4—Monitoring Oscillator Control

3.04 For an L4S system long enough to require ***two*** groups of monitoring oscillators to serve all the repeaters in a line, another arrangement similar to that shown in Fig. 4 is provided. For this arrangement, the ***near*** and ***far*** main station designations are the reverse of those shown in Fig. 4.

3.05 A trouble in a monitoring oscillator control pair will cause affects as follows: A ***ground*** or an ***open*** in a control pair from the far main station will power the associated group of monitoring oscillators via the 4234A network in the near main station. A ***short*** in a control pair will prevent the far main station from powering the associated group of monitoring oscillators.

3.06 A 4234A network is adjusted as follows:

Near main station refers to the main station at which the 4234A networks are provided in the line bays. ***Far*** main station refers to the adjacent main station at which the pushbuttons for monitoring oscillator control are provided in the control connecting bay.

STEP	PROCEDURE
	*At **near** main station,*
1	Measure the voltage between TP1 (−) and TP2 (+) on the 4234A network.
2	Adjust the ADJ control on the 4234A network to obtain 2 volts dc between TP1 and TP2.
	*At **far** main station,*
3	Depress the appropriate pushbutton momentarily to turn on the group of monitoring oscillators controlled by this pushbutton. ***Note:*** For each group of monitoring oscillators, there are five pushbuttons on the line protection patch and monitoring oscillator control panel. Each pushbutton controls the monitoring oscillators associated with four lines. The lamp lights in the pushbutton depressed. ***Requirement:*** The group of monitoring oscillators should turn on. ***Note:*** Monitoring oscillator signals are transmitted at 15 dB below transmission level; nominal power of a monitoring oscillator signal at the RCVG LINE TST jack is −43.4 dBm. Frequencies are assigned, in order, with the lowest frequency in a group at the east or north end.
4	Depress this pushbutton momentarily to turn off the monitoring oscillators.