TD-3 MICROWAVE RADIO
HOT STANDBY/SPACE DIVERSITY
OVERALL SWITCHING
GENERAL

1. GENERAL

1.01 This section presents general information and theory to help guide maintenance personnel through the procedures used to test all switching features of the Hot Standby/Space Diversity System. Section 422-100-100 presents a general description of the Hot Standby/Space Diversity System and should be read first, since this section deals more specifically with switching features.

1.02 The switch control unit (Fig. 1) is located in a miscellaneous bay and is involved in the operation of all of the units in the switching system. The illustration shows a full control unit. Each side of this unit (receiver or transmitter) may be furnished separately, in which case the front panel on the opposite side will be blank. Figure 2 shows, in block diagram form, how the switch control unit fits into and directs the overall switching. Table A gives a summary of the inputs and outputs to and from the switch control unit.

1.03 The received signal is monitored by the AGC monitor; the transmitter power output signal, by the power monitor. If the radio bay is equipped with the J68387S amplifier, the AGC monitor circuit is located in the radio bay alarm panel. If the radio bay is equipped with a J68387AB IF amplifier, the AGC monitor circuit is located in the IF amplifier proper. The power monitor circuit, in all cases, is located in the radio bay alarm panel. When the signals drop below a prescribed value, this information is sent to the logic in the switch control unit. The 8.7-MHz pilot, fed from the input to the wire-line entrance link, is monitored by the pilot detectors which are located in the transmission bay at main stations. Loss of pilot information is sent to the switch control unit from these detectors. Commands may be transmitted remotely to the switch control unit from the E2 system in the order-wire and alarm bay.

1.04 On the basis of the information provided, the switch control unit decides what action, if any, is to be initiated. Commands may then be sent to the IF and/or RF switches. Verification of IF and/or RF switch operation is returned to the switch control unit, thus completing the operations necessary to light the associated indicating lamps on the switch control unit and to initiate office alarm action.

1.05 The brief outline of the overall switching operation given in the preceding paragraphs is intended to emphasize that the tests given in Section 411-600-501 are meant to test the complete switching system as an entity rather than by individual units; ie, detector, switch control, switches, and alarms.

1.06 Some general precautions to be observed are as follows:

(a) At no time during the switching tests must either of the radio channels be deliberately failed by maintenance personnel to bring in alarms.

(b) Therefore, switching requests will be simulated as explained in Section 411-600-501.

(c) Both radio bays must be operating properly.

1.07 Because of the necessity for in-service testing and for possible replacement of the switch control unit without service interruption, the switching system is designed to switch to the regular facility when the switch control unit is removed. The switch control outputs appear on the jacks designated J1 and J2, and the power and inputs appear on the plugs designated P1 and P2. The connection or disconnection is accomplished without intermittent switches as the connections make and break. Because the system switches to the regular facility when the switch control is removed, it is imperative

that the regular facility be functioning properly if service is to be unimpaired.

1.08 To become familiar with the operation of the switch control unit, refer to the layout, Fig. 3, and the following instructions. To force a switch of either the receiver or transmitter to the REG or STBY position, depress the MSTR and REG (or STBY) pushbuttons ***simultaneously.*** Operating any pushbutton by itself will not cause the switch to operate. If either channel has failed, the corresponding CHANNEL FAIL lamp will be glowing. No switch to a failed channel should be attempted since a service failure would result. When the mode of operation is AUTO, the appropriate in-service indicators glow steadily. A force switch to either the REG or STBY bay causes the in-service indicators to flash at a steady rate. This will continue until the AUTO (along with the MSTR) pushbuttons are depressed to return the system to normal. This action will stop the flashing, and the in-service indicators will glow steadily.

TABLE A

INPUTS TO SWITCH CONTROL UNIT		OUTPUTS FROM SWITCH CONTROL UNIT	
ASSOCIATED WITH RADIO RECEIVER		ASSOCIATED WITH RADIO RECEIVER	
FROM	TYPE	TYPE	TO
Radio Bay Alarm Panel →or J68387AB IF Amplifier←	AGC Monitor	IF Switch Control	IF Switch in Radio Bay
IF Switch in Radio Bay	Switch Verification	E2 Alarm Indications	Order-Wire and Alarm Bay
Order-Wire and Alarm Bay	E2 Remote Switching	Regular and Standby	Radio Bay Alarm Panel
ASSOCIATED WITH RADIO TRANSMITTER		ASSOCIATED WITH RADIO TRANSMITTER	
FROM	TYPE	TYPE	TO
Pilot Detector in Transmission Bay (Main Stations)	Pilot Level Condition	RF Switch Control	RF Switch in Radio Bay
RF Switch in Radio Bay	Switch Verification	E2 Alarm Indications	Order-Wire and Alarm Bay
Radio Bay Alarm Panel	Output Power Monitor	Regular and Standby Alarms	Radio Bay Alarm Panel
Order-Wire and Alarm Bay	E2 Remote Switching Commands		

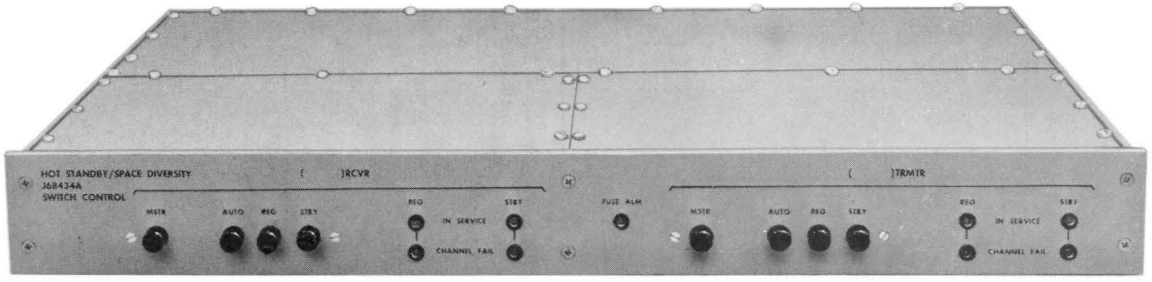

Fig. 1—J68434A Switch Control Unit

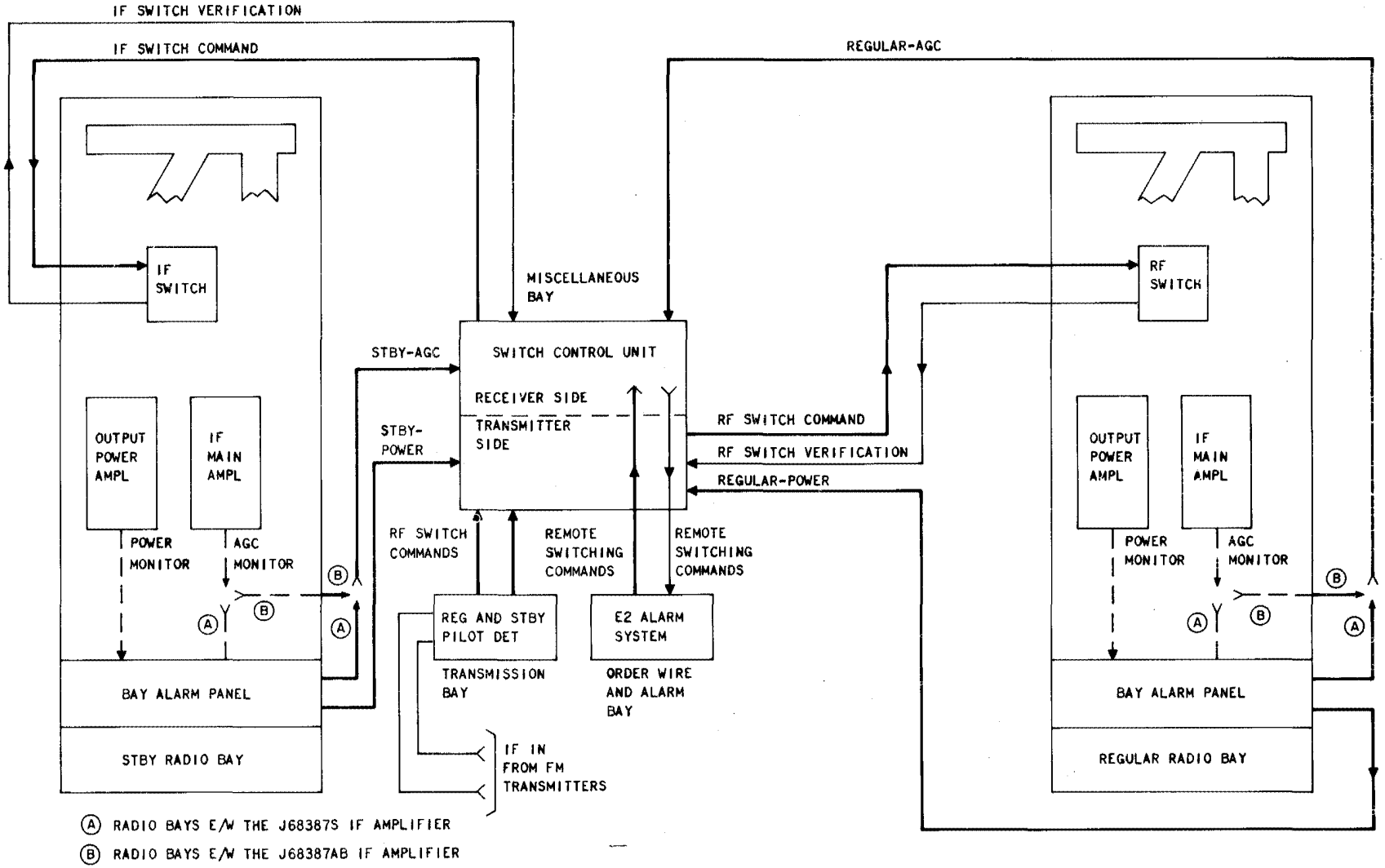

Fig. 2—Switch Control Functions

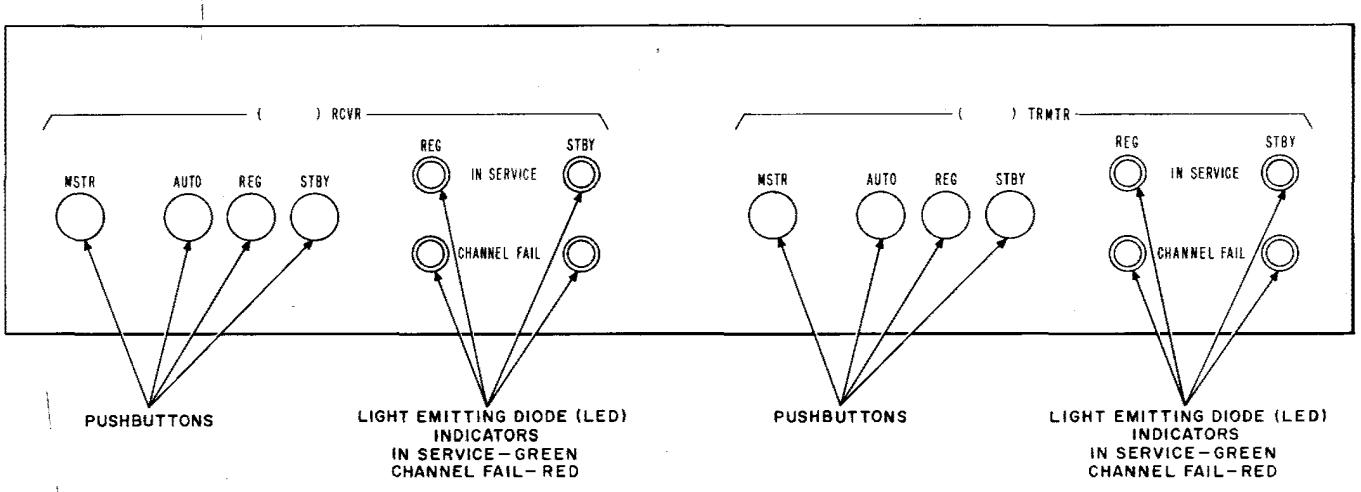

Fig. 3—Layout of Switch Control Panel