

DESCRIPTION AND MAINTENANCE
GE-MARC V™ REPEATER STATION CONTROL SHELF

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DESCRIPTION

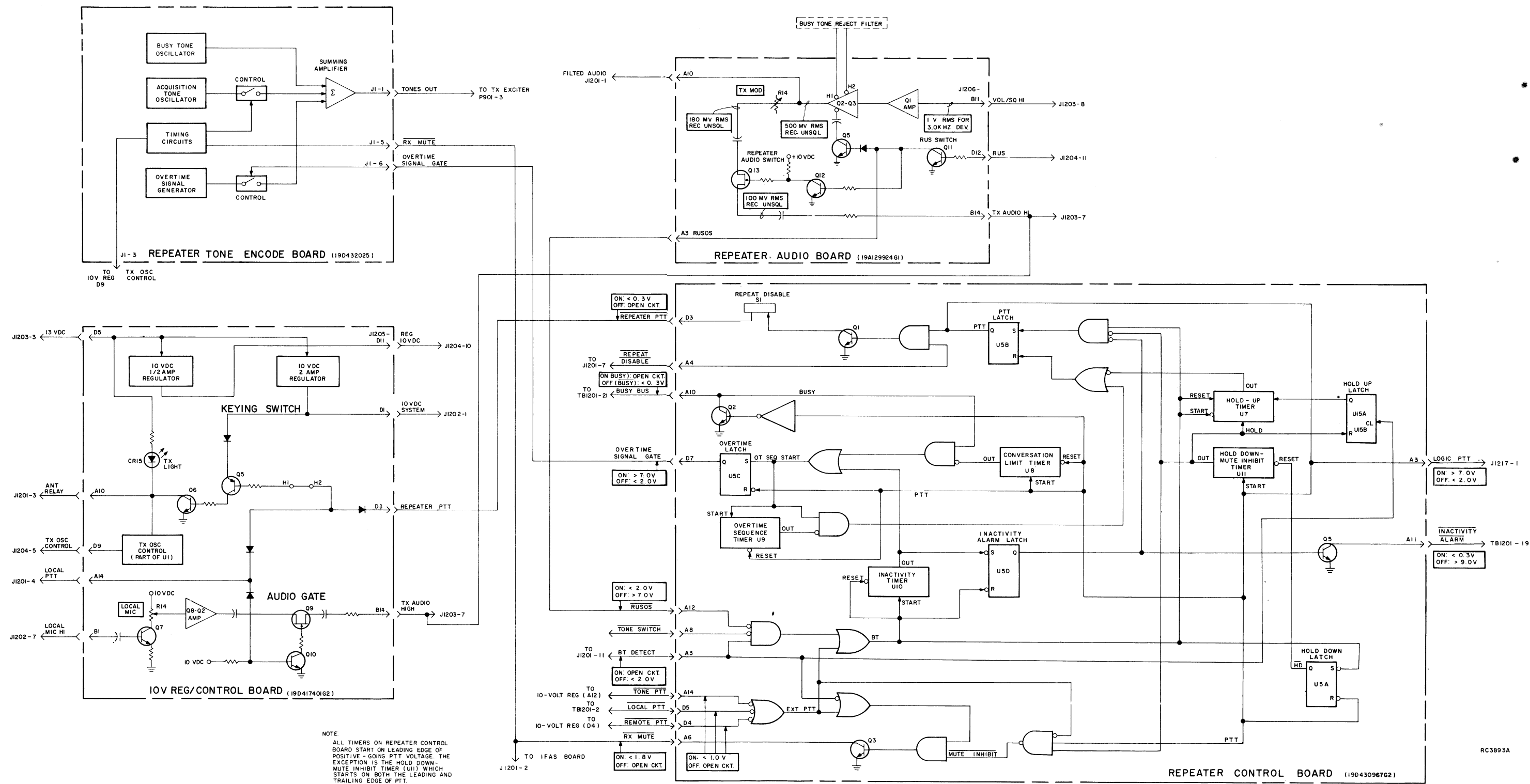
The GE-MARC V™ Trunked Mobile Radio Repeater Station Control Shelf is a 3-rack unit card shelf with a Mother Board containing jacks to interconnect the plug-in repeater control, audio and regulator boards. The Mother Board provides the station interconnect printed wiring runs between the jacks. The control shelf is accessed by opening the receiver/exciter door.

MAINTENANCE

All circuit modules can be easily removed for routine inspection. An Extender Board (19D417458G1, Option 9544) is recommended for servicing any of the modules out of the shelf while maintaining circuit connections.

GENERAL ELECTRIC COMPANY • MOBILE COMMUNICATIONS DIVISION
WORLD HEADQUARTERS • LYNCHBURG, VIRGINIA 24502 U.S.A.





REPEATER CONTROL SYSTEM AND TROUBLESHOOTING

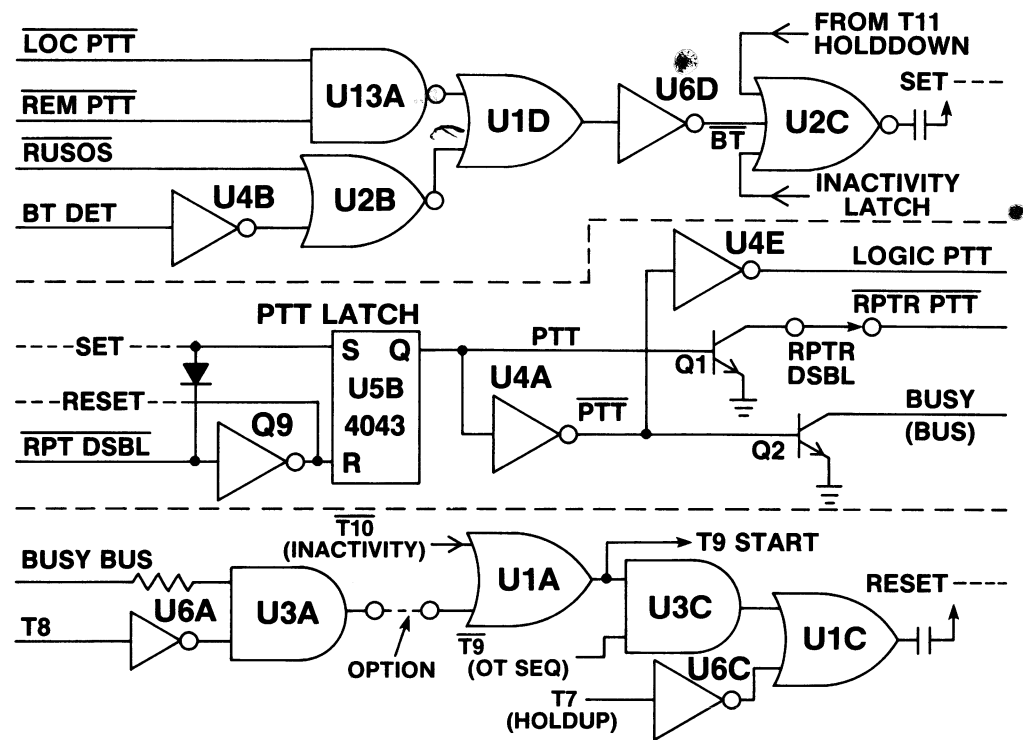


FIGURE 1 REPEATER CONTROL BOARD, 19D430967G2; XMTR ON-OFF CONTROL. PTT LATCH U5B is the "key to keying." When U5B is SET, PTT=1; Q1 is on; XMTR is on. When U5B is RESET, PTT=0; Q1 is off; XMTR is off. U5B is SET (XMTR ON) primarily by inputs BT DET and RUSOS. U5B is RESET (XMTR OFF) by timers, usually Holdup Timer T7.

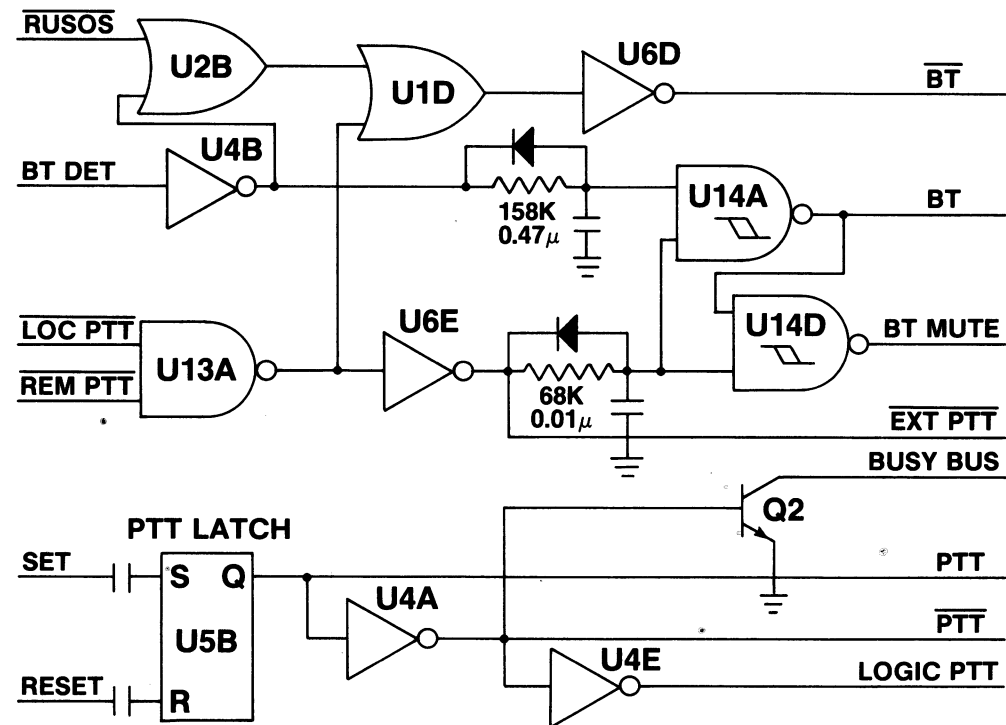


FIGURE 2 DERIVED LOGIC LEADS. RUSOS and BT DET are furnished from the Door Assembly; LOC PTT and REM PTT (test microphone and test switch) come from 10V REG/CNTL BOARD (Control Shelf). The "output" leads shown are all derived in the Repeater Control Board. The first four (BT through EXT PTT) are the direct result of inputs. The remaining four result from the output of PTT LATCH U5B.

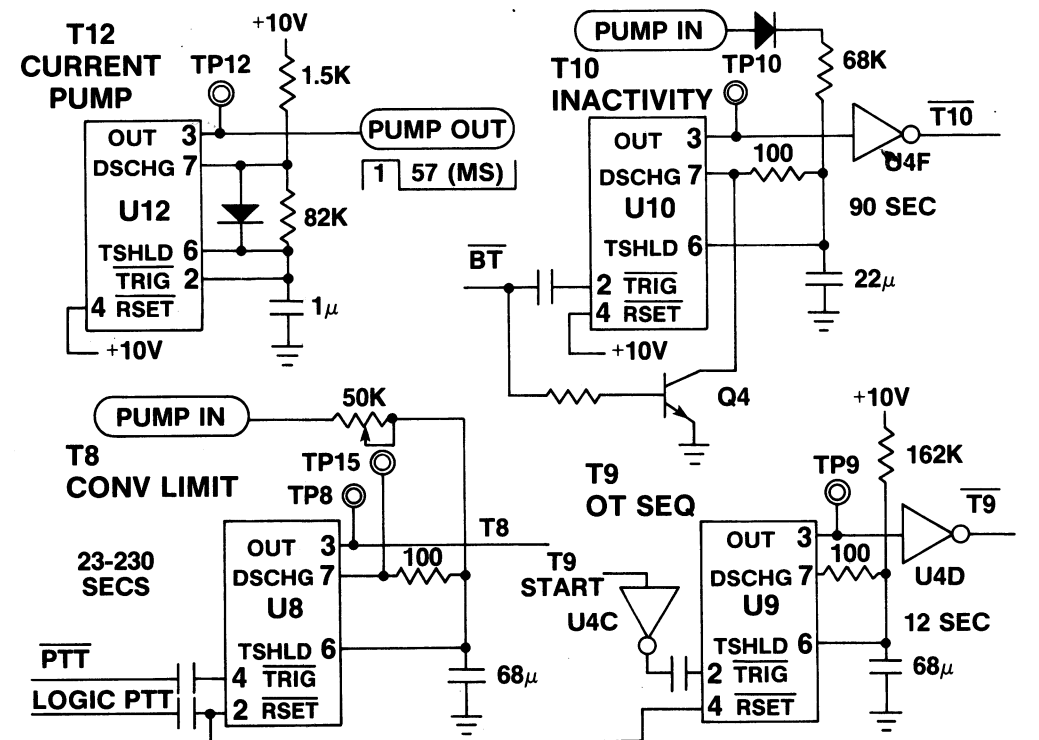


FIGURE 3 TIMERS T8, T9, T10 AND T12. All use "555" timers. T12, astable connected, delivers charging current to T8 and T10. Duty factor is 1/58; RC-determined timed periods are multiplied. T8, T9 and T10 start with logic inputs; T8 and T9 reset with logic inputs. Timeout of T10 is inhibited when Q4 is on. Outputs go to circuits which reset PTT Latch U5B (XMTR OFF). All timers have an output Test Point (1=running or inhibited, 0=reset).

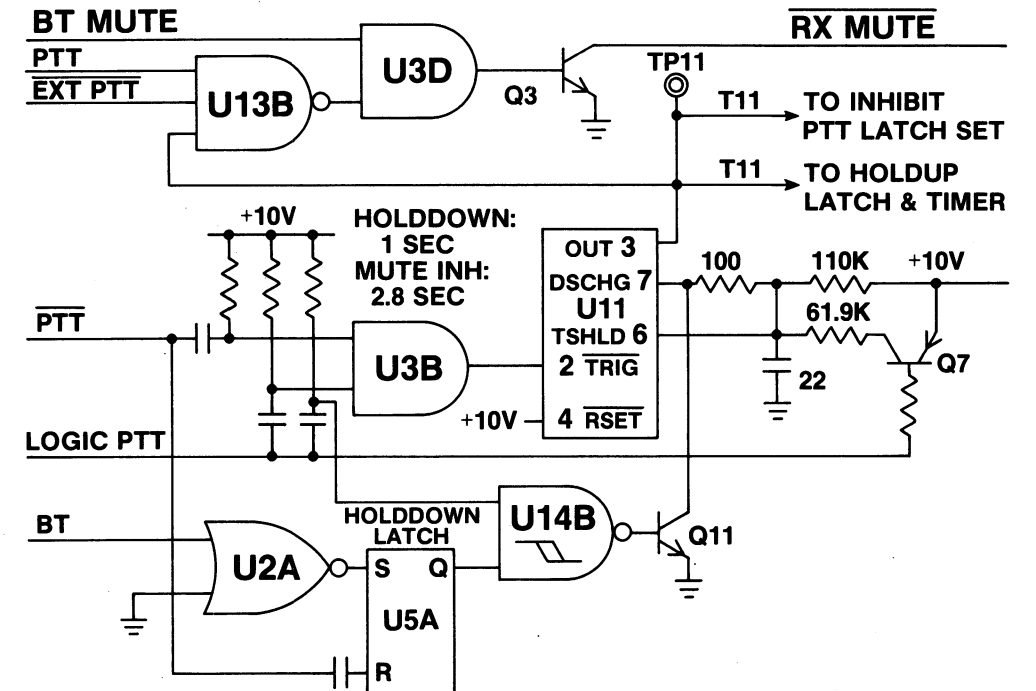
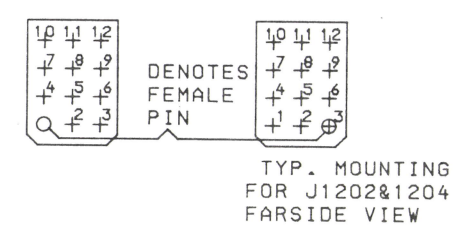
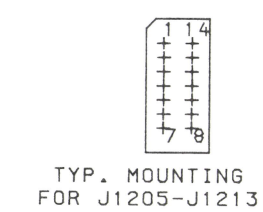
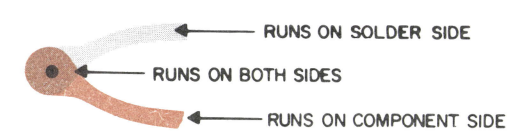
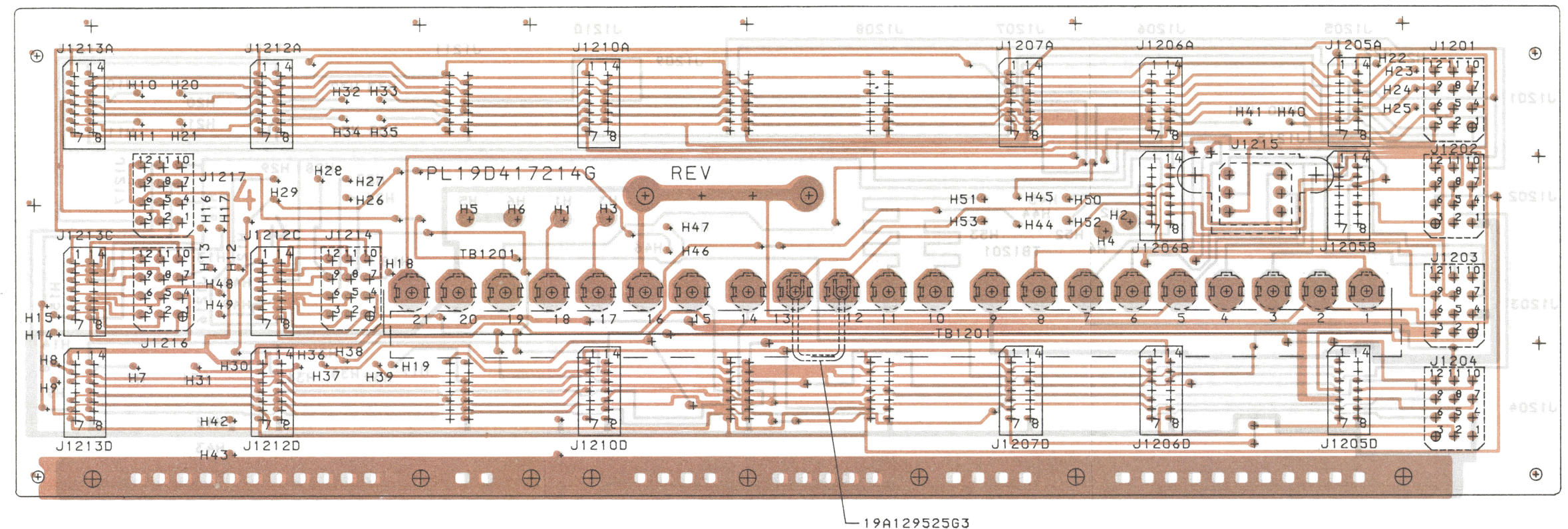


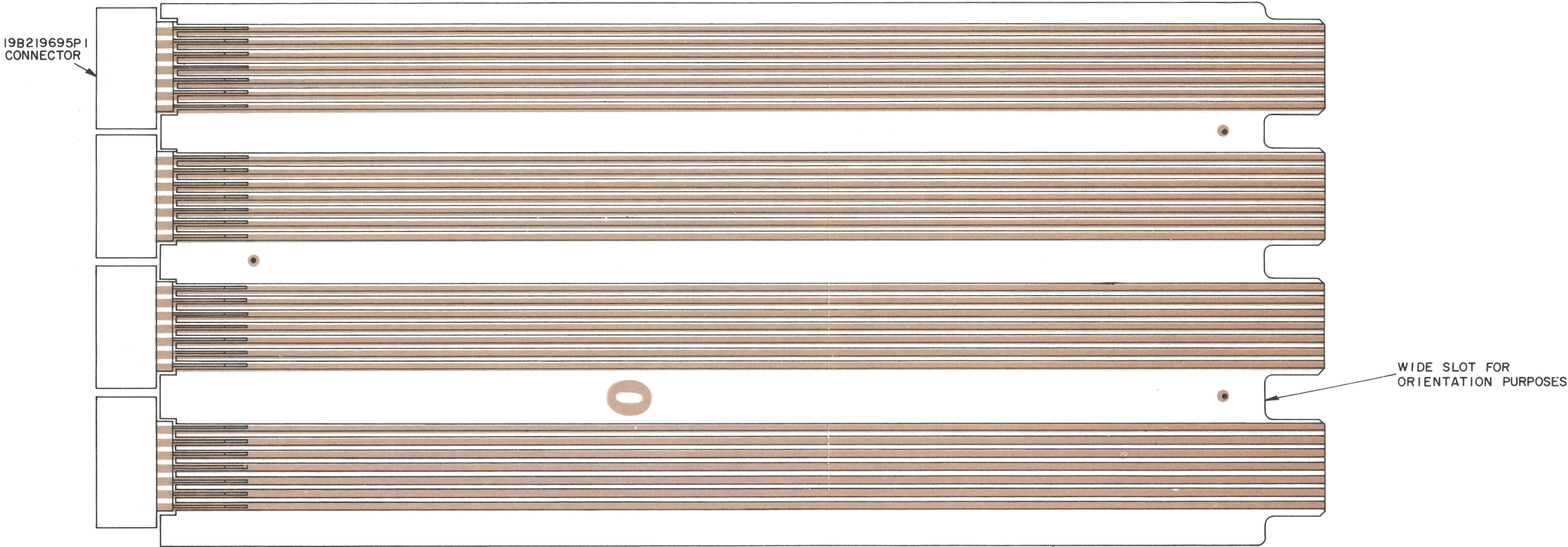
FIGURE 4 MUTE FUNCTION; HOLDDOWN/MUTE INHIBIT TIMER. The RX MUTE output (to IFAS) silences high-level audio and inhibits RUS output with many control consequences. When running, T11 inhibits RX MUTE (Q3 is off via U13B and U3D). Timeout of T11 is inhibited when Q11 is on. T11 times 2.8 seconds when Q7 is off; 1.0 second when Q7 is on.

FIGURE 6 OVERTIME SEQUENCE. Inactivity Timer T10 expires after 90 seconds of uninterrupted Busy Tone. It sets INACT ALARM LATCH US0 (inhibits set of USB via INACT) and sets OT LATCH US1 (starts the OT Signal oscillator and interruptor in RPTR TONE CODE BOARD). It also starts OT SEQ TIMER T9 (via U1A) which, 12 seconds later, allows pulse from U1C to reset PTT LATCH USB (XMTR OFF). CONV LIMIT TIMER T8 expires when XMTR ON exceeds settable (23-230 seconds) limit. If Jumper *** is removed, OT Signal tone is sent. If Jumper # is added, shutdown occurs after 12 seconds.

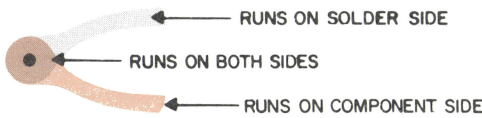


(19D430579, Rev. 4)
(19A142677, Sh. 1, Rev. 4)
(19A142677, Sh. 2, Rev. 4)

OUTLINE DIAGRAM
CONTROL SHELF MOTHER BOARD
19D417214G3

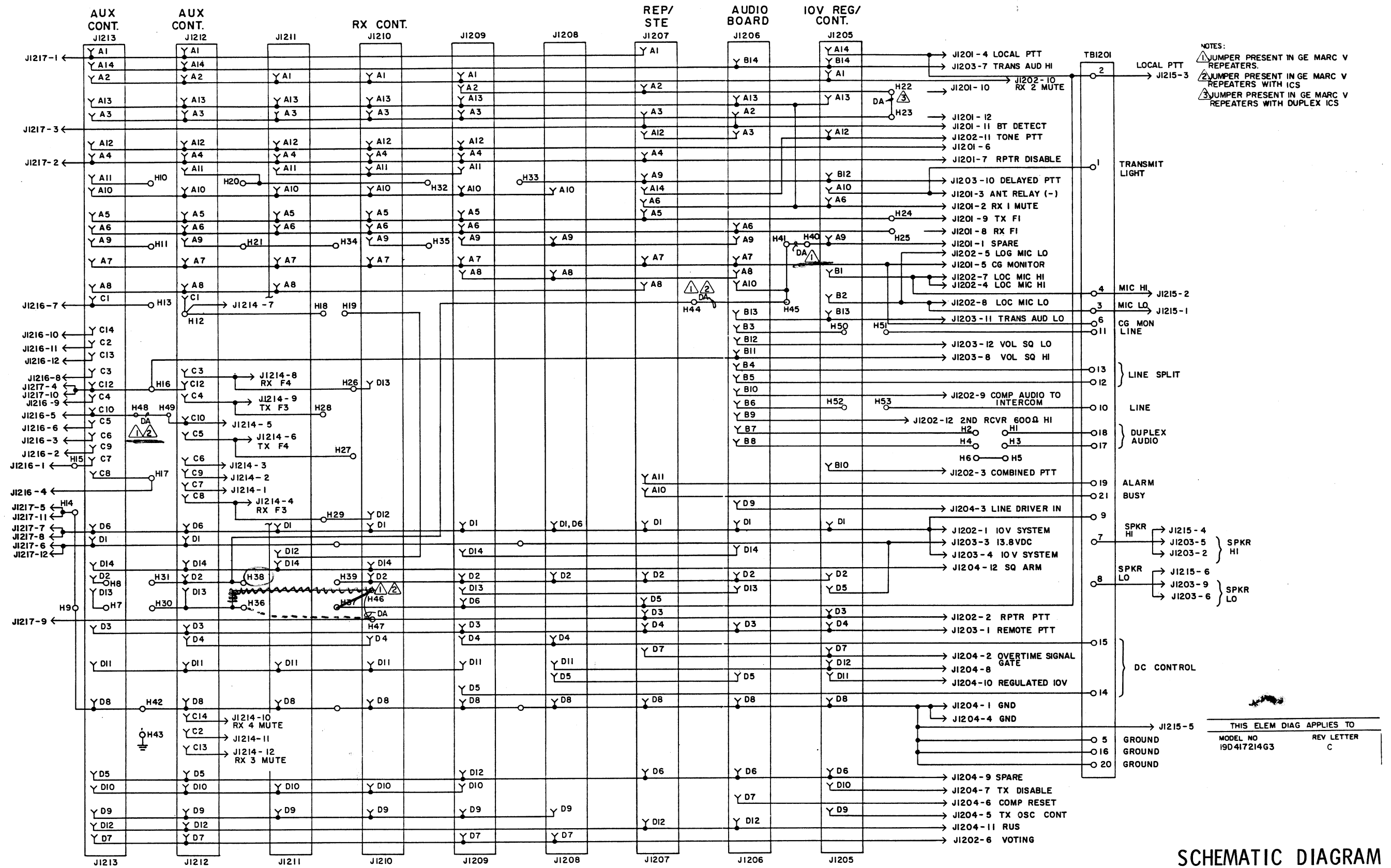


(19D423102, Rev. 0)
(19D417215, Sh. 2, Rev. 0)
(19D417215, Sh. 3, Rev. 0)



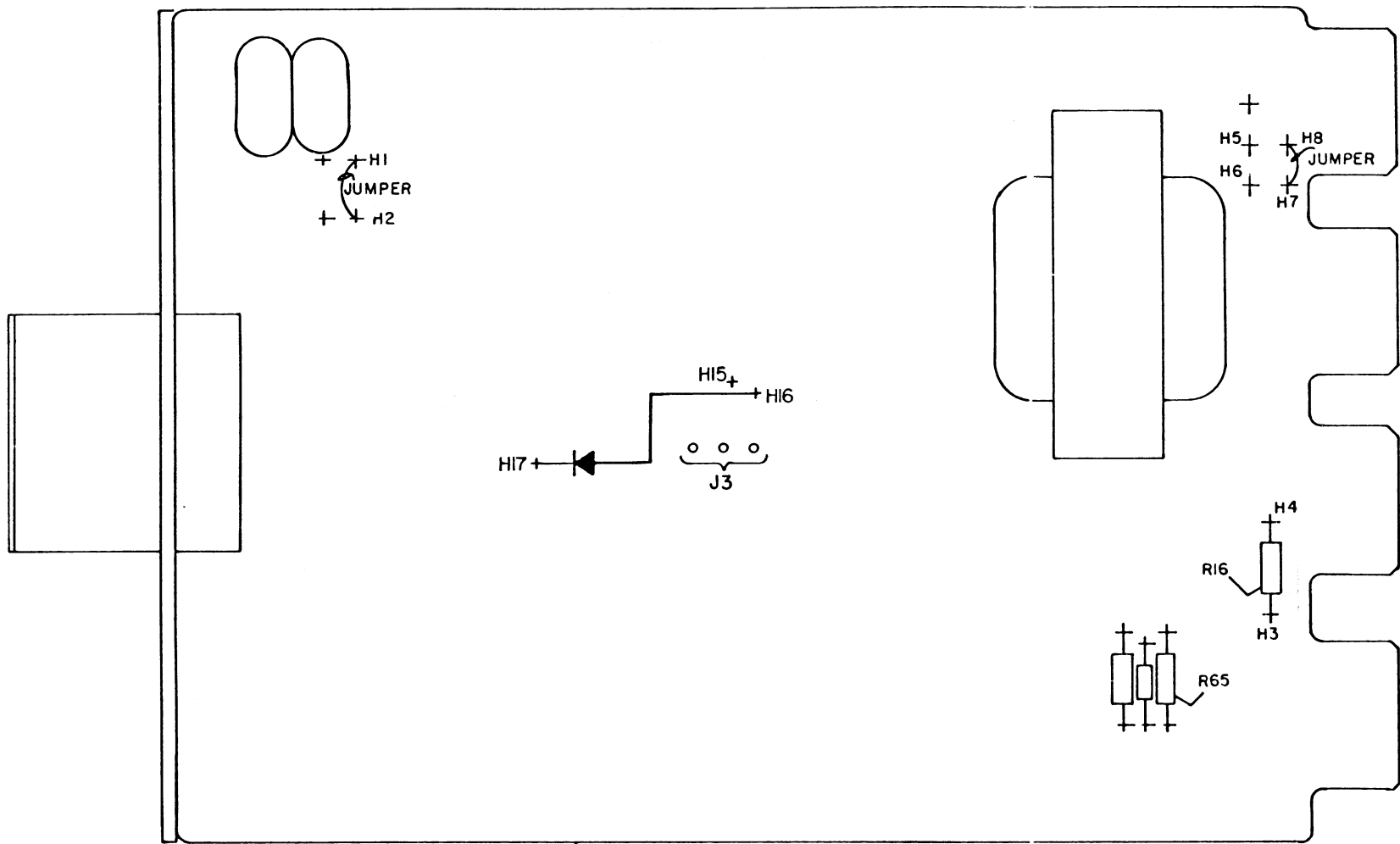
OUTLINE DIAGRAM

EXTENDER BOARD 19D417458G1



Jumper from H38 to H41 for Rev B
 Jumper from H47 to H36 Rev B
 H46 connected to H37 in Rev B

(19D430590, Rev. 5)



AUDIO BOARD
PL19A129924

(19C320824)

AUDIO BOARD

THESE INSTRUCTIONS COVER THE MODIFICATIONS TO THE AUDIO BOARD (19A129924) FOR OPERATION WITH CHANNEL GUARD SYSTEM AND FOR OPERATION IN TONE CONTROL OR WITH CHANNEL GUARD IN A TONE CONTROL SYSTEM.

- ① MODIFICATION FOR OPERATION AS CHANNEL GUARD SYSTEM.
 1. REMOVE JUMPER BETWEEN HOLE 1 AND HOLE 2 AND DISCARD.
- ② MODIFICATIONS FOR OPERATION IN TONE CONTROL SYSTEM.
 1. REMOVE R16 AND R65 AND DISCARD.
 2. REMOVE JUMPER BETWEEN HOLE 7 AND HOLE 8 AND DISCARD.
- ③ MODIFICATIONS FOR OPERATION IN TONE CONTROL SYSTEM WITH CHANNEL GUARD.
 1. REMOVE JUMPER BETWEEN HOLE 1 AND HOLE 2 AND DISCARD.
 2. REMOVE R16 AND R65 AND DISCARD.
 3. REMOVE JUMPER BETWEEN HOLE 7 AND HOLE 8 AND DISCARD.
- ④ MODIFICATIONS FOR GE-MARC V DUPLEX SYSTEM.
 1. INSTALL DIODE (19A700047P2) BETWEEN H16 AND H17. USE INSULATING SLEEVE (A7143140P2) ON DIODE LEADS.

MODIFICATION INSTRUCTIONS

Audio Board
19A129924

PARTS LIST

LBI31037B

GE MARC V
REPEATER STATION CONTROL SHELF MOTHERBOARD
19D417214G3 - REV C
ISSUE 2

PRODUCTION CHANGES

Changes in the equipment to improve performance or to simplify circuits are identified by a "Revision Letter," which is stamped after the model number of the unit. The revision stamped on the unit includes all previous revisions. Refer to the Parts List for descriptions of parts affected by these revisions.

- REV. A and B - Incorporated initial shipment.
- REV. C - CONTROL SHELF MOTHER BOARD 19D417214G3
To make the GE-MARC V Repeater Mother Board compatible with Duplex ICS. Revision B boards require the following modifications:
Jumpers removed from H32-H33
H34-H35
H36-H37
H38-H39
Jumpers installed from H36-H47
H44-H45
H48-H49

SYMBOL	GE PART NO.	DESCRIPTION
		----- JACKS AND RECEPTACLES -----
J1201	19A116647P4	Connector, printed wiring: 12 terminals, sim to Molex 09-18-5121.
J1202	19A116647P6	Connector, printed wiring: 12 terminals, sim to Molex 09-18-5927.
J1203	19A116647P4	Connector, printed wiring: 12 terminals, sim to Molex 09-18-5121.
J1204	19A116647P6	Connector, printed wiring: 12 terminals, sim to Molex 09-18-5927.
J1205A	19A116446P5	Connector, printed wiring: 14 contacts.
J1205B	19A116446P5	Connector, printed wiring: 14 contacts.
J1205D	19A116446P5	Connector, printed wiring: 14 contacts.
J1206A	19A116446P5	Connector, printed wiring: 14 contacts.
J1206B	19A116446P5	Connector, printed wiring: 14 contacts.
J1206D	19A116446P5	Connector, printed wiring: 14 contacts.
J1207A	19A116446P5	Connector, printed wiring: 14 contacts.
J1207D	19A116446P5	Connector, printed wiring: 14 contacts.
J1210A	19A116446P5	Connector, printed wiring: 14 contacts.
J1210D	19A116446P5	Connector, printed wiring: 14 contacts.
J1212A	19A116446P5	Connector, printed wiring: 14 contacts.
J1212C	19A116446P5	Connector, printed wiring: 14 contacts.
J1212D	19A116446P5	Connector, printed wiring: 14 contacts.
J1213A	19A116446P5	Connector, printed wiring: 14 contacts.
J1213C	19A116446P5	Connector, printed wiring: 14 contacts.
J1213D	19A116446P5	Connector, printed wiring: 14 contacts.
J1214	19A116647P4	Connector, printed wiring: 12 terminals, sim to Molex 09-18-5121.
J1215	19B219627G1	Connector: 6 contacts.
J1216	19A116647P4	Connector, printed wiring: 12 terminals, sim to Molex 09-18-5121.
J1217	19A116647P6	Connector, printed wiring: 12 terminals; sim to Molex 09-18-5927.
		----- TERMINAL BOARDS -----
TB1201	19A116667P3	Plate nut. (Quantity 21).
		----- MISCELLANEOUS -----
	19A129525G3	Cable: approx 3 inches long. (Located between TB1201-12 & TB1201-13).
	NP280729	Nameplate, plastic. (Used with TB1201).

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES