L MULTIPLEX TERMINALS

COMMON EQUIPMENT

CARRIER TRANSMISSION MAINTENANCE SYSTEM (CTMS)

LINE PILOT MEASUREMENTS (LP)

1. GENERAL

1.01 This section describes the line pilots program (LP) of CTMS and corrective action to take when measurements exceed allowable limits. LP is normally run by clock control to measure transmitting and receiving line pilots of L carrier and radio facilities. It may also be run on demand to measure the pilots of a specified facility.

1.02 This section is reissued to reflect printout modifications, change the command structure for demand measurements, and revise the corrective action suggestions. Since this issue constitutes a general revision, arrows ordinarily used to indicate changes are omitted.

2. ACCESS CIRCUITS

2.01 The following circuits provide access to carrier and radio facilities for the measurement of line pilots:

Fig. 1—3A WLEL Transmitting Access Circuit (for TD-2, TD-3, and TH-3)

3. SCHEDULING PROGRAM

3.01 LP in a magnetic tape storage system is controlled by BOS commands IT (to establish an execution time), ON (to initialize the program for routine running), and ON,LP,NOW... (for demand execution). In a disc storage system, one of two methods of control may be used: (1) RTE system commands IT and ON as above for routine execution and RU for demand execution, or (2) control by the auxiliary terminal monitor (ATM) program in which LP is initialized by an IP command, scheduled by an IS command, and run as a demand program by an ON,LP,NOW... command. The BOS and RTE system commands and the ATM program commands are described in Section 103-260-300.

3.02 When run as a demand program, LP is called on to measure line pilots of a specific facility. The command to start LP is then:

*ON,LP[,NOW],p1,p2 [,p3]

in a magnetic tape system or in a disc system when LP is under ATM program control, or:

*RU,LP,*p1,p2* [,*p3*]

in a disc system using only system commands.

Where:

p1 is the short code assigned to specific line.

p2 is access point designation. Use 2 for receiving line access and 3 for transmitting line access.

p3 = 0 (or absent) print only out-of-limits measurements.

p3 > 0 print all measurements.

4. PRINTOUT

4.01 Figure 9 is a printout of the LP program when operating in the mode that prints all measurements. Normally only excessive deviations from expected levels are printed. The print limit is then ±0.5 dB from nominal for all transmitting line pilots and for all receiving line pilots except the following:

SYSTEM	PILOT (kHz)*	LIMIT
TH-1	512/308	1.0 dB
TD-2	512/64/8800/5930	1.0 dB
TD-3	512/64/8800/5930	1.0 dB
TH-3	512/64/8800/5930	1.0 dB
L1	512	1.5 dB

*The 512-kHz frequency for DUV (data under voice) is measured first. If no pilot is found, other frequencies (where listed) are measured in the order given.

The printout ends with a separate figure of merit calculated for each part of the program.

5. CORRECTIVE ACTION

5.01 Charts 1 through 6 contain suggested procedures for clearing line pilot deviations. When trouble has been cleared, follow local procedures to update the maintenance history file.
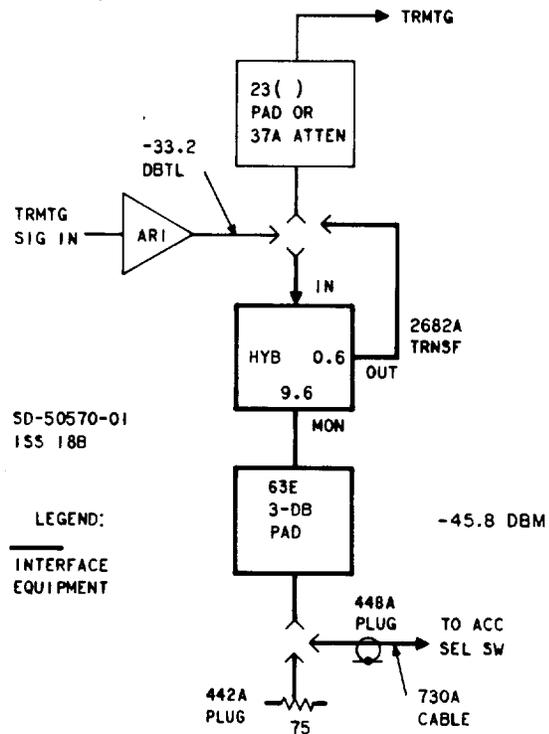
Fig. 1—3A WLEL Transmitting Access Circuit (for TD-2, TD-3, and TH-3)
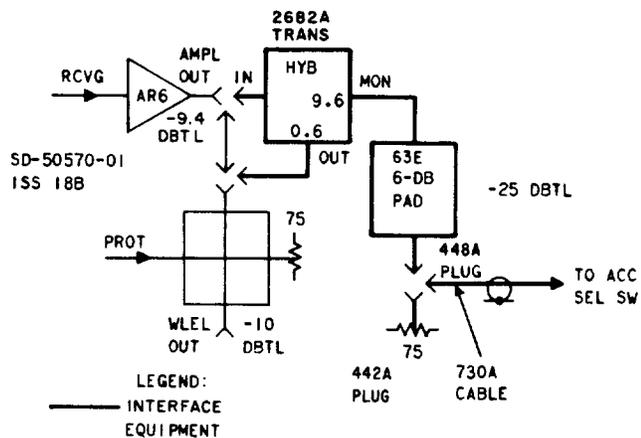
Fig. 2—3A WLEL Receiving Access Circuit (for TD-2, TD-3, and TH-3)

SD-50029-01
ISS 8D (TH-1)

TRMTG COMB. HYB

→ TRMTG

REMOVE TERM. RES

724A CABLE

MGI -46.5 DBTL
MG2 -41.5 DBTL
MG3 -38.9 DBTL

TO ACC SEL SW

730A CABLE

75

540A JACK

477E JACK

TRMTG MMX OUT TST

CTMS IN

P/O JACK PANEL

372A PLUG

LEGEND:
INTERFACE EQUIPMENT
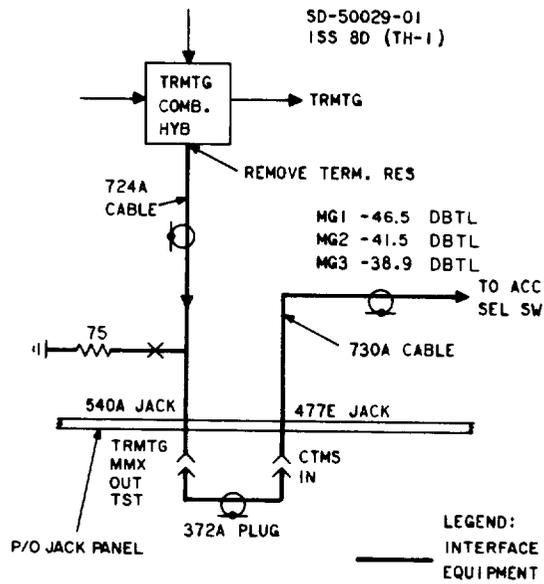
Fig. 3—TH-1 Transmitting Access Circuit

SD-50029-01, ISS 8D

TO REG MGI A

RCVG 2

RCVG MGI HYB

1

75

75

MGI -31.5 DBTL
MG2 -26.5 DBTL
MG3 -23.9 DBTL

724A CABLE

TO ACC SEL SW

730A CABLE

P/O JACK PNL

75

540A JACK

477E JACK

MGI OUT B

CTMS IN

372A PLUG

LEGEND:
INTERFACE EQUIPMENT
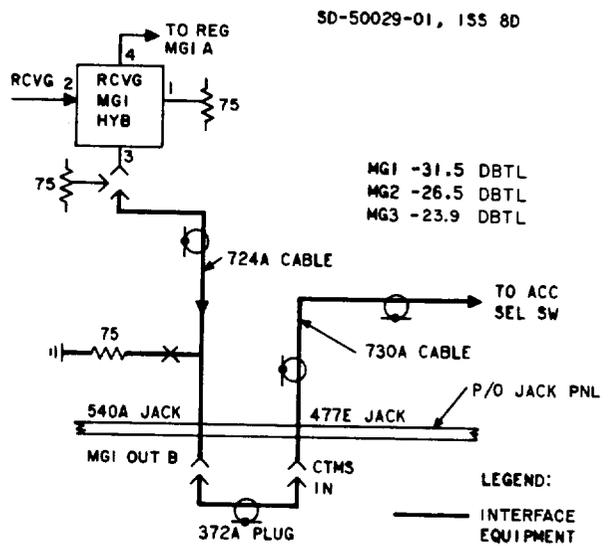
Fig. 4—TH-1 Receiving Access Circuit

AMP OUT

P6

V

V

J3

AMP OUT

FLAT AMPL T

CTMS ACC HYB

0.65

9.6

519A PLUG

621A PLUG

621A PLUG

730A CABLE TO ACC SEL SW

SD-59484-01
ISS 10D

P/O JACK PANEL

75

540A JACK

477E JACK

MGI -30 DBM
MG2 -25 DBM
MG3 -20 DBM

LEGEND:
INTERFACE EQUIPMENT

TRMTG L3 TST

CTMS IN

372A PLUG
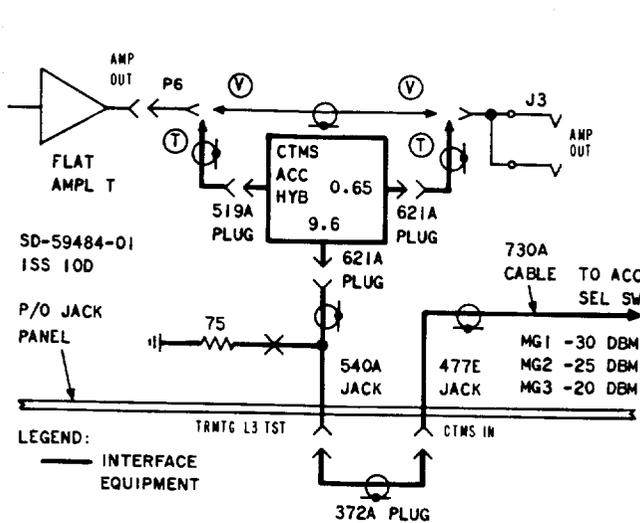
Fig. 5—L3 Transmitting Access Circuit

PIL HYB OUT A

LINE IN

ZX

ZX

ZW

ZW

PIL HYB

TO REGS

FLAT AMPL D

CTMS ACC HYB

0.65

9.6

514A PLUG

621A PLUG

621A PLUG

730A CABLE TO ACC SEL SW

SD-59608-01
ISS 23D

P/O JACK PANEL

75

540A JACK

477E JACK

MGI -28.7 DBTL
MG2 -23.7 DBTL
MG3 -18.7 DBTL

LEGEND:
INTERFACE EQUIPMENT

REC L3 TST

CTMS IN

372A PLUG
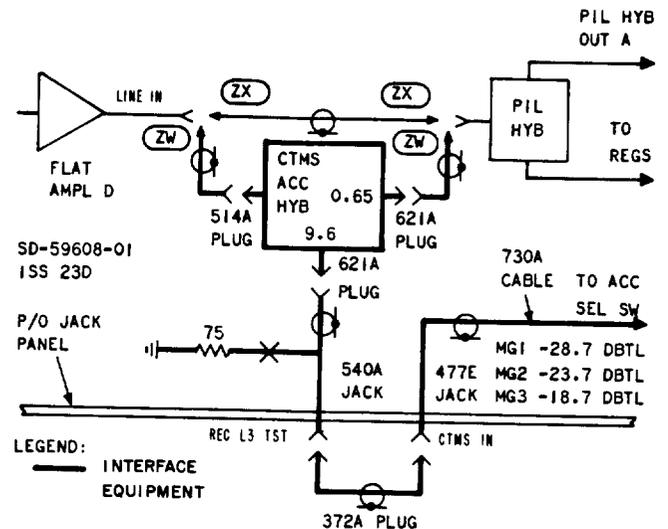
Fig. 6—L3 Receiving Access Circuit
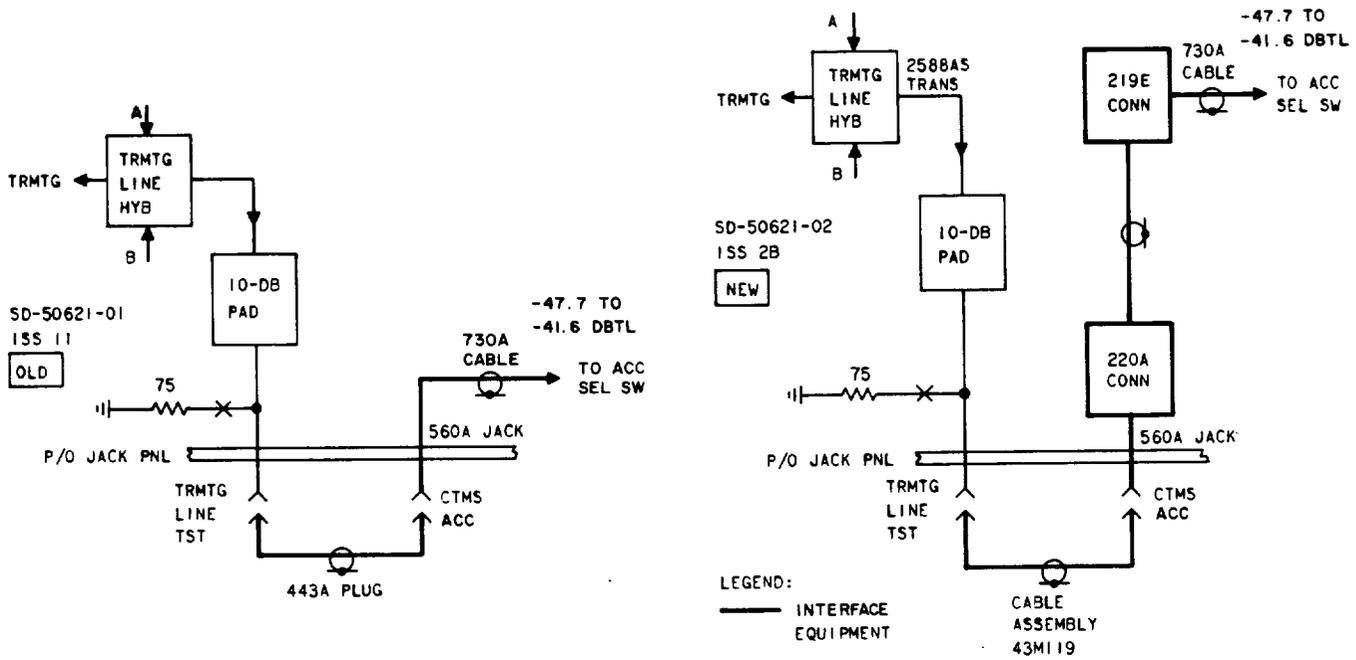
Fig. 7—L4 Transmitting Access Circuit
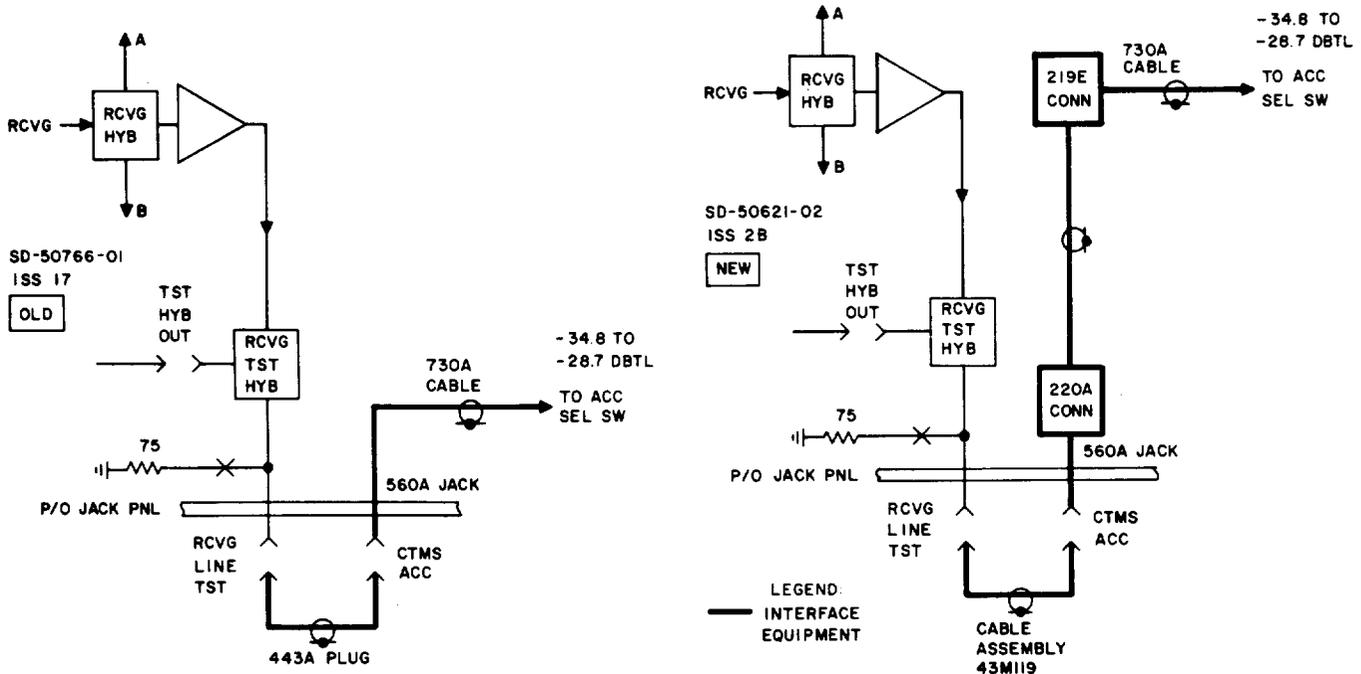
Fig. 8—L4 Receiving Access Circuit

PROGRAM NAME   ISSUE   JULIAN DAY   TIME

```
          LP: LINE PILOTS        ISSUE 4      DATE 202    8:59
        LIM=0.5,EXCEPT RCVG: TD2,TD3,TH1,TH3=1.0;L4(512)=1.5DB

        *************       RECEIVING LIMITS GREATER THAN 0.5 DB


             LP: RCVG


       LINE.......FREQ-KHZ.......DEV..
          100          512.        -1.0
          100        11648.         -.0
          200          512.          .6
          200        11648.         -.1
          300          512.          .5
          300        11648.          .3     RECEIVING PILOTS
          400          512.          .1

         5400          308.         -.1
         5500          308.          .3
         5600          308.          .2


        *************

       LP: TRMTG


       LINE.......FREQ-KHZ.......DEV..
          100          512.         -.0
          100        11648.          .3
          200          512.          .3
          200        11648.          .3
          300          512.         -.1
          300        11648.          .1     TRANSMITTING PILOTS

         5200          308.         -.3           PROGRAM SUMMARIES
         5400          308.          .1
         5500          308.          .1      A - NO. OF PILOTS MEASURED
         5600          308.         -.3      B - NO. OUT-OF-LIMITS
                                             C - PERCENT OUT-OF-LIMITS
                                             D - FIGURE OF MERIT

        *************


           LP:   RCVG  SUMMARY            TRMTG SUMMARY  DATE 202   9: 7
             LINE PILOTS:  75      A     LINE PILOTS:  75
                #>LIMIT:   1       B        #>LIMIT:   0
                %>LIMIT:   1       C        %>LIMIT:   0
             FIG/MERIT:  99.17     D     FIG/MERIT: 100.00
```

Fig. 9—LP Printout of Line Pilots

```
┌─────────────────┐         ╱─────────╲                  ┌─────────────────┐
│ [1] MAKE RC&D   │        ╱ [2] IS PILOT╲      NO        │ [3] RECORD      │
│ OR LP DEMAND    │───────▶   STILL OUT   ─────────────▶ │ TEST RESULT.    │──────┤
│ TEST OF FACILITY│        ╲ OF LIMITS  ╱                 │ FILE PRINTOUT   │
└─────────────────┘         ╲─────────╱                  └─────────────────┘
        ▲                        │
        │                       YES
        │                        ▼
        │                 ┌─────────────────────┐
        │     RECHECK     │ [4] TEST AND        │
        └─────────────────│ ADJUST PER          │
                          │ SECTION 359-035-505 │
                          └─────────────────────┘
```
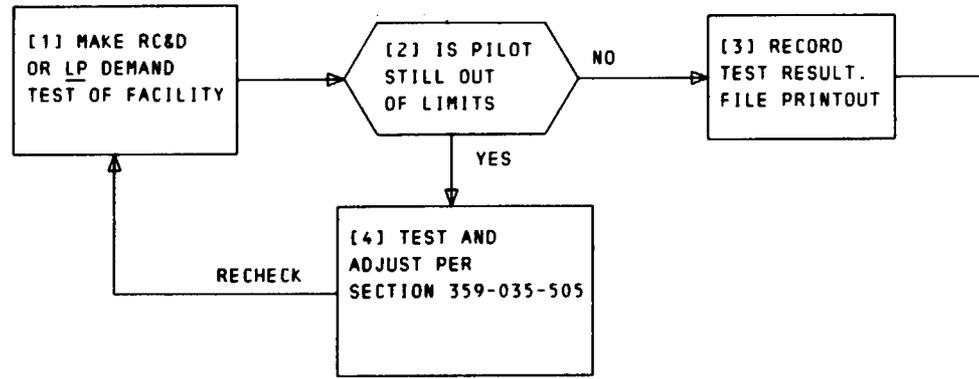
Chart 1—Clear L3 Transmitting Line Pilot Deviation

```
┌──────────────┐        ╱─────────────╲              ┌──────────────┐
│ [1] MAKE RC&D│        ╱ [2] IS PILOT  ╲    NO       │ [3] RECORD TEST│  ─────┤
│ OR LP DEMAND │ ─────▷ ╲  STILL OUT    ╱ ──────────▷ │ RESULT. FILE  │       │
│ TEST OF FACILITY│     ╲  OF LIMITS   ╱              │ PRINTOUT      │  ─────┤
└──────────────┘        ╲─────────────╱              └──────────────┘
        △                     │ YES
        │                     ▽
        │              ┌──────────────────┐
        │    RECHECK   │ [4] TEST AND     │
        └──────────────│ ADJUST PER       │
                       │ SECTION 359-215-509│
                       └──────────────────┘
```
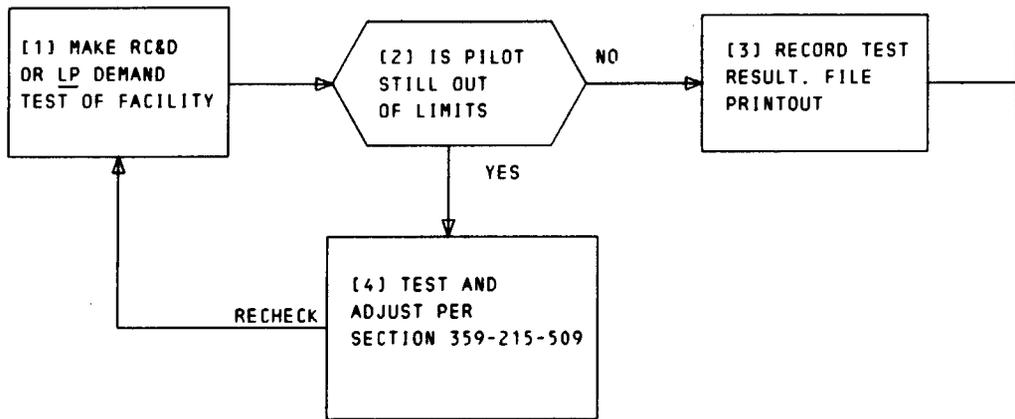
Chart 2—Clear L4 Transmitting Line Pilot Deviation
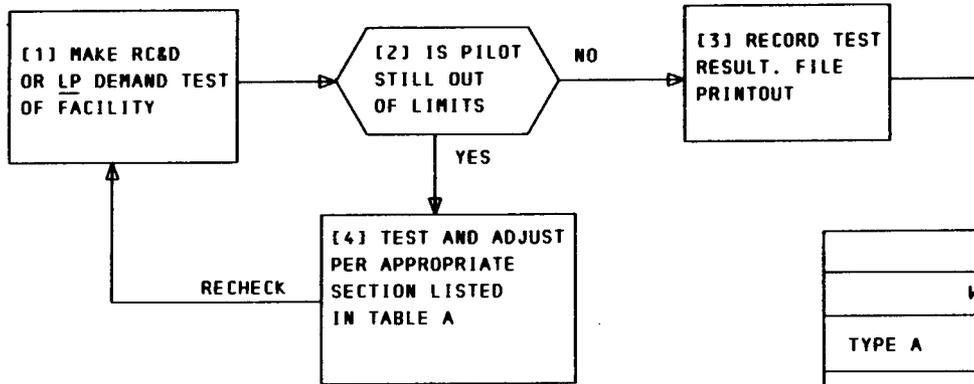
```
┌─────────────────┐       ╱╲                    ┌─────────────────┐
│ [1] MAKE RC&D   │      ╱    ╲                  │ [3] RECORD TEST │
│ OR LP DEMAND TEST├────▷│ [2] IS PILOT │  NO    │ RESULT. FILE    ├──┤ │
│ OF FACILITY     │      │ STILL OUT    ├───────▷│ PRINTOUT        │  │ │
│                 │      │ OF LIMITS    │        │                 │
└────────▲────────┘       ╲    ╱                  └─────────────────┘
         │                 ╲  ╱
         │                  ╲╱
         │                   │ YES
         │                   ▼
         │          ┌─────────────────┐
         │          │ [4] TEST AND ADJUST │
  RECHECK│          │ PER APPROPRIATE │
         └──────────│ SECTION LISTED  │
                    │ IN TABLE A      │
                    └─────────────────┘
```

TABLE A	
WLEL	SECTION
TYPE A	357-005-506
TYPE B	357-010-506
TRANSISTORIZED TYPE A	357-210-503
3A	357-300-502
3A MSG CONN LINK FOR TH-1	357-303-503

Chart 3—Clear Radio Facility Transmitting Line Pilot Deviation

[1] MAKE RC&D OR LP DEMAND TEST OF FACILITY

[2] IS PILOT STILL OUT OF LIMITS

NO

[3] RECORD TEST RESULT. FILE PRINTOUT

YES

[4] IS TRANSMITTING OFFICE EQUIPPED WITH CTMS AND DATAPHONE CAPABILITY

NO

[5] REQUEST TRANSMITTING OFFICE TO MEASURE LINE PILOTS OF FACILITY

YES

[6] MAKE LP DEMAND TEST OF FACILITY IN TRANSMITTING OFFICE

[7] IS MEASUREMENT OUT OF LIMITS

YES

[8] REQUEST TRANSMITTING OFFICE TO CLEAR TROUBLE. FILE PRINTOUT

NO

[9] TROUBLE IS IN LINE OR RECEIVING EQUIPMENT. CLEAR PER SECTION 359-035-505

Chart 4—Clear L3 Receiving Line Pilot Deviation

[1] MAKE RC&D
OR LP DEMAND
TEST OF
FACILITY

[2] IS PILOT
STILL OUT
OF LIMITS

NO

[3] RECORD TEST
RESULT. FILE
PRINTOUT

YES

[4] IS TRANSMITTING
OFFICE EQUIPPED
WITH CTMS AND
DATAPHONE CAPABILITY

NO

[5] REQUEST
TRANSMITTING OFFICE
TO MEASURE LINE
PILOTS OF FACILITY

YES

[6] MAKE LP
DEMAND TEST OF
FACILITY IN
TRANSMITTING OFFICE

[7] IS MEASUREMENT
OUT OF LIMITS ·

YES

[8] REQUEST
TRANSMITTING
OFFICE TO CLEAR
TROUBLE. FILE
PRINTOUT

NO

[9] TROUBLE IS
IN LINE OR RECEIVING
EQUIPMENT. CLEAR
PER SECTION
359-215-501

Chart 5—Clear L4 Receiving Line Pilot Deviation
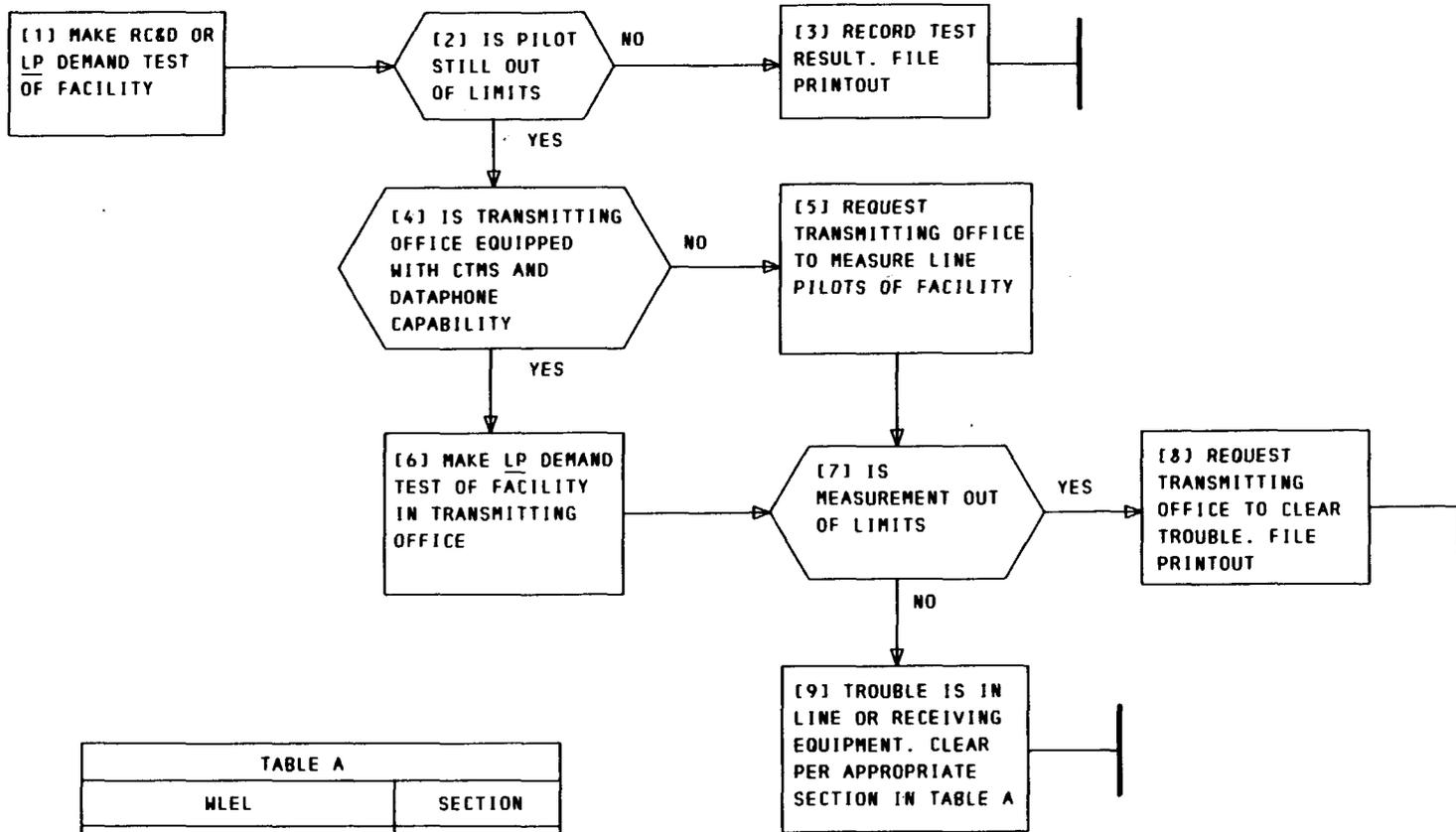
[1] MAKE RC&D OR LP DEMAND TEST OF FACILITY

[2] IS PILOT STILL OUT OF LIMITS — NO → [3] RECORD TEST RESULT. FILE PRINTOUT

YES

[4] IS TRANSMITTING OFFICE EQUIPPED WITH CTMS AND DATAPHONE CAPABILITY — NO → [5] REQUEST TRANSMITTING OFFICE TO MEASURE LINE PILOTS OF FACILITY

YES

[6] MAKE LP DEMAND TEST OF FACILITY IN TRANSMITTING OFFICE

[7] IS MEASUREMENT OUT OF LIMITS — YES → [8] REQUEST TRANSMITTING OFFICE TO CLEAR TROUBLE. FILE PRINTOUT

NO

[9] TROUBLE IS IN LINE OR RECEIVING EQUIPMENT. CLEAR PER APPROPRIATE SECTION IN TABLE A

| TABLE A	
WLEL	SECTION
TYPE A	357-005-506
TYPE B	357-010-506
TRANSISTORIZED TYPE A	357-210-503
3A	357-300-502
3A MSG CONN LINK FOR TH-1	357-303-503

Chart 6—Clear Radio Facility Receiving Line Pilot Deviation