# L MULTIPLEX TERMINALS COMMON EQUIPMENT

# CARRIER TRANSMISSION MAINTENANCE SYSTEM (CTMS) MEASUREMENT OF TERMINAL PILOTS AT MASTERGROUP AND LINE ACCESS

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|    | A.           | Scheduling PLTX Program                          | 2   | Access  |  |
|    | B.           | Transmitting Mastergroup Access Circuits         | 2   | 1. GENERAL  |  |
|    | C.           | PLTX Printout at Mastergroup Access              | 2   | 1.01 Terminal pilots of transmitting facilities are measured by the PLTX program, and terminal pilots of receiving facilities are measured      |  |
|    | D.           | Corrective Action for PLTX at Mastergroup Access | 2   | by the PLRX program. Each program, in turn, measures the facilities at mastergroup access and at line access, thus providing four complete sets |  |
|    | E.           | Transmitting Line Access Circuits .              | 2   | of printouts for use in evaluating the condition of terminal pilots in an office. Since PLTX and PLRX   |  |
|    | F.           | PLTX Printout at Line Access                     | 3   | are separate programs, the application of each is discussed separately.   |  |
|    | G.           | Corrective Action for PLTX at Line               |     |   |  |
|    |              | Access   | 3   | 1.02 This section is reissued to reflect printout modifications, add new access circuits, and   |  |
| 3. | PLR          | X PROGRAM  | 3   | revise the corrective action procedure. Since this issue constitutes a general revision, arrows ordinarily                                      |  |
|    | Α.           | Scheduling PLRX Program                          | 3   | used to indicate changes are omitted.   |  |
|    | B.           | Receiving Line Access Circuits                   | 3   | 2. PLTX PROGRAM   |  |
|    | C.           | PLRX Printout at Line Access                     | 3   | 2.01 The transmitting pilots at line and mastergroup program PLTX is a routine application  |  |
|    | D.           | Corrective Action for PLRX at Line               |     | program that measures transmitting pilots at both   |  |
|    |              | Access   | 3   | mastergroup and line access points and also measures 104.08-kHz group pilot bus levels at mastergroup   |  |
|    | E.           | Receiving Mastergroup Access Circuit             |     | access. It may be run as a demand measurement   |  |
|    |              |  | 3   | with parameter control.   |  |

# NOTICE

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#### A. Scheduling PLTX Program

by BOS commands IT (to establish an execution time), ON (to initialize the program for routine running), and ON,PLTX,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 PLTX is initialized by an IP command, scheduled by an IS command, and run as a demand program by an ON,PLTX,NOW... command. The BOS and RTE system commands and the ATM program commands are described in Section 103-260-300.

2.03 When run as a demand program, PLTX is called on to measure pilots of a specific facility at mastergroup access or at line access. The command to start PLTX for a demand measurement is:

## \*ON,PLTX[,NOW],*p1* [,*p2,p3* ]

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

#### \*RU,PLTX,p1 [,p2,p3 ]

in a disc system using only system commands.

#### Where:

p1 is short code assigned to specific mastergroup or line

p2 is always zero (enter by default using two commas).

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

p3 > 0 print all measurements.

## **B.** Transmitting Mastergroup Access Circuits

2.04 The following circuits provide access to transmitting pilots at mastergroup level and

also 104.08-kHz pilot bus signals for measurement by CTMS:

Fig. 1—LMX-1 and LMX-2 Multiplex Transmitting Mastergroup and Pilot Access Circuit (U600 Configuration)

Fig. 2-LMX-1 and LMX-2 Multiplex Transmitting Mastergroup Access Circuit (L600 Configuration)

Fig. 3—104.08-kHz Pilot Bus Access Circuit (L600 Configuration)

#### C. PLTX Printout at Mastergroup Access

2.05 Figure 4 illustrates a typical routine PLTX printout when measuring supergroup and group pilots at mastergroup access. The print limits are:

SG pilot:  $\pm 0.5$  dB from nominal.

GR pilot:  $\pm 0.5$  dB from SG.

104.08-kHz pilot bus: ±0.2 dB from nominal.

In addition, the average deviation of the group pilots of a mastergroup is printed if any group pilot is out of limits. The meanings of some entries in the heading, measurement results, and summary have been identified for convenience.

#### D. Corrective Action for PLTX at Mastergroup Access

2.06 Chart 1 is a suggested procedure for correcting transmitting pilot deviations measured at mastergroup access. When trouble has been cleared, follow local procedures to update the maintenance history file.

#### E. Transmitting Line Access Circuits

2.07 The following circuits provide access to transmitting pilots at line level:

Fig. 5-3A WLEL Transmitting Access Circuit (for TD-2, TD-3, and TH-3)

Fig. 6—TH-1 Transmitting Access Circuit

Fig. 7-L3 Transmitting Access Circuit

Fig. 8-L4 Transmitting Access Circuit

#### F. PLTX Printout at Line Access

2.08 Figure 9 illustrates a typical routine PLTX printout when measuring mastergroup and supergroup pilots at line access. The print limits are:

MG pilot: ±0.5 dB from nominal.

SG pilot: ±1.0 dB from nominal.

In addition, the average deviation of the supergroup pilots in a mastergroup is printed if any supergroup pilot is out of limits.

#### G. Corrective Action for PLTX at Line Access

2.09 Chart 2 is a suggested procedure for correcting transmitting pilot deviations measured at line access. When trouble has been cleared, follow local procedures to update the maintenance history file.

#### 3. PLRX PROGRAM

3.01 The receiving pilots at line and mastergroup program PLRX is a routine application program. It may also be run as a demand measurement with parameter control.

#### A. Scheduling PLRX Program

3.02 PLRX is scheduled in a manner similar to that described in 2.02 for PLTX routine execution. Demand execution uses the commands and parameter controls described in 2.03.

#### B. Receiving Line Access Circuits

3.03 The following circuits provide access to receiving pilots at line level:

Fig. 10-3A WLEL Receiving Access Circuit (for TD-2, TD-3, and TH-3)

Fig. 11—TH-1 Receiving Access Circuit

Fig. 12-L3 Receiving Access Circuit

Fig. 13-L4 Receiving Access Circuit

#### C. PLRX Printout at Line Access

3.04 Figure 14 illustrates a typical routine PLRX printout when measuring mastergroup and supergroup pilots at line access. The print limits are:

MG pilot: ±2.0 dB from nominal.

SG pilot (with MG regulation): ±3.0 dB from MG.

SG pilot (without MG regulation): ±4.0 dB from nominal.

In addition, the average deviation of the supergroup pilots in a mastergroup is printed if any supergroup pilot is out of limits.

#### D. Corrective Action for PLRX at Line Access

3.05 Chart 3 is a suggested procedure for correcting receiving pilot deviations measured at line access. When trouble has been cleared, follow local procedures to update the maintenance history file.

#### E. Receiving Mastergroup Access Circuit

3.06 The following circuit provides access to receiving pilots at mastergroup level:

Fig. 15—LMX-1 and LMX-2 Multiplex Receiving Mastergroup Access Circuit

#### F. PLRX Printout at Mastergroup Access

3.07 Figure 16 illustrates a typical routine PLRX printout when measuring supergroup and group pilots at mastergroup access. The print limits are:

SG pilot (with MG regulation): ±3.0 dB from nominal.

SG pilot (without MG regulation): ±4.0 dB from nominal.

GR pilot: ±3.0 dB from SG.

In addition, the average deviation of the group pilots in a mastergroup is printed if any group pilot is out of limits.

mastergroup access. When trouble has been cleared, follow local procedures to update the maintenance history file.

# G. Corrective Action for PLRX at Mastergroup Access

3.08 Chart 4 is a suggested procedure for correcting receiving pilot deviations measured at

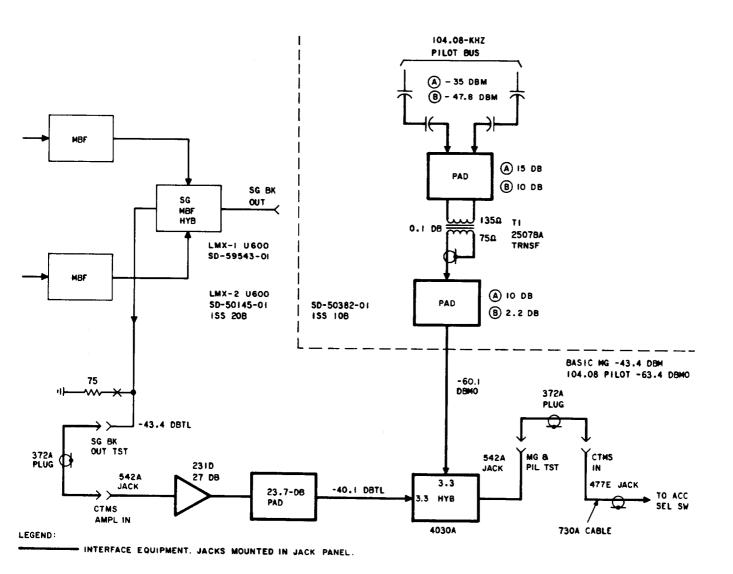


Fig. 1—LMX-1 and LMX-2 Multiplex Transmitting Mastergroup and Pilot Access Circuit (U600 Configuration)

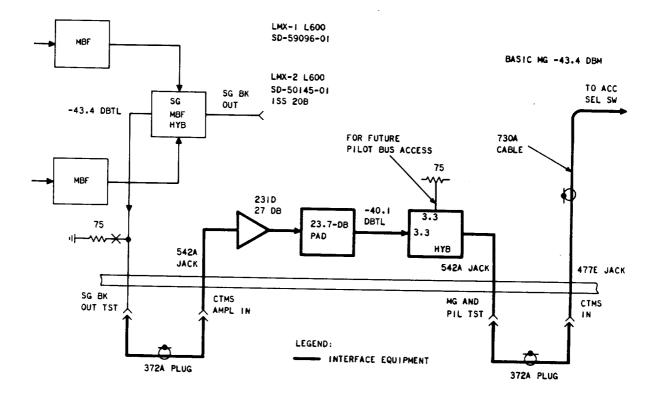


Fig. 2—LMX-1 and LMX-2 Transmitting Mastergroup Access Circuit (L600 Configuration)

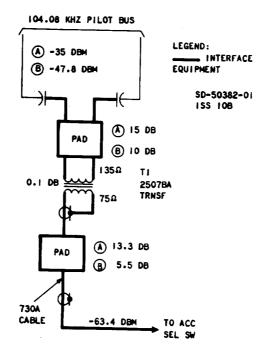


Fig. 3—104.08-kHz Pilot Bus Access Circuit (L600 Configuration)

```
PROGRAM NAME
                                                 ISSUE NO.
PLTX: TERMINAL PILOTS- TRMTG AT LINE & MG
                                                 ISSUE 4
MG LIM: PB=.2DB; SG=.5DB; GP=.5DB/SG PRINT LIMITS (#FROM NOMINAL)
  MG PRINTOUT
PLTX: DATE 69 19:524 DATE AND TIME
  MG= 201; 01 MXS AC1 CHSHCT02 NTCNNJNC MG IDENTIFICATION
          SHORT CODE OF MG
SG...GP...OLD...NEW...CHANGE
                •3
                       • 1
15 5 .7
    •8
•8
•8
•8
                        • Ø
          .8
17
17
                        -. Ø
     4
         -.8 -1.0
18
                       -.1
                            OUT-OF-LIMITS MEASUREMENTS
26
     3 -.6 -.7 -.0
28
     3
           .7
                 • 8
                       • 1
     4 1.1
28
                1.5
                       •3
    5
28
          • 9
                1.2
                       •3
    AVG
           .Ø .1
                        ر ھ.
*****
PLTX: DATE 69 20: J
 MG= 404: 01 MXS AE4 BSTNMAFR NICHNUNC
SG...GP...OLD...NEW...CHANGE
13 2 -.6 -.6 -.0
                                              PROGRAM SUMMARY
          -.7
13
     4
                 -.8
                        -.2
18 5 .3 .6
26 2 -1.1 -1.0
26 3 -.9 -.7
                                           (I) NO. OF PILOTS MEASURED
                       •3
                       .1
                                           2 NO. OUT-OF-LIMITS
                                           3 PERCENT OUT-OF-LIMITS
26
     4 -.7
                       • Ø
               -.7
                                           (4) FIGURE OF MERIT
27
     2
         -.7
                       . Ø
               -.6
    AVG -.2 -.2
                        • B
*****
PLTX: DATE 69 20: 1
  MG= 502; PRIMES AGR NICHNING PLOSMARR
SG...GP...OLD...'IEV...CHANGE
         .7 .8 .1
          • 4
                .7
18
     4
                        • 3
     4
            .9 .9
                        -.0
           .C
    AVG
                  • ମ
*****
 PLTX: MG SUMMARY DATE 69 21:34

      PP PILOTS=
      31
      SG PILOTS=
      826
      GP PILOTS=
      2677

      #>LIMIT=
      3
      #>LIMIT=
      35
      #>LIMIT=
      879

      %>LIMIT=
      9
      %>LIMIT=
      4
      %>LIMIT=
      32

                                                                       ①
②
③
                                                   #>1.IMIT= 879
                          FIG/MERIT= 89.81 FIG/MERIT= 62.69@
```

Fig. 4—PLTX Printout of SG and GR Pilots at Mastergroup Access

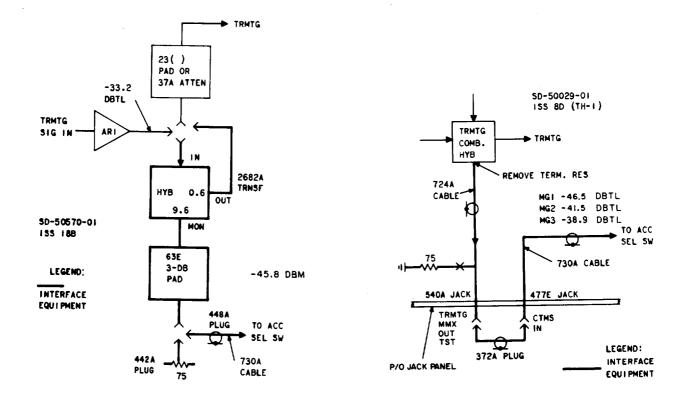


Fig. 5—3A WLEL Transmitting Access Circuit (for TD-2, TD-3, and TH-3)

Fig. 6—TH-1 Transmitting Access Circuit

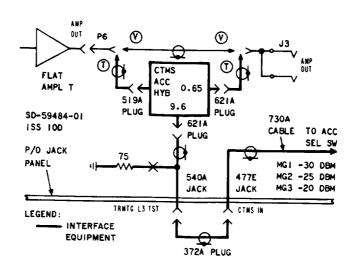


Fig. 7—L3 Transmitting Access Circuit

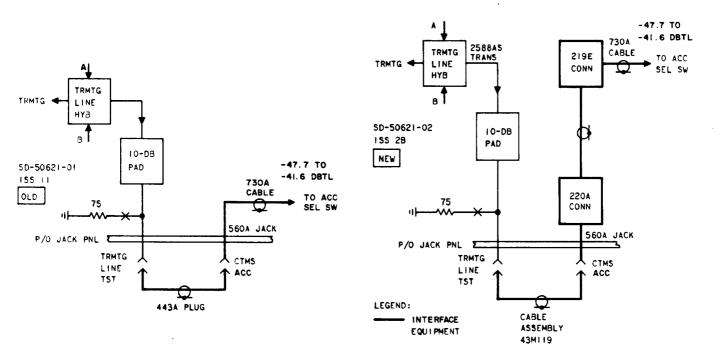


Fig. 8—L4 Transmitting Access Circuit

```
ISSUE NO.
               PROGRAM NAME
PLTX: TERMINAL PILOTS- TRMTG AT LINE & MG
                                           ISSUE 4
LINE_LIM: MG=.5DB; SG=1.DB PRINT LIMITS (+ FROM NOMINAL)
     LINE PRINTOUT
*****
                                    NTCN N JNC LINE IDENTIFICATION
PLTX: DATE 69 19: 3 DATE AND TIME
               L401/2FPA CHSHCT02
LINE = 100;
NO PILOTS
           SHORT CODE OF LINE
******
PLTX: DATE 69 19: 4
              LAG3/4FCA CHSHCTG2 NTCNNJNC
LINE= 200:
MG...SG...OLD...NEW...CHANGE
        1.3
    13
              1.4
 3
    16
        1.9
              1.8
                     -.Ø
    17
 3
         2.0
               2.1
                      • 1
                         OUT-OF-LIMITS MEASUREMENTS
 3
    18
        1.Ø
             1.8
                     • 8
    28
        1.7
              1.7
                      . 1
    AVG
          • 9
               1.0
                      • 1
******
PLTX: DATE 69 19:49
LINE= 5400; MUR301/2FHC NTCNNJNC SYCMPAQ0010
*****
PLTX: DATE 69 19:50
LINE= 5500: MUR301/2BEC NICHNING
                                    PTVYNY02
******
PLTX: DATE 69 19:50
LINE: 5600: MUR301/2EFF CHVLNJOA NICNNJNC
MG...SG...OLD...NEV...CHANGE
 1 13 1.0 1.1
                    • 1
               • 4
    AVG •5
                     -.1
                      • Ø
    28
         1.8 1.8
    AVG
                •3
                      • Ø
          •3
*****
                                               PROGRAM SUMMARY
 PLTX: LINE SUMMARY DATE 69 19:51
     MG PILOTS= 163
                        SG PILOTS= 1552
                                            NO. OF PILOTS MEASURED
       #>LIMIT= 32
                           #>LIMIT= 315
                                            NO. OUT-OF-LIMITS
                19
      %>LIMIT=
                           Z>LIMIT=
                                     20
                                            PERCENT OUT-OF-LIMITS
     FIG/MERIT= 59.27 FIG/MERIT=
                                     75.01
                                            FIGURE OF MERIT
```

Fig. 9—PLTX Printout of MG and SG Pilots at Line Access

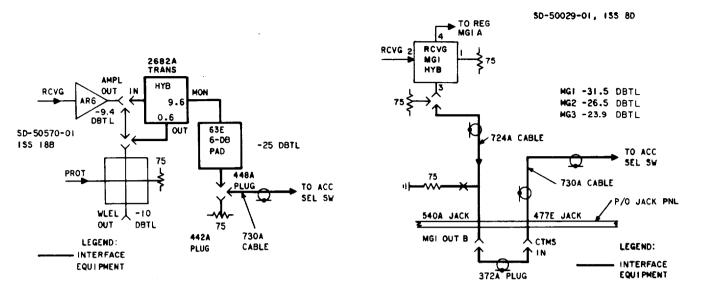


Fig. 10—3A WLEL Receiving Access Circuit (for TD-2, TD-3, and TH-3)

Fig. 11—TH-1 Receiving Access Circuit

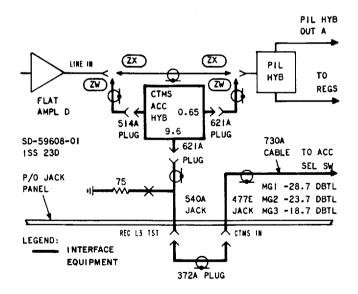


Fig. 12-L3 Receiving Access Circuit

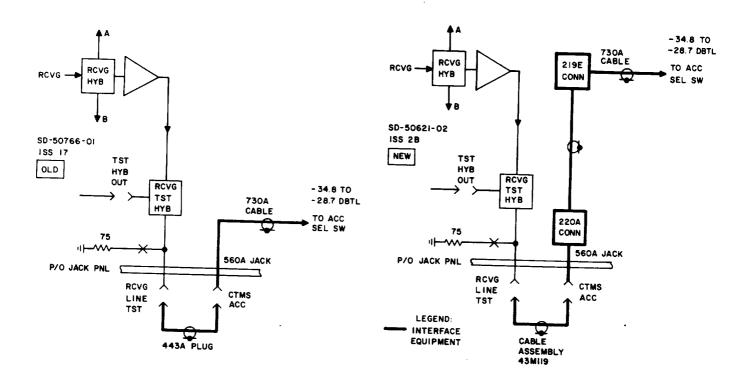


Fig. 13-L4 Receiving Access Circuit

```
ISSUE NO.
                PROGRAM NAME
PLRX: TERMINAL PILOTS - RCVG AT LINE & MG
                                                ISSUE 4
LINE LIM: MG=2DB; SG=3.DB/MG
PRINT LIMITS (± FROM NOMINAL)
PLRX: DATE 69 17: 3 DATE AND TIME
LINE= 100; L401/2FPA CHSHCT02 NTCNNJNC LINE IDENTIFICATION
NO PILOTS
            SHORT CODE OF LINE
******
PLRX: DATE 69 17: 4
LINE= 200: L403/4FCA CHSHCT02 NTCNNJNC
MG...SG...OLD...NEW...CHANGE
 2 26 .3 3.7 3.5 OUT-OF-LIMITS MEASUREMENTS AVG -.1 .2 .3
*****
PLRX: DATE 69 17:25
LIME= 3300; LAMI/2APH CDRNNJCK01TNTCNNJNC
NO PILOTS
*****
PLRX: DATE 69 17:26
LINE= 3400: L403/4AAH CDKNNJCK01TNTCNNJNC
*****
PLRX: DATE 69 17:27
LINE= 3900; MUR209/0ELF CHVLNJQA NTCNNJNC
MG...SG...OLD...NEW...CHANGE
 1 27 -3.6 -3.4 .1
AVG -1.1 -.8 .3
*****
PLRX: DATE 69 17:28
LINE= 4000; MUR255/6CJA NTCNNJNC RCPKNJRH
PLRX: LINE SUMMARY DATE 69 17:35
                                                   PROGRAM SUMMARY
     MG PILOTS= 166 SG PILOTS= 1586 NO. OF PILOTS MEASU

#>LIMIT= 7 #>LIMIT= 55 NO. OUT-OF-LIMITS

Z>LIMIT= 4 Z>LIMIT= 3 PERCENT OUT-OF-LIM

FIG/MERIT= 98.03 FIG/MERIT= 98.10 FIGURE OF MERIT
                                               NO. OF PILOTS MEASURED
                                                PERCENT OUT-OF-LIMITS
```

Fig. 14—PLRX Printout of MG and SG Pilots at Line Access

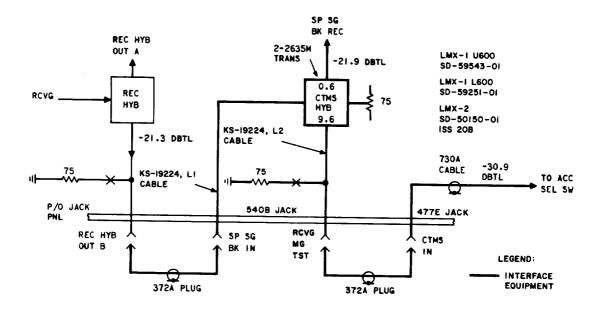


Fig. 15—LMX-1 and LMX-2 Multiplex Receiving Mastergroup Access Circuit

```
PROGRAM NAME
                                         ISSUE NO.
PLRX: TERMINAL PILOTS - RCVG AT LINE & MG
                                        ISSUE 5
MG LIM: SG=3DB; NO REG: SG=4DB; GP=3.DB/SG
                                        PRINT LIMITS (± FROM NOMINAL)
  MG PRINTOUT
*****
PLRX: DATE 69 17:36 DATE AND TIME
  MG = 201; ØI MXS ACI CHSHCTO2 NTCNNJNC MG IDENTIFICATION
        SHORT CODE OF MG
*****
PLRX: DATE 69 17:37
  MG= 202: 02 MXS AC2 CHSHCT02 NTCNNJNC
SG...GP...OLD...NEW...CHANGE
26 1 .6 4.1 3.5
        .1 .2 .1
   AVG
******
PLRX: DATE 69 17:38
MG= 302: 01 MXS AF2 HRERCT02 NICHNING
******
PLRX: DATE 69 17:38
 MG= 303; 01 MXS AF3 BLCSMA02
                                 NTCNNJNC
*****
PLRX: DATE 69 18:38
MG= 5403: 02 MXS FH3 NTCNNJNC SYCMPAQ0010
SG. . GP. . OLD . . NEW . . CHANGE
25 1 -2.8 -3.1 -.2
  AVG -.5 -.4 .1 OUT-OF-LIMITS MEASUREMENTS
28
*****
PLRX: DATE 69 18:39
 MG= 5501: 01 MXS BEI NICHNUNC PIVYNYOS
******
PLRX: DATE 69 18:39
 MG= 5601: ØIMXS FFI CHVLNJOA
                                 MICHNINC
*****
PLRX: MG SHMMARY DATE 69 18:40
SG PILOTS= 842 GP PILOTS= 27
                                           PROGRAM SUMMARY
                   GP PILOTS= 2760
                                        NO. OF PILOTS MEASURED
      #>LIMIT= 21
                      NO. OUT-OF-LIMITS
      % Z > L IM IT =
               2
                                         PERCENT OUT- OF-LIMITS
    FIG/MERIT= 98.91 FIG/MERIT= 99.88 FIGURE OF MERIT
```

Fig. 16—PLRX Printout of SG and GR Pilots at Mastergroup Access

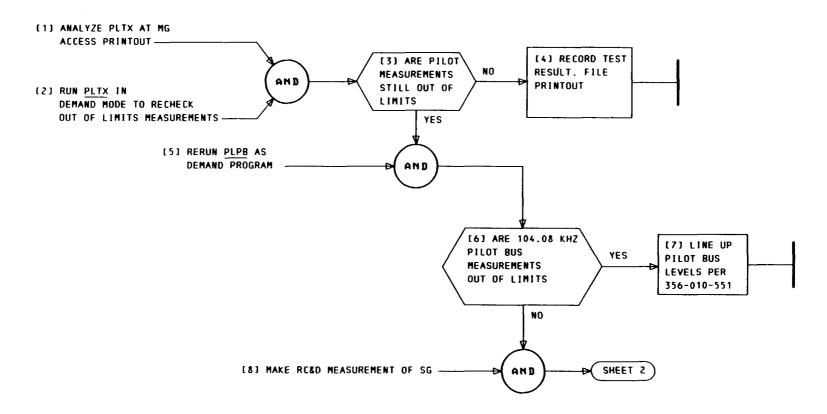


Chart 1—Correct Pilot Deviations of PLTX at Mastergroup Printout (Sheet 1 of 2)

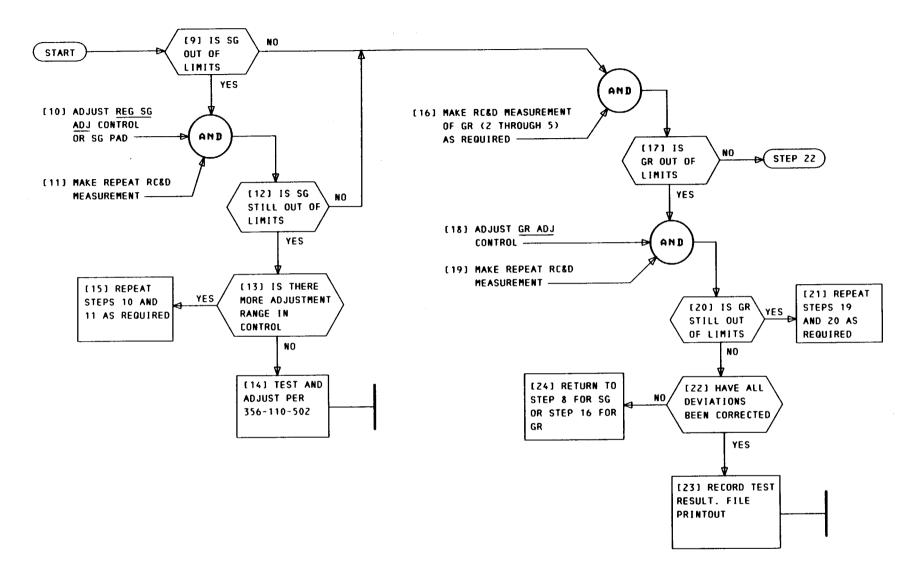


Chart 1—Correct Pilot Deviations of PLTX at Mastergroup Printout (Sheet 2 of 2)

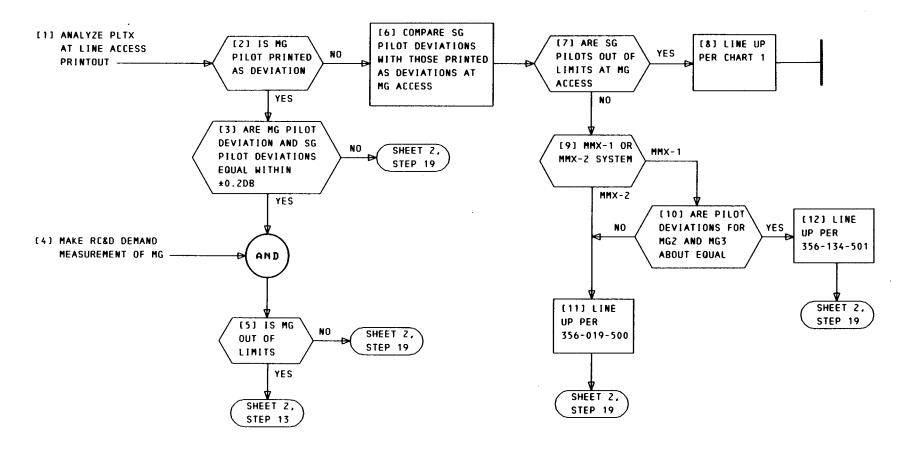


Chart 2—Correct Pilot Deviations of PLTX at Line Printout (Sheet 1 of 2)

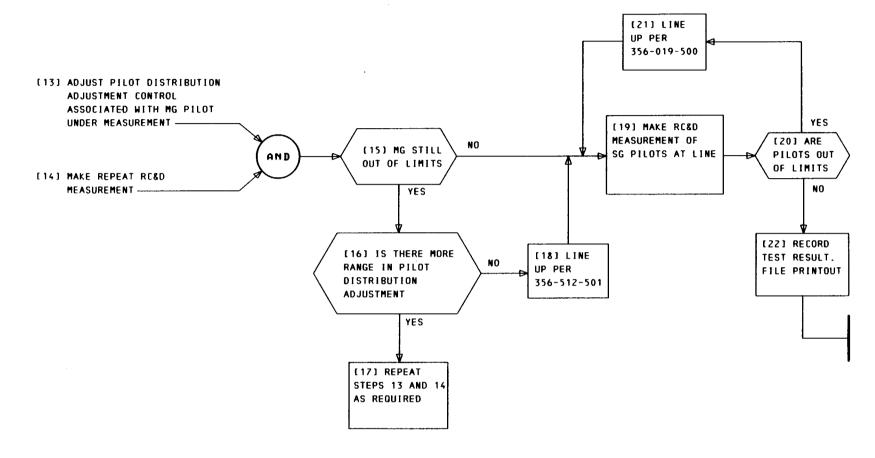


Chart 2—Correct Pilot Deviations of PLTX at Line Printout (Sheet 2 of 2)

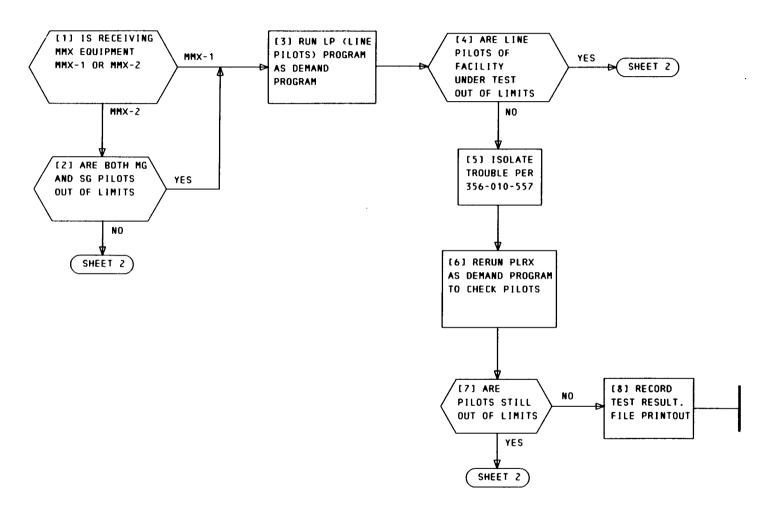


Chart 3—Correct Pilot Deviations of PLRX at Line Printout (Sheet 1 of 2)

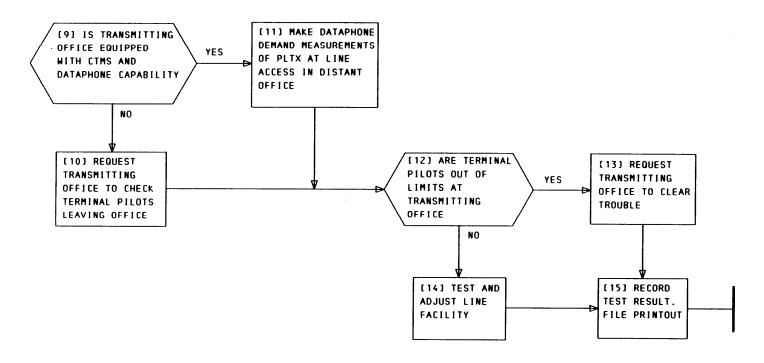


Chart 3—Correct Pilot Deviations of PLRX at Line Printout (Sheet 2 of 2)

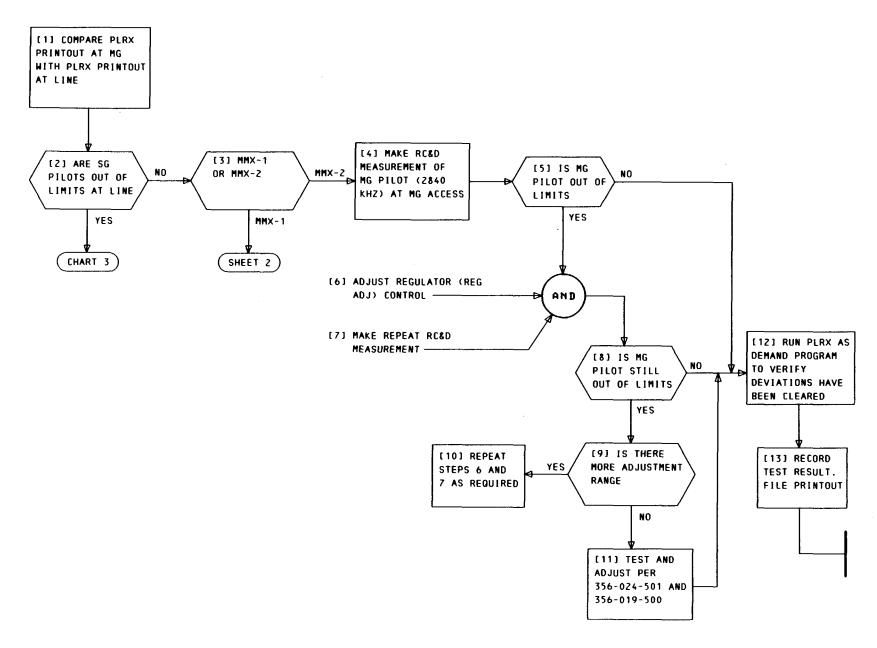


Chart 4—Correct Pilot Deviations of PLRX at Mastergroup Printout (Sheet 1 of 2)

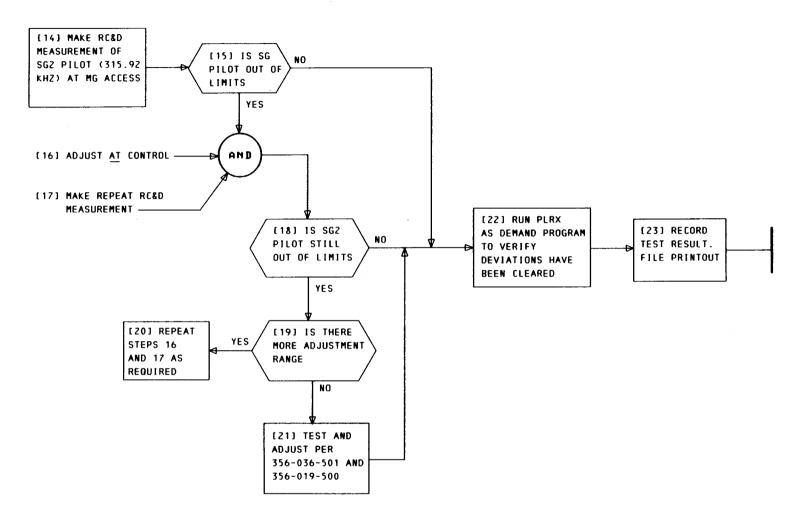


Chart 4—Correct Pilot Deviations of PLRX at Mastergroup Printout (Sheet 2 of 2)