L MULTIPLEX TERMINALS

COMMON EQUIPMENT

CARRIER TRANSMISSION MAINTENANCE SYSTEM (CTMS)

SUPERGROUP OUT-OF-BAND NOISE MEASUREMENTS

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1. GENERAL

1.01 This section describes the supergroup out-of-band noise measurement program (NOSG) of CTMS and corrective action to take when measurements exceed allowable limits. NOSG is normally run by clock control to measure noise at receiving mastergroup, but may be run as a demand measurement with parameter control.

1.02 This section is reissued to reflect printout modifications and revise corrective action procedures. Since this issue constitutes a general revision, arrows ordinarily used to indicate changes are omitted.

2. ACCESS CIRCUITS

2.01 Supergroup out-of-band noise slots are normally accessed at receiving mastergroup points for CTMS measurement by the circuit shown in Fig. 1. When run as a demand program, the NOSG program can sample signals through access circuits at transmitting mastergroup, transmitting line, receiving line, and at scanner in addition to receiving mastergroup access. The additional access circuits that may be used on a demand basis are listed below:

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

Fig. 3—LMX-1 and LMX-2 Multiplex Transmitting Mastergroup Access Circuit (L600 Configuration)

Fig. 4—3A WLEL Transmitting Access Circuit (for TD-2, TD-3, and TH-3)

Fig. 5—TH-1 Transmitting Access Circuit

Fig. 6—L3 Transmitting Access Circuit

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Fig. 8—3A WLEL Receiving Access Circuit (for TD-2, TD-3, and TH-3)

Fig. 9—TH-1 Receiving Access Circuit

Fig. 10—L3 Receiving Access Circuit

Fig. 11—L4 Receiving Access Circuit

Fig. 12—LMX-1 and LMX-2 Scanner Access Circuit.

3. SCHEDULING PROGRAM

3.01 NOSG 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,NOSG,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 NOSG is initialized by an IP command, scheduled by an IS command, and run as a demand program by an ON,NOSG,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, NOSG is called on to measure SG out-of-band noise at a specific access level in a transmitting or receiving path. The command to start NOSG for a demand measurement is:

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

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

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

in a disc system using only system commands.

Where:

p1 is short code assignment of MG (if defaulted to 0, all mastergroups are measured).

p2 is access point designation as follows (if defaulted to 0, measurement is made at receiving mastergroup):

2—receiving line access

3—transmitting line access

4—receiving mastergroup access

5—transmitting mastergroup access

6—scanner supergroup output access

p3 = 0 (or absent) print all measurements on an MG when average is out of limits.

p3 = 1 print all measurements.

p3 = 2 print all out-of-limits measurements.

4. PRINTOUT

4.01 Figure 13 illustrates a typical routine NOSG printout. The noise limit for the receiving direction of each multiplex section (MXS) is dependent on the length of the MXS from the transmitting LMX terminal as given in Table A. This receiving noise limit plus a standard limit of 28 dBrnc0 for the transmitting direction of an MXS when terminal (or identical to the receiving limit when it is a through MXS) is defined in the data base per the instructions of Section 103-260-301. The meaning of some entries in the heading, measurement results, and summary have been identified for convenience.

5. CORRECTIVE ACTION

5.01 Charts 1 through 4 suggest procedures for correcting noise problems. Chart 1 provides general guidance and may, in turn, lead to other charts for final trouble isolation. Chart 4, which deals with noise isolation in a transmitting office, is normally used when responding to a request from a receiving office to check a noise condition. When trouble has been cleared, follow local procedures to update the maintenance history file.

TABLE A

NOISE REQUIREMENTS

TEST JACKS	NOMINAL TRANSMISSION LEVEL (DB)	TRANSMISSION PATH IN MILES							
		0 to 50	51 to 100	101 to 200	201 to 400	401 to 1000	1001 to 1500	1501 to 2500	2501 to 4000
		REQUIREMENTS IN DBRNC*							
FMR OUT MON	−52	−24	−21	−20	−18	−15	−13	−11	−9
WKG CH OUT or TERM TRK IN	−43	−15	−12	−11	−9	−6	−4	−2	0
SG DEM OUT B** via ED-99736-30 cord with 3-dB loss	−31	−3	0	1	3	6	8	10	12
Equivalent dBrnc0 (dBrnc at 0-dB transmission level point)		28	31	32	34	37	39	41	43

* Measured noise in dBrnc shall not be greater than the indicated values. These requirements are based on the mileage between supergroup terminals.

** Where a group connector or supergroup connector is used to entend the transmission path, disregard the distance beyond the connector. Filters in a connector provide adequate attenuation in the frequency slot measured to confine the measured noise within one supergroup section.

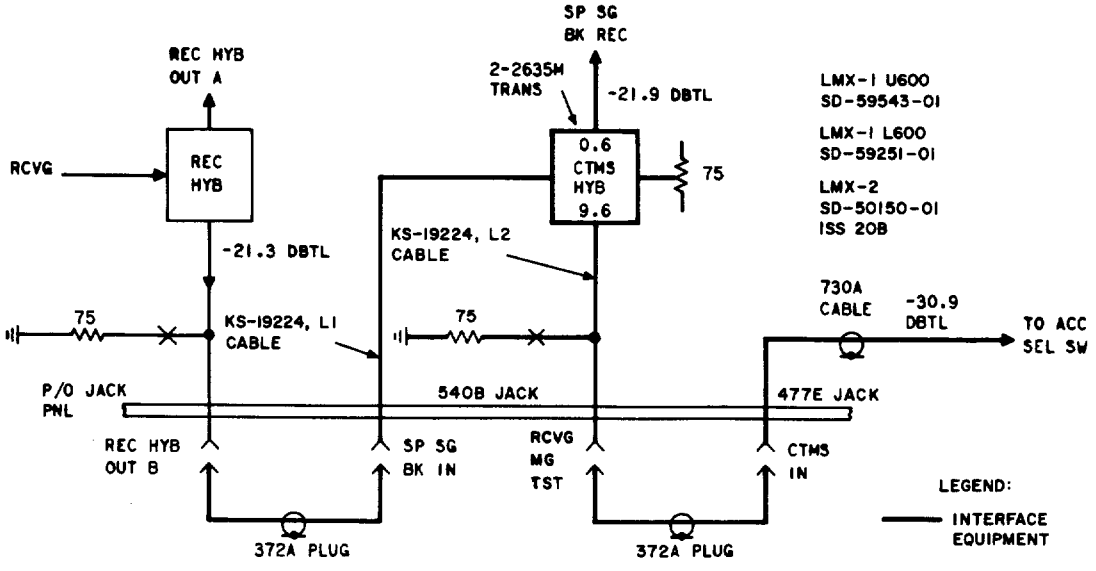

Fig. 1—LMX-1 and LMX-2 Multiplex Receiving Mastergroup Access Circuit

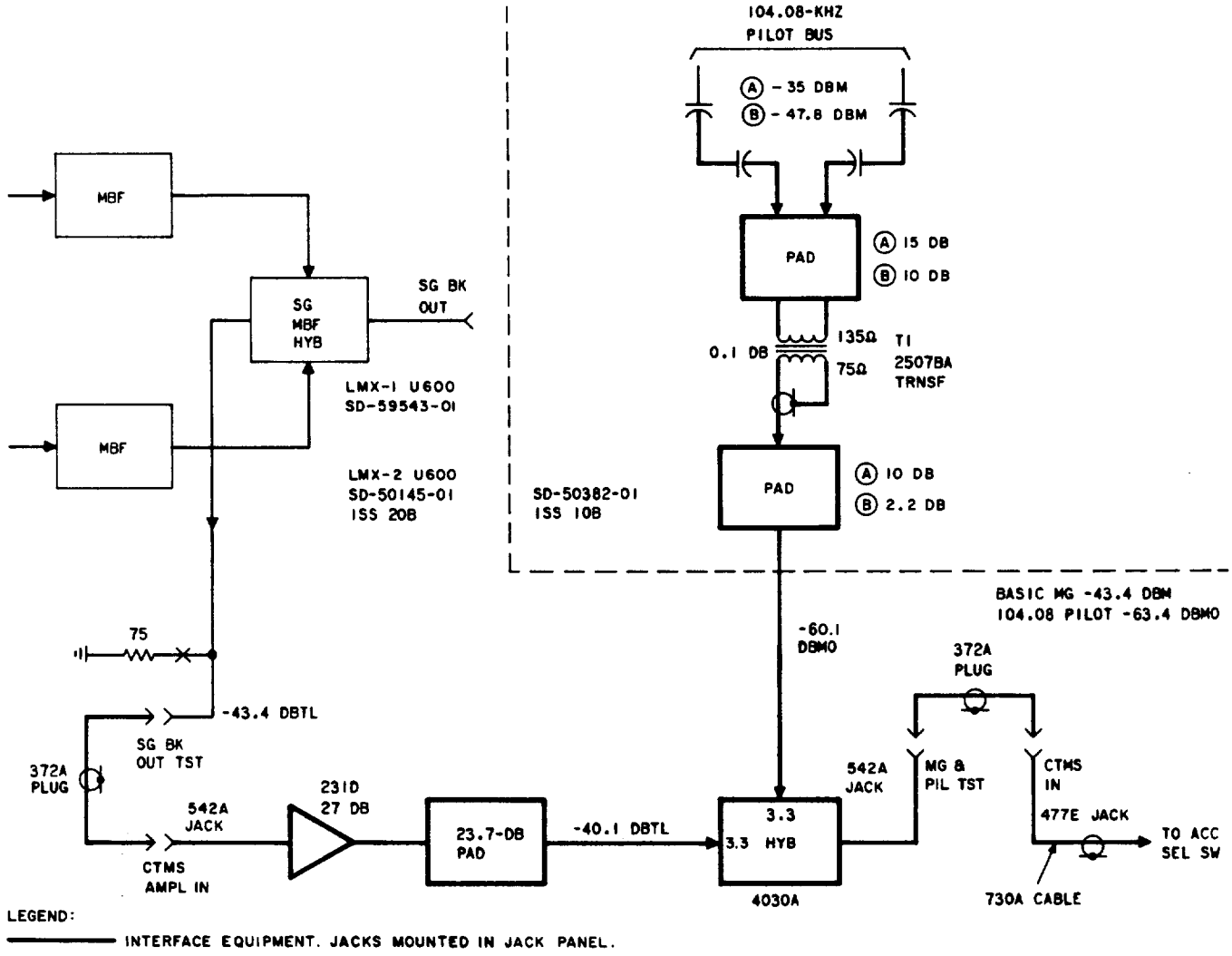

Fig. 2—LMX-1 and LMX-2 Multiplex Transmitting Mastergroup and Pilot Access Circuit (U600 Configuration)

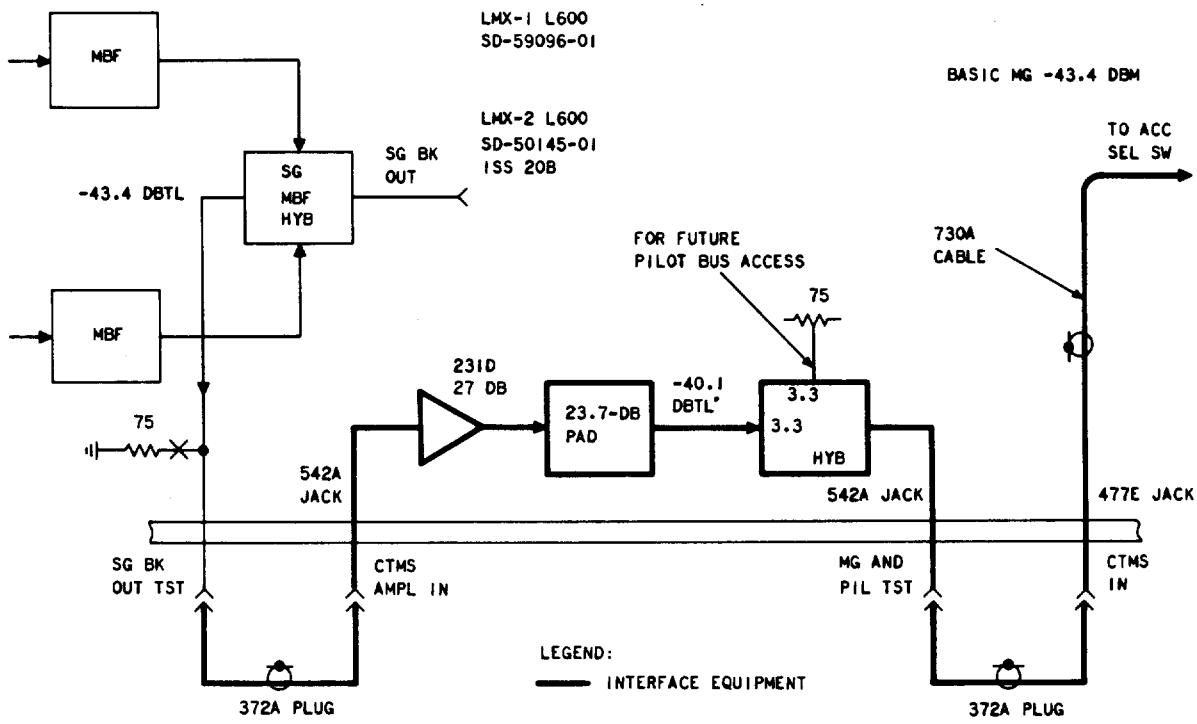

Fig. 3—LMX-1 and LMX-2 Multiplex Transmitting Mastergroup Access Circuit (L600 Configuration)

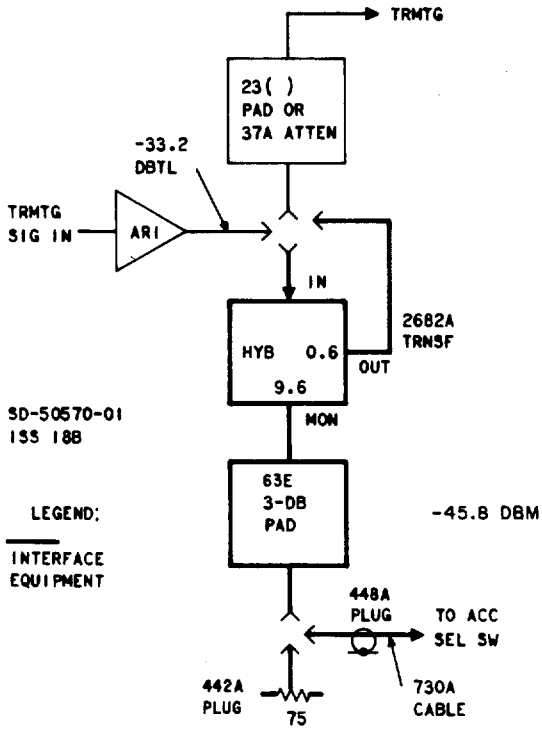

Fig. 4—3A WLEL Transmitting Access Circuit (for TD-2, TD-3 and TH-3)

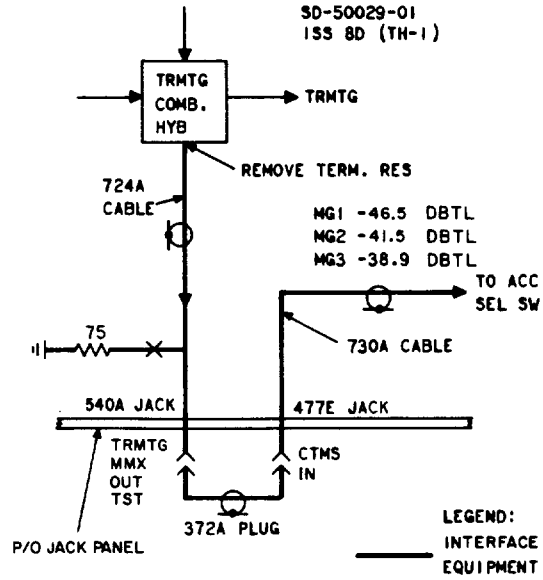

Fig. 5—TH-1 Transmitting Access Circuit

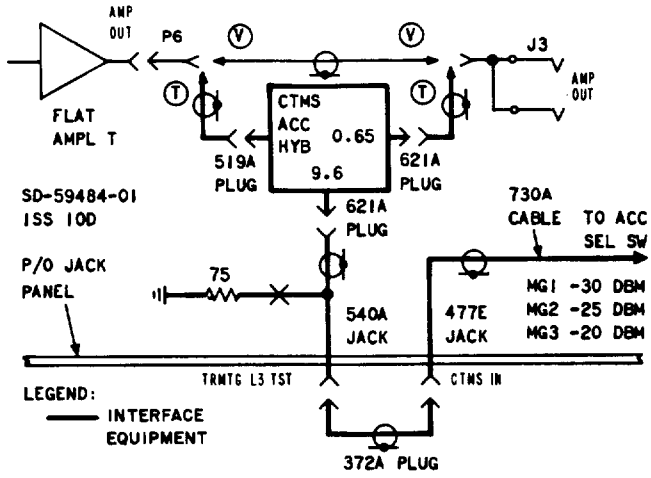

Fig. 6—L3 Transmitting Access Circuit

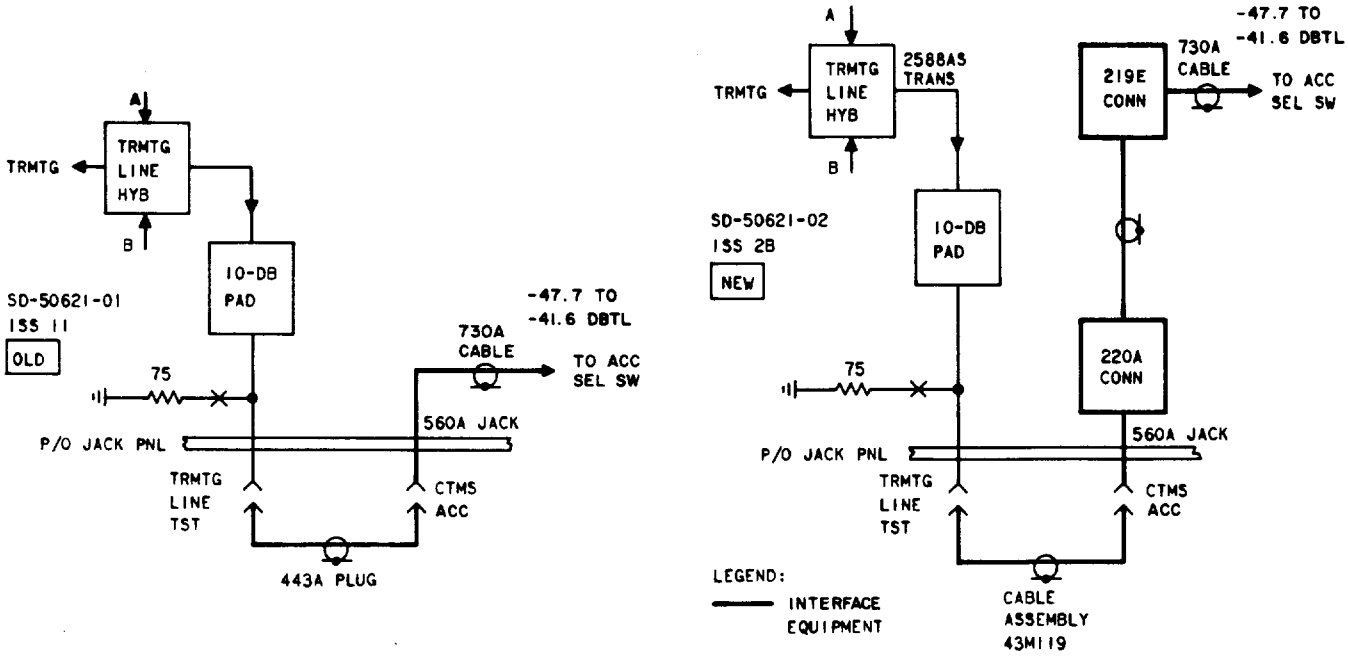

Fig. 7—L4 Transmitting Access Circuit

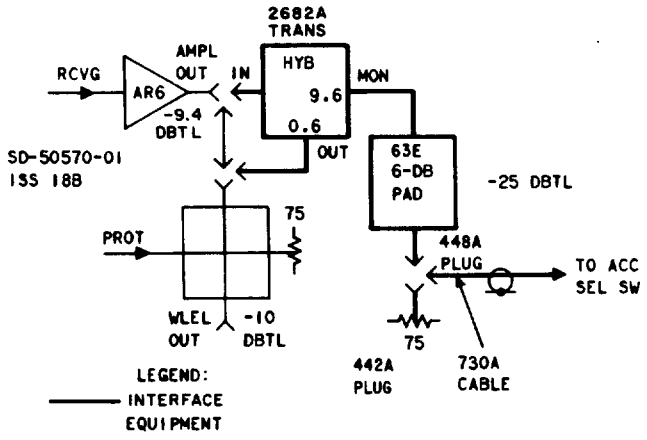

Fig. 8—3A WLEL Receiving Access Circuit (for TD-2, TD-3, and TH-3)

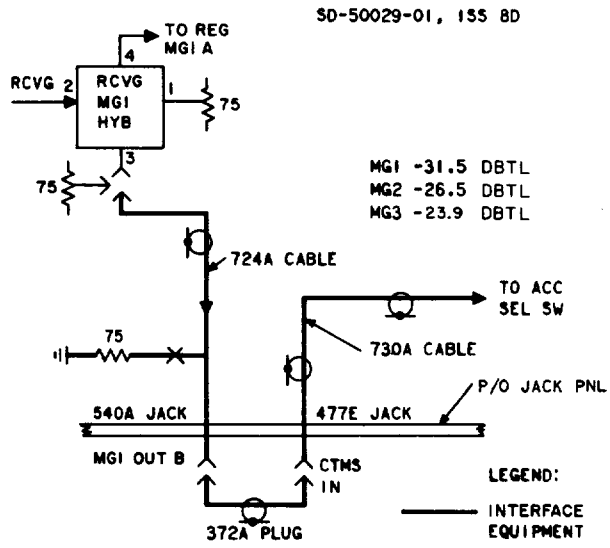

Fig. 9—TH-1 Receiving Access Circuit

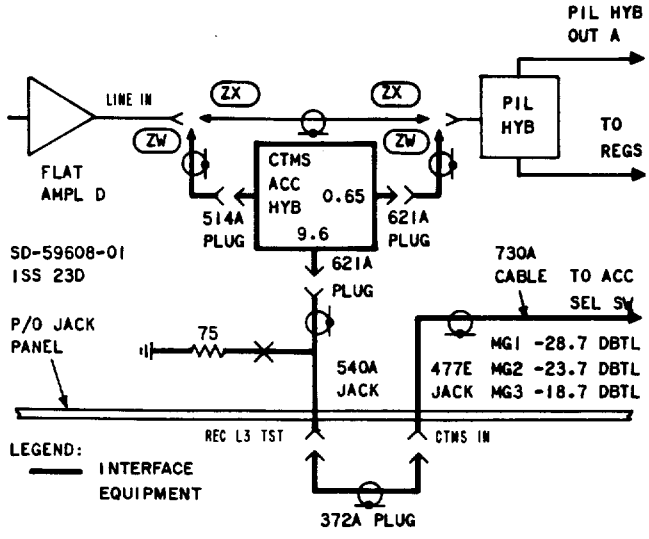

Fig. 10—L3 Receiving Access Circuit

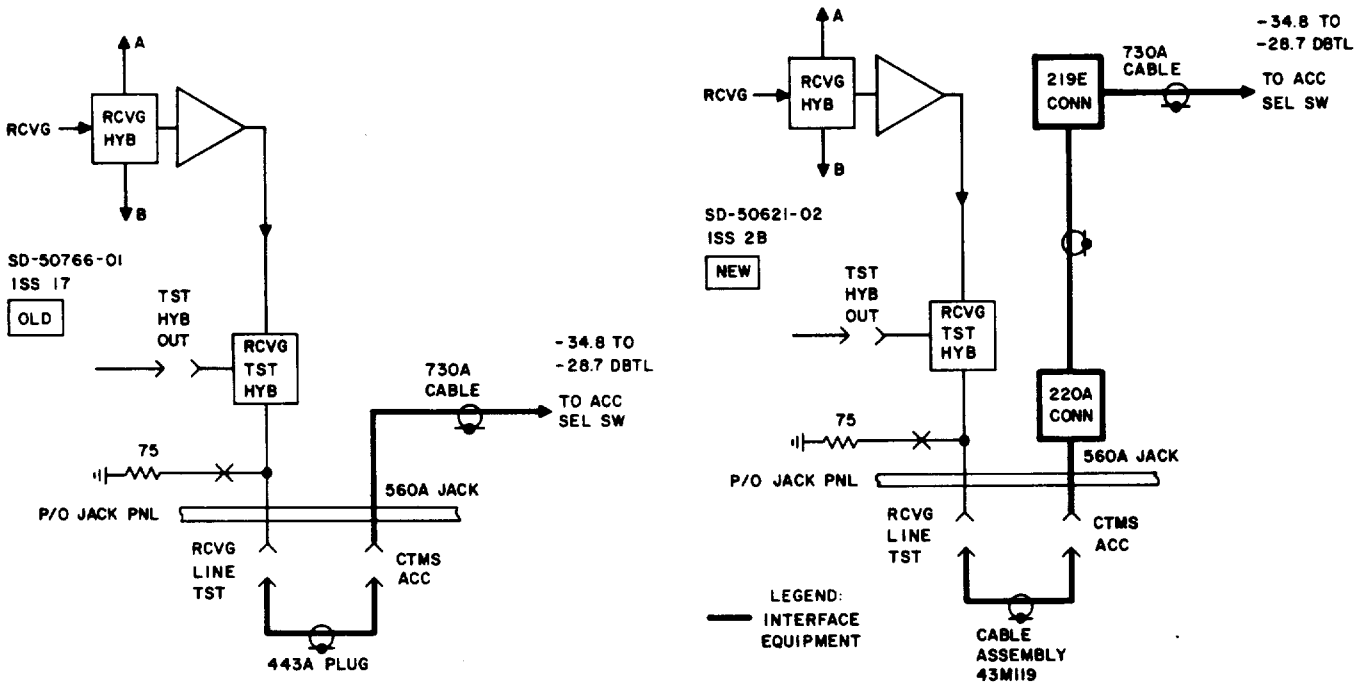

Fig. 11—L4 Receiving Access Circuit

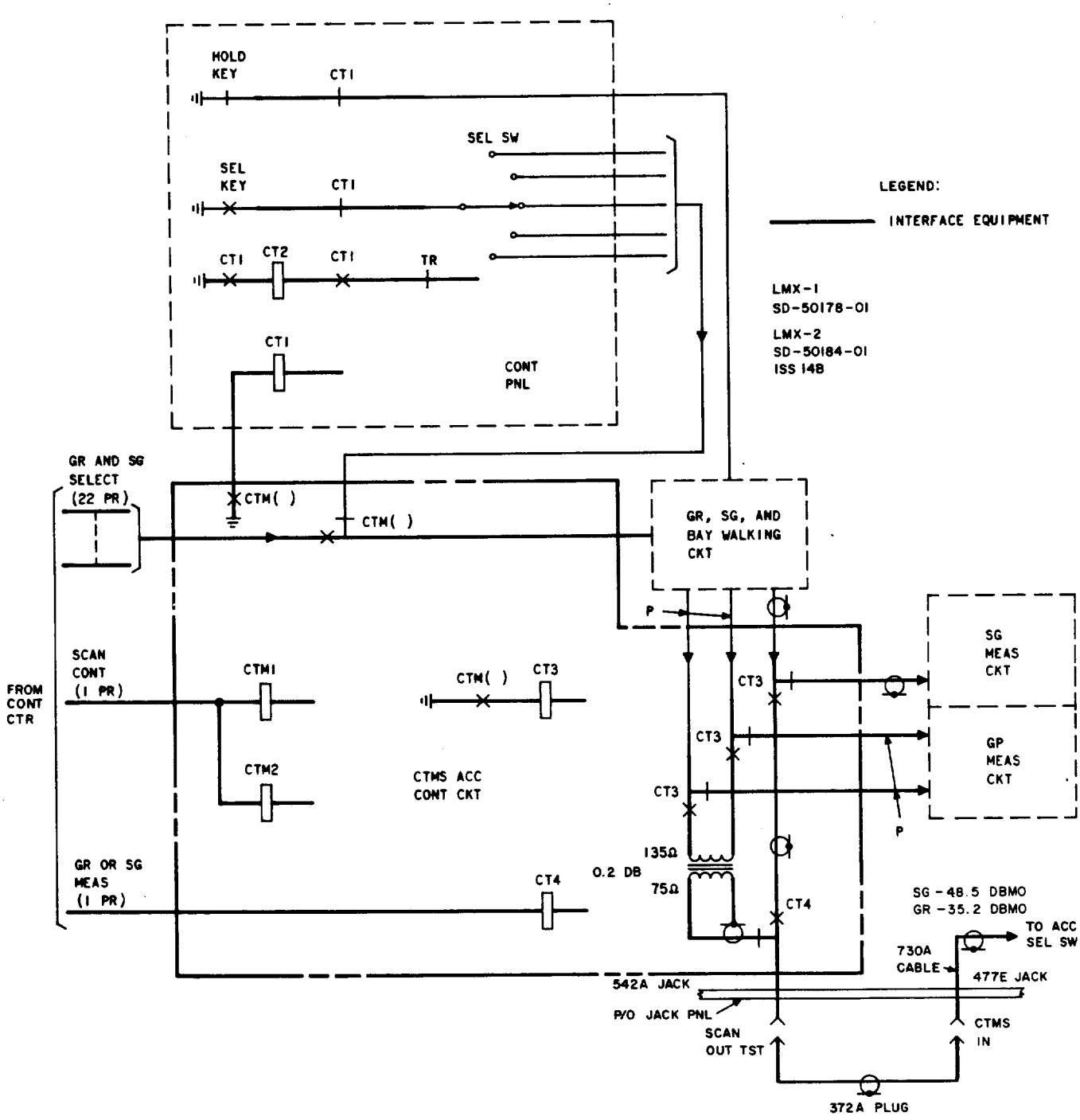

Fig. 12—LMX-1 and LMX-2 Scanner Access Circuit

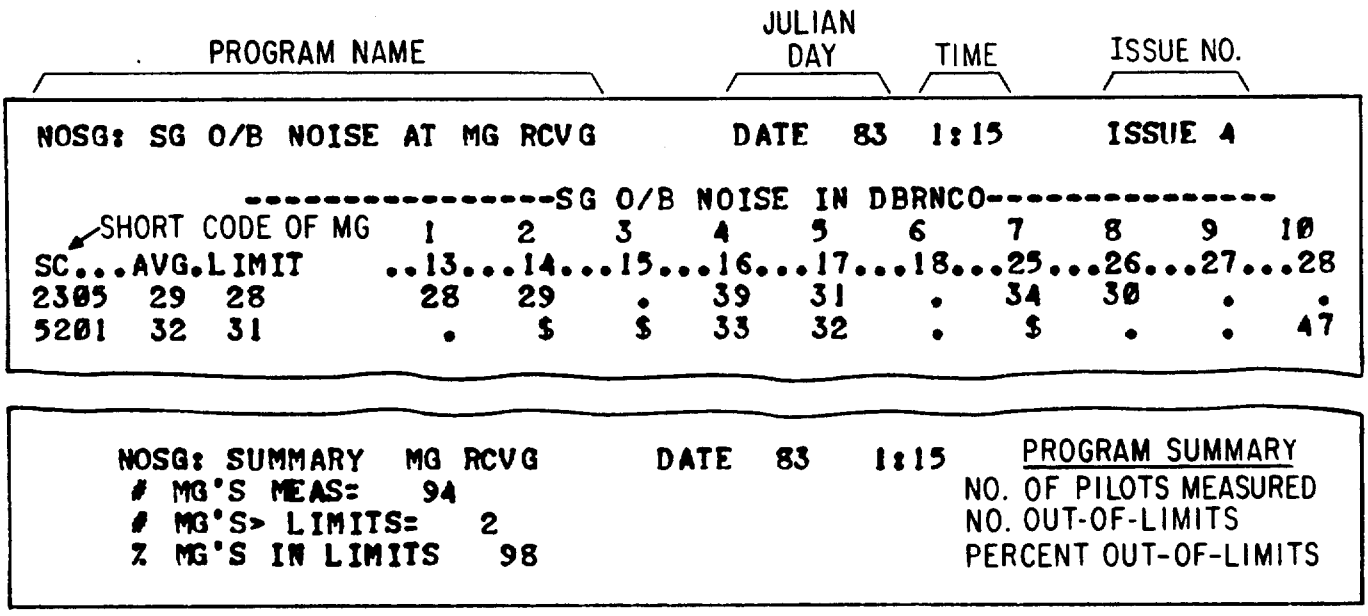

Fig. 13—NOSG Printout of Supergroup Out-of-Band Noise

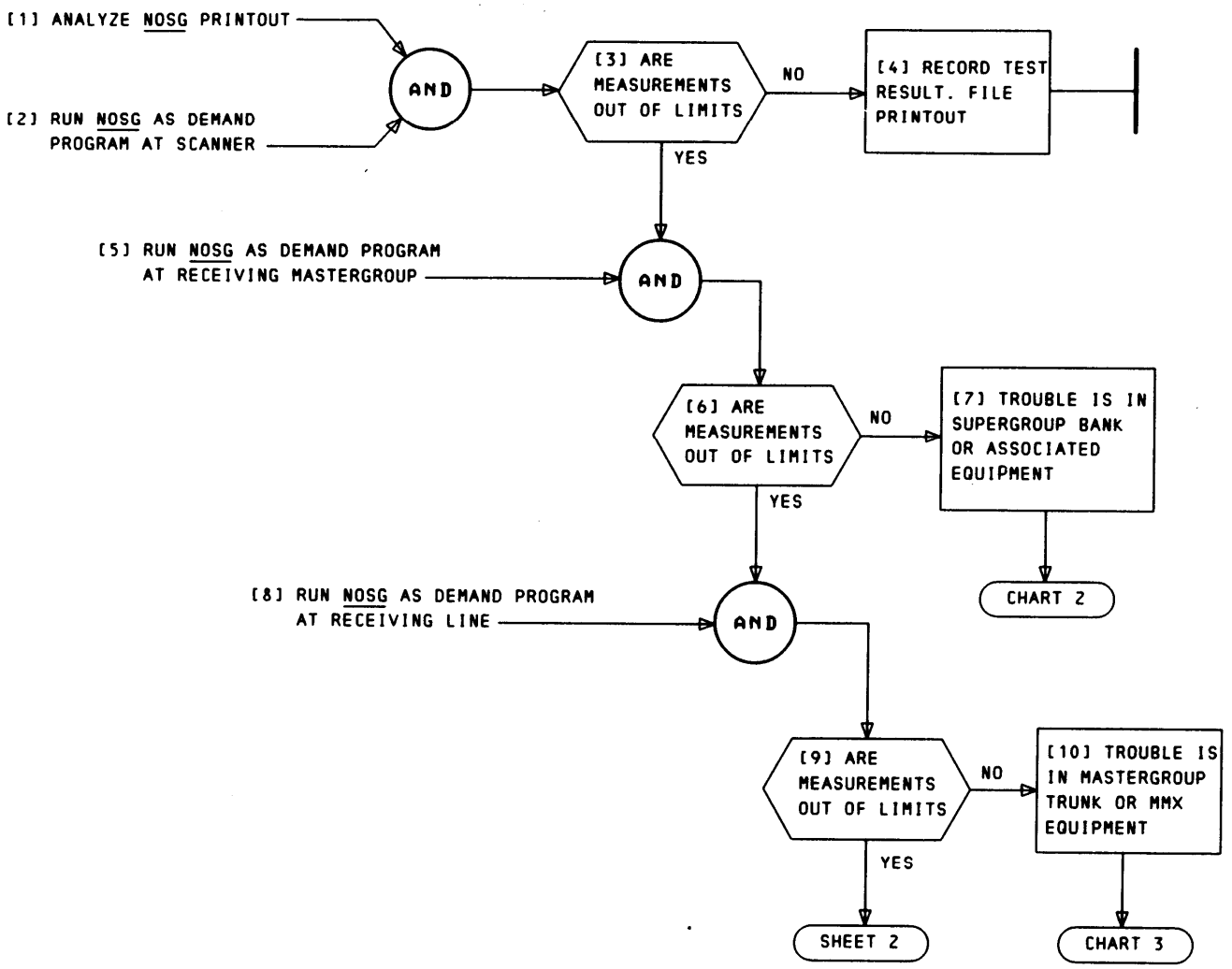

Chart 1—General Isolation of Supergroup Out-of-Band Noise (Sheet 1 of 2)

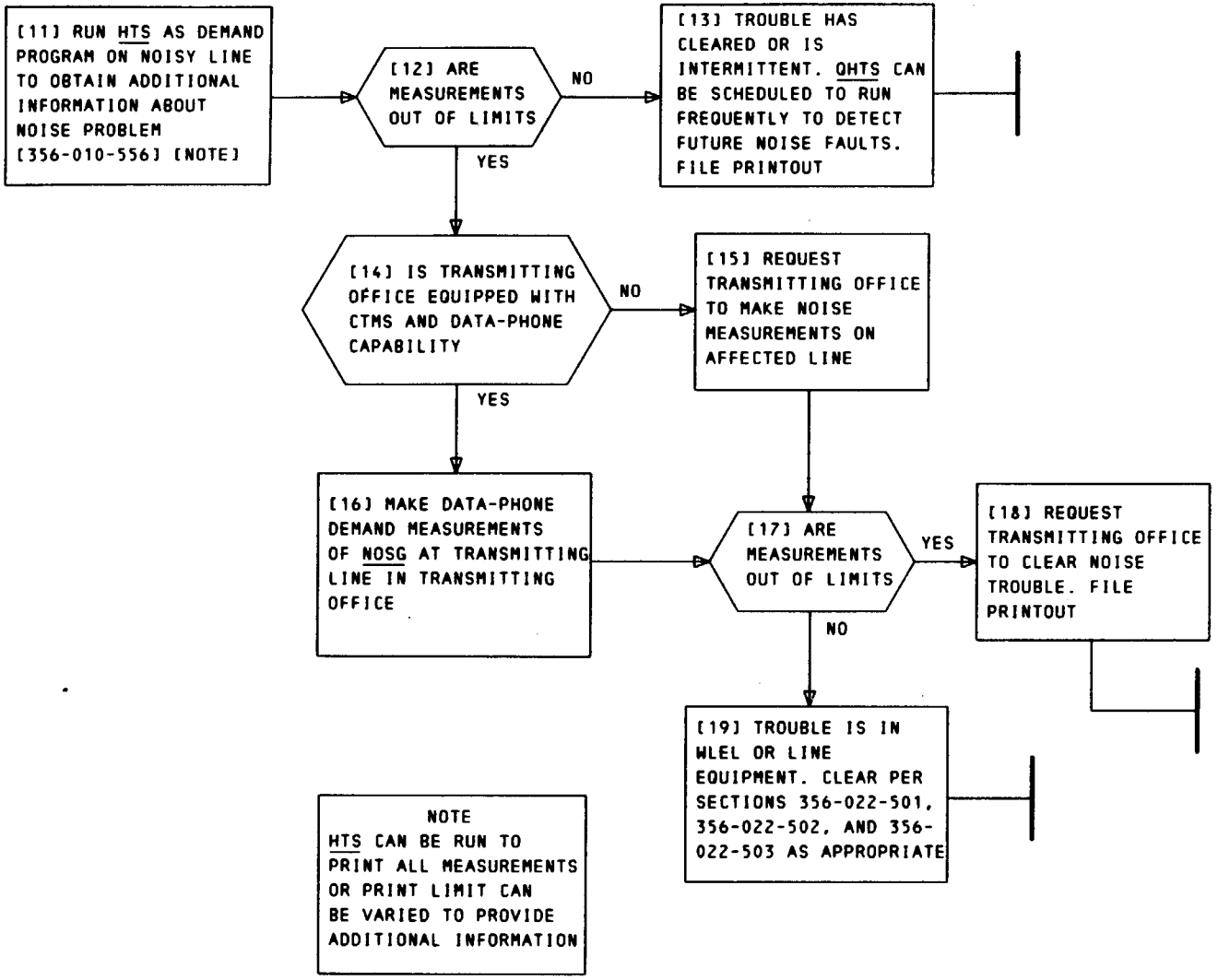

Chart 1—General Isolation of Supergroup Out-of-Band Noise (Sheet 2 of 2)

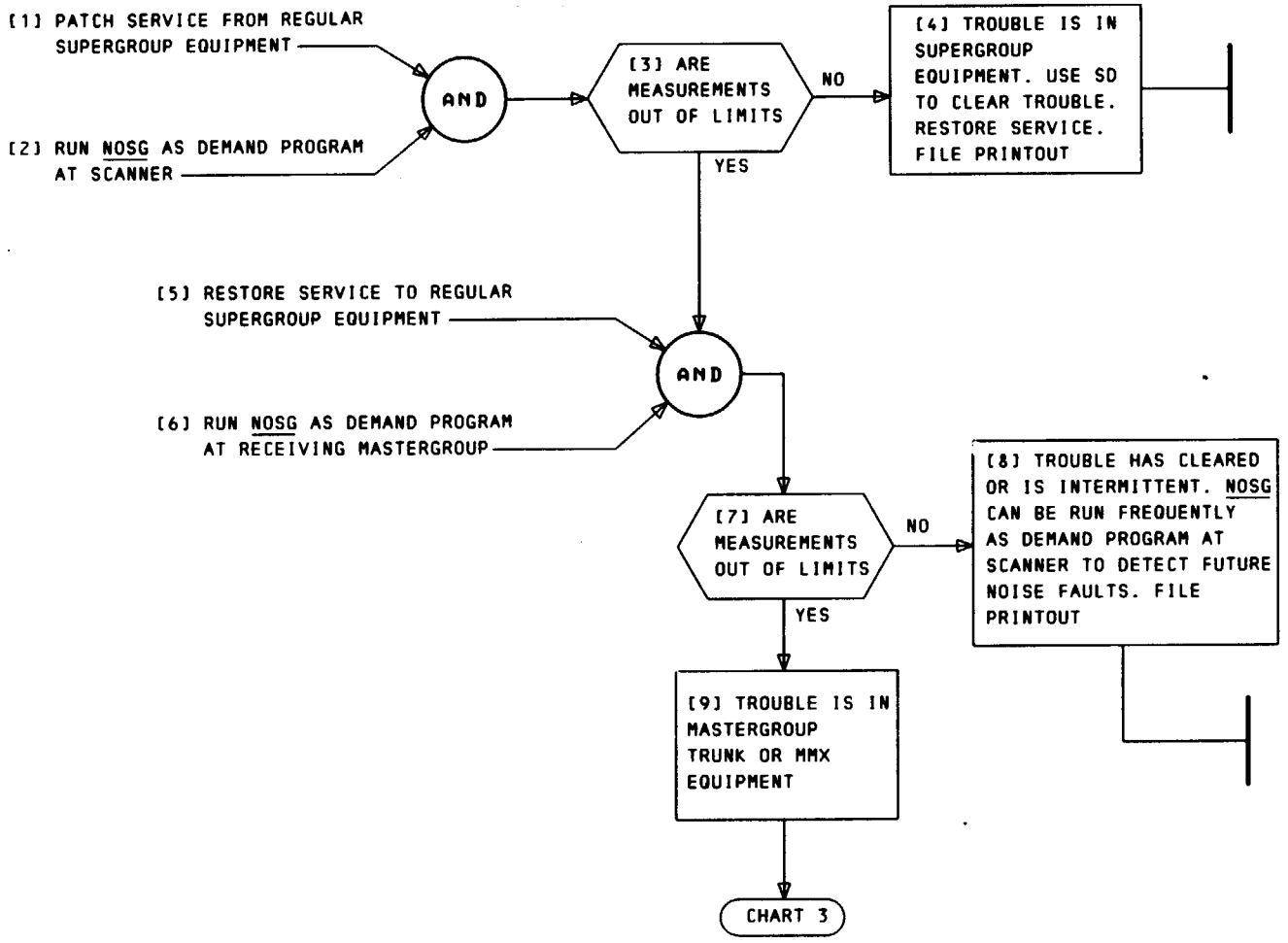

Chart 2—Isolation of Noise in Receiving Supergroup Equipment

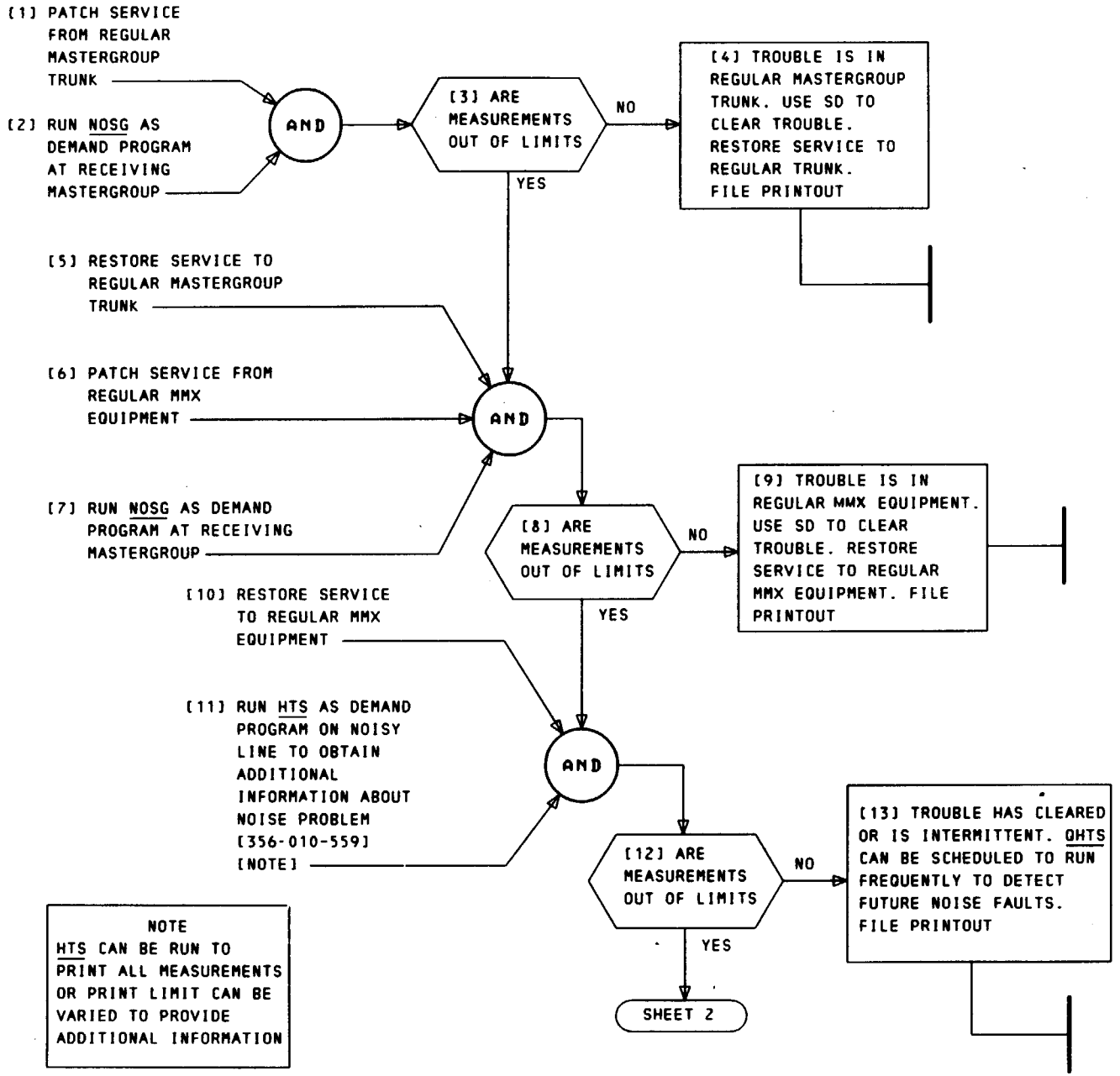

Chart 3—Isolation of Noise in Receiving Mastergroup Equipment (Sheet 1 of 2)

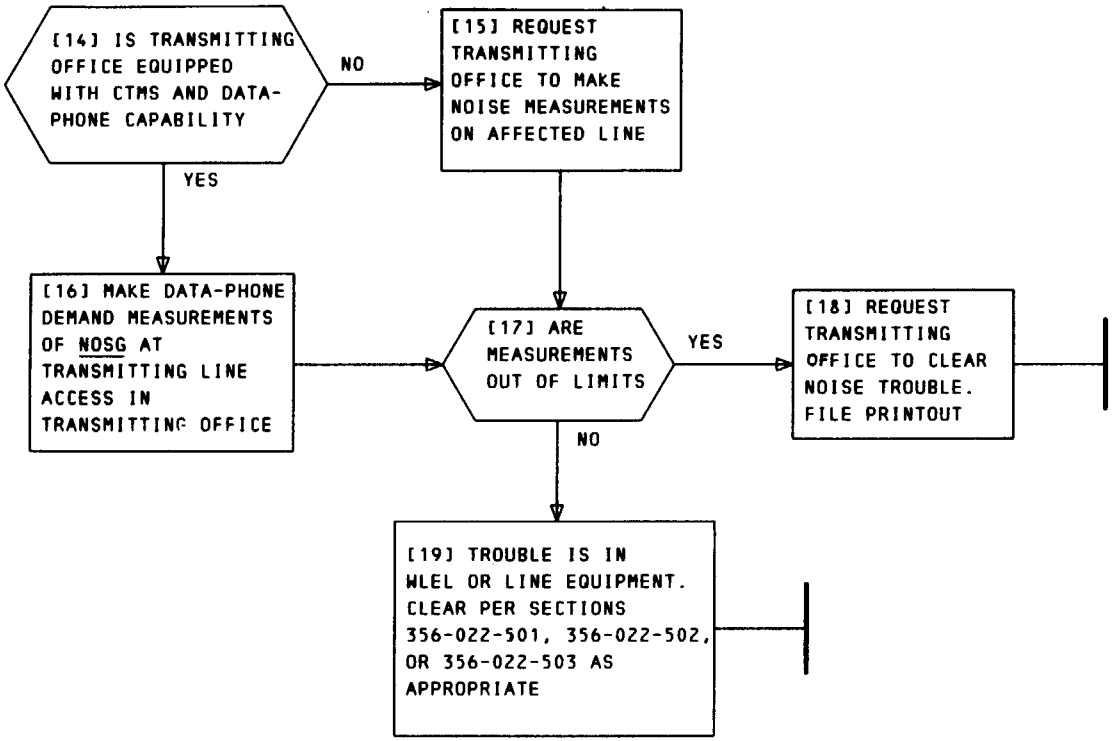

Chart 3—Isolation of Noise in Receiving Mastergroup Equipment (Sheet 2 of 2)

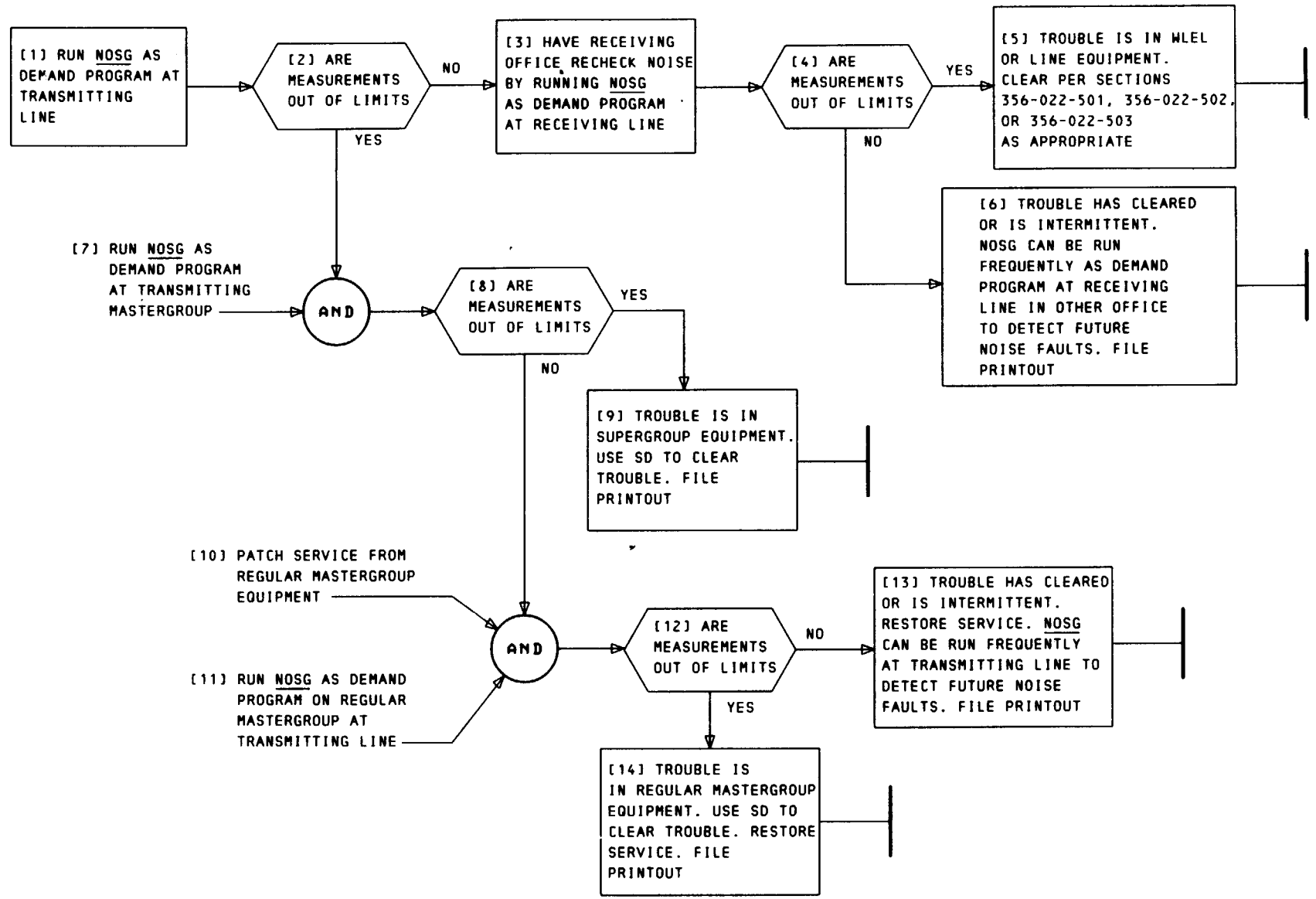

Chart 4—Isolation of Noise in Transmitting Office