

**CALIFORNIA LAW ENFORCEMENT  
TELECOMMUNICATIONS SYSTEM (CLETS)  
DESCRIPTION**

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## 1. GENERAL

1.01 The State of California Law Enforcement Telecommunications System (CLETS) is a statewide message switching network connecting all State, County, and City law enforcement agencies, and certain other departments, by means of a common communication system. This system completely replaces the present Department of Justice (DOJ) semi-automatic tape relay system. The message switching is done by computers provided by the Radio Corporation of America.

1.02 This non-voice data system consists of two distinct networks, Administrative and Broadcast, whose switching operations are per-

formed by common computers. The Administrative portion is a point-to-point network for direct communication between stations on this network. The sole function of the Broadcast is for transmission of either Area or "All Points Bulletins" on a "receive only" basis.

1.03 RCA Spectra 70/40 computers in Sacramento and Los Angeles will provide the switching functions of both the Administrative and Broadcast networks. The telephone companies will furnish computer interfaces, facilities, teletypewriters, 400 Data Packages and other equipment under direct contract with the State.

## 2. CLETS NETWORK

2.01 The CLETS Network, consisting of computers, switching units and teletypewriter stations, has replaced the present Department of Justice (DOJ) semi-automatic tape relay system.

2.02 The RCA computers, located in Sacramento and Los Angeles, will provide message switching between teletypewriter stations with the exception of intra-county traffic. Stations served from the same 400 Data Package within a county may direct traffic to one another without switching through a computer.

2.03 The RCA computers interface each other, in addition to the Department of Motor Vehicles (DMV) and the Criminal Identification and Investigation (CI&I) computers on voice grade/C-2 conditioned data channels; the AUTO-STATIS computer via 150 baud channel; the 400 Data Packages, 757 systems and their 33- and 35-type teletypewriter stations on voice grade 3002 data channels; the selective calling 8A1 and 8B1 35-type teletypewriters operating on 150-baud telegraph channels; the Broadcast Network using 28-type machines on 75-baud telegraph channels and the selective calling 83B system at the Sacramento Computer location to allow the National Law Enforcement Teletypewriter System (LETS) access to the CLETS Network (see Exhibit 1).

## 3. RCA SPECTRA 70/45 COMPUTER

3.01 Four RCA Spectra 70/45 computers (one regular and one backup) are located at Los Angeles and Sacramento. These computers are interconnected by C-2 conditioned data channels.

Access to the Department of Motor Vehicles (DMV) and the Criminal Identification and Investigation (CI&I) computers is via C-2 conditioned data channels. EIA voltage interfaces are provided between the computers and the 201B (DMV) and 202D (CI&I) data sets on these data channels. Transmission requirements for voice bandwidth data channels with C-2 conditioning are in Section 314-410-500. See Exhibit 33.

**3.02** Access to the AUTO-STATIS computer is via 150-baud channels using 108-type data sets and 820-type data auxiliary sets with EIA voltage interfaces. At telegraph service board locations, 811-type data auxiliary sets will be used in place of the 820's. Refer to Sections 598-046-100, 312-800-100, and 312-801-100 for detailed information.

**3.03** The RCA Spectra 70/45 computers will also connect to the following systems:

- (a) Computer "backup" 400 Data Packages
- (b) Outlying 400 Data Packages
- (c) 8A1 Data Selective Calling System
- (d) 8B1 Data Selective Calling System
- (e) 83B Data Selective Calling System
- (f) Broadcast Network
- (g) 757 System

**3.04** Signal circuit PSD1D030-01 is provided for use on all 4-wire 3002 channels terminating at computer locations. This signaling circuit, uses a 24V4C repeater and a plug-in SF signaling unit per PSD90075-01. It can ring 20 Hertz toward the 2-wire 103-type data set and accept ground start from the 801-type data auxiliary set. Continuous ringing is required on both trunks and lines to overcome an average delay in station connect time of two seconds associated with the normal 2-second ring/4-second silent interval. On receiving a 20 Hertz ring, a station will automatically "off-hook". Because of the number of trunks involved at each computer location, these signal circuits are mounted at a wall relay rack per ED-69463-50, Group 1 (see Exhibits 2, 20 and 21).

**3.05** Because of the short loops involved, the trunks between the 757 switchers and the

Los Angeles computer location may be 2-wire (see Exhibit 51). All other circuits (i.e., computer to computer, computer to 400 Data Package, 400 Data Package to 400 Data Package and 400 Data Package to 10B Data Test Centers), will be 4-wire.

**3.06** Messages directed to a station outside a county's 400 Data Package will be processed by either the Los Angeles or Sacramento computer on a "store and forward" basis. Therefore, no more than two end links are involved at any one time during normal operation. Emergency backup operation increases this number to a maximum of 2 end links and 3 middle links and is discussed further under RCA computer backup arrangements (see Exhibit 14).

#### 4. RCA COMPUTER BACKUP ARRANGEMENT

**4.01** If the regular and backup RCA Spectra 70/45 computers fail, a manual transfer arrangement will be available to individually transfer only the voice grade 3002 channels from outlying Data Packages to a "backup" 400 Data Package at each computer location. Exceptions to this will be the trunks from the CHP "PATROLS" network and some trunks from the 757 systems that will remain inoperative while the computers are down. The customer will decide the extent of manual transfer necessary to the backup 400 Data Package depending upon the degree of service impairment.

**4.02** In the backup mode, a maximum of 3 middle links and 2 end links is possible. By maintaining the middle links at zero trunk loss we can maintain an overall 16 dB connection with the two 8 dB end links. There is no guarantee of service offered under this emergency arrangement (see Exhibits 11 through 14).

**4.03** A separate backup arrangement for the Broadcast Network is discussed in Part 12.

**4.04** There will be no backup arrangements for the 8A1, 8B1 and 83B Selective Signaling Systems.

#### 5. 400 DATA PACKAGE

**5.01** The 400 Data Package serves as a local switching unit to provide intra-county connections via access lines for its stations, indepen-

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dent of the remainder of the network. It also provides an inter-tie, via access lines, to the serving 70/45 RCA computer (see Exhibits 2 through 32).

**5.02** The 400 Data Package is a common control, 4-wire, crossbar switching machine which:

- (a) Has a modular line, link, and marker arrangement for 10 to 60 terminations/lines or trunks/in increments of 10 terminations.
- (b) Is housed in one 3-slide cabinet for 20 terminations. Two cabinets are required for 60 terminations.
- (c) Has automatic retry on called station busy condition.
- (d) Has automatic release calling/disconnect following retry timeout/.
- (e) Has loop, ground start or SF supervision.
- (f) Has TOUCH-TONE® signaling from station.
- (g) Has a traffic usage and peg count register leads/registers optional/.
- (h) Has five classes of service. One class of service is required for multiple address restriction.
- (i) Has call condition tones.
  - (1) Dial tone — 640 Hz (Multiple address dial tone — 1000 Hz)
  - (2) Busy tone — 60 IPM
  - (3) Retry tone — 15 IPM
  - (4) Unassigned number tone — 120 IPM
  - (5) Permanent Signal (PS) tone — 2600 Hz
- (j) Has 2-digit station selection.
- (k) Has multiple address.

**5.03** All access lines from a 400 Data Package to a station or computer location are presently designed for a net loss of 8.0 dB at 1000 Hz.

The overall net loss, therefore, from station to station or computer will be 16.0 dB.

**5.04** General information and specific requirements for 3002 channels can be found in Section 314-410-500.

**5.05** An SF signaling unit per PSD90075-01, supplied by a common 2600 Hz oscillator, has been provided in the 400 Data Package Line Circuit PSD2G031, B15, FS20, for use on all trunks and lines. This SF plug-in unit will utilize the equalizer No. 2 socket in the 44V4 repeater. This socket position became available when the associated equalizer coils were hard-wired within the line circuit. If an SF signaling unit is not required in this line circuit, then a 359C (dummy) equalizer must be provided in its place to provide continuity. The earlier Line Circuit PSD2G031-01, B12, FS16 required the use of either the 359F (0.5 dB) or the later 359N (0.3 dB) equalizer in the equalizer No. 2 socket to provide these coils. This SF unit is compatible with the SF unit of the Signal Circuit PSD1D030-01 for use at computer locations, the SF unit in the station Signal Circuit PSD1D028-01 for use at station locations, and E-type SF units or equivalent for use in central offices (see Exhibits 2 through 4).

**5.06** All 400 Data Packages are equipped with SF signaling except one in Santa Barbara County (owned by General Telephone) two in Riverside and Orange Counties (owned by Pacific Telephone). General Telephone desires equipment uniformity. Therefore, their new data package for San Bernardino County will be similar to their existing Santa Barbara data package except for the 259C (dummy) equalizer that will be required in place of the SF signaling unit. These four data packages will be equipped with DX signaling per Relay Circuit PSD2G035-012, FS1 for 4-wire operation or FS2 for 2-wire 20Hz/loop start operation (see Exhibit 4).

**5.07** No. 33- and 35-type teletypewriter stations will interconnect through the 400 Data Package. Station options provide the following out-of-service indications.

- (1) Paper out - ring - no response.
- (2) Low paper - ring - no response.
- (3) Paper jam - ring - no response.
- (4) Terminal hunt stations - busy or PS line condition.

**5.08** SF signaling is included as part of a station signaling circuit PSD1D028-01 to provide, where possible, an overall 4-wire design using on-premise SF signaling. A modification of the 101C data set hybrid card is required for this arrangement. All transmit data levels are, therefore, uniform (i.e., F2/2025-2225 Hz = zero dBm and F1/1070-1270 Hz = 4.0 dB below F2). Station design configurations are uniform except for the choice of a 359-type equalizer and the 849-type network which will be dependent upon the type of facility used (see Exhibits 3, 16 and 19).

**5.09** Where the stations must be served on a 2-wire basis, E-type SF signaling and dial long line equipment SD-96252-01 (or equivalent) must be used in the serving central office. (These dial long line units must be arranged for continuous ring and trip ring during ringing interval.)

**CAUTION:**

1. Where DLLE SD-96252 is used and Figure G (TP relay to provide trip ring during ringing cycle) is required, a note of caution is urged. Previous experience has indicated that some wiring lists and equipment records were incorrect in specifying the availability of Figure G and that in most cases, a physical check for this figure had to be made. This TP relay is mounted separately and may come one or six units per shelf — (J99236F-1, List 1 is equipped with six relays and List 2 is equipped with one relay). The use of Figure G will require Option ZB (AC-DC AUD ringing supply). Option discrepancies associated with the use of Figure G (SD-96252-15, Figure 56, Issue 24D) are presently being corrected by Western Electric Company. See Exhibits 25 and 28.

2. Where DLLE SD-96252 is used in the 2-wire voice path, care should be taken to see that Figure 3 (120 type repeat coil for use with 2-wire N and O carrier) is not provided. Equipment records in many instances have not indicated the provision of this figure in the assigned DLLE and difficulty is encountered when balancing the repeat coil hybrid or 4-wire terminating set. See Exhibits 26 and 28.

3. Where DLLE SD-96252 is used in the EM/AB lead path, prevention of audible ring feedback through the 4-wire terminating set or repeat coil hybrid toward the 400 Data Package is required while ringing toward the station. This can be accomplished by tying leads T2, T3 (or T1, R1)

of DLLE to a 1-C pad in the 4-wire transmit side. Thus, when a station is rung, a short is placed toward the 400 Data Package through a 1-C pad circuit during the ringing period. See Exhibits 25 and 27.

**5.10** End link circuits, employing 2-wire overhang, are designed for 8 dB net loss, for both directions of transmission, between the 400 Data Pack and the station. The 2-wire loop loss is limited to a maximum of 5.0 dB loss. Circuits having less than 5 dB, in the 2-wire section, will be compensated by building out the loss in the 4-wire section. Build out would be applied at the terminating set by selection of appropriate plug-in 89-type resistances.

**EXAMPLES:**

A. If the 2-wire loop loss @ 1000 Hz is 5.0 dB the loss at the same frequency for the 4-wire section must be 3.0 dB.

B. If the 2-wire loop loss @ 1000 Hz is 3.0 dB the loss at the same frequency for the 4-wire section must be 5.0 dB.

**5.11** In all cases the F2 transmit frequency is strapped for 0.0 dBm and F1 for -4.0 dBm at the Data Set. The TLP at the station will be 12 dB higher than the F2 level. Again, the 4-wire portion of each circuit containing a 2-wire overhang must be built out so the overall net loss will total 8.0 dB at 1000 Hz.

**5.12** The TLP at the 400 Data Package will always be a +4.0 dB with a data level (F2) of -8.0 dBm. See Exhibits 5 and 15 for level information.

**6. 400 DATA PACKAGE MAINTENANCE CIRCUIT**

**6.01** Each data package will require a 4-wire maintenance circuit terminating at a 10-B or equivalent test board. These 4-wire test line circuits (line link and marker circuit PSD2G031-01-B14, FS19) are equipped with DX signaling per PSD2G035-012-FS1. Since SF signaling is not available in the data package for this circuit, where required, SF signaling must be provided separately in the central offices.

**6.02** The circuit net loss from the 400 Data Package to the test center (data access test jack appearance) is 0 dB. The circuit net loss from

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test center to 400 Data Package will be approximately +2.0 dB depending upon the transmitting data levels and equipment arrangements at the test center. Maintenance Engineering in each area will specify 10-B or equivalent test board equipment configuration to be used. See Exhibits 15, 31 and 32.

### 7. SPARE 400 DATA PACKAGE

7.01 A spare 400 Data Package equipped with 60 ports and arranged for SF signaling is available for emergency use. In addition, 10-line circuits equipped with DX signaling has been provided for use as required. This emergency package is stored in STORE-10 at the Western Electric Distribution House at San Leandro when approval is received. Release of the emergency package can be obtained through the General Administration Reports Center (GARC).

### 8. 8A1 DATA SELECTIVE CALLING SYSTEM

8.01 The 8A1 data selective calling system is used to automatically exchange data on a telegraphic network on a noncontention basis. The traffic is regulated by computer polling to prevent conflicts between sending stations for transmission time. Data is transmitted at 100 words (110 baud) per minute using the 8-level, American Standard Code for Information Interchange (ASCII).

8.02 The RCA computer will selectively poll each 35ASR transmitter in the system. All stations constantly monitor the line for call directing code combinations in the heading of the message. These code combinations cause selected stations to respond in an appropriate manner. Each transmitter can, in turn, direct data to any receiver at any station in the system. Each send-receive set is equipped with a TP198400 station controller to interface a station with the controlled signal line. The terminal sets operate on DC signals and are compatible with standard 20 or 60 MA telegraphic loops. However, all 110 or 150 baud loops from the testrooms to the stations use AC transmission with 108-type data sets and 820-type data auxiliary sets or 130C subsets equipped with double bandwidth channels. See Exhibits 34 through 41.

8.03 Backup arrangements for the 8A system will not be provided if the regular and standby computers fail.

### 9. 8B1 DATA SELECTIVE CALLING SYSTEM

9.01 The 8B1 outlying stations are situated on the send and receive legs of each full duplex branch. The sending devices have access to the send leg, and the receiving devices have access to receive leg. Data is exchanged at 100 words per minute (110 baud) using the 8-level, American Standard Code for Information Interchange (ASCII).

9.02 The data communications processor (RCA computer) exerts complete control of all signal line activity. It polls each sending device for message transmission, selectively calls one or more receiving devices for message reception, and inserts the appropriate control to hold or disconnect a sending and receiving device. All control codes are issued by the computer to the receive line and are directed to one or more outlying receivers. Answer back responses and outgoing messages, originated from outlying stations, are received by the computer on the send leg. The send and receive legs are independent of each other. Traffic on one leg does not appear on the other.

9.03 The outlying stations are equipped with 8B1/35 automatic send-receive (ASR) and receive-only (RO) teletypewriter sets. The ASR teletypewriter set is equipped with a station controller assembly to provide the necessary logic elements for automatic operation. The station is compatible with 20 MA or 60 MA telegraphic loops. AC loops are required for the 110- or 150-baud circuits using 108-type data sets, data auxiliary sets or 130C subsets equipped with double bandwidth channels (see Exhibits 34 through 41).

9.04 Backup arrangements for the 8B system will not be provided if the regular and standby control computers fail.

### 10. 83B DATA SELECTIVE CALLING SYSTEM

10.01 The 83B system is a half-duplex, 75-baud, 100-WPM, 5-level system which will provide torn-tape interexchange between the National Law Enforcement Teletypewriter System (LETS) and the CLETS Network.

10.02 The computer at Sacramento provides the only access for the LETS system.

10.03 Backup arrangements for the 83B system will not be provided if the regular and standby computers fail.

## 11. BROADCAST NETWORK

11.01 The Broadcast Network consists of a large number of receive-only stations operating at 75-baud, 5-level, 100-WPM. This multi-section network of 28-type receive-only machines provides for the reception of All Points Bulletins (APB's). Sacramento will transmit to Areas I, II and III and Los Angeles will transmit to Areas IV, V and VI. Broadcast traffic between the two computers will be over the interconnecting C-2 conditioned data channels. Fresno (Area II) will extend a leg south to terminate at the Los Angeles Telegraph Service board for backup arrangement. See Exhibits 42 through 50.

11.02 A loopback arrangement in the 130 subset may be used to permit the serving testboard to monitor signals received at the receiving-only station. On "receive-only" service, the send side form the station is not in use and can be used to transmit the received signals back to the testboard for monitoring and testing. Bias and distortion readings received back from the station will not be the same as at the station, but will indicate the algebraic sum of the readings on the send and receive legs. Since these readings are only an indication of condition, they should be used only as an aid to locating trouble and not as a basis for adjustment. See Exhibit 50.

## 12. BROADCAST BACKUP ARRANGEMENTS

12.01 In the event of failure of both the regular and standby computers at either Los Angeles or Sacramento, manual backup arrangements will be as follows:

- (1) Emergency status combines the six individual areas, forming one common network.

- (2) Operation of a transfer key at the Los Angeles computer location will tie Areas IV, V, VI and II (Fresno leg) together at the Los Angeles Telegraph Service board. (See description of Fresno Area II extension in Part 11.)

- (3) Operation of a transfer key at the Sacramento computer location will tie Areas I, II and III together at the Sacramento Telegraph Service board.

- (4) A 28 ASR machine at the Sacramento computer location will send manually to all stations. See Exhibits 44 and 45.

## 13. 757 DATA PACKAGE

13.01 The 757 Data Package is a 2-wire, crossbar, common control type switching machine. It automatically switches low and medium speed data, both digital and analog. This package is expandable in 40-line modules from 40 to 200 lines.

13.02 The 757 Data Package has the following additional features:

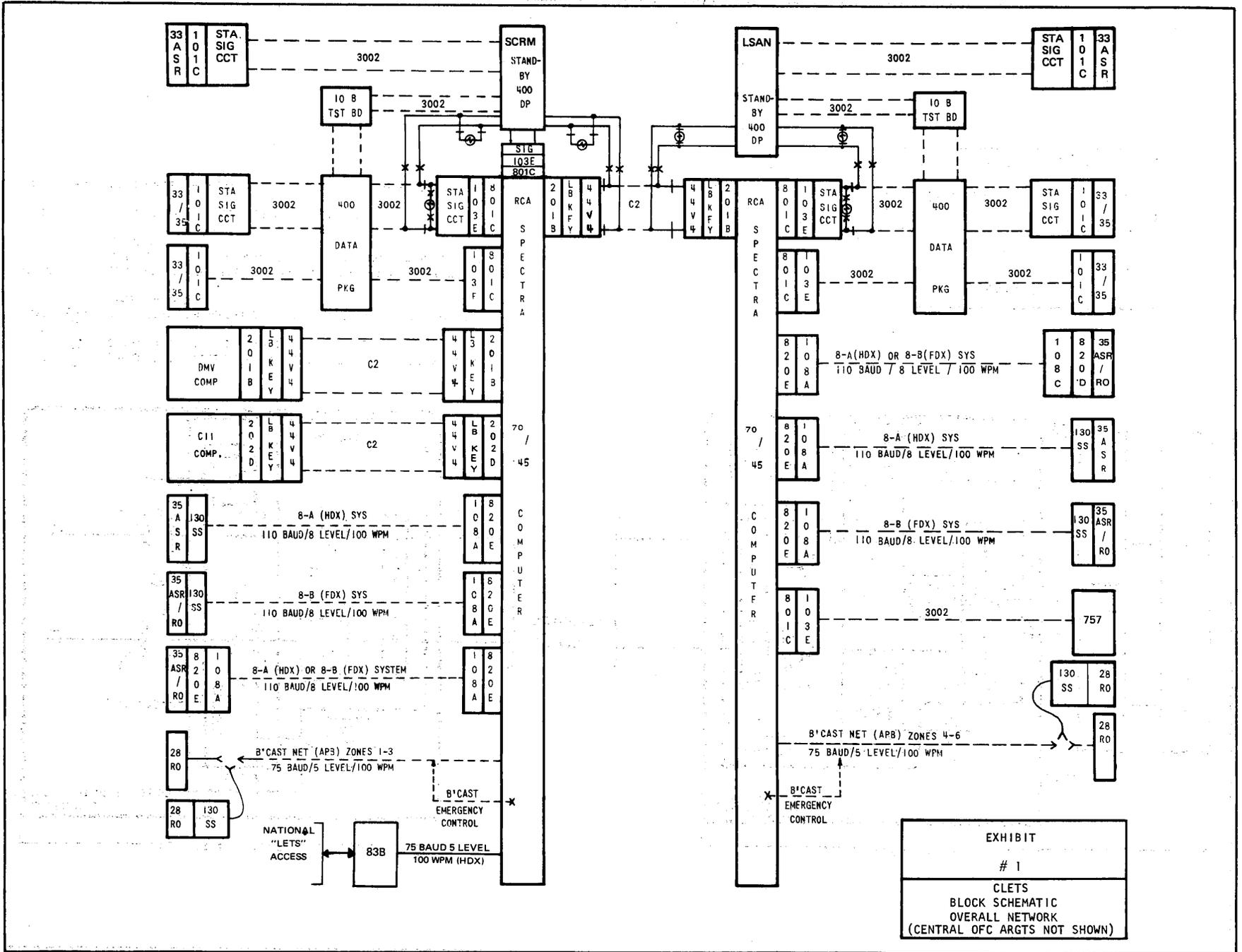
- (a) Multiple Address equipment which will permit the transmission of one message to two to six addresses simultaneously.
- (b) "Executive Camp-On" which permits the first station calling a line that is busy to get through as soon as the line becomes idle.
- (c) Monitor. The Switching Center attendants have the ability to monitor any call in progress.
- (d) Line Load Control. During an emergency, any number of stations can be prevented from originating messages; however, they still will be able to receive.
- (e) Operating Console. Monitor jacks and line load control keys for each circuit are terminated in an operating console. Circuit busy lamps associated with each jack and key are also provided.

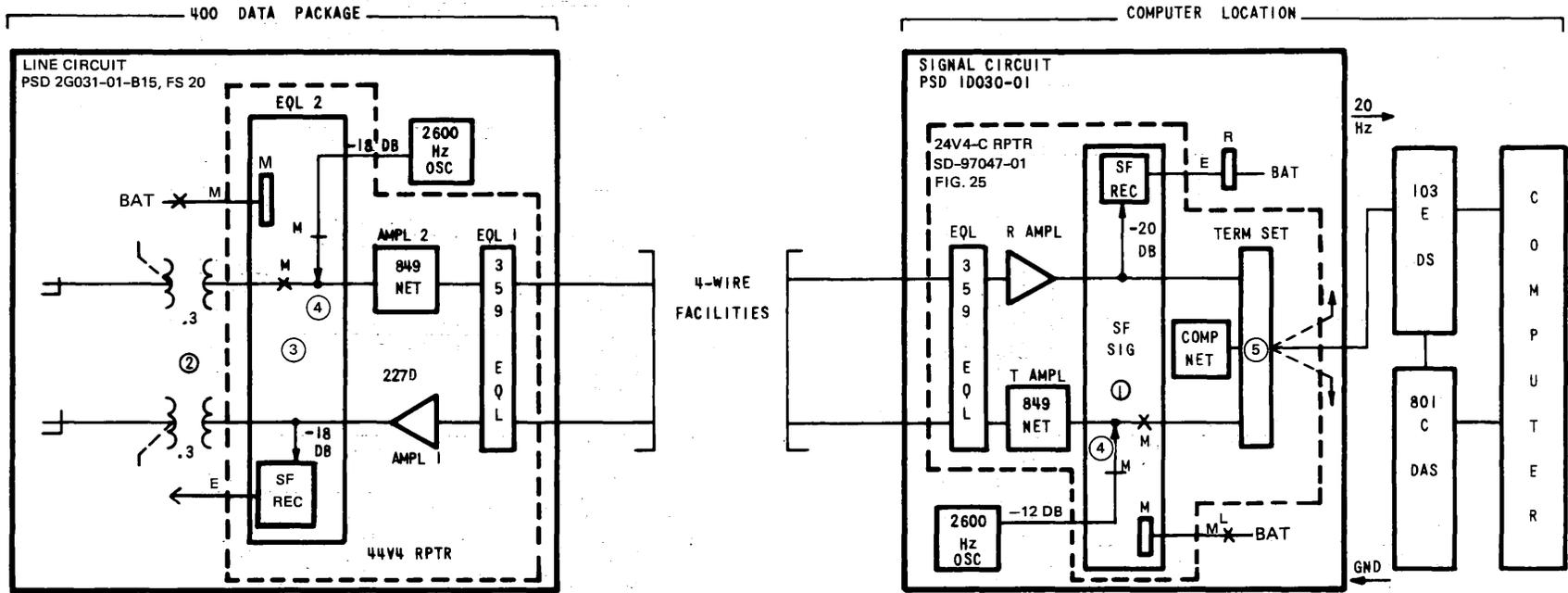
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**13.03** This system is used by the Los Angeles County Sheriff's Department and City Police Department to connect all of the cities 16 main divisions and the County Sheriff's 106 stations including the 46 municipal police departments together. It allows any unit in the Los Angeles Area to communicate instantly with any

other unit or with all of them. It also has access to the Los Angeles CLETS computer as shown in Fig. 1.

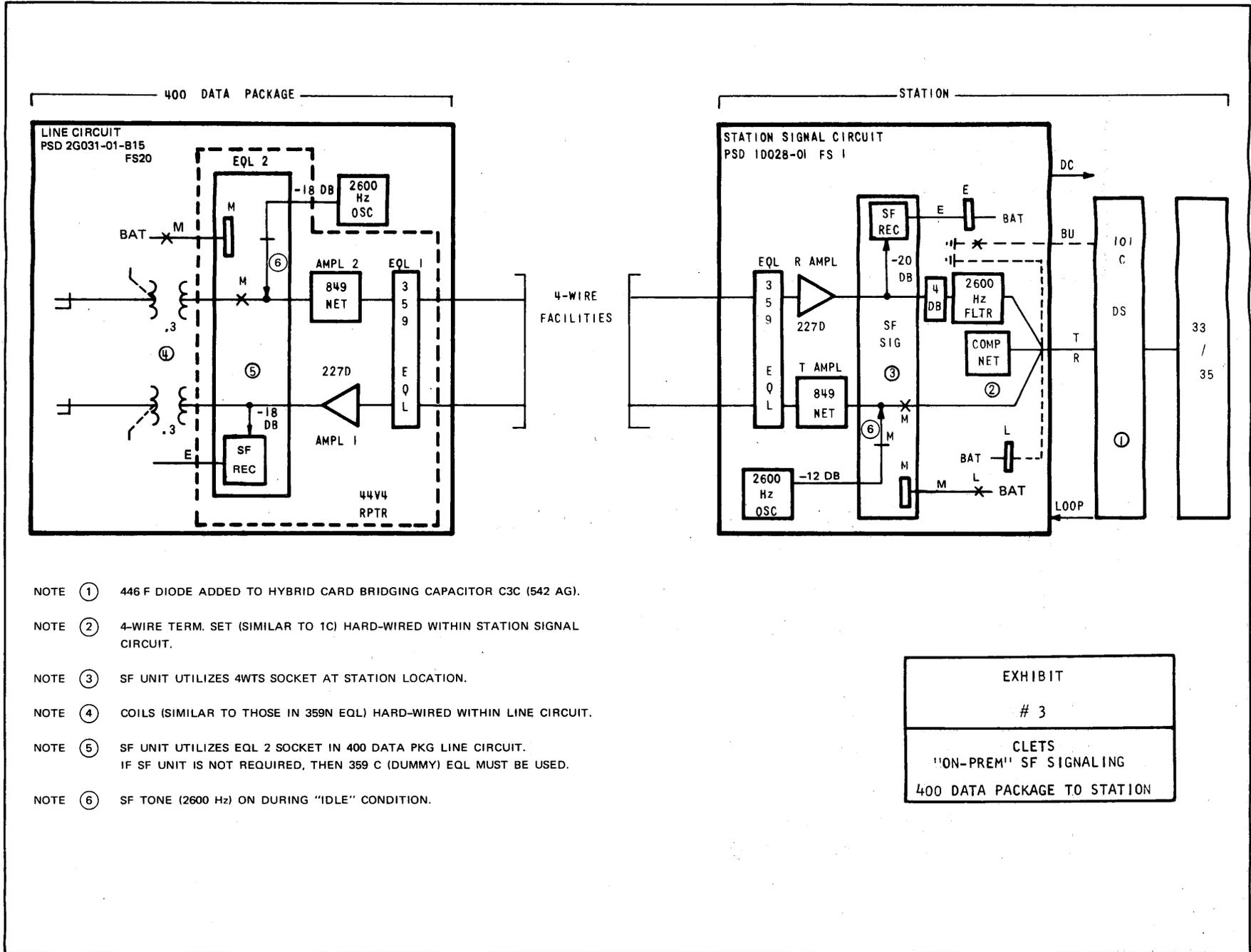
**13.04** Exhibits 51 and 52 show typical transmission arrangements for the access lines between the 757 Switches and the Los Angeles Computer.





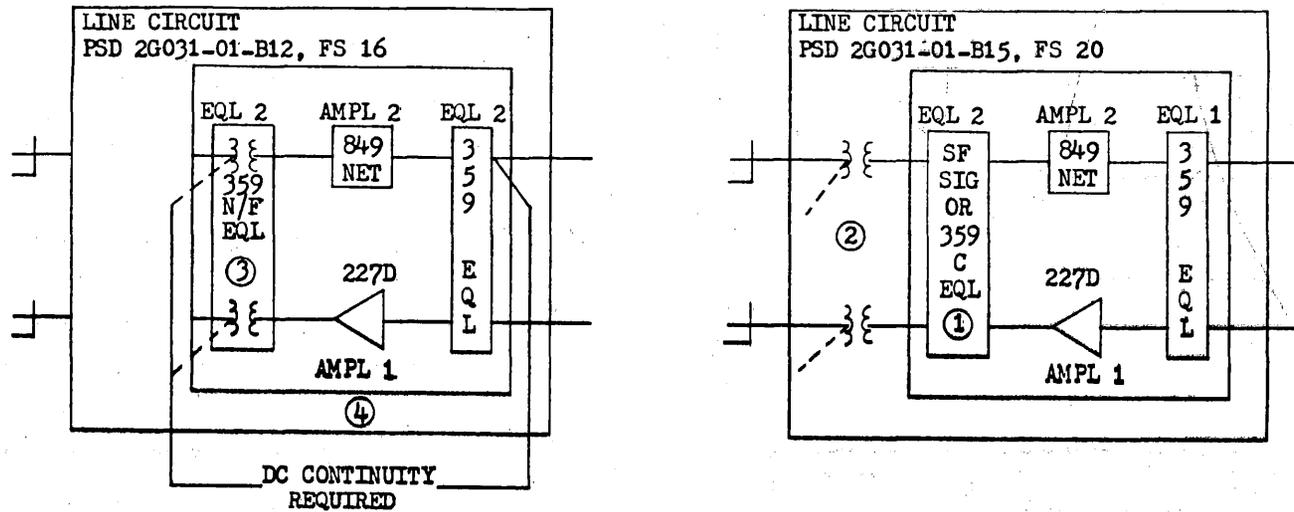
- NOTE ① S.F. UNIT UTILIZES SPARE SOCKET ON REPEATER MOUNTING IN SIGNAL CIRCUIT PSD 1D030-01.
- NOTE ② COILS (SIMILAR TO THOSE IN 359N EQL) HARD-WIRED WITHIN LINE CIRCUIT.
- NOTE ③ SF UNIT UTILIZES EQL 2 SOCKET IN 400 DATA PKG LINE CIRCUIT. IF SF UNIT IS NOT REQUIRED, THEN 359 C (DUMMY) EQL MUST BE USED.
- NOTE ④ SF TONE (2600 Hz) ON DURING "IDLE" CONDITION.
- NOTE ⑤ 1C TERM SET E/W 89A/ZERO DB (REC) & 89T/4.0 DB (TRANS).

EXHIBIT
# 2
CLETS "ON-PREM" SF SIGNALING 400 DATA PKG TO COMPUTER



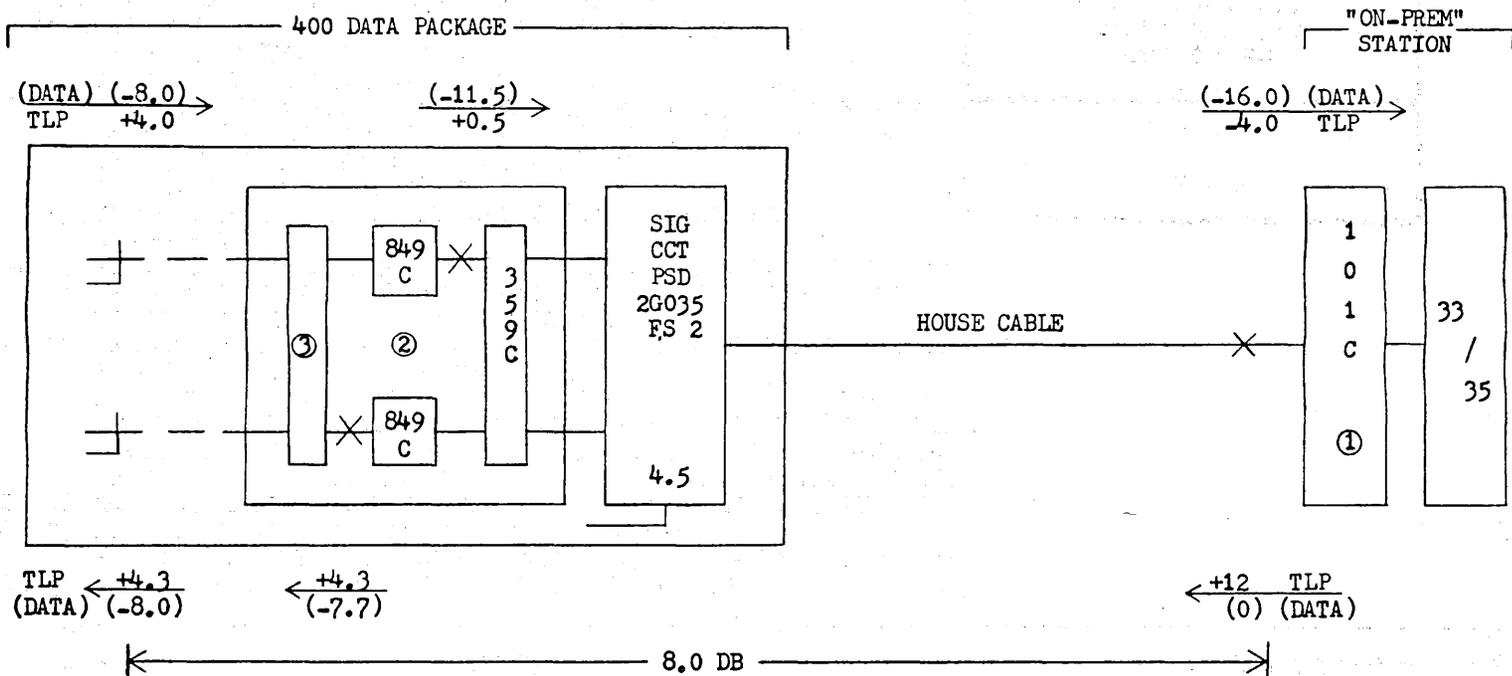
- NOTE ① 446 F DIODE ADDED TO HYBRID CARD BRIDGING CAPACITOR C3C (542 AG).
- NOTE ② 4-WIRE TERM. SET (SIMILAR TO 1C) HARD-WIRED WITHIN STATION SIGNAL CIRCUIT.
- NOTE ③ SF UNIT UTILIZES 4WTS SOCKET AT STATION LOCATION.
- NOTE ④ COILS (SIMILAR TO THOSE IN 359N EQL) HARD-WIRED WITHIN LINE CIRCUIT.
- NOTE ⑤ SF UNIT UTILIZES EQL 2 SOCKET IN 400 DATA PKG LINE CIRCUIT. IF SF UNIT IS NOT REQUIRED, THEN 359 C (DUMMY) EQL MUST BE USED.
- NOTE ⑥ SF TONE (2600 Hz) ON DURING "IDLE" CONDITION.

EXHIBIT  
# 3  
CLETS  
"NON-PREM" SF SIGNALING  
400 DATA PACKAGE TO STATION



- NOTE ① PROVIDE SF SIGNAL UNIT PER PSD-90075-01 IN EQ L 2 SOCKET. IF SF SIGNALING IS NOT REQUIRED THEN 359 C (DUMMY) EQUALIZER MUST BE USED IN ITS PLACE TO PROVIDE CONTINUITY.
- NOTE ② COILS REQUIRED FOR SWITCH CONTROL VIA SX LEADS. COILS ARE HARDWIRED WITHIN LINE CIRCUIT.
- NOTE ③ EQUIP WITH 359 N (REPLACES 359 F) EQUALIZER IN EQ L 2 SOCKET TO PROVIDE SX COILS FOR SWITCH CONTROL. THIS LINE CIRCUIT NOT EQUIPPED FOR SF SIGNALING.
- NOTE ④ REQUIRES DC CONTINUITY AROUND REPEATER, BETWEEN SWITCH/ LINE SX LEADS.

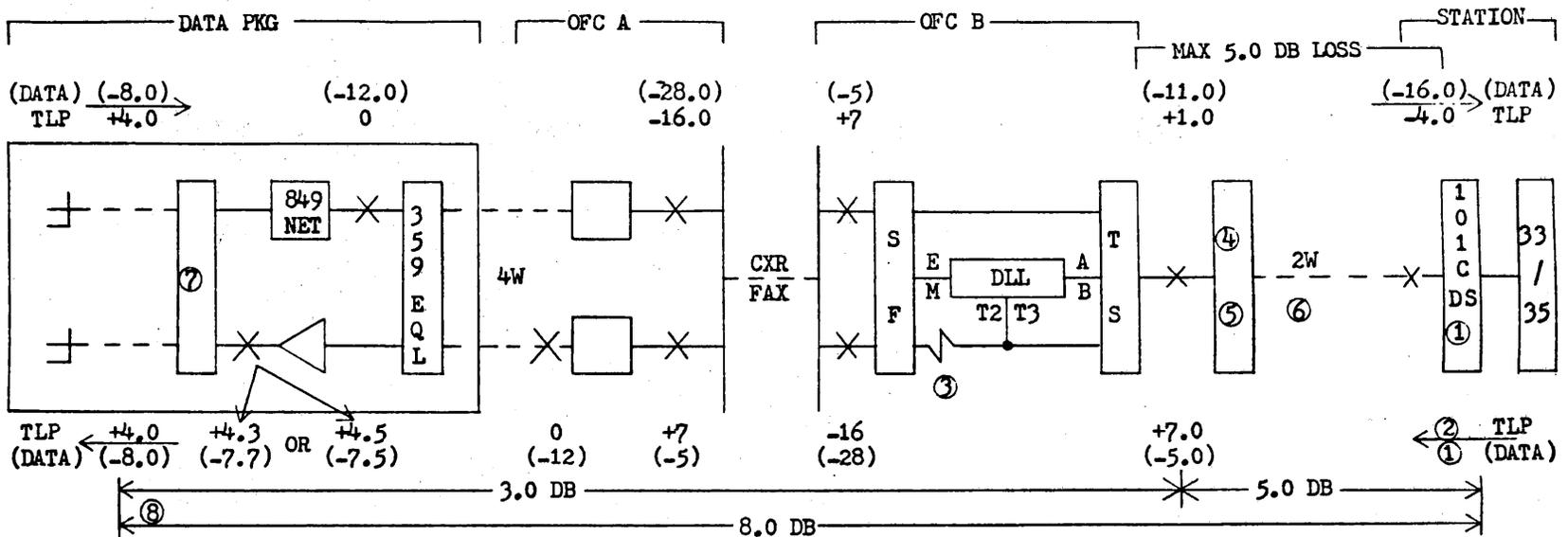
EXHIBIT  
# 4  
GLETS  
400 DATA PACKAGE  
LINE LINK & MARKER CCT  
PSD-2G031-01



- NOTE ① SET F2 (2025-2225 HZ) TRANSMIT LEVEL FOR ZERO DB  
SET F1 (1070-1270 HZ) TRANSMIT LEVEL 4.0 DB BELOW THAT OF F2 LEVEL.
- NOTE ② EQUIP. 849 C NETWORKS WITH 89P/3.25 DB PLUG\_IN PAD.
- NOTE ③ IF EQL 2 SOCKET E/W SF SIG UNIT OR 359 C (DUMMY) EQL.  
HARDWIRED COIL LOSS = 0.3 DB  
IF E/W 359 N EQL, EQL COIL LOSS = 0.3 DB  
IF E/W 359 F EQL (REPLACED BY 359 N), EQL COIL  
LOSS = 0.5 DB

DATA LEVELS IN ( ) ARE THEO. F2 LEVELS IN DEMO  
 INDICATES 849 TYPE NETWORK

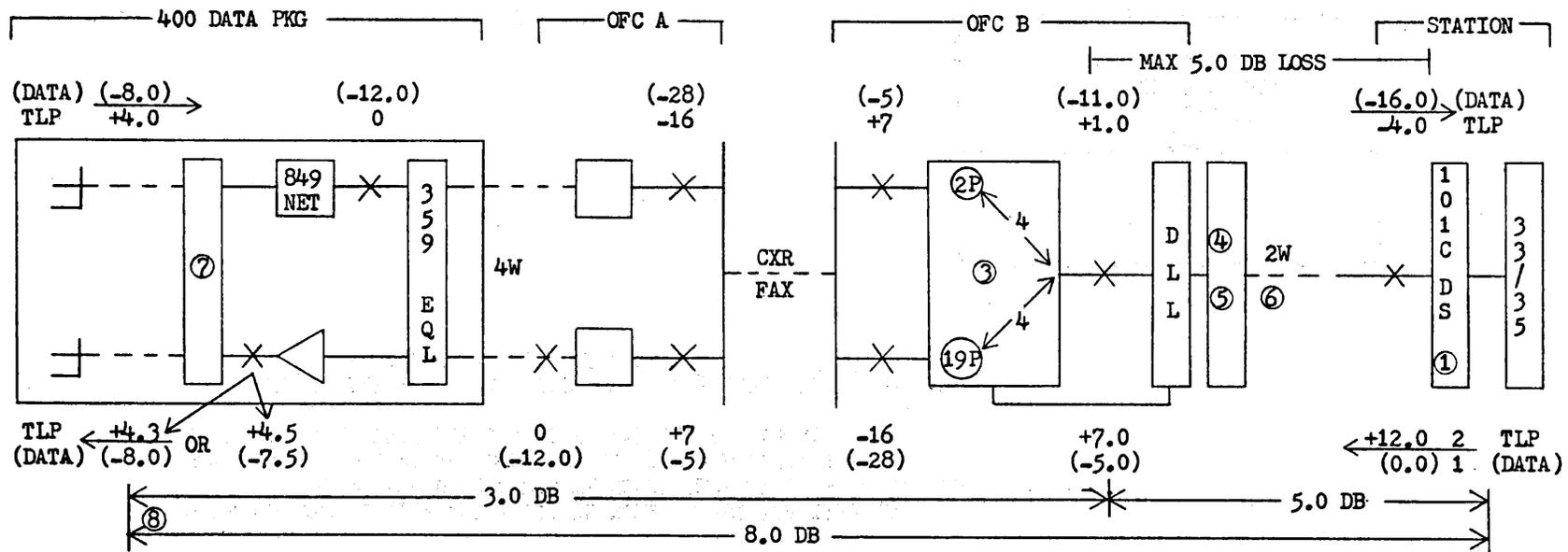
EXHIBIT  
 # 5  
 CLETS  
 LEVEL DIAGRAM  
 400 DP "ON-PREM" STATION  
 E/W SIG CCT PSD2G035



- NOTE ① SET F2 (2025-2225 HZ) TRANSMIT LEVEL FOR ZERO DEMO.  
SET F1 (1070-1270 HZ) TRANSMIT LEVEL 4.0 DB BELOW THAT OF F2 BRAND.
- NOTE ② TLP WILL BE 12.0 DB ABOVE THE THEO. F2 LEVEL.
- NOTE ③ WHERE REQUIRED TO PREVENT FEEDBACK THROUGH THE TERM SET HYBRID. TOWARD DATA PKG. PROVIDE 1-C PAD FOR TERMINATION PURPOSES & EXTEND A SHORT THROUGH THE 600 OHM TERMINATION OF THE 1-C PAD TOWARD DATA PKG WHEN RINGING TOWARD STATION. THIS PAD WILL BE USED, RATHER THAN THE TERM SET PAD, TO ADJUST SIGNAL LEVELS TO CARRIER IN THE STATION TO DATA PACK DIRECTION OF TRANSMISSION.
- NOTE ④ PROVIDE IMPEDANCE COMP OR EQUIV AS REQUIRED ( 837 TYPE FOR LOADED FAX AND 1613 TYPE FOR NON-LOADED FAX).
- NOTE ⑤ PROVIDE E6 REPEATER OR EQUIV WHERE LINE LOSS EXCEEDS 5.0 DB LOSS.
- NOTE ⑥ LINE LOSS INCLUDES IMP COMP OR GAIN DEVICE (AS REQ'D) F2 PAD AND 2-WIRE FAX LOSS.
- NOTE ⑦ IF EQL 2 SOCKET E/W SF SIG UNIT OR 359 C (DUMMY) EQL.  
HARDWIRED COIL LOSS = 0.3 DB  
IF E/W 359 N EQL, EQL COIL LOSS = 0.3 DB  
IF E/W 359 F EQL (REPLACED BY 359 N), EQL COIL LOSS = 0.5 DB
- NOTE ⑧ LOSS FIGURES INDICATED, APPLY TO A 2W/4W CIRCUIT HAVING A 5 DB (8 DB NL) - (LOSS OF 2W SECTION).\*
- DATA LEVEL IN ( ) ARE THEO. F2 (2025-2225 HZ) LEVELS IN DEMO  
□ INDICATES 849 TYPE NETWORKS OR EQUIVALENT  
\* ALL LOSSES AT 1000 HZ.

EXHIBIT  
# 6

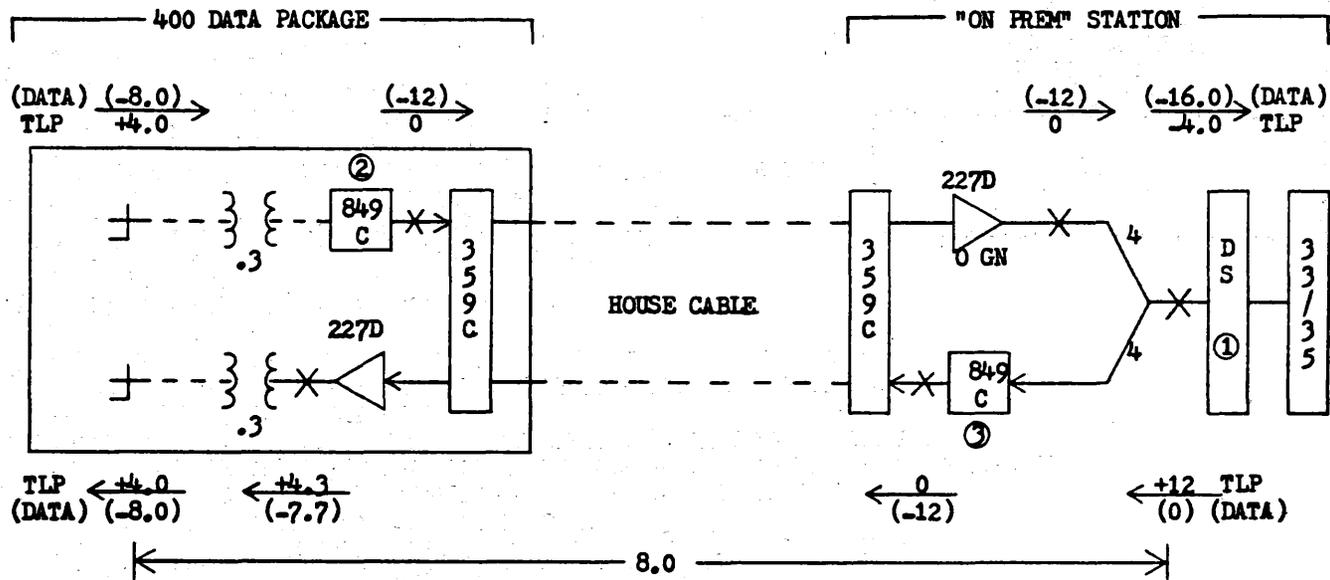
CLETS  
LEVEL DIAGRAM  
400 DATA PKG LINES  
2-WIRE ARRANGEMENT



- NOTE ① SET F2 (2025-2225 HZ) TRANSMIT LEVEL FOR ZERO DEMO.  
SET F1 (1070-1270 HZ) TRANSMIT LEVEL 4.0 DB BELOW THAT OF F2 BAND.
- NOTE ② TLP WILL BE 12.0 DB ABOVE THAT OF F2 LEVEL.
- NOTE ③ EQUIPMENT CONSISTS OF SF UNIT/TERM SET OR EQUIV. TRANS & REC TERM SET PAD VALUES ARE DEPENDENT UPON HYBRID LOSSES AND 2-WIRE FAX/EQUIP LOSSES.
- NOTE ④ PROVIDE IMPEDANCE COMP OR EQUIV AS REQUIRED (837 TYPE FOR LOADED FAX AND 1613 TYPE FOR NON-LOADED FAX).
- NOTE ⑤ PROVIDE E6 REPEATER OR EQUIV WHERE LINE LOSS EXCEEDS 5.0 DB LOSS.
- NOTE ⑥ LINE LOSS INCLUDES DLL AND IMP. COMP. OR GAIN DEVICE (AS REQ'D) F2 PAD AND FAX LOSS.
- NOTE ⑦ IF EQL 2 SOCKET E/W SF SIG UNIT OR 359 C (DUMMY) EQL, HARDWIRED COIL LOSS = 0.3 DB  
IF E/W 359 N EQL, EQL COIL LOSS = 0.3 DB  
IF E/W 359 F EQL (REPLACED BY 359 N), EQL COIL LOSS = 0.5 DB
- NOTE ⑧ LOSS FIGURES INDICATED APPLY TO A 2W/4W CIRCUIT HAVING A 5 DB 2W OVERHANG. GENERAL APPLICATION: LOSS OF 4W SECTION = (8 DBNL) - (LOSS OF 2W SECTION)\*
- DATA LEVEL IN ( ) ARE THEO. F2 (2025-2225 HZ) LEVELS IN DEMO
- INDICATES 849 TYPE NETWORKS OR EQUIVALENT.
- \* ALL LOSSES AT 1000 HZ.

EXHIBIT  
# 7

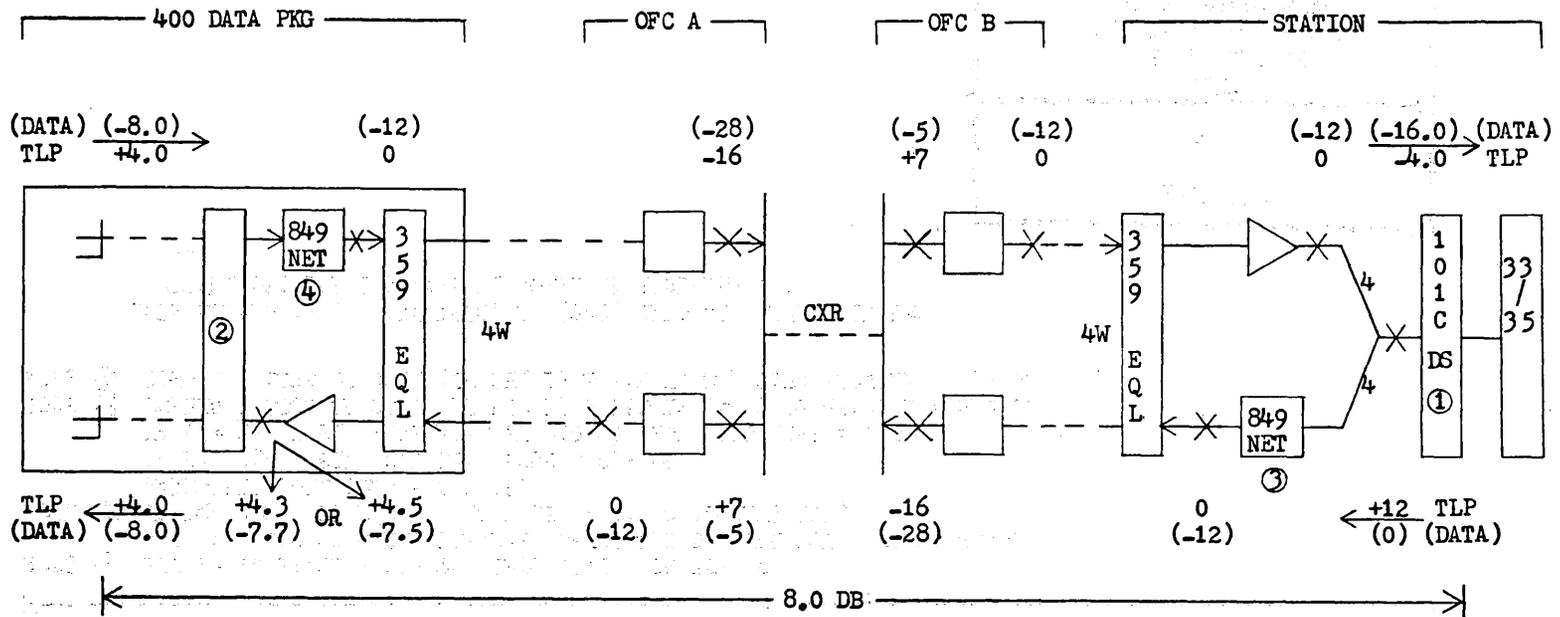
CLETS  
LEVEL DIAGRAM  
400 DATA PKG LINES  
2-WIRE ARRANGEMENT



- NOTE ① SET F2 (2025-2225 HZ) TRANSMIT LEVEL FOR ZERO DB  
 SET F1 (1070-1270 HZ) TRANSMIT LEVEL 4.0 DB BELOW THAT OF F2 BAND.
- NOTE ② EQUIP 849C NETWORK WITH 893/3.75 DB PLUG-IN PAD
- NOTE ③ EQUIP 849C NETWORK WITH 89AN/8.0 DB PLUG-IN PAD

DATA LEVELS IN ( ) ARE THEO. F2 (2025-2225 HZ) LEVELS IN DEMO  
 □ INDICATES 849 TYPE NETWORK

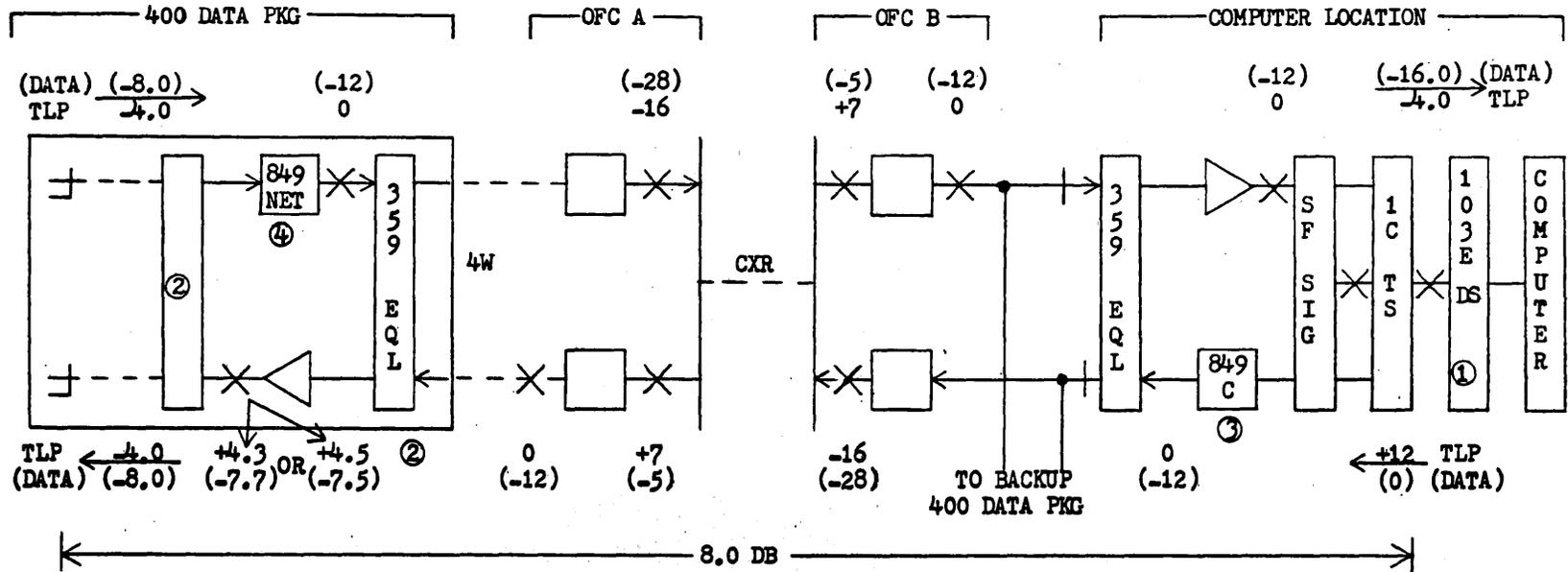
EXHIBIT
# 8
CLETS LEVEL DIAGRAM 400 DP "ON-PREM" STATION (E/W SF SIG EQPT)



- NOTE ① SET F2 (2025-2225 HZ) TRANSMIT LEVEL FOR ZERO DB  
 SET F1 (1070-1270 HZ) TRANSMIT LEVEL 4.0 DB BELOW  
 THAT OF F2 BAND.
- NOTE ② IF EQL 2 SOCKET E/W SF SIG UNIT OR 359 C (DUMMY) EQL,  
 HARDWIRED COIL LOSS = 0.3 DB  
 IF E/W 359 N EQL, EQL COIL LOSS = 0.3 DB  
 IF E/W 359 F EQL (REPLACED BY 359 N), EQL COIL LOSS=0.5DB
- NOTE ③ COMBINED LOSS OF COIL (IF REQ'D) & PAD IN 849 TYPE  
 NETWORK = 8.0 DB
- NOTE ④ COMBINED LOSS OF COIL (IF REQ'D) & PAD IN 849 TYPE  
 NETWORK = 3.7 DB.

DATA LEVELS IN ( ) ARE THEO. F2 (2025-2225 HZ) LEVELS IN DBMO  
 □ INDICATES 849-TYPE NETWORKS OR EQUIVALENT

EXHIBIT
# 9
CLETS LEVEL DIAGRAM 400 DATA PKG LINES 4-WIRE ARRANGEMENT



- NOTE ① SET F2 (2025-2225 HZ) TRANSMIT LEVEL FOR ZERO DB  
SET F1 (1070-1270 HZ) TRANSMIT LEVEL 4.0 DB BELOW THAT OF F2 BAND.
- NOTE ② IF EQ L 2 SOCKET E/W SF SIG UNIT OR 359 C (DUMMY) EQ L,  
HARDWIRED COIL LOSS = 0,3 DB.  
IF E/W 359 N EQ L, EQ L COIL LOSS = 0,3 DB.  
IF E/W 359 F EQ L (REPLACED BY 359 N), EQ L COIL LOSS = 0.5 DB.
- NOTE ③ COMBINED LOSS OF COIL (IF REQ'D) & PAD IN 849 TYPE NETWORK = 8.0 DB.
- NOTE ④ COMBINED LOSS OF COIL (IF REQ'D) & PAD IN 849 TYPE NETWORK - 3.7 DB.

DATA LEVELS IN ( ) ARE THEO. F2 (2025-2225 HZ) LEVELS IN DEMO  
 INDICATES 849 TYPE NETWORKS OR EQUIVALENT.

EXHIBIT  
 # 10  
 CLETS  
 LEVEL DIAGRAM  
 400 DATA PKG TRUNKS  
 4-WIRE ARRANGEMENT

"BACKUP" 400 DATA PACKAGE  
AT COMPUTER LOCATION

OFC A

OFC B

400 DATA PACKAGE

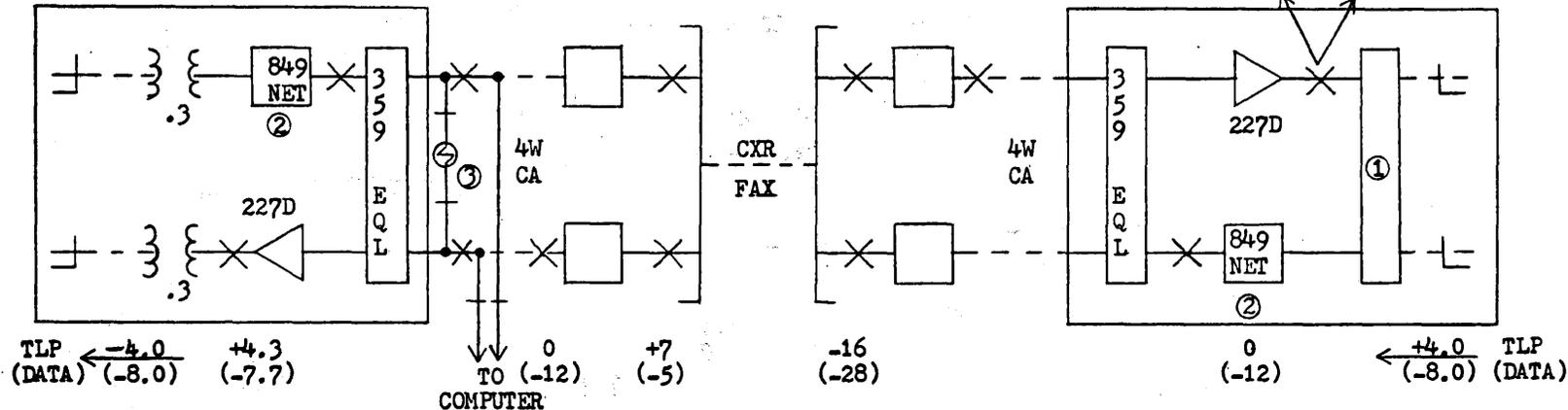
(DATA) (-8.0)  
TLP +4.0

(-12)  
0

(-28)  
-16

(-5) (-12)  
+7 0

① (-7.7) (-7.5) (-8.0) (DATA)  
+4.3 OR +4.5 +4.0 TLP



NOTE ① IF EQL 2 SOCKET E/W SF SIG UNIT OR 359 C (DUMMY) EQL,  
HARDWIRED COIL LOSS = 0.3 DB.

IF E/W 359 N EQL, EQL COIL LOSS = 0.3 DB.

IF E/W 359 F EQL (REPLACED BY 359 N), EQL COIL LOSS = 0.5 DB.

NOTE ② COMBINED LOSS OF COIL (IF REQ'D) & PAD IN 849 TYPE NETWORK = 3.7 DB.

NOTE ③ LOOPBACK PAD REQUIRED TO HOLD SF UNIT IN "IDLE" CONDITION  
WITH TRANSFER KEY OPERATED.

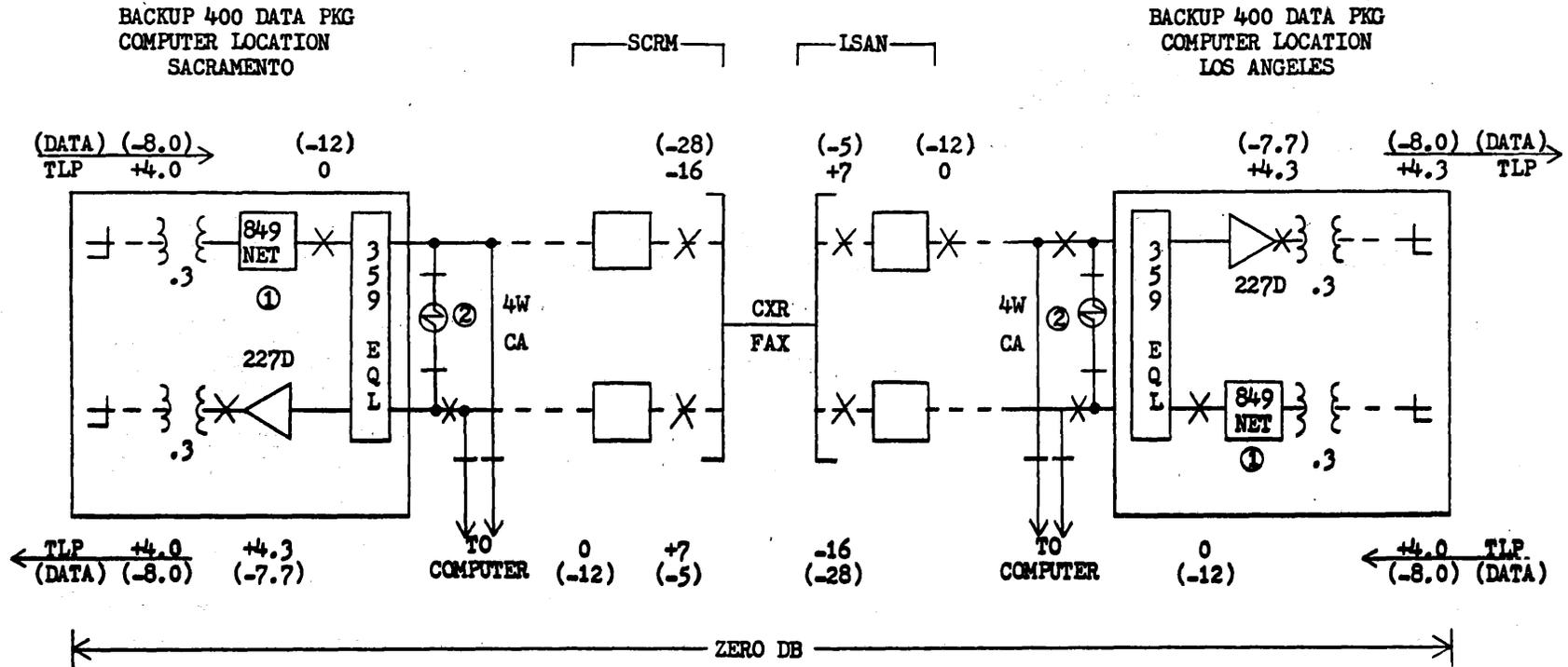
DATA LEVELS IN ( ) ARE THEO. F2 (2025-2225 HZ) LEVELS IN DEMO.

□ INDICATES 849 TYPE NETWORK OR EQUIVALENT.

EXHIBIT

# 11

CLETS LEVEL DIAGRAM  
COMPUTER BACKUP ARRANGEMENT  
BACKUP 400 DATA PKG TO  
400 DATA PKG TRKS

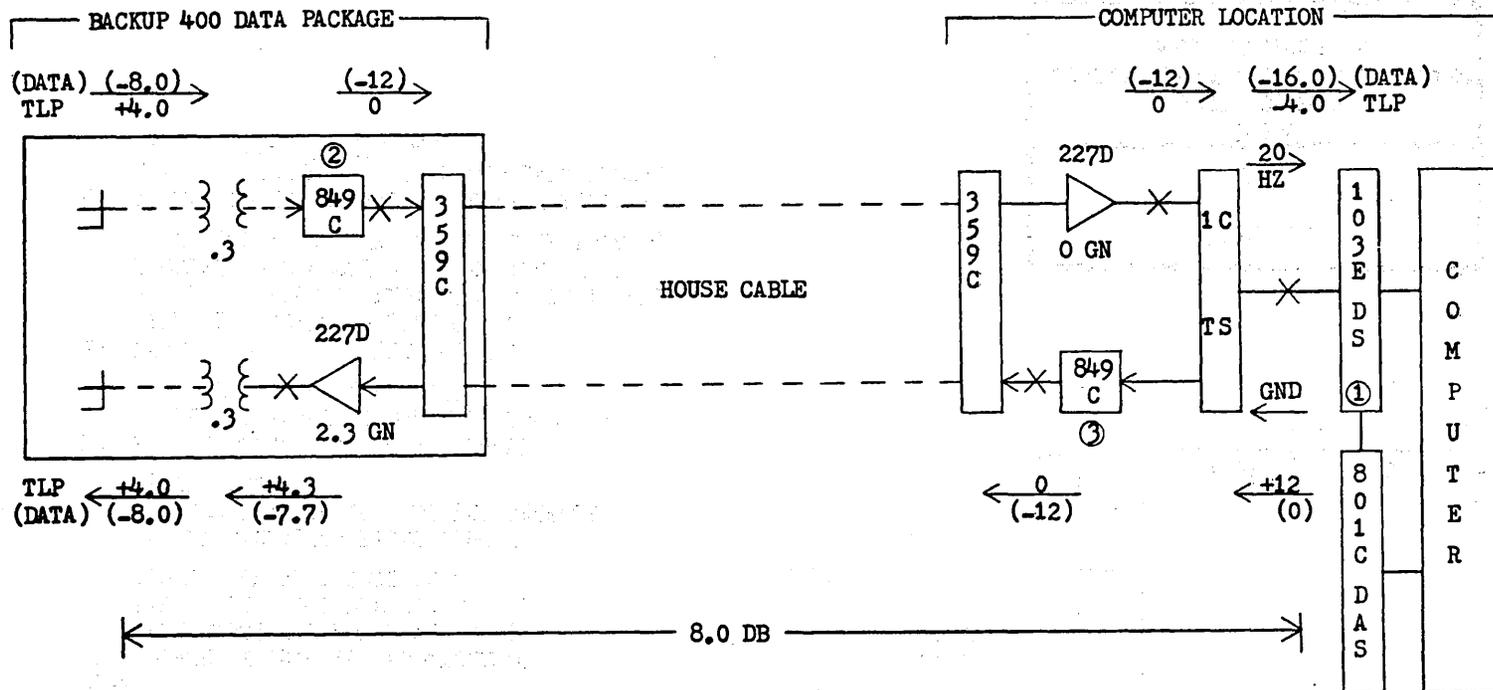


- NOTE ① COMBINED LOSS OF COIL (IF REQ'D) AND PAD IN 849 TYPE NETWORK = 3.7 DB.  
 NOTE ② LOOPBACK PAD REQUIRED TO HOLD SF UNIT IN "IDLE" CONDITION WHEN TRANSFER KEY OPERATED.

DATA LEVELS IN ( ) ARE THEO. F2 (2025-2225 HZ) LEVELS IN DEMO

□ INDICATES 849 TYPE NETWORKS OR EQUIVALENT

EXHIBIT  
 # 12  
 CLETS LEVEL DIAGRAM  
 COMPUTER BACKUP ARRANGEMENT BACK-  
 UP 400 DATA PKG TO  
 BACKUP 400 DATA PKG



NOTE ① SET F2 (2025-2225 HZ) TRANSMIT LEVEL FOR ZERO DB  
 SET F1 (1070-1270 HZ) TRANSMIT LEVEL 4.0 DB BELOW THAT OF F2 BAND.

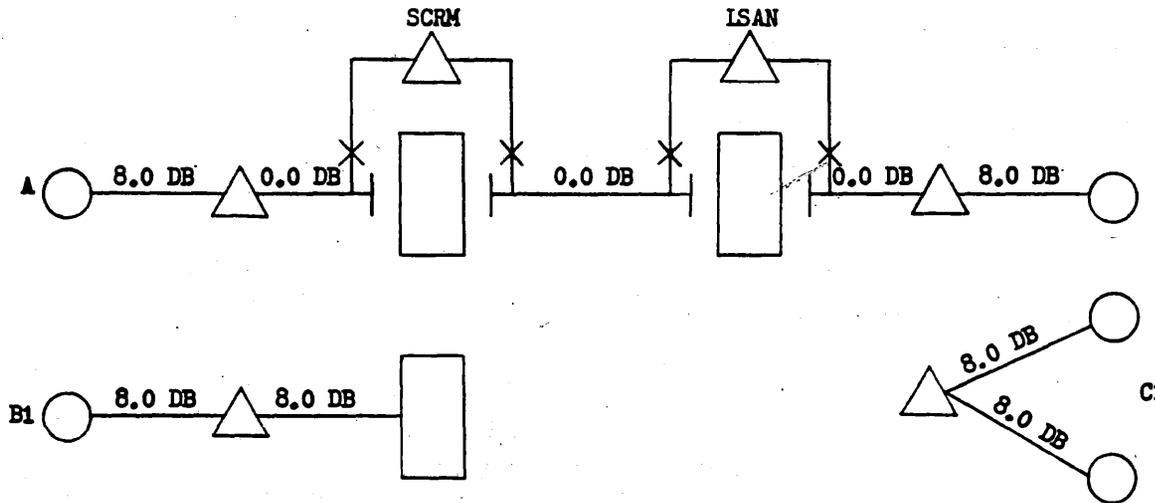
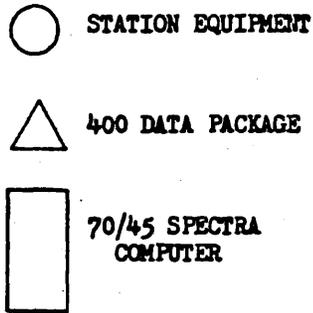
NOTE ② EQUIP 849 C NETWORK WITH 893/3.75 DB PLUG-IN PAD

NOTE ③ EQUIP 849 C NETWORK WITH 89AN/8.0 DB PLUG-IN PAD

DATA LEVELS IN ( ) THEO. F2 (2025-2225 HZ) LEVELS IN DEMO  
 □ INDICATES 849 TYPE NETWORK

EXHIBIT  
 # 13

CLETS LEVEL DIAGRAM  
 COMPUTER BACKUP ARRANGEMENT  
 BACKUP 400 DATA PKG TO COMPUTER  
 TRUNKS



**NOTES:**

- A EMERGENCY INVOLVES END-TO-END TRANSMISSION THROUGH TWO 8 DB END LINKS AND THREE 0.0 DB MID LINKS. OVERALL LOSS 16 DB.
- B1 NORMAL OPERATION FIRST CIRCUIT SEGMENT STATION TO COMPUTER STORAGE 16 DB LOSS.
- B2 NORMAL OPERATION SECOND CIRCUIT SEGMENT COMPUTER STORAGE TO COMPUTER STORAGE. 16 DB TRUNK LOSS.
- B3 NORMAL OPERATION THIRD CIRCUIT SETMENT - COMPUTER STORAGE TO STATION. LOSS OF LAST SECTION IS 16 DB. SEQUENCE PROGRESSION OF MESSAGE GIVES AN EFFECTIVE CIRCUIT NET LOSS OF 16.0 DB.
- C1 NORMAL OPERATION INTRA-COUNTY STATION TO STATION SERVED FROM SAME 400 DATA PACKAGE. OVERALL LOSS = 16.0 DB.

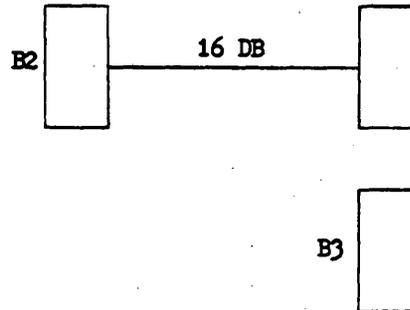
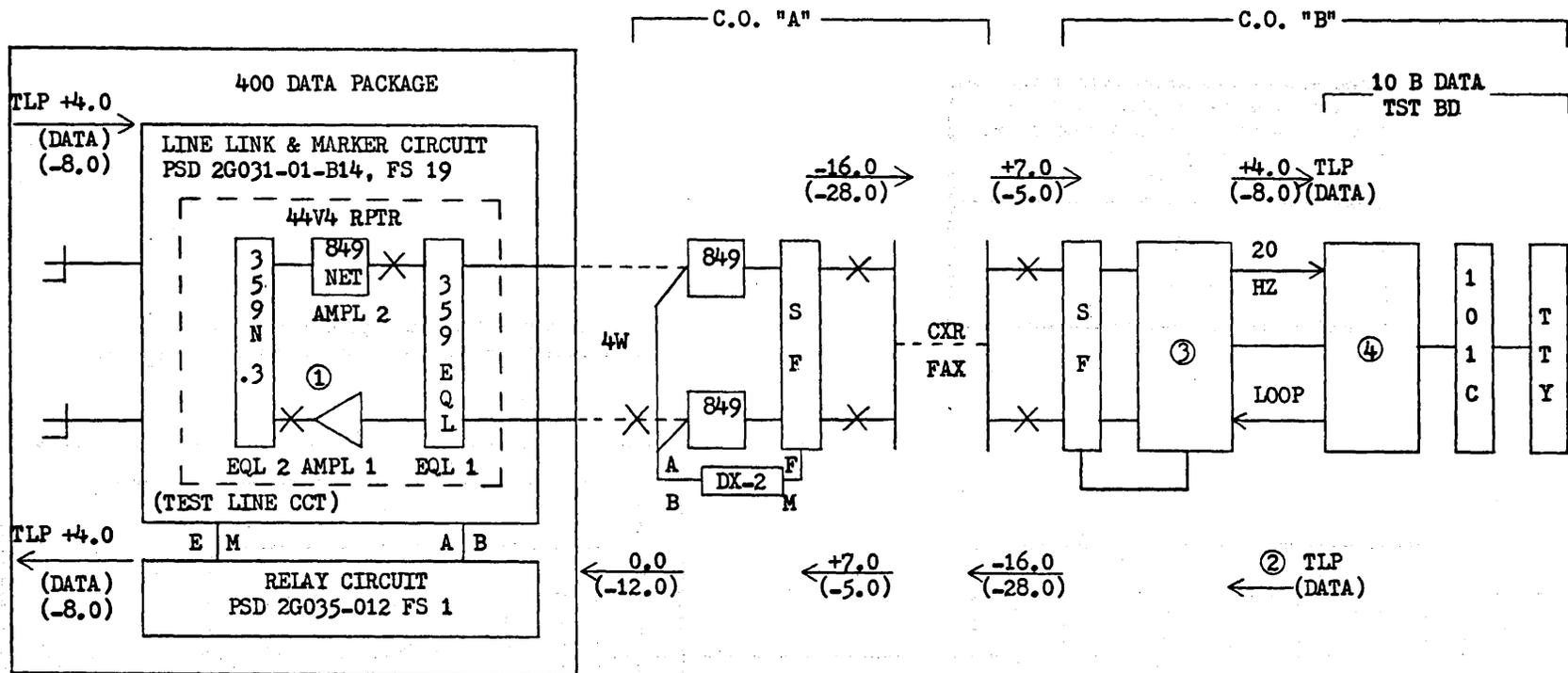


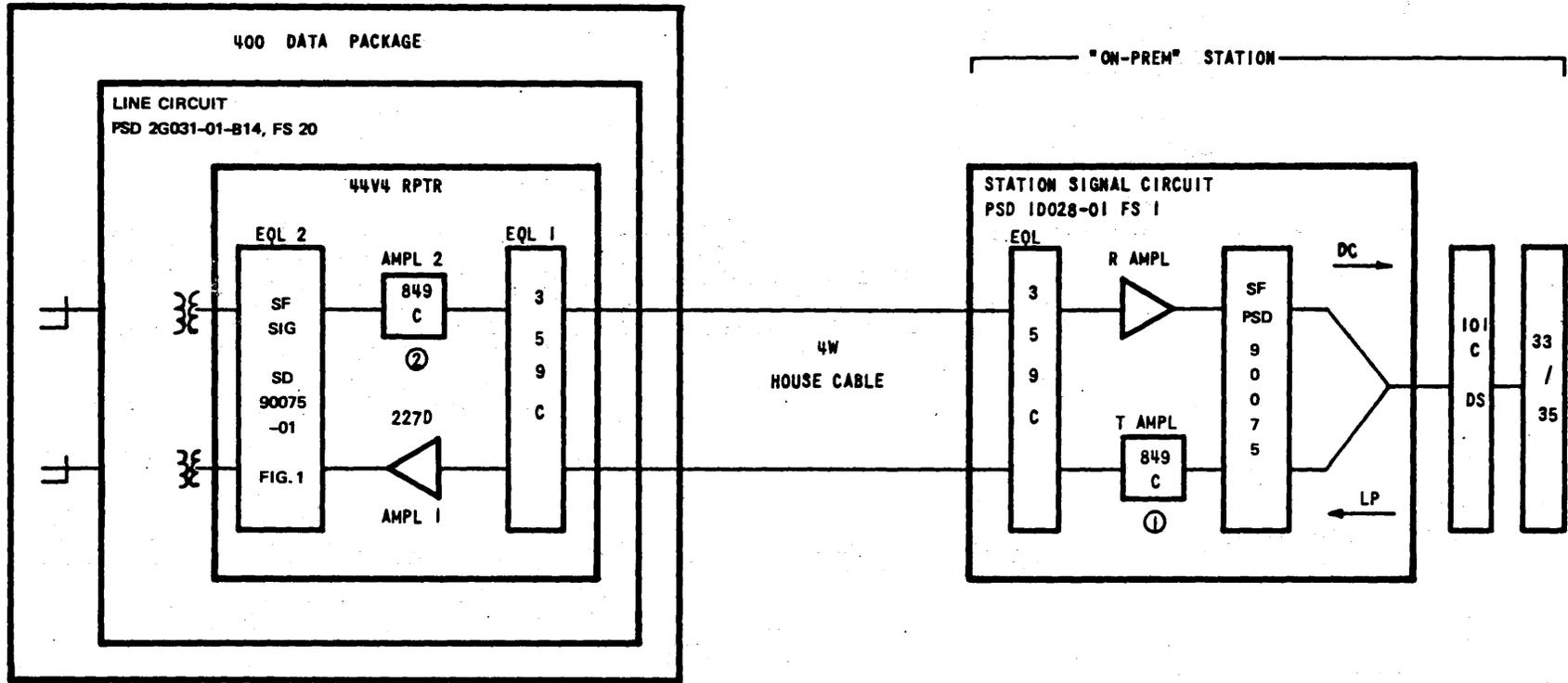
EXHIBIT
# 14
CLETS LEVEL DIAGRAM COMPARISON OF NORMAL - EMERGENCY MESSAGE PROGRESS



- NOTE ① ADJUST AMPL 1 OUTPUT FOR +4.3 DB/ (-7.7dB).  
EQUIP 849 TYPE NETWORK WITH PROPER 89 TYPE PLUG-IN PAD  
FOR 0 DB/ (-12 DB) AT AMPL 2 OUTPUT.
- NOTE ② TEST & DATA LEVELS DEPENDENT UPON LEVELS OF EXISTING 101 C DATA SET.  
(EXAMPLE: IF F2 (2025-2225 HZ) = -8.0 AND F1 (1070-1270 HZ) =  
-14.0 DB, THEN DATA LEVEL WOULD BE (-8.0) AND TLP 12 DB HIGHER OR +4.0 DB.
- NOTE ③ SEE EXHIBIT 30 & 31 FOR EQUIPMENT CONFIGURATIONS.
- NOTE ④ DATA TEST ACCESS CIRCUIT PSD 70063-01/PJ 70063-A.

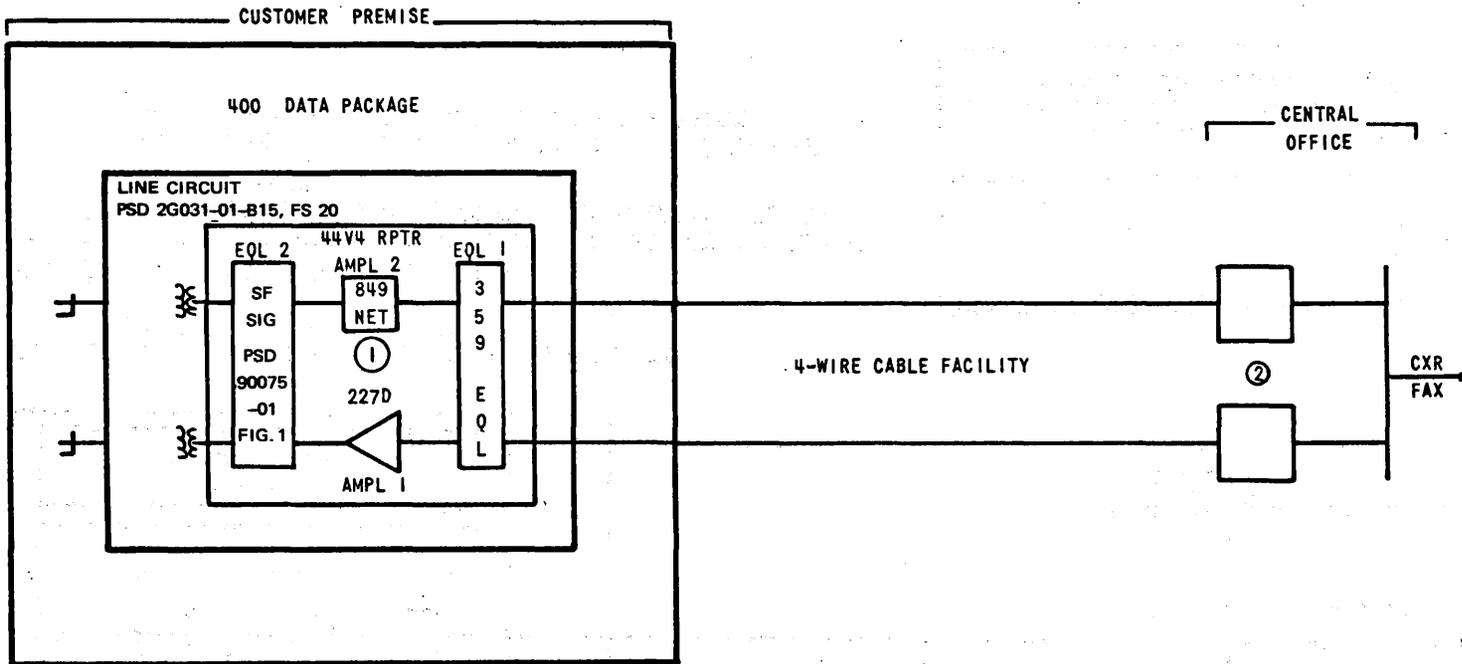
( ) INDICATES THEO. F2 (2025-2225 HZ) LEVEL.

EXHIBIT  
# 15  
CLETS  
LEVEL DIAGRAM  
400 DATA PACKAGE  
MAINTENANCE CIRCUIT



- NOTE ① EQUIP. 849C NETWORK WITH 89AN/8.0 dB PLUG-IN PAD.  
 NOTE ② EQUIP. 849C NETWORK WITH 89B/3.75 dB PLUG-IN PAD.

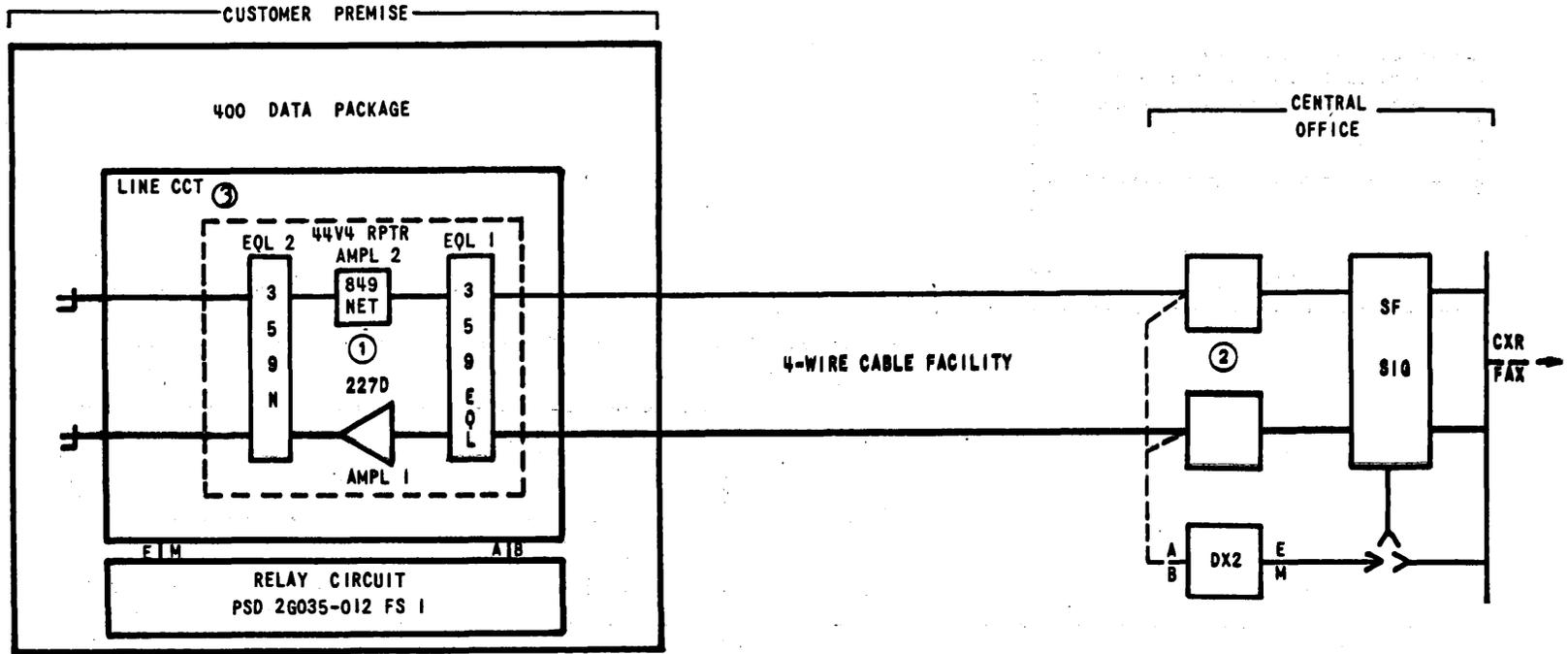
EXHIBIT  
 # 16  
 CLETS  
 400 DATA PACKAGE  
 4-WIRE "ON-PREM" STATION ARRANGEMENT  
 (USING STATION SIGNAL CCT PSD 1D028-01)



NOTE ① COMBINED LOSS OF COIL (IF REQ'D) & PAD IN 849 TYPE NETWORK = 3.75dB

NOTE ② 849 TYPE NETWORKS OR EQUIVALENT.

<p>EXHIBIT</p> <p># 17</p>
<p>CLETS</p> <p>400 DATA PACKAGE</p> <p>4-WIRE LINE OR TRUNK ARRANGEMENT</p> <p>(E/W SF SIGNAL CIRCUIT PSD 90075-01)</p>

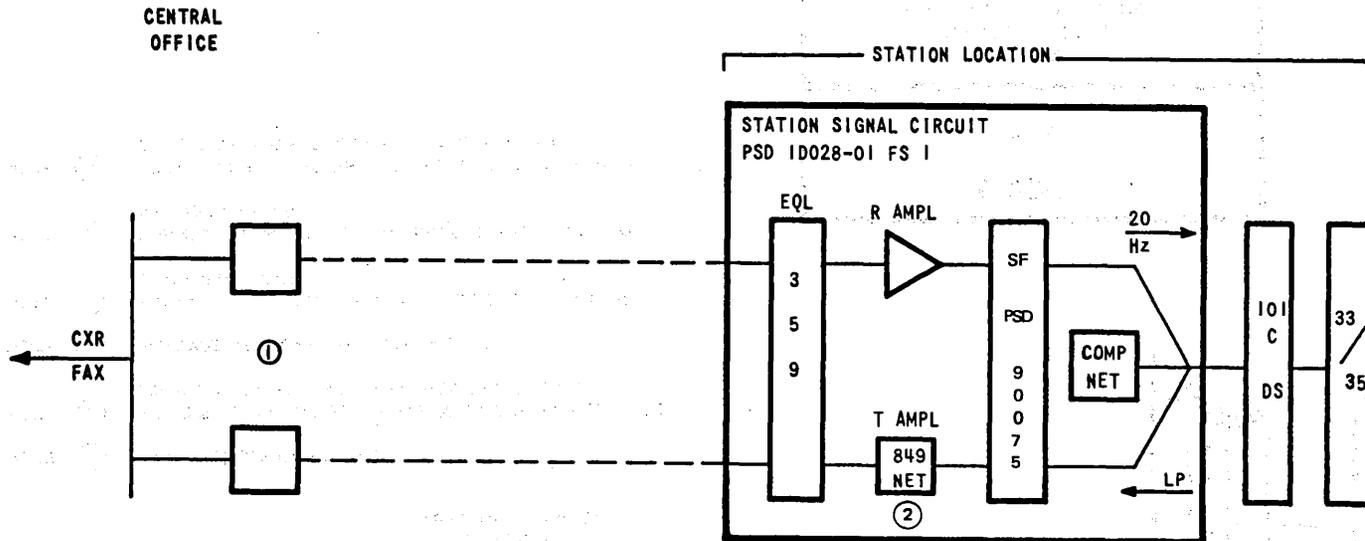


- NOTE ① COMBINED LOSS OF COIL (IF REQ'D) & PAD IN 849 TYPE NETWORK = 3.75dB.
- NOTE ② 849 TYPE NETWORK OR EQUIVALENT.
- NOTE ③ THE NEW LINE CCT PSD 2G031-01-B15, FS 20 REQUIRES EITHER AN SF UNIT PER PSD 90075-01 OR A 359 C (DUMMY) EQL IN THE EQL 2 SOCKET.
- THE EARLIER LINE CCT PSD 2G031-01-B12, FS 16 REQUIRED A 359 N (REPLACING 359 F) EQL IN THE EQL 2 SOCKET.

EXHIBIT

# 18

CLETS  
400 DATA PACKAGE  
4-WIRE LINE OR TRUNK ARRANGEMENT  
E/W SIGNAL CIRCUIT PSD 2G035-01



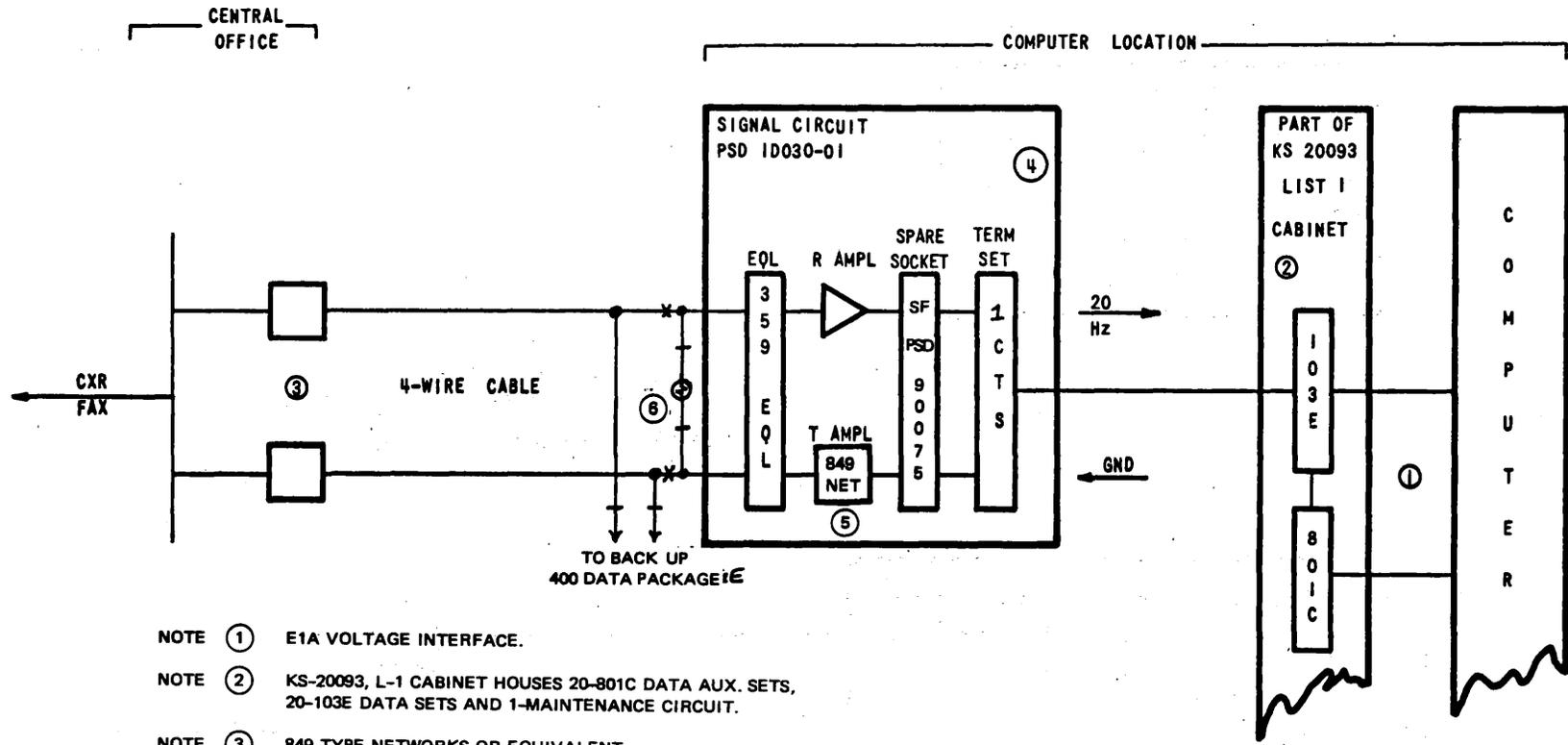
NOTE ① 849 TYPE NETWORKS OR EQUIVALENT.

NOTE ② COMBINED LOSS OF COIL (IF REQ'D) & PAD IN 849 TYPE NETWORK = 8.0dB.

EXHIBIT

# 19

CLETS  
400 DATA PACKAGE  
4-WIRE LINE ARRANGEMENT  
(USING STA. SIG. CIRCUIT PSD 1D028-01)

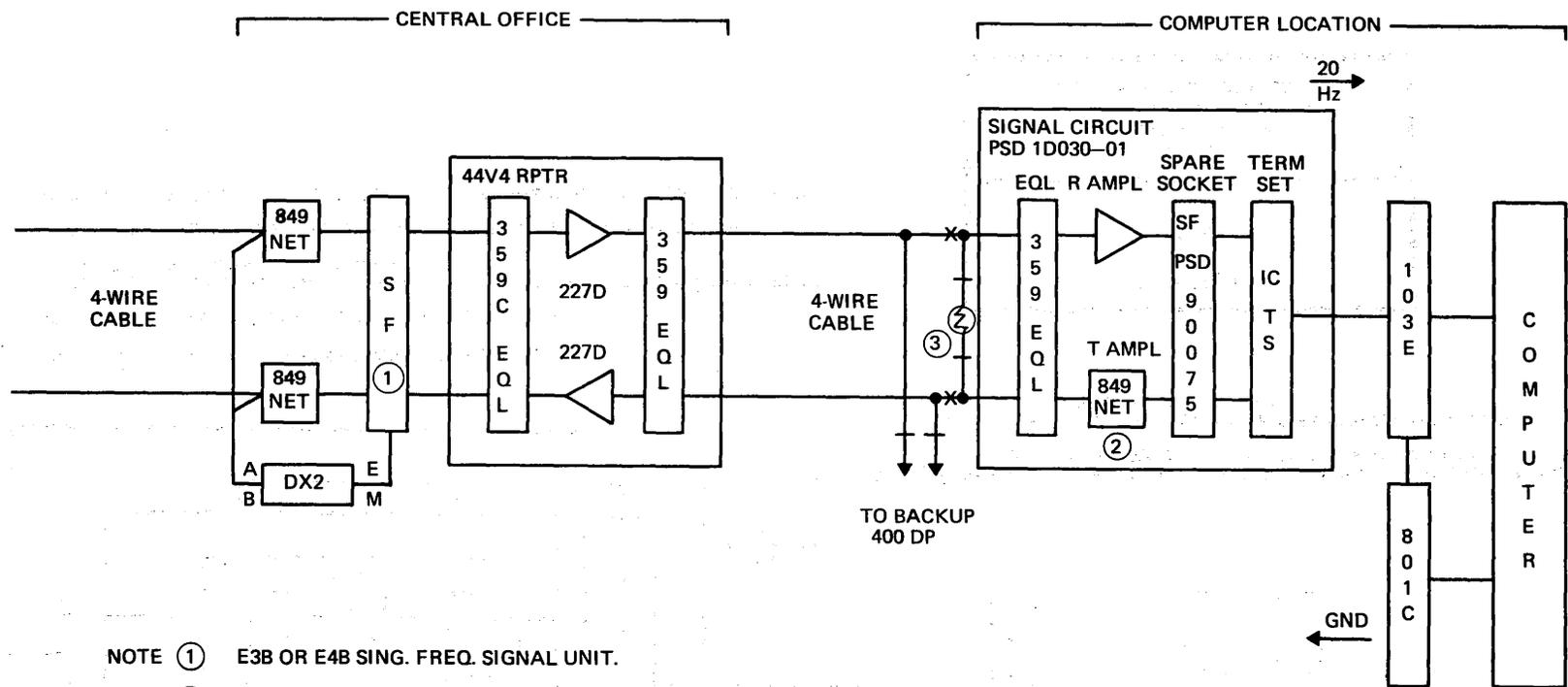


- NOTE ① E1A VOLTAGE INTERFACE.
- NOTE ② KS-20093, L-1 CABINET HOUSES 20-801C DATA AUX. SETS, 20-103E DATA SETS AND 1-MAINTENANCE CIRCUIT.
- NOTE ③ 849 TYPE NETWORKS OR EQUIVALENT.
- NOTE ④ SIGNAL CIRCUIT TO MOUNT IN WALL RELAY RACK PER ED-69463-50, GRP. 1.
- NOTE ⑤ COMBINED LOSS OF COIL (IF REQ'D) & PAD IN 849 TYPE NETWORK = 8.0dB.
- NOTE ⑥ LOOPBACK PAD REQUIRED TO HOLD SF UNIT IN "IDLE" CONDITION WHEN TRANSFER KEY OPERATED.

**EXHIBIT**  
# 20

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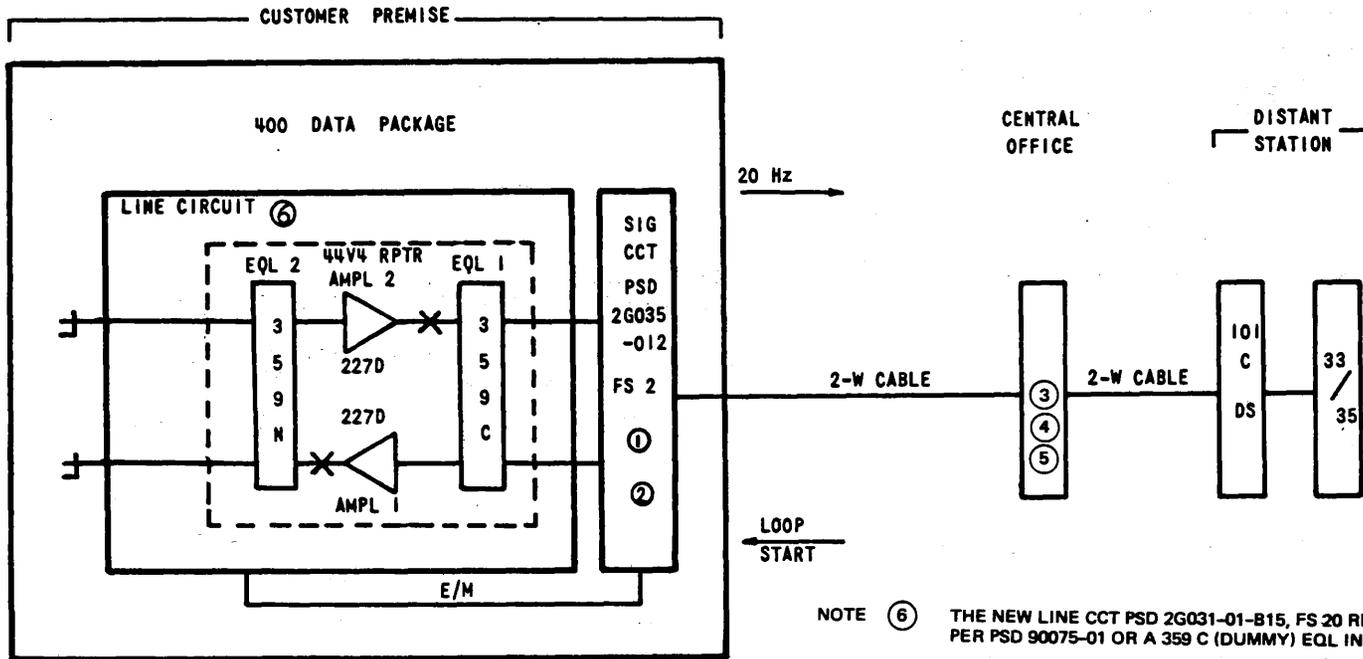
CLETS  
400 DATA PACKAGE  
4-WIRE TRUNK ARRANGEMENT  
(USING SIGNAL CIRCUIT PSD 1D030-01)



- NOTE ① E3B OR E4B SING. FREQ. SIGNAL UNIT.
- NOTE ② COMBINED LOSS OF COIL (IF REQ'D) & PAD IN 849 TYPE NETWORK = 8.0 DB.
- NOTE ③ LOOPBACK PAD REQUIRED TO HOLD S.F. UNIT IN IDLE CONDITION WHEN TRANSFER KEY IS OPERATED.

EXHIBIT  
# 21

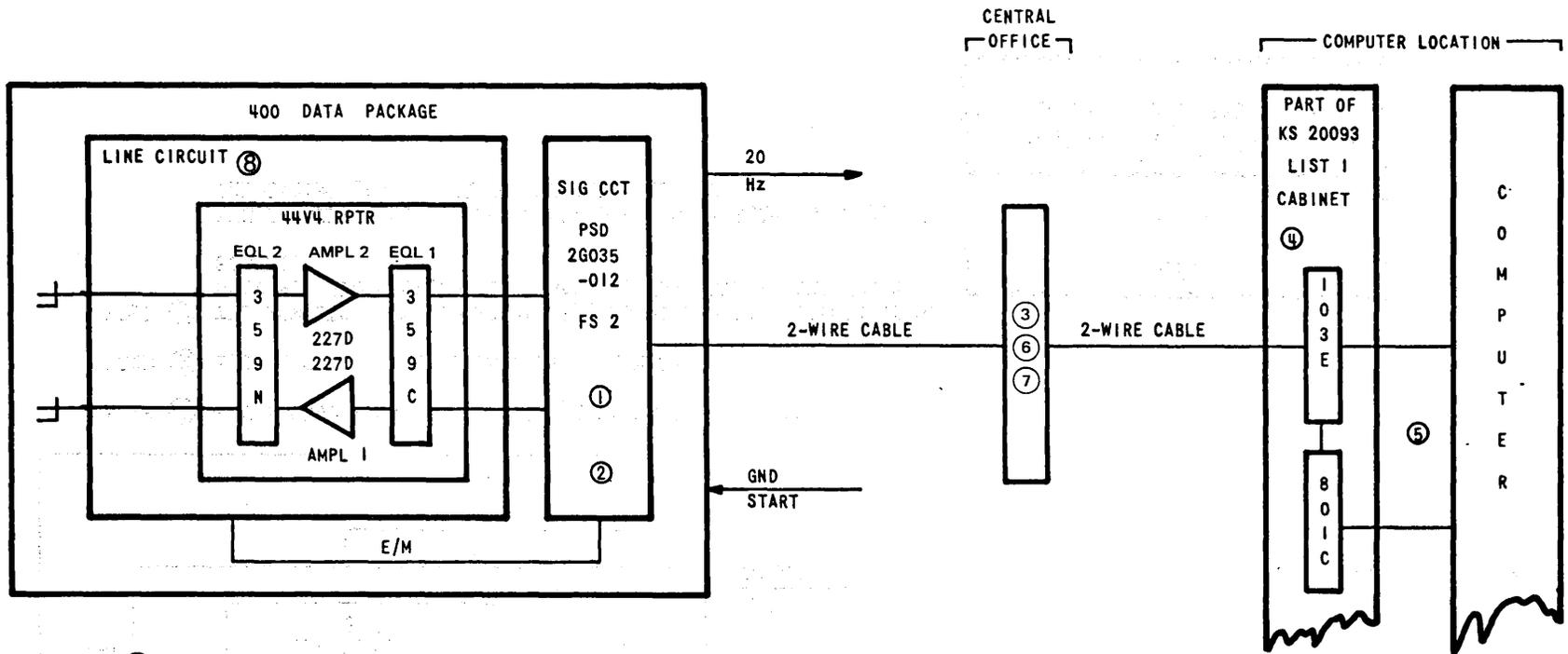
CLETS 400 DATA PACKAGE  
4-WIRE TRUNK ARRANGEMENT  
(USING C.O. E-TYPE SF SIGNALING)



- NOTE ① MAXIMUM LOOP RESISTANCE IS 1500 OHMS.
- NOTE ② SIGNAL CIRCUIT INCLUDES 1-TYPE TERM. SET.
- NOTE ③ WHERE NECESSARY DIAL LONG LINE SD-96555 OR EQUIV. MAY BE USED TO EXTEND SIGNALING RANGE.
- NOTE ④ PROVIDE E-6 REPEATER WHERE 2-WIRE LINE LOSS EXCEEDS 5.0dB.
- NOTE ⑤ PROVIDE IMPEDANCE COMPENSATOR (1613/NL OR 837/H-88) AS REQUIRED.

NOTE ⑥ THE NEW LINE CCT PSD 2G031-01-B15, FS 20 REQUIRES EITHER AN SF UNIT PER PSD 90075-01 OR A 359 C (DUMMY) EQL IN THE EQL 2 SOCKET.  
 THE EARLIER LINE CCT PSD 2G031-01-B12, FS 16 REQUIRED A 359 N (REPLACING 359 F) EQL IN THE EQL 2 SOCKET.

EXHIBIT
# 22
CLETS 400 DATA PACKAGE 2-WIRE LINE ARRANGEMENT E/W SIGNAL CIRCUIT PSD 2G035-01

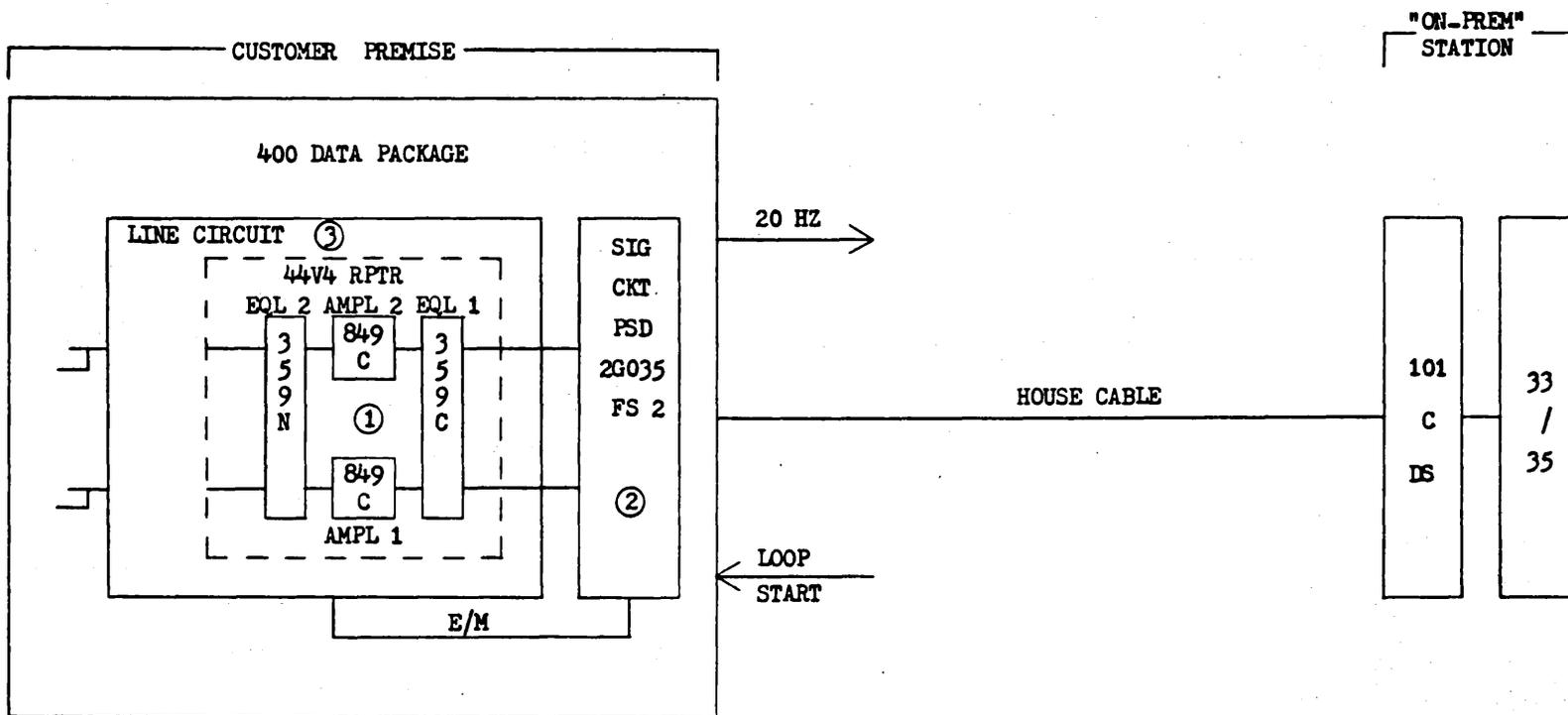


- NOTE ① MAXIMUM LOOP RESISTANCE IS 1500 OHMS.
- NOTE ② SIGNAL CIRCUIT INCLUDES 1-TYPE TERM. SET.
- NOTE ③ WHERE NECESSARY, DIAL LONG LINE SD 66192 OR EQUIV. MAY BE USED TO EXTEND SIGNALING RANGE. ARRANGE TO REPEAT GROUND START & 20 Hz RING.
- NOTE ④ KS 20093, L-1 CABINET HOUSES 20-801C DATA AUX. SETS, 20-103E DATA SETS AND 1-MAINTENANCE CIRCUIT.
- NOTE ⑤ E1A VOLTAGE INTERFACE.
- NOTE ⑥ PROVIDE E-6 REPEATER WHERE 2-WIRE LINE LOSS EXCEEDS 5.0dB.
- NOTE ⑦ PROVIDE IMPEDANCE COMPENSATOR (1613/NL OR 837/H-88) AS REQUIRED.
- NOTE ⑧ THE NEW LINE CCT PSD 2G031-01-B15, EXH. 20 REQUIRES EITHER AN SF UNIT PER PSD 90075-01 OR A 359 C (DUMMY) EQL IN THE EQL 2 SOCKET.
- THE EARLIER LINE CCT PSD 2G031-01-B12, EXH 16 REQUIRED A 359 N (REPLACING 359 F) EQL IN THE EQL 2 SOCKET.

EXHIBIT

# 23

CLETS  
400 DATA PACKAGE  
2-WIRE TRUNK ARRANGEMENT  
E/W SIGNAL CIRCUIT PSD 2G035-01



NOTE ① EQUIP 849C NETWORKS WITH 89P/3.25 DB PLUG-IN PAD.

NOTE ② SIGNAL CIRCUIT INCLUDES 1-TYPE TERM SET.

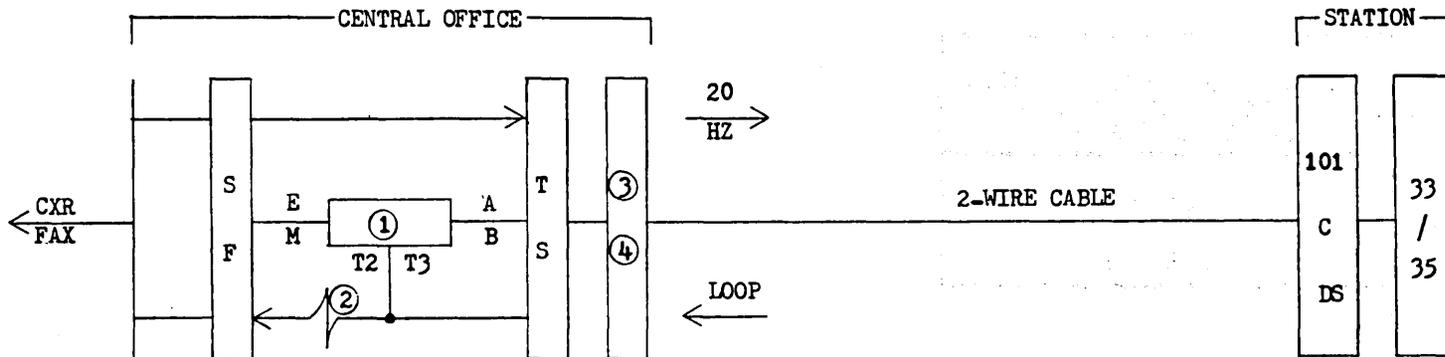
NOTE ③ THE NEW LINE CCT PSD 2G031-B15, FS 20 REQUIRED EITHER AN SF UNIT PER PSD 90075-01 OR A 359C (DUMMY) EQL IN THE EQL 2 SOCKET.

THE EARLIER LINE CCT PSD 2G031-B15, FS 16 REQUIRED A 359 N (REPLACING 359 F) EQL IN THE EQL 2 SOCKET.

EXHIBIT

# 24

CLETS 400 DATA PACKAGE  
 2-WIRE "ON-PREM" STATION ARGT  
 E/W SIGNAL CIRCUIT PSD 2G035-01



NOTE ① DIAL LONG LINE DS-96252-01, FIG. 1, 4, E & G; OPT. ZB, ZD, H, M, N & Y (ARRANGED FOR CONTINUOUS RING & TRIP RING DURING RINGING INTERVAL).

NOTE ② WHERE REQUIRED TO PREVENT FEEDBACK THROUGH THE TERM SET HYBRID TOWARD DATA PKG, PROVIDE 1-C PAD FOR TERMINATION PURPOSES & EXTEND T2, T3 (OR T1, R1) LEADS TO THE TRANSMIT SIDE OF TERM. SET. THIS PROVIDES A SHORT THROUGH THE 600 OHM TERMINATION OF THE 1-C PAD TOWARD DATA PKG WHEN RINGING TOWARD STATION.

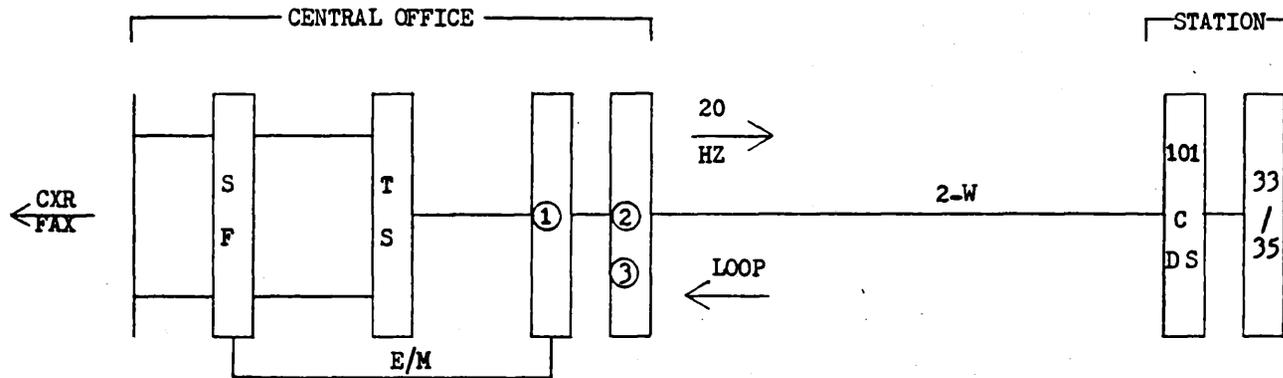
NOTE ③ PROVIDE IMPEDANCE COMPENSATORS AS REQUIRED. (837 TYPE FOR LOADED & 1613 TYPE FOR NON-LOADED FACILITIES).

NOTE ④ PROVIDE E-6 REPEATER WHERE 2-WIRE LINE LOSS EXCEEDS 5.0 DB.

EXHIBIT

# 25

CLETS 400 DATA PACKAGE  
2-WIRE LINE ARRANGEMENT  
(USING DIAL LONG LINE SD 96252-01)



NOTE ① DLL SD 96252-01 FIG. 1, 4, E & G, OPTS ZB, ZD, H, M, N & Y OR EQUIV.  
(ARRANGED FOR CONTINUOUS RING & TRIP RING DURING RINGING CYCLE).

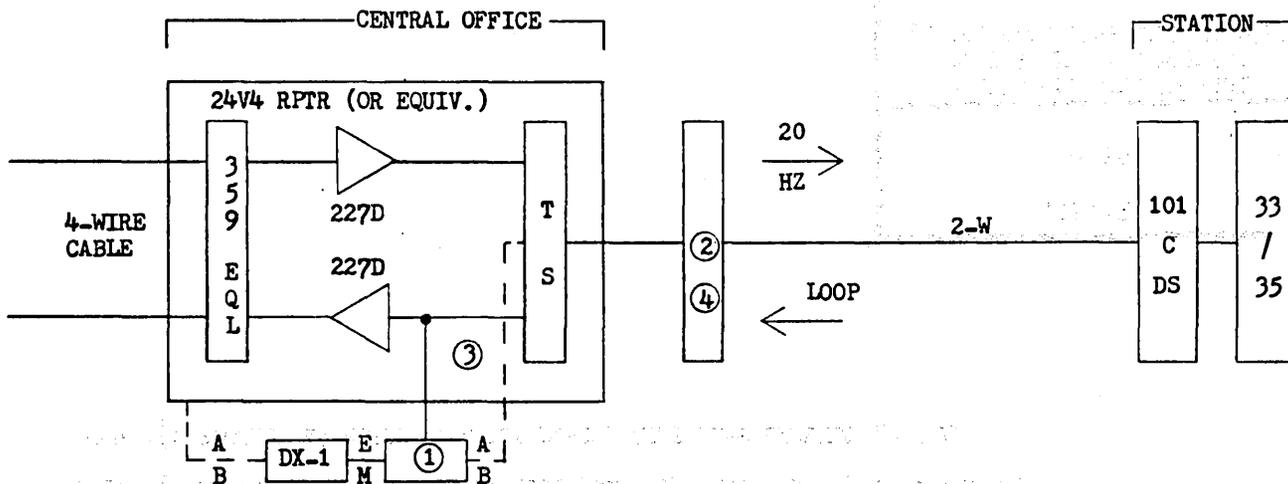
NOTE ② PROVIDE IMPEDANCE COMP. (1613/NL OR 837/H88) AS REQUIRED.

NOTE ③ PROVIDE E-6 REPEATER WHERE 2-WIRE LINE LOSS EXCEEDS 5.0 DB.

EXHIBIT

# 26

CLETS 400 DATA PACKAGE  
2-WIRE LINE ARRANGEMENT  
(USING DIAL LONG LINE SD 96252-01)

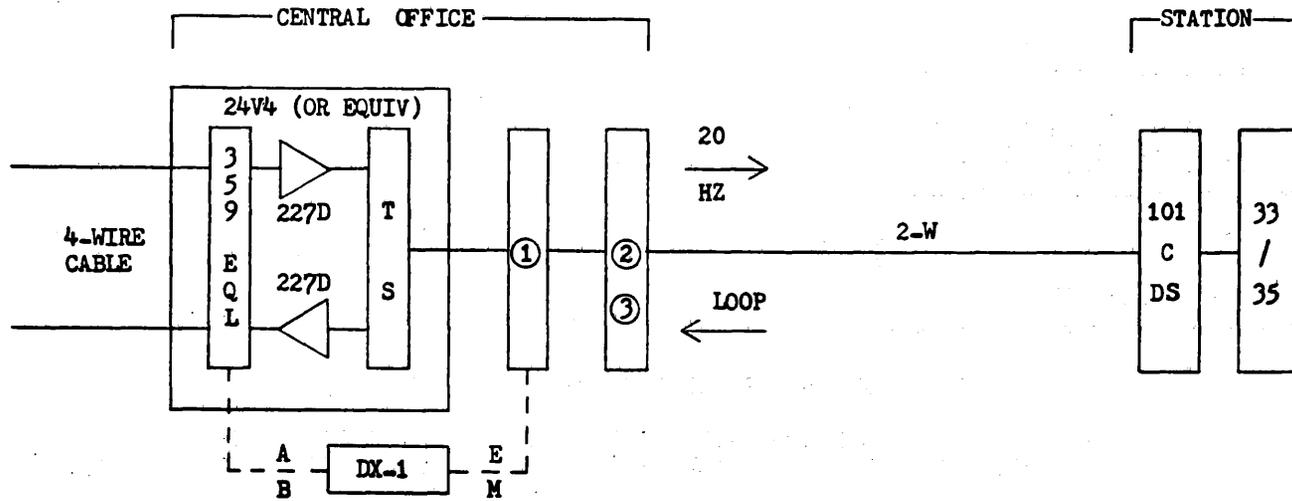


- NOTE ① DLL 96252-01, FIG. 1, 4, E & G; OPT. ZB, ZD, H, M, N & Y (ARRANGED FOR CONTINUOUS RING AND TRIP RING DURING RING CYCLE).
- NOTE ② PROVIDE IMPEDANCE COMP. (1613/NL & 837/H88) AS REQUIRED.
- NOTE ③ CONNECT T2, T3 (OR T1, R1) TO TRANSMIT SIDE OF 4-WIRE TERM. SET TO PREVENT AUDIBLE RING-BACK TOWARD DATA PKG WHEN RINGING TOWARD STATION.
- NOTE ④ PROVIDE E-6 REPEATER WHERE 2-WIRE LINE LOSS EXCEEDS 5.0 DB.

EXHIBIT

# 27

CLETS 400 DATA PACKAGE  
2-WIRE LINE ARRANGEMENT  
(USING DIAL LONG LINE SD 96252-01)

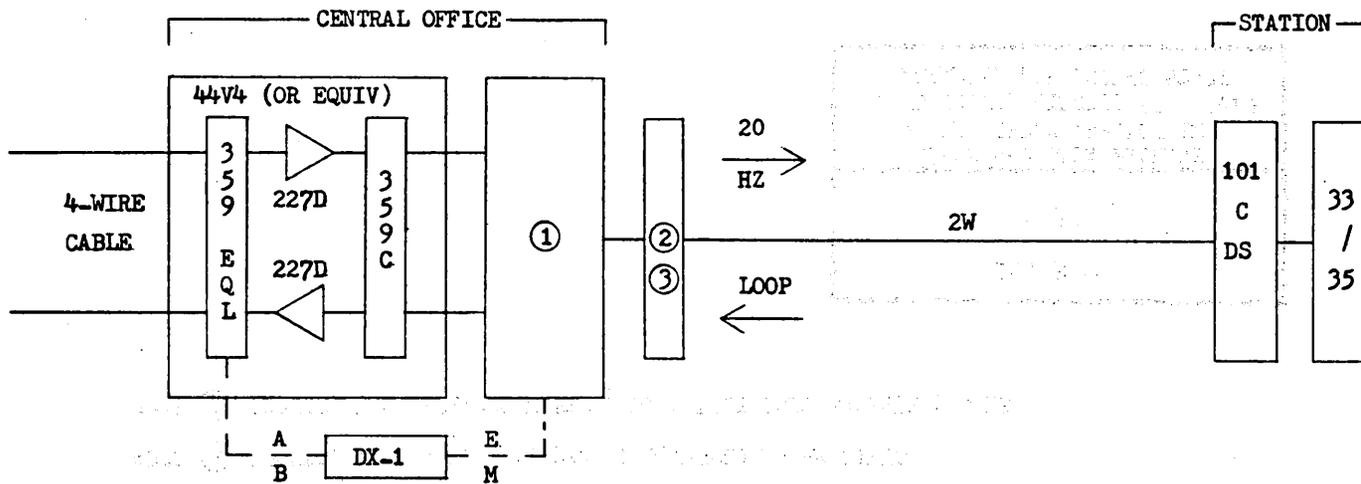


- NOTE ① DLL 96252-01, FIG. 1, 4, E & G; OPT. ZB, ZD, H, M, N & Y (ARRANGED FOR CONTINUOUS RING AND TRIP RING DURING RING CYCLE) OR EQUIVALENT.
- NOTE ② PROVIDE IMPEDANCE COMP. (1613/NL & 837/H88) OR E6, AS REQUIRED.
- NOTE ③ PROVIDE E6 REPEATER WHERE 2-WIRE LINE LOSS EXCEEDS 5.0 DB.

EXHIBIT

# 28

CLETS 400 DATA PACKAGE  
 2-WIRE LINE ARRANGEMENT  
 (USING DIAL LONG LINE SD 96252)



NOTE ① SIGNAL CIRCUIT PER PSD 2G010-012, FS 1 & 2; W, Y & Z OPT.  
(INCLUDES 1-TYPE TERM. SET) FOR LOOP START APPLICATION.

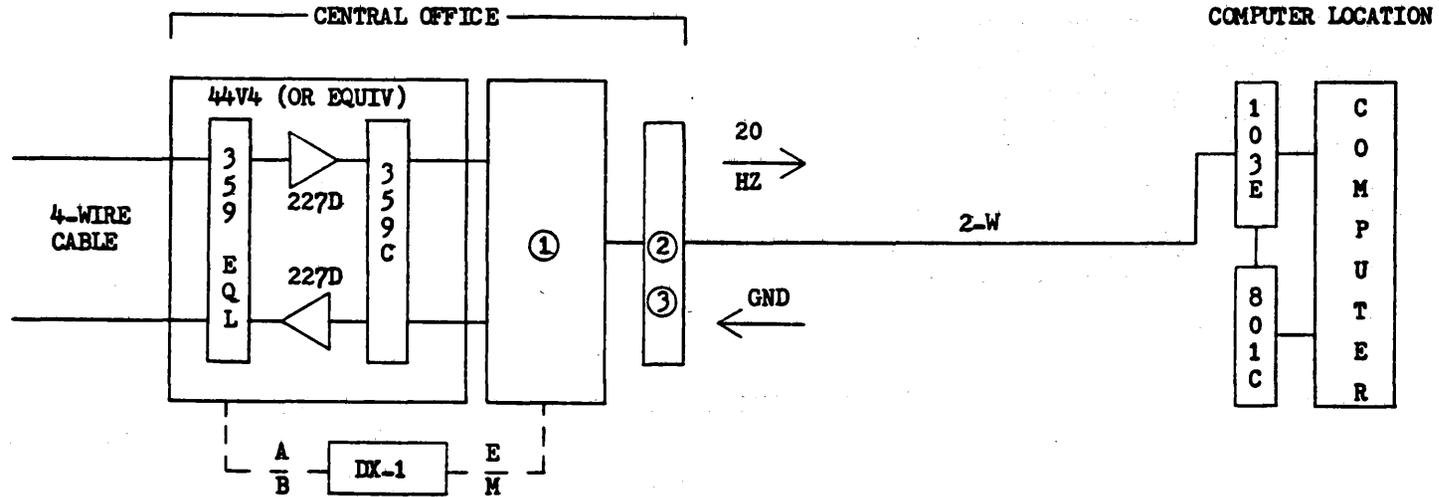
NOTE ② PROVIDE IMP. COMP. (1613/NL & 837/H88)  
AS REQUIRED.

NOTE ③ PROVIDE E-6 REPEATER WHERE 2-WIRE LINE LOSS EXCEEDS 5.0 DB.

EXHIBIT

# 29

CLETS 400 DATA PACKAGE  
2-WIRE LINE ARRANGEMENT  
USING SIGNAL CIRCUIT PSD 2G01001  
ARRANGED FOR LOOP START

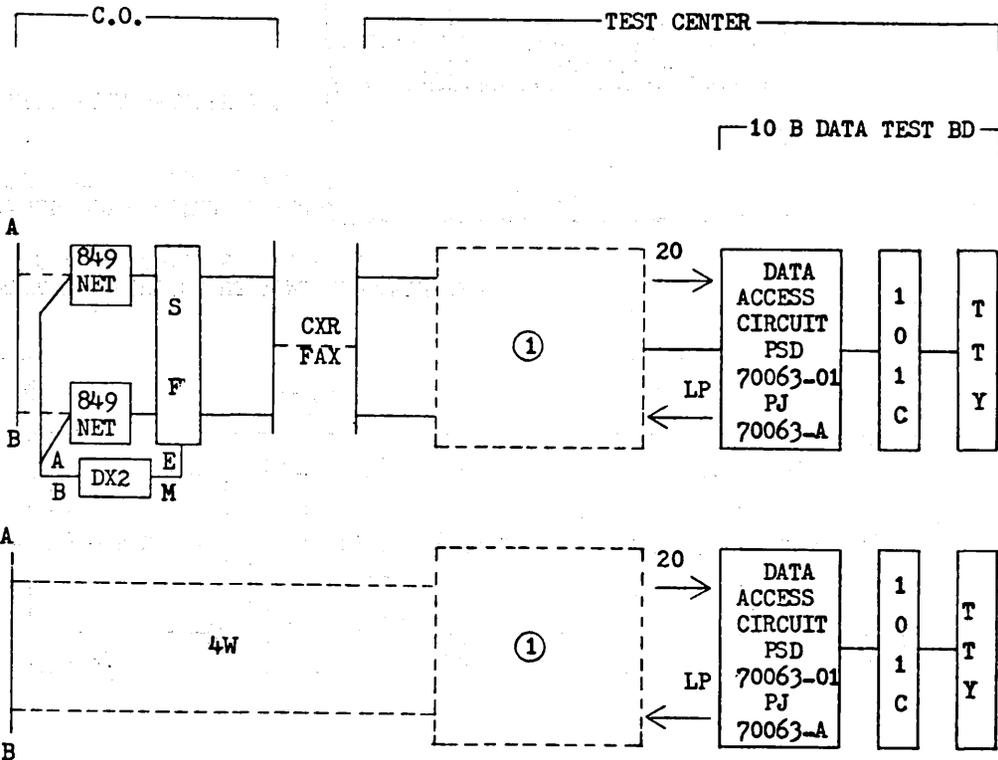
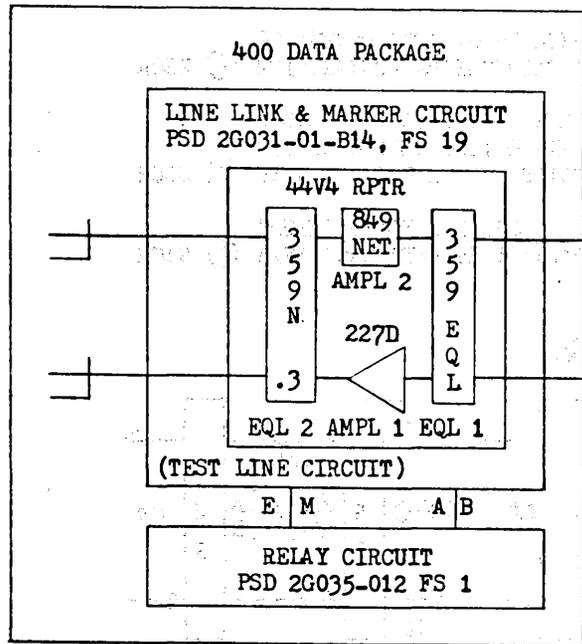


NOTE ① SIGNAL CIRCUIT PER PSD 2G010-012, FS 1 & 2; W & Y OPT.  
(INCLUDES 1-TYPE TERM. SET) FOR GROUND START APPLICATION.

NOTE ② PROVIDE IMP. COMP. (1613/NL & 837/H88) AS REQUIRED.

NOTE ③ PROVIDE E-6 REPEATER WHERE 2-WIRE LINE LOSS EXCEEDS 5.0 DB.

EXHIBIT  
# 30  
CLETS 400 DATA PACKAGE  
2-WIRE TRUNK ARRANGEMENT  
USING SIGNAL CIRCUIT PSD 2G010  
ARRANGED FOR GROUND START



A

B

4W

①

20

LP

DATA  
ACCESS  
CIRCUIT  
PSD  
70063-01  
PJ  
70063-A

1  
0  
1  
C
T  
T  
Y

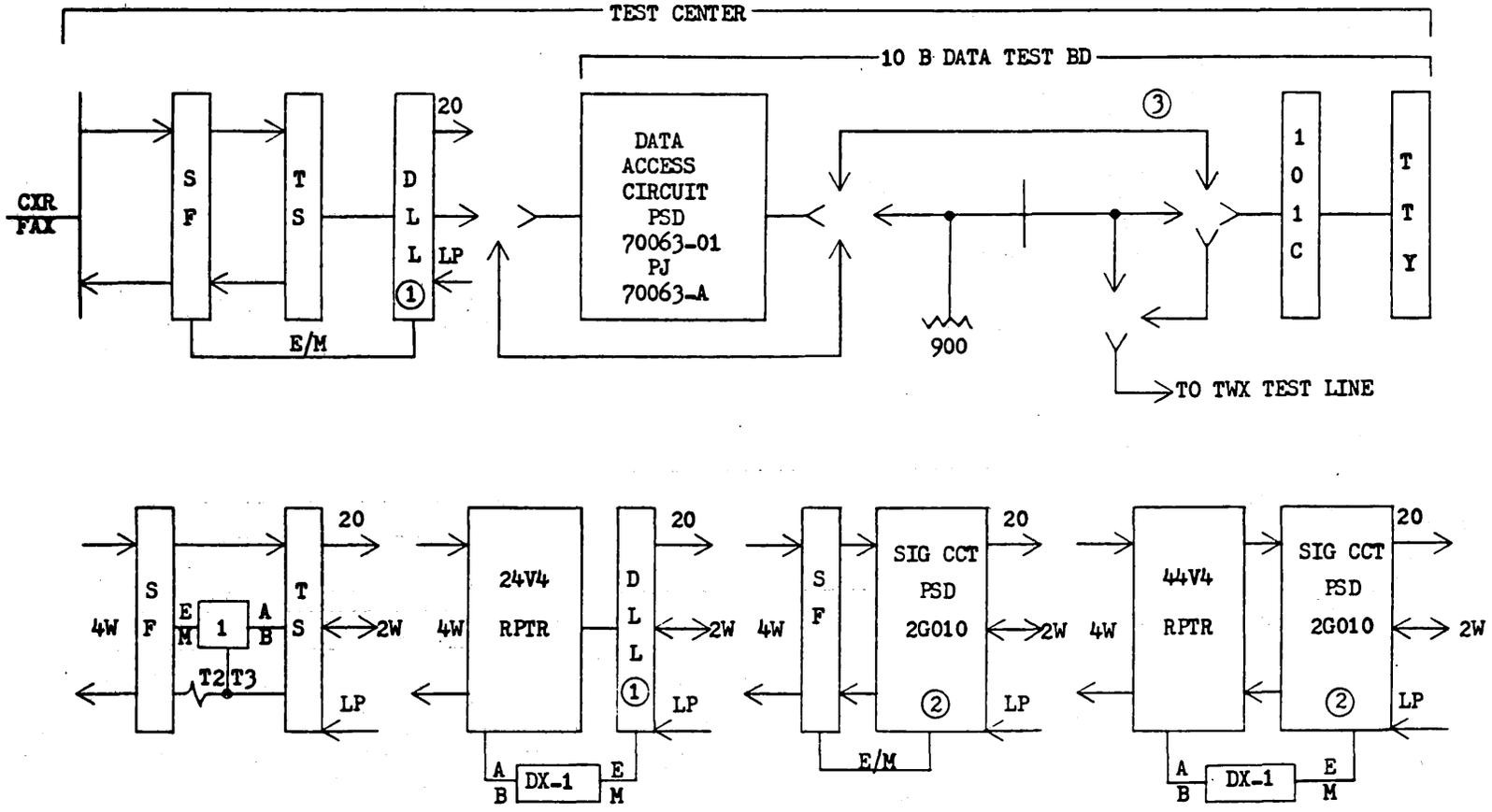
① SEE EXHIBIT 32 FOR EQUIPMENT CONFIGURATIONS  
(LEVEL REQUIREMENTS SHOWN ON EXHIBIT 15)

EXHIBIT

# 31

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CLETS  
400 DATA PACKAGE  
MAINTENANCE CIRCUIT



- NOTE ① DIAL LONG LINE SD-96252-01 ARRANGED FOR CONTINUOUS RING AND TRIP RING DURING RINGING CLCLE. FIG. 1, 4, E & G; OPT. ZB, ZD, H, M, N & Y.
- NOTE ② SIGNAL CIRCUIT PSD 2G010-01 ARRANGED FOR CONTINUOUS RING AND TRIP RING DURING RINGING CYCLE. FS 1 & 2; W, Y & Z OPTS. (INCL'S 1 G TERM SET).
- NOTE ③ MAINTENANCE ENGINEERING IN EACH AREA WILL SPECIFY TEST BD ARRANGEMENT TO BE USED.

EXHIBIT  
# 32

CLETS 400 DATA PACKAGE  
MAINTENANCE CIRCUIT (TEST CENTER  
EQUIPMENT CONFIGURATIONS)

SACRAMENTO COMPUTER LOCATION

LOS ANGELES COMPUTER LOCATION

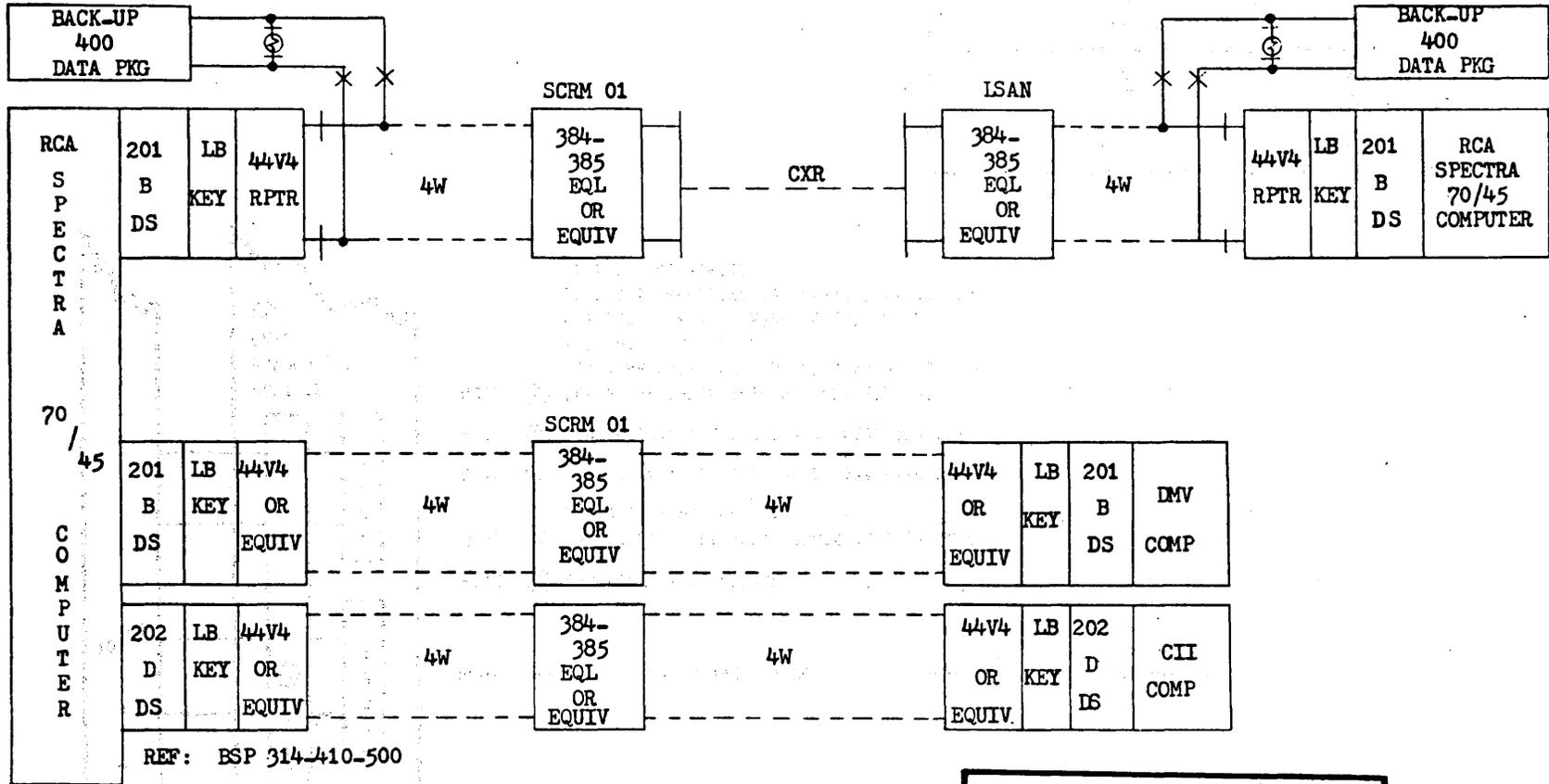
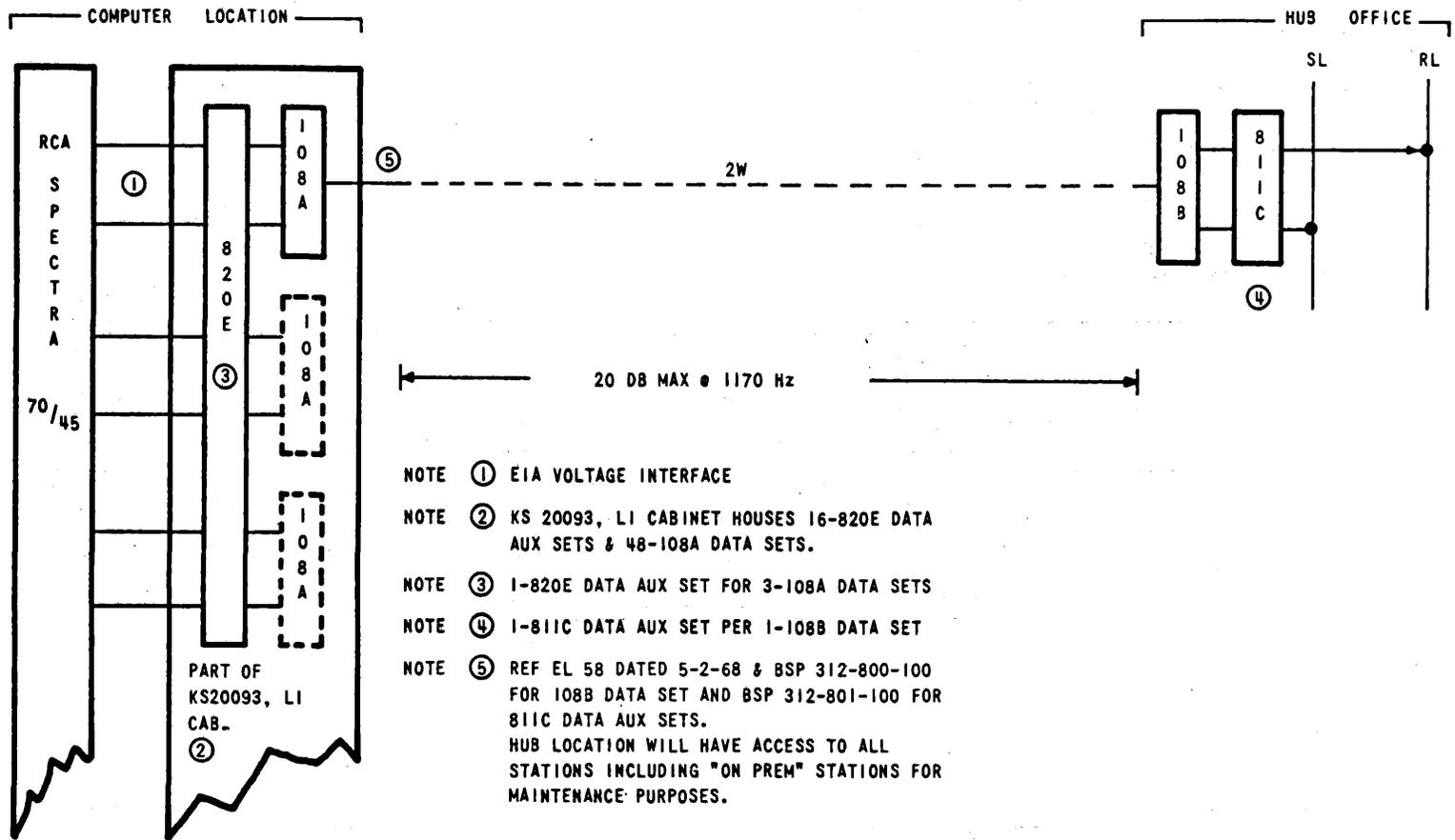


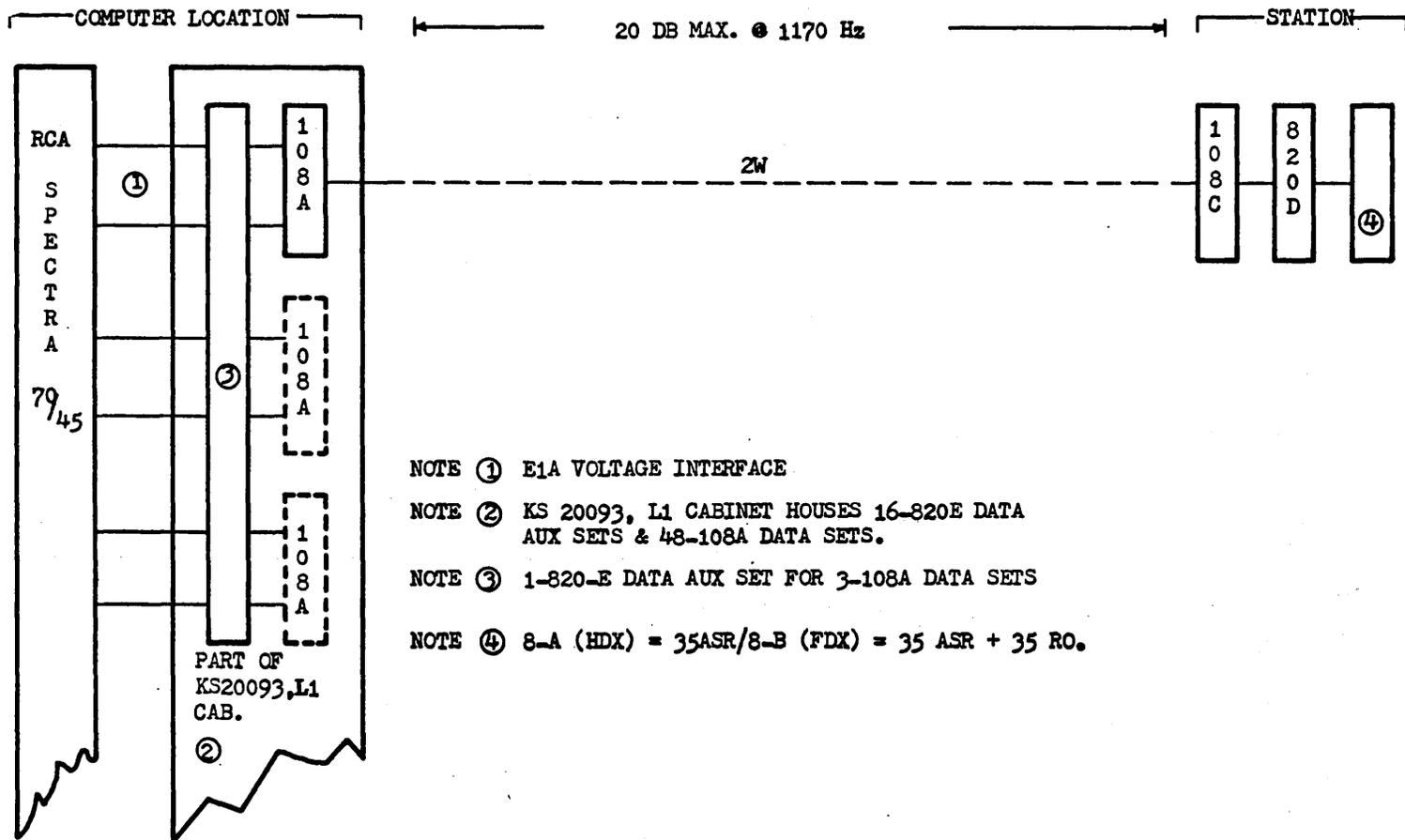
EXHIBIT  
#33  
CLETS  
COMPUTER TO COMPUTER TRUNKS  
(C-2 CONDITIONING)



EXHIBIT

# 34

CLETS  
ADMINISTRATIVE NETWORK/110 BAUD  
8-A (HDX) & 8-B (FDX) SYSTEM  
COMPUTER LOCATION TO HUB OFC



NOTE ① E1A VOLTAGE INTERFACE

NOTE ② KS 20093, L1 CABINET HOUSES 16-820E DATA  
AUX SETS & 48-108A DATA SETS.

NOTE ③ 1-820-E DATA AUX SET FOR 3-108A DATA SETS

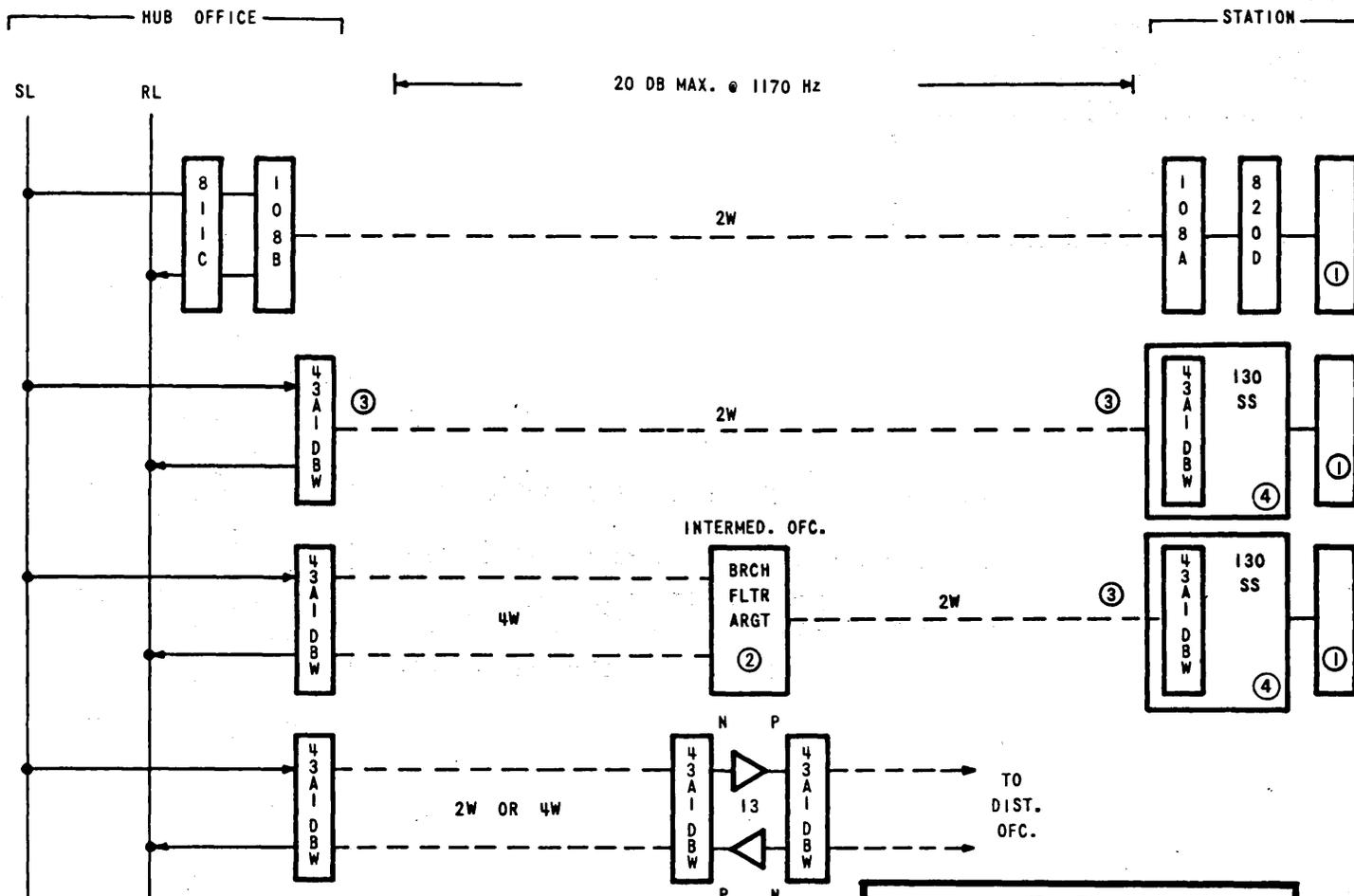
NOTE ④ 8-A (HDX) = 35ASR/8-B (FDX) = 35 ASR + 35 RO.

EXHIBIT

# 35

CLETS

ADMINISTRATIVE NETWORK/110 BAUD  
8-A (HDX) & 8-B (FDX) SYSTEM  
COMPUTER LOCATION TO STATION



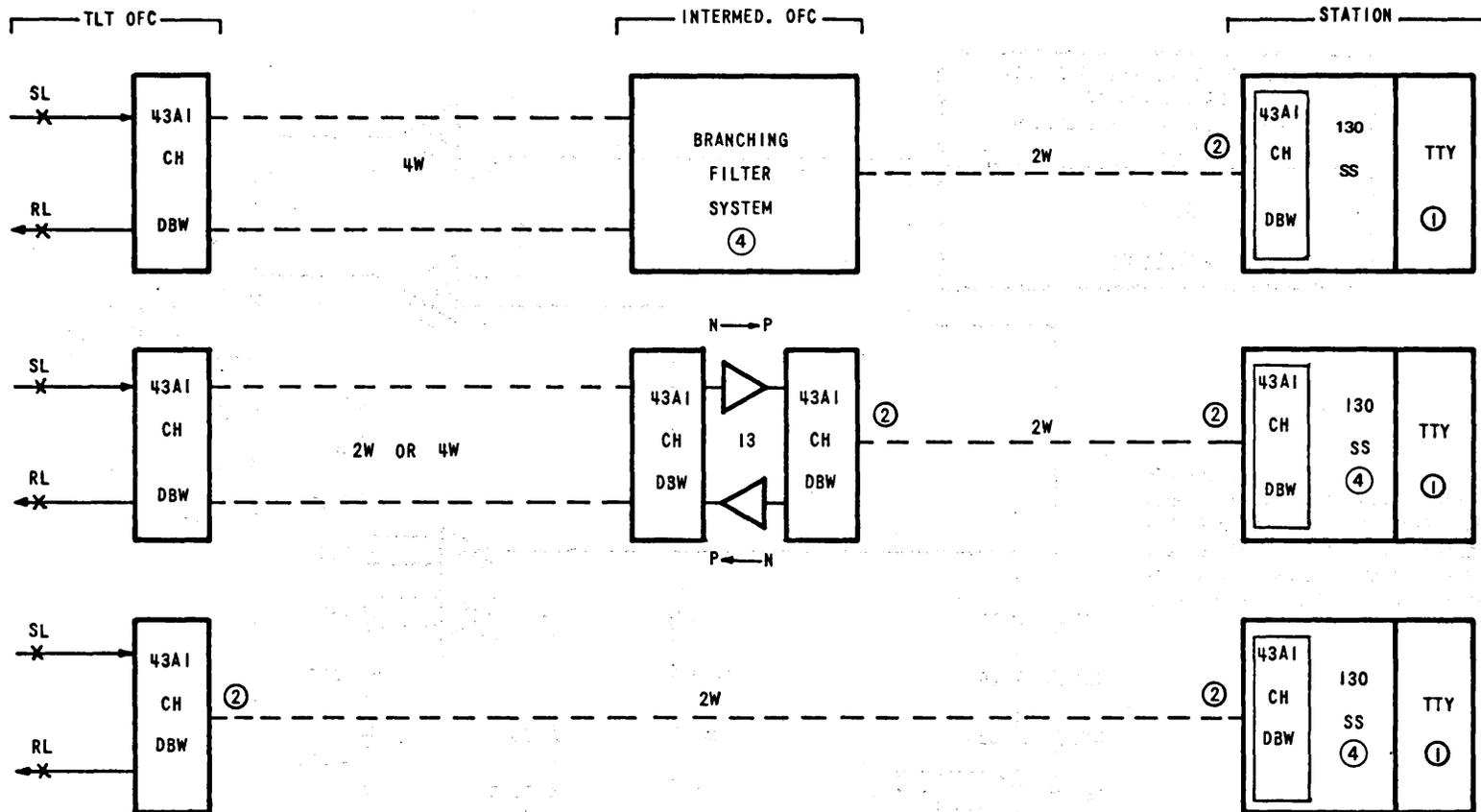
- NOTE ① 8-A (HDX) = 35 ASR/8-B (FDX) = 35 ASR + 35 RO.
- NOTE ② BRANCHING FILTER SYSTEM. SEE EXHIBIT 46.
- NOTE ③ MAX. OUTPUT INTO LOOP NOT TO EXCEED 0 DBM.  
MIN. INPUT INTO 43A1 EQPT. NOT TO EXCEED  
-27.0 DBM.
- NOTE ④ SEE EXHIBIT 41.

**EXHIBIT**

# 36

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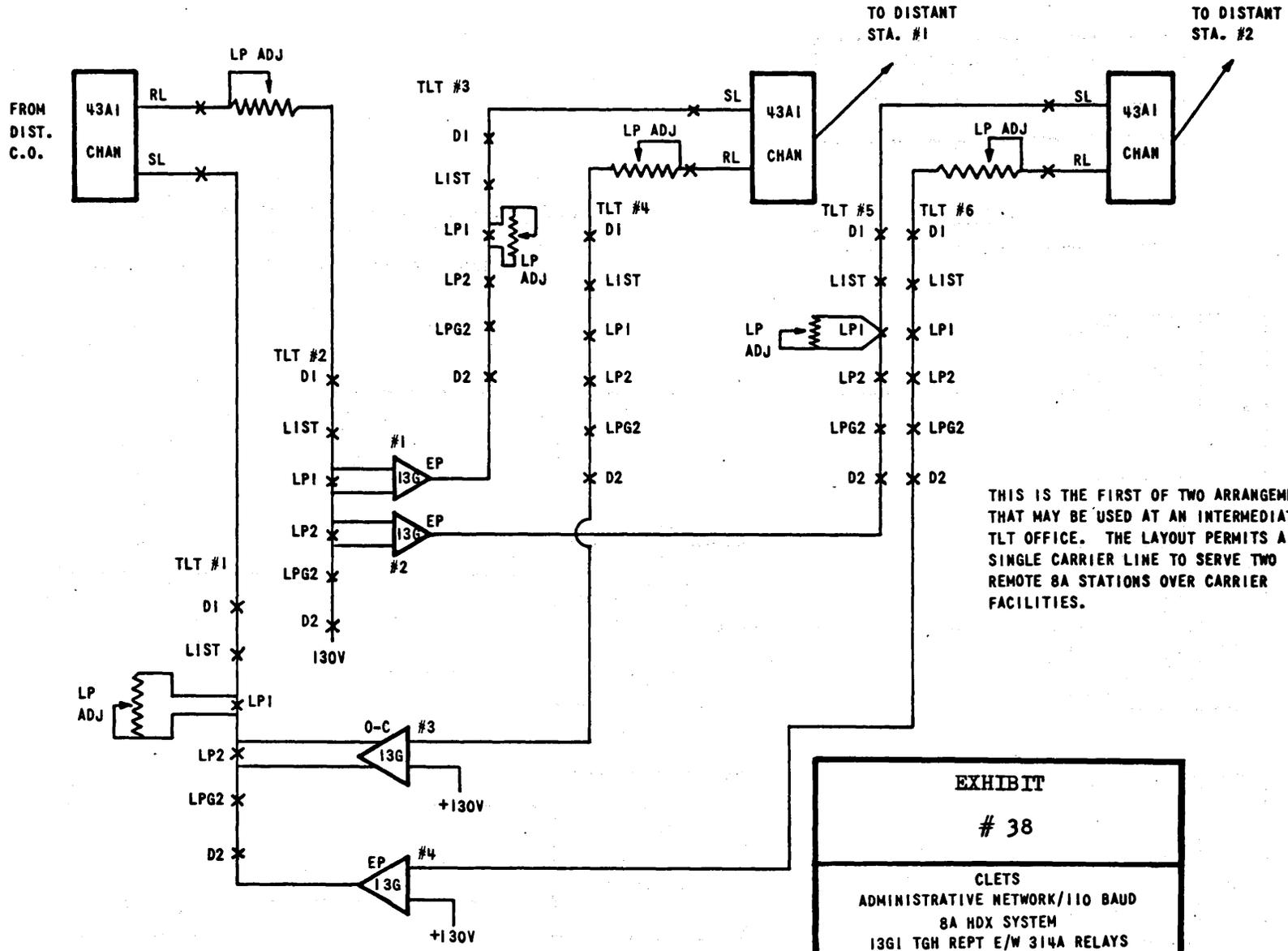
CLETS  
ADMINISTRATIVE NETWORK/110 BAUD  
8-A (HDX) & 8-B (FDX) SYSTEM  
HUB OFC TO STA LOCATIONS

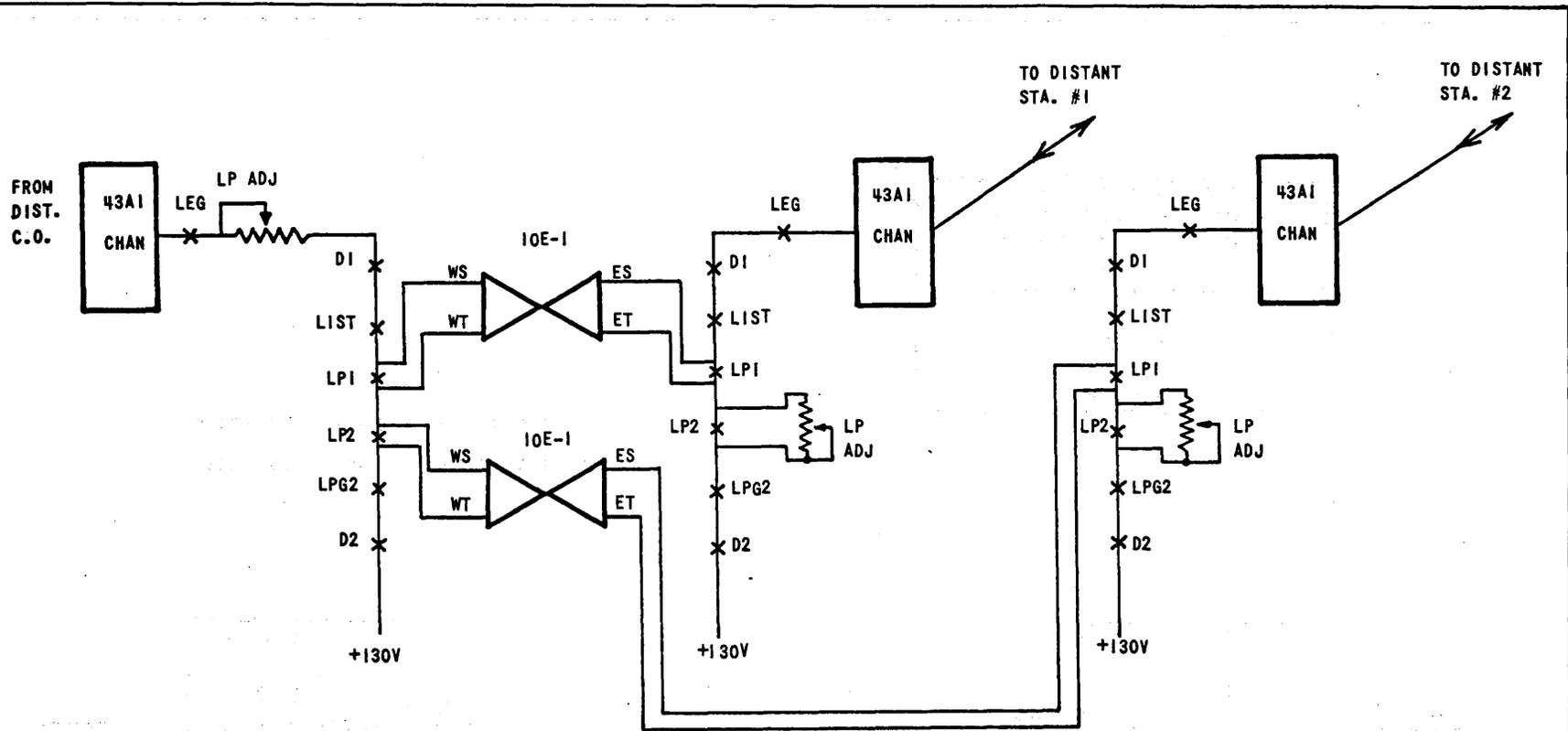


- NOTE ① 8-A (HDX) = 35 ASR/8-B (FDX) = 35 ASR & 35 RO.
- NOTE ② MAX. OUTPUT INTO LOOP NOT TO EXCEED 0 DBM.  
MIN. INPUT INTO 43A1 EQPT. NOT TO EXCEED -27.0 DBM.
- NOTE ③ SEE EXHIBIT 41.
- NOTE ④ SEE EXHIBIT 46.

EXHIBIT  
# 37

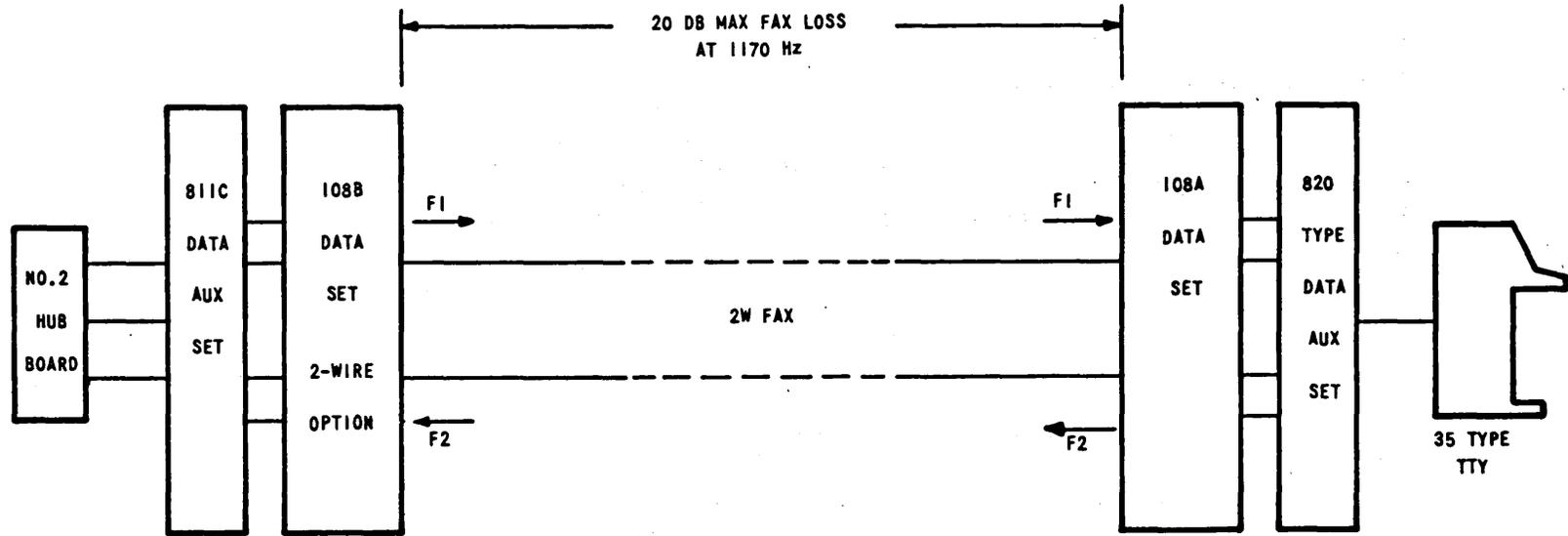
CLETS  
ADMINISTRATIVE NETWORK/110 BAUD  
8-A (HDX) & 8-B (FDX) SYSTEM  
TLT OFC TO STA LOCATIONS





THIS IS THE SECOND OF TWO ARRANGEMENTS THAT MAY BE USED AT AN INTERMEDIATE TLT OFFICE. PERMITS A SINGLE CXR LINE TO SERVE TWO REMOTE 8A STATIONS USING CXR FAX.

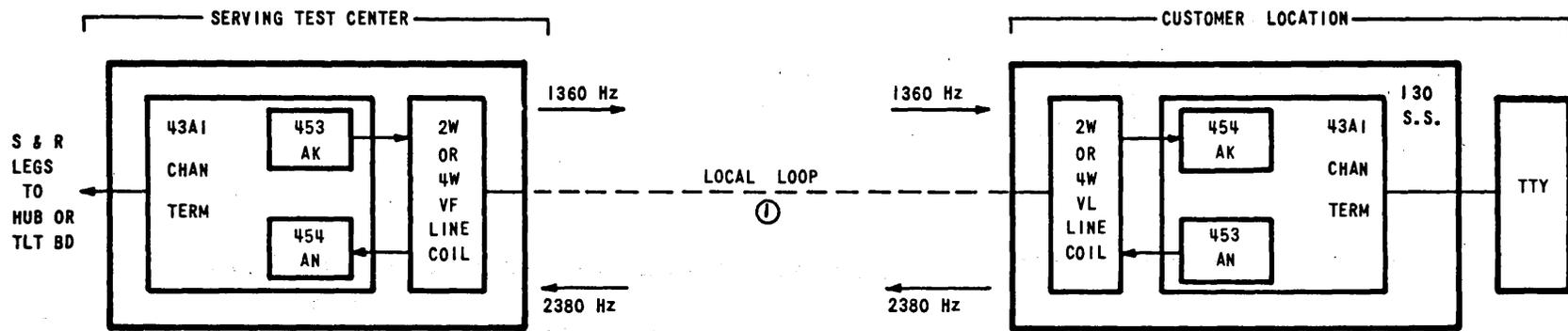
EXHIBIT
# 39
CLETS ADMINISTRATIVE NETWORK/110 BAUD 8A HDX SYSTEM 10E-1 TGH REPT. E/W 314A RELAYS



DESCRIPTION 108A D.S. BSP 591-023-103

DESCRIPTION 108B D.S. BSP 312-800-100

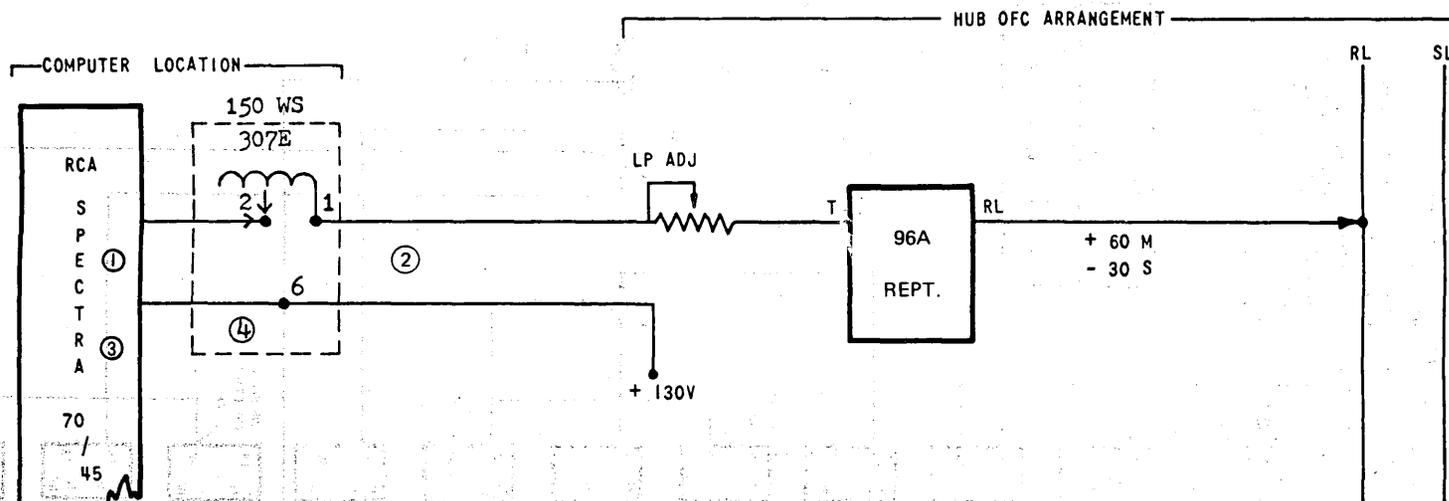
EXHIBIT
# 40
CLETS ADMINISTRATIVE NET/110 BAND 8A (HDX) & 8B (FDX) SYSTEM 2-WIRE END LINK ARRANGEMENT



NOTE ① MAX. OUTPUT INTO LOOP NOT TO EXCEED 0 DBM.  
 MIN. INPUT INTO 43A1 EQUIPMENT NOT TO EXCEED -27.0 DBM

EXHIBIT  
 # 41  
 CLETS  
 ADMINISTRATIVE NETWORK/110 BAUD  
 43A1 DOUBLE BANDWIDTH  
 SUBSCRIBER LOOP DESIGN  
 TYPICAL AC SERVING ARRANGEMENT

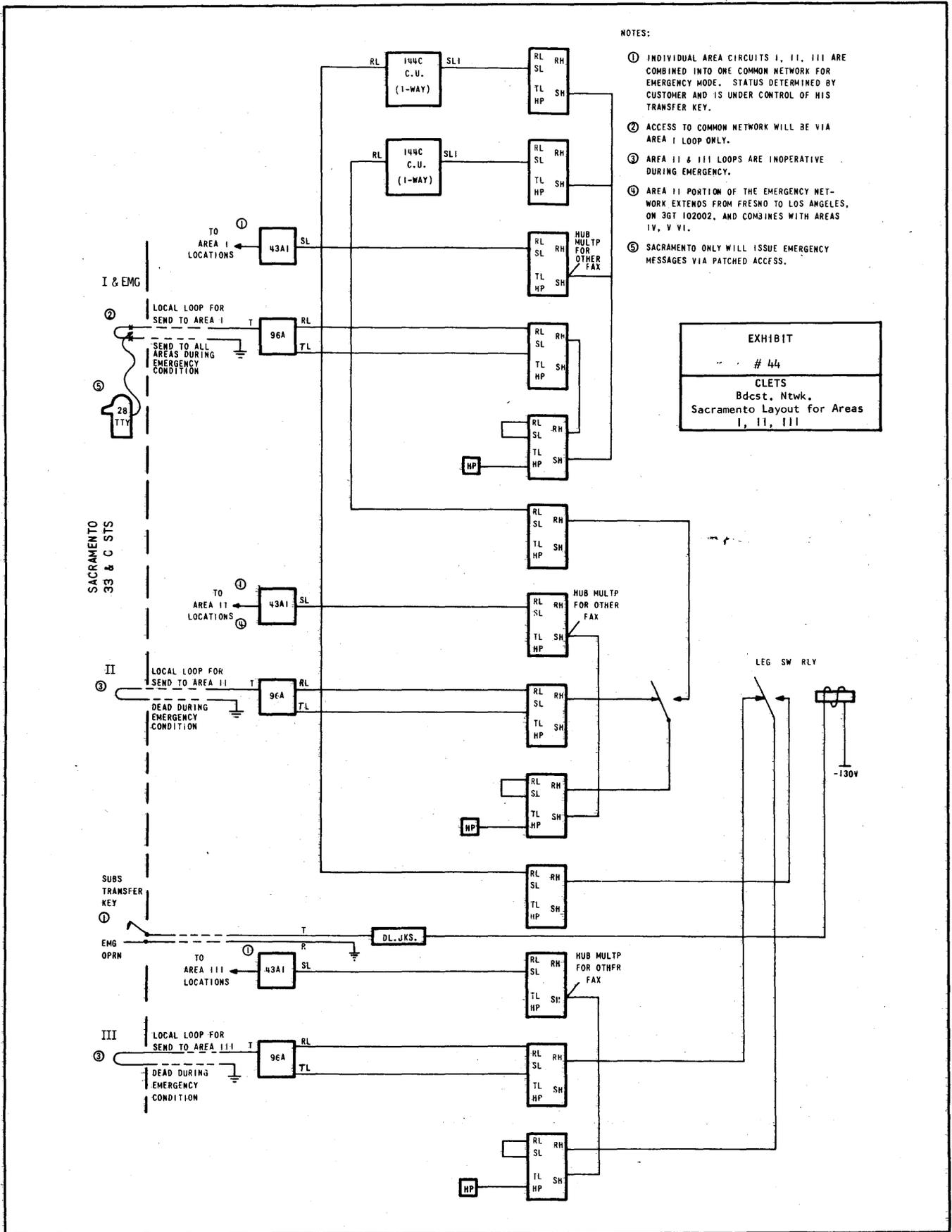




- NOTE ① 62.5 MA NEUTRAL.
- NOTE ② THE MAXIMUM OVERALL LOOP RESISTANCE EXTERNAL TO THE REPEATER IS LIMITED TO 2880 OHMS.
- NOTE ③ SPARK SUPPRESSION NETWORK PROVIDED FOR IN COAM EQUIPMENT.
- NOTE ④ APPLY WAVESHAPING PER BSP 312-008-100. PROVIDE 150 D1 WS PER SD-70082-011, FIG 3. ADJUST WS SO THAT ONLY LUGS 1 & 2 OF 307E INDR ARE ON TIP SIDE OF LOOP. DO NOT STRAP OUT UNUSED LUGS ON 307E INDR. DUMMY TERMINAL DESIGNATED #6 ON W.S. TO BE USED AS COMMON "RING LEAD" TERMINAL.

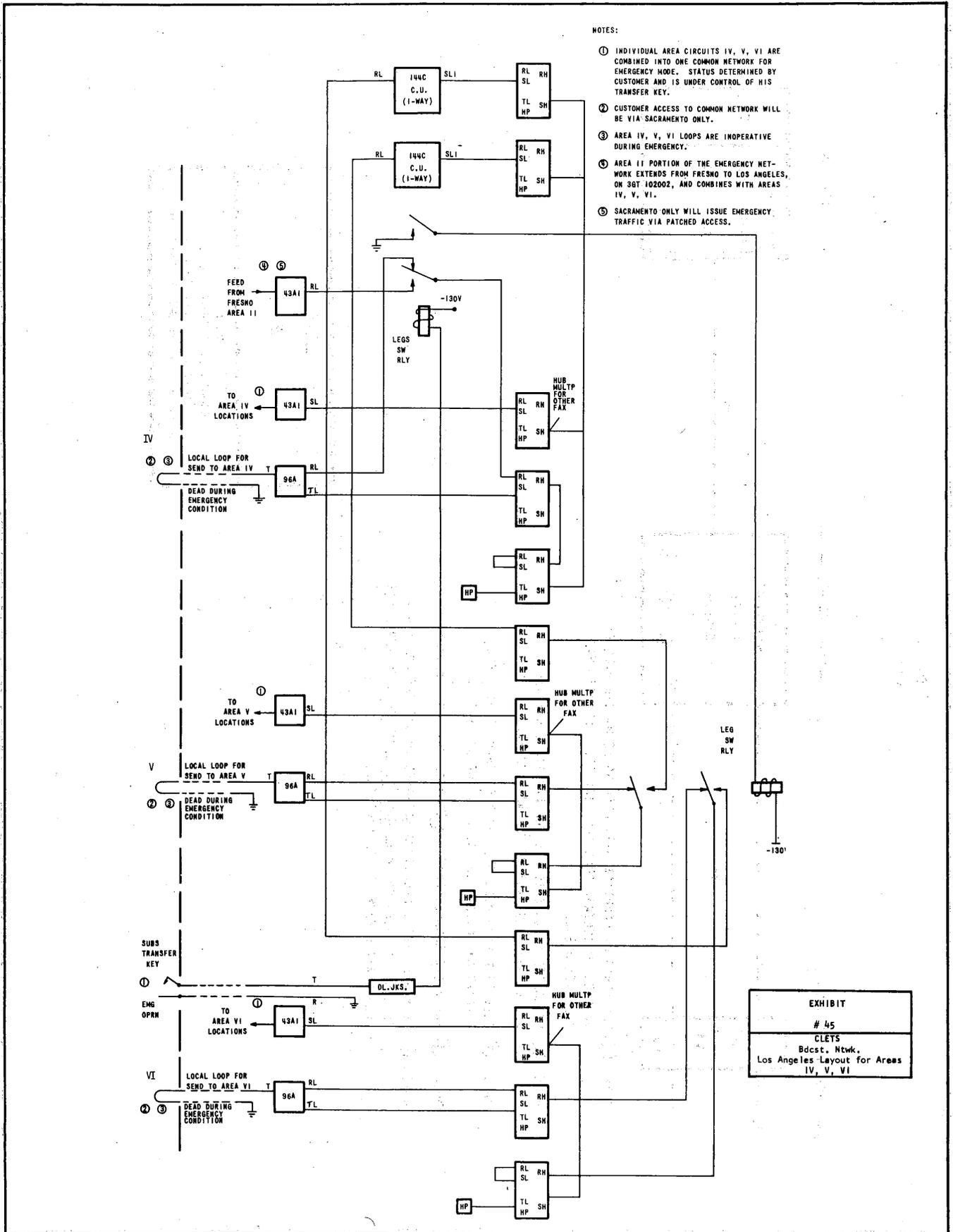
EXHIBIT  
# 43

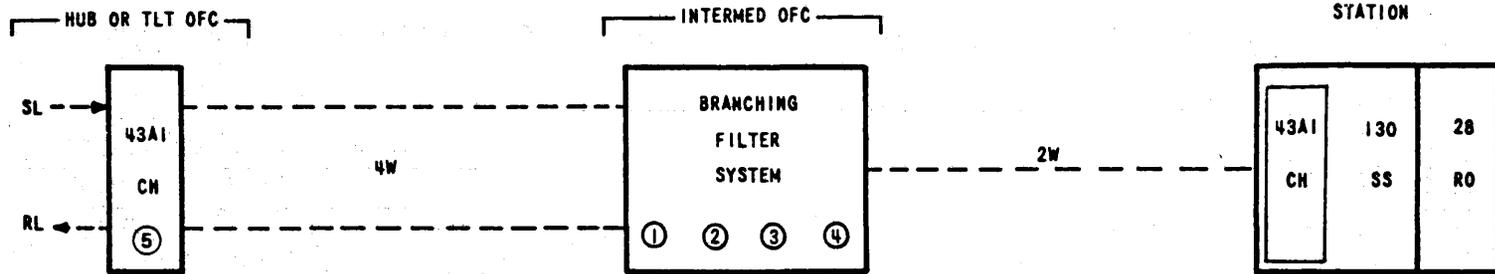
CLETS  
BROADCAST NETWORK/75 BAUD  
HUB OFC ARRANGEMENT  
96A REPEATER



- NOTES:
- ① INDIVIDUAL AREA CIRCUITS I, II, III ARE COMBINED INTO ONE COMMON NETWORK FOR EMERGENCY MODE. STATUS DETERMINED BY CUSTOMER AND IS UNDER CONTROL OF HIS TRANSFER KEY.
  - ② ACCESS TO COMMON NETWORK WILL BE VIA AREA I LOOP ONLY.
  - ③ AREA II & III LOOPS ARE INOPERATIVE DURING EMERGENCY.
  - ④ AREA II PORTION OF THE EMERGENCY NETWORK EXTENDS FROM FRESNO TO LOS ANGELES, ON 3GT 102002, AND COMBINES WITH AREAS IV, V VI.
  - ⑤ SACRAMENTO ONLY WILL ISSUE EMERGENCY MESSAGES VIA PATCHED ACCESS.

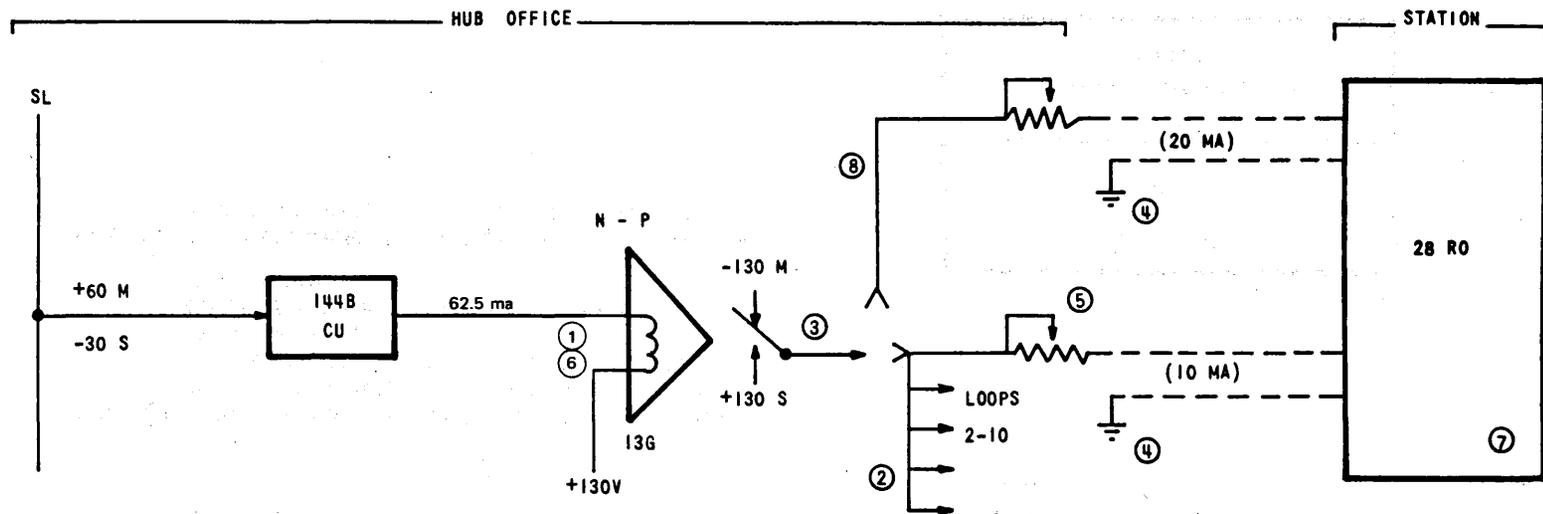
EXHIBIT  
# 44  
CLETS  
Bdcst. Ntwk.  
Sacramento Layout for Areas  
I, II, III





- NOTE ① THE NORTHERN COUNTIES AREA DRAWING NC-M-7015 WILL BE APPLIED IN CENTRAL COUNTIES, BAY AREA AND NORTHERN COUNTIES AREAS.
- NOTE ② LOS ANGELES PLANS TO USE THE SAN DIEGO DRAWING S-3897 WHERE BRANCHING SYSTEMS ARE APPROPRIATE.
- NOTE ③ BELL OF NEVADA WILL SPECIFY THE BRANCH SYSTEM FREQUENCY ALLOCATION COVERED IN TABLE VII OF AB 83.047.1
- NOTE ④ THE ABOVE ARRANGEMENTS DERIVE BOTH SBW AND DBW CHANNELS.
- NOTE ⑤ TERMINAL OFFICE MOUNTINGS ASSIGNED TO SYSTEMS CONTAINING BOTH SBW AND DBW CHANNELS MUST BE EQUIPPED WITH IMPEDANCE COMPENSATION NETWORK PER J70112AE.

<p>EXHIBIT</p> <p># 46</p>
<p>CLETS BROADCAST NETWORK/75 BAUD HUB OR TLT OFFICE TO STATION ARRANGEMENT (CARRIER)</p>



NOTE ① PROVIDE 13G1 LOOP REPEATER FOR SENDING POLAR SIGNALS TO A GROUP OF SUBSCRIBER STATION LOOPS CONNECTED IN PARALLEL FOR ECONOMY IN EQUIPMENT AND MAINTENANCE.

NOTE ② WHERE LIMITED QUANTITIES OF 13 TYPE REPEATERS ARE AVAILABLE, A MAXIMUM OF 10 STATION LOOPS MAY BE CONNECTED TO A SINGLE REPEATER. WHERE SUFFICIENT QUANTITIES ARE AVAILABLE, AN AVERAGE OF FIVE SUCH STATION LOOPS SHOULD BE USED (REF: BSP 666-100-100 AND 312-302-102).

NOTE ③ NEG 130V IS USED FOR MARK AND EACH LEG DRAWS APPROXIMATELY 10 MA/POLAR.

NOTE ④ GROUND RETURN AT CENTRAL OFFICE AT ALL TIMES ON A LOOP BASIS.

NOTE ⑤ A HIGH RESISTANCE LOOP PAD (10K OHMS) IS REQUIRED AT EACH CUSTOMER OUTLET. IF NOT AVAILABLE, USE THREE LOOP ADJUST PADS IN SERIES.

NOTE ⑥ PROVIDE PROPER SPARK SUPPRESSION (INTERNAL ON 314-A MERCURY).

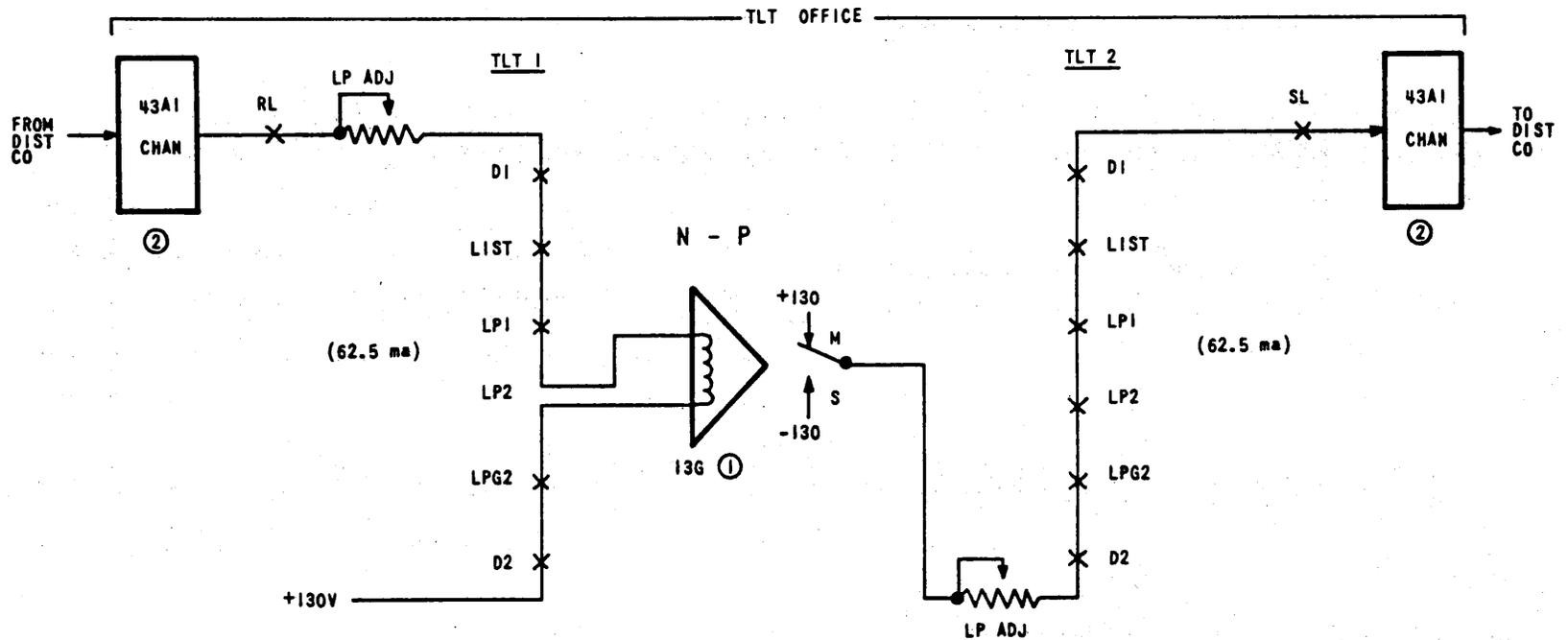
NOTE ⑦ DISABLE BIAS WDG OF 314-A REC RELAY (REMOVE OPT C & D PER W 0470 FOR POLAR OPRN).

NOTE ⑧ IF ONLY ONE OR TWO STATION REQUIREMENT, SERVICE MAY BE PROVIDED ON A 20 MA POLAR LOOP.

EXHIBIT

# 47

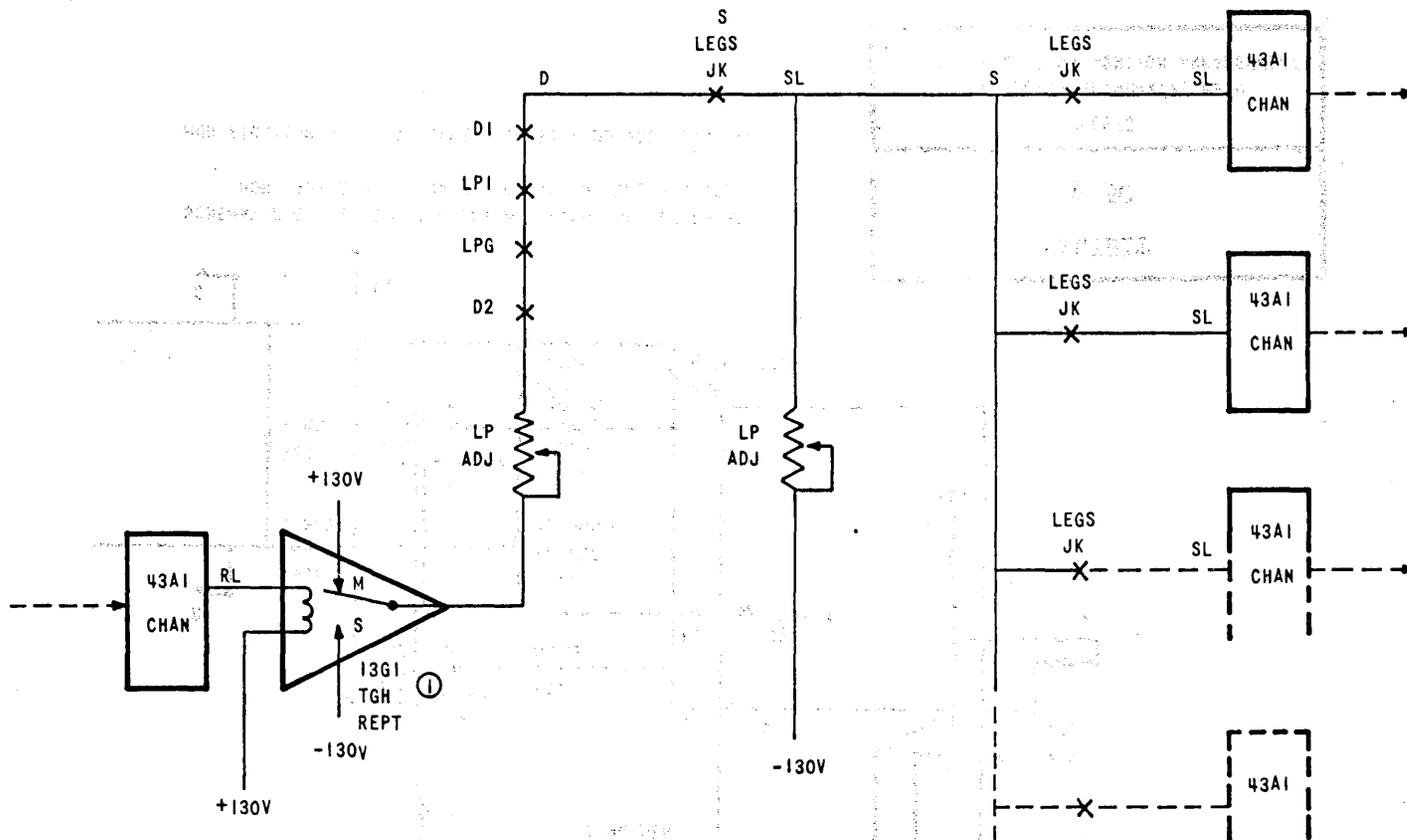
CLETS  
BROADCAST NETWORK/75 BAUD  
HUB OFFICE TO STATION ARRANGEMENT  
DC LOOP



NOTE ① PROVIDE ONLY ONE 13G REPEATER FOR INTERCONNECTION OF TWO 43 TYPE CHANNELS FOR BACK-TO-BACK OPERATION ARRANGE 13G REPEATER FOR NEUTRAL-TO-EFFECTIVE POLAR OPERATION AT 62.5 MA. OUTPUT OF 13G REPEATER IS POS. 130V FOR MARK AND NEG. 130V FOR SPACE.

NOTE ② DO NOT USE CHANNELS 2 THROUGH 4 INCLUSIVE UNLESS THEY HAVE BEEN UPGRADED FOR 75 BAUD/100 WPM (EM511).

<p>EXHIBIT</p> <p># 48</p>
<p>CLETS</p> <p>BROADCAST NETWORK/75 BAUD</p> <p>TLT OFC ARRANGEMENT</p>



- NOTE ① REVERSED BATTERY REQUIRED.
- NOTE ② FOR DESCRIPTIVE INFO SEE 312-700-100
- NOTE ③ REQUIRES TEST JACK CIRCUIT FOR ALIGNMENT  
FIGS. 16A & 16B OF 312-700-100.

TO MAX. OF  
10 CHANS.

EXHIBIT # 49
CLETS BROADCAST NETWORK/75 BAUD TLT OFFICE ARRANGEMENT ONE-WAY MULTIPLE LOOP OPERATION

FIG. 16 OF 312-700-100

PART OF 130 STATION SUBSET

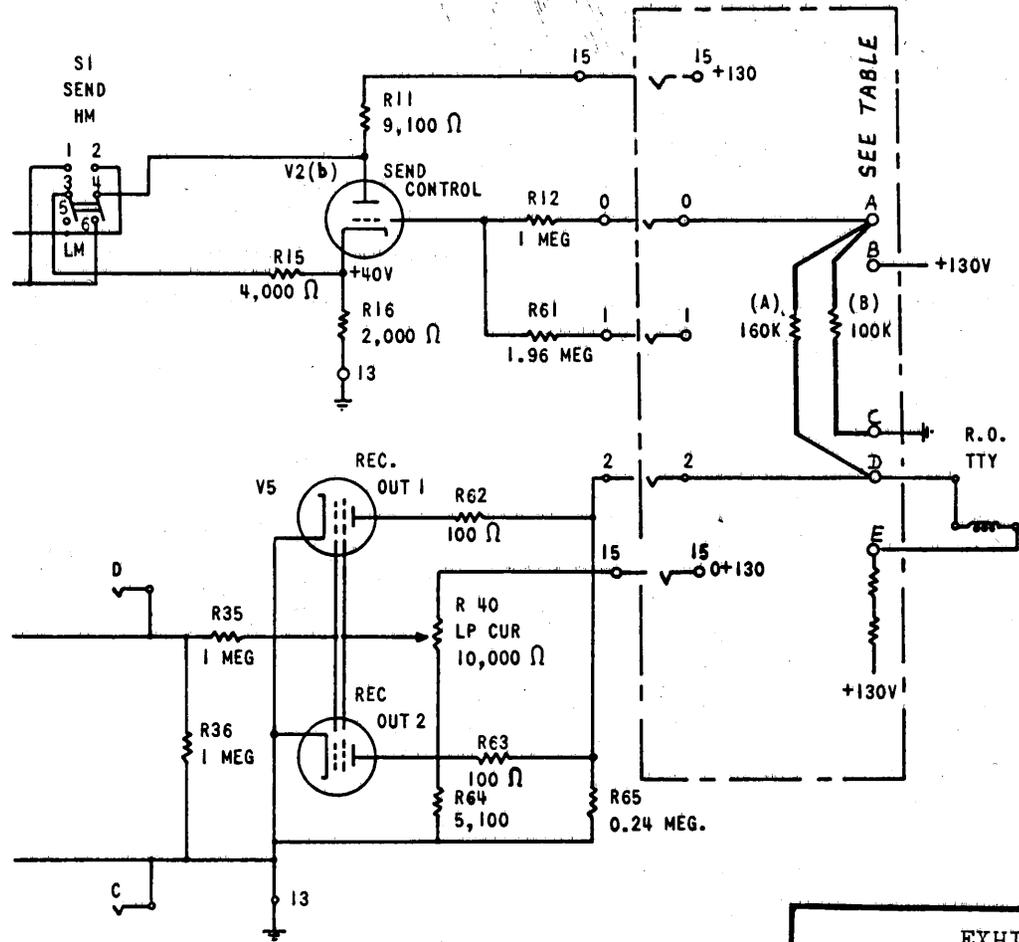


TABLE OF EQUIPMENT CONNECTIONS

130B1	130C1
A-28	A-18
B-27	B-28
C-12	C-22
D-11	D-20
E-3	E-5

SCHEMATIC OF 130 STATION SET MODIFIED FOR TESTBOARD MONITORING OF SIGNALS RECEIVED AT THE STATION

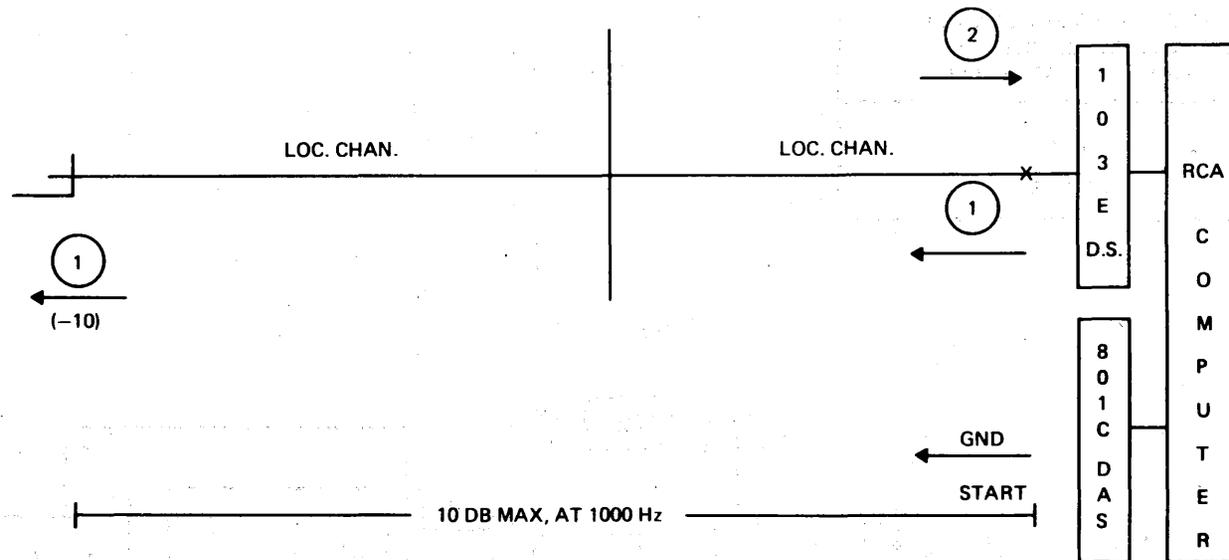
MODIFICATION DETAILS COVERED IN 312-700-100 P.T. APPX.1

EXHIBIT # 50
CLETS BROADCAST NETWORK/75 BAUD REMOTE STATION MONITOR ARRANGEMENT

757 PBX  
 LOCATIONS  
 LAPD & LA SHERIFF  
 2 WIRE SWITCHED ONLY

MADISON

COMPUTER

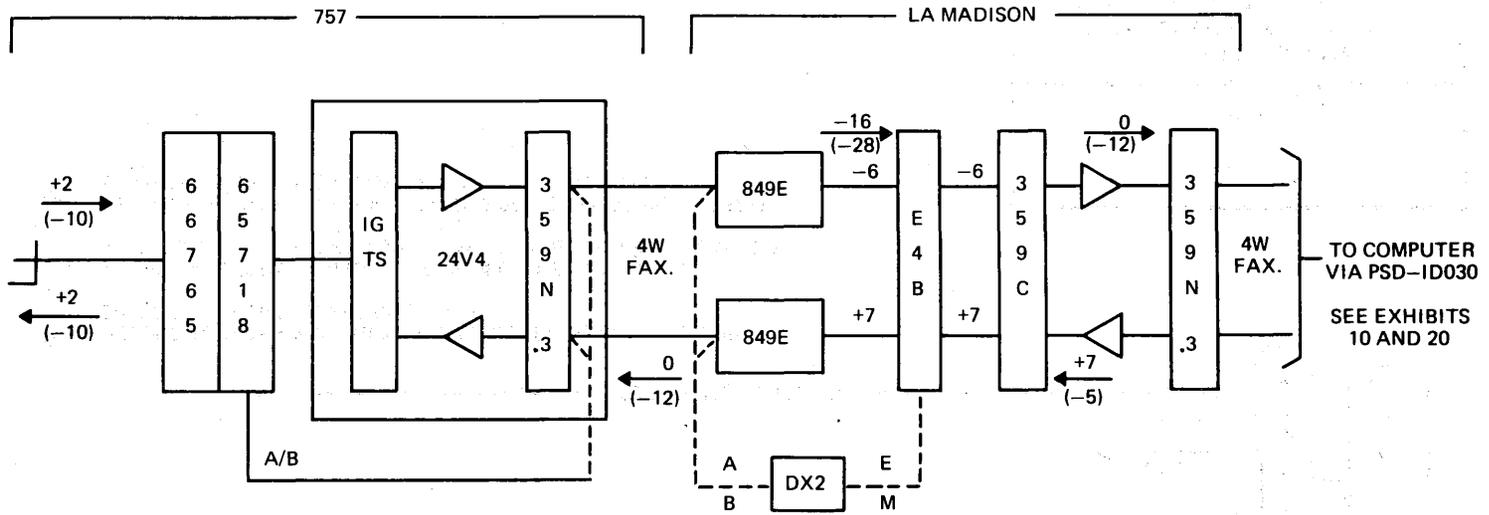


- ① ADJUST F2 (2025 – 2225 Hz) TRANSMIT LEVEL TO ARRIVE AT PBX. SWITCH – 10 DBmO AS SHOWN ( ).
- ② F1 (1070 – 1270 Hz) TRANSMIT LEVEL 4.0 DB BELOW F2 BAND. 103E D.S. RECEIVE LEVEL TO BE COMPENSATED FOR BY AGC OF SET.
- ③ ALL TRUNKS TO MEET REQUIREMENTS FOR DATA SCHEDULE 3002 CHANNELS (EXCEPT NET LOSS) PER BSP 314 – 410 – 500.

EXHIBIT  
 # 51

CLETS LEVEL DIAGRAM  
 LAPD – LA SHERIFF 757 PACKAGE  
 TO LA COMPUTER LOCATION

757 PBX LOCATIONS  
LAPD & LA SHERIFF  
4 WIRE ARRANGEMENT



TO COMPUTER  
VIA PSD-ID030  
SEE EXHIBITS  
10 AND 20

EXHIBIT  
# 52

CLETS LEVEL DIAGRAM  
LAPD-LA SHERIFF 757 PACKAGE  
TO LA COMPUTER LOCATION