

**DATA SYSTEMS CENTRAL OFFICE
915-TYPE WIDEBAND DATA TEST BAYS**

CONTENTS	PAGE	CONTENTS	PAGE
1. GENERAL	1	G. Access to the Data Station Under Test via Switched Network	17
2. PHYSICAL DESCRIPTION	2	H. Access to the Data Station Under Test via Wideband Service Bay or T1 Office Repeater Bay	18
3. FUNCTIONAL DESCRIPTION	3	I. Transfer of Data Station to 904-Type Data Test Center—Access to Data Station via Patch Bay Line Circuit	19
Wideband Section	3	J. Transfer of Data Station to 904-Type Data Test Center—Access to Data Station via Switched Network Line Circuit	19
Voiceband Section	7	K. Self Test of Wideband Data Test Bay—Wideband Section	19
4. SYSTEM ARRANGEMENTS	9	L. Remote Test Mode	23
Access via a Wideband Service Bay	10	7. REFERENCES	24
Access via a Switching System	10	1. GENERAL	
Point-to-Point Telephone	10	1.01 This section describes the equipment and operating principles of the 915-type wideband data test bay (WDTB). For the remainder of this section, the wideband data test bay will be referred to as the WDTB.	
Regular Telephone Service	10	1.02 This section is reissued for the following reasons:	
Permanent Trunk Access	10	• To delete reference to the 915A WDTB which is now rated Manufacture Discontinued (MD)	
5. DESCRIPTION OF CONTROLS	12	• To provide information about new options which can be incorporated into existing 915-type WDTB. These options include an audible alarm circuit only, an audible alarm circuit with capability of terminating one	
6. OPERATION	13		
A. Incoming Telephone Call From Switched Network or Special Trunk	13		
B. Incoming Telephone Call From 904-Type Data Test Center	14		
C. Outgoing Telephone Call via Switched Network (Dialed Station)	14		
D. Outgoing Telephone Call via Patch Bay	14		
E. Outgoing Telephone Call to 904-Type Data Test Center	14		
F. Outgoing Telephone Call on Special Trunk	17		

SECTION 314-602-100

extra switched network line circuit, or an audible alarm circuit with capability of terminating two extra switched network line circuits. These options are incorporated with present manufacture of the 915-type WDTB.

1.03 The WDTB is designed to provide remote testing of wideband data sets and dynamic testing of wideband transmission facilities. It may also serve as one end during a station-to-station (end-to-end) test of a wideband data set.

2. PHYSICAL DESCRIPTION

2.01 The WDTB is a rack-mounted unit designed to be used independently or in conjunction with a wideband service bay (WSB) to provide initial check-out and maintenance test on wideband data set 301B, 303-type, and 306A.

2.02 The WDTB is mounted in a 23-inch relay rack. The maximum vertical space requirement for the installation is 11 feet 6 inches. Figure 1 shows the physical layout of the WDTB.

2.03 The units which make up the WDTB are designed for proper operation in an environment with an ambient temperature of 40 to 120°F and a relative humidity of 20 to 95 percent.

2.04 Power requirements are 117 volts rms ± 10 percent; 60 ± 0.1 Hz, 500 watts; and -48 volts ± 10 percent dc, 50 watts. The ± 0.1 Hz frequency requirement occurs because of the data sets that are mounted in the bay.

2.05 The writing shelf (31-1/4 inches above the floor) is arranged to accommodate either a rotary or Touch-Tone® dial. Jacks are also provided for connecting telephone headsets. Headset type 52H is rated Manufacture Discontinued and is replaced by HT1 which has been recoded to 52S. A storage compartment is mounted beneath the writing surface for storage of operating instructions, logs, practices, etc.

2.06 The terminal block at the top of the bay provides termination points for all incoming and outgoing lines.

2.07 All rack space not occupied by equipment is covered with blank panels.

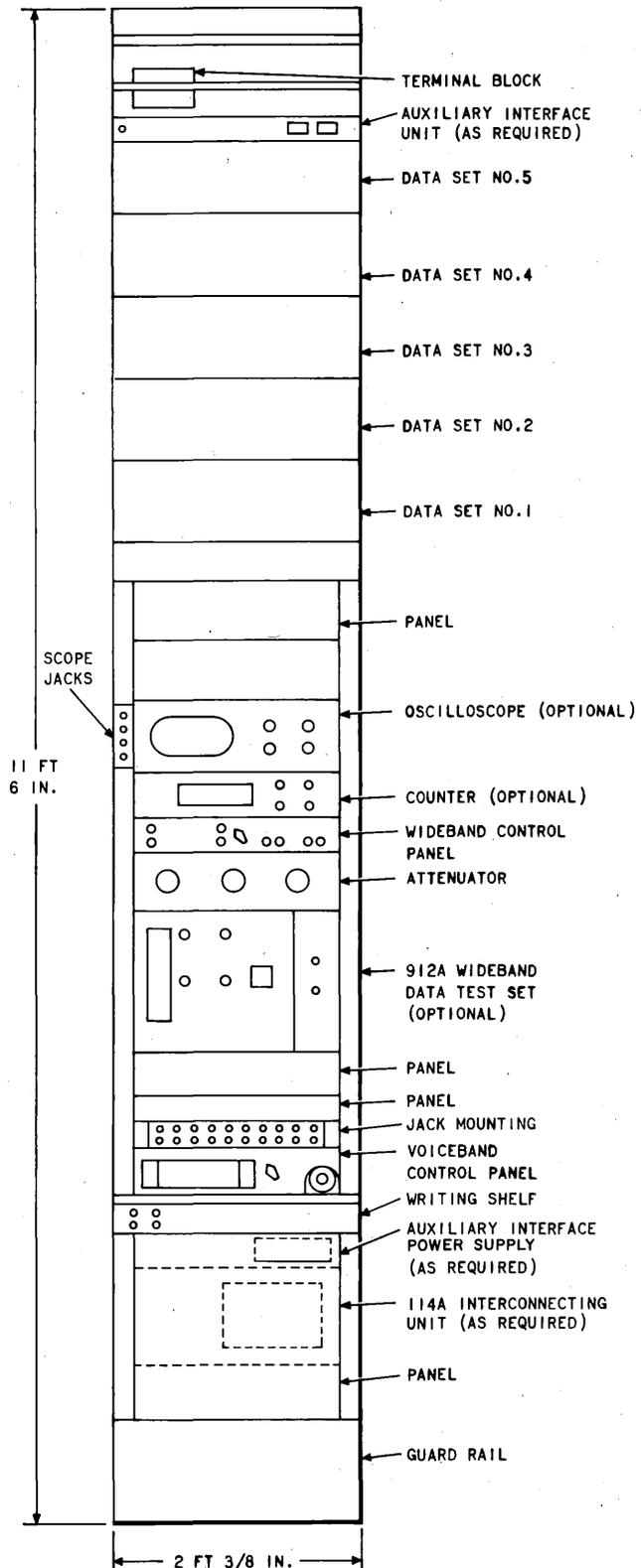


Fig. 1—915-Type Wideband Data Test Bay Layout

3. FUNCTIONAL DESCRIPTION

3.01 For descriptive purposes, the WDTB may be divided into a wideband section and a voiceband section. Typical examples of the wideband section are shown in Fig. 2 and 3. Figure 2 shows an arrangement of five data sets consisting of 301B-type or any 303-type except the 303J25 or 303J26. Figure 3 shows specifically data sets 303J25, 303J26, and 306A and two other data sets which may be of either the 301B- or 303-type.

Wideband Section

3.02 The wideband section consists of wideband trunks, data sets, oscilloscope (optional),

electronic counter (optional), wideband control panel, transmitting attenuator, 912A wideband data test set, and local test and monitor jacks as described in the following paragraphs. An auxiliary interface unit and power supply will be included when required for data set 306A.

3.03 Wideband Trunks: Two 4-wire trunks are provided under control of the TRUNK keys on the wideband control panel. One trunk will normally be connected to a wideband service bay and the second may be connected to a wideband switching machine. Only one trunk at a time can be selected by the appropriate TRUNK key. Permanently wired trunks are provided to connect

NOTE:

ONLY ONE EYE JACK PER DATA SET 303,
TWO FOR DATA SET 301B.

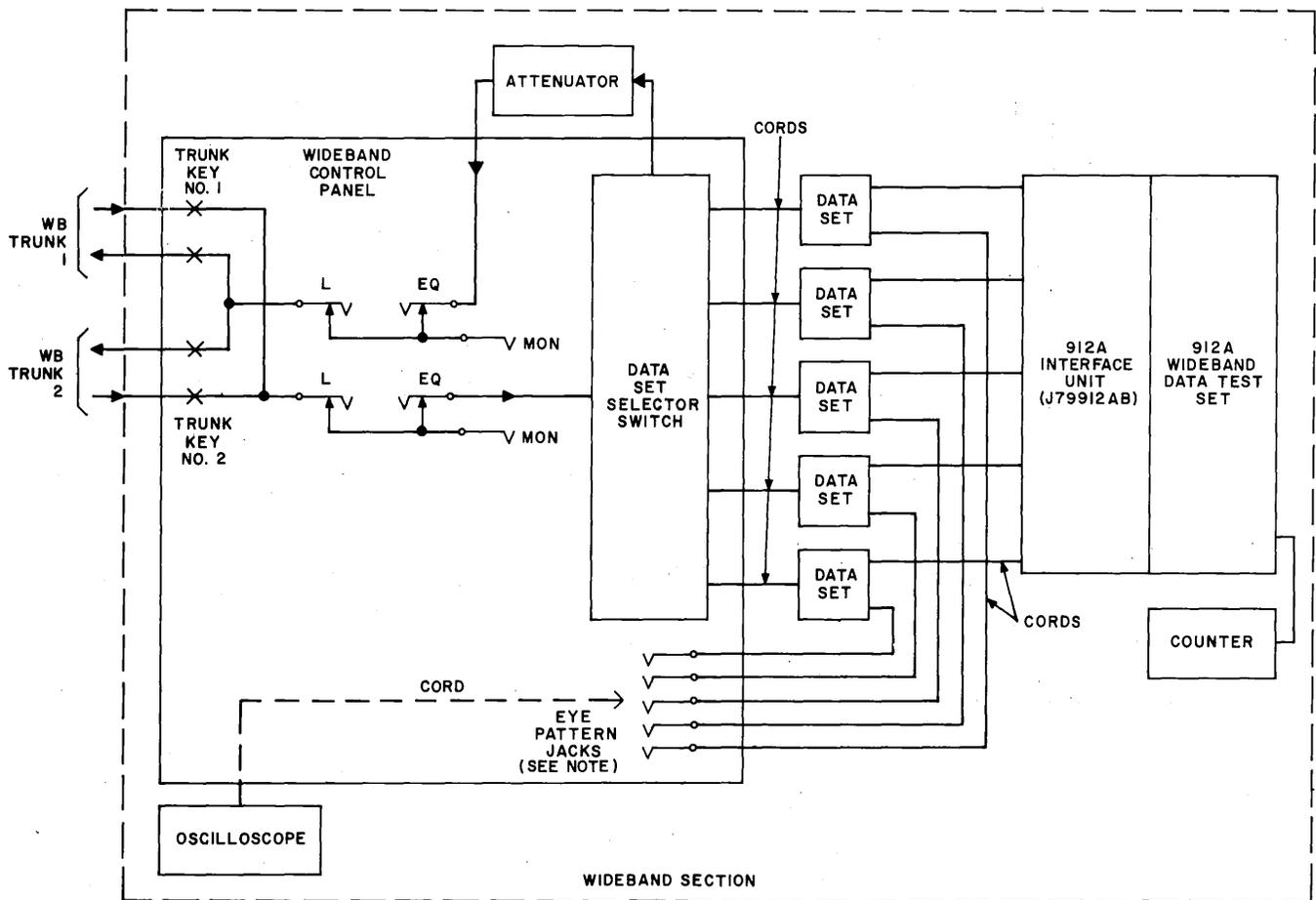
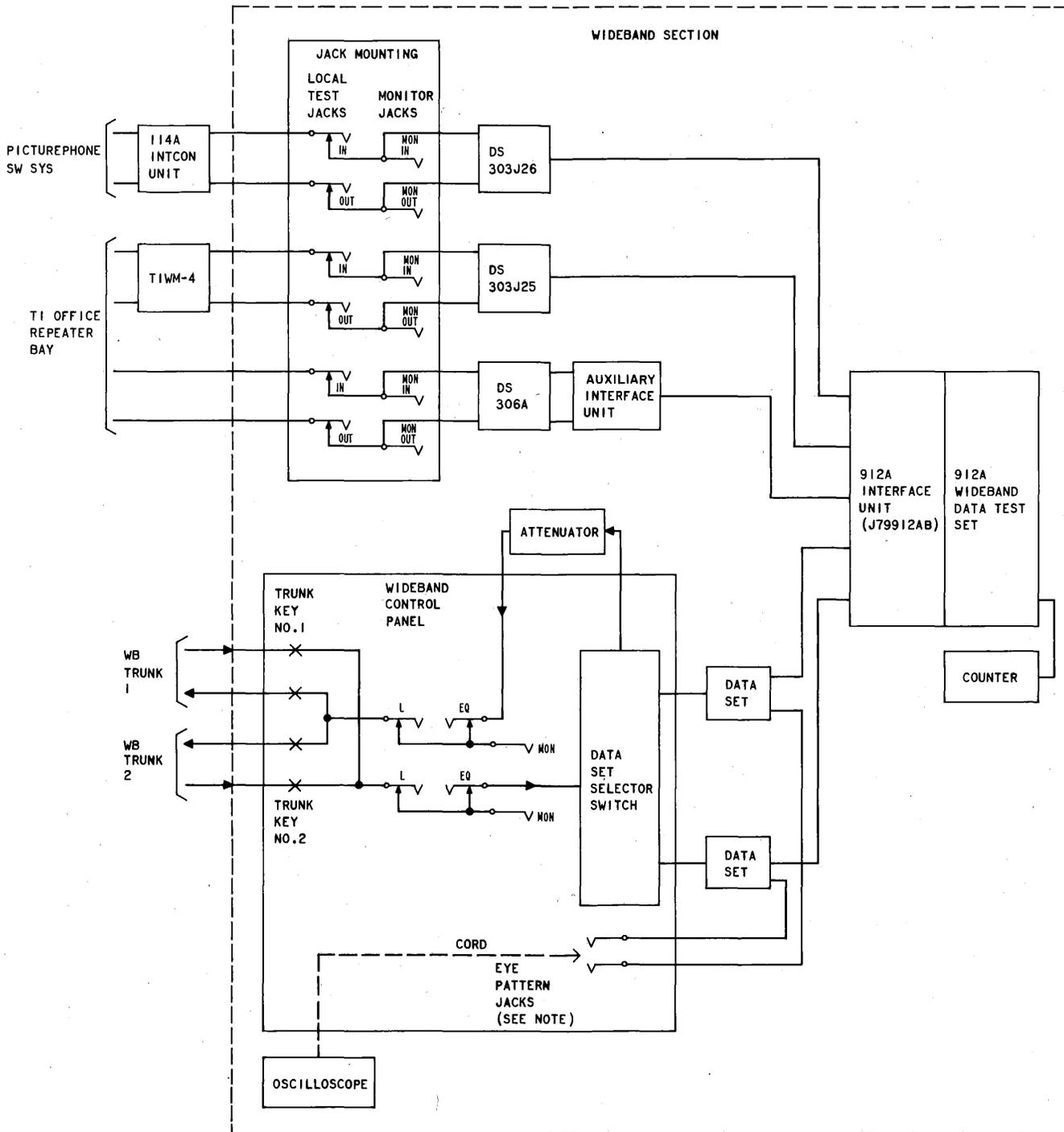


Fig. 2—One Example of 915-Type Wideband Data Test Bay—Block Diagram of Wideband Data Section

SECTION 314-602-100



NOTE:
 ONLY ONE EYE JACK PER DATA SET 303,
 TWO FOR DATA SET 301B.

Fig. 3—Second Example of 915-Type Wideband Data Test Bay—Block Diagram of Wideband Data Section

data sets 303J25, 303J26, and 306A to appropriate wideband systems.

3.04 Data Sets: The WDTB has provisions for a maximum of five wideband data sets 301B, 303-type, and 306A. The desired set is connected to the wideband line via the data set selector switch except on permanent trunk arrangements. The data set in the WDTB should have the same option(s) as the data set being tested at the station. When half-group facilities are used, such as those required for data set (DS) 303B, a data auxiliary set (DAS) 809B vestigial sideband modem is required. The DAS 809B is mounted above the data set. Because of limited space, this reduces the maximum number of data sets in the WDTB to four. When DS 303J25 is used, the wideband line must be interfaced with a T1WM-4 wideband modem which is usually located at a T1 office repeater bay. DS 303J26 is interfaced through a 114A interconnecting unit to the Picturephone® switched system.

3.05 Oscilloscope: The dual-trace oscilloscope is used primarily for viewing the eye patterns obtained from the EYE jacks on the wideband control panel. The oscilloscope may be provided as a portable unit at small installations. When the WDTB is located adjacent to a WSB, a single oscilloscope may serve both bays and may be located in either bay.

3.06 Oscilloscope Jacks: These jacks (Fig. 4) permit connection between the oscilloscope and any of the wideband trunks or equipment. They are located on the bay frame beside the oscilloscope. With the oscilloscope plugged into the SCOPE jack, any circuit patched to the SCOPE TERM jack will be connected to the oscilloscope with 135 ohms across the oscilloscope terminals. Any circuit connected to the SCOPE BRDG jack is directly connected to the oscilloscope without any loading.

3.07 Electronic Counter: A counter may be provided to remotely measure the clock frequency of the data station under test. The counter is normally connected to the RECEIVE CLOCK OUT terminals of the 912A wideband data test set. It may be provided as a portable unit at small installations.

3.08 Wideband Control Panel: The wideband control panel connects any one of the data sets to either of the two wideband trunks. This

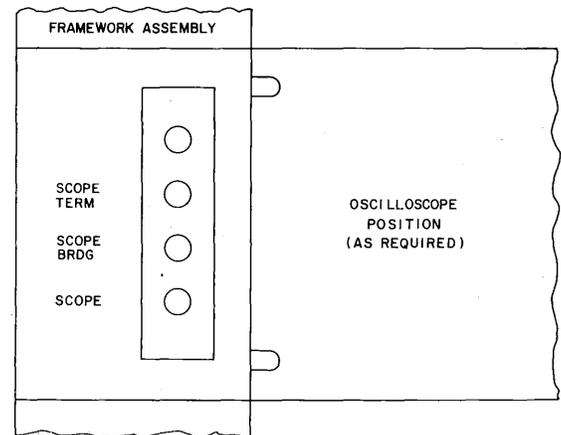


Fig. 4—Oscilloscope Jacks

panel contains the necessary switch, keys, and jacks which are described as follows:

(a) **TRUNK Keys:** Two TRUNK keys are provided for selecting one of the two wideband trunks. Usually, one trunk goes to a WSB where it is terminated in a jack appearance. This trunk is used for a patched connection. The other trunk can be used for connection to a switching system. This trunk is used for a "dialed-up" connection. Eight spare jacks are provided for future use.

(b) **DATA SET Selector Switch:** This switch connects one of up to five (maximum) data sets not connected to a permanent trunk to the attenuator and the wideband TRUNK keys. The switch is on the line side of the data sets.

(c) **DATA IN and DATA OUT Jacks:** These jacks can be used to obtain eye patterns of the equipment operation on wideband trunks 1 and 2. The monitor (MON) jack can provide eye patterns of the facility operation without interference to the signal level. Jack connections can also be used to terminate the signal path toward the facility (LINE) or toward the equipment (EQ).

3.09 Attenuator: An attenuator is provided in the transmit side of the wideband line to set exact output levels, vary the output levels, check the automatic gain control (AGC) circuit of the data set under test, and, in other instances, verify the remote test mode (RT1 and RT2). The attenuator is variable up to 111 dB in 0.1-dB steps. The attenuator is not connected in the wideband

transmit line of the permanently wired trunks to the Picturephone or T1 carrier networks.

3.10 912A Wideband Data Test Set: A 912A wideband data test set (WDTs) equipped with a J79912AB interface unit may be mounted in the WDTB. The 912A WDTs is used to generate a test message, analyze an incoming test message for errors, make margin tests, and when used in conjunction with an electronic counter, to determine the clock frequency of synchronous data sets. The 912A WDTs selects the desired data set by means of a switch located on the interface unit. Five data sets may be connected to the interface unit at one time. The interface unit also contains a switch to control the send request lead to the selected data set and a lamp to indicate the status of the automatic gain control signal from data set 303-type or 301B-type. When the data set is in use, the AGC/COO lamp will indicate that the signals on the receive data lead are reliable, which means the data set is in frame sync and is receiving good framing information over the T1 line from the distant data station. The TEST MODE switch on the interface unit may be set to the LOOPED position to loop the 912A WDTs. This permits local testing of the test set itself. The WDTs may be provided as a portable unit at small installations. For more information concerning the 912A WDTs, refer to the section entitled 912A Wideband Data Test Set—Description and Operation (107-400-100).

3.11 Auxiliary Interface Unit: This unit (Fig. 5), which is required only when a data set 306A is used in a WDTB, converts balanced signals from

the DS 306A to unbalanced signals for the J79912AB interface unit of the 912A WDTs. Unbalanced EIA signals (request to send and receive line signal detector) are also passed. The RLSD signal appears on the AGC/COO lead. This unit may be mounted either above or below DS 306A.

3.12 Jack Mounting: The 915 type WDTB uses a 231A jack mounting. The function of the jack mounting (Fig. 6) is to provide: (1) local test jacks for data sets 303J25, 303J26, and 306A in the WDTB and (2) monitor jacks for data sets 303J25, 303J26, and 306A where required.

3.13 Auxiliary Interface Unit Power Supply: This power supply consists of a 26A power unit, 166A regulator, terminal strip, and cords. The power supply delivers approximately +4.2, +12, and -18 volts dc for the auxiliary interface unit. This power supply is mounted behind the kick panel below the writing shelf.

3.14 Interconnecting Unit (ICU): The 114A ICU is required when data set 303J26 is installed. The 114A ICU provides an interface between the data set and the permanently wired or directly connected Picturephone switched network. The ICU and DS 303J26 make up a typical data station for use over the Picturephone network. The ICU may be mounted in the WDTB behind the kick panel on the back side, below the writing shelf, or up to 100 feet from the data set.

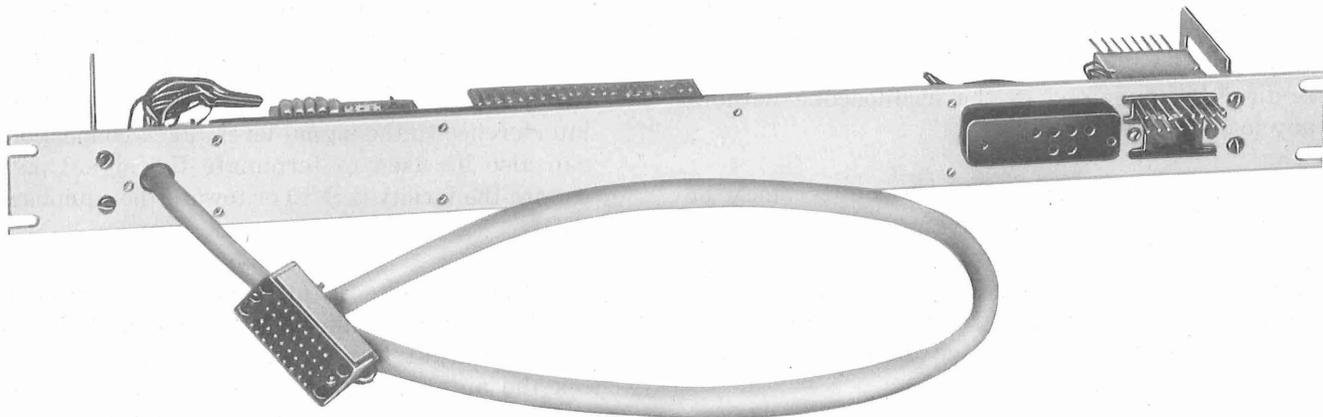


Fig. 5—Auxiliary Interface Unit for Use With Data Set 306A-Type (Cover Removed)

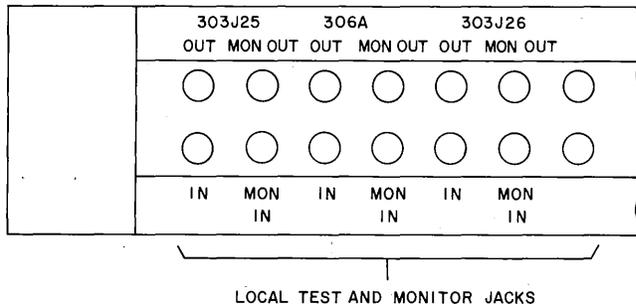


Fig. 6—Jack Mounting

Voiceband Section

3.15 The voiceband section of the WDTB consists of a voiceband control panel, telephone circuit, a 2800-Hz oscillator, an interrupter, a buzzer, a level conversion circuit, and several line circuits. This section is independent of the wideband data section, except for a connection from the switched network line circuit to the 114A ICU.

Voiceband Control Panel

3.16 The controls and jack appearances necessary to operate the voiceband portion of the WDTB are located on this panel. The following descriptions identify the control panel circuits shown in Fig. 7. The descriptions are also keyed using parentheses to relate callouts shown in Fig. 8. Figure 8 also shows control panel modifications if the audible alarm option and/or extra switched network line termination options are added to an existing 915-type WDTB. The keys select the desired voiceband line which consists of a patch bay line, one of two switched network lines, a special trunk line, and a 904 trunk line. The power level control for the 2800-Hz oscillator is also located on this panel.

3.17 Telephone Circuit: The telephone circuit may be used with either 2- or 4-wire lines. The circuit can be equipped with a rotary or a Touch-Tone dial and provides jacks for headsets. In 2-wire operation, the FW-relay *is not* energized and in 4-wire operation the relay *is* energized. A common HOLD key (16) in the telephone circuit serves all line circuits that require this function.

3.18 PATCH BAY Line Circuit (PBLC): The patch bay line circuit is connected to a trunk

that is terminated on jacks in the vicinity of a jack field that contains appearances of all voice coordination channels passing through the office. The desired channel is patched into the trunk from the WDTB. The trunk is connected to a level conversion circuit and then to either a WSB or to a voiceband patch bay. The PBLC is arranged only for 4-wire operation. A fifth lead (RK) is also available to control ringing toward a station if the WSB or voiceband patch bay is equipped with the necessary circuit to ring the station. However, there is not a standard circuit for this purpose. The 2800 CPS key (2) for the patch bay line circuit, when operated to the RING position, applies ground to the RK lead when ringing is desired. This key, when operated to the 2800 CPS position, applies a 2800-Hz tone to the transmit pair of the PBLC. The PBLC may be connected to a telephone circuit by operating the LINE key (3) to the TALK position or to the 904 TRUNK circuit by operating the LINE key (15) to the TEST position.

3.19 Level Conversion Circuit: This circuit is controlled by the LEVEL key (4) on the voiceband control panel. When operated, the level conversion circuit is supplied and the PBLC can be connected to a carrier system with +7 and -16 transmission level points. When the LEVEL key is operated to 0 position, a straight-through condition is established.

3.20 SW NET (Switched Network) Line Circuit (SNLC): This circuit is required when the WDTB has trunks to a switching machine. This circuit is necessary to complete calls over a switched network. This circuit provides a ringing detector feature and is answered by operating the LINE key to the TALK position. When the LINE key (7 or 10) is operated to the TEST position, the SNLC is connected to the 904 TRUNK circuit. A 2800-Hz tone from oscillator may be applied to the transmit line by operating the 2800 CPS key (6 or 9). The tone is not applied to the line if the LINE key is in the TEST position. The 2800-Hz tone is used to control the looping of the wideband line (RT1), the wideband data set (RT2), the voiceband line, and the voiceband data set.

3.21 SPL TRUNK (Special Line) Circuit (SLC): The SLC provides the interface between the telephone circuit and the universal line or trunk circuit (ULTC). The SLC provides rapid communication between the WDTB and a control center. When the LINE key (12) is operated to

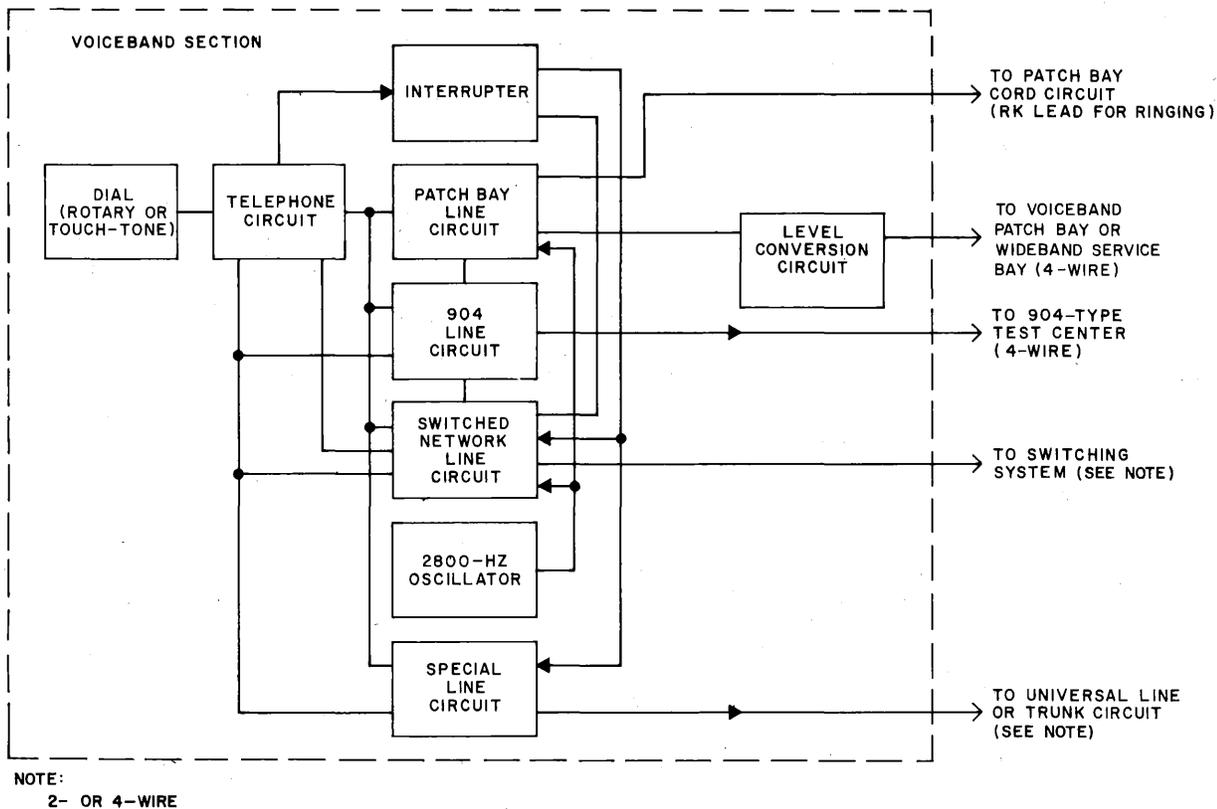


Fig. 7—915-Type Wideband Data Test Bay—Block Diagram of Voiceband Section

the TALK position, the SLC goes off-hook which automatically rings the telephone at the control center, lights the LINE lamp (11), and connects the telephone circuit to the trunk. The outgoing and incoming calls are accomplished by means of separate leads instead of by loop supervision and ringing.

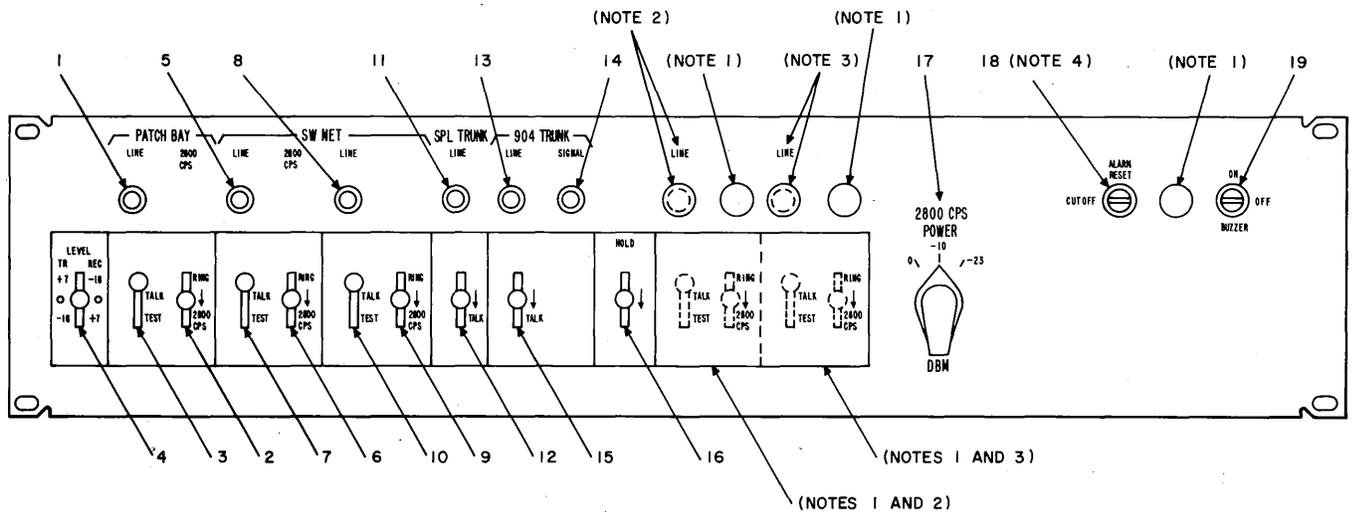
3.22 904 TRUNK Line Circuit (904 LC): The 4-wire trunk with two signaling leads connects the WDTB with a nearby 904-type data test center (DTC). This allows the 904-type DTC to perform tests on the voiceband data sets which are sometimes included in wideband data stations. Signaling is initiated when the LINE key (15) is operated to the TALK position. When the WDTB is called by the 904-type DTC, the SIGNAL lamp (14) is lighted and the buzzer sounds. The LINE lamp (13) is lighted whenever the LINE key (15) is operated or the LINE key is operated to TEST on the PBL (3) or SLNC (7 or 10).

3.23 2800 CPS POWER Oscillator: The 2800-Hz oscillator connects to the switched network

line circuit or to the patch bay line circuit and the level conversion circuit. The 2800-Hz tone from the oscillator may be applied via these line circuits to a Dataphone® 50-voice access line or to the voice-coordination channel of a data station under test for the purpose of controlling the remote test modes. A switch (17) is provided on the voiceband control panel to control the output power of the oscillator. Power levels of 0, -10, and -23 dBm are available. Usually, the -10 dBm level is used, but occasionally the power level required to establish loop-back at the station is below the minimum signal level, in which case a higher tone level (0 dBm switch setting) is required.

3.24 Interrupter: The interrupter is connected to the switched network line circuit and the special line circuit. When the WDTB is called, the interrupter will cause the LINE lamp to flash on the appropriate line.

3.25 ALARM Key: An ALARM key (18) can be added to the voiceband control panel as an option to existing 915B-type WDTBs. This



NOTES:

1. THESE APPARATUS BLANKS ARE FOR FUTURE MODIFICATION WHEN NECESSARY.
2. RECOMMENDED LOCATIONS FOR SWITCHES, LAMP, AND PANEL STAMPS WHEN ADDING AUXILIARY THIRD SWITCHED NETWORK CAPABILITY PER J79915B-1, LIST 19.
3. RECOMMENDED LOCATIONS FOR SWITCHES, LAMP, AND PANEL STAMPS WHEN ADDING AUXILIARY FOURTH SWITCHED NETWORK CAPABILITY PER J79915B-1, LIST 20.
4. TO BE ADDED WHEN PROVIDING AUDIBLE ALARM CONTROL FEATURE PER J79915B-1, LIST 18.

Fig. 8—Voiceband Control Panel—Controls and Indicators Explained in Table A

function is incorporated on current manufactured equipment. Circuit details for the ALARM key (18) function is shown in Fig. 9. This optional circuit can be wired into the office alarm system to provide an audible alarm signal when an incoming call is received at the 915-type WDTB. The audible alarm is meant to alert the operator who, at times, may be several aisles away. Operating the ALARM key to the CUTOFF position will silence the alarm. After servicing the incoming call, the alarm circuit is conditioned to react to the next incoming call by positioning the ALARM key to the RESET position.

3.26 The ALARM key (18) is added to the voiceband control panel as J79915B-1, List 18, and should be located as shown in Fig. 8. Refer to 7.03 and 7.04 for ordering information. This addition will provide the audible alarm control feature for existing facilities at the 915-type WDTB. A circuit sketch of the switch, relay, and alarm connections are shown in Fig. 9 for reference only. Both terminal strips TS(A) and TS(B) are located at the top of the 915-type WDTB. Additional switched network line facility terminations can also be ordered and added to an existing 915-type

WDTB as J79915B-1, List 19 and/or List 20. The List 19 provides the termination of a third auxiliary switched network, and the List 20 provides termination of a fourth auxiliary switched network. The suggested locations for additional line switches, lamps, and panel decals are shown by dashed lines in Fig. 8 with reference to the proper notes.♦

3.27 BUZZER Key: A buzzer, under control of a BUZZER cutoff key (19), is available for an audible signal when the WDTB is being called on the 904 trunk, the SNLC, or the SPL trunk.

4. SYSTEM ARRANGEMENTS

4.01 The overall system configuration and the circuits connected to the WDTB will depend upon local arrangements. Figure 10 shows some recommended wideband and voice coordination channel access arrangements which might be utilized for the various services to be tested from the WDTB. Fig. 11 supplements the recommended arrangements with a typical arrangement which may be used on services where the outgoing wideband trunk is selected by the TRUNK on

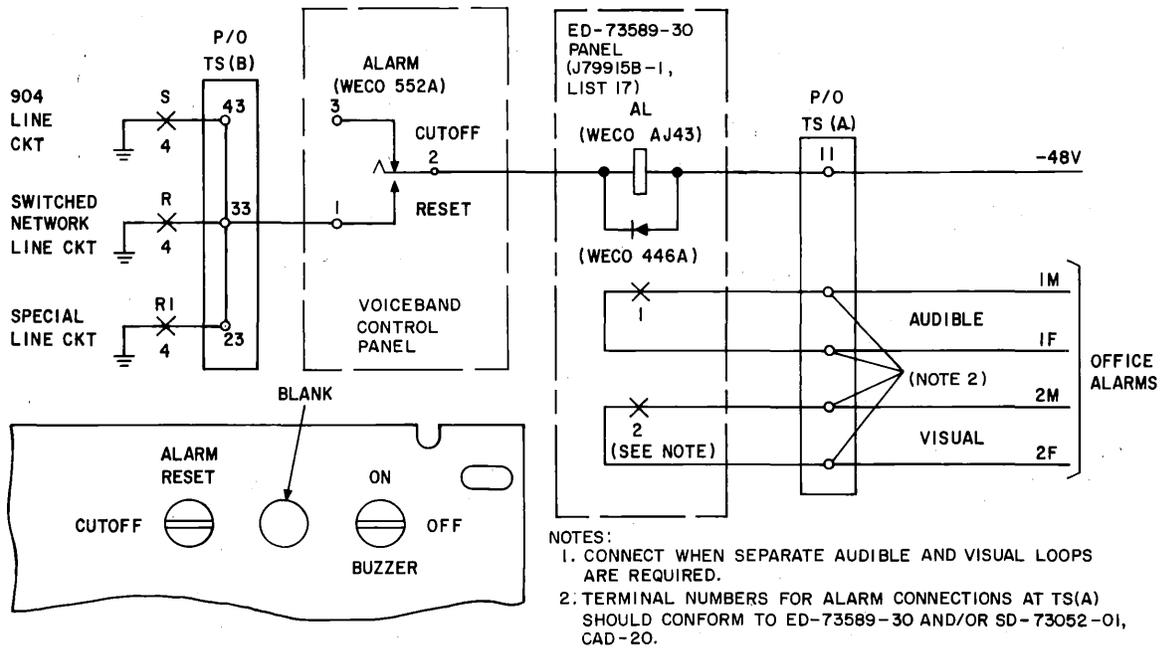


Fig. 9—Alarm Modification Circuit Sketch

the wideband control panel. Fig. 11 also shows typical connecting circuits for the voiceband circuits.

Access via a Wideband Service Bay

4.02 Probably the most common means of access to a wideband circuit will be via a nearby WSB. The recommended arrangement is to have one wideband trunk and the patch bay line circuit connected to jacks in the WSB. Connection to a station line is then made by patch cords at the WSB. If the connections are into carrier systems, the level conversion circuit must be supplied in the WDTB as shown in Fig. 11.

Access via a Switching System

4.03 If the wideband service is switched, then connections to the stations from the WDTB may be through the switching system. In this case, one wideband trunk and one switched network line circuit in the WDTB are connected to the switching system. Wideband calls may then be originated or answered from the WDTB.

Point-to-Point Telephone

4.04 When a point-to-point telephone circuit is required between a distant telephone and the WDTB, there are two ways it may be furnished.

(a) The recommended method is to connect to the distant telephone via a universal line or trunk circuit and the special line circuit of the WDTB. The universal line or trunk circuit may be arranged for most types of signaling toward the remote end. The WDTB end is always arranged for separate lead signaling.

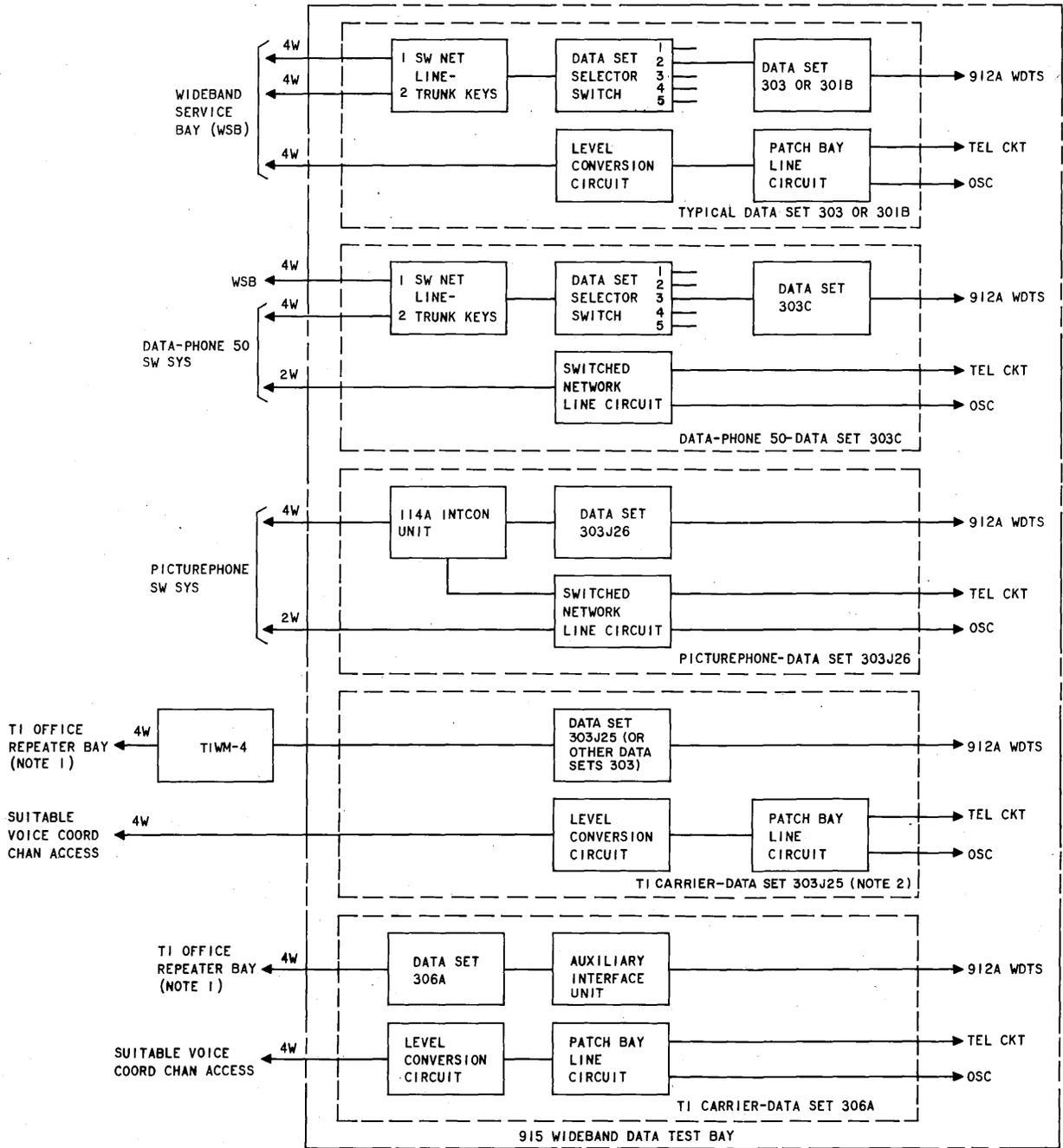
(b) The second method of connecting a remote telephone is to use one of the switched network line circuits of the WDTB (arranged for 2-wire service) connected to the distant station via a private line circuit.

Regular Telephone Service

4.05 A regular (2-wire) telephone circuit may be established to the WDTB via one of the switched network line circuits. The dial must be compatible.

Permanent Trunk Access

4.06 For access by the WDTB to special wideband services, permanent trunk wiring between the data set and an access point to the system is provided as follows.



NOTES:

1. WHEN DATA SETS 303J25 OR 306A ARE TO BE INCLUDED IN THE WDTB, SPECIAL JACKS MUST BE INSTALLED AT THE TI OFFICE REPEATER BAY IN THE MISCELLANEOUS JACK STRIP TO PROVIDE A NORMAL LOOP-BACK ARRANGEMENT.
2. THIS BLOCK DIAGRAM IS APPLICABLE TO OTHER 303-TYPE DATA SETS WITH BALANCED DC LINE SIGNAL FOR TRANSMISSION OF SERIAL BINARY DATA OVER TI FACILITIES USING THE TIWM-4 WIDEBAND MODEM.

Fig. 10—Recommended Wideband and Voice-Coordination Channel Access Arrangements

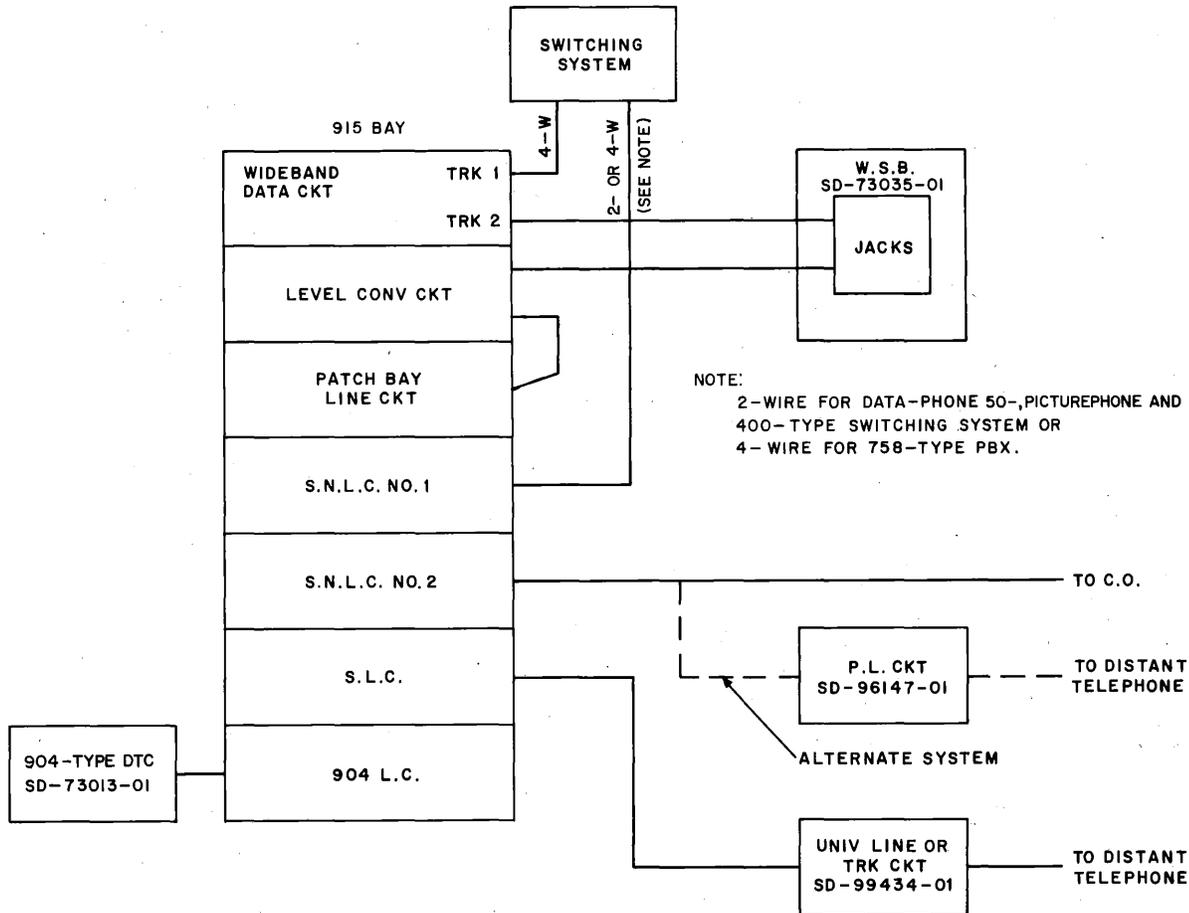


Fig. 11—915-Type Wideband Data Test Bay—Typical System Arrangement

- (a) Data set 303J25 [460.8 kilobits per second (kbps), T1 carrier] is wired directly by means of a permanent trunk to the T1WM-4 modem.
- (b) Data set 303J26 (460.8 kbps, Picturephone facilities) is wired to a 114A interconnecting unit which connects to the Picturephone network.
- (c) Data set 306A (1.344 mbps, T1 carrier) is wired to jacks appearing at the miscellaneous jack strip in a T1 office repeater bay.

5. DESCRIPTION OF CONTROLS

5.01 The controls and indicators used in operating the WDTB are illustrated by Fig. 8, 12, and 13 and are described in associated Tables A, B, and C, respectively. Controls and indicators of commercially provided equipment and/or Bell System-provided equipment described in other Bell

System Practices are not discussed here. Operating instructions for data sets and test equipment should refer to the appropriate BSP or operating manual.

5.02 Voiceband Control Panel: The controls and indicators associated with the voiceband control panel are shown by Fig. 8 and are described in Table A.

5.03 Wideband Control Panel: The controls and indicators associated with the wideband control panel are shown in Fig. 12 and are described in Table B.

5.04 Attenuator: The attenuator controls are shown in Fig. 13 and are described in Table C. The attenuator is not connected in the transmit line of the permanently wired trunks.

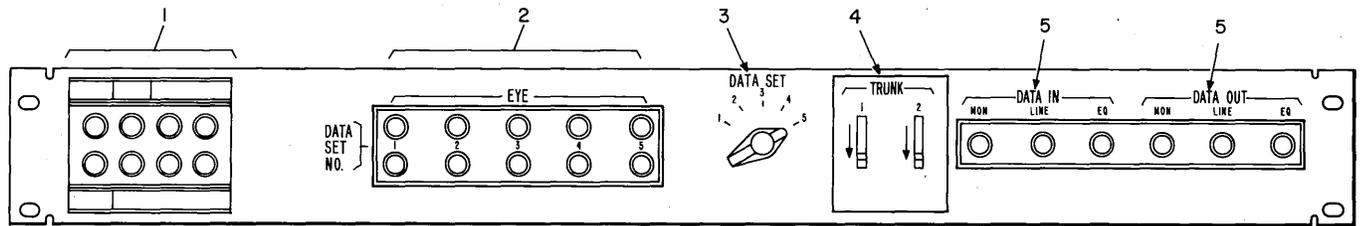


Fig. 12—Wideband Control Panel—Controls and Jacks Explained in Table B

6. OPERATION

6.01 The following information provides the operating instructions for the WDTB. The test procedures and requirements for the specific types of data sets are not included in this section but are covered in other sections in this series of practices.

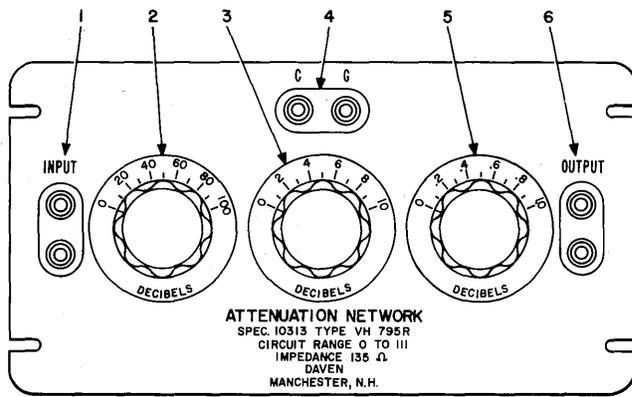


Fig. 13—Attenuator—Controls and Indicators Explained in Table C

STEP	PROCEDURE
------	-----------

A. Incoming Telephone Call From Switched Network or Special Trunk

- 1 When LINE lamp on voiceband control panel flashes (an audible alarm will sound if ALARM key is positioned to RESET and a buzzer should also sound if BUZZER key is operated), insert headset plug into TEL SET jack.
- 2 Silence alarms by setting ALARM key to CUTOFF and/or BUZZER key to OFF. Operate LINE key (associated with flashing lamp) to TALK.
- 3 To hold call (switched class only), operate HOLD key, then restore LINE key to normal. (Observe that LINE lamp flashes.)

Note 1: Only the switched network line circuits (SNLC) have a hold feature.

Note 2: HOLD key must be *held* operated until LINE key has been restored to normal, then HOLD key should be released. (LINE lamp should continue flashing.)

STEP

PROCEDURE

-
- 4 To talk again on the connection established in Step 2, operate LINE key to TALK. (LINE lamp should be lighted.)
 - 5 To disconnect call, restore LINE key to normal.

B. Incoming Telephone Call From 904-Type Data Test Center

- 1 When SIGNAL lamp (associated with trunk to 904 DTC) on voiceband control panel flashes (an audible alarm is heard and/or buzzer should also sound if ALARM and/or BUZZER key are properly positioned), insert headset plug into TEL SET jack.
- 2 Operate 904 TRUNK key to TALK. (LINE lamp should be lighted.)
- 3 To disconnect call, restore LINE key to normal.

C. Outgoing Telephone Call via Switched Network (Dialed Station)

- 1 Insert headset plug into TEL SET jack.
- 2 Operate the SW NET—LINE key to TALK.
- 3 When dial tone is heard, dial telephone number. Voice communications may now be conducted.
- 4 The procedure to hold a call, to talk again, and to disconnect a call is the same as in Part A.

D. Outgoing Telephone Call via Patch Bay

- 1 Insert headset plug into TEL SET jack.
- 2 Operate PATCH BAY—LINE key, located on voiceband control panel, to TALK.
- 3 Operate PATCH BAY—2800 CPS key to RING. When call is acknowledged, return 2800 CPS key to normal. Voice communications may now be conducted.

Note: This step (ringing) is effective only if the patch bay is equipped to relay ringing. The WSB is not normally arranged to ring a station over a voice-frequency coordination channel. The direct distance dialing (DDD) network is usually used to establish the initial connection and ask the customer to pick up the voice-frequency coordination telephone set. The RK lead in the PBLC was required for a special application.

- 4 To disconnect call, restore LINE key to normal.

E. Outgoing Telephone Call to 904-Type Data Test Center

- 1 Insert headset plug into TEL SET jack.

TABLE A
VOICEBAND CONTROL PANEL FUNCTIONS

KEY TO FIG. 8	CONTROL OR INDICATOR	FUNCTION
1	PATCH BAY — LINE Lamp	Lights when PATCH BAY — LINE key (3) is in either the TALK or TEST position.
2	PATCH BAY — 2800 CPS Key	When set to RING, causes ringing current to be applied to the patch bay line. When set to 2800 CPS, causes a 2800-Hz signal to be applied to the patch bay line.
3	PATCH BAY — LINE Key	When set to TALK, disables the patch bay test circuit and enables the talk circuit. When set to TEST, disables the patch bay talk circuit and enables the test circuit.
4	LEVEL — TR-REC Key	When operated to TR +7, REC -16 (up), the level conversion circuit introduces a signal gain of 7 dB on the transmit line and 16 dB on the receive line. When the LEVEL key is in the 0 position, a straight-through operating condition exists. When operated to TR -16, REC +7 (down), the level conversion circuit attenuates the signal by 16 dB on the transmit line and 7 dB on the receive line.
5	SW NET — LINE Lamp	Lights when the associated SW NET — LINE key (7) is in either the TALK or TEST position.
6	SW NET — 2800 CPS Key	When set to the down position, causes 2800-Hz signal to be applied to the associated switched network line.
7	SW NET — LINE Key	When set to TALK, disables the associated switched network line test circuit and enables the associated switched network line talk circuit.
8	SW NET — LINE Lamp	Lights when the associated SW NET — LINE key (10) is in either the TALK or TEST position.
9	SW NET — 2800 CPS Key	Same as 6.
10	SW NET — LINE Key	Same as 7.
11	SPL TRUNK — LINE Lamp	Lights when SPL TRUNK — LINE key (12) is in the TALK position.
12	SPL TRUNK — LINE Key	When set to TALK, enables the special trunk line circuit.

TABLE A (Cont)

KEY TO FIG. 8	CONTROL OR INDICATOR	FUNCTION
13	904 TRUNK — LINE Lamp	Lights when 904 TRUNK — LINE key (15) is in TALK position or if either the SW NET — LINE (7 or 10) or PATCH BAY — LINE key (3) is in TEST position.
14	904 TRUNK — SIGNAL Lamp	Flashes when the WDTB is being called from the 904-type DTC.
15	904 TRUNK — LINE Key	When set to TEST, disables the 904 talk circuit and enables the 904 test circuit. When set to TALK, enables the 904 talk circuit and disables the 904 test circuit.
16	HOLD Key	Provides a means of holding one of the switched network lines so that the other switched network line can be answered.
17	2800 CPS POWER Switch (Rotary 3-Position)	Sets level of 2800-Hz signal from the 2800-Hz oscillator in the WDTB.
18	ALARM Key (Note 1)	When provided and positioned to RESET, will enable audible office alarm to alert operating personnel of an incoming call to the 915-type WDTB. Positioning the key to CUTOFF will silence the alarm.
19	BUZZER Key	When positioned to ON, enables the buzzer to signal the operator of an incoming call. The buzzer is silenced when the key is positioned to OFF.

Note 1: The ALARM key can be added to 915-type WDTB in the field using J79915B-1, List 17 and List 18. See Part 7 for ordering information. This feature is incorporated on current 915-type WDTB equipment manufacture.

TABLE B
WIDEBAND CONTROL PANEL FUNCTIONS

KEY TO FIG. 11	CONTROL OR INDICATOR	TYPE	FUNCTION
1	Spare Jacks	—	—
2	EYE Pattern Jacks (1 through 5)	—	Provide a means of monitoring the eye pattern of a data set in the WDTB. This eye pattern is an indication of the performance of the system under test. The upper jacks are used only when monitoring a data set 303-type. Both an upper and lower jack are required for monitoring the two eye patterns of data set 301B-type.
3	DATA SET Selector	Switch, Rotary (5-Position)	Provides a means of connecting any one of the five bay-mounted data sets to the line.
4	TRUNK Keys (1 and 2)	Lever (2-Position)	Provide a means of selecting either of two wideband trunks from the WDTB.
5	DATA IN — DATA OUT Test and Monitoring Jacks (MOD, LINE, and EQ)	—	Provide a means of monitoring the incoming and outgoing wideband data lines.

STEP**PROCEDURE**

2 Operate 904 LINE key, located on voiceband control panel, to TALK. When call is acknowledged, voice communications may be conducted.

3 To disconnect call, restore LINE key to normal.

F. Outgoing Telephone Call on Special Trunk

1 Insert headset plug into TEL SET jack.

2 Operate SPL TRUNK—LINE key, located on voiceband control panel, to TALK. When call is acknowledged, voice communications may be conducted.

3 To disconnect call, restore LINE key to normal.

G. Access to the Data Station Under Test via Switched Network

1 Insert headset plug into TEL SET jack.

TABLE C
ATTENUATOR FUNCTIONS

KEY TO FIG. 12	CONTROL OR INDICATOR	TYPE	FUNCTION
1	INPUT Jack	Jack — Top Binding Posts	Provides a means of monitoring the input to the attenuator.
2	Attenuator Dial 0-100 dB	Rotary, 11-Position	Provides a means of attenuating the transmitted line signal from the WDTB.
3	Attenuator Dial 0-10 dB	Rotary, 11-Position	Same as 2.
4	C-G Jack	Jack — Top Binding Posts	Provides a means of obtaining a ground or common connection.
5	Attenuator Dial 0-1.0 dB	Rotary, 11-Position	Same as 2.
6	OUTPUT Jack	Jack — Top Binding Posts	Provides a means of monitoring the output of the attenuator.

STEP**PROCEDURE**

- 2 Operate the SW NET—LINE key to TALK.
- 3 Call the number of the desired data station on the TOUCH-TONE or rotary dial.
- 4 After dialing is completed, operate the TRUNK key located on the wideband control panel. This connects the WDTB to the associated wideband line. If the data station is on Picturephone switched network, the WDTB is permanently wired into the switched system.
- 5 Automatic answer data stations will send a 2025-Hz answer-back tone for about 5 seconds.

H. Access to the Data Station Under Test via Wideband Service Bay or T1 Office Repeater Bay

- 1 Establish voice communications with the WSB or repeater bay.
- 2 Request a wideband patch from the WDTB appearance on the WSB or repeater bay to the desired data station appearance.
- 3 Request a patch from the voice-coordination channel appearance of the desired data station to the WDTB appearance on the WSB or repeater bay.

STEP**PROCEDURE**

I. Transfer of Data Station to 904-Type Data Test Center—Access to Data Station via Patch Bay Line Circuit

- 1 Operate 904 TRUNK—LINE key to TALK.
- 2 When call is acknowledged, request test of voiceband section of wideband data station.
- 3 Operate PATCH BAY—LINE key to the TEST position.
- 4 Return the 904 TRUNK—LINE key to normal. The 904 TRUNK—LINE lamp will remain lighted.
- 5 The appropriate tests may now be conducted at the 904-type DTC.

Note: Voice communication between the WDTB and the 904-type DTC is not possible when the 904 TRUNK—LINE key is returned to normal; however, the 904-type DTC will retain the connection (established in Step 2) from the WDTB to the data station under test.

- 6 To regain voice communications with the 904-type DTC, operate the 904 TRUNK—LINE key to TALK.

J. Transfer of Data Station to 904-Type Data Test Center—Access to Data Station via Switched Network Line Circuit

- 1 Operate 904 TRUNK—LINE key to TALK.
- 2 When call is acknowledged, request test of voiceband section of wideband data station.
- 3 Operate the SW NET—LINE key to the TEST position.
- 4 Return the 904 TRUNK—LINE key to normal. The 904 TRUNK—LINE lamp will remain lighted.
- 5 The appropriate tests may now be conducted at the 904-type DTC.

Note: Voice communication between the WDTB and the 904-type DTC is not possible when the 904 TRUNK—LINE key is operated to normal; however, the 904-type DTC will retain the connection (established in Step 2) from the WDTB to the data station under test.

- 6 To regain voice communication with the 904-type DTC, operate the 904 TRUNK—LINE key to TALK.

K. Self Test of Wideband Data Test Bay—Wideband Section

- 1 Set attenuator to 6 dB.

STEP

PROCEDURE

-
- 2 Set DATA SET selector switch located on the wideband control panel to the number of the data set being tested and set the TRUNK key to off.
 - 3 Position the 912A WDTS controls as follows:
 - POWER—ON
 - OUTPUT—NORMAL
 - INPUT—NORMAL
 - TIMING—0
 - WORD SYNC—NEUT
 - TRANSMIT TEST SIGNAL—2087
 - RECEIVE TEST SIGNAL—2087
 - TRANSMIT TRIGGER—+ (plus)
 - RECEIVE TRIGGER—+ (plus)
 - TRANSMIT BIT RATE—Speed of data set (if nonsynchronous data set is being tested);
EXT (if synchronous data set is being tested)
 - RECEIVE BIT RATE—Speed of data set (if nonsynchronous data set is being tested);
EXT (if synchronous data set is being tested)
 - DATA SET—Number of data set being tested
 - TEST MODE—OPERATE
 - SEND REQUEST—ON
 - COUNTER—ON.
 - 4 Connect a patch cord from DATA OUT—MON jack to DATA IN—MON jack. Both jacks are located on the wideband control panel.
 - 5 The NO DATA lamp on the 912 WDTS will extinguish, the AGC/COO lamp will light, the NO SYNC lamp will remain lighted, and the counter will continue to count.
 - 6 Operate the WORD SYNC switch to the AUTO position.
 - 7 The NO SYNC lamp will extinguish and the counter will stop counting. No counts should occur in the three least significant digits of the counter.

STEP	PROCEDURE
8	Connect the counter to the <i>RECEIVE—CLOCK OUT</i> connector. A count equal to the bit rate of the data set (± 0.01 percent) should be observed.
9	Set oscilloscope controls as follows: MODE—ADDED CHANNEL A—INVERTED CHANNEL A and B VOLTS/DIV—2 VOLTS/DIV SWEEP RATE—5 CM/BIT SLOPE— (neg) SOURCE—EXT.
10	Set all remaining oscilloscope controls as for routine operation. The oscilloscope will be triggered externally from the TRANSMIT—CLOCK OUT of the 912A WDTS.
11	Connect an appropriate test lead from the TRANSMIT—CLOCK OUT of the 912A WDTS to the EXT TRIG IN of the oscilloscope.
12	The oscilloscope should be connected to the appropriate EYE jack located on the wideband control panel. These connections will usually be made by a single cord as follows: CHANNEL A to TIP CHANNEL B to RING GROUND to SLEEVE.
13	For a data set 303-type, perform (1) below. For a data set 301B, perform (2) below. (1) A signal similar in wave shape to that shown in Fig. 14 or 15 should be observed. (2) A signal similar in wave shape to that shown in Fig. 16 should be observed.
14	Remove all test leads and connections made in the previous steps. The patch cord (connected in Step 4) must remain as previously connected.
15	Connect channel A of the oscilloscope to one side of the attenuator input and channel B to the other side. Set the oscilloscope in the added mode with channel A inverted. Observe amplitude of pattern on oscilloscope.
16	Remove oscilloscope connections from the input of the attenuator and place them on the output of the attenuator.

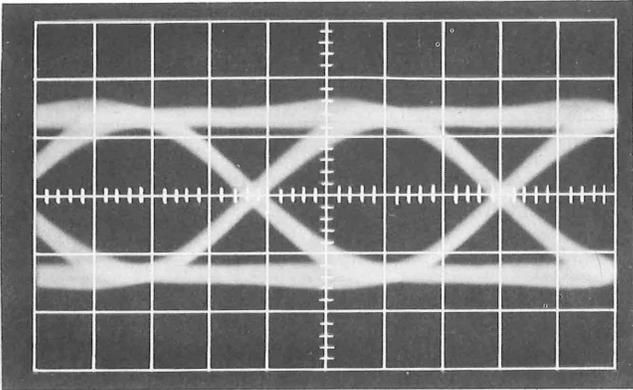


Fig. 14—Eye Pattern for Data Set 303-Type With 100 Percent Filters

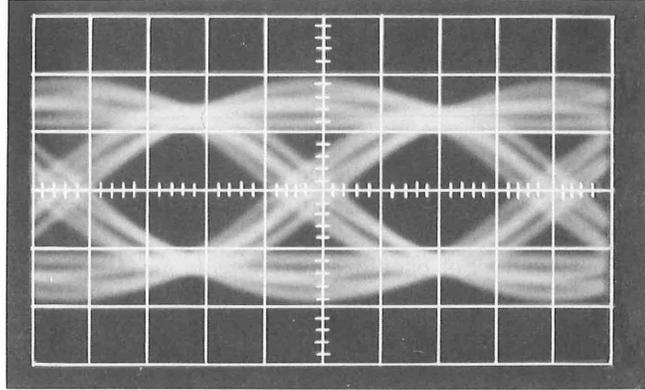


Fig. 15—Eye Pattern for Data Set 303-Type With 50 Percent Filters

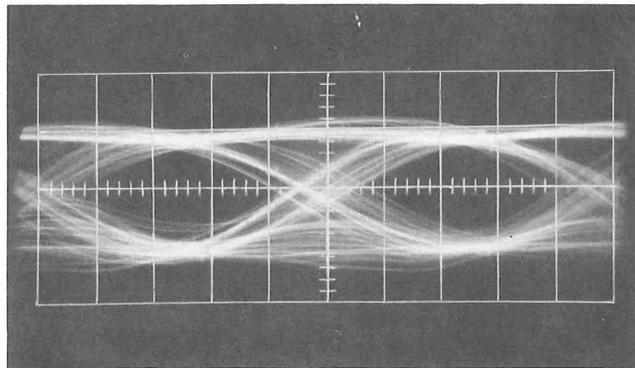


Fig. 16—Eye Pattern for Data Set 301B-Type

STEP

PROCEDURE

- 17 The wave shape observed should be one-half the amplitude of the wave shape viewed in Step 16.
- 18 Remove oscilloscope test leads.
- 19 Remove the patch cord (connected in Step 4). This restores the WDTB to normal operation.

STEP	PROCEDURE
L. Remote Test Mode	
1	Gain access to the data station under test. When using DS 306A, verify that the customer's data terminal ready signal is ON.
2	Insert headset plug into TEL SET jack.
3	Set the 2800 CPS POWER switch located on the voiceband control panel to the -10 dBm position. Occasionally, a higher tone level of 0 dBm is necessary to establish loop-back.
4	To establish RT1 mode, operate the appropriate 2800 CPS key to the 2800 CPS position and hold for 10 seconds. Release key and listen for answer-back tone. <i>Note 1:</i> In certain wideband data stations using data set 306A, data auxiliary set 804A-type may not be provided; therefore, the 2025-Hz answer-back tone is not heard. (The 2025-Hz is not provided all the time depending on how the remote station is wired.) <i>Note 2:</i> The data station is now in the RT1 mode. It will remain in this mode until the RT2 mode is established. Caution: <i>Insert a dummy phone plug into the receive line to interrupt the voice circuit path before going to RT2.</i> <i>Note 3:</i> If using the patch bay line circuit, the PATCH BAY LINE key must be in the TALK position to hear answer-back tone if RT1 is plugged off.
5	To establish RT2 mode, operate the appropriate 2800 CPS key to the 2800 CPS position. This key must be held in the 2800 CPS position until the 2800-Hz tone stops. Release key and, after a slight pause, the 2025-Hz answer-back tone becomes audible. The 2800 CPS key should be depressed for approximately 10 seconds.
6	Release the 2800 CPS key. <i>Note:</i> The data station is now in the RT2 mode. It will remain in this mode until returned to the normal mode.
7	To restore line to normal, operate the 2800 CPS key to the 2800 CPS position for at least 10 seconds. Observe that the NO SYNC and NO DATA lamps on the 912A WDTS light when the data station returns to the normal mode. <i>Note:</i> The data station is now returned to the normal mode and normal operation may be resumed.

SECTION 314-602-100

7. REFERENCES

7.01 The CDs and SDs for the various pieces of equipment included in the WDTB are as follows:

- CD- & SD-73052-01 915A or 915B Wideband Data Test Bay
- CD- & SD-73047-01 912A Wideband Data Test Set
- CD- & SD-1D033-01 Data Set 301B-Type
- CD- & SD-1D067-01 Data Auxiliary Set 809B1
- CD- & SD-1D100-01 Data Set 303-Type
- CD- & SD-1D187-01 Data Set 306-Type

7.02 Bell System Practices covering the various equipment in the station are given below:

SECTION	TITLE
103-627-100	◆6G Wideband Noise Measuring Set (J94006G)—Description, Operation and Maintenance◆
107-400-100	912A Wideband Data Test Set, Description and Operation
314-601-110	◆Data Systems, Wideband Service Bay (WSB)◆
314-602-501	915 Wideband Data Test Bay, Test Procedures for 303-Type Data Station, Restored Polar Line Signal Operation
314-602-520	915 Wideband Data Test Bay, Test Procedures for 301B-Type Data Station
463-390-100	114A Interconnecting Unit
593-011-100	◆Data Set 301B-Type, Transmitter-Receiver, Identification and Operation◆

SECTION	TITLE
593-012-100	Data Set 303-Type, Description
593-015-100	◆Data Set 306, Identification◆
593-800-111	◆Wideband Data Station Using Data Set 303-Type, Two-Wire Switched Service, (460.8 KBPS Data Over Picturephone Facilities), Description and Operation◆
598-034-100	Data Auxiliary Set 809B-Type, Description and Operation◆
807-462-165	◆912-Type Wideband Test Set, Equipment Design Requirements, Data Systems◆
807-463-150	915 Wideband Data Test Bay, Equipment Design Requirements

807-463-180	Performance Requirements for the 915A or 915B Wideband Data Test Bay, General Equipment Requirements.
-------------	---

7.03 ◆The alarm feature and provisions for terminating additional switched network lines can be separately ordered and incorporated into existing 915B-type WDTB already in use. These modifications consist of a series of orderable list numbers to identify specific functions and are identified as follows:

- **J79915B-1, List 17**—This consists of a basic ED-73589-01 panel with a terminal strip only and the necessary adaptor brackets for mounting the panel in the 915B-type WDTB.
- **J79915B-1, List 18**—This consists of a key, a diode, and an AJ-type relay only. The key is used to modify the voiceband control panel of the 915B-type WDTB and the remaining components are to be added to the List 17 panel. Proper connections according to ED-73589 will permit the key to control the audible alarm feature.

● **J79915B-1, List 19**—This provides the necessary relay compliment and cable bay wiring for a List 17 panel together with the switches and lamp to modify the voiceband control panel of the 915B-type WDTB. Proper connections according to ED-73589 will permit the components to control a third switched network line facility to be terminated at the 915B-type WDTB.

● **J79915B-1, List 20**—This provides components similar to List 19 modifications and permits control over a fourth switched network line facility to be terminated at the 915B-type WDTB.

7.04 Consult the following chart to order the necessary list numbers for a desired function.◆

FUNCTION	ORDER J79915B-1 (QUANTITIES IN PARENTHESES)
ALARM only	(1) List 17 and (1) List 18
ALARM and a third switched network facility	(1) List 17, (1) List 18, and (1) List 19
ALARM with both a third and fourth switched network facility	(1) List 17, (1) List 18, and (1) List 19, and (1) List 20
Third switched network facility control only (no ALARM function)	(1) List 17 and (1) List 19
Third and fourth switched network facility control only (no ALARM function)	(2) List 17, (1) List 19, and (1) List 20