

**DIAL TONE DELAY ALARM**  
**OPERATION**  
**NO. 2/2B ELECTRONIC SWITCHING SYSTEM**

CONTENTS	PAGE
1. GENERAL . . . . .	1
2. DIAL TONE DELAY ALARM CONTROLS . . . . .	2
3. TTY CONTROL OF THE DTDA . . . . .	3
4. DTDA INTERFACE WITH OFFICE ALARM SYSTEM . . . . .	3
5. CHANGING ASSIGNMENT OF THE TEST LINE . . . . .	5
6. ASSIGNING A TEST LINE (NEW OFFICE) . . . . .	6
7. REFERENCE DOCUMENTS . . . . .	6
<b>Figures</b>	
1. Dial Tone Delay Alarm Unit . . . . .	2
2. No. 2/2B Interface With DTDA . . . . .	4
<b>Tables</b>	
A. Dial Tone Delay Alarm Logic States . . . . .	5
B. DTDA Scan Points . . . . .	5

**1. GENERAL**

**1.01** This section describes the operation of the dial tone delay alarm (DTDA) used for the No. 2/2B Electronic Switching System (ESS).

**1.02** This section is being reissued to add assignment information to Part 5, add a new Part 6, and to modify Fig. 2. Revision arrows are used to emphasize the more significant changes.

**1.03** The purpose of the DTDA (SD-1A277) is to sound an alarm if an ESS office fails to supply dial tone to a test line within required timing limits. This device is designed as an external module to detect catastrophic system problems which may not be known or are not detectable through normal internal means.

**1.04** The DTDA circuit is assigned a line terminal location with an originating-only class of service. The DTDA is completely autonomous and has the capability of originating a call at intervals of time adjustable between limits of 20 and 60 seconds. This adjustment is controlled by the setting of the TIME potentiometer.

**1.05** The DTDA circuit tests for the presence of dial tone by initiating an off-hook condition on the test line. The system then attempts to connect the test line to a customer digit receiver (CDR). If dial tone is returned within 8 to 10 seconds, the DTDA circuit will check that dial tone is continuously present for 2 seconds. If dial tone is not detected or present for the required time interval, an alarm will sound. (If 2 seconds of dial tone is detected after the alarm is sounded, the alarm is automatically retired and the circuit is recycled.) Upon successful detection of dial tone, the DTDA will restore the test line to an on-hook condition. The circuit will time for 8 to 10 seconds for the test line to release from dial tone. If dial tone is still present at the end of the release interval, an alarm will sound. (If dial tone is released after the alarm is sounded, the alarm is automatically retired and the circuit is recycled.) If dial tone is removed within the release interval, the test is successful and the test sequence is recycled.

**1.06** When a failure condition exists, the test circuit is arranged to sound an alarm. Two alarm features are provided by the DTDA. The circuit has a self-contained alarm comprised of a 1000-Hz tone

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that is sounded if a failure is encountered. The circuit alarm is interfaced with the regular office alarm system. If a failure is encountered, a major alarm is sounded. The major alarm sounded by the external alarm circuit can be retired at the control via a peripheral decoder (PD) applique circuit. Retirement of the internal alarm will cause the test sequence to be recycled by the DTDA circuit. The circuit also provides the means by which the system may inhibit the alarms via the peripheral decoder applique circuit.

**1.07** Since the DTDA circuit is connected via a single test line which has an originating class of service (denied-terminating), a trouble peculiar to the test line could activate the alarm. The extent of the trouble causing the alarm should be determined before remedial actions are taken.

**1.08** The line location to which the test line is assigned should be changed at intervals of 2 months or as specified in the Equipment Test List. The new assignment may be in any network frame but should not be associated with the same first stage as the previous assignment. Rotation of the test line assignment will distribute the test call load more evenly. The network administrator is responsible for these assignments, and procedures should be available to rotate the assignments on a routine basis.

**1.09** The DTDA unit (Fig. 1) is mounted below the writing shelf on the trunk test frame.

**1.10** The traffic count programs are affected by the use of a DTDA. Each test origination will

score a false start in the False Start Register, OFT24, and will add to the Total Line Originations Register, OFT05. Each time the rate is changed by moving the TIME control, the Network Administration Department should be notified of the new rate. The Network Administration Department should also be notified when testing is started or discontinued in order that the false starts can be properly evaluated for the new rate. The Traffic Department should also be notified when tests are started or discontinued in order that the false starts can be properly evaluated.

## 2. DIAL TONE DELAY ALARM CONTROLS

**2.01** The following controls are provided to monitor and control the DTDA.

(a) **TIME:** The TIME control permits adjusting the rate at which test originations occur from one origination every 20 seconds to one origination every 60 seconds.

(b) **VOL:** The VOL (volume) control adjusts the output volume of the dial tone being received. A dial tone monitor circuit receives, amplifies, and feeds dial tone to a monitor speaker. This feature permits maintenance personnel to monitor operation of the DTDA. The VOL control permits the dial tone to be completely silenced for normal conditions. This control does not affect the volume of an alarm signal.

**2.02** The following keys and lamps are provided to control and test operation of the DTDA.

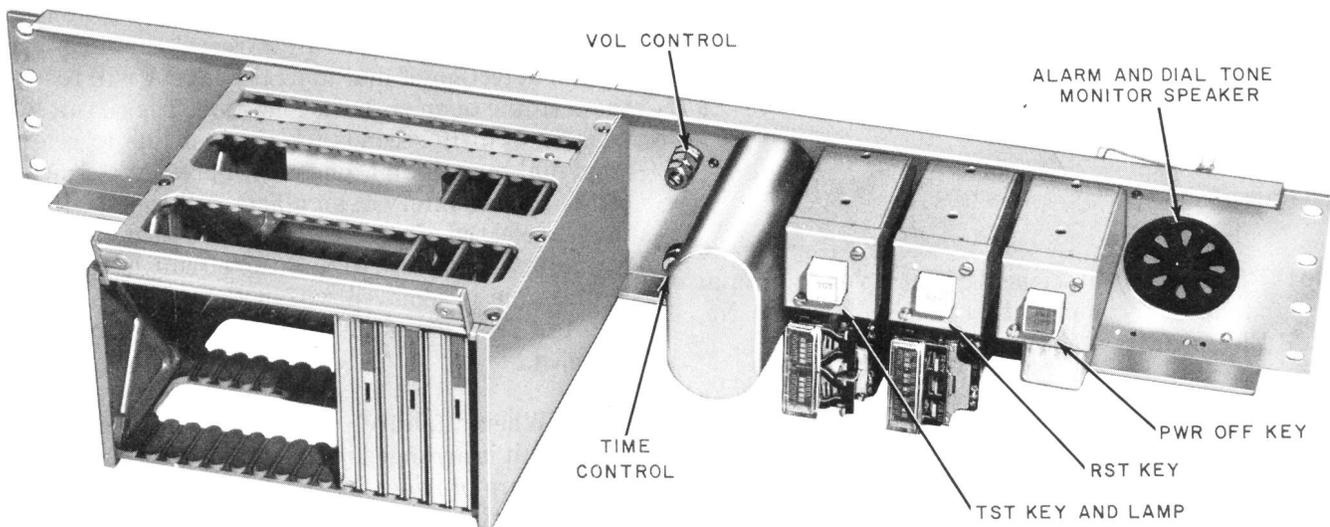


Fig. 1—Dial Tone Delay Alarm Unit

(a) **TST (Yellow):** The TST (test) key is a locking pushbutton switch which opens the test line so that the system does not detect the off-hook condition. If the alarm circuit is functioning properly, the alarm sounds when origination and time-out functions occur after this key is operated.

(b) **RST:** The RST (reset) key is a pushbutton switch used to recycle the test sequence. The RST key is normally used to silence the alarm after the TST key has been operated.

(c) **PWR OFF (Red):** The PWR (power) OFF key is a locking pushbutton switch used to remove power from the DTDA unit. The power should be removed before working on circuits or before replacing circuit packs.

### 3. TTY CONTROL OF THE DTDA

**3.01** When the DTDA must be retired, enabled, or disabled by means other than the DTDA controls discussed in Part 2, a special TTY message can be used to accomplish this. An example of this is switching control center (SCC) access to remotely control the audible alarms at the central office (CO) from the SCC TTY.

**3.02** The following TTY messages provide the ability to reset the DTDA. These messages are available with 2BE3 and later generic programs.

INH:DTDA!

RESET:DTDA!

where:

INH—Disables the DTDA circuit and does not allow any alarms.

RESET—Retires the alarm and resets the DTDA circuit. When the RESET message is entered, a system response of OK is given followed by a REPT DTDA message indicating the DTDA inhibit is off (NORM).

**3.03** For all generics prior to 2BE3, the PD order utility message (Ma DC:ORD) must be used. Send one message to perform the inhibit function by operating relay A (Fig. 2) and two order messages to perform the reset function by first operating relays A and B, then releasing relays A and B.

### 4. DTDA INTERFACE WITH OFFICE ALARM SYSTEM

**4.01** The DTDA circuit (Fig. 2) has connections for two master scanner applique (scan) points (SD-1A133) and one PD applique (SD-2H117) which are fixed assigned (per SD-2H167) for generics EF-2, 2B-EF-2, and 2BE3. For LO-1, EF-1, and 2B-EF-1, **only** the alarm scan point is used. This is assigned to the miscellaneous field of trunk scanner 0 and will generate a miscellaneous alarm when saturated.

**4.02** Table A gives the eight possible states of the DTDA circuit. The first scan point is used to detect an alarm condition. The second scan point is used to detect a POWER-OFF condition. The third scan point is used to detect an INHIBIT condition. If an alarm is sounded by the DTDA circuit, an audible major alarm is sounded and the maintenance TTY prints out the following message.

- For No. 2B ESS this message is printed:

REPT DTDA 47 8 001000 OFN

- For No. 2 ESS this message is printed:

MA SY DTD 00 47 001000

**4.03** The DTDA alarm is retired by pushing the RST key on the DTDA. For 2BE3, the DTDA may also be retired with the input message RESET:DTDA!. Refer to paragraph 3.02 for an explanation of this message. For earlier generics, refer to the procedure described in paragraph 3.03.

**4.04** Retirement of the alarm at the DTDA unit, either remotely or locally, results in the following TTY output message.

- For No. 2B ESS this message is printed:

REPT DTDA 47 8 001400 NORM

- For No. 2 ESS this message is printed:

MI SY DTD 00 47 001400

**4.05** For unattended offices, these alarm messages appear on the remote maintenance TTY and the remote audible alarm sounds. The remote audible alarm can be retired at the remote TTY. For 2BE3, the RESET:DTDA! message (paragraph 3.02) may be used at the remote maintenance TTY to retire the

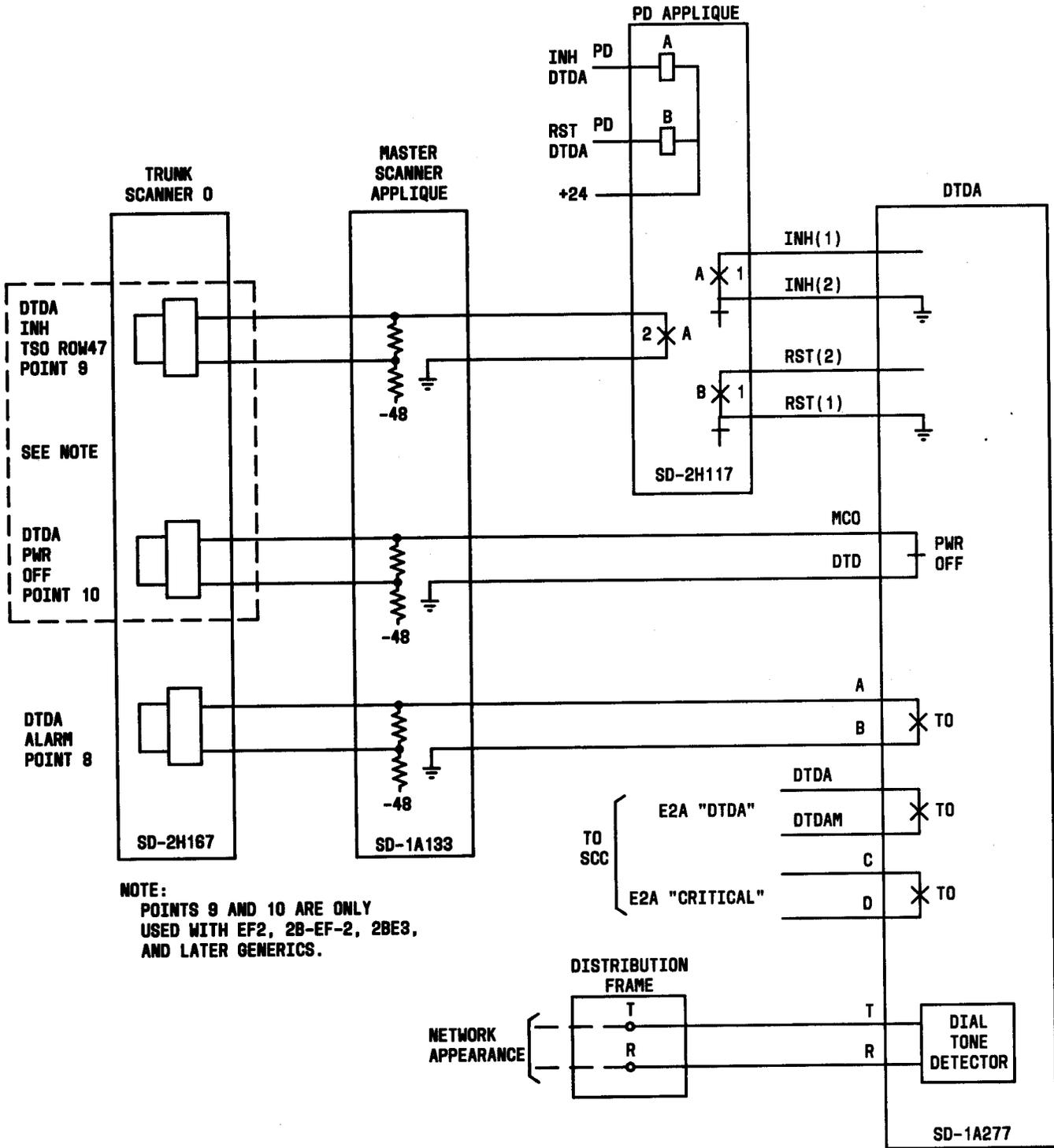


Fig. 2—No. 2/2B Interface With DTDA

TABLE A

DIAL TONE DELAY ALARM LOGIC STATES

PWR DTD	INH DTD1	ALM DTD0	CONDITIONS
1	1	1	DTDA circuit PWR is OFF
1	1	0	DTDA circuit PWR is OFF + ALM
1	0	1	DTDA circuit PWR is OFF + INH
1	0	0	DTDA circuit PWR is OFF + ALM + INH
0	1	1	DTDA circuit NORMAL
0	1	0	DTDA circuit ALARM (MAJOR)
0	0	1	DTDA circuit INH
0	0	0	DTDA circuit INH + ALM

DTDA alarm. For earlier generics, use the procedure described in paragraph 3.03.

**4.06** Table B gives translation information associated with the three DTDA alarm scan points. Refer to PA-2H2XX for additional translation information.

#### 5. CHANGING ASSIGNMENT OF THE TEST LINE

**5.01** Use the following procedure to change assignment of a test line.

(a) Remove power from the DTDA. The TTY prints out the following messages.

- For No. 2B ESS this message is printed:

REPT DTDA 47 10 003400 OFN

- For No. 2 ESS this message is printed:

MI SY DTD 00 47 003400

(b) Change the DTDA OE by typing in the following message:

A RC:L/  
TYP CHG/  
ORD 0000/  
TN NXX XXXX/  
OE nn gcs/ \*  
IOE nn gcs/ †  
END!

\*Current OE assignment.

† New OE assignment. OE must be an essential OE, level 0 on even-numbered switches.

(c) Change the OE by changing the appropriate jumpers.

(d) To verify if system accepts new OE translation, type in the following message:

A VY:OE/

TABLE B

DTDA SCAN POINTS

DESTINATION	TS	SCAN POINTS		RTN	CG
		ROW	POINT		
Dial Tone Delay Alarm	0	47	8	6	1
Dial Tone Delay Alarm Inhibit	0	47	9	6	1
Dial Tone Delay Alarm Power	0	47	10	6	1

**SECTION 232-317-301**

OE nn gcsl/  
END!

System response should be the AR VY OE message.

(e) Restore power to DTDA by releasing PWR OFF key. Key lamp is extinguished and system prints out the following message.

- For No. 2B ESS the following message is printed:

REPT DTDA 47 10 001400 NORM

- For No. 2 ESS the following message is printed:

MI SY DTD 00 47 001400

(f) Initialize circuit test by depressing reset (RST) key. Dial tone should be heard at the next test origination.

(g) Check timing to see if time interval between test originations is correct.

**6. ASSIGNING A TEST LINE (NEW OFFICE)**

**6.01** Use the following procedure to assign a new test line.

(a) Define the DTDA OE by typing in the following message:

A RC:L/  
TYP NEW/  
ORD 0000/  
TN NXX XXXX/  
OE nn gcsl/ \*  
LCC ccc/ †  
RTI rrr/ ‡  
END!

\*OE must be an essential OE, level 0 on even-numbered switches.

†LCC in office which has denied termination class of service and allowed originating class.

‡RTI required for originating only line.

(b) Run jumper from DTDA appearance to the selected test line OE.

(c) Verify test line OE translation by typing in the following message:

A VY:OE/  
OE nn gcsl/  
END!

System response should be the AR VY OE message.

(d) Power up DTDA by releasing PWR OFF key. Key lamp is extinguished and system prints out the following message:

- For No. 2B ESS the following message is printed:

REPT DTDA 47 10 001400 NORM

- For No. 2 ESS the following message is printed:

MI SY DTD 00 47 001400

Initialize circuit test by depressing reset (RST) key. Dial tone should be heard at the next test origination.

(e) Check timing to see if time interval between test originations is correct.¶

**7. REFERENCE DOCUMENTS**

**7.01** The following documents are required in addition to those already listed for installation of the DTDA.

- DTDA Circuit—J1A024BP-1
- Maintenance Frame—J1C060A
- Trunk Test Frame—J2H024A