82B1 TELETYPEWRITER SWITCHING SYSTEM

SINGLE-STATION-LINE STATION

PERFORMANCE TESTS

1. GENERAL

1.01 *CAUTION: If the room temperature at the station exceeds 105°F, occasional erratic operation may result and test results will be unreliable. If the temperature exceeds 120°F, permanent damage may be done to the equipment components.*

1.02 This section provides a procedure for testing single-station-line stations. Option H applies to stations without customer equipment and option G to stations with customer equipment. In such stations a station control circuit per SD-70747-01 controls only the sending functions of the 28 automatic send-receive set (28ASR). The receiving equipment, which may be a page printer (RO) or a typing reperforator (ROTR), or both, is connected under option H, directly to the switching center via the receiving loop. When option G applies, the RO, ROTR or both is connected to the receiving line via the receiving customer equipment. No transmitter start control over the receiving loop is involved.

1.03 This section is reissued to include a test procedure for stations equipped with customer equipment.

1.04 This section covers two test procedures arranged in a step-by-step sequence covering the complete test of a station for routine maintenance tests or reported trouble tests. The first test procedure covers both option H and option G stations. The second test procedure is a back-to-back test via the customer equipment and cannot be performed unless the customer equipment or temporary networks are connected to the station. It is helpful to review each paragraph first before attempting to perform the tests. If care is exercised, selected parts of the procedure may be followed in making specific partial tests. However, it will be necessary to establish the proper key and switch positions to obtain the test results specified since the section arrangement assumes a continuing sequence.

1.05 The copy to be checked on the typing unit should be as indicated in the examples shown and should appear in about the same relative position as indicated in the sample copy.

1.06 The sending line need not be connected if the tests are performed at the time of installation. However, if the line is already connected, no copy will be transmitted to the line because a short is placed across the line by the control equipment.

1.07 The following items of material are required in performing these tests:

(a) A blown fuse (70 type).

(b) A partially depleted roll of perforator tape approximately 2-1/2 inches in diameter.

(c) Test tapes locally perforated as follows:

Tape ONE:

ⲁⲁⲁⲁⲁⲁⲁⲁⲁⲁCZZCⲁⲁⲁⱴ≡>Vⲁⲁⲁⱴ
YYZⲁⲁⲁⲁⲁⲁⲁⲁⲁⲁAUXRYRY . . .
<≡NNNNAUXRYRY . . .
<≡NNNNⱴⱴⱴⱴⱴⱴⱴⱴⱴⱴⱴⱴⱴⱴ ⱴⱴⱴ ⱴⱴ

Tape TWO:

ⲁⲁⲁⲁⲁⲁⲁⲁⲁⲁⲁEEⱴEEⲁⲁⲁKTNTKⲁⲁⲁCZZC
ⲁⲁⲁⲁⲁⲁⲁⲁⲁⲁⲁAUX>PILOT>TAPEⱴⱴⱴⱴⱴⱴⱴⱴ

Legend

ⲁ Blank	< Carriage Return
Ʌ Figures	≡ Line Feed
V Letters	> Space (see Note)

Note: A 28ROTR will print ■ instead of > as the functional symbol for a space.

The character combination (ꞟꞟCZZCꞟꞟꞟꞟⱴ≡>Ɐꞟ ꞟꞟⱴYYZ) when perforated in tape identifies the tape as ONE.

The character combination (ꞟꞟEEⱴEEꞟꞟꞟꞟKTNTK ꞟꞟꞟCZZC) when perforated in tape identifies the tape as TWO.

2. PREPARATION OF STATION APPARATUS

2.01 Check that all the connectors are connected.

2.02 Check that the power cords are connected to the proper power receptacles.

2.03 Set the keys and switches as follows:
  (a) On Control Panel of Cabinet:

Switch Designation	Position
POWER	OFF
NUMBER CHANGE	NORM
SOM-NBR	MAN
LOCAL TEST	LOCAL TEST
REG XMTR HOLD	NORM
AUX XMTR HOLD	NORM
BUZZER	NORM

  (b) On 28 ASR:

POWER	OFF
K-KT-T	T

2.04 Remove tape (if any) from the auxiliary transmitter (AUX XMTR), move the pivoted transmitter (REG XMTR) against the punch block and insert the perforator tape into the transmitter (REG XMTR).

Option G

2.05 Block relay SF operated.

3. LOCAL TESTS

3.01 Perform the following tests in the order specified.

3.02 Turn on the power switch on the control cabinet and on the 28ASR. The typing unit should run closed. The DC PWR lamp should light and the buzzer should sound. Operate the BUZZER key to OFF and restore it to NORM. This should silence the buzzer.

3.03 Operate the NUMBER CHANGE switch to HNDS. Depress the SET button several times. The HNDS digit appearing in one of the windows marked MESSAGE NUMBER should increase by one for each time the button is pressed. Set the number to indicate 2.

3.04 Operate the NUMBER CHANGE switch to TENS. Repeat as in 3.03 for the TENS digit.

3.05 Operate the NUMBER CHANGE switch to UNITS. Repeat as in 3.03 for the UNITS digit.

3.06 Operate the NUMBER CHANGE switch to RESET. Depress SET button. The indicated number should change to 001.

3.07 Type on the keyboard: REGRYRY≶≡NNN

Neither of the transmitters not the distributor should start transmitting.

3.08 Type the character N on the keyboard. Transmission of the tape in the REG XMTR should start. The material on the tape should be fully transmitted and the copy should appear on the typing unit of the 28ASR.

3.09 Operate the SOM-NBR switch to AUTO. Operate the REG XMTR HOLD key to HOLD. The REG XMTR HOLD lamp should light.

3.10 Type the following sequence on the keyboard. REGRYRY...≶≡NNNN
REGRYRY...≶≡NNNNⱴⱴⱴⱴⱴⱴⱴⱴⱴⱴⱴ

No transmission should take place.

3.11 Operate the AUX XMTR HOLD key to HOLD. The AUX XMTR HOLD lamp should light.

3.12 Insert test tape ONE in the AUX XMTR with the first character A over the pins. No transmission should take place.

3.13 Set the channel number to 999 as explained previously. Operate NUMBER CHANGE switch to NORM. Restore key REG XMTR HOLD to NORM and immediately reoperate it to HOLD. One message from the REG XMTR should be transmitted and the following copy should appear on the typing unit of the 28ASR.

Option H ZCZCABC999REGRYRY...
NNNN

Option G VZCZCABC999REGRYRY...
NNNN

Note: The three-letter station identification code for the station under test will appear in place of the characters ABC in this and all following examples.

3.14 Restore key AUX XMTR HOLD to NORM and immediately reoperate it to HOLD. One message from the AUX XMTR should be transmitted and the following copy should appear on the typing unit of the 28ASR.

Option H ZCZCABCØØØUXRYRY...
NNNN

Option G VZCZCABCØØØUXRYRY...
NNNN

Note that the character A of the word AUX should be missing and observe the proper change of channel number.

3.15 Restore both REG and AUX XMTR HOLD keys simultaneously to NORM. The REG and AUX XMTR HOLD lamps should go out. Transmission should take place first from the AUX, then from the REG XMTR. The following copy should appear on the typing unit of the 28ASR.

Option H ZCZCABCØØ1AUXRYRY...
NNNNZCZCABCØØ2REGRYRY...
NNNN

Option G NNNNVZCZCABCØØ1AUXRYRY...
NNNNVZCZCABCØØ2REGRYRY...
NNNN

Note that the words AUX and REG are complete in the copy. The sequence of the letter characters at the end of the message in the AUX XMTR should step through the transmitter (at reduced speed) without causing any operation of the typing unit. A similar effect should occur at the end of the message in the REG XMTR.

3.16 Operate the K-KT-T switch on the 28ASR to KT. Type:
RYRYRY...
on the keyboard. Local copy should be obtained on the typing unit of the 28ASR while typing.

3.17 Open the lid of the regular transmitter so that no tape can be transmitted, then type:
<=NNNN

The start-of-message code and channel number should be sent automatically but without local copy. As soon as the indicated number changes to 004, the audible alarm should sound and the REG XMTR TAPE TBL lamp should light. Operate the BUZZER key momentarily to OFF to silence the alarm. Depress the ALM RLS button. The lamp should remain lit. Operate key REG XMTR HOLD to HOLD, then depress the ALM RLS button. The lamp should go out. Close the lid with the line feed perforations over the pins of the transmitter and restore key REG XMTR HOLD to NORM. A new start-of-message and number should be transmitted, followed by the remaining perforated tape, without local copy.

3.18 Insert test tape TWO into the AUX XMTR with one of the first blanks over the pins. As the tape starts moving, quickly raise the tight tape arm. The transmitter should stop. Release the tight tape arm. The transmitter should resume. As the sixth pin comes up at the end of the tape, the audible alarm should sound and the AUX XMTR TAPE TBL lamp should light. Operate the BUZZER key momentarily to OFF to silence the alarm. Depress the ALM RLS button. The lamp should remain lit. Open the lid of the AUX XMTR, then depress the ALM RLS button. The lamp should go out.

3.19 Operate K-KT-T switch to T. Insert a tape into the AUX XMTR and open the lid of the transmitter the moment typing commences on the typing unit of the 28ASR (that is, during the start-of-message). The copy should read:

Option H ZCZCABCØØ6

Option G VZCZCABCØØ6

An additional character may be printed after the message number. The audible alarm should sound and the AUX XMTR TAPE TBL lamp should light. Operate the BUZZER key momentarily to OFF to silence the alarm, then depress the ALM RLS button. The lamp should go out.

3.20 Operate SOM-NBR switch to MAN and the REG XMTR HOLD key to HOLD. Type the following sequence on the keyboard.
REG<=NNNN>PILOT>ʌ123Ɐʌ

Depress the PILOT TAPE button momentarily. The REG XMTR PILOT TAPE lamp should light. Depress the ALM RLS button momentarily. The REG XMTR PILOT TAPE lamp should go out. Depress the PILOT TAPE button momentarily. Insert test tape ONE into the AUX XMTR with the character A of the last message over the pins. Restore the REG XMTR HOLD key to NORM and quickly reoperate it to HOLD. The REG XMTR PILOT TAPE lamp should remain lit. One message should be transmitted from the REG XMTR and the following copy should be printed on the typing unit of the 28ASR.

```
        REG
     NNNN
```

The REG XMTR PILOT TAPE lamp should remain lit.

3.21 Restore the REG XMTR HOLD key to NORM. The remaining tape should be transmitted from the REG XMTR and should be followed by the message from the AUX XMTR. The REG XMTR PILOT TAPE lamp should go out as the AUX XMTR starts transmitting. The following copy should be printed on the typing unit of the 28ASR.

```
     PILOT 123UXRYRY...
     NNNN
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Note: The character A of the word AUX should be missing. It is important that the last characters typed on the keyboard be as specified in 3.20.

3.22 Operate the AUX XMTR HOLD key to HOLD. Depress the PILOT TAPE button. The AUX XMTR PILOT TAPE lamp should not light. Insert test tape ONE into the AUX XMTR, then momentarily depress the PILOT TAPE button. The AUX XMTR PILOT TAPE lamp should light. Depress momentarily the ALM RLS button. The AUX XMTR PILOT TAPE lamp should go out. Operate the REG XMTR HOLD key to HOLD. Depress any character and the repeat key on the keyboard for 15 to 20 seconds followed by ◁≡NNNN. Depress again momentarily the PILOT TAPE button. The AUX XMTR PILOT TAPE lamp should light. Restore the REG XMTR HOLD key to NORM and while the REG XMTR is transmitting, restore the AUX XMTR HOLD key to NORM. The AUX XMTR PILOT TAPE lamp should remain lit. Quickly remove the tape from the AUX XMTR while the

REG XMTR is still sending. The AUX XMTR PILOT TAPE lamp should go out.

Note: If the AUX XMTR PILOT TAPE lamp remains lit, the changes first shown on SD-70747-01, sheet B3, issue 8AR, may not have been incorporated in the unit. Check if contact (12M) on relay (STA) has wires connected to it. If not, connect this contact as shown on the corresponding wiring drawing.

3.23 Operate the AUX XMTR HOLD key to HOLD. Insert tape ONE into the AUX XMTR with the second message over the pins, then depress momentarily the PILOT TAPE button. THE AUX XMTR PILOT TAPE lamp should light. Restore the AUX XMTR HOLD key to NORM. As the typing stops and as letter discard begins, the AUX XMTR PILOT TAPE lamp should go out.

3.24 Operate the AUX XMTR HOLD key to HOLD. Remove test tape ONE from the AUX XMTR and insert test tape TWO with the character A over the pins. Depress momentarily the PILOT TAPE button. The AUX XMTR PILOT TAPE lamp should light. Restore the AUX XMTR HOLD key. The tape should be transmitted from the AUX XMTR. When the transmitter stops at the end of the tape, remove the tape. No alarm indication should be given.

3.25 Operate REG XMTR HOLD key to HOLD. Depress momentarily the PILOT TAPE button. The REG XMTR PILOT TAPE lamp should not light.

Note: If the REG XMTR PILOT TAPE lamp lights, the changes first shown on SD-70747-01, sheet B3, issue 8AR, may not have been incorporated in the unit. Check if contact (5B) of relay (ASP) has wires connected to it. If not, connect this contact as shown on the corresponding wiring drawing.

3.26 Insert test tape ONE into the AUX XMTR with the character A of the last message over the pins. As the AUX XMTR starts transmitting again, the AUX XMTR PILOT TAPE lamp should go out. The copy on the typing unit of the 28ASR should read:

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     UX PILOT TAPEUXRYRY...
     NNNN
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Remove test tape from AUX XMTR.

4. LOW TAPE ALARM

4.01 Remove the roll of tape from the 28ASR. The audible alarm should sound and the LOW TAPE lamp should light. Insert a roll of tape 2-1/2 inches in diameter. The alarm should continue to sound. Momentarily operate the BUZZER key to OFF. The audible alarm should be silenced. Replace the original roll of tape. The lamp should go out.

5. FUSE ALARM

5.01 Operate the K-KT-T switch to KT. Operate LOCAL TEST switch to NORM. The DC PWR lamp should go out. Replace F2 fuse with a blown 70-type fuse. The DC PWR lamp should light and the audible alarm should sound. Operate BUZZER key to OFF and restore to NORM. The audible alarm should be silenced. Replace F2 fuse. The DC PWR lamp should go out.

5.02 Restore all keys to normal operating position and release SF relay.

6. LOCAL BACK-TO-BACK TEST

6.01 Set keys and switches as follows:

(a) On Control Panel of Station Control Unit:

Switch Designation	Position
POWER	ON
NUMBER CHANGE	AUTO
SOM-NBR	NORM
LOCAL TEST	NORM
REG XMTR HOLD	NORM
AUX XMTR HOLD	NORM
BUZZER	NORM

(b) On 28ASR:

POWER	OFF
K-KT-T	KT

(c) On 28RO, ROTR, or both:

POWER	ON

(d) On LCEC

POWER	ON
TEST	TEST 1

6.02 Remove tape (if any) from the auxiliary transmitter (AUX XMTR), move the pivoted transmitter (REG XMTR) against the punch block and insert the perforator tape into the transmitter (REG XMTR).

6.03 Turn on the power switch of the 28ASR.

6.04 Type on the keyboard:

REGRYRY...<=NNN

6.05 The following copy should appear on the typing unit of the 28ASR:

VZCZCABC123REGRYRYRY...
NNNN

6.06 The following should appear on the typing unit of the 28RO, ROTR, or both.

(*)VZCZCABC123REGRYRY...
NNNN

Note: The symbol (*) indicates several random characters.

6.07 Repeat 6.04 within 2 minutes.

6.08 Same as 6.05.

6.09 The following should appear on the typing unit of the 28RO, ROTR, or both.

VZCZCABC123REGRYRY...
NNNN

Note: The random characters do not appear as in 6.06.

6.10 Repeat 6.04 after 2 minutes.

6.11 Same as 6.05.

6.12 Same as 6.06.

7. CIRCUIT LINE-UP TESTS

7.01 Connect the send and receive lines. Restore all keys to normal operating position.

7.02 Check that the wave shaper is connected as required.

7.03 Contact the test room for line-up tests.