# 86A1 DATA SELECTIVE CALLING SERVICE
# HALF-DUPLEX—100-WORD PER MINUTE DATA STATION
# TEST PROCEDURE

CONTENTS PAGE



## 1. GENERAL

**1.01** This section describes the installation and maintenance test procedures for a half-duplex (HDX), 100-word per minute (wpm) data station which incorporates Model 33- or 35-type teletypewriters and is used in the 86A1 Data Selective Calling Service.

**1.02** This section is reissued to include reference material for data sets 108E and 109E, add trouble locating chart and revise Fig. 1 and 2.

**1.03** The tests covered are:

*A. Local Test:* This test verifies that the data station TTY is operative and functioning properly.

*B. Remote Test of Data Set 108A, ▶108E, or 109E◀ :* This test requires gaining access to the controller and is made by the STC.

*C. ▶Attended Station Testing With STC:* This is a concurrent test between an attended station and an STC in which voice communication must be established and maintained throughout the test. When a step cannot be verified, refer to the same step number in Table A for a listing of components or items that may be the cause of the trouble condition or malfunction. Several steps in Table A refer to Action A and Action B which are defined as follows:

*Action A:* Initialize station by having the STC send DLE-DLE-EOT-DLE-+-EOT which returns the controller logic to the idle condition, and then repeat the step.

*Action B:* Operate the NORM/MTCE switch to MTCE and have the STC perform a check of the line facilities and data set. After the check, operate the NORM/MTCE switch to NORM.

*Note:* Before starting this test, make sure the station leg is connected to a test hub and establish voice communication with the STC to aid in coordinating the test.◀

*D. Continuity Test of DAS 804N2 or 804R3 (TERM ONLY Station Attendant Set):* This test checks the continuity of the keys, lamps, and cabling associated with the receive attendant set.

*E. Continuity Test of DAS 804N4 (ORIG/TERM Station Attendant Set):* This test checks

the continuity of the keys, lamps, and cabling of the transmit attendant set.

**1.04** The testing of the data staton depends on a specific format. Any deviation from this format may condition the data station for false indications or operations. If such a condition occurs, return the station to the idle condition.


***Test procedures of the data station are controlled by the serving test center (STC).***

**1.05** Both installation and maintenance test procedures are given. Since some of the tests are identical for installation and maintenance, each test is presented only once. For best results, final range finder adjustments should be made with the STC. The setting should be the midpoint of the overall range for the terminal unit taken with signals received over the line. The controller regenerates the line signals. Sending from the keyboard or tape in the OFF-LINE mode bypasses the regenerative capability of the controller.


***Transmission from the data station to the STC will require preparation of special test tapes. The same tapes are used for both installation and maintenance testing.***

**Installation Testing**

**1.06** The installation tests are designed to verify that the data station has been properly assembled and is operative. The test procedure should be performed in the following sequence:

(1) Test A—Local Test

(2) Test C—Attended Station Testing With STC.

**Maintenance Testing**

**1.07** The maintenance test procedure should be in accordance with the maintenance philosophy given in the section entitled 86A1 Data Selective Calling Service—Half-Duplex—100-Word Per Minute Data Station—Maintenance (581-136-300).

**1.08** The maintenance test sequence will be determined by the nature of the trouble being investigated. In general, the station will have been remotely tested by the STC to determine the nature of the trouble. Any or all of the tests in this section may be used in investigating trouble reports. For information on the test required for troubleshooting and trouble clearing procedures, refer to the section referenced in 1.07.

**TTY Maintenance**

**1.09** Maintenance procedures for the TTYs should be in accordance with the following practices, whichever is applicable:

(a) ▸574-1 Bell System Practices (BSPs) for 33 TTY and 574-2 BSPs for 35 TTY.

***Note:*** Maintenance procedures for the 33 TTY and 35 TTY are not covered adequately in these BSPs but may be used in part.◂

(b) Model 33 Teletypewriters—Field Maintenance Practice (FMP)—(579-200-350)

(c) Model 35 Teletypewriters—Field Maintenance Practice (FMP)—(579-210-350).

**1.10** No attempts should be made to test the data station with the STC until it is verified that the TTY(s) and associated components which are part of the station are operative.


***Take proper steps to ensure that the customer is not billed for telephone calls made to the STC. See the section entitled Crediting Charges On Test Calls (010-250-001).***

**1.11** ***Lettered Steps:*** A letter a, b, c, etc, added to a step number in Part 4 of this section indicates an action which may or may not be required depending on local conditions. The condition under which a lettered step or series of lettered steps should be made is given in the ACTION column, and all steps governed by the same condition are designated by the same letter within a test. Where a condition does not apply, all steps designated by that letter should be omitted.

## 2. APPARATUS

**TEST A, B, C, D, AND E**

**2.01** STC.

**2.02** KS-14510-L1 volt-ohm-milliammeter.

**2.03** KS-16786-L3 connector.

## 3. PREPARATION OF TEST TAPES

| STEP | ACTION | VERIFICATION |
|---|---|---|
| | **ORIGINATE-TYPE STATIONS ONLY** | |
| 1 | At ASR TTY—<br>Operate MODE switch to OFF LINE. | OUT OF SVC lamp lighted. |
| 2 | At ASR TTY keyboard—<br>Momentarily operate DEL key several times until approximately three inches of DEL characters are punched on tape. | |
| 3 | ◗Prepare test tape: DEL-DEL-SOH-A-B-C-STX-TEXT-EXT-DEL-DEL-S0H-A-B-C-CR-LF-STX-TEXT 2-FF-DEL-ETX-EOT-DEL-DEL-DEL. Insert this tape into gate at initial DELs, operate the bat handle to run (if M33 or 35 ASR). Momentarily operate BID key in attendant set. Initialize: DLE-DLE-EOT-DLE-+-EOT. | Tape runs to SOH and then stops. BID lamp lights (motors start if 33.) OUT OF SVC lamp flashes once.◖ |
| 4 | Tear off tape and designate it as ***tape 2.*** | |

## 4. ◗TEST PROCEDURE◖

| STEP | ACTION | VERIFICATION |
|---|---|---|
| | **A. Local Test** | |
| 1 | Using nearby telephone—<br>Call STC and request the data station leg be connected to a test hub. | |
| 2 | Momentarily disconnect the data station power cord. | Controller circuits will initialize (assume idle). |
| 3a | If AUD OFF lamp is lighted at either ASR or RO TTY—<br>Momentarily operate AUD OFF key. | AUD OFF lamp extinguished. |
| | **ASR TTY** | |
| 4 | Operate mode switch to LINE. | |

| STEP | ACTION | VERIFICATION |
|---|---|---|
| 5 | Momentarily operate OUT OF SVC key. | OUT OF SVC lamp lighted.<br>If TTY is a 35 ASR—<br>TTY motor will stop. |
| 6 | Momentarily operate OUT OF SVC key. | OUT OF SVC lamp extinguished.<br>If TTY is a 35 ASR—<br>TTY motor will start. |
| 7 | Operate MODE switch to OFF LINE. | |
| 8 | Check the general operation of the TTY (typing, end-of-line counter and lamp, tabulation, form-feed contacts, etc). | |
| **Primary RO TTY** | | |
| 9 | Remove paper supply. | PAPER LOW lamp lighted.<br>Audible alarm sounded. |
| 10 | Depress AUD OFF key. | AUD OFF lamp lighted.<br>Audible alarm silenced. |
| 11 | Replace paper supply. | PAPER LOW lamp remains lighted. |
| 12 | Depress PAPER LOW and AUD OFF keys. | PAPER LOW and AUD OFF lamps extinguished. |
| 13 | Repeat Steps 5 and 6 for RO TTY. | |
| **Primary 35 ROTR** | | |
| 14 | Remove tape supply. | TAPE LOW lamp lighted and audible alarm sounded. |
| 15 | Repeat Steps 10 through 12 substituting the TAPE LOW lamp and key for the PAPER LOW lamp and key. | |
| 16 | Repeat Steps 5 and 6. | |
| 17b | If no further tests are to be performed—<br>Perform the customer verification procedure described in Part 6. | |

**B. Remote Test of Data Set 108A, ▶108E, or 109E◀**

| | | |
|---|---|---|
| 1 | Gain access to the controller as described in the section referenced in 1.07. | |
| 2 | Call STC and request a remote test of data set ▶108-type or 109E.◀ | |

| STEP | ACTION | VERIFICATION |
|---|---|---|
| 3 | When instructed to do so—<br>Operate R switch on the controller to the MTCE position.<br><br>***Note:*** The test of the data set is now under control of the STC. | At attendant set—<br>OUT OF SVC lamp lighted. |
| 4 | When informed of the test results by the STC—<br>Operate the R switch to the NORM position. | At attendant set—<br>OUT OF SVC lamp extinguished. |
| 5a | If no further tests are to be made—<br>Perform the customer verification described in Part 6. | |

**C. ▶Attended Station Testing With STC◀**

***Note:*** Section 666-702-501 is used for testing at the STC.

| | | |
|---|---|---|
| 1 | Check paper form or tape supply in TTYs, clear all alarms that may be on, check that OUT OF SVC, HOLD, and AUD OFF keys in attendant sets are released. Check for no tape in tape reader. | In attendant sets:<br>all lamps extinguished and alarm silent; all keys released. |
| 2 | Check for ASR to be in LINE mode. | Motors running if 35 ASR, copy light on, motor not running if 33 ASR. |
| 3 | Operate T (carrier squelch) switch on controller to OFF. | None |

***Note:*** When a data set 109-type is provided, the loop current must be checked to determine if the data set is operative. Refer to the applicable section covering the data set used in the controller for information on the loop current requirements.

| | | |
|---|---|---|
| 4 | Operate R switch on controller to MTCE. | OUT OF SVC lamp lights. (Test with 911 TSG.) |
| 5 | Return R switch on controller to NORM. Return T (carrier squelch) switch to original position. | OUT OF SVC lamp extinguished. |
| 6 | None | OUT OF SVC lamp flashes. 33 and 35 ASR motors stop. |
| 7 | Operate OUT OF SVC key in attendant set. | OUT OF SVC lamp lights. 33 ASR motor not running; 35 ASR motors stop. |

| STEP | ACTION | VERIFICATION |
|---|---|---|
| 8 | None | CALL lamp lights. |
| 9 | Release OUT OF SVC key. | CALL and OUT OF SVC lamps in attendant set extinguished. |
| 10 | Create paper alarm by real or simulated removal of paper form or tape from TTY machine. | PAPER LOW lamp lights, audible alarm in attendant set sounds. |
| 11 | None | CALL lamp lights. |
| 12 | Replace paper form or tape in machine. Momentarily operate PAPER LOW key. | PAPER LOW lamp off, audible alarm in attendant set off. CALL lamp off. |
| 13 | None | CALL lamp flashes once.<br>TRANS/REC lamp on.<br>Motor starts if 33 ASR. |
| 14 | None | TTY prints (or punches) heading.<br><br>***Note:*** 1-character delay—A will not print. |
| 15 | None | TTY prints A. |
| 16 | None | Primary TTY prints TDM-TEXT 1 (TEXT 2 if no print suppression is on primary).<br>Form feeds (if sprocket-feed RO).<br>Aux machine types or punches TEXT 2. |
| 17 | None | If primary receiver is ROTR, tape feeds out. |
| 18 | None | TRANS/REC lamp extinguishes. |
| 19 | None | CALL lamp flashes once.<br>TRANS/REC lamp lights.<br>TEXT 1 received on TTY. |
| 20 | None | ERROR lamp lights and audible alarm sounds. TEXT 2 received, then underline characters replace parity error character. If punched tape, the underline character will be ODD parity. |
| 21 | None | None |
| 22 | Release all alarms. | MSG REC lamp lights.<br>(Audible alarm sounds).<br>Lamps extinguished and audible alarm silent. |
| 23 | None | TRANS/REC and MSG REC lamps light and alarm sounds. TEXT received. |

| STEP | ACTION | VERIFICATION |
|---|---|---|
| 24 | Release the alarm. | TRANS/REC lamp extinguishes. If 33, TTY motor stops. Alarms canceled. |
| 25 | None | CALL lamp flashes once.<br>TRANS/REC lamp on.<br>If 33, motor starts. |
| 26 | None | MSG REC lamp lights and audible alarm sounds.<br>ERROR lamp ***may*** light.<br>TRANS/REC lamp off.<br>If 33, motor stops. |
| 27 | Cancel the alarms. | All lamps extinguished and audible alarm silent. |
| 28 | Check that the ASR is in LINE mode with no tape in gate of tape reader. Operate OUT OF SVC key in attendant set. | OUT OF SVC lamp in attendant set lights. |
| 29 | None | None |
| 30 | None | None |
| 31 | None | CALL lamp lights. |
| 32 | None | None |
| 33 | Release OUT OF SVC key. | CALL lamp extinguished.<br>OUT OF SVC lamp extinguished. |
| 34 | None | None |
| 35 | Prepare test tape: DEL-DEL-SOH-A-B-C-STX-TEXT-ETX-DEL-DEL-SOH-A-B-C-CR-LF-STX-TEXT 2-FF-DEL-ETX-EOT-DEL-DEL-DEL. Insert this tape into gate at initial DELs. Operate the bat handle to run (if M33 or 35 ASR). Momentarily operate BID key in attendant set. Initialize: DLE-DLE-EOT-DLE-+-EOT. | Tape runs to SOH and then stops. BID lamp lights (motor starts if 33). OUT OF SVC lamp flashes once. |
| 36 | None | None |
| 37 | None | TRANS/REC lamp in attendant set lights. |
| 38 | None | Heading 1 received on ASR typing unit. |
| 39 | None | A-B-C LOCAL COPY tape runs and stops at STX. |
| 40 | None | TEXT—local copy.<br>Tape runs and stops at ETX. |

| STEP | ACTION | VERIFICATION |
|---|---|---|
| 41 | None | Tape runs and stops at second SOH if ETX STOP option is provided; otherwise runs to SOH. |
| 42 | None | A-B-C local copy tape runs and stops at STX. |
| 43 | None | TEXT 2 local copy:<br>tape runs and stops for form feeding (if ASR is sprocket feed) and then restarts and stops at ETX. |

***Note:*** TEXT 1 and TEXT 2 represent any group of test characters that are sent to check the transmission. It is suggested that at least two lines of "Fox..." be used as the TEXT 1 and TEXT 2 checks.

| | | |
|---|---|---|
| 44 | None | Station unselects as transmitter when EOT is detected. TRANS/REC lamp extinguished. Tape continues to run until out. BID lamp extinguished. 33 ASR motor stops. |
| 45 | Insert tape as in Step 35. Initialize: DLE-DLE-EOT-DLE-+-EOT. | Tape runs and stops at SOH. OUT OF SVC lamp flashes once. |
| 46 | None | TRANS/REC lamp on tape runs and stops at STX.<br>A-B-C local copy. |
| 47 | Remove tape from tape reader gate. | TAPE lamp lights. Audible alarm sounds. BID lamp off. |
| 48 | Silence tape alarm. | EMG STOP lamp lights.<br>Audible alarm sounds. |
| 49 | Silence EMG STOP alarm. | EMG MSG received on ASR typing unit. |
| 50 | Operate TAPE and EMG STOP key to extinguish TAPE and EMG STOP alarms. | TRANS/REC lamp extinguished. |
| 51 | Check that:<br>(1) OUT OF SVC, HOLD, and AUD OFF keys in attendant set are released.<br>(2) Test tape is removed from reader.<br>(3) Form or tape supply in TTYs.<br>(4) All keys and switches are set as they were prior to these tests. | In attendant sets, all lamps extinguished and alarm silent. |

| STEP | ACTION | VERIFICATION |
|---|---|---|
| **D.** | **Continuity Test of DAS 804N2 or 804R3 (TERM ONLY Station Attendant Set)** | |
| | ***Caution: Remove power cord to the customer-provided ac receptacle before performing this test.*** | |
| 1 | Gain access to the controller as described in the section referenced in 1.07. | |
| 2 | Disconnect the N plug from the controller. | |
| 3 | Connect N plug to the KS-16786-L3 connector. | |
| 4 | Using a KS-14510-L1 volt-ohm-milliammeter— Perform the continuity tests shown in Table B by the pins of K-16786-3 connector to make connections. | See Table B. |
| 5 | Disconnect N plug from KS-16786-L3 connector and reconnect to the controller. | |
| 6a | If no further tests are to be made— Perform the customer verification described in Part 6. | |
| **E.** | **Continuity Test of DAS 804N4 (ORIG/TERM Station Attendant Set)** | |
| | ***Caution: Remove power cord to the customer provided ac receptacle before performing this test.*** | |
| 1 | Gain access to the controller as described in the section referenced in 1.07. | |
| 2 | Disconnect N plug from the controller. | |
| 3 | Connect N plug to KS-16786-L3 connector. | |
| 4 | Using KS-14510-L1 volt-ohm-milliammeter— Perform continuity test shown in Table C by using the pins of the KS-16786-L3 connector to make connections. | See Table C. |
| 5 | Disconnect N plug from KS-16786-L3 connector and reconnect to controller. | |
| 6a | If no further tests are to be made— Perform the customer verification described in Part 6. | |

## 5. ▶ADDITIONAL TROUBLESHOOTING TESTS AND ALTERNATE PROCEDURES FOR DAS 820B-TYPE (CONTROLLER)◀

**5.01** Maintenance of the controller can be accomplished by substitution of circuit packs (CP). Refer to Fig. 1 and 2 and Tables D, E, and F for information on CP substitution.

**5.02** Tables C and D outline the more likely trouble conditions and give the suggested CP substitutions to isolate the CP or CPs that are faulty.


***The following tests and substitutions should not be performed until the line facilities and associated data set have been checked and verified to be operative as indicated in the section entitled 86A1 Data Selective Calling Service—Half-Duplex—100-Word Per Minute Data Station—Maintenance (581-136-300). When the CPs of the controller are to be replaced or substitutions are to be made, refer to the previously mentioned section for information on the procedure to be followed.***

**5.03** The numbers in the Properly Performing Functions column correspond to the number of the feature in the Trouble column that must be operating correctly for the fault to be isolated to the CPs designated.


***Disconnect the power from the controller and visually inspect the pins of the 927B connectors for shorting before proceeding with the following circuit pack substitutions.***

**5.04** Tables D, E, and F show the relationship between groups of CPs and the controller functions. They also list specific functional troubles and the CPs that may be suspected of causing this trouble. The columns are designated (from left to right) as follows:

(a) Trouble (probable troubles to be encountered)

(b) Properly Performing Feature (those features in the station that are all right by their number in the Trouble column)

(c) Probable Location of Fault (CPs to be replaced).

**5.05** Tables D, E, and F may be used, if desired, to narrow down the list of possible CPs in trouble. All previously substituted CPs should be left in place until further substitutions eliminate the trouble condition. In order to determine the CPs which caused the trouble, replace the new CPs with the old CPs in a reverse order until the trouble condition returns. Leave each old CP in place after determining that it is not in trouble. If the trouble condition persists after all of the suggested CPs have been replaced, then a replacement of the entire controller is recommended.

**5.06** The elimination of all trouble conditions by the substitution of CPs is not always possible since the source of trouble may be associated with nest wiring, connectors, power supply, etc. In such cases, replacement of the complete station controller DAS 820B-type will be required.

## 6. CUSTOMER VERIFICATION

**6.01** When a test is complete, all test requirements have been met, and no further tests are to be made, suggest that the customer verify that service is satisfactory by sending a message to itself. If the customer has messages to deliver, verify that the service is satisfactory in this manner. If the customer has no messages to deliver, consider the station satisfactory for service. When customer verification has been completed, return the station to normal service.

## ◗ TABLE A ◖

## TROUBLE LOCATING CHART

| STEP FAILURE | TYPE OF TROUBLE | | EQUIPMENT TO BE CHECKED | | | | |
|---|---|---|---|---|---|---|---|
| | STATION | TEST CENTER | TTY | 820B7 CONTROLLER | DAS 804 | LINE OR HUB FACILITY | OTHER |
| 1 | OUT OF SVC lamp lights | | ESU | | | | R switch operated to MAINT position; check that M, N connectors are secure |
| | PAPER OUT lamp lights | | Paper out switch | AR566 | | | |
| 2 | Motor not running (35 ASR) | | Motor, ESU | AR32 | Send, Receive | | Check TTY mode switch, out-of-service key contacts, M connectors, TTY motor fuse |
| | Motor running (33 ASR) | | Contact | AR32 | Send, Receive | | |
| 3 | | No tones | | D/S | | Loop | Check dc power, tip and ring short, carrier squelch switch |
| | | Low level | | D/S | | | |
| | | High level | | D/S | | | |
| | | Off frequency | | D/S | | | |
| | | Continuous space | | AR272, AR556, D/S | | | Check nest wiring; replace data set |
| 4 | Motor does not stop | | ESU | AR32, AR568 | | | TTY MAINT switch in MAINT position |
| | OUT OF SVC lamp does not light | | | | Send, Receive | | Check lamp |

ESU = Electrical Service Unit

D/S = Data Set

NST = Nest Wiring

TABLE A (Cont)

| STEP FAILURE | TYPE OF TROUBLE | | EQUIPMENT TO BE CHECKED | | | | |
|---|---|---|---|---|---|---|---|
| | STATION | TEST CENTER | TTY | 820B7 CONTROLLER | DAS 804 | LINE OR HUB FACILITY | OTHER |
| 4 Cont | | High distortion | | D/S | | Loop, D/S, 811C | |
| | | No response | | D/S | | Loop, D/S, 811C | |
| | | Garbled copy | | D/S | | Loop, D/S, 811C | Check outgoing copy |
| 5 | OUT OF SVC lamp not extinguished | | ESU | | | | Check M connector, TTY mode switch |
| | | Hits received | | D/S | | | Check R switch, nest wiring |
| 6 | OUT OF SVC lamp does not flash | | | AR32, AR566, AR568, AR567, AR35, AR272, AR271, AR39, AR64, AR66, D/S, NST | | Loop, D/S, | Check lamp |
| | | Hits received | | D/S | | Loop, D/S, 811C | Check distortion with 911 DTS. |
| 7 | OUT OF SVC lamp does not light | | | AR568, | Send, Receive | | Check lamp, N connector, nest wiring |
| 8 | CALL lamp does not light | | | AR32, AR272, AR556, AR39, AR66 | | | Check lamp |
| | TRANS/REC lamp lights | | | AR568 | | | Check out-of-service not ready to receive indication, selector or receiver |

TABLE A (Cont)

| STEP FAILURE | TYPE OF TROUBLE | | EQUIPMENT TO BE CHECKED | | | | |
|---|---|---|---|---|---|---|---|
| | STATION | TEST CENTER | TTY | 820B7 CONTROLLER | DAS 804 | LINE OR HUB FACILITY | OTHER |
| 8 Cont | | No response | | AR35, AR272, D/S, NST | | Loop, D/S, 811C | Actions A and B |
| | | Response other than SIC-NAK | | AR272 | | | |
| | | Single-character response | | AR272 | | 811C | Action A |
| | | Wrong SIC character | | AR272 | | | Check connections on SIC winding of shift register |
| 9 | CALL lamp lights | | | AR32, AR39, AR66 | Send, Receive | | |
| | OUT OF SVC lamp lights | | | | Send, Receive | | Initial controller may be in loop-back mode |
| | | Hit character | | D/S, NST | Send, Receive | Loop | M, N connectors; nest wiring |
| 10 | PAPER LOW lamp does not light | | Contact, ESU | AR566 | Send, Receive | | Check lamp, M connector, PAPER OUT switch, nest wiring, speaker |
| | Audible alarm does not sound | | | AR566 | Send, Receive | | Check M connector, PAPER OUT switch, nest wiring, speaker |
| 11 | CALL lamp does not light | | | AR32, AR568 | | | Check lamp |
| | TRANS/REC lamp lights | | | | | | Check not ready to receive condition |

TABLE A (Cont)

| STEP FAIL-URE | TYPE OF TROUBLE | | EQUIPMENT TO BE CHECKED | | | | |
|---|---|---|---|---|---|---|---|
| | STATION | TEST CENTER | TTY | 820B7 CONTROLLER | DAS 804 | LINE OR HUB FACILITY | OTHER |
| 11 Cont | | No response | | AR35, AR272, D/S, NST | | Loop, 811C | Actions A and B |
| | | Response other than SIC-NAK | | AR272 | Send, Receive | 811C | Action A |
| | | Single-character response | | AR272 | | | Action A |
| | | Hit character | | D/S | | Loop, 811C | |
| 12 | PAPER LOW lamp lights | | Contact, ESU | AR566, NST | | | Check M, N connectors; nest wiring |
| | CALL lamp lights | | | AR32, AR568, NST | | | |
| | Audible alarm sounds | | | AR547 | | | |
| | | Hits received | ESU | D/S | | D/S, other | Check nest wiring, grounding system |
| 13 | CALL lamp does not flash | | | AR32, AR35, AR66 | | | Check lamp |
| | CALL lamp lights | | | AR548, AR358 | | Other | Check that station is ready to receive |
| | TRANS/REC lamp does not light | | | AR32, AR568 | | | Check lamp |
| | Motor does not start | | Motor, ESU | AR32, AR568, AR567 | | Other | Check M connector and cable, nest wiring; motor fuse circuit breaker |
| | | No response | | AR35, AR272, D/S | | Loop, D/S, 811C | Actions A and B |

TABLE A (Cont)

| STEP FAILURE | TYPE OF TROUBLE | | EQUIPMENT TO BE CHECKED | | | | |
|---|---|---|---|---|---|---|---|
| | STATION | TEST CENTER | TTY | 820B7 CONTROLLER | DAS 804 | LINE OR HUB FACILITY | OTHER |
| 13 Cont | | Response other than SIC-ACK | Contact, ESU | AR32, AR566, AR568, AR272 | Send, Receive | Other | Check STC send parity (even); correct CEC character (upper or lower case) |
| | | Single-character response | | AR32, AR566, AR546, AR272 | | | Action A |
| | | Wrong SIC character | | AR272 | | | |
| | | Hit characters | Noise net, motor, contact, ESU | AR34, AR39, D/S | | Loop, D/S, 811C, other | Check grounding system |
| 14 | Heading does not print or punch on TTY | | Motor, ESU, typing unit | AR567, AR556, AR271 | | | Check M connector, nest wiring |
| | Garbled copy | | ESU, typing unit | AR35, AR272, AR39, D/S | | Loop, D/S, 811C | Check with 911 DTS when controller R switch is set to MAINT |
| | Underline characters | | Noise net | AR34, AR39, D/S | | Loop, D/S, 811C | Check test center TTY for parity |
| | | Receives heading | | | | | Station in loop-back mode; Action A |
| 15 | TTY prints character other than A | | Noise net, typing unit | AR567, AR34, AR272 | | | Action A |
| | | Hit character | Noise net | AR34, AR272, AR39 | | D/S, 811C | Actions A and B |

TABLE A (Cont)

| STEP FAILURE | TYPE OF TROUBLE | | EQUIPMENT TO BE CHECKED | | | | |
|---|---|---|---|---|---|---|---|
| | STATION | TEST CENTER | TTY | 820B7 CONTROLLER | DAS 804 | LINE OR HUB FACILITY | OTHER |
| 16 | TTY does not copy TDM or text | | Noise net | AR34, AR272, D/S | | | Station terminal did not unblind; resend unblind sequence ENQ-DC2; Action B |
| | TTY prints underline characters | | | AR566, AR34, AR272, D/S | | | Check test position, TTY for parity errors |
| | ERROR lamp lights | | ESU, typing unit | | | | |
| | No form feed if sprocket TTY; no copy on ROTR, if provided | | ROTR motor, contact, ESU, typing unit | | | | Check PR1 TTY DC2 stunt box contacts; send line feed followed by F/F delete |
| | False alarms on attn set audible, visual, or both | | Noise net, ESU | AR566, | | | Check grounding system |
| | | False response | Noise net, typing unit | AR567, AR34, AR272, AR556 | | | Station failed to detect ENQ-DC2 |
| | | Prints copy | | AR271 | | | Station may be in loop-back mode; Action A |
| 17 | No tape feed-out, if ROTR is provided | | ESU, ROTR, typing unit | AR32, AR568 | | | Check M connector pin 25 |
| | ERROR lamp lights; audible alarm sounds | | Noise net | AR566, AR34 | | Loop, D/S, 811C | Check nest wiring and repeat steps; Action A; check test-board on TTY for parity errors |

TABLE A (Cont)

| STEP FAIL-URE | TYPE OF TROUBLE | | EQUIPMENT TO BE CHECKED | | | | |
|---|---|---|---|---|---|---|---|
| | STATION | TEST CENTER | TTY | 820B7 CONTROLLER | DAS 804 | LINE OR HUB FACILITY | OTHER |
| 17 Cont | | Single character response | | AR39, AR64, NST | | | Check nest wiring and repeat steps; Action A; check test-board on TTY for parity errors |
| | | Response other than SIC-CAN or SIC-NAK | | AR272, AR271, AR39, AR64, D/S | | | |
| | | No response | | AR34, AR272, AR39, AR64, D/S, NST | | Loop, D/S, 811C | Actions A and B |
| | | SIC-NAK response | Contact, ESU | | | Loop, D/S, 811C | Check receive parity error; Action A |
| 18 | TRANS/REC lamp does not extinguish | | | AR32, AR568, AR35, NST | | Loop, D/S, 811C | Station failed to detect EOT, resend EOT; check N connector pin 4 |
| | Motors remain running (33 ASR/RO or 35 RO, mode switch in unatt) | | Motor relay, contact, ESU | AR32, AR568 | | | Check M connector pin 24 for ground trouble |
| | False alarm on attn set (audible, visual, or both) | | Noise net, contact, ESU | NST | | | Check grounding system for noise, noise protection network |
| | | Hits received | Noise net | AR34, D/S, NST | | | Check grounding system |
| 19 | No response | | Contact, ESU | AR32, AR566, AR568, AR556 | Send, Receive | | Station out-of-service |

TABLE A (Cont)

| STEP FAIL-URE | TYPE OF TROUBLE | | EQUIPMENT TO BE CHECKED | | | | |
|---|---|---|---|---|---|---|---|
| | STATION | TEST CENTER | TTY | 820B7 CONTROLLER | DAS 804 | LINE OR HUB FACILITY | OTHER |
| 19 Cont | CALL lamp lights; CALL lamp does not flash | | | NST | Send, Receive | | Check lamp, M connector pin 2 |
| | TRANS/REC lamp does not light | | | | | | Check lamp, M connector pin 4 |
| | Motor does not run; OUT OF SVC lamp lights | | Motor, Noise net, ESU | AR32, AR568, NST | | Loop, D/S | Check noise protection network, motor relay, motor fuses, maintenance switch to NORM ON, M connector pin 24 |
| | MSG error lamp lights | | ESU, typing unit | AR567 | | | Check M connector pin 43 |
| | No copy | | ESU, typing unit | AR567 | | Loop, D/S, 811C | Station in loop-back mode; Action A |
| | Garbled copy or underline characters | | | AR272, D/S, NST | | | Receive parity errors; Action B; check position TTY and line |
| | | No response | | AR34, AR272, AR39, AR64, D/S, NST | | Loop, D/S, 811C | Actions A and B |
| | | Two character response other than SIC-ACK | Contact, ESU | AR32, AR566, AR568, AR556 | | | Station not ready to receive; check M connector, TTY ESU paper out switch, TTY F/F-H.T. contacts |
| | | Single character response | | AR272, AR556, NST | | | |

TABLE A (Cont)

| STEP FAIL-URE | TYPE OF TROUBLE | | EQUIPMENT TO BE CHECKED | | | | |
|---|---|---|---|---|---|---|---|
| | STATION | TEST CENTER | TTY | 820B7 CONTROLLER | DAS 804 | LINE OR HUB FACILITY | OTHER |
| 19 Cont | | Wrong SIC character | | AR272 | Send, Receive | | Check shift register windings |
| 20 | No response; ERROR lamp does not light | | | AR566, AR34 | Send, Receive | | Check lamp, N connector pins 18 and 27, speaker; Actions A and B |
| | Audible alarm does not sound | | | AR566, AR34, AR272 | Speaker | | Check AUD OFF key (EMB) contacts, ERROR (EMB) contacts |
| | Does not print under-line characters in text; garbled copy | | ESU, typing unit | AR567, D/S, NST | | Loop, D/S, 811C | Check that position TTY or SIG generator is sending parity errors |
| | | Hit characters | ESU, typing unit | AR34, D/S | | Loop, D/S, 811C | Station in loop-back mode; Action A |
| 21 | MSG REC lamp does not light; audible alarm does not sound | | | AR566, NST | Send, Receive | | Check lamp, MSG REC key (EMB) contacts, N connector pins 15 and 16 |
| | False alarms; TRANS/REC lamp does not extinguish | | Noise net | AR568, AR34, NST | Send, Receive | Loop, D/S, 811C | |
| | | No response | | AR358, AR34, AR272, AR556, AR39, AR64, D/S, NST | | Loop, D/S, 811C | Actions A and B |

TABLE A (Cont)

| STEP FAIL-URE | TYPE OF TROUBLE | | EQUIPMENT TO BE CHECKED | | | | |
|---|---|---|---|---|---|---|---|
| | STATION | TEST CENTER | TTY | 820B7 CONTROLLER | DAS 804 | LINE OR HUB FACILITY | OTHER |
| 21 Cont | | Two character response other than SIC-CAN or SIC-NAK | Noise net | AR34, AR272, AR556 | | | Check grounding system for noise; Actions A and B |
| | | Single character response | | AR272, AR39, AR64, AR66 | | Loop, D/S, 811C | Action A and B |
| 22 | Alarms not canceled | | | NST | Send, Receive | | Check for trouble in (EMB) contacts of 804 attn set and connector cable |
| | | Hits received | | D/S, NST | Send, Receive | Loop, D/S, 811C | Check nest for power supply trouble (grounds) |
| 23 | No response | | ESU, typing unit | | Send, Receive | | |
| | TRANS/REC lamp does not light | | | AR566, AR272, AR556, NST | Send, Receive | | Check lamp; station failed to detect DLE |
| | MSG REC lamp does not light; alarm does not sound | | | AR566, NST | Send, Receive | | Check DAS 804 contacts; check lamp |
| | No text | | Typing unit | NST | | | Station failed to detect DC1 |
| | | No response | | AR35, AR34, AR272, AR39, AR64, D/S, NST | Send, Receive | Loop, D/S, 811C | Actions A and B |

TABLE A (Cont)

| STEP FAIL-URE | TYPE OF TROUBLE | | EQUIPMENT TO BE CHECKED | | | | |
|---|---|---|---|---|---|---|---|
| | STATION | TEST CENTER | TTY | 820B7 CONTROLLER | DAS 804 | LINE OR HUB FACILITY | OTHER |
| 23 Cont | | SIC-NAK | Contact, ESU | AR39, AR64 | | | Station not ready to receive |
| 24 | No response, TRANS/REC lamp does not extinguish, motor running | | Motor, contact, ESU | AR32, AR568, AR35, NST | Send, Receive | | Station failed to detect EOT; resend EOT |
| | False alarms | | Noise net | NST | | | Check noise protection network |
| | | Hit characters | Noise net | AR34, AR66, NST | | | Check grounding system |
| 25 | No response | | | AR34, AR272, AR39, AR64, D/S, NST | Send, Receive | Loop, D/S, 811C | |
| | | No response | | AR34, AR272, AR39, AR64, D/S, NST | Send, Receive | Loop, D/S, 811C | |
| 26 | MSG REC lamp does not light | | | AR566, AR34, D/S, NST | Send, Receive | | Check lamp; N connector |
| | Audible alarm does not sound | | | AR566, AR34, D/S, NST | | | Check speaker; N connector pin 26 |
| | Station remains selected as receiver | | | AR566, D/S | | | |
| | TRANS/REC lamp does not extinguish | | | D/S, NST | Send, Receive | | |
| | Motor remains running | | Motor, contact, ESU | AR566, NST | | | |

TABLE A (Cont)

| STEP FAILURE | TYPE OF TROUBLE | | EQUIPMENT TO BE CHECKED | | | | |
|---|---|---|---|---|---|---|---|
| | STATION | TEST CENTER | TTY | 820B7 CONTROLLER | DAS 804 | LINE OR HUB FACILITY | OTHER |
| 27 | All lamps are not extinguished, audible alarm not silenced | | ESU | AR566, NST | Send, Receive | | Check for grounds in connector cable and nest wiring; Actions A and B; repeat steps |
| 28 | OUT OF SVC lamp does not light | | | AR32, AR568, NST | Send, Receive | | Check lamp; +12V supply voltage |
| | | Hit characters | | D/S | | | Check N connector; Action A |
| 29 | False alarms | | | AR566, NST | Send, Receive | | Check grounding system, N connector and cable |
| | | No response | | AR35, AR34, AR272, AR39, AR64, AR66, D/S, NST | | Loop, D/S, 811C | Actions A and B |
| | | Response other than CAN | Contact, ESU | AR568, AR272 | | | Check N connector |
| 30 | | Hit characters | | D/S | | Loop, D/S, 811C | Failed to detect DC1; resend DC1; Actions A and B |
| | | CAN | | AR272, AR556, AR39, NST | | | Check nest wiring; DLE F/F not cleared |

TABLE A (Cont)

| STEP FAIL-URE | TYPE OF TROUBLE | | EQUIPMENT TO BE CHECKED | | | | |
|---|---|---|---|---|---|---|---|
| | STATION | TEST CENTER | TTY | 820B7 CONTROLLER | DAS 804 | LINE OR HUB FACILITY | OTHER |
| 31 | CALL lamp does not light | | | AR32, AR568, NST | | | Check lamp, N connector and cable |
| | | No response | | AR35, AR34, AR272, AR39, AR64, AR66, D/S, NST | | Loop, D/S, 811C | Actions A and B |
| | | Response other than SIC-NAK | | AR34, AR272 | | | Check that station is out-of-service |
| 32 | All alarms are not canceled except OUT-OF-SVC and CALL lamps, audible alarm sounds | | | AR32, AR566, AR568, AR66, NST | | | Check grounding system, nest wiring |
| | | No response | | AR35, AR34, AR272, AR39, AR64, AR66, D/S, NST | | Loop, D/S, 811C | Action A and B |
| | | Response other than NAK | | AR32, AR568, AR272, NST | Send, Receive | | Check out-of-service contacts |
| | | Two character response | ESU | AR32, AR568 | Send, Receive | | Actions A and B |
| | | Hit character | | AR34, AR556 | | Loop, D/S, 811C | |
| 33 | OUT OF SVC lamp does not extinguish | | Contact, ESU | AR32, AR566, AR568 | Send, Receive | | Check M connector and cable |

TABLE A (Cont)

| STEP FAIL-URE | TYPE OF TROUBLE | | EQUIPMENT TO BE CHECKED | | | | |
|---|---|---|---|---|---|---|---|
| | STATION | TEST CENTER | TTY | 820B7 CONTROLLER | DAS 804 | LINE OR HUB FACILITY | OTHER |
| 33 Cont | CALL lamp does not extinguish | | Contact, ESU | AR32 AR66 | Send, Receive | | Check M connector and cable |
| | | No response | | AR35, AR34, AR272, AR39, AR64, D/S, NST | Send, Receive | Loop, D/S, 811C | Actions A and B |
| | | Single character response other than CAN | Contact, ESU | AR32, AR566, AR568, NST | Send, Receive | | |
| 34 | EMG STOP alarm or other false alarm indication | | | AR32, AR566, AR568, AR66, NST | | | Check grounding system |
| | | CAN | | AR39, NST | | | Failed to detect EOT; resend EOT |
| 35 | BID lamp does not light | | | AR32, AR568 | Send, Receive | | Check lamp, N connector pin 5, M connector and cable |
| | Motor does not run | | Motor, ESU | AR32 AR568 NST | Send, Receive | | Check fuse, circuit breaker, motor start relay windings |
| | Tape does not run | | ESU, tape read | AR567 | Send, Receive | | |
| | Tape fails to stop on SOH | | ESU, tape read | AR567 | | | Check M connector and cable; replace test tape and repeat test; check for ground noise |
| | Tape stops before SOH is detected | | Noise net, contact, tape read | AR567 NST | | | |

TABLE A (Cont)

| STEP FAIL-URE | TYPE OF TROUBLE | | EQUIPMENT TO BE CHECKED | | | | |
|---|---|---|---|---|---|---|---|
| | STATION | TEST CENTER | TTY | 820B7 CONTROLLER | DAS 804 | LINE OR HUB FACILITY | OTHER |
| 35 Cont | | Hit characters | | NST | | | Action A |
| 36 | Tape starts to run | | Noise net | | | | Check grounding system; Action A |
| | False alarms | | | AR32, AR566, AR568, AR66 | | | |
| | | No response | | AR35, AR34, AR272, AR39, AR64, D/S, NST | | Loop, D/S, 811C | Actions A and B |
| | | Two character response other than R-ACK | Contact, ESU, tape read | AR32, AR566, AR568, AR34, AR272, NST | Send, Receive | | Check station for traffic available and if ready to receive |
| | | Single character response | Contact, ESU | AR32, AR566, AR568, NST | Send, Receive | | |
| 37 | TRANS/REC lamp does not light | | | AR32, AR566 | Send, Receive | | Check lamp, N connector pin 4 and M connector pin 43 |
| | Hits on ASR printer | | Noise net, ESU, typing unit | AR34, NST | Send, Receive | | |
| | | No response | | AR34, AR272, AR556, AR39, AR64, D/S, NST | Send, Receive | Loop, D/S, 811C | Actions A and B |

TABLE A (Cont)

| STEP FAIL-URE | TYPE OF TROUBLE | | EQUIPMENT TO BE CHECKED | | | | |
|---|---|---|---|---|---|---|---|
| | STATION | TEST CENTER | TTY | 820B7 CONTROLLER | DAS 804 | LINE OR HUB FACILITY | OTHER |
| 37 Cont | | Character other than SOH | | AR272, AR64 | | | Station fails to detect ENQ-CEC; repeat sequence DLE-ENQ-CEC |
| | | Hit character with wrong parity | | AR567, AR35, AR64, D/S, NST | | D/S, 811C | |
| 38 | No response | | Contact, ESU, typing unit | AR32, AR566, AR568, AR272, AR556 | | | Station fails to detect DC1; Action A |
| | Garbled copy, underline characters | | ESU, typing unit | AR358, AR34 | | Loop, D/S | Actions A and B |
| | False alarms | | | AR32, AR566, AR568, AR34, NST | | | Check grounding system |
| | EMG STOP alarm lights | | Noise net | | | | DLE DC1 may have been sent instead of DC1; Action A |
| | | Hit characters | | NST | | Loop, D/S, 811C | Actions A and B |
| | | Heading received | | | | | Station may be in loop-back mode |
| 39 | No response | | Noise net, ESU, tape read, typing unit | | | | |
| | Character A not printed | | ESU, tape read | | | | |
| | Garbled copy | | Contact | | | | |

TABLE A (Cont)

| STEP FAILURE | TYPE OF TROUBLE | | EQUIPMENT TO BE CHECKED | | | | |
|---|---|---|---|---|---|---|---|
| | STATION | TEST CENTER | TTY | 820B7 CONTROLLER | DAS 804 | LINE OR HUB FACILITY | OTHER |
| 39 Cont | Tape fails to stop on STX | | Noise net, ESU, tape read | AR272, AR556 | | | Check stop on STX option |
| | | No response | | AR272, AR556, AR39, D/S, NST | | Loop, D/S, 811C | Station failed to detect STX; resend STX |
| | | Garbled copy | Noise net, contact, ESU, tape read | D/S | | Loop, D/S, 811C | Check grounding system for noise |
| | | Character A response not received | Noise net, ESU, tape read | | | | |
| | | Fails to stop on STX | | AR272, AR556, AR39 | | | Check stop on STX option |
| 40 | Tape does not run | | | | | | Check test tape; station failed to detect ETX |
| | Tape does not stop on ETX | | | | | | |
| | False alarms; EMG stop alarm sounds | | | AR32, AR566, AR568, AR66, NST | | | |
| | Garbled copy | | Tape read, typing unit | AR34, AR556, AR66 | | Loop, D/S, 811C | |
| | | No response | | AR272, AR556, AR39, D/S | | Loop, D/S, 811C | Station failed to detect STX; resend STX |
| | | Garbled copy | Noise net, contact, ESU, tape read | D/S | | Loop, D/S, 811C | |

TABLE A (Cont)

| STEP FAILURE | TYPE OF TROUBLE | | EQUIPMENT TO BE CHECKED | | | | |
|---|---|---|---|---|---|---|---|
| | STATION | TEST CENTER | TTY | 820B7 CONTROLLER | DAS 804 | LINE OR HUB FACILITY | OTHER |
| Cont 40 | | Fails to stop on ETX | Noise net, ESU, tape read | AR272, AR556, AR39 | | | Check ETX option |
| | | Parity errors on 911 DTS | Contact, ESU, tape read | | | Loop, D/S, 811C | |
| 41 | Tape does not run | | | | | | Actions A and B |
| | Hit characters | | Noise net, contact, ESU, tape read, typing unit | | | | Station failed to detect SOH |
| | Tape does not stop on SOH | | | AR272, AR556 | | | Check test tape for SOH; repeat test |
| | | No response | | AR272, AR556, D/S | | Loop, D/S, 811C | Station failed to detect STX; resend STX |
| | | DEL-DEL-SOH then text | | AR272, AR556 | | | |
| 42 | No response | | Motor, ESU, tape read | AR32, AR566, AR568, AR272, AR556, D/S | | | Station failed to detect STX; resend STX; Actions A and B |
| | Character A not printed | | ESU, tape read | | | | |
| | | No response | | AR272, AR556, D/S | | | |
| | | Hit characters | Noise net, contact, ESU, tape read | NST | | Loop, D/S, 811C | |
| | | Garbled copy | Noise net | | | Loop, D/S, 811C | |

TABLE A (Cont)

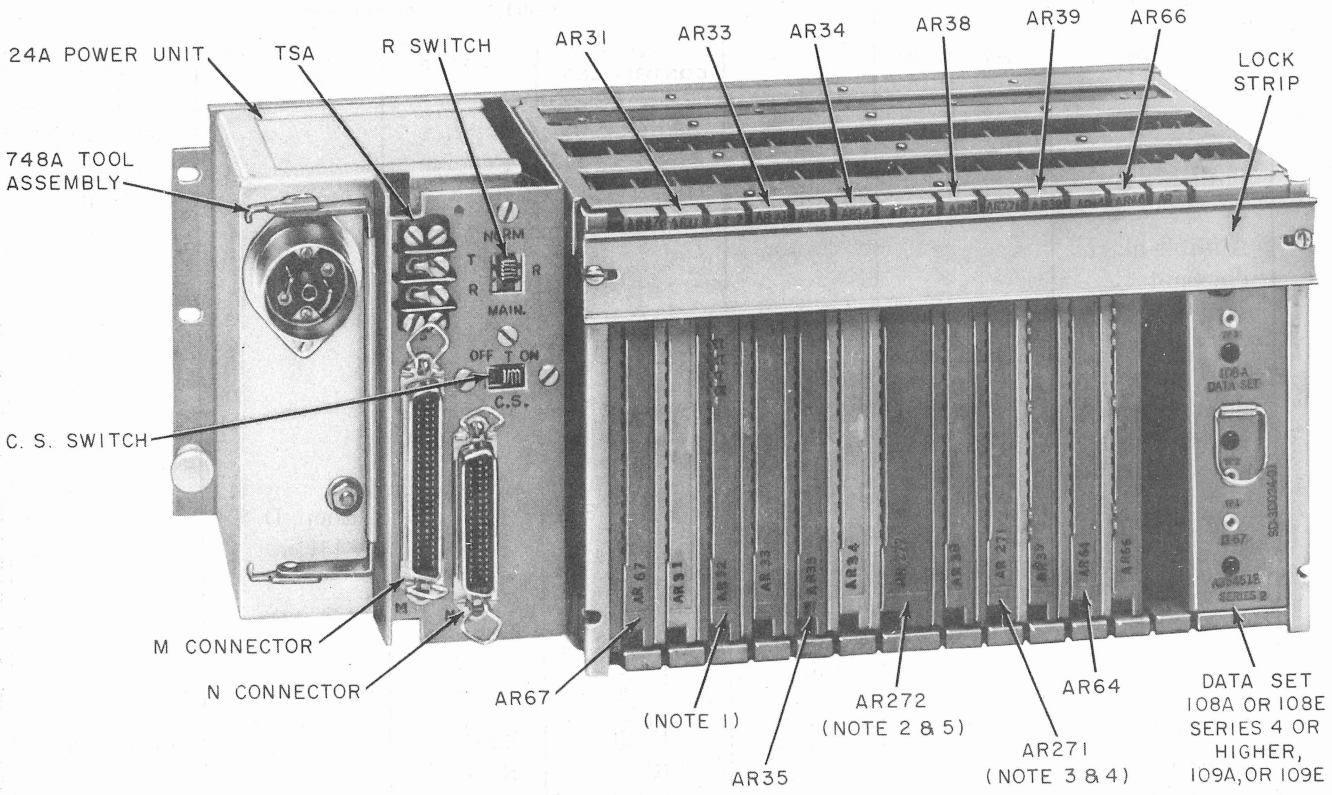
| STEP FAIL-URE | TYPE OF TROUBLE | | EQUIPMENT TO BE CHECKED | | | | |
|---|---|---|---|---|---|---|---|
| | STATION | TEST CENTER | TTY | 820B7 CONTROLLER | DAS 804 | LINE OR HUB FACILITY | OTHER |
| 42 Cont | | Character A response not received | Noise net, ESU, tape read | AR34 | | | Station failed to detect STX; resend STX; Actions A and B |
| 43 | Does not copy text | | Motor, ESU, tape read | | | Loop, D/S, 811C | Station failed to detect STX; resend STX |
| | Garbled local copy | | ESU, tape read, typing unit | AR272, AR556, D/S | | Loop, D/S, 811C | |
| | Tape fails to stop on ETX | | | AR556 | | | Check stop on ETX option |
| | | No response | | AR272, AR556, D/S | | Loop, D/S, 811C | Station failed to detect STX; resend STX |
| | | Parity errors detected by 911 DTS | Contact, ESU, tape punch, tape read | | | Loop, D/S, 811C | Check test tape for parity error; local punch |
| 44 | Station does not unselect | | Contact, tape read | AR272, AR556, AR39, NST | | | |
| | Tape stops after EOT is detected | | | | | | Check test tape for EOT with even parity; EOT counter set |
| | BID lamp does not extinguish | | | AR32, AR566, AR568, NST | | | |
| | | No response | | AR272, AR556 | | Loop, D/S, 811C | Station failed to detect STX; resend STX; Actions A and B |

TABLE A (Cont)

| STEP FAILURE | TYPE OF TROUBLE | | EQUIPMENT TO BE CHECKED | | | | |
|---|---|---|---|---|---|---|---|
| | STATION | TEST CENTER | TTY | 820B7 CONTROLLER | DAS 804 | LINE OR HUB FACILITY | OTHER |
| 44 Cont | | EOT not received | Noise net, contact, tape punch, tape read | AR34 | | Loop, D/S, 811C | Check test tape for EOT with even parity; EOT counter set |
| 45 | Tape does not run | | Motor, ESU | AR567 | | | Check test tape; M connector and cable |
| | Tape stops before SOH | | Noise net, ESU, tape punch, tape read | AR567 | | | |
| | Tape fails to stop on SOH | | ESU, tape punch | AR567, NST | | | |
| | | Hit characters | | NST | Send, Receive | | |
| 46 | Station fails to receive local copy | | ESU, typing unit | | | | Check tape reader, ESU, and typing unit in local mode with TST tape |
| | Garbled copy | | Noise net, ESU, typing unit | AR272, AR556, NST | | | |
| | TRANS/REC lamp does not light | | | AR32, AR568 | | | Check lamp |
| | | No response | | AR272, AR556, AR39, D/S | | Loop, D/S, 811C | Action A and B |
| | | Fails to receive heading | Noise net, contact, ESU, tape read | | | | |

TABLE A (Cont)

| STEP FAILURE | TYPE OF TROUBLE | | EQUIPMENT TO BE CHECKED | | | | |
|---|---|---|---|---|---|---|---|
| | STATION | TEST CENTER | TTY | 820B7 CONTROLLER | DAS 804 | LINE OR HUB FACILITY | OTHER |
| 47 | Tape lamp does not light | | Contact, ESU | AR566, NST | Send, Receive | | Check lamp, speaker and connecting cable for short |
| | Audible alarm does not sound | | | | | | |
| | BID lamp does not extinguish | | Contact, ESU | AR32 AR568 NST | Send, Receive | | |
| | | Hit characters | Noise net, contact, ESU, tape read | D/S | | Loop, D/S, 811C | |
| 48 | EMG STOP lamp does not light | | | AR566, AR34, AR272, AR556 | Send, Receive | | Check lamp |
| | Audible alarm does not sound | | | AR566, AR34 | Send, Receive | | Resend break DLE |
| 49 | EMG MSG not received | | | | | Loop, D/S, 811C | Station failed to detect DC1; Action A |
| | EMG MSG garbled | | Noise net, ESU, typing unit | AR272, AR556 | | | |
| | | Hit characters | Noise net | D/S | | Loop, D/S, 811C | |
| 50 | TRANS/REC lamp not extinguished, alarm not silenced | | | AR32, AR566, AR568, NST | Send, Receive | | Actions A and B |




NOTES:

1. AR32 WITH EOT COUNTER (DAS 820B1), AR356 W/O EOT COUNTER (DAS 820B2).
2. EARLY INSTALLATIONS MAY BE EQUIPPED WITH AR37.
3. EARLY INSTALLATIONS MAY BE EQUIPPED WITH AR36.
4. IF DAS IS EQUIPPED WITH AR36 AND IT IS TO BE REPLACED WITH AR271, AR37 MUST BE REPLACED WITH AR272 AND VICE VERSA.

**Fig. 1—DAS 820B1 and B2, Locations of Circuit Packs and Components**

TABLE B

CONTINUITY TEST OF DAS 804N2 OR 804R3

| STEP | KEY OR LAMP | POSITION | SCALE | VOLT-OHM-MILLIAMMETER | | |
|---|---|---|---|---|---|---|
| | | | | CONNECT PROBE | | READING OHMS |
| | | | | + | – | |
| 1 | OUT OF SVC lamp | | | 3 | 12 | 55 ±15 |
| 2 | CALL lamp | | | 3 | 2 | 55 ±15 |
| 3 | REC lamp | | | 3 | 4 | 55 ±15 |
| 4 | ERROR lamp | | | 3 | 18 | 55 ±15 |
| 5 | MSG REC lamp | | | 3 | 16 | 55 ±15 |
| 6 | PAPER LOW* lamp | | | 3 | 26 | 55 ±15 |
| 7 | AUD OFF key | RLS | | 3 | 8 | ∞ |
| 8 | AUD OFF key | OPR | | 3 | 8 | † 55 ±15 |
| 9 | AUD OFF key | OPR | | 25 | 8 | ∞ |
| 10 | AUD OFF key | RLS | | 25 | 8 | 0 to 2 |
| 11 | OUT OF SVC key | RLS | | 13 | 8 | 0 to 2 |
| 12 | OUT OF SVC key | OPR | | 13 | 8 | ∞ |
| 13 | | | | 9 | 8 | 0 to 2 |
| 14 | | | R X 1 | 6 | 8 | 0 to 2 |
| 15 | | | | 19 | 8 | 0 to 2 |
| 16 | | | | 21 | 8 | 0 to 2 |
| 17 | PAPER LOW* key | RLS | | 14 | 23 | 0 to 2 |
| 18 | PAPER LOW* key | OPR | | 14 | 23 | ∞ |
| 19 | ERROR key | RLS | | 14 | 17 | 0 to 2 |
| 20 | ERROR key | OPR | | 14 | 17 | ∞ |
| 21 | MSG REC key | RLS | | 14 | 15 | 0 to 2 |
| 22 | MSG REC key | OPR | | 14 | 15 | ∞ |
| 23 | | | | 30 | LSPK YEL-OR | 0 to 2 |
| 24 | | | | 27 | LSPK YEL-BL | 0 to 2 |
| 25 | | | | 36 | FRAME VIO-SL | 0 to 2 |

* TAPE LOW designation substituted for PAPER LOW on DAS 804R3.

† Checks AUD OFF lamp as well as contacts of key.

TABLE C

CONTINUITY TEST OF DAS 804N4

| STEP | KEY OR LAMP | POSITION | SCALE | VOLT-OHM-MILLIAMMETER | | |
|---|---|---|---|---|---|---|
| | | | | CONNECT PROBE | | READING OHMS |
| | | | | + | – | |
| 1 | OUT OF SVC lamp | | | 3 | 12 | 55 ±15 |
| 2 | HOLD lamp | | | 3 | 11 | 55 ±15 |
| 3 | PRIOR lamp | | | 3 | 7 | 55 ±15 |
| 4 | BID lamp | | | 3 | 5 | 55 ±15 |
| 5 | CALL lamp | | | 3 | 2 | 55 ±15 |
| 6 | TRANS REC lamp | | | 3 | 4 | 55 ±15 |
| 7 | PAPER LOW lamp | | | 3 | 26 | 55 ±15 |
| 8 | EMG STOP lamp | | | 3 | 22 | 55 ±15 |
| 9 | TAPE lamp | | | 3 | 24 | 55 ±15 |
| 10 | ERROR lamp | | | 3 | 18 | 55 ±15 |
| 11 | MSG REC lamp | | | 3 | 16 | 55 ±15 |
| 12 | | | | 36 | FRAME YEL-GN | 0 to 2 |
| 13 | AUD OFF key | RLS | | 3 | 8 | ∞ |
| 14 | AUD OFF key | OPR | R X 1 | 3 | 8 | * 55 ±15 |
| 15 | OUT OF SVC key | RLS | | 13 | 8 | 0 to 2 |
| 16 | OUT OF SVC key | OPR | | 13 | 8 | ∞ |
| 17 | OUT OF SVC key | OPR | | 28 | 8 | 0 to 2 |
| 18 | OUT OF SVC key | RLS | | 28 | 8 | ∞ |
| 19 | HOLD key | RLS | | 10 | 8 | ∞ |
| 20 | HOLD key | OPR | | 10 | 8 | 0 to 2 |
| 21 | PRIOR key | RLS | | 9 | 8 | 0 to 2 |
| 22 | PRIOR key | OPR | | 9 | 8 | ∞ |
| 23 | BID key | RLS | | 6 | 8 | 0 to 2 |
| 24 | BID key | OPR | | 6 | 8 | ∞ |
| 25 | AUD OFF key | OPR | | 25 | 8 | ∞ |
| 26 | AUD OFF key | RLS | | 25 | 8 | 0 to 2 |
| 27 | | | | LSPK GR-RD | 8 | 0 to 2 |
| 28 | | | | LSPK RD-BR | 27 | 0 to 2 |
| 29 | PAPER LOW key | RLS | | 14 | 23 | 0 to 2 |

*Checks AUD OFF lamp as well as contacts of key.

TABLE C (Cont)

CONTINUITY TEST OF DAS 804N4

| STEP | KEY OR LAMP | POSITION | SCALE | VOLT-OHM-MILLIAMMETER | | |
|---|---|---|---|---|---|---|
| | | | | CONNECT PROBE | | READING OHMS |
| | | | | + | – | |
| 30 | PAPER LOW key | OPR | R × 1 | 14 | 23 | ∞ |
| 31 | EMG STOP key | RLS | | 14 | 21 | 0 to 2 |
| 32 | EMG STOP key | OPR | | 14 | 21 | ∞ |
| 33 | TAPE key | RLS | | 14 | 19 | 0 to 2 |
| 34 | TAPE key | OPR | | 14 | 19 | ∞ |
| 35 | ERROR key | RLS | | 14 | 17 | 0 to 2 |
| 36 | ERROR key | OPR | | 14 | 17 | ∞ |
| 37 | MSG REC key | RLS | | 14 | 15 | 0 to 2 |
| 38 | MSG REC key | OPR | | 14 | 15 | ∞ |

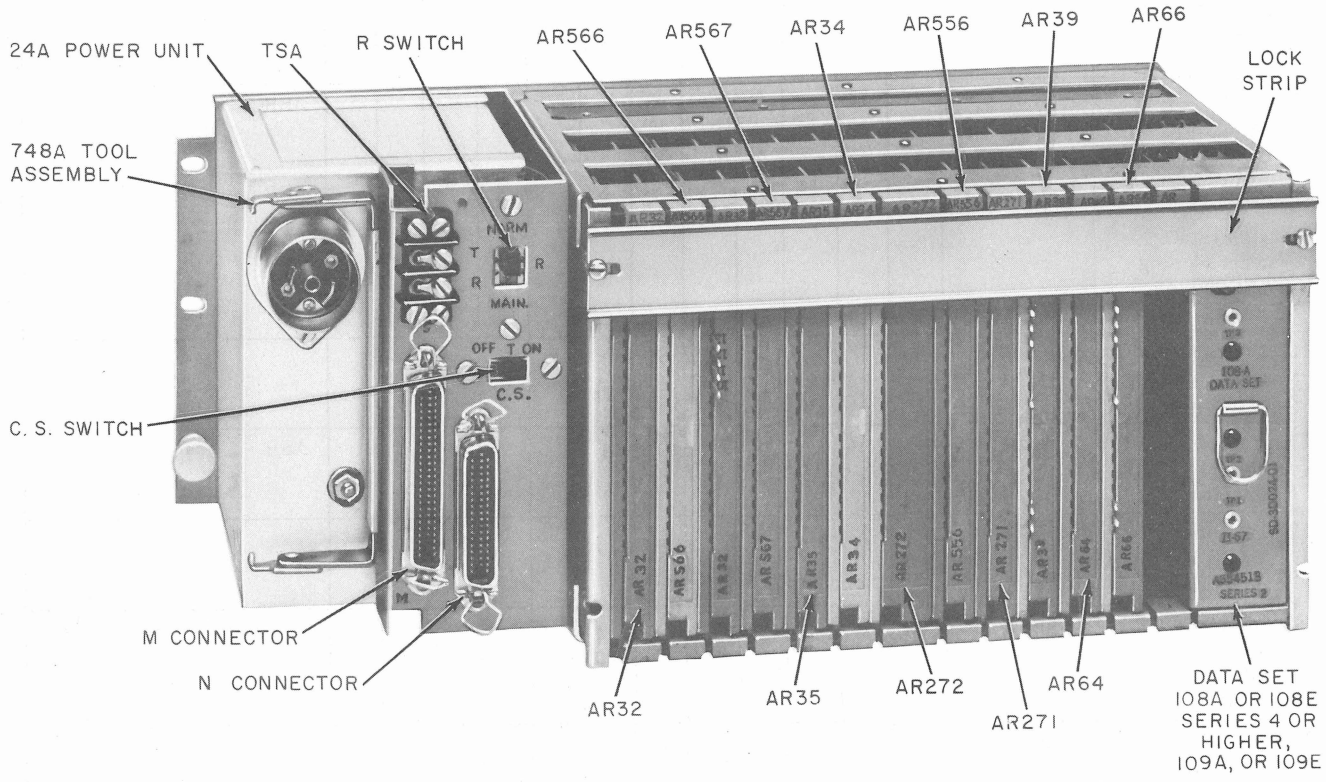



**Fig. 2—DAS 820B7, Locations of Circuit Packs and Components**

TABLE D

DAS 820B1

| TROUBLE | PROPERLY PERFORMING FEATURE | PROBABLE LOCATION OF FAULT* | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | AR 32 | AR 31 | AR 67 | AR 33 | AR 35 | AR 34 | AR 272 | AR 556 | AR 271 | AR 39 | AR 64 | AR 66 | TTY | OTHER |
| 1. Improper response to polling | None | X | X | X | X | | | | X | | X | X | | | |
| 2. No response to polling | None | X | X | X | X | X | X | X | X | X | X | X | X | | Check lines and data set |
| 3. BID lamp does not light | None | X | | X | X | | | | | | | | | | BID lamp |
| 4. Reader does not run | None | X | X | X | X | | | | X | | | | | ASR | |
| 5. Reader does not stop on SOH | 1 and 2 | | | | X | | | | X | | X | X | | | |
| 6. Station does not enter selected-to-send state | 1, 2, and 5 | | | | X | X | X | X | X | | | | | | |
| 7. ASR TTY does not print time, date, and message number (TDM) | 1, 2, 5, and 6 | | | | | X | X | | X | | X | | | ASR | |
| 8. Garbled transmission from tape | 1, 2, 5, and 6 | | | | | X | | | | | | | | ASR | |
| 9. Fails to return to unselected (idle) state after sending (EOT) from tape | 1, 2, 5, 6, and 8 | | | | X | | | X | X | X | X | | | ASR | |
| 10. Improper EMG STOP alarm operation | 1 and 6 | | X | | | | X | X | X | | | | | | |
| 11. Improper EOT counter operation | 3, 4, and 9 | X | | | | | | | | | | | | ASR | |
| 12. Improper TAPE alarm operation | 6 | | X | X | | | | | | | | | | | |
| 13. Improper audible operation in ASR | None | | X | | | | | | | | | | | | ASR speaker |
| 14. No ASR TTY motor emergency stop with ASR OFF-LINE mode key and OUT OF SVC key operated | None | | | X | | | | | | | | | | | TTY maintenance switch in the maintenance position |

TABLE D (Cont)

DAS 820B1

| TROUBLE | PROPERLY PERFORMING FEATURE | PROBABLE LOCATION OF FAULT* | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | AR 32 | AR 31 | AR 67 | AR 33 | AR 35 | AR 34 | AR 272 | AR 556 | AR 271 | AR 39 | AR 64 | AR 66 | TTY | OTHER |
| 15. Improper call-in response | None | | X | X | | X | X | X | | X | | | X | | Check wiring and solder connections in shift register |
| 16. Call lamp does not light or flash | 15 | | | X | | | | X | X | | X | | X | | CALL lamp |
| 17. TRANS/REC lamp does not light | 15 and 16 | | | X | | | | X | X | X | | | | | TRANS/REC lamp |
| 18. Improper unblinding | 15, 16, and 17 | | | X | | | | X | X | X | | | X | ASR, RO TTY | |
| 19. Excessive parity errors or garbled text received by primary TTY | 15, 16, and 17 | | | | | | X | X | X | | X | | | ASR, RO TTY | Check lines |
| 20. Improper roll-call operation | 15, 16, 17, and 19 | | X | | X | | | X | X | X | | | | Primary RO TTY | |
| 21. No negative roll-call response due to lost character, form-feed while form is out in the middle of a message, or power loss in primary RO TTY | 15, 16, and 17 | | X | X | | | | X | X | X | | | X | Primary receiving TTY | |
| 22. Improper MSG REC alarm operation | 15, 16, and 17 | | X | | | | | X | X | X | | | | | MSG REC lamp |
| 23. Improper ERROR alarm operation | 15, 16, and 17 | | X | | | X | X | | | | | | | | ERROR lamp |
| 24. Improper PAPER or TAPE alarm operation | None | | X | | | | | | | | | | | Primary receiving TTY | PAPER or TAPE lamp |
| 25. Improper audible alarm operation in primary RO TTY | None | | X | | | | | | | | | | | | Speaker in primary RO TTY |

TABLE D (Cont)

DAS 820B1

| TROUBLE | PROPERLY PERFORMING FEATURE | PROBABLE LOCATION OF FAULT* | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | AR 32 | AR 31 | AR 67 | AR 33 | AR 35 | AR 34 | AR 272 | AR 556 | AR 271 | AR 39 | AR 64 | AR 66 | TTY | OTHER |
| 26. No motor start in ASR or RO TTY | 15 and 17 | | | X | | | | | | | | | | Fuse, maint. switch, or no power in primary receiving TTY or ROTR | |
| 27. No tape feed-out in primary ROTR TTY | 15, 17, and 20 | | | X | | | | | | | | | | ROTR (pot. adjust-ment) | |
| 28. Failure to enter loop-back mode | None | | | | | X | X | X | X | X | | | X | | Ensure that Data Set 108A, 108E, or 109E is in-stalled (no loop-back test when 109A is installed) |
| 29. No return to idle when carrier fails | 6, 16, and 17 | | | | | | X | | X | | X | | | | Data set |
| 30. No retransmis-sion with R switch in the MTCE position | None | | | | | | | | | | | | | | Data set |
| 31. Primary RO TTY motor runs continu-ously | None | | | X | | | | | | | | | | FF cont-tacts in primary RO TTY | |

* The CPs listed are only the most likely causes of trouble. If changing the indicated CP(s) does not rectify the trouble, further action must be taken.

TABLE E

DAS 820B2

| TROUBLE | PROPERLY PERFORMING FEATURE | PROBABLE LOCATION OF FAULT* | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | AR 356 | AR 31 | AR 67 | AR 33 | AR 35 | AR 34 | AR 272 | AR 556 | AR 271 | AR 39 | AR 64 | AR 66 | TTY | OTHER |
| 1. Improper response to polling | None | X | X | X | X | | | | X | | X | X | | | |
| 2. No response to polling | None | X | X | X | X | X | X | X | X | X | X | X | X | | Check lines and data set |
| 3. BID lamp does not light | None | X | | X | X | | | | | | | | | | BID lamp |

TABLE E (Cont)

DAS 820B2

| TROUBLE | PROPERLY PERFORMING FEATURE | PROBABLE LOCATION OF FAULT* | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | AR 356 | AR 31 | AR 67 | AR 33 | AR 35 | AR 34 | AR 272 | AR 556 | AR 271 | AR 39 | AR 64 | AR 66 | TTY | OTHER |
| 4. Reader does not run | None | X | X | X | X | | | | X | | | | | ASR | |
| 5. Reader does not stop on SOH | 1 and 2 | | | | X | | | | X | | X | X | | | |
| 6. Station does not enter selected-to-send state | 1, 2, and 5 | | | | X | X | X | X | X | | | | | | |
| 7. ASR TTY does not print time, date, and message number (TDM) | 1, 2, 5, and 6 | | | | | X | X | | X | | X | | | ASR | |
| 8. Garbled transmission from tape | 1, 2, 5, and 6 | | | | | X | | | | | | | | ASR | |
| 9. Fails to return to unselected (idle) state after sending (EOT) from tape | 1, 2, 5, 6, and 8 | | | | X | | | X | X | X | X | | | ASR | |
| 10. Improper EMG STOP alarm operation | 1 and 6 | | X | | | | X | X | X | | | | | | |
| 11. Improper TAPE alarm operation | 6 | | X | X | | | | | | | | | | | |
| 12. Improper audible operation in ASR | None | | X | | | | | | | | | | | | ASR speaker |
| 13. No ASR TTY motor emergency stop with ASR OFF-LINE mode key and OUT OF SVC key operated | None | | | X | | | | | | | | | | | TTY maintenance switch in the maintenance position |
| 14. Improper call-in response | None | | X | X | | X | X | X | | X | | | X | | Check wiring and solder connections in shift register |
| 15. CALL lamp does not light or flash | 15 | | | X | | | | X | X | | X | | X | | CALL lamp |

TABLE E (Cont)

DAS 820B2

| TROUBLE | PROPERLY PERFORMING FEATURE | PROBABLE LOCATION OF FAULT* | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | AR 356 | AR 31 | AR 67 | AR 33 | AR 35 | AR 34 | AR 272 | AR 556 | AR 271 | AR 39 | AR 64 | AR 66 | TTY | OTHER |
| 16. TRANS/REC lamp does not light | 15 and 16 | | | X | | | | X | X | X | | | | | TRANS/REC lamp |
| 17. Improper unblinding | 15, 16, and 17 | | | X | | | | X | X | X | | | X | ASR, RO TTY | |
| 18. Excessive parity errors or garbled text received by primary TTY | 15, 16, and 17 | | | | | | X | X | X | | X | | | ASR, RO TTY | Check lines |
| 19. Improper roll-call operation | 15, 16, 17, and 19 | | X | | X | | | X | X | X | | | | Primary RO TTY | |
| 20. No negative roll-call response due to lost character, form-feed while form is out in the middle of a message, or power loss in primary RO TTY | 15, 16, and 17 | | X | X | | | | X | X | X | | | X | Primary receiving TTY | |
| 21. Improper MSG REC alarm operation | 15, 16, and 17 | | X | | | | | X | X | X | | | | | MSG REC lamp |
| 22. Improper ERROR alarm operation | 15, 16, and 17 | | X | | | X | X | | | | | | | | ERROR lamp |
| 23. Improper PAPER or TAPE alarm operation | None | | X | | | | | | | | | | | Primary receiving TTY | PAPER or TAPE lamp |
| 24. Improper audible alarm operation in primary RO TTY | None | | X | | | | | | | | | | | | Speaker in primary RO TTY |
| 25. No motor start in ASR or RO TTY | 15 and 17 | | | X | | | | | | | | | | Fuse, maint. switch, or no power in primary receiving TTY or ROTR | |

TABLE E (Cont)

DAS 820B2

| TROUBLE | PROPERLY PERFORMING FEATURE | PROBABLE LOCATION OF FAULT* | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | AR 356 | AR 31 | AR 67 | AR 33 | AR 35 | AR 34 | AR 272 | AR 556 | AR 271 | AR 39 | AR 64 | AR 66 | TTY | OTHER |
| 26. No tape feed-out in primary ROTR TTY | 15, 17, and 20 | | | X | | | | | | | | | | ROTR (pot. adjust-ment) | |
| 27. Failure to enter loop-back mode | None | | | | | X | X | X | X | X | | | X | | Ensure that Data Set 108A, 108E, or 109E is in-stalled (no loop-back test when 109A is installed) |
| 28. No return to idle when carrier fails | 6, 16, and 17 | | | | | | X | | X | | X | | | | Data set |
| 29. No retransmis-sion with R switch in the MTCE position | None | | | | | | | | | | | | | | Data set |
| 30. Primary RO TTY motor runs con-tinuously | None | | | X | | | | | | | | | | FF con-tacts in primary RO TTY | |

* The CPs listed are only the most likely cause of trouble. If changing the indicated CP(s) does not rectify the trouble, further action must be taken.

TABLE F

DAS 820B7

| TROUBLE | PROPERLY PERFORMING FEATURE | PROBABLE LOCATION OF FAULT* | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | AR 32 | AR 566 | AR 568 | AR 567 | AR 35 | AR 34 | AR 272 | AR 556 | AR 271 | AR 39 | AR 64 | AR 66 | TTY | OTHER |
| 1. Improper response to polling | None | X | X | X | X | | | | X | | X | X | | | |
| 2. No response to polling | None | X | X | X | X | X | X | X | X | X | X | X | X | | Check lines and data set |
| 3. BID lamp does not light | None | X | | X | X | | | | | | | | | | BID lamp |
| 4. Reader does not run | None | X | X | X | X | | | | X | | | | | ASR | |
| 5. Reader does not stop on SOH | 1 and 2 | | | | X | | | | X | | X | X | | | |
| 6. Station does not enter selected-to-send state | 1, 2, and 5 | | | | X | X | X | X | X | | | | | | |

TABLE F (Cont)

DAS 820B7

| TROUBLE | PROPERLY PERFORMING FEATURE | PROBABLE LOCATION OF FAULT* | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | AR 32 | AR 566 | AR 568 | AR 567 | AR 35 | AR 34 | AR 272 | AR 556 | AR 271 | AR 39 | AR 64 | AR 66 | TTY | OTHER |
| 7. ASR TTY does not print time, date, and message number (TDM) | 1, 2, 5, and 6 | | | | | X | X | | X | | X | | | ASR | |
| 8. Garbled transmission from tape | 1, 2, 5, and 6 | | | | | X | | | | | | | | ASR | |
| 9. Fails to return to unselected (idle) state after sending (EOT) from tape | 1, 2, 5, 6, and 8 | | | | X | | | X | X | X | X | | | ASR | |
| 10. Improper EMG STOP alarm operation | 1 and 6 | | X | | | | X | X | X | | | | | | |
| 11. Improper EOT counter operation | 3, 4, and 9 | X | | | | | | | | | | | | ASR | |
| 12. Improper TAPE alarm operation | 6 | | X | X | | | | | | | | | | | |
| 13. Improper audible operation in ASR | None | | X | | | | | | | | | | | | ASR speaker |
| 14. No ASR TTY motor emergency stop with ASR OFF-LINE mode key and OUT OF SVC key operated | None | | | X | | | | | | | | | | | TTY maintenance switch in the maintenance position |
| 15. Improper call-in response | None | | X | X | | X | X | X | | X | | | X | | Check wiring and solder connections in shift register |
| 16. CALL lamp does not light or flash | 15 | | | X | | | | X | X | | X | | X | | CALL lamp |
| 17. TRANS/REC lamp does not light | 15 and 16 | | | X | | | | X | X | X | | | | | TRANS/REC lamp |
| 18. Improper unblinding | 15, 16, and 17 | | | X | | | | X | X | X | | | X | ASR, RO TTY | |

TABLE F (Cont)

DAS 820B7

| TROUBLE | PROPERLY PERFORMING FEATURE | PROBABLE LOCATION OF FAULT* | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | AR 32 | AR 566 | AR 568 | AR 567 | AR 35 | AR 34 | AR 272 | AR 556 | AR 271 | AR 39 | AR 64 | AR 66 | TTY | OTHER |
| 19. Excessive parity errors or garbled text received by primary TTY | 15, 16, and 17 | | | | | | X | X | X | | X | | | ASR, RO TTY | Check lines |
| 20. Improper roll-call operation | 15, 16, 17, and 19 | | X | | X | | | X | X | X | | | | Primary RO TTY | |
| 21. No negative roll-call response due to lost character, form-feed while form is out in the middle of a message, or power loss in primary RO TTY | 15, 16, and 17 | | X | X | | | | X | X | X | | | X | Primary receiving TTY | |
| 22. Improper MSG REC alarm operation | 15, 16, and 17 | | X | | | | | X | X | X | | | | | MSG REC lamp |
| 23. Improper ERROR alarm operation | 15, 16, and 17 | | X | | | X | X | | | | | | | | ERROR lamp |
| 24. Improper PAPER or TAPE alarm operation | None | | X | | | | | | | | | | | Primary receiving TTY | PAPER or TAPE lamp |
| 25. Improper audible alarm operation in primary RO TTY | None | | X | | | | | | | | | | | | Speaker in primary RO TTY |
| 26. No motor start in ASR or RO TTY | 15 and 17 | | | X | | | | | | | | | | Fuse, maint. switch or no power in primary receiving TTY or ROTR | |
| 27. No tape feed out in primary ROTR TTY | 15, 17, and 20 | | | X | | | | | | | | | | ROTR (pot. adjustment) | |

TABLE F (Cont)

DAS 820B7

| TROUBLE | PROPERLY PERFORMING FEATURE | PROBABLE LOCATION OF FAULT* | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | AR 32 | AR 566 | AR 568 | AR 567 | AR 35 | AR 34 | AR 272 | AR 556 | AR 271 | AR 39 | AR 64 | AR 66 | TTY | OTHER |
| 28. Failure to enter loop-back mode | None | | | | | X | X | X | X | X | | | X | | Ensure that Data Set 108A, 108E, or 109E is installed (no loop-back test when 109A is installed) |
| 29. No return to idle when carrier fails | 6, 16, and 17 | | | | | | X | | X | | X | | | | Data set |
| 30. No retransmission with R switch in the MTCE position | None | | | | | | | | | | | | | | Data set |
| 31. Primary RO TTY motor runs continuously | None | | | X | | | | | | | | | | FF contacts in primary RO TTY | |

* The CPs listed are only the most likely causes of trouble. If changing the indicated CP(s) does not rectify the trouble, further action must be taken.