

## 85A2 DATA SELECTIVE CALLING SERVICE STATIONS 150-WORD PER MINUTE HALF-DUPLEX OPERATION TEST PROCEDURES

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**1. GENERAL**

**1.01** This section contains information on testing of the 85A2 data selective calling service (DSCS) stations, 150-word per minute half-duplex operation, hereafter referred to in this practice as the station.

**1.02** This section is reissued for the following reasons:

- To provide information on the data auxiliary set (DAS) 820J-type controller that is used for RO and ROTR service
- To include test procedures for testing the DAS 820J-L1/3 controller-equipped station
- To include a sectionalizing trouble chart for the DAS 810J-L1/3 controller
- To add identifying figures for DAS 820J-L1/3 type controller
- To incorporate minor changes throughout this section.

Since this reissue constitutes a general revision, marginal arrows ordinarily used to denote changes have been omitted.

**1.03** Both installation testing and troubleshooting information are included in this section. Some of the tests are identical; therefore, each test is presented only once. Attended station testing with the STC should be performed when a station is installed to verify proper station operation. This test is also used to sectionalize trouble.

**1.04** An installation test of the station will consist of the following tests:

- Local tests
- Loop-back test of data set 108-type or 109E
- Attended station testing with STC.

**1.05** The troubleshooting sequence will be determined by the nature of trouble being investigated. In general, the station will have to be tested by the serving test center (STC) or controlling serving test center (CSTC) to determine the nature of the

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trouble. Refer to the practice entitled 85A2 Data Selective Calling Service Stations—150-Word per Minute Half-Duplex Operation—Maintenance (581-131-301) for additional troubleshooting and trouble clearing procedures. Any or all of the following tests or procedures may be used in investigating a trouble condition:

- Local test
- Loop-back test of data set 108-type or 109E
- Alternate troubleshooting tests and substitution procedures
- Continuity test of DAS 804R5 or 804R7
- Attended station testing with STC.

### 1.06 Tools and Material Required:

- KS-14510-L1 volt-ohm-milliammeter (VOM)
- 1011-Type handset
- KS-16785-L3 plug.

## 2. INSTALLATION TESTS

**2.01** The installation tests are used to verify that the station has been installed properly and is operative as part of the 85A2 DSCS system.

**2.02** After completing the installation of a station, perform the applicable test procedures contained in Part 4 or 5 of this practice. Refer to 1.04 for a list of the tests required to verify that a station is properly installed and operative.

**Note:** When a station is equipped with a data set 109A-type, loop-back testing of the station is not possible due to the design of the data set.

## 3. TROUBLESHOOTING

**3.01** The troubleshooting procedure should be performed in accordance with the maintenance philosophy given in the section entitled 85A2 Data Selective Calling Service Station—150-Word Per Minute Half-Duplex Operation—Maintenance (581-131-301).

**3.02** Maintenance procedures for the TTYs associated with the station should be performed in accordance with the applicable parts of the following section.

- Model 37 Teletypewriter—Field Maintenance Practice (FMP) (579-400-350).



**Before testing a station, the type controller used at the station and the options used should be determined from the service order or station line card. The STC or CSTC must be informed of the type controller and the options provided so the options can be verified and the test "tailored" to the individual station (eg, the station stops on STX or the station does not stop on STX, etc). Unless this information is verified, an invalid test may result. Refer to Tables A and B for information on the options that may exist at a station.**

## 4. TEST PROCEDURES

### PREPARING TEST TAPE (ASR TTY ONLY)

**Note:** When preparing a message, insert approximately 3 inches of deletes (DELS) between each message and the next in order to aid in identifying each of the messages. A message begins with the start of heading (SOH) and ends with the end of text (ETX). A transmission begins with the start of heading (SOH) and ends with the end of transmission (EOT). A typical message format is shown in Fig. 1.

**4.01** A test tape should be prepared before beginning the test procedure. To prepare the test tape, proceed as follows:

- (1) Condition the TTY for off-line operation by depressing the MODE switch designated OFF-LINE. The OFF-LINE lamp on the control panel lights. The OUT OF SVC lamp on the attendant set lights.
- (2) Start with approximately 3 inches of deletes (DELS) and proceed to type the test tape message shown in Fig. 1, ending with sufficient deletes (DELS) to ensure that the EOT can be detected by the reader.

TABLE A  
85A2 STATION OPTIONS AVAILABLE WITH DAS 820G-L1/2 AND DAS 820G-L1/3

FUNCTION OR OPTION		CIRCUIT PACK	SWITCH	POSITION
Parity Error Response	Detection of parity error causes a CAN response	AR485	SW3	IN
	Detection of parity error <i>does not</i> cause a CAN response	AR485	SW3	OUT
Audible Alarm	Audible alarm is activated when the MSG ERROR lamp is lighted	AR487	SW4	IN
	Audible alarm <i>is not</i> activated when the MSG ERROR lamp is lighted	AR487	SW4	OUT
Paper Alarm	Alarm indication when paper is low (friction-feed machine) or the tape is out (ROTR machine)	AR487	SW1	IN
	Alarm indication when paper is out (sprocket-feed machine)	AR487	SW1	OUT
Baud	150-baud operation	AR190	SW1 SW2 SW3 SW4	OUT OUT IN IN
Shift Out EOT	Station returned to idle mode upon receipt of EOT	AR485	SW2	OUT
	EOT shifted to terminal by pushing character out of transfluxor before stations assume idle mode	AR485	SW2	IN
Polling Response	Station starts transmitter when polled	AR485	SW4	OUT
	Station answers ACK when polled	AR485	SW4	IN
	Station answers SIC when polled	AR485	SW4	IN
Stop On SOH	Station <i>does not</i> stop on SOH	AR530	SW3	OUT
	Station stops on SOH	AR530	SW3	IN
Stop On STX	Station stops on STX	AR530	SW4	OUT
	Station <i>does not</i> stop on STX	AR530	SW4	IN
Stop On ETX	Station <i>does not</i> stop on ETX	AR530	SW1	IN
	Station stops on ETX	AR530	SW1 SW2	OUT IN
Copy Heading	Station will copy heading	AR486	SW1	OUT
	Station <i>will not</i> copy heading	AR486	SW1	IN
Delete Trailer	Alarm on delete trailer	AR487	SW2	OUT
	No alarm on delete trailer	AR487	SW2	IN

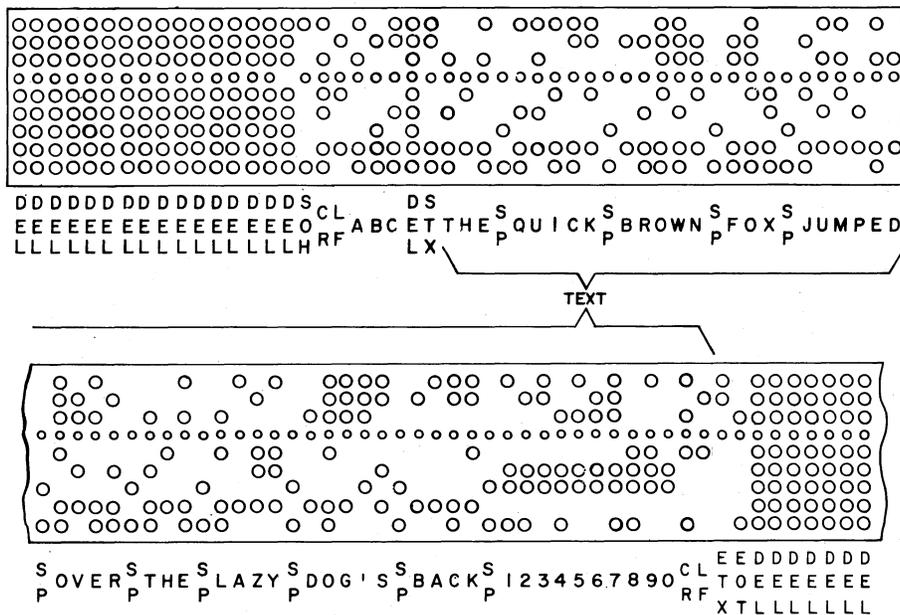
TABLE B  
85A2 STATION OPTIONS AVAILABLE WITH DAS 820J-L1/3

FUNCTION OR OPTION		CIRCUIT PACK	SWITCH	POSITION (NOTE 1)
Parity Error Response	Detection of a parity error causes a CAN response	AR683	S7	Closed
	Detection of a parity error <i>does not</i> cause a CAN response	AR683	S7	Open
Audible Alarm	Audible alarm is activated when a message error is detected and the MSG ERROR lamp is lighted	AR683	S3	Closed
	Audible alarm <i>is not</i> activated when a message error is detected and the MSG ERROR lamp is lighted	AR683	S3	Open
Paper Alarm	Paper alarm and indication is actuated when paper is low (friction-feed machine) or tape is low (RO TTY))	AR683	S6	Closed
	Paper alarm and indication is actuated when paper is out (sprocket-feed machine)	AR683	S6	Open
Shift Out EOT	Station returned to idle mode upon receipt of EOT	AR684	S8	Open
	EOT passed to terminal by pushing character before station assumes the idle mode	AR684	S8	Closed
Polling Response (Test Poll and Regular Poll)	CAN response indicates no traffic — receiver ready (must be specified for DAS-820G-L1/ - operation)	AR683	S8	Open
		AR684	S1 S2 S3 S4 S5 S6 S7	Closed Open Open Closed Open Open Closed
Response to Call-in while Form or Tape is Feeding	ACK or SIC response	AR683	S1 S2	Open Closed
	NAK response	AR683	S1 S2	Closed Open
Response to Call-in, Roll Call, and Test Poll	ACK response (see <i>Note 2</i> )	AR686	Switch SC All Eight Sections	Switch positions are determined by the code character
	SIC response (see <i>Note 2</i> )			
Automatic Tape Feedout	Automatic tape feedout on roll call or when the station unselects	AR683	S4	Closed
	Automatic tape feedout only when station unselects	AR683	S4	Open
Baud	150-baud operation ( <i>Note 4</i> )	AR685	S1*	Open
		AR685	S2*	Open

TABLE B (Cont)

FUNCTION OR OPTION		CIRCUIT PACK	SWITCH	POSITION (NOTE 1)
Carrier Squelch On Carrier Fail	Yes (Note 4)	AR682	S1*	Closed
	No (Note 3 and Note 4)	AR682	S1*	Open

- Note 1:** The "open" and "closed" designations referred to in this table are obtained by depressing one side of the rocker arm switch. When the side adjacent to the numbers is depressed, the switch is closed. When the side opposite the numbers is depressed, the switch is open.
- Note 2:** Encoding the ACK or SIC response requires the setting of the eight contacts of the SC switch (AR686 CP) to give the proper mark-space sequence. The setting of each contact is determined by the character being encoded. Refer to the BSP entitled 85A1 Data Selective Calling Service Stations — 100-Word Per Minute Half-Duplex Operation — Maintenance (581-131-300) for information on setting these switches.
- Note 3:** When the data set 109E is used, the no-carrier squelch option must be provided for both the data set and the DAS 820J-L/-.
- Note 4:** Switches marked thus (\*) are screw switches and are "closed" when the screw is turned all the way in.



LEGEND:

- D  
E=DELETE  
L
- S  
O=CTRL A  
H
- S  
T=CTRL B  
X
- E  
T=CTRL C  
X
- E  
O=CTRL D  
T
- S  
P=SPACE  
P
- C  
R=CARR RET  
R
- L=LINE FEED  
F (NEW LINE)

Fig. 1—Test Tape for Testing 85A2-Type Outlying Station

LOCAL TESTING

**4.02** The following test should be performed to verify that the station functions properly. No attempts should be made to test the station with the STC or CSTC until it has been verified that the TTY, and associated components which are part of the station, are operative.

**4.03** To perform a local test of the station, proceed as follows:

- (1) Supply power to the station. This will initialize the circuits of DAS 820G-L1 type or 820J-type.

**Note:** In the following steps, the alarms and associated indicator lamps are checked to verify that they are operative. The audible alarm can be optionally disabled.

- (2) Verify that the AUD OFF lamp is extinguished. If the lamp is lighted, it can be extinguished by depressing and restoring the AUD OFF key.
- (3) Use a nearby telephone, if available, to call the STC or CSTC and request a release. The STC will connect the loop to a test hub when the release is granted and will acknowledge release. This prevents interrupting service in the rest of the system.



**Take proper steps to ensure that the customer is not billed for test calls. Refer to the section entitled Crediting Charges on Test Calls (010-250-001).**

- (4) When the station is equipped with an ASR TTY, condition the TTY for on-line operation. The ON LINE and PERF lamp lights and the motors run.
- (5) Remove the paper supply. The PAPER lamp should light and the alarm should sound.  
**Note:** If the primary station is a 37 ROTR TTY, remove the tape. This is analogous to the removal of the paper supply and will cause a corresponding alarm indication.
- (6) Operate the AUD OFF key. The AUD OFF lamp should light and the alarm should be silenced.

- (7) Replace the paper (or tape) supply. The PAPER (TAPE) lamp will remain lighted.
- (8) Operate the PAPER (TAPE) key. The PAPER (TAPE) lamp will be extinguished.
- (9) Restore the AUD OFF key. The AUD OFF lamp will be extinguished.

**Note:** In the preceding steps, the alarm would have sounded each time an alarm condition was encountered unless the AUD OFF key had been operated.

- (10) Operate the OUT OF SVC key. This key is operated to place the station in an out-of-service status. When the key is operated while the station is unselected, the OUT OF SVC lamp lights, the station will give a not-ready response to call in, the SEL lamp will flash once and the alarm will momentarily sound. When the key is operated while a station is selected, the OUT OF SVC lamp will not light and the key operation will not take effect until the station becomes unselected. Operation of this key will not inhibit the station from making a CAN response to call in. Operation of the OUT OF SVC key will cause the TTY motor to turn off (ASR in off-line mode and idle) unless the station is selected. The OUT OF SVC lamp will also light when the station is in the loop-back mode or the ASR is in the off-line mode.

- (11) Operate the OUT OF SVC key. The OUT OF SVC lamp will extinguish and the station is now restored to service. The motors continue to run unless the mode switch is operated to place the station in the unattended mode and the station is idle.

**Note:** When an ASR TTY is used at a station, the mechanical operation of the TTY can be checked by going off-line and using the keyboard to verify operation of the machine. When an RO TTY or ROTR TTY is provided, a similar mechanical check of the unit cannot be made.

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- (12) Condition the station TTY for the off-line mode of operation.

- (13) Check the mechanical operation of the TTY (by typing U\* U\*..., etc) to verify that the TTY is operational. Refer to the previously referenced FMPs for information on the repair and adjustment of the TTY.
- (14) Remove the TTY from the off-line mode.
- (15) Perform the loop-back test of data set 108-type or 109E to verify operation of the data set and facilities.

#### **RO and ROTR Stations Equipped With DAS 820J-L1/3**

**Note:** In order to perform the following tests, it is necessary to gain access to the DAS 820J-L1/3 controller. Refer to the Bell System Practice (BSP) entitled 85A2 Data Selective Calling Service Stations—150 Word Per Minute Half-Duplex Operation—Maintenance (581-131-301).

**4.04** The DAS 820J-L1/3 controller provides a data bypass switch (designated T) on the controller. Operation of the T switch supplies data set signals (via the controller interface) to the TTY, thereby bypassing the controller logic circuits. This allows additional testing of the TTY using signals from the STC.

#### **LOOP-BACK TEST OF DATA SETS 108-TYPE AND 109E**

**4.05** The remote test of data set 108-type or 109E also necessitates gaining access to the DAS 820G-L1 type or 820J-L1/3. Perform the following steps to check the operation of the data set and verify that the line facilities are operative.

**Note:** This test is essentially the same as Action B in the attended tests.

- (1) Use a nearby telephone to call the STC or CSTC and request a test of the data set 108-type or 109E.
- (2) The STC or CSTC will request that the NORM-MTCE switch be operated to the MTCE position to loop back the data set.
- (3) The STC or CSTC can now perform a remote test of the data set 108-type or 109E to verify that the data set and loop facilities are operating properly.

- (4) Verify that nothing is typed at station.
- (5) After completion of the test, return the NORM-MTCE switch to the NORM position.

**4.06** The TTY range adjustment and/or adjustments to any auxiliary receiver should be made with a test signal that is transmitted from the STC. The station controller regenerates signals between the line and the TTY. Signals sent from the station reader in the off-line mode are not regenerated by the station controller. Range finder settings for ASR units (typing unit and punch, 37 only) can be made with the station in the off-line mode and then verified with signals from the STC. Range finder settings for the primary and auxiliary RO and ROTR must be made with STC signals.

#### **ATTENDED STATION TESTING WITH STC—STATION EQUIPPED WITH DAS 820G-L1/- CONTROLLER**

**4.07** This is a concurrent test between an attended station and an STC or CSTC in which voice communication must be established and maintained throughout the test. The STC using the section entitled 85A-Type Data Selective Calling Service—STC Test Procedures (666-702-500) will ask the craft employee at the station to provide the alphanumeric characters for the SCC, SIC, and station options which will be required by the STC during the test.

**4.08** The STC can test poll the station by sending the ENQ-EOT-DLE sequence followed by the SCC. The station will respond with ACK (or SIC), NAK, or CAN depending on the condition of the station and the options provided by the station. The test poll does not pick up traffic and it gives no visual indications to the station attendant that a poll is being made.

**4.09** This station test procedure has some steps that require no action or verification by the telephone company (Telco) employee. A statement giving information on STC testing is included in parentheses to aid the attendant in following the test progress at the STC.

**4.10** When a step cannot be verified, refer to the same step number in Table C for a listing of components or items that may be the cause of the trouble condition or malfunction.

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Table C may be used for either DAS 820G-L1/2 or DAS 820G-L1/3. When the L1/3 controller is provided, AR269 circuit pack (CP) is used in place of AR274. Therefore, by changing all AR274 references to AR269, Table C can be used for DAS 820G-L1/3.

**4.11** Several steps in Table C refer to Action A and Action B which are defined as follows:

**Action A:** Initialize station by having the STC send ENQ-DC2-ETX -EOT-DEL 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.

**4.12** Perform the following step-action-verification to check an attended DSCS station that uses a DAS 820G-L1/- controller (Fig. 2).

**85A2 Service, Sectionalizing Trouble—Attended Station Testing (DAS 820G-L1/- only)**

STEP	ACTION	VERIFICATION
1	None (STC sends ENQ DC2-ETX-EOT-DEL to initialize.)	SEL lamp OFF.
2	Check paper, form, or tape supply in TTY. Clear all alarms that may be on, check that OUT OF SVC and AUD OFF keys in attendant set are released. Check for no tape in tape reader. On ASR TTY, depress the ON LINE mode switch.	In attendant set: all lamps extinguished and audible alarm silent; all keys released. ASR TTY motor on. ON LINE and PERF lamps lights.
3	Operate MTCE/NORM switch on the controller to MTCE.	None (OUT OF SVC lamp remains extinguished when MTCE/NORM switch is in MTCE position.)
4	None (STC sends to test for distortion of characters.)	None
5	Return MTCE/NORM switch on the controller to NORM.	None

STEP	ACTION	VERIFICATION
6	Operate OUT OF SVC key in attendant set.	OUT OF SVC lamp lights.
7	None (STC sends ENQ-SCC.)	SEL lamp flashes once and audible alarm sounds momentarily.
8	Release OUT OF SVC key in attendant set.	OUT OF SVC lamp extinguishes.
9	Create paper alarm by real or simulated removal of paper, form, or tape from the machine.	PAPER lamp lights; audible alarm sounds.
10	None (STC sends ENQ-SCC.)	SEL lamp flashes once.
11	Replace paper, form, or tape in the machine. Momentarily operate PAPER key on attendant set.	PAPER lamp extinguishes; audible alarm becomes silent.
12	None (STC sends ENQ-SCC.)	SEL lamp lights; ASR motor is running.
13	None (STC sends SOH-HEADING-DEL.)	TTY prints (or punches) HEADING.
14	None (STC sends ENQ and a character that is different from SCC.)	None
15	None (STC sends several characters.)	None
16	None (STC sends ENQ-DC2.)	None
17	None (STC sends TDM-STX-TEXT 1-DC2-TEXT 2-DC4-FF-DEL.)	Primary machine prints or punches TDM-STX (punched only)-TEXT 1-TEXT 2 (if no print suppression). Form feeds (if sprocket-feed machine). Aux types or punches TEXT 2.
18	None (STC sends roll-call ETX-ENQ-SCC.)	If primary machine is an ROTR and has tape feed on roll-call option, tape feeds out.
19	None (STC sends disconnect EOT-DEL.)	SEL lamp extinguishes. If primary machine is an ROTR and has the push-out EOT option, an EOT should be punched in the tape. If disconnect option is provided, tape feeds out and TTY motor stops.
20	None (STC sends call-in ENQ-SCC-ENQ-DC2-TEXT.)	Motor starts (RO and ROTR) and SEL lamp lights; TEXT received on primary machine.
21	None (STC sends character with parity error-TEXT-ETX-ENQ-SCC-EOT-DEL.)	MSG ERROR lamp lights; audible alarm sounds (if option is in); SEL lamp extinguishes. Underline is printed for characters with parity error.
22	Operate the MSG ERROR key on the attendant set. (STC will then send ENQ-SCC.)	SEL lamp lights. TTY motor starts on RO and ROTR.

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STEP	ACTION	VERIFICATION
		ASR motor starts if it was in the unattended mode and idle.
23	None (STC sends ENQ-DC2-TEXT-BREAK-ENQ-EOT-EOT)	Machine copies TEXT underlines for characters with parity error. MSG ERROR lamp lights, audible alarm sounds, if option in, and SEL lamp extinguishes. TTY motor stops.
24	Operate the MSG ERROR key on the attendant set.	MSG ERROR lamp extinguishes and audible alarm is silenced.
25	None (STC sends ENQ-SCC.)	None
26	None (STC sends ENQ-SCC.)	SEL lamp lights. TTY motor starts.
27	None (STC creates a carrier fail condition.)	MSG ERROR lamp lights; audible alarm sounds. An underline is printed for characters with parity error. SEL lamp extinguishes and motor stops.
28	Operate MSG ERROR key on attendant set.	Aud alarm becomes silent; MSG ERROR lamp extinguishes.
29	None (STC sends ETX-ENQ-SCC-EOT-DEL.)	None
30	Check that ASR is in the ON-LINE mode, with no tape in the gate of the tape reader. Operate the OUT OF SVC key on the attendant set.	ON LINE and PERF lamps light and motor is running. OUT OF SVC lamp lights.
31	None (STC sends DLE-SCC.)	None
32	Release OUT OF SVC key on attendant set.	OUT OF SVC lamp shall be off.
33	None (STC sends a character other than SCC.)	None
34	If not previously prepared, prepare tape: DEL...DEL-SOH-CR-LF-A-B-C-DEL-STX-TEXT-EXT-EOT-DEL...DEL. Insert this tape into gate at initial DELS, operate the READER ON key of the M37 ASR.	BID lamp lights.
<b>Note:</b> The station transmission can optionally be arranged to stop upon receipt of control codes (SOH, STX, ETX, EOT) received from the tape. Stopping of the tape is indicated in the following test. The tape stops two characters after the control code is read.		
35	None (STC sends DLE-SCC.)	(a) SEL lamp lights. <i>or</i> (b) SEL lamp lights and tape advances and stops after SOH, depending on controller

STEP	ACTION	VERIFICATION
		option. <i>or</i> (c) SEL lamp lights and tape advances and stops after STX. Station may or may not copy A-B-C, depending on controller option. <i>or</i> (d) SEL lamp lights and tape advances and stops after ETX. <i>or</i> (e) SEL lamp lights and tape advances and stops after EOT. SEL lamp extinguishes.
	<b>Note:</b> If the verification is 35(a), proceed to Step 36. If 35(b), proceed to Step 37. If 35(c), proceed to Step 38. If 35(d), proceed to Step 39. If 35(e), proceed to Step 40.	
36	None (STC sends STX.)	(a) Tape advances and stops after SOH. <i>or</i> (b) Tape advances and stops after STX. Station may not copy A-B-C, depending on controller option. <i>or</i> (c) Tape advances and stops after ETX. <i>or</i> (d) Tape advances and stops after EOT. SEL lamp extinguishes.
	<b>Note:</b> If the verification is 36(a), proceed to Step 37. If 36(b), proceed to Step 38. If 36(c), proceed to Step 39. If 36(d), proceed to Step 40.	
37	None (STC sends STX.)	(a) Tape advances and stops after STX. Station may or may not copy A-B-C, depending on controller option. <i>or</i> (b) Tape advances and stops after ETX. <i>or</i> (c) Tape advances and stops after EOT. SEL lamp extinguishes.
	<b>Note:</b> If the verification is 37(a), proceed to Step 38. If 37(b), proceed to Step 39. If 37(c), proceed to Step 40.	
38	None (STC sends ENQ-DC2-STX.)	(a) Tape advances and stops after ETX. Station copies TEXT. <i>or</i> (b) Tape advances and stops after EOT. Station copies TEXT. SEL lamp extinguishes.
	<b>Note:</b> If the verification is 38(a), proceed to Step 39. If 38(b), proceed to Step 40.	
39	None (STC sends DLE-STX.)	Tape advances and stops after EOT. SEL lamp extinguishes.

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STEP	ACTION	VERIFICATION
40	None (STC sends DLE-SCC.)	(a) SEL lamp lights. <i>or</i> (b) SEL lamp lights and BID lamp extinguishes. TAPE lamp lights and audible alarm sounds. Depending on controller and option, audible alarm may not sound.
<i>Note:</i> If the verification is 40(a), proceed to Step 41. If 40(b), proceed to Step 42.		
41	None (STC sends STX.)	SEL lamp remains lighted and BID lamp extinguishes. TAPE lamp lights and audible alarm sounds. Depending on controller and option, audible alarm may not sound.
42	Operate TAPE key on attendant set.	SEL lamp lighted, TAPE lamp extinguishes, and audible alarm is silenced if not already silent.
43	None (STC send BREAK-PAUSE-ENQ-EOT-EOT.)	SEL lamp extinguishes. Emergency alarm.
44	Insert test tape into the gate at initial DELs; operate the READER ON key on the M37 ASR.	READER lamp lights. BID lamp on the attendant set lights.
45	None (The STC will repeat the applicable parts of Steps 35 through 40 to check operation of BID key.)	At the completion of Step 40, all lamps at the station attendant set should be off.
46	Remove tape and release the BID key.	None
47	Insert test tape into the gate at initial DELs; operate the READER ON key on the M37 ASR.	READER lamp lights. BID lamp on the attendant set lights.
48	None (The STC will repeat the applicable parts of Steps 35 through 38 and perform an emergency stop during transmission of the TEXT.)	EMG STOP lamp lights and audible alarm sounds. Tape stops. SEL and BID lamps are off.
49	Operate EMG STOP key on attendant set.	EMG STOP lamp extinguishes, audible alarm silenced, and BID lamp lights.
50	Insert test tape into the gate at initial DELs; operate the READER ON key on the M37 ASR.	READER lamp lights. BID lamp is lighted.
51	The STC will repeat the applicable parts of Steps 35 through 38. During TEXT transmission, cause a paper-out condition.	<b>Friction-feed machine:</b> PAPER lamp on the attendant set lights, audible alarm sounds, tape continues to run. <b>Sprocket-feed machine:</b> PAPER lamp on the attendant set lights,

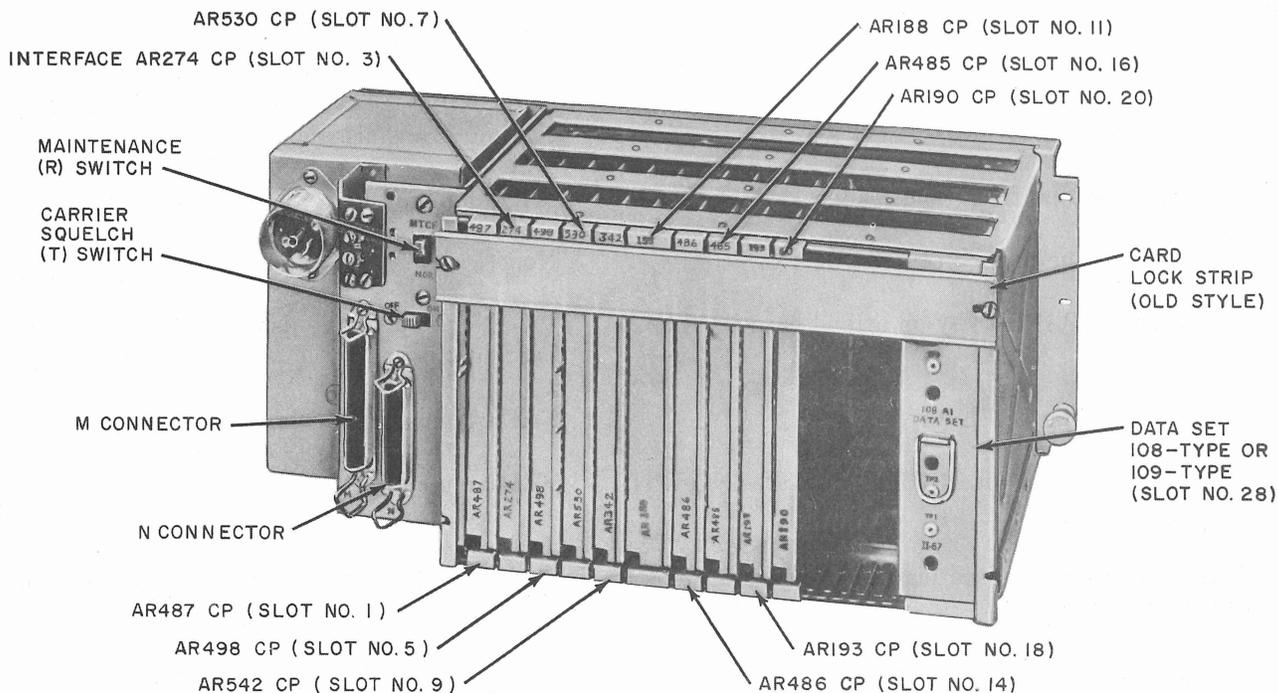
STEP	ACTION	VERIFICATION
		audible alarm sounds, tape stops, and BID lamp extinguishes. Depress PAPER key to continue transmission.
52	Remove tape from tape reader.	TAPE lamp lights.
53	Replace the paper in the ASR.	None
54	Depress PAPER key on attendant set.	PAPER lamp extinguishes and audible alarm becomes silent.
55	Depress the TAPE key.	TAPE lamp extinguishes.
56	None (STC sends BREAK-PAUSE-ENQ-EOT-EOT.)	SEL lamp extinguishes.

**Note:** For friction-feed machines perform Steps 57 through 59. For sprocket-feed machines perform Steps 60 through 62.

57	None (STC sends ENQ-SCC.)	SEL lamp lights.
58	Cause a paper-out condition.	Audible alarm sounds when the paper-out condition occurs. PAPER lamp lights. The station remains selected (SEL lamp remains lighted).
59	Restore paper and operate the PAPER key.	Alarm condition canceled, PAPER lamp is extinguished.
60	None (STC sends ENQ-SCC.)	SEL lamp lights.
61	Cause a paper-out condition.	Audible alarm sounds when the paper-out condition occurs. ERROR lamp lights, PAPER lamp lights, and SEL lamp extinguishes (station unselects).
62	Restore paper and operate the PAPER key.	Alarm condition canceled, PAPER lamp is extinguished.
63	None (STC sends ENQ-DC2-ETX-EOT-DEL)	Station returns to idle state End of test.

**ATTENDED STATION TESTING WITH STC—STATION  
EQUIPPED WITH DAS 820J-L1/3 CONTROLLER**

SECTION 581-131-501



NOTE:  
 DAS 820G-L1/2 USES AR 274 CP (SHOWN)  
 DAS 820G-L1/3 USES AR 269 CP

Fig. 2—Data Auxiliary Set 820G-L1/2—Location and Designation of Circuit Packs

**4.13** This is a concurrent test between an attended station and an STC or CSTC in which voice communication must be established and maintained throughout the test. The STC, using the section entitled 85A-Type Data Selective Calling Service—STC Test Procedures (666-702-500), will ask the craft employee at the station to provide the alphanumeric characters for the SCC, SIC, and station options which will be required by the STC during the test.

**4.14** This station test procedure has some steps that require no action or verification by the Telco employee. A statement giving information on STC testing is included in parentheses to aid the attendant in following the test progress at the STC.

**4.15** When a step cannot be verified, refer to the same step number in Table D for a listing of components or items that may be the cause of the trouble condition or malfunction.

**4.16** Several steps in Table D refer to Action A and Action B which are defined as follows:

**Action A:** Initialize station by having the STC send ENQ-DC2-ETX-EOT-DEL 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.

**4.17** Perform the following step-action-verification to check an attended DSCS station that uses the DAS 820J-L1/3 controller (Fig. 3).

TABLE C  
TROUBLE LOCATING CHART FOR DAS 820G-L1 TYPE

STEP FAIL- URE	TYPE OF TROUBLE		EQUIPMENT TO BE CHECKED				
	STATION	TEST CENTER	TTY	820G-L1/2 CONTROLLER (SEE NOTE)	DAS 804	LINE OR HUB FACILITY	OTHER
1	SEL lamp remains lighted			AR188, 190, 193, 274, 498	Send- Receive	Loop, 811, hub	Remove AC power to initial- ize station
2	Motor does not run		Motor, TTY mode switch	AR274, 487	Send- Receive		Check for volt- age pin 24 M connector, TTY fuses, +48V, motor breaker
	PAPER OUT lamp not extinguished		PAPER OUT switch, ESU	AR274, 487 NST	Send- Receive		Check voltage pins 6 and 50 of M connector
	TAPE lamp not extinguished			AR274, 487	Send- Receive		Contacts in DAS 804 not opening
3		No tones		D/S, NST		Loop	No incoming carrier, turn carrier squelch "T" switch OFF
		Low level		D/S		Loop	
		High level		D/S		Loop	
		Off frequency		D/S		Loop	
		Continuous space frequency		D/S			Incoming signal spacing
4		High distor- tion or no response		D/S		Loop, 811, hub or D/S	
5	Not applicable	Not applicable					

ESU = Electrical Service Unit

D/S = Data Set

NST = Nest Wiring

Note: Substituting AR269 CP for AR274 changes controller to DAS 820G-L1/3.

TABLE C (Cont)

STEP FAIL- URE	TYPE OF TROUBLE		EQUIPMENT TO BE CHECKED				
	STATION	TEST CENTER	TTY	820G-L1/2 CONTROLLER (SEE NOTE)	DAS 804	LINE OR HUB FACILITY	OTHER
6	OUT OF SVC lamp does not light			AR274 NST	Send- Receive		Check lamp and contact on DAS 804, +12V on pins 2 and 4 of N connector
7		No response or character other than NAK		AR188, 274, 498, D/S		Loop, D/S, 811, or hub	
	SEL lamp does not flash			AR274, 498, NST	Send- Receive		Check lamp
	Audible alarm does not sound			AR274, 487, 498, NST	Send- Receive		
	SEL lamp lights						Station selected as a receiver, not out of service
8	OUT OF SVC lamp does not extinguish		ESU	AR274, NST	Send- Receive		Action A, station may be in loop- back mode. TTY mode switch in OFF LINE position
9	PAPER lamp does not light		PAPER switch, ESU	NST	Send- Receive		Check paper out lamp and for voltage pins 50 and 31 of M connector
	Audible alarm does not sound			AR274, 487, NST	Send- Receive		Check speaker
10		No response		AR188, 190, 193, 486, 487, 498, 530, 542, D/S		Loop, D/S, 811, or hub	Action B
		Response other than NAK	Contacts, ESU	AR188, 190			Station is not out of service
	SEL lamp does not flash			AR498	Send- Receive		Station is selected as a receiver

TABLE C (Cont)

STEP FAIL- URE	TYPE OF TROUBLE		EQUIPMENT TO BE CHECKED				
	STATION	TEST CENTER	TTY	820G-L1/2 CONTROLLER (SEE NOTE)	DAS 804	LINE OR HUB FACILITY	OTHER
10 (Cont)	SEL lamp lights		Contacts, ESU	AR274, 487, NST	Send- Receive		
11	PAPER lamp does not extinguish		Paper contacts, ESU	AR274, 487, NST	Send- Receive		DAS 804 con- nections or key contacts. Check continuity be- tween pins 6 and 8 of N plug for paper and 15 and 8 for alarm
12		No response		AR188, 190, 193, 274, 486, 487, 498, 530, 542, D/S, NST		Loop, D/S, 811, or hub	Action B
		Response other than SIC or ACK	Form feed	AR188, 274, 487, NST			Station is still out of service
	SEL lamp does not light			AR274, 498			Check lamp
	SEL lamp flashes		Contacts	AR274, 487			Station is not ready to receive
13	TTY does not copy heading		ESU or typing unit	AR274			Check for voltage on pin 43 of M connector
	Motor not running		Motor fuse or ESU	AR274			
		Receives copy					Station in loop- back; send ETX EOT and repeat step
	TTY prints underline characters, ERROR lamp lights, copy is garbled					Loop, D/S, 811, or hub	Action B

TABLE C (Cont)

STEP FAIL- URE	TYPE OF TROUBLE		EQUIPMENT TO BE CHECKED				
	STATION	TEST CENTER	TTY	820G-L1/2 CONTROLLER (SEE NOTE)	DAS 804	LINE OR HUB FACILITY	OTHER
14		Hits or characters		D/S or NST		Loop, D/S, 811 at hub or noise pickup at hub	Station may be in loop-back; send ETX-EOT and repeat test
	Station unselects			AR188, D/S, NST		Loop, D/S, 811, or hub	
	Error lamp lights			D/S		Loop, D/S, 811, or hub	Parity error
	Prints underline characters		Motor, lost character contact, typing unit			Loop, D/S, 811, or hub	
15	Station prints characters			AR188, 485, 542, NST			Failed to detect ENQ or failed to blind on detection of ENQ
		Receives the transmitted characters		AR193, NST			Station in loop-back mode; send ETX-EOT
16		Hits or characters				Loop, D/S, 811, at hub noise pickup	Action B
	ERROR lamp lights			AR188, 485, 542, NST			
	Hit characters						
	Underline characters			AR188			
	Station unselects						
17	TTY does not print TDM or TEXT		ESU or typing unit	AR188, 485, 542		Loop, D/S, 811, or hub	Station failed to unblind; detect ENQ-DC2

TABLE C (Cont)

STEP FAIL- URE	TYPE OF TROUBLE		EQUIPMENT TO BE CHECKED				
	STATION	TEST CENTER	TTY	820G-L1/2 CONTROLLER (SEE NOTE)	DAS 804	LINE OR HUB FACILITY	OTHER
17 (Cont)	TTY prints underline characters. ERROR lamp lights		Lost character contact, typing unit			Loop, D/S, 811, or hub	Parity error
	No typing on ROTR		ESU, contacts				
	No form feed		Typing unit				
	Garbled copy		Typing unit				
		Prints copy or hits and characters					Station may be in loop-back mode; send EXT-EOT and repeat test
18		No response		AR188, D/S		Loop, D/S, 811, or hub	Failed to detect the roll call sequence. Repeat ETX-ENQ-SCC
		CAN response	Lost character contact, typing unit				Parity error
		Response other than SIC or ACK		AR274, 487, 498, 542			
	Hit characters received		Motor, ESU			Loop	
	Motor stops running		Motor fuse				Station unselected because of carrier fail condition
19	SEL lamp does not extinguish			AR188, 274, 498 542, NST		Loop, D/S, 811, or hub	Failed to detect EOT-EOT
	Motor does not stop			AR188, 274, 498 530, 542, NST		Loop, D/S, 811, or hub	Check for ground on pin 24 of M connector

TABLE C (Cont)

STEP FAIL- URE	TYPE OF TROUBLE		EQUIPMENT TO BE CHECKED				
	STATION	TEST CENTER	TTY	820G-L1/2 CONTROLLER (SEE NOTE)	DAS 804	LINE OR HUB FACILITY	OTHER
19 (Cont)	EOT not punched in tape if ROTR			AR485			Shift out EOT option not provided
	False alarms on attendant set both audible and visual		ESU, noise network				
		Hits received	Protective network				Check system grounding
20		No response		AR188, 190, 193, 274, 486, 487, 498, 530, 542, D/S, NST		Loop, D/S, 811, or hub	Action B
		Single character		AR188		Loop, D/S, 811, or hub	Noise at customer computer switcher
		Response other than SIC or ACK	Lost character contacts or typing unit				
		CAN response	Contacts, ESU	AR274, 487			Last message not properly received
		NAK response	Contacts				Station not ready to receive
		SEL lamp does not light	Contacts for form feed, vertical or horizontal tab, typing unit				
		Motor does not start	Fuse or breaker				
		False alarms	Check protective networks				

TABLE C (Cont)

STEP FAIL- URE	TYPE OF TROUBLE		EQUIPMENT TO BE CHECKED				
	STATION	TEST CENTER	TTY	820G-L1/2 CONTROLLER (SEE NOTE)	DAS 804	LINE OR HUB FACILITY	OTHER
20 (Cont)	No TEXT received		Typing unit	AR542 485, D/S			Station failed to unblind upon generation of ACK or SIC
21	MSG ERROR lamp does not light			AR188, 274, 486			Action A. Check lamp and con- tinuity between pins 12 and 8 on N connector
	Underline characters not received		Typing unit	AR188, 190, 486			
	Audible alarm does not sound			AR274			Check speaker. Check for volt- age between pins 8 and 22 of N connector
	No copy	No response		D/S		Loop, D/S, 811, hub	
		Character other than ACK, SIC, or CAN		AR188, 274, 487			Check for noise
		False SIC character		AR188			
	SEL lamp does not extinguish			AR274, 498			
	Motor does not stop		ESU, contacts for form feed or horizontal tabs				Failed to detect EOT-EOT
22		No response or false response		AR188, 190, 193, 274, 486, 487, 498, 530, 542, D/S, NST		Loop, D/S, 811, or hub	Action 3, also check for noise condition

TABLE C (Cont)

STEP FAIL- URE	TYPE OF TROUBLE		EQUIPMENT TO BE CHECKED				
	STATION	TEST CENTER	TTY	820G-L1/2 CONTROLLER (SEE NOTE)	DAS 804	LINE OR HUB FACILITY	OTHER
23	No copy			D/S			Action B
	Garbled copy		ESU, typing unit	AR188, 190, 193, 274			
	MSG ERROR lamp does not light			AR274, 487			Check lamp
	Audible alarm does not sound			AR274, 487			Check AUD OFF key on attendant set. Check for open between pins 15 and 8 of N plug
	Underline characters not received		Typing unit	AR188, 190, 486			
	Station does not unselect			AR188			Failed to detect EOT
24	MSG ERROR lamp does not extinguish			AR274, 487, 498	MSG ERROR contacts		Check for open between pins 13 and 8 on N plug
	Audible alarm does not silence			AR274, 487			
		Hits received				Noise	
25		No response		AR188, 190, 193, 274, 486, 487, 498, 530, 542		Loop, D/S, 811, or hub	Action B
		ACK or SIC response		AR485			Failed to set CAF flip-flop on AR485
		Response other than ACK, SIC, NAK and CAN		AR188			Check for noise
	Station SEL lamp lights			AR485			

TABLE C (Cont)

STEP FAIL- URE	TYPE OF TROUBLE		EQUIPMENT TO BE CHECKED				
	STATION	TEST CENTER	TTY	820G-L1/2 CONTROLLER (SEE NOTE)	DAS 804	LINE OR HUB FACILITY	OTHER
25 (Cont)	SEL lamp flashes		Form feed contacts				Station not ready to receive
	Audible alarm sounds		ESU	AR274, 487, 498, NST	Send- Receive		
26		No response			Send- Receive	Loop, D/S, 811, hub	Action B
		Response other than ACK or SIC		AR485			Check for noise
	SEL lamp does not light		Form feed contacts	AR188, 274, 487, 498	Send- Receive	Loop, D/S, 811, hub	Check SEL lamp
27	SEL lamp remains lighted			AR274, 487, 498			
	Audible alarm does not sound			AR193			
	MSG ERROR lamp does not light			AR274, 487, 498, NST	Send- Receive		Check lamp
	Station does not unselect			AR274, 487, 498			Check for noise
	Underline characters not received		Typing unit	AR188, 190, 486			
28	Alarm not silenced and lamp not extinguished			AR485	Send- Receive		Check continuity between pins 13 and 8 on N plug
29		Response other than CAN or no response		AR485, D/S	Send- Receive	Loop, D/S, 811, or hub	Action B. Check for noise
30	OUT OF SVC lamp does not light			AR274, NST	Send- Receive		Check lamp and key contacts
31		Response other than CAN or NAK		AR188, 190			

TABLE C (Cont)

STEP FAIL- URE	TYPE OF TROUBLE		EQUIPMENT TO BE CHECKED				
	STATION	TEST CENTER	TTY	820G-L1/2 CONTROLLER (SEE NOTE)	DAS 804	LINE OR HUB FACILITY	OTHER
31 (Cont)		No response		AR188		Loop, D/S, 811, or hub	Check continuity between pins 4 and 8 on N plug
32	OUT OF SVC lamp is not extinguished		ESU		Send- Receive		Action A. Check DAS 804 contacts
		No response		AR188, 190, 193, 274, 485, 486, 498, 530, 542, D/S, NST		Loop, D/S, 811, or hub	
		Response other than CAN or NAK		AR188, 190			Station may be in loop-back mode. Send ETX-EOT and repeat step
33		Transmitted characters					Action A
		Hit				Loop, D/S, 811, or hub	
		CAN or NAK		AR188, 190			
34	BID lamp does not light		Reader contacts	AR274, 487	Send- Receive		Check BID lamp and contacts
	Motor does not start		Motor fuse or breaker, ESU				
		Hits	Noise protection network on motor starts. Motor, ESU			Loop, D/S, 811, or hub	EMG STOP lamp may be burned out and eng stop condition may exist. Operate EMG STOP key to clear condition.

TABLE C (Cont)

STEP FAIL- URE	TYPE OF TROUBLE		EQUIPMENT TO BE CHECKED				
	STATION	TEST CENTER	TTY	820G-L1/2 CONTROLLER (SEE NOTE)	DAS 804	LINE OR HUB FACILITY	OTHER
35		(a) No re- sponse or response other than SIC or ACK		D/S  AR188, 190, 530		Loop, D/S, 811, or hub	Noise at hub; Action A; Action B
		(b) No re- sponse SIC or ACK DEL...DEL SOH-CR-LF	Tape reader and tape reader contacts, ESU	AR530			Check options on AR530
		(c) No re- sponse. Hit characters STX followed by TEXT	Tape reader and tape reader contacts, ESU	AR274, 487, 530			Check options on AR530
		(d) No re- sponse. TEXT-ETX followed by EOT		AR274			
	(a) SEL lamp does not light			AR274, NST	Send- Receive		Check SEL lamp
	(a) TD runs		ESU, check fuse, tape reader	AR274, NST			Check between pins 49 and 8 on DAS 820G-L1/2 for voltage L1/3 continuity
	(b) TD is not stopped by SOH		Tape reader	AR193, 274, 530, 542			Check stop on SOH option installed
	(c) TD is not stopped by STX			AR530			Check stop on STX option installed
	(d) TD is not stopped by ETX			AR530			Check stop on ETX option installed
	(e) TD stops before end of message pickup		Tape reader			Loop, D/S, 811, or hub	

TABLE C (Cont)

STEP FAIL- URE	TYPE OF TROUBLE		EQUIPMENT TO BE CHECKED				
	STATION	TEST CENTER	TTY	820G-L1/2 CONTROLLER (SEE NOTE)	DAS 804	LINE OR HUB FACILITY	OTHER
36		(a) No re- sponse		AR188, 190, 193, 485, 486, 498, 530, 542, D/S		Loop, D/S, 811, or hub	Action A; Action B
		(a) DEL... DEL- SOH-STX		AR530			Check stop on SOH option
		(a) DEL... DEL- SOH-STX- TEXT-ETX or DEL... ETX-EOT		AR188, 530, 542			
		(a) Garbled copy	ESU, tape reader			Loop, D/S, 811, or hub	
		(a) Parity errors received	ESU, motor noise	AR188, 190, 193, 486			Check for noise
		(a) Tape does not start		AR274, 487, 530			Action A
		(a) Tape is not stopped by SOH	Contacts, ESU,tape tape reader				Check options provided
		(a) Tape runs through complete message	Contacts, tape reader	AR530			Check options provided
		(a) Garbled copy	Tape reader			Loop, D/S, 811, or hub	Action B
		(a) False alarm indications	Motor noise or tape reader				
		(b) No re- sponse		AR188, 190, 193, 485, 486, 498, 530, 542, D/S		Loop, D/S, 811, or hub	Action B; Action A

TABLE C (Cont)

STEP FAIL- URE	TYPE OF TROUBLE		EQUIPMENT TO BE CHECKED				
	STATION	TEST CENTER	TTY	820G-L1/2 CONTROLLER (SEE NOTE)	DAS 804	LINE OR HUB FACILITY	OTHER
36 (Cont)		(b) Station is not stopped by STX					Check options provided
	(b) Station fails to copy heading			AR486			Check options provided
		(c) No response		AR188, 190, 193, 485, 486, 498, 530, 542, D/S		Loop, D/S, 811, or hub	
		(c) Station is not stopped by ETX		AR530			Check options provided
		(c) Parity errors				Loop, D/S, 811, or hub	
	(c) Station fails to copy TEXT			AR274, 485, 486			
	(c) Garbled copy			D/S		Loop, D/S, 811, or hub	Action B
		(d) No response		AR188, 190, 193, 485, 486, 498, 530, 542, D/S		Loop, D/S, 811, or hub	Action B
		(d) Station fails to send EOT	Tape reader	AR274, NST			
	(d) SEL lamp does not extinguish		NST			Check SEL lamp control, pin 16 on N connector	
37		(a) No response		AR188, 190, 193, 485, 486, 498, 530, 542, D/S		Loop, D/S, 811, or hub	Perform Action A and Action B

TABLE C (Cont)

STEP FAIL- URE	TYPE OF TROUBLE		EQUIPMENT TO BE CHECKED				
	STATION	TEST CENTER	TTY	820G-L1/2 CONTROLLER (SEE NOTE)	DAS 804	LINE OR HUB FACILITY	OTHER
37 (Cont)		(a) No CR- LF-STX	Tape reader	AR530			Check options provided
	(a) Tape does not start			AR274, 487, 530			Action A
	(a) Tape is not stopped by STX			AR530			Check options provided
	(a) Garbled copy, no local copy		Contacts, ESU tape reader	AR274, 487, 498, D/S			Check options provided
	(a) False alarms			AR530			Check options provided
		(b) No re- sponse		AR188, 190, 193, 485, 486, 498, 530, 542, D/S		Loop, D/S, 811, or hub	Action A; Action B
		(b) STX-no TEXT		AR530			Check options provided
		(b) Garbled or no copy	Tape reader	D/S		Loop, D/S, 811, or hub	Check options provided. Action B
	(b) Tape does not start			AR274, 487, 530			Action A
	(b) Tape stopped by STX			AR530			Check options provided
	(b) No local copy of heading or TEXT		ESU, tape reader	AR274, 487, 498, D/S			Check options provided
	(b) Garbled copy		ESU, tape reader	D/S			
		(c) No re- sponse		AR188, 190, 193, 485, 486, 498, 530, 542, D/S		Loop, D/S, 811, or hub	Action A; Action B

TABLE C (Cont)

STEP FAIL- URE	TYPE OF TROUBLE		EQUIPMENT TO BE CHECKED				
	STATION	TEST CENTER	TTY	820G-L1/2 CONTROLLER (SEE NOTE)	DAS 804	LINE OR HUB FACILITY	OTHER
37 (Cont)		(c) DEL... DEL- STX-TEXT- ETX		AR530			Check options provided
	(c) Tape does not start			AR274, 487, 530			Action A
	(c) Tape is stopped by ETX			AR530			Check options provided
	(c) No local copy of garbled copy		ESU, tape reader	AR274, 487, 498, 530, D/S			Check options provided
38		(a) No re- sponse		AR188, 190, 193, 485, 486, 498, 530, 542, D/S, NST		Loop, D/S, 811, or hub	Action A; Action B
		(a) Garbled TEXT	ESU, tape reader	AR188, 530, 542,		Loop, D/S, 811, or hub	
		(a) TEXT ETX- EOT		AR188, 274, 542			Check options provided
	(a) No local copy		ESU, contacts tape reader	AR274, 487, 498, D/S			Check options provided
	(a) Tape not stopped by ETX						Check options provided
	(a) False alarms		Contacts tape reader	AR188, 193, 498, 542, NST			
		(b) No re- sponse		AR188, 190, 193, 485, 486, 498, 530, 542, D/S, NST		Loop, D/S, 811, or hub	Action A; Action B

TABLE C (Cont)

STEP FAIL- URE	TYPE OF TROUBLE		EQUIPMENT TO BE CHECKED				
	STATION	TEST CENTER	TTY	820G-L1/2 CONTROLLER (SEE NOTE)	DAS 804	LINE OR HUB FACILITY	OTHER
38 (Cont)		(b) Garbled TEXT	Tape reader, ESU, contacts	AR188, 190			
		(b) TEXT- ETX	Tape reader, ESU				Check options provided
		(b) No re- sponse, tape does not start		AR274, 487, 530			
		(b) No local copy, heading or TEXT		ESU, typing unit, tape reader contacts	AR188, D/S		Check options provided
39		No response, EOT not received		AR188, 190, 193, 485, 486, 498, 530, 542, D/S, NST		Loop, D/S, 811, or hub	Action A; Action B
		No response, SEL lamp does not extinguish		AR274, 487, 530, D/S			EOT not re- ceived, station still selected. Action A
40		(a) No re- sponse		AR188, 190, 193, 485, 486, 498, 530, 542, D/S, NST		Loop, D/S, 811, or hub	Action A; Action B
		(a) DEL... DEL, or Improper SIC		AR188, 274, 487, NST			
		(a) No re- sponse, SEL lamp does not light		AR274, 487, 530			Action A

TABLE C (Cont)

STEP FAIL- URE	TYPE OF TROUBLE		EQUIPMENT TO BE CHECKED				
	STATION	TEST CENTER	TTY	820G-L1/2 CONTROLLER (SEE NOTE)	DAS 804	LINE OR HUB FACILITY	OTHER
40 (Cont)		(b) No re- sponse		AR188, 190, 193, 485, 486, 498, 530, 542, D/S		Loop, D/S, 811,	Action A; Action B
		(b) ACK or SIC		AR188, 274			Check options provided
		(b) Parity errors	ESU, tape reader	AR188, 530, 542, D/S		Loop, D/S, 811, or hub	
	(b) No re- sponse			AR274, 487, 530, D/S			Action A
	(b) Tape does not run		ESU, contacts, tape reader	AR274, 487, 498			
	(b) SEL lamp does not light		Tape reader contacts				
	(b) BID lamp does not extinguish				Send- Receive		Check contacts
	(b) Tape lamp does not light		ESU	AR274, 487			Check lamp
	(b) Audible alarm does not sound		ESU, contacts				Check options provided
	(b) False alarms both audible and visual		ESU	AR274, 487	Send- Receive		
41		No response		AR188, 190, 193, 485, 486, 498, 530, 542, D/S		Loop, D/S, 811, or hub	Action A; Action B
		Hit character or parity errors	ESU, tape reader	AR188, 530, 542, D/S	Send- Receive		Check for noise

TABLE C (Cont)

STEP FAIL URE	TYPE OF TROUBLE		EQUIPMENT TO BE CHECKED				
	STATION	TEST CENTER	TTY	820G-L1/2 CONTROLLER (SEE NOTE)	DAS 804	LINE OR HUB FACILITY	OTHER
41 (Cont)	No response			AR274, 487, 530, D/S			Action A
	SEL lamp does not light		Contacts, tape	AR274, 487	Send- Receive		
	BID lamp does not extinguish				Send- Receive		Check contacts
	Audible alarm does not sound			AR274	Send- Receive		Check alarm circuits
42	TAPE lamp does not extinguish			AR274			Check continuity between pins 8 and 9 of N plug
43		Hit characters	Contacts			Loop, D/S, 811, or hub	Check for noise on line
	SEL lamp does not extinguish			AR193, 487			Action A
44	BID lamp does not light		ESU, tape contacts	AR274, 487			BID lamp key contacts. Check continuity be- tween pins 18 and 8 on the N plug
45							See repeated steps — NAK response indi- cates a no traffic or not ready condition
46							Not applicable
47	BID lamp does not light		Tape reader contacts	AR274, 487, 193	Send- Receive		EMG STOP condition may exist and not be indicated
		Hits					Check noise protection network

TABLE C (Cont)

STEP FAIL- URE	TYPE OF TROUBLE		EQUIPMENT TO BE CHECKED				
	STATION	TEST CENTER	TTY	820G-L1/2 CONTROLLER (SEE NOTE)	DAS 804	LINE OR HUB FACILITY	OTHER
48	BID lamp does not extinguish			AR193, 274, 487			
	EMG STOP lamp does not light			AR193, 274, 487			EMG STOP lamp is burned out
	Audible alarm does not sound						Audible alarm speaker
49	EMG STOP lamp does not extinguish; audible alarm is not silenced			AR274	Send- Receive		Check DAS and connecting cables for ground troubles
50	BID lamp does not light when tape is loaded		Tape available contacts and tape reader	AR193, 274, 487			
51	Friction Feed: PAPER lamp does not light		Paper out contacts, ESU	AR193, 274, 487, D/S, NST			Also see applicable parts of the steps that are repeated
	Audible alarm does not sound						Check options provided on AR487
	TD stops			AR274, 487			
	Sprocket Feed: PAPER lamp does not light		ESU, contacts	AR274, 487			Also see applicable parts of the steps that are repeated
	Audible alarm does not sound			AR274, 487			Check on the options provided on AR487
	TD does not stop			AR274, 487			
52	TAPE lamp does not light		ESU, contacts	AR274, 487	Send- Receive		Check tape out contacts
53	PAPER lamp extinguishes		ESU, contacts	AR274, 487	Send- Receive		Check paper contacts

TABLE C (Cont)

STEP FAIL- URE	TYPE OF TROUBLE		EQUIPMENT TO BE CHECKED				
	STATION	TEST CENTER	TTY	820G-L1/2 CONTROLLER (SEE NOTE)	DAS 804	LINE OR HUB FACILITY	OTHER
54	PAPER lamp does not extinguish		ESU, contacts	AR274	Send- Receive		Check paper contacts and continuity be- tween pins 6 and 8 on N plug
55	TAPE lamp does not extinguish			AR274	Send- Receive		Check continuity between pins 8 and 9 on N plug
56	SEL lamp does not extinguish			AR193, 274, 487		Loop, D/S, or 811	
57		No response		AR190, 193, 486, 530, D/S, NST		Loop, D/S, or	Action A; Action B
	SEL lamp does not light			AR188, 193			
58		Station answers ACK or SIC	Check contacts				
		No response		AR190, 193, 486, 530, D/S, NST			Action A; Action B
	Alarm does not sound and PAPER lamp does not light		Check contacts		Check contacts		
59	Alarm condi- tion not can- celed. PAPER lamp lighted		Check contacts		Check contacts		
60		No response		AR190, 193, 486, 530, D/S, NST			Action A; Action B
	SEL lamp does not light			AR188, 193			
61		Station answers ACK or SIC	Check contacts				

TABLE C (Cont)

STEP FAIL- URE	TYPE OF TROUBLE		EQUIPMENT TO BE CHECKED				
	STATION	TEST CENTER	TTY	820G-L1/2 CONTROLLER (SEE NOTE)	DAS 804	LINE OR HUB FACILITY	OTHER
61 (Cont)		No response		AR190, 193, 486, 530, D/S, NST			Action A; Action B
	Alarm does not sound, PAPER and ERROR lamps do not light. Station is selected (SEL lighted)		Check contacts		Check contacts		
62	Alarm condi- tion not can- celed. PAPER lamp lighted		Check contacts		Check contacts		
63	Station not in unselected or idle condition			AR188, 190, D/S		Loop, D/S, or 811	Station failed to detect EOT
	END OF TEST						

## SECTION 581-131-501

### 85A2 Service, Sectionalizing Trouble-Attended Station Testing (DAS 820J-L1/3 Only)

STEP	ACTION	VERIFICATION
1	None (STC sends ENQ DC2-ETX-EOT-DEL to initialize.)	SEL lamp OFF.
2	Check paper, form, or tape supply in TTY. Clear all alarms that may be on, check that OUT OF SVC and AUD OFF keys in attendant set are released.	In attendant set: all lamps extinguished and audible alarm silent; all keys released. TTY motor off.
3	Operate MTCE/NORM switch on the controller to MTCE.	OUT OF SVC lamp lights.
4	None (STC sends to test for distortion of characters.)	None
5	Return MTCE/NORM switch on the controller to NORM.	OUT OF SVC lamp extinguishes.
<b>Note:</b> At this time the range can be set on the RO and ROTR TTYs and can be tested with unregenerated signals from the STC by performing Steps 6 through 10. If this testing is not required, these steps may be omitted.		
6	Operate the DAS 820J-L1/3 T switch (data bypass switch) to ON.	OUT OF SVC lamp lights.
7	Gain access to the TTY MAINT ON-OFF-NORM ON switch and operate to the MAINT ON position.	TTY motor starts.
8	None (STC will transmit signals for testing.)	TTY will copy STC transmission.
9	Return MAINT ON-OFF-NORM ON switch to NORM ON position.	TTY motor stops.
10	Return the T switch to the OFF position.	OUT OF SVC lamp extinguishes.
11	Operate OUT OF SVC key in attendant set.	OUT OF SVC lamp lights.
12	None (STC sends ENQ-SCC.)	SEL lamp flashes once and audible alarm sounds momentarily.
13	Release OUT OF SVC key in attendant set.	OUT OF SVC lamp extinguishes.
14	Create paper alarm by real or simulated removal of paper, form, or tape from the machine.	PAPER lamp lights; audible alarm sounds.
15	None (STC sends ENQ-SCC.)	SEL lamp flashes once.

STEP	ACTION	VERIFICATION
16	Replace paper, form, or tape in the machine. Momentarily operate PAPER key on attendant set.	PAPER lamp extinguishes; audible alarm becomes silent.
17	None (STC sends ENQ-SCC).	SEL lamp lights; motor starts.
18	None (STC sends SOH-HEADINGS-DEL.)	TTY prints (or punches) HEADING.
19	None (STC sends ENQ and a character that is different from SCC.)	None
20	None (STC sends several characters.)	None
21	None (STC sends ENQ-DC2.)	None
22	None (STC sends TDM-STX-TEXT 1-DC2-TEXT 2-DC4-FF-DEL.)	Primary machine prints or punches TDM-STX (punched only)-TEXT 1-TEXT 2 (if no print suppression). Form feeds (if sprocket-feed machine). The auxiliary types or punches TEXT 2.
23	None (STC sends roll-call ETX-ENQ-SCC.)	If primary machine is an ROTR and has tape feed on roll call option, tape feeds out.
24	None (STC sends disconnect EOT-DEL.)	SEL lamp extinguishes; the motor stops. If primary machine is an ROTR and has the push-out EOT option, an EOT should be punched in the tape. If disconnect feedout option is used, the tape feeds out and the motor stops.
25	None (STC sends call-in ENQ-SCC-ENQ-DC2-TEXT.)	SEL lamp lights; motor starts. TEXT received on primary machine.
26	None (STC sends character with parity error-TEXT-ETX-ENQ-SCC-EOT-DEL.)	MSG ERROR lamp lights; audible alarm sounds (if option is in); SEL lamp extinguishes. Underline is printed for character with parity error.
27	Operate the MSG ERROR key on the attendant set. (STC will then send ENQ-SCC.)	SEL lamp lights; motor starts.
28	None (STC sends ENQ-DC2-TEXT-BREAK-ENQ-EOT-EOT.)	Machine copies TEXT underlines for characters with parity error. MSG ERROR lamp lights, audible alarm sounds; SEL lamp extinguishes, and motor stops.
29	Operate the MSG ERROR key on the attendant set.	MSG ERROR lamp extinguishes and audible alarm is silenced.
30	None (STC sends ENQ-SCC).	None

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<b>STEP</b>	<b>ACTION</b>	<b>VERIFICATION</b>
31	None (STC sends ENQ-SCC.)	SEL lamp lights; motor starts.
32	None (STC causes a carrier fail.)	MSG ERROR lamp lights; audible alarm sounds. An underline is printed for characters with parity errors. SEL lamp extinguishes and the motor stops.
33	Operate MSG ERROR key on attendant set.	Audible alarm becomes silent. MSG ERROR lamp extinguishes.
34	None (STC sends ETX-ENQ-SCC.)	None
35	None (STC sends EOT-DEL.)	None
36	End of Test.	

**5. ALTERNATE TROUBLESHOOTING TESTS AND SUBSTITUTION PROCEDURES FOR DAS 820G-TYPE CONTROLLERS**

**A. DAS 820G-L1 Type**

**5.01** Maintenance of DAS 820G-L1 type station controller can be accomplished by substitution of CPs and the use of the 1011-type handset to monitor the signals received and transmitted by the controller. Refer to Fig. 2 and Tables E and F for information on CP substitution and tests using the 1011-type handset.

**5.02** Table E outlines the more likely trouble conditions and gives the suggested order of CP substitution to isolate the CPs that are in trouble. Table F outlines the test procedures using the 1011-type handset to locate the trouble condition.



*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 BSP entitled 85A2 Data Selective Calling Service Stations—150-Word per Minute Half-Duplex Operation—Maintenance (581-131-301). When the CPs of DAS 820G-L1 type are to be replaced or substitutions made, refer to the previously referenced BSP for information on the replacement procedures for the CPs.*

**5.03** The STC or CSTC will attempt to place DAS 820G-L1 type in the loop-back mode. If DAS 820G-L1 type can be placed in the loop-back mode, it can be assumed that AR190 CP is functioning properly. When DAS 820G-L1 type cannot be placed in the loop-back mode, the procedure outlined in Table F and the associated text should be followed.



**Disconnect all power from the station and visually inspect the wiring terminals for shorting, loose wires, etc, before proceeding with the following CP substitutions.**

**5.04** Table E shows the relationship between groups of CPs and the controller functions. Table E also lists specific functional troubles and the CPs that may be suspected of causing this trouble. The columns are designated (from left to right) as follows:

- (1) Trouble (probable troubles to be encountered)
- (2) Table F Test Number (the handset tests that will aid in the isolation of CPs in trouble)
- (3) Possible Option (installer options)
- (4) Circuit packs to be Replaced (numbered in the suggested order of replacement).

**5.05** The test outlined in Table E may be used, if desired, to narrow down the list of possible CPs in trouble. The columns, under Circuit Packs

to be Replaced, are numbered in the suggested order of replacement. 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, return the removed CPs in the order they were removed 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 the entire controller should be replaced.

**5.06** Table F can be used to expedite the isolating of the CPs that are in trouble. This is accomplished by using the test points to monitor functions such as timing, data input, data output, and control signal detection. Table F columns (from left to right) are as follows:

- (1) Test Number
- (2) Circuit Pack (CPs containing test points)
- (3) Test Point (test point position numbers)
- (4) Action To Be Taken (action required by STC or maintenance personnel)
- (5) 1011-Type Handset Receiver Indications (test results or response).

**5.07** The tests given in Table F are performed as follows:

- (1) The 1011-type handset is conditioned for the talk mode.
- (2) Connect one of the handset leads to ground (TP 14 on AR190 CP).
- (3) Connect the other handset lead to the test point indicated in Table F.

The Handset Receiver Indications column includes the required receiver indication with an ordered list of CPs that should be replaced if the proper response is not obtained. When the response indicated in Table F is obtained and the trouble condition still exists, the substitution procedure outlined in Table E will have to be performed. When this is the case, previously substituted CPs will not have to be replaced.

**5.08** 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 820G-L1 type will be required.

#### **B. Continuity Test of DAS 804R7 and DAS 804R5**

##### **Continuity Test of DAS 804R7**

**5.09** This test checks the continuity of the keys and cabling associated with DAS 804R7.



*Remove the power cord to the customer-provided ac receptacle before performing this test.*

- (1) Gain access to the DAS 820G-L1 type or 820J-L1/3. Refer to the applicable section entitled 85A2 Data Selective Calling Service Stations—150-Word per Minute Half-Duplex Operation—Maintenance (581-131-301).
- (2) Disconnect the N plug from DAS 820G-L1 type or 820J-L1/3.
- (3) Connect a KS-16785-L3 plug (not part of station) to the N connector.
- (4) Using a KS-14510-L1 VOM, perform continuity test shown in Table G by using the pins of the KS-16785-L3 plug to make the connections.

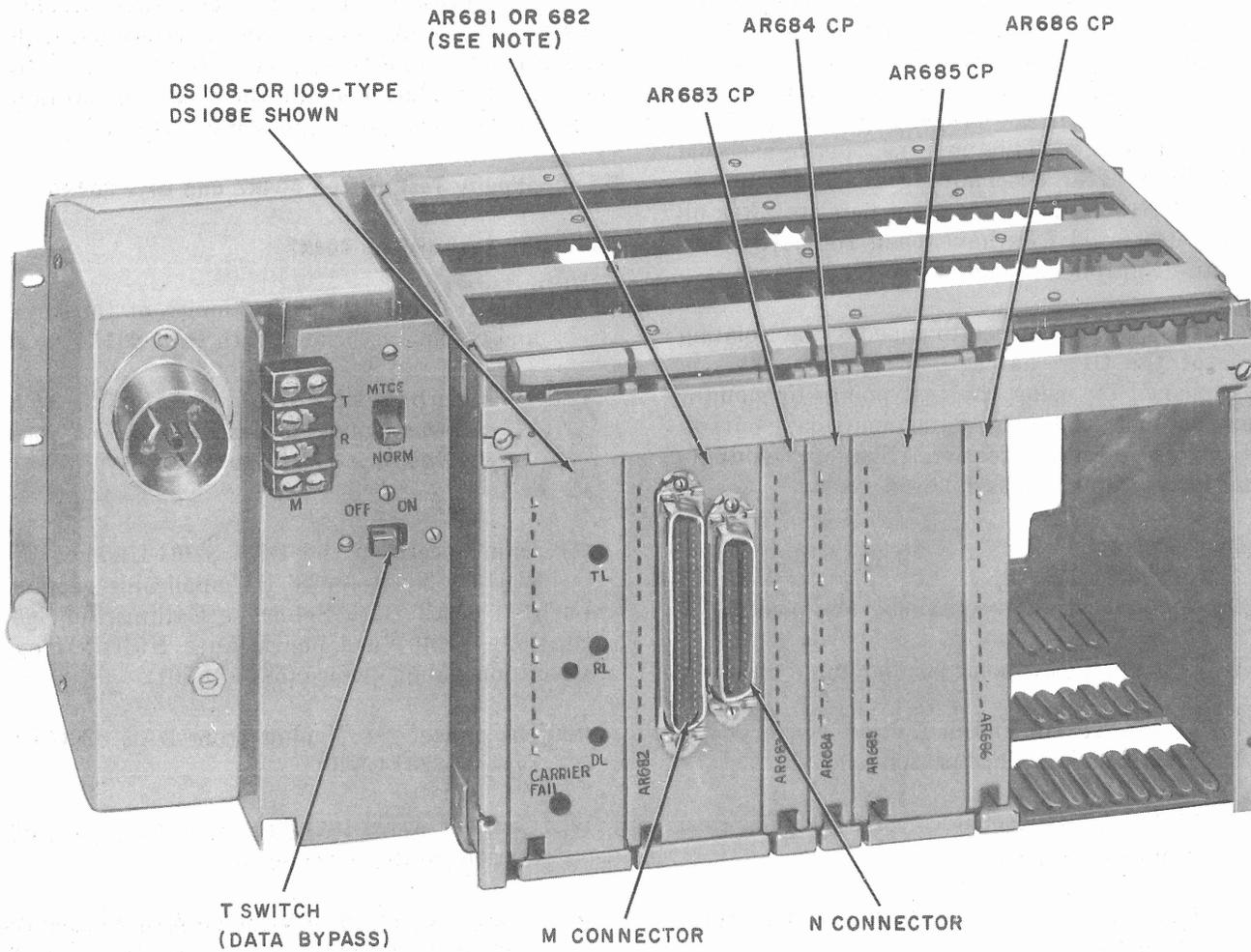
##### **Continuity Test of DAS 804R5**

**5.10** This test checks the continuity of the keys, lamps, and cabling associated with DAS 804R5.



*Remove the power cord to the customer-provided ac receptacle before performing this test.*

- (1) Gain access to DAS 820G-L1 type or 820J-L1/3. Refer to 5.09 (1).
- (2) Disconnect the N plug from DAS 820G-L1 type or 820J-L1/3.



NOTE:  
 DAS 820J-L1/2 USES AR682 CP  
 DAS 820J-L1/3 USES AR681 CP

Fig. 3—Data Auxiliary Set 820J-Type—Location and Designation of Circuit Packs

- (3) Connect a KS-16785-L3 plug (not part of station) to the N plug.
- (4) Using a KS-14510-L1 VOM, perform continuity test shown in Table H by using the pins of the KS-16785-L3 plug to make the connections.

call the STC and request that the station be returned to service. Suggest that the customer verify that the service is satisfactory by sending a message through the system to the station. If possible, the customer should originate traffic and check that traffic is received satisfactorily at the station for which it was designated.

## 6. STATION IN-SERVICE VERIFICATION

6.01 When the preceding tests have been completed and the test requirements have been met,

TABLE D  
TROUBLE LOCATING CHART FOR DAS 820J-L1/3

STEP FAIL- URE	TYPE OF TROUBLE		EQUIPMENT TO BE CHECKED				
	STATION	TEST CENTER	TTY	820J-L1/3 CONTROLLER	DAS 804	LINE OR HUB FACILITY	OTHER
1	SEL lamp remains lighted			AR686, 685, 684, 683, 682	Receive	Loop, 811, or hub	Remove AC power to initialize station.
2	Audible alarms sound continuously			AR682, 683	Receive		Check for ground
	PAPER lamp not extinguished		PAPER contact, ESU		Receive ground on PAPER lead		
	TAPE lamp not extin- guished			AR682	Receive		Contacts in DAS 804 not opening
3	OUT OF SVC lamp fails to light	No tones		AR682, D/S (108)		Loop	No incoming carrier. No AC power. Check lamp
		Low level		D/S (108)		Loop	
		High level		D/S (108)		Loop	
		Off frequency		D/S (108)		Loop	
		Continuous space frequency		D/S (108)			Incoming signal spacing
4		High dis- tortion or no response		D/S (108)		Loop, 811, hub, or D/S	
5	OUT OF SVC lamp fails to extinguish						Check R switch on DAS
6 to 10	OUT OF SVC lamp fails to light. No copy on TTY		SMD, ESU	AR682, D/S			Check controller wiring and opera- tion of the T switch. Check AC power
11	OUT OF SVC lamp fails to light			AR682, 684	Receive		Check lamp and DAS 804

TABLE D (Cont)

STEP FAIL- URE	TYPE OF TROUBLE		EQUIPMENT TO BE CHECKED				
	STATION	TEST CENTER	TTY	820J-L1/3 CONTROLLER	DAS 804	LINE OR HUB FACILITY	OTHER
12		No response or character other than NAK		AR686, 685, 684, 683, 682	Receive OUT OF SVC key and lamp	Loop, D/S, 811, or hub	
	SEL lamp does not flash			AR684, 683, 682	Receive		Check lamp
	Audible alarm does not sound			AR684, 683, 682	Receive		Check speaker
	SEL lamp lights			AR684, 683, 682	Check OUT OF SVC key		Station selected as a receiver, not out of service
13	OUT OF SVC lamp does not extinguish		ESU	AR684, 682	Check for ground on lamp lead		Action A, station may be in loop- back mode.
14	PAPER lamp does not light		PAPER contacts, ESU	AR683, 682	Check PAPER lamp		
	Audible alarm does not sound			AR683, 682	Receive		Check speaker
15		No response		AR686, 685, 684, 683, 682		Loop, D/S, 811, or hub	Action B
		Response other than NAK	Contacts, ESU	AR682, 683			Station is not out of service
	SEL lamp does not flash			AR684, 683, 682	Check lamp		
	SEL lamp lights		Contacts, ESU	AR684, 683, 682	Receive		Station is selected as a receiver
16	PAPER lamp does not extinguish		PAPER contacts, ESU	AR682, 683	Receive PAPER switch contacts		
17		No response		AR686, 685, 684, 683, 682		Loop, D/S, 811, or hub	Action B

TABLE D (Cont)

STEP FAIL- URE	TYPE OF TROUBLE		EQUIPMENT TO BE CHECKED				
	STATION	TEST CENTER	TTY	820J-L1/3 CONTROLLER	DAS 804	LINE OR HUB FACILITY	OTHER
17 (Cont)		Response other than SIC or ACK	Form Feed contacts				Station is still out of service. Check SIC coding
	SEL lamp does not light			AR684, 682	Receive		Check lamp
	SEL lamp flashes		Form Feed contacts	AR684, 683, 682	Receive		Station is not ready to receive
18	TTY does not copy heading		ESU or typing unit	AR682, 684, 683			
	Motor not running		Motor fuse or ESU	AR682, 683, 684			
		Receives copy		AR684			Station in loop- back; send ETX- EOT and repeat step
	TTY prints underline characters, ERROR lamp lights, copy is garbled			AR685		Loop, D/S, 811, or hub	Action B
19		Hits or characters				Loop, D/S, 811, hub, or noise pickup at hub	Station may be in loop-back; send ETX-EOT and repeat test
	Station unselects					Loop, D/S, 811, or hub	
	ERROR lamp lights			AR685, 683		Loop, D/S, 811, or hub	Parity error
	Prints under- line characters		Motor, lost character contact typing unit	AR685		Loop, D/S, 811, or hub	

TABLE D (Cont)

STEP FAIL- URE	TYPE OF TROUBLE		EQUIPMENT TO BE CHECKED				
	STATION	CENTER	TTY	820J-L1/3 CONTROLLER	DAS 804	LINE OR HUB FACILITY	OTHER
20	Station prints characters			AR684, 683			Failed to detect ENQ or failed to blind on detection of ENQ
		Receives the transmitted characters		AR684			Station in loop-back mode; send ETX-EOT
21		Hits or characters				Loop, D/S, 811, or hub noise pickup	Action B
	ERROR lamp lights			AR683, 685			
	Hit characters					Loop, D/S, 811, hub, or noise	
	Underline characters					Loop, D/S, 811, hub, or noise	
22	TTY does not print TDM or TEXT		ESU or typing unit	AR684, 683, 682		Loop, D/S, 811, or hub	Station failed to unblind; detect ENQ-DC2
	TTY prints underline characters. ERROR lamp lights		Lost character contact, typing unit	AR685, 682		Loop, D/S, 811, or hub	Parity error
	No typing on ROTR		ESU contacts in primary machine				
	No form feed		Typing unit stunt box	AR683, 682			
	Garbled copy		Typing unit	AR683, 682			
		Prints copy or hits and characters			AR684		Loop, D/S, 811, or hub

TABLE D (Cont)

STEP FAIL- URE	TYPE OF TROUBLE		EQUIPMENT TO BE CHECKED				
	STATION	TEST CENTER	TTY	820J-L1/3 CONTROLLER	DAS 804	LINE OR HUB FACILITY	OTHER
23		No response		AR686, 685, 684 683, 682		Loop, D/S, 811, or hub	Failed to detect the roll call sequence. Repeat ETX-ENQ SCC
		CAN response	Lost character contact, typing unit	AR684, 682, 683		Loop, D/S, 811, or hub	Parity error
		Response other than SIC or ACK		AR684, 683, 686		Loop, D/S, 811, or hub	Check SIC coding
	Hit characters received		Motor, ESU	D/S		Loop	
24	SEL lamp does not extinguish			AR685, 684, 682		Loop, D/S, 811, or hub	Failed to detect EOT-DEL
	Motor does not stop		ESU, form feed, contacts	AR683, 682			
	EOT not punched in tape if ROTR			AR684			Shift out EOT option not provided
	False alarms on attendant set both audi- ble and visual		ESU, noise network				
		Hits received	Protective network				Check system grounding
25		No response		AR686, 685, 684, 683, 682		Loop, D/S, 811, or hub	Action B
		Response other than SIC or ACK	Lost character contacts or typing unit	AR683, 684, 682			Check SIC coding
		CAN response	Contacts, ESU	AR683			Last message not properly received

TABLE D (Cont)

STEP FAIL- URE	TYPE OF TROUBLE		EQUIPMENT TO BE CHECKED				
	STATION	TEST CENTER	TTY	820J-L1/3 CONTROLLER	DAS 804	LINE OR HUB FACILITY	OTHER
25 (Cont)		NAK response	PAPER, form feed, horizontal tab contacts	AR682	OUT OF SVC key contacts		Station not ready to receive
	SEL lamp does not light		Contacts, for form feed, ver- tical or horizontal tab, typing unit	AR684, 682	Receive		
	Motor does not start		Fuse or breaker	AR683, 682			Station not ready to receive
	False alarms		Check pro- tective networks				Check for grounds
	No TEXT received		Typing unit	AR683, 684, 682			Station failed to unblind upon generation of ACK or SIC
26	MSG ERROR lamp does not light			AR685, 683, 682	Check lamp contacts and leads		
	Underline characters not received		Typing unit	AR686, 685			
	Audible alarm does not sound			AR683, 682	Check AUD OFF key and contacts		Check speaker
	No copy	No response				Loop, D/S, 811, or hub	Check AC power
		Character other than ACK, SIC or CAN			AR686	Loop, D/S, 811, or hub	Check for noise
		False SIC character			AR686		Check SIC coding

TABLE D (Cont)

STEP FAIL- URE	TYPE OF TROUBLE		EQUIPMENT TO BE CHECKED				
	STATION	TEST CENTER	TTY	820J-L1/3 CONTROLLER	DAS 804	LINE OR HUB FACILITY	OTHER
26 (Cont)	SEL lamp does not extinguish			AR685, 684, 682			Station failed to unselect
	Motor does not stop		ESU, contacts for form feed or horizontal tabs	AR682, 683			Failed to detect EOT
27		No response or false response		AR686, 685, 684, 683, 682		Loop, D/S, 811, or hub	Action B, also check for noise condition
28	No copy		Typing unit	AR683, 682			Action B
	Garbled copy		ESU, typing unit	AR683, 682			
	MSG ERROR lamp does not light			AR683, 682	Receive		Check lamp
	Audible alarm does not sound			AR683, 682	Check AUD OFF key and leads		Check speaker
	Station does not unselect			AR685, 684, 682			Failed to detect EOT
	Underline characters not received		Typing unit	AR686 685			
29	MSG ERROR lamp does not extinguish			AR682, 683	MSG ERROR Contacts		
	Audible alarm does not silence			AR682, 683	Check AUD OFF key contacts		Check speaker
		Hits received				Noise	
30		No response		AR686, 685, 684, 683, 682		Loop, D/S, 811, or hub	Action B

TABLE D (Cont)

STEP FAIL- URE	TYPE OF TROUBLE		EQUIPMENT TO BE CHECKED				
	STATION	TEST CENTER	TTY	820J-L1/3 CONTROLLER	DAS 804	LINE OR HUB FACILITY	OTHER
30 (Cont)		ACK or SIC response		AR683			AC power interrupted
		Response other than ACK, SIC, NAK, or CAN		AR686			Check for noise. Check SIC coding
31		Response other than ACK or SIC		AR686			Check for noise. Check SIC coding
	SEL lamp does not light		Form feed contacts	AR683, 682	Receive	Loop, D/S, 811, or hub	Check SEL lamp
32	SEL lamp remains lighted			AR682, 683, D/S	SEL lamp, contact, and leads		
	Audible alarm does not sound			AR683, 682			
	MSG ERROR lamp does not light			AR683, 682	Receive		Check lamp
	Station does not unselect			AR684, 685, 682			Check for noise
33	Alarm not silenced and lamp not extinguished			AR683, 682	Receive, check contacts		Check for ground
34		Response other than CAN or no response		AR683	Receive		
35	Not applicable						
36	END OF TEST						

TABLE E  
TROUBLESHOOTING CHART FOR DAS 820G-L1/2 AND DAS 820G-L1/3

TROUBLE	TABLE C TEST NUMBER	POSSIBLE OPTION	CIRCUIT PACK TO BE REPLACED						
			1	2	3	4	5	6	7
1 No Response to Polling	1,2,3	Send Heading	AR188	AR542	AR498	AR530	AR587	AR193	AR190
		Answer ACK	AR188	AR542	AR485	AR486	AR498	AR193	AR530
2 BID Lamp Does Not Light	5		AR487	AR274 or AR269					
3 Single Bid Does Not Work			AR487						
4 Tape Distributor Does Not Run	2,5	Answer ACK on Poll	AR188	AR542	AR530	AR487	AR274 or AR269		
5 Tape Distributor Does Not Stop on STX		Stop on STX	AR188	AR542	AR530				
6 No Response to Emer Stop	2		AR188	AR542	AR485	AR193	AR498		
7 Paper Lamp Remains Lighted			AR274 or AR269	AR487					
8 No Response to Call-In	1,2,3		AR188	AR190	AR542	AR485	AR193	AR530	AR487
9 Tape Lamp Remains Lighted			AR274 or AR269	AR487					
10 Permanent Loop-Back	2		AR485	AR498	AR530				
11 Does Not Unblind on ENQ DC2	2,4		AR188	AR542	AR498	AR485	AR274 or AR269		
12 Improper Response			AR188	AR542					
13 No Response		Performs all tests (1-6)							

TABLE F  
TESTING PROCEDURE WITH 1011-TYPE HANDSET

TEST NUMBER	CIRCUIT PACK	TEST POINT	ACTION TO BE TAKEN	1011-TYPE HANDSET RECEIVER INDICATIONS
1	AR190	9 12	STC sends single characters	<ul style="list-style-type: none"> <li>— A click will sound for every character received.</li> <li>— If a click does not sound or if clicking is continuous, replace (1) AR530... (2) AR190... (3) AR193.</li> </ul>
2	AR530	6	STC sends alternately DLE-EOT	<ul style="list-style-type: none"> <li>— A click will sound for every control character received.</li> <li>— If a click does not sound, replace (1) AR530... (2) AR542... (3) AR188.</li> </ul>
		1	STC send alternately ENQ-EOT	<ul style="list-style-type: none"> <li>— A click will sound for every control character received.</li> <li>— If a click does not sound, replace (1) AR530... (2) AR542... (3) AR188.</li> </ul>
3	AR193	12	STC send single characters	<ul style="list-style-type: none"> <li>— A click will sound for every character received.</li> <li>— If a click does not sound, replace AR193.</li> </ul>
		10	Station shall be placed in the traffic-available state. STC sends DLE-SCC	<ul style="list-style-type: none"> <li>— If TD runs, a clock shall sound for every character sent to the line.</li> <li>— If the TD does not run, replace (1) AR274 or AR269... (2) AR193... (3) AR487.</li> </ul>
4	AR485	13	Station shall be placed in ready-to-receive state. STC sends ENQ-SCC	<ul style="list-style-type: none"> <li>— A click will sound for every character printed by TU.</li> <li>— If a click does not sound, replace (1) AR485... (2) AR274 or AR269.</li> </ul>
5	AR487	10	Depress READER ON key	<ul style="list-style-type: none"> <li>— Receiver emits barely audible hum (in STOP position) and then a click (in RUN position) coincident with the BID lamp lighting.</li> <li>— If the receiver does not sound a click, replace (1) AR487... (2) AR274 or AR269.</li> </ul>
6	AR487	9	Station shall be placed in the traffic-available state. STC sends DLE-SCC	<ul style="list-style-type: none"> <li>— Receiver will emit barely audible hum until EOT is detected and coincident with EOT, a click will sound.</li> <li>— If receiver does not sound a click, replace (1) AR498... (2) AR487.</li> </ul>

**TABLE G**  
**CONTINUITY TEST OF DAS 804R7**

STEP	KEY	POSITION	SCALE	VOLT-OHM-MILLIAMMETER		
				CONNECT PROBE		READING OHMS
				+	-	
1	MSG ERROR	OPERATE	R X 10	13	8	$\infty$
2		RELEASE		13	8	0 to 2
3	PAPER*	OPERATE		6	8	$\infty$
4		RELEASE		6	8	0 to 2
5	AUD OFF	OPERATE		15	8	$\infty$
6		RELEASE		15	8	0 to 2
7	OUT OF SVC	OPERATE		21	8	0 to 2
8		RELEASE		21	8	$\infty$
9		OPERATE		4	8	$\infty$
10		RELEASE		4	8	0 to 2
11				3	16	$55 \pm 15$
12				3	12	$55 \pm 15$
13				3	5	$55 \pm 15$
14				3	14	$55 \pm 15$
15				3	2	$55 \pm 15$
16				9	36	0 to 2

\* TAPE LOW designation substituted for PAPER LOW when ROTR is provided.

TABLE H  
CONTINUITY TEST OF DAS 804R5

STEP	KEY	POSITION	SCALE	VOLT-OHM-MILLIAMMETER		
				CONNECT PROBE		READING OHMS
				+	-	
1				3	16	55 ± 15
2				3	17	55 ± 15
3				3	2	55 ± 15
4				3	5	55 ± 15
5				3	7	55 ± 15
6				3	10	55 ± 15
7				3	12	55 ± 15
8				3	14	55 ± 15
9				36	GRD	0 to 2
10	BID	OPERATE	R X 10	19	8	∞
11		RELEASE		19	8	0 to 2
12		OPERATE		18	8	0 to 2
13		RELEASE		18	8	∞
14	OUT OF SVC	OPERATE		21	8	0 to 2
15		RELEASE		21	8	∞
16		OPERATE		4	8	∞
17		RELEASE		4	8	0 to 2
18	PAPER	OPERATE		6	8	∞
19		RELEASE		6	8	0 to 2
20	TAPE	OPERATE		9	8	∞
21		RELEASE		9	8	0 to 2
22	EMER STOP	OPERATE		11	8	∞
23		RELEASE		11	8	0 to 2
24	MSG ERROR	OPERATE		13	8	∞
25		RELEASE		13	8	0 to 2
26	AUD OFF	OPERATE		15	8	∞
27		RELEASE		15	8	0 to 2