85A1/85A2 DATA SELECTIVE CALLING SERVICE

STATIONS USING DATA AUXILIARY SETS

820J AND 820L CONTROLLERS

TEST PROCEDURES

1. GENERAL

1.01 This section contains information on testing the 85A1 and 85A2 station consisting of a Model 33, 35, or 37 teletypewriter (TTY) equipped with a data auxiliary set (DAS) 820J- or 820L-type controller.

1.02 This section is reissued to add reference to AR751 circuit pack (CP), which replaces data set (DS) 108- or 109-type to provide interface leads BA, BB, AA, and AB for use with a 1A data station single channel arrangement (SCA). AR751 CP also provides a means for station testing at the customer location using a 911P Electronic Industries Association (EIA) test adapter and a 911NA data test set. Since this reissue constitutes a general revision, arrows ordinarily used to indicate 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 serving test center (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 DS 108A, 108E, 109E, or AR751 CP and 1A data station

● 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 STC or controlling serving test center (CSTC) to determine the nature of the trouble. Refer to the section entitled 85A1/85A2 Data Selective Calling Service Stations Using Data Auxiliary Sets 820J and 820L Controllers—Maintenance (581-131-302) 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 DS 108A, 108E, 109E, or AR751 CP and 1A data station

● Alternate troubleshooting tests and substitution procedures

● Continuity test of data auxiliary set 804N-type or 804R7

● Attended station testing with STC.

1.06 Tools and materials required:

● KS-14510-L1 volt-ohm-milliammeter (VOM) or equivalent

● 911NA data test set.

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 85A1/85A2 Data Selective Calling Service System.

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

3. TROUBLESHOOTING

3.01 The troubleshooting procedure should be performed in accordance with the maintenance philosophy given in the section entitled 85A1/85A2 Data Selective Calling Service Stations Using Data Auxiliary Sets 820J and 820L Controllers—Maintenance (581-131-302).

3.02 Maintenance procedures for the TTYs associated with the station should be performed in accordance with the applicable parts of the following sections:

● Model 33 Teletypewriter—Field Maintenance Practice (FMP) (579-200-350)

● Model 35 Teletypewriter—Field Maintenance Practice (FMP) (579-210-350)

● 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 (DEL) between one message and the next 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.

TABLE A

STATION OPTIONS AVAILABLE WITH 820J and 820L-TYPE CONTROLLERS

SWITCH OPTIONS		CIRCUIT PACK	SWITCH	
			OPEN	CLOSE
Detection of parity error	Causes a CAN response	AR683		S7
	Does not cause a CAN response	AR683	S7	
Audible alarm on message error	Activated when MSG ERROR lamp is lighted	AR683		S3
	Is not activated when MSG ERROR lamp is lighted	AR683	S3	
Paper alarm indication	When paper is low (friction feed machine) or the tape is low (ROTR machine)	AR683		S6
	When paper is out (sprocket feed machine)	AR683	S6	
Shift out EOT	Outlying station returned to idle mode on receipt of EOT	AR684	S8	
	EOT passed to terminal by pushing character before station assumes idle mode	AR684		S8
Response to test poll and regular poll	Single CAN response indicates last message improperly received	AR684	S1 S4 S7	S2 S3 S5 S6
	CAN response indicates no traffic; receiver ready	AR684	52, 53, 55, 56	S1, S2, S7
		AR683	S8	
Response to test poll	ACK/SIC indicates receiver ready	AR683		S8
	NAK indicates no traffic	AR683	S8	
Response to call-in while form or tape is feeding	ACK/SIC indicates receiver ready	AR683	S1	S2
	NAK indicates no traffic	AR683	S2	S1
Response to call-in, roll call, test poll	ACK indicates receiver ready	AR686	Depends on code (SC switch)	
	NAK indicates no traffic	AR686		
Auto tape feedout (ROTR)* (820J option)	Roll call or when station unselects	AR683		S4
	Only when station unselects	AR683	S4	
Baud	110 baud	AR685		S1, S2
	150 baud	AR685	S1, S2	
Carrier squelch on carrier fail	Yes	AR681/682 or AR741/742		S1
	No		S1	

* Switch S4 should be open for 820L-type controllers.

TABLE B

ADDITIONAL 820L-TYPE CONTROLLER ASR OPTIONS

SWITCH OPTIONS		CIRCUIT PACK	SWITCH	
			OPEN	CLOSE
Blind or unblind on SOH	Station copies heading	AR743	S2	
	Station does not copy heading			S2
Stop on SOH	Station stops on SOH	AR743	S6	
	Station does not stop on SOH			S6
Stop on STX	Station stops on STX	AR743		S3
	Station does not stop on STX		S3	
Delete trailer	Alarm on delete trailer	AR743	S5	
	No alarm on delete trailer			S5
Polling response for having traffic to send	Starts to send when polled	AR743		S7
	Gives SIC or ACK		S7	
Stop on ETX	Station stops on ETX	AR743		S8
	Station does not stop on ETX		S8	

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 operating the MODE switch to OFF-LINE position. The OUT OF SVC lamp lights.

(2) Start with approximately 3 inches of deletes (DEL) and proceed to type the test tape message shown in Fig. 1, ending with sufficient deletes (DEL) to ensure that the EOT can be detected by the reader.

LOCAL TEST

4.02 The following test should be performed to verify that the station functions properly. No attempt 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 the data auxiliary set (DAS) 802J- or 802L-type.

Note: In the following steps, 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 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.

DDDDD DD DDDD DDDS CL   DS
EEEEEE EE EEEEEE EEEO   ABC ET THE S QUICK S BROWN S FOX S JUMPED
LLLLLL LLLLLLLL LLLH RF   LX P   P   P   P

TEXT

S OVER S THE S LAZY S DOG'S S BACK S 1234567890 CL EEDDDDDDD
P   P   P   P   P   P   RF TOEEEEEEE
                                                   XTLLLLLLL
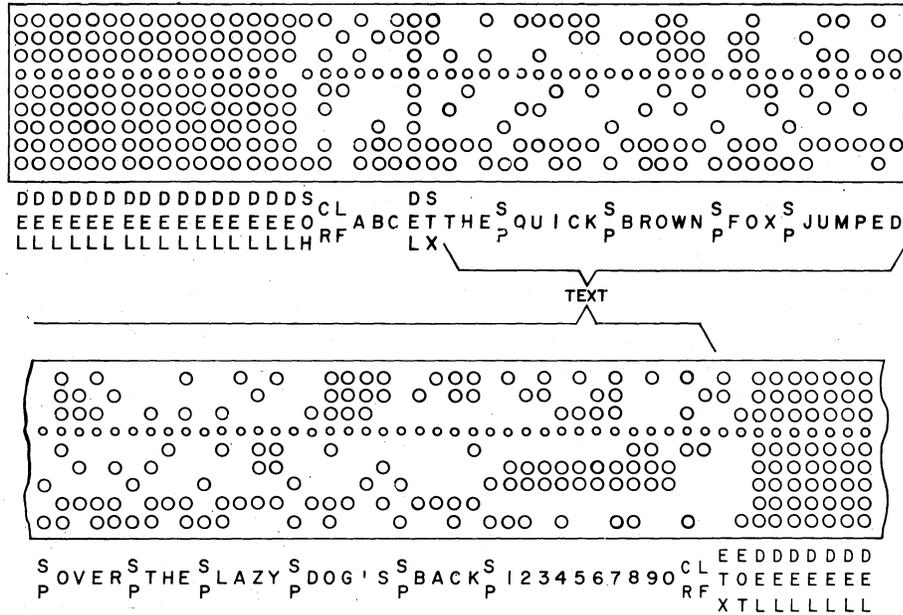
LEGEND:

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

Fig. 1—Test Tape for Testing 85A Stations

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. Refer to Table A for possible options.

(5) Remove the paper supply. The PAPER lamp should light and the alarm should sound.

Note: If the primary station is a 35 or 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 and the TTY motor stops.

(11) Operate the OUT OF SVC key. The OUT OF SVC lamp will extinguish and the station is restored to service.

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 a RO TTY or ROTR TTY is provided, a similar mechanical check of the unit cannot be made.

ASR Stations Only

(12) Condition the station TTY for 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 repair and adjustment of the TTY.

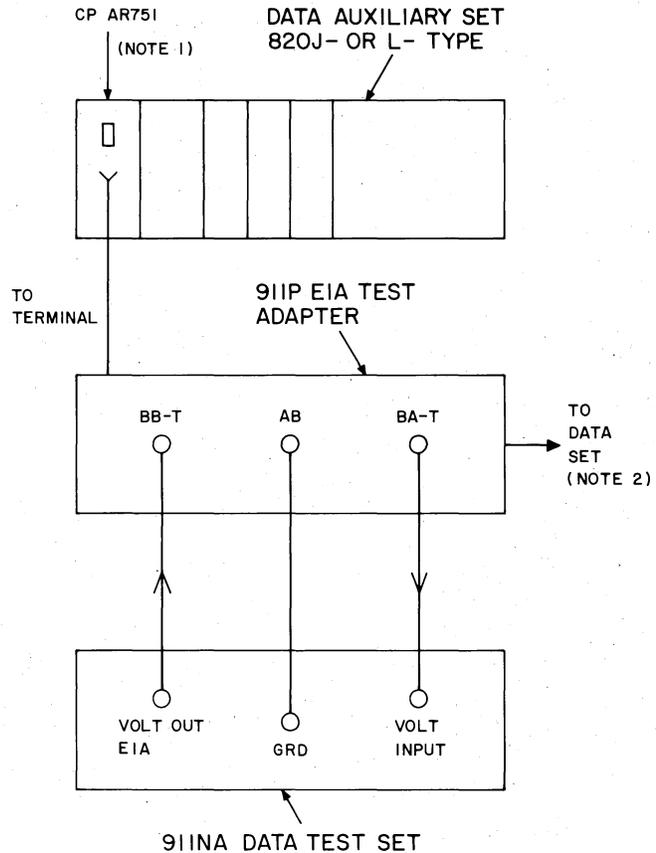(14) Remove the TTY from the off-line mode.

Note: In order to perform the following tests, it is necessary to gain access to the DAS 820J- or 820L-type controller. Refer to the section entitled 85A1/85A2 Data Selective Calling Service Stations Using Data Auxiliary Sets 820J and 820L Controller—Maintenance (581-131-302). Also refer to Table B for possible options.

4.04 The DAS 820J- and 820L-type controllers provide 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.

EIA LOCAL TEST

4.05 Obtain access to EIA signal leads BA, BB, and AB for local testing of 820J- and 820L-type station controllers by using AR751 CP in place of DS 108- or 109-type. Cross-connect these EIA signal leads to a 911NA data test set or equivalent using a 911P test adapter (Fig. 2). [See 911P EIA Test Adapter—Description and Operation (103-813-111)].

4.06 Use the 911NA test sentence generator to transmit over the BB lead to the connected controller. Test the station using three programmable characters to transmit the desired control code sequence (eg, Call Inquiry Code, Roll Call, Station Polling Code, Blind Unblind, Disconnect, etc), in accordance with Table C.

Fig. 2—EIA Local Test Arrangement

4.07 Monitor controller answer-back signals over lead BA using the 911NA distortion measuring set (DMS). Answer-back signals are shown on the LED display of the DMS. The correctness of received characters, parity errors, and the amount of distortion can thus be checked. Controller loop-back can also be checked using this test arrangement. The control character sequence to place the controller in loop-back is ENQ EOT ENQ SCC. The control character sequence to terminate loop-back is EOT EOT.

LOOP-BACK TEST OF DATA SET 108-TYPE AND 109E

4.08 The remote test of the DS 108-type or 109E also necessitates gaining access to DAS 820J-type (Fig. 3) or 820L-type (Fig. 4). Perform the following steps to check the operation of the

TABLE C

DAS 820J AND 820L CONTROL CODE SEQUENCE

CONTROL FUNCTION		SEQUENCE	STATION RESPONSE
STATION INITIALIZATION		DC2 ETX EOT EOT	(NONE)
CALL IN		ENQ SCC	CAN,OR SIC,OR ACK,OR NAK
BLIND		ENQ	WILL NOT COPY INCOMING TRAFFIC
UNBLIND		ENQ DC2	WILL COPY INCOMING TRAFFIC
ROLL CALL		ETX ENQ SCC	CAN,OR SIC,OR ACK
DISCONNECT		ETX EOT EOT	SEL LAMP EXTINGUISHES
POLL		DLE SCC	CAN,OR SIC,OR ACK,OR NAK,OR READER START
START READER AFTER: SIC OR ACK		STX	READER START
START READER AFTER STOP ON: (NOTE:Stop depends on controller options) (See Table B)	SOH	STX	READER START
	STX	ENQ DC2 STX	READER START
	ETX	DLE STX	READER START
TRANSMITTER EMERGENCY STOP		BREAK (PAUSE) ENQ EOT EOT	READER STOP
TEST POLL		ENQ EOT DLE SCC	CAN,OR SIC,OR ACK,OR NAK
REMOVE FROM TEST POLL		EOT EOT	(NONE)
LOOP BACK		ENQ EOT ENQ SCC	SIC,OR ACK OUT OF SVC LAMP LIGHTS
REMOVE FROM LOOP BACK		EOT EOT	OUT OF SVC LAMP EXTINGUISHES

data set and verify that the loop facilities are operative.

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

(1) Use a nearby telephone to call the STC or CSTC and request a test of DS 108-type or 109E.

(2) The STC or CSTC will request that the NORM-MTCE switch be operated to MTCE position to loop back the data set.

(3) The STC or CSTC can now perform a remote test of DS 108-type or 109E to verify that the data set and loop facilities are operating properly.

(4) Verify that nothing is typed at the station.

(5) After completion of the test, return the NORM-MTCE switch to NORM position.

4.09 The TTY range adjustments 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, M35 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.

MAINTENANCE SWITCH

DS 108A, 108E, 109E OR AR751 CP

AR681 OR 682 (SEE NOTE)

AR683 CP

AR684 CP

AR685 CP

AR686 CP

LOCK STRIP

TL

RL

DL

CARRIER FAIL

T SWITCH (DATA BYPASS)

M CONNECTOR

N CONNECTOR

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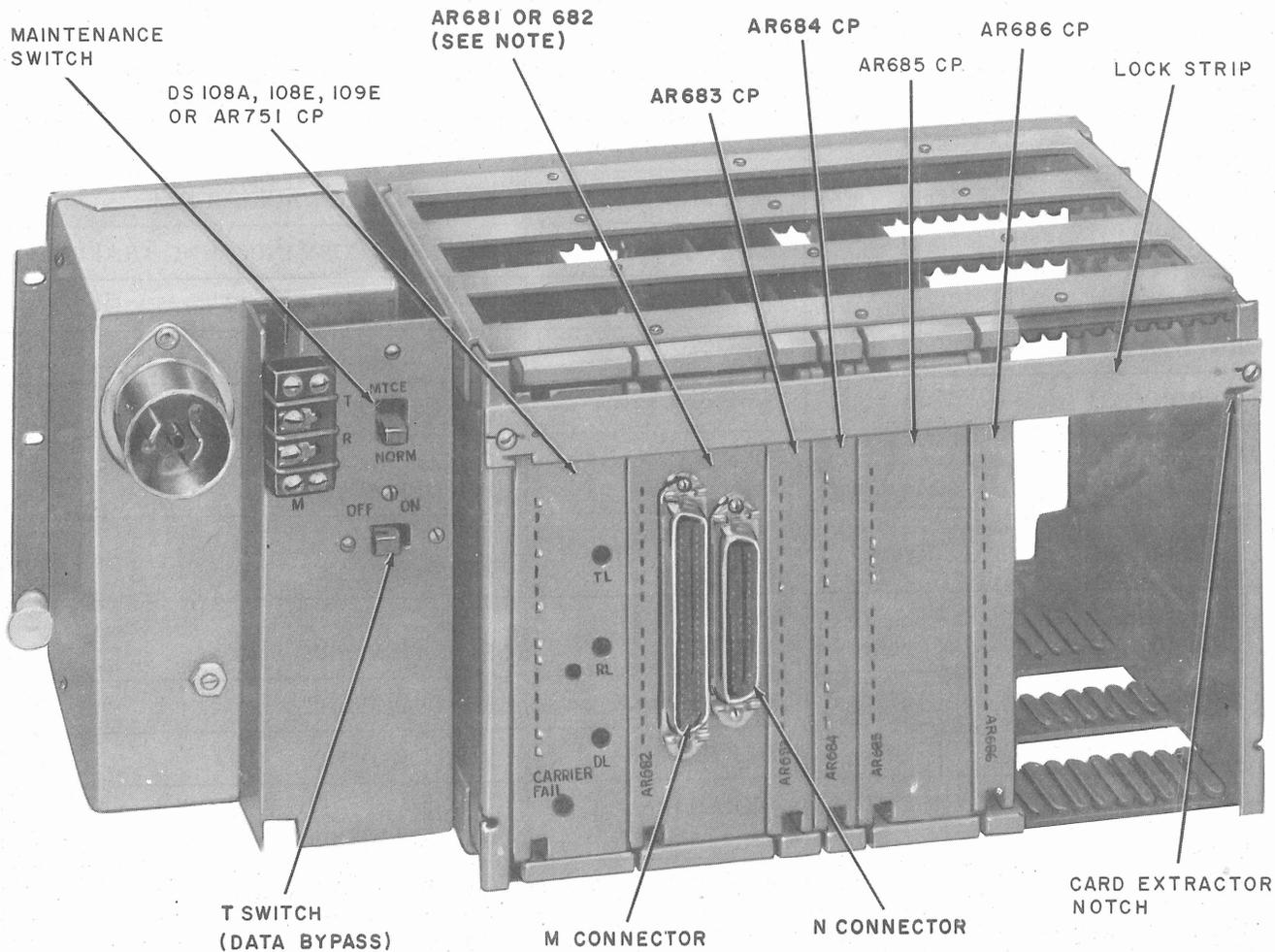
NOTE:
DAS 820J-L1/2 USES AR682 CP
DAS 820J-L1/3 USES AR681 CP

Fig. 3—DAS 820J-Type—Location of Circuit Packs

TTY range adjustments using biased signals can be performed with the controller T switch operated.

ATTENDED STATION TESTING WITH STC—STATION EQUIPPED WITH DAS 820L-TYPE CONTROLLER (ASR)

4.10   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 will ask the craft employee at the station to provide the alphanumeric characters for the SCC and SIC and station options which will be required by the STC during the test.

4.11   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.

4.12   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 often included in parentheses to
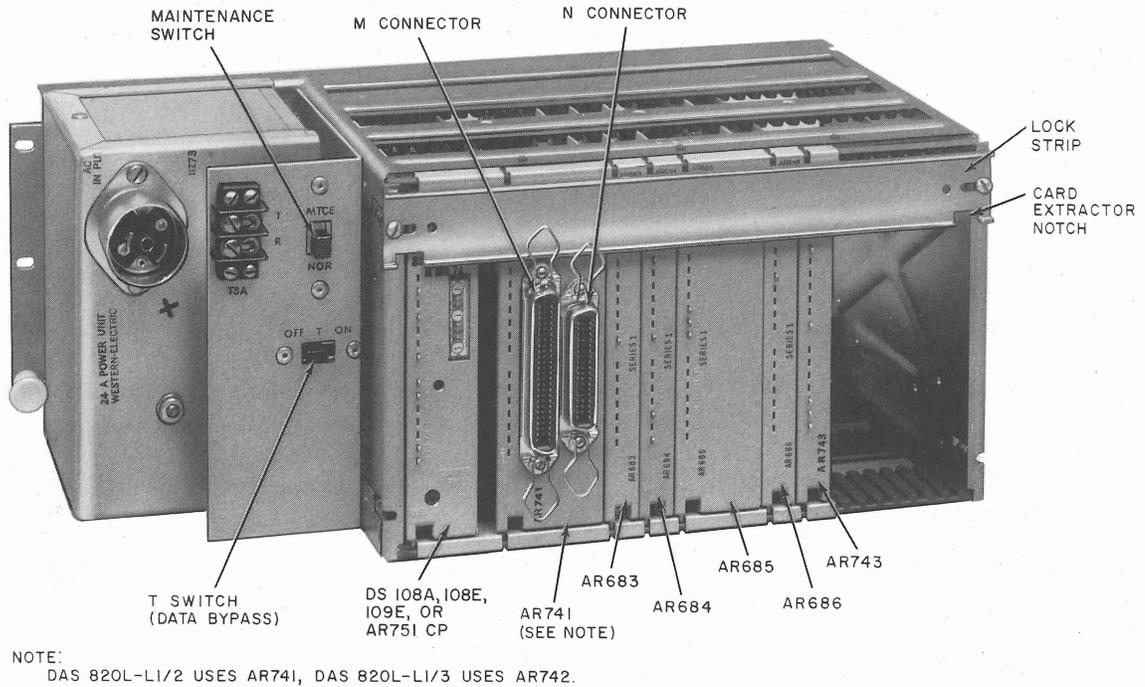
Fig. 4—DAS 820L-Type—Location of Circuit Packs

aid the attendant in following the test progress at the STC.

4.13 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. Table D may be used for either DAS 820L-L1/2 or -L1/3. When L1/3 controller is provided, AR742 circuit pack is used in place of AR741.

4.14 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 NORM/MTCE switch to MTCE and have the STC perform a check of the line facilities and data set. After the check, operate 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.

4.15 Perform the following Step-Action-Verification to check an attended DSCS station that uses an ASR DAS 820L-type controller (Fig. 4).

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	In attendant set, all lamps extinguished and audible alarm silent; all keys released. ASR TTY motor on (for 35 ASR). ON LINE

STEP	ACTION	VERIFICATION
	set are released. Check for no tape in tape reader. On ASR TTY, set mode switch to LINE position.	lamp lights (for 37 ASR).
3	Operate MTCE/NORM switch on 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 controller to NORM.	OUT OF SVC lamp extinguished.
6	Operate DAS 820L T switch (data bypass switch) to ON.	OUT OF SVC lamp lights.
7	Gain access to TTY MAINT ON-OFF-NORM ON switch and operate to 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 T switch to 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.
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. (33 ASR, 33 RO, 35 RO, 35 ROTR and 35 and 37 ASR in unattended mode, the 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

STEP	ACTION	VERIFICATION
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 DC 4 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.
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. If primary machine is an ROTR and has the push out EOT option, an EOT should be punched in the tape. If disconnect feed out option is provided, the tape feeds out and the motor stops.
25	None (STC sends call-in ENQ SCC ENQ DC2 TEXT)	Motor starts, SEL lamp lights; 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). Underline is printed for character with parity error. Underline punched in tape will be ODD parity. SEL lamp extinguishes and motor stops.
27	Operate MSG ERROR key on attendant set. (STC will then send ENQ SCC)	MSG ERROR lamp extinguished; audible alarm silenced. 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 alarms sounds, SEL lamp extinguishes, and motor stops.
29	Operate MSG ERROR key on attendant set.	MSG ERROR lamp extinguishes and audible alarm is silenced.
30	None (STC sends ENQ SCC)	None
31	None (STC sends ENQ SCC)	SEL lamp lights. Motor starts.
32	None (STC causes 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.
33	Operate MSG ERROR key on attendant set.	Audible alarm becomes silent. MSG ERROR lamp extinguishes.

STEP	ACTION	VERIFICATION
34	None (STC sends ETX ENQ SCC *waits for station to respond* then sends EOT DEL)	None
35	Check that ASR is in ON-LINE mode with no tape in the gate of the tape reader. Operate OUT OF SVC key on attendant set.	OUT OF SVC lamp lights. 35 ASR motor stops.
36	None (STC sends DLE SCC)	None
37	Release OUT OF SVC key on attendant set.	OUT OF SVC lamp extinguishes.
38	None (STC sends a character other than SCC.)	None
39	If not previously prepared, prepare tape per Fig. 1. Insert this tape into gate at initial DELs, operate bat handle to RUN.	BID lamp lights.

Note: Station transmission can optionally be arranged to stop upon receipt of control codes (SOH, STX, ETX) received from the tape (see Table B). Stopping of the tape is indicated in the following test; however, due to equipment design the tape stops one or two characters (depending on the TTY used) after the control code is read. Due to differences in equipment, the exact character the tape stops on is not indicated.

STEP	ACTION	VERIFICATION
40	None (STC sends DLE SCC)	(a) SEL lamp lights. *or* (b) SEL lamp lights and tape advances and stops after SOH, depending on controller option. *or* (c) SEL lamp lights and tape advances and stops after STX. Station may or may not copy A B C, depending on controller option *or* (d) SEL lamp lights and tape advances and stops after ETX. *or* (e) SEL lamp lights and tape advances and stops after EOT. SEL lamp extinguishes.

Note: If the verification is 40(a), proceed to Step 41. If 40(b), proceed to Step 42. If 40(c), proceed to Step 43. If 40(d), proceed to Step 44. If 40(e), proceed to Step 45.

STEP	ACTION	VERIFICATION
41	None (STC sends STX)	(a) Tape advances and stops after SOH. *or* (b) Tape advances and stops after STX. Station may not copy A B C, depending on controller option. *or*

STEP	ACTION	VERIFICATION
		(c) Tape advances and stops after ETX. or (d) Tape advances and stops after EOT. SEL lamp extinguishes.

Note: If the verification is 41(a), proceed to Step 42. If 41(b), proceed to Step 43. If 41(c), proceed to Step 44. If 41(d), proceed to Step 45.

STEP	ACTION	VERIFICATION
42	None (STC sends STX)	(a) Tape advances and stops after STX. Station may or may not copy A B C, depending on controller option. *or* (b) Tape advances and stops after ETX. *or* (c) Tape advances and stops after EOT. SEL lamp extinguishes.

Note: If the verification is 42(a), proceed to Step 43. If 42(b), proceed to Step 44. If 42(c), proceed to Step 45.

STEP	ACTION	VERIFICATION
43	None (STC sends ENQ DC2 STX)	(a) Tape advances and stops after ETX. Station copies test message. or (b) Tape advances and stops after EOT. Station copies test message. SEL lamp extinguishes.

Note: If the verification is 43(a), proceed to Step 44. If 43(b), proceed to Step 45.

STEP	ACTION	VERIFICATION
44	None (STC sends DLE STX)	Tape advances and stops after EOT. SEL lamp extinguishes.
45	None (STC sends DLE SCC)	(a) SEL lamp lights. *or* (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.

Note: If the verification is 45(a), proceed to Step 46. If 45(b), proceed to Step 47.

STEP	ACTION	VERIFICATION
46	None (STC sends STX)	SEL lamp remains lighted and BID lamp extinguishes. TAPE lamp lights and audible

STEP	ACTION	VERIFICATION
		alarm sounds. Depending on controller and option, audible alarm may not sound.
47	Operate TAPE key on attendant set.	SEL lamp lighted, TAPE lamp extinguishes, and audible alarm is silenced if not already silent.
48	None (STC sends break pause ENQ EOT EOT)	SEL lamp extinguishes. Emergency alarm sounds.
49	Insert test tape into gate at initial DELS; operate bat handle to RUN, then operate BID key on attendant set.	BID lamp on the attendant set lights.
50	None (The STC will repeat the applicable parts of Steps 40 through 45 to check operation of BID key.)	At the completion of Step 45, all lamps at the station attendant set should be off.
51	Remove tape and release BID key.	None
52	Insert test tape into gate at initial DELS; operate bat handle to RUN.	BID lamp on the attendant set lights.
53	None (The STC will repeat applicable parts of Steps 40 through 43 and perform an emergency stop during transmission of text.)	EMG STOP lamp lights and audible alarm sounds. Tape stops. SEL and BID lamps are off.
54	Operate EMG STOP key on attendant set.	EMG STOP lamp extinguishes, audible alarm silenced, and BID lamp lights.
55	Insert test tape into gate at initial DELS; operate bat handle to RUN.	BID lamp is lighted.
56	The STC will repeat the applicable parts of Steps 40 through 43. During TEXT transmission, cause a paper-out condition.	Friction feed machine: PAPER lamp on the attendant set lights, audible alarm sounds, tape continues to run. Sprocket feed machine: PAPER lamp on the attendant set lights, audible alarm sounds, tape stops, and BID lamp extinguishes. Depress PAPER key to continue transmission.
57	Remove tape from tape reader.	Tape lamp lights.
58	Replace paper in ASR.	None
59	Depress PAPER key on attendant set.	PAPER lamp extinguishes and audible alarm becomes silent.
60	Depress TAPE key.	TAPE lamp extinguishes.
61	None (STC sends break pause ENQ EOT EOT)	SEL lamp extinguishes.

Note: For friction feed machines perform Steps 62 through 64. For sprocket feed machines perform Steps 65 through 67.

STEP	ACTION	VERIFICATION
62	None (STC sends ENQ SCC)	SEL lamp lights.
63	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).
64	Restore paper and operate PAPER key.	Alarm condition canceled; PAPER lamp is extinguished.
65	None STC sends ENQ SCC)	SEL lamp lights.
66	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).
67	Restore paper and operate PAPER key.	Alarm condition canceled; PAPER lamp is extinguished.
68	None (STC sends ENQ DC2 ETX EOT DEL)	Station returns to idle state.

END OF TEST

TABLE D

TROUBLE LOCATING CHART FOR DAS 820L-TYPE (NOTE 1)

STEP FAIL-URE	TYPE OF TROUBLE		EQUIPMENT TO BE CHECKED				
	STATION	TEST CENTER	TTY	820L-TYPE CONTROLLER	DAS 804	LINE OR HUB FACILITY	OTHER
1	SEL lamp remains lighted			AR686, 685, 684, 683, 741/742	Receive	Loop, 811, or hub	Remove AC power to initialize station.
2	Audible alarms sound continuously			AR741/742, 683	Receive		Check for ground
	PAPER lamp not extinguished		PAPER contact, ESU		Receive ground on PAPER lead		
	TAPE lamp not extin-guished			AR741/742, 743	Receive		Contacts in DAS 804 not opening
3	OUT OF SVC lamp fails to light	No tones		AR741/742, DS (108)		Loop	No incoming carrier. No AC power. Check lamp
		Low level		DS (108)		Loop	
		High level		DS (108)		Loop	
		Off frequency		DS (108)		Loop	
		Continuous space frequency		DS (108)			Incoming signal spacing
4		High dis-tortion or no response		DS (108)		Loop, 811, hub, or DS	
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	AR741/742, DS			Check con-troller wir-ing and operation of the T switch. Check AC power

TABLE D (Cont)

TROUBLE LOCATING CHART FOR DAS 820L-TYPE (NOTE 1)

STEP FAIL-URE	TYPE OF TROUBLE		EQUIPMENT TO BE CHECKED				
	STATION	TEST CENTER	TTY	820L-TYPE CONTROLLER	DAS 804	LINE OR HUB FACILITY	OTHER
11	OUT OF SVC lamp fails to light			AR741/742, 684	Receive		Check lamp and DAS 804
12		No response or character other than NAK		AR686, 685, 684, 683, 741/742	Receive OUT OF SVC key and lamp	Loop, DS, 811, or hub	
	SEL lamp does not flash			AR684, 683, 741/742	Receive		Check lamp
	Audible alarm does not sound			AR684, 683, 741, 742	Receive		Check speaker
	SEL lamp lights			AR684, 683, 741/742	Check OUT OF SVC key		Station selected as a receiver, not out of service
13	OUT OF SVC lamp does not extinguish		ESU	AR684, 741/742	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, 741/742	Check PAPER lamp		
	Audible alarm does not sound			AR683, 741/742	Receive		Check speaker
15		No response		AR686, 685, 684, 683, 741/742		Loop, DS, 811, or hub	Action B
		Response other than NAK	Contacts, ESU	AR741/742, 683			Station is not out of service
	SEL lamp does not flash			AR684, 683, 741/742	Check lamp		
	SEL lamp lights		Contacts, ESU	AR684, 683, 741/742	Receive		Station is selected as a receiver
16	PAPER lamp does not extinguish		PAPER contacts, ESU	AR741/742, 683	Receive PAPER switch contacts		

TABLE D (Cont)

TROUBLE LOCATING CHART FOR DAS 820L-TYPE (NOTE 1)

STEP FAIL-URE	TYPE OF TROUBLE		EQUIPMENT TO BE CHECKED				
	STATION	TEST CENTER	TTY	820L-TYPE CONTROLLER	DAS 804	LINE OR HUB FACILITY	OTHER
17		No response		AR686, 685, 684, 683, 741/742		Loop, DS, 811, or hub	Action B
		Response other than SIC or ACK	Form feed contacts				Station is still out of service. Check SIC coding
	SEL lamp does not light			AR684, 741/742	Receive		Check lamp
	SEL lamp flashes		Form feed contacts	AR684, 683, 741/742	Receive		Station is not ready to receive
18	TTY does not copy heading		ESU or typing unit	AR741/742, 684, 683			
	Motor not running		Motor fuse or ESU	AR741/742, 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, DS, 811, or hub	Action B
19		Hits or characters				Loop, DS, 811, hub, or noise pickup at hub	Station may be in loop-back; send ETX EOT and repeat test
	Station unselects					Loop, DS, 811, or hub	
	ERROR lamp lights			AR685 683		Loop, DS, 811, or hub	Parity error

TABLE D (Cont)

TROUBLE LOCATING CHART FOR DAS 820L-TYPE (NOTE 1)

STEP FAIL-URE	TYPE OF TROUBLE		EQUIPMENT TO BE CHECKED				
	STATION	TEST CENTER	TTY	820L-TYPE CONTROLLER	DAS 804	LINE OR HUB FACILITY	OTHER
19 (Cont)	Prints under-line characters		Motor, lost character, typing unit	AR685		Loop, DS, 811, or hub	
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, DS, 811, or hub noise pickup	Action B
	ERROR lamp lights			AR683, 685			
	Hit characters					Loop, DS, 811, hub, or noise	
	Underline characters					Loop, DS, 811, hub, or noise	
22	TTY does not print TDM or TEXT		ESU or typing unit	AR684, 683, 741/742, 743		Loop, DS, 811, or hub	Station failed to unblind; detect ENQ DC2
	TTY prints underline characters. ERROR lamp lights		Lost character contact, typing unit	AR685, 741, 742		Loop, DS, 811, or hub	Parity error
	No typing on ROTR		ESU contacts in primary machine				

TABLE D (Cont)

TROUBLE LOCATING CHART FOR DAS 820L-TYPE (NOTE 1)

STEP FAIL-URE	TYPE OF TROUBLE		EQUIPMENT TO BE CHECKED				
	STATION	TEST CENTER	TTY	820L-TYPE CONTROLLER	DAS 804	LINE OR HUB FACILITY	OTHER
22 (Cont)	No form feed		Typing unit stunt box	AR683, 741/742			
	Garbled copy		Typing unit	AR683, 741/742			
		Prints copy or hits and characters		AR684		Loop, DS, 811, or hub	Station may be in loop-back mode; send ETX EOT and repeat test
23		No response		AR686, 685, 684, 683, 741/742		Loop, DS, 811, or hub	Failed to detect the roll call sequence. Repeat ETX ENQ SCC
		CAN response	Lost character contact, typing unit	AR684, 683, 741/742		Loop, DS, 811, or hub	Parity error
		Response other than SIC or ACK		AR684, 683, 686		Loop, DS, 811, or hub	Check SIC coding
	Hit characters received		Motor, ESU	DS		Loop	
24	SEL lamp does not extinguish			AR685, 684, 741/742		Loop, DS, 811, or hub	Failed to detect EOT DEL
	Motor does not stop		ESU, form feed, contacts	AR683, 741/742			
	EOT not punched in tape if ROTR			AR684			Shift out EOT option not provided
	False alarms on attendant set both audible and visual		ESU, noise network				

TABLE D (Cont)

TROUBLE LOCATING CHART FOR DAS 820L-TYPE (NOTE 1)

STEP FAIL-URE	TYPE OF TROUBLE		EQUIPMENT TO BE CHECKED				
	STATION	TEST CENTER	TTY	820L-TYPE CONTROLLER	DAS 804	LINE OR HUB FACILITY	OTHER
24 (Cont)		Hits received	Protective network				Check system grounding
25		No response		AR686, 685, 684, 683, 741/742		Loop, DS, 811, or hub	Action B
		Response other than SIC or ACK	Lost character contacts or typing unit	AR683, 684, 741/742			Check SIC coding
		CAN response	Contacts, ESU	AR683			Last message not properly received
		NAK response	PAPER, form feed, horizontal tab contacts	AR741/742	OUT OF SVC key contacts		Station not ready to receive
	SEL lamp does not light		Contacts for form feed, vertical or horizontal tab, typing unit	AR684, 741/742	Receive		
	Motor does not start		Fuse or breaker	AR683, 741/742			Station not ready to receive
	False alarms		Check protective networks				Check for grounds
	No TEXT received		Typing unit	AR683, 684, 741/742			Station failed to unblind upon generation of ACK or SIC
26	MSG ERROR lamp does not light			AR685, 683, 741/742	Check lamp contacts and leads		

TABLE D (Cont)

TROUBLE LOCATING CHART FOR DAS 820L-TYPE (NOTE 1)

STEP FAIL-URE	TYPE OF TROUBLE		EQUIPMENT TO BE CHECKED				
	STATION	TEST CENTER	TTY	820L-TYPE CONTROLLER	DAS 804	LINE OR HUB FACILITY	OTHER
26 (Cont)	Underline characters not received		Typing unit	AR686, 685			
	Audible alarm does not sound			AR683, 741/742	Check AUD OFF key and contacts		Check speaker
	No copy	No response				Loop, DS, 811, or hub	Check AC power
		Character other than ACK, SIC, or CAN		AR686		Loop, DS, 811, or hub	Check for noise
		False SIC character		AR686			Check SIC coding
	SEL lamp does not extinguish			AR685, 684, 741/742			Station failed to unselect
	Motor does not stop		ESU, contacts for form feed, or horizontal tabs	AR683, 741/742			Failed to detect EOT
27		No response or false response		AR686, 685, 684, 683, 741/742		Loop, DS, 811, or hub	Action B, also check for noise condition
28	No copy		Typing unit	AR683, 741/742			Action B
	Garbled copy		ESU, typing unit	AR683, 741/742			
	MSG ERROR lamp does not light			AR683, 741/742	Receive		Check lamp
	Audible alarm does not sound			AR683, 741/742	Check AUD OFF key and leads		Check speaker

TABLE D (Cont)

TROUBLE LOCATING CHART FOR DAS 820L-TYPE (NOTE 1)

STEP FAIL-URE	TYPE OF TROUBLE		EQUIPMENT TO BE CHECKED				
	STATION	TEST CENTER	TTY	820L-TYPE CONTROLLER	DAS 804	LINE OR HUB FACILITY	OTHER
28 (Cont)	Station does not unselect			AR685, 684, 741/742			Failed to detect EOT
	Underline characters not received		Typing unit	AR686, 685			
29	MSG ERROR lamp does not extinguish			AR683, 741/742	MSG ERROR contacts		
	Audible alarm does not silence			AR683, 741/742	Check AUD OFF key contacts		Check speaker
		Hits received				Noise	
30		No response		AR686, 685, 684, 683, 741/742		Loop, DS, 811, or hub	Action B
		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 for coding
	SEL lamp does not light		Form feed contacts	AR683, 741/742	Receive	Loop, DS, 811, or hub	Check SEL lamp
32	SEL lamp remains lighted			AR683, 741/742, DS	SEL lamp, contact, and leads		
	Audible alarm does not sound			AR683, 741/742			
	MSG ERROR lamp does not light			AR683, 741/742	Receive		Check lamp
	Station does not unselect			AR684, 685, 741/742			Check for noise

TABLE D (Cont)

TROUBLE LOCATING CHART FOR DAS 820L-TYPE (NOTE 1)

STEP FAIL-URE	TYPE OF TROUBLE		EQUIPMENT TO BE CHECKED				
	STATION	TEST CENTER	TTY	820L-TYPE CONTROLLER	DAS 804	LINE OR HUB FACILITY	OTHER
33	Alarm not silenced and lamp not ex-tinguished.			AR683, 741/742			Check conti-nuity between pins 13 and 8 on N plug.
34		Response other than CAN or no response		AR683, 741/742		Loop, DS, 811, or hub	Action B. Check for noise.
35	OUT OF SVC lamp does not light.			AR683, 741/742, NST	Check OUT OF SVC lamp and key con-tacts		
36		Response other than CAN or NAK		AR686, 741/742			
		No response		AR683, 684, 686, 741/742		Loop, DS, 811, or hub	Check conti-nuity between pins 4 and 8 on N plug.
37	OUT OF SVC lamp is not extin-guished.		ESU		Check con-tacts		Action A.
		No response		AR683, 684, 686, 741/742, DS, NST		Loop, DS, 811, or hub	
		Response other than CAN or NAK		AR686, 741/742			Station may be in loop-back mode; send ETX EOT and repeat step.
38		Transmitted characters					Action A
		Hit				Loop, DS, 811, or hub	
		CAN or NAK		AR683, 741/742			

TABLE D (Cont)

TROUBLE LOCATING CHART FOR DAS 820L-TYPE (NOTE 1)

STEP FAIL- URE	TYPE OF TROUBLE		EQUIPMENT TO BE CHECKED				
	STATION	TEST CENTER	TTY	820L-TYPE CONTROLLER	DAS 804	LINE OR HUB FACILITY	OTHER
39	BID lamp does not light.		Reader contacts	AR683, 741/742	Check BID lamp and contacts		
	Motor does not start.		Motor fuse or breaker, ESU				
		Hits	Noise protec- tion net- work on motor start. Motor ESU			Loop, DS, 811, or hub	EMG STOP lamp may be burned out and emergen- cy stop con- dition may exist. Operate EMG STOP key to clear condition.
40		(a) No re- sponse or response other than SIC or ACK		AR683, 684, 685, 686, 741/742		Loop, DS, 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	AR683, 684, 685, 686, 741/742			Check options on AR743
		(c) No re- sponse. Hit char- acters STX followed by TEXT.	Tape reader and tape reader contacts, ESU	AR683, 684, 685, 686, 741/742			Check options on AR743
		(d) No re- sponse. TEXT ETX followed by EOT.		AR683, 684, 685, 686, 741/742			

TABLE D (Cont)

TROUBLE LOCATING CHART FOR DAS 820L-TYPE (NOTE 1)

STEP FAIL-URE	TYPE OF TROUBLE		EQUIPMENT TO BE CHECKED				
	STATION	TEST CENTER	TTY	820L-TYPE CONTROLLER	DAS 804	LINE OR HUB FACILITY	OTHER
40 (Cont)	(a) SEL lamp does not light.			AR683, 684, 685, 741/742	Check SEL lamp		
	(a) TD runs.		ESU, check fuse, tape reader	AR741/742, 743			
	(b) TD is not stopped by SOH.		Tape reader	AR741/742, 743			Check stop on SOH option installed.
	(c) TD is not stopped by STX.			AR741/742, 743			Check stop on STX option installed.
	(d) TD is not stopped by ETX.			AR741/742, 743			Check stop on ETX option installed.
	(e) TD stops before end of message pickup.		Tape reader contacts			Loop, DS, 811, or hub	
41		(a) No re-sponse		AR683, 684, 685, 686, 741/742		Loop, DS, 811, or hub	Action A Action B
		(a) DEL DEL SOH STX		AR683, 684, 685, 686, 741/742			Check stop on SOH option.
		(a) DEL DEL SOH STX TEXT ETX or DEL EXT EOT		AR683, 684, 685, 686, 741/742			
		(a) Garbled copy	ESU, tape reader			Loop, DS, 811, or hub	
		(a) Parity errors received	ESU, motor noise				Check for noise and poor ground.
	(a) Tape does not start			AR741/742, 743			Action A

TABLE D (Cont)

TROUBLE LOCATING CHART FOR DAS 820L-TYPE (NOTE 1)

STEP FAIL-URE	TYPE OF TROUBLE		EQUIPMENT TO BE CHECKED				
	STATION	TEST CENTER	TTY	820L-TYPE CONTROLLER	DAS 804	LINE OR HUB FACILITY	OTHER
41 (Cont)	(a) Tape is not stopped by SOH.		Contacts, ESU, tape reader	AR741/742, 743			Check options provided.
	(a) Tape runs through complete message.		Contacts, tape reader mode switch	AR741/742, 743			Check options provided.
	(a) Garbled copy.		Tape reader			Loop, DS, 811, or hub	Action B
	(a) False alarm indications.		Motor noise or tape reader				
		(b) No response		AR683, 684, 685, 686, 741/742, DS		Loop, DS, 811, or hub	Action B Action A
		(b) Station is not stopped by STX					Check options provided.
	(b) Station fails to copy headings			AR683, 684, 741/742			Check options provided.
		(c) No response		AR683, 684, 685, 686, 741/742, DS		Loop, DS, 811, or hub	
		(c) Station is not stopped by ETX		AR683, 684, 685, 686, 741/742, DS			Check options provided.
		(c) Parity errors				Loop, DS, 811, or hub	
	(c) Station fails to copy TEXT.			AR741/742, 743, NST			
	(c) Garbled copy.			DS		Loop, DS, 811, or hub	Action B

TABLE D (Cont)

TROUBLE LOCATING CHART FOR DAS 820L-TYPE (NOTE 1)

STEP FAIL-URE	TYPE OF TROUBLE		EQUIPMENT TO BE CHECKED				
	STATION	TEST CENTER	TTY	820L-TYPE CONTROLLER	DAS 804	LINE OR HUB FACILITY	OTHER
41 (Cont)		(d) No response		AR683, 684, 685, 686, 741/742, DS		Loop, DS, 811, or hub	Action B
		(d) Station fails to send EOT	Tape reader	AR684, 686, 741/742, NST			
	(d) SEL lamp does not extinguish.			NST	Check SEL lamp control.		Check pin 16 on N connector.
		(a) No response		AR683, 684, 685, 686, 741/742, DS		Loop, DS, 811, or hub	Action A Action B
		(a) No CR LF STX	Tape reader	AR683, 741/742			Check options provided.
	(a) Tape does not start.			AR683, 741/742			Action A
	(a) Tape is not stopped by STX.			AR683, 741/742			Check options provided.
	(a) Garbled copy, no local copy.		Contacts, ESU tape reader	AR683, 684, 741/742, DS			Check options provided.
42	(a) False alarms			AR683, 741/742			Check options provided.
		(b) No response		AR683, 684, 685, 686, 741/742, DS		Loop, DS, 811, or hub	Action A Action B
		(b) STX no TEXT		AR683, 741/742			Check options provided.
		(b) Garbled or no copy	Tape reader	DS		Loop, DS, 811, or hub	Check options provided. Action B

TABLE D (Cont)

TROUBLE LOCATING CHART FOR DAS 820L-TYPE (NOTE 1)

STEP FAIL-URE	TYPE OF TROUBLE		EQUIPMENT TO BE CHECKED				
	STATION	TEST CENTER	TTY	820L-TYPE CONTROLLER	DAS 804	LINE OR HUB FACILITY	OTHER
42 (Cont)	(b) Tape does not start.			AR685, 686, 741/742			Action A
	(b) Tape stopped by STX.			AR683, 741/742			Check options provided.
	(b) No local copy of heading or TEXT.		ESU, tape reader	AR683, 684, 741/742, DS			Check options provided.
	(b) Garbled copy		ESU, tape reader	DS			
		(c) No re-sponse		AR683, 684, 685, 686, 741/742, DS		Loop, DS, 811, or hub	Action A Action B
		(c) DEL DEL STX TEXT ETX		AR683, 741/742			Check options provided.
	(c) Tape does not start.			AR684, 685, 741/742			Action A
	(c) Tape is stopped by ETX.			AR683, 741/742			Check options provided.
	(c) No local copy of garbled copy.		ESU, tape reader	AR683, 684, 685, 686, 741/742, DS			Check options provided.
43		(a) No re-sponse		AR683, 684, 685, 686, 741/742, DS, NST		Loop, DS, 811, or hub	Action A Action B
		(a) Gar-bled TEXT	ESU, tape reader	AR685, 686, 741/742, DS		Loop, DS, 811, or hub	
		(a) TEXT ETX EOT		AR685, 686, 741/742			Check options provided.

TABLE D (Cont)

TROUBLE LOCATING CHART FOR DAS 820L-TYPE (NOTE 1)

STEP FAIL- URE	TYPE OF TROUBLE		EQUIPMENT TO BE CHECKED				
	STATION	TEST CENTER	TTY	820L-TYPE CONTROLLER	DAS 804	LINE OR HUB FACILITY	OTHER
43 (Cont)	(a) No local copy		ESU, contacts tape reader	AR684, 685, 741/742, DS			Check options provided.
	(a) Tape stopped by ETX.						Check options provided.
	(a) False alarms		Contacts tape reader	AR683, 685, 741/742, NST			
		(b) No re- sponse		AR683, 684, 685, 686, 741/742, DS, NST		Loop, DS, 811, or hub	Action A Action B
		(b) Garbled TEXT	Tape reader, ESU, contacts	AR683, 741/742			
		(b) TEXT ETX	Tape reader, ESU				Check options provided.
	(b) No re- sponse, tape does not start.			AR684, 685, 686, 741/742			
	(b) No local copy, heading or TEXT.		ESU, typing unit, tape reader contacts	AR683, 741/742			Check options provided.
44		No re- sponse. EOT not received		AR683, 684, 685, 686, 741/742, DS, NST		Loop, DS, 811, or hub	Action A Action B
	No response, SEL lamp does not extinguish.			AR685, 686, 741/742, DS			EOT not re- ceived, station still selected. Action A
45		(a) No re- sponse		AR683, 684, 685, 686, 741/742, DS, NST		Loop, DS, 811, or hub	Action A Action B

TABLE D (Cont)

TROUBLE LOCATING CHART FOR DAS 820L-TYPE (NOTE 1)

STEP FAIL-URE	TYPE OF TROUBLE		EQUIPMENT TO BE CHECKED				
	STATION	TEST CENTER	TTY	820L-TYPE CONTROLLER	DAS 804	LINE OR HUB FACILITY	OTHER
45 (Cont)		(a) DEL DEL or improper SIC		AR683, 741/742, NST			
	(a) No re-sponse. SEL lamp does not light.			AR684, 685, 686, 741/742, 743			Action A
		(b) No re-sponse		AR683, 684, 685, 686, 741/742, DS		Loop, DS, 811, or hub	Action A Action B
		(b) ACK or SIC		AR683, 741/742			Check options provided.
		(b) Parity errors	ESU, tape reader	AR683, 685, 741/742, DS		Loop, DS, 811, or hub	
	(b) No re-sponse			AR684, 685, 741/742, DS			Action A
	(b) Tape does not run			ESU, contacts tape reader	AR684, 685, 741/742, 743		
	(b) SEL lamp does not light.		Tape reader contacts				
	(b) Bid lamp does not extinguish.						Check contacts.
	(b) TAPE lamp does not light.		ESU	AR683, 684, 741/742	Check TAPE lamp		
	(b) Audible alarm does not sound.		ESU, contacts				Check options provided.
	(b) False alarms both audi-ble and visual.		ESU	AR683, 741/742			

TABLE D (Cont)

TROUBLE LOCATING CHART FOR DAS 820L-TYPE (NOTE 1)

STEP FAIL-URE	TYPE OF TROUBLE		EQUIPMENT TO BE CHECKED				
	STATION	TEST CENTER	TTY	820L-TYPE CONTROLLER	DAS 804	LINE OR HUB FACILITY	OTHER
46		No response		AR683, 684, 685, 686, 741/742, DS		Loop, DS, 811, or hub	Action A Action B
		Hit character or parity errors	ESU, tape reader	AR683, 685, 741/742, DS			Check for noise.
	No response			AR683, 685, 741/742, DS			Action A
	SEL lamp does not light.		Contacts tape	AR741/742	Check SEL lamp		
	BID lamp does not extinguish.				Check contacts		
	Audible alarm does not sound.			AR683, 741/742			Check alarm circuits.
47	TAPE lamp does not extinguish.			AR683, 741/742	Check contacts		Check continuity between pins 8 and 9 of N plug.
48		Hit characters	Contacts			Loop, DS, 811, or hub	Check for noise on line.
	SEL lamp does not extinguish.			AR684, 685, 741/742			Action A
49	BID lamp does not light.		ESU, tape contacts	AR683, 684, 741/742	Check BID lamp		Check continuity between pins 18 and 8 on the N plug.
50							See repeated steps — NAK response indicates a no traffic or not ready condition.

TABLE D (Cont)

TROUBLE LOCATING CHART FOR DAS 820L-TYPE (NOTE 1)

STEP FAIL-URE	TYPE OF TROUBLE		EQUIPMENT TO BE CHECKED				
	STATION	TEST CENTER	TTY	820L-TYPE CONTROLLER	DAS 804	LINE OR HUB FACILITY	OTHER
51							Not applicable.
52	BID lamp does not light.		Tape reader contacts	AR684, 685, 741/742			EMG STOP condition may exist and not be indicated.
		Hits					Check noise protection network.
53	BID lamp does not extinguish.			AR684, 685, 741/742			
	EMG STOP lamp does not light.			AR684, 685, 741/742	Check EMG STOP lamp		
	Audible alarm does not sound.				Check speaker		
54	EMG STOP lamp does not extinguish, audible alarm is not silenced.			AR683, 741/742			Check DAS and connecting cables for ground troubles.
55	BID lamp does not light when tape is loaded.		Tape available contacts and tape reader	AR684, 685, 741/742			
56	Friction Feed: Paper lamp does not light.		Paper out contacts, ESU	AR685, 686, 741/742, DS, NST			Also see applicable parts of the steps that are repeated.
	Audible alarm does not sound.			AR743	Check speaker		Check options provided on AR743
	TD stops.			AR683, 741/742			

TABLE D (Cont)

TROUBLE LOCATING CHART FOR DAS 820L-TYPE (NOTE 1)

STEP FAIL-URE	TYPE OF TROUBLE		EQUIPMENT TO BE CHECKED				
	STATION	TEST CENTER	TTY	820L-TYPE CONTROLLER	DAS 804	LINE OR HUB. FACILITY	OTHER
56 (Cont)	Sprocket Feed: Paper lamp does not light.		ESU, contacts	AR683, 741/742			Also see applicable parts of the steps that are repeated.
	Audible alarm does not sound.			AR683, 741/742, 743			Check on the options provided on AR743
	TD does not stop.			AR683, 741/742			
57	TAPE lamp does not light.		ESU, contacts	AR683, 741/742	Check tape out contact		
58	PAPER lamp extinguishes.		ESU, contacts	AR683, 741/742	Check paper contacts		
59	PAPER lamp does not extinguish.		ESU, contacts	AR683, 741/742			Check paper contacts and continuity between pins 6 and 8 on N plug.
60	TAPE lamp does not extinguish.			AR683, 741/742			Check continuity between pins 8 and 9 on N plug.
61	SEL lamp does not extinguish.			AR684, 685, 741/742		Loop, DS, or 811	
62		No response		AR683, 684, 685, 686, 741/742, DS, NST		Loop, DS, or 811	Action A Action B
	SEL lamp does not light.			AR685, 741/742			
63		Station answers ACK or SIC	Check contacts				

TABLE D (Cont)

TROUBLE LOCATING CHART FOR DAS 820L-TYPE (NOTE 1)

STEP FAIL-URE	TYPE OF TROUBLE		EQUIPMENT TO BE CHECKED				
	STATION	TEST CENTER	TTY	820L-TYPE CONTROLLER	DAS 804	LINE OR HUB FACILITY	OTHER
63 (Cont)		No response		AR683, 684, 685, 686, 741/742, NST			Action A Action B
	Alarm does not sound and PAPER lamp does not light.		Check contacts		Check contacts		
64	Alarm condition not canceled. PAPER lamp lighted.		Check contacts		Check contacts		
65		No response		AR683, 684, 685, 686, 741/742, DS, NST			Action A Action B
	SEL lamp does not light.			AR683, 741/742			
66		Station answers ACK or SIC	Check contacts				
		No response		AR684, 685, 686, 741/742, DS, 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		
67	Alarm condition not canceled. PAPER lamp lighted.		Check contacts		Check contacts		
68	Station not in unselected or idle condition.			AR683, 741/742, DS		Loop, DS, or 811	Station failed to detect EOT
END OF TEST							

Note 1: Attended station testing with STC — station equipped with 820L-type controller. Reference: 4.15, steps 1—68.

Note 2: ESU = Electrical service unit. NST = Nest wiring.

ATTENDED STATION TESTING WITH STC—STATION EQUIPPED WITH DAS 820J-TYPE CONTROLLER (RO)

4.16 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 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 test.

4.17 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 often included in parentheses to aid the attendant in following the test progress at the STC.

4.18 When a step cannot be verified, refer to the same step number in Table E for a listing of components or items that may be the cause of the trouble condition or malfunction. Table E may be used for either DAS 820J-L1/2 or

L1/3. When the L1/3 controller is provided, CP AR681 is used instead of CP AR682.

4.19 Several steps in Table E 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 NORM/MTCE switch to MTCE and have the STC perform a check of the line facilities and data set. After the check, operate 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.

4.20 Perform the following Step-Action-Verification to check an attended DSCS station that uses an RO DAS 820J-type controller (Fig. 3).

TABLE E

TROUBLE LOCATING CHART FOR DAS 820J-TYPE (NOTE 1)

STEP FAIL-URE	TYPE OF TROUBLE		EQUIPMENT TO BE CHECKED				
	STATION	TEST CENTER	TTY	820J CONTROLLER	DAS 804	LINE OR HUB FACILITY	OTHER
1	SEL lamp remains lighted			AR686, 685, 684, 683, 682/681	Receive	Loop, 811, or hub	Remove AC power to initialize station.
2	Audible alarms sound continuously			AR682/681, 683	Receive		Check for ground
	PAPER lamp not extinguished		PAPER contact, ESU		Receive ground on PAPER lead		
	TAPE lamp not extinguished			AR682/681	Receive		Contacts in DAS 804 not opening
3	OUT OF SVC lamp fails to light	No tones		AR682/681, DS (108)		Loop	No incoming carrier. No AC power. Check lamp
		Low level		DS (108)		Loop	
		High level		DS (108)		Loop	
		Off frequency		DS (108)		Loop	
		Continuous space frequency		DS (108)			Incoming signal spacing
4		High distortion or no response		DS (108)		Loop, 811, hub, or DS	
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	AR682/681, DS			Check controller wiring and operation of the T switch. Check AC power.

TABLE E (Cont)

TROUBLE LOCATING CHART FOR DAS 820J-TYPE (NOTE 1)

STEP FAIL-URE	TYPE OF TROUBLE		EQUIPMENT TO BE CHECKED				
	STATION	TEST CENTER	TTY	820J CONTROLLER	DAS 804	LINE OR HUB FACILITY	OTHER
11	OUT OF SVC lamp fails to light			AR682/681, 684	Receive		Check lamp and DAS 804
12		No response or character other than NAK		AR686, 685, 684, 683, 682/681	Receive OUT OF SVC key and lamp	Loop, DS, 811, or hub	
	SEL lamp does not flash			AR684, 683, 682/681	Receive		Check lamp
	Audible alarm does not sound			AR684, 683, 682/681	Receive		Check speaker
	SEL lamp lights			AR684, 683, 682/681	Check OUT OF SVC key		Station selected as a receiver, not out of service
13	OUT OF SVC lamp does not extinguish		ESU	AR684, 682/681	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, 682/681	Check PAPER lamp		
	Audible alarm does not sound			AR683, 682/681	Receive		Check speaker
15		No response		AR686, 685, 684, 683, 682/681		Loop, DS, 811, or hub	Action B
		Response other than NAK	Contacts, ESU	AR682/681, 683			Station is not out of service
	SEL lamp does not flash			AR684, 683, 682/681	Check lamp		
	SEL lamp lights		Contacts, ESU	AR684, 683, 682/681	Receive		Station is selected as a receiver
16	PAPER lamp does not extinguish		PAPER contacts, ESU	AR682/681, 683	Receive PAPER switch contacts		

TABLE E (Cont)

TROUBLE LOCATING CHART FOR DAS 820J-TYPE (NOTE 1)

STEP FAIL-URE	TYPE OF TROUBLE		EQUIPMENT TO BE CHECKED				
	STATION	TEST CENTER	TTY	820J CONTROLLER	DAS 804	LINE OR HUB FACILITY	OTHER
17		No response		AR686, 685, 684, 683, 682/681		Loop, DS, 811, or hub	Action B
		Response other than SIC or ACK	Form feed contacts				Station is still out of service. Check SIC coding
	SEL lamp does not light			AR684, 682/681	Receive		Check lamp
	SEL lamp flashes		Form feed contacts	AR684, 683, 682/681	Receive		Station is not ready to receive
18	TTY does not copy heading		ESU or typing unit	AR682/681, 684, 683			
	Motor not running		Motor fuse or ESU	AR682/681, 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, DS, 811, or hub	Action B
19		Hits or characters				Loop, DS, 811, hub, or noise pickup at hub	Station may be in loop-back; send ETX EOT and repeat test
	Station unselects					Loop, DS, 811, or hub	
	ERROR lamp lights			AR685, 683		Loop, DS, 811, or hub	Parity error

TABLE E (Cont)

TROUBLE LOCATING CHART FOR DAS 820J-TYPE (NOTE 1)

STEP FAIL-URE	TYPE OF TROUBLE		EQUIPMENT TO BE CHECKED				
	STATION	TEST CENTER	TTY	820J CONTROLLER	DAS 804	LINE OR HUB FACILITY	OTHER
19 (Cont)	Prints under-line characters		Motor, lost character, typing unit	AR685		Loop, DS, 811, or hub	
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, DS, 811, or hub noise pickup	Action B
	ERROR lamp lights			AR683, 685			
	Hit characters					Loop, DS, 811, hub, or noise	
	Underline characters					Loop, DS, 811, hub, or noise	
22	TTY does not print TDM or TEXT		ESU or typing unit	AR684, 683, 682/681		Loop, DS, 811, or hub	Station failed to unblind; detect ENQ DC2
	TTY prints underline characters. ERROR lamp lights		Lost character contact, typing unit	AR685, 682/681		Loop, DS, 811, or hub	Parity error
	No typing on ROTR		ESU contacts in primary machine				

TABLE E (Cont)

TROUBLE LOCATING CHART FOR DAS 820J-TYPE (NOTE 1)

STEP FAIL-URE	TYPE OF TROUBLE		EQUIPMENT TO BE CHECKED				
	STATION	TEST CENTER	TTY	820J CONTROLLER	DAS 804	LINE OR HUB FACILITY	OTHER
22 (Cont)	No form feed		Typing unit stunt box	AR683, 682/681			
	Garbled copy		Typing unit	AR683, 682/681			
		Prints copy or hits and characters		AR684		Loop, DS, 811, or hub	Station may be in loop-back mode; send ETX EOT and repeat test
23		No response		AR686, 685, 684, 683, 682/681		Loop, DS, 811, or hub	Failed to detect the roll call sequence. Repeat ETX ENQ SCC
		CAN response	Lost character contact, typing unit	AR684, 683, 682/681		Loop, DS, 811, or hub	Parity error
		Response other than SIC or ACK		AR684, 683, 686		Loop, DS, 811, or hub	Check SIC coding
	Hit characters received		Motor, ESU	DS		Loop	
24	SEL lamp does not extinguish			AR685, 684, 682/681		Loop, DS, 811, or hub	Failed to detect EOT DEL
	Motor does not stop		ESU, form feed, contacts	AR683, 682/681			
	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			

TABLE E (Cont)

TROUBLE LOCATING CHART FOR DAS 820J-TYPE (NOTE 1)

STEP FAIL-URE	TYPE OF TROUBLE		EQUIPMENT TO BE CHECKED				
	STATION	TEST CENTER	TTY	820J CONTROLLER	DAS 804	LINE OR HUB FACILITY	OTHER
24 (Cont)		Hits received	Protective network				Check system grounding
25		No response		AR686, 685, 684, 683, 682/681		Loop, DS, 811, or hub	Action B
		Response other than SIC or ACK	Lost character contacts or typing unit	AR683, 684, 682/681			Check SIC coding
		CAN response	Contacts, ESU	AR683			Last message not properly received
		NAK response	PAPER, form feed, horizontal tab contacts	AR682/681	OUT OF SVC key contacts		Station not ready to receive
	SEL lamp does not light		Contacts for form feed, vertical or horizontal tab, typing unit	AR684, 682/681	Receive		
	Motor does not start		Fuse or breaker	AR683, 682/681			Station not ready to receive
	False alarms		Check protective networks				Check for grounds
	No TEXT received		Typing unit	AR683, 684, 682/681			Station failed to un-blind upon generation of ACK or SIC
26	MSG ERROR lamp does not light			AR685, 683, 682/681	Check lamp contacts and leads		

TABLE E (Cont)

TROUBLE LOCATING CHART FOR DAS 820J-TYPE (NOTE 1)

STEP FAIL-URE	TYPE OF TROUBLE		EQUIPMENT TO BE CHECKED				
	STATION	TEST CENTER	TTY	820J CONTROLLER	DAS 804	LINE OR HUB FACILITY	OTHER
26 (Cont)	Underline characters not received		Typing unit	AR686, 685			
	Audible alarm does not sound			AR683, 682/681	Check AUD OFF key and contacts		Check speaker
	No copy	No response				Loop, DS, 811, or hub	Check AC power
		Character other than ACK, SIC, or CAN		AR686		Loop, DS, 811, or hub	Check for noise
		False SIC character		AR686			Check SIC coding
	SEL lamp does not extinguish			AR685, 684, 682/681			Station failed to unselect
	Motor does not stop		ESU, contacts for form feed, or horizontal tabs	AR683, 682/681			Failed to detect EOT
27		No response or false response		AR686, 685, 684, 683, 682/681		Loop, DS, 811, or hub	Action B, also check for noise condition
28	No copy		Typing unit	AR683, 682/681			Action B
	Garbled copy		ESU, typing unit	AR683, 682/681			
	MSG ERROR lamp does not light			AR683, 682/681	Receive		Check lamp
	Audible alarm does not sound			AR683, 682/681	Check AUD OFF key and leads		Check speaker

TABLE E (Cont)

TROUBLE LOCATING CHART FOR DAS 820J-TYPE (NOTE 1)

STEP FAIL-URE	TYPE OF TROUBLE		EQUIPMENT TO BE CHECKED				
	STATION	TEST CENTER	TTY	820J CONTROLLER	DAS 804	LINE OR HUB FACILITY	OTHER
28 (Cont)	Station does not unselect			AR685, 684, 682/681			Failed to detect EOT
	Underline characters not received		Typing unit	AR686, 685			
29	MSG ERROR lamp does not extinguish			AR683, 682/681	MSG ERROR contacts		
	Audible alarm does not silence			AR683, 682/681	Check AUD OFF key contacts		Check speaker
		Hits received				Noise	
30		No response		AR686, 685, 684, 683, 682/681		Loop, DS, 811, or hub	Action B
		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 for coding
	SEL lamp does not light		Form feed contacts	AR683, 682/681	Receive	Loop, DS, 811, or hub	Check SEL lamp
32	SEL lamp remains lighted			AR683, 682/681, DS	SEL lamp, contact, and leads		
	Audible alarm does not sound			AR683, 682/681			
	MSG ERROR lamp does not light			AR683, 682/681	Receive		Check lamp
	Station does not unselect			AR684, 685, 682/681			Check for noise

TABLE E (Cont)

TROUBLE LOCATING CHART FOR DAS 820J-TYPE (NOTE 1)

STEP FAIL-URE	TYPE OF TROUBLE		EQUIPMENT TO BE CHECKED				
	STATION	TEST CENTER	TTY	820J CONTROLLER	DAS 804	LINE OR HUB FACILITY	OTHER
33	Alarm not silenced and lamp not extinguished			AR683, 682/681	Receive, check contacts		Check for ground
34		Response other than CAN or no response		AR683	Receive		
35	Station not in unselected or idle condition			AR683, 682/681		Loop, DS, or 811	Station failed to detect EOT
END OF TEST							

Note 1: Attended station testing with STC — station equipped with 820J-type controller. Reference: 4.20, Steps 1—35.

Note 2: ESU = Electrical service unit. NST = Nest wiring.

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 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.

Note: At this time the RO and ROTR TTYs can be tested with unregenerated signals by performing Steps 6 through 10. If this test is not required, these steps may be omitted.

STEP	ACTION	VERIFICATION
6	Operate DAS 820J T switch (data bypass switch) to ON.	OUT OF SVC lamp lights.
7	Gain access to TTY MAINT ON-OFF-NORM ON switch and operate to 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 T switch to 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. The motor is off.
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). AUX 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.

STEP	ACTION	VERIFICATION
24	None (STC sends disconnect EOT DEL)	SEL lamp extinguishes and 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 feed out 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. If underline is punched in tape, it will be of ODD parity. TTY motor stops. MSG ERROR lamp extinguished. Audible alarm silenced.
27	Operate MSG ERROR key on attendant set. (STC will then send ENQ SCC)	SEL lamp lights. Motor starts.
28	None (STC sends ENQ DC2 TEXT BREAK ENQ 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 MSG ERROR key on attendant set.	MSG ERROR lamp extinguishes and audible alarm is silenced.
30	None (STC sends ENQ SCC)	None
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 error. 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

END OF TEST

5. ALTERNATE TROUBLESHOOTING TESTS AND SUBSTITUTION PROCEDURES FOR DAS 820L- AND 820J-TYPE CONTROLLERS

5.01 Maintenance of the data auxiliary set 820J- or 820L-type station controller can be accomplished by substitution of circuit packs and by using the 911NA data test set to transmit control codes and monitor answer-back signals. Refer to Fig. 2 and Tables C, F, and G for information on circuit pack substitution and tests using the 911NA data test set.

5.02 Table F lists the code and location of circuit packs used in the RO and ASR station controllers along with the station controller type, speed, and code.

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 85A1/85A2 Data Selective Calling Service Stations Using Data Auxiliary Sets 820J and 820L Controllers—Maintenance (581-131-302). When the circuit packs of DAS 820J- or 820L-type are to be replaced or substitutions made, refer to the previously referenced BSP for information on replacement procedures for CPs.

5.03 The STC or CSTC will attempt to place DAS 820J- or 820L-type in loop-back mode. If DAS 820J- or 820L-type can be placed in loop-back mode, it can be assumed that AR685 CP is functioning properly. When DAS 820J- or 820L-type cannot be placed in loop-back mode, the procedure outlined in Table G 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 circuit pack substitutions.

5.04 Table G shows the relationship between groups of circuit packs and the controller functions. It also lists specific functional troubles and the circuit packs 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) Controller

(3) Possible Option (installer options)

(4) Circuit Pack to be Replaced (numbered in the suggested order of replacement).

5.05 Elimination of all trouble conditions by 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 820J- or 820L-type will be required.

Continuity Test of DAS 804N3, DAS 804N5, DAS 804R5, and DAS 804R7

5.06 This test checks the continuity of the keys, lamps, and cabling associated with the above DASs.

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

(1) Gain access to DAS 820J- or 820L-type. Refer to the applicable part in the section entitled 85A1/85A2 Data Selective Calling Service Stations Using Data Auxiliary Sets 820J and 820L Controllers—Maintenance (581-131-302).

(2) Disconnect the N plug from DAS 820J or 820L.

(3) Using a KS-14510-L1 VOM, perform the applicable test as shown in Table H, I or J.

6. STATION IN-SERVICE VERIFICATION

6.01 When the preceding tests have been completed and test requirements have been met, call the STC and request that the station be returned to service. Suggest that the customer verify the service is satisfactory by sending a message through the system to the station. If possible, the customer should originate traffic and check that it is received satisfactorily at the station for which it was designated.

TABLE F

CONTROLLER CIRCUIT PACK CROSS-REFERENCE

CIRCUIT PACK LOCATION	DATA AUXILIARY SET AND SPEED			
	RECEIVE ONLY STATION CONTROLLER		SEND/RECEIVE STATION CONTROLLER	
	820J-L1/2 100	820J-L1/3 150	820L-L1/2 100	820L-L1/3 150
6	AR682	AR681	AR741	AR742
12	AR683	AR683	AR683	AR683
14	AR684	AR684	AR684	AR684
16	AR685	AR685	AR685	AR685
21	AR686	AR686	AR686	AR686
23	—	—	AR743	AR743

TABLE G

TROUBLESHOOTING DAS 820J AND 820L (SENDING FEATURES)

	TROUBLE	CONTROLLER	POSSIBLE OPTION	CIRCUIT PACK TO BE REPLACED			
				1	2	3	4
1	No response to polling	J and L	Send heading	AR686	AR685	AR684	AR683
			Answer ACK	AR686	AR685	AR684	AR683
2	BID lamp does not light	L		AR743	AR741/742		
3	Single bid does not work	L		AR743			
4	Tape distributor does not run	L	Answer ACK on poll	AR686	AR683	AR743	AR741/742
5	Tape distributor does not stop on STX	L	Stop on STX	AR686	AR683	AR743	AR741/742
6	No response to emergency stop	L		AR686	AR743		
7	PAPER lamp remains lighted	J and L		AR741/742, 681/682	AR683		
8	No response to call-in	J and L		AR686	AR685	AR741/742, 681/682	AR684
9	TAPE lamp remains lighted	L		AR741/742	AR743		
10	Permanent loop-back	J and L	MTCE/ NORM switch on MTCE	AR741/742, 681/682			
11	Does not unblind on ENQ DC2	J and L		AR686	AR685	AR684	

TABLE G (Cont)

TROUBLESHOOTING DAS 820J AND 820L (SENDING FEATURES)

	TROUBLE	CONTROLLER	POSSIBLE OPTION	CIRCUIT PACK TO BE REPLACED			
				1	2	3	4
12	Not sending steady mark signal	J and L		AR741/742, 681/682			
13	Improper generation of SIC code	J and L		AR686			

TABLE H

CONTINUITY TEST OF DAS 804N3 OR DAS 804R7
ATTENDANT SET FOR RECEIVE ONLY STATION

STEP	ITEM	KEY POSITION	VOLT-OHM-MILLIAMMETER			READING, OHMS OR VOLTS
			SCALE	CONNECT PROBE		
				+	−	
1	MSG ERROR key	Operated		13	8	∞
2		Released		13	8	0 to 2
3	PAPER key*	Operated		6	8	∞
4		Released		6	8	0 to 2
5	AUD OFF key	Operated		15	8	∞
6		Released		15	8	0 to 2
7	OUT OF SVC key	Operated		21	8	0 to 2
8		Released		21	8	∞
9		Operated	R X 10	4	8	∞
10		Released		4	8	0 to 2
11	SEL lamp	—		3	16	55 ±15
12	MSG ERROR lamp	—		3	12	55 ±15
13	PAPER lamp	—		3	5	55 ±15
14	AUD OFF lamp	—		3	14	55 ±15
15	OUT OF SVC lamp	—		3	2	55 ±55
16	Frame ground	—		Frame GRD	36	0 to 2
17	Speaker	—	0-60V	22	8	13 ±3V
18	Circuit to frame ground	—	R X 10	8	Frame GRD	∞

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

TABLE I

CONTINUITY TEST OF DAS 804N5 OR DAS 804R5
ATTENDANT SET FOR SEND/RECEIVE STATION

STEP	ITEM	KEY POSITION	VOLT-OHM-MILLIAMMETER			READING, OHMS OR VOLTS
			SCALE	CONNECT PROBE		
				+	−	
1	SELECT lamp	—		3	16	55 ±15
2	BID lamp	—		3	17	55 ±15
3	OUT OF SVC lamp	—		3	2	55 ±15
4	PAPER lamp	—		3	5	55 ±15
5	TAPE lamp	—		3	7	55 ±15
6	EMG STOP lamp	—		3	10	55 ±15
7	MSG ERROR lamp	—		3	12	55 ±15
8	AUD OFF lamp	—		3	14	55 ±15
9	Frame ground	—		36	Frame GRD	0 to 2
10	BID key	Operated	R X 10	19	8	∞
11		Released		19	8	0 to 2
12		Operated		18	8	0 to 2
13		Released		18	8	∞
14	OUT OF SVC key	Operated		21	8	0 to 2
15		Released		21	8	∞
16		Operated		4	8	∞
17		Released		4	8	0 to 2
18	PAPER key	Operated		6	8	∞
19		Released		6	8	0 to 2
20	TAPE key	Operated		9	8	∞
21		Released		9	8	0 to 2
22	EMER STOP key	Operated		11	8	∞
23		Released		11	8	0 to 2

TABLE I (Cont)

CONTINUITY TEST OF DAS 804N5 OR DAS 804R5
ATTENDANT SET FOR SEND/RECEIVE STATION

STEP	ITEM	KEY POSITION	VOLT-OHM-MILLIAMMETER			
			SCALE	CONNECT PROBE +	CONNECT PROBE −	READING, OHMS OR VOLTS
24	MSG ERROR key	Operated	R X 10	13	8	∞
25		Released		13	8	0 to 2
26	AUD OFF key	Operated		15	8	∞
27		Released		15	8	0 to 2
28	Circuit to frame ground	—		8	Frame GRD	∞
29	Speaker	—	0–60V	22	8	13 ±3V

TABLE J

CP TEST POINT DATA — 820L- AND 820J-TYPE CONTROLLERS

	CIRCUIT PACK AR					LOGIC LEVEL LOW (0 TO +0.5V)	LOGIC LEVEL HIGH (+3 TO +5V)
	683	684	685	686	743		
T E S T P O I N T S	8					OK	Error detected
		1				Normal	ETX detected
		3				DLE detected	Normal
		8				—	—
		14				Ready to RCV	Not ready to RCV
			8			Normal	ENQ detected
			9			Clock	Clock
			10			Line/TD data	Idle
					12	Idle mark	Shift REG data
				1		Single BID	Normal
				2		SOH detected	Normal
				3		Idle	TD running
				8		STX detected	Normal

Note: Frame ground is optionally strapped to circuit ground for noise considerations. If ground strap is provided, use frame as a ground return point; otherwise, use power supply ground terminal at rear of nest.

7. REFERENCES

7.01 The following schematic drawings, circuit descriptions, and Bell System Practices (BSPs) pertain to the 85A1 DSCS stations:

NUMBER	TITLE
SD & CD-1D198-01	Data Set 109E
SD & CD-1D229-01	Data Set 108E
SD & CD-1D244-01	820J-Type and 820L-Type Controllers
SD & CD-1D258-01	EIA Interface Coupler (AR751 CP)
SD & CD-3D024-01	Data Set 108A
SD & CD-3D041-01	Data Auxiliary Sets 804N3, 804N5, 804R5, and 804R7
SD & CD-73092-01	Data Test Set 911NA
SD & CD-73112-01	EIA Test Adapter 911P

SECTION	TITLE
103-813-110	911NA Data Test Set—Description and Operation
103-813-111	911P EIA Test Adapter—Description and Operation
581-131-102	85A1 and 85A2 Data Selective Calling Service Stations Using Data Auxiliary Sets 820J and 820L Controllers—Description and Operation
581-131-202	85A1 and 85A2 Data Selective Calling Service Stations Using Data Auxiliary Sets 820J and 820L Controllers—Installation
581-131-302	85A1 and 85A2 Data Selective Calling Service Stations Using Data Auxiliary Sets 820J and 820L Controllers—Maintenance
590-101-102	AR751 Circuit Pack—Identification.