MAINTENANCE DATA TRANSMITTER (MDT)

ACCEPTANCE TESTS

NO. 1 CROSSBAR OFFICES ARRANGED FOR

AUTOMATIC TROUBLE ANALYSIS (ATA)

1. GENERAL

1.01 This section is provided to verify ATA end office operation and run Tests A through K or L through AL depending upon status of ATA computer.

1.02 This section affects the Equipment Test List.

1.03 The tests covered are:

Testing No. 1 Crossbar End Offices With An Operating ATA Computer

1.04 When testing No. 1 crossbar end offices with an operating ATA computer, the ATA system generation procedure should be completed for office definition and data base generation for the end office under test. The office queue, teletypewriter (TTY), and ATA should be restored for this end office. The office should be set to monitor at least the following message classes:

long form (lf)

critical long form (clf)

local

immediate action (ia)

summaries (sum)

measurements (meas)

alert (a).

1.05 When running acceptance tests, all frames, except the one being used for trouble insertion, should be made busy at the trouble indicator frames used. This prevents masking of the inserted trouble condition.

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

2. APPARATUS

Tests A through K

2.01 ATA System TTY.

Tests B through E and G through AL

2.02 MDT keyboard printer. Keyboard printers of various manufacturers can be used as terminals. The user's manual of the keyboard printer should be used for switch settings and key operations.

Tests L through AL

2.03 ATA keyboard printer.

2.04 Null modem cable.

3. PREPARATION

STEP	INPUT MESSAGE/OPERATOR ACTION	OUTPUT MESSAGE/SYSTEM RESPONSE

Tests A through K

1	At ATA System TTY— Type: **login admin** <CR>	TTY prints: %
2	Type: **startata noinit** <CR>	When ATA is already running— TTY prints: **ATA ALREADY RUNNING**
3	At processor— Set SWITCH REGISTER switches to 000000 (000 000 000 000 000 000).	
4	At ATA System TTY— Type: **/etc/siginit** <CR>	After approximately 5 seconds— TTY prints: **#**

Tests L through AL

5	Connect MDT keyboard printer to I/O port 2 using a null modem cable.	
6	Connect the ATA keyboard printer to I/O port 0 using a null modem cable.	

STEP	INPUT MESSAGE/OPERATOR ACTION	OUTPUT MESSAGE/SYSTEM RESPONSE
7	Insert make-busy (MB) plugs into the CATA jacks of all equipped trouble indicators and ANI trouble ticketer.	
8	Insert MB plug in MDT MB jack.	

4. METHOD

STEP	INPUT MESSAGE/OPERATOR ACTION	OUTPUT MESSAGE/SYSTEM RESPONSE

A. Loop-Around Test of Data Sets

5	At central office under test— At data set associated with primary link to ATA— Operate TM switch.	
6	At ATA System TTY— Type: **mdt:siteid.smode;punch all;xmit all!**	Typical message— **mdt:clinton.smode;punch all;xmit all! M FEB 26 09:59:41**
7	At central office under test— At data set— Release TM switch.	

B. Start MDT

5a	If data sets are required between the ATA keyboard printer and the PSD— Verify that they are plugged in and that TM switch is not operated.	
6	Insert MB plug in MDT MB jack of all trouble indicators and ANI trouble ticketer.	
7b	If 3-minute timer provided— At PSD control panel— Set CONTROL 1 through 3 switches down and CONTROL 4 switch up.	
8c	If 3-minute timer not provided— Set CONTROL 1 through 4 switches down.	
9	At power unit— Operate PWR switch to ON.	
10	At PSD control panel— Operate PWR switch to ON.	Red lamps lighted.
11b	If 3-minute timer provided— Set CONTROL 4 switch down.	

STEP	INPUT MESSAGE/OPERATOR ACTION	OUTPUT MESSAGE/SYSTEM RESPONSE
12	Momentarily operate EX switch.	Red lamps extinguished.
13b	If 3-minute timer provided— Set CONTROL 4 switch up.	
14	At MDT— Operate AR key.	ALM lamp extinguished. *Note:* I/O LED flashing indicates a bad data link to the ATA computer. Verify that TM switch on data set is released and that data set is properly connected. If necessary, replace data set. When problem is cleared, I/O LED extinguishes.
15b	If 3-minute timer provided— Set CONTROL 4 switch down.	Every minute— NUL character should be received from ATA computer. *Note:* If NUL character is not received, the PSD will time out in 3 minutes and make the MDT busy. At MDT keyboard printer— An initialization message is received. A typical message is: **A JAN 6 08:45:26 1976 MORR MDT REPORT** **MDT INITIALIZATION** **MDT MAKE BUSY TO TROUBLE INDICATORS** **PRIMARY DATA LINK IN SERVICE** **KEYBOARD PRINTER A IN SERVICE** **KEYBOARD PRINTER B OUT OF SERVICE** **SEND NONTST INDICATIONS FOR:OTI TTIO ANI** **SST1 TTI1 TTI2 CCTI CTI** **RELEASE ALL INDICATIONS FOR: OTI TTIO SSTI** **TTI1 TTI2 CCTI CTI** **PRINT TEST INDICATIONS FOR ANI** **ATA RECORDING CANCELLED (CATA) FOR: OTI** **ANI CCTI CTI**
16	At MDT keyboard printer— Type: **acp:stat**	A typical response— **acp:stat! IP** **M OCT 1 17:44:35 clinton accept** **clinton accepts:** **mon alw acp reach operd oper** **upd setthrt setbin ver opact cne** **mod aud inh purge stop start** **meas cmp xmt mdtc mdts intg** **rmv rstr xfer** **%**
17d	If ATA computer will not accept command or if xmt is not indicated—	At MDT keyboard printer— **acp:siteid,add xmt!**

STEP	INPUT MESSAGE/OPERATOR ACTION	OUTPUT MESSAGE/SYSTEM RESPONSE
	At ATA System TTY— Type: **acp:siteid, add xmt!**	
18	At ATA System TTY— Remove commands added during test by entering message similar to following: Type: **acp:siteid,rmv xmt!** *Note:* **siteid** is the name of the site of the MDT.	

C. Keyboard Message Interchange

STEP	INPUT MESSAGE/OPERATOR ACTION	OUTPUT MESSAGE/SYSTEM RESPONSE
5	At MDT keyboard printer— Type: **xmt:destination: (operate all keys on keyboard except !)** *Note:* **destination** is the name of the System TTY in ATA center.	
6	Type: **!**	At ATA System TTY— All letters keyed in Step 5 are printed in same sequence.
7	Type: **xmt: (assigned name):(operate all keys on keyboard except !)** *Note:* **assigned name** is name assigned to MDT keyboard under test.	
8	Type: **!**	At MDT keyboard printer— All letters keyed in Step 7 are printed in same sequence.
9a	If second keyboard printer is provided in switching office under test— Repeat Steps 5 through 8 for second keyboard printer.	

D. Keyboard Blocking During Incoming Message

STEP	INPUT MESSAGE/OPERATOR ACTION	OUTPUT MESSAGE/SYSTEM RESPONSE
5	At MDT keyboard printer— Type: **mdt:stat!**	Status report printout at keyboard printer.
6	While report is being printed— Type several characters at keyboard.	Printout is not interrupted.
7a	If second keyboard printer is provided in switching office under test— Repeat Steps 5 and 6 for second keyboard printer.	

STEP	INPUT MESSAGE/OPERATOR ACTION	OUTPUT MESSAGE/SYSTEM RESPONSE

E. Transmission of CAN and DEL Characters During Printer Output

5	At MDT keyboard printer— Type: **mdt:stat!**	Status report printout at keyboard printer.
6	While report is being printed— Type: <**CTRL and X**> *Note:* Key operation could be different on some keyboard printers.	Printer hesitates, then stops.
7	Type: **!**	Printer starts and continues status report.
8	Type: **mdt:stat!**	Status report printout at keyboard printer.
9	While report is being printed— Type: <**DEL**>	Printer hesitates, then stops.
10	Type: **!**	Printer starts and continues status report.
11a	If second keyboard printer is provided in switching office— Repeat Steps 5 through 10 for second keyboard printer.	

F. Scan Point Verification Test

5	At PSD control panel— Set CONTROL 1, 3, 4 switches down and CONTROL 2 switch up.	
6	Connect a ground to terminal 1 of SC TS.	
7	Operate EX switch.	At ATA System TTY— **M JAN 6 08:26:51 1976 MORR MDT REPORT** **MDT SCAN POINT VERIFICATION** **S0-29** **00000 00000 00000 00000 00000 10000** **S30-59** **01000 00000 00000 00000 00000 00000** **S60-89** **00000 00000 00000 00000 00000 00000** **S90-119** **00000 00000 00000 00000 00000 00000** *Note:* The one in position 31 corresponds to the grounded terminal.
8	At PSD control panel— Remove ground on terminal 1 of SC TS.	

STEP	INPUT MESSAGE/OPERATOR ACTION	OUTPUT MESSAGE/SYSTEM RESPONSE
9	Set CONTROL 2 switch down.	

G. Operation Over Proper Data Link

STEP	INPUT MESSAGE/OPERATOR ACTION	OUTPUT MESSAGE/SYSTEM RESPONSE
5	At PSD control panel— Operate PWR switch to OFF.	
6	At data set associated with the primary data link— Operate TM switch.	
7	At telephone associated with one of the data sets at the ATA center — With no keys operated— Dial the directory number assigned to the backup data set in the office under test.	Audible ringing heard.
8	When audible ringing ceases— Operate DATA key.	
9	Replace handset.	
10	At ATA System TTY— Type: **remove:siteid.ata!**	**ATA:clinton.ata! IP** **M OCT 1 15:20:30 ownsite remove** **OK** **%**
11	Type: **remove:siteid.tty!**	ATA responds (typical) **remove:clinton.tty! IP** **M OCT 1 15:25:30 ownsite remove** **OK** **%**
12	Type: **remove:siteid.queue!**	ATA responds (typical) **remove:clinton.queue! IP** **OK** **%**
13	Type: **xfer:from lnxx;to lnxx!** *Note:* The first **xx** is the line number in the multiplexer assigned to the primary data link, and the second **xx** is the line number of the backup data link.	
14	Repeat Steps 10 through 13, substituting restore for remove.	ATA will be working on the backup data link.
15	At PSD control panel— Operate PWR switch to ON.	Red lamps lighted.
16	Momentarily operate EX switch.	Red lamps extinguished.

STEP	INPUT MESSAGE/OPERATOR ACTION	OUTPUT MESSAGE/SYSTEM RESPONSE
17	Operate AR key.	Releases ALM lamp. I/O LED should not flash. At MDT keyboard printer— The resulting printout should have the words **backup data link.**
18	Type: **mdt:stat!**	The resulting printout should have the words **backup data link.**
19	At PSD control panel— Operate PWR switch to OFF.	
20	At data set associated with the primary data link— Release TM switch.	
21	Repeat Steps 10 through 14. *Note:* The first **xx** in Step 13 is the line number in the multiplexer assigned to the backup data link, and the second **xx** is the line number of the primary data link.	
22	At telephone associated with the backup data set— Operate and release CLEAR-TALK key.	
23	Repeat Steps 15 through 19. *Note:* The printout would have the words **backup data link.**	

H. Set Mode Command Message

5	At ATA System TTY— Type: **mdt:siteid.smode oti;send all;release all!**	The resulting printout should have the word **all.**
6	Type: **mdt:siteid.smode oti;send nontst;release all!**	The resulting printout should have the word **nontst.**

I. Set Distribute Point Command Message

5	At ATA System TTY— Type: **mdt:siteid.dist set;row 3;pos 12!**	The resulting printout should be similar to: **mdt:dist set;row 3;pos 12!** **M OCT 1 14:20:30 ownsite mdt:dist** **mdt:dist request for clinton** **OK** **%** At MDT— Major alarm sounded.

STEP	INPUT MESSAGE/OPERATOR ACTION	OUTPUT MESSAGE/SYSTEM RESPONSE

Aisle pilot lamp associated with keyboard printer A lighted.
Report alarm lamp lighted.

6   At ATA System TTY—
Type: **mdt:siteid.dist clear;row 3; pos 12!**

The resulting printout should be similar to response in Step 5 except the word **clear** is used instead of **set**.

At MDT—
Major alarm silenced.

7   Repeat Steps 5 and 6 for the following (substituting the indicated pos for **pos 12**):
pos 13-set and clear minor alarm
pos 14-set and clear major alarm
pos 15-set and clear minor alarm

8   At ATA System TTY—
Type: **mdt:siteid.dist set;row 2; pos 14!**

At MDT—
MB lamp lighted.

9   Remove MB plug.

At MDT keyboard printer—
Status change message received.

10   At ATA System TTY—
Type: **mdt:siteid.dist clear;row 2; pos 14!**

Status change message received.

At MDT—
MB lamp extinguished.

11   Replace MB plug.

J. Trouble Record Data Collection

> *Note:* If an exception report is not received, there is a possibility that missing or incorrect information caused the computer to place the generated trouble into a bin other than the indicated one. To locate this bin, continue to indicate trouble indications until the threshold level for the incorrect bin is exceeded, which will cause an exception report to be received.

5   At ATA System TTY—
Type: **set:siteid.bin a0*no-ids;thresh immediate!**

> *Note:* The NO-IDS bin for identifier group 0 should now have a threshold value of 1.

A typical report is:
M APR 8 11:04:38 CLINTON SETBIN
PRESET BIN STATUS FOR SITE CLINTON
BIN 0*NO-SIK
THRESH   IMMEDIATE
STATUS   NORMAL
PERIOD   7 DAYS
MATCH   32 RECORDS
PURGE   NP PRINT
ALARM   MINOR
PUMPER   ENABLE

STEP	INPUT MESSAGE/OPERATOR ACTION	OUTPUT MESSAGE/SYSTEM RESPONSE

ROUTE   NORMAL
%

6a   If equipped with identifier group 1 and 2—
Repeat Step 5 substituting **1*** and **2*** for **0***.

7   Type* **set:siteid.bin c*no-d;thresh immediate!**   Response similar to report in Step 5.

Note: The NO-D bin for CTI should now
have a threshold value of 1 for marker group
0.

8b   If equipped with marker group 1—
Repeat Step 7 substituting the name assigned
to marker group 1 for siteid.

9   Type: **set:siteid.bin cc*no-tk;thresh immediate!**   Response similar to report in Step 5.

Note: The NO-TK bin for CCTI should now
have a threshold value of 1.

10c   If equipped with an additional CCTI—   Response similar to report in Step 5.
Type: **set:siteid.bin cc0*no-tk;thresh immediate!**

Note: **cc0*** for CCTIO and **cc1*** for CCTI1.

11   Type: **siteid.bin ss*snt;thresh immediate!**   Response similar to report in Step 5.

Note: The SNT bin for SSTI should now
have a threshold value of 1.

12   Type: **mdt:siteid.stat!**   The resulting printout indicates a send all,
release none mode of operation is in effect
for OTI, TTI0, SSTI, TTI1, TTI2, CCTI, CTI
trouble indicators as provided and send all,
print all for ANI trouble indicators.

13d   If a second originating marker group is assigned
to the OTI—
Type: **mdt:siteid.stat!**

Note: Use the siteid assigned to the marker
group to determine its mode of operation.

14e   If a change in mode of operation is required—
Type: **mdt:sited.smode oti;send all;release none!**

15e   Repeat Step 14 substituting **tti0, tti1, tti2, ssti,
ccti,** and **cti** for **oti** as provided.

STEP	INPUT MESSAGE/OPERATOR ACTION	OUTPUT MESSAGE/SYSTEM RESPONSE
	Note: When equipped with an additional CCTI, use ccti0 for CCTI0 and ccti1 for CCTI1.	
16e	When there is a second originating marker group assigned— Type: **mdt:siteid.smode oti;send all;release none!** *Note:* Use the siteid assigned to the marker group.	
17f	If ANI requires change— Type: **mdt:siteid.smode ani;send all;print all!**	
18	Insert MB plugs into the CATA jacks of all trouble indicators.	A change of status message is received.
19	Remove MB plug from the MDT-MB jack.	A change of status message is received.
20	Remove MB plug from the CATA jack of OTI.	
21	Release any display.	
22	Originate a test call to any marker in MGO.	An immediate exception report should be received. Minor alarm sounded for a short interval, then silence.
23	Verify that the office name is correct on the exception report and that the printout agrees with the lighted lamps on the OTI.	
24	Release the indicator display.	
25b	If equipped with marker group 1— Repeat Steps 20 through 24 to a marker in the marker group.	The resultant printout should appear on the MDT keyboard prints or on the terminal associated with the MDT for that marker group.
26b	Insert MB plug into the CATA jack of OTI.	
27	Remove MB plug from the CATA jack of TTI0.	
28	Release any display.	
29	Originate a test call to a terminating marker in terminating marker group 0 in TTI0.	An immediate exception report should be received.

STEP	INPUT MESSAGE/OPERATOR ACTION	OUTPUT MESSAGE/SYSTEM RESPONSE
30	Verify that the office name is correct on the exception report, that the terminating marker group is correctly identified, and that the printout agrees with the lighted lamps on the TTI0.	
31	Release the indicator display.	
32	Repeat Steps 29 through 31 for each of the terminating marker groups assigned to TTI0.	
33	Insert MB plug into the CATA jack of TTI0.	
34g	If equipped with TTI1 and TTI2— Repeat Steps 27 through 33, substituting TTI1 and TTI2 for TTI0.	
35	At ANI trouble ticketer frame— Block RLS relay nonoperated.	
36	Remove MB plug from CATA jack.	
37	In an outpulser circuit for identifier group 0, hold IDS relay normal and then release after a trouble indication is received.	An exception report should be received.
38	Verify the exception report for a NO-IDS failure, a correct identifier designation, and that the report agrees with the operated relays in the trouble ticketer frame.	
39	Remove blocking tool from the RLS relay.	
40a	If equipped with identifier group 1 and 2— Repeat Steps 35 and 39.	
41	Insert MB plug into CATA jack.	
42	Remove MB plug from CATA jack of the CTI.	
43	Release any display.	
44	At subscriber sender link in MGO— Hold DE relay normal and then release after a trouble indication is received.	An exception report should be received.
45	Verify that the office name is correct on the exception report, that a NO-D failure is indicated, and that the report agrees with the lighted display lamps.	

STEP	INPUT MESSAGE/OPERATOR ACTION	OUTPUT MESSAGE/SYSTEM RESPONSE
46	Release the display.	
47b	If equipped with marker group 1— Repeat Steps 42 through 46.	The resultant printout should appear on the MDT keyboard printer or on the terminal associated with the MDT for that marker group.
48	Insert MB plug into CATA jack.	
49	Remove MB plug from CATA jack of the CCTI or CCTI0 if two CCTIs are provided.	
50	In a code compressor circuit, hold TK relay normal and then release after a trouble indication is received.	An exception report should be received.
51	Verify that the office name is correct on the exception report, that a NO-TK failure is indicated, and that the report agrees with the lighted display lamps.	
52	Release the display.	
53	Insert MB plug into CATA jack of CCTI or CCTI0.	
54c	If equipped with an additional CCTI— Repeat Steps 49 through 53 substituting CCTI1 for CCTI0.	
55	Insert MB plug in a subscriber sender.	
56	Block ON1 relay operated.	
57	Manually operate SS relay.	The SSTI circuit should attempt to find the trunk associated with the sender. The SSTI scanning sequence will take at least 3 minutes to complete. Since it cannot, an exception report will be sent to ATA computer. The exception report should identify the sender with the operated ON1 relay.
58	Remove blocking tool from ON1 relay.	
59	Remove MB plug from the subscriber sender.	
60	Repeat Steps 5 through 11, substituting the word **normal** for **immediate**.	

STEP	INPUT MESSAGE/OPERATOR ACTION	OUTPUT MESSAGE/SYSTEM RESPONSE

K. Detect False Ground on a Data Bus

STEP	INPUT MESSAGE/OPERATOR ACTION	OUTPUT MESSAGE/SYSTEM RESPONSE
5	At concentrator unit A— Connect ground to terminal 50 on AA TS.	
6	At an originating marker— Manually hold HMT1 relay normal and then release when trouble records are received.	At MDT keyboard printer— **False ground on data concentrator bus (162).** Major alarm sounded. A status change printout is received indicating that the MDT is made busy to the trouble indicators.
7	At concentrator unit A— Remove ground from terminal 50 on AA TS.	
8	At ATA System TTY— Type: **r:alm!**	A printout similar to the following is received: **R:ALM! IP M APR 8 11:31:24 CLINTON R:ALM RELASE ALARM REQUEST FOR CLINTON OK** %
9	Type: **mdt:mb clear!**	
10a	If the 3-minute timing function is canceled— Operate CONTROL 4 switch up.	A message should be received at the terminal indicating that the timing function has been canceled.
11a	Operate CONTROL 4 switch down.	A message should be received at the terminal indicating that the timing function has been restored.

L. Automatic Reinitialization

STEP	INPUT MESSAGE/OPERATOR ACTION	OUTPUT MESSAGE/SYSTEM RESPONSE
9	At PSD control panel— Operate PWR key to OFF.	
10	Set CONTROL 4 switch up.	
11	Carefully remove the FB598 I/O circuit packs in postions 29 and 30.	
12	Operate PWR key to ON.	The MDT repeatly initializes every 2 seconds.
13	Operate PWR key to OFF.	
14	Replace FB598 circuit packs in positions 29 and 30.	

STEP	INPUT MESSAGE/OPERATOR ACTION	OUTPUT MESSAGE/SYSTEM RESPONSE

M. Operation When No Data Links Available

9	At PSD control panel— Operate PWR switch to ON.	
10	Set CONTROL 4 switch up.	I/O LED should flash at 60 IPM.
11	At ATA keyboard printer— Operate PWR switch to ON.	I/O LED stops flashing.
12	At PSD control panel— Operate PWR switch to OFF.	

N. Start-Up Message

9	At MDT keyboard printer connected to I/O port 2— Operate PWR switch to ON.	
10	At PSD control panel— Operate PWR switch to ON.	
11	Set CONTROL 4 switch up.	At ATA keyboard printer— **F**, @, @, **U**, @, @, @, **STAT5, STAT6, CR** *Note:* The words **STAT5** and **STAT6** will not be printed; instead, a character will be printed in each position.
12	Advance the paper by hitting PAPER ADVANCE key.	

O. Clearing Trouble Indicating Light Emitting Diodes (LEDs)

9	At PSD control panel— Operate PWR switch to OFF	
10	Set CONTROL 1 through 3 switches down and CONTROL 4 switch up.	
11	Operate PWR switch to ON.	
12	Momentarily operate INIT switch.	
13	After 3 seconds— Set CONTROL 4 switch down.	
14	Momentarily operate EX switch.	All LEDs extinguished.
15	Set CONTROL 4 switch up.	

STEP	INPUT MESSAGE/OPERATOR ACTION	OUTPUT MESSAGE/SYSTEM RESPONSE

P. Keyboard Printer Operation

9	At MDT keyboard printer connected to I/O port 2— Slowly operate keys on the keyboard.	All printing characters should echo. At ATA keyboard printer— **B, @, [character], CR** *Note:* **Characters** LF and CR should both echo CR and then LF.
10	Connect MDT keyboard printer to I/O port 3.	
11	At MDT keyboard printer connected to I/O port 3— Slowly operate keys on the keyboard.	All printing characters should echo. At ATA keyboard printer— **B, A, [character], CR**
12	Reconnect MDT keyboard printer to I/O port 2.	

Q. Printing of Incoming Print Data

9	At ATA keyboard printer— Type a message using the form: **<SOH> B, @, data...** *Note:* Generate a sequence of characters as data.	At MDT keyboard printer connected to I/O port 2— The characters generated at ATA keyboard should print.
10	Operate a number of keys.	No echoing or character transmission should occur.
11	Operate CAN and DEL keys.	At ATA keyboard printer— The following message is received for each CAN and DEL inputted: **B, @, CR** (CAN and DEL do not print.)
12	Operate CR key.	**B, @, [character], CR** At MDT keyboard printer connected to I/O port 2— All printing characters should echo.
13	Connect MDT keyboard printer to I/O port 3.	
14	At ATA keyboard printer— Type a message using the form: **<SOH> B, A, data...** *Note:* Generate a sequence of characters as data.	At MDT keyboard printer connected to I/O port 3— The characters generated at ATA keyboard should print.

STEP	INPUT MESSAGE/OPERATOR ACTION	OUTPUT MESSAGE/SYSTEM RESPONSE
15	Operate a number of keys.	No echoing or character transmission should occur.
16	Operate CAN and DEL keys.	At ATA keyboard printer— The following message is received for each CAN and DEL inputted: **B, A, CR** (CAN and DEL do not print.)
17	Operate CR key.	**B, @, [character], CR** At MDT keyboard printer connected to I/O port 3— All printing characters should echo.
18	Reconnect MDT keyboard printer to I/O port 2.	

R. Scan Point Verification Test

9	At PSD control panel— Connect a ground to terminal 30 on SC TS.	
10	Set CONTROL 1, 3, 4 switches down and CONTROL 2 switch up.	
11	Operate EX switch.	At ATA keyboard printer— **D, @, [19 characters, could be anything but will probably be #, , 19@], CR.**
12	At PSD control panel— Set CONTROL 2 switch down and CONTROL 4 switch up.	
13	Remove ground from terminal 30 on SC TS.	

S. Buffering of Keyboard Characters

9	At PSD control panel— Connect a ground to terminal 30 on SC TS.	
10	Set CONTROL 1, 3, 4 switches down and CONTROL 2 switch up.	
11	Operate EX switch.	At ATA keyboard printer— **D, @ [19 characters, could by anything, but will probably be # , , 19@], CR.**
12	At MDT keyboard printer connected to I/O port 2— While message is printing at ATA keyboard	At ATA keyboard printer— No interruption of the trouble data message should occur.

STEP	INPUT MESSAGE/OPERATOR ACTION	OUTPUT MESSAGE/SYSTEM RESPONSE
	printer— Operate several keys.	At MDT keyboard printer connected to I/O port 2— **B, @, [character], CR.**
		Note: Ignore overprinting which will occur at the ATA keyboard printer.
13	At PSD control panel— Set CONTROL 2 switch down and CONTROL 4 switch up.	
14	Remove ground from terminal 30 of SC TS.	

T. Software-Detected Fatal Troubles

STEP	INPUT MESSAGE/OPERATOR ACTION	OUTPUT MESSAGE/SYSTEM RESPONSE
9	At PSD control panel— Operate PWR switch to OFF.	
10	Remove A1068 circuit pack in position 31 of scan/distribute unit.	
11	Operate PWR switch to ON.	S/D and CONT 1 LEDs lighted. The PSD should repeatedly reinitialize.
12	Operate PWR switch to OFF.	
13	Replace A1068 circuit pack in position 31.	
14	Remove FB598 circuit packs in position 29 and 30 for I/O ports 0 and 1.	
15	Operate PWR switch to ON.	I/O and CONT 1 LEDs lighted. The PSD should repeatedly reinitialize.
16	Operate PWR switch to OFF	
17	Replace FB598 circuit pack in position 29 for I/O port 0.	
18	Operate PWR switch to ON.	The PSD successfully initializes. A start-up message is received on the ATA keyboard printers. *Note:* Ignore panel indications.
19	Operate PWR switch to OFF.	

STEP	INPUT MESSAGE/OPERATOR ACTION	OUTPUT MESSAGE/SYSTEM RESPONSE
20	Connect ATA keyboard printer to I/O port 1.	
21	Replace FB598 circuit pack in position 30 for I/O port 1.	
22	Remove FB598 circuit pack in position 29 for I/O port 0.	
23	Operate PWR switch to ON.	The PSD successfully initializes. A start-up message is received on the ATA keyboard printer. *Note:* Ignore panel indications.
24	Operate PWR switch to OFF.	
25	Replace FB598 circuit pack in position 29 for I/O port 0.	
26	Remove FB598 circuit pack in position 31 for I/O port 2.	
27	Operate PWR switch to ON.	I/O, CONT 2, and CONT 4 LEDs lighted. The PSD should repeatedly reinitialize.
28	Operate PWR switch to OFF.	
29	Replace FB598 circuit pack in position 31 for I/O port 2.	
30	Block LMJA relay normal.	
31	Operate PWR switch to ON.	
32	Momentarily operate INIT switch.	
33	After 3 seconds— Set CONTROL 4 switch down.	
34	Momentarily operate EX switch	Panel lamps extinguished.
35	Set CONTROL 4 switch up.	
36	Remove FB598 circuit pack in position 30 for I/O port 1.	I/O and CONT 3 LEDs lighted.
37	Replace FB598 circuit pack in position 30 for I/O port 1.	

STEP	INPUT MESSAGE/OPERATOR ACTION	OUTPUT MESSAGE/SYSTEM RESPONSE
38	Connect ATA keyboard printer to I/O port 0.	
39	Repeat Steps 32 through 35.	
40	Remove FB598 circuit pack in position 29 for I/O port 0.	I/O, CONT 1, and CONT 2 LEDs lighted.
41	Operate PWR switch to OFF.	
42	Replace FB598 circuit pack in position 29 for I/O port 0.	
43	Reconnect ATA keyboard printer to I/O port 1.	
44	Operate PWR switch to ON.	
45	Repeat Steps 32 through 35.	
46	At ATA keyboard printer— Operate PWR switch to OFF.	At PSD control panel— I/O and CONT 4 LEDs lighted.
47	Operate PWR switch to OFF.	
48	Connect ATA keyboard printer to I/O port 0.	
49	At ATA keyboard printer— Operate PWR switch to ON.	
50	At PSD control panel— Operate PWR switch to ON.	
51	Repeat Steps 32 through 35.	
52	At ATA keyboard printer— Operate PWR switch to OFF.	At PSD control panel— I/O, CONT 1, CONT 2, and CONT 3 LEDs lighted.
53	At ATA keyboard printer— Operate PWR switch to ON.	
54	At PSD control panel— Repeat Steps 32 through 35.	All LEDs extinguished.
55	Remove FC319 circuit pack in position 19.	CONT and CONT 3 LEDs lighted.
56	Replace FC319 circuit pack in position 19.	
57	Repeat Steps 32 through 35.	All LEDs extinguished.

STEP	INPUT MESSAGE/OPERATOR ACTION	OUTPUT MESSAGE/SYSTEM RESPONSE
58	Insert a spare FB594 circuit pack in position 23.	MEM and CONT 1 LEDs lighted.
59	Remove FB594 circuit pack in position 23.	
60	Repeat Steps 32 through 35.	All LEDs extinguished.
61	Remove blocking tool from LMJA relay.	

U. Operation Over Proper Data Link

STEP	INPUT MESSAGE/OPERATOR ACTION	OUTPUT MESSAGE/SYSTEM RESPONSE
9	At PSD control panel— Operate PWR switch to OFF.	
10	Connect MDT keyboard printer to I/O port 1.	
11	Operate PWR switch to ON.	
12	Momentarily operate INIT switch.	
13	After 3 seconds— Set CONTROL 4 switch down.	
14	Momentarily operate EX switch.	Panel lamps extinguished.
15	Set CONTROL 4 switch up.	At MDT keyboard printer connected to I/O port 1— Start-up message should be printed. At ATA keyboard printer— Start-up message should be printed.
16	Operate PWR switch to OFF.	
17	At PSD control panel— Momentarily operate INIT switch.	At MDT keyboard printer connected to I/O port 1— Start-up message should be printed.
18	At ATA keyboard printer— Operate PWR switch to ON.	
19	At MDT keyboard printer connected to I/O port 1— Operate PWR switch to OFF.	
20	At PSD control panel— Momentarily operate INIT switch.	At ATA keyboard printer connected to I/O port 0— Start-up message should be printed.
21	At PSD control panel— Operate PWR switch to OFF.	

STEP	INPUT MESSAGE/OPERATOR ACTION	OUTPUT MESSAGE/SYSTEM RESPONSE
22	Reconnect MDT keyboard printer to I/O port 2.	
23	At MDT keyboard printer connected to I/O port 2— Operate PWR switch to ON.	
24	At PSD control panel— Momentarily operate INIT switch.	
25	After 3 seconds— Set CONTROL 4 switch down.	
26	Momentarily operate EX switch.	Panel lamps extinguished.
27	Set CONTROL 4 switch up.	

V. Response to Polling Message

9	At ATA keyboard printer— Type: <SOH> F, @, @, A, A, A, A, A, A, A <CR>	F, @, @, STAT0, STAT1-STAT6, CR *Note:* The words STAT0, STAT1, etc, will not be printed; instead, a character will be printed in each position.

W. Set Mode Command Message

9	At ATA keyboard printer— Type: <SOH> F, @, A, STAT0-STAT6 <CR>	F, @, A, STAT0-STAT6, CR *Note:* The words STAT0, STAT1, etc, will not be typed; instead, a character will be typed in each position.

X. Transfer Between Data Links

9	At PSD control panel— Operate PWR switch to OFF.	
10	Connect MDT keyboard printer to I/O port 1.	
11	Operate PWR switch to ON.	
12	Momentarily operate INIT switch.	
13	After 3 seconds— Set CONTROL 4 switch down.	
14	Momentarily operate EX switch.	Panel lamps extinguished.
15	Set CONTROL 4 switch up.	

STEP	INPUT MESSAGE/OPERATOR ACTION	OUTPUT MESSAGE/SYSTEM RESPONSE
16	Set CONTROL 2 switch up and CONTROL 4 switch down.	
17	At ATA keyboard printer— Type: <SOH> F, @, A, B, STAT1-STAT6	
18	At PSD control panel— Momentarily operate EX switch.	At ATA keyboard printer— SPV test prints.
19	While SPV test is printing— Operate CR key.	Printing stops. At MDT keyboard printer connected to I/O port 1— SPV test prints. A TBL (F@BD), SMR, and RUTR message may follow the SPV record.
20	Connect ATA keyboard printer to I/O port 1.	
21	Connect MDT keyboard printer to I/O port 0.	
22	At ATA keyboard printer connected to I/O port 1— Type: <SOH> F, @, A, A, STAT1-STAT6	
23	At PSD control panel— Momentarily operate EX switch.	At ATA keyboard printer connected to I/O port 1— SPV test prints.
24	While SPV test is printing— Operate CR key.	Printing stops. At MDT keyboard printer— SPV test prints. A TBL (F@BD), SMR, and RUTR message may follow the SPV record.
25	At PSD control panel— Operate PWR switch to OFF.	
26	Set CONTROL 2 switch down and CONTROL 4 switch up.	
27	Reconnect MDT keyboard printer to I/O port 2.	
28	Reconnect ATA keyboard printer to I/O port 0.	
29	Operate PWR switch to ON.	

STEP	INPUT MESSAGE/OPERATOR ACTION	OUTPUT MESSAGE/SYSTEM RESPONSE
30	Momentarily operate INIT switch.	
31	At 3 seconds— Set CONTROL 4 switch down.	
32	Momentarily operate EX switch.	Panel lamps extinguished.
33	Set CONTROL 4 switch up.	

Y. Set Distribute Point Command Message

9	At ATA keyboard printer— Type: <SOH> F, @, C, C, L, A, X, X, X, X <CR> *Note:* Xs are any characters used as fill.	Sets CMJ0 relay (row 3, bit position 12, distribute point MJ0).
10	Type: <SOH> F, @, C, C, L, @, X, X, X, X, <CR>	Releases CMJ0 relay.
11	Type: <SOH> F, @, C, C, M, @, X, X, X, X <CR>	Sets CMN0 relay (row 3, bit position 13, distribute point MN0).
12	Type: <SOH> F, @, C, C, M, @, X, X, X, X <CR>	Releases CMN0 relay.
13	Type: <SOH> F, @, C, C, N, A, X, X, X, X <CR>	Sets CMJ1 relay (row 3, bit position 14, distribute point MJ1).
14	Type: <SOH> F, @, C, C, N, @, X, X, X, X <CR>	Releases CMJ1 relay.
15	Type: <SOH> F, @, C, C, O, A, X, X, X, X <CR>	Sets CMN1 relay (row 3, bit position 15, distribute point MN1).
16	Type: <SOH>, F, @, C, C, O, @, X, X, X, X <CR>	Releases CMN1 relay.
17	Type: <SOH> F, @, C, B, N, A, X, X, X, X, <CR>	Sets MB relay (row 2, bit position 14, distribute point MB). RUTR message is received.
18	Type: <SOH> F, @, C, B, N, @, X, X, X, X, <CR>	Releases MB relay.

Z. I/O Errors That Cause Trouble Message to ATA

9	At ATA keyboard printer— Operate and hold BREAK key.	F, @, B, [0(102)=B] CR
10	Release BREAK key.	
11	Set PARITY switch to ODD.	F, @, B, [0(103)=C] CR

STEP	INPUT MESSAGE/OPERATOR ACTION	OUTPUT MESSAGE/SYSTEM RESPONSE
12	Set PARITY switch to EVEN. *Note:* Do not turn PSD power off.	
13	At scan/distribute unit— Remove FB598 circuit pack in position 31 for I/O port 2.	At ATA keyboard printer— **F, @, B, [0(111)=I] CR**
14	At scan/distribute unit— Replace FB598 circuit pack in position 31 for I/O port 2.	

AA. Print Buffer Full Condition

9	At ATA keyboard printer— Type: <**SOH**> **B**, @ [characters] <**CR**> *Note:* For the word **characters,** continue to operate keys until a trouble message is received.	
10	At MDT keyboard printer connected to I/O port 2— Operate PWR switch to OFF.	At ATA keyboard printer— RUTR message is received. *Note:* A paper advance should be generated, as necessary, to prevent overprinting. After 80 characters have been originated— The following message should be received: **F, @, B, K, CR** *Note:* K is trouble number 0(113).
11	At MDT keyboard printer connected to I/O port 2— Operate PWR switch to ON.	
12	Connect MDT keyboard printer to I/O port 3.	
13	At MDT keyboard printer connected to I/O port 3— Operate PWR switch to OFF.	At ATA keyboard printer— RUTR message is received. *Note:* A paper advance should be generated, as necessary, to prevent overprinting. After 80 characters have been originated— The following message should be received: **F, @, B, L, CR**

Page 27

STEP	INPUT MESSAGE/OPERATOR ACTION	OUTPUT MESSAGE/SYSTEM RESPONSE
		Note: L is trouble number 0(114).
14	At MDT keyboard printer connected to I/O port 3— Operate PWR switch to ON.	
15	Reconnect MDT keyboard printer to I/O port 2.	

AB. Sanity Timer Verification

STEP	INPUT MESSAGE/OPERATOR ACTION	OUTPUT MESSAGE/SYSTEM RESPONSE
9	At PSD control panel— Set CONTROL 2 through 4 switches down and CONTROL 1 switch up.	
10	Momentarily operate EX switch.	LMJ and MB relays operate. CONT LED momentarily flashes. CONT 1, CONT 2, CONT 3, and CONT 4 LEDs lighted. *Note:* Disregard flashing I/O LED. At MDT— ALM lamp lighted. Major alarm sounded.
11	Operate ACO key.	Major alarm silenced. ALM lamp extinguished. ACO lamp lighted.
12	Operate AR key.	ACO lamp extinguished.
13	At PSD control panel— Set CONTROL 1 switch down.	
14	Momentarily operate EX switch.	All LEDs extinguished.
15	Set CONTROL 4 switch up.	

AC. ATA Computer Inoperative Timer

STEP	INPUT MESSAGE/OPERATOR ACTION	OUTPUT MESSAGE/SYSTEM RESPONSE
9	Block LMJA relay nonoperated.	
10	Set CONTROL 4 switch down.	At ATA keyboard printer— **F, @, @, STAT0-STAT6, CR** *Note:* The words **STAT0, STAT1**, etc, will not be printed; instead, a character will be printed in each position. The STAT6 character should indicate that the CONT 4 bit is not set.

STEP	INPUT MESSAGE/OPERATOR ACTION	OUTPUT MESSAGE/SYSTEM RESPONSE
11	At PSD control panel— Set CONTROL 4 switch up.	At ATA keyboard printer— RUTR message is received. *Note:* The **STAT6** character should indicate that the CONT 4 bit is set.
12	At PSD control panel— Set CONTROL 4 switch down.	At ATA keyboard printer— RUTR message is received.
13	After 2 minutes— Originate a NUL character on ATA keyboard printer. *Note:* The MDT should continue to operate normally with no control lamps lighted and no alarms as long as nul characters are generated every 2 minutes.	
14	Originate a NUL character on ATA keyboard printer.	After 3 minutes— At PSD control panel— I/O, CONT 2, CONT 3, and CONT 4 LEDs lighted.
15	Momentarily operate EX switch.	All LEDs extinguished.
16	Operate CONTROL 4 switch up.	
17	Remove blocking tool from LMJA relay.	

AD. Initialization-Nul Character Receipt on Either Data Link

9	At PSD control panel— Operate PWR switch to OFF	
10	At MDT— Make busy.	
11	At PSD control panel— Set CONTROL 4 switch down.	
12	Operate PWR switch to ON.	I/O LED flashes at 60 IPM. *Note:* Disregard any other lighted LEDs.
13	At ATA keyboard printer— Input a NUL character.	At PSD control panel— I/O LED extinguished. At ATA keyboard printer— **F**, @, @, **U**, @, @, @, @, **STAT5**, **STAT6** CR

STEP	INPUT MESSAGE/OPERATOR ACTION	OUTPUT MESSAGE/SYSTEM RESPONSE
		Note: The **U** indicates that the primary data link is in service. The words STAT5 and STAT6 will not be printed; instead, a character will be printed in each position.
14	At PSD control panel— Operate PWR switch to OFF.	
15	Connect ATA keyboard printer to I/O port 1.	
16	At PSD control panel— Operate PWR switch to ON.	I/O LED flashes at 60 IPM. *Note:* Disregard any other lighted LEDs.
17	At ATA keyboard printer— Input a NUL character.	At PSD control panel— I/O LED extinguished. At ATA keyboard printer— **F, @, @, V, @, @, @, @, STAT5, STAT6 CR** *Note:* The **V** indicates that the backup data link is in service.
18	At PSD control panel— Operate PWR switch to OFF.	
19	Connect ATA keyboard printer to I/O port 0.	
20	At PSD control panel— Set CONTROL 4 switch up.	
21	Operate PWR switch to ON.	
22	Momentarily operate INIT switch.	
23	After 3 seconds— Set CONTROL 4 switch down.	
24	Momentarily operate EX switch.	Panel lamps extinguished.
25	Operate CONTROL 4 switch up.	

AE.   Cancel ATA When MDT Major Alarm Occurs

9	At all trouble indicators— Remove all CATA plugs.	
10	At PSD control panel— Operate PWR switch to OFF.	MDT, MB, and ALM lamp lighted. Major alarm sounded.

STEP	INPUT MESSAGE/OPERATOR ACTION	OUTPUT MESSAGE/SYSTEM RESPONSE
		At each trouble indicator— CATA lamps lighted.
11	At MDT alarm unit— Operate ACO key.	At PSD control panel— Major alarm silenced.
12	Operate PWR switch to ON.	
13	Momentarily operate INIT switch.	
14	After 3 seconds— Set CONTROL 4 switch down.	
15	Momentarily operate EX switch.	All LEDs extinguished.
16	Set CONTROL 4 switch up.	
17	At ATA keyboard printer— Type: <SOH> **F, @, C, B, N,** @, **X, X, X, X** <**CR**>	At MDT— Releases MB relay.
	Note: **Xs** are any characters used as fill.	

AF. Changes in CATA Status of Trouble Indicators

STEP	INPUT MESSAGE/OPERATOR ACTION	OUTPUT MESSAGE/SYSTEM RESPONSE
9	At all trouble indicators— Check that all CATA plugs have been removed.	
	Note: The SSTI should be idle.	
10	At MDT— Insert MB plug in MDT MB jack.	
11	At MDT alarm unit— Operate AR key.	Major alarm silenced.
12	Insert and remove a make-busy plug in the CATA jack of each trouble indicator shown in Table A or B. Advance the paper on ATA keyboard printer after plug is inserted or removed.	At ATA keyboard printer— **F,** @, @, **STAT0-STAT6, CR** *Note:* The words **STAT5** and **STAT6** should agree with characters in Table A or B.

AG. Trouble Record Data Collection

STEP	INPUT MESSAGE/OPERATOR ACTION	OUTPUT MESSAGE/SYSTEM RESPONSE
9a	If 3-minute timer provided— At ATA keyboard printer— Type: <SOH>, **F,** @, **A, E, W, C, W, C,** @, �⬀ <**CR**>	**F,** @, **A, E, W, C, W, C,** @, ⬀, **CR**
	Note: The characters **E** through ⬀ are, STAT0 to STAT6 respectively.	

TABLE A

Trouble Indicator With 3-Minute Timer Provided

TROUBLE INDICATOR	PLUG INSERTED STAT5	STAT6	PLUG REMOVED STAT5	STAT6
OTI	A	●	@	●
TTI0	B	●	@	●
ANI	D	●	@	●
SSTI	H	●	@	●
TTI1	P	●	@	●
TTI2	●	●	@	●
CCTI0	@	a	@	●
CTI	@	b	@	●
CCTI1	@	h	@	●

Note: This table is based on only one trouble busy to ATA.

TABLE B

Trouble Indicator With 3-Minute Timer Not Provided

TROUBLE INDICATOR	PLUG INSERTED STAT5	STAT6	PLUG REMOVED STAT5	STAT6
OTI	A	@	@	@
TTI0	B	@	@	@
ANI	D	@	@	@
SSTI	H	@	@	@
TTI1	P	@	@	@
TTI2	●	@	@	@
CCTI0	@	A	@	@
CTI	@	B	@	@
CCTI1	@	H	@	@

Note: This table is based on only one trouble busy to ATA.

STEP	INPUT MESSAGE/OPERATOR ACTION	OUTPUT MESSAGE/SYSTEM RESPONSE

10b   If 3-minute timer not provided—
Type: <SOH> F, @, A, E, W, C, W, C, @, @, <CR>

F, @, A, E, W, C, W, C, @, @, CR

Note: The characters **E** through second @ are STAT0 to STAT6 respectively.

11   At MDT—
Remove MDT MB plug.

12   At each trouble indicator and marker or identifier group—
Hold the indicated relay (Table C) normal in the specified equipment until the circuit trouble indicates.

At ATA keyboard printer—
A printout should be received for each trouble generated.

Note: The first character is either an A or a C, and the second character is the MSID character shown in Table C.

TABLE C

Trouble Record Data

TROUBLE	INDICATOR	EQUIP.	HOLD RELAY NO.	MSID
OTI	MG0	OM	HMT1	P
OTI	MG1	OM	HMT1	P
TTI0	MG0	TM	HMT1	H
TTI0	MG1	TM	HMT1	h
TTI0	MG2	TM	HMT1	X
TTI1	MG0	TM	HMT1	D
TTI1	MG1	TM	HMT1	d
TTI1	MG2	TM	HMT1	T
TTI2	MG0	TM	HMT1	L
TTI2	MG1	TM	HMT1	1
TTI2	MG2	TM	HMT1	⬥
ANI	IDG0	Note 1	THK	K
ANI	IDG1	Note 1	THK	k
ANI	IDG2	Note 1	THK	[
CTI	MG0	Note 2	SL	B
	MG1	Note 2	SL	b
CCTI0		Steps 13-15		R
SSTI		Steps 16-20		x
CCTI1		Steps 13-15		Z

Note 1: ANI outpulser circuit

Note 2: Controller in subscriber sender link and controller circuit

STEP	INPUT MESSAGE/OPERATOR ACTION	OUTPUT MESSAGE/SYSTEM RESPONSE
13a	If trouble indicator is CCTI0 or CCTI1— At code compressor circuit— Insert MB plug.	
14a	Manually operate XR relay.	
15a	When display has been received— Remove MB plug.	
16b	If trouble indicator is SSTI— At subscriber sender— Insert MB plug.	
17b	Block ON1 relay operated.	
18b	Operate SS relay.	At ATA keyboard printer— A printout should be received with a MSID of x.
19b	At subscriber sender— Remove blocking tool from ON1 relay.	
20b	Remove MB plug.	
21	At ATA keyboard printer— Advance paper after each trouble printout to prevent overprinting.	

AH. Trouble Record Length

9	At data concentrator units— Remove fuses A (1 to 8) and B (1 to 8).	
10	Use the information recorded in Test AG, Step 12— Generate one trouble record from each of the following trouble indicator frames: OTI, TTI, CTI, CCTI0, CCTI1, SSTI, ANI.	At ATA keyboard printer— The first character of the printout should be either A or C. The number of @ characters after the first character will be: OTI-100 TTI-80 CTI-40 CCTI-20 SSTI-20 ANI-40 *Note:* The OTI will print more than one full line, so overprinting will occur unless the paper is advanced. When a carriage return occurs, several characters are lost.
11	At data concentrator units— Replace fuses A (1 to 8) and B (1 to 8).	

STEP	INPUT MESSAGE/OPERATOR ACTION	OUTPUT MESSAGE/SYSTEM RESPONSE

AI.   Fuse Failures

STEP	INPUT MESSAGE/OPERATOR ACTION	OUTPUT MESSAGE/SYSTEM RESPONSE
9	At PSD control panel— Replace the IOP fuse with a blown fuse.	Major alarm sounded.
10	Replace the blown fuse with the good fuse.	
11	Operate AR key.	Major alarm silenced.
12	Momentarily operate INIT key.	
13	Repeat Steps 9 through 12 substituting ION, SPB, CDO, SDO, PDO, PF, REF, CO, and PF1 for IOP.	
14	Momentarily operate INIT switch.	All LEDs extinguished.
15	After 3 seconds— Set CONTROL 4 switch down.	
16	Momentarily operate EX switch.	
17	Set CONTROL 4 switch up.	
18a	If alarm lamp lighted— Momentarily operate AR key.	

AJ.   Detect False Ground on Data Bus

STEP	INPUT MESSAGE/OPERATOR ACTION	OUTPUT MESSAGE/SYSTEM RESPONSE
9a	If 3-minute timer provided— At ATA keyboard printer— Type: <SOH> F, @, A, E, W, C, @, @, @, ✎, <CR> *Note:* STAT6 character will not appear on some keyboard printers.	F, @, A, E, W, C, @, @, @,✎, CR
10b	If 3-minute timer not provided— At ATA keyboard printer— Type: <SOH> F, @, A, E, W, C, @, @, @, @, <CR> *Note:* STAT6 character will not appear on some keyboard printers.	F, @, A, E, W, C, @, @, @, @, CR
11	At MDT— Block C04 relay operated.	
12	At any originating marker— Hold HMT1 relay normal until trouble indications occur.	

STEP	INPUT MESSAGE/OPERATOR ACTION	OUTPUT MESSAGE/SYSTEM RESPONSE
13	After trouble indications occur— Release HMT1 relay.	At ATA keyboard printer— **F @ Br** RUTR message indicating MDT has been made busy. MB lamp lighted.
14	At MDT— Remove blocking tool from C04 relay.	
15	At ATA keyboard printer— Type: <**SOH**> **F, @, C, B, N,** @, **X, X, X, X,** <**CR**> *Note:* **Xs** are any character used as fill.	At MDT— MB lamp extinguished. At ATA keyboard printer— RUTR message is received.

AK. Power Failure

STEP	INPUT MESSAGE/OPERATOR ACTION	OUTPUT MESSAGE/SYSTEM RESPONSE
9	At converter— Operate PWR switch to OFF.	ALM lamp lighted. At MDT— ALM lamp lighted. At PSD control panel— ALM lamp lighted. Major alarm sounded.
10	At converter— Operate PWR switch to ON.	ALM lamp extinguished.
11	At PSD control panel— Momentarily operate INIT switch.	
12	Set CONTROL 4 switch down.	
13	Momentarily operate EX switch.	All LEDs extinguished.
14	Set CONTROL 4 switch up.	
15	Operate AR key.	Major alarm silenced. ALM lamp extinguished.

AL. Operational Mode and Indicator Release Control

STEP	INPUT MESSAGE/OPERATOR ACTION	OUTPUT MESSAGE/SYSTEM RESPONSE
9a	If 3-minute timer provided— At ATA keyboard printer— Type: <**SOH**> **F,** @, **A, E,** @, @, @, @, <**CR**>	
10b	If 3-minute timer not provided— At ATA keyboard printer— Type: <**SOH**> **F,** @, **A, E,** @, @, @, @, @, <**CR**>	

STEP	INPUT MESSAGE/OPERATOR ACTION	OUTPUT MESSAGE/SYSTEM RESPONSE
11	At MDT— Generate a service trouble indication by using information in Table C for OTI.	At ATA keyboard printer— Printout is received. At OTI— Lamps extinguished.
12	At MDT— Generate a test call on the OTI.	After 30 to 60 seconds— Lamps on indicator are released. At ATA keyboard printer— No printout is received.
13	Repeat Steps 11 and 12 substituting TTI0, TTI1, TTI2, CCTI0, and CCTI1 for OTI.	
14	At MDT— Generate a service trouble indication by using information in Table C for CTI.	At ATA keyboard printer— Printout is received. At CTI— Lamps extinguished.
15	At MDT— Generate a service trouble indication by using information in Table C for SSTI.	At ATA keyboard printer— Printout is received. At SSTI— Lamps extinguished.
16	At MDT— Generate a service trouble indication by using information in Table C for ANI.	At trouble ticketer— No printout is received.
17	At OITT frame— Generate an ANI test call.	At ATA keyboard printer— Verify that no printout is received. At trouble ticketer— Test call printout is received.