EC 826380			PN 2597109
27MAY83			

ENTRY POINTS

FROM	ENTER THIS MAP		
MAP NUMBER	ENTRY POINT	PAGE NUMBER	STEP NUMBER
0101	A	1	001
0115	A	1	001
8809	A	1	001
8809	B	5	040
9910	B	5	040

EXIT POINTS

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
2	014	0101	C
11	072	0116	A
3	031	0399	A
10	064	0599	A
8	057	0599	A
7	050	0599	A
8	054	9905	A
8	058	9905	A

001
(Entry Point A)

MAP DESCRIPTION:
Tape and Data Storage subsystem

FRUs PARTIALLY TESTED:
A-A2K2
A2L2
A2C2
A2E2
A2D2
A2J2

Are any of the following 8809 tape drive symptoms present?
Fails to power on.
Fails to load tape.
Fails to unload tape.
Fails to come ready.
Damages the tape.
Y N

002
Do you have a 4 digit SRC?
Y N

003
Go to Page 4, Step 034, Entry Point C.

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1
2 2
A B

004
Is a Cxxx SRC displayed on the screen or on the panel?
Y N

005
Is a 1bxx or a 5bxx SRC displayed on the screen or on the panel?
Y N

006
Is a 13xx SRC displayed on the panel with a system processor check?
Y N

007
Is the failure a suspected tape problem?
Y N

008
Suspect you are in the wrong MAP. Do the following to determine the primary failing device:
- Run SYSTEST, select tape, disk, and diskette (use scratch tape and diskette).
- Run ERAP, analyze recorded failures to determine primary failing device.
- Locate the SRC obtained from above in MAP 113 through 116 to determine which MAP to follow.

009
Go to Page 4, Step 034, Entry Point C.

010
Is the SRC 135C, 135d, 13F0 or 13F4?
Y N

011
Is the SRC 13F3 or 135b?
Y N

012
Is the SRC 135E or 135F?
Y N

013
Is the SRC 1301, 1356 or 13F5?
Y N

014
SRC not valid. Repeat the procedure that caused the original failure.
Go To Map 0101, Entry Point C.

015
- Select mode 6.
- Press the Power key (power off).
- Remove A2K2 and A2L2.
- Press the Power key (power on).
- Select mode 0.
- Enter 0000.
- Press the Load key.

Does the failure repeat (processor check with SRC CFb1)?
Y N

016
- Select mode 6.
- Press the Power key (power off).
- Reinstall A2K2 and A2L2.
- Press the Power key (power on).
- Select mode 0.
- Enter 0000.
- Press the Load key.

Does the failure repeat (processor check with SRC 1301, 1356 or 13F5)?
Y N

017
Bad card:
A2L2.

018
Bad card:
A2K2
---or---
A2J2.

019
Bad card:
A2K2
---or---
A2J2.

020
Is the SRC 135E?
Y N

021
- Configure the system.
- Reload microcode.

Bad card:
A2J2
---or---
A2K2.

022
Bad card:
A2J2
---or---
A2K2
---or---
A2L2.
- Reload microcode.

023
- Select mode 6.
- Press the Power key (power off).
- Remove A2K2.
- Press the Power key (power on).
- Select mode 0.
- Enter 0000.
- Press the Load key.

Does IPL fail with SRC CFb1?
Y N

L M

024
Bad card:
A2J2.

025
- Select mode 6.
- Press the Power key (power off).
- Swap A2K2 (removed in preceding step) with A2E2.
- Install both cards.
- Press the Power key (power on).
- Select mode 0.
- Enter 0000.
- Press the Load key.

Does the failure repeat (SRC 13F3 or 135b)?
Y N

026
Bad card:
A2K2 (now in A2E2)
---or---
A2L2.

027
Bad card:
A2J2.

028
Bad card:
A2J2.

029
Is the SRC 1b0C?
Y N

030
Is this a solid failure?
Y N

031
Intermittent failure.
Go To Map 0399, Entry Point A.

1
1 4
N P

032
Is the SRC 1b7C, 1b7d or 1b4F?
Y N

033
Is the SRC 1bCA, 1bA0, 1bd6, 1bd7, 1b35, 1b39 or 5bd3?
Y N

034
(Entry Point C)
Is the system available for dedicated maintenance?
Y N

035
Is the SRC 1b54 through 1bF0?
Y N

036
Do not continue testing until a dedicated system is available. The SRC indicates that the problem is in the adapter. Verify the adapter before testing the 8809 tape drives.

When dedicated system time is available, **Go to Step 034, Entry Point C.**

037
Is the customer using the 8809 tape drive?
Y N

1 1
0 0 5 5 5
Q R S T U

038
Go to 8809 MIM Start section (see note 1).

039
Additional testing cannot continue until the tape drive(s) are available (On a two drive system both drives must be available). When the tape drive(s) are available,
Go to Page 4, Step 034, Entry Point C.

040
(Entry Point B)
Did you run the tape MDI following the instructions before?
Y N

041
Run tape MDI (see note 2).
- Select mode 1.
- Press the System Reset key.
- Select mode E.
- Enter FF00.
- Insert DIAG21/41 diskette.
- Press the Load key.
- Repeat MDI MAPs.
- From the second menu select 8809 Tape Drive 1.
- Follow the MDI instructions.

(Step 041 continues)

Note 1: For additional testing of the tape attachment you must have a dedicated system to run the 8809 tape MDIs, but, the 8809 diagnostic link series (DLS) tests will run in concurrent mode while the customer is using the system. Go to 8809 MIM Start section and run the DLS. If the DLS fails to isolate the problem schedule dedicated system time and return to this MAP at Entry Point B, step 041 on page 5 to continue testing the attachment in dedicated mode.

(Step 041 continued)

Note 2: The MDIs need a dedicated system. The 8809 tape MDIs will test the 8809 attachment and interface cables to the 8809 tape drives. Because the attachment and cables are common to both drives (if installed) the MDIs run only with tape drive 1.

If the MDIs do not isolate the failure, you will be instructed to go to the 8809 tape drive MIM Start pages.

042

The tape MDI failed to locate the problem.

Did a failure occur during MDI 61xx?

Y N

043

Did a failure occur during MDI 65xx?

Y N

044

Did a failure occur during MDI Mb101, Mb102 or Mb103?

Y N

045

The failure may be associated with the 8809 tape drive.

Go to 8809 tape drive MIM, Start section.

046

The failure is associated with the tape attachment card.

Was card A-A2L2 replaced before?

Y N

047

Bad card:

A2L2.

048

- Measure the A-A2 board voltages at the tape attachment card pins in table 3.

Table 3

Voltage	Tolerance High	Tolerance Low	Probe Points
+5.0	+5.5	+4.55	A2L2D03, J03
Ground			A2L2D08, J08

Are all voltages in tolerance on each pin?

Y N

049

- Select mode 6.
- Press the Power key (power off).
- Remove the A-A2L2 card.
- Press the Power key (power on).
- Measure the voltages from table 3 for the level that failed in the preceding step.

Is the voltage now in tolerance?

Y N

050

System power problem.

Go To Map 0599, Entry Point A.

051

The tape attachment card is causing the failing voltage.

Bad card:
A2L2.

052

Bad card:
A2L2.

053

The failure is associated with the tape DSA card.

Was the DSA A-A2K2 card replaced before?

Y N

054

Go To Map 9905, Entry Point A.

055

- Measure the A-A2 board voltages at the DSA card A2K2 listed in table 2.

Table 2

Voltage	Tolerance High	Tolerance Low	
+1.7	+1.73	+1.67	A2K2B09, G09, M09, S09
+5.0	+5.5	+4.5	A2K2D03, J03, P03 U03
Ground			A2K2D08, J08, P03 U03

Are all voltages in tolerance on each pin?

Y N

056

- Select mode 6.
- Press the Power key (power off).
- Remove the A-A2K2 card.
- Press the Power key (power on).
- Measure the voltages from table 2 for the level that failed in the preceding step.

Is the voltage now in tolerance?

Y N

057

System power problem.

Go To Map 0599, Entry Point A.

058

The DSA A2K2 card is probably causing the failing voltage.

Go To Map 9905, Entry Point A.

059
Bad card:
A2K2.

060
The failure is probably associated with the Data Storage controller.
Was the DSC A-A2J2 card replaced before?
Y N

061
Bad card:
A2J2
---or---
A2K2.

062
- Measure the A-A2 board voltages at the A2J2 (DSC) card pins indicated in table 1.

Table 1

Voltage	Tolerance High	Tolerance Low	
+1.7	+1.73	+1.6	A2J2B05, G05,G09, M05
+5.0	+5.5	+4.55	A2J2D03, J03,U03
-5.0	-5.5	-4.55	A2J2S06
+8.5	+9.35	+7.68	A2J2M11
Ground			A2J2D08, J08,P08, U08

Are all voltages in tolerance on each pin listed?
Y N

063

- Select mode 6.
- Press the Power key (power off).
- Remove the DSC A-A2J2 card.
- Press the Power key (power on).
- Measure the voltages from table 1 for the failed level.

Is the voltage now in tolerance?

Y N

064

System Power problem.

Go To Map 0599, Entry Point A.

065

The DSC card is probably causing the failing voltage.

Bad card:

A2J2.

066

Bad card:

A2J2.

067

- Clean head. Reference 8809 MIM Carr 1 (tape path cleaning procedure).
- Check tape. Reference 8809 MIM, Start section to determine how to identify damaged tape.
  Creases.
  Stretch marks.
  .Curled edges.
- Repeat the procedure that caused the original SRC. If problem remains,

Go to Page 4, Step 034, Entry Point C.

068

- Check for 8809 Drive Not Ready.
- Check for loose cables between system and tape drive.

Go to Page 4, Step 035, Entry Point C.

069
Bad card:
A2J2
---or---
A2K2.

070
Is a Cbxx or CFB1 SRC displayed?
Y N

071
Is a C3xx or a CF65 SRC displayed?
Y N

072
Go To Map 0116, Entry Point A.

073
Bad card:
A2J2
---or---
A2K2.

074
See note 3.
Power off the 8809 tape drive(s).
- Repeat IPL.
- Select mode 1.
- Press the System Reset key.
- Select mode 0.
- Enter 0000.
- Press the Load key.

Is a Cbxx or CFb1 SRC displayed?
Y N

075
Go To 8809 Tape Drive MIM, Start page 1.

Note 3: For additional testing you must have a dedicated system. Schedule dedicated system time before continuing.

076

- Select mode 1.
- Press the System Reset key.
- Select mode E.
- Enter FF00.
- Insert DIAG21/41 diskette.
- Press the Load key.

Does the DCP menu appear on the screen?

Y N

077

Bad card:

A2K2

---or---

A2J2

---or---

A2L2.

078

Go to Page 5, Step 040, Entry Point B. -

079

Go to 8809 MIM Start section.

ENTRY POINTS

FROM	ENTER THIS MAP		
MAP NUMBER	ENTRY POINT	PAGE NUMBER	STEP NUMBER
B101	A	1	001
B102	A	1	001
B103	A	1	001

EXIT POINTS

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
4	017	9910	A

001
(Entry Point A)

MAP DESCRIPTION:
- Swap A2K2 and A2E2 DSA cards.

FRUs PARTIALLY TESTED:
A-A2L2, A-A2K2, A-A2E2

Did you IPL from the disk during this failure before?
Y N

002
- Select mode 1.
- Press the System Reset key.
- Select mode 6.
- Press the Power key (power off).
- Swap the A2K2 and A2E2 cards.
- Reinstall the TCC on both cards.
- Press the Power key (power on).

Go to Page 2, Step 007, Entry Point B.

003
Did the SSP screen appear during the preceding IPL if wraps wer bypassed (FF00)? If wraps were not bypassed or if you do not know, answer no.
Y N

2 A 2 B

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004

- Select mode 1.
- Press the System Reset key.
- Select mode 6.
- Press the Power key (power off).
- Swap the A2K2 and A2E2 cards.
- Reinstall the TCC on both cards.
- Press the Power key (power on).

Go to Step 007, Entry Point B.

005

- Select mode 1.
- Press the System Reset key.
- Select mode 6.
- Press the Power key (power off).
- Swap the A2K2 and A2E2 cards.
- Reinstall the TCC on both cards.
- Press the Power key (power on).
- Select mode 0.
- Enter FF00.
- Press the Load key.

Does the SSP screen appear?

Y N

006

Bad card:

- Replace the tape DSA card now in the A2E2 location.

007

(Entry Point B)

- Insert DIAG21/41.
- Select mode E.
- Enter FF00.
- Press the Load key.

Does the DCP screen appear?

Y N

008

Bad card:

- Replace the tape DSA card now in the A-A2E2 location.

009

- Run the tape MDI from DIAG22/42.

Did the tape MDI run without errors?

Y N

010

Is the failure the same as before entering this MAP (see note 1)?

Y N

011

- Select mode 6.
- Press the Power key (power off).
- Return the DSA cards A2E2 and A2K2 to their original locations.
- Reinstall the TCC's on both cards.
- Press the Power key (power on).
- Select mode E.
- Enter FF00.
- Press the Load key.
- Run the tape MDIs from DIAG22/42.

Is the failure the same as before entering this MAP (see note 1)?

Y N

012

Is the failure the same as in the preceding step?

Y N

013

- Suspect a card seating problem.
- Reseat A-A2K2, L2 and run the tape MDI.

014

Bad card:

- Replace the disk DSA card A-A2E2 and the tape DSA card A-A2K2.

Note 1: After swapping the A2E2 and A2K2 cards, does the failure appear to be the same as before swapping the cards? Example: Did the MDI specify probing the same pins or indicate the same FRU call out or Go To statement?

015

Bad card:

- Replace the tape DSA card A-A2K2.

016

- Replace the A-A2L2 tape attachment card.
- Run the tape MDI from DIAG22/42.

Did the tape MDI run without errors?

Y N

017

Go To Map 9910, Entry Point A.

018

Replacing the A-A2L2 card fixed the problem.

019

Bad card:

- Replace the tape DSA card now plugged into the A-A2E2 location. Although the card appears to work as the disk/diskette DSA, this card probably has a failing address line not used by a disk/diskette DSA.

ENTRY POINTS

FROM	ENTER THIS MAP		
MAP NUMBER	ENTRY POINT	PAGE NUMBER	STEP NUMBER
B104	D	4	010
0500	D	4	010
9905	A	1	001

EXIT POINTS

EXIT THIS MAP		TO	
PAGE NUMBER	STEP NUMBER	MAP NUMBER	ENTRY POINT
4	011	9900	B

001

(Entry Point A)

This MAP will verify the cables between the 01A-A2 board and the system cable tower and the cables between the tape attachment and the tape drive.

This diagnostic routine will test all lines to and from the tape drive, with limited use of a probe will identify which line if any is open or short in the interface cables.

- Press the system Power key (power off).
- Power off tape drive(s).
- Disconnect the two interface cables (#1 and #2) at the tape drive cable tower located at the rear of the tape drive.
- Turn one connector 180 degrees and plug the two cable connectors into one another.
- Tighten the four thumb screws to ensure connection.
- Press the system Power key (power on).
- IPL DIAG21/41 diskette (mode E, FF00).
- Select exercisers.
- From the second menu, select 8809 tape 1.
- From the third menu, select special requirement diagnostic.
- Select '69-cable wrap' test.
- Select 'Run Routine'.

Does the test display an Isolation code of 0000?

Y N

MAP DESCRIPTION:
Cable wrap test procedure

FRUs PARTIALLY TESTED:
A-A2L2
A-A2U4, A-A2U5 cables
I/O Control cables

The tape cable wrap test will normally be done while following the 8809 tape drive diagnostics (MAPs).
The cable wrap test procedure is included here for free-lance trouble shooting.

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002

(Entry Point B)

One or more lines failed cable wrap test.

- Use the Isolation code or wrap line failure and table 1 to identify which return line is failing.

T a b l e 1

Isolation Code	Driven line		Return line	
****	Cable #2		Cable #1	
****	+Tape DB0 bit 0	U4D02	Tape wrap line 4	U5B02
****	+Tape DB0 bit 1	U4B03	Tape wrap line 2	U5D03
****	+Tape DB0 bit 2	U4D03	Tape wrap line 5	U5B03
****	+Tape DB0 bit 3	U4B04	Tape wrap line 3	U5D04
6904	+Tape DB0 bit 4	U4D04	+Select alert	U5B04
6905	+Tape DB0 bit 5	U4B06	+Check end	U5D06
6906	+Tape DB0 bit 6	U4D06	+Normal end	U5B06
6907	+Tape DB0 bit 7	U4B07	+Tag valid	U5D07
****	+Tape DB0 bit P	U4B02	+Tape wrap line 1	U5D02
6909	+Sync out	U4D07	+Select active	U5B07
	Cable #1		Cable #2	
6910	+Response	U5D09	Tape DBI bit 0	U4D09
6911	+Select hold	U5D10	Tape DBI bit 1	U4B10
6912	+Tag gate	U5B10	Tape DBI bit 2	U4D10
6913	+Tag bus bit 5	U5D11	Tape DBI bit 3	U4B11
6914	+Tag bus bit 0	U5B11	Tape DBI bit 4	U4D11
6915	+Tag bus bit 7	U5D12	Tape DBI bit 5	U4B12
6916	+Tag bus bit 4	U5B12	Tape DBI bit 6	U4D12
6917	+Tag bus bit P	U5D13	Tape DBI bit 7	U4B13
6918	+Recycle	U5D09	Tape DBI bit P	U4B09
6919	+Tag bus bit 6	U5B13	Sync in	U4D13
6920	Many control line failures or cables plugged wrong			
0000	No failure detected			

**** Denotes lines not tested by cable wrap routine.

#Indicates lines not tested by Routine 69. They must be probed.

(Step 002 continues)

(Step 002 continued)
- Select 'Exercisers'.
- Select '8809 Tape 1.'.
- Select 'Special Requirement Diagnostic'.
- Select routine '69-Cable Wrap'.
- Select option 1 'Run Routine'.
- Put the probe on the failing return line as identified in table 1 using the Isolation code or information obtained from previous probing.

- Observe the probe while pressing the Enter key (run Cable Wrap routine).

Does the return line pulse (up light flash) each time the Enter key is pressed?

Y N

003
- Probe the driven line associated with the failing, return line as indicated in table 1.

Does the driven line pulse (up light flashes) each time the Enter key is pressed?

Y N

004
Bad card:
A2L2

005
(Entry Point C)
- Reseat A2U4 and A2U5 at the A2 board.
- Reseat the tape cables in the system cable tower.
- Reseat and secure the tape interface cables at the system cable tower.
- Repeat the cable wrap test.
- Select exerciser.
- From the second menu, select 8809 tape 1.
- From the third menu, select special requirement diagnostic.
- Select '69-Cable Wrap'.
- Select (Run Routine).

Does the test display an Isolation code of 0000?

Y N

5 4
C D E

E

006
- Record the Isolation code.
- Swap the two tape interface cables at the system cable tower by plugging cable #1 into socket #2 and cable #2 into socket #1.
- Repeat the cable wrap test.
- Select exerciser.
- From the second menu, select 8809 tape 1.
- From the third menu, select special requirement diagnostic.
- Select Routine '69-Cable Wrap'.
- Select option 1, (Run Routine).

Is the failure the same as in the preceding step?

Y N

007
One of the two interface cables between the system cable tower and the tape drive is failing.
- Use the TU failure data and table 1 to determine which cable lines are affected.
- Use the CE meter to check the affected cable line for open or short.
- If you cannot identify which cable is failing using the CE meter, disconnect one cable from the tape drive and move the disconnected end to the system cable tower.
- Connect both ends of this cable to the tape drive cable connectors in the system cable tower.
- Repeat cable wrap test.
- Select exerciser.
- From the second menu, select 8809 tape 1.
- From the third menu, select special requirement diagnostic.
- Select '69-Cable wrap'.
- Select 'Run Routine'.

Does the test display an Isolation code of 0000 (no errors)?

Y N

008
The cable that is now looped to the system cable tower is bad.
- Replace the interface cable.

4 4
F G

009

The cable that is now looped to the system is good. The other tape interface cable is bad.

- Replace the interface cable.

010

(Entry Point D)

Have the tape MDIs been run for this failure?

Y N

011

For additional testing you must have a dedicated system. Schedule dedicated system time.

Go To Map 9900, Entry Point B.

012

One of the two ribbon cables between the A-A2 board and the system cable tower is failing.

- Use the isolation code from the cable wrap test and table 1 on page 2 to determine which line is affected.
- Use the CE meter to check the affected cable line for open or short.
- Repair or replace bad cable.
- Reference system MIM 99-210 for cable tower pin locations.

013

- Probe the following pins one at a time while observing the probe when the Enter key is pressed (Running Cable Wrap routine):

A-A2U5B02
U5B03
U5D02
U5D03
U5D04.

Does the Up light flash each time the Enter key is pressed for all pins?

Y N

014

- Record the failing probe point.
- Swap the two tape interface cables at the system cable tower by plugging cable #1 into socket #2 and cable #2 into socket #1.
- Probe the following pins one at a time while observing the probe when the Enter key is pressed (Running Cable Wrap test):

A-A2U5B02
U5B03
U5D02
U5D03
U5D04.

Does the same line fail that failed before swapping the cables?

Y N

015

One of the two interface cables between the system cable tower and the tape drive is failing.

- Use table 1 to determine which cable lines are affected.
- Use the CE meter to check the affected cable line for open or short.
- If you cannot identify which cable is failing using the CE meter, disconnect one cable from the tape drive and move the the disconnected end to the system cable tower.
- Connect both ends of this cable to the tape drive cable connectors in the system cable tower.
- Repeat cable wrap test while probing the failing line(s) and pressing the Enter key.

Does the Up light flash each time the Enter key is pressed?

Y N

016

The cable that is now looped back to the system cable tower is bad.

- Replace the interface cable.

5360 MAPS

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