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FCO

 Level of
 Urgency
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FIELD CHANGE ORDER

Number: HSC50-R007

Applicability: Retrofit all HSC50 L0108-YB CS Revision "C9" and below (Etch Revision "D") modules and CS Revision "C2" and Below (Revision "E") modules.

This will bring the L0108-YB Module to the following Revisions:

C10 for Etch Revision "D".

C3 for Etch Revision "E".

*Note: This FCO incorporates ECO #L0108-CX016. The HSC50 top revision level will not change. It will remain at "C2".

Problem/Symptoms: The K.STI Microcode revision was at "22". This FCO will release the K.STI Microcode version "26". Use the HSC50 "Show Requestor" to display the code version.

Quick Check:

E151 contains PROM Part Number 23-116F2-00

Compatibility/Prerequisite FCO:

None

Est. Time to Install

1.5 Hours

Special Tools or Test Equipment:

Velostat Kit (Anti-Static) - Part Number 29-11762-00

FCO Parts Information

Order by FCO Kit #	Contents		
	Quantity	Part Number	Description
EQ-01356-01	1	29-25510-00	K.STI (L0108-YB) 12 ROM Set
	1	29-25505-00	IC Insertion Tool
	1	FA-04637-01	FCO Document

EQ Kit Variation/System-Option Applic:

Approvals

CSSE Engineer Keith Norman	F.S. Product Safety John Freudenberg	F.S. Logistics Edward M. Duggan
Responsible CSSE Mgr	F.S. Microfiche Libraries	Affected Population 1,900

ESD&P Micropublishing Barbara Eriss	VAX VAXnotes STARS	Initial Kitting 1,900
Revision A		Hardcopy Publication 2,000
FCO Release Date 19 July 1985		Parts Availability August 1985

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LOGISTICS NOTES

The L0108-YB module is functionally referred to as the K.STI tape data channel. This module has four STI ports (four tape formatter connections). The module is, in itself, a customer purchasable HSC50 option, as it is all that is required to add-on additional tape drives to the HSC50. Because of this reason, Logistics will refer to this module as an option. The option nomenclature is HSC5X-CA. All returned and ordered modules through Logistics MUST be referenced by this name (HSC5X-CA).

Most ECO's are written against individual modules. For this reason, all references to the HSC5X-CA in this and future FCO'S will be labeled as "L0108-YB". This will help in any necessary cross references made to the associated module ECO and to any other pertinent technical documentation regarding this HSC50 module.

For a reminder, all Logistics references to the L0108-YB module (returned, ordered, kit parts) will be labeled as an HSC5X-CA option module. All technical references will be to the L0108-YB module.

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INSTALLATION AND TEST PROCEDURE

- 1) Ensure customer has suspended all traffic to the HSC50 node that is to be upgraded.
- 2) Ensure that the customer has dismounted all drives (disk and tape) connected to the HSC50 node, from all HOST SYSTEMS that have drives mounted to them.

```

*****
*                                     *
*                               NOTE   *
*   These first two steps may be precluded by shutting down *
*   all Host Systems that utilize the HSC50 node.           *
*                                     *
*****

```

- 3) Open the HSC50 front door (See Figure 1, p.16).
- 4) Set the Enable/Disable switch on the inside front door of the HSC50 to the Enable position. See Figure 2, p. 17 for the switch location.
- 5) After all traffic has been suspended and all drives dismounted, push and release the on-line switch on the HSC front door (See Figure 3, p. 18). This will prohibit new host connections from taking place with the HSC50.
- 6) Gain access to the maintenance panel by loosening the captive screws securing the maintenance panel access cover (See Figure 4, p. 19).
- 7) Remove D.C. power to the HSC50 by pushing the D.C. power switch on the maintenance panel to the 0 (off) position (See Figure 4, p. 19).
- 8) Open the HSC50 card cage cover by releasing the card cage cover locks. See Figure 4, p. 19 for the card cage cover locks location.
- 9) Before removing any of the HSC50 modules, ensure that the Velostat anti-static kit is being properly utilized.
- 10) Remove each L0108-YB module (rework one module at a time) from the HSC50 card cage.

```

*****
*                               C A U T I O N                               *
*                               *                                           *
*      USE EXTREME CAUTION AND PROPER STATIC CONTROLS.                    *
*      THESE MODULES ARE EXTREMELY SHOCK AND STATIC                        *
*      SENSITIVE.                                                           *
*****

```

Refer to Figure 5, p. 20 to locate the indicated IC location designators. Remove the 12 PROMS at locations E151, E146, E141, E137, E130, E123, E114, E105, E96, E87, E78, and E69.

Using the PROM insertion tool, add the 12 PROMS that are contained in this EQ kit to the IC sockets (See the following):

PROM part number 23116F2-00 should be installed at location E151,
 PROM part number 23117F2-00 should be installed at location E146.

Continue in this manner (increasing PROM part numbers as the IC location designators decrease) until the last PROM (part number 23-127F2-00) is installed in IC location E69.

Mark the appropriate module revision on the L0108-YB module handle. The "D" etch revision module becomes module revision C10 and "E" etch revision module becomes module revision C3. Now reinstall this module in the same slot it was removed from in the HSC50 card cage.

Make note of the requestor number of this module as indicated on the label above the card cage. This aids in later documentation of module selection for testing. Refer to the System Sizer Chart (Step 2 of Appendix A).

Perform this Rework step for each L0108-YB module in the HSC50.

- 11) Upgrade all necessary ECO/FCO status sheets to reflect the new module revisions of the L0108-YB modules being FCO'ed. The newly FCO'ed module revision is as follows:

L0108-YB	etch rev. D	CS rev C10
L0108-YB	etch rev. E	CS rev C3

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- 12) Close the HSC50 card cage cover and close the card cage cover locks.
- 13) Ensure that the HSC50 auxiliary terminal is powered on and is on-line.
- 14) Locate the "HSC50 OFF-LINE DIAGS" tape cartridge. This is typically stored in the tape cartridge storage tray inside the HSC50 front door (See Figure 2, p. 17).
- 15) Ensure that the write protect tab on the tape cartridge is moved to the left (inner) position to write protect the "HSC50 OFF-LINE DIAGS" tape.
- 16) Locate the TU58 tape drive inside the front door (See Figure 2, p. 17).
- 17) Insert the "HSC50 OFF-LINE DIAGS" tape cartridge into drive 0 of the TU58 (refer to Figure 2, p.17).
- 18) Restore DC power to the HSC50 by pushing the DC power switch located on the maintenance panel, to the 1 (ON) position (See Figure 4, p. 19).
- 19) The HSC50 will automatically boot the "HSC50 OFF-LINE DIAGS" tape.
- 20) After two minutes of loading the "HSC50 OFF-LINE DIAGS" tape into the HSC50 memory, the HSC50 auxiliary terminal will print:

```

HSC50 OFL Diagnostic Loader, Version Vnnn-nnn
Radix - Octal, Data Length = Word, Reloc = 00000000
ODL>

```

- 21) Now test each K.STI (L0108-YB) module that was FCO'ed using the HSC50 off-line diagnostics "SIZE", and "TEST BUS" .

Refer to Appendix A to run these off-line diagnostics on each module (L0108-YB) that was FCO'ed. Run each diagnostic a minimum of two passes.

- 22) On any reported failures, replace the reported failing module. If the failure is on an FCO'ed module, verify that the correct Rework procedure has been performed before replacing the module or ordering a new FCO E.Q. Kit.

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- 23) After all off-line diagnostics have been successfully completed, take out the diagnostics tape cartridge from the TU58 #0 and store it in its original container and back in its storage location (TU58 storage rack, HSC50 inside front door). Refer to Figure 2, p. 17.
- 24) Locate the "HSC50 SYSTEM TAPE" inside the HSC50 front door. Refer to Figure 2, p.17 for tape storage.

```
*****
*
*                               NOTE                               *
*   This tape may have been in the TU58 drive 0 prior to         *
*   and using the "HSC50 OFF-LINE DIAGS" tape in TU58           *
*   drive 0, in the previous steps.                               *
*****
```

- 25) Ensure that the write protect tab on the "HSC50 SYSTEM TAPE" cartridge is in the RECORD position. Move this tab towards the outer edge of the cartridge to set the RECORD position.
- 26) Put the "HSC50 SYSTEM TAPE" cartridge into drive 0 of the TU58.
- 27) Push and release the INIT Switch on the front of the HSC50 (See Figure 3, p. 18).

This will cause the HSC50 to run internal self-tests and then on successful completion, to boot the operating system in from the TU58 drive 0. After successfully executing all internal self-tests, the HSC50 will display the following message on the auxiliary terminal:

```
INIPIO-I BOOTING....
```

and then the operating system will begin loading in from the TU58.

- 28) Once the HSC50 operating system is loaded and begins running, the state indicator light on the front door begins pulsing. See Figure 3, p. 18 for state light location. After about four minutes the following message will appear on the HSC50 auxiliary terminal indicating that the internal operating system is running successfully.

```
MESSAGE:
```

```
-----
```

```
"HSC50 Version Xnnn (Date and Time)"
```

- 29) Refer to Appendix B to run in-line verification tests on all FCO'ed components of the HSC50.
- 30) After all in-line tests are satisfactorily completed, resecure the maintenance panel access cover over the maintenance panel (See Figure 4, p. 19).
- 31) Now push the on-line switch in, located on the HSC50 front door. See Figure 3, p. 18 for its location. This will allow Virtual Circuits to be established with any host CPU's that will be using the HSC50.
- 32) Set the Secure/Enable switch on the HSC50 inside front door, to the Secure position. Refer to Figure 2, p. 17 for its location.
- 33) Close the HSC50 front door and secure it by locking the front door key lock.
- 34) Have the customer resume normal activity on the HSC50. This could mean either restarting the host system, or just logically connecting the HSC50 to each system it is attached to and mounting all drives connected to this HSC50.
- 35) Verify proper operation of the HSC50 subsystem with the customer. (Normal system activity is acceptable.) Also ensure that all tape drives connected to this HSC50 will function properly with a host system.

APPENDIX A

HSC50 OFF-LINE DIAGS TESTS

Use the following commands from the OFF-LINE DIAGS monitor prompt ODL>

1. Type:

SIZE

to display that type of modules, Port Processor (K.CI), tape Data Channel (K.STI) and/or Disk Data Channel (K.SDI) and the status of each. The SIZE command also displays the size of the HSC50 memories. An example of the SIZE printout follows:

HSC50 OFL System sizer, Version Vnn-nn

Req.	Status Value	Meaning
----	-----	-----
001	001	K.CI
002	203	K.STI
003	377	Empty Requestor
004	377	Empty Requestor
005	377	Empty Requestor
006	377	Empty Requestor
007	002	K.SDI

RESPONDING MEMORY	ADDRESS RANGE	DECIMAL WORDS	KWORDS
-----	-----	-----	-----
Program	00000000-00777777	0131072	00128
Data	14000000-14377777	0065536	00064
Control	16000000-16377777	0065536	00064

The Req. column refers to requestor. The OFL System Sizer identifies the requestors installed in the HSC50.

The Meaning column prints the name of the requestor installed in the HSC50. The Meaning column may print a test failure message in place of the module name.

The Status Value column lists the codes that describe the module status with the HSC50. Any code other than those shown in this example may indicate an initialization failure of that respective module.

Refer to the card cage label for the identity and location of the faulty module.

The Address Range column contains octal addresses you will use during the following HSC50 off-line diagnostics.

```
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```

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2. Fill in the following chart if a hardcopy of your printout is not available.

HSC50 OFL system Sizer, Version Vnn-nn

Req. ----	Status Value -----	Meaning -----
001	_____	_____
002	_____	_____
003	_____	_____
004	_____	_____
005	_____	_____
006	_____	_____
007	_____	_____

RESPONDING MEMORY -----	ADDRESS RANGE -----	DECIMAL WORDS -----	KWORDS -----
Program	_____ - _____	_____	_____
Data	_____ - _____	_____	_____
Control	_____ - _____	_____	_____

You will also use requestors during the following HSC50 off-line diagnostics.

NOTE

Verify that the actual placement of these modules reflects your size printout. If the printout still does not correspond with the actual placement of the modules, check that each module is properly seated in its appropriate requestor slot. Turn the DC power switch to 0 (OFF). Refer to Figure 4, p. 19. Reseat the faulty module. Turn the DC power switch to 1 (ON).

3. Type:

TEST BUS

in response to ODL>. This command loads and starts the off-line bus interaction diagnostic. The TU58 Drive 0 run indicator will light as the bus interaction diagnostic is loaded. After the diagnostic is loaded, you will receive the following display.

HSC50 OFL Bus Interaction Test, Version Vnn-nn.

After displaying the program name and version, the program, control and data memories are sized. The bounds of each memory are displayed on the terminal. Then you will select the requestors that should be used for the diagnostic. Use your HSC50 OFL System Sizer Chart to answer the following prompts.

Use Requestor #001, K.CI (Y/N) [Y]?

Answer with a RETURN. The host interface (K.CI) should be used as a requestor for this test. NOTE: This test will not affect host CPU operation.

After you answer that, the next available requestor number will be prompted. Continue this process until all the requestors have been covered.

At least two working requestors must be used to run the bus contention test since one requestor cannot generate bus contention by itself. The program will display the following error message if fewer than two requestors have been chosen after the user has indicated which requestors should be used.

"Not enough K's Available for Test"

If you have chosen enough requestors and the above prompt is displayed, refer to your HSC50 OFL System Sizer Chart. If enough requestors are present, check that each module is correctly seated in its slot.

The program will next ask if I/O control processor (P.IOC) interaction with memory is desired.

P.IOC Memory Interaction desired (Y/N) [Y]?

Answer the prompt with a RETURN.

If the prompt is answered with an N, the next three prompts will be skipped. If the prompt is answered with a RETURN, the following prompts are displayed.

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Interact with Program Memory (Y/N) [Y]? Respond with a Y.

Interact with Control Memory (Y/N) [Y]? Respond with a Y.

Interact with Data Memory (Y/N) [Y]? Respond with a Y.

Answer with a RETURN to allow interaction between the I/O control processor and the specified memory. During this interaction, the selected requestors are generating contention on the control and data buses.

The program now prompts for OCP interaction.

OCP Interaction Desired (Y/N) [Y]?

In this FCO, this interaction check is not required.

If I/O control processor interaction with the operator control panel (OCP) is desired, answer with a RETURN. If OCP interaction is not desired, answer with an N, followed by a RETURN. The test will now prompt for TU58 interaction.

Interact with TU58 (Y/N) [Y]?

In this FCO, this interaction check is not required.

If I/O control processor interaction with the TU58 is desired, answer with a RETURN. If TU58 interaction is not desired, answer with an N, followed by a RETURN. The program will now prompt:

of passes to perform (D) [1]?

Answer with a 2. The bus contention test will now begin. This test will take 4 (four) minutes if two requestor slots are filled. It will take 15 minutes if all requestors are filled.

The test can be aborted at any time by typing a CTRL/C. (The test may continue running for a few seconds after CTRL/C is typed.)

The following prompt will ask you if you want to repeat this diagnostic.

Re-use parameters (Y/N) [Y]?

If you do not want to re-use the parameters, type an N.

Type a CTRL/C to end this routine.

```
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```

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APPENDIX B

FIELD ACCEPTANCE HSC50 SYSTEM TAPE TESTS

Use the following HSC50 SYSTEM TAPE tests for field acceptance. A scratch magtape is required to test tape drives.

1. Type:

CTRL/Y

then the

HSC50>

prompt will appear.

2. If you have tape drives to diagnose, type:

RUN DD1:ILTAPE.DIA

to run the In-line tape Drive Diagnostic. One drive at a time is tested with this program.

You will see only error reports returned from ILTAPE.

The System will load the program from the TU58 tape system. This may take as much as a minute to complete. When the program has been successfully loaded, the following prompt will appear.

ILTAPE > D > (Time) Execution Starting.

ILTAPE will now ask you:

DRIVE UNIT NUMBER (U) []?

	d		i		g		i
	t		a		l		

3. Repeat the RUN ILTAPE procedure for each MASTER tape drive connected to the HSC50.

Refer to the RUN ILEXER section of this appendix next.

4. Type:

```
RUN ILEXER
```

to run the Multi-Drive Exerciser Program. You can exercise from one to ten tape drives simultaneously with this test.

ILEXER has three basic forms of user output. They are the data transfer error report, the performance summary and the ILEXER communications error report. The data transfer error report will be printed each time an error is encountered in one of the drives being tested. The performance summary will be printed when ILEXER completes one pass on each drive being tested or if you terminate the pass prematurely. The ILEXER communications report will be sent anytime ILEXER is unable to establish communications with a drive selected to be exercised. Error and performance summaries will be issued every 30 seconds. The HSC50 Service Manual, Diagnostic Chapter 4 contains descriptions of the performance summary, data transfer error report, and communications error report.

The System will load the program from the TU58 tape system. This may take as much as a minute to complete. When the program has been successfully loaded, the following prompt will appear.

```
ILEXER > D > (Time) Execution Starting.
```

Then ILEXER will begin with the following prompt:

```
DRIVE UNIT NUMBER (U) [ ]?
```

You will enter the unit number of the tape drive or tape transport to be exercised. The unit number for a tape drive consists of a "T" followed by the unit number of the desired tape drive. T1 is an example of a valid response to this prompt.

The range of possible unit numbers is 1 to 255 for tape drives. There is no default for the above prompt. ILEXER will determine if the selected drive is a tape drive or a tape transport and issue the appropriate prompts.

```
_|_|_|_|_|_|_|_|_|_|
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|_|_|_|_|_|_|_|_|_|_|
```

If you are exercising a tape transport, use the following procedure:

- a. Answer the following prompts with a Y.

IS A SCRATCH TAPE MOUNTED (Y/N) [N]?

ARE YOU SURE (Y/N) [N]?

- b. Answer the following prompt with a RETURN

DATA PATTERN NUMBER (D) [21]?

- c. Select the density to be used on the tape. Choose 800, 1600, or 6250. Any other response is illegal and the prompt will be repeated. Once you have defined the tape density, you will have also selected the recording mode by implication (800-NRZI, 1600-PE, 6250-GCR).

DENSITY (800, 1600, 6250) [6250]?

- d. Type a CTRL/Z to default the remaining prompts for this selected drive. Refer to the HSC50 Service Manual, Diagnostic Chapter 4 if you want a full description of the ILEXER prompts.

- e. Answer the following final tape transport prompt.

ANOTHER DRIVE (Y/N) []?

If you answer with a Y, the DRIVE UNIT NUMBER prompt will be repeated. If you answer with an N, you will receive the ILEXER global prompts below.

Answer each of the following ILEXER global prompts with a RETURN.

RUN TIME IN MINUTES (D) [10]?

HARD ERROR LIMIT (D) [20]?

NARROW REPORT (Y/N) [N]?

Type a CTRL/Z to default the remaining prompts. Refer to the HSC50 Service Manual, Diagnostic Chapter 4 if you want a full description

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