```
+------------------------------------------------------------------------+
|                                                                        |
|                                                                        |
|  _ _ _ _ _ _ _            Level of Urgency        Page_1_              |
| | | | | | | | |               +--+                   Of_14            |
| |d|i|g|i|t|a|l|      FCO       | I|                                    |
| |_|_|_|_|_|_|_|               +--+                                     |
|                                                                        |
|                                                                        |
|  FIELD  CHANGE  ORDER                    Number:   HSC50-I009          |
|                                                                        |
|  Applicability: The L0118 Rev B* module should be installed on all CI750, |
|  CI780, CIBCI, & HSCxx nodes used in VAXclusters of 6 (six) or more CI/HSC |
|  nodes connected to a common SC008 Star Coupler.   L0118s should replace all |
|  L0100 Rev D* link modules; L0100 Rev E* can coexist with L0118s except in |
|  greater than 16 node environment.                                     |
|                                                                        |
|  Problem/Symptom:  Clusters of 6 or more CI/HSC nodes on SC008 may exhibit |
|  CI-PATH NO_RSP or NAK, ARB-TIMEOUTS, and VC-CLOSURE.  L0118 (& L0100 Rev E*)|
|  corrects adjacent-node collision & arb problems. * FIX DETAILS ON PAGE 2. * |
|                                                                        |
|  Quick Check:   Check that link module is part number L0118.           |
|                                                                        |
|                                                                        |
|                                                                        |
|  Compatibility/Prerequisite FCO:            | Est. Time to Install:    |
|  CI750-I005, CI780-I006, CIBCI-I002, HSC70-I001  |   1 hour per node    |
|                                                                        |
|  Special Tools or Test Equipment:  See page 2.                         |
|                                                                        |
|                                                                        |
|                    FCO      Parts    Information                       |
|                                                                        |
|  Order by          Quantity:         Part Number:        Description:  |
|  FCO Kit#:                                                             |
|  EQ-01454-05        1           L0118 (Rev B)        Link Module       |
|  EQ-01454-04        1                                FA-04740-01/05    |
|  FA-04740-04        1                                FCO Document      |
|                                                                        |
| EQ Kit Variation System/Option Applic:    N/A                          |
|                                                                        |
|                     Approvals                                          |
|                                                                        |
|   CSSE Engineer   | F.S.  Product Safety  | F.S.  Logistics            |
|   Loyd Buchanan   | Robert Brister        | Ed Duggan                  |
|                                                                        |
|   CSSE Manager    | F.S. Microfiche Libraries| Affected Population:    |
|   Randy Elmer     |                       | 12,000/2,000               |
|                     EP-FSNVX-LB  VAX      |----------------------------|
|   MicroMedia Pub. |                       | Initial Kitting:           |
|   Ray LeBlanc     | VAXnotes              | 12,000/2,000               |
|                   | STARS                 |                            |
|   Revision:       |                       | Hardcopy Publication:      |
|       A           |                       | 2,000                      |
|                   |                       |                            |
```

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```

PROBLEMS/SYMPTOMS: Continued from Page 1.

SOLUTION SUMMARY - L0118 DESIGN AND L0100 E* ECOS

        # - Denotes changes incompatible with L0100-D1, or CIBCA
        "7-tick DELTA-TIME mode; and controlled by "COMPATIBILITY
        7/10-tick" switch on L0100-E1/E2 or L0118.

  1.# BASIC QUIET-SLOT extended from 7 to 10 ticks (tick=byte=114 ns.,
      change = 800 ns. to 1140 ns.) to fix adjacent node collision
      problem at 40% CI-path utilization caused by L0100 Tx-start/Rx-
      detect logic delays when such nodes simultaneously arbitrate.

  2.# HIGH/LOW-PRIORITY (Round-ROBIN) ARBITRATION COUNTER logic fixed
      to prevent "false BEATEN-BY-NODE-0" detection during ACK-
      TURNAROUND carrier-delay, resulting in biasing arb-wins to
      low-nodes. Fix requires QUIET-SLOT change, and must be
      applied to all L0100 to prevent arbitration biasing.

  3. # EXTEND ACK-TURNAROUND TIME (INFO-to-ACK PACKET delay) to
      ensure CI-sender (INFO-PKT) ready to receive ACK, under
      worst-case (short,fast) propagation delays, such as with
      SC004 (dual-CI750) and short-CI-cables (6-10 meter).
      Fix requires QUIET-SLOT change.

  4. Fix SYNC-DETECT "PAL" to prevent lock-up during CI-carrier
     "flood", an infrequent CI-LINK failure mode.

  5. EXTEND "TRAILER TRANSMIT TIME" to ensure at least 5 bytes
     of trailer (after CRC) sent, instead of 3.5 bytes.

  6. EXTEND HEADER JUMPER (not used in current CI applic.) was
     non-functional: Fix.

  7. ALTER-DELTA-TIME JUMPER (7/16-tick quiet-slot) was
     non-functional: Fix. Not currently used, but intended
     for extended CI-cabling lengths, or fiber.

  8. ARBITRATION STATUS REPORTING enhanced to distinguish
     ARB-TIMEOUT from "fail to xmit after successful ARB".

  9. CI20 ONLY: CRC-COUNT RESET failed on SELF-DIRECTED
     packets: Fix.

10. MISCELLANEOUS L0100 Print-Set logic-drawing clean-up,
    marginal logic-design improvement, for benefit of
    future CIxxx chip-designs (CIBCA...) based on L0100.

    SPECIAL TOOLS: Continued from page 1.

    Field Service Tool Kit
    VELOSTAT Electrostatic Field Service Kit (P/N 29-26246-00)
    Loopback Attenuators (12-19907-01)

```
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```

    PARTS LIST: Continued from page 1.

Order by FCO Kit#:	Quantity:	Part Number:	Description:
EQ-01454-05	1	L0118 (Rev B1/B2)	Link Module
FA-04740-06	1		Inst. sheet for ordering kits
EQ-01454-04	1	FA-04740-01	CI750 FCO Doc.
	1	FA-04740-02	CI780 FCO Doc.
	1	FA-04740-03	CIBCI FCO Doc.
	1	FA-04740-04	HSC50 FCO Doc.
	1	FA-04740-05	HSC70 FCO Doc.

            LINK MODULE UTILIZATION/SWITCH SETTINGS MATRIX

OPTION	1 - 5 NODES	6 - 16 NODES
	MODULE/REV/SLOT-COUNT	MODULE/REV/SLOT-COUNT
CI7XX, CIBCI, HSCXX	L0100 REV "D" L0100 REV "E" @ 7 TICK L0118 @ 7 TICK	L0100 REV E @ 10 TICK L0118 @ 10 TICK
CIBCA-AA	T1025 @ 7 TICK	T1025 @ 10 TICK

NOTE: If all nodes in the VAXcluster system have 10 tick capability
(I.E., L0118, L0100 Rev "E" and/or CIBCA-AA and NO L0100 Rev "D"),
then all nodes should be set to 10 tick mode regardless of the
VAXcluster system size.

```
   L0100  -  Rev "E"  -  See page 6, step 8 for 7/10-TICK Switch setup.

   L0118  -  Rev "B"  -  See page 6, step 8 for 7/10-TICK, Cluster-size
                          Switch set-up, and Misc. Function Jumpers.

   CIBCA-AA           -  Add Jumper from E11 to E41 on VAXBI Backplane
                          for "10-TICK INCOMPATIBLE" mode operation.
                          Verify no jumpers D29-D59 and D30-D60 for cluster-
                          size (NODE-COUNT) of 16 or less.   Refer to
                          CIBCA User Guide Pg. 2-10 to 2-13 for set-up.
```

CI-LINK MODULE FCO INSTALLATION SUMMARY

```
***************************************************************************
*           INCOMPATIBILITY WARNING  -  L0100-E1/E2 and L0118         *
*           -------------------------------------------------         *
*  The new L0100-E1/E2 and L0118 "10-TICK-MODE" design changes are    *
*  *** INCOMPATIBLE *** with current L0100-D1 design, and CI/HSC-     *
*  LINK modules (L0100-E, CIBCA, L0118) set to "7-TICK-MODE".         *
*  Mixed "7 and 10-TICK-MODE" CI-LINK operation can have severe       *
*  impact on CI-arbitration performance and collision-rate (NO_RSP).  *
*  For this reason, DEC does not support "10-TICK-MODE" CI-LINK       *
*  ROLLING-UPGRADES, thus requiring a CLUSTER SHUTDOWN to "ENABLE"    *
*  10-TICK-MODE ** ONLY ** after all CI/HSC-nodes have been FCO'd.    *
*                                                                     *
*      NOTE: High-availability customer exceptions to CLUSTER-        *
*      SHUTDOWN "rule" should be referred to CSSE for advice on       *
*      minimizing risks; but DEC will not assume any liabilities      *
*      for lost data/time with such CLUSTER upgrade programs.         *
***************************************************************************
```

o Forecast and obtain sufficient CI/HSCxx L0100 FCO kits for all CI7x0,
  CIBCI, HSCxx Cluster Nodes, ensuring availability of 1 (one) spare
  for every 10 (ten) FCO kits. FCO kits should NOT BE "P1 ORDERED",
  but should be ordered according to the Corporate Implementation
  Plan. CIxxx Functional Diags (EVGAA/B) from VAX Diag. Rel #31 are
  also recommended for checkout.

o Study SWITCH/JUMPER SET-UP Procedures for L0100, L0118, and CIBCA
  T1025 modules for adjusting the following CI-LINK functions/modes:

          - "7/10-TICK" DELTA-TIME/QUIET-SLOT:
                + L0118   Page 6. Step 9
                + L0100-E   Page 6, Step 9

+ T1025/CIBCA   Page 6, Step 9 and
                                     CIBCA USER'S GUIDE Pg. 2-12

          - CLUSTER-SIZE of 16/32 NODES:
                    + L0118   Page 6, Step 9
                    + L0100-E   NOT APPLICABLE
                    + T1025/CIBCA   Page 6, Step 8 and
                                     CIBCA USER'S GUIDE Pg. 2-13

          - L0118 CI-LINK-MODE JUMPERS: Page 6, Step 9.

  o Install L0118 set to "7-TICK/COMPATABLE-MODE" in all CI780, CI750,
    CIBCI, and HSC50/70 Cluster nodes. There are no prerequisite/co-
    requisite CIxxx or HSCxx FCOs (modules or microcode) required for
    L0118 upgrade in "7-TICK 16-NODE MODE", but CI780.BIN Version V8.0
    and CIBCA.BIN Version V5.3 are recommended.

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                                 |
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  o Schedule and perform cluster shutdown after all non-CIBCA nodes are
    upgraded/FCO'd, and have been tested and verified to function in
    "7-TICK-MODE" operation under VMS. VMS system-testing is important
    to early detection and repair of any DOA FCO modules, prior to
    disrupting VAXcluster for CI-LINK 7-to-10-TICK mode-change.

          ****
          *   IMPORTANT NOTE ===   IMPORTANT NOTE   *
          * Customer should be involved or perform all CLUSTER-   *
          * wide or node-specific VAX and HSC STARTUPS, BOOTS,   *
          * and SHUTDOWNS.   *
          ****

  o Switch all L0100-E, L0118, and T1025/CIBCA to "10-TICK-MODE"
    "INCOMPATIBLE" operation. Ensure all CIs and HSCs are powered-off
    before changing switches/jumpers. Refer to appropriate FCO steps.
    Any planned CI-NODE-ADDRESSS changes should also be made at this
    time, with consideration of VMS SYSGEN and DECNET parameter changes
    required on reboot.

  o Reboot cluster, with customer consent, starting with HSCs.

              CI-LINK MODULE FCO INSTALLATION PROCEDURE
              ----

  1. Ensure the customer has suspended all traffic from all Hosts to the
      HSC50 node that is to be upgraded by ensuring that the customer has
      either dismounted all drives (disk and tape) connected to the HSC50,
      or by manually failing the units over to an alternate HSC.

Press the INIT switch to the OUT position.

```
    ********************************************************************
    *                              NOTE                               *
    *      The first step may be precluded by shutting down           *
    *      all Host Systems that utilize the HSC50 node.              *
    ********************************************************************
```

2.   Open the HSC50 front door.

3.   Type a CTRL C on the HSC console. Then set the Enable/Disable
     switch on the inside front door of the HSC70 to the Enable
     position.

4.   Gain access to the maintenance panel by loosening the captive
     screws securing the maintenance panel access cover.

5.   Remove D.C. power to the HSC50 by pushing the D.C. power switch
     on the maintenance panel to the 0 (OFF) position.

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```

6.   Open the HSC50 card cage cover by releasing the card cage cover
     locks.

```
    ******************************************************************
    *                    C A U T I O N                              *
    *                                                               *
    *      The L0118 module, as all VAX modules do,                 *
    *      contains electrostatic discharge sensitive               *
    *      devices (ESDS).  The use of the VELOSTAT kit             *
    *      is essential to prevent damage which may not            *
    *      be noticed immediately.                                  *
    *                                                               *
    ******************************************************************
```

7.   Set up VELOSTAT KIT.

     a.   Unfold the VELOSTAT mat to full size (24" x 24").
     b.   Attach the 15 foot ground cord to the VELOSTAT
          snap fastener on the mat.
     c.   Attach the alligator clip end of the ground cord
          to a good ground on the system.
     d.   Attach the wrist strap to either wrist and the
          alligator clip to a convenient portion of the mat.

8.   Remove the L0100 or L0118 module from its HSCxx module slot
     and place it on the mat. Check the revision and module type:

```
                - L0100-E1/E2, or L0118, reinstall in same slot, and
                  go to step 11 (no upgrade needed).
                - L0100 below Rev. E1/E2, go to step 8 to continue with upgrade.

        Record old CI-NODE ADDRESS settings on SW1 and SW2 switches
        (8-switch DIP on module handle).

    9.  With L0118 (EQ-01454-05) on ESD Mat, configure and verify CI-LINK
        mode jumpers/switches for "7-TICK COMPARABLE" mode operation.
        The L0118 also contains CLUSTER-SIZE switch and 4 (four) jumpers
        for MISC-FUNCTIONAL-MODES which should be checked.   Install the
        new L0118 in the HSCxx option slot.

            *****************************************************************
            *                     IMPORTANT  -  NOTE                       *
            *  Copy old CI-NODE ADDRESS to new L0100/L0118.                 *
            *  Ensure "7-TICK COMPARABLE" mode is ENABLED/SET to avoid      *
            *  CI-PATH errors with L0100-D1 or other "7-TICK" CI/HSC        *
            *  nodes.  The "10-TICK INCOMPATIBLE" mode cannot be used       *
            *  with L0100-D1 in cluster.  Default L0100/L0118 manuf.        *
            *  switch setting should be "7-TICK COMPARABLE" mode.           *
            *****************************************************************
```

```
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                           |
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```

```
        SET L0100-E1 COMPATIBILITY JUMPER AS FOLLOWS:
        ----------------------------------------------
        o 7/10-TICK COMPAT. MODE SET BY 1 JUMPER and E177 stake-pins.

            - "7-TICK    COMPAT.-MODE": jumper E177-11 to E177-12
            - "10-TICK INCOMPAT.-MODE": jumper E177-9  to E177-10


        o NO CLUSTER-SIZE OR FUNCTION-MODE JUMPERS/SWITCHES.


        o L0100-E1 QUICK-CHECK (PART-REVISION VERIFY):

            - ECO wires at E177-13 and E177-9;
            - STAKE-PINS (for jumper) @ E177-9,10,11,12.
            - ETCH REV-C: P/N "50-14430C-0" marking.

         "ECO-FIX OFF"                           "ECO-FIX ON"
           "7-TICK"                                "10-TICK"
         "COMPARABLE"                           "INCOMPATIBLE"
          20                 +-+                20                12 11
       ....................|.|..        ........................
       | . . . . . . . .  | | |        | . . . . . . . . . . |
       |       E177       |            |       E177         |
       | . . . . . . . . . |            | . . . . . . . . . |
       |...................|            |...................|.|.|
```
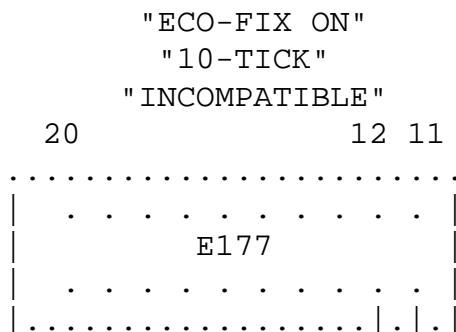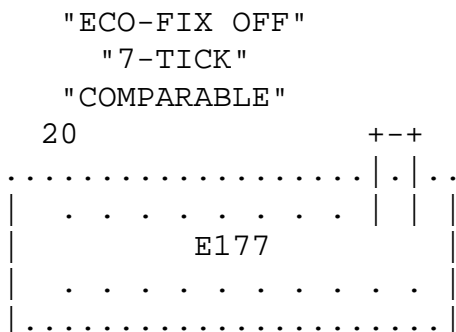
```
       SET L0100-E2 SWITCH SETTINGS AS FOLLOWS:
       ------------------------------------------
     o 7/10-TICK COMPAT. MODE SET BY DIP-SWITCH SW3-1 LOCATED AT
       TOP CENTER OF L0100-E2 TO RIGHT OF E118:

         - "7-TICK    COMPAT.,ECO OFF": SW3-1 SWITCH "OFF"
         - "10-TICK INCOMPAT.,ECO ON ": SW3-1 SWITCH "ON" .
                 NOTE: SW3-2 IS NOT USED, BUT SET SAME
                 AS SW3-1 TO AVOID CONFUSION.


     o NO CLUSTER-SIZE OR FUNCTION-MODE JUMPERS/SWITCHES.


     o L0100-E2 QUICK-CHECK (PART-REVISION VERIFY):

         - SW3 DUAL-SWITCH-DIP-PACK AT TOP-CENTER, RIGHT OF E118.
         - ETCH REV-D: P/N "50-14430-0-0 D1-P4" marking.

       SET L0118 SWITCH/JUMPER SETTINGS AS FOLLOWS:
       --------------------------------------------
         ****************************************************
         *   NOTE: REFER TO L0118 FIGURES ON FCO PAGES 13   *
         *   AND 14 FOR SW3 AND JUMPERS W1-W4 LOCATIONS.     *
         ****************************************************
```

```
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```
     o 7/10-TICK COMPAT. MODE SET BY DIP-SWITCH SW3-4 LOCATED AT
       TOP CENTER OF L0118 TO LEFT (BELOW IF VERTICAL) OF 2 CI-
       NODE-ADDRESS 8-SWITCH PACKS.
         - "7- TICK   COMPAT.,ECO OFF": SW3-4 SWITCH "OFF".
         - "10-TICK INCOMPAT.,ECO ON" : SW3-4 SWITCH "ON" .
         - SWITCHES SW3-2 AND SW3-3 MUST BE "OFF" (AFFECTS
           DELTA-TIME/QUIET-SLOT).


     o CLUSTER-SIZE FOR 16/32-NODE ADDRESSING AND ARBITRATION IS
       CONTROLLED BY SWITCH SW3-1.  DEFAULT = 16-NODE-MODE = "OFF".
         - 16-NODE MODE (DEFAULT WITH NO CISCE): SW3-1 "OFF".
         - 32-NODE MODE (CISCE 24-NODE CLUSTER): SW3-1 "ON" .


     o L0118 FUNCTION-MODE JUMPERS W1-W4 DEFAULT SETTINGS CHECK:
         View module with HANDLE-UP and FINGERS-DOWN.
         Refer to L0118 Figures on FCO page 13 and 14.

         - L0118-B1 HAS ECO-WIRES ON E83-3 and E150-1:
               = W1 located left of E2: plugged on left 2
                 stake-pins, marked with "box".
```

= W3 located between E54 and E75: plugged on
                                horizontal stake-pins, marked with "box".
                              = W2 and W4 located as 4 stake pins below E24
                                and E62: W2 and W4 "OUT".
                       - L0118-B2 HAS NO ECO-WIRES TO E83-3 AND E150-1:
                              = W1 located left of E2: W1 on left 2
                                stake-pins, marked with "box".
                              = W3 located between E54 and E75: W3 on
                                horizontal stake-pins, marked with "box".
                              = W2 located below junction of E24 and E62:
                                W2 on left 2 stake-pins marked with "box".
                              = W4 located below E24: W4 plugged on left 2
                                stake-pins marked with "box".

        SET CIBCA BACKPLANE JUMPER SETTINGS AS FOLLOWS:(FOR QUICK REFERENCE)

             Refer to CIBCA Users Guide Pg. 2-10 to 2-13.
             All jumpers are located behind T1015 Module.
             Jumper changes DO NOT take effect until SELF-TEST
             EXECUTED.

        o "7/10-TICK ALTER-DELTA-TIME" CONTROLLED BY JUMPER ON
          T1015 BACKPLANE PINS E11-E41, E09-E39, and E10-E40:
             - ENSURE E09-E39 and E10-E40 JUMPERS "OUT".
             - "7 -TICK COMPAT., ECO-OFF": Jumper OUT E11-E41.
             - "10-TICK INCOMPAT.,ECO-ON" : Jumper IN E11-E41.

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        o CLUSTER-SIZE FOR 16/32-NODE ADDRESSING AND ARBITRATION IS
          SET BY JUMPER ON T1015 PINS D30-D60 AND D29-D59:
             - Ensure E29-E59 out for both 16 or 32-NODE mode.
             - 16-NODE mode (default no CISCE): D30-D60 "OUT".
             - 32-NODE mode (CISCE 24-NODE   ): D30-D60 "IN" .

   10. Close the HSC50 card cage cover and close the card cage locks.

   11. Ensure that the HSC50 auxiliary terminal is powered on and is
       ON-LINE.

   12. Locate the "HSC50 OFF-LINE DIAGS" Floppy. This is typically stored
       in the disk storage tray inside the HSC50 front door.

   13. 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.

   14. Locate the TU58 tape drive inside the front door.

15. Insert the "HSC50 OFF-LINE DIAGS" tape cartridge into drive 0 of
    the TU58

16. Restore DC power to the HSC50 by pushing the DC power switch
    located on the maintenance panel, to the 1 (ON) position.

17. The HSC50 will automatically boot the "HSC50 OFF-LINE DIAGS" tape.

18. 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>

19. At the ODL> prompt, type:

        TEST K

    This command loads and starts the off-line K test selector. The
    TU58 Drive 0 run indicator will light as the test is loaded.

    After the diagnostics is loaded, you will receive the following
    display:

        HSC50 OFL K TEST SELECTOR, VERSION Vnn-nn


```
 _ _ _ _ _ _ _              |        FCO    HSC50-I009
| | | | | | | |             |
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|_|_|_|_|_|_|_|             |
                            |
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```

    The off-line K test selector first prompts:

        REQUESTER # (1 THRU 7) [ ]?

20. Respond with a number "1" for K.CI Test.

    Then hit a Carriage Return.

21. The test then prompts:

        TEST # (1 THRU 11) (0) [ ]?

    Run #1 first time through.

22. The port processor module is the selected requester, run octal test
    numbers 1 thru 4, 6, 7, 10 and 11 two times each.

        ****
        *   NOTE   *
        *   *

```
        *     OCTAL TEST 11 REQUIRES THAT ONE CI CHANNEL BE        *
        *     LOOPED BACK WITH AN ATTENUATOR OR CONNECTED TO A      *
        *     STAR COUPLER.                                         *
        *                                                           *
        *************************************************************
```

23. The test then prompts:

    # OF PASSES TO PERFORM (D) [ ]?

    Answer with a 2 and a RETURN.

24. The I/O control processor now instructs the requester to perform the
    selected test. If the requester fails to complete the test within
    the allotted time, the I/O control processor will display a
    requester error message. Refer to Chapter 4 of the HSC Service
    Manual.

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

    RE-USE PARAMETERS (Y/N) [Y]?

    Reply N and repeat steps 20 through 26 for TWO passes of each
    recommended test.

26. Type a CTRL C to end this routine after all tests have been
    completed.

27. Install the HSC50 system tape into Drive 0 and the Utility tape
    to Drive 1. Now press and release the INIT switch.

```
 _ _ _ _ _ _ _           |     FCO    HSC50-I009
| | | | | | | | |        |
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|_|_|_|_|_|_|_|          |
                         |
_____|_____
```

```
    ********************************************************************
    *                            NOTE                                 *
    * INSURE THE SYSTEM TAPE IS WRITE ENABLED. BY ENSURING  THAT THE   *
    * WRITE PROTECT TAB ON THE TAPE CARTRIDGE IS MOVED TO THE RIGHT    *
    * (OUTER) POSITION TO WRITE ENABLE THE "HSC50 SYSTEM" TAPE.        *
    ********************************************************************
```

28. Wait approximately 4.5 minutes for the system tape to boot.
    After it has booted, the console will say:

    HSC50 Version V3nn 2-Nov-1987 00:00:00 System XXXXXX

29. Now push the on-line switch in, located on the HSC50 front door.
    This will allow Virtual Circuits to be established with any host
    CPU's that will be using the HSC50.

30. Resume normal disk-activity on HSCxx using disk/HSC-failover
    or VAX/VMS remount/reboot, if necessary, to ensure HSC receives
    system testing in 7-TICK mode. IT IS PREFERRED THAT THE CUSTOMER
    PERFORM THIS STEP.

        EVERY UPGRADED CI/HSC NODE WITH NEW L0100-E*/L0118 SHOULD
        BE TESTED UNDER VMS IN "7-TICK ECO-OFF MODE" TO SYSTEM-TEST
        NEW FCO PARTS PRIOR TO CLUSTER-WIDE CI-LINK-MODE TRANSITION.

31. Upgrade remaining CI750, CI780, CIBCI, HSC50, and HSC70 nodes
    that do not contain L0100-E1/E2 or L0118 CI-LINK modules.

    *** REPEAT STEP 1 UNTIL ALL NODES ARE COMPLETED. ***

32. Set all CI/HSC nodes to "10-TICK, INCOMPATIBLE, ECO-ENABLED
    MODE" operation. *** THIS REQUIRES ENTIRE CLUSTER-SHUTDOWN
    TO AVOID CI-PATH FAILURES, CLUSTER-MEMBER LOSS, AND RISKS TO
    DATA-INTEGRITY.   *** Ensure each CI is powered off when
    changing jumpers.

    Set "10-TICK, INCOMPATIBLE, ECO-ENABLED MODE" by referring
    to Page 6, Step 9; or use following quick reference chart:

| | L0100-E1 | L0100-E2 | L0118 | CIBCA |
| | E177 | SW3-1 | SW3-4 | T1015 |
	JUMPER	SWITCH	SWITCH	E11-E41
7 -TICK:	11-12 IN	"OFF"	"OFF"	"OUT"
10-TICK:	9-10 IN	"ON"	"ON"	"IN"

    Only L0100 Rev E* needs to be removed in order to set to 10-TICK.

33. Set the Secure/Enable switch on the HSC50 inside the front door,
     to the Secure position.

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 _ _ _ _ _ _ _          |        FCO    HSC50-I009
| | | | | | | |         |
|d|i|g|i|t|a|l|         |        PAGE  12  OF  14
|_|_|_|_|_|_|_|         |
                        |
_____|_____
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34. Close the Maintenance Panel by securing the captive screws that
    secure the Maintenance Panel access cover.

35. Close the HSC50 front door and secure it by locking the front door
    key lock.

36. Boot all systems back into VAXcluster, starting with HSCs, using
    customer's "standard operating procedures". IT IS PREFERRED
    THAT THE CUSTOMER PERFORM THIS STEP.

    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.

37. Verify proper operation of the HSC50 subsystems 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.

38. Report the FCO activity on the LARS form in the "module/fail/area/
    FCO" column as "FCO HSC50-I009" as indicated.

                              LARS

                    USA   GIA   EUROPE

Activity -
    Contract and Warranty   W   U   Y
    Non Contract/Non Warranty   F   F   F
DEC Option   HSC50   HSC50   HSC50
Type of Call   M   M   M
Action Taken   D   D   I
Fail Area-Module-FCO-Comments   HCS50-I009   HSC50-I009   HSC50-I009
Material Used   EQ-01454-05   EQ-01454-05   EQ-01454-05
                                EQ-01454-04   EQ-01454-04   EQ-01454-04

        LARS   USA & GIA   EUR

     _ _ _ _ _ _ _ | FCO   HSC50-I009
    | | | | | | | | | |
    |d|i|g|i|t|a|l| | PAGE   13 OF   14
    |_|_|_|_|_|_|_| |
                              |
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            FIGURE 1 - L0118 LINK MODULE SETTINGS

     _ _ _ _ _ _ _ | FCO   HSC50-I009
    | | | | | | | | | |
    |d|i|g|i|t|a|l| | PAGE   14 OF   14
    |_|_|_|_|_|_|_| |
                              |
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            FIGURE 2 - L0118 LINK MODULE SETTINGS

\^ HSC50
\\HSC50
\\BUCHANAN

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\\1988
\\JUN
\\FCO_DOCS
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