DIGITAL	FCO	CATEGORY	PAGE 1
		[F]	OF 10

FIELD CHANGE ORDER	NUMBER: KA45/KA47-F001

APPLICABILITY:
This FCO applies to MicroVAX 3100 Models 30, 40 and 80 with Version V1.1
firmware. The affected systems have a system serial number less than
AY231****** (AYR built systems) and less than KA234****** for KAO built
systems. ECO's 5420654-TWO002 & 5420652-TWO002 apply to this FCO.

PROBLEM & SYMPTOM:
Version V1.1 firmware (contained in 2 EPROM's) has the following bugs:

    * Halt value incorrect (NVRAM gets erased on Halt)
    * SCSI devices not seen after self-test failure
    * TSZ07 self-test failure
    * LA120 failure when used as a console device

SOLUTION:
Replace the V1.1 firmware (EPROM's P/N 23-149E8-00 and 23-150E8-00) with
V1.2 (EPROM's P/N 23-223E8-00 and 23-224E8-00).

QUICK CHECK: With the system in console mode (" >>> " prompt), enter the
command >>> SHOW CONFIG. The top line on the console terminal display should
say:
        KA45-A V1.2-343-V4.0 (for Model 30 or 40)
        KA47-A V1.2-343-V4.0 (for Model 80)

If it is at V1.1, then the V1.2 firmware in this FCO should be installed.

PRE/CO-REQUISITE FCO: While installing this FCO, check to see if a	MTTI HRS
Rev. B03 54-20662-01 module is installed in the system. If it is,	
then make note that it will require the DHW4X-F001 as well. The	1.2 hrs.
DHW4X-F001 FCO will be available in the Q4 timeframe.	

TOOL/TEST EQUIPMENT: Field Service tool kit and Electrostatic kit.

FCO PARTS INFORMATION

FCO KIT NO.	DESCRIPTION OF CONTENTS
EQ-01663-01	23-224E8-00 & 23-223E8-00 EPROMs
	36-19208-02, "2" Brady Marker, 36-19209-05, "E" Brady Marker,
	36-19209-08, "H" Brady Marker
FA- 04999-01	FCO Document

FCO CHARGING INFORMATION (See Last Page)

APPROVALS

TECH. ENGINEER Greg Stillings	BUSINESS MGR. Vin Indorato	DSHQ LOGISTICS Barry Weinstein	DS PRODUCT SAFETY Robert Brister
MICROMEDIA Diane MacDonald	PARTS AVAILABILITY February, 1993	FCO REVISION A	FCO RELEASE DATE 8 February 1993

```
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|   |   |   |   |   |   |   |  |   |
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|   |   |   |   |   |   |   |  |   |
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```

Field Installation and Test Procedure

** NOTE **

Read these instructions completely before attempting installation of this FCO.

If problems are encountered during the procedures described herein, refer to the documentation listed in Step 21.

```
**********************************************************************************
*                                                                              *
*                               CAUTION                                        *
*                                                                              *
* The internal Field Replaceable Units (FRU's) handled during this            *
* procedure are sensitive and can be damaged by electrostatic discharge        *
* (ESD).  Wear a wrist strap and place an anti-static mat under the           *
* system unit when working with the internal parts of the system unit.        *
**********************************************************************************
```

1. Operating system shutdown: Have the customer notify all affected system users and shutdown the operating system following the procedures described in the operating system documentation.

2. Verify the firmware version and system configuration:

    a. Press the Halt button on the back of the system unit to put the system in console mode. The system should respond with the console prompt (" >>> ") when in console mode.

    b. Enter the command   >>> SHOW CONFIG .

        A sample system response follows for a system with a KA45 CPU board

with 8 MB memory and version V1.1 firmware, an RZ24 system disk and
TZ30 tape drive, a DSW42 synchronous communications option and a DHW42
asynchronous communications option.

The following configuration display indicates a healthy system
because:

  *   All devices indicate an " OK " status
  *   No soft errors (" ? ") are indicated
  *   No hard errors (" ?? ") are indicated

    KA45-A V1.1-31E-V4.0
    08-00-2B-16-44-48
    8MB

```
+---------------------------+   |
|   |   |   |   |   |   |   |   |           FCO   KA45/47-F001
| d | i | g | i | t | a | l |   |
|   |   |   |   |   |   |   |   |           PAGE 3 OF 10
+---------------------------+   |
_____|_____
```

```
        DEVNBR      DEVNAM           INFO
        ------      --------      --------------------------
            1          NVR      OK
            3           DZ      OK
            4        CACHE      OK
            5          MEM      OK
                                8MB = SY=8MB, S0/1=0MB, S2/3=0MB, S4/5=0MB
            6          FPU      OK
            7           IT      OK
            8          SYS      OK
            9           NI      OK
           10         SCSI      OK
                                3-RZ24    5-TZ30 6-INITR
           12         COMM      OK
                                DSW41/42 2 CHANNEL V3.11-47
           14        ASYNC      OK
                                DHW41/42 V1.6
```

The top line of the display reveals the firmware version as follows:

    KA45-A V1.1-31E-V4.0   for Model 30 or 40
    KA47-A V1.1-31E-V4.0   for Model 80
          ^^^^
             |
             |____   Firmware version V1.1 shown here.

Make a note of the firmware version and system configuration for
reference later in Step 18.

3. Decision point:

    a. If the firmware version is V1.1, go to Step 4.

    b. If the firmware version is V1.2 or V1.3, and the system does not
        contain a DHW4x-xx option, then FCO installation is NOT required.
        Go to Step 19.

    c. If a DHW4x option is installed, determine if the DHW4X-F001 FCO is
        required. If it is required (the 54-20662-01 is at part Rev. B3),
        and you have the appropriate EQ kit, install it at this time. If you
        don't have the appropriate EQ kit, order it and go to step 19.

4. Power-down the system: Turn off the following in the order shown:

    a. Console terminal
    b. All connected peripheral devices
    c. All connected expansion boxes
    d. The system unit

5. Remove all connections from the system unit's rear panel: Disconnect from
    the system unit the power cord, cables, loopback connectors and
    terminators.

```
    +-----------------------------+     |
    |    |    |    |    |    |    |    | |           FCO  KA45/47-F001
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    |    |    |    |    |    |    |    | |           PAGE 4 OF 10
    +-----------------------------+     |
_____|_____
```

                              ** NOTE **

    You can remove the drive-mounting shelf/shelves with all the mass storage
    devices attached and without disconnecting the power cable and SCSI cable
    from the mass storage devices.

```
*********************************************************************************
*                                                                             *
*                                CAUTION                                       *
*                                                                             *
*  When you disconnect the SCSI cable from the CPU board, ensure that you     *
*  not damage or disturb the MS44 memory modules (SIMM).                      *
*                                                                             *
*  Be careful not to disturb any green wire connections on the CPU board.     *
*********************************************************************************
```

6. Remove the system unit's enclosure cover: Loosen the two captive Philips
    screws (12-30338-05) on the back of the system unit. Slide the cover
    forward and lift it up from the system unit.

7. Remove the mass storage drive mounting shelf/shelves:

a. For the model 30, there is one drive mounting shelf.

    1. On the power supply unit, disconnect the 'flying lead' power cable
        that supplies power to the mass storage devices.

    2. Loosen the three captive screws that secure the drive mounting
        shelf to the enclosure (2 screws) and power supply unit (1 screw).

    3. Loosen the two captive Philips screws (90-09984-07) on the right
        of the enclosure.

    4. Slide the drive mounting shelf towards the front of the enclosure
        as far as it will go.

    5. Disconnect from the CPU board the 'flying lead' SCSI cable that
        extends from the drive mounting shelf. Refer to Figure 1 for the
        location of the SCSI connector.

    6. Lift the drive mounting shelf up from the enclosure and set it
        aside.

b. For Models 40 and 80, there are two drive mounting shelves; these can
    be removed as one unit.

    1. On the power supply unit, disconnect the two 'flying lead' power
        cables that supply power to the mass storage devices.

    2. Loosen the two captive screws that secure the upper drive mounting
        shelf to the power supply unit.

```
+---------------------------+    |
|   |   |   |   |   |   |   | |    |              FCO  KA45/47-F001
|   |   |   |   |   |   |   | |    |
| d | i | g | i | t | a | l | |    |
|   |   |   |   |   |   |   | |    |              PAGE 5 OF 10
+---------------------------+    |
_____|_____
```

    3. Loosen the two captive screws that secure the lower drive mounting
        shelf to the enclosure.

    4. Loosen the two Philips screws (90-09984-07) that secure the lower
        drive mounting shelf to the enclosure.

    5. Slide the upper and lower drive mounting shelf combination towards
        the front of the enclosure as far as it will go.

    6. Disconnect from the CPU board the 'flying lead' SCSI cable that
        extends from the drive mounting shelf combination. Refer to
        Figures 1 and 2 for the location of the SCSI connector.

    7. Lift the drive mounting shelf combination up from the enclosure

and set it aside.

8. Decision point:

    a. If the system does not have a DHW41-AA, DHW41-BA, DHW42-AA, DHW42-BA
        or DHW42-CA, go to Step 10.

    b. If the system has a DHW4x-xx asynchronous communications option
        installed, the option's 54-20662-01 logic board should be removed to
        check the part rev to determine if DHW4X-F001 FCO should also be
        installed. In the case of Model 80 system, the DHW4x option MUST be
        removed to gain access to the firmware ROM's. Go to Step 9.

9. Remove the 54-20662-01 logic board:

    a. Refer to Figure 1 (Model 30, 40) or Figure 2 (Model 80) which shows
        the location of the 54-20662-01 logic board.

    b. Press the latch on one of the stand-off pillars and push up the corner
        of the 54-20662-01 logic board until the 54-20662-01 logic board is
        released from the stand-off pillar.

    c. Press the latch on the other stand-off pillar and push up the corner
        of the 54-20662-01 logic board until the latch releases the
        54-20662-01 logic board from the stand-off pillar.

    d. Push up the 54-20662-01 logic board until the connectors on the
        54-20662-01 logic board disengage from the connectors on the CPU
        board.

    e. Remove the 54-20662-01 logic board from the enclosure and note the
        part revision. If it is part revision B3 or below, install the
        DHW4X-F001 FCO before reassembling the system.

10. Remove and replace the firmware EPROM's:

    a. Refer to Figure 1 if your system is a Model 30 or 40, or Figure 2 for
        a model 80. These figures show the location of the firmware EPROM's
        that need to be replaced.


```
    +------------------------------+    |
    |   |   |   |   |   |   |   |   |    |              FCO   KA45/47-F001
    | d | i | g | i | t | a | l |   |    |
    |   |   |   |   |   |   |   |   |    |              PAGE 6 OF 10
    +------------------------------+    |
 _____|_____
```

    ****
    *   CAUTION   *
    *   *
    * If the EPROM's are installed in the wrong location or orientation,   *
    * power-up self-test will not pass and the components may be damaged.   *

```
*************************************************************************
```

   b.   Locate and remove the firmware EPROM with part number 23-150E8-00
        (High Byte), using an IC remover or small screw driver. Replace with
        EPROM 23-224E8-00 supplied in the kit. Observe the orientation of the
        notch in the ROM package.

   c.   Locate and remove the firmware EPROM with part number 23-149E8-00 (Low
        Byte), using an IC remover or small screwdriver. Replace with EPROM
        23-223E8-00 supplied in the kit. Observe the orientation of the
        notch in the ROM package.

11. Affix the CPU board revision level: When upgraded with V1.2 firmware, the
    CPU boards take on a new revision level as follows:

        Model 30/40: KA45-AA CPU board becomes revision level H2
        Model 80   : KA47-AA CPU board becomes revision level E2

    Three brady markers are supplied in the EQ kit; E, H and 2. Place the
    appropriate brady marker over the bar code label revision sticker. The
    approximate label location is shown in Figures 1 and 2.

12. Decision point:

    a.   For a system with a DHW4X option, go to Step 13.

    b.   For a system without a DHW4X option, go to Step 14.

13. Re-install the 54-20662-01 logic board: After insuring that the
    54-20662-01 is at part Rev. C01 (if not, install the DHW4X-F001 FCO)
    follow Step 9 in reverse, then go to Step 14.

14. Re-install the mass storage drive mounting shelf/shelves: Follow Step 7
    in reverse, then go to Step 15.

15. Re-install the system unit's enclosure cover: Follow Step 6 in reverse,
    then go to Step 16.

16. Re-install all connections on the system unit's rear panel: Connect the
    terminators, loopback connectors, cables and the power cord to the system
    unit.

17. Power-up the system: Turn on the following in the order shown:

    a.   All connected expansion boxes
    b.   All connected peripheral devices
    c.   Console terminal
    d.   The system unit

```
    +-----------------------------+     |
    |   |   |   |   |   |   |   |  |     |              FCO  KA45/47-F001
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    |   |   |   |   |   |   |   |  |     |              PAGE 7 OF 10
```

```
       +--------------------------+    |
 _____|_____
```

18. System verification test: Wait for the system unit's power-up self-test
    to complete. Enter the command   >>> SHOW CONFIG . Verify that:

        *   The power-up self-test is successful (ie, no hard errors)
        *   The firmware version is V1.2-343-V4.0
        *   The status for all devices is the same as indicated from Step 2.b.

    If problems are indicated, refer to the documentation listed in Step 21.

19. Reboot the operating system: Follow the system reboot procedures.

20. Complete the LARS form for this FCO activity. Refer to the last page of
    this FA document for further information.

21. MicroVAX 3100 Platform Maintenance Information Kit:

    For more information, refer to the MicroVAX 3100 Platform Maintenance
    Information Kit (MIK) - part number QZ-K44AC-GZ - which contains the
    following documents:

        Volume 1:
        _____

        EK-A0512-MG   Guide to the MicroVAX 3100 Platform Maintenance
                               Information Kit
        EK-A0541-CL   Cover Letter for MicroVAX 3100 Platform Internal
                               Options
        EK-A0510-MG   BA42-A Enclosure Maintenance
        EK-A0511-MG   BA42-B Enclosure Maintenance
        EK-A0519-MG   Options
        EK-MV310-IP   Illustrated Parts Breakdown

        Volume 2:
        _____

        EK-A0513-MG   KA45 CPU System Maintenance
        EK-A0514-MG   KA47 CPU System Maintenance
        EK-A0574-HR   CPU Reference Information

```
       +----------------------------+     |
       |   |   |   |   |   |   |   | |     |          FCO   KA45/47-F001
       | d | i | g | i | t | a | l | |     |
       |   |   |   |   |   |   |   | |     |          PAGE 8 OF 10
       +----------------------------+     |
 _____|_____
```

Figure 1 - Diagram of KA45-AA CPU Board used in MicroVAX 3100-30, -40
_____

```
                  {Latest version EPROM's are shown}



                        Back of system - I/O panel
     +-----------------------------------------------------------------+
     |                      External connectors                        |
     +-----------------------------------------------------------------+
     |                                       KA45-AA CPU board          |
     |                                         (54-20654-01)            |
     |                                                                  |
     |                                                                  |
     |                                                                  |
     |                                                                  |
     |                                                                  |
     |                                                                  |
     |    +-----------------------------+   +----------------------------+  |
  P  |    |      MS44 SIMM    3L         |   |      MS44 SIMM    3H        |  |
  o  |    +-----------------------------+   +----------------------------+  |
  w  |    +-----------------------------+   +----------------------------+  |
  e  |    |      MS44 SIMM    2L         |   |      MS44 SIMM    2H        |  |
  r  |    +-----------------------------+   +----------------------------+  |
     |    +-----------------------------+   +----------------------------+  |
  S  |    |      MS44 SIMM    1L         |   |      MS44 SIMM    1H        |  |
  u  |    +-----------------------------+   +----------------------------+  |
  p  |                                     +----------------+  |
  p  |       +------------------+          |              * |  |
  l  |       |  SCSI connector  |          |                |  |
  y  |       +------------------+          |                |  |
     |                                     |                |  |
  U  |                                     |                |  |
  n  |                                     |                |  |
  i  |                                     |                |  |
  t  |                                     |                |  |
     |                                     |                |  |
     |  +-------------+                    |   DHW4x         |  |
     |  >  23-224E8-00|  High byte EPROM   |   Logic board   |  |
     |  +-------------+                    |   54-20662-01   |  |
     |                                     |                |  |
     |  +-------------+                    |                |  |
     |  >  23-223E8-00|  Low byte EPROM    |                |  |
     |  +-------------+                    |                |  |
     |  ^                                  |                |  |
     |  |                                  |                |  |
     |  |                                  |                |  |
     |  +------ Notch side                 |                |  |
     |                                     |                |  |
     |                                     |                |  |
     |                                     | *              |  |
     |                                     +----------------+  |
     |                                       P U S H  +----+   |
     |            CPU Board Revision Label------------------>|H02 |   |
     +---------------------------------------------------------+----+---+
                          Front of system
```
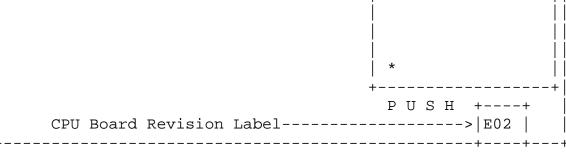
Figure 2 - Diagram of KA47-AA CPU Board used in MicroVAX 3100-80
_____

{Latest version EPROM's are shown}

```
                        Back of system - I/O panel
+---------------------------------------------------------------------+
|                       External connectors                           |
+---------------------------------------------------------------------+
|                                             KA47-AA CPU board        |
|                                                (54-20652-01)         |
|                                                                     |
|                                                                     |
|                                                                     |
|                                                                     |
|                                                                     |
|                                                                     |
|    +------------------------------+    +------------------------------+ |
P  | |        MS44 SIMM    3L        |    |        MS44 SIMM    3H        | |
o  | +------------------------------+    +------------------------------+ |
w  | +------------------------------+    +------------------------------+ |
e  | |        MS44 SIMM    2L        |    |        MS44 SIMM    2H        | |
r  | +------------------------------+    +------------------------------+ |
   | +------------------------------+    +------------------------------+ |
S  | |        MS44 SIMM    1L        |    |        MS44 SIMM    1H        | |
u  | +------------------------------+    +------------------------------+ |
p  |                                         +------------------+|
p  |    +--------------------+                | + - - - - - - +* ||
l  |    |   SCSI connector   |   High byte EPROM ->  | >  23-224E8-00|  ||
y  |    +--------------------+                | + - - - - - - +  ||
   |                                         |                  ||
U  |    Both EPROM's are                     | + - - - - - - +  ||
n  |    located under the    Low byte EPROM  ->  | >  23-223E8-00|  ||
i  |    54-20662-01 logic board              | + - - - - - - +  ||
t  |                                         | ^                ||
   |                                         | |                ||
   |                                         | +--- Notch side  ||
   |                                         |                  ||
   |                                         |                  ||
   |                                         |       DHW4x      ||
   |                                         |     Logic board  ||
   |                                         |     54-20662-01  ||
   |                                         |                  ||
   |                                         |                  ||
   |                                         |                  ||
```

```
|                                   |                              ||
|                                   |                              ||
|                                   |                              ||
|                                   |                              ||
|                                   |  *                           ||
|                                   +-----------------+|
|                                     P U S H  +----+  |
|           CPU Board Revision Label------------------>|E02 |  |
+---------------------------------------------------------------+----+--+
                        Front of system
```

```
+-------------------------------+  |
|   |   |   |   |   |   |   |   |  |            FCO  KA45/47-F001
| d | i | g | i | t | a | l |   |  |
|   |   |   |   |   |   |   |   |  |            PAGE 10 OF 10
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_____|_____
```

                                 LARS

CATEGORY F		USA	GIA	EUROPE
Activity -				
(a)Contract and Warranty		W	U	W or K
(b)IN-DEC Contract		K		A
Hardware Segment Code		111	111	111
Non Contract/Non Warranty		F	F	F
(c)RTD/Off-site Agreement		F	F	F
Product Line		01	01	031
DEC Option	Model 30	450ZN	450ZN	450ZN
	Model 40	450ZM	450ZM	450ZM
	Model 80	470ZM	470ZM	470ZM
Option ID		(As applicable)		
Type of Call		M	M	M
Action Taken		D	D	I or V
Fail Area-Module-FCO-Comments				
	MV3100 Model 30 & 40	KA45-F001	KA45-F001	FCO-KA45-F001
	Model 80	KA47-F001	KA47-F001	FCO-KA47-F001
Material Used		EQ-01663-01	EQ-01663-01	EQ-01663-01

(a) Warranty Optimum, Warranty Standard and Warranty Basic (on-site)
    Agreements; * Note material (only) free of charge for all customers.
(b) Applies to IN-DEC Area Only
(c) RTD=Return to Digital or Off-site Agreements; If Field Engineer
    On-site, use Activity Code "F".

```
_____
|                        FCO CHARGING INFORMATION                             |
|_____|
|                              ||                                             |
|   WARRANTY/CONTRACT          ||       NONWARRANTY/NONCONTRACT               |
|_____||_____|
|  ON-SITE   |   OFF-SITE  ||   ON-SITE   |   OFF-SITE   |   MATERIAL ONLY    |
```

TRAVEL/ INSTALL	EQ KIT	INSTALL	EQ KIT	TRAVEL/ INSTALL	EQ KIT	INSTALL	EQ KIT	ORDER-ADMIN,HANDLING PKG,SHIPPING & EQ KIT
DEC	DEC	DEC	DEC	CUS	CUS	CUS	CUS	CUS

\\FCO_DOCS