DIGITAL	FCO	CATEGORY	PAGE 1
		[F]	OF 15

FIELD CHANGE ORDER   NUMBER: DS-173Q2-F001

APPLICABILITY:
This FCO should be installed on all MIRA systems shipped before 03-Jul-1989.
(Continued on Page 2)

PROBLEM & SYMPTOM: Cross-talk problem between Dispatcher cable and switched cable. Revision incompatibility problem between M7764-00 and M7763-00 module. (See Page 2 for more detail)

SOLUTION: See Page 3.

QUICK CHECK: See Page 3.

PRE/COREQUISITE FCO: None	MTTI HRS
	3.5 Hrs.

TOOL/TEST EQUIPMENT: None

FCO PARTS INFORMATION

FCO KIT NO.	DESCRIPTION OF CONTENTS	EQ KIT VARIATION APPLICABILITY
EQ-01568-02	(2) M7763-00 Modules, (4) M7764 Modules, (2) 70-27118-03, (2) 70-27118-06 Cables	N/A
FA-04894-01	FCO Document	

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

APPROVALS

CSSE	FSHQ LOGISTICS	FS PRODUCT SAFETY
J-Claude Chalumeau	Rick Orlando	Bob Brister

CSSE MANAGER	FS. MICROFICHE LIBRARIES	FCO RELEASE DATE
Guy Caillaud		9 April, 1990
_____	_____	VAXDOC EP-CSVDC-LB	_____
MICROMEDIA		FCO REVISION
Diane MacDonald	STARS	A
_____	VAX Notes	_____
POPULATION		PARTS AVAILABILITY
01		May, 1990
_____	_____	_____

```
 _ _ _ _ _ _ _
| | | | | | | |
|d|i|g|i|t|a|l|
|_|_|_|_|_|_|_|
```

Applicability: (Continued from Page 1)

All MIRA systems, Revision A1 or A2, with the following part
numbers are affected:

   o DS-173Q2-A2/A3

This FCO is also required for Special Customized MIRA PDP systems
(not always referred to with the part numbers listed above), that
use the MIRA logic modules M7763 and M7764 at Revision D or below.

This FCO incorporates ECO's M7763-AE006, M7764-AE004, DS173QZ-AE004.

This FCO also provides the functionality enhancements made in the
following ECO's:

   o M7763-AE004 Implement DC LOW
   o M7764-AE003 add LM339 to drive DCOK (DC LOW)
   o M7763-AE005 etch re-layout to suppress extra wires

  Implementation: Planned call, as the whole system must be shutdown,
  and the customer application stopped to install this FCO.

 Problem/Symptom: (Continued from Page 1)

   Intermittent data corruptions happen when testing switched KMV1A
   with XXDP Diagnostics in MIRA Systems. The data was corrupted by
   cross-talk between cables generated by the BC05L cable between the
   MIRA watch-dog Module (M7763-00) and the dispatcher Module
   (M7764-00).

   A re-layout of the two modules M7763-00 and M7764-00 has been
   necessary to adapt the impedances between these modules. Both M7764
   and M7763 become Revision E with the new etch. A new cable 70-27118

has been designed to replace the BC05L cable.

The new modules M7763 and M7764 at Rev E cannot be used with the
previous revision D or below.

```
 _ _ _ _ _ _ _                  |        FCO   DS-173Q2-F001
| | | | | | | |                 |
|d|i|g|i|t|a|l|                 |        PAGE 3 OF 15
|_|_|_|_|_|_|_|                 |
                                |
_____|_____
```

Solution: (Continued from Page 1)

Replace all modules M7763 and M7764 at Revision D or below by new
modules at Rev E and replace BC05L dispatcher cables at one time.

Quick Check: (Continued from Page 1)

If all the cables on the watch-dog module M7763-00 are flat cables,
this FCO is required.

If you find a round cable (70-27118-03) connected to the M7763, the
module is at the correct Revision (E), and the FCO is not required.

NOTE: This can be checked in both systems A or B, as they must
be identical in terms of revision levels of M7763.


```
 _ _ _ _ _ _ _                  |        FCO    DS-173Q2-F001
| | | | | | | |                 |
|d|i|g|i|t|a|l|                 |        PAGE  4 OF 15
|_|_|_|_|_|_|_|                 |
                                |
_____|_____
```

INTERCONNECTION OF MIRA MODULES (SYSTEM A only is shown)

```
    WATCH DOG MODULE TO BE REPLACED                    COMPUTER A
          ---------------------------                  CPU BOX SLOT 3
           /  M7763                    /
          /              +-------+      /
         /               |  J2   |     /
```
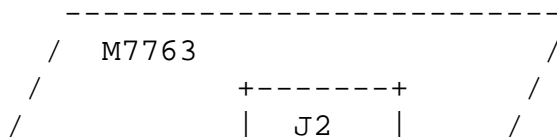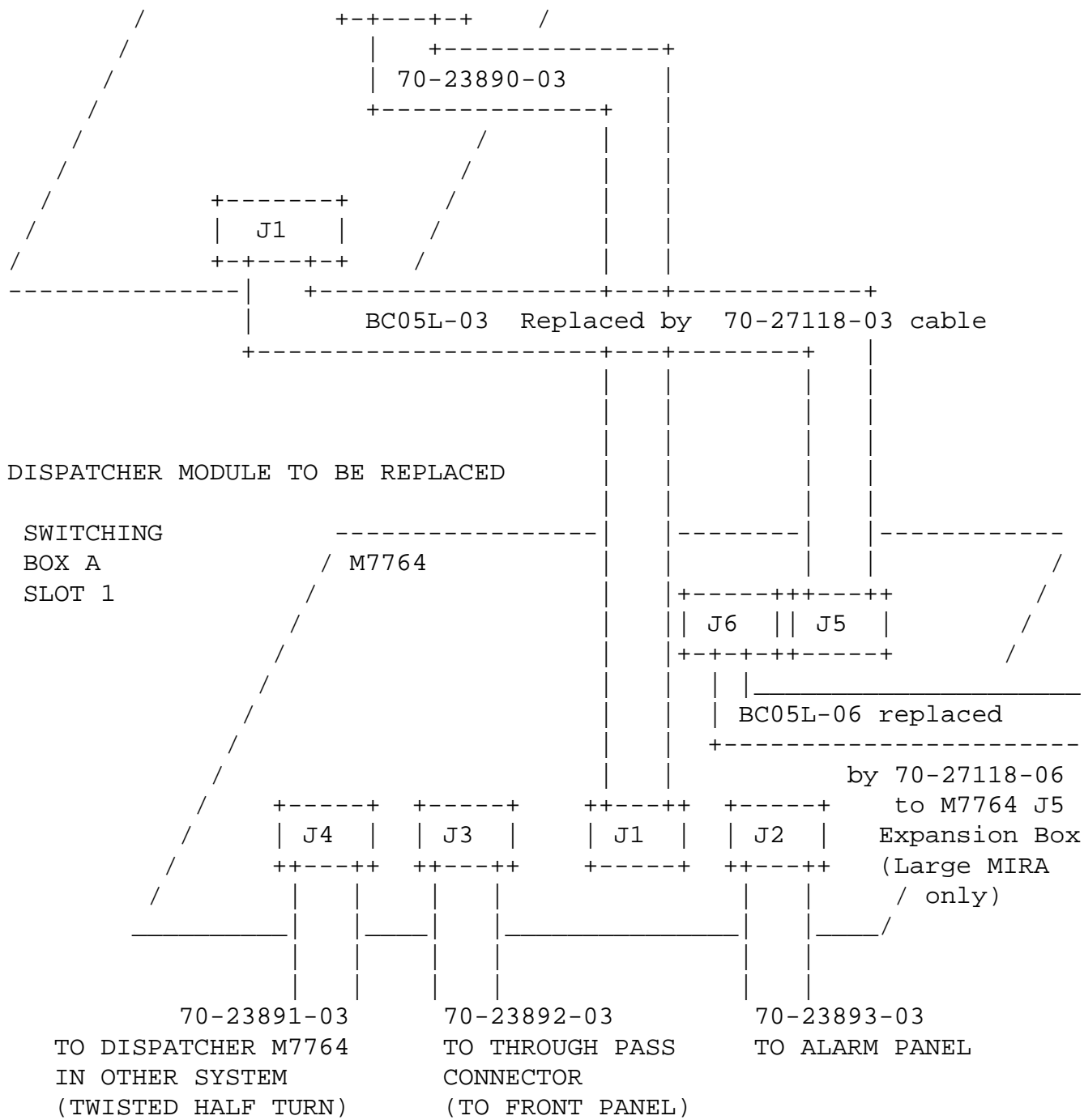
```
          /             +-+--+-+     /
         /              |   +-------------+
        /               | 70-23890-03     |
       /                +-------------+    |
      /                       /        |   |
     /                       /         |   |
    /        +-------+      /          |   |
   /         |  J1   |     /           |   |
  /          +-+---+-+    /            |   |
 -------------|     +---------------+---+----------+
             |        BC05L-03  Replaced by  70-27118-03 cable
             +----------------------+---+--------+   |
                                    |   |        |   |
                                    |   |        |   |
                                    |   |        |   |
DISPATCHER MODULE TO BE REPLACED    |   |        |   |
                                    |   |        |   |
 SWITCHING         ----------------|   |--------|   |-----------
 BOX A              / M7764        |   |        |   |          /
 SLOT 1            /               |   |+-----++|+---++       /
                 /                 |   || J6  || J5  |       /
                /                  |   |+-+-+-++----+       /
               /                   |   |  | |  |_____
              /                    |   |  | | BC05L-06 replaced
             /                     |   |  +-----------------------
            /                      |   |          by 70-27118-06
           /     +-----+  +-----+  ++---++  +-----+    to M7764 J5
          /      | J4  |  | J3  |  | J1  |  | J2  |   Expansion Box
         /       ++---++  ++---++  +-----+  ++---++   (Large MIRA
        /         |   |    |   |            |   |      / only)
      _____|   |___|   |_____|   |____/
               |   |    |   |            |   |
               |   |    |   |            |   |
          70-23891-03       70-23892-03       70-23893-03
          TO DISPATCHER M7764   TO THROUGH PASS    TO ALARM PANEL
          IN OTHER SYSTEM       CONNECTOR
          (TWISTED HALF TURN)   (TO FRONT PANEL)


    _ _ _ _ _ _ _            |     FCO   DS-173Q2-F001
   | | | | | | | |           |
   |d|i|g|i|t|a|l|           |     PAGE 5 OF 15
   |_|_|_|_|_|_|_|           |
                             |
_____|_____


      FIELD INSTALLATION AND TEST PROCEDURE FOR FCO DS-173Q2-F001
      ------------------------------------------------------------


   Preliminary Recommendations:
   ----------------------------


   This FCO replaces all watch-dog, dispatchers modules and BC05L
   cables attached to these dispatchers. This replacement requires the
```

complete MIRA to be powered down.

Before making any modifications to the system, insure both MIRA
systems have no hidden faults in their hardware.

The best way to check complete MIRA system integrity is to ask the
System Manager or User to run the MIRA TEST command and if the test
is successful, to make a MIRA SWAP with his application.

If the system has a fault somewhere, do not attempt to implement this
FCO, but fix the system first.

The interconnection of the modules and cables to be replaced is shown
on Page 4.

The test procedures under RSX are separate and given on Page 11.

The watch-dog link cable (70-23891-03) between the A and B systems,
connected on J4 of M7764 modules in switching boxes 0, is a half-turn
between both systems. It is wise to mark the upper side on both ends
of this cable before disconnecting.

There are some "traps" with in MIRA behavior for non-aware persons
during use of diagnostics. See test procedure on Page 10 for details.

```
===========
**WARNING**
===========
```

 The customer might have modified the STARTUP.CMD file to include
 the startup of MIRA software. Some processes require undetermined
 time to start, and could cause TIME-OUT when the software MIRA is
 started. To avoid this potential problem of MIRA time-out when you
 will reboot the Operating System, you must check the STARTUP.CMD
 on both System A and B before you stop the system. If MRASTART.CMD
 is included in the system startup command file, modify the STARTUP
 file and put the MIRA start command MRASTART.CMD as a comment line.
 You must do these checks and modifications on both Systems A and B.
 This will allow you to start MIRA software manually and check
 the system as described on Page 11 after you have installed the FCO.


```
 _ _ _ _ _ _ _             |      FCO    DS-173Q2-F001
| | | | | | | |            |
|d|i|g|i|t|a|l|            |      PAGE   6 OF 15
|_|_|_|_|_|_|_|            |
                           |
_____|_____
```

   Field Installation

                         Pre-test of system
                         ----

  1. Check the STARTUP.CMD files on both systems as described in the

WARNING on Page 5. Modify the files if necessary and ask the
     System Operator to stop the application. Installation of this
     FCO needs to stop both systems A and B.

  2. Run MIRA test on system A and system B. (See test on Page 11)

  3. If MIRA test is successful on both systems, issue a SWAP at operator
     console. If MIRA SWAP fails, do not attempt to install this FCO.
     Refer to MIRA Installation and Maintenance Guide EK-MIRAI-MM.

  4. Stop MIRA on both systems using MIRA STOP DCL command.
     (standby first, then Master)

  5. Shut down the system by executing the Shutdown Command
      Procedure on both systems.

                       FCO Hardware Installation
                       ----
  6. Power-Off Instructions

      - After the system has been shut down, Switch off both CPU A
         and B with Front Panel CPU switches.
      - Place the two Circuit Breakers for system A at the top of
         cabinet and system B at the bottom of cabinet, in the "OFF"
         (0) position.
      - Wait five minutes to allow the capacitors to bleed down.

  7. Use ALL ESD safety precautions to prevent DOA modules in upgrade
      kit.

  8. Utilize static strap. Unpack FCO material.

  9. On System A (Top system):

 10. Open the Unswitched I/O panel door.

 11. Remove the M7763-00 module from slot 3. Note switch settings.

 12. Disconnect cable BC05L-03 from connector J1.

 13. Mark orientation and disconnect cable 70-23890-03 (20 pins)
      from connector J2.

 14. Take the new module M7763-00 at Rev. E, reconnect the cable
      70-23890-03 (20 pins) into connector J2.

15. Connect the new round cable (3 feet) 70-27118-03 into J1
    of the M7763 module. (note mark on connector upper side).

16. Set CSR and Vector address switches as on the old M7763 module.
    (See switch settings on Page 14 if necessary)

17. Plug the new M7763-00 into slot 3 of CPU box.

18. Route the new round cable 70-27118-03 to the switching box 0.
    (It will go to the dispatcher M7764 in slot 1 of this box)

19. Remove the dispatcher module M7764-00 from slot 1 of switching
    box 0. Note the E5 switch position on the left of the board.
    (See switch settings on Page 14 if necessary)

20. Disconnect cables from connectors J5, J6, J2, J1, J3, J4.

21. Reconnect cables on the new M7764-00 Rev. E module on connectors
    J2, J1, J3, J4. Note cable orientation, especially J4 (watch dog
    link).

22. Replace the BC05L-03 cable from the M7763-00 by the round cable
    (3 feet) 70-27118-03. Connect it to J5 (right hand side)
    of the M7764 module. Note that J5 and J6 locations can vary
    on previous revisions modules (A, B, C or D).

23. Remove the BC05L-03 flat cable from the system, store it for
    for return to logistics.

24. Connect the new second round cable (6 feet) 70-27118-06 in
    connector J6 of the M7764 module. Although this new cable is
    thicker than flat one, it fits between module and top of the box.

25. Set up E5 switches as they were on the old M7764 module.

26. Plug the M7764 Module in the backplane.

```
 _ _ _ _ _ _ _          |        FCO    DS-173Q2-F001
| | | | | | | | |        |
|d|i|g|i|t|a|l|          |        PAGE   8 OF 15
|_|_|_|_|_|_|_|          |
                         |
_____|_____
```

27. Open the expansion cabinet, open the Top I/O panel.

28. Extract the M7764 module from slot 1 of the extension
    switch box 1.

29. Note the switches position at location E5.

30. Disconnect the flat cable BC05L-06 from connector J5 or J6.

31. Remove this BC05L-06 cable from the FCC pipe between both cabinets.
     Store it for return to logistics. Be careful not to disconnect
     other cables when removing this cable from the FCC pipe.

32. Route the new round cable 70-27118-06 from the M7764 dispatcher J6
     connector (the left hand one) in the CPU cabinet through
     the FCC pipe to the top extension switch box of the second
     cabinet. Be careful not to disconnect other cables.

33. Take the new second M7764 Rev E module.

34. Connect the round cable 70-27118-06 to the J5 connector (on
     the right hand side of the M7764 module).

35. Set up E5 switches as they were on the old modules.

36. Plug the M7764 module into slot 0 of the switching box.
     Although this new cable is thicker than flat one, it fits
     between the module and the top of the box.

37. Insure all the cables are properly set up in the box.

38. Close the I/O panel box of the expansion cabinet.

39. Go to the main CPU cabinet. Close I/O Panel.

40. Check if all cables are properly set up. Close the CPU panel.

41. You can now Power-Up System A. Observe the CPU self test sequence.
     (It is possible to see a double boot during self tests, this is
     not a failure, the second pass must be OK, proceed to next step.)

42. Start loading of diagnostics on CPU A.

43. While the diagnostics are loading, you can start the FCO installation
     on System B.

Upgrade System B
----

44. Repeat the similar procedure for system B to replace the M7763
    and M7764 modules and cables, using the same recommendations as

as mentioned in steps 10 through 40.

45. Do not power-on System B immediately.

Testing MIRA with Diagnostics
----

46. Test System A with Diagnostics.

    Once the diagnostics are loaded, you can power up system B
    and start loading of diagnostics on System B.

47. Running system exerciser tests in verify mode on both systems
    A and B is normally sufficient. During MIRA tests check warning
    messages, to insure switching boxes and switching modules are
    correctly seen by the MIRA diagnostic. (See diagnostics for
    details on Page 10)

48. When Diagnostics have been run successfully, power-off both
    Systems A and B to reset the entire system.

Testing MIRA under Operating System
----

49. Power-on both systems and Boot the Operating System on both CPU's.

    WARNING After FCO installation, the MIRA Software will fail
    if only one CPU is booted with the Operating system.

50. Log in as system operator.

51. Test MIRA as described in MIRA Testing procedure on Page 11.

52. Modify the STARTUP.CMD files if necessary and ask the system
    operator to restart his application.

Complete Site Administration
----

53. Update the module revisions to E1 and system revision level
    to A3 on the MIRA configuration sheet in the cabinet.

54. Package the material in the same ESD boxes and close boxes.

55. Update the Site Management Guide to reflect this FCO.

56. Report this FCO activity on the LARS in the "Fail Area/
    Module/FCO/Comments" as per example on Page 15.

57. Return the old material ASAP to Logistics Center

```
    |_|_|_|_|_|_|_|                     |
                                        |
_____|_____
```

                   MIRA STANDALONE DIAGNOSTICS   XXDP

      For the FCO installation test purpose, it is sufficient to run
      MIRA Diagnostics VMRAxx.BIN in customer mode or Installation mode
      with no loopbacks.

      See Chapter 3.7.8 of MIRA Installation and Maintenance Guide
      EK-MIRAI-MM for details of tests.

      As non-switched options and switched options cabling is not modified,
      there is no need to test the system with external loopbacks.

      ===========
      WARNING
      ===========

      DO NOT RUN TEST in INSTALLATION MODE ON BOTH SYSTEMS AT THE SAME TIME.

       System Exerciser test

       Do not attempt to use it with loopback at I/O panel level, if
       you are not familiar with MIRA tests with switched options.
       This test needs to close the MIRA switches using MIRA utilities,
       before you start exerciser.

             MIRA TESTING PROCEDURE UNDER MicroRSX/RSX-11M
(Typical check when starting a MIRA system, useless messages have been deleted)

     Log in as system manager.
 $ @[1,2]UVSTARTUP   (loads Driver and Install MIRA tasks)
 $ @MRASTART.CMD
 $ MRA
 MIRA> SHOW
        Local System State   :   MASTER
        Remote System State :   UNKNOWN

```
        Swap State              :        ENABLED


        Module    Module State         Switch Map
         0        DISC/NOSWITCH        UNASSIGNED
         1           CONNECTED         SAME
         2           CONNECTED         SAME
         3           CONNECTED         SAME
         4           CONNECTED         SAME
         5        DISC/NOSWITCH        UNASSIGNED
         6        DISC/NOSWITCH        UNASSIGNED
         7        DISC/NOSWITCH        UNASSIGNED
         8        DISC/NOSWITCH        UNASSIGNED
         9        DISC/NOSWITCH        UNASSIGNED
        10        DISC/NOSWITCH        UNASSIGNED
        11        DISC/NOSWITCH        UNASSIGNED


        Total Connected:  4      Total Assigned:  4
MIRA> TEST
        Local loop test    : OK
        Remote loop test   : OK
        Watchdog link connected
        Switching box 0 connected
        Switching box 1 not connected
        Front panel connected
        Alarm I/O panel connected
        Module       Test              Status
         0        FAIL/NOSWITCH        DISC/NOSWITCH
         1              OK             CONNECTED
         2              OK             CONNECTED
         3              OK             CONNECTED
         4              OK             CONNECTED
         5        FAIL/NOSWITCH        DISC/NOSWITCH
         6        FAIL/NOSWITCH        DISC/NOSWITCH
         7        FAIL/NOSWITCH        DISC/NOSWITCH
         8        FAIL/NOSWITCH        DISC/NOSWITCH
         9        FAIL/NOSWITCH        DISC/NOSWITCH
        10        FAIL/NOSWITCH        DISC/NOSWITCH
        11        FAIL/NOSWITCH        DISC/NOSWITCH
```

```
   _ _ _ _ _ _ _                    |      FCO   DS-173Q2-F001
  | | | | | | | | |                 |
  |d|i|g|i|t|a|l|                   |      PAGE 12 OF 15
  |_|_|_|_|_|_|_|                   |
                                    |
_____|_____
```

                MIRA TESTING PROCEDURE UNDER RSX (continued)

    MIRA> SHO

        Local System State   :   MASTER
        Remote System State :   STANDBY
        Swap State   :   ENABLED

```
         Module    Module State        Switch Map
          0       DISC/NOSWITCH        UNASSIGNED
          1          CONNECTED         SAME
          2          CONNECTED         SAME
          3          CONNECTED         SAME
          4          CONNECTED         SAME
          5       DISC/NOSWITCH        UNASSIGNED
          6       DISC/NOSWITCH        UNASSIGNED
          7       DISC/NOSWITCH        UNASSIGNED
          8       DISC/NOSWITCH        UNASSIGNED
          9       DISC/NOSWITCH        UNASSIGNED
         10       DISC/NOSWITCH        UNASSIGNED
         11       DISC/NOSWITCH        UNASSIGNED
          Total Connected:  4      Total Assigned:  4
MIRA> TEST
        Local loop test    : OK
        Remote loop test   : OK
        Watchdog link connected
        Switching box 0 connected
        Switching box 1 not connected
        Front panel connected
        Alarm I/O panel connected
        Module        Test              Status
          0       FAIL/NOSWITCH       DISC/NOSWITCH
          1                  OK       CONNECTED
          2                  OK       CONNECTED
          3                  OK       CONNECTED
          4                  OK       CONNECTED
          5       FAIL/NOSWITCH       DISC/NOSWITCH
          6       FAIL/NOSWITCH       DISC/NOSWITCH
          7       FAIL/NOSWITCH       DISC/NOSWITCH
          8       FAIL/NOSWITCH       DISC/NOSWITCH
          9       FAIL/NOSWITCH       DISC/NOSWITCH
         10       FAIL/NOSWITCH       DISC/NOSWITCH
         11       FAIL/NOSWITCH       DISC/NOSWITCH
```

```
  _ _ _ _ _ _ _                    |      FCO   DS-173Q2-F001
 | | | | | | | |                   |
 |d|i|g|i|t|a|l|                   |      PAGE 13 OF 15
 |_|_|_|_|_|_|_|                   |
                                   |
_____|_____
```

MIRA TESTING PROCEDURE UNDER RSX (continued)

```
 MIRA> SWAP
 MIRA> SHO
        Local System State    :      STANDBY
        Remote System State   :   MASTER

        Module    Module State        Switch Map
          0       DISC/NOSWITCH        UNASSIGNED
```

```
              1          DISCONNECTED        SAME
              2          DISCONNECTED        SAME
              3          DISCONNECTED        SAME
              4          DISCONNECTED        SAME
              5          DISC/NOSWITCH       UNASSIGNED
              6          DISC/NOSWITCH       UNASSIGNED
              7          DISC/NOSWITCH       UNASSIGNED
              8          DISC/NOSWITCH       UNASSIGNED
              9          DISC/NOSWITCH       UNASSIGNED
             10          DISC/NOSWITCH       UNASSIGNED
             11          DISC/NOSWITCH       UNASSIGNED
          Total Connected:  0        Total Assigned:  4
MIRA> TEST

        Local loop test    : OK
        Remote loop test   : OK
        Watchdog link connected
        Switching box 0 connected
        Switching box 1 not connected
        Front panel connected
        Alarm I/O panel connected
        Module        Test              Status
         0         FAIL/NOSWITCH        DISC/NOSWITCH
         1                   OK         DISCONNECTED
         2                   OK         DISCONNECTED
         3                   OK         DISCONNECTED
         4                   OK         DISCONNECTED
         5         FAIL/NOSWITCH        DISC/NOSWITCH
         6         FAIL/NOSWITCH        DISC/NOSWITCH
         7         FAIL/NOSWITCH        DISC/NOSWITCH
         8         FAIL/NOSWITCH        DISC/NOSWITCH
         9         FAIL/NOSWITCH        DISC/NOSWITCH
        10         FAIL/NOSWITCH        DISC/NOSWITCH
        11         FAIL/NOSWITCH        DISC/NOSWITCH

MIRA> EXIT
     Do not forget to re-activate the MIRA start into the STARTUP.CMD files
     if you have modified these files.
   ******     END OF TEST SYSTEM IS READY FOR APPLICATION USE ******




    _ _ _ _ _ _ _                    |     FCO   DS-173Q2-F001
   | | | | | | | | |                 |
   |d|i|g|i|t|a|l|                   |     PAGE 14 OF 15
   |_|_|_|_|_|_|_|                   |
                                     |
_____|_____

                    MIRA SWITCH SETTINGS


    M7764-00   DISPATCHER MODULE   (SWITCH LOCATION E5)
    -----------------------------
```

Main Cabinet (Switching Box 0)

```
              _____
             |  3   |  2   |  1   |  0   |      Bit
             ---------------------------
             | ON   | OFF  | OFF  | OFF  |      Switch Setting Main Cabinet
             ---------------------------
               E5     E5     E5     E5
                1      2      3      4         Switch Number
```

Expansion Cabinet (Switching Box 1)

```
              _____
             |  3   |  2   |  1   |  0   |      Bit
             ---------------------------
             | OFF  | ON   | OFF  | OFF  |      Switch Setting Main Cabinet
             ---------------------------
               E5     E5     E5     E5
                1      2      3      4         Switch Number
```

M7763-00 WATCHDOG MODULE

Vector Address location E24   example (400)

```
MSB                                                                        LSB
Bit  15   14   13   12   11   10    9    8    7    6    5    4    3    2    1    0

Switch                             E24  E24  E24  E24  E24  E24  E24
                                    1    2    3    4    5    6    7

                                   OFF   ON  OFF  OFF  OFF  OFF  OFF
```

CSR Address location E33   Example (767000)

```
MSB                                                                        LSB
Bit  15   14   13   12   11   10    9    8    7    6    5    4    3    2    1    0

Switch                   E33  E33  E33  E33  E33  E33  E33  E33  E33  E33
                          1    2    3    4    5    6    7    8    9    10

                         OFF   ON   ON   ON  OFF  OFF  OFF  OFF  OFF  OFF
```

```
 _ _ _ _ _ _ _              |      FCO   DS-173Q2-F001
| | | | | | | |             |
|d|i|g|i|t|a|l|             |      PAGE 15 OF 15
|_|_|_|_|_|_|_|             |
                            |
_____|_____
```

```
CATEGORY F                          USA            GIA          EUROPE


Activity -
(a)Contract and Warranty            W              U            Y
(b)IN-DEC Contract                  K
   Hardware Segment Code            111


   Non Contract/Non Warranty        F              F            F
(c)RTD/Off-site Agreement           F
   Product Line                     16


DEC Option                          DS-173Q2-XX    DS-173Q2-XX DS-173Q2-XX
Type of Call                        M              M            M
Action Taken                        D              D            I
Fail Area-Module-FCO-Comments MIRA-F001            MIRA-F001    MIRA-F001
Material Used                       EQ-01568-02    EQ-01568-02 EQ-01568-02
```

  (a) Warranty Optimum, Warranty Standard and Warranty Basic (on-site)
       Agreements.
  (b) Applies to INDEC AREA ONLY - Warranty Optimum, Warranty Standard
       and Warranty Basic (on-site) Agreements.
  (c) RTD=Return to Digital or Off-site Agreements; If Field Engineer
       On-site, use Activity Code "F"

```
\^ 173Q2
\\173Q2
\\DS-173Q2
\\CHALUMEAU
\\1990
\\APR
\\FCO_DOCS
```