ANSALDO SIGNAL

A Finmeccanica Company

UNION SWITCH & SIGNAL

UM-6800E

Microlok® II

TROUBLESHOOTING AND RECOVERY

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1.1	**Internal review comments**	**P.Mariappan**
1.2	**Issued to SECR**	**P.Mariappan**
1.3	**Corrected Typographical error**	**A.Muruganantham**

MANUAL CONTENTS

1. INTRODUCTION

WARNING
FAILURE TO OBTAIN APPROVED TRAINING, AND TO ACT IN ACCORDANCE WITH THE PROCEDURES AND WARNINGS OUTLINED IN THESE MANUALS, MAY RESULT IN SERIOUS PERSONAL INJURY AND/OR PROPERTY DAMAGE.

- ❖ This manual provides general guidelines for isolating and correcting Microlok II system malfunctions.
- ❖ Troubleshooting any complex system such as Microlok II must follow a logical approach that minimizes the time needed to isolate a fault or a series of related faults.
- ❖ Troubleshooting the Microlok II system involves careful analysis of observable symptoms, knowledge of Microlok II system operation, and the ability to perform standard electrical and electronic troubleshooting operations.

2. ISOLATING THE MALFUNCTION

The following is a general process recommended by US&S for isolating most Microlok II system Malfunctions.

1. If available, review the trouble report from the maintenance department to define the circumstances associated with the problem.
    - When the malfunction occurred.
    - The condition of the system at the time of the malfunction.
    - The location of any trains in or near the interlocking when the malfunction occurred.
2. Scan the Microlok II system indications for any obvious clues that might lead to a quick diagnosis of the problem.

    Check the following:

    - The Power Supply board 5V ON indicator LED should be on.
    - The Power Supply board VCOR LED should be illuminated.
    - The CPU board ON-LINE LED should be on.
    - The CPU board VPP LED should be off.
    - The RESET LED should be off.

- The CPU upper 4-character display should be scrolling the phrase US&S MICROLOK II.
- The CPU lower 4-character display should be scrolling the application program name.

3. In addition to the system-related indications listed in step 2, observe the indications on all I/O boards.
4. Attempt to reset the Microlok II system by pressing the reset pushbutton on the front panel of the CPU board. This will, in many cases, clear software related malfunctions.
5. If the problem still persists after the system reset, check the system error log and event log for information related to the fault.
6. If the error and event logs provide no assistance in identifying the problem, try replacing the affected Microlok II printed circuit board and recheck the operation of the affected circuit. If this does not restore the system to normal operation, check the field wiring and any related interface panels for defects.
7. Replace the Microlok II CPU board if the actions in step 6 provide no results. Recheck the operation of the affected circuit.
8. Once all of the hardware associated with the malfunctioning circuit has been ruled out as the cause, check the application program for possible errors.

3. RESTORING THE SYSTEM TO NORMAL OPERATION

- The system error log and system event log contain a great deal of historical information regarding the performance of a Microlok II unit.
- These logs can be very useful when troubleshooting Microlok II unit malfunctions.
- Information placed in these logs falls into three general categories, as described below.

  1. Critical errors
  2. Warnings
  3. Events

3.1 Critical Errors

- The Microlok II executive is a highly secure, vital executive.
- It continuously tests the Microlok II hardware and executive software to ensure proper operation.

- Failure of any test causes logging of a critical error and either restart or shutdown of the unit (depending on the recent error history and the type of error detected).

3.2 Warnings

- Warnings usually result from the malfunction of equipment external to the Microlok II unit, or from minor, recoverable internal malfunctions.
- Warnings should be taken seriously, especially if they occur repeatedly and if they are not readily explainable.
- Warnings should not routinely appear.

3.3 Events

- Typically, event messages are information and require no corrective action.
- They simply contain information that may be of interest to anyone who troubleshoots or maintains the Microlok II unit.
- They are logged on the occurrence of significant but routine events that occur during operation of the unit.

3.4 Analyzing the System Error and Event Logs

- Whenever the Microlok II unit is operating in normal mode, information can be recovered from the system error log and the system event log using the Microlok II Maintenance Tools.
- When troubleshooting a unit that has failed or is malfunctioning, it is important to first check the critical error history contained in the system error log.
- The system error log contains information on the most recent failure as well as historical information on past failures.
- It is important to check entries in the system error log for patterns; the same failure or group of failures occurring repeatedly, for example.
- If no recent critical errors are found in the system error log, the system event log should be downloaded to the Microlok II Maintenance Tool and reviewed.
- The system event log contains information on less-severe conditions that can cause various unit malfunctions.
- Logged warnings and events included recoverable errors associated with physical I/O boards, and information concerning performance of the serial links.
- Most warnings and event messages are self-explanatory.
- After analysing, if the malfunction has been traced to a hardware component, replace the component or make the necessary repairs.

- ❖ Then check the configuration of the affected portion of the system and retest the affected system functions to verify proper operation.
- ❖ After analysing, if the malfunction appears to be related to the application program, review the program listing carefully, make any necessary corrections, recompile the application program and then reload the application program.
- ❖ Then check the configuration of the affected portion of the system and retest the affected system functions to verify proper operation.

4. TROUBLESHOOTING THE SYSTEM RESET CONDITION

4.1 SYSTEM RESET-FAILURE TYPE/MESSAGE (MAIN CLASS/SUB CLASS)

- OUT16 Output error, Board J “x”, Output “y”, Output Read Failure
- OUT16 Hardware error, Board J “x”, Monitor “y”, Output Monitor OFF/ON Failure
- OUT16 Output error, Board J “x”, Output “y”, Output Flip Failure
- OUT16 Type error, Board J "x"
- OUT16 Echo error, Board J "x"
- IN16 Type error, Board J "x"
- IN16 Echo error, Board J "x"
- NVIN32OUT32 Type error, Board J "x"
- NVIN32OUT32 Echo error, Board J "x"
- Reset Bit set by application logic due to Vital serial link failed or FCOR bit set
- System RESET without any event/error log information
- VCOR failed
- CPS down mode (or) NO VCOR LED indication in the Power Supply board
- System Reset-Watchdog Hit without Critical Error
- RAM error
- Logic queue overflow error
- System Timer Watchdog Timeout-Idle Loop
- System Timer Watchdog Timeout-Logic Processing

4.1.1 OUT16 Output error, Board J "x", Output "Y", Output Read Failure

Possible Solutions:

Isolate false feed at the identified bit, there may be false feed before the diode terminals.

4.1.2 Output Read Failure (or) Output Monitor OFF/ON Failure

Reading Monitors:

- A separate diagnostic routine reads the monitor circuit on each output.
- The output value in memory is compared to the bit received from the output monitor.
- If these are not in agreement, a system Reset occurs.
- This test is performed to determine if the outputs are in correct state.
- This test is conducted once every 50 milliseconds.

Possible Solutions:

1. Check/Replace the 24V DC fuse of the identified board, there may be noise in the Microlok II I/O 24V DC supply.
2. Check/Replace 24V DC-DC CONVERTER module, there may be noise in the Microlok II I/O 24V DC supply.
3. Check/Replace the 48 pin connector cable.
4. Replace the faulty output board.

4.1.3 OUT16 Output error, Board J "x", Output "y", Output Flip Failure

Flip Failure:

- The present state of the output circuit is read and stored in the data-bus.
- The CPU then generates an opposite-state output signal and reads the return signal from the monitor.
- If the return signal is not in agreement with the test signal, a system Reset occurs since output stuck in prior state.
- This test is performed to determine whether an output circuit can, in fact, change state.
- It is conducted approximately once every 800 milliseconds and holds the output in the opposite state for no more than 0.4 milliseconds.

Possible Solutions:

1. Check/Replace 12V DC-DC Converter module, there may be noise in the Microlok II Cardfile 12V DC Supply.

- Noise in the Microlok II I/O 24V DC Supply.
  2. Check/Replace 24V DC-DC Converter module.
  3. Check/Replace the 24V DC fuse of the identified board.
  4. Isolate output from the Relay.
  5. Check/Replace the diode terminal of the identified bit.
  6. Check/Replace the transzorb across the Left & Right coils in the twin relay of the identified bit.
  7. Check/Replace the 48 pin connector cable.
  8. Replace the faulty output board.

4.1.4 Output Monitor OFF Failure (or) Output Flip Failure

Possible Solutions:

- 24V circuit is shorted in the output board.
  1. Disable the identified board.
  2. Switch ON the system.
  3. If the error shifts to the next board, disable all the output boards in the Cardfile and remove them from the slot.
  4. If VCOR picks up, then
  5. Switch OFF the system.
  6. Label the removed output boards.
  7. Insert the first labelled output board in the first slot.
  8. Enable the first output board slot and Switch ON the system.
     - If the VCOR is NOT picking up, separate that output board with proper tags.
     - If the VCOR picks up, insert the next labelled output board in the first slot and repeat this cycle till isolating the faulty output board/s.
  9. Enable all the output board slots after replacing the faulty output board/s.
  10. If the problem persist Contact US&S staff.

NOTE
OCCURRENCE OF MONITOR OFF, READ FAILURE AND FLIP FAILURE ERRORS ARE NOT RESTRICTED TO ANY ONE CAUSE. HENCE MAINTENANERS ARE ADVISED TO READ SECTIONS 4.1.1, 4.1.2, 4.1.3 &

4.1.4 WHEN ATTENDING THESE ERRORS

4.1.5 OUT16 Type error, Board J "x"

4.1.6 OUT16 Echo error, Board J "x"

4.1.7 IN16 Type error, Board J "x"

4.1.8 IN16 Echo error, Board J "x"

4.1.9 NVIN32OUT32 Type error, Board J "x"

4.1.10 NVIN32OUT32 Echo error, Board J "x"

Address select PCB:

- Address select PCB with six two-position Jumpers are used to set the Cardfile electrical address of the associated board.
- It is installed at rear end of connector assemblies.
- The Jumper settings must exactly match the values set in the application program to ensure normal system operation.
- The Jumper settings do not depend on the order of the boards in the Cardfile.

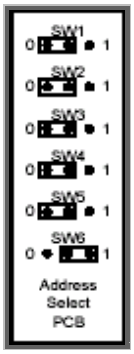


Figure-01

Type error:

- The Type check is used primarily to ensure that the proper type of board is present at each address as expected by the CPU PCB.
- Periodically, the type check routine requests each type information from each board in the system, using the data bus.
- If a board responds to the wrong address as a result of motherboard address failure, and it is not of the type expected by the CPU, the error will be detected and system Reset occurs.

Echo error:

- The Echo check is used to ensure that the data written to or read from a PCB has been received correctly.

- After receiving or sending data, the echo routine repeats the same action using the data's complement.
- Therefore, this routine will detect all data bus corruption failures.
- If any corruption failures in data bus, the error will be detected and system Reset occurs.

Possible Solutions:

Identify the faulty……board in the event/error log information using Maintenance Tool.

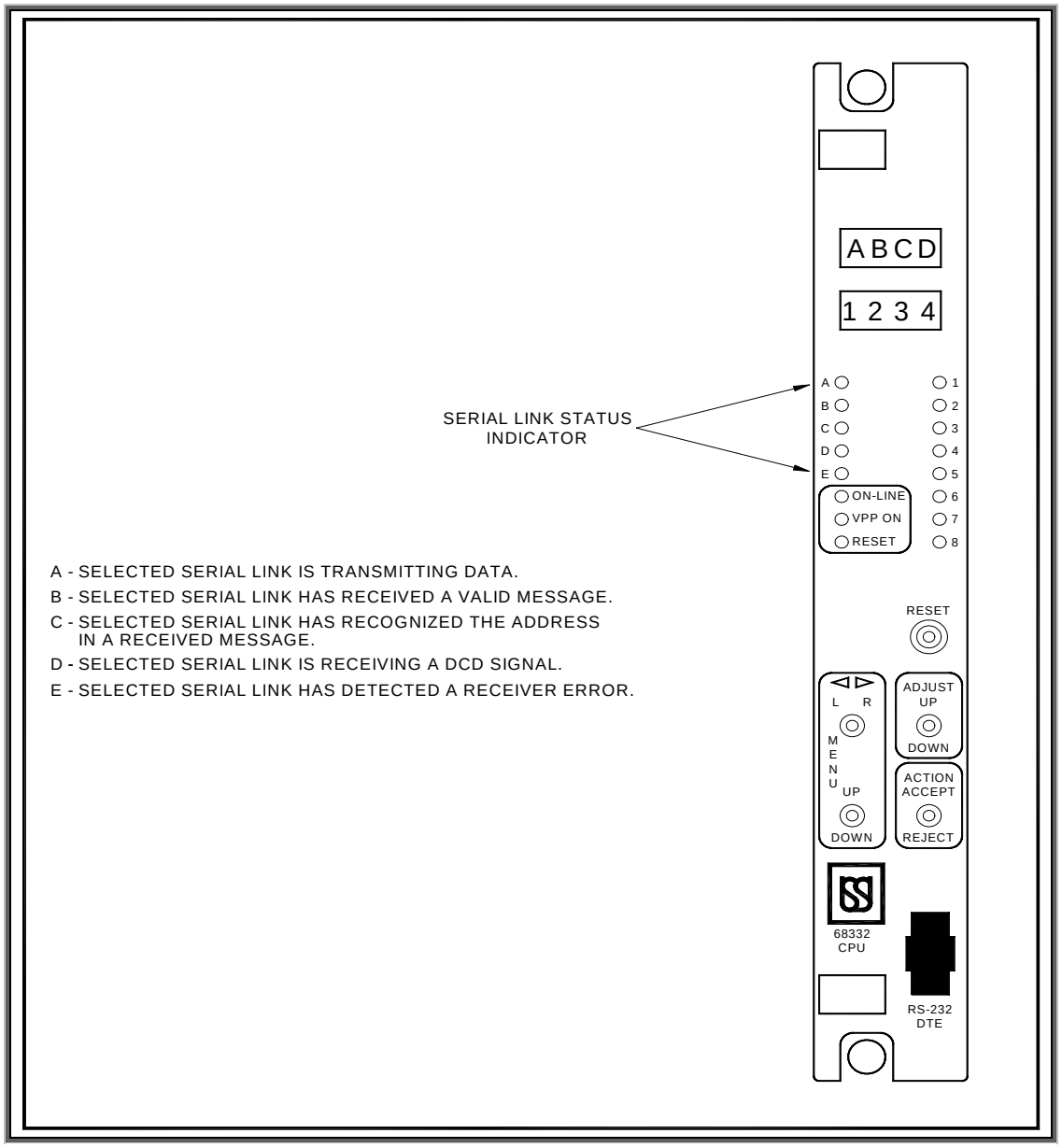
1. After identifying the faulty……board, ensure correct Jumper settings in the Address select PCB.
2. Ensure locking of all crimps in the Address select PCB.
3. Check/Replace the Address select PCB.

4.1.11 Reset Bit set by application logic due to Vital serial link failed

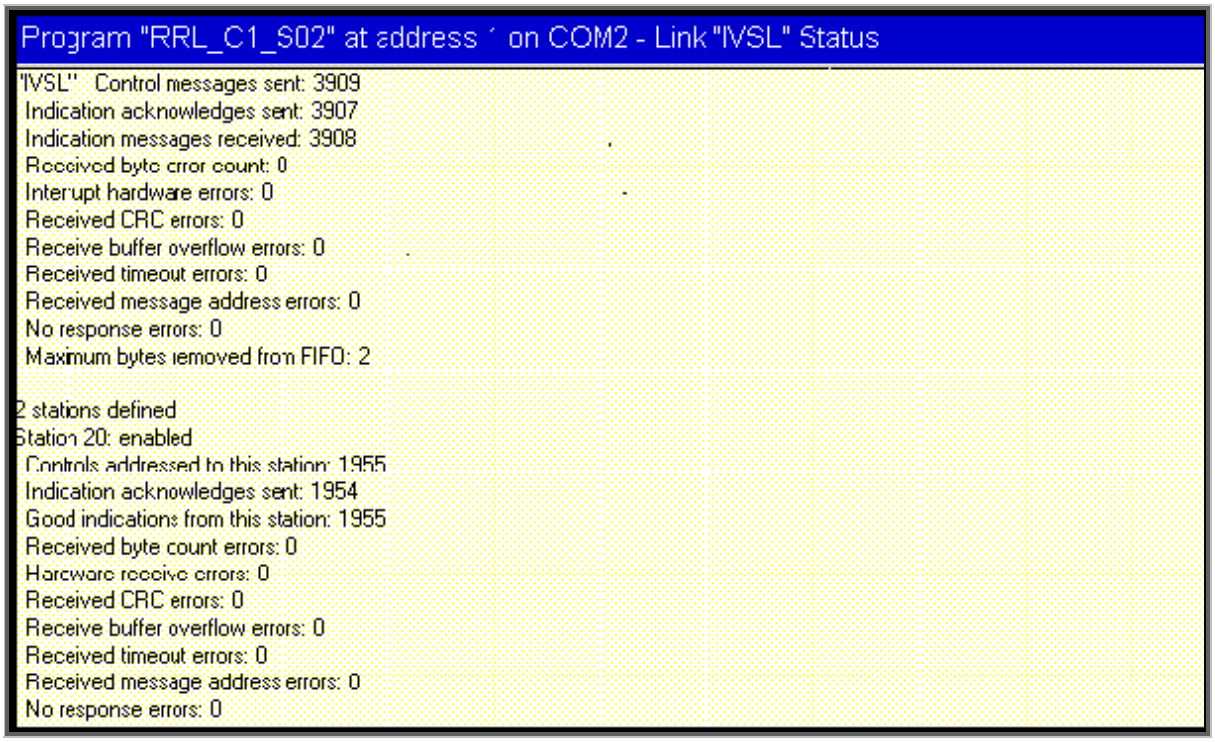
Vital serial link allows more efficient transfer of controls and indications between two remote points controlled by different units.

Possible Solutions:

1. Check Serial link status indicator, this is available for each serial link via the front panel configuration switches located on the CPU board (Refer Figure-02).
2. Check Serial link communication statistics display, this is available for each active serial link defined in the application program and this display accessed via the "Board Information" push button in system configuration (Refer Figure-03).
3. Ensure locking of all crimps, there may be disconnection in CPU 48 pin connector assembly.
4. Tighten the terminals, there may be disconnection in Microlok II rack serial communication terminals.
5. Replace the Resistor leg, there may be broken of Resistor leg in serial communication wiring.
6. Refer Serial link communications troubleshooting diagram (Figure-04).
7. Replace the CPU board, there may be serial port failure.



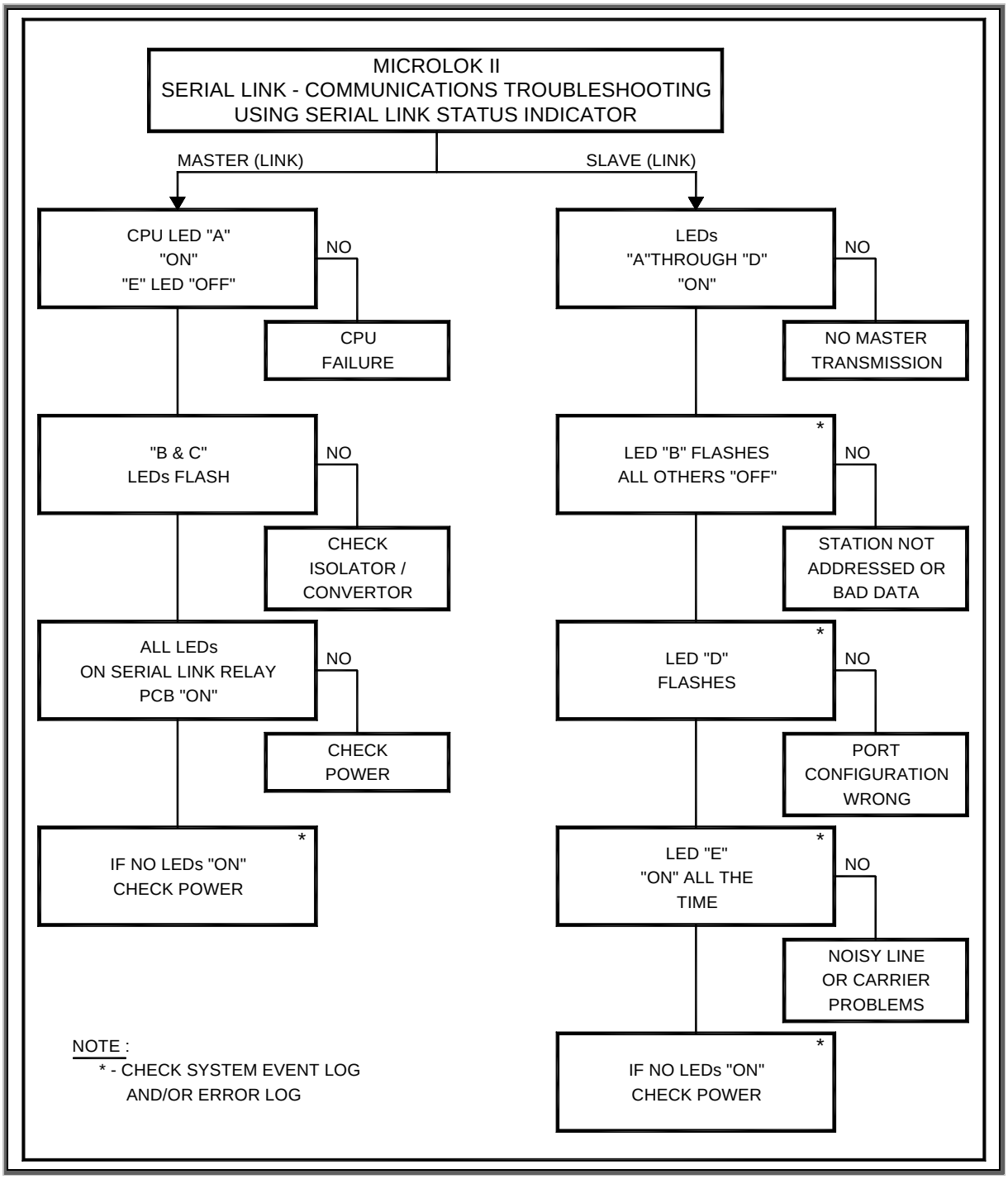
SERIAL LINK STATUS INDICATOR *(Figure-02)*



SERIAL LINK COMMUNICATION STATISTICS DISPLAY *(Figure – 03)*

Serial link communication statistics display:

- It gives error count.
- This error count should be low otherwise communication circuit problem should be suspected.
- The sum of error counts should normally be less than two percent of the total number of valid messages received.
- Large number of hardware-receive errors and Large counts of received byte count errors indicate excessive noise on the communication circuit.
- Large number of no-response errors on a master link indicates complete failure of the communication link.
- When no good messages are received on a slave link for a minute or more indicate failure of the communication circuit.



SERIAL LINK COMMUNICATIONS TROUBLESHOOTING *(Figure – 04)*

4.1.12 Reset Bit set by application logic due to FCOR bit set

FCOR:

- The abbreviation of FCOR is False feed Cut Off Relay.
- All the output relay status is read back into the system using the relay front contacts in the Non-vital boards.
- When a physical output is delivered by Microlok II, the corresponding output relay is picked up and its status is read back.
- Mismatch will occur in the event of falsely picking up the relay (i.e. giving a false feed in the relay coils).
- This will be detected in the system as there is a mismatch between non-vital read back input which is high and the physical vital output which is low.
- If there is a mismatch between non-vital read back input which is high and the physical vital output which is low, the FCOR bit picks up with 500 msec time delay.

Possible Solutions:

Isolate the false feed as there may be false feed at the relay coil.

4.1.13 System RESET without any event/error log information

Possible Solutions:

- Low power/NO power at Power Supply board.
  1. Increase Microlok II Cardfile source voltage as specified, if the System power 12V DC is low due to voltage drop in the Microlok II.
  2. Check/Replace the fuse of the MLK II 12V DC.
  3. Ensure locking of all crimps in the Power Supply board 48 pin connector assembly and the terminals between power source and Power Supply board.
  4. Replace Power Supply board.
  5. Replace 12V DC module.

4.1.14 VCOR failed

VCOR:

- The abbreviation of VCOR is Vital Cut Off Relay.
- This relay is used by the Microlok II system to control the power of all vital outputs.
- This relay is energized by the conditional output from the Power Supply board in the system Cardfile.

Possible Solutions:

1. Ensure proper connection at VCOR relay coil.
2. Ensure locking of all crimps in the 48 pin connector at CPU board and Power Supply board including CPU to Power Supply board 250Hz wire connection.
3. Ensure output board 24V DC fuse & wiring are OK.
4. Ensure that the diagnostic switch is in "OFF" position, if used.

4.1.15 CPS down mode (or) NO VCOR LED indication in the Power Supply board

The abbreviation of CPS is Conditional Power Supply.

CPS down mode:

- The Microlok II executive software retains information about "past life".
- That is, how often the system has Reset within the recent past.
- The reason for above is to keep the system from continually resetting in the event of a permanent failure.
- So the system counts the number of resets within a short period.
- If more resets occur than a particular limit, the system will run with the CPS down.

Possible Solutions:

Refer "CPS CLEAR FUNCTION" details (Figure-05 & 06).

CPS CLEAR FUNCTION

OPTION 1:- CPS clear through Maintenance Tool

1. Click on the "Reset MICROLOK II" button on the Maintenance Tools main menu.
2. The system displays "MICROLOK II Maintenance Tools" confirmation screen.
3. Click on the "Yes" button in the confirmation screen to reset the MICROLOK II unit.
4. At this point, if the CPS is down the System displays "MICROLOK II Maintenance Tools" dialogue box.
5. Click on the "Yes" button in the "MICROLOK II Maintenance Tools" dialogue box to switch the unit to CPS Up mode.

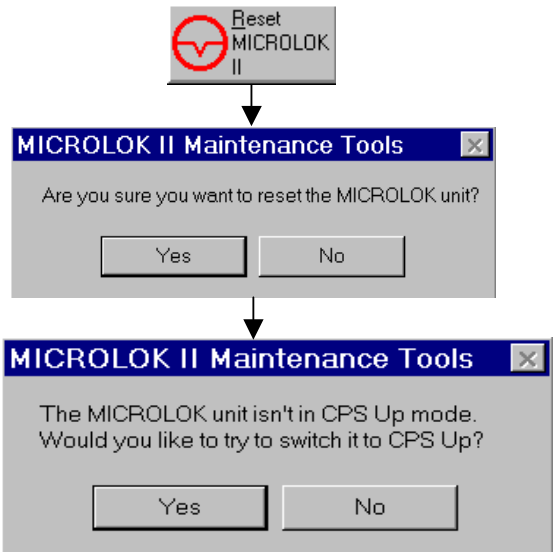


Figure-05

OPTION 2:- CPS clear through CPU front panel

CPS clear through CPU front panel

To enter the Reset mode from CPU front panel

1. Press and release the "RESET" push button on the CPU board front panel.
2. Quickly operate any one of the four front panel toggle switches. Hold the switch in the toggled position.
3. Release the toggle switch that was operated in step 2 after the CPU board 4-character displays shows RES/MENU.

To access this function

1. Toggle the MENU UP-DOWN switch to the "DOWN" position.
2. Toggle the MENU L-R switch to the "Right" position.
3. Toggle the MENU L-R switch to the "Right" position with CLR / CPS shown on the CPU board displays, Toggle the Action ACCEPT-REJECT switch to the "ACCEPT" position. This action resets the CPU software & VCOR relay and returns the CPU to the on-line mode.

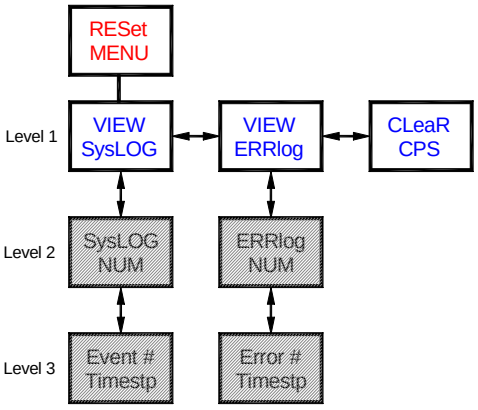


Figure-06

4.1.16 System Reset-Watchdog Hit without Critical Error

- This error is due to Glitch or internal board error.
- If it happens once in an isolated situation, there is NO cause of concern.

Possible Solutions:

If it happens in regular interval, replace the CPU board.

4.1.17 RAM error

This error appears when CPU Data is Corrupted.

Possible Solutions:

Replace CPU board.

4.1.18 Logic queue overflow error

Logic queue overflow:

- Logic queue overflow occurs when any of input bit status change results into series of triggering and thereby placing many number of statements in the trigger list for execution.
- If all the statements are not executed within the stipulated time, (maximum allowable time 5 seconds, which is set by application program designer) logic queue overflow will occur.
- Logic queue overflow error is Not applicable during the normal working.
- Generally this error may appear in the initial stages of Microlok II start up.

4.1.19 System Timer Watchdog Timeout-Idle Loop

Idle Loop:

- Certain types of logic can cause an endless operation problem when Microlok II is being executed (for example: ASSIGN ~FLASH TO FLASH;).
- If FLASH has not been defined in timer bit section in the above example, the FLASH bit being set and cleared at an infinitely short rate because it has no clear-cut pick up or drop delay.
- As a result, the system only executes this equation and other logics are forcefully put down from execution.
- Excessive time is required for other logic processing will cause the system to Reset.

- Idle loop error is Not applicable during the normal working.
- Generally this error may appear in the initial stages of Microlok II start up.

4.1.20 System Timer Watchdog Timeout-Logic Processing

Possible Solutions:

Increase the logic timeout 100msec step-by-step from the default value upto 5 sec using system configuration mode in the Maintenance Tool, there may be program settings that are not sufficient to complete the logic processing.

5. TROUBLESHOOTING THE SYSTEM KILL CONDITION

5.1 Kill Bit set by application logic

- Each Cardfile shall be given a unique Cardfile identification number via the application program.
- This data shall be resident in the EEPROM on the CPU Euro-connector backshell.
- The initial processing of the application data will evoke the “Kill” function and further processing will not be possible until the appropriate values are entered.
- The unique Cardfile identification number, Application data version number and Executive software version number shall be entered after the application program has been loaded.

Possible Solutions:

Refer “CLEAR KILL CONDITION” details (Figure-07).

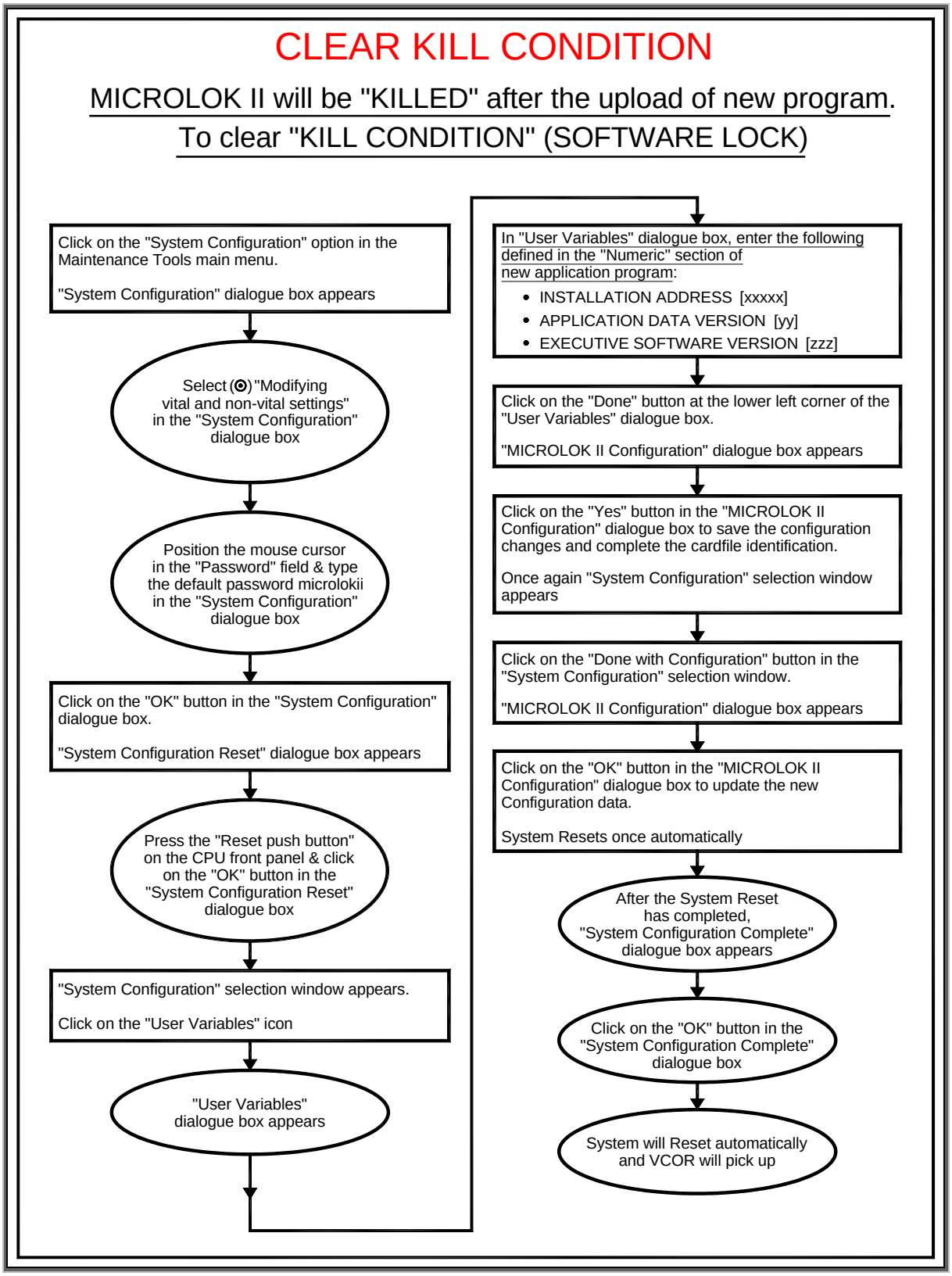

CLEAR KILL CONDITION
MICROLOK II will be "KILLED" after the upload of new program.
To clear "KILL CONDITION" (SOFTWARE LOCK)
Click on the "System Configuration" option in the Maintenance Tools main menu.
"System Configuration" dialogue box appears
Select (◉) "Modifying vital and non-vital settings" in the "System Configuration" dialogue box
Position the mouse cursor in the "Password" field & type the default password microlokii in the "System Configuration" dialogue box
Click on the "OK" button in the "System Configuration" dialogue box.
"System Configuration Reset" dialogue box appears
Press the "Reset push button" on the CPU front panel & click on the "OK" button in the "System Configuration Reset" dialogue box
"System Configuration" selection window appears.
Click on the "User Variables" icon
"User Variables" dialogue box appears
In "User Variables" dialogue box, enter the following defined in the "Numeric" section of new application program:
INSTALLATION ADDRESS [xxxxx]
APPLICATION DATA VERSION [yy]
EXECUTIVE SOFTWARE VERSION [zzz]
Click on the "Done" button at the lower left corner of the "User Variables" dialogue box.
"MICROLOK II Configuration" dialogue box appears
Click on the "Yes" button in the "MICROLOK II Configuration" dialogue box to save the configuration changes and complete the cardfile identification.
Once again "System Configuration" selection window appears
Click on the "Done with Configuration" button in the "System Configuration" selection window.
"MICROLOK II Configuration" dialogue box appears
Click on the "OK" button in the "MICROLOK II Configuration" dialogue box to update the new Configuration data.
System Resets once automatically
After the System Reset has completed, "System Configuration Complete" dialogue box appears
Click on the "OK" button in the "System Configuration Complete" dialogue box
System will Reset automatically and VCOR will pick up

Figure-07

6. TROUBLESHOOTING THE GENERAL FAILURE CONDITION

6.1 GENERAL FAILURE TYPE

- System configuration mode failed
- LINK 1920(0)
- Diagnostic mode failed
- Bit FAIL in Vital Output/Vital Input/Non-Vital I/O board
- Non-vital serial link failed

6.1.1 System configuration mode failed

Possible Solutions:

- System settings could not be changed through Maintenance Tool.
  1. Ensure locking of all crimps in the EEPROM PCB.
  2. Replace EEPROM PCB.
  3. Maintenance Tool is to be re-installed.

6.1.2 LINK 1920(0)

It indicates that communication between Microlok II and Maintenance Tool application in Maintenance PC is to be established to identify the type of failure in Event/Error log information.

6.1.3 Diagnostic mode failed

Possible Solutions:

- BAD LINK between Microlok II and Maintenance PC.
  1. Ensure Maintenance VDU is closed before open Maintenance Tool application.
  2. Check Port address and Baud rate settings in the Maintenance Tool.
  3. Remove and Reconnect 9-pin connector at both Microlok II and Maintenance PC ends.
  4. Close & Restart Maintenance Tool program afresh.

6.1.4 Bit FAIL in Vital Output/Vital Input/Non-vital I/O board

Possible Solutions:

1. Ensure that the board is fully finger tightened.
2. Check the terminals in the entire path.
3. Ensure locking of all crimps in the 48/96-pin connector.
4. Replace the faulty board.

6.1.5 Non-vital serial link failed (i.e. NVLOP/NVLMP COM OK bit clear)

Possible Solutions:

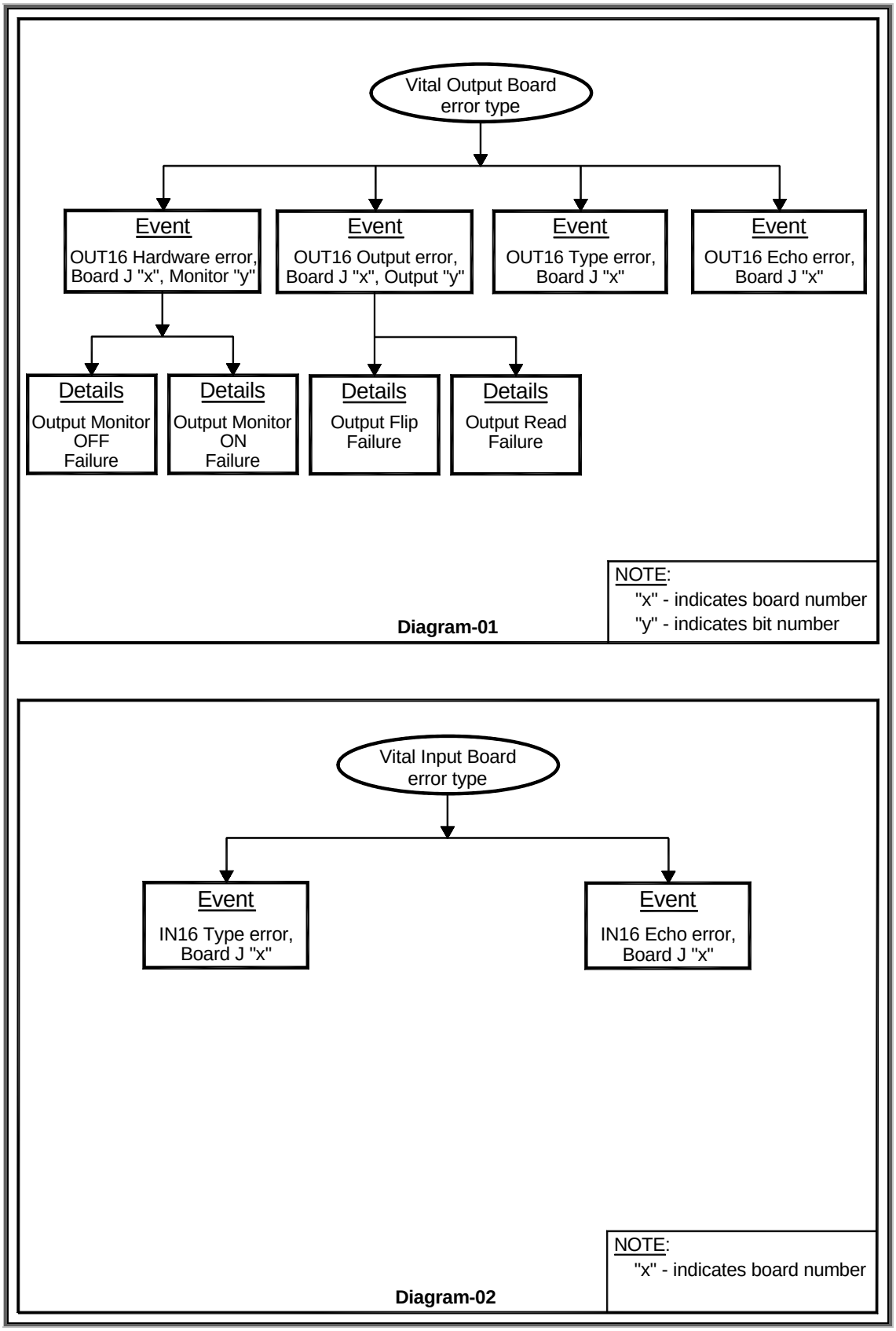
1. Check Serial link status indicator which is available for each serial link via the front panel configuration switches located on the CPU board (Refer Figure-02).
2. Check Serial link communication statistics display which is available for each active serial link defined in the application program and this display accessed via the "Board Information" push button in system configuration (Refer Figure-03).
3. Ensure locking of all crimps, there may be disconnection in CPU 48 pin connector assembly.
4. Tighten the terminals, there may be disconnection in Microlok II rack serial communication terminals.
5. Tighten the terminals, there may be disconnection in Isolator/ Converter terminals between Microlok II and Operator VDU PC/ Microlok II and Maintenance VDU PC.
6. Check Isolator 12V DC.
7. Check/Replace Isolator and Converter.
8. Check 12V DC Converter Supply at the Operator PC end, there may be Structure Error due to noise in the communication.
9. Refer Serial link communications troubleshooting diagram (Figure-04).
10. Replace the Microlok II CPU board, there may be Serial port failure.
11. Check/Replace the Operator/Maintenance PC CPU, there may be communication port failure.

7. FLOW DIAGRAMS

7.1 SYSTEM RESET CONDITIONS

7.1.1 Vital Output Board error type-Diagram 01

7.1.2 Vital Input Board error type-Diagram 02


Vital Output Board error type
Event
OUT16 Hardware error, Board J "x", Monitor "y"
Event
OUT16 Output error, Board J "x", Output "y"
Event
OUT16 Type error, Board J "x"
Event
OUT16 Echo error, Board J "x"
Details
Output Monitor OFF Failure
Details
Output Monitor ON Failure
Details
Output Flip Failure
Details
Output Read Failure
NOTE:
"x" - indicates board number
"y" - indicates bit number
Diagram-01
Vital Input Board error type
Event
IN16 Type error, Board J "x"
Event
IN16 Echo error, Board J "x"
NOTE:
"x" - indicates board number
Diagram-02

7.1.3 Non-vital I/O Board error type-Diagram 03

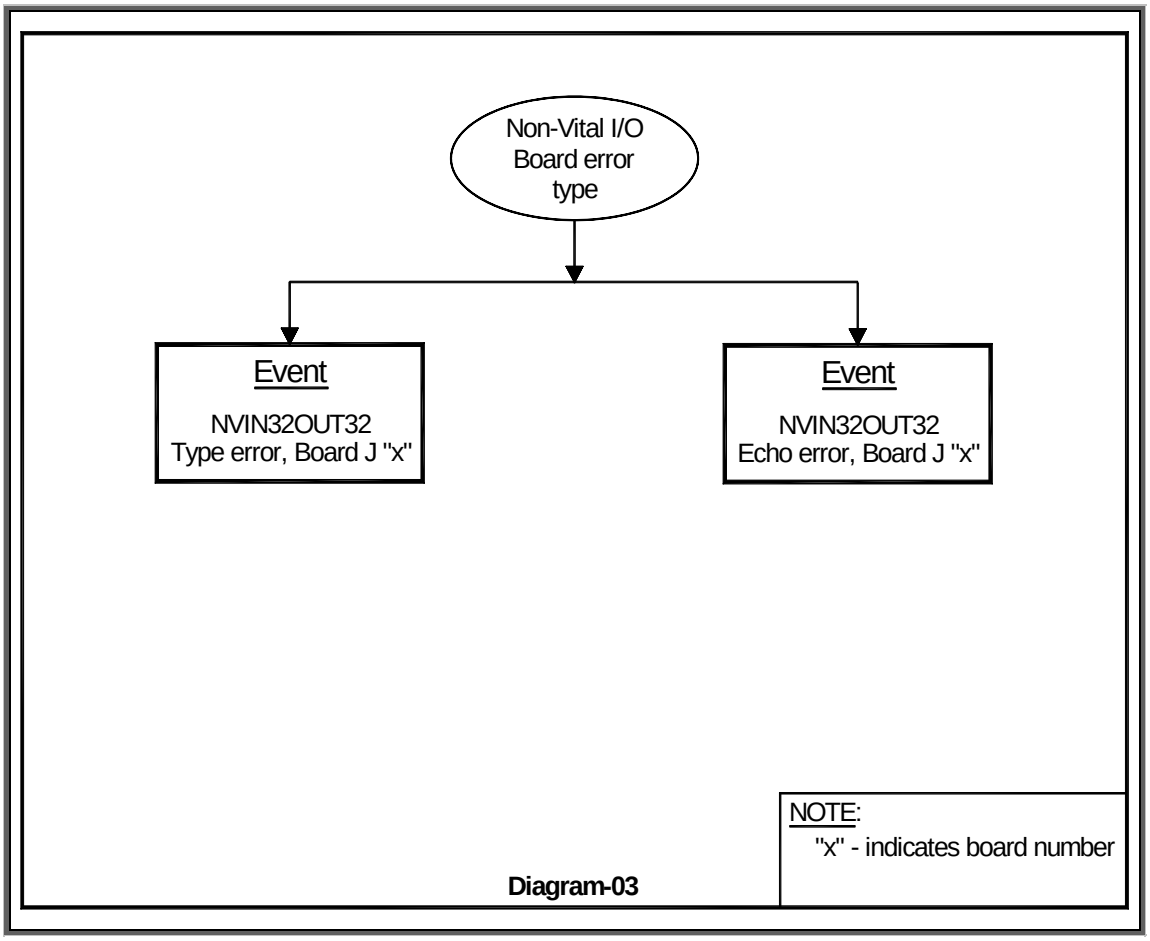
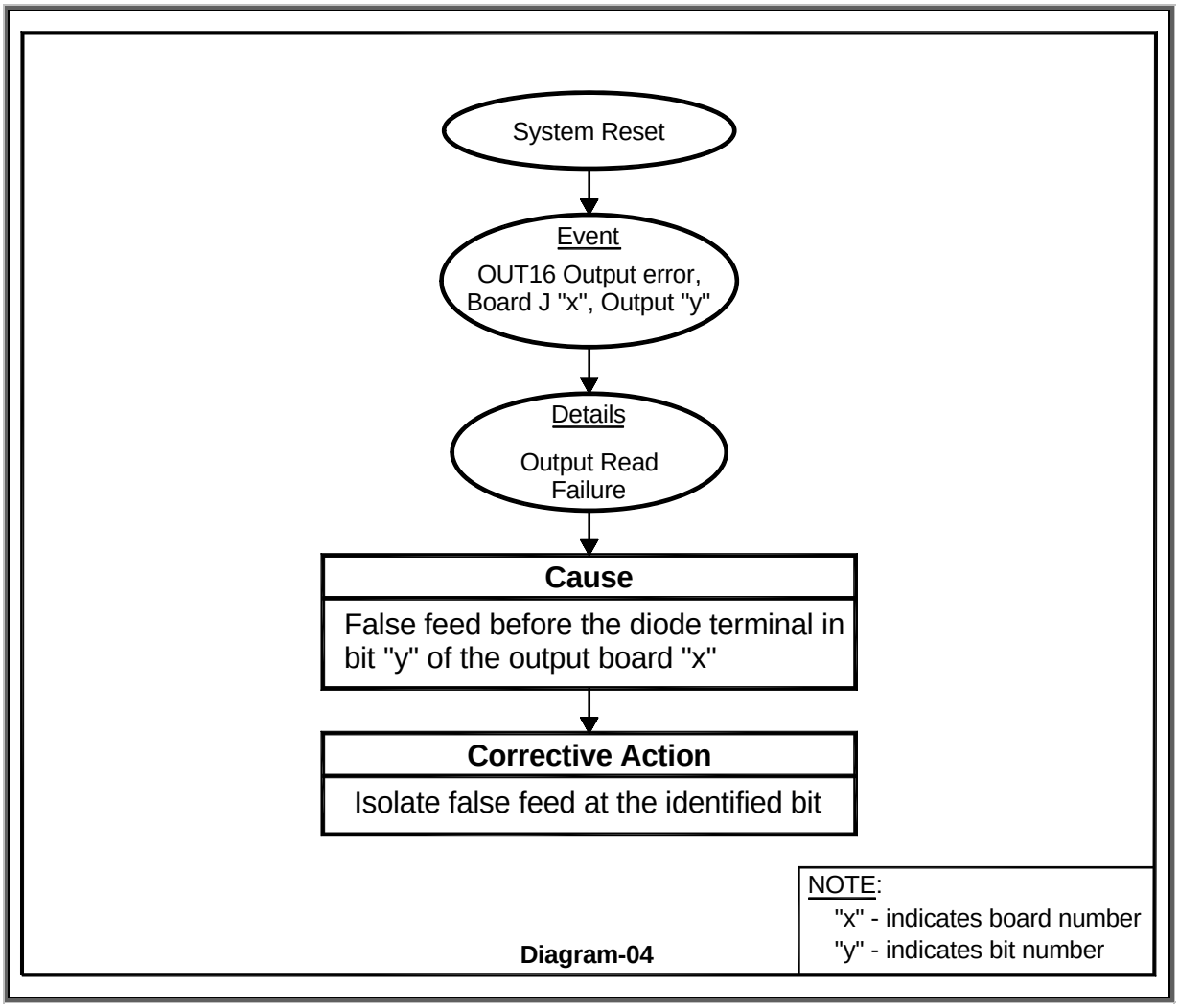


Diagram-03

7.1.4 Output Read Failure-Diagram 04



7.1.5 Output Read (or) Monitor OFF/ON Failure-Diagram 05

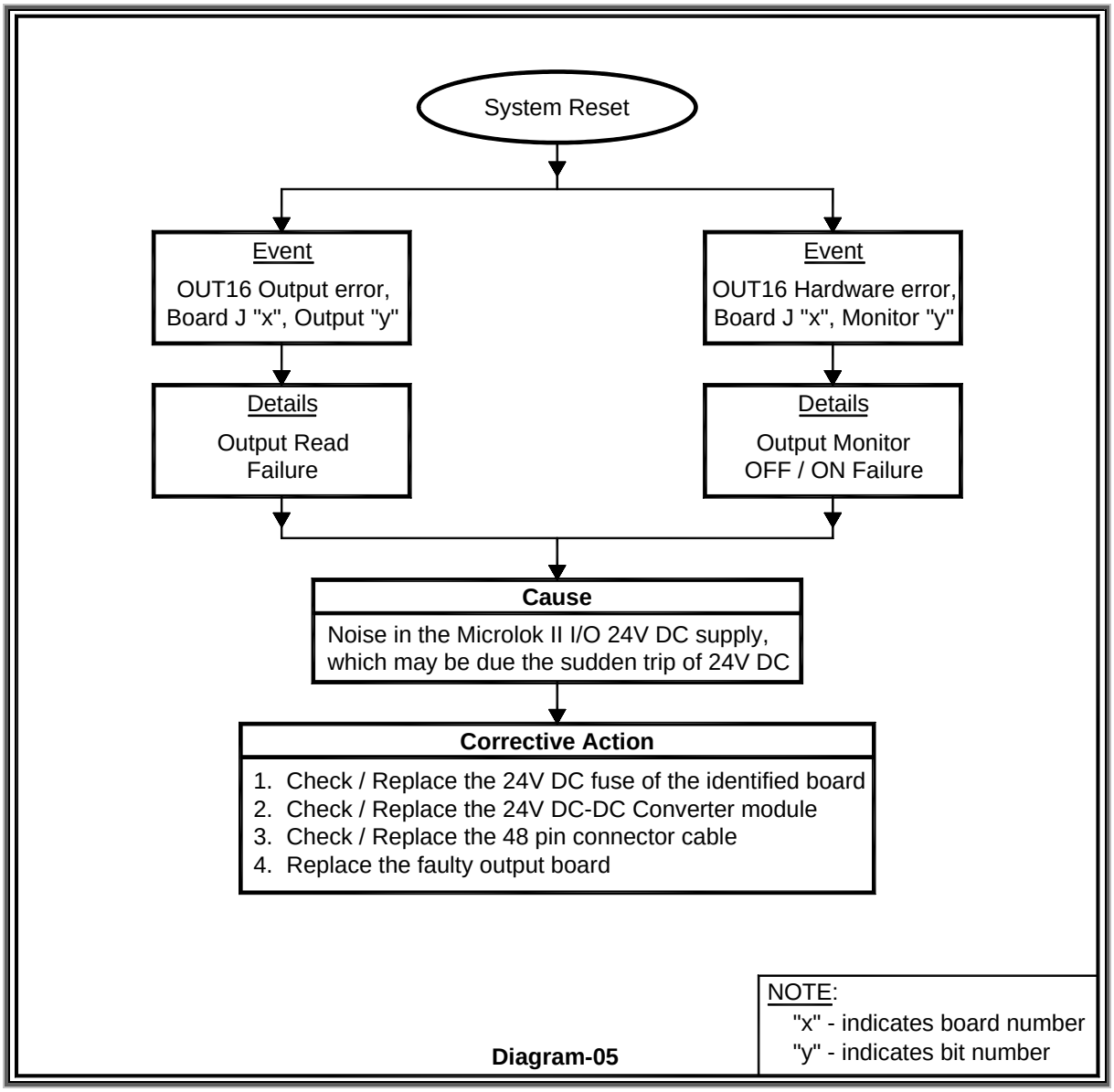


Diagram-05

7.1.6 Output Flip Failure-Diagram 06

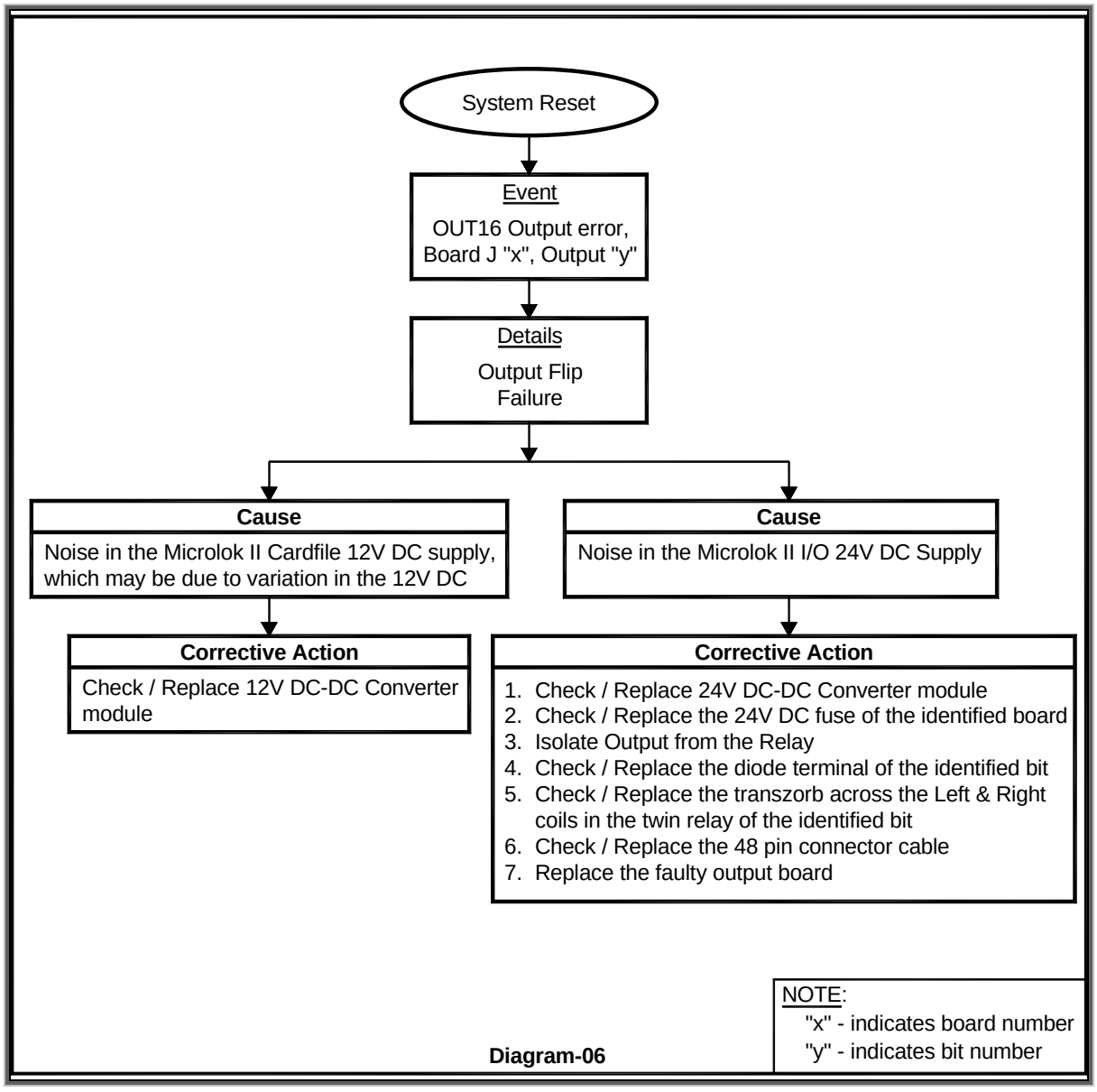


Diagram-06

7.1.7 Output Monitor OFF (or) Flip Failure-Diagram 07

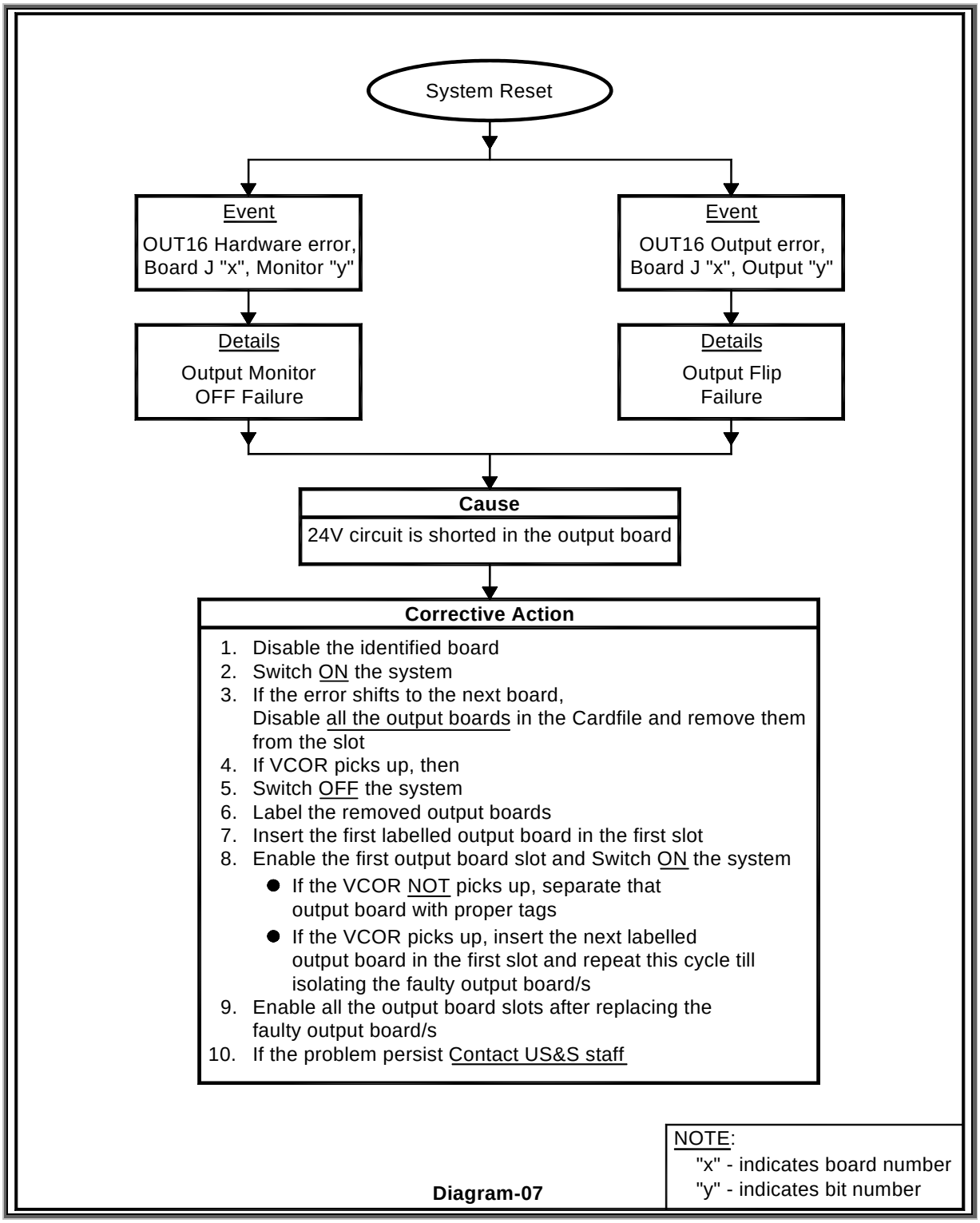


Diagram-07

7.1.8 OUT16/IN16/NVIN32OUT32 Type (or) Echo error-Diagram 08

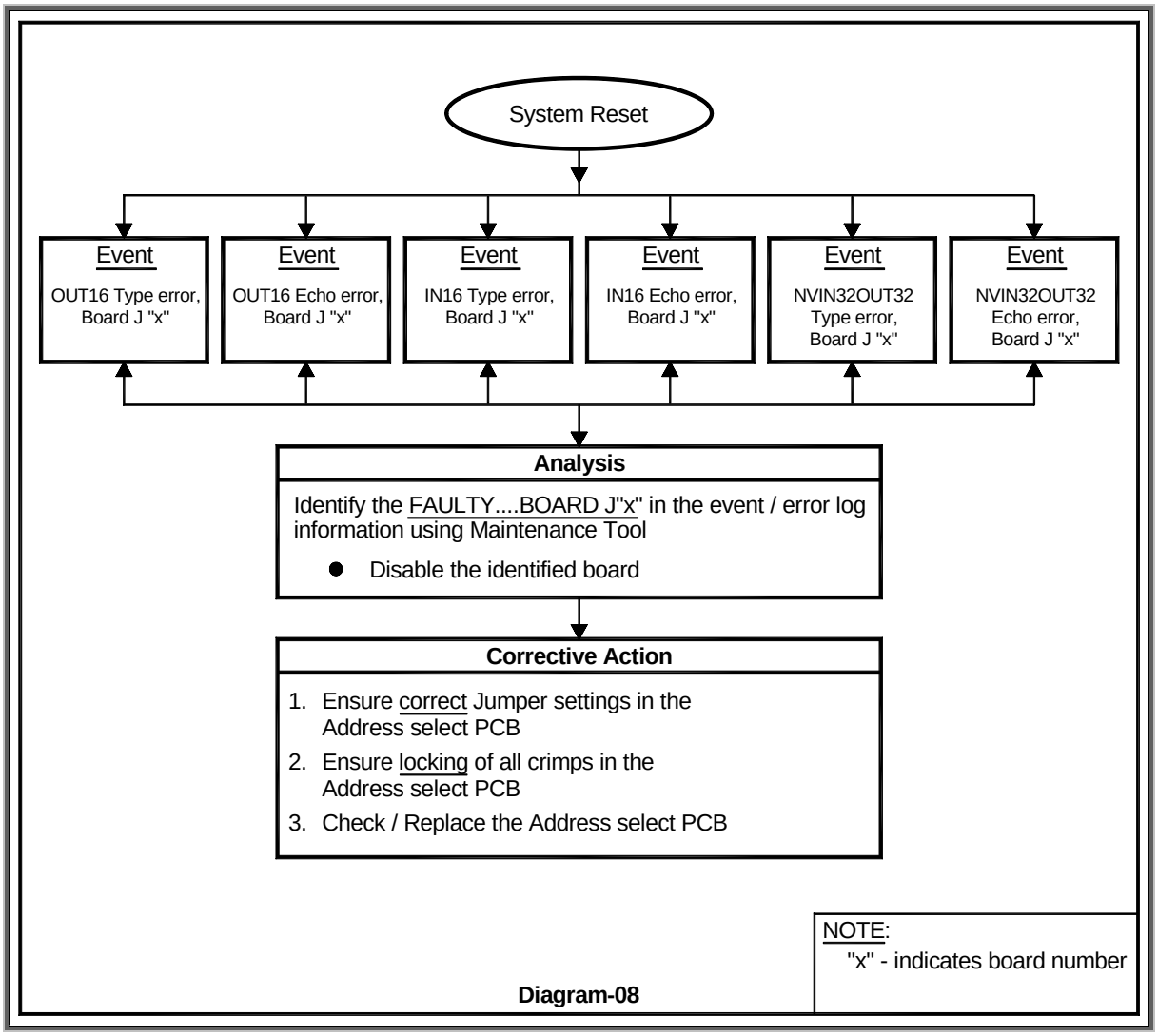
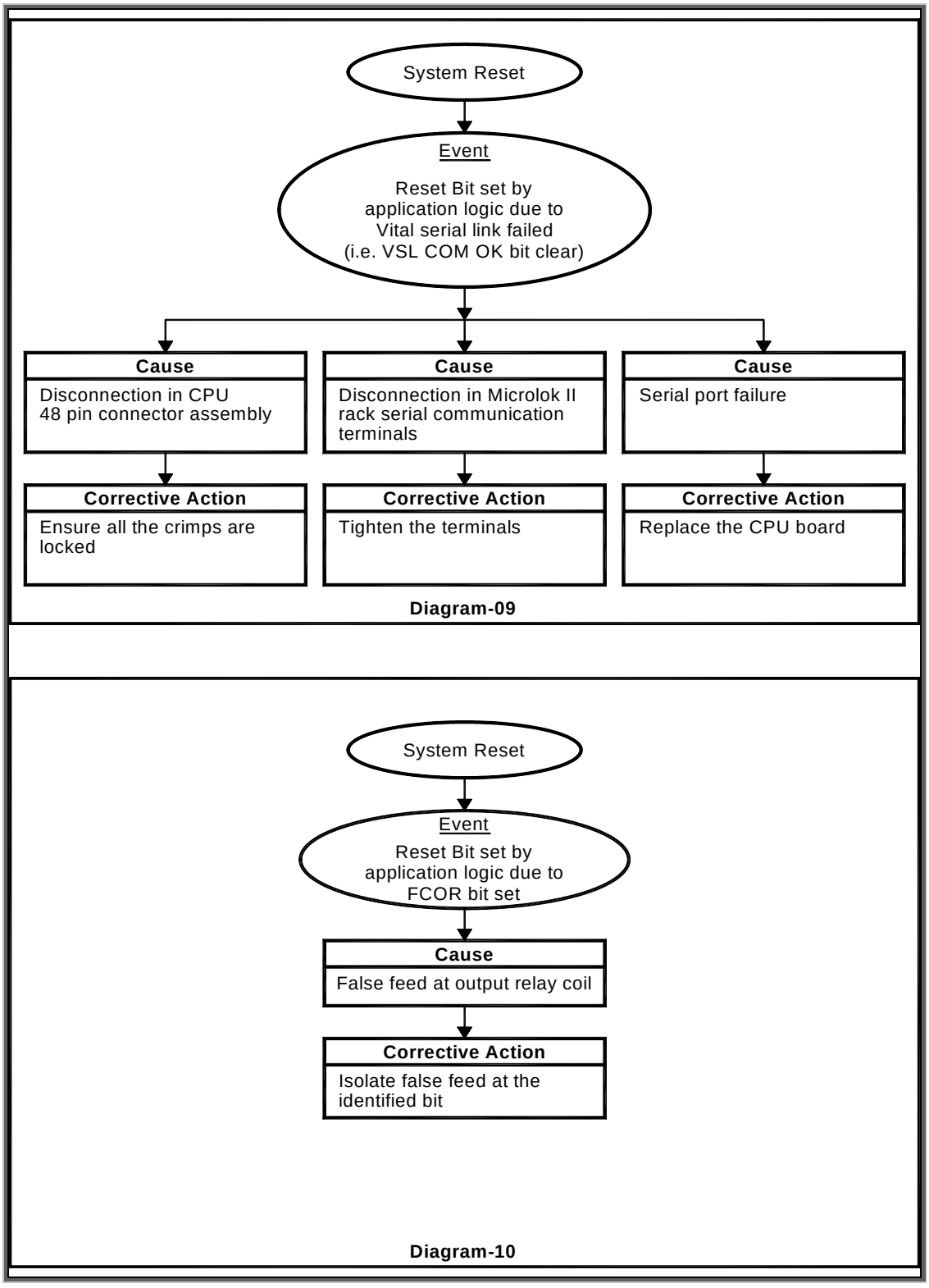


Diagram-08

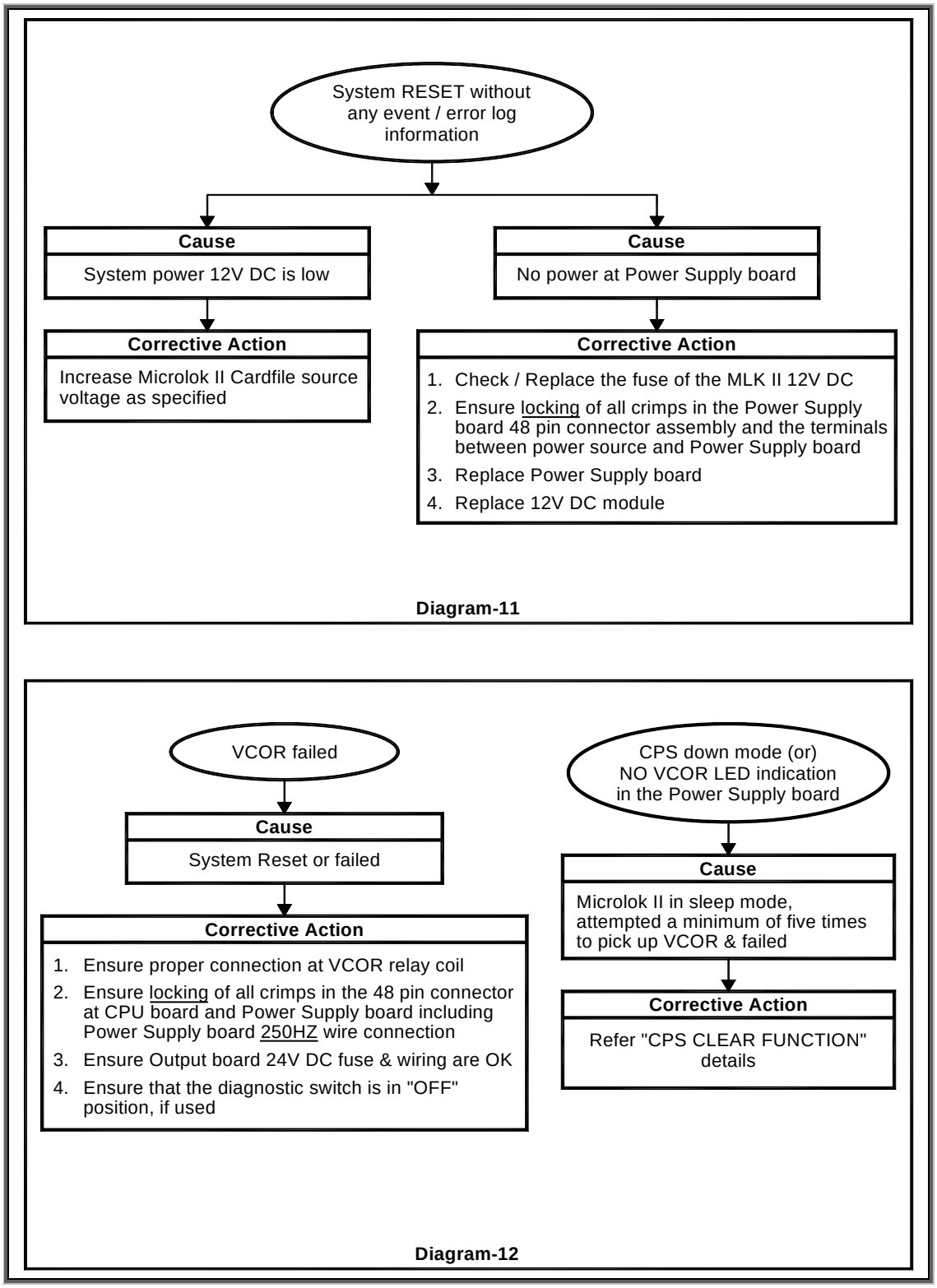
7.1.9 Reset Bit set by application logic due to Vital serial link failed-Diagram 09

7.1.10 Reset Bit set by application logic due to FCOR bit set-Diagram 10



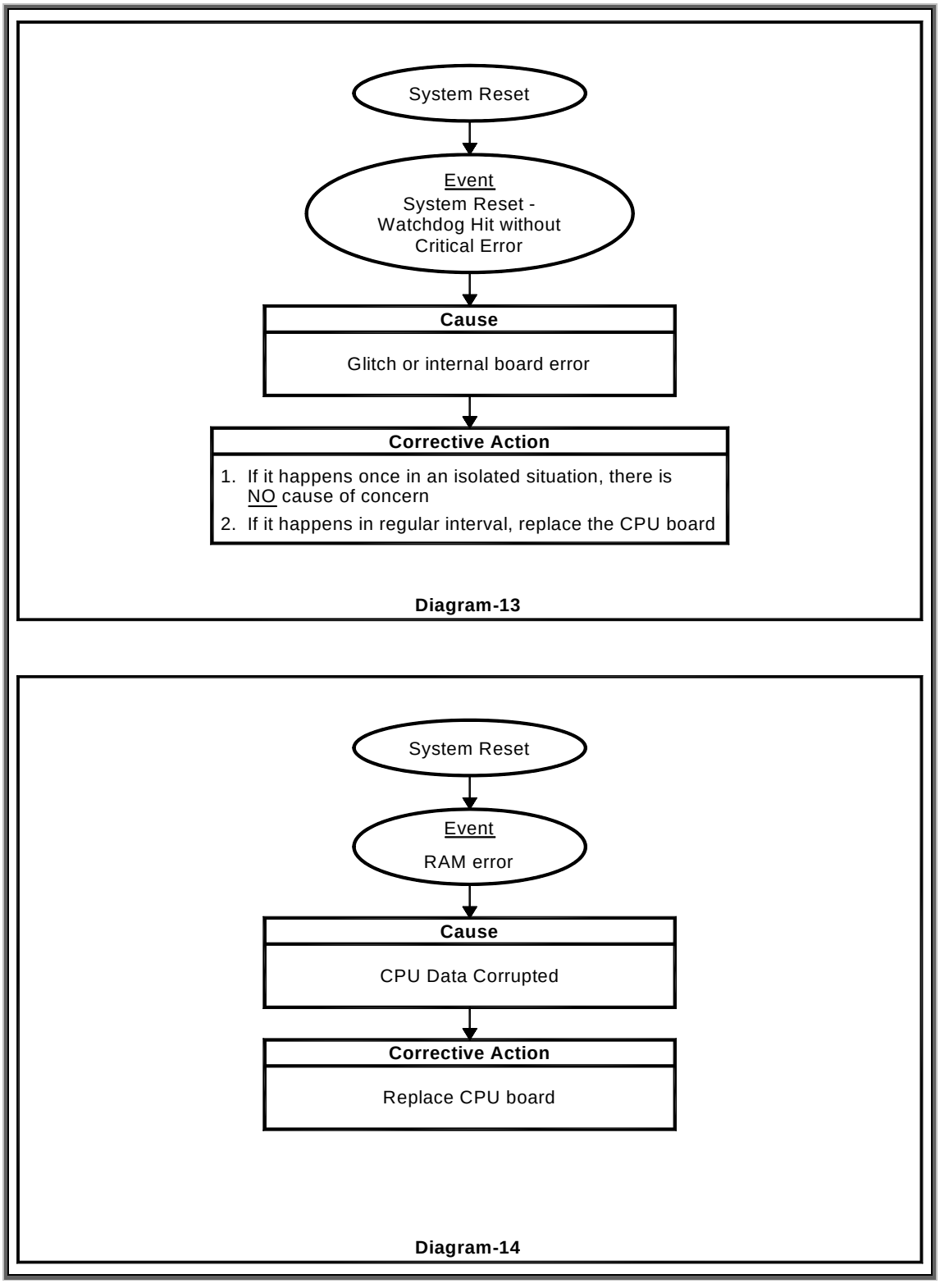
7.1.11 System RESET without any event/error log information-Diagram 11

7.1.12 VCOR failed and CPS down mode-Diagram 12



7.1.13 System Reset-Watchdog Hit without Critical Error-Diagram 13

7.1.14 RAM error-Diagram 14



7.1.15 Logic queue overflow error-Diagram 15

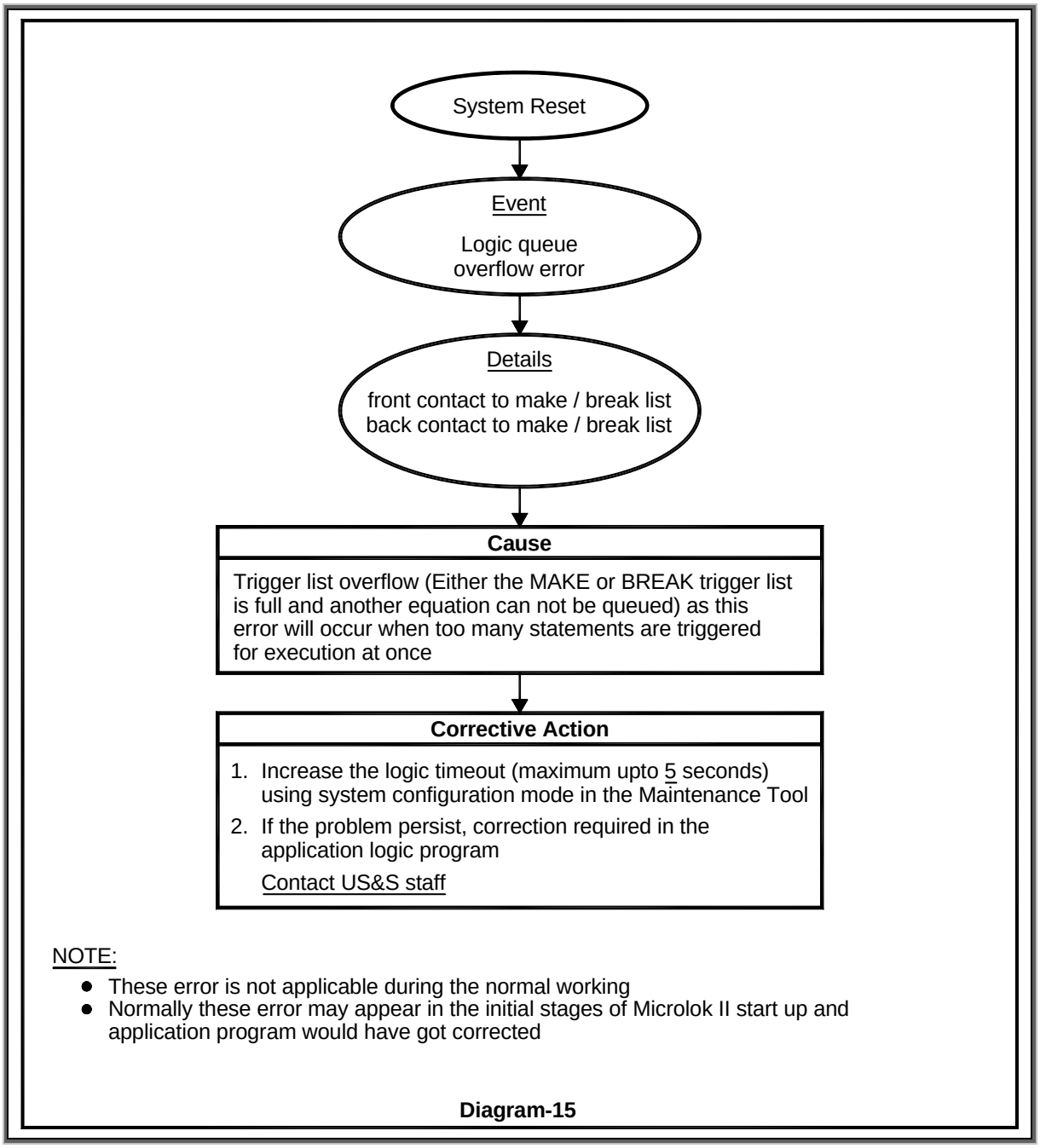
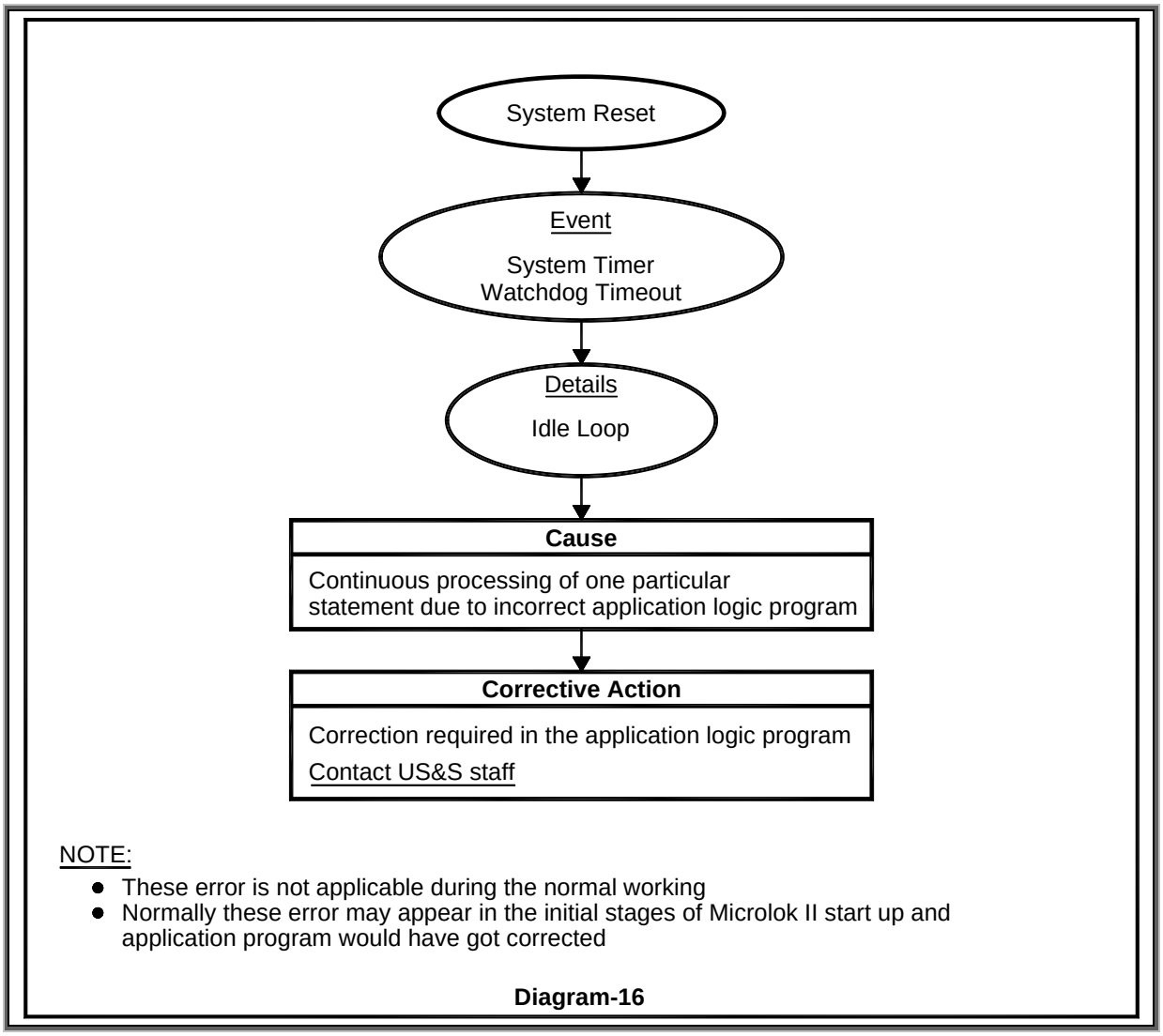


Diagram-15

7.1.16 System Timer Watchdog Timeout-Idle Loop-Diagram16

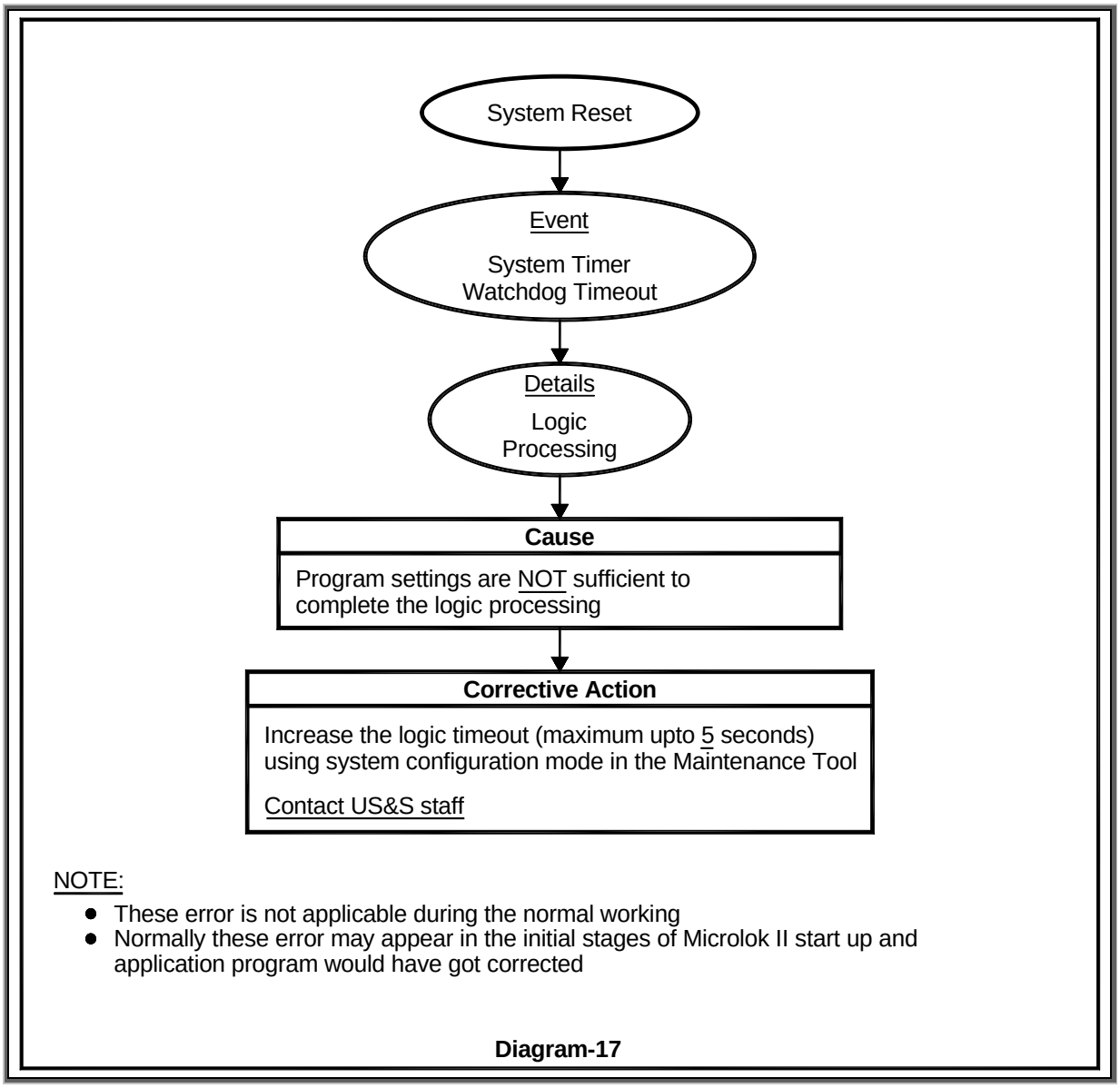


NOTE:

- These error is not applicable during the normal working
- Normally these error may appear in the initial stages of Microlok II start up and application program would have got corrected

Diagram-16

7.1.17 System Timer Watchdog Timeout-Logic Processing-Diagram 17



NOTE:

- These error is not applicable during the normal working
- Normally these error may appear in the initial stages of Microlok II start up and application program would have got corrected

Diagram-17

7.2 SYSTEM KILL CONDITIONS

7.2.1 Kill Bit set by application logic-Diagram 18

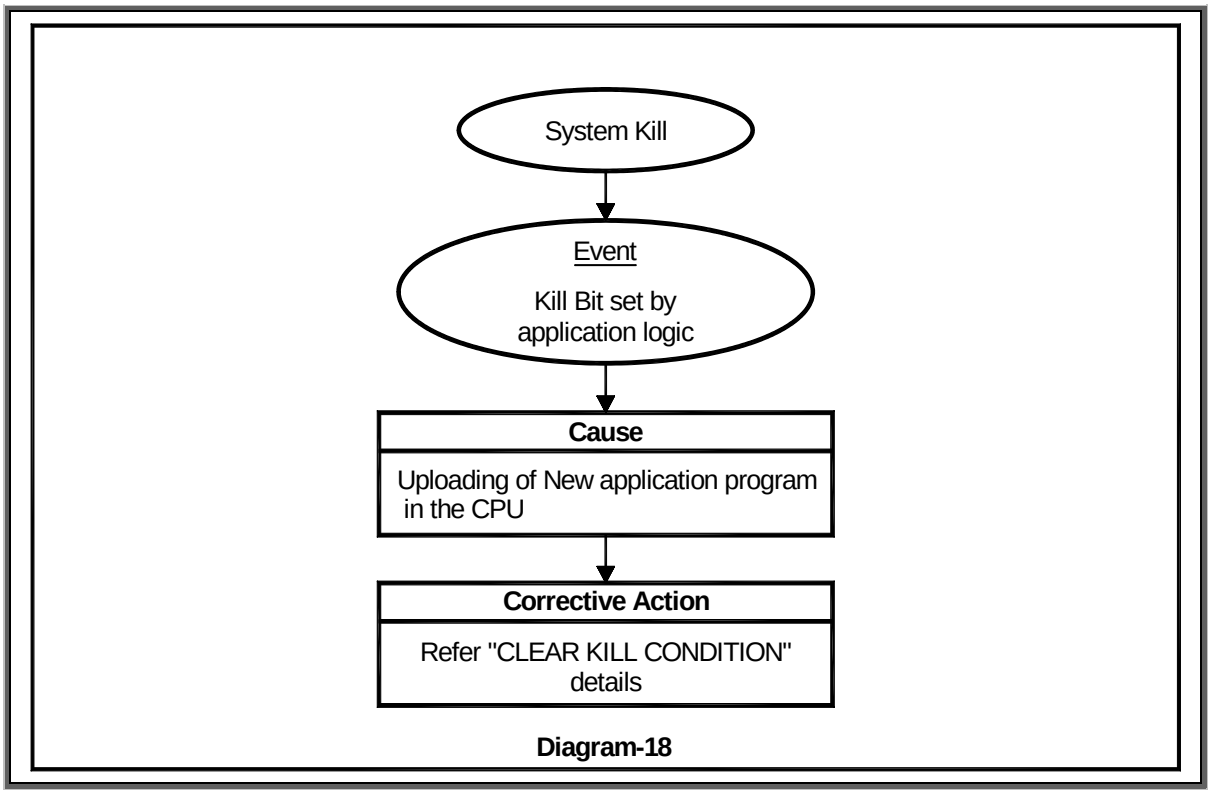
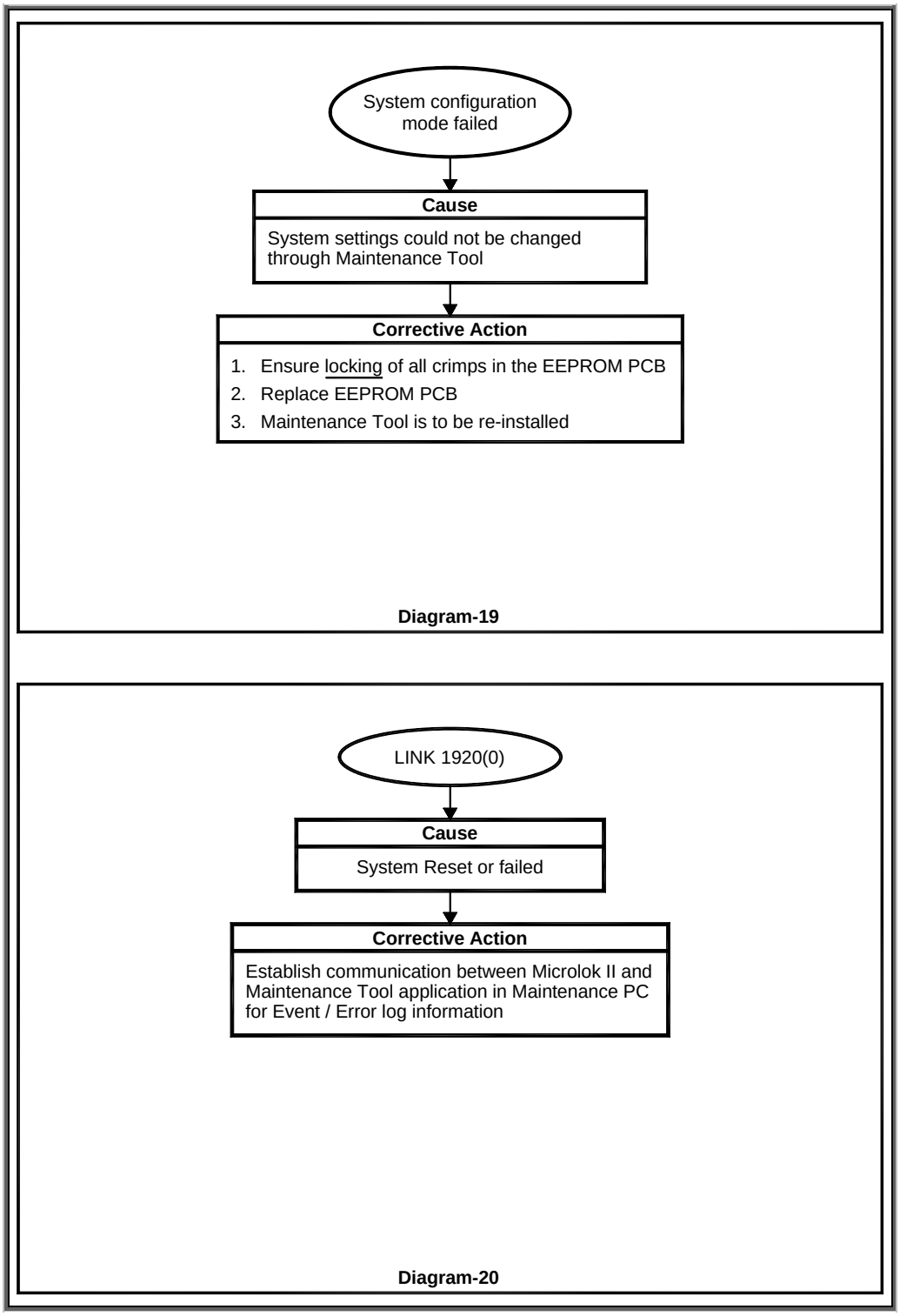


Diagram-18

7.3 GENERAL FAILURE CONDITIONS

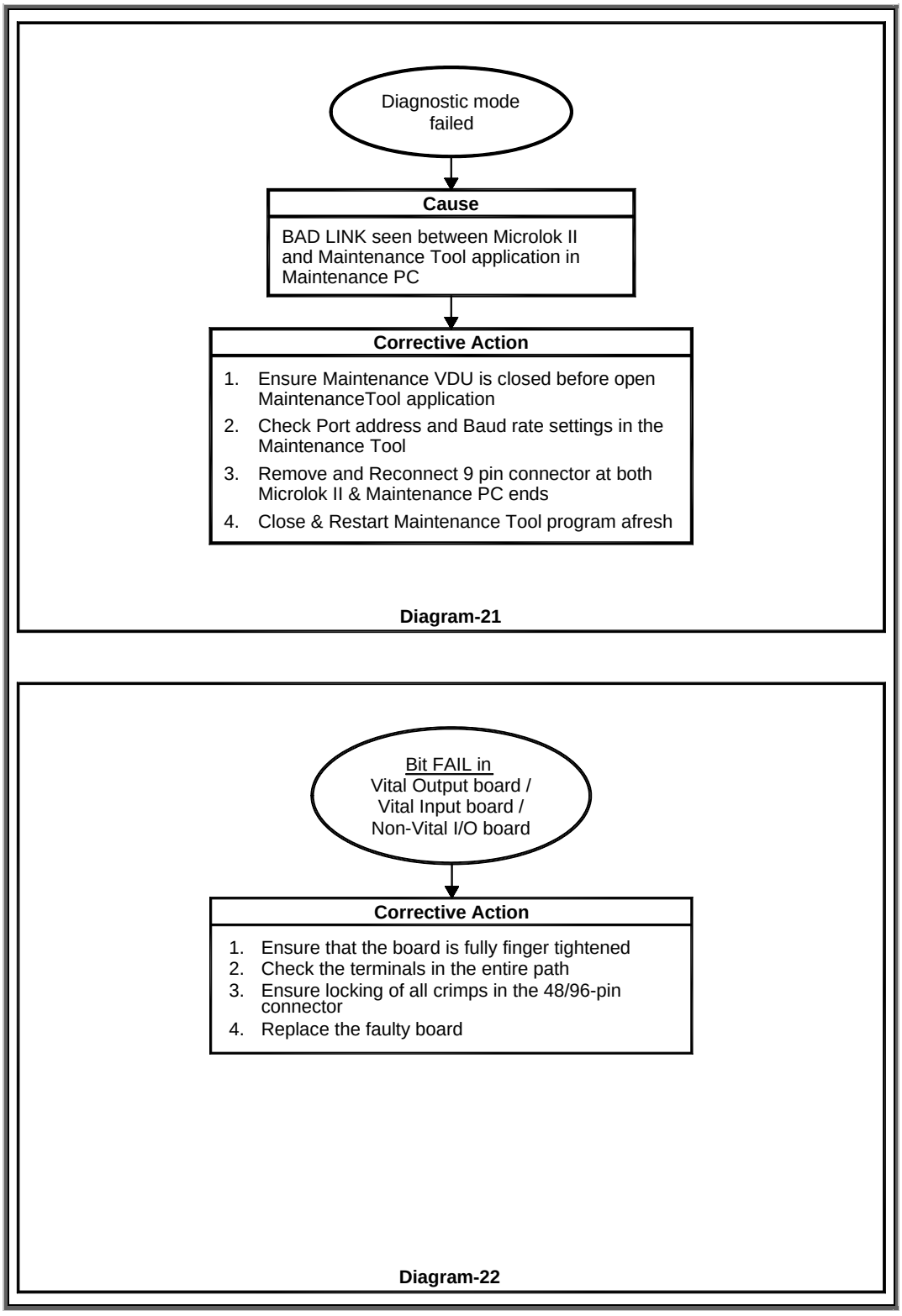
7.3.1 System configuration mode failed-Diagram 19

7.3.2 LINK 1920(0)-Diagram 20



7.3.3 Diagnostic mode failed-Diagram 21

7.3.4 Bit FAIL in Vital Output/Vital Input /Non-vital I/O board-Diagram 22



7.3.5 Non-vital serial link failed-Diagram 23

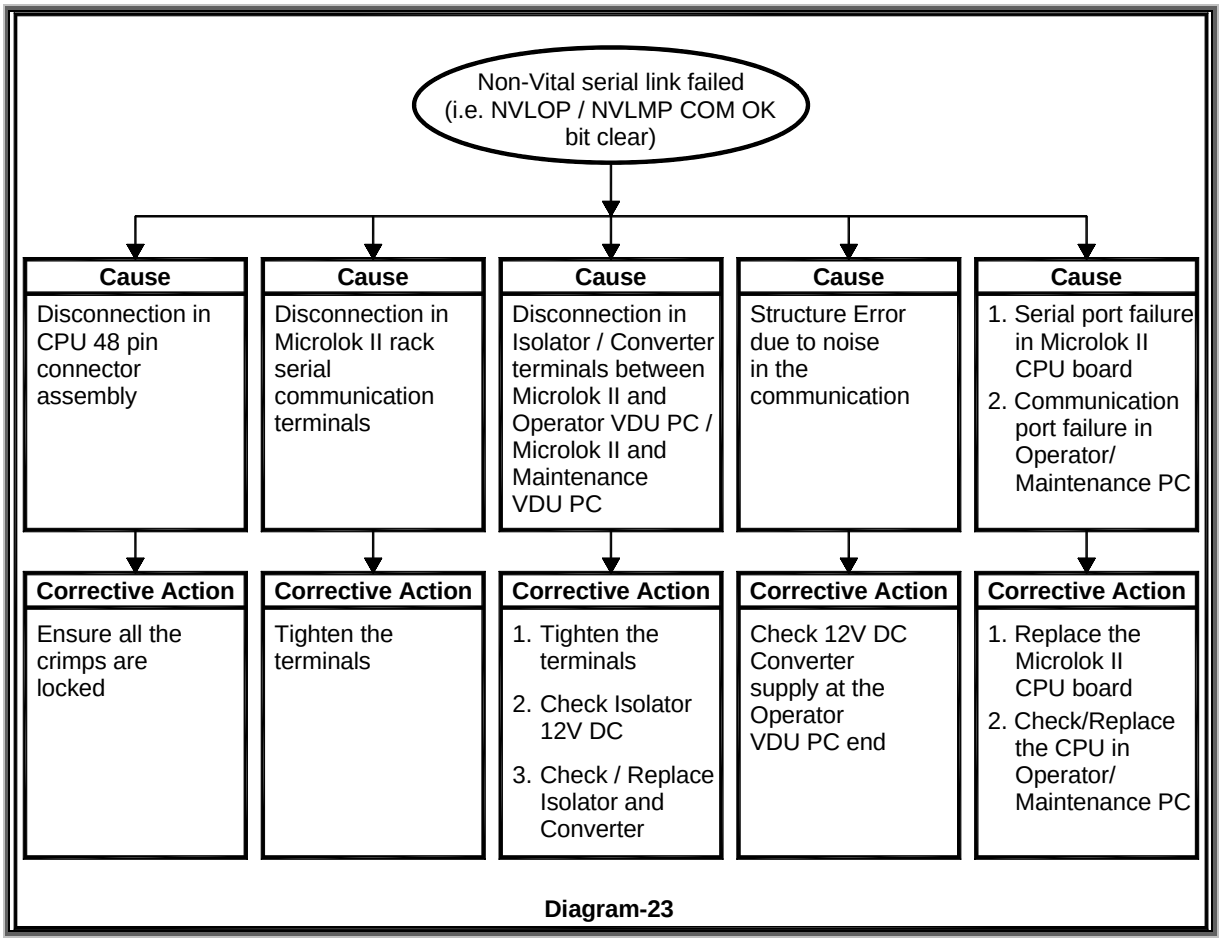


Diagram-23