

Microlok® II

STARTUP & MAINTENANCE

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Title of Author:	Design Engineer		
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MANUAL CONTENTS

1. INTRODUCTION	6
2. SYSTEM CARDFILE CONTROLS AND INDICATIONS	6
2.1 CPU PRINTED CIRCUIT BOARD (Refer Figure-2.1)	7
2.2 POWER SUPPLY PRINTED CIRCUIT BOARD (Refer Figure-2.2)	8
2.2.1 SYSTEM POWER TROUBLESHOOTING DIAGRAM	10
2.3 VITAL INPUT PRINTED CIRCUIT BOARD (Refer Figure-2.3)	10
2.4 STANDARD VITAL OUTPUT PRINTED CIRCUIT BOARD (Refer Figure-2.4)	11
2.5 NON-VITAL I/O PRINTED CIRCUIT BOARD (Refer Figure-2.5)	12
3. MICROLOK II MODES OF OPERATION	13
3.1 ON-LINE mode	13
3.2 CPS down mode	14
3.3 CONFIGURATION mode	14
3.4 RESET mode	14
4. MICROLOK II Maintenance Tools Installation (4.01)	16
5. MICROLOK II MAINTENANCE TOOLS PROGRAM	24
5.1 INTRODUCTION	24
5.2 USING THE MAINTENANCE TOOLS PROGRAM	25
5.2.1 Maintenance Tools Program Screen Components	25
5.2.2 Flow Diagram of Configure Communications	27
5.3 SYSTEM INFORMATION DISPLAY	27
5.4 VIEWING CIRCUIT BOARD STATUS	30
5.5 VIEWING SYSTEM VARIABLE AND BIT INFORMATION	33
5.5.1 INTRODUCTION	33
5.5.2 FREE-RUN VARIABLE DISPLAY	33
5.5.3 DYNAMIC BIT VARIABLE DISPLAY	35

5.6 VIEWING LOGGED INFORMATION	38
5.6.1 INTRODUCTION	38
5.6.2 VIEWING THE USER DATA LOG	39
5.6.3 VIEWING THE SYSTEM EVENT LOG	50
5.6.4 VIEWING THE SYSTEM ERROR LOG	60
5.6.5 VIEWING THE MERGED EVENT LOG	70
5.7 SETTING THE SYSTEM CLOCK	74
5.8 RESETTING THE MICROLOK II SYSTEM	77
5.9 LOADING THE MICROLOK II SYSTEM APPLICATION PROGRAM	80
5.10 APPLICATION DOWNLOAD	94
6. SYSTEM STARTUP	97
6.1 INTRODUCTION	97
6.2 POWERING UP THE MICROLOK II SYSTEM	98
6.3 MICROLOK II SYSTEM STARTUP GUIDE	100
7. CONFIGURING THE MICROLOK II SYSTEM	102
7.1 INTRODUCTION	102
7.2 SYSTEM CONFIGURATION	102
7.3 Accessing MICROLOK II Maintenance Tools Program Configuration Display	103
7.4 CONFIGURING THE SYSTEM CONFIGURATION	108
7.4.1 CONFIGURING THE GENERAL SYSTEM PARAMETERS	108
7.4.2 CONFIGURING THE USER VARIABLES	114
7.4.3 CONFIGURING THE USER LOG	119
7.5 ENABLING, DISABLING AND CONFIGURING PRINTED CIRCUIT BOARDS	121
7.5.1 CONFIGURING THE STANDARD VITAL OUTPUT BOARDS (OUT16)	122
7.5.2 CONFIGURING THE VITAL INPUT BOARDS (IN16)	128
7.5.3 CONFIGURING THE NON-VITAL I/O BOARDS (NV.IN32.OUT32)	135
7.6 CONFIGURING THE SYSTEM SERIAL LINKS	142
8. SYSTEM MAINTENANCE	148
8.1 INTRODUCTION	148

8.2 ELECTROSTATIC DISCHARGE PRECAUTIONS	149
8.3 PREVENTIVE MAINTENANCE	150
8.4 CORRECTIVE MAINTENANCE	151
8.5 WEEKLY MAINTENANCE	151
8.5.1 MEASURING VOLTAGES	151
8.5.2 FUSE CHECKING	152
8.5.3 BACKUP SCHEDULES	152
8.6 MONTHLY MAINTENANCE	152
8.6.1 SYSTEM CHANGEOVER	152
8.6.2 MEASURING EARTH RESISTANCE VALUE	152
8.7 ANNUAL MAINTENANCE	153
8.8 FIVE YEARS MAINTENANCE	153
8.9 SYSTEM FAILURE REGISTER	153
9. ERROR CODES	153
9.1 CPU Board Error/Event codes Refer Service Manual 6800C Appendix A	153

NOTE:

THIS MANUAL HAS TO BE REFERED IN CONJUNCTION WITH MICROLOK II SERVICE MANUALS SM6800 AND IS WRITTEN SPECIFICALLY FOR FIELD PERSONNEL WHO ARE RESPONSIBLE FOR THE STARTUP & CONFIGURATION OF THE MICROLOK II SYSTEM.

1. INTRODUCTION**WARNING**

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

This manual contains the following detailed information for maintaining the system in a safe and operable state.

- ❖ Microlok II printed circuit board, CPU front panel controls and indications.
- ❖ Microlok II Maintenance Tools installation.
- ❖ Procedures for using the Microlok II Maintenance Tools.
- ❖ Procedures for powering up the Microlok II system.
- ❖ Microlok II Startup guide.
- ❖ Procedures for adjusting the configurable parameters of the Microlok II system and for testing the operation of the various system functions.
- ❖ Procedure for Preventive maintenance and Corrective maintenance of Microlok II system.
- ❖ Procedures for scheduled maintenance to provide means of detecting early signs of equipment degradation.

2. SYSTEM CARDFILE CONTROLS AND INDICATIONS

- ❖ Before user can set up and configure the Microlok II system, user should become familiar with the front panel controls and indications associated with the Microlok II system printed circuit boards.

- ❖ Sections 2.1 through 2.5 that follow provide an introduction to the functions associated with each control and the information provided by each indicator on the Microlok II circuit boards.

2.1 CPU PRINTED CIRCUIT BOARD (Refer Figure-2.1)

Fig. 2-1 Ref	Label	Device	Purpose
1, 2	(None)	4-character alpha-numeric displays	On-site configuration programming menus and options.
3	A, B, C, D, E	Yellow LEDs	Reserved for serial link status.
4	1, 2, 3, 4, 5, 6, 7, 8	Red LEDs	User-defined in application software.
5	ON LINE	Green LED	When lit, indicates normal system operation (successful diagnostics).
6	VPP ON	Yellow LED	When lit, indicates FLASH +5V or +12V programming voltage enabled (via board jumper).
7	RESET	Green LED	When lit, indicates that the system is in reset mode.
8	RESET	Momentary pushbutton	When pressed, resets the CPU. Also used to place the CPU in the reset mode.
9	MENU L-R	3-position (return-to-center) toggle switch	Used to search main program menu items shown on displays.
10	MENU UP-DOWN	3-position (return-to-center) toggle switch	Used to select main program menu items shown on displays.
11	ADJUST UP-DOWN	3-position (return-to-center) toggle switch	Used to cycle through configuration values to be selected with “ACTION” switch.
12	ACTION ACCEPT-REJECT	3-position (return-to-center) toggle switch	Executes or cancels configuration value selected with “ADJUST” switch.
13	RS-232 DTE Diagnostic Link Connector	DB9, RS-232 Connector (DTE)	Used for connection to Maintenance PC for System monitoring diagnosis.

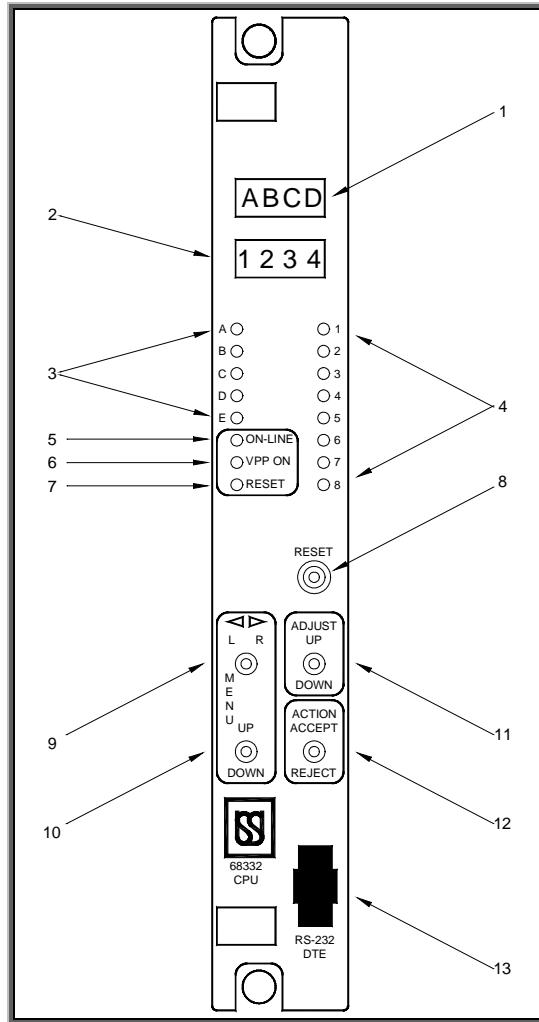


Figure-2.1

2.2 POWER SUPPLY PRINTED CIRCUIT BOARD (Refer Figure-2.2)

Fig. 2-2 Ref	Label	Device	Purpose
1	5V ON	LED (green)	When lit, indicates 5V-operating power on to other cardfile PCBs (If not lit refer to Figure-2.2.1).
2	VCOR	LED (green)	When lit, indicates conditional power on to VCOR relay (CPU diagnostics normal). (If not lit refer "CPS CLEAR FUNCTION" details in Figure-3.4).

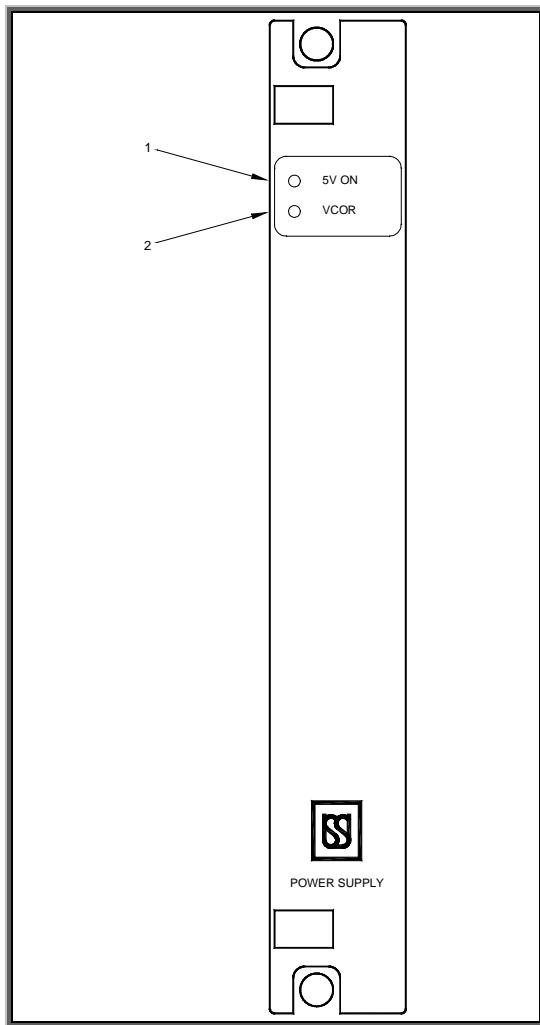


Figure-2.2

2.2.1 SYSTEM POWER TROUBLESHOOTING DIAGRAM

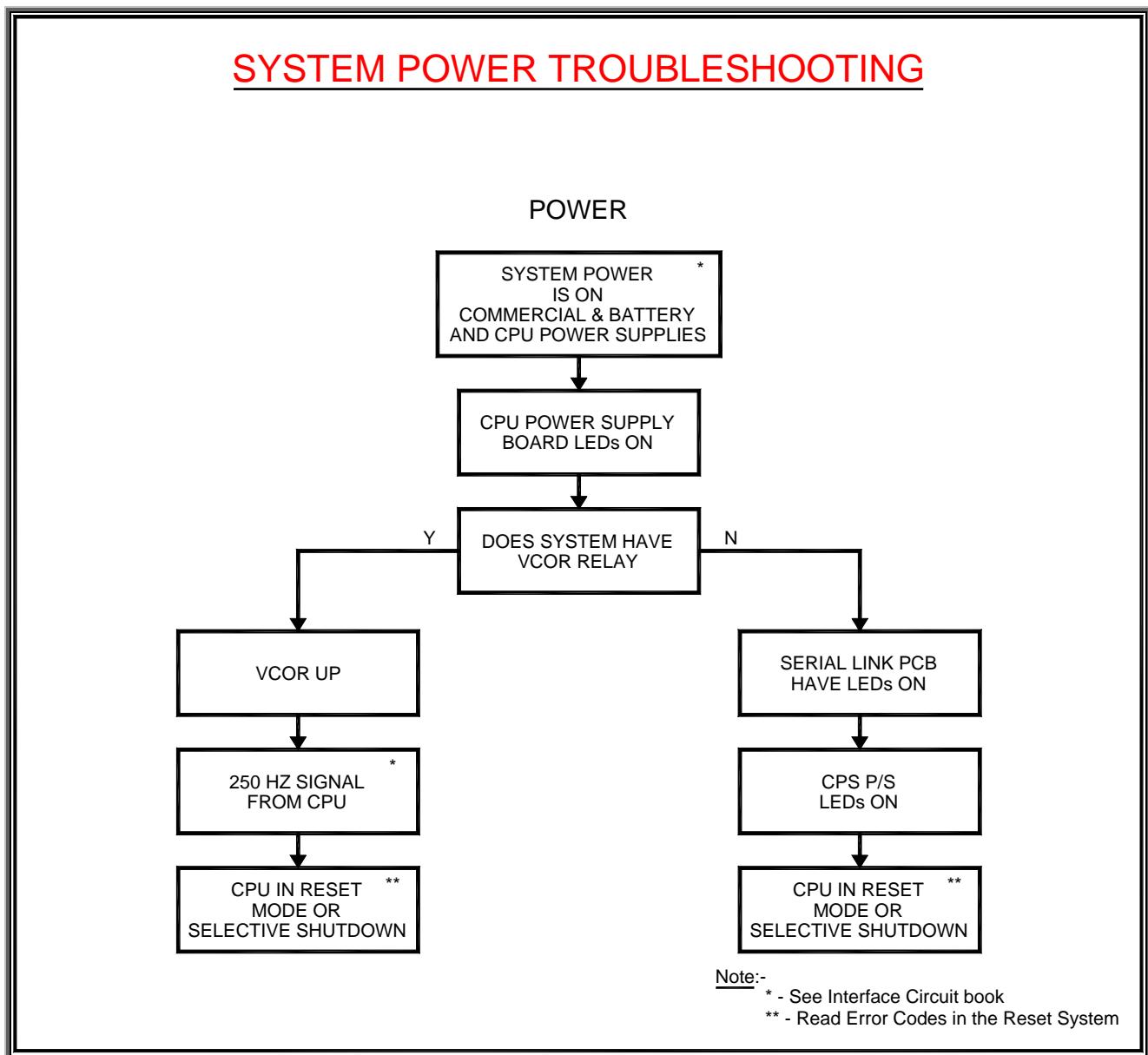


Figure-2.2.1

2.3 VITAL INPUT PRINTED CIRCUIT BOARD (Refer Figure-2.3)

Fig. 2-3 Ref	Label	Device	Purpose
1	IN1 -IN8	green LEDs	Monitor state of vital inputs 1 through 8. When lit, indicates respective input is turned on.
2	IN9 -IN16	green LEDs	Monitor state of vital inputs 9 through 16. When lit, indicates respective input is turned on.

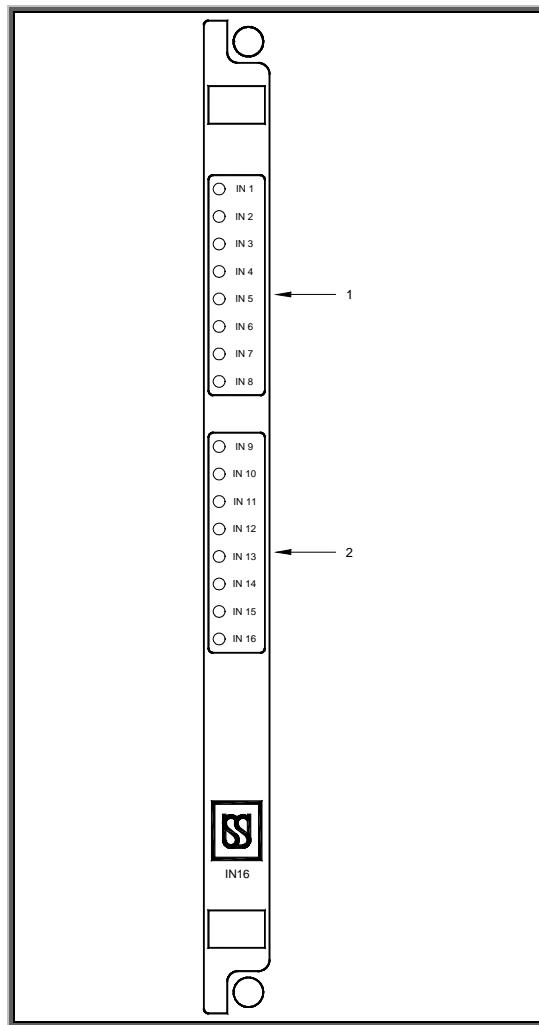


Figure- 2.3

2.4 STANDARD VITAL OUTPUT PRINTED CIRCUIT BOARD (Refer Figure-2.4)

Fig. 2-4 Ref	Label	Device	Purpose
1	OUT1 -OUT8	Yellow LEDs	Monitor state of vital outputs 1 through 8. When lit, indicates respective output is turned on.
2	OUT9 -OUT16	Yellow LEDs	Monitor state of vital outputs 9 through 16. When lit, indicates respective output is turned on.

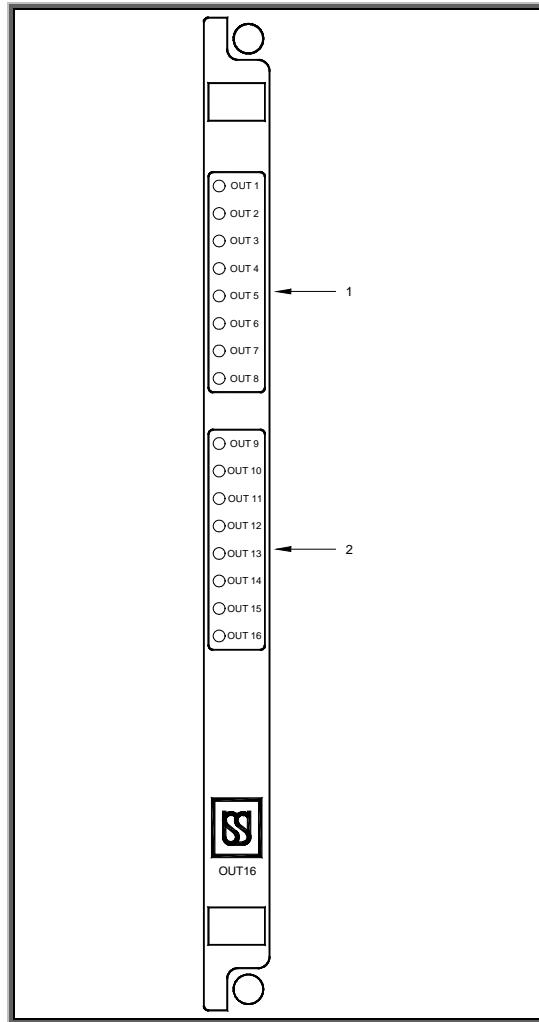


Figure-2.4

2.5 NON-VITAL I/O PRINTED CIRCUIT BOARD (Refer Figure-2.5)

Fig. 2-5 Ref	Label	Device	Purpose
1	INPUTS 1-32	Green LEDs	Monitors states of non-vital inputs 1-32. When LED is lit, respective input is on.
2	OUTPUTS (SWITCHED TO N12) 1-32	Yellow LEDs	Monitors states of non-vital outputs 1-32. When LED is lit, respective output is on.

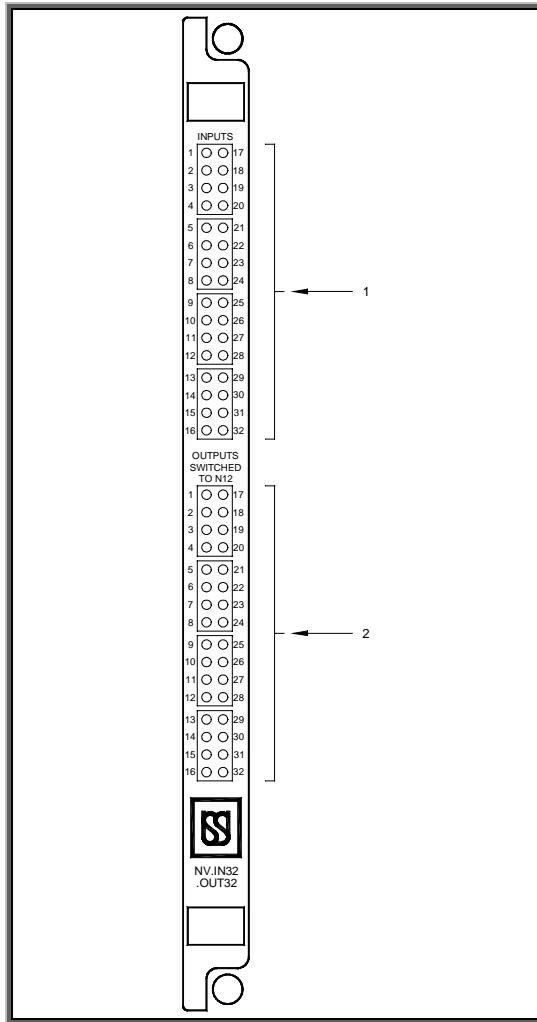


Figure-2.5

3. MICROLOK II MODES OF OPERATION

The Microlok II CPU board has the following four basic modes of operation.

1. On-line mode
2. CPS down mode
3. Configuration mode
4. Reset mode

3.1 ON-LINE mode

- ❖ It is the normal mode of CPU operation.
- ❖ In this mode, the Microlok II CPU actively controls all processes associated with an interlocking, including vital and non-vital discrete I/O monitoring and generation.

- ❖ System is in “ON-LINE” mode, can be confirmed by:
 - ◆ Observing the two 4-character displays and the LED indicators at the top of the CPU board front panel.
 - ◆ The phrase “MICROLOK II” will scroll across the upper display, the application program name will scroll across the lower display and the “ON-LINE” LED on the CPU board front panel will be illuminated.

3.2 CPS down mode

- ❖ The CPU assumes the “CPS” (*conditional power supply*) *down mode* whenever the processor detects the failure of an internal diagnostic check.
- ❖ When an error is detected, the CPU cuts off the 250 Hz check signal to the power supply board, which in turn drops the associated vital cut-off relay (VCOR).
 - ❖ This disables battery source voltage to all vital output circuits.
 - ❖ The Microlok II CPU continues to execute all non-vital processes including non-vital I/O and track circuit monitoring.
- ❖ System is in “CPS down mode” can be confirmed by:
 - ◆ VCOR LED on the power supply front panel is “OFF” when the power supply board drops the VCOR relay.

3.3 CONFIGURATION mode

- ❖ The system assumes the “CONFIGURATION mode” whenever a Maintenance PC is connected to the Microlok II CPU board diagnostic port and the configuration section of the Microlok II Maintenance Tools program is accessed.
- ❖ This mode enables startup personnel to configure various system-level and printed circuit board parameters.
- ❖ While the system is in the configuration mode, application logic is not processed and also, all control functions are inactive.

3.4 RESET mode

- ❖ The primary purpose of the “RESET mode” is to reset the VCOR relay and the Microlok II system software when the occurrence of a CPS trip.
- ❖ This mode also provides access to the event and error logs and some hardware configuration functions.
- ❖ The reset mode must be manually selected using the CPU board front panel controls.
- ❖ When the reset push button is pressed, the reset LED on the CPU board front panel appears.

- ❖ When the reset button is released, the reset LED on the CPU board front panel disappears.

To enter the reset mode:

- ❖ Press and release the RESET pushbutton on the CPU board front panel.
- ❖ Quickly operate any one of the four front panel toggle switches. Hold the switch in the toggled position.
- ❖ Release the toggle switch that was operated in step 2 after the CPU board 4-character displays shows “RES|MENU”.
- ❖ The first term “RES” is shown on the upper four-character display and the second term “MENU” is shown on the lower display.
- ❖ To access the level 1 options from the main reset menu display, toggle the MENU UP-DOWN switch to the “DOWN” position. The CPU board 4-character displays will show “VIEW|SLOG”.

Clear CPS Function (Figure 3.4)

To access the “CLR|CPS” option from the “VIEW|SLOG” option, toggle the MENU L-R switch to the “Right” position two times.

- ❖ With “CLR|CPS” shown on the CPU board displays, to toggle the ACCEPT-REJECT switch to the “ACCEPT” position.
- ❖ This action resets the CPU software & VCOR relay and returns the CPU to the on-line mode (assuming that the original cause of the CPS trip is no longer present). Refer the following Figure in conjunction with Figure-2.1.

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.

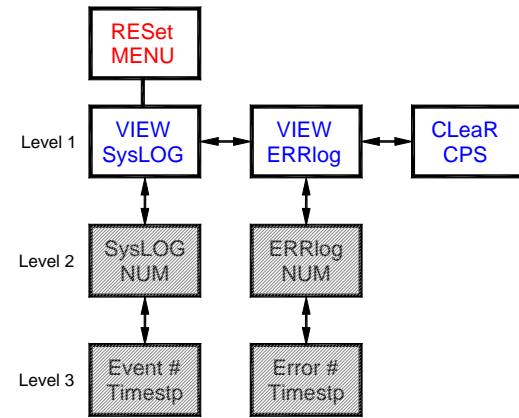


Figure-3.4

- ❖ For other front panel operations, refer Microlok II Service Manual SM-6800C Chapter 3.

4. MICROLOK II Maintenance Tools Installation (4.01)

- ❖ To begin the installation, CD containing the Maintenance Tools installation software is to be loaded in the Maintenance PC.
- ❖ Once the CD is loaded, select the “Setup” and double click.
- ❖ “Welcome” dialogue will appear (Figure-4.1).

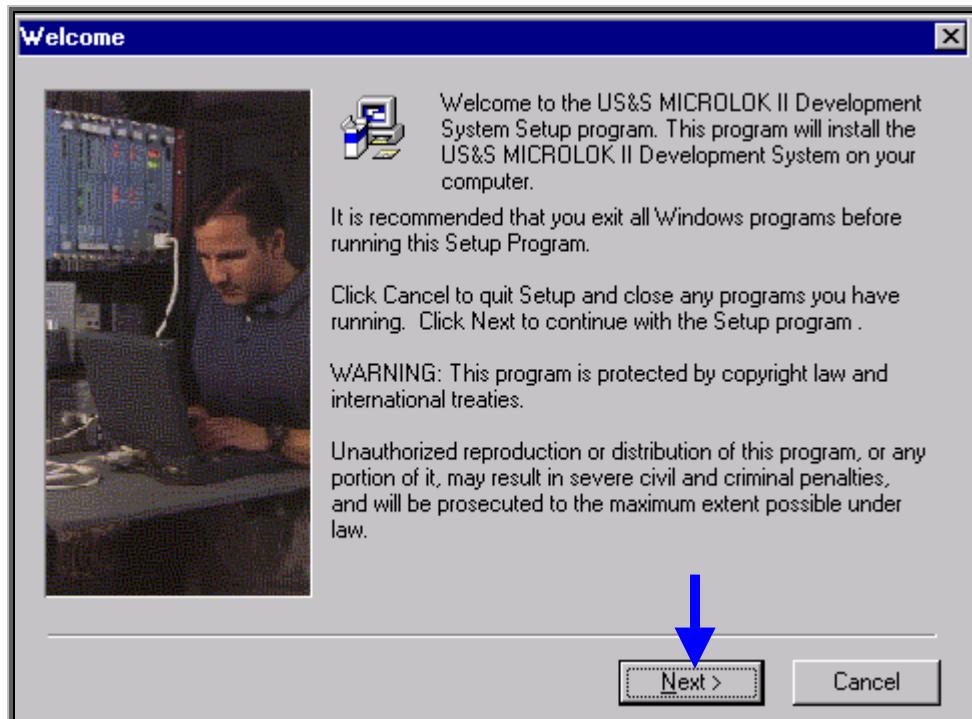


Figure-4.1

- ❖ Click the “Next>” button in the “**Welcome**” dialog box to proceed with the installation and this will present another dialog box as shown in Figure-4.2.

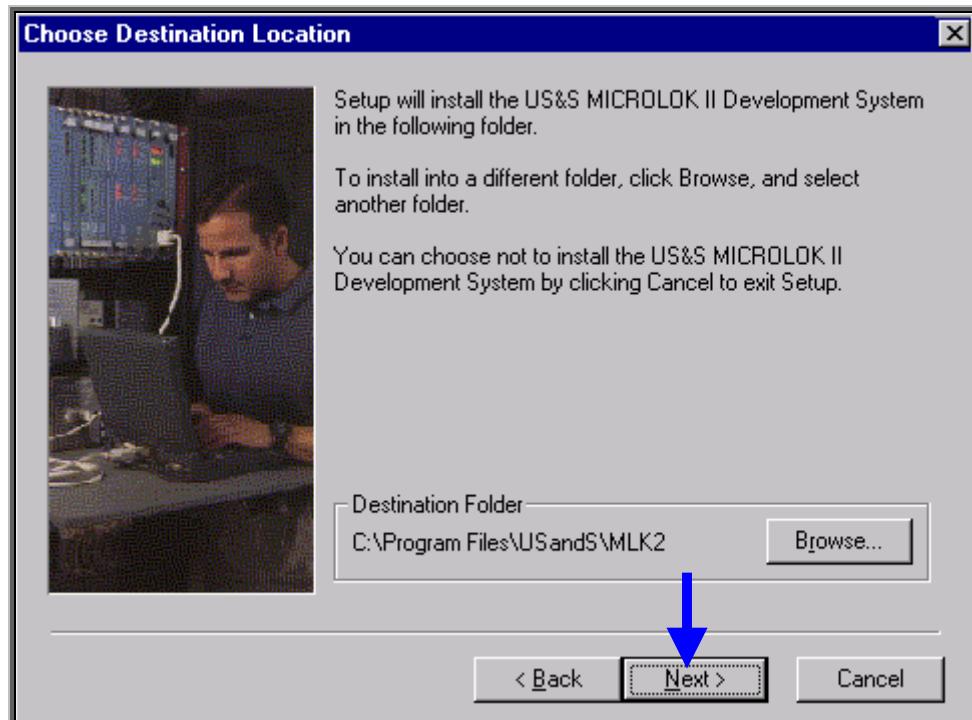


Figure-4.2

- ❖ Click the “Next>” button in the “Choose Destination Location” dialog box to install the Maintenance Tools software in the default location and proceed with the installation.
- ❖ This will present another dialog box as shown in Figure-4.3.

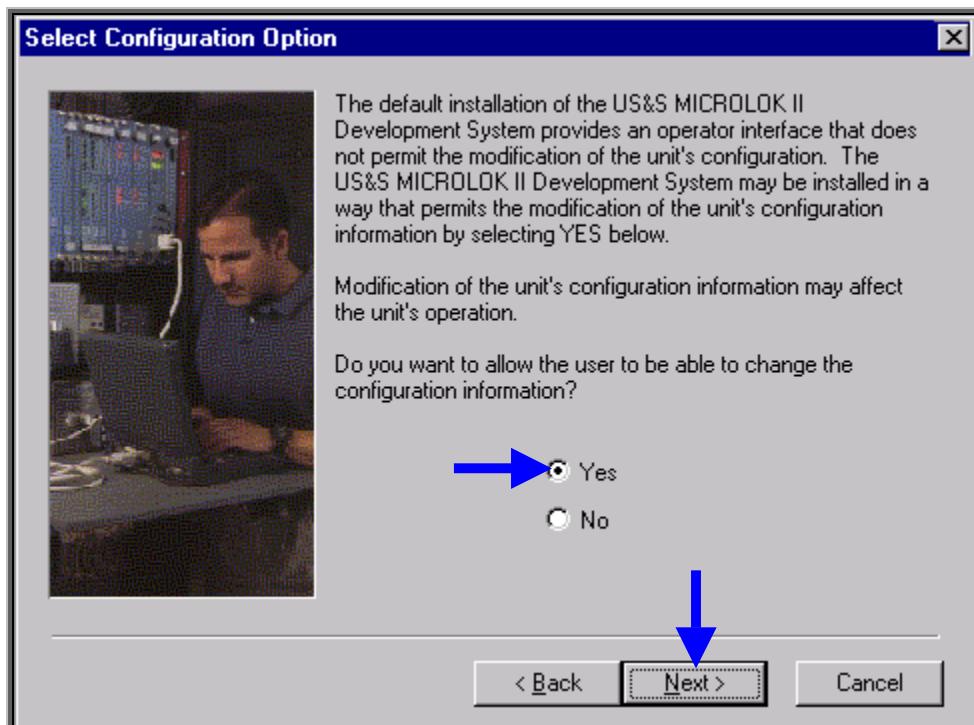


Figure-4.3

- ❖ Select “Yes” in the “Select Configuration option” dialog box to change the configuration information.
- ❖ Click the “Next>” button in the “Select Configuration option” dialog box to proceed with the installation.
- ❖ This will present another dialog box as shown in Figure-4.4.

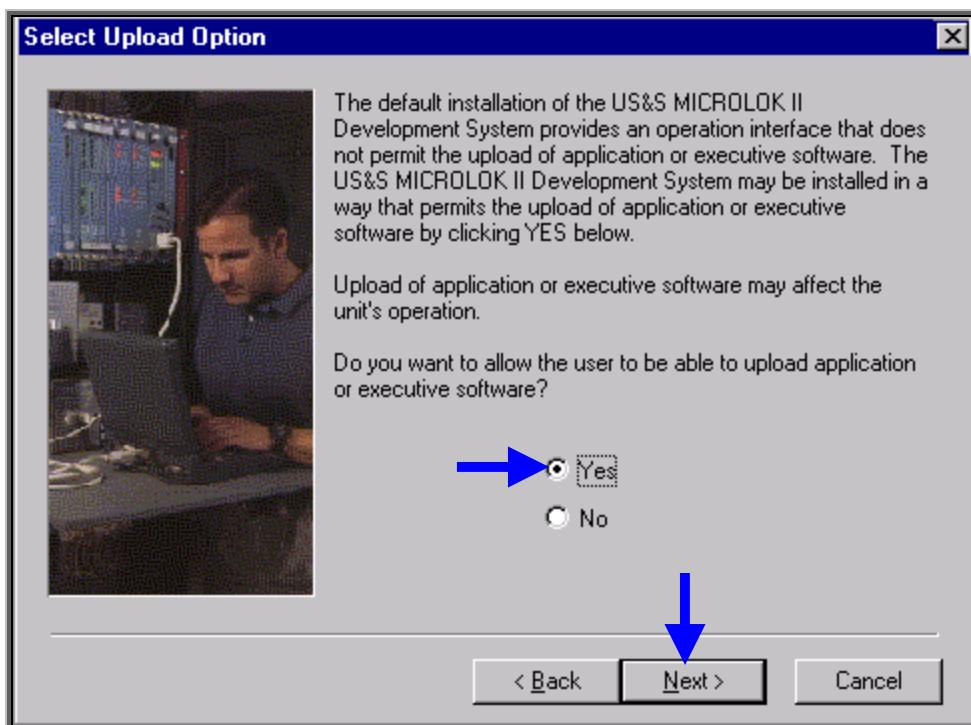


Figure-4.4

- ❖ Select “Yes” in the “Select Upload Option” dialog box to upload application or executive software.
- ❖ Click the “Next>” button in the “Select Upload Option” dialog box to proceed with the installation.
- ❖ This will present another dialog box as shown in Figure-4.5.

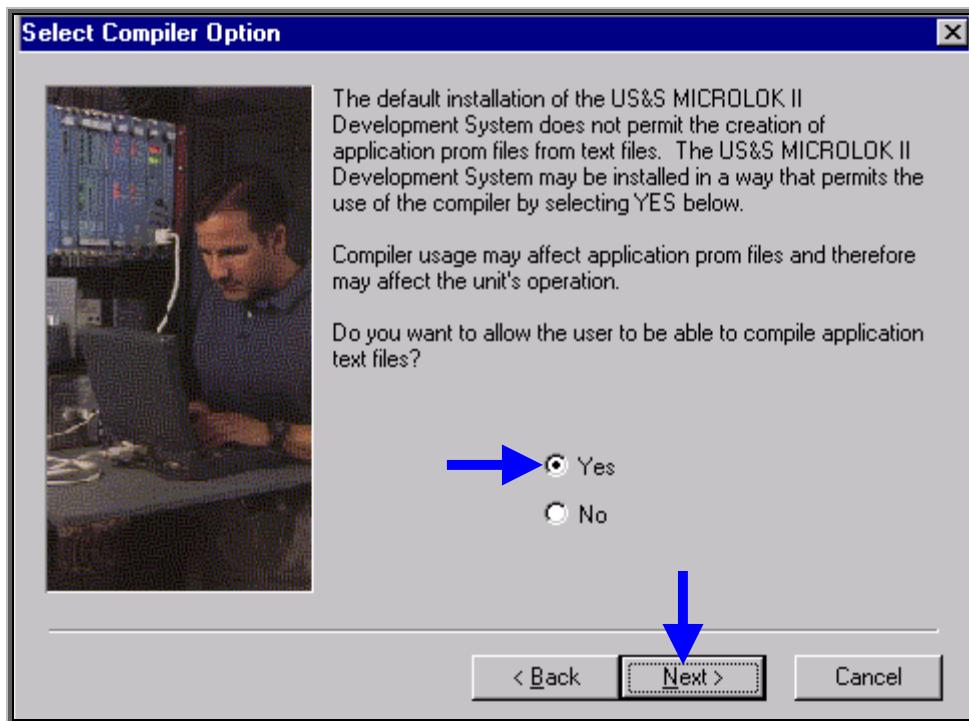


Figure-4.5

- ❖ Select “Yes” in the “Select Compiler Option” dialog box to compile application text files.
- ❖ Click the “Next>” button in the “Select Compiler Option” dialog box to proceed with the installation.
- ❖ This will present another window as shown in Figure-4.6.

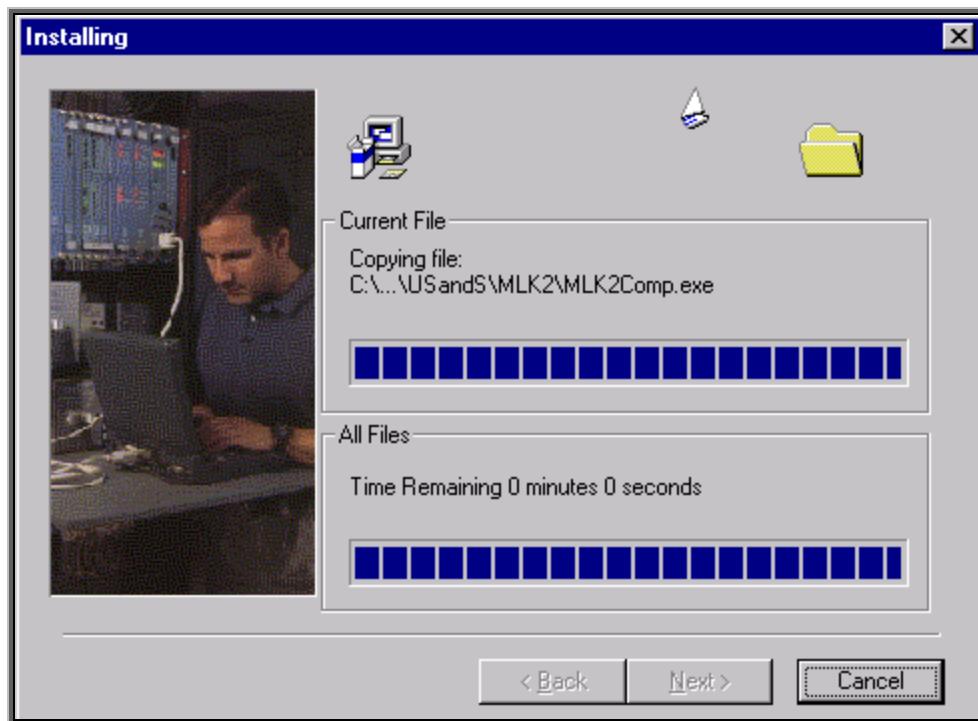


Figure-4.6

- ❖ The above window indicates that installation is in progress.
- ❖ After the completion of installation, another dialogue box will appear as shown in Figure-4.7.

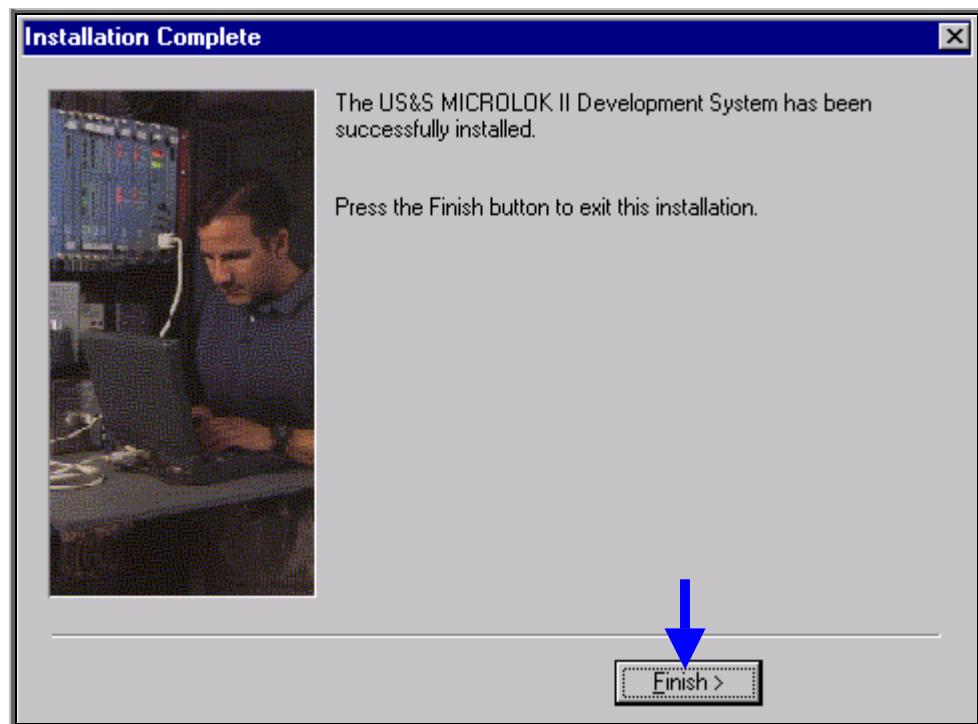


Figure-4.7

- ❖ Click the “Finish>” button in the “**Installation Complete**” dialog box to exit this installation.

Flow chart for MICROLOK II Maintenance Tools (4.01) installation

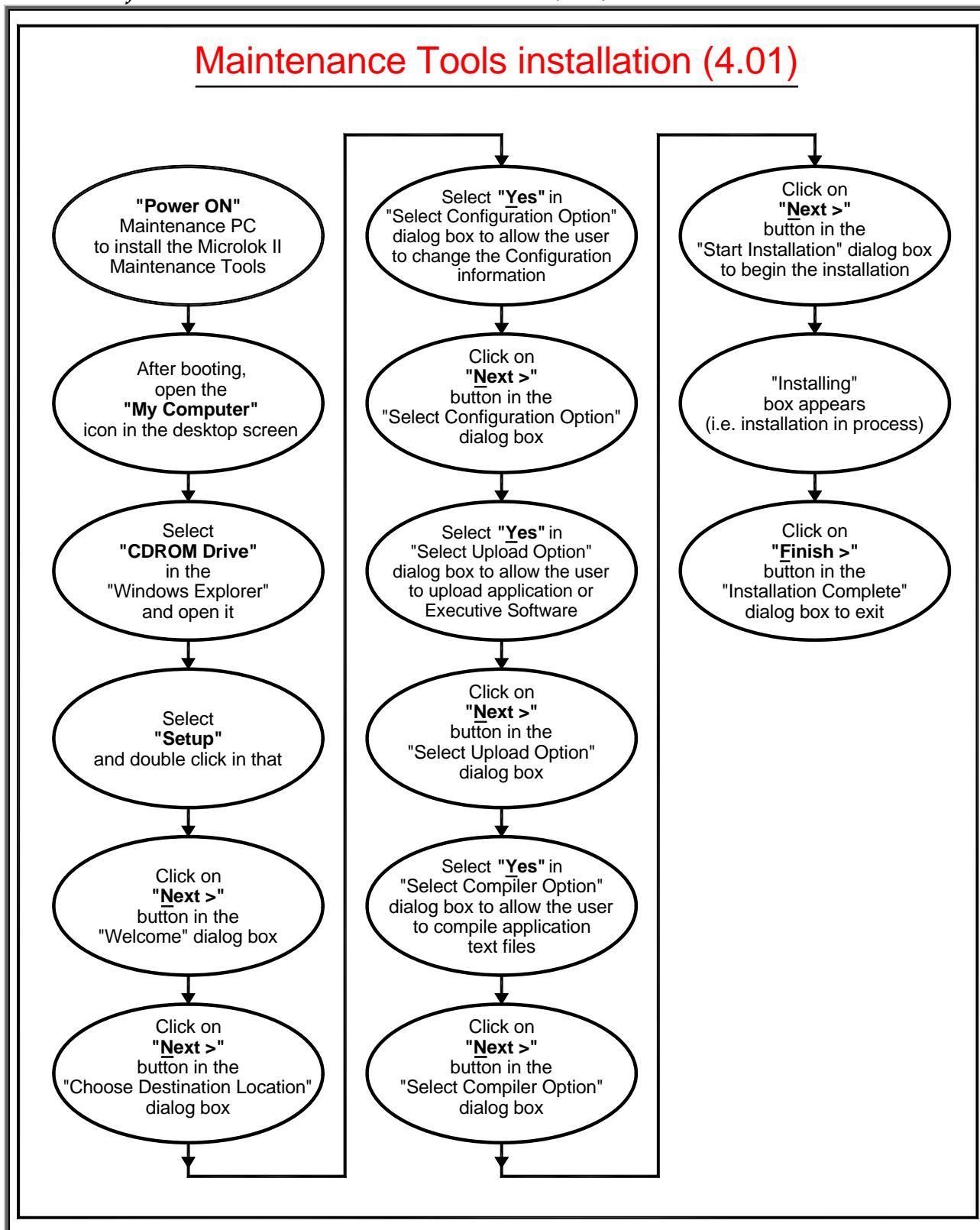


Figure-4.8

5. MICROLOK II MAINTENANCE TOOLS PROGRAM

5.1 INTRODUCTION

This section provides an overview of the Microlok II Maintenance Tools program and using this, maintenance personnel can perform the following.

- ❖ Viewing the current status of the Microlok II equipment and related systems.
- ❖ Reviewing stored system event and error data.
- ❖ Reconfiguring and resetting the system when necessary.
- ❖ The Maintenance Tools program provides these tools as selections on the Microlok II Maintenance Tools main menu, as shown in Figure 5-1.

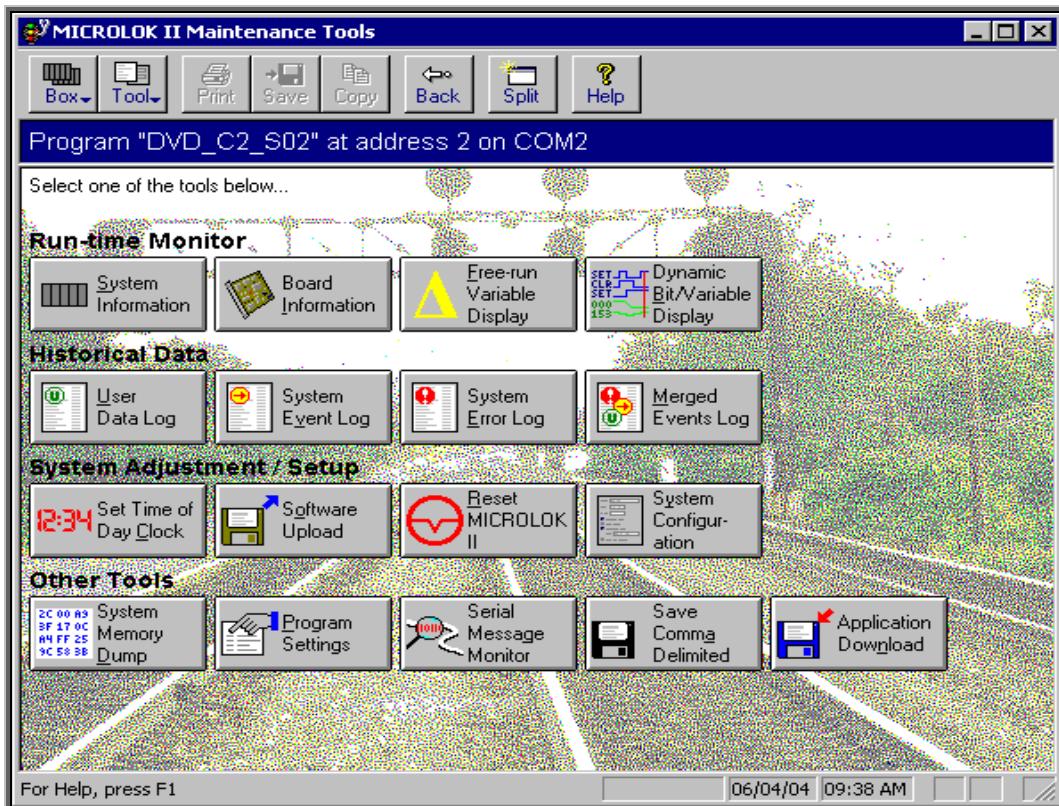


Figure 5-1

- ❖ The Maintenance Tools program main menu displays buttons as shown in Figure 5-1. These buttons activate the primary functions of the program.
- ❖ The selection of buttons are grouped into four main categories as follows:
 1. Run-time Monitor
 2. Historical Data
 3. System Adjustment/Setup

4. Other Tools

5.2 USING THE MAINTENANCE TOOLS PROGRAM

- ❖ The Microlok II Maintenance Tools program is a Windows-based program designed for use with either Microsoft Windows 95 or Microsoft Windows NT.
- ❖ Because Windows 95 and NT were chosen as the platforms for the program, the appearance and operation of the Tools program are similar to any other Windows-based application.
- ❖ Although this program can be used on any personal computer that has the Windows 95 or NT platform, the Tools program will be most frequently be used in the field during Microlok II system installation.
- ❖ This requires the use of a Maintenance PC.
- ❖ The Maintenance PC is linked to the Microlok II installation CPU board through an RS-232 serial connection.

CAUTION

TO AVOID POSSIBLE DAMAGE TO THE DIAGNOSTIC COMPUTER WHEN CONNECTED TO THE MICROLOK II CARD FILE, IT IS RECOMMENDED THAT, IF THE POWER SUPPLY OF THE DIAGNOSTIC COMPUTER IS CONNECTED TO AN AC POWER SOURCE, THE POWER SOURCE BE ISOLATED FROM EARTH GROUND BY WAY OF A 3-PRONG TO 2-PRONG ADAPTER.

5.2.1 Maintenance Tools Program Screen Components



Figure-5.2.1

- ❖ To load the Microlok II Maintenance Tools program, double click on the Tools program icon on the Windows desktop.
- ❖ The Maintenance Tools main menu (Figure 5-1) will appear after the program completes loading.
- ❖ This display provides user access to all of the tools and control functions associated with the program.
- ❖ When clicked on the “Box” button in the upper left hand corner of the tool bar, a pull-down menu appears that provides access to the Tools program communication control functions as shown in Figure-5.2.1.1

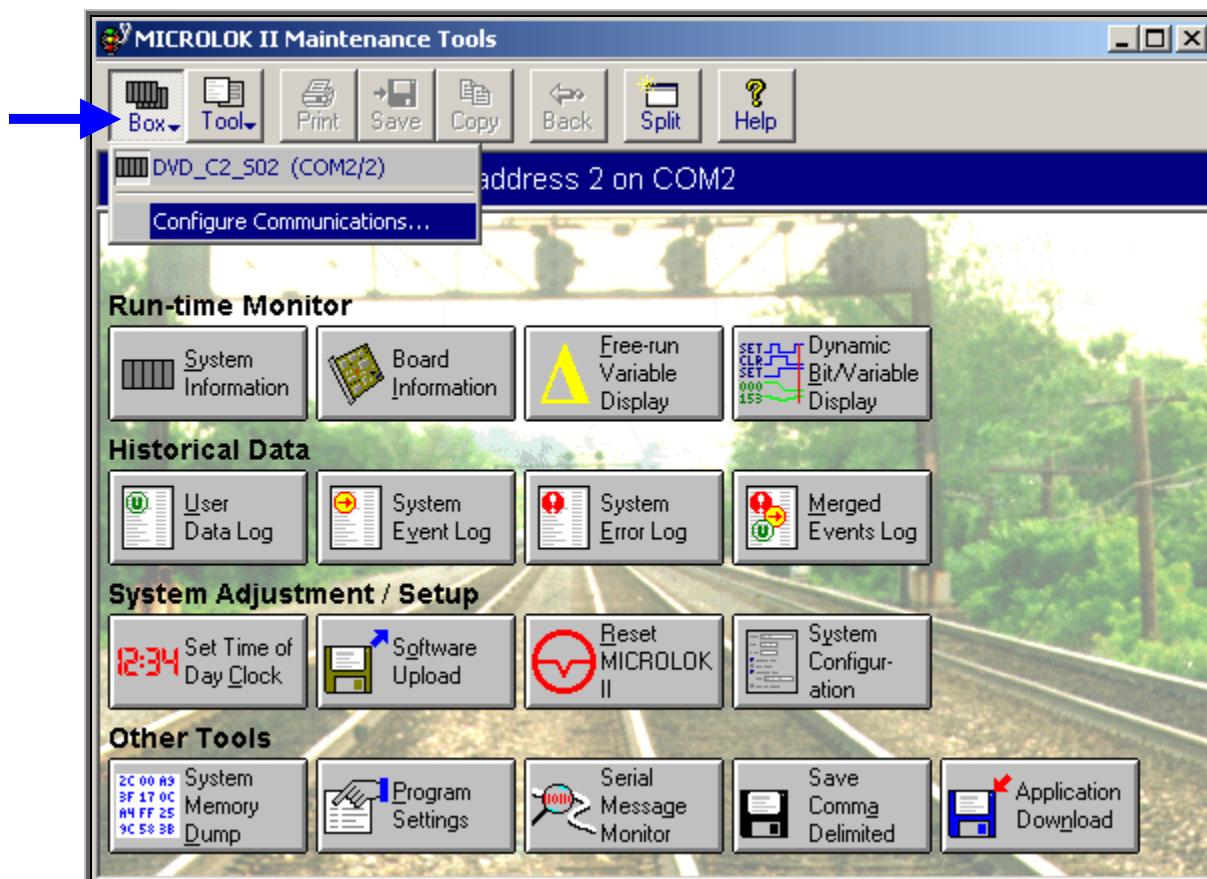


Figure-5.2.1.1

- ❖ The “Configure Communications...” option enables to configure the baud rate and the Maintenance PC port (COM1/COM2).
- ❖ Once a PC serial port has been configured and successfully linked to a Microlok II CPU, a selectable listing for the connection is shown in the “Box” pull-down menu.
- ❖ This listing includes the application program name and the associated PC serial port designation.

5.2.2 Flow Diagram of Configure Communications

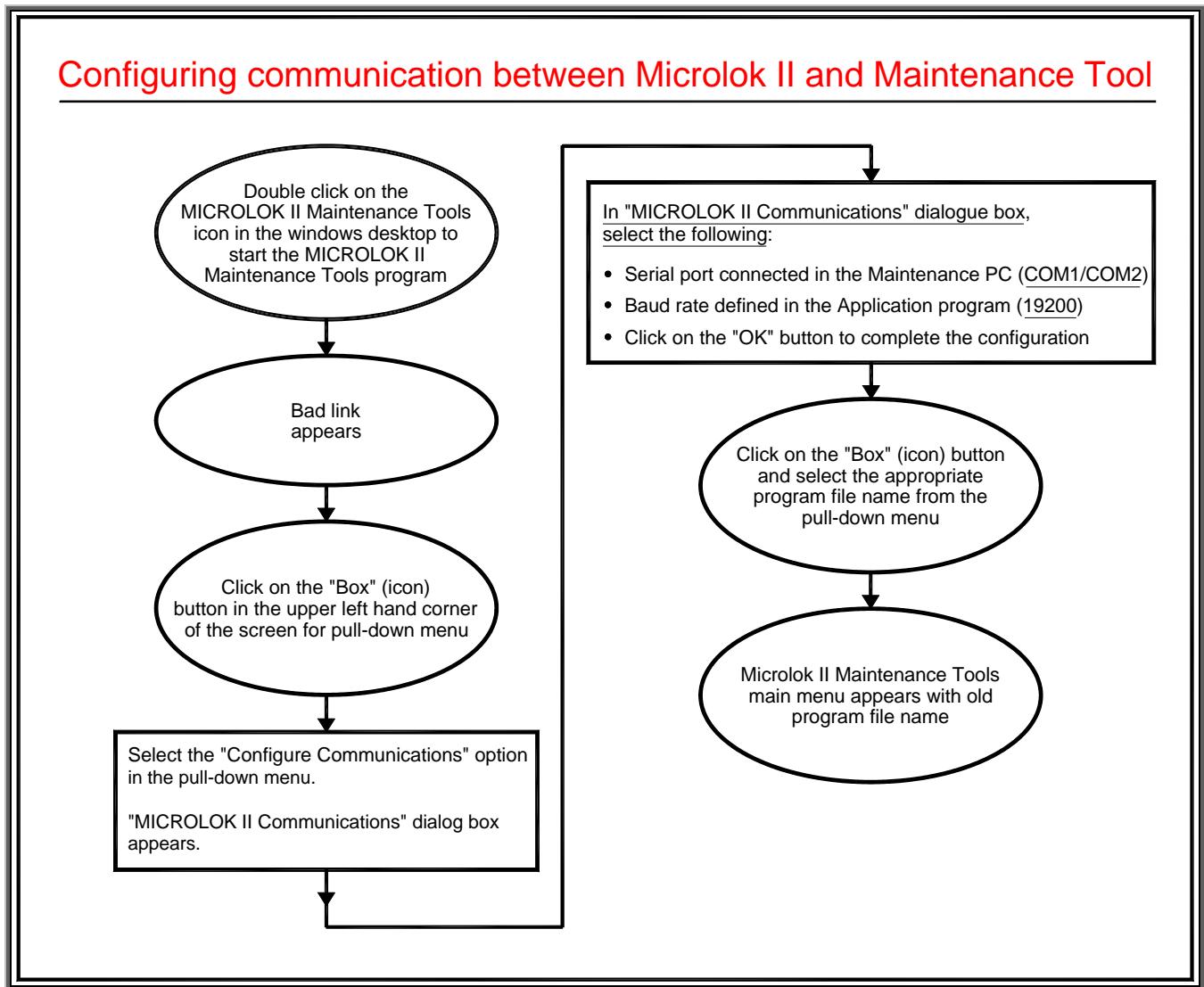


Figure-5.2.2

5.3 SYSTEM INFORMATION DISPLAY

- ❖ The system information display is used to view the most recent occurrence of significant system events recorded in the system adjustment table.
- ❖ System information is one of the four Run-time Monitor maintenance tools on the main menu.
- ❖ This group of tools enables to view the current status of equipment and related systems.
- ❖ The system information display lists the time and date when the following types of events last occurred:

- System resets
 - System errors
 - Unit configuration
 - Clearing of the system log clear
 - Clearing of the user data log clear
 - Time changes
 - Clearing of conditional power supply (CPS) trips
- ❖ Since some of these events occur infrequently, the displayed date also includes the year in which the associated event occurred.
 - ❖ The advantage of using the system information display to review recent events instead of search through a long list of events and error messages in the Event Log to find the most recent occurrence of a particular event.
 - ❖ If more than a brief description of a single event is required, access the information using a more detailed display such as the User Data Log, the Event Log, or the Error Log.
 - ❖ To view system events on the system information display, click on the “**System Information**” button on the Maintenance Tools main menu (Figure-5.3.1).
 - ❖ A typical System Information display is shown in Figure-5.3.2.

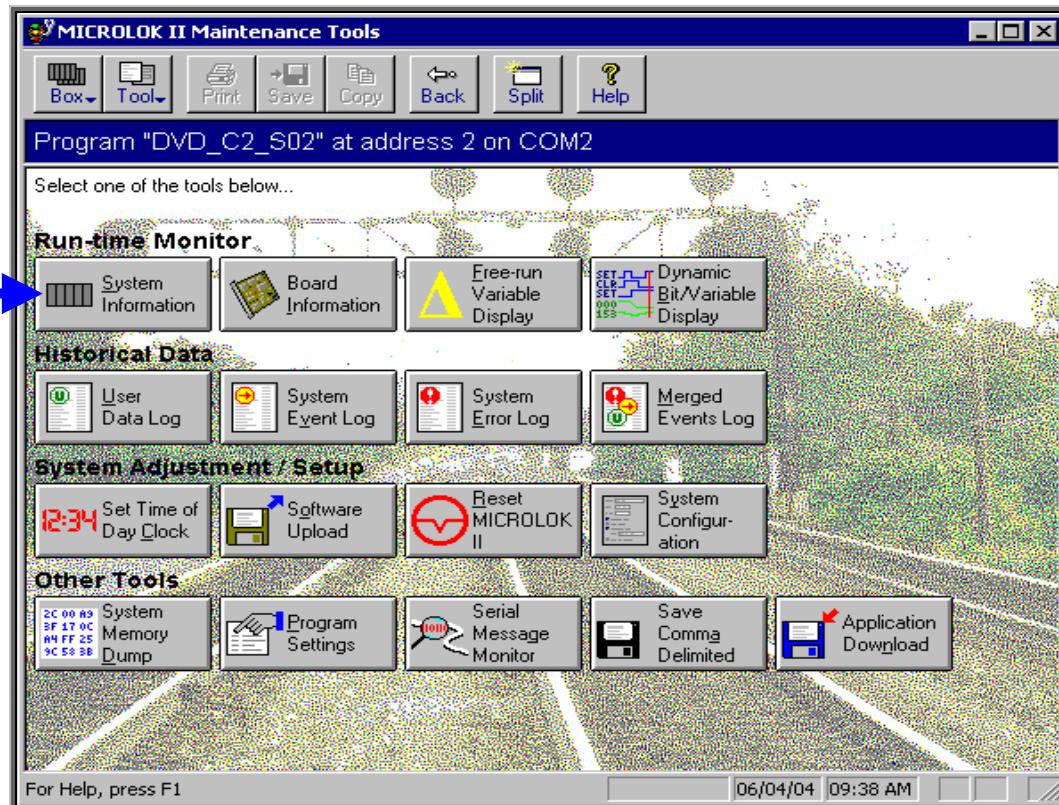


Figure-5.3.1

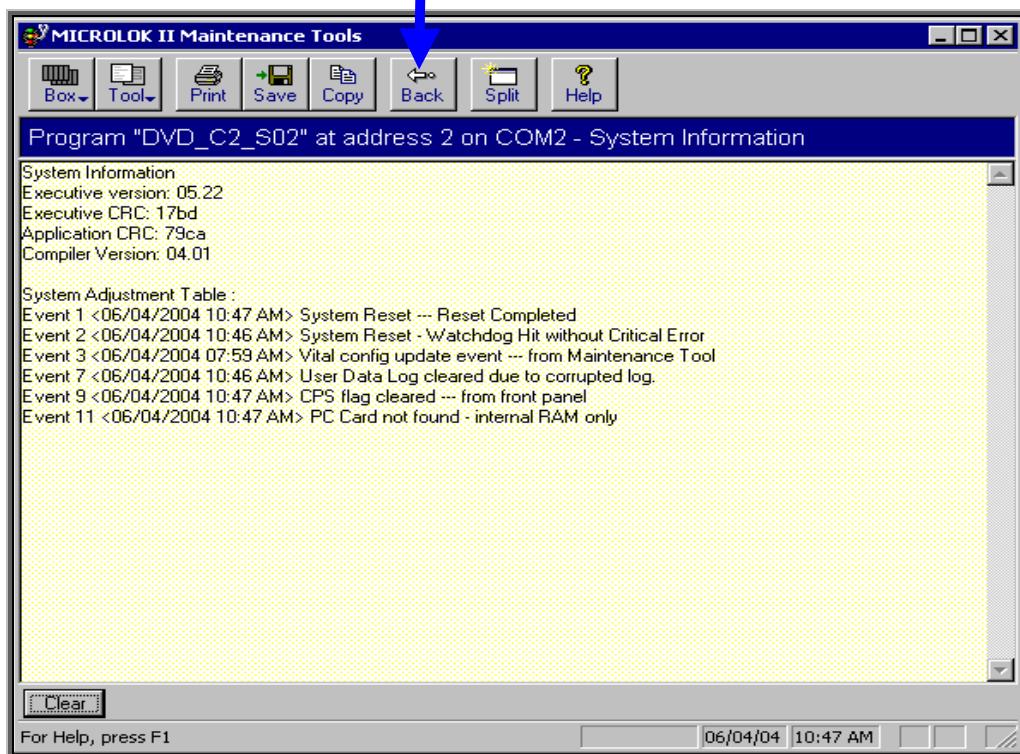


Figure-5.3.2

- ❖ The window in Figure-5.3.2 displays data about an operating Microlok II and its application.
 - ◆ Executive software version, executive Cyclic Redundancy Check (CRC), application CRC and compiler version.
 - ◆ System adjustment table consisting of the event number, event occurred time and the event description.
 - ◆ There are 12 possible events for this view.
 - ◆ To return to the Maintenance Tools main menu from this display, click on the “**Back**” button on the tool bar.

NOTE

The Clear button (lower left hand corner) does actually clear the display screen and send a clear message to the MICROLOK II unit. The data may be the same as before the clear because the data is polled every 500 milliseconds, for example, the data has not changed.

5.4 VIEWING CIRCUIT BOARD STATUS

- ❖ The board information tool enables to view the current status of each enabled printed circuit board and active serial communication link in the Microlok II cardfile.
- ❖ The information presented in the display for each board type is dynamically updated.
- ❖ To view the status of a Microlok II printed circuit board or serial communication link, click on the “**Board Information**” button on the Maintenance Tools main menu (Figure-5.4.1).

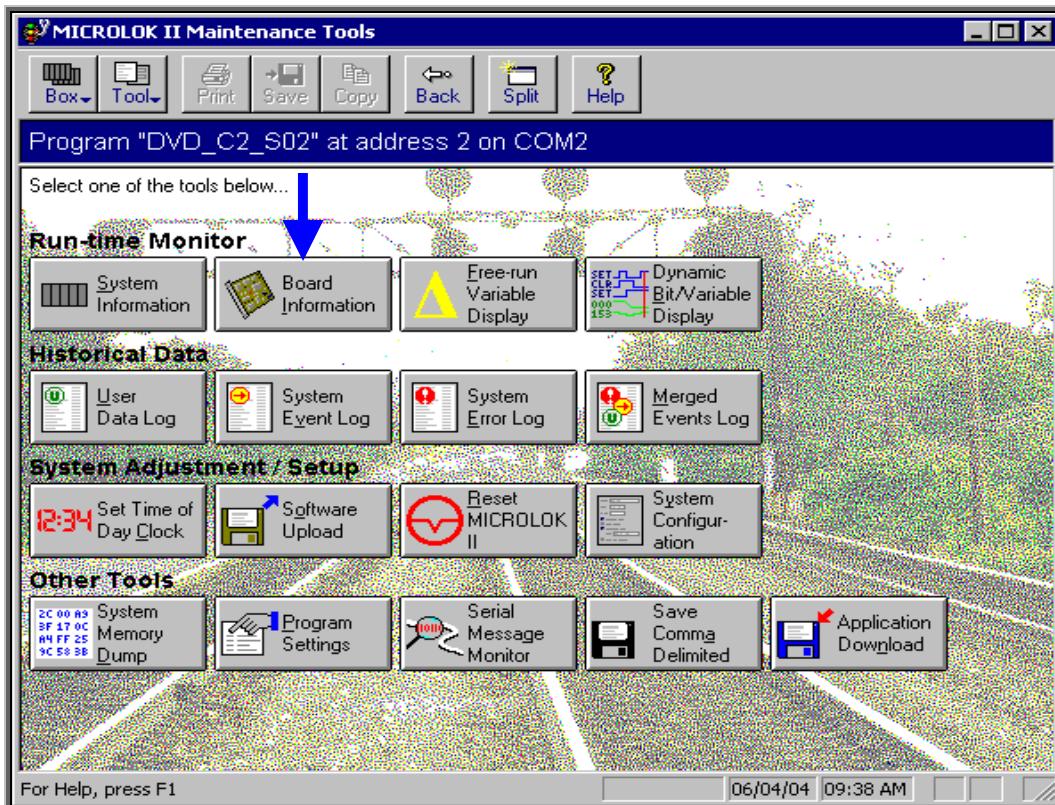


Figure-5.4.1

- ❖ The circuit board and serial communication links selection display appears as shown in Figure-5.4.2.

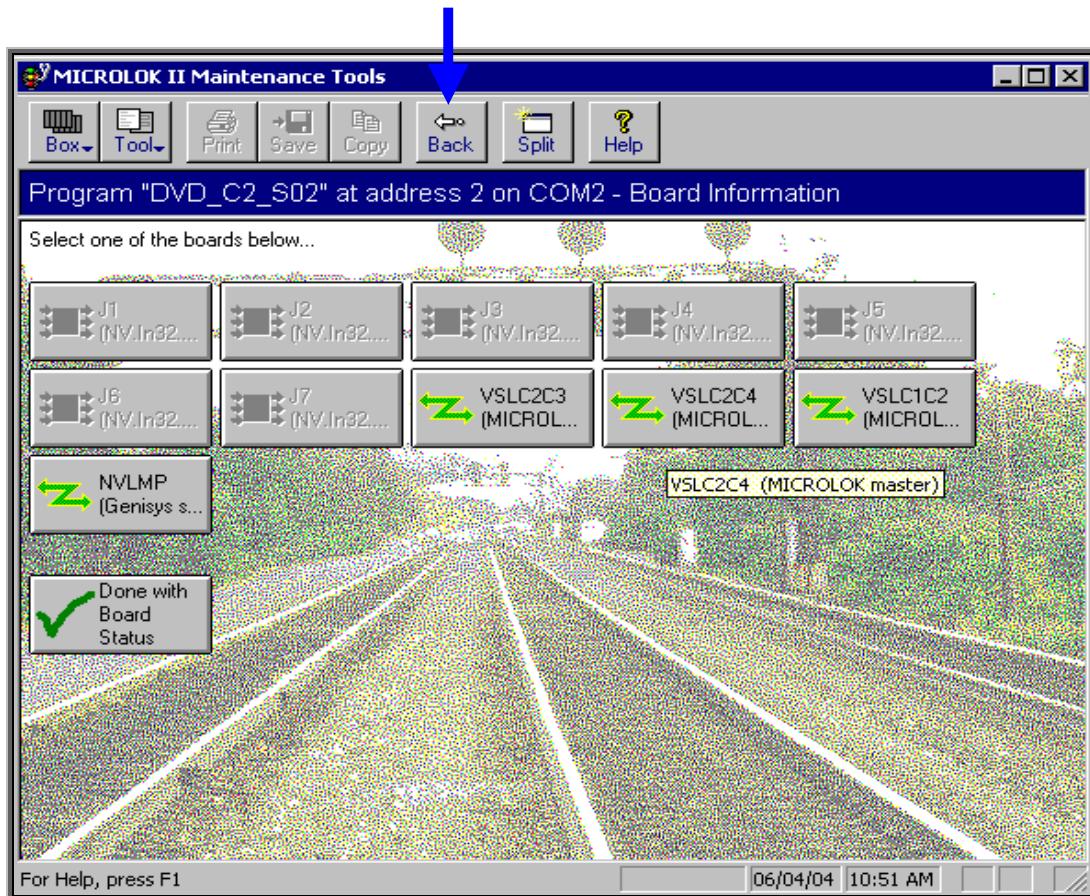


Figure-5.4.2

- ❖ This display contains a selection button for each printed circuit board & serial communication links that is installed in the Microlok II cardfile, and is properly defined and enabled in the application program.
- ❖ To select a circuit board and view the real-time status of the board, just click on the appropriate selection button on the display. The printed circuit board status display will appear on the screen.
- ❖ If all links and boards are disabled, no buttons will appear.
- ❖ Boards and links are enabled during the configuration process.
- ❖ To return to the Maintenance Tools main menu from this display, click on the “Back” button on the tool bar.

NOTE
In this display, boards and links can NOT accessed and it can only be viewed.

5.5 VIEWING SYSTEM VARIABLE AND BIT INFORMATION

5.5.1 INTRODUCTION

- ❖ There are two tools included on the Maintenance Tools main menu that enable to view the real-time status of Microlok II system variables.
- ❖ These are the “*Free-running Variable Display*” and the “*Dynamic Bit/Variable Display*”.
- ❖ These two displays provide the same information in different ways.
- ❖ The *Free-running Variable Display* presents the status information in a text mode, while the *Dynamic Bit/Variable Display* represents the indications graphically.

5.5.2 FREE-RUN VARIABLE DISPLAY

- ❖ To view system variables in the text mode, click on the “**Free-run Variable Display**” button on the Maintenance Tools main menu (Figure-5.5.2.1).

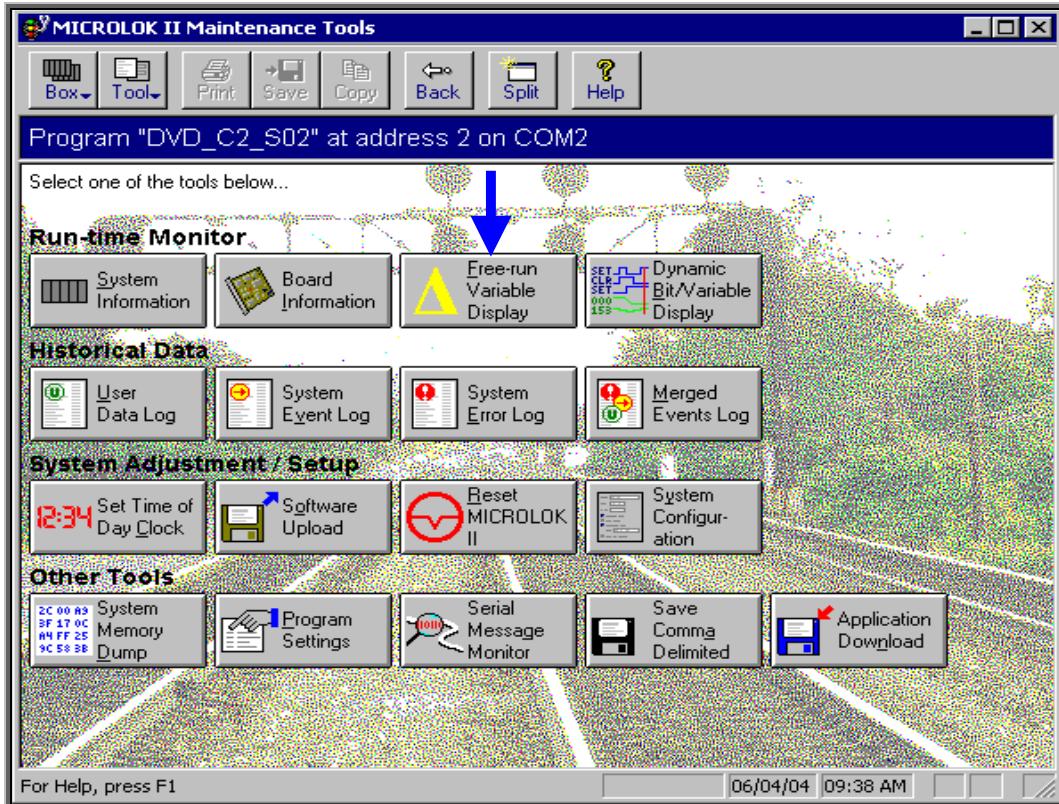


Figure-5.5.2.1

- ❖ The free-running variable display (a typical display is shown in Figure-5.5.2.2) provides a list of system variables with a text-based description of each variable's current status.

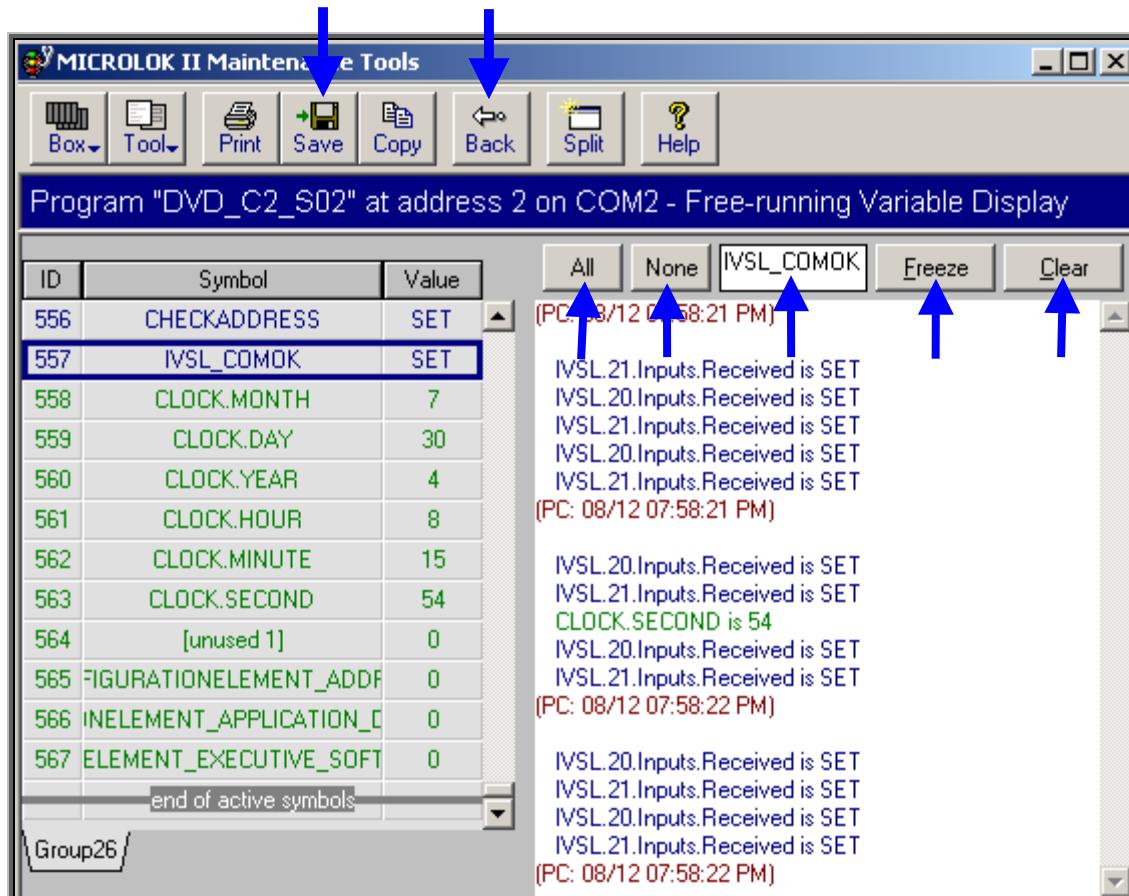


Figure-5.5.2.2

- ❖ The user specifies which variables are to be monitored. There are three ways to do this:
- ❖ Click on the “All” button. The system moves all of the listed variables to a point above the “**end of active symbols**” line. Any variables listed above this line are monitored and dynamically updated by the program; variables listed below this line are not dynamically updated.
- ❖ Click on the “None” button. The system moves all of the listed variables to a point below the “**end of active symbols**” line. Use this option when user want to start a new list of monitored variables.
- ❖ Move individual variables or blocks of variables to a point above the “**end of active symbols**” line. There are a number of ways to do this:
 - ◆ Double-click on a variable name.
 - ◆ Click on a variable name and drag the selection to a point above the “**end of active symbols**” line.
 - ◆ Click on a variable to highlight it. Next, hold down the <Ctrl> key as select additional variables that wish to move at the same time. Finally, drag one of the highlighted variables above the “**end of active symbols**” line.

- ◆ Click on a variable name to highlight it as the beginning of a block. Next, hold down the <Shift> key as highlight another variable for the end of the range. (All of the variables in between become highlighted as well). Finally, drag one of the highlighted variables above the “**end of active symbols**” line.
 - ◆ Click on the “text” box next to the “**None**” button. Type in the first part of the variable name desired. The tool will find the closest match to the typed-in name. Finally, click on the variable name and drag the selection to a point above the “**end of active symbols**” line, or simply double-click on the variable name.
 - ◆ Blue rectangle represents a selected symbol.
 - ◆ The variable list can be stored by ID or Symbol.
 - ◆ The user has the choice to save the text listing to a continuous log file or current buffer file by using “**Save**” button.
- ❖ The “**Freeze/Resume**” and “**Clear**” buttons at the top of the window affect the displayed data for all of the monitored variables:
 - ❖ “**Freeze**” enables to stop the data for all variables from updating. This feature gives a snapshot of the variable status. After paused the display, the “**Freeze**” pushbutton changes to “**Resume**”. Then click on the “**Resume**” button to resume the dynamic updating of the variable data.
 - ❖ “**Clear**” removes all of the currently displayed information from the screen and restarts the updating process. The selected variables in the list remain unchanged.
 - ❖ To return to the Maintenance Tools main menu from Free-running Variable Display, click on the “**Back**” button on the tool bar.

5.5.3 DYNAMIC BIT VARIABLE DISPLAY

- ❖ To view system variables in the graphic mode, click on the “**Dynamic Bit/Variable Display**” button on the Maintenance Tools main menu (Figure-5.5.3.1).

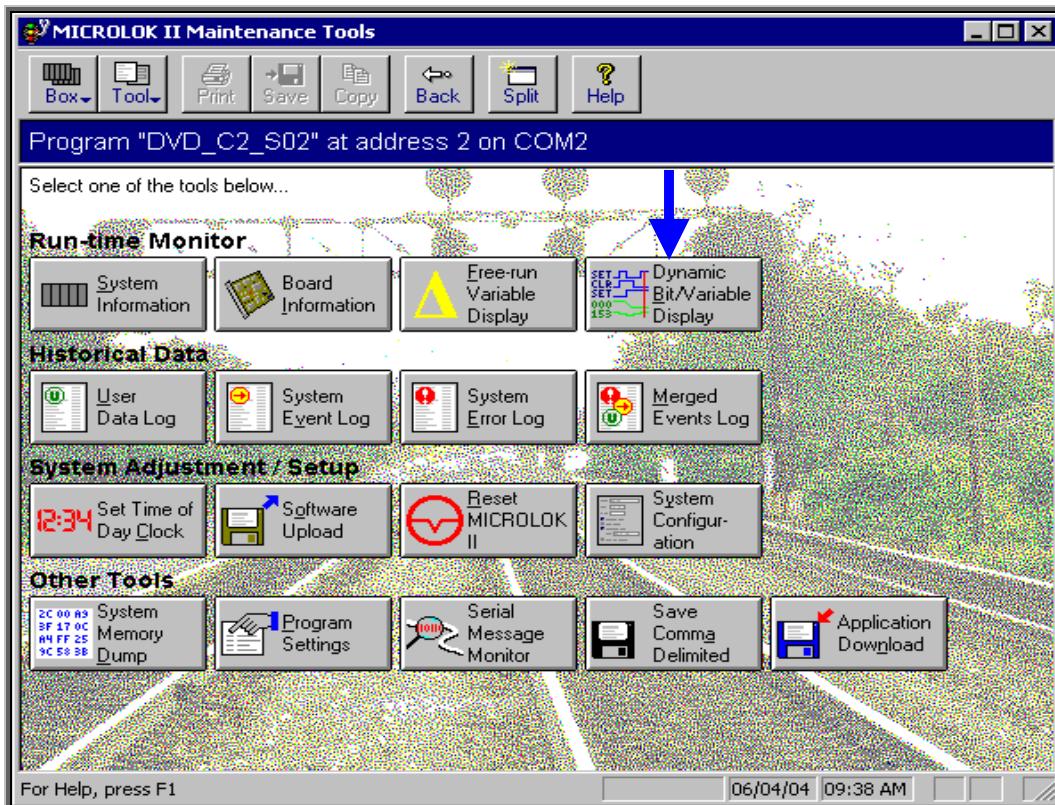


Figure-5.5.3.1

- ❖ A strip-chart view of bit and variable changes in real time is displayed in Figure-5.5.3.2.

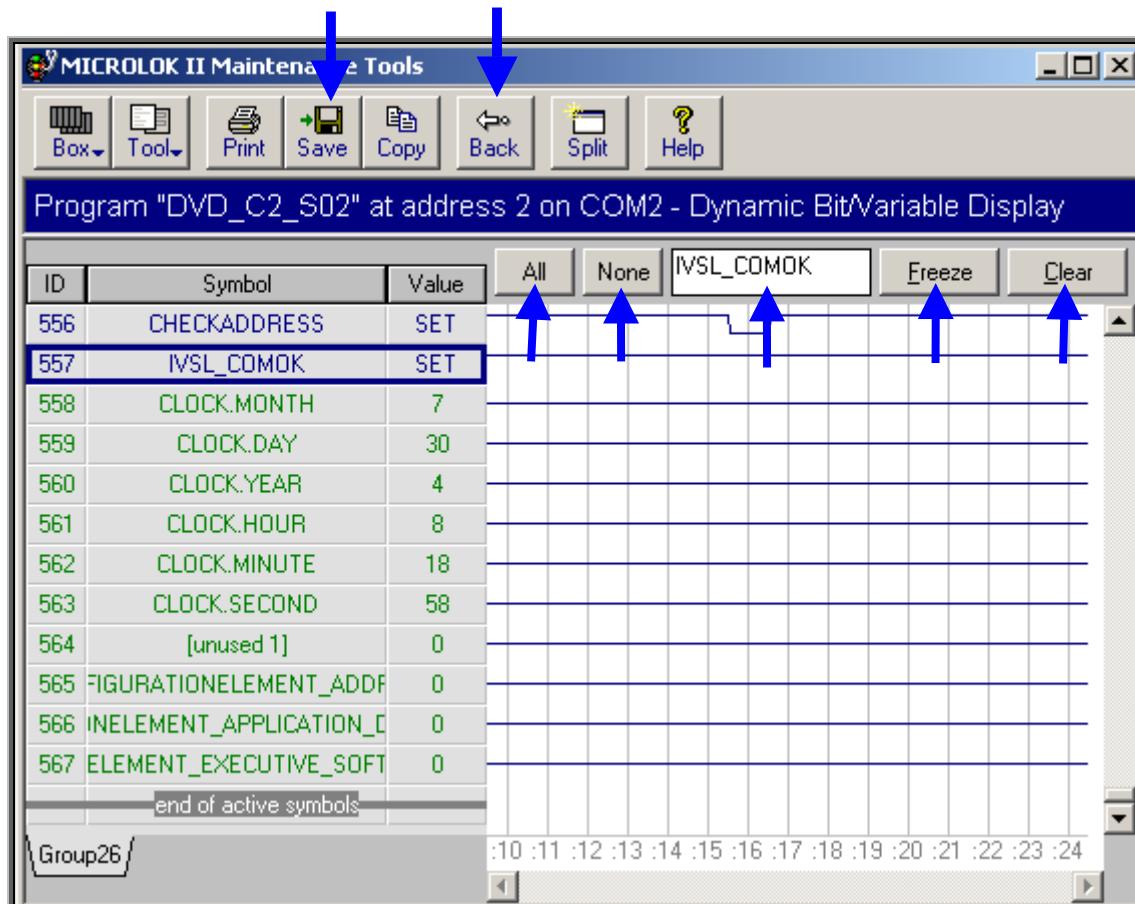


Figure-5.5.3.2

- ❖ The user specifies which variables are to be monitored. There are three ways to do this:
- ❖ Click on the “All” button. The system moves all of the listed variables to a point above the “**end of active symbols**” line. Any variables listed above this line are monitored and dynamically updated by the program; variables listed below this line are not dynamically updated.
- ❖ Click on the “None” button. The system moves all of the listed variables to a point below the “**end of active symbols**” line. Use this option when user want to start a new list of monitored variables.
- ❖ Move individual variables or blocks of variables to a point above the “**end of active symbols**” line. There are a number of ways to do this:
 - ◆ Double-click on a variable name.
 - ◆ Click on a variable name and drag the selection to a point above the “**end of active symbols**” line.
 - ◆ Click on a variable to highlight it. Next, hold down the <Ctrl> key as additional variables that are required to be moved at the same

are selected. Finally, drag one of the highlighted variables above the “**end of active symbols**” line.

- ◆ Click on a variable name to highlight it as the beginning of a block. Next, hold down the <Shift> key as another variable for the end of the range is highlighted. (All of the variables in between become highlighted as well). Finally, drag one of the highlighted variables above the “**end of active symbols**” line.
- ◆ Click on the “text” box next to the “None” button. Type in the first part of the variable name desired. The tool will find the closest match to the typed-in name. Finally, click on the variable name and drag the selection to a point above the “**end of active symbols**” line, or simply double-click on the variable name.
- ◆ Blue rectangle represents a selected symbol.
- ◆ The variable list can be stored by ID or Symbol.
- ◆ The user has the choice to save the text listing to a continuous log file or current buffer file by pressing “Save” button on the tool bar.
- ❖ The “Freeze/Resume” and “Clear” buttons at the top of the display window affect the displayed data for all of the monitored variables:
- ❖ “Freeze” enables to stop the data for all variables from updating. This feature gives a snapshot of the variable status. After the display is paused, the “Freeze” pushbutton changes to “Resume”. Then click on the “Resume” button to resume the dynamic updating of the variable data.
- ❖ “Clear” removes all of the currently displayed information from the screen and restarts the updating process. The selected variables in the list remain unchanged.
- ❖ To return to the Maintenance Tools main menu from Dynamic Bit/Variable Display, click on the “Back” button on the tool bar.

5.6 VIEWING LOGGED INFORMATION

5.6.1 INTRODUCTION

- ❖ The Microlok II system logs and reports information in three classifications.
 1. Critical errors
 2. Warnings
 3. Events
- ❖ The Historical Data section of the Maintenance Tools main menu contains four tools that enable to review the logged system information in several ways:
- ❖ The user data log records only those events that the user specifies.

- ❖ The system event log records up to 5000 of the most recent critical errors, warnings, and events.
- ❖ The system error log records up to 50 of the most recent critical system errors.
- ❖ The merged events log enables to view errors, warnings, and events as in the system event log. This log also provides graphic displays of parameters and events as specified in the user data log.

NOTE

IN THE MAINTENANCE PC, **WEEKLY MAINTENANCE FOLDER TO BE MAINTAINED IN WHICH USER DATA LOG, EVENT LOG & ERROR LOG BACKUP TO BE DONE ON WEEKLY BASIS.**

5.6.2 VIEWING THE USER DATA LOG

- ❖ The user data log enables users to monitor a specifically chosen set of events.
- ❖ These events are assigned in the configuration section of the Tools program.
- ❖ The system then records in the log any state changes of the assigned events, along with the date and time that each state changes occurs.
- ❖ This log is capable of recording up to 90,000 of the most recent specified Boolean changes, or at least 64,000 Boolean and/or Numeric changes.
- ❖ To view the user data log, click on the “User Data Log” button on the Maintenance Tools main menu (Figure-5.6.2.1).

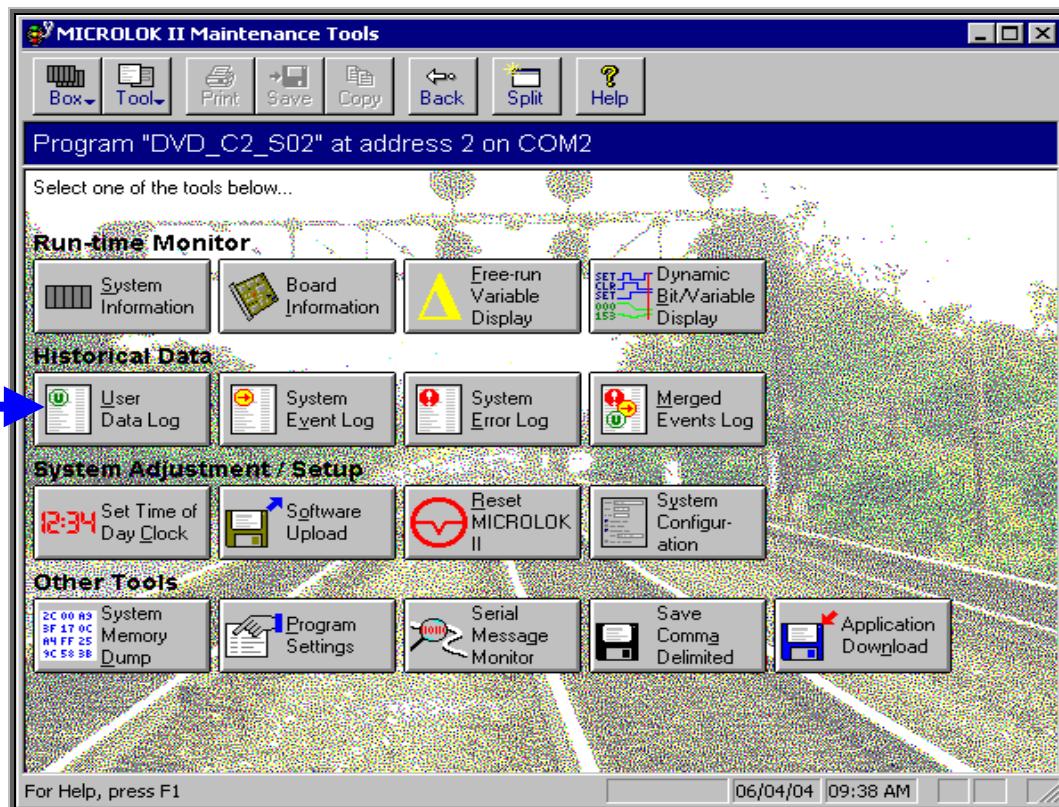


Figure-5.6.2.1

- ❖ The first screen allows the user to determine how much of the log to view. This window is shown in Figure-5.6.2.2.

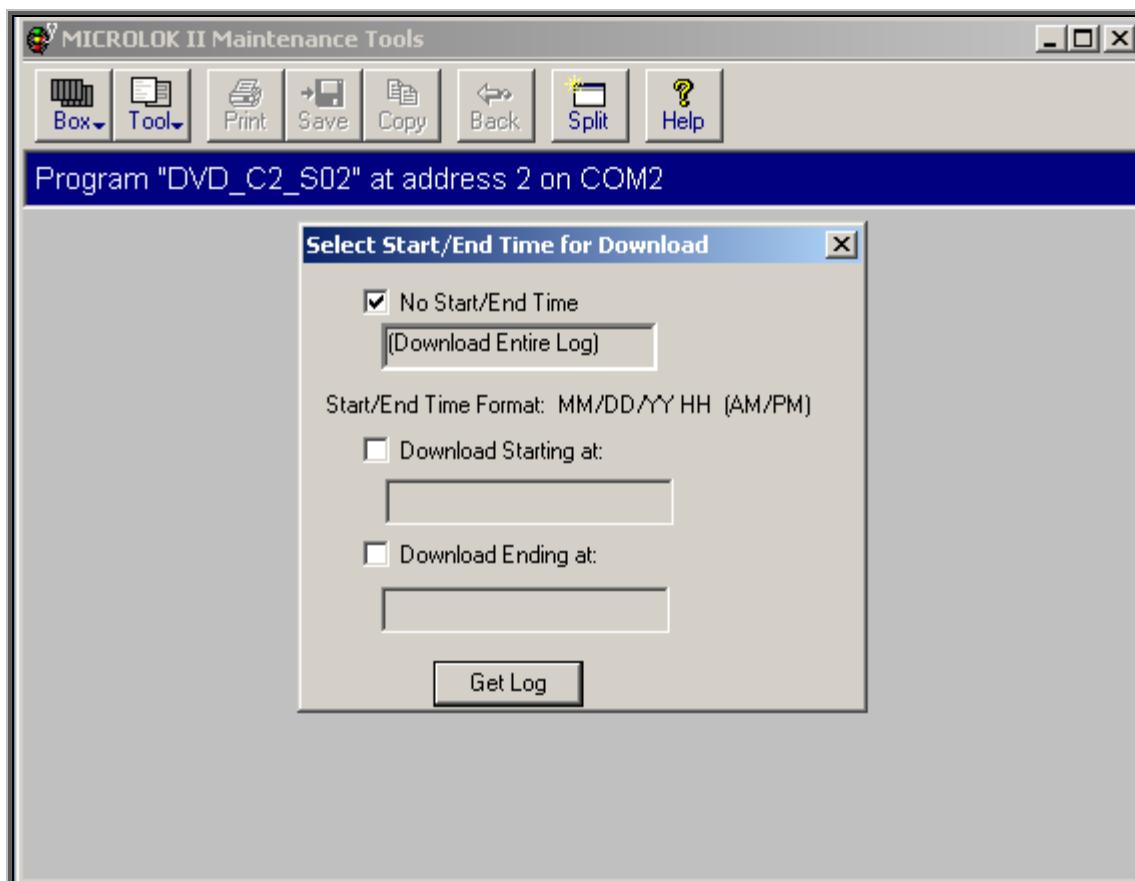


Figure-5.6.2.2

- ❖ “**No Start/End Time**” - Selecting this check-box will allow the user to download the entire log.
- ❖ “**Download Starting at**” - Selecting this check-box will allow the user to enter a starting date and time.
- ❖ “**Download Ending at**” - Selecting this check-box will allow the user to enter an ending date and time.
 1. If the user only specifies a start time, the user data log display will only show all user data log events from the start time to the end of the log.
 2. The entry of only an end time, then causes the user data log to only display events from the beginning of the log to the end time.
 3. If a user enters both a start and end time, the user data log will only display events within that range.
- ❖ Normally above 3rd method is prepared for downloading User Data Log (refer Figure – 5.6.2.3).
 - Select (✓) “**Download Starting at:**” check box.
 - Enter **MM/DD/YY HH AM or PM** (Example: 07/30/04 7AM).

- Select (✓) “Download Ending at:” check box.
- Enter **MM/DD/YY HH AM or PM** (Example: 07/30/04 8AM).

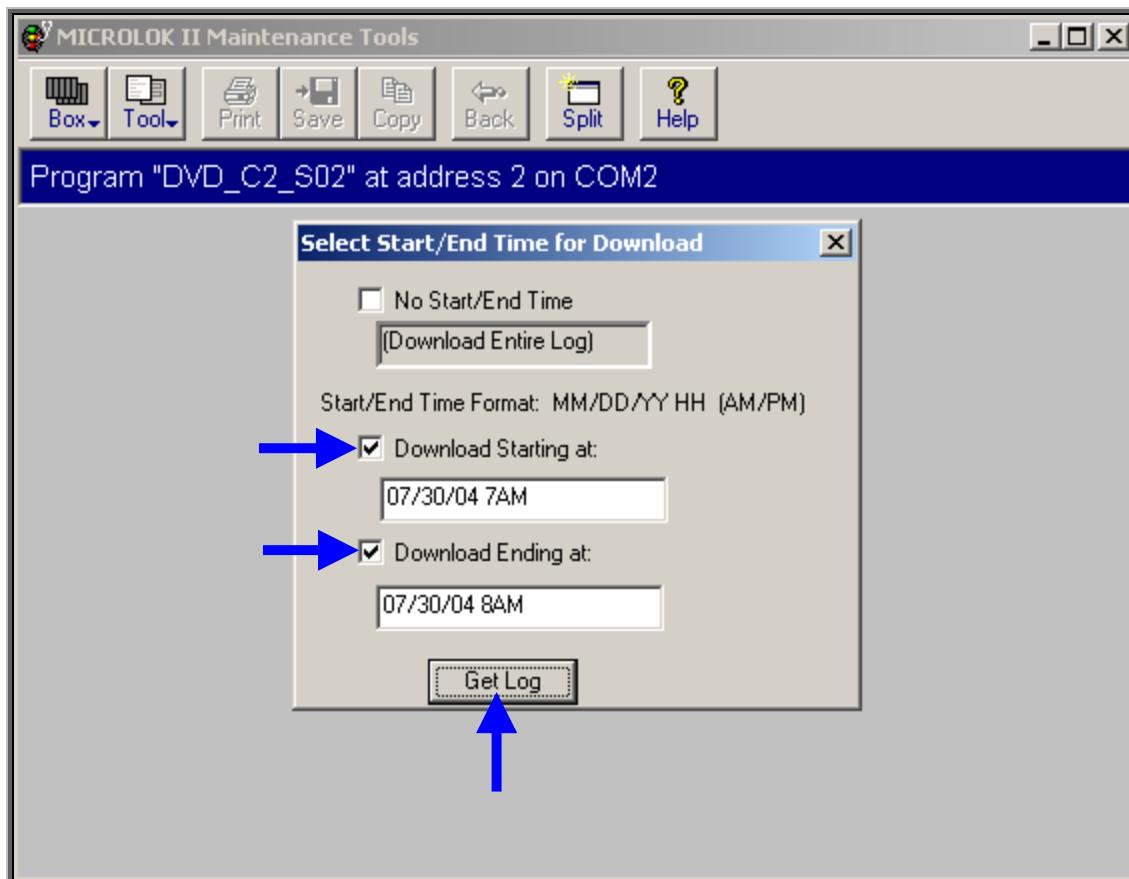


Figure-5.6.2.3

- ❖ After Starting & Ending time entered, click on the “**Get Log**” button in the above figure.

NOTE

STARTING & ENDING TIME SHOULD BE IN CORRECT FORMAT
OTHERWISE USER DATA LOG DOWNLOADING WOULD NOT START.

SYNTAX FOR THE DATE/TIME STRING:

Month (1 or 2 digits)/Date (1 or 2 digits)/Year (2 digits) Hour (1 or 2 digits) AM or PM (optional)

- ❖ User Data Log window appears as shown in Figure-5.6.2.4.

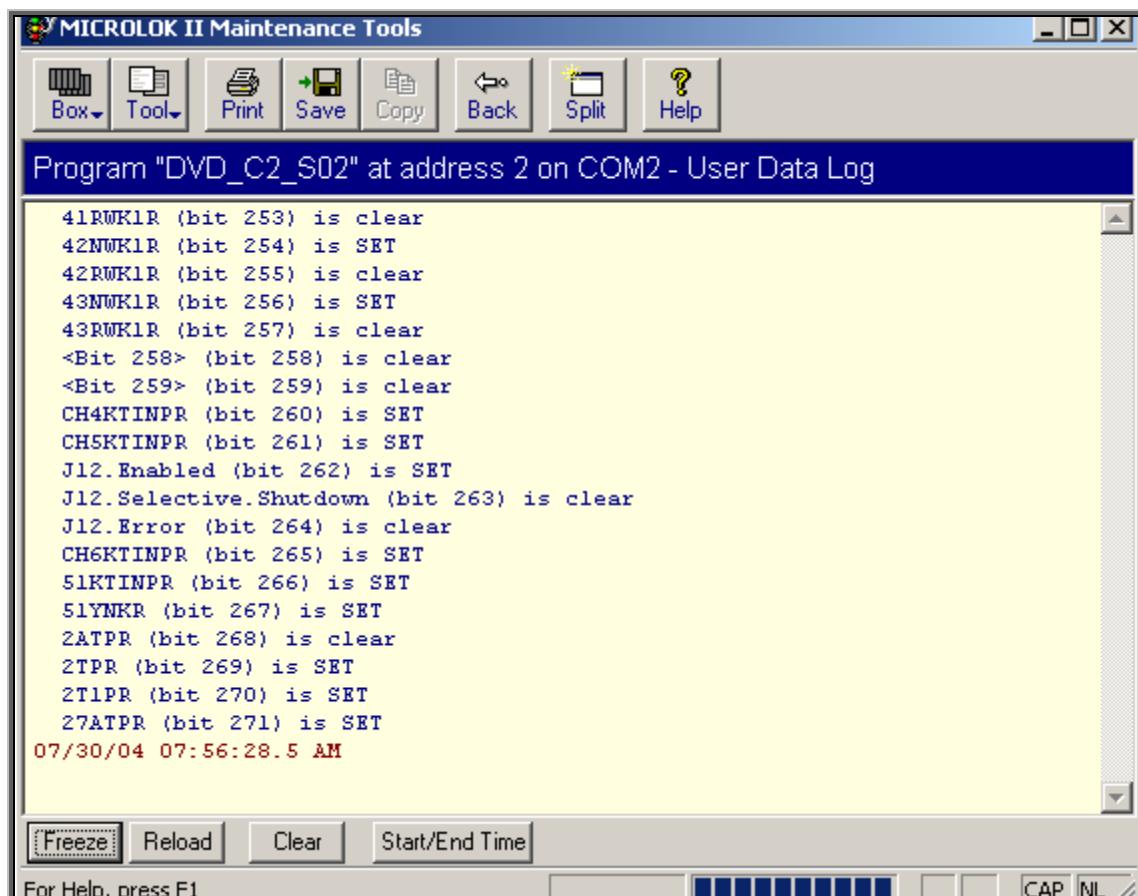


Figure-5.6.2.4

- ❖ The above window indicates user data is downloaded (i.e. from the start time).
- ❖ On completion of user data download (i.e. upto the specified end time), the following window appears (Figure-5.6.2.5).

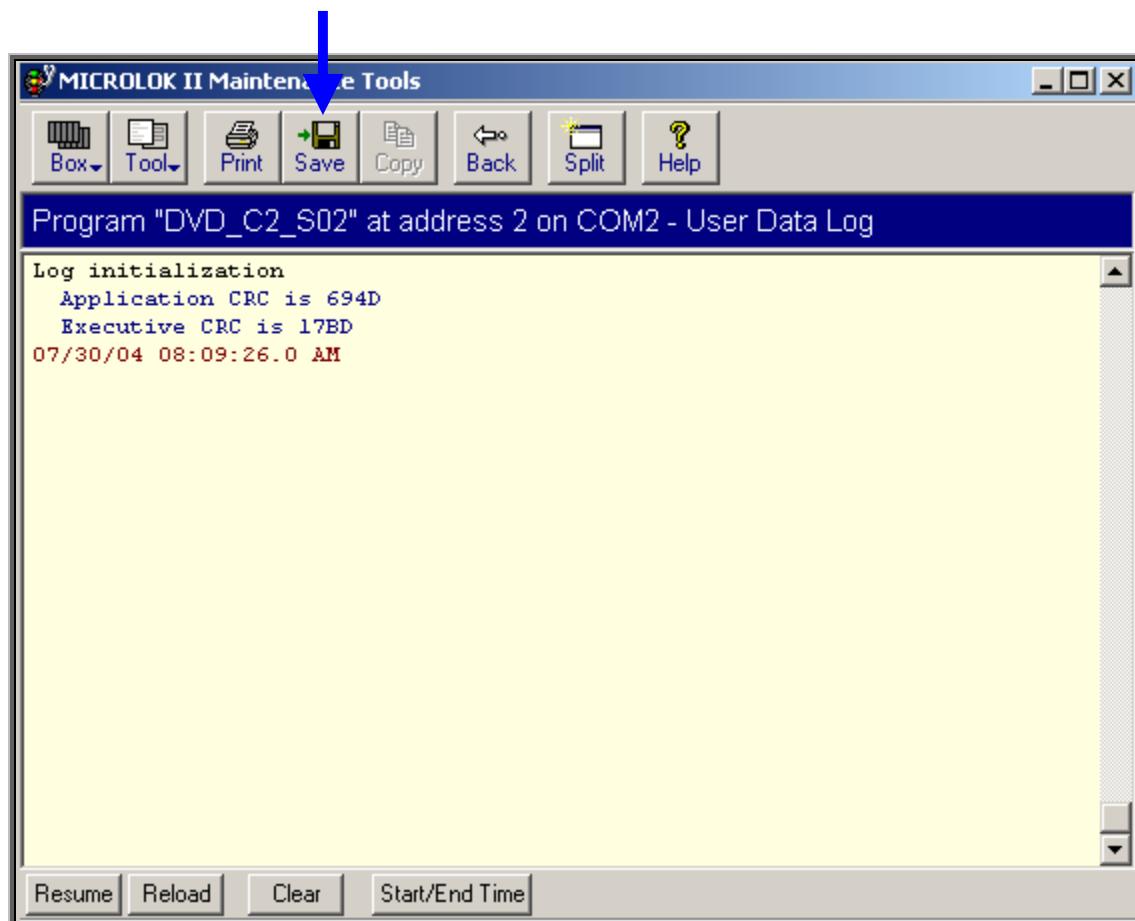


Figure-5.6.2.5

- ❖ The oldest entry always appears at the top of the list. All more recent entries scroll downward as they are retrieved from the Microlok II unit. The log will finish downloading when the most recent entry has been received.
- ❖ The user to save the User Data Log file in Maintenance PC “C” drive to click the “Save” button on the tool bar of User Data Log window.
- ❖ Mini active window “Save As” appears as shown in Figure-5.6.2.6.

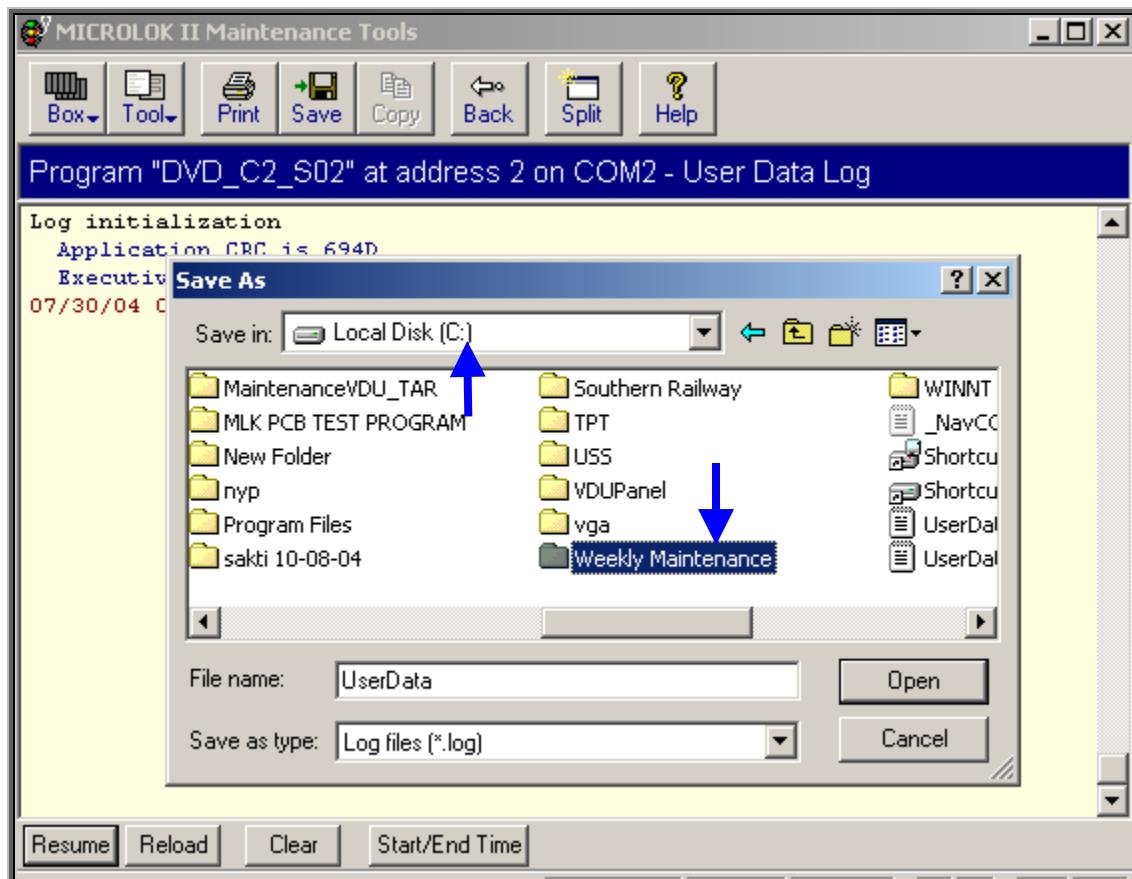


Figure-5.6.2.6

- ❖ Double click on the “Weekly Maintenance” folder in the Maintenance PC “C” drive (Figure-5.6.2.6).
- ❖ Sub folders User Data Log, System Event Log & System Error Log appear as shown in Figure-5.6.2.7.

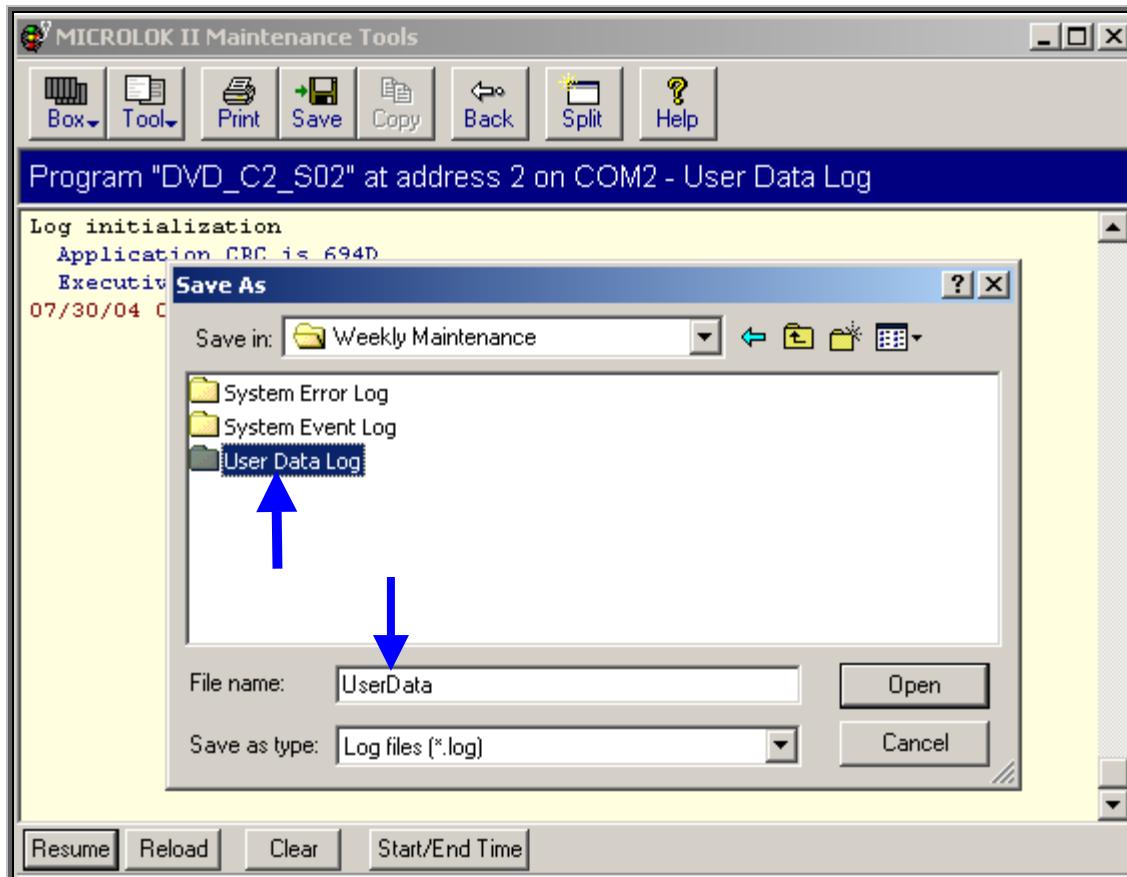


Figure-5.6.2.7

- ❖ Double click on the User Data Log folder in the above window.
- ❖ Rename the default file name “UserData” (refer figure-5.6.2.8).
- ❖ Example: – File name: **A2_30JULY04_08AM**

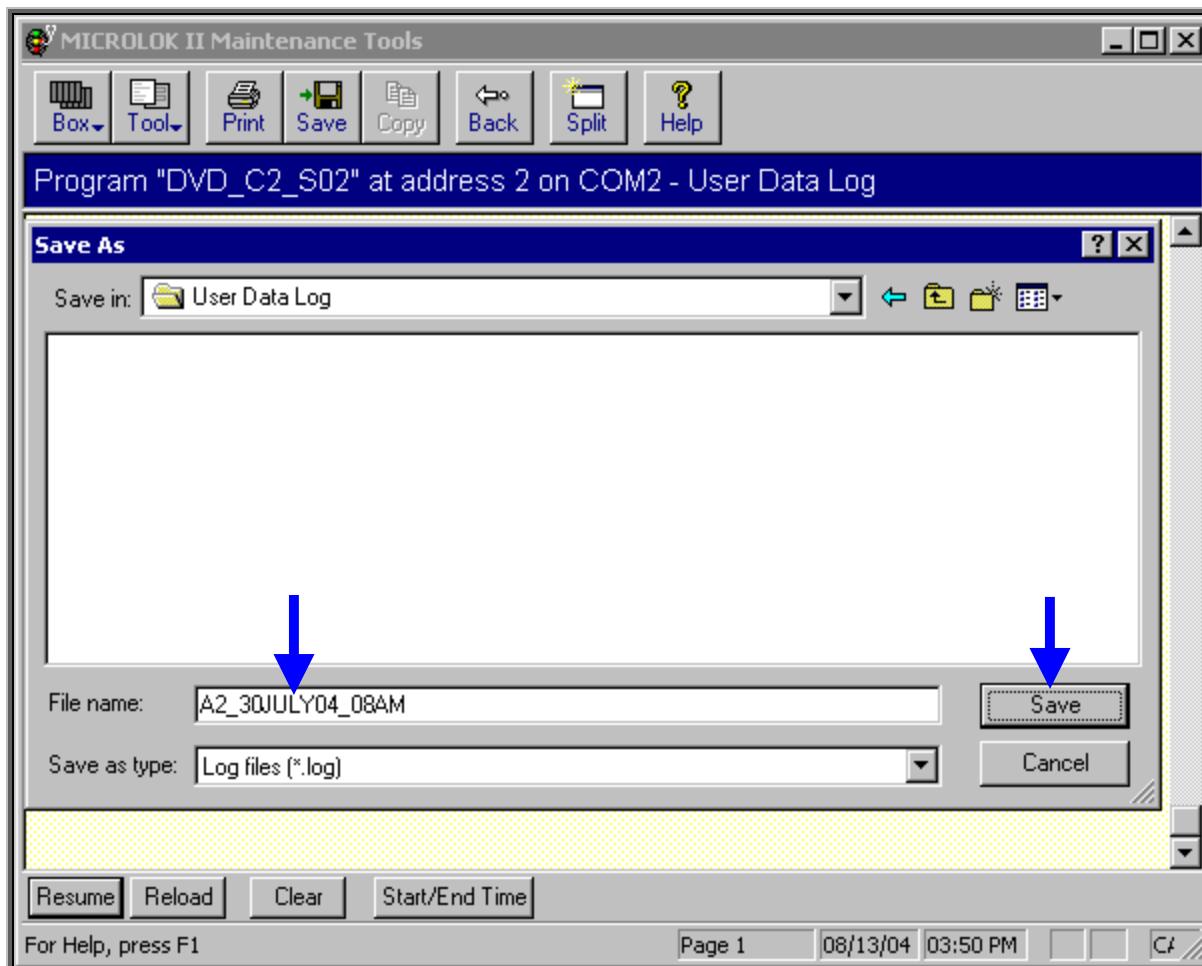


Figure-5.6.2.8

- ❖ Click on the “Save” button in the above window.
- ❖ The “Freeze/Resume, Clear, Reload and Start/End Time” buttons at the bottom of the display control the operation of the data logger (refer figure-5.6.2.9).
 - ◆ “Freeze” enables to pause while downloading data from the User Data Log. After the display is paused, the Freeze pushbutton changes to “Resume”. Then click on the “Resume” button to resume downloading data.
 - ◆ “Clear” removes all of the currently recorded indications from the log and restarts the updating process. The selected events/variables in the list remain unchanged.
 - ◆ Before user can clear the log, the system issues a confirmation box to verify that user wants to remove the indications from the user data log.

- An example of the confirmation box is shown in Figure-5.6.2.9. Click on “Yes” to clear the log or “No” to return to the User Data Log display.

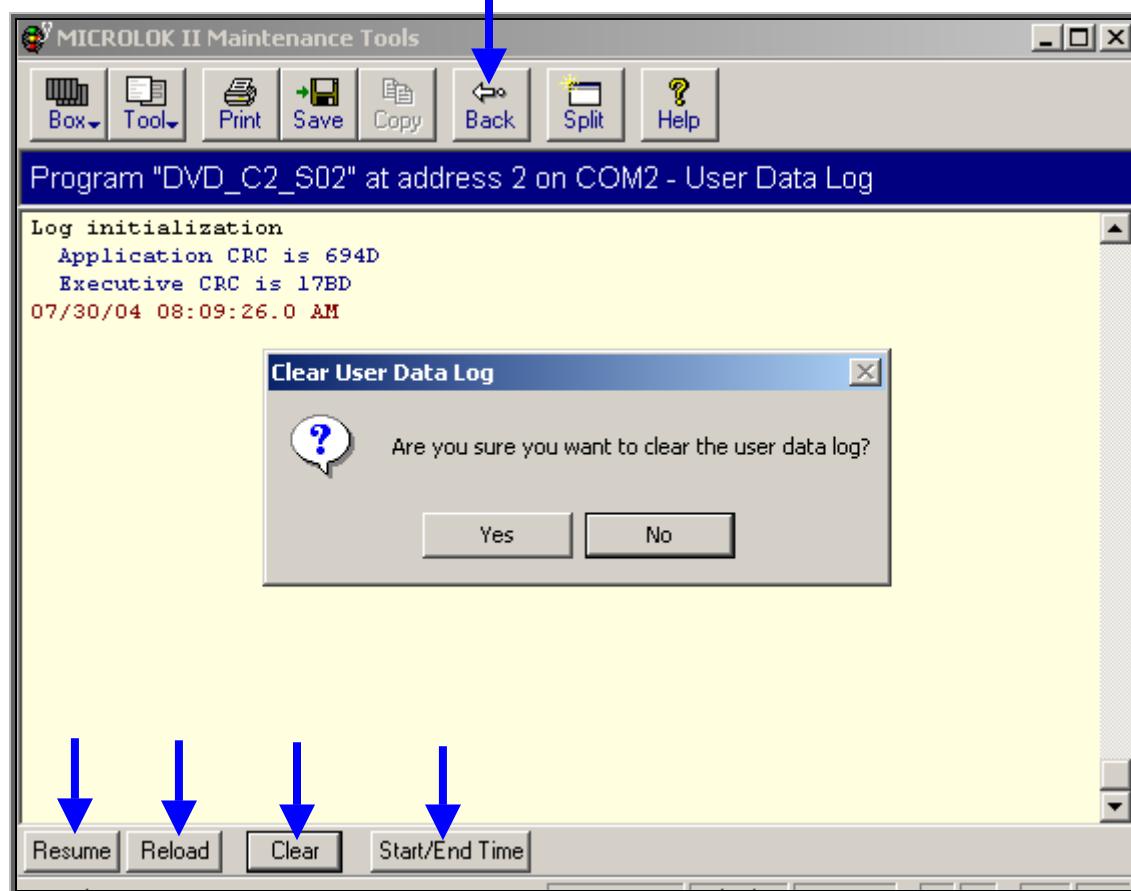


Figure-5.6.2.9

- “Reload” returns to the oldest event and begins the downloading process again.
- “Start/End Time” returns to the previous screen to allow the user to specify a new starting and ending time for downloading the User Data Log.
- To return to the Maintenance Tools main menu from User Data Log display, click on the “Back” button on the tool bar.

NOTE
IF THE CPU BOARD IS REMOVED FROM CARDFILE, THE “USER DATA LOG” WILL BE LOST. ENSURE USER DATA LOG BACKUP IS TAKEN FROM CPU BOARD BEFORE REMOVING THE CPU BOARD FROM CARDFILE.

FLOW DIAGRAM FOR USER DATA LOG DOWNLOADING

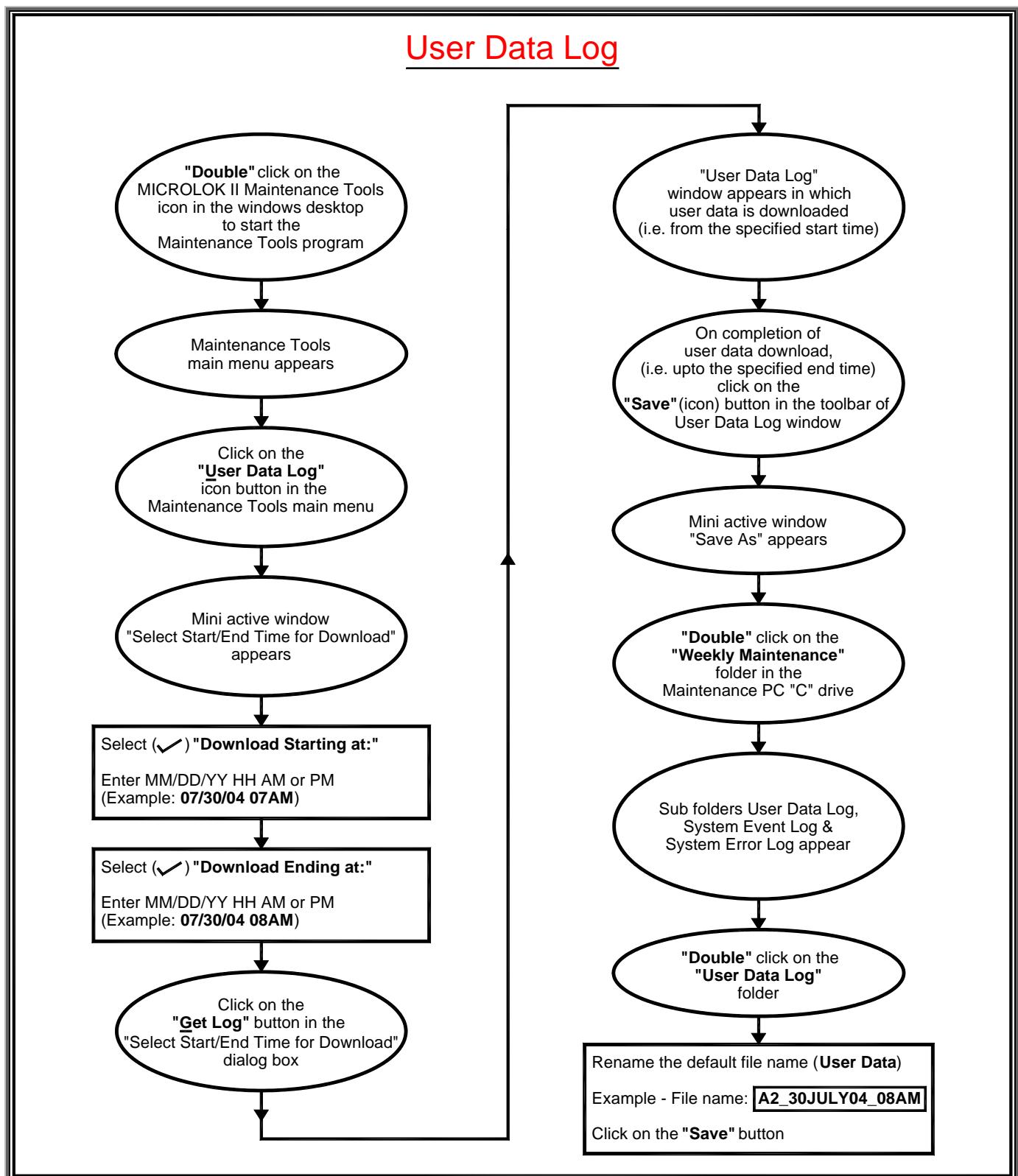


Figure-5.6.2.10

5.6.3 VIEWING THE SYSTEM EVENT LOG

- ❖ The System Event Log records 5000 of the most recent critical system errors, warnings, and events.
- ❖ All log entries are date and time stamped.
- ❖ To view the system event log, click on the “System Event Log” button on the Maintenance Tools main menu (Figure-5.6.3.1).

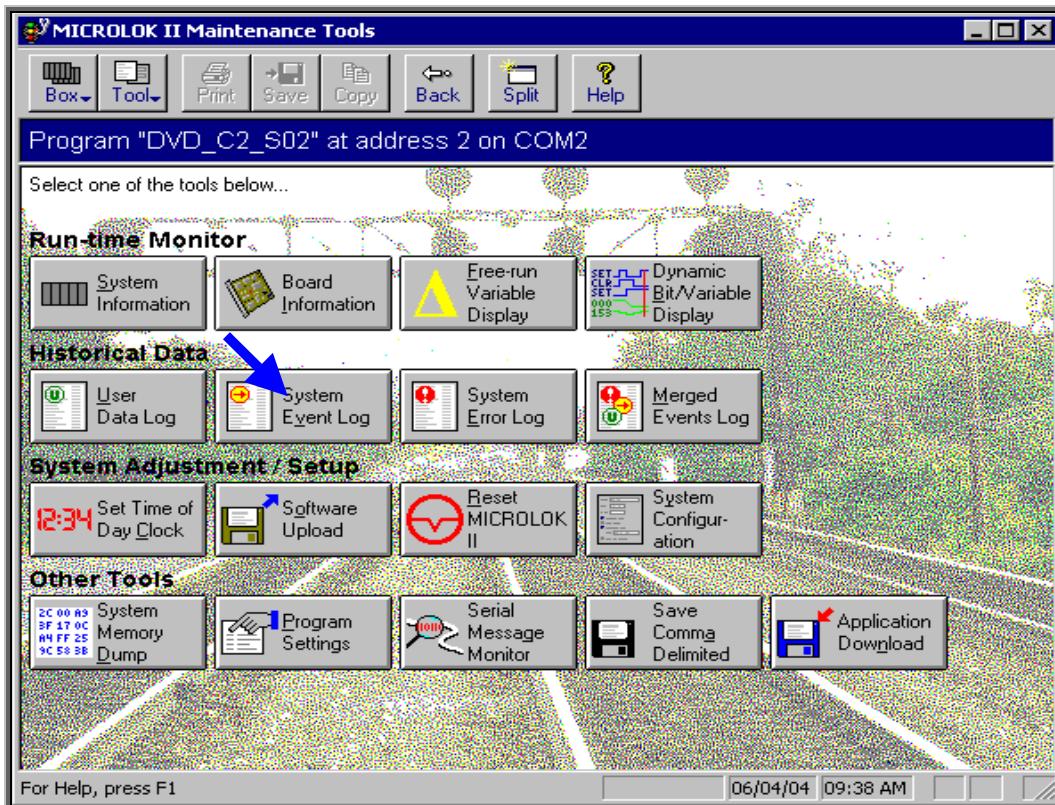


Figure-5.6.3.1

- ❖ A typical System event Log display appears as shown in Figure-5.6.3.2.

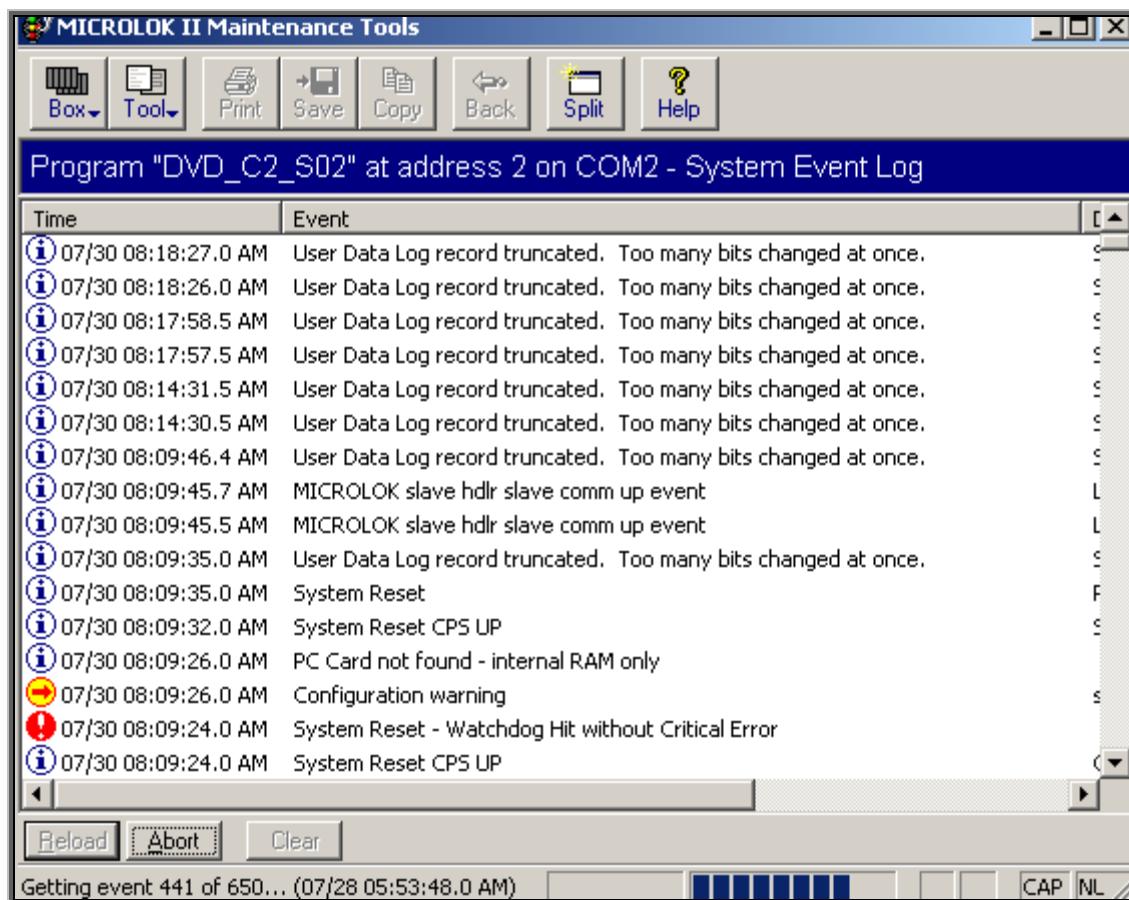


Figure-5.6.3.2

- ❖ The above window indicates that event log is downloaded.
- ❖ On completion of event log download, the following window appears (Figure-5.6.3.2).

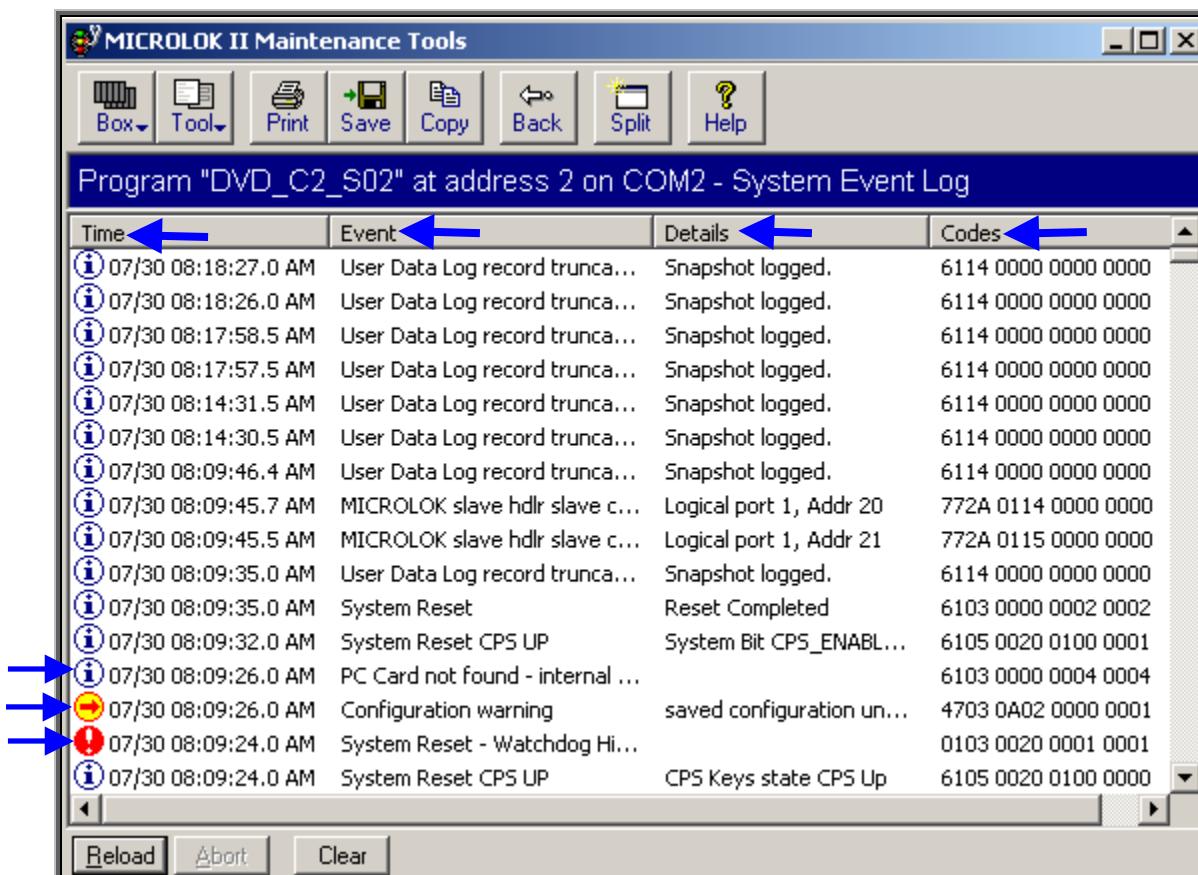


Figure-5.6.3.3

In the above display, - This symbol represents an information event.

- This symbol represents a warning.

- This symbol represents an error.

- ❖ The most recent entry always appears at the top of the list.
- ❖ Note, however that new events are not added dynamically.
- ❖ The system adds new events to the log each time it is re-loaded.
- ❖ All previous entries scroll downward when the system adds new events to the log.
- ❖ The log can record up to 5000 entries. When the log has reached its maximum limit, the newest events will overwrite the oldest events.
- ❖ To get help on any particular event, error, or warning, highlight the time of the event by clicking on it and then press the F1 key. A help box on that event, error, or warning will appear as shown in Figure-5.6.3.3.1.

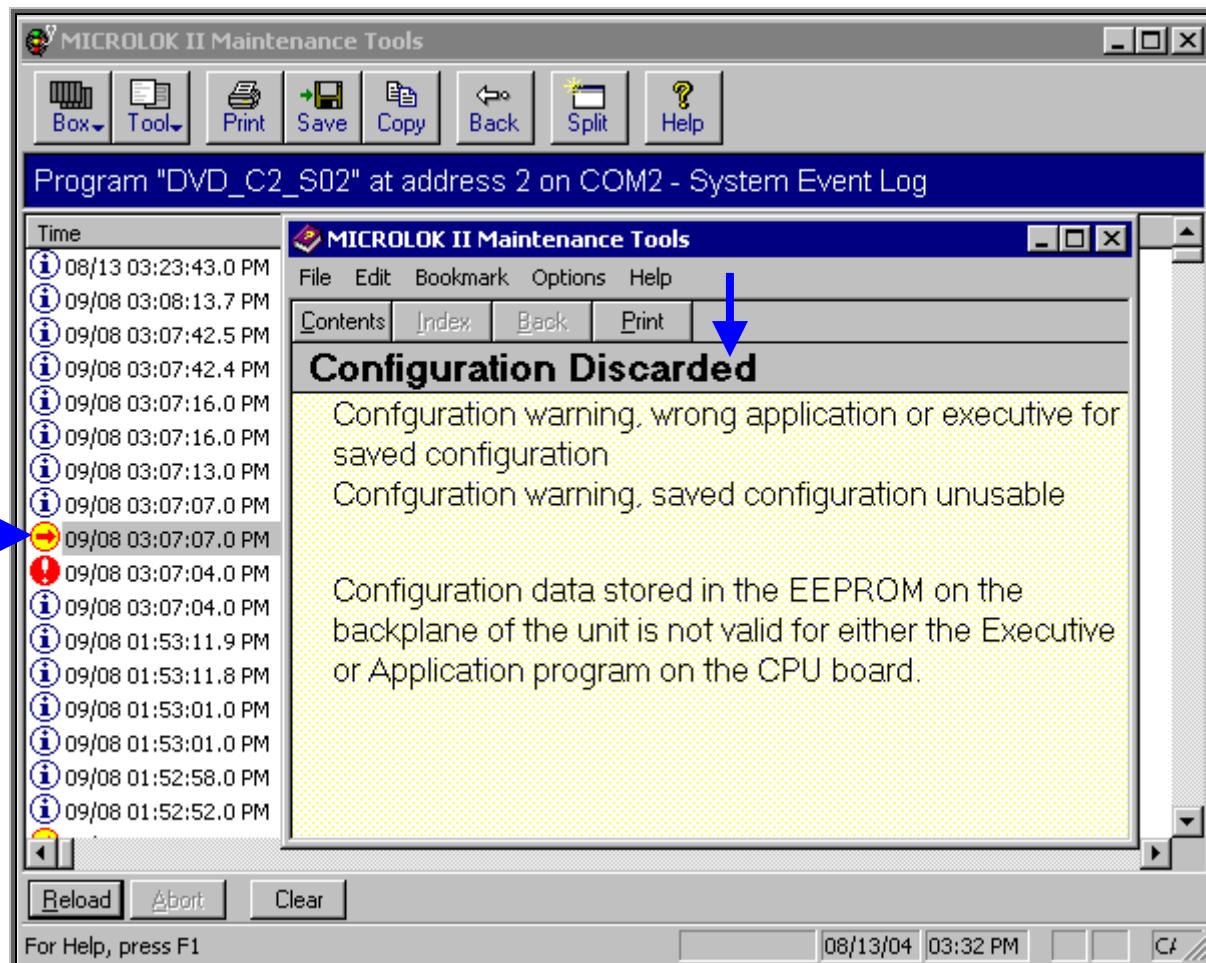


Figure-5.6.3.3.1

- ❖ Events are initially sorted in chronological order starting with the most recent event. User can change the order in which the events are displayed with these actions:
 - ◆ Clicking on the “Event” column header will sort the events alphabetically according to the Event text information.
 - ◆ Clicking on the “Details” column header will sort the events alphabetically according to the Details text information.
 - ◆ Clicking on the “Codes” column header will sort the events from the lowest code number to the highest (at the top).
- ❖ If “Codes” column header is not displayed, do the following:
 - ◆ Go to the Maintenance Tools main menu.
 - ◆ Click on the “Program Settings” button (Figure-5.6.3.3.2).

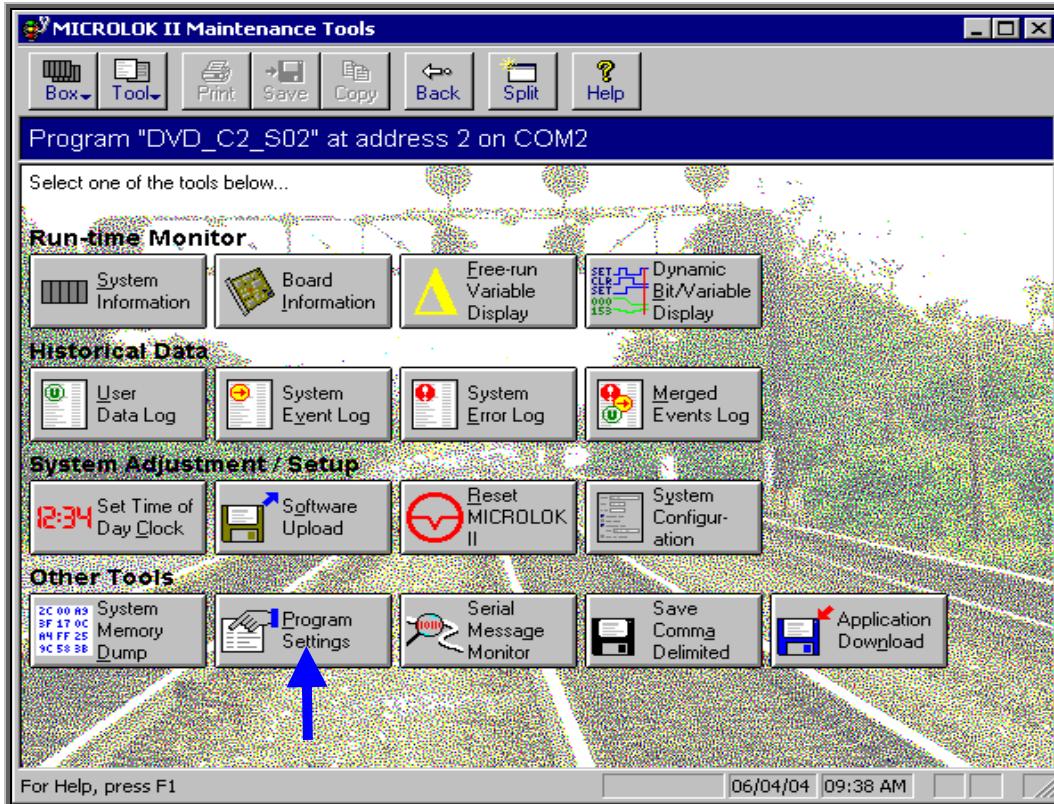


Figure-5.6.3.3.2

- ❖ “MICROLOK II Program Settings” window appears as shown in Figure-5.6.3.3.3.

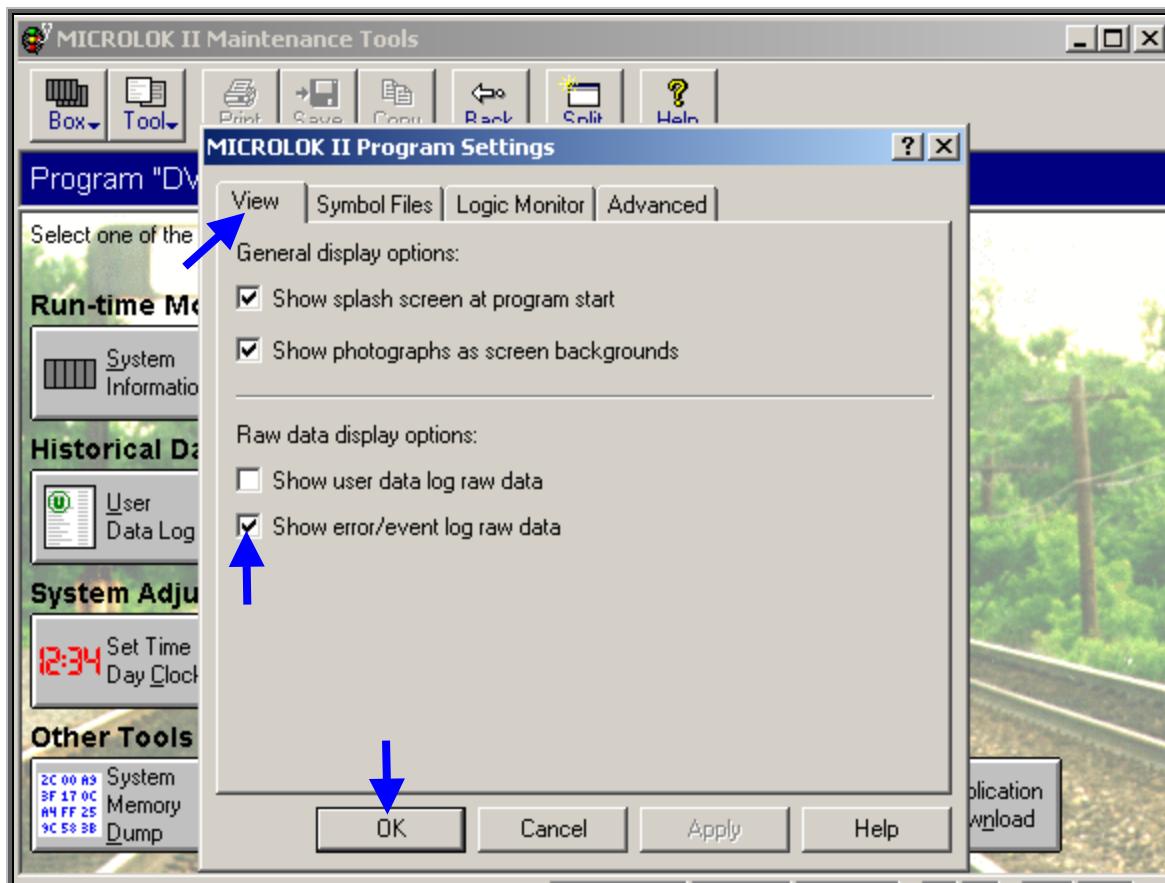


Figure-5.6.3.3.3

- ◆ Go to the “View”.
- ◆ Click the “Show error/event log raw data” in RAW data display options.
- ◆ Click the “OK” button in RAW data display options.
- ◆ Now go back to the Maintenance Tools main menu.
- ◆ Click the “System Event Log” icon.
- ◆ Now “Codes” column will appear.
- ❖ After user have changed the way in which events appear, *user can click on the “Time” column header* to sort the events in chronological order again.
- ❖ The “Clear, Reload, and Abort” buttons at the bottom of the display control the operation of the data logger (refer figure 5.6.3.4):
- ❖ “Clear” removes all of the currently recorded indications from the log and restarts the updating process.
- ❖ Before user can clear the log, the system issues a confirmation box for the removal of indications from the System Event Log.

- ❖ An example of the confirmation box is shown in Figure-5.6.3.4.
- ❖ Click on “Yes” to clear the log or “No” to return to the System Event log display.

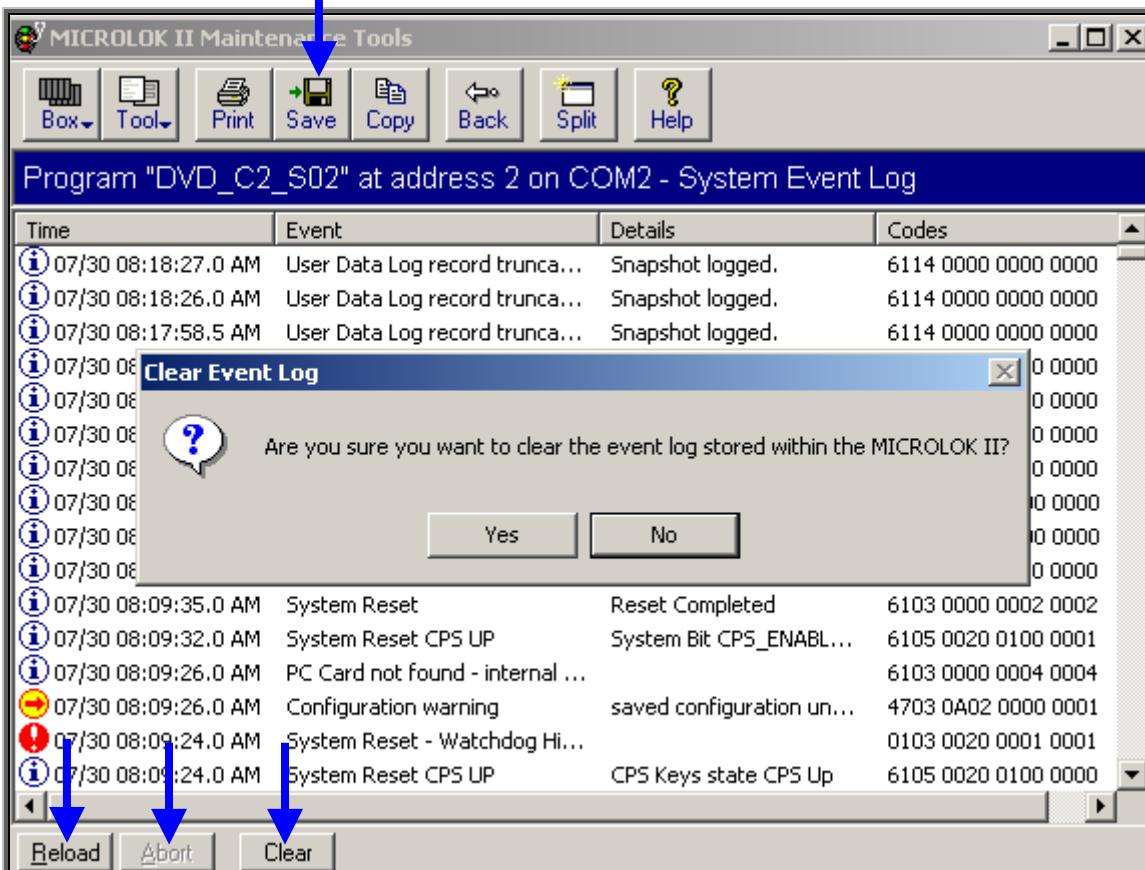


Figure-5.6.3.4

- ❖ “Reload” returns to the most recent event and begins the loading process again.
- ❖ “Abort” discontinues the reloading of the system log.
- ❖ The user to save the System Event Log file in Maintenance PC C drive to click the “Save” button on the tool bar of System Event Log window.
- ❖ Mini active window “Save As” appears as shown in Figure-5.6.3.5.

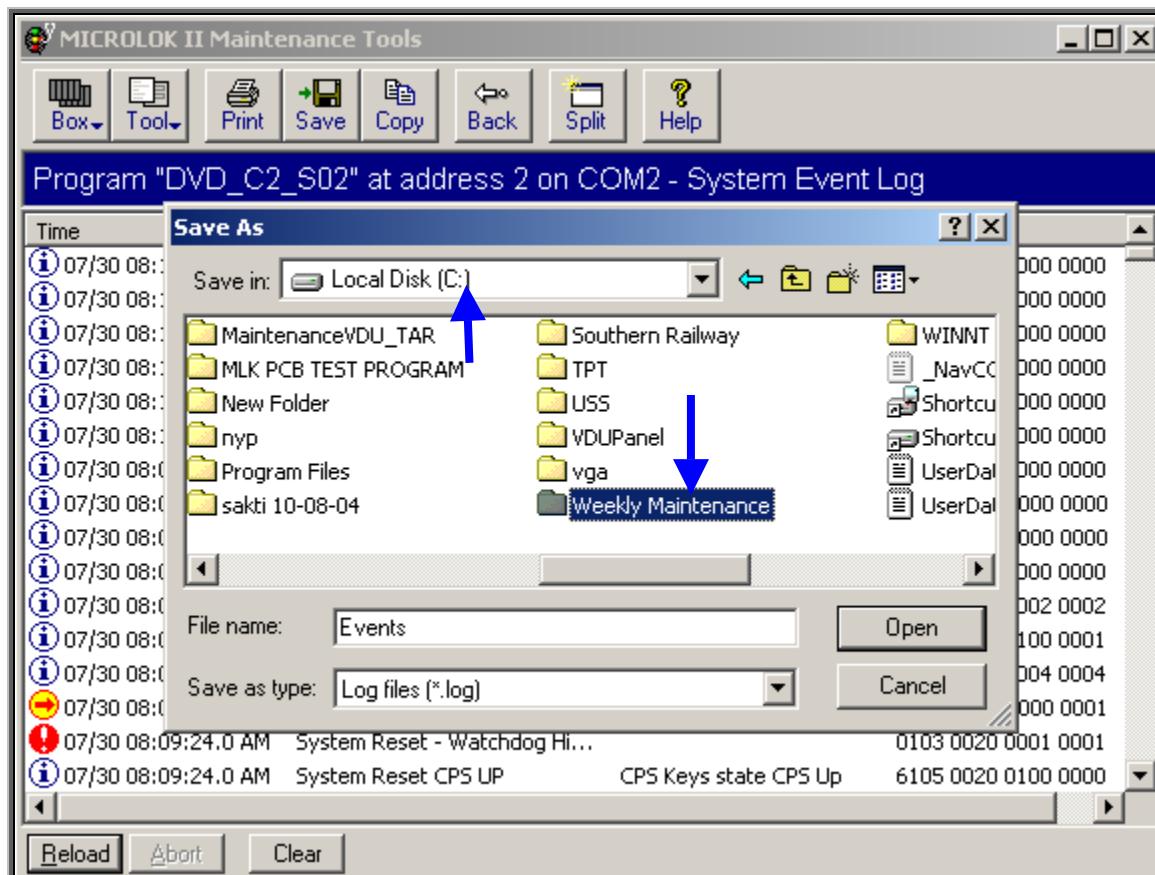


Figure-5.6.3.5

- ❖ Double click on the “Weekly Maintenance” folder in the Maintenance PC “C” drive (Figure-5.6.3.5).
- ❖ Sub folders User Data Log, System Event Log & System Error Log appear as shown in Figure-5.6.3.6.

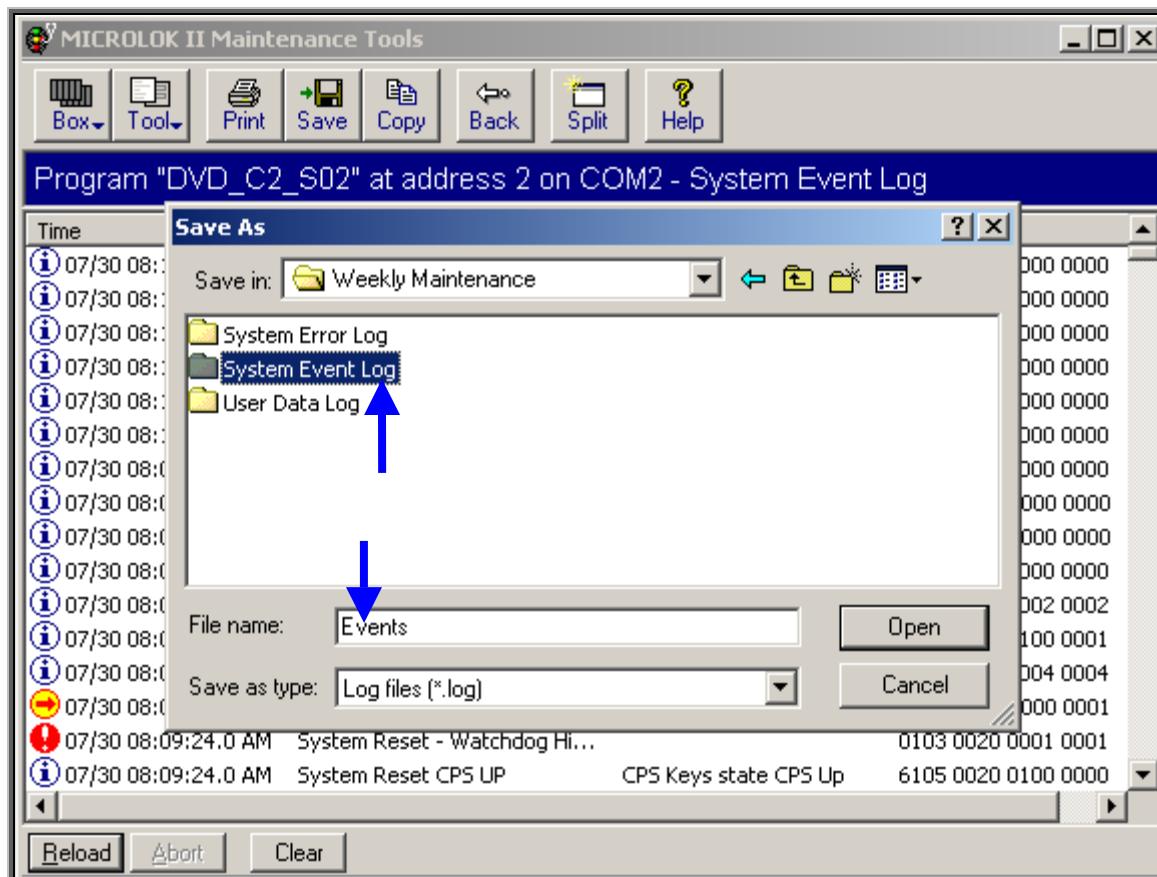


Figure-5.6.3.6

- ❖ Double click on the System Event Log folder in the above window.
- ❖ Rename the default file name “Events” (refer figure-5.6.3.7).
- ❖ Example: – File name: **A2_30JULY04_08AM**

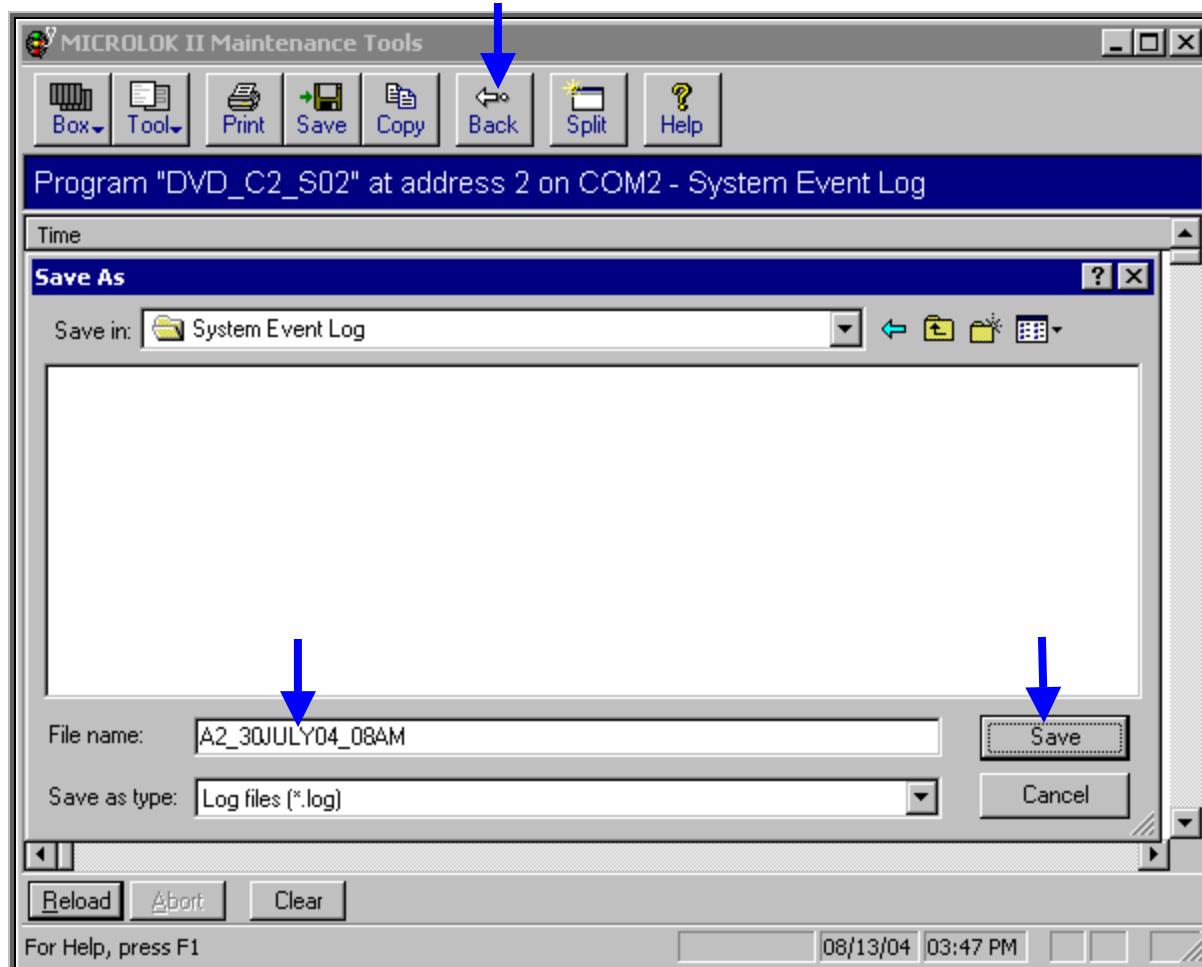


Figure-5.6.3.7

- ❖ Click on the “Save” button in the above window.
- ❖ To return to the Maintenance Tools main menu from the system event log display, click on the “Back” button on the tool bar.

NOTE
IF THE CPU BOARD IS REMOVED FROM CARDFILE, THE “SYSTEM EVENT LOG” WILL BE LOST. ENSURE EVENT LOG BACKUP IS TAKEN FROM CPU BOARD BEFORE REMOVING THE CPU BOARD FROM CARDFILE.

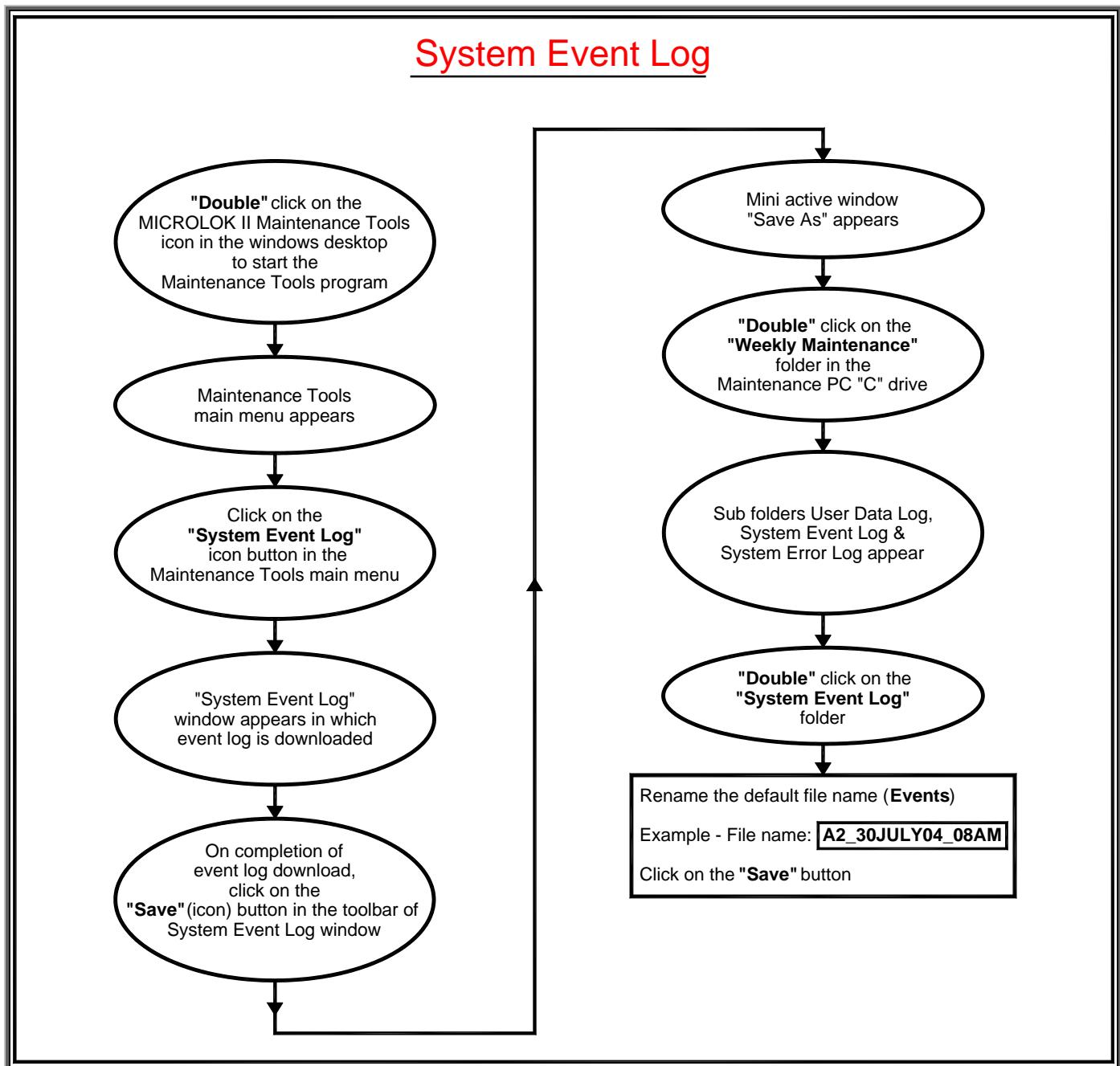
FLOW DIAGRAM FOR SYSTEM EVENT LOG DOWNLOADING

Figure-5.6.3.8

5.6.4 VIEWING THE SYSTEM ERROR LOG

- ❖ The system error log records only the most recent critical system errors.
- ❖ All log entries are date and time stamped.
- ❖ The System Error Log has no clear Log feature.
- ❖ To view the system error log, click on the “System Error Log” button on the Maintenance Tools main menu (Figure-5.6.4.1).

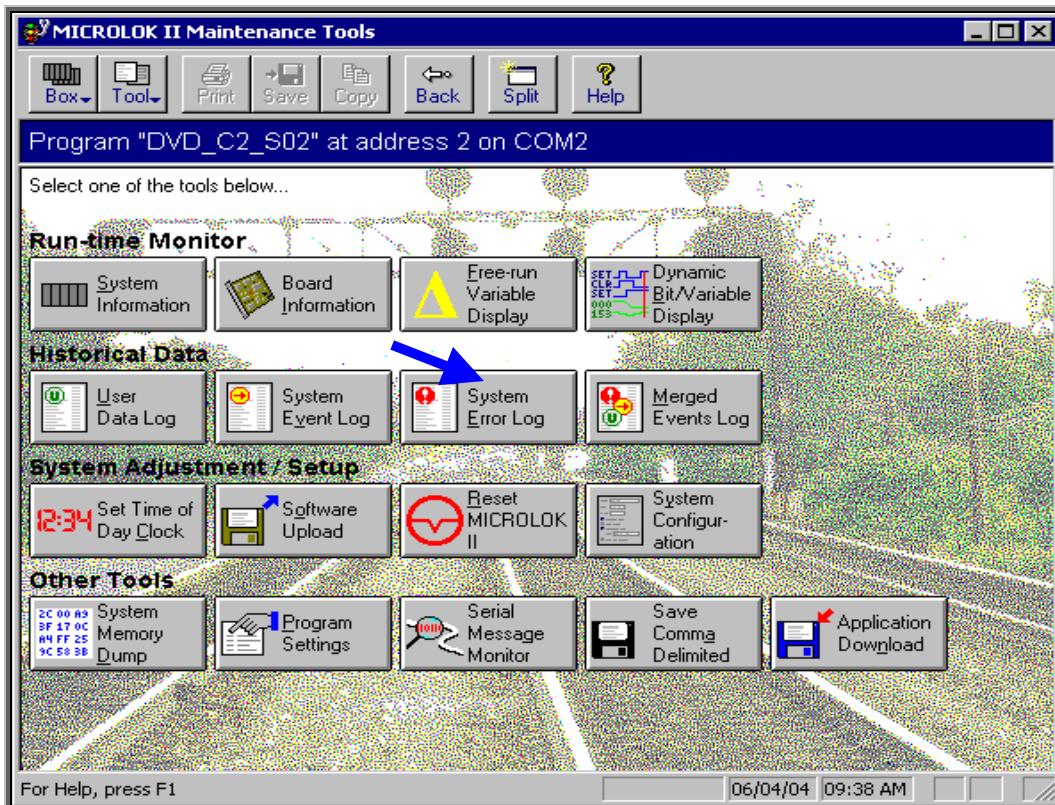


Figure-5.6.4.1

- ❖ A typical error log display appears as shown in Figure-5.6.4.2.

The screenshot shows a Windows application window titled "MICROLOK II Maintenance Tools". The menu bar includes "File", "Edit", "View", "Tools", "Help", and "About". The toolbar contains icons for "Box", "Tool", "Print", "Save", "Copy", "Back", "Split", and "Help". The main area displays a table titled "Program 'DVD_C2_S02' at address 2 on COM2 - System Error Log". The table has columns: Time, Event, Details, and Codes. The data in the table is as follows:

Time	Event	Details	Codes
07/30 08:09:24.0 AM	System Reset - Watchdog Hi...		0103 0020 0001 0001
07/29 06:57:22.5 AM	OUT16 Output error, Board ...	Output Read Failure	0A04 0203 0000 0300
07/28 03:31:15.0 PM	System Reset - Watchdog Hi...		0103 0020 0001 0001
07/28 06:05:00.9 AM	IN16 Echo error, Board J9	Expected Echo = D9 ...	0901 0900 D920 0000
07/28 05:54:02.0 AM	OUT16 Hardware error, Boa...	Output Monitor OFF Fai...	0A05 0102 0000 0100
07/28 05:53:48.0 AM	OUT16 Hardware error, Boa...	Output Monitor OFF Fai...	0A05 0102 0000 0100
07/28 05:53:36.4 AM	OUT16 Hardware error, Boa...	Output Monitor OFF Fai...	0A05 0102 0000 0100
07/28 05:46:58.0 AM	OUT16 Hardware error, Boa...	Output Monitor OFF Fai...	0A05 0102 0000 0100
07/28 05:46:44.0 AM	OUT16 Hardware error, Boa...	Output Monitor OFF Fai...	0A05 0102 0000 0100
07/28 05:46:30.0 AM	OUT16 Hardware error, Boa...	Output Monitor OFF Fai...	0A05 0102 0000 0100
07/28 05:46:19.2 AM	OUT16 Output error, Board ...	Output Read Failure	0A04 0202 0000 0300
invalid time	Year is changing from 'FF to '...	The year for this event ...	6115 0004 FFFF 0000

At the bottom left are buttons for "Reload" and "Abort". At the bottom right are status indicators for CAP and NUM.

Getting event 1 of 12...

Figure-5.6.4.2

- ❖ The above window indicates that error log is downloaded.
- ❖ On completion of error log download, the following window appears as shown in Figure-5.6.4.3.

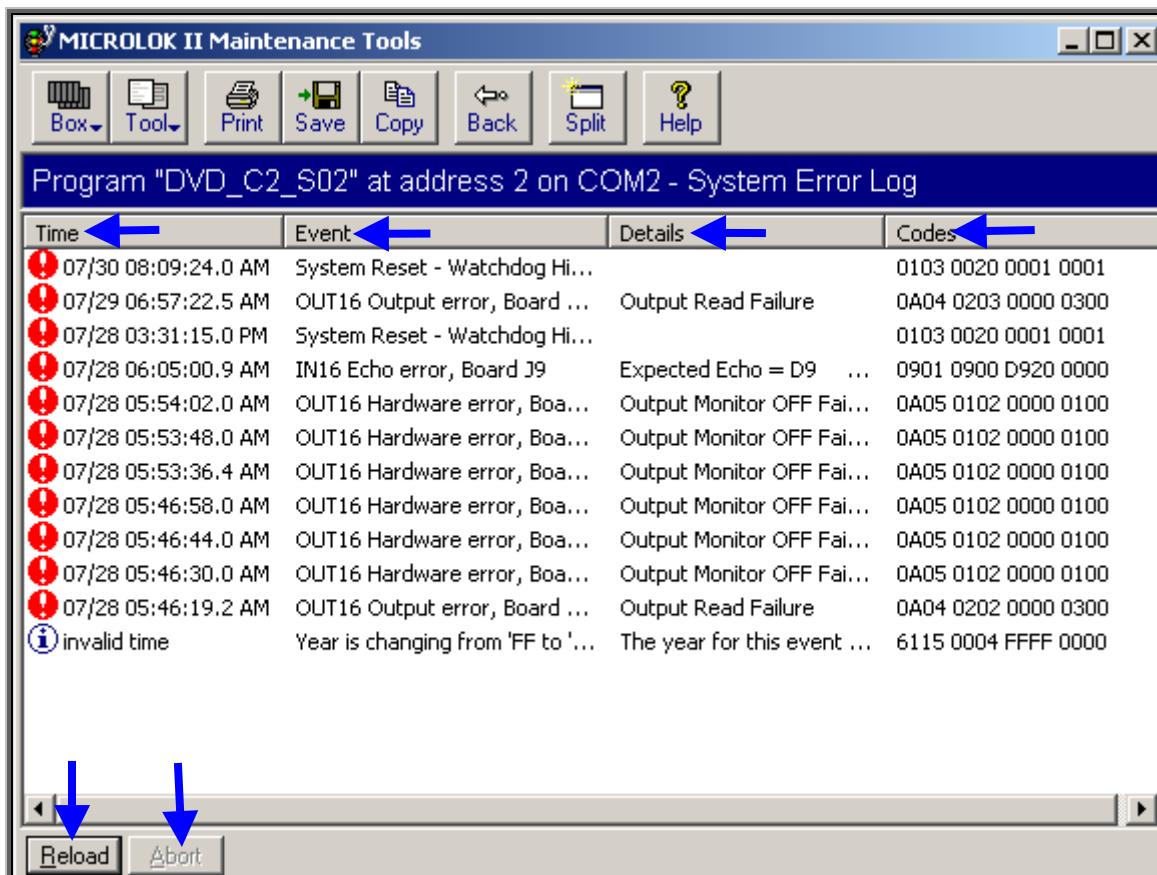


Figure-5.6.4.3

- ❖ The display lists each error recorded in the system so far.
- ❖ The most recent entry appears at the top of the list.
- ❖ The log can record up to 50 of the most recent critical errors. When the log has reached its maximum limit, the newest errors will overwrite the oldest errors.
- ❖ To get help on any particular error, highlight the time of the event by clicking on it and then press the F1 key. A help box on that error will appear as shown in Figure-5.6.4.3.1.

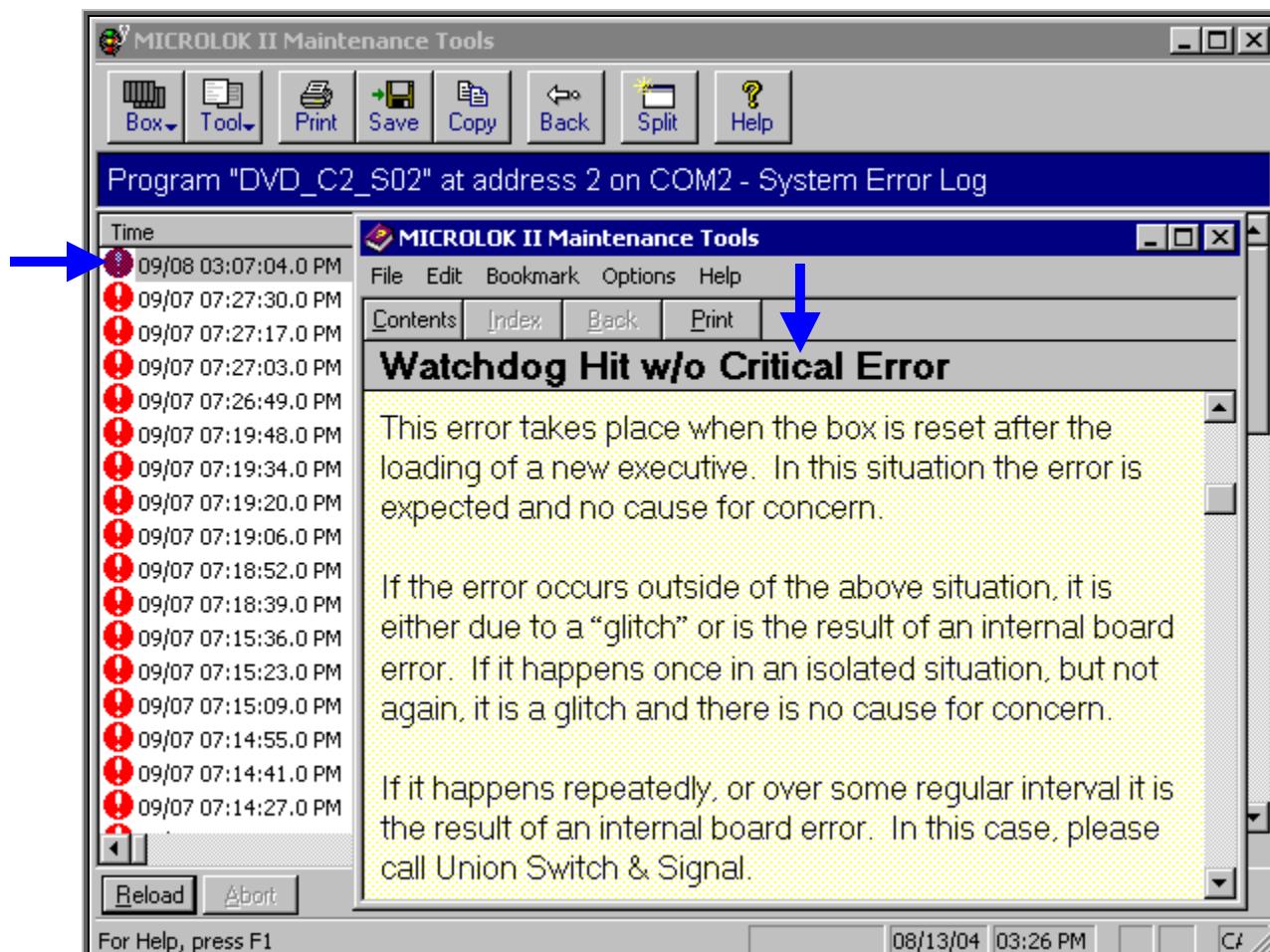


Figure-5.6.4.3.1.

- ❖ Errors are initially sorted in chronological order starting with the most recent event. User can change the order in which the errors are displayed with these actions:
 - ◆ Clicking on the “Event” column header will sort the errors alphabetically according to the Event text information.
 - ◆ Clicking on the “Details” column header will sort the errors alphabetically according to the Details text information.
 - ◆ Clicking on the “Codes” column header will sort the errors from the lowest code number to the highest (at the top).
- ❖ If “Codes” column header is not displayed, do the following:
 - ◆ Go to the Maintenance Tools main menu.
 - ◆ Click on the “Program Settings” button.

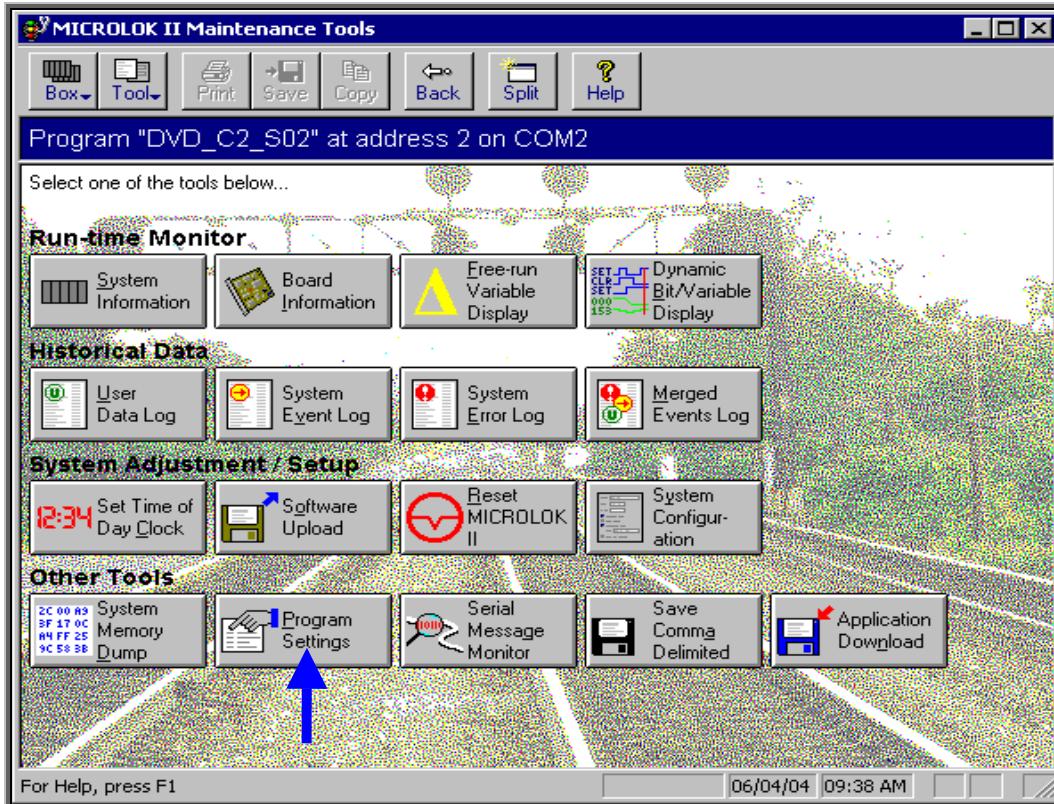


Figure-5.6.4.3.2

- ❖ “MICROLOK II Program Settings” window appears as shown in Figure-5.6.3.4.3.

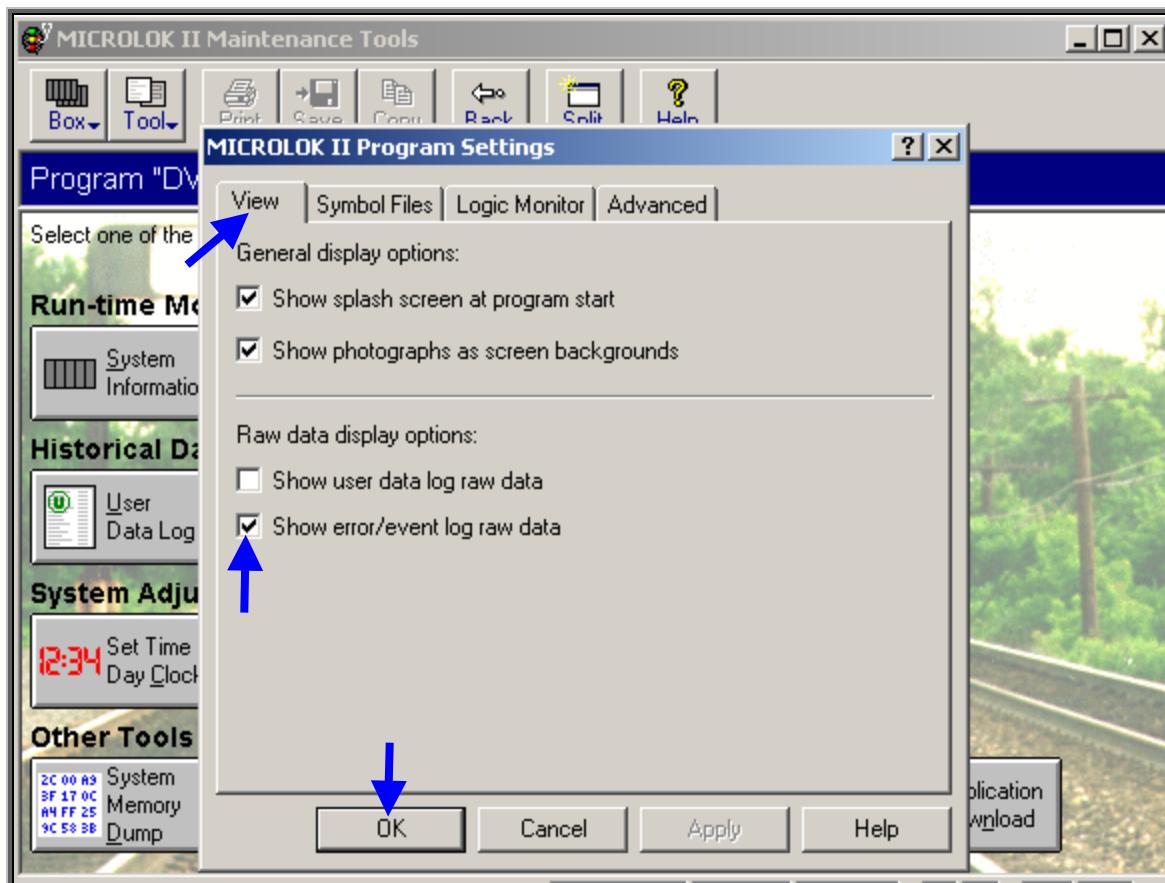


Figure-5.6.4.3.3

- ◆ Go to the “View”.
- ◆ Click the “Show error/event log raw data” in RAW data display options.
- ◆ Click the “OK” button in RAW data display options.
- ◆ Now go back to the Maintenance Tools main menu.
- ◆ Click the “System Error Log” icon.
- ◆ Now “Codes” column will appear.
- ❖ After User have changed the way in which errors appear, *user can click on the “Time” column header* to sort the errors in chronological order again.
- ❖ The “Reload” and “Abort” buttons at the bottom of the display control the operation of the data logger (refer figure-5.6.4.3):
- ❖ “Reload” lets to clear the currently displayed errors, and then load the most recent 50 errors. This option would be used to ensure that the most current errors are listed.
- ❖ “Abort” discontinues the reloading of the system log.

- ❖ For saving, the System Error Log file in Maintenance PC “C” drive the user has to click the “Save” button on the tool bar of System Error Log window.
- ❖ Mini active window “Save As” appears as shown in Figure-5.6.4.4.

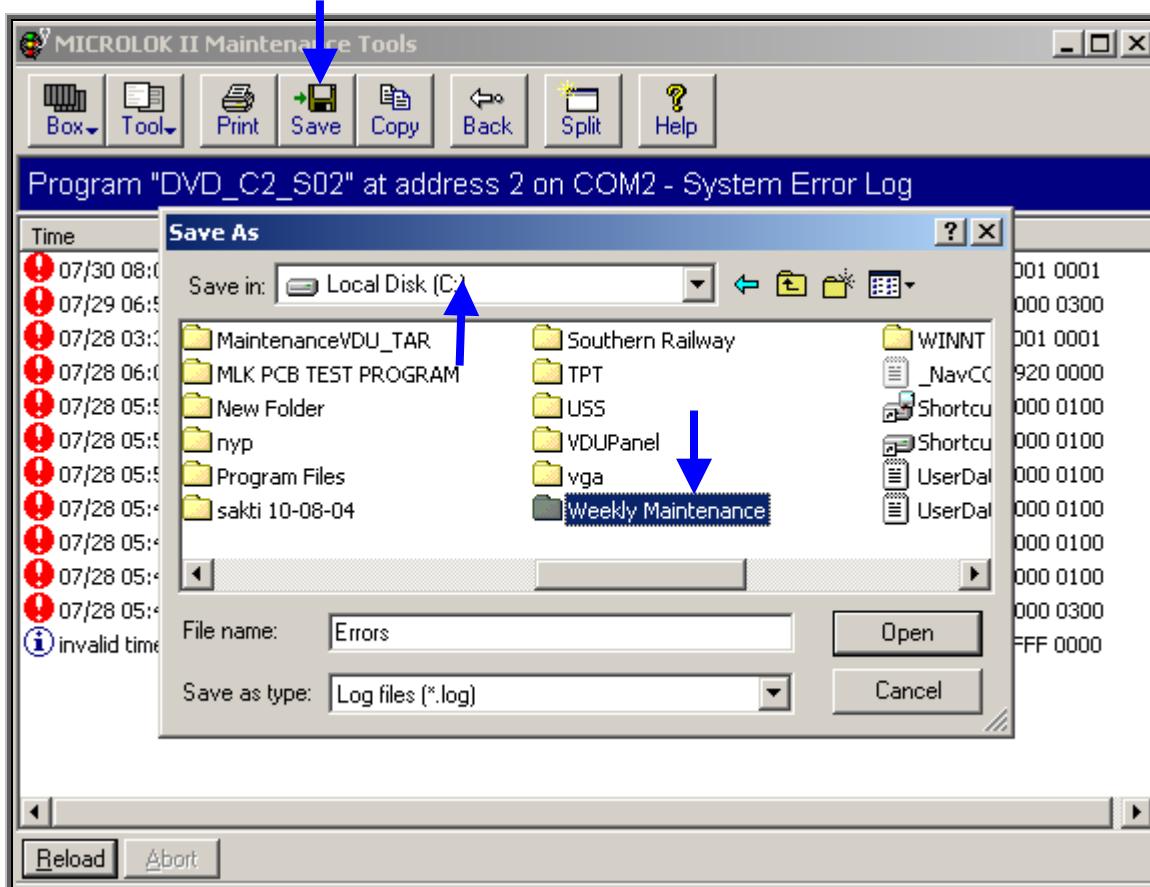


Figure-5.6.4.4

- ❖ Double click on the “Weekly Maintenance” folder in the Maintenance PC “C” drive (Figure-5.6.4.4).
- ❖ Sub folders User Data Log, System Event Log & System Error Log appear as shown in Figure-5.6.4.5.

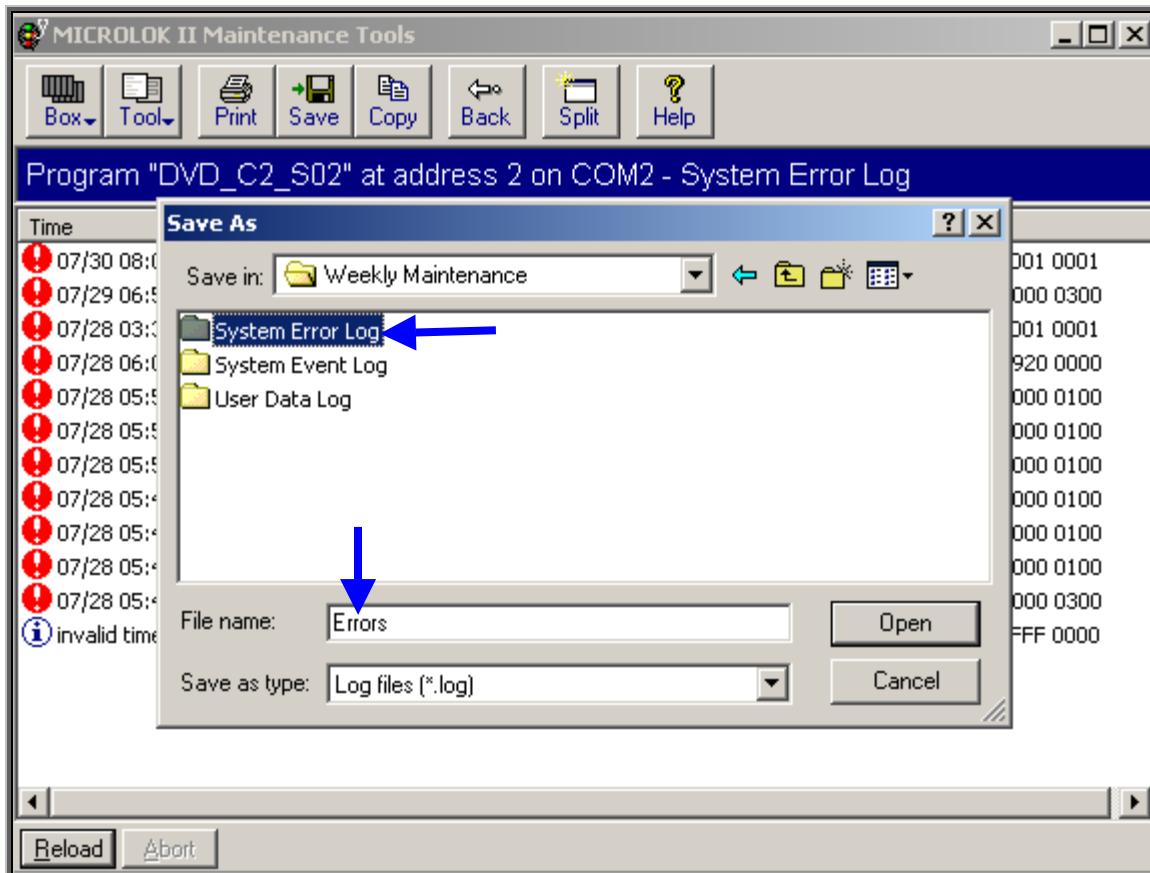


Figure-5.6.4.5

- ❖ Double click on the System Error Log folder in the above window.
- ❖ Rename the default file name “Errors” (refer figure-5.6.4.6).
- ❖ Example: – File name: **A2_30JULY04_08AM**

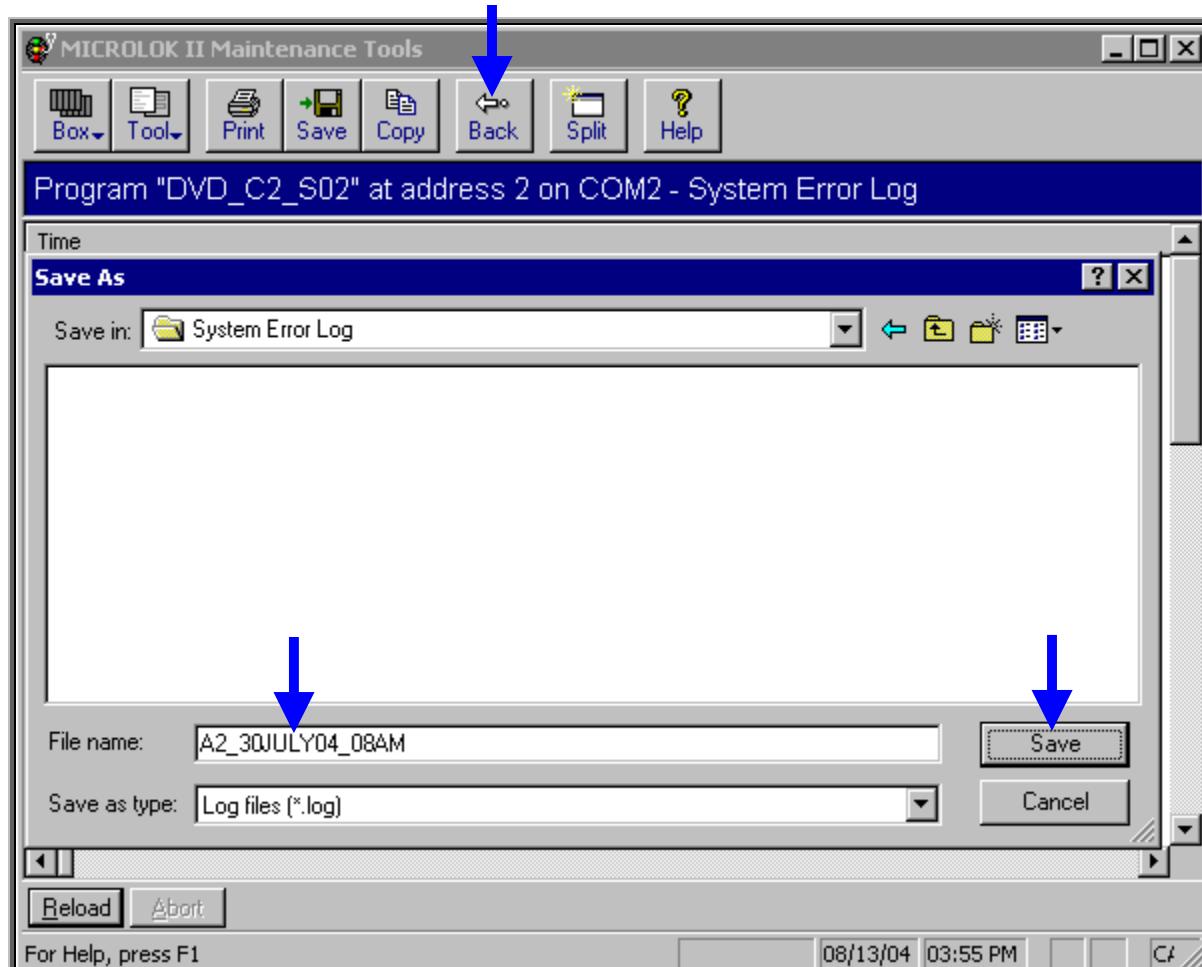


Figure-5.6.4.6

- ❖ Click on the “Save” button in the above window.
- ❖ To return to the Maintenance Tools main menu from the system error log display, click on the “Back” button on the tool bar.

NOTE

IF THE CPU BOARD IS REMOVED FROM CARDFILE, THE “SYSTEM ERROR LOG” WILL BE LOST. ENSURE SYSTEM ERROR LOG BACKUP IS TAKEN FROM CPU BOARD BEFORE REMOVING THE CPU BOARD FROM CARDFILE.

FLOW DIAGRAM FOR SYSTEM ERROR LOG DOWNLOADING

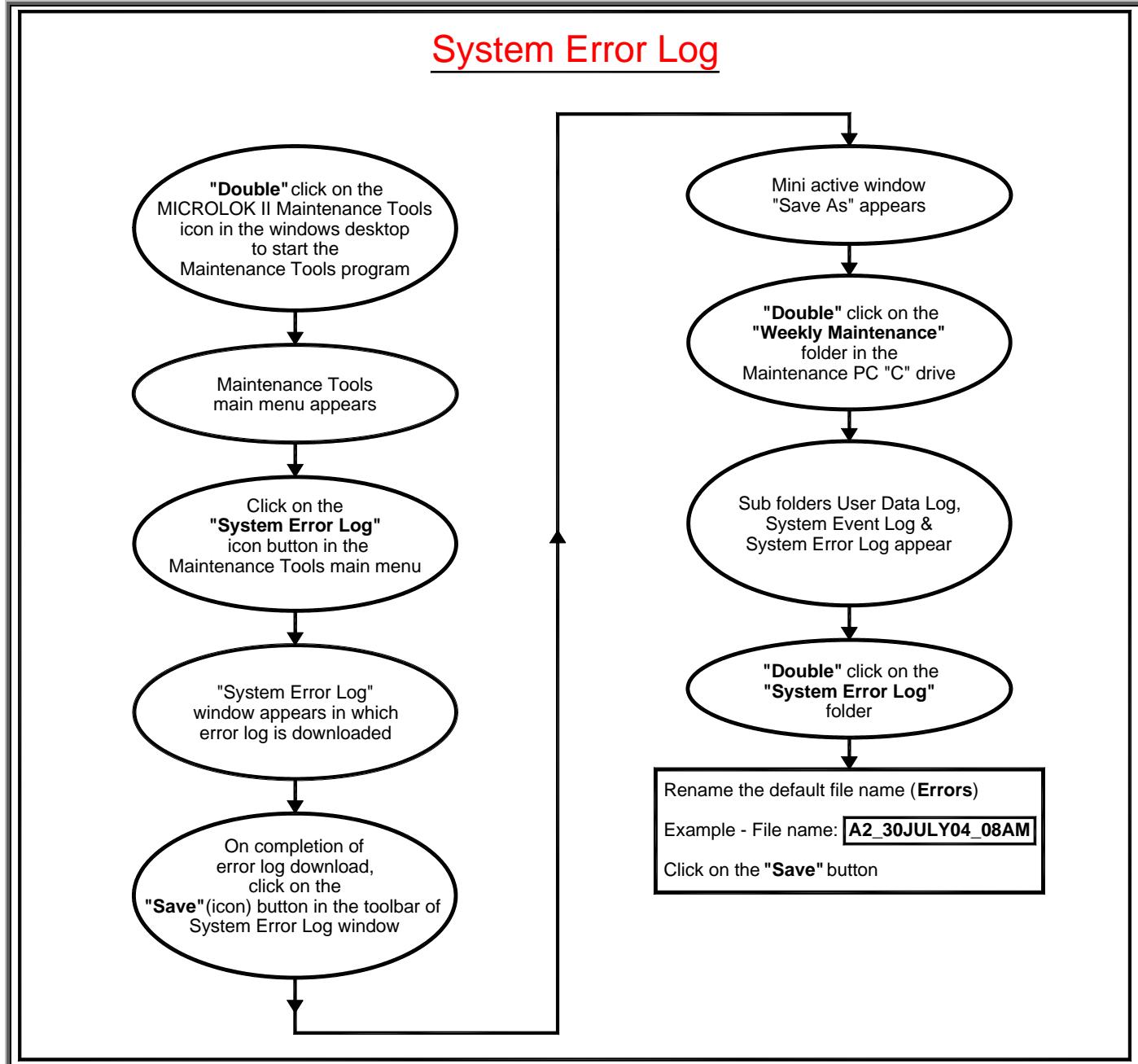


Figure-5.6.4.7

5.6.5 VIEWING THE MERGED EVENT LOG

- ❖ Displays the User Data Log, System Event Log & System Error Log changes merged onto the same time axis.
- ❖ To view the Merged Event Log, click on the “Merged Event Log” button on the Maintenance Tools main menu (Figure-5.6.5.1).

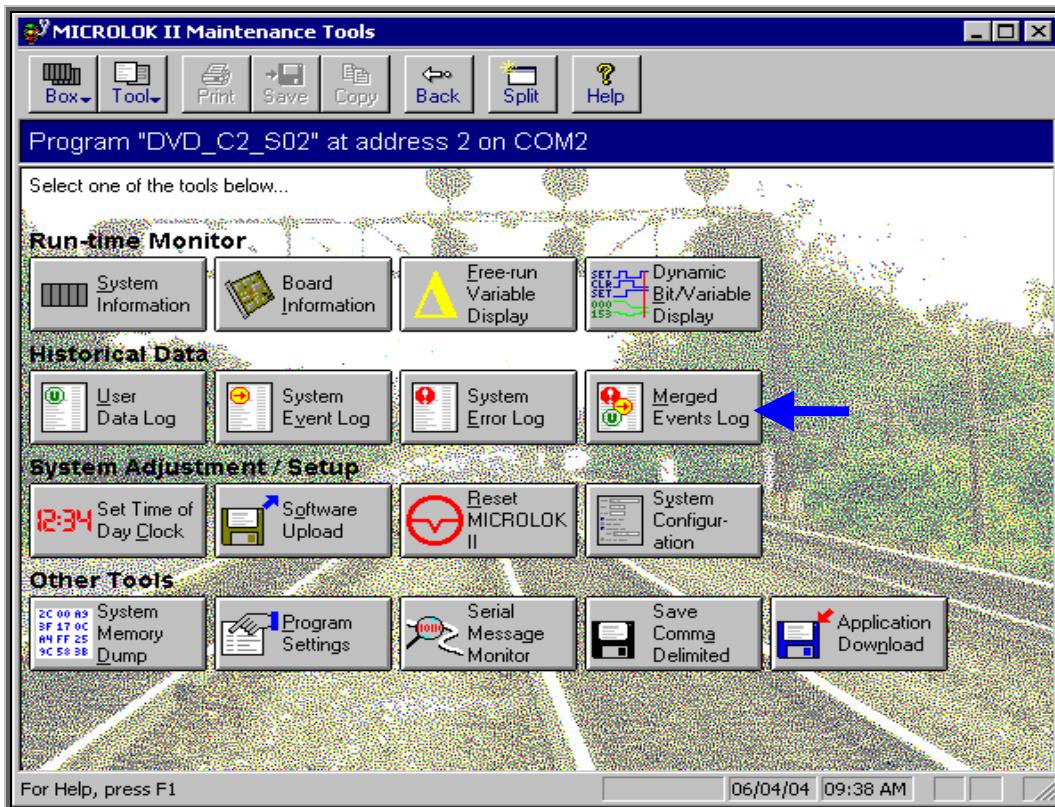


Figure-5.6.5.1

- ❖ A typical Merged Event Log display appears as shown in Figure-5.6.5.2.

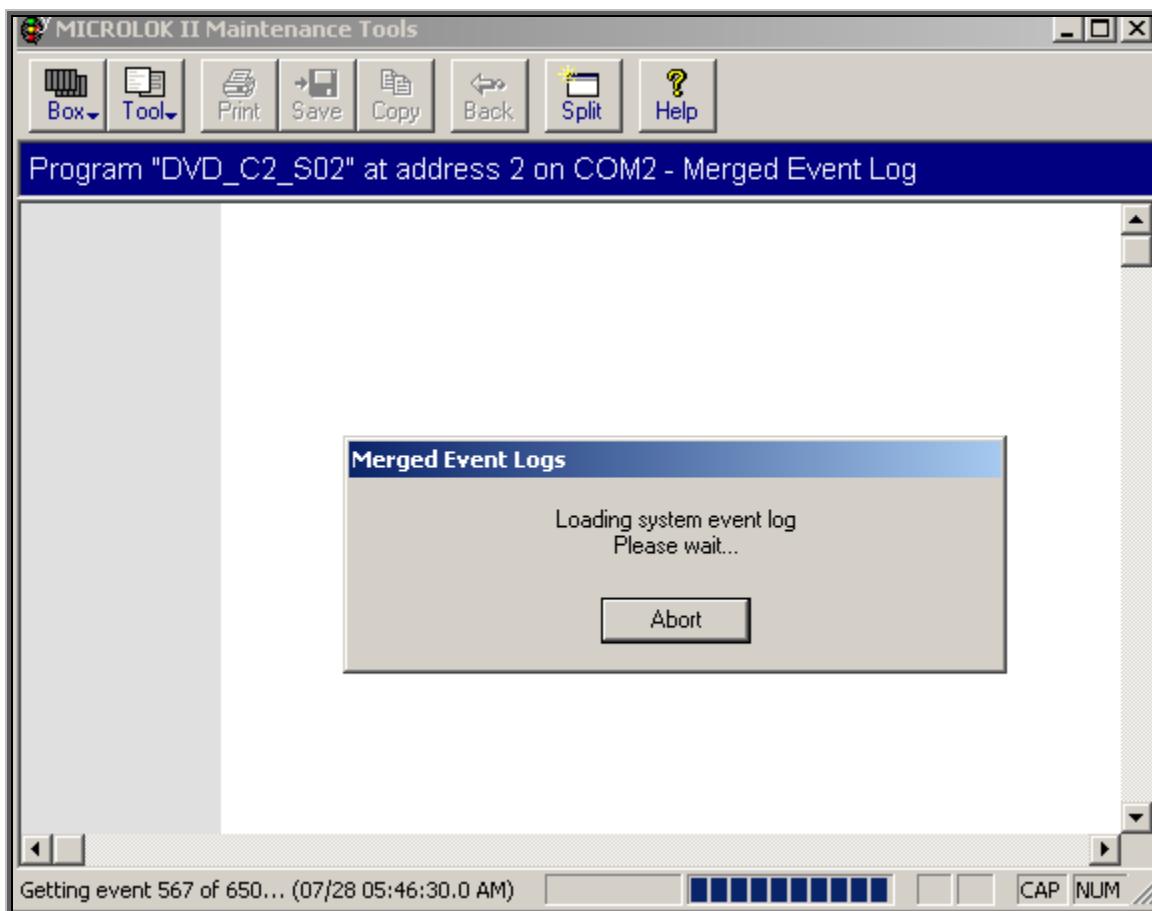


Figure-5.6.5.2

- ❖ The above window indicates that system event log loading in Merged Event Logs.
- ❖ After system event log loading, the following window appears (Figure-5.6.5.3).

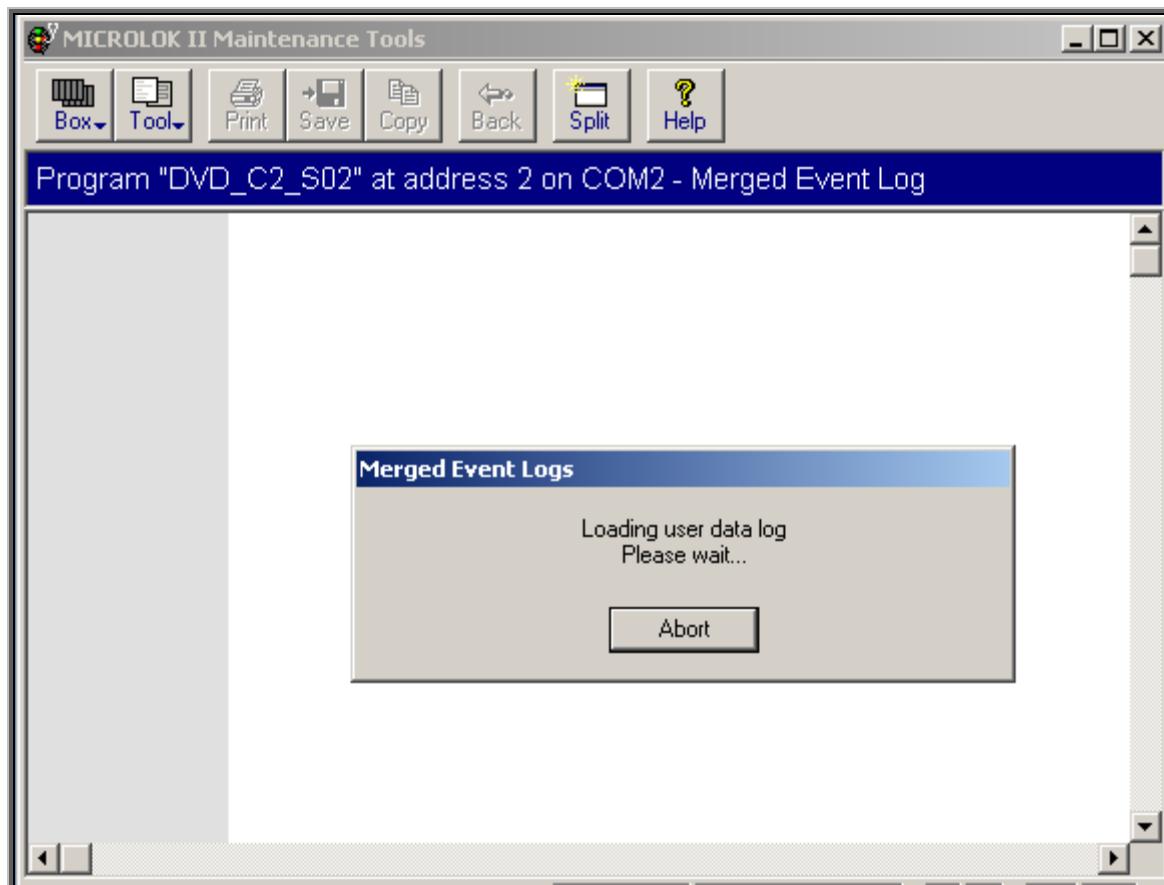


Figure-5.6.5.3

- ❖ The above window indicates user data log loading in Merged Event Log.
- ❖ After user data log loading, the following window appears (Figure-5.6.5.4).

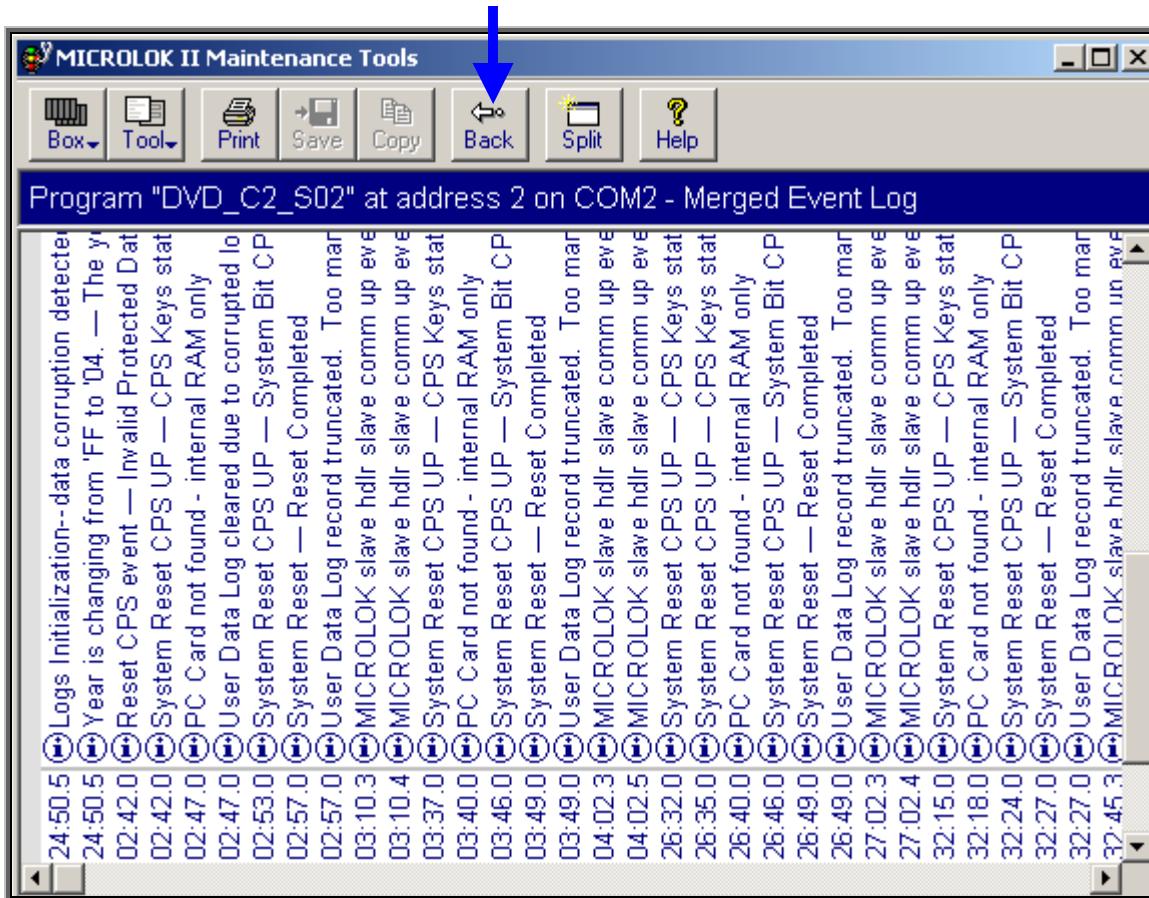


Figure-5.6.5.4

- ❖ To return to the Maintenance Tools main menu from the Merged Event Log display, click on the “Back” button on the tool bar.

5.7 SETTING UP THE SYSTEM CLOCK

- ❖ As the name indicates, this tool is used to set the Microlok II CPU clock.
- ❖ This option will be used mainly during initial system configuration.
- ❖ This function displays the date and time settings for both the Microlok II system CPU and the Maintenance PC.
- ❖ During system configuration, user usually will set the time to that displayed for the Maintenance PC.
- ❖ Even after user has configured the system, however, the time settings for the system and the Maintenance PC will not necessarily match. Some slight variances are to be expected.
- ❖ Use the following procedure to set the system date and time:
 - ◆ Click on the “Set Time of Day Clock” button on the Maintenance Tools main menu (Figure-5.7.1).

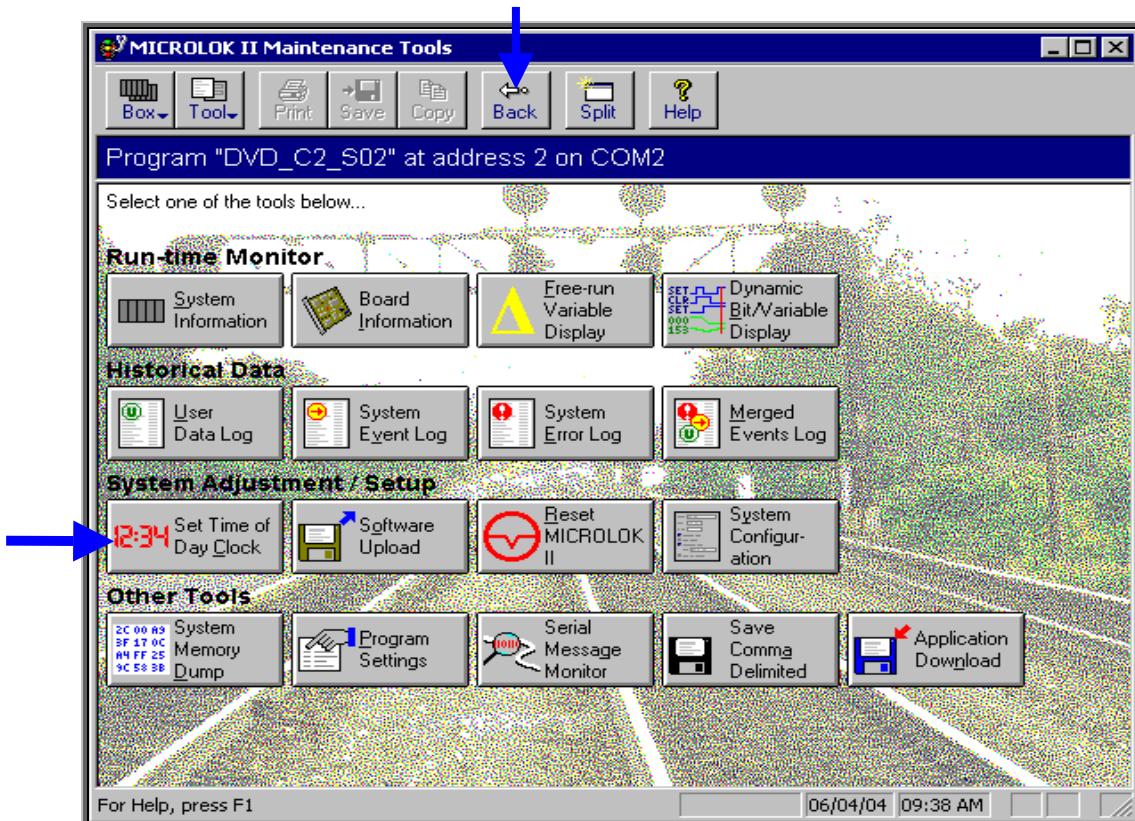


Figure-5.7.1

- ❖ The set time of day clock display will appear as shown in Figure-5.7.2.

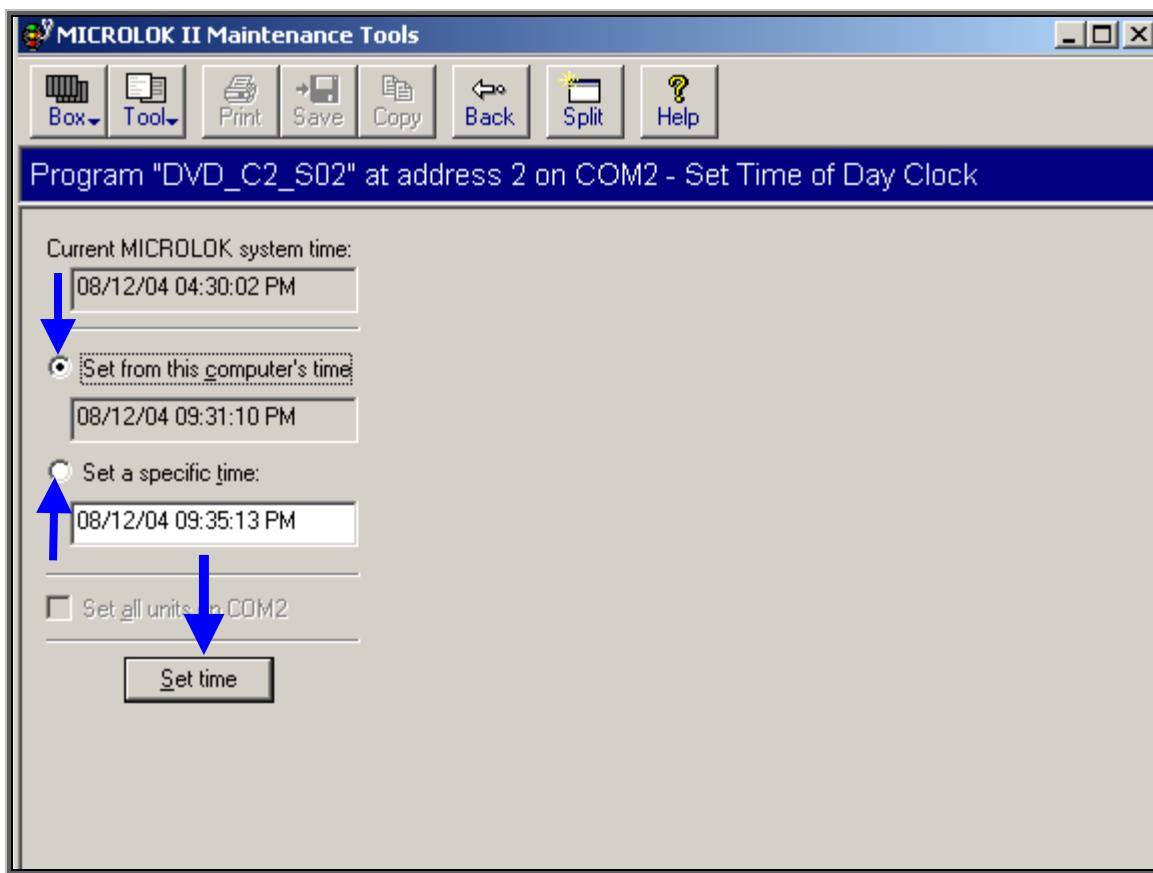


Figure-5.7.2

- ❖ This display contains three fields that are used to set the system's date and time:
 - ◆ The top window shows the current Microlok II system time (Figure-5.7.2).
 - ◆ The center window shows the date and time set for the Maintenance PC (Figure-5.7.3).
 - ◆ The bottom window lets user to enter a specific date and time (Figure-5.7.4).
- ❖ To set the system time and date to those shown for the Maintenance PC:
 - ◆ Ensure that the “Set from this computer's time” option is active, as shown in Figure-5.7.3.
 - ◆ If necessary, click in the circle beside the “Set from this computer's time” option to specify the selection. The option is the default selection, so the circle is usually pre-filled.

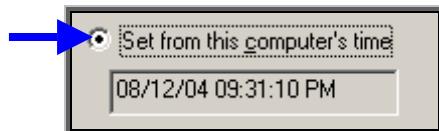


Figure-5.7.3

- ◆ Click on the screen's “**Set time**” pushbutton. The system's time and date change to those originally shown for the Maintenance PC.
- ◆ Click on the “**Back**” button on the tool bar to return to the Maintenance Tools main menu.
- ❖ To set the system time and date by manually entering the data:
 - ◆ Click in the circle beside the “**Set a specific time**” option to specify the selection. “**The Set from this computer's time**” option is the default selection, so user usually must change options. When Set a specific time is active, the field appears as shown in Figure-5.7.4:

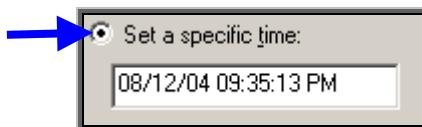


Figure-5.7.4

- ◆ Enter new date and time values over those that appear in the field by default.
- ◆ Click on the screen's “**Set time**” pushbutton. The system's time and date change to the values entered.
- ◆ Click on the “**Back**” button on the tool bar to return to the Maintenance Tools main menu.

5.8 RESETTING THE MICROLOK II SYSTEM

- ❖ This tool enables to reset the Microlok II CPU from the Maintenance PC.
- ❖ The reset function is used mainly to clear system faults and return the system to normal operation.

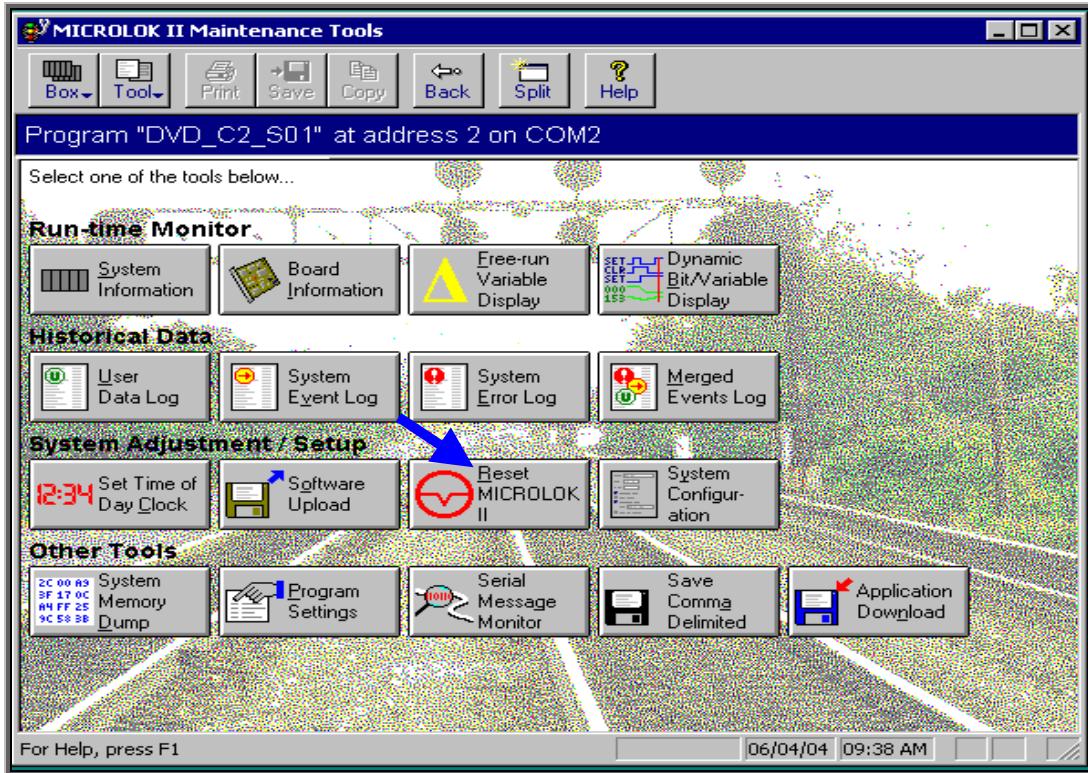


Figure-5.8.1

- ❖ To reset the Microlok II CPU, click on the “Reset MICROLOK II” button on the Maintenance Tools main menu (Figure-5.8.1).
- ❖ The system displays a confirmation screen, as shown in Figure-5.8.2.

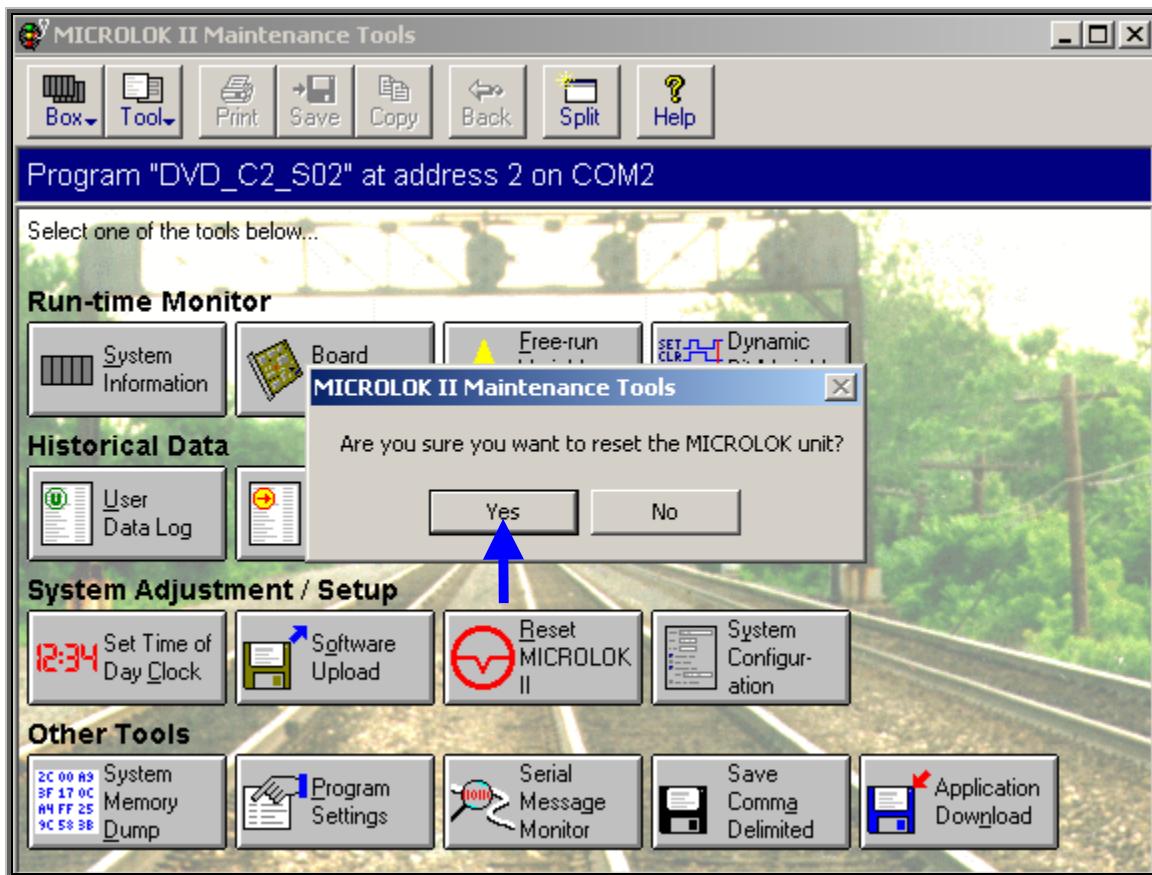


Figure-5.8.2

- ❖ The system prompts to click on “Yes” to confirm the reset operation, or “No” to cancel the request.
- ❖ Click on the “Yes” button to reset Microlok II. At this point, if the CPS is down the system displays the following window (Figure-5.8.3).

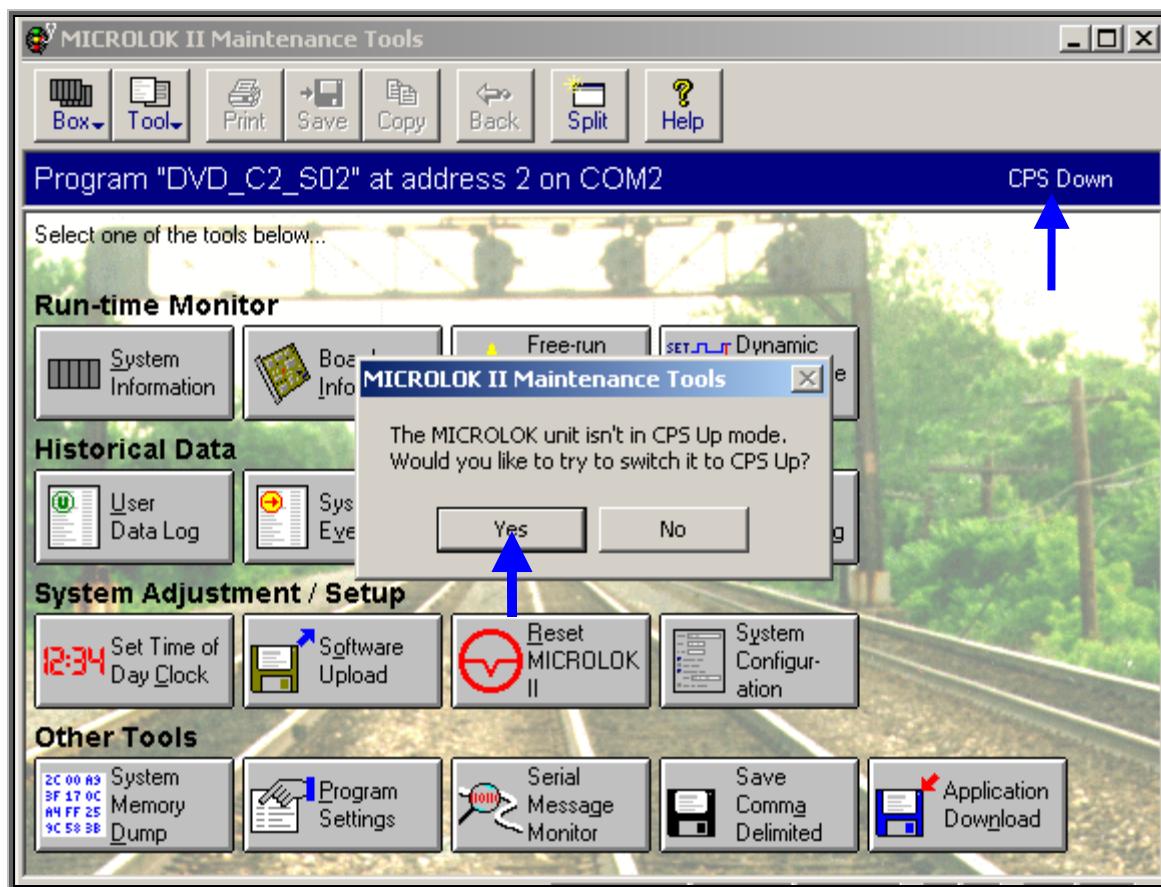


Figure-5.8.3

- ❖ The system prompts to click on “Yes” if user would like to set it to CPS up, and “No” if no attempt is desired. The system then resets itself with no further user interaction.
- ❖ When the reset is complete, the CPU upper 4-character display will scroll the phrase “US&S MICROLOK II” and the lower 4-character display will scroll the pre-programmed application name.
- ❖ The Maintenance Tools main menu will again be displayed on the Maintenance PC screen.

5.9 LOADING THE MICROLOK II SYSTEM APPLICATION PROGRAM

This process requires the use of a Maintenance PC and the US&S Microlok II Maintenance Tools program. Use the following procedure to load the application logic program:

- ❖ Ensure Microlok II CPU jumpers “20, 21, 22, 23, 24 & 30 in 2-3” unlock position.
- ❖ Connect a serial cable (a null modem cable with a 9-pin connector on the CPU board end) between the COM2 serial port on the computer and the diagnostic serial port on the front of the Microlok II CPU board.

- ❖ Power up the computer and allow the Microsoft Windows program to load.
- ❖ Double click on the “MICROLOK II Maintenance Tools” icon in the Windows desktop to start the Microlok II Maintenance Tools program.
- ❖ Maintenance Tools main menu with old program file name appears (Figure-5.9.1).

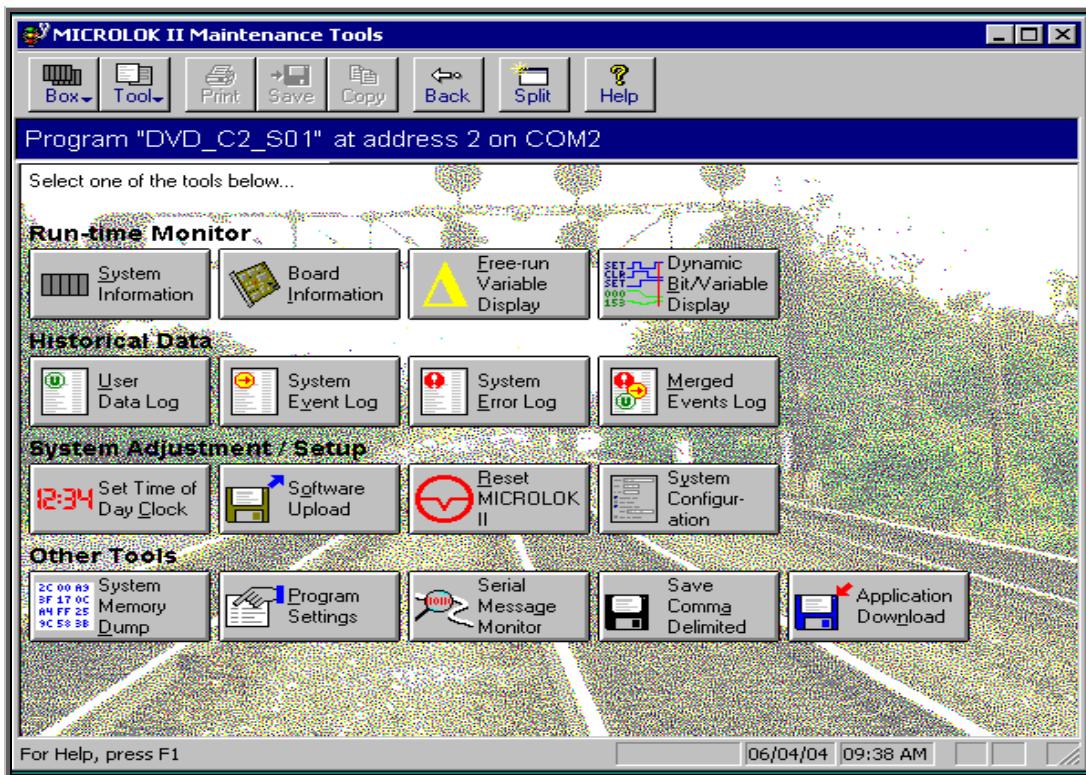


Figure-5.9.1

- ❖ If bad link appears (Figure-5.9.2), Configure communication between the computer’s serial port with the Microlok II CPU board as follows:
 - ◆ Click on the “Box” (icon) button in the upper left-hand corner of the screen for pull-down menu.
 - ◆ Next, select the “Configure Communications” option in the pull-down menu.
 - ◆ “MICROLOK II Communications” dialog box appears (Figure-5.9.2).

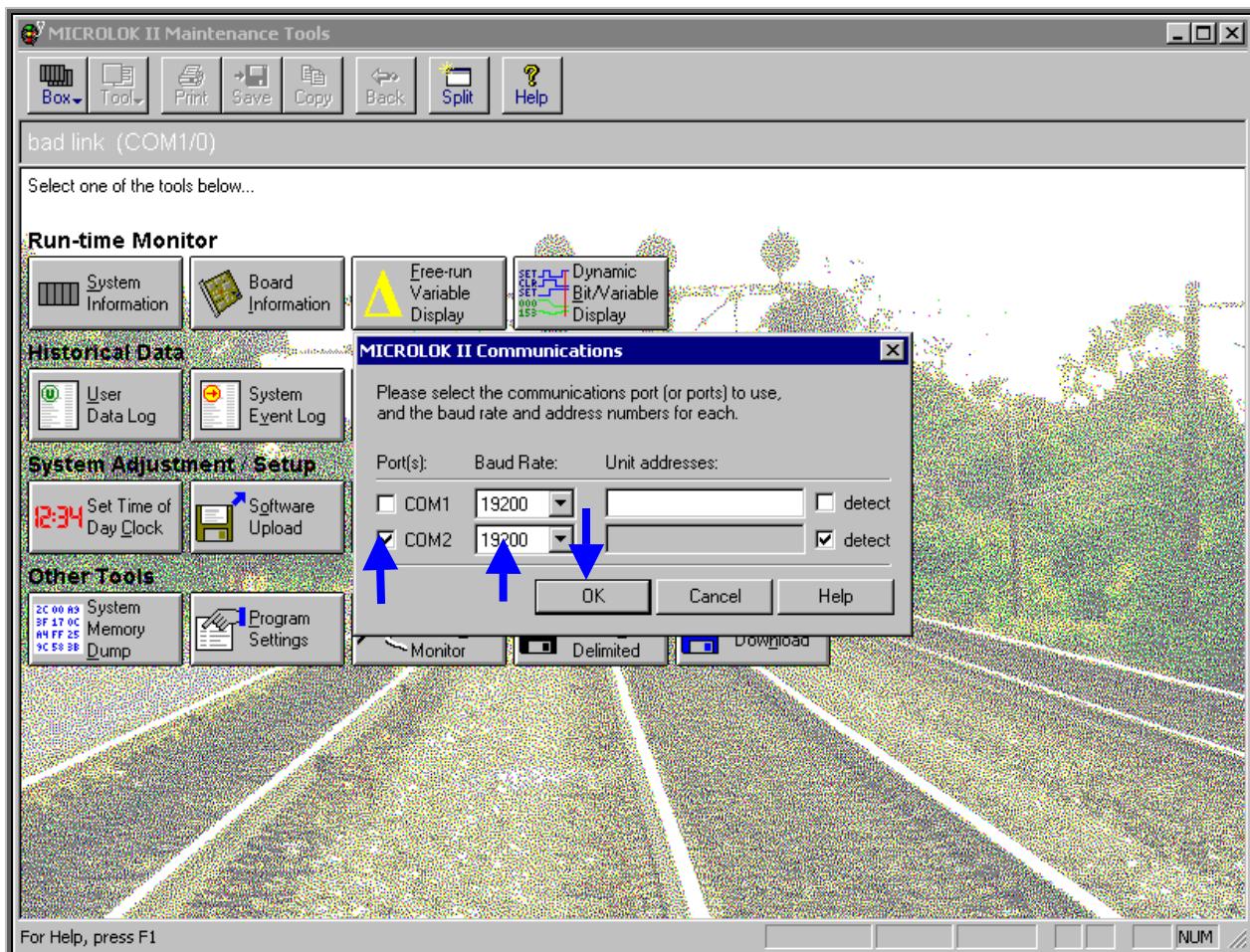


Figure-5.9.2

- ❖ Select the following in “MICROLOK II Communications” dialogue box:
 - ◆ Connected serial port in the Maintenance PC (COM1/COM2).
 - ◆ Defined baud rate in the application program (19200).
- ❖ Click on the “OK” button in “MICROLOK II Communications” dialogue box to complete the configuration.
- ❖ Once again click on the “Box” (icon) button and select the appropriate program file name from the pull-down menu (Refer Figure-5.9.2.1).

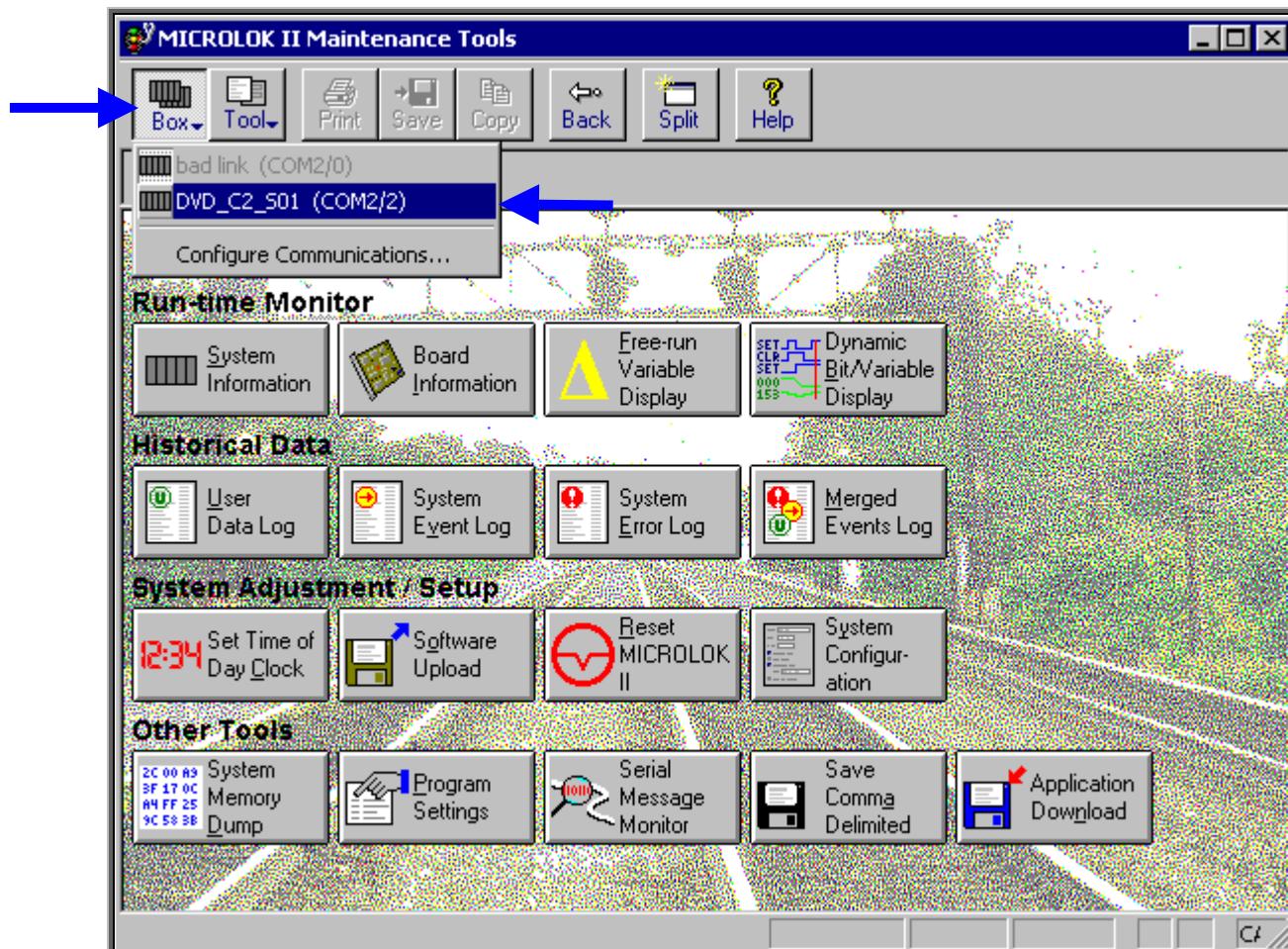


Figure-5.9.2.1

- ❖ Maintenance Tools main menu with old program file name appears (Figure-5.9.3).

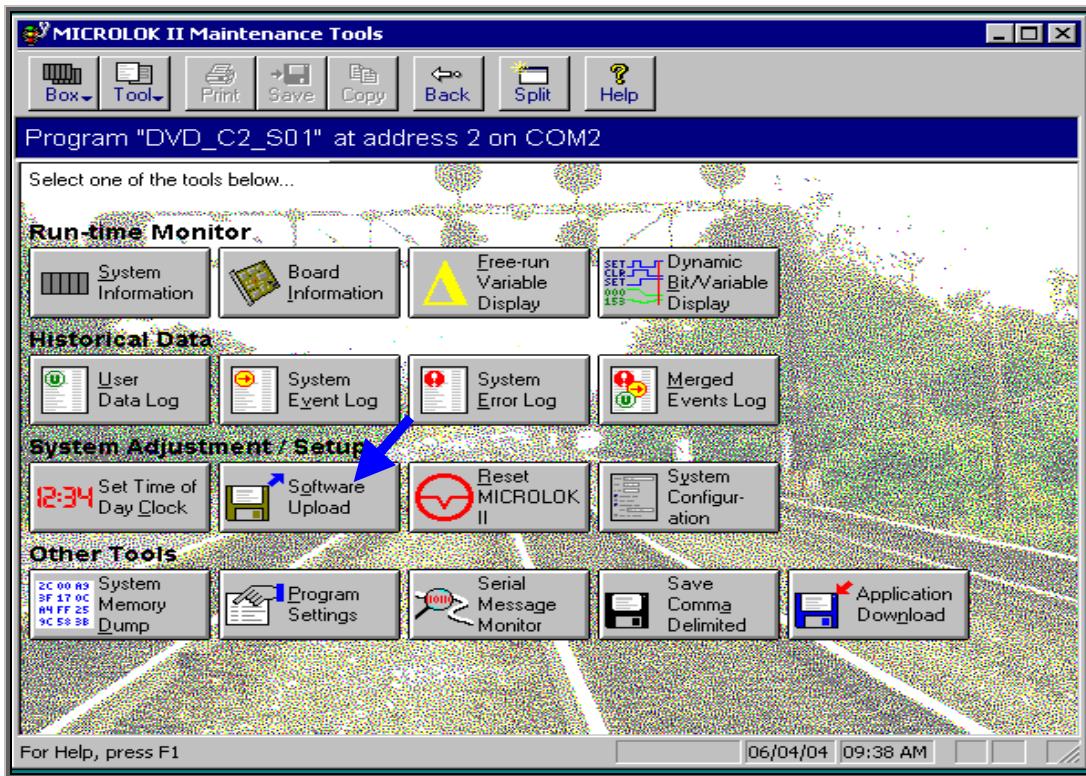


Figure-5.9.3

- ❖ Click on the “**Software Upload**” option in the Maintenance Tools main menu (Figure-5.9.3).
- ❖ “**Programming Jumpers**” mini window appears (Figure-5.9.4).

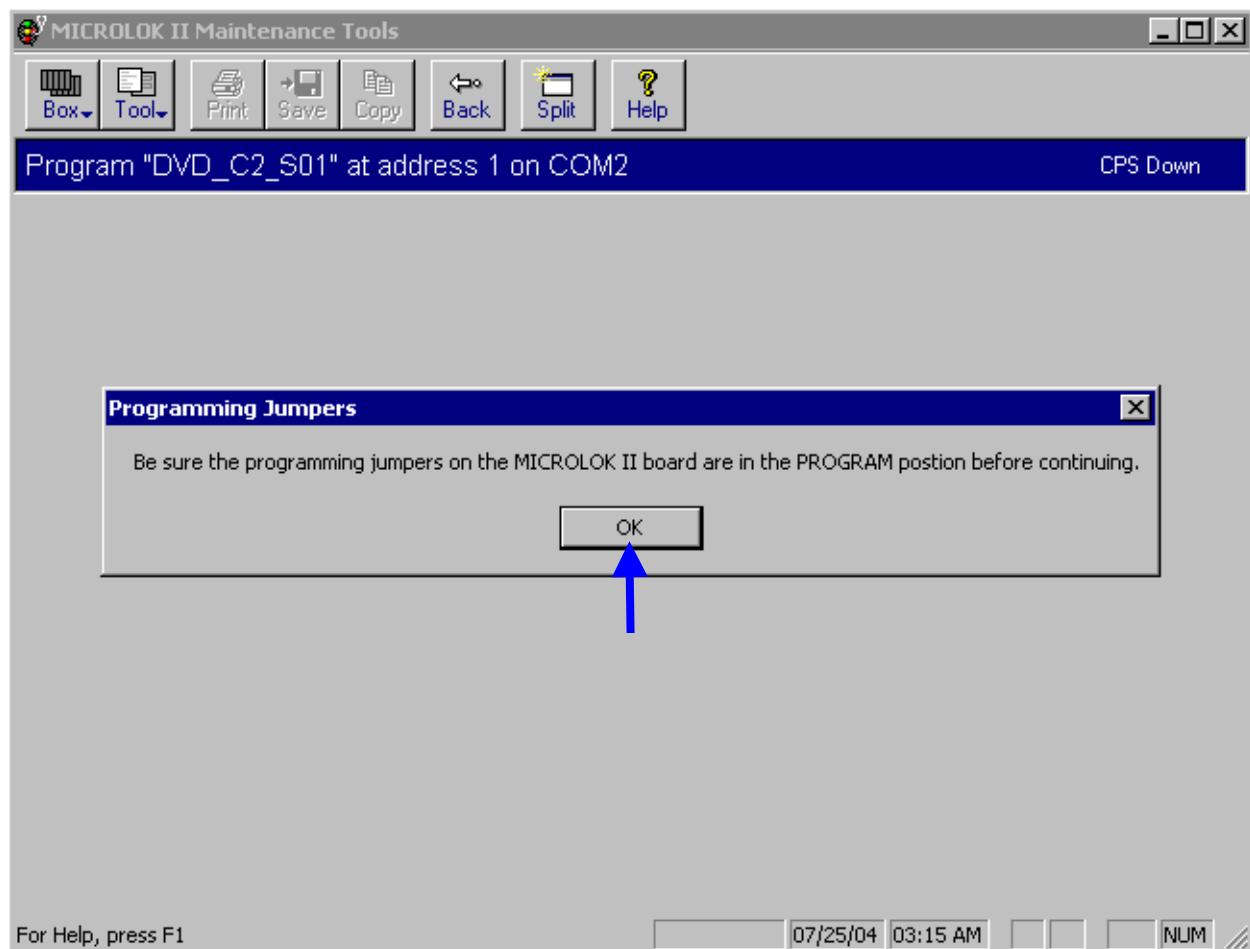


Figure-5.9.4

- ❖ The above “**Programming Jumpers**” window is to remind the user to ensure that Programming jumpers on the MICROLOK II board are in the PROGRAM position before continuing.
- ❖ Click on the “OK” button in “**Programming Jumpers**” window.
- ❖ “**Software Upload**” window appears (Figure-5.9.5).

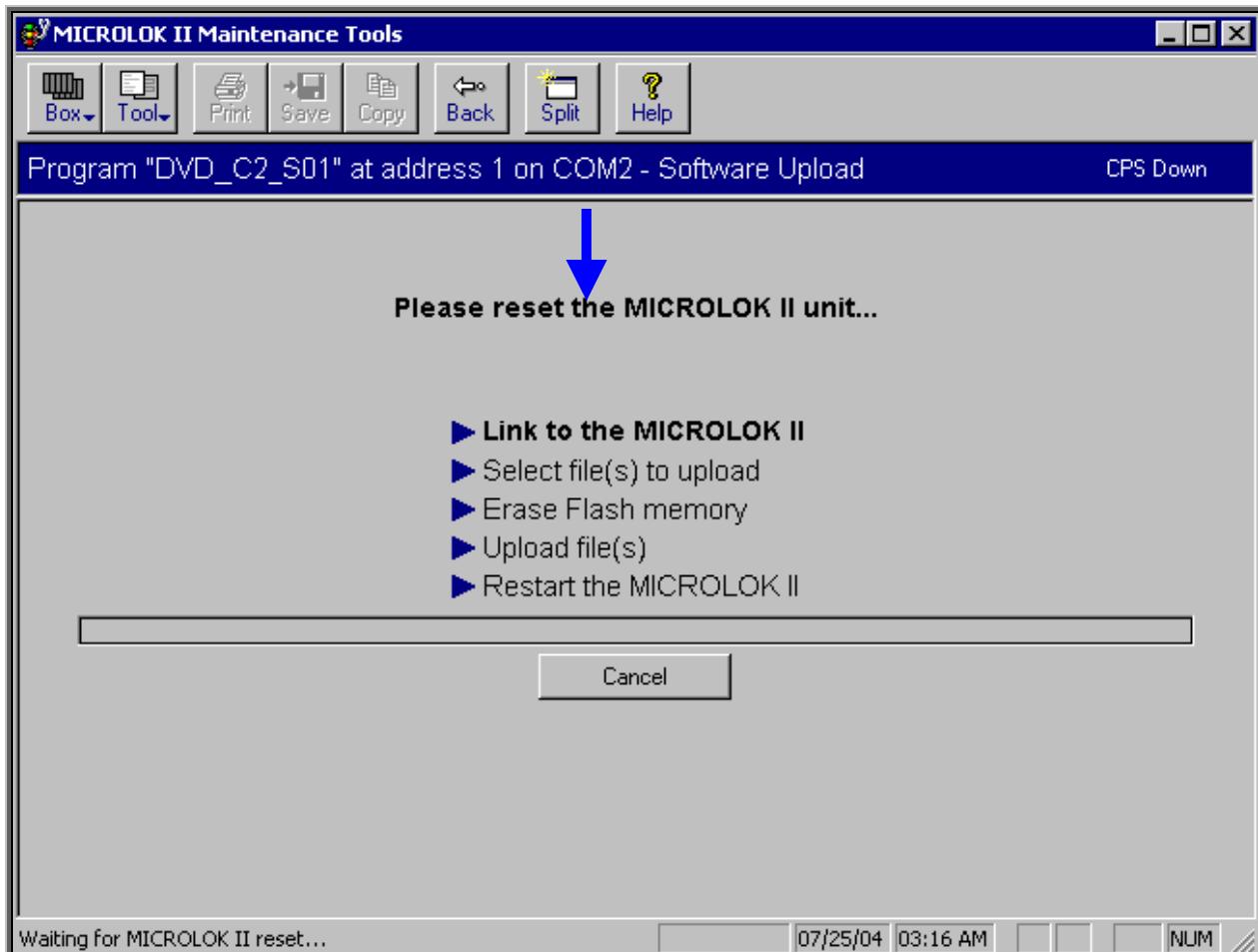


Figure-5.9.5

- ❖ The above window prompts, “**Please reset the MICROLOK II unit...**”
- ❖ Press the “**RESET**” push button on the CPU board front panel.
- ❖ When System completes the Reset process, mini active window “**Open**” appears (Figure-5.9.6).

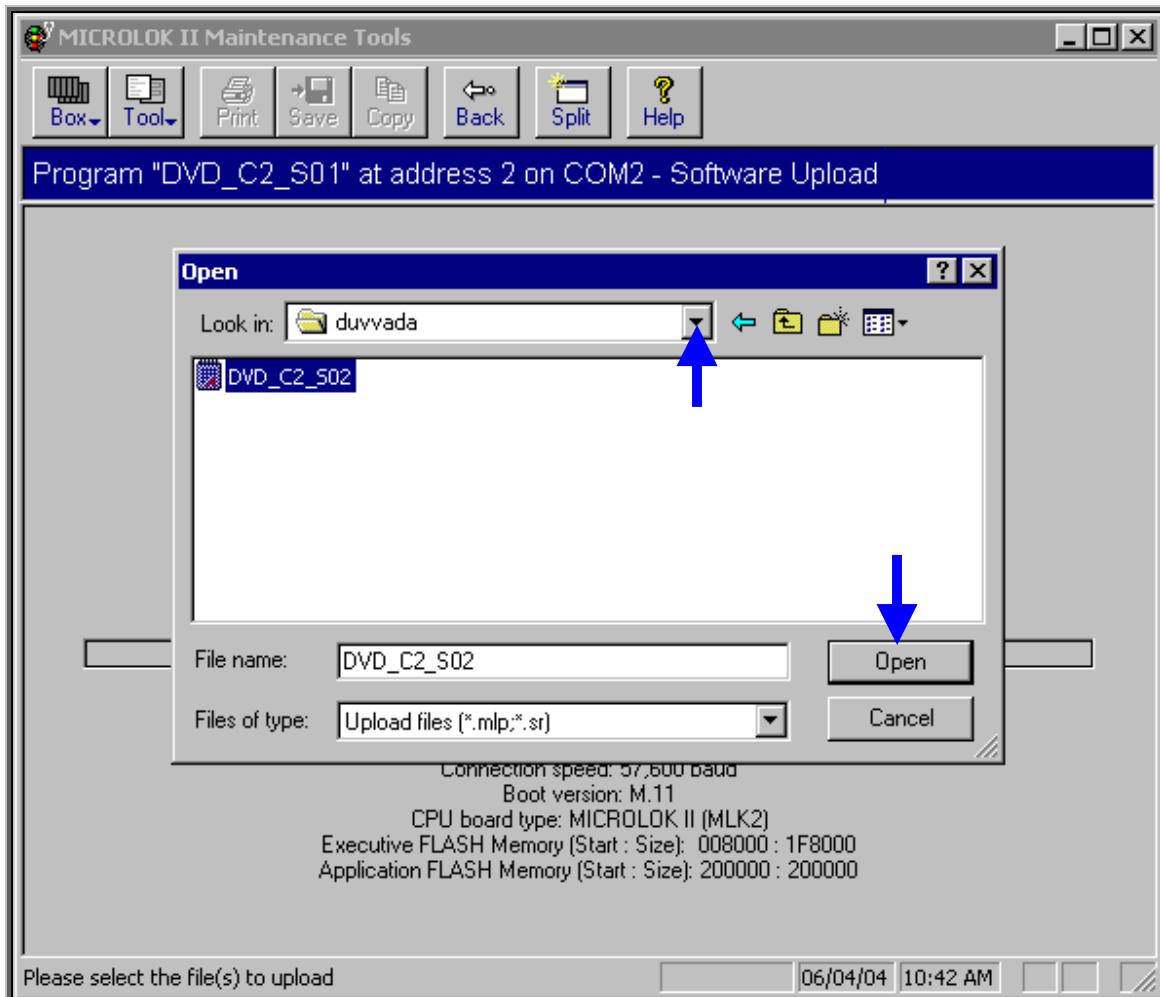


Figure-5.9.6

- ❖ In the above window, select the appropriate application program file name in the concerned drive and click on the “Open” button.
- ❖ “File Upload” mini window appears (Figure-5.9.7).

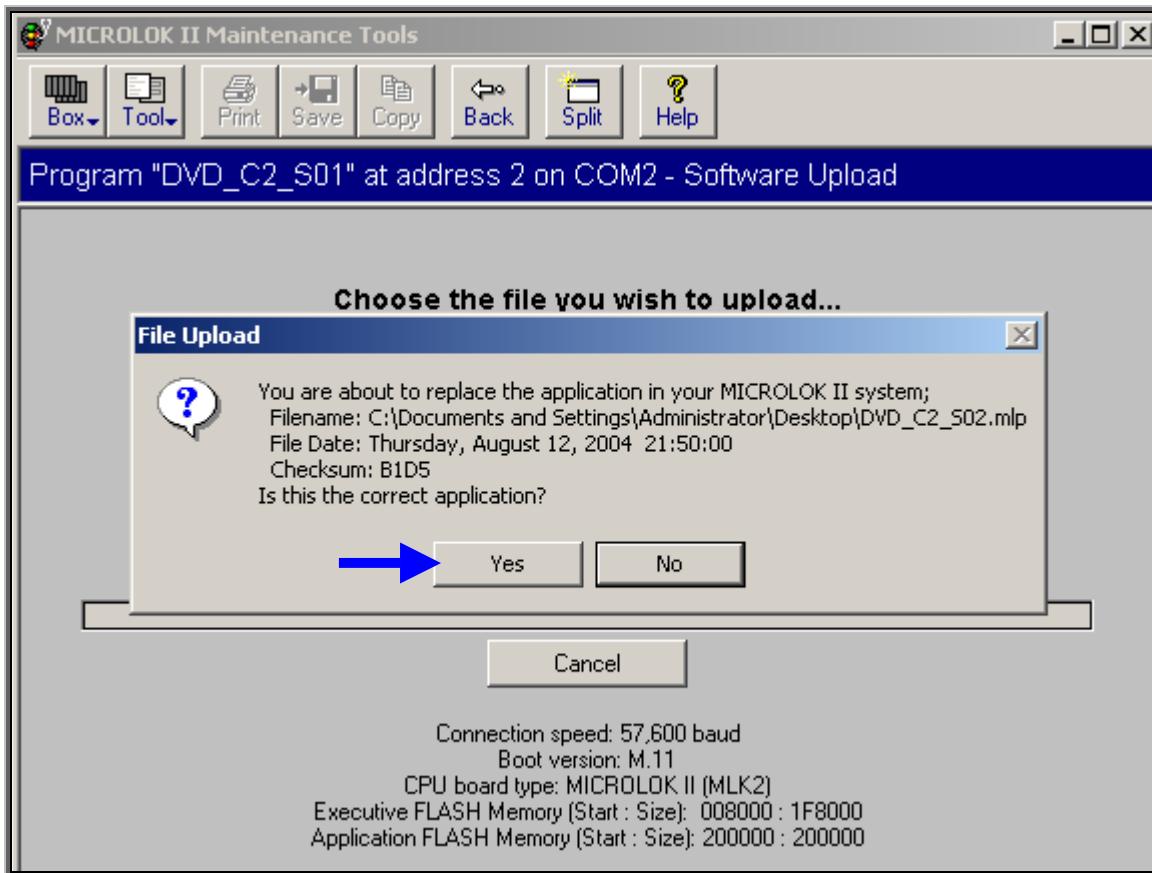


Figure-5.9.7

- ❖ Click on the “Yes” button to replace the application program in Microlok II system.
- ❖ “Upload Confirmation” mini window appears (Figure-5.9.8).

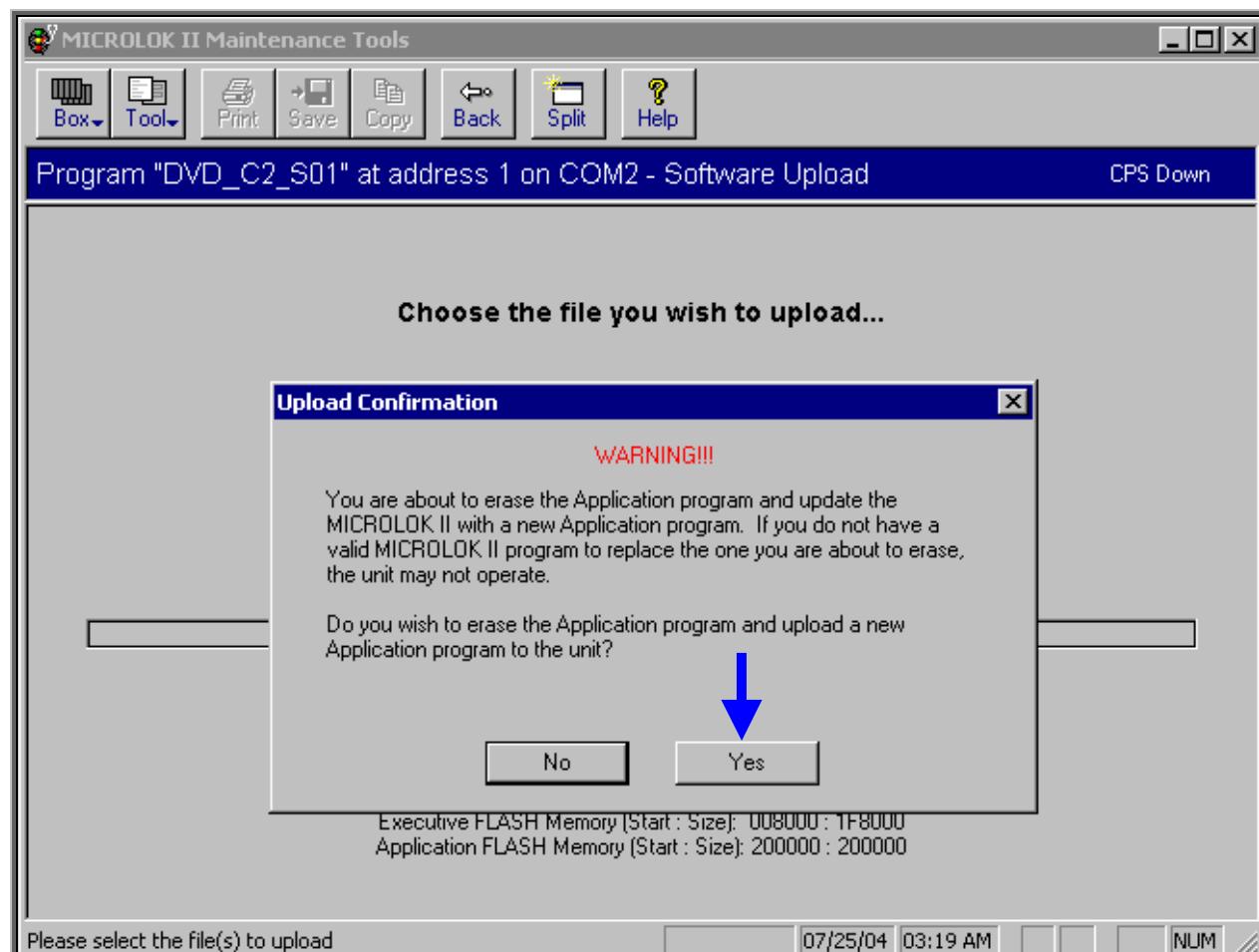


Figure-5.9.8

- ❖ In the above mini window, click on the “Yes” button to erase the old Application program and upload a new Application program in Microlok II system.
- ❖ The following operations are performed automatically in the upload process.
 - ◆ Erase Flash memory (Figure –5.9.9)
 - ◆ Upload file (Figure –5.9.10)
 - ◆ Restart Microlok II

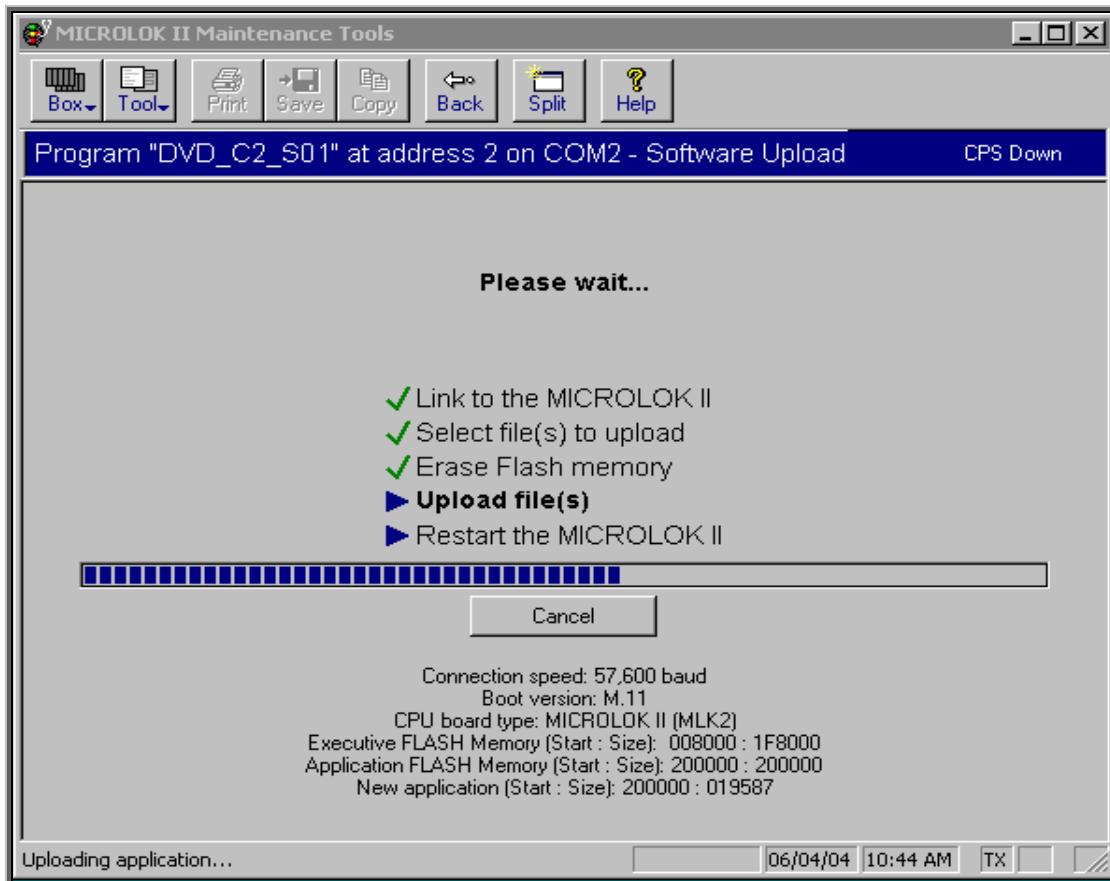


Figure-5.9.9

- ❖ The above screen indicates that old Application program is erased and Uploading new application program in Microlok II system.
- ❖ After the program upload, a “File Upload” mini active window appears & System resets automatically once (Figure-5.9.10).

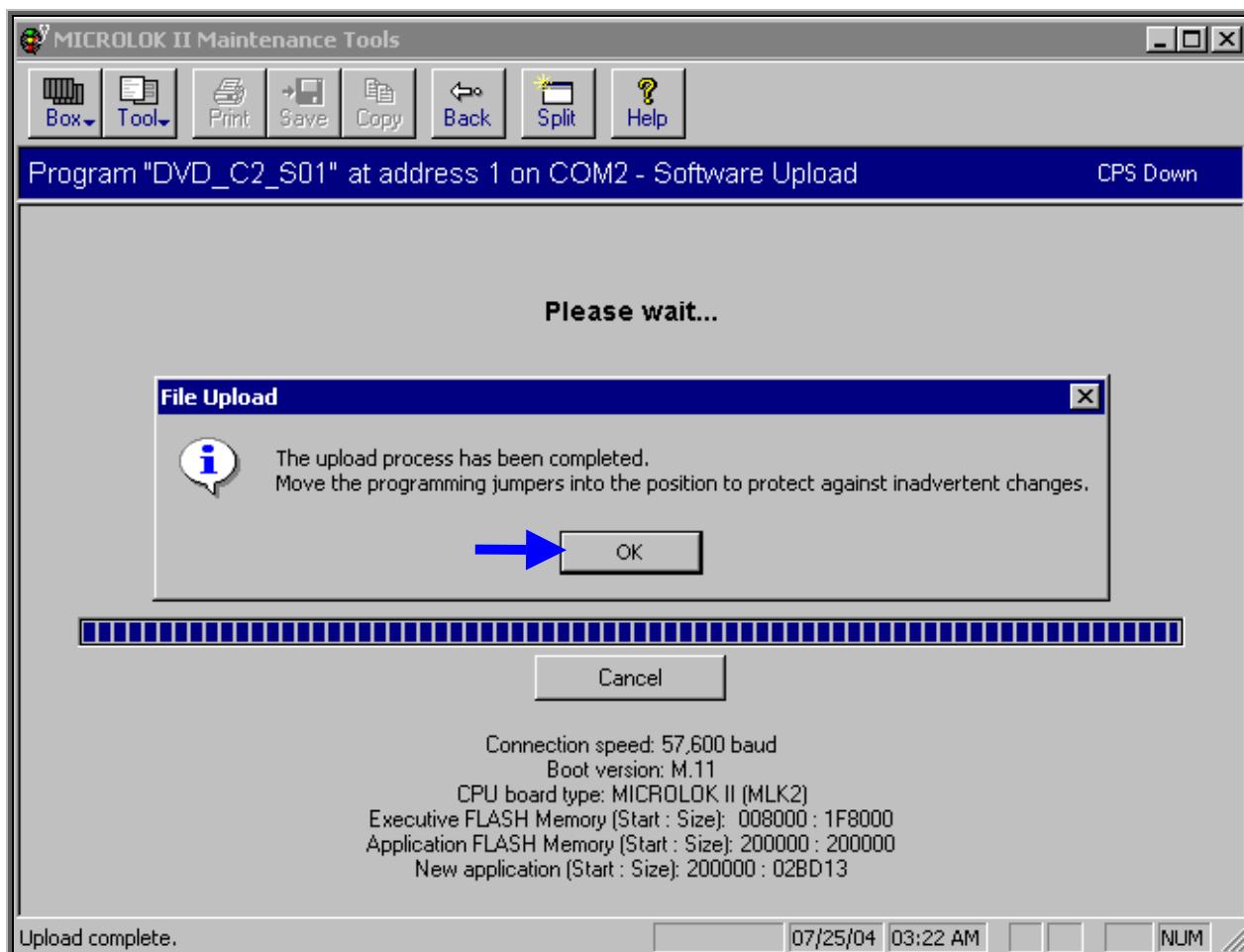


Figure-5.9.10

- ❖ The above mini window reminds, the user to move the programming jumpers into the position to protect against inadvertent changes.
- ❖ Click on the “OK” button in the “File Upload” window.
- ❖ Software Upload window is closed & Maintenance Tools main menu appears (Figure-5.9.11).
- ❖ Next Switch “OFF” the System.
- ❖ “Remove” CPU from the Cardfile.
- ❖ Lock the CPU jumpers “20, 21, 22, 23, 24 & 30 in 1-2” position.
- ❖ “Insert” CPU in the cardfile.
- ❖ “Restart” the System.

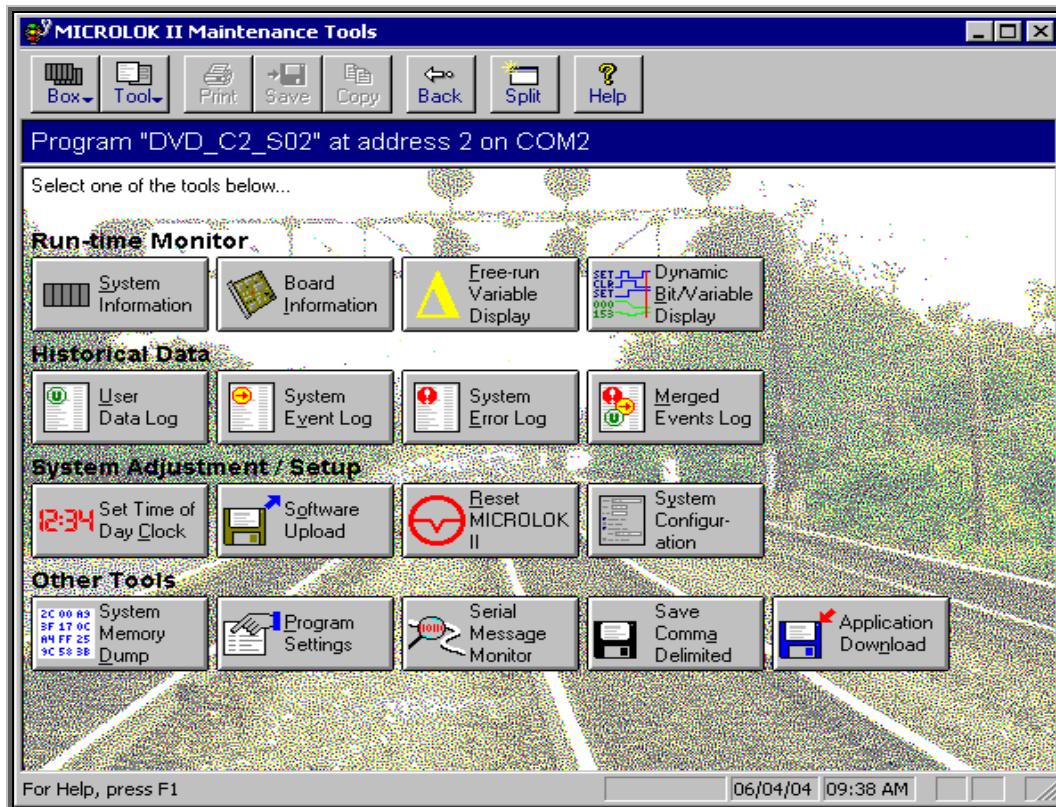
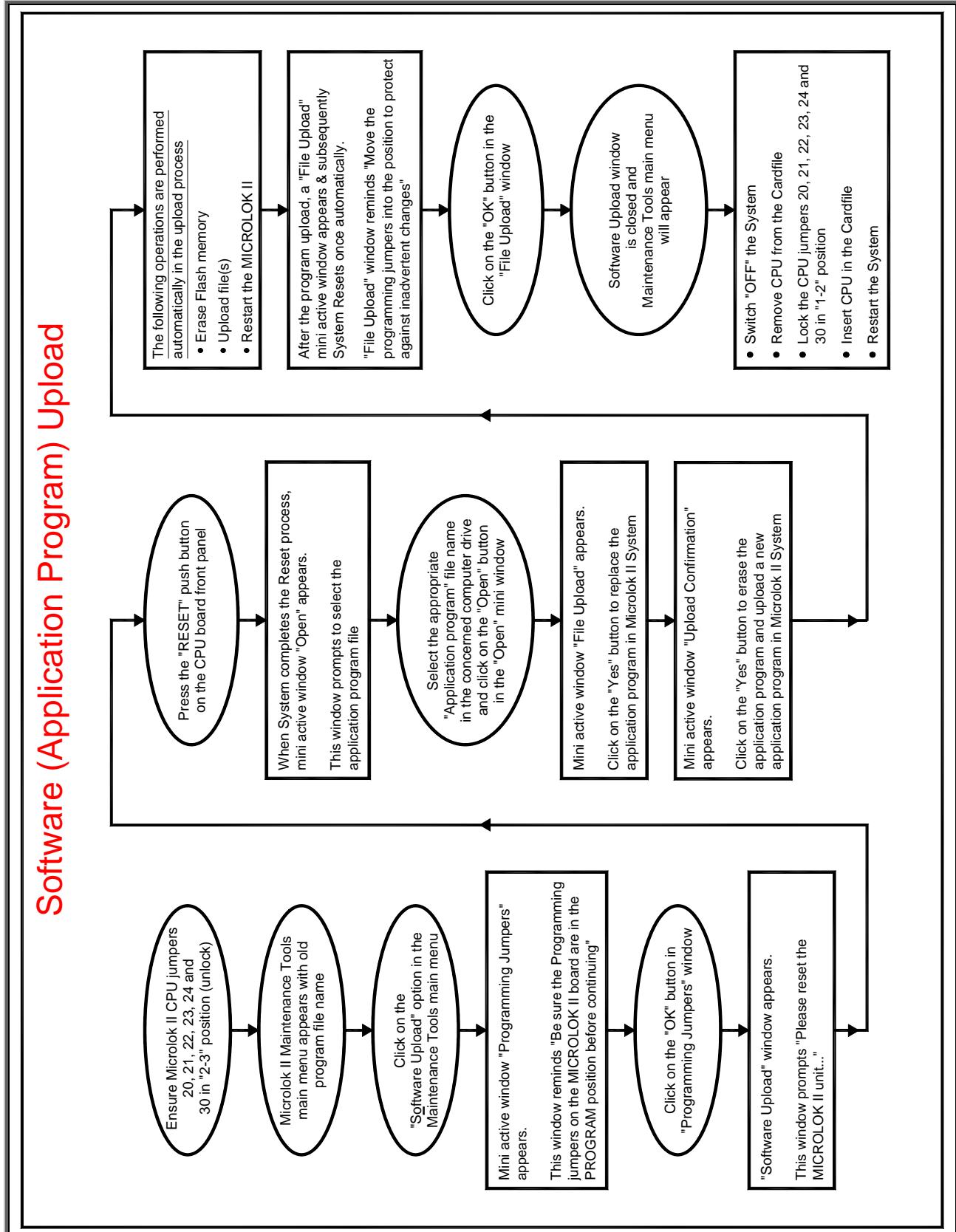


Figure-5.9.11

FLOW DIAGRAM OF SOFTWARE UPLOAD (Figure-5.9.12)



5.10 APPLICATION DOWNLOAD

- ❖ This tool lets the user download the application image from the PROM on the Microlok II unit in S-Record format and place it on a hard disk (floppy disk).
- ❖ To view the Application Download click on the “Application Download” option in the Maintenance Tools main menu (Figure-5.10.1).

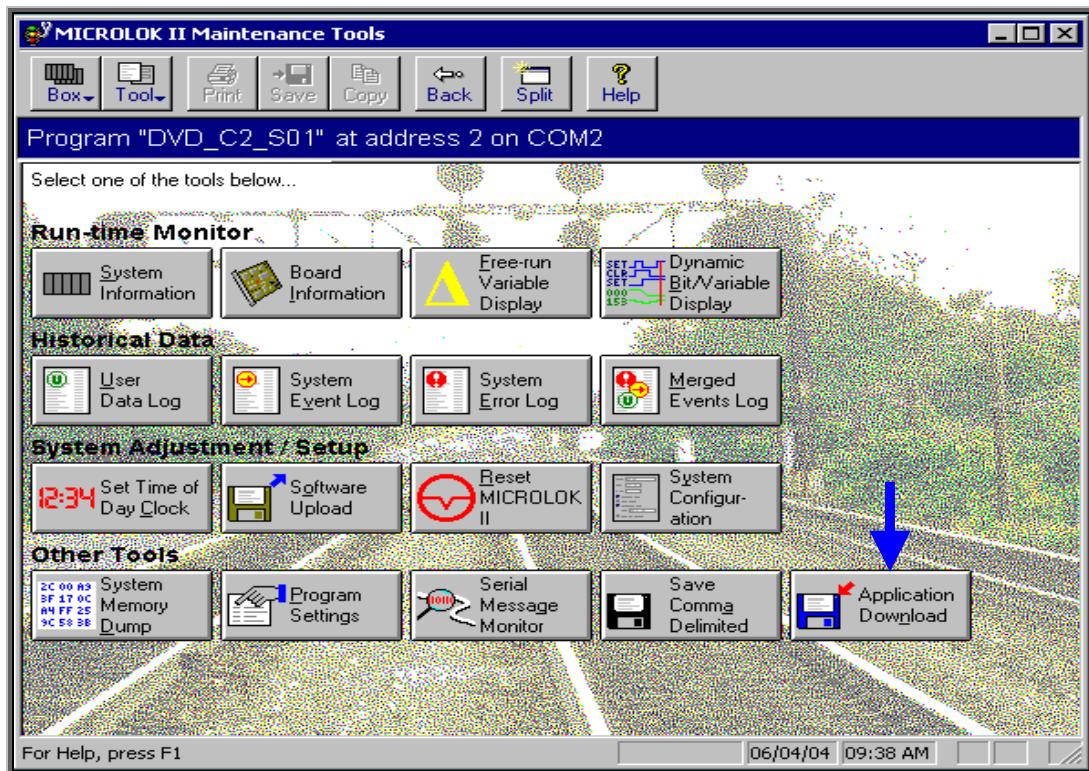


Figure-5.10.1

- ❖ Mini active window “Save As” appears as shown in Figure-5.10.2.

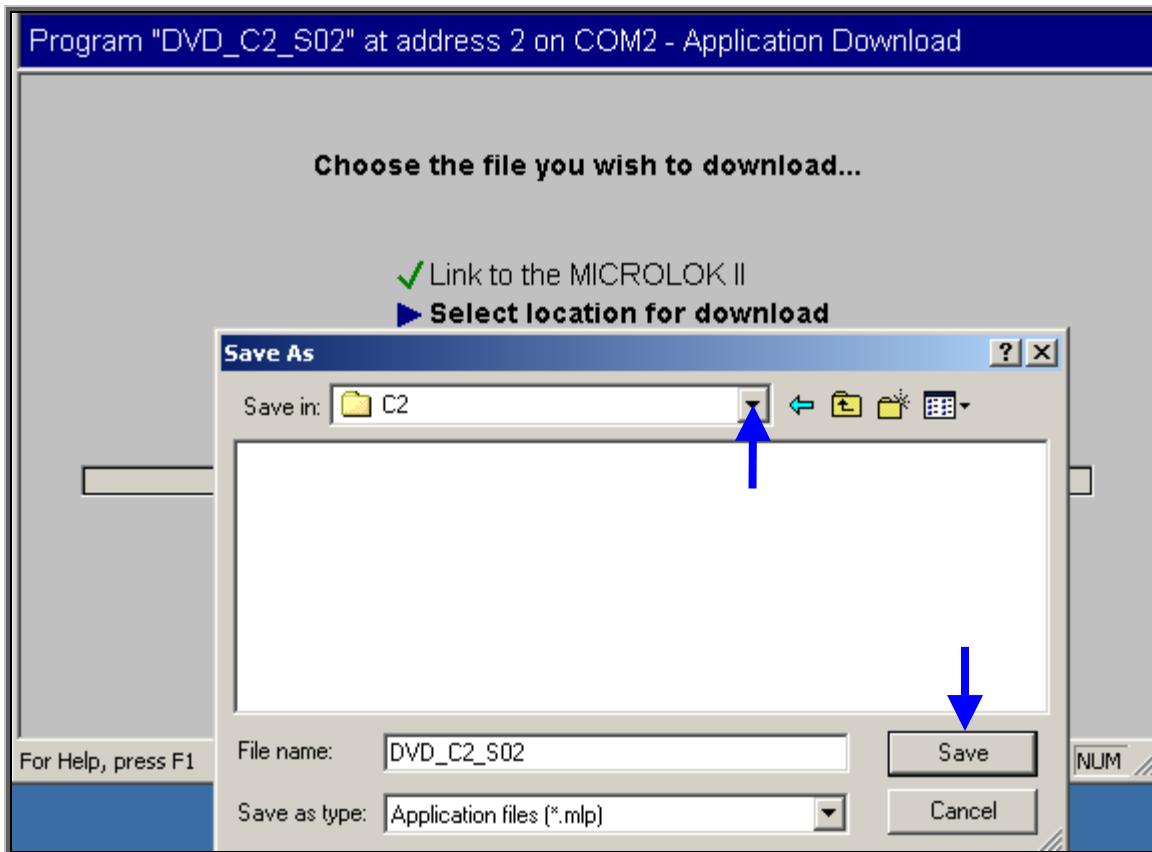


Figure-5.10.2

- ❖ Select the appropriate hard drive & folder to save the application program file and Click on the “Save” button in the above window.
- ❖ This will present another window as shown in Figure 5.10.3.

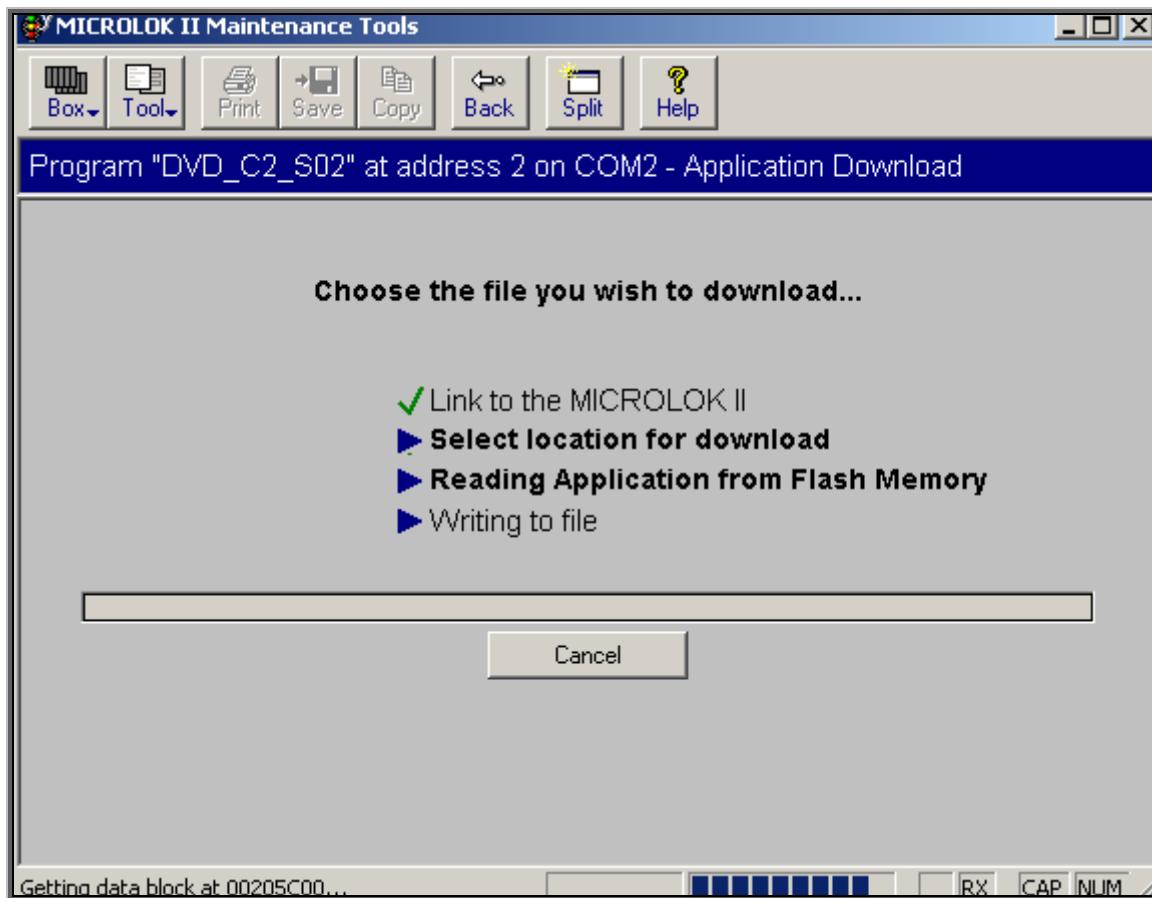


Figure-5.10.3

- ❖ The above window indicates that Application Program is read from Flash Memory.
- ❖ After Application Reading is completed, the following window appears as shown in Figure-5.10.4.

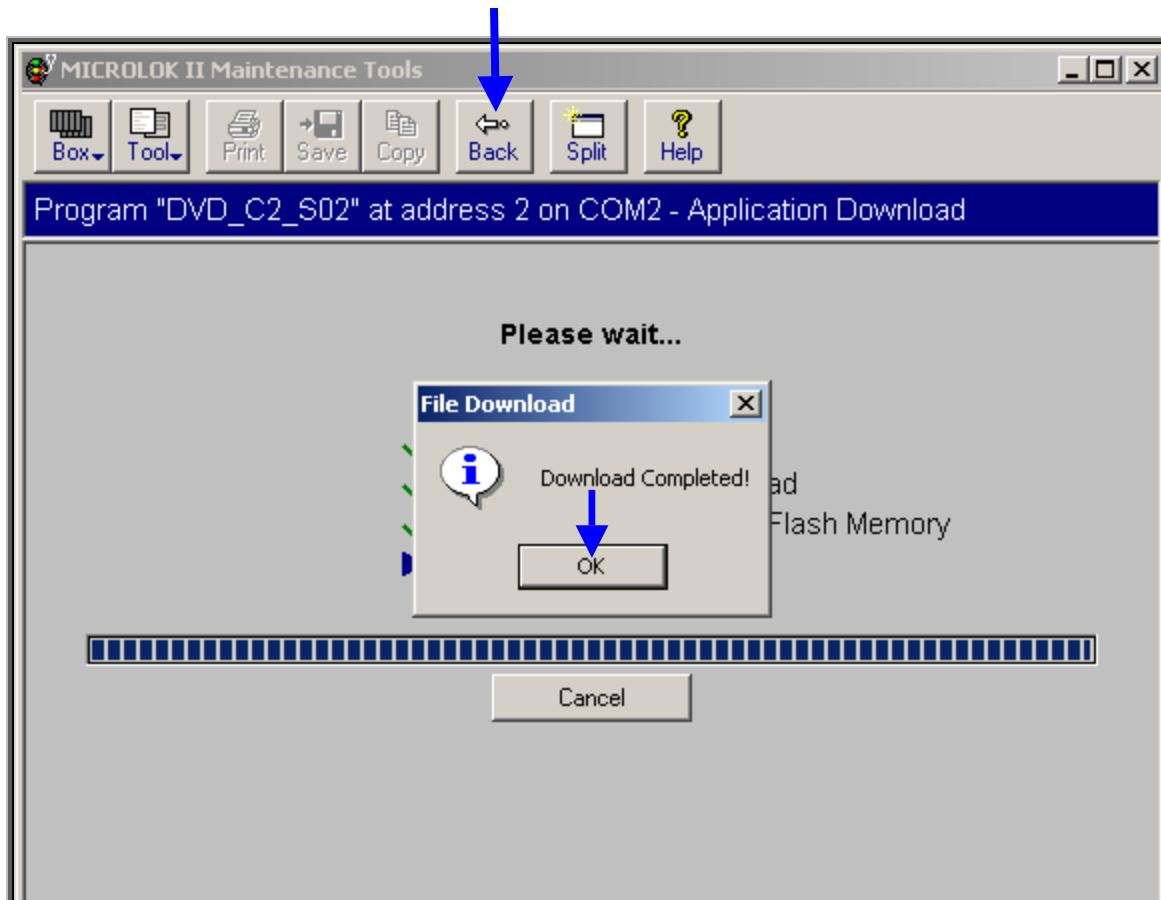


Figure-5.10.4

- ❖ As a default, the file is stored with an “.mlp” extension so that it can be easily uploaded to the box if necessary.
- ❖ The center shows the progress of the file being written.
- ❖ Clicking on the Cancel pushbutton can stop the downloading process.
- ❖ Before attempting download, selection of correct application type is to be ensured.
- ❖ After downloading process is completed, “File Download” mini active window appears (Refer figure-5.10.4).
- ❖ Click on the “OK” button when Download Completed (Refer figure-5.10.4).
- ❖ Click on the “Back” button on the tool bar to return to the Maintenance Tools main menu.

6. SYSTEM STARTUP

6.1 INTRODUCTION

After the Microlok II system hardware components have been installed and connected, the next step in the startup process is to apply power to the system,

load the application logic software, and then verify that the internal functions of the Microlok II system are working properly. This section addresses these operations.

Note that in some situations the application software may be loaded into the CPU board flash memory before shipment of the equipment to the field. The procedures presented in section (5.9) address this possibility.

6.2 POWERING UP THE MICROLOK II SYSTEM

Use the following procedure to power up the Microlok II system:

- ❖ Before applying power to the system for the first time, the entire hardware installation should be verified for correctness. As a minimum, the following quality checks should be made:
 - ◆ Make certain that all modular components of the system are installed in the proper locations and that the correct mounting hardware has been used as per the station specific interface design drawings.
 - ◆ Ensure that the locations selected for equipment installation will satisfy the environmental requirements specified in service manual SM-6800A.
 - ◆ Ensure that all mounting hardware is present and has been torqued to the required values (as applicable).
 - ◆ Ensure that all system wiring/cabling has been properly run and terminated. Check all cable installations and wiring connections against the system installation drawings.
 - ◆ Ensure that the DC power source (battery) for the cardfile is properly configured.
 - ◆ Ensure that the 48-pin or 96-pin connector for each Microlok II printed circuit board is securely connected to the mating connector at the rear of the cardfile.
 - ◆ Ensure that the bus address jumpers for each applicable Microlok II circuit board are properly set.
 - ◆ Ensure that all Microlok II printed circuit boards are fully seated in the cardfile.
 - ◆ Ensure that the required surge protection arrangement is installed as specified in UM6800B manual.

CAUTION

BEFORE POWERING UP THE MICROLOK II CARDFILE, MAKE CERTAIN THAT RAIL TRAFFIC IS PROHIBITED FROM ENTERING THE ASSOCIATED INTERLOCKING.

- ❖ Once the installation quality checks as per mention about UM6800B have been satisfactorily completed, apply +12V DC battery power to the Microlok II cardfile. Verify that the 5V ON LED on the cardfile power supply board is illuminated.
- ❖ If everything has been connected and configured properly, the Microlok II CPU will begin to run a series of self-tests and initialization routines. User will be able to monitor the progress of the testing by watching the 4-character displays at the top of the CPU board front panel. An abbreviated description of each test is displayed here as the CPU performs each test.
- ❖ If the application software has already been loaded into the CPU flash memory, the startup test routines should complete successfully and the CPU board will assume the on-line mode of operation. User can tell when the system is in the on-line mode by observing a number of cardfile indications:
 - ◆ The CPU board ON-LINE LED will be on.
 - ◆ The CPU board VPP ON LED will be off.
 - ◆ The CPU RESET LED will be off.
 - ◆ The CPU upper 4-character display will repeatedly scroll the phrase “US&S MICROLOK II” and the executive version information.
 - ◆ The CPU lower 4-character display will scroll the pre-programmed application name.
 - ◆ The power supply board VCOR LED will be illuminated.
- ❖ If all of the above indications are present, perform the System test & configuration procedures.
- ❖ If the CPU did not successfully complete self-test process, refer to section 6.3 to troubleshoot the Microlok II installation.
- ❖ If the application software has not been loaded into the CPU board flash memory, the board self-tests will most likely fail when the CPU attempts to initialize the application program. In this case, refer to section 5.9 to load the application program.

6.3 MICROLOK II SYSTEM STARTUP GUIDE

S.No	CONDITION
1	VCOR down 1.1 Check CPS.STATUS & CPS.ENABLE bit status in Free run variable display 1.2 Ensure CPS in up mode (Refer “CPS CLEAR” function details) 1.3 Also refer manual UM-6800E sections 4.1.14 & 7.1.12
2	Vital Serial Link fail 2.1 Check resistors connection 2.2 Check port number and address definitions in Application program 2.3 Check serial link parameters in Application program 2.4 Mismatch in serial I/O in the Application program 2.5 Also refer manual UM-6800E sections 4.1.11 & 7.1.9
3	Non-vital Serial Link fail 3.1 Check port number and address definitions in Application program 3.2 Check serial link parameters in Application program 3.3 Mismatch in serial I/O (between Microlok II & VDU) 3.4 Check cable distance 3.5 Also refer manual UM-6800E sections 6.1.5 & 7.3.5
4	Bit “FAIL” in Vital Output/Vital Input/Non-vital I/O board 4.1 Program local I/O list mismatch with Interface circuits 4.2 Also refer manual UM-6800E sections 6.1.4 & 7.3.4
5	OUT16 Type error, Board J “x” (or) OUT16 Echo error, Board J “x” (or) IN16 Type error, Board J “x” (or) IN16 Echo error, Board J “x” (or) NVIN32OUT32 Type error, Board J “x” (or) NVIN32OUT32 Echo error, Board J “x” 5.1 Refer manual UM-6800E sections 4.1.5, 4.1.6, 4.1.7, 4.1.8, 4.1.9, 4.1.10 & 7.1.8
6	OUT16 Output error, Board J “x”, Output “y” Output Read Failure 6.1 Refer manual UM-6800E sections 4.1.1 & 7.1.4
7	OUT16 Output error, Board J “x”, Output “y” Output Read Failure (or) OUT16 Hardware error, Board J “x”, Monitor “y” Output Monitor OFF Failure 7.1 Refer manual UM-6800E sections 4.1.2 & 7.1.5

8	OUT16 Output error, Board J “x”, Output “y” Output Flip Failure
8.1	Refer manual UM-6800E sections 4.1.3 & 7.1.6
9	OUT16 Hardware error, Board J “x”, Monitor “y” Output Monitor OFF Failure (or) OUT16 Output error, Board J “x”, Output “y” Output Flip Failure
9.1	Refer manual UM-6800E sections 4.1.4 & 7.1.7
10	System Reset during program initialization
10.1	System Timer Watchdog Timeout-Idle Loop (or) Result overflow in nv.assign statement- statement number “x”
10.1.1	Refer manual UM-6800E sections 4.1.19 & 7.1.16
10.2	System Timer Watchdog Timeout-Logic Processing
10.2.1	Refer manual UM-6800E sections 4.1.20 & 7.1.17
10.3	Logic queue overflow error
10.3.1	Refer manual UM-6800E sections 4.1.18 & 7.1.15
11	FCOR bit set at startup
11.1	Program local I/O list mismatch with Interface circuits
11.2	Also refer manual UM-6800E sections 4.1.12 & 7.1.10
12	Software (Program) Upload not possible
12.1	Ensure CPU jumper 21, 22, 23, 24 & 30 in “2-3” position (unlock)
12.2	Recompile the program and load
12.3	Maintenance Tool is to be re-installed
12.4	Replace CPU Board
13	RAM error / CPU board port failure
13.1	Refer manual UM-6800E sections 4.1.17 & 7.1.14
14	System configuration mode fail
14.1	Refer manual UM-6800E sections 6.1.1 & 7.3.1
15	Kill Bit set by application logic
15.1	Refer manual UM-6800E sections 5.1 & 7.2.1
16	Diagnostic mode fail
16.1	Refer manual UM-6800E sections 6.1.3 & 7.3.3

17	System Reset without any event/error log information
17.1	Refer manual UM-6800E sections 4.1.13 & 7.1.11
18	Display of LINK 1920(0)
18.1	Refer manual UM-6800E sections 6.1.2 & 7.3.2
19	Non-Volatile memory error
19.1	Replace the EEPROM PCB
20	Output Relay fail when Microlok II Vital output is high
20.1	Check diode terminal
20.2	Coil connection
20.3	Relay coil open
20.4	Check relay N24 looping

7. CONFIGURING THE MICROLOK II SYSTEM

7.1 INTRODUCTION

The configuration tool provides a wide variety of options for checking and modifying the configuration of the Microlok II system hardware and software. Three types of options are provided within this tool:

- ❖ *System configuration* options enable to modify the general system parameters and the user parameters, and to assign specific parameters to the user data log.
- ❖ *Board configuration* options enable to disable/enable and configure the individual Microlok II system printed circuit boards.
- ❖ *Link configuration* options enable to configure the Microlok II system communication links.

7.2 SYSTEM CONFIGURATION

The configuration process involves checking and adjusting system and printed circuit board settings using the Microlok II Maintenance Tools program, as well as making hardware jumper adjustments and performing various tests to validate several of the parameter settings.

The configuration process begins with the Maintenance PC connected to the diagnostic port of the CPU board, and assumes the following conditions:

- ❖ The application software has been loaded.
- ❖ The Microlok II CPU board is running in the on-line mode.
- ❖ The CPU board diagnostic serial link is operational.

- ❖ The Microlok II Maintenance Tools program is running.

7.3 Accessing MICROLOK II Maintenance Tools Program Configuration Display

Use the following procedure to access the Tools program configuration display:



Figure-7.3.1

- ❖ Double click on the MICROLOK II Maintenance Tools icon (Figure-7.3.1) on the windows desktop to start the Microlok II Maintenance Tools program.
- ❖ Maintenance Tools main menu appears (Figure-7.3.2).

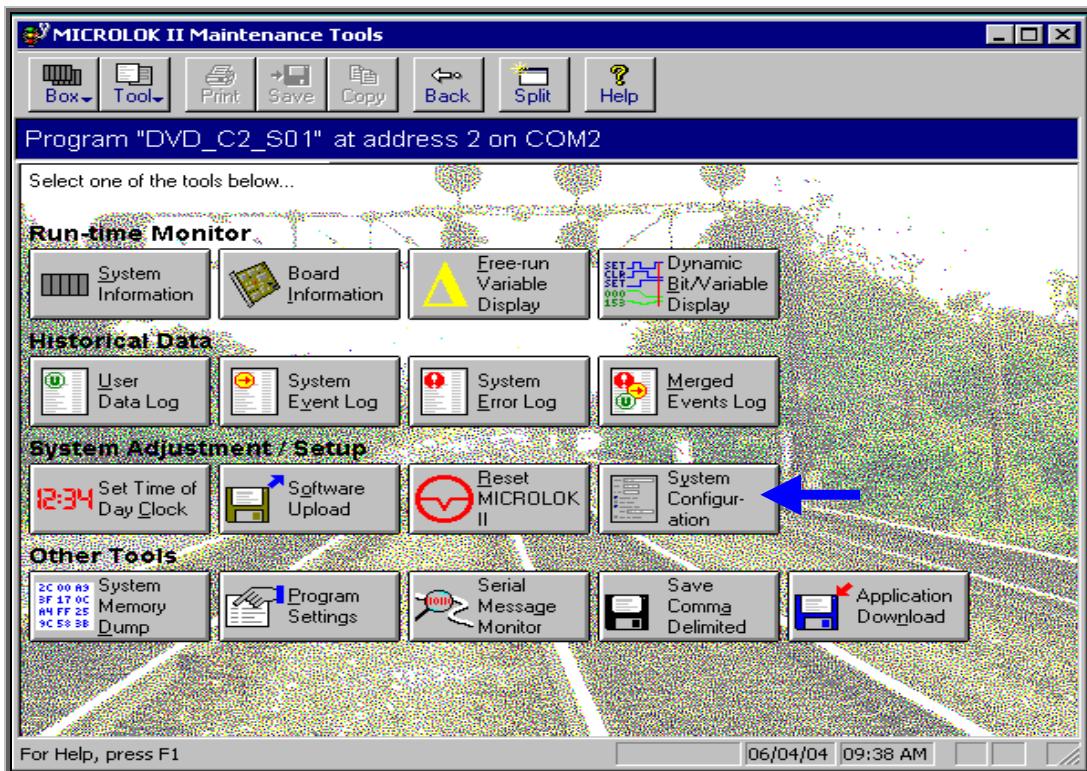


Figure-7.3.2

- ❖ Click on the “System Configuration” selection button in the above Maintenance Tools main menu.
- ❖ “System Configuration” dialogue box appears as shown in Figure-7.3.3.

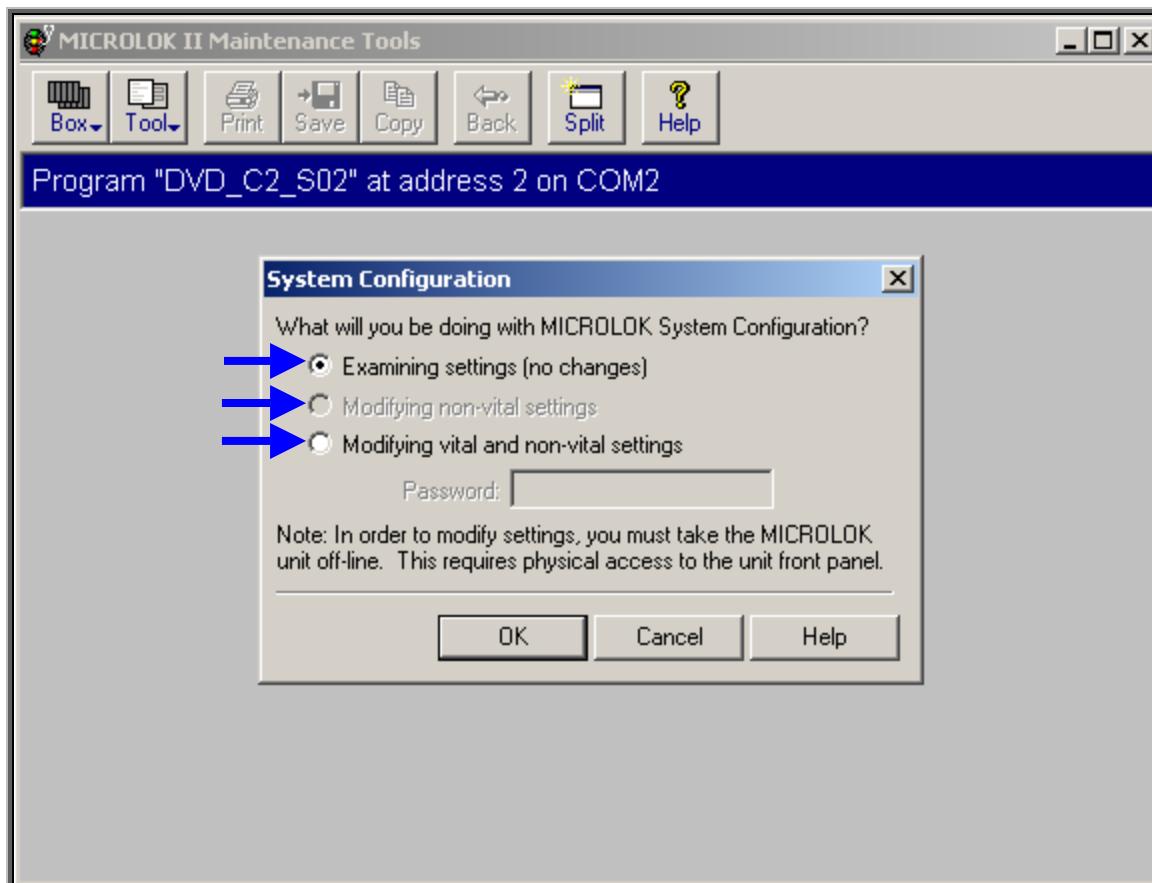


Figure-7.3.3

1. In the above display, “**Examining settings (no changes)**” allows the user to view the configuration of boards and links without making any changes (a read-only view).
2. “**Modifying non-vital settings**” allows the user to view and make changes to the non-vital settings of boards and links. This option requires a password.
3. “**Modifying vital and non-vital settings**” allows the user to view and make changes to the vital and non-vital settings of boards and links. This option also requires a password.

NOTE

THE PROGRAM WILL NOT ALLOW ACCESS TO MODIFICATIONS OF CONFIGURATION VALUES WITHOUT THE “CORRECT PASSWORD”.

- ❖ Select the “Modifying vital and non-vital settings” option in the System Configuration dialog box (Refer Figure-7.3.4).
- ❖ Position the mouse cursor in the “Password” field and type in the current password. The default password is “*microlokii*”. (Refer Figure-7.3.4).

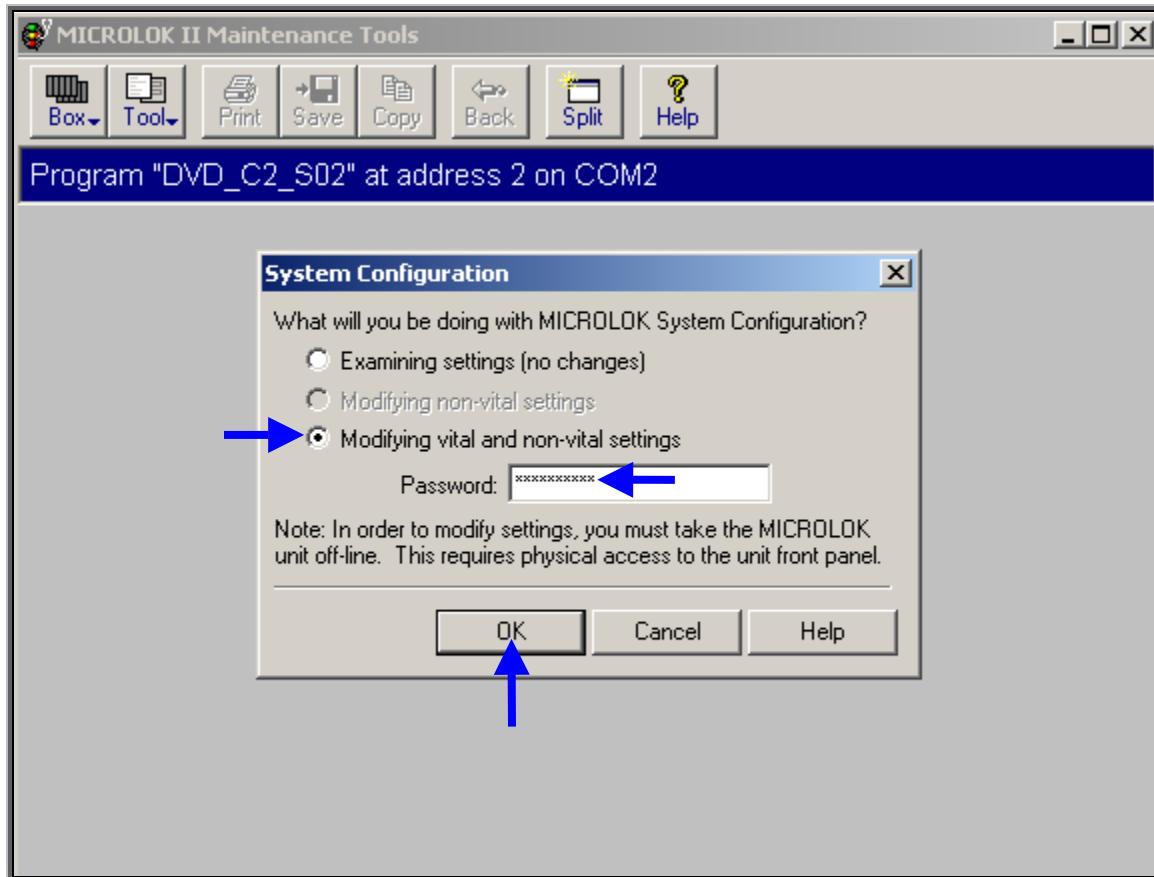


Figure-7.3.4

- ❖ Click on the “OK” button in the above System Configuration dialog box.
- ❖ “System Configuration Reset” dialog box appears as shown in Figure-7.3.5.

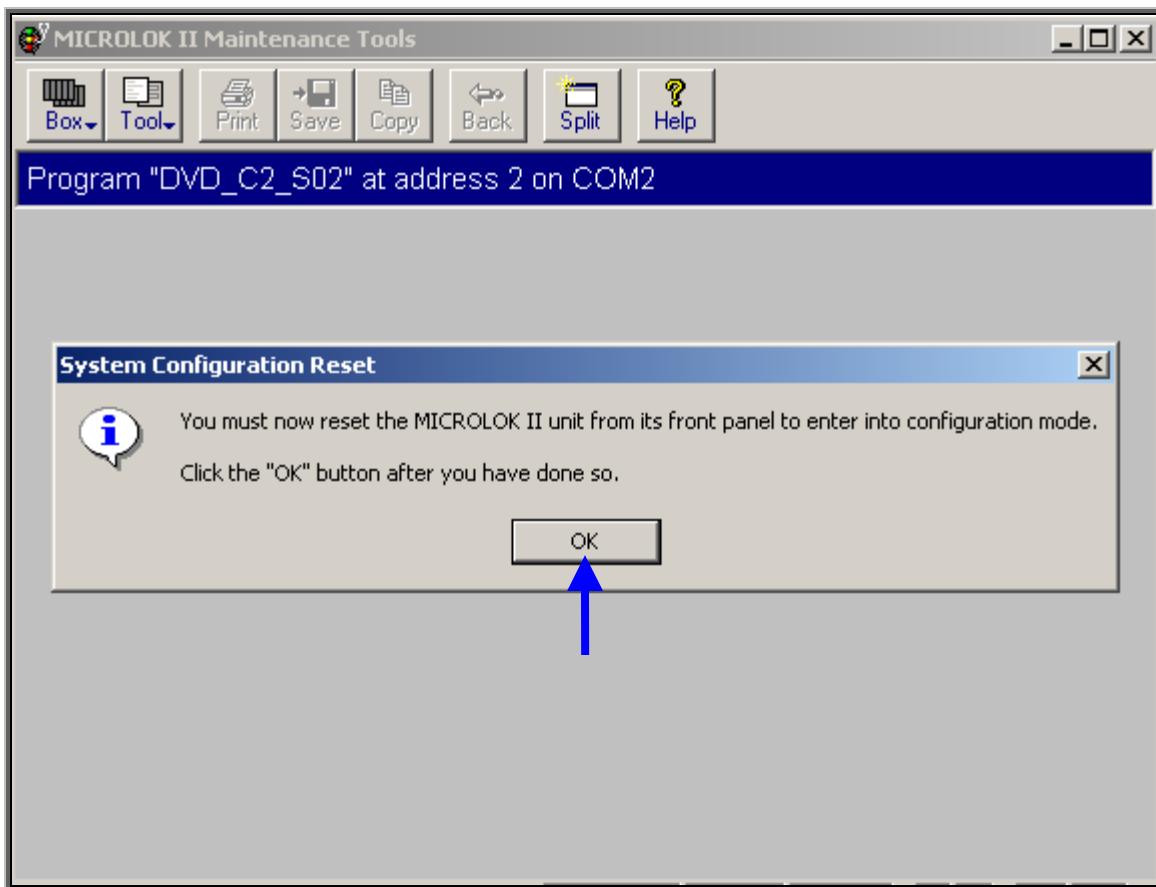


Figure-7.3.5

- ❖ Press the “RESET pushbutton” on the front panel of the Microlok II CPU board and then click on the “OK” button in the above “System Configuration Reset” dialog box.
- ❖ “please wait...” window appears as shown in Figure-7.3.6.

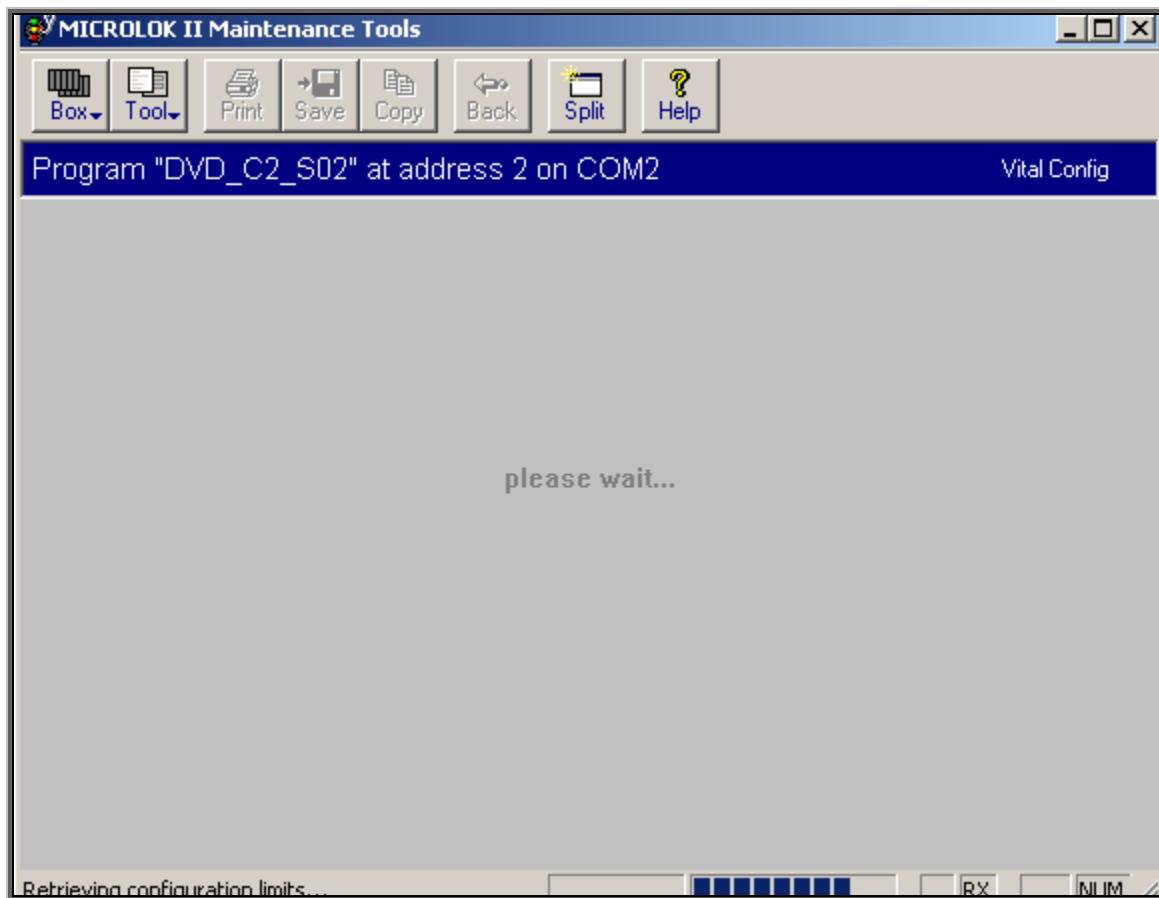


Figure-7.3.6

- ❖ After some time, “System Configuration” selection window appears as shown in Figure-7.3.7.

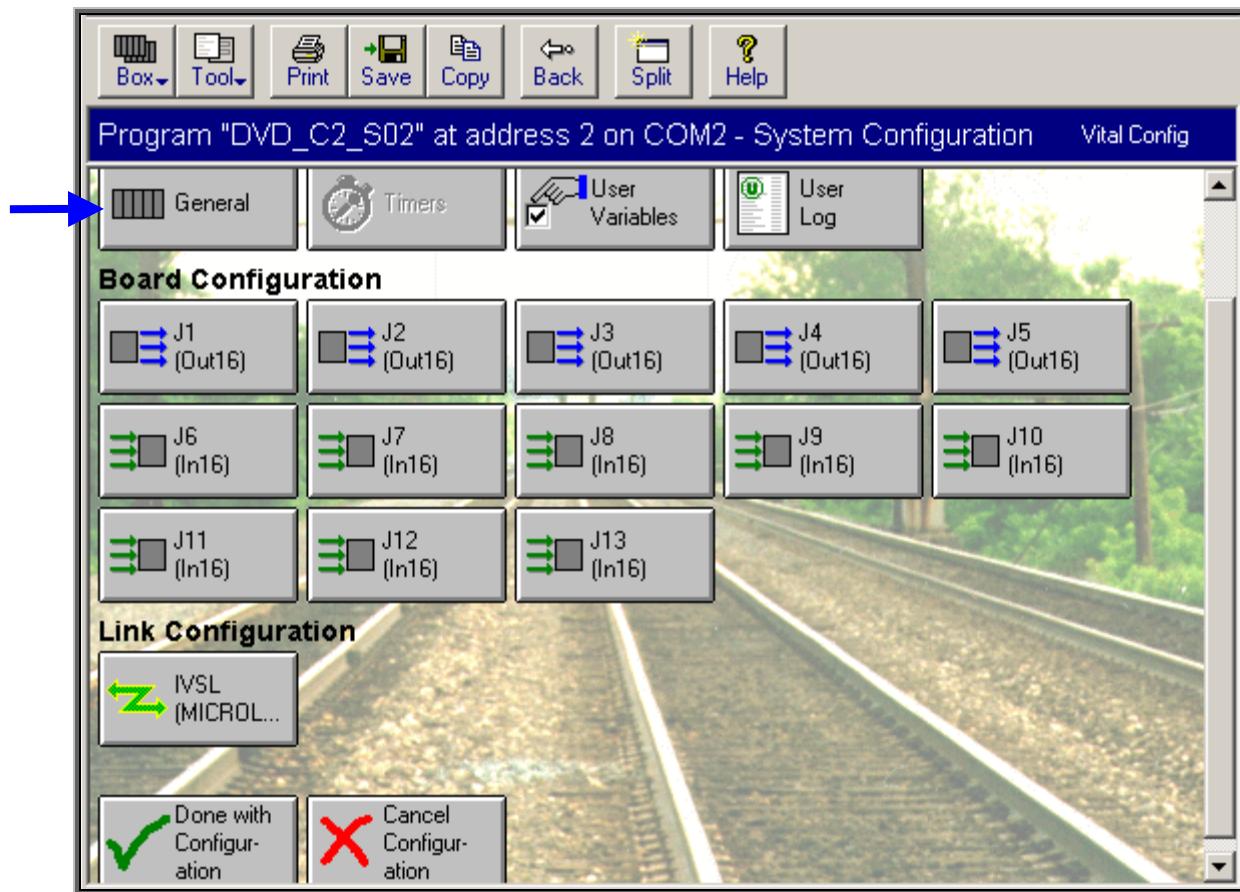


Figure-7.3.7

7.4 CONFIGURING THE SYSTEM CONFIGURATION

7.4.1 CONFIGURING THE GENERAL SYSTEM PARAMETERS

- ❖ To Configure the General system parameters, first carryout the steps as per section “7.3” and then click on the “General” icon in the above System Configuration selection window.
- ❖ This will present the following windows as shown in Figure-7.4.1.1 & 7.4.1.2.
- ❖ There are several symbols used in the System configuration displays that denote what data user can and cannot modify.



- ❖ The symbols include an X which indicates a fixed field with information that cannot be changed.
- ❖ An exclamation point, ! which indicates that the information is vital and cannot be left blank.

- ❖ A check mark, ✓ which indicates that user, can change the information as required.

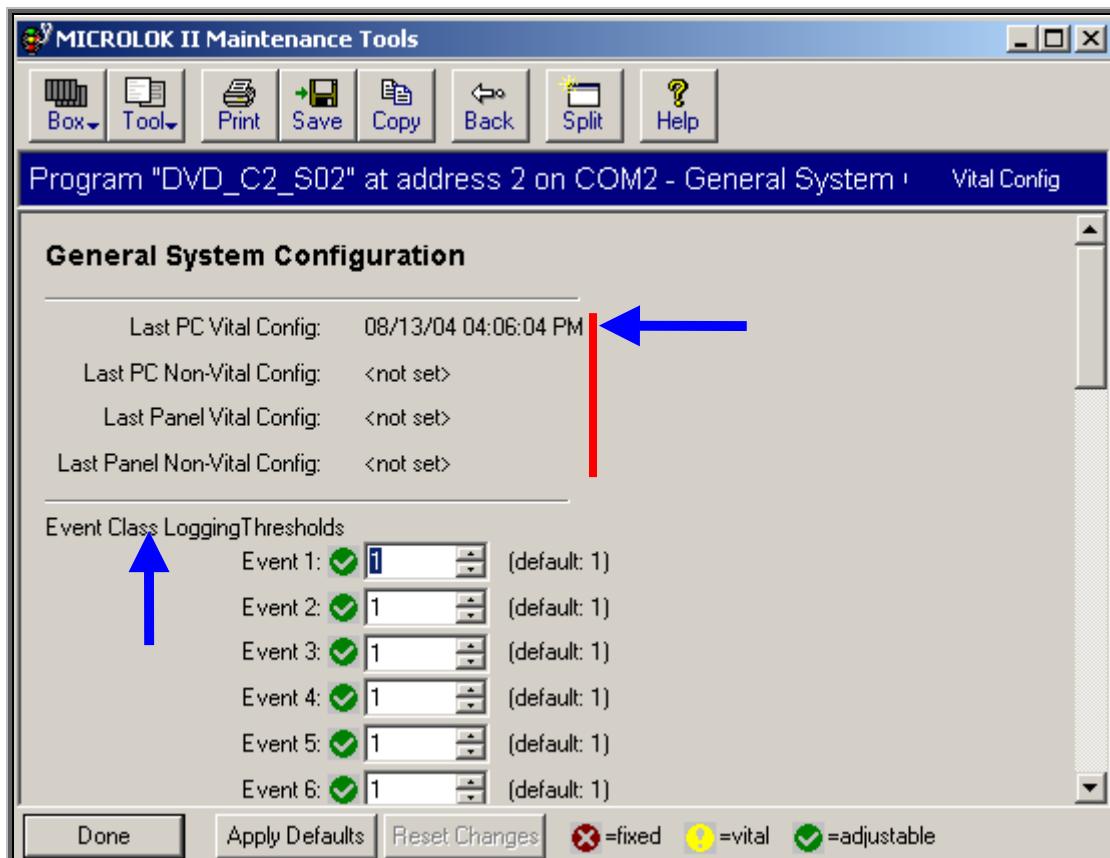


Figure-7.4.1.1

- ❖ In the above display, the top four fields show the dates on which the system vital and non-vital configuration settings were last modified.
- ❖ The “Event Class Logging Threshold” fields are used to manage the amount of information placed in the event buffer during system operation.
- ❖ Each event listed on this display is a system event predefined in the Microlok II executive software.
- ❖ The default setting is “level 1” and normally this setting will not be changed.

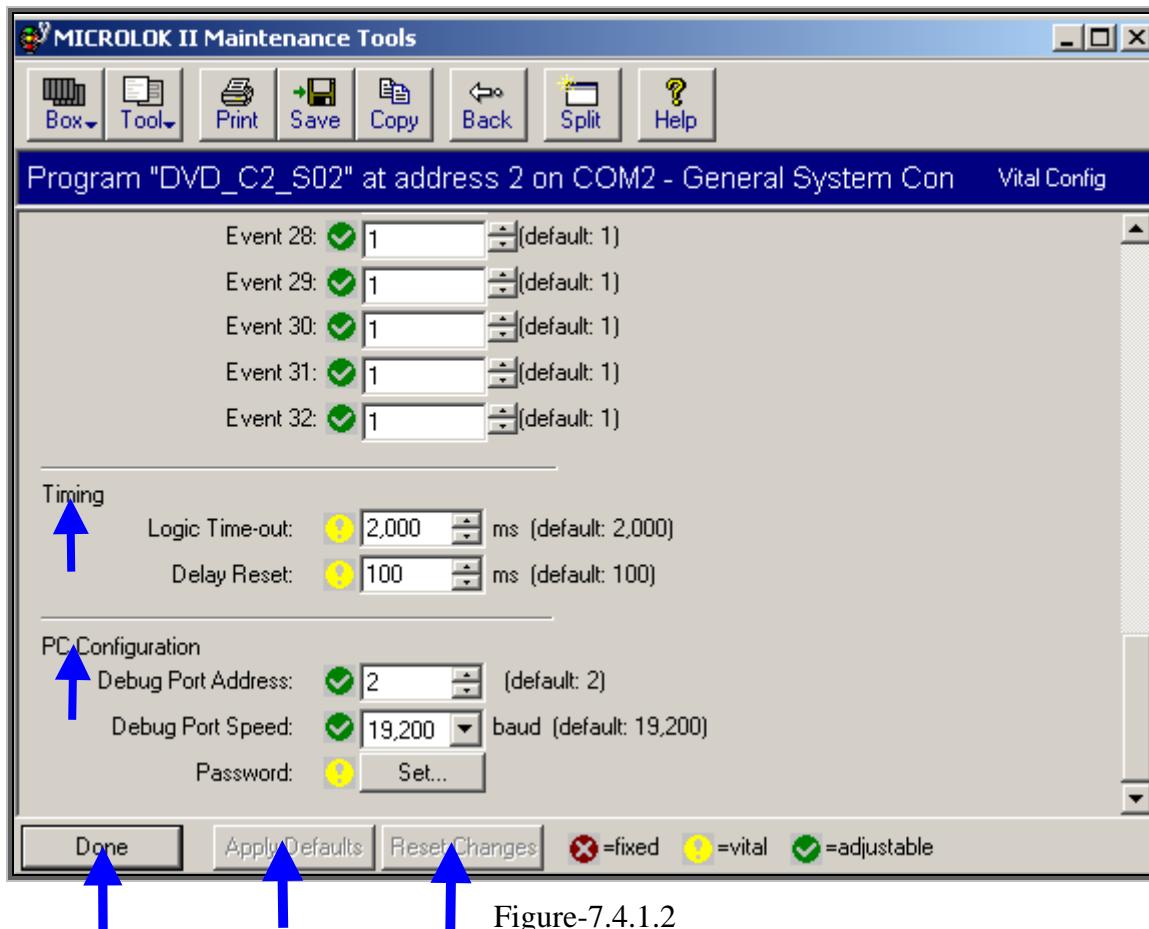


Figure-7.4.1.2

Timing fields:

- ❖ The Timing parameters are set in the application program.
- ❖ These parameters specify delay periods in milliseconds that are used by the system during normal operation.
- ❖ Timing fields are used to set the Logic Time-out & Delay Reset.

PC Configuration fields:

- ❖ The PC Configuration fields are used to set the Port Address and Port Speed (baud rate) for the Microlok II CPU board diagnostic port.
- ❖ After user has modified the information in one or more fields, two pushbuttons near the bottom of the window become active:
 - ◆ “**Apply Defaults**” button will allow the user to “change” the data in all of the fields back to the default values as set in the application program.

- ◆ “Reset Changes” button will allow the user to “undo” all of current changes so that the values as revert back to what they were when user first accessed the configuration screen.
- ❖ After completion of modification, click on the “Done” button at the lower left corner of the above screen.
- ❖ This will present “MICROLOK II Configuration” dialogue box as shown in Figure-7.4.1.3.

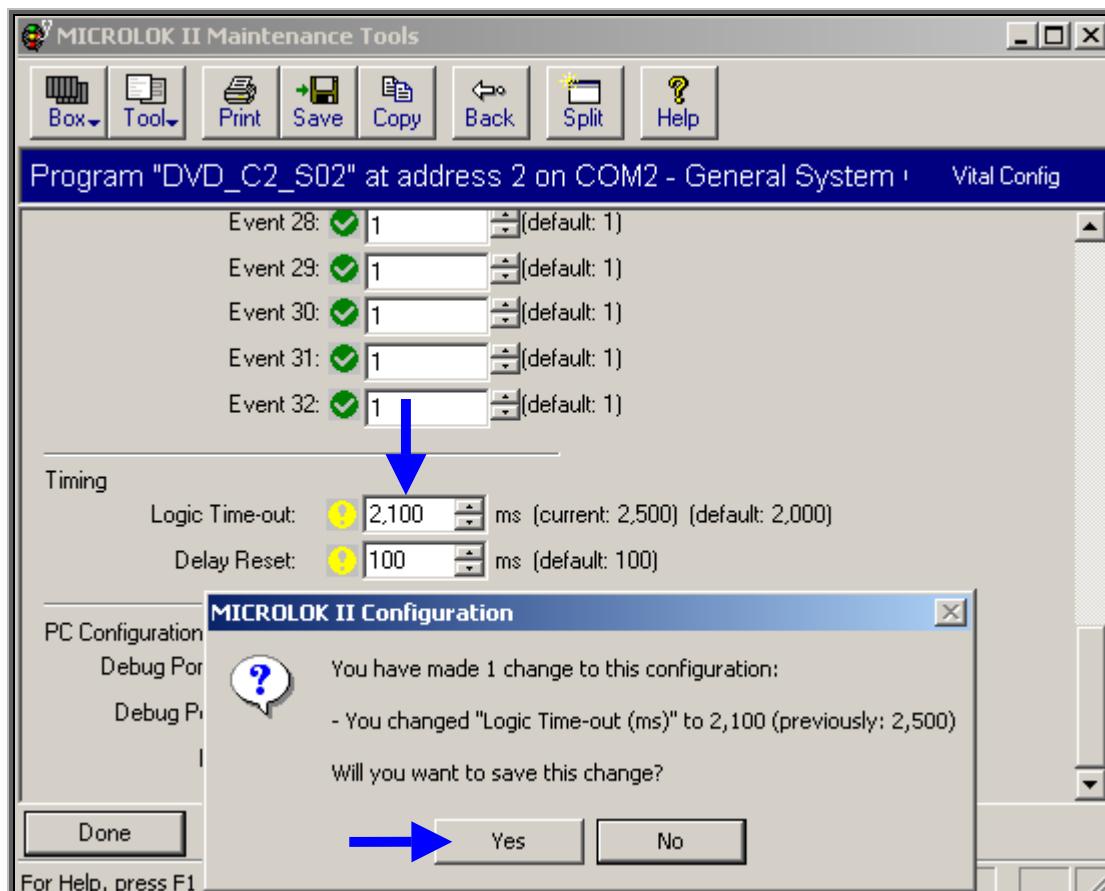


Figure-7.4.1.3

- ❖ Click on the “Yes” button in the above “MICROLOK II Configuration” dialogue box to save the configuration changes and complete the configuration.
- ❖ Once again “System configuration” selection window appears (Figure-7.4.1.4).

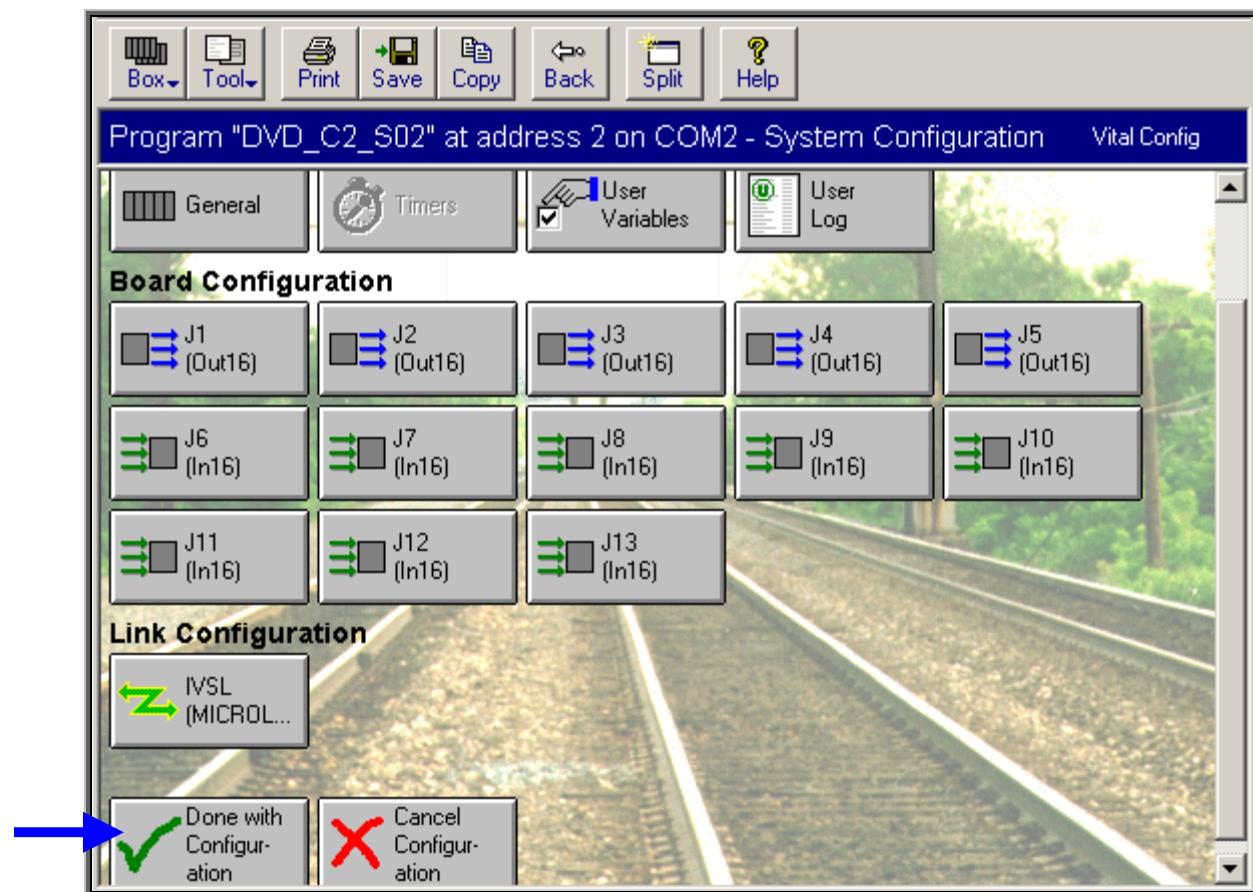


Figure-7.4.1.4

- ❖ Click on the “**Done with Configuration**” button in the above System Configuration selection window.
- ❖ This will present “**MICROLOK II Configuration**” dialogue box as shown in Figure-7.4.1.5.

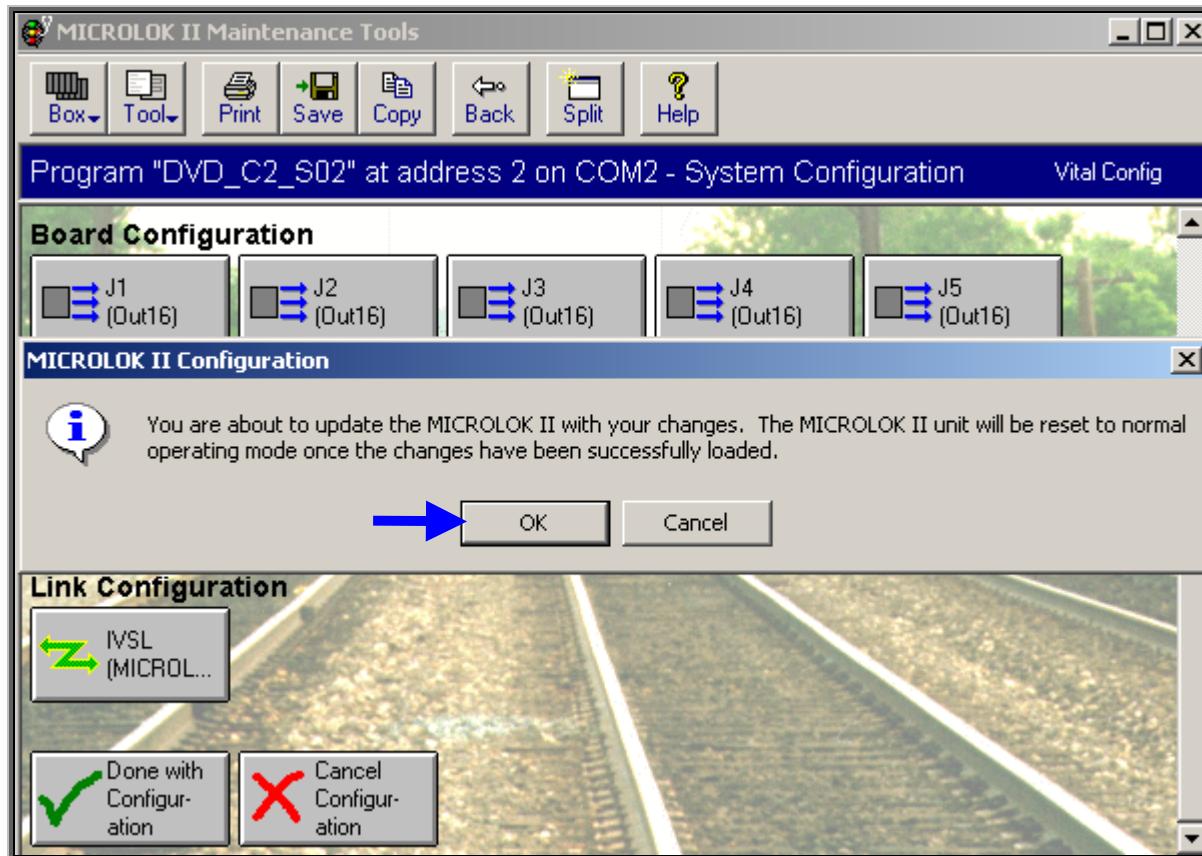


Figure-7.4.1.5

- ❖ Click on the “OK” button in the above “MICROLOK II Configuration” dialogue box to update the new configuration data.
- ❖ System resets automatically once.
- ❖ On completion of system reset process, “System Configuration Complete” dialogue box appears as shown in Figure-7.4.1.6.

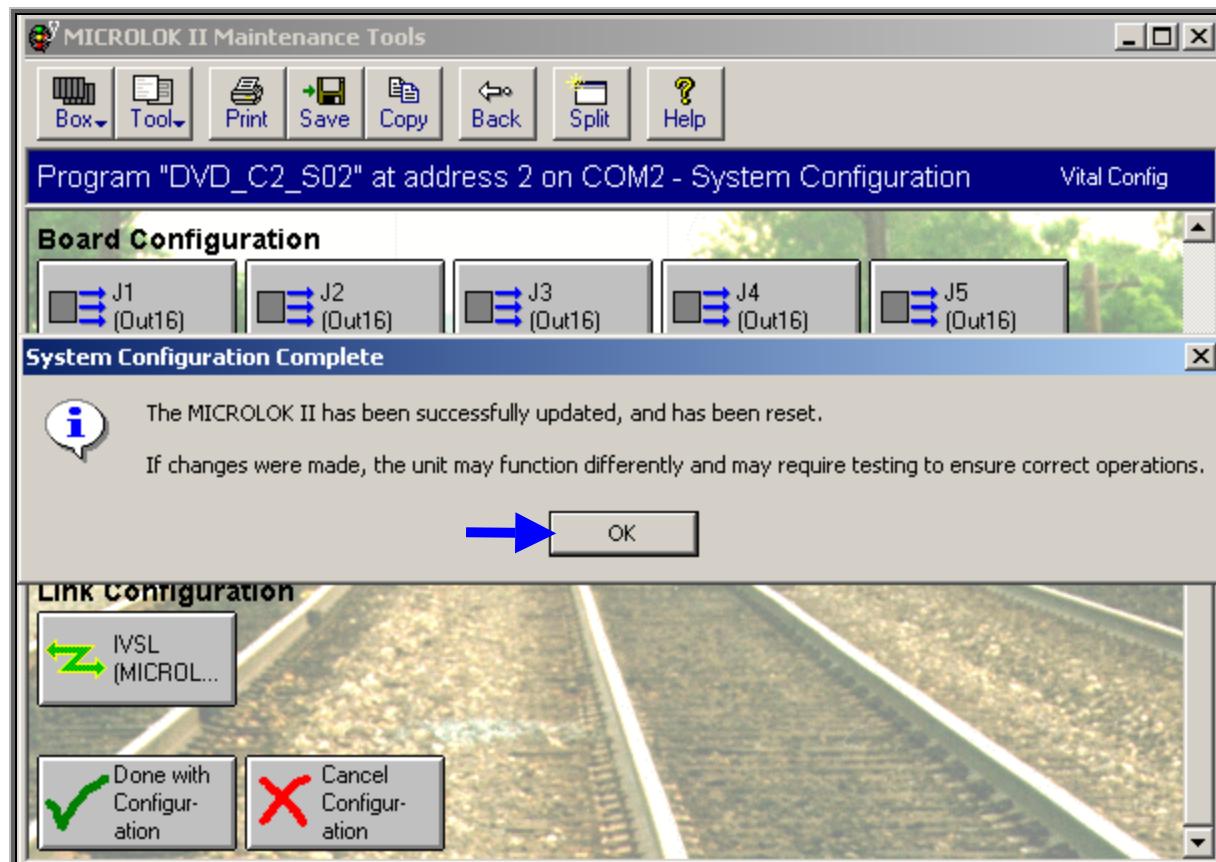


Figure-7.4.1.6

- ❖ Click on the “OK” button in the above “System Configuration Complete” dialogue box.
- ❖ System will Reset automatically and VCOR will pick up.

7.4.2 CONFIGURING THE USER VARIABLES

- ❖ To Configure the User Variables, first carryout the steps as per section “7.3” and then click on the “User Variables” icon in the “System Configuration” selection window (Refer Figure-7.4.2.1).

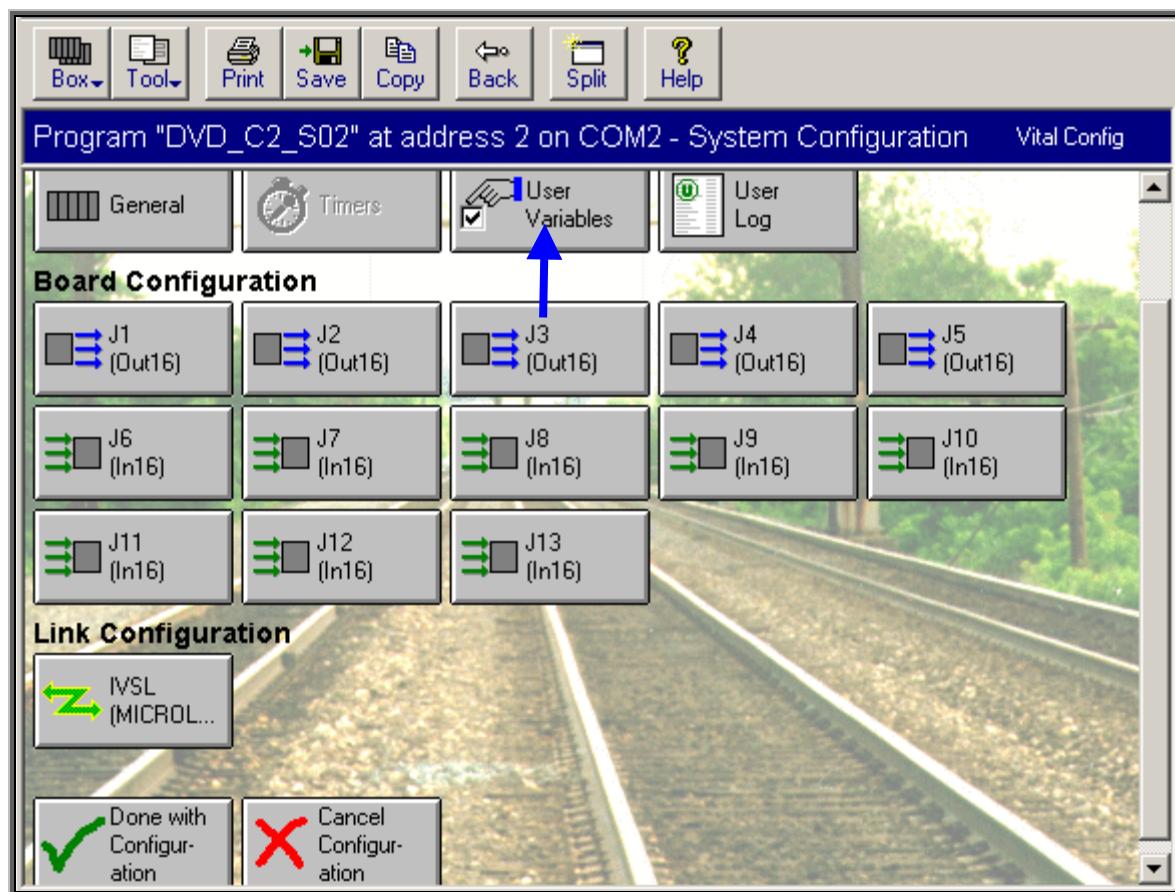


Figure-7.4.2.1

❖ “User Variables” dialogue box appear as shown in Figure-7.4.2.2.

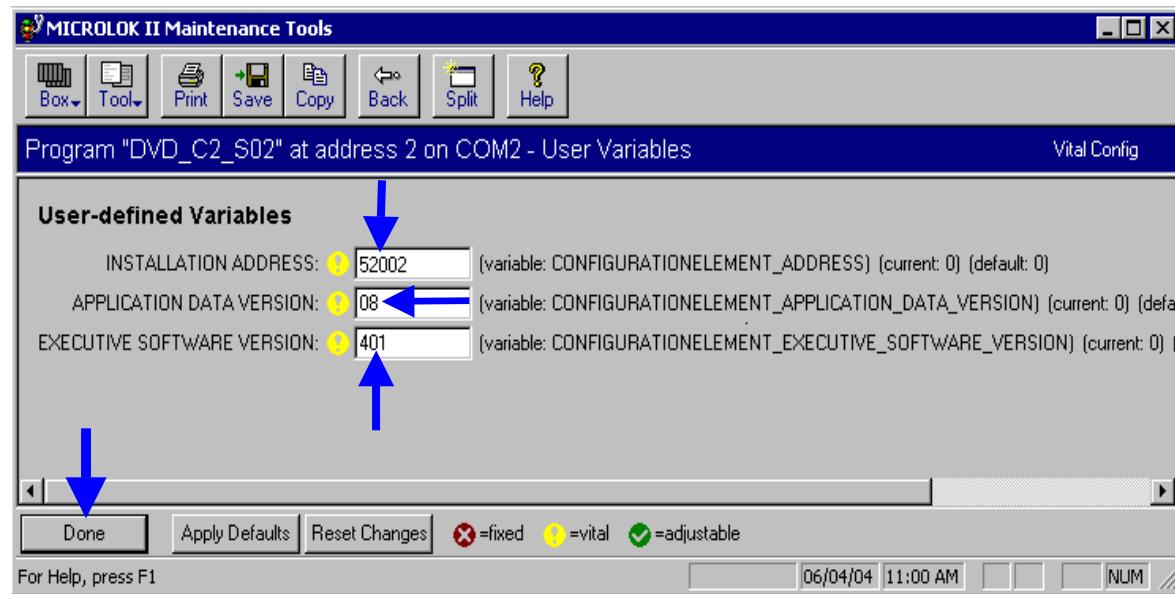


Figure-7.4.2.2

- ❖ In User Variables dialogue box, enter the following defined in the “**Numeric**” section of the new Application program:
 - ◆ **INSTALLATION ADDRESS** - Enter the correct CPU number with project code (Normally all the CPU’s in the station are numbered).
 - ◆ **APPLICATION DATA VERSION** - Enter the revision number of the latest program (i.e. Revision being loaded in this cardfile CPU number of the loaded program).
 - ◆ **EXECUTIVE SOFTWARE VERSION** - Enter the CPU’s executive software version number used for this cardfile.
- ❖ When all of the user-defined variables have been set to the proper values for the application program, click on the “**Done**” button at the lower left corner of the Figure-7.4.2.2 User Variables dialogue box.
- ❖ This will present “**MICROLOK II Configuration**” dialogue box as shown in Figure-7.4.2.3.

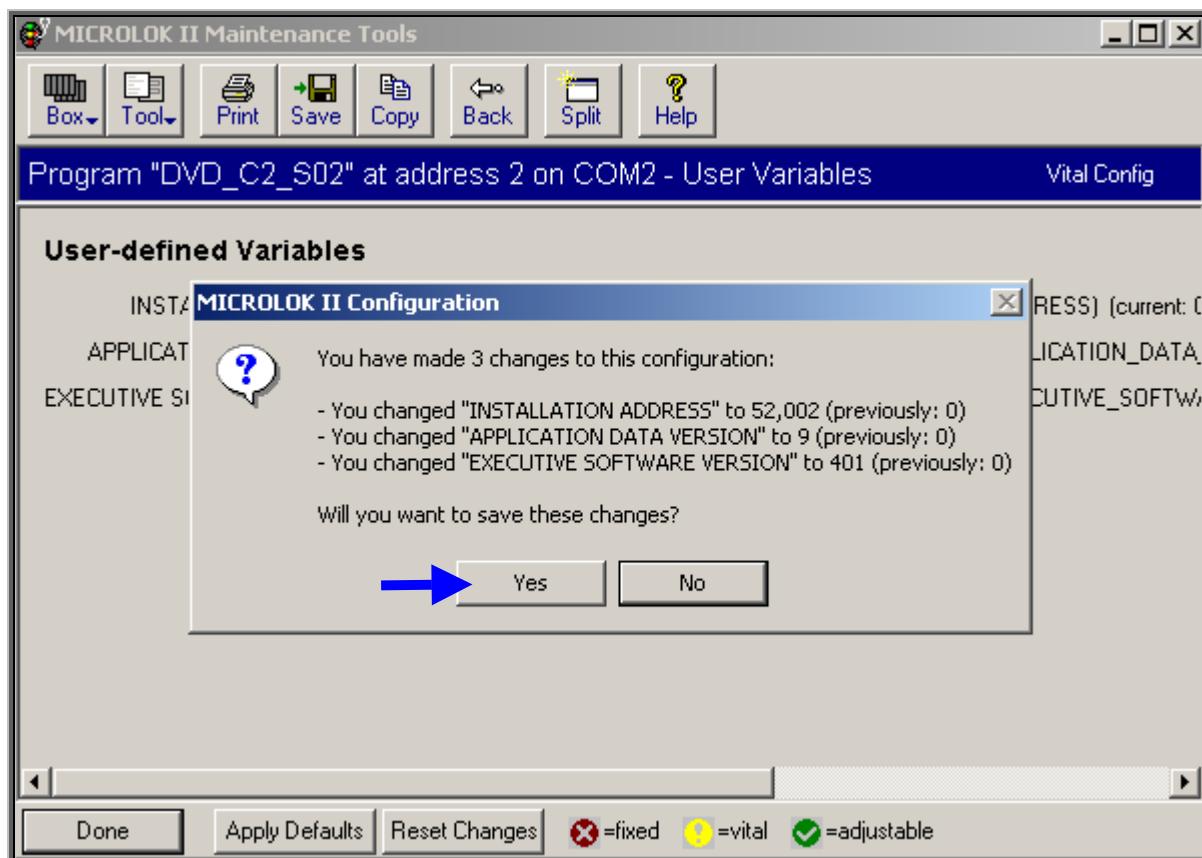


Figure-7.4.2.3

- ❖ Click on the “**Yes**” button in the above “**MICROLOK II Configuration**” dialogue box to save the configuration changes and complete the cardfile identification.

- ❖ Once again “System configuration” selection window appears (Figure-7.4.2.4).

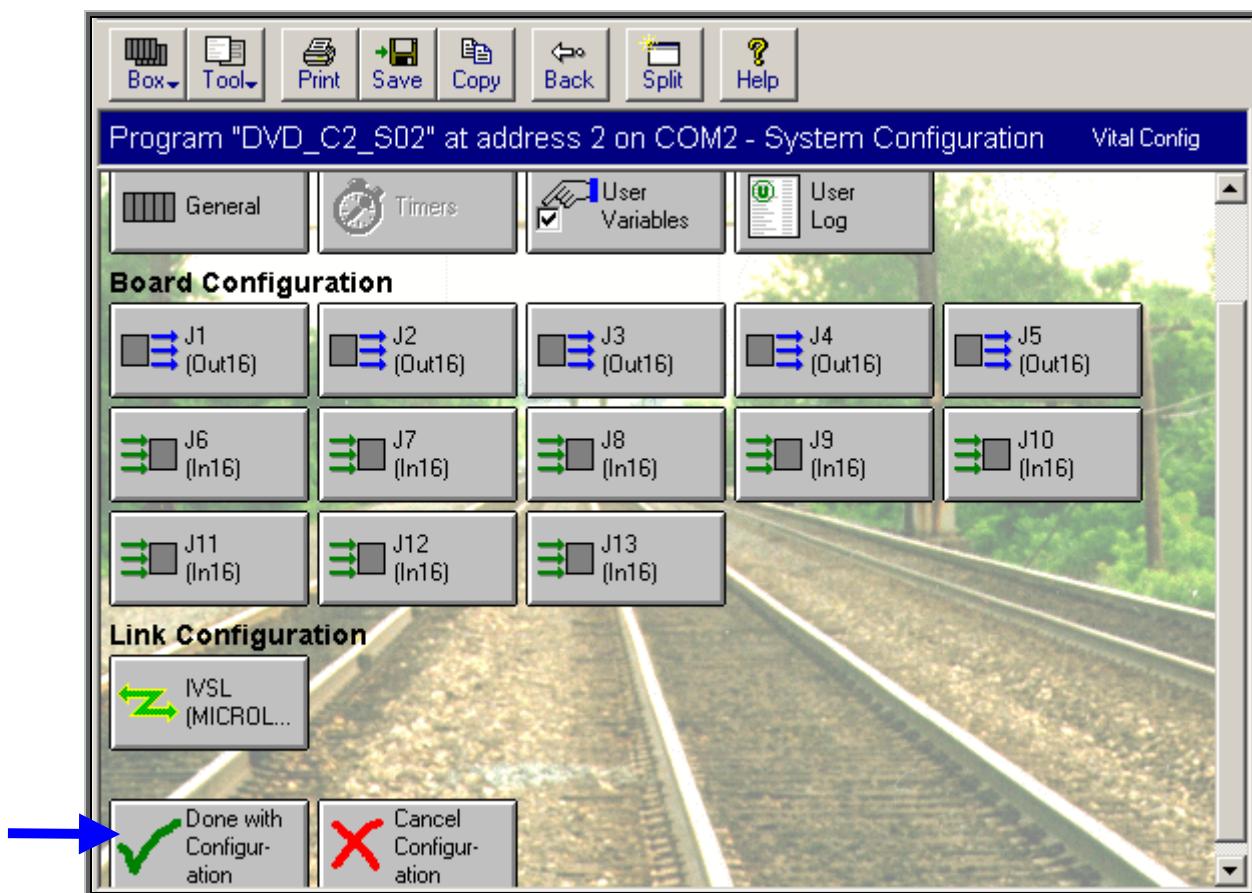


Figure-7.4.2.4

- ❖ Click on the “Done with Configuration” button in the above System Configuration selection window.
- ❖ This will present “MICROLOK II Configuration” dialogue box as shown in Figure-7.4.2.5.

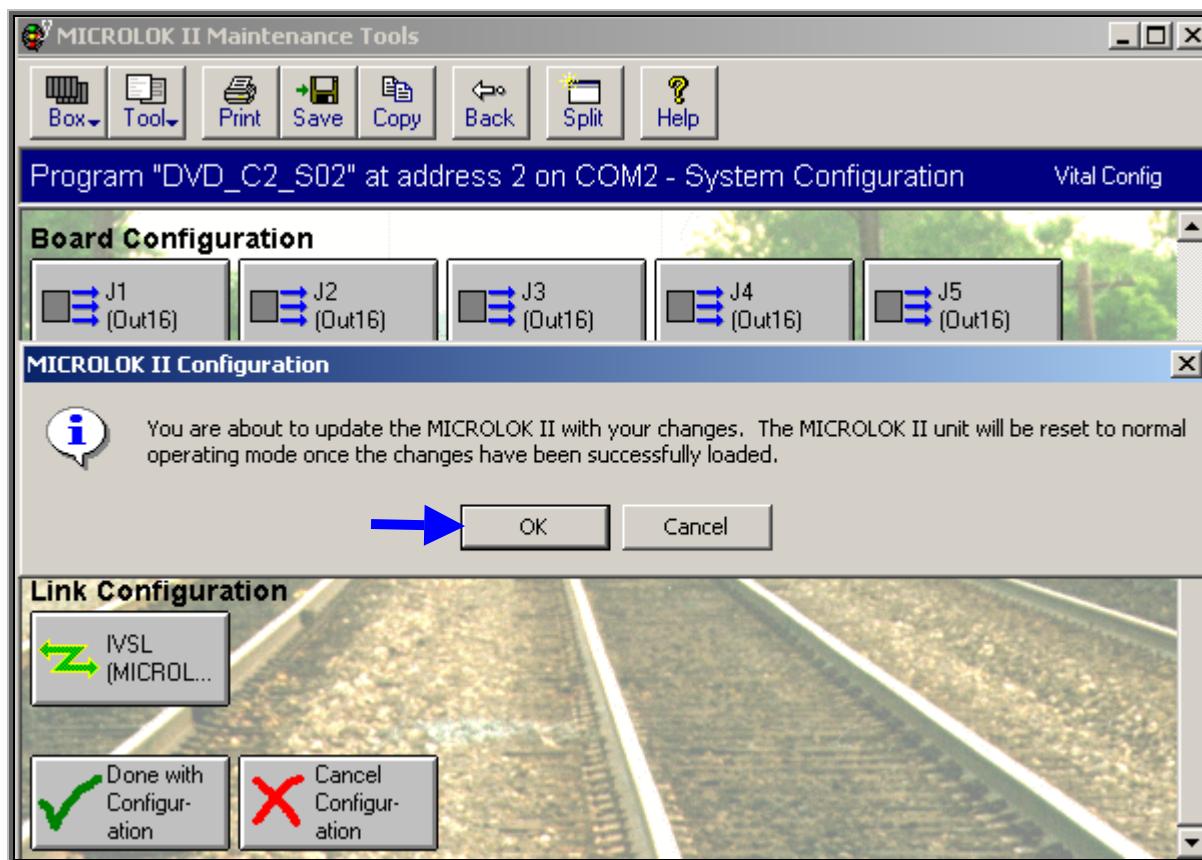


Figure-7.4.2.5

- ❖ Click on the “OK” button in the above “MICROLOK II Configuration” dialogue box to update the new configuration data.
- ❖ System reset automatically once.
- ❖ On completion of system reset process, “System Configuration Complete” dialogue box appears as shown in Figure-7.4.2.6.

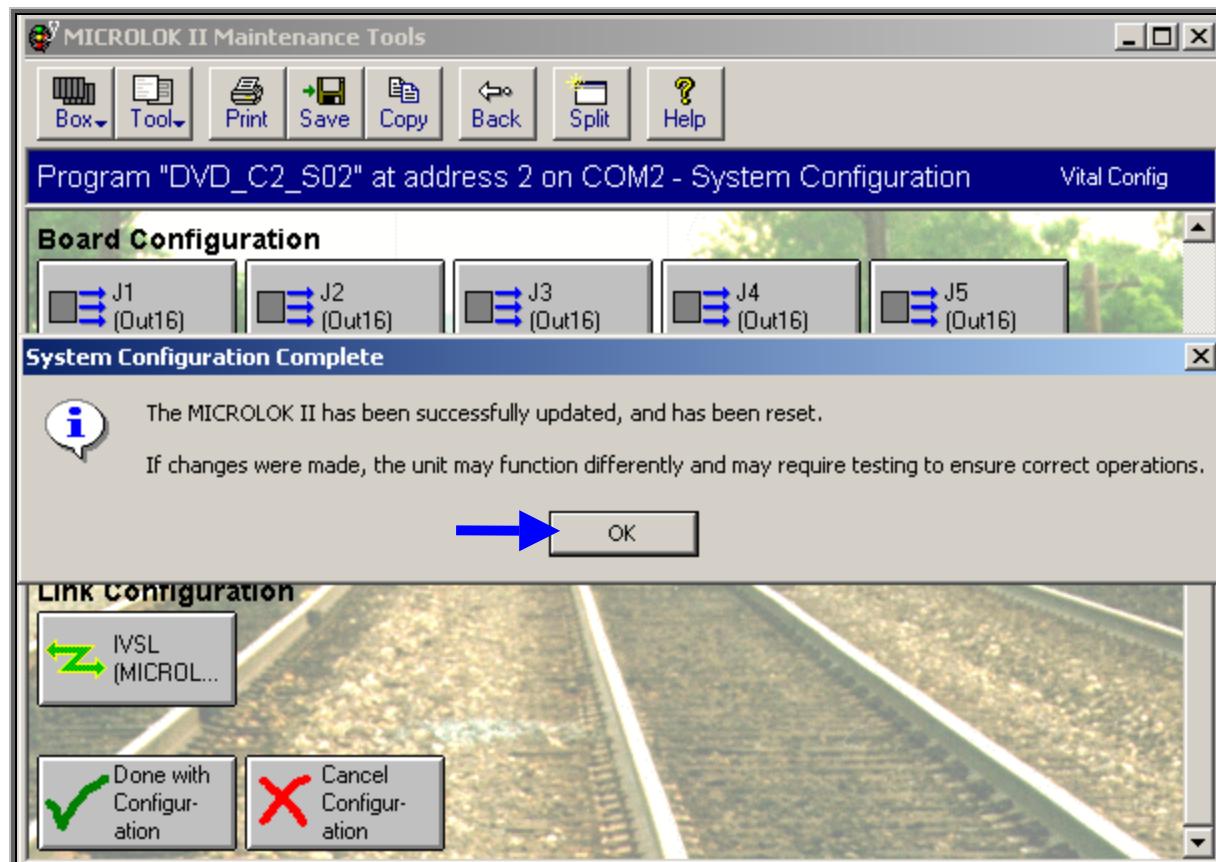


Figure-7.4.2.6

- ❖ Click on the “OK” button in the above “System Configuration Complete” dialogue box.
- ❖ System will Reset automatically and VCOR will pick up.

7.4.3 CONFIGURING THE USER LOG

- ❖ To Configure the User Log, first carryout the steps as per section “7.3” and then click on the “User Log” icon in the “System Configuration” selection window (Refer Figure-7.4.3.1).

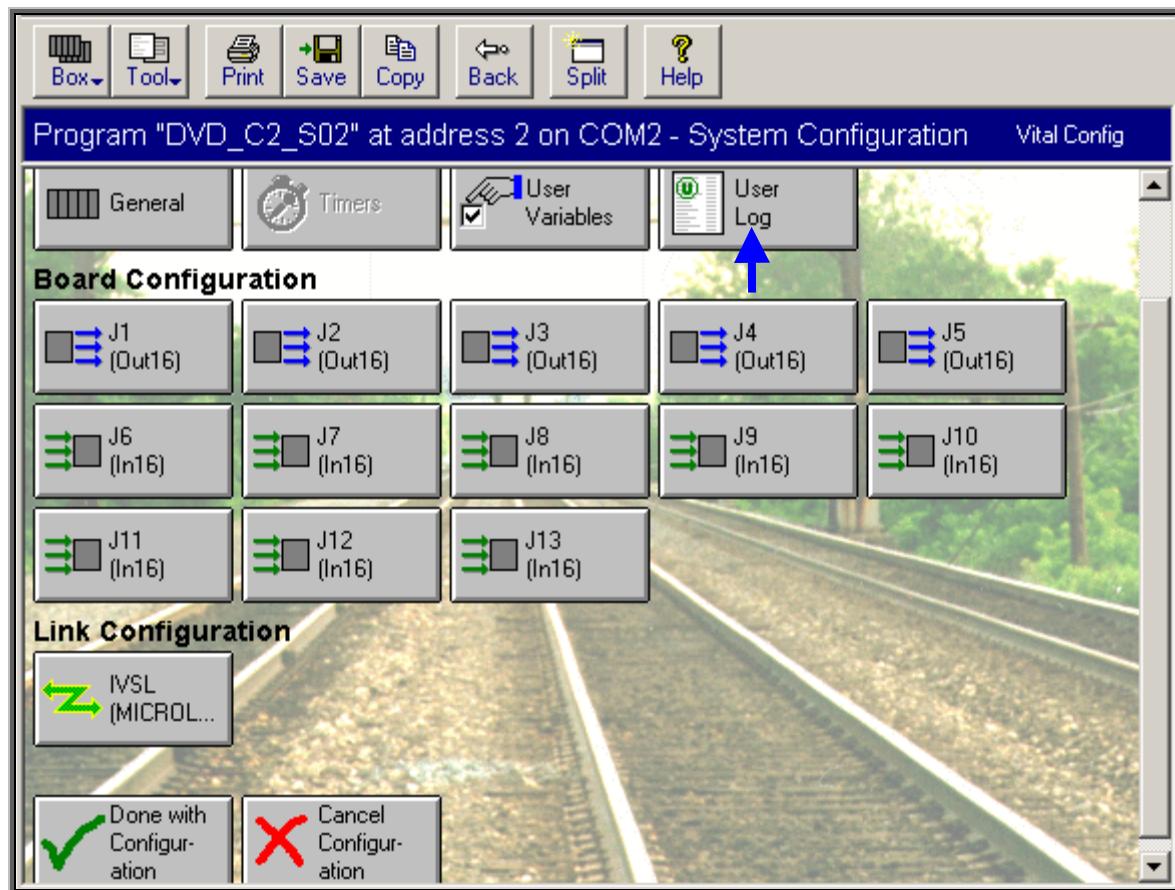


Figure-7.4.3.1

- ❖ After click on the User Log icon, the following window appears as shown in Figure-7.4.3.2.

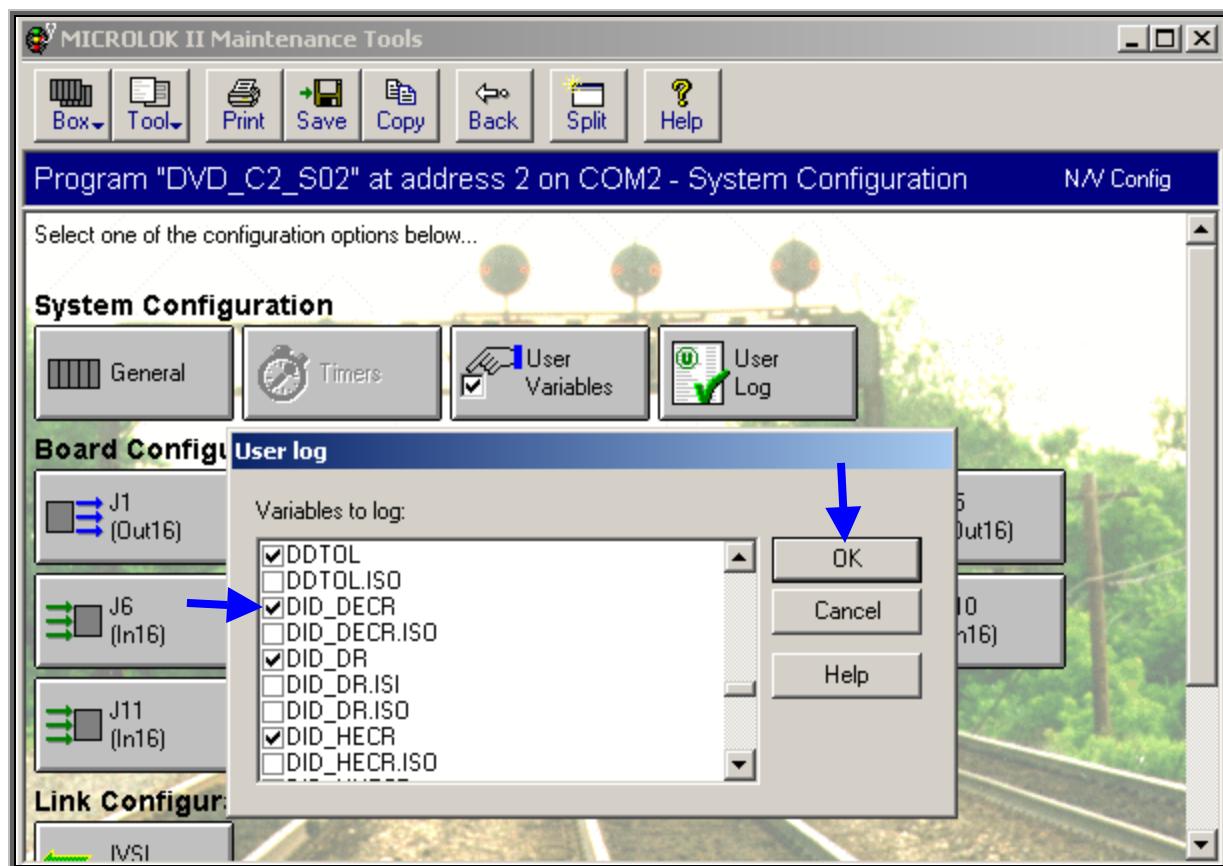


Figure-7.4.3.2

- ❖ This display enables the user at each site to define a custom set of variables and events that are to be logged in the User Log.
- ❖ Each parameter in the list will be logged in the User Log if the associated selection box checked.
- ❖ To set a parameter for inclusion in the User Log, position the cursor within the appropriate selection box and then press the <Space Bar>. Repeat this step until all desired parameters have been checked.
- ❖ When all of the desired variables have been checked, click on the “OK” button.

7.5 ENABLING, DISABLING AND CONFIGURING PRINTED CIRCUIT BOARDS

- ❖ The system configuration selection display provides a number of selection buttons that enable the configuration of the Microlok II system printed circuit boards.
- ❖ Buttons are only provided on this display for circuit boards that are properly defined in the application program.
- ❖ For the majority of the Microlok II I/O circuit boards, user can only set the enabled/disabled state of the board and enable/disable the selective shutdown feature for the board.

7.5.1 CONFIGURING THE STANDARD VITAL OUTPUT BOARDS (OUT16)

- ❖ To configure a standard vital output board, first carryout the steps as per section “7.3” and then click on one of the “Out16” selection buttons on the system configuration selection screen.

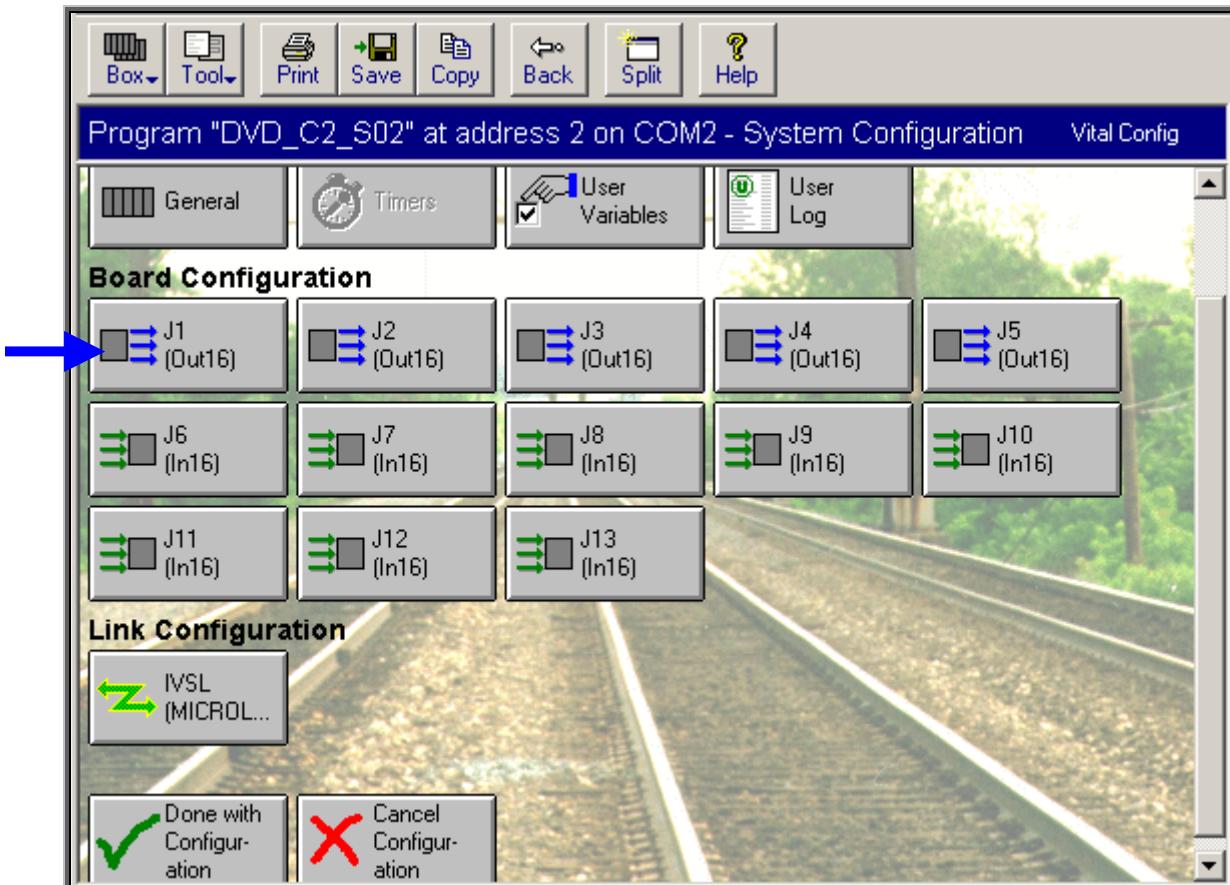


Figure-7.5.1.1

- ❖ After selection of the particular board, the following window appears as shown in Figure-7.5.1.2.

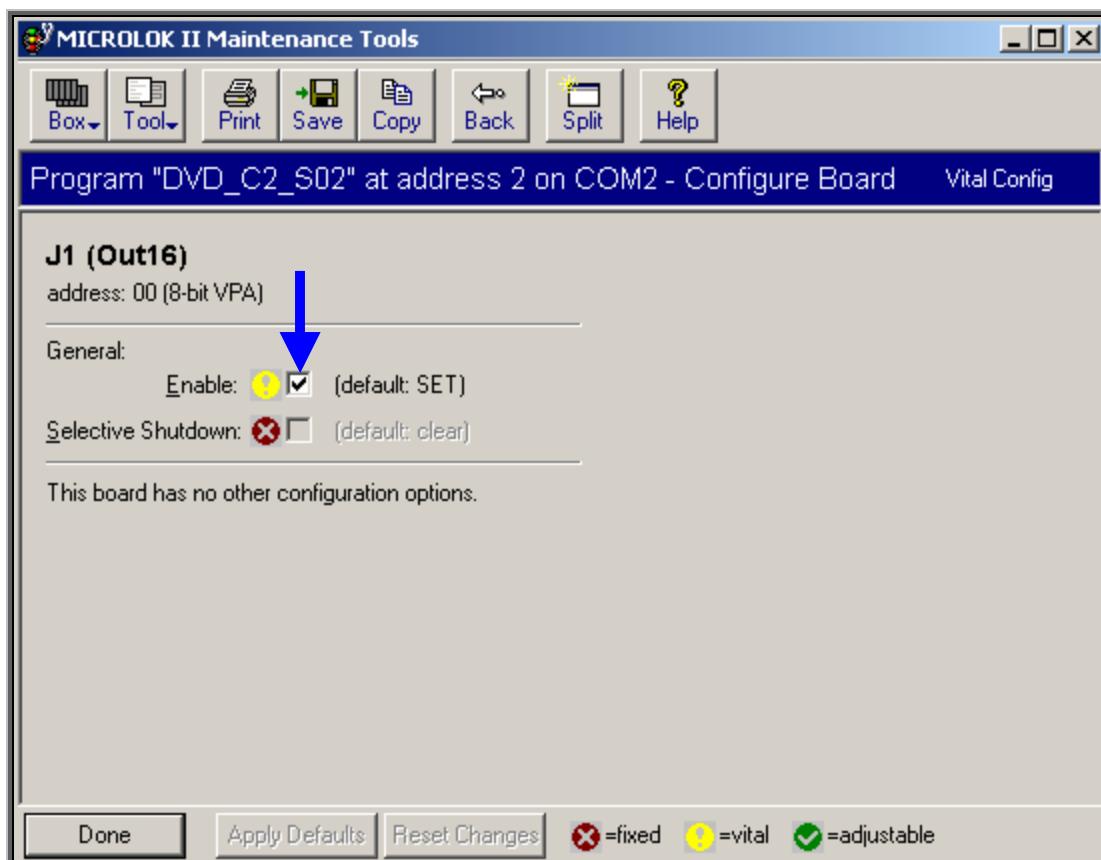


Figure-7.5.1.2

- ❖ The only configurable option for the standard vital output board is the “Enable” option.
- ❖ “Selective Shutdown” is not yet implemented and will remain disabled.
- ❖ “Enable” is user configurable through the Tools program only if it is identified as an adjustable parameter in the application program.
- ❖ Use the following procedure to configure the standard vital output board:
 - ◆ First, make sure that a check mark appears in the “Enable” selection square box at the top of the screen.
 - ◆ If check mark appears, that indicates particular board is enabled.
 - ◆ User wants to disable the particular board, click the “Enable” selection square box (Refer Figure-7.5.1.3).

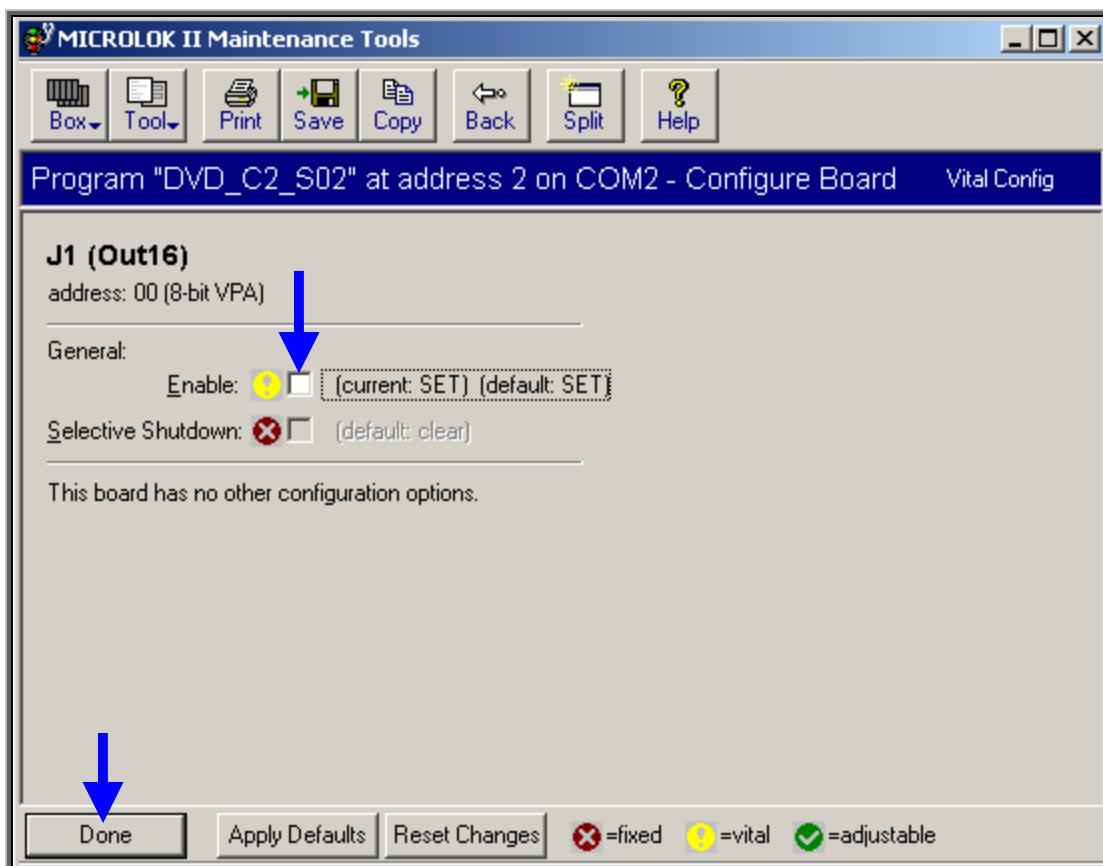


Figure-7.5.1.3

- ❖ Now check mark ✓ disappears, that indicates particular board is disabled.
- ❖ Click on the “Done” button at the lower left corner of the screen.
- ❖ This will present “MICROLOK II Configuration” dialogue box as shown in Figure-7.5.1.4.

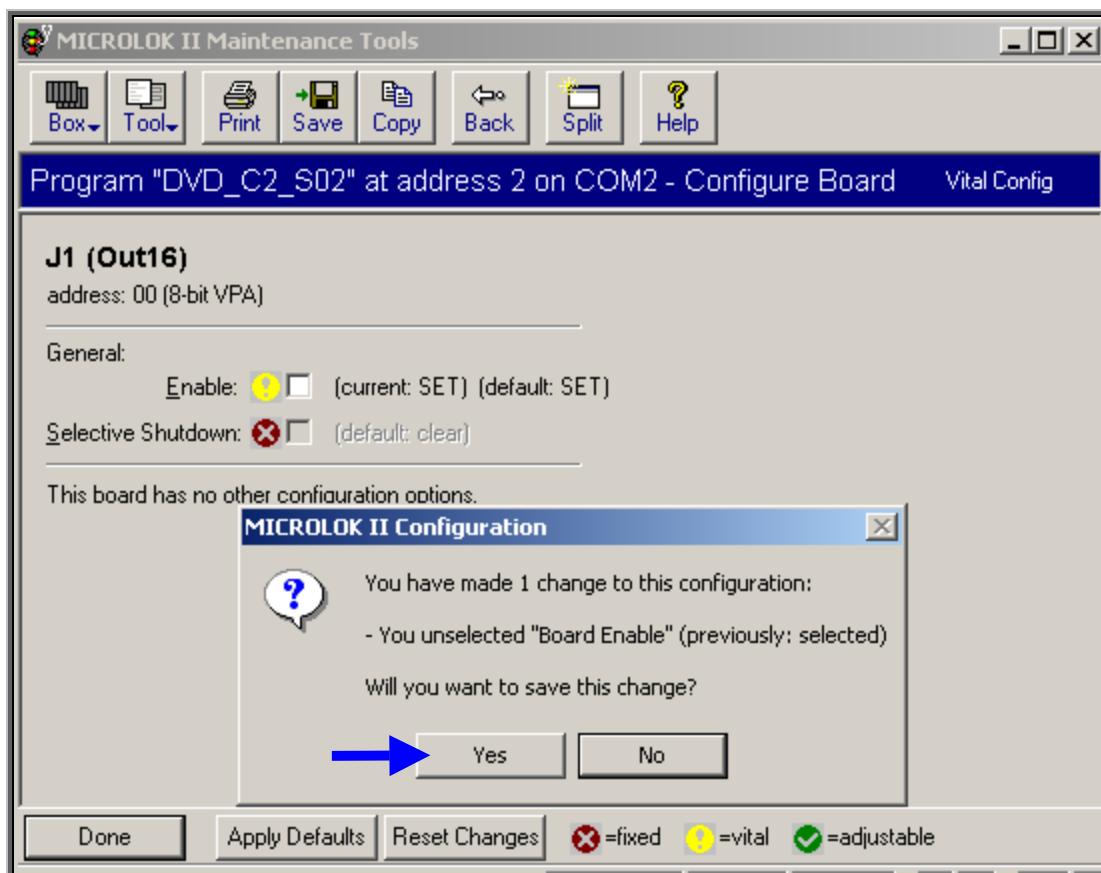


Figure-7.5.1.4

- ❖ Click on the “Yes” button in the above “MICROLOK II Configuration” dialogue box to save the configuration changes and complete the board configuration.
- ❖ Once again “System configuration” selection window appears (Figure-7.5.1.5).

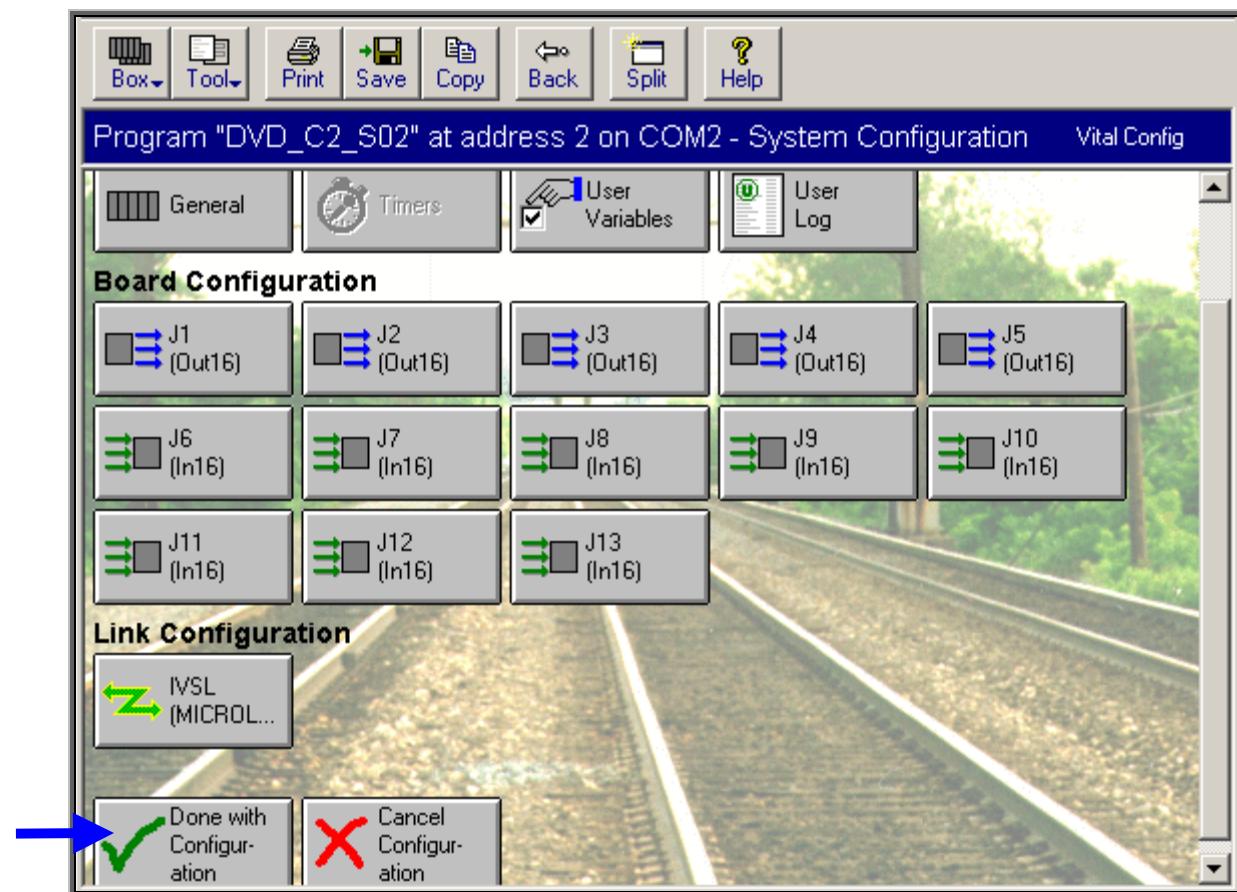


Figure-7.5.1.5

- ❖ Click on the “**Done with Configuration**” button in the above System Configuration selection window.
- ❖ This will present “**MICROLOK II Configuration**” dialogue box as shown in Figure-7.5.1.6.

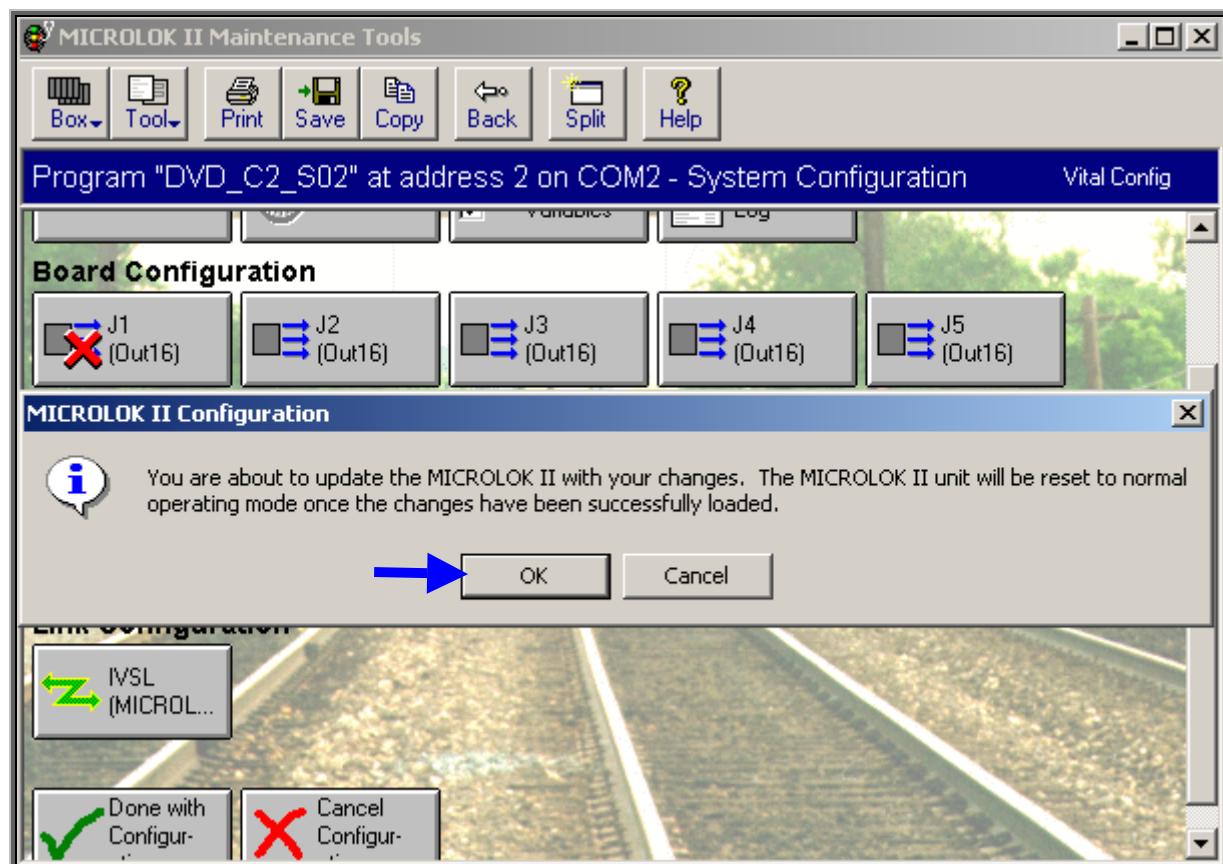


Figure-7.5.1.6

- ❖ Click on the “OK” button in the above “MICROLOK II Configuration” dialogue box to update the new configuration data.
- ❖ System resets automatically once.
- ❖ After the system reset has completed, “System Configuration Complete” dialogue box appears as shown in Figure-7.5.1.7.

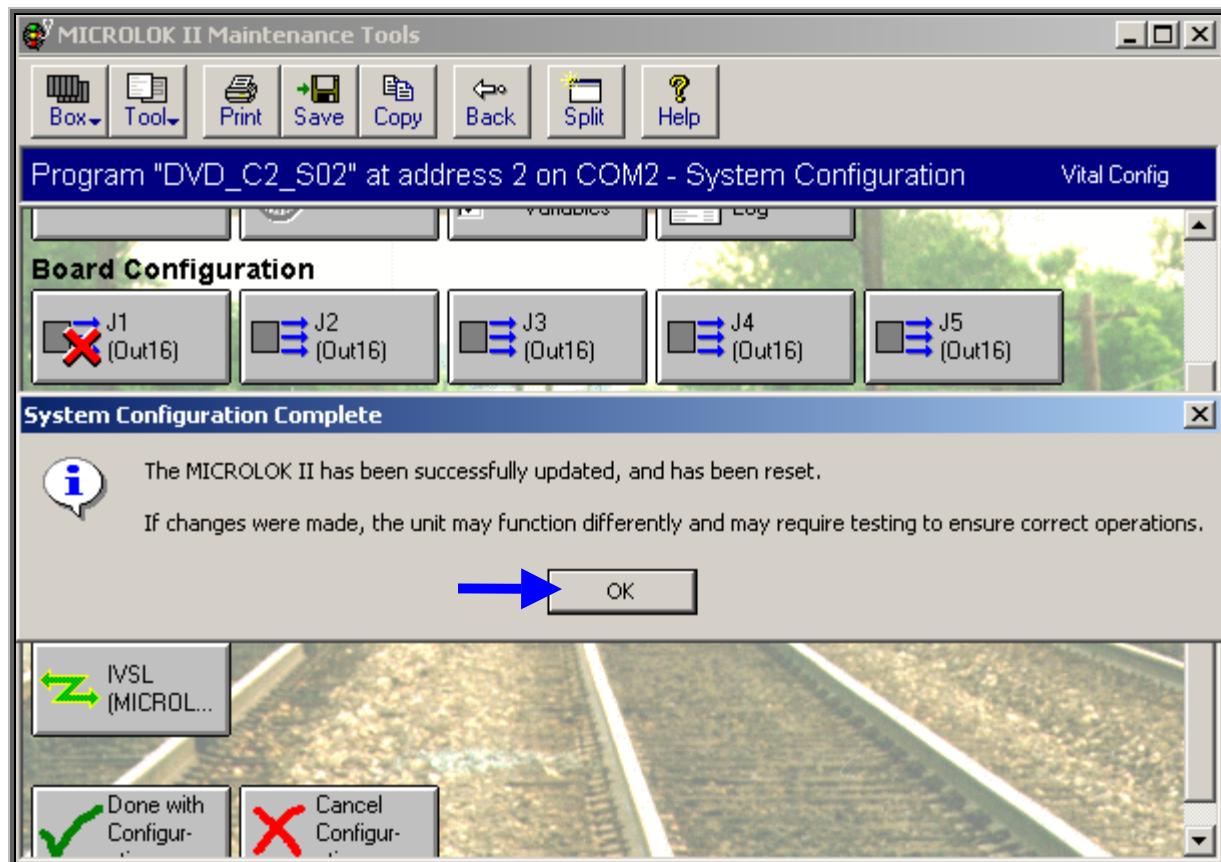


Figure-7.5.1.7

- ❖ Click on the “OK” button in the above “System Configuration Complete” dialogue box.
- ❖ System will Reset automatically and VCOR will pick up.

7.5.2 CONFIGURING THE VITAL INPUT BOARDS (IN16)

- ❖ To configure a standard vital input board, first carry out the steps as per section “7.3” and then click on one of the “In16” selection buttons on the system configuration selection screen.

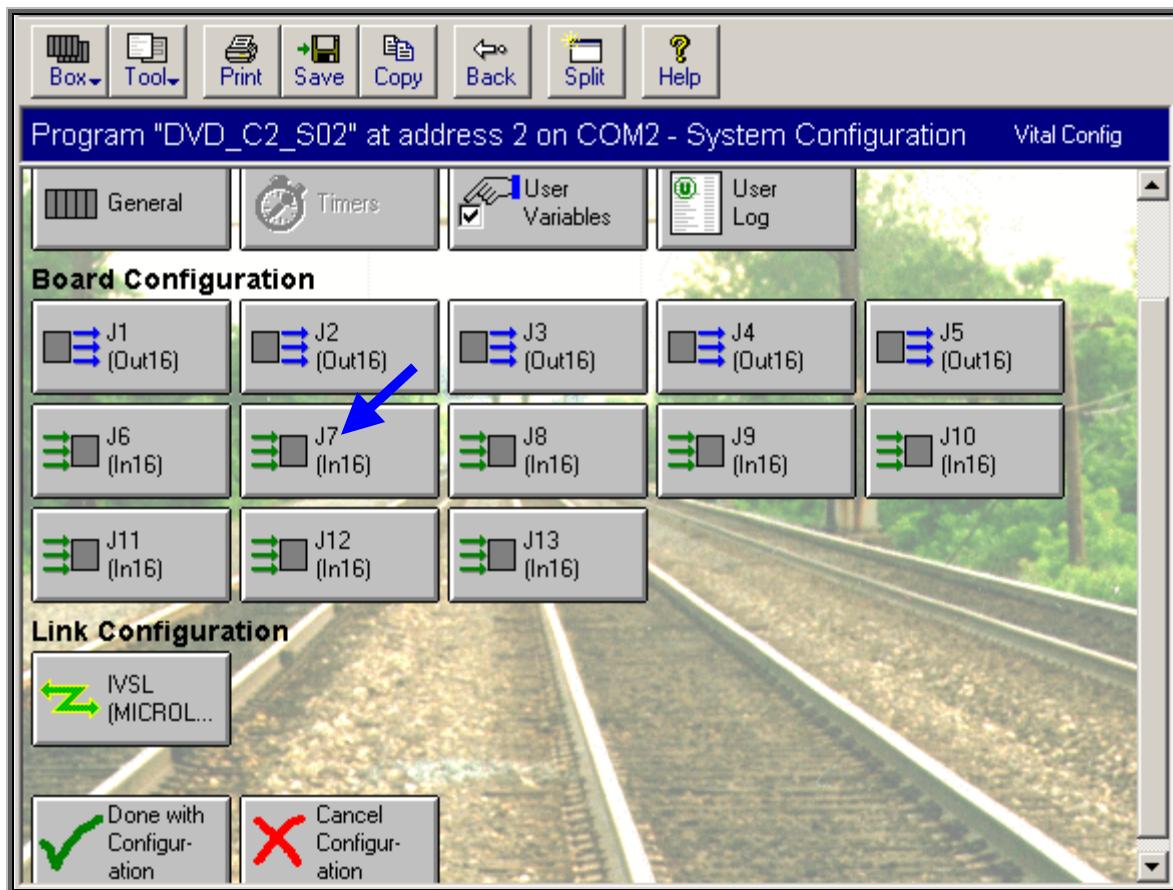


Figure-7.5.2.1

- ❖ After selection of the particular board, the following window appears as shown in Figure-7.5.2.2.

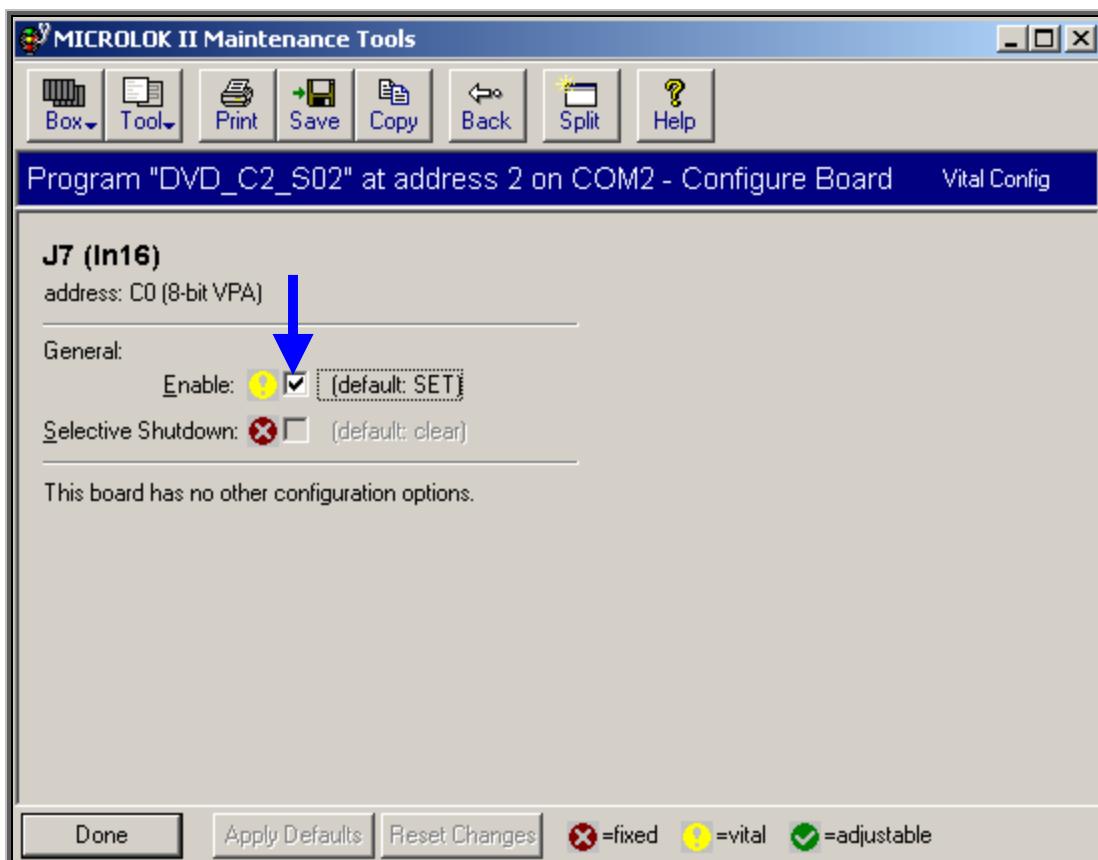


Figure-7.5.2.2

- ❖ The only configurable option for the standard vital input board is the “Enable” option.
- ❖ “Selective Shutdown” is not yet implemented and will remain disabled.
- ❖ “Enable” is user configurable through the Tools program only if it is identified as an adjustable parameter in the application program.
- ❖ Use the following procedure to configure the standard vital input board:
 - ◆ First, make sure that a check mark ✓ appears in the **Enable** selection square box at the top of the screen.
 - ◆ If check mark ✓ appears, that indicates particular board is enabled.
 - ◆ User wants to disable the particular board, click the “Enable” selection square box (Refer Figure-7.5.2.3).

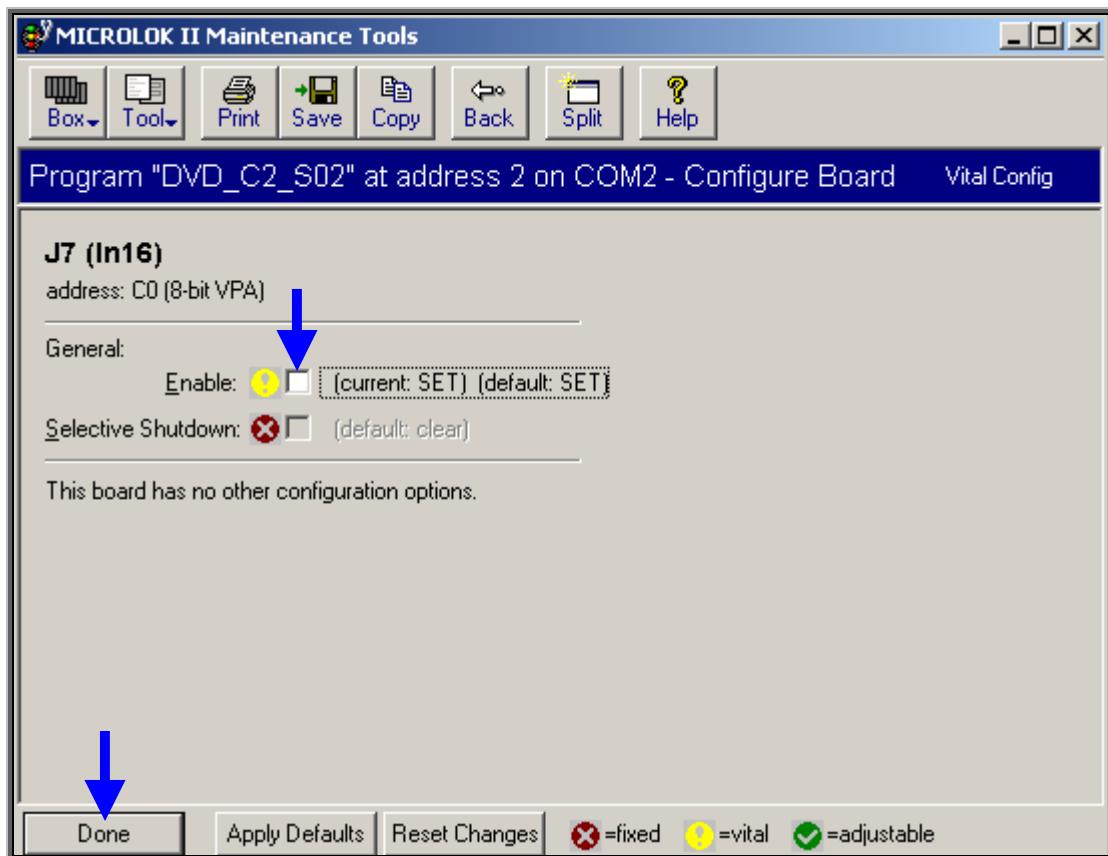


Figure-7.5.2.3

- ❖ Now check mark disappears, that indicates particular board is disabled.
- ❖ Click on the “Done” button at the lower left corner of the screen.
- ❖ This will present “MICROLOK II Configuration” dialogue box as shown in Figure-7.5.2.4.

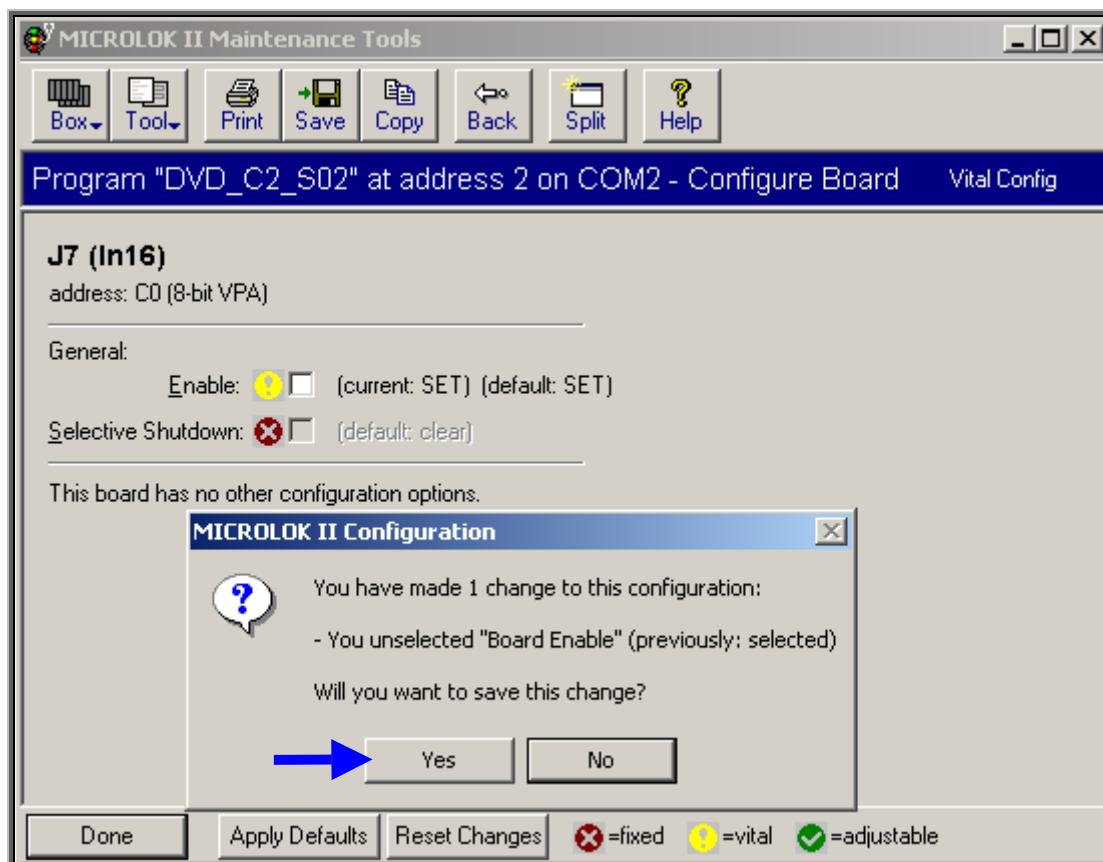


Figure-7.5.2.4

- ❖ Click on the “Yes” button in the above “MICROLOK II Configuration” dialogue box to save the configuration changes and complete the board configuration.
- ❖ Once again “System configuration” selection window appears (Figure-7.5.2.5).

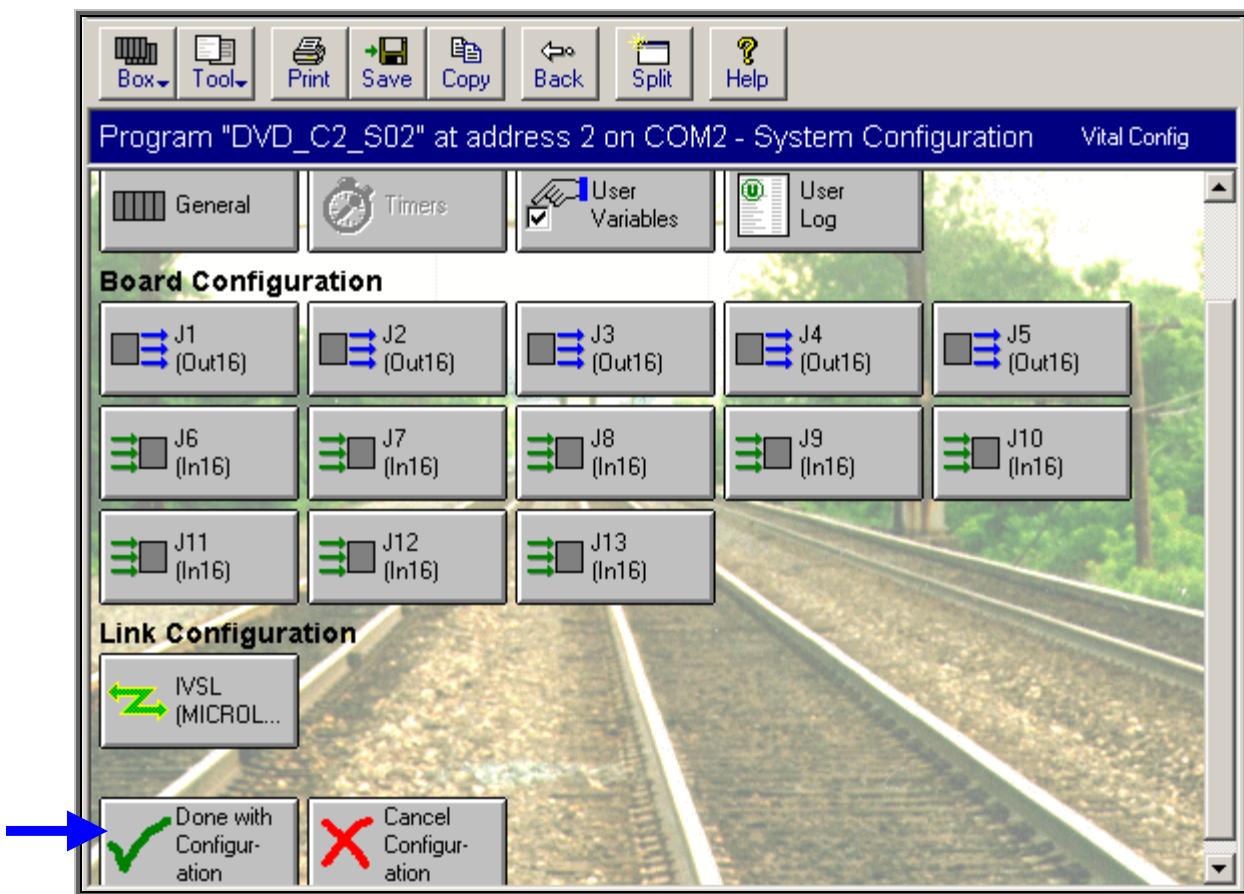


Figure-7.5.2.5

- ❖ Click on the “**Done with Configuration**” button in the above System Configuration selection window.
- ❖ This will present “**MICROLOK II Configuration**” dialogue box as shown in Figure-7.5.2.6.

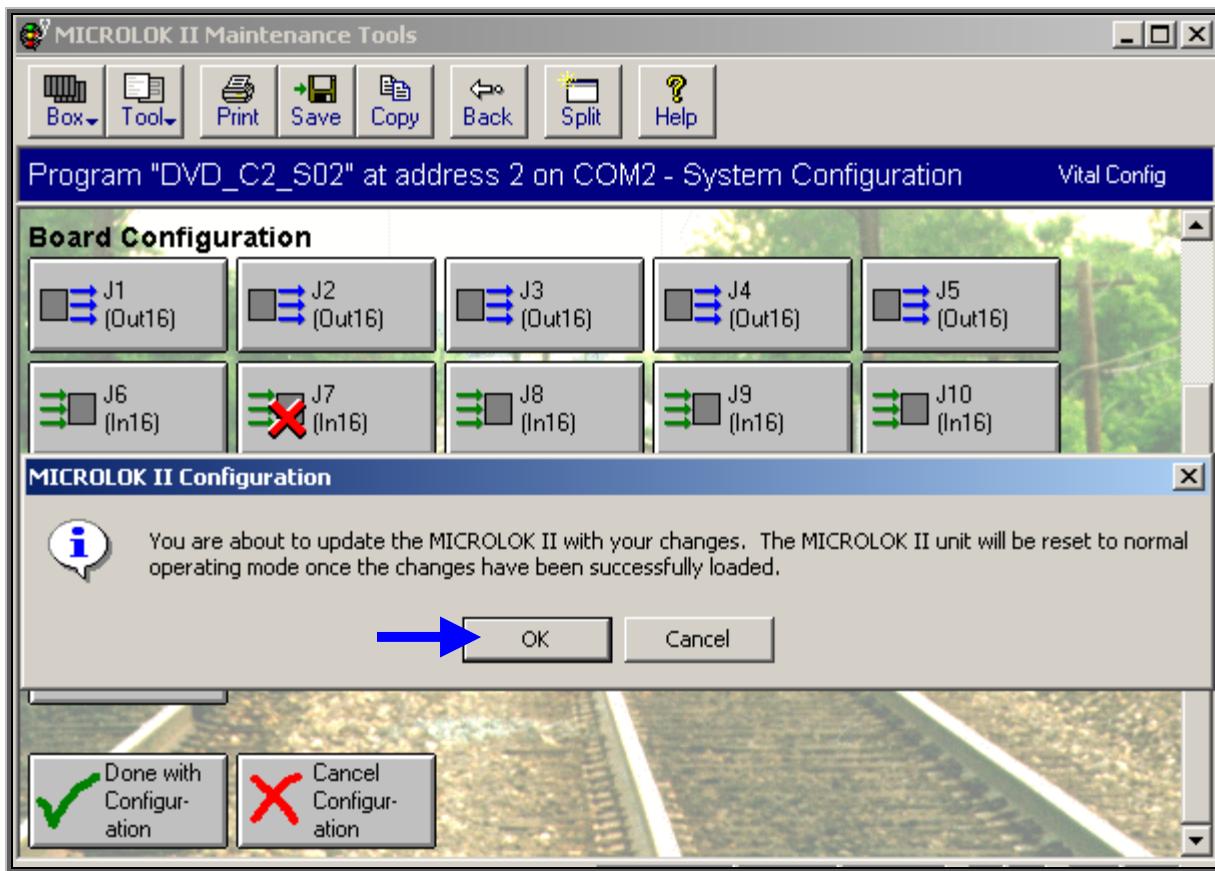


Figure-7.5.2.6

- ❖ Click on the “OK” button in the above “MICROLOK II Configuration” dialogue box to update the new configuration data.
- ❖ System resets automatically once.
- ❖ On completion of system reset process, “System Configuration Complete” dialogue box appears as shown in Figure-7.5.2.7.

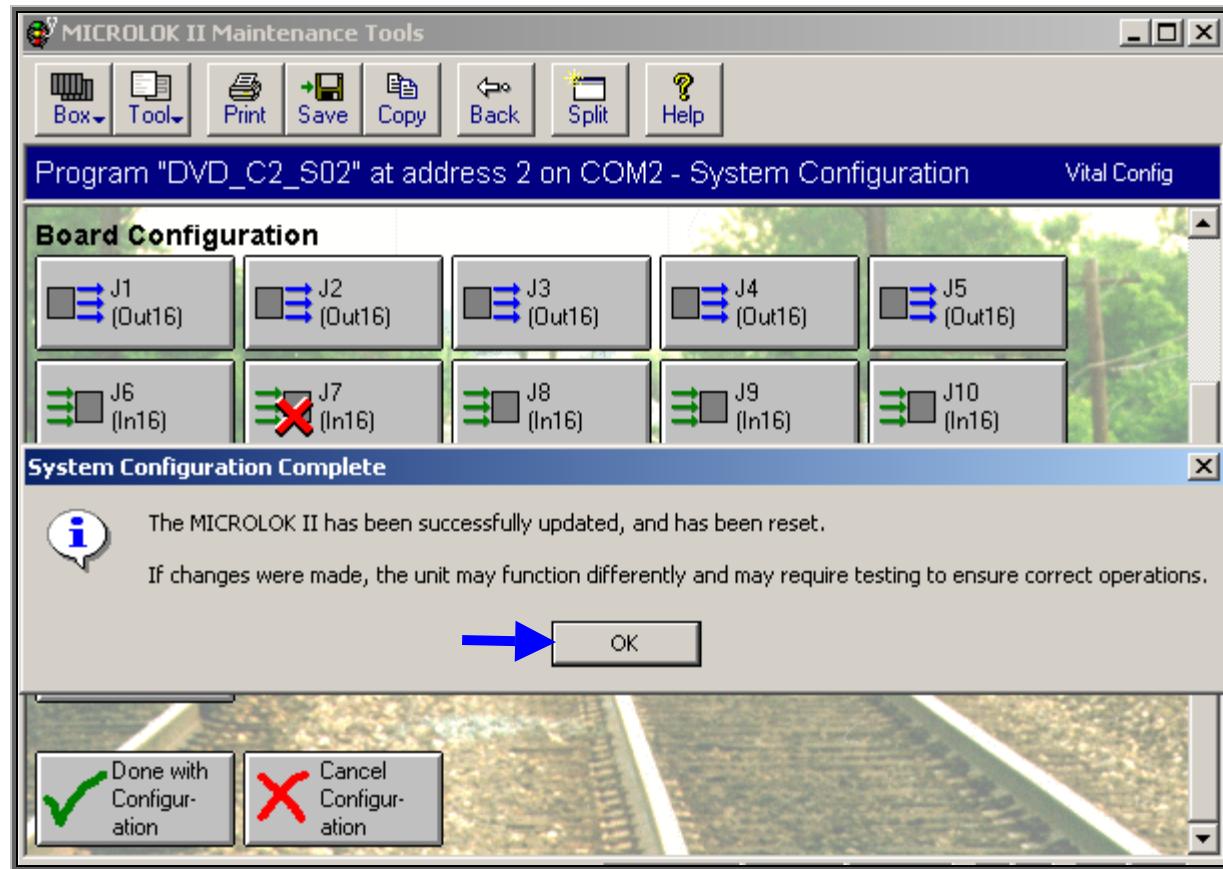


Figure-7.5.2.7

- ❖ Click on the “OK” button in the above “System Configuration Complete” dialogue box.
- ❖ System will Reset automatically and VCOR will pick up.

7.5.3 CONFIGURING THE NON-VITAL I/O BOARDS (NV.IN32.OUT32)

- ❖ To configure a standard non-vital I/O board, first carry out the steps as per section “7.3” and then click on one of the “NV.In32.Out32” selection buttons on the system configuration selection screen.

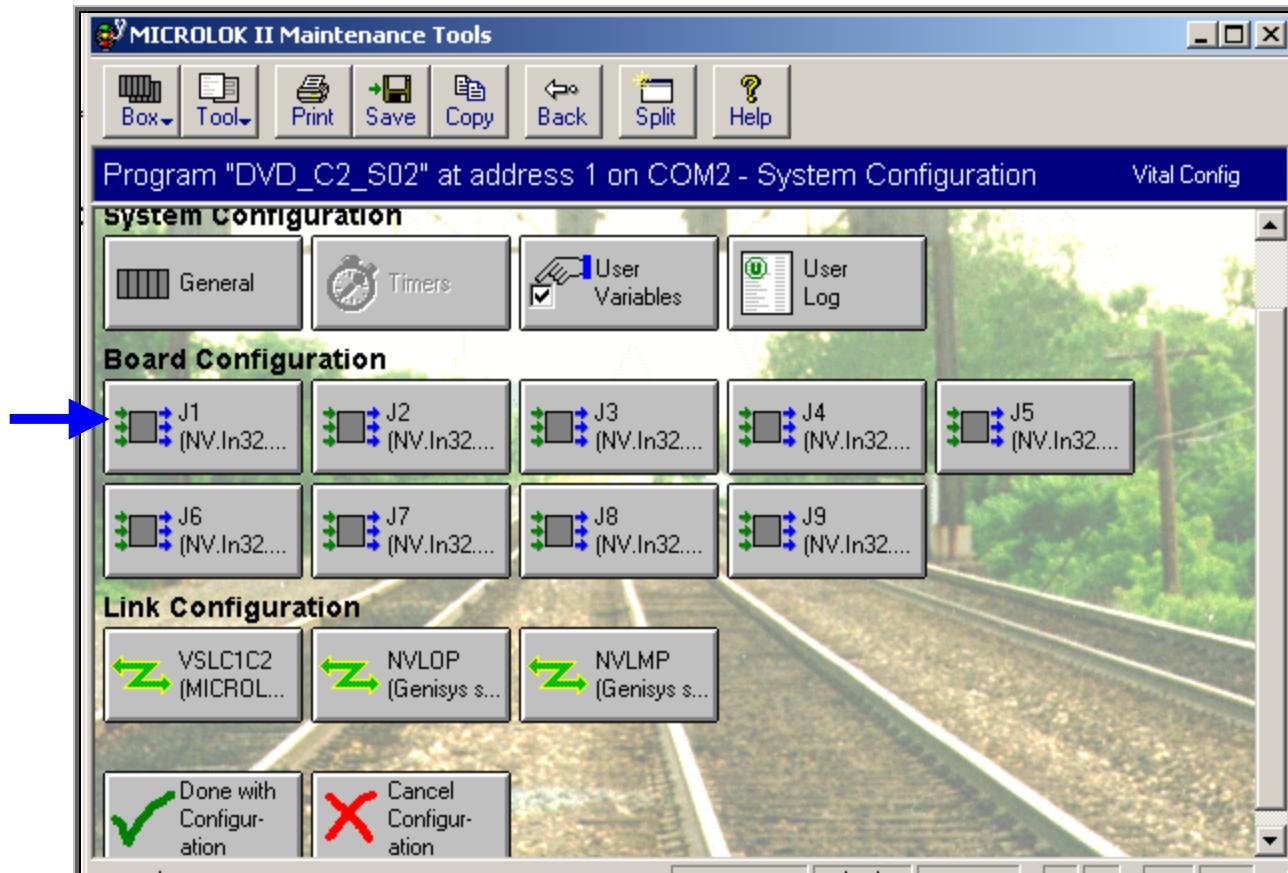


Figure-7.5.3.1

- ❖ After selection of the particular board, the following window appears as shown in Figure-7.5.3.2.

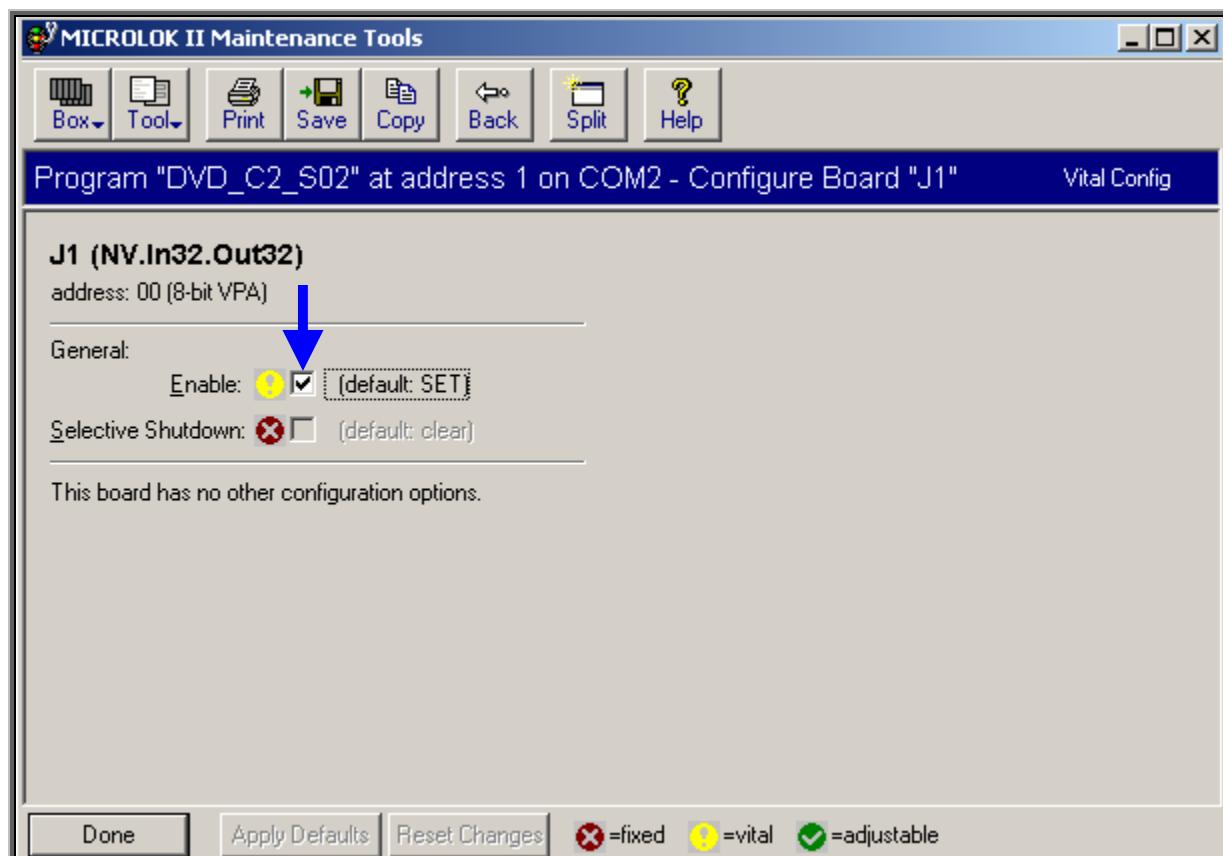


Figure-7.5.3.2

- ❖ The only configurable option for the standard non-vital I/O board is the “Enable” option.
- ❖ “Selective Shutdown” is not yet implemented and will remain disabled.
- ❖ “Enable” is user configurable through the Tools program only if it is identified as an adjustable parameter in the application program.
- ❖ Use the following procedure to configure the standard non-vital I/O board:
 - ◆ First, make sure that a check mark ✓ appears in the “Enable” selection square box at the top of the screen.
 - ◆ If check mark ✓ appears, that indicates particular board is enabled.
 - ◆ User wants to disable the particular board, click the “Enable” selection square box (Refer Figure-7.5.3.3).

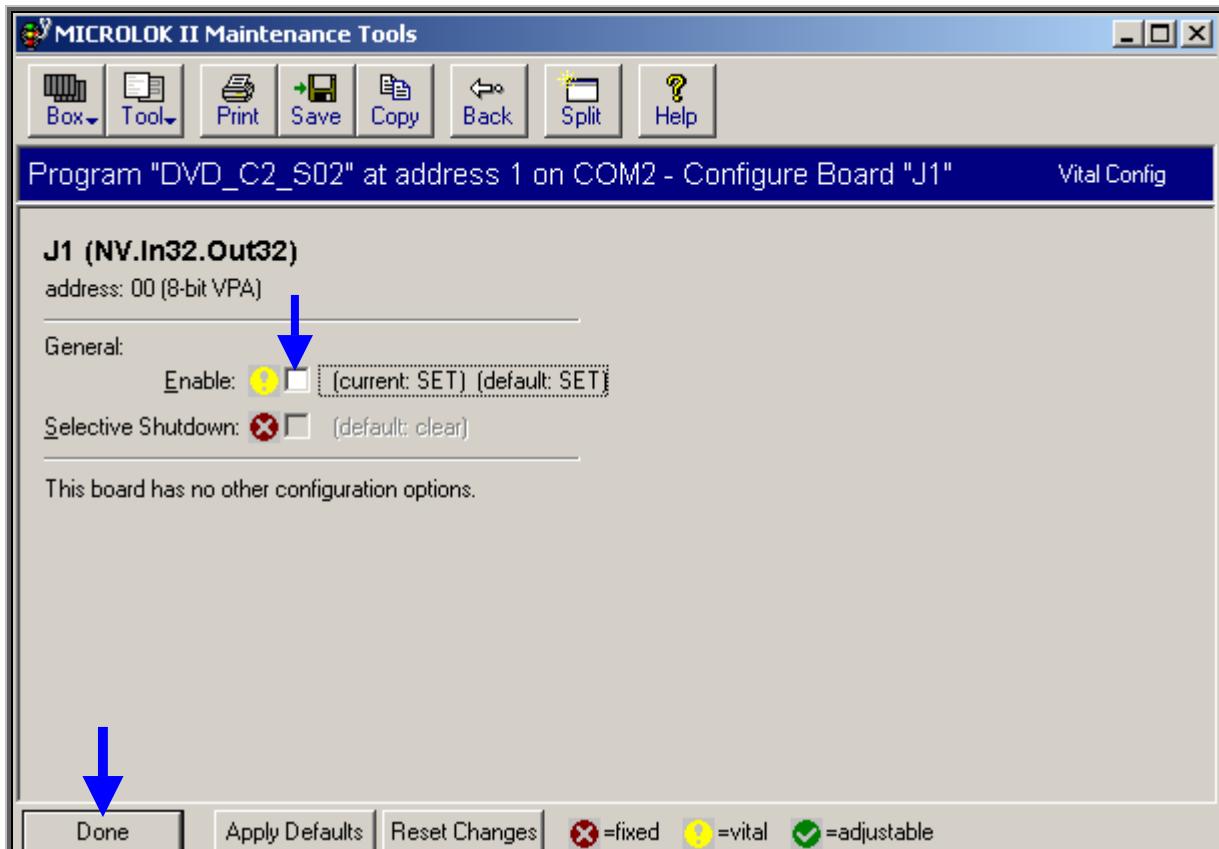


Figure-7.5.3.3

- ❖ Now check mark disappears, that indicates particular board is disabled.
- ❖ Click on the “Done” button at the lower left corner of the screen.
- ❖ This will present “MICROLOK II Configuration” dialogue box as shown in Figure-7.5.3.4.

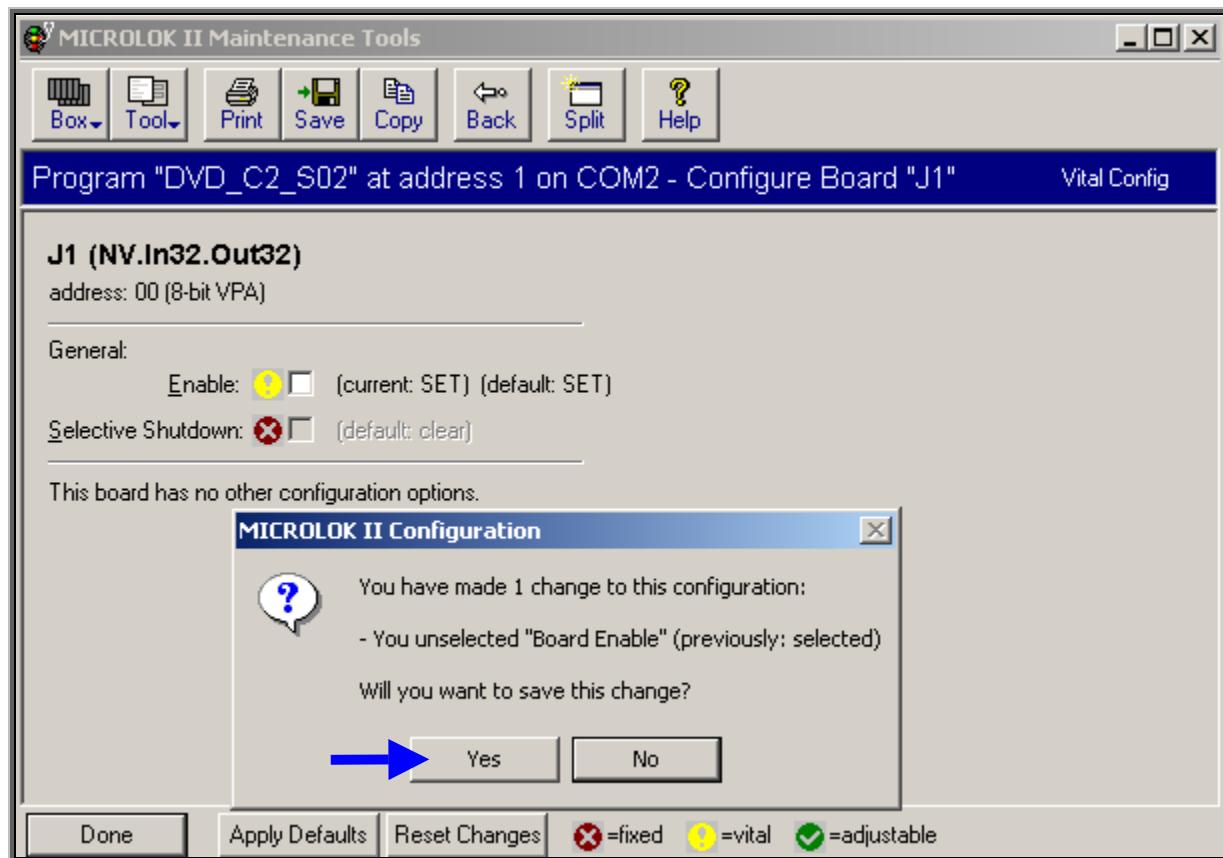


Figure-7.5.3.4

- ❖ Click on the “Yes” button in the above “MICROLOK II Configuration” dialogue box to save the configuration changes and complete the board configuration.
- ❖ Once again “System configuration” selection window appears as shown in Figure-7.5.3.5.

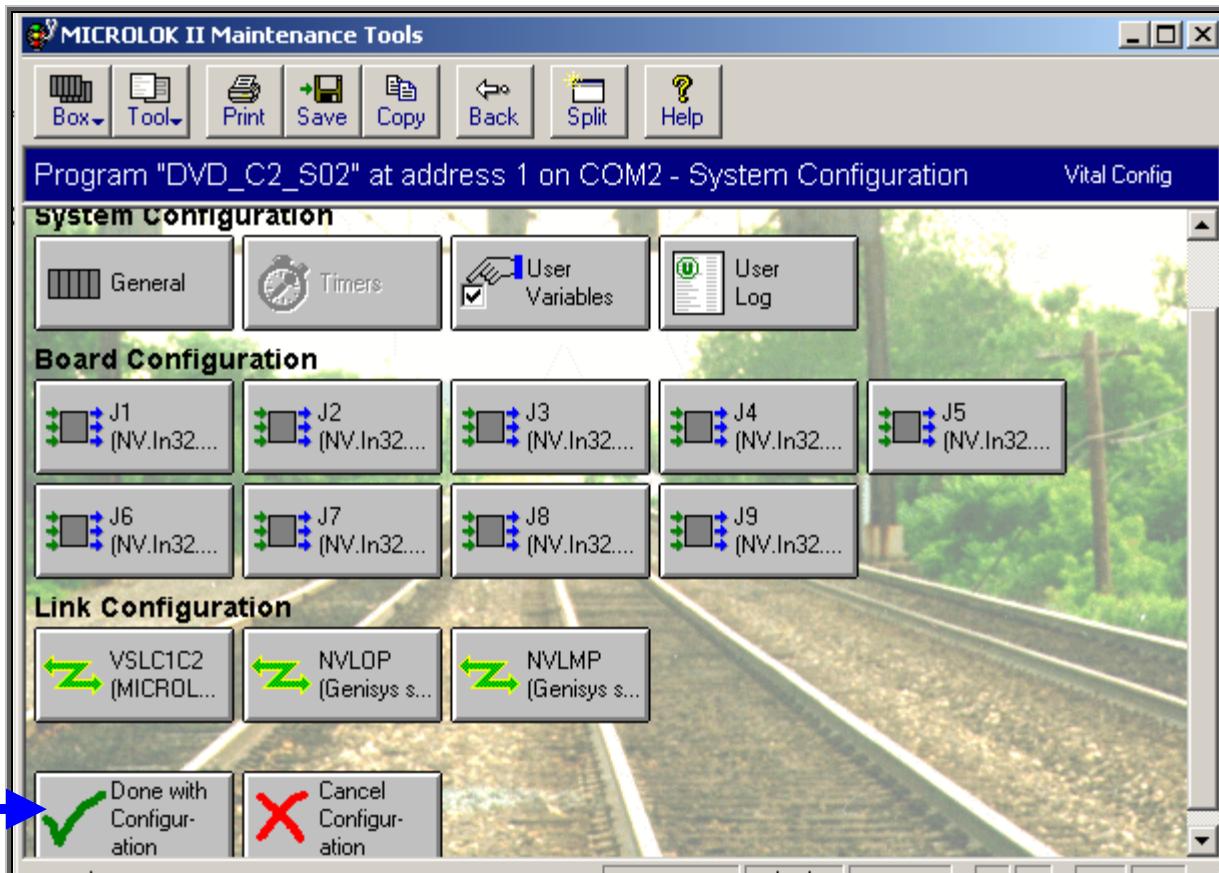


Figure-7.5.3.5

- ❖ Click on the “**Done with Configuration**” button in the above System Configuration selection window.
- ❖ This will present “**MICROLOK II Configuration**” dialogue box as shown in Figure-7.5.3.6.

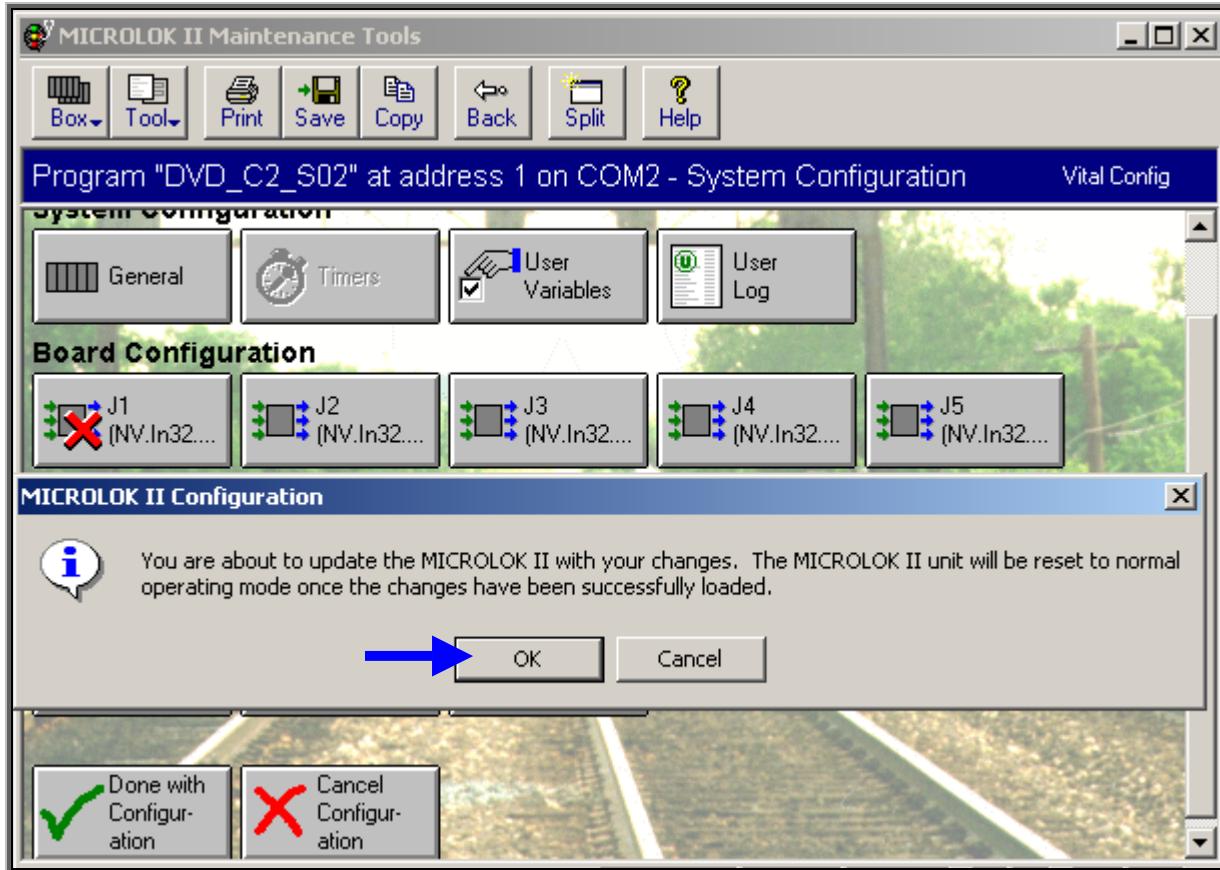


Figure-7.5.3.6

- ❖ Click on the “OK” button in the above “MICROLOK II Configuration” dialogue box to update the new configuration data.
- ❖ System resets automatically once.
- ❖ On completion of system reset process, “System Configuration Complete” dialogue box appears as shown in Figure-7.5.3.7.

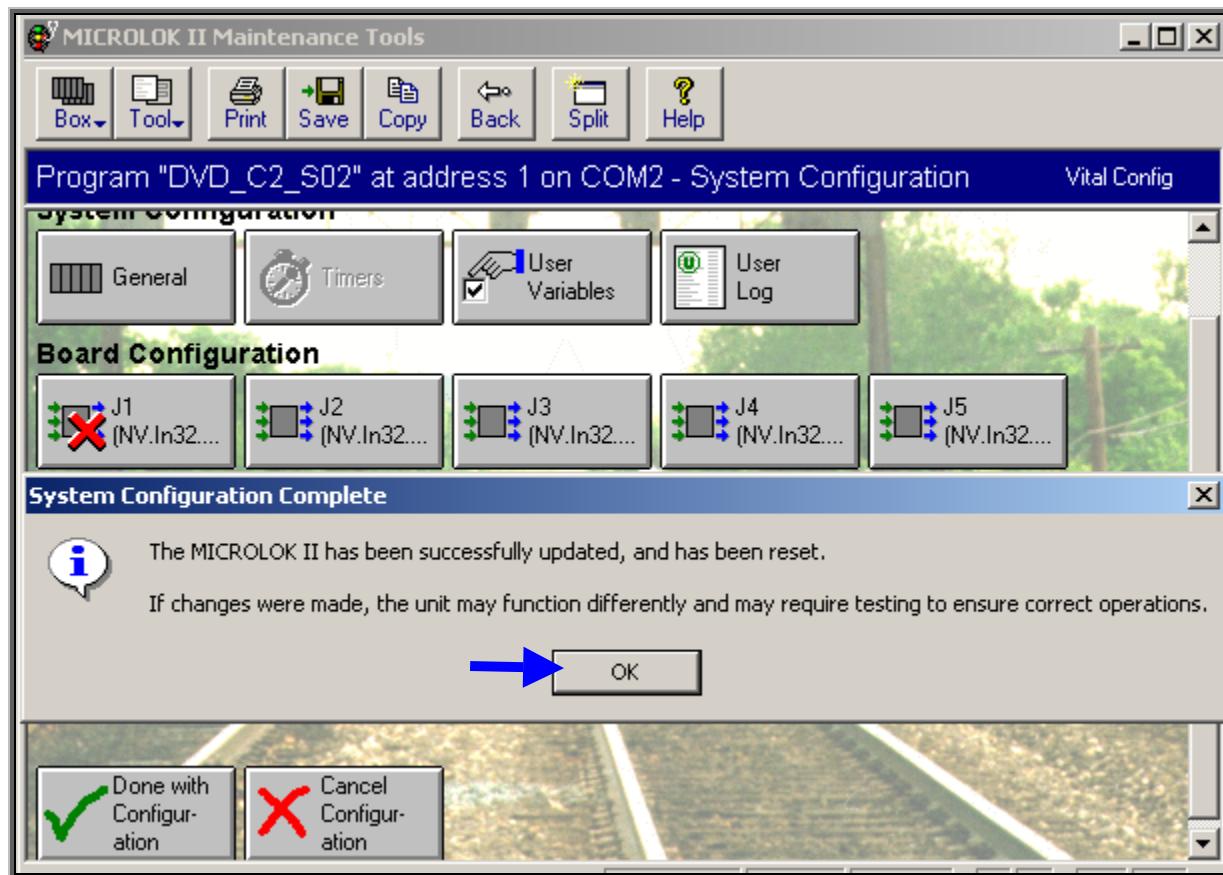


Figure-7.5.3.7

- ❖ Click on the “OK” button in the above “System Configuration Complete” dialogue box.
- ❖ System will Reset automatically and VCOR will pick up.

7.6 CONFIGURING THE SYSTEM SERIAL LINKS

Use the following procedure to configure the system serial links:

- ❖ First carryout the steps as per “7.3” section and then click on one of the Link Configuration selection button on the system configuration selection window (Refer Figure-7.6.1).

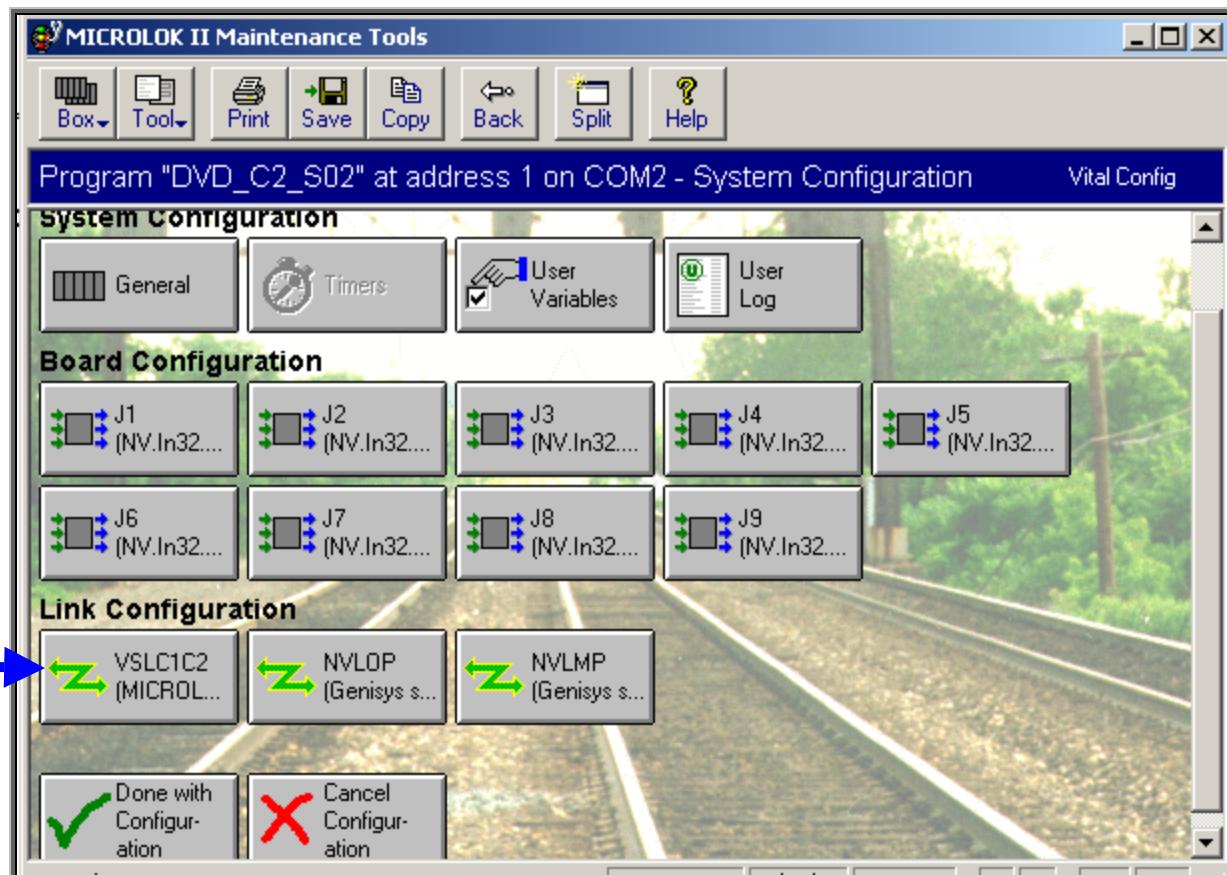


Figure-7.6.1

- ❖ After click on the one of Link Configuration, the following window appears as shown in Figure-7.6.2.

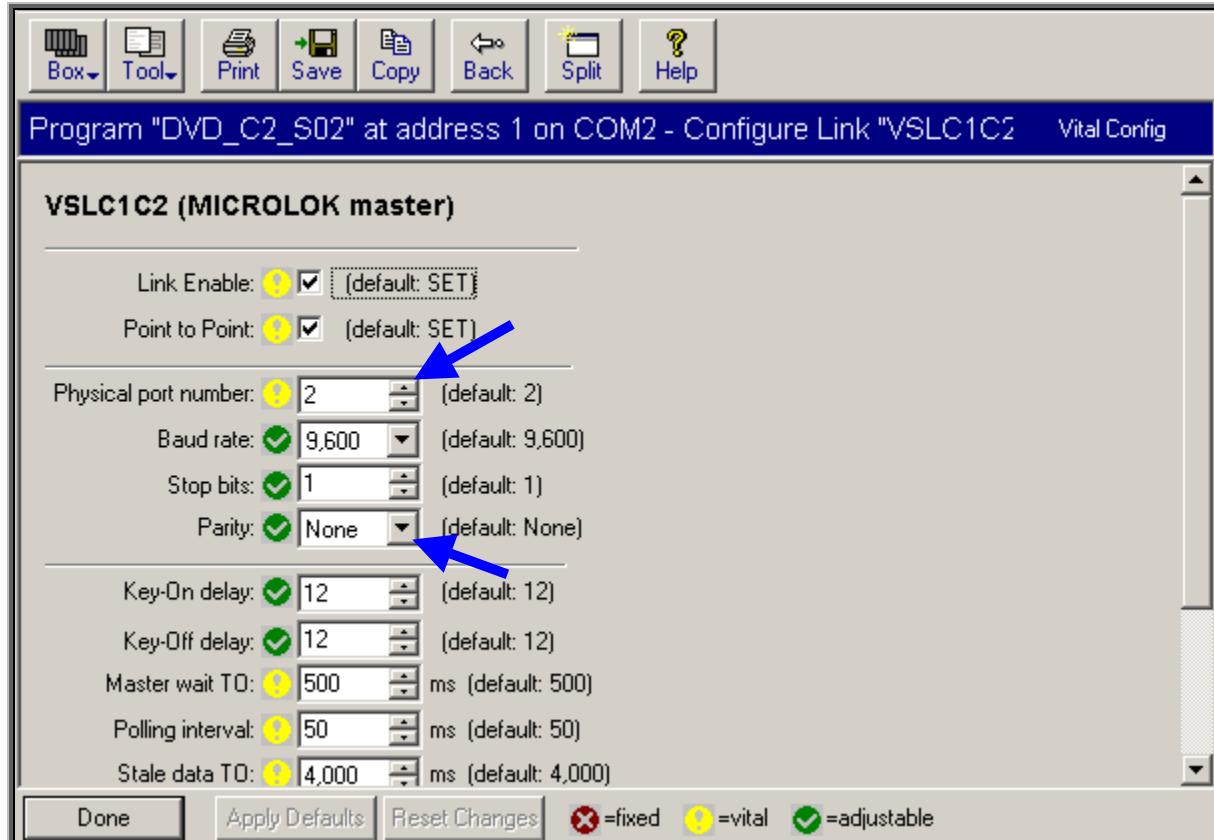


Figure-7.6.2

- ❖ Review the configuration parameters for the selected serial link. Modify the parameters as necessary. Use the arrow buttons on the screen to modify the values for adjustable parameters:



- *Fields with a single arrow box* lets user display a supplemental window that lists all valid values. After user click on the box and the list appears, user can click on the appropriate displayed value to have it automatically entered into the field.



- *Fields with two arrow boxes* will allow the user raise or lower the value of the displayed setting. Click the arrow pointed in the proper direction until the value increases or decreases to the desired setting.

- ❖ When all of the user-defined variables have been set to the proper values for the application, click on the “Done” button at the lower left corner of the screen (Refer Figure –7.6.3).

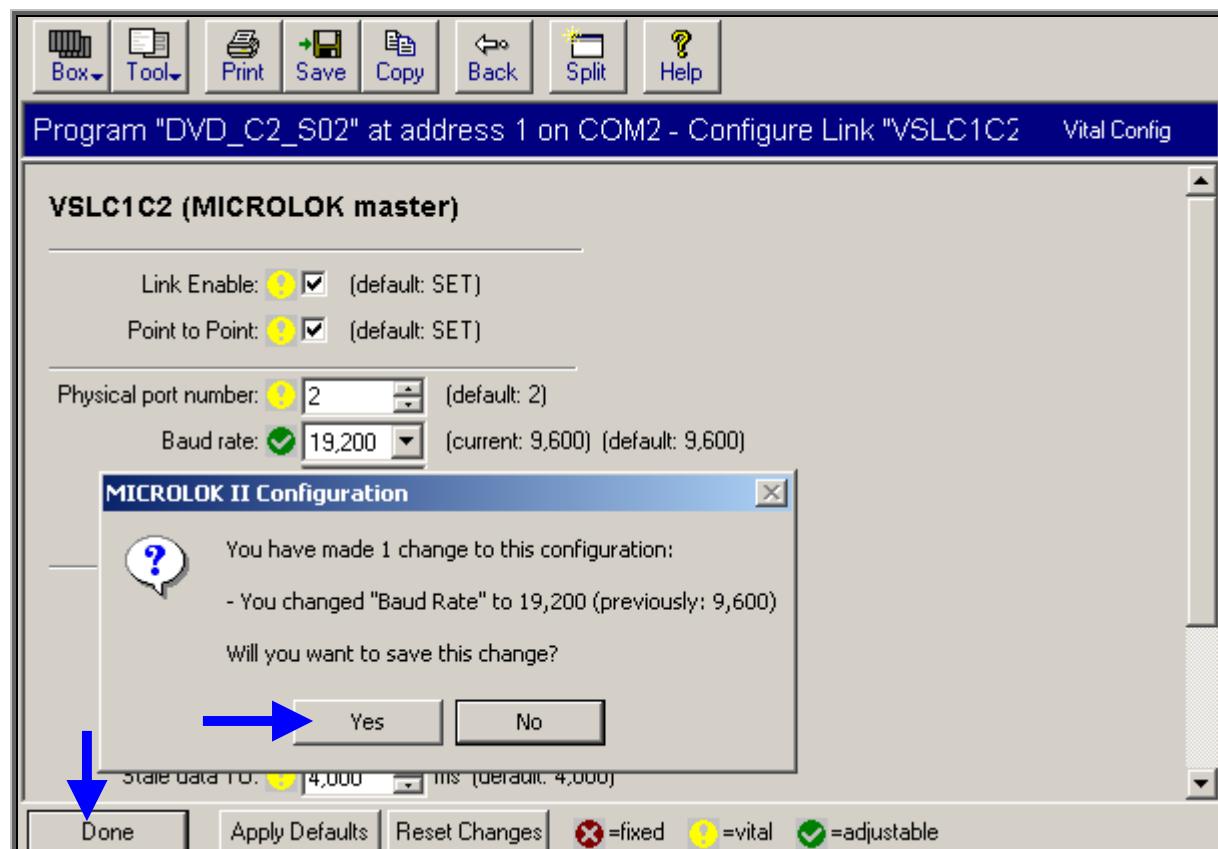


Figure-7.6.3

- ❖ Click on the “Yes” button in the above “MICROLOK II Configuration” dialogue box to save the configuration changes and complete the board configuration.
- ❖ Once again “System configuration” selection window appears (Figure-7.6.4).

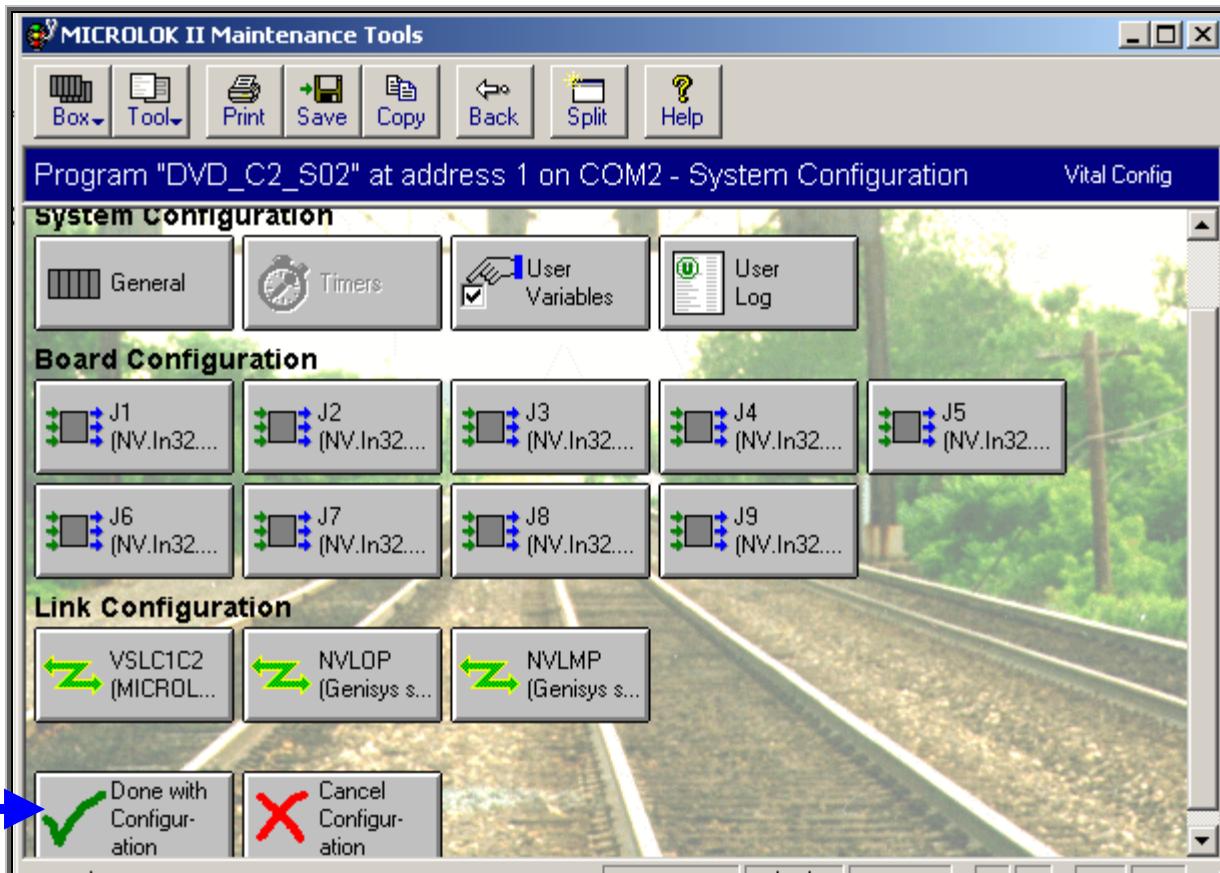


Figure-7.6.4

- ❖ Click on the “**Done with Configuration**” button in the above System Configuration selection window.
- ❖ This will present “**MICROLOK II Configuration**” dialogue box as shown in Figure-7.6.5.

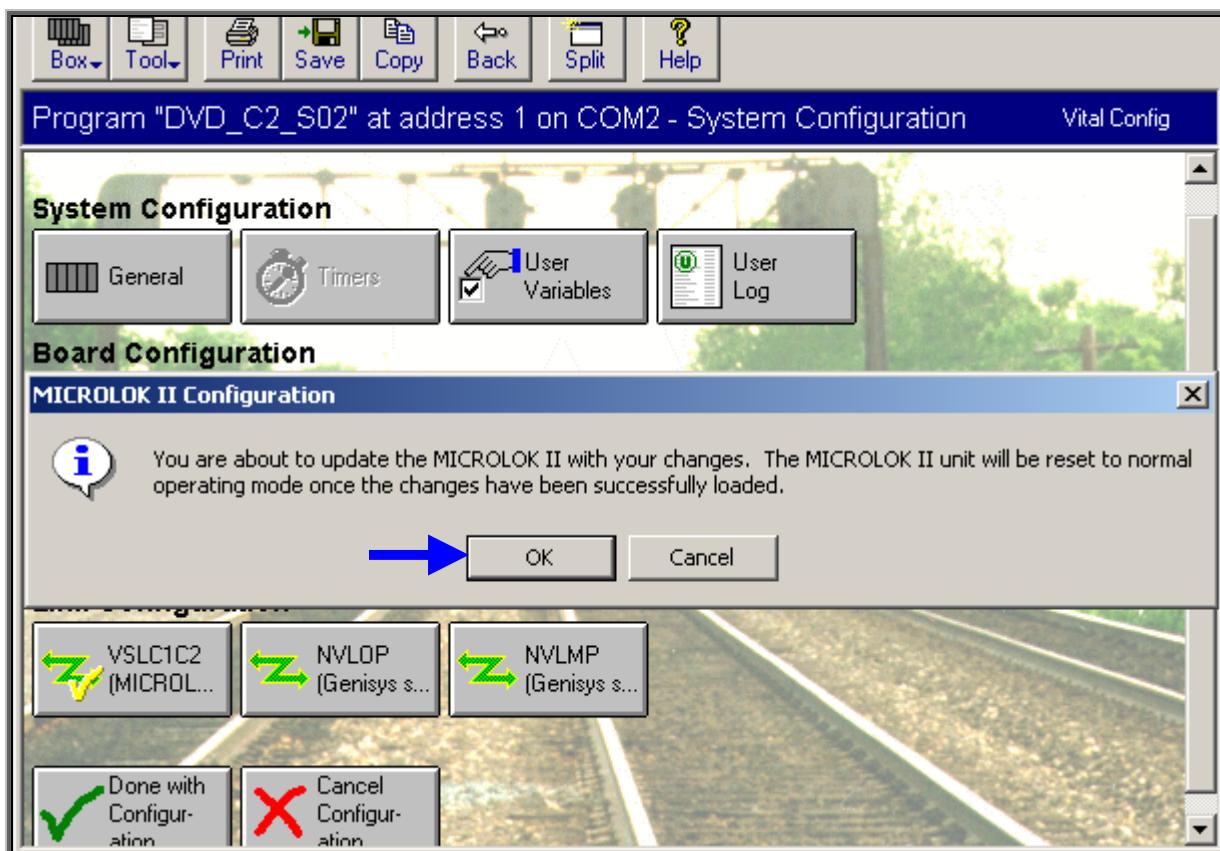


Figure-7.6.5

- ❖ Click on the “OK” button in the above “MICROLOK II Configuration” dialogue box to update the new configuration data.
- ❖ System resets automatically once.
- ❖ On completion of system reset process, “System Configuration Complete” dialogue box appears as shown in Figure-7.6.6.

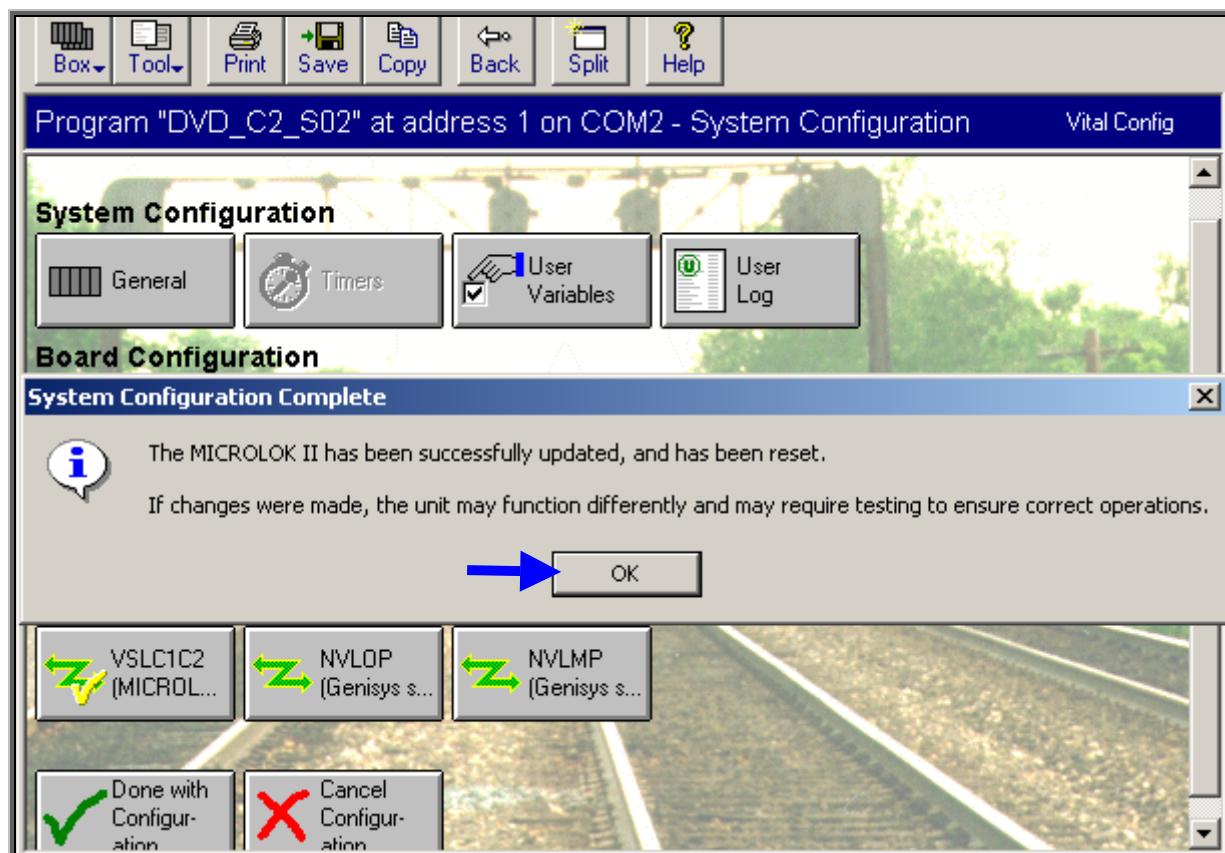


Figure-7.6.6

- ❖ Click on the “OK” button in the above “System Configuration Complete” dialogue box.
- ❖ System will Reset automatically and VCOR will pick up.

8. SYSTEM MAINTENANCE

8.1 INTRODUCTION

This chapter provides instructions for performing a scheduled maintenance routine that is designed to detect early symptoms of equipment degradation which, if left unattended, may eventually result in a system malfunction.

WARNING

MICROLOK II IS VITAL ELECTRONIC EQUIPMENT. BE AWARE THAT RADIO TRANSMISSIONS CAN AFFECT ELECTRONIC EQUIPMENT.

WE RECOMMEND THAT RADIO EQUIPMENT NOT BE UTILISED WITHIN THE IMMEDIATE VICINITY OF MICROLOK II EQUIPMENT.

Maintenance personnel must be familiar with the recommended methods for operating, testing, and repairing the Microlok II system equipment.

WARNING

THE MICROLOK II SYSTEM DIRECTLY AFFECTS THE OPERATIONAL SAFETY OF THE ASSOCIATED INTERLOCKING AND THE ADJOINING TRACK CIRCUITS. THEREFORE, MAINTENANCE PERSONNEL SHOULD NOT MAKE CIRCUIT REPAIRS OR ALTERATION.

8.2 ELECTROSTATIC DISCHARGE PRECAUTIONS

- ❖ Most people have at one time or another experienced the unpleasant sensation associated with an electrostatic discharge (ESD), also known as static electricity.
- ❖ Most people do not realize, however, that an electrical potential ranging from 3000 to 5000 volts must be present before an electrostatic discharge can be felt, seen, or heard.
- ❖ Some semiconductor devices such as the EPROM (erasable programmable read only memory) and the VMOS (vertical metal oxide semiconductor) have been proven susceptible to ESD damage at voltage levels as low as 30 to 100 volts.
- ❖ Therefore, it is easy to reason that most semiconductor devices can be severely damaged without knowing that the damage has been done.
- ❖ When working on the Microlok II system and contact with the system printed circuit boards cannot be avoided, observe the following guidelines:
- ❖ Always stand on an approved conductive floor mat when touching or handling printed circuit boards.
- ❖ Always wear a wrist strap grounding device. The wrist strap should have a 1.0 megohm current limiting resistor. Connect the wrist strap grounding connector to suitable ground connection.
- ❖ Periodically check each wrist strap for continuity using an approved tester. Continuity readings must be between 500k ohms and 10 megohms. Discard any wrist strap that does not meet this criterion.
- ❖ Always handle printed circuit boards by the edges. Do not touch board components.
- ❖ Keep the work area clean and free of debris. Avoid using non-conductive materials such as Styrofoam cups, plastic ashtrays, cellophane

wrappers, or plastic covered binders in the vicinity of the Microlok II cardfile.

- ❖ Once removed from the cardfile, immediately place printed circuit boards into a conductive-shielded bag. Wrap the bag in conductive foam to protect the circuit board during transport and shipment.

8.3 PREVENTIVE MAINTENANCE

- ❖ The Microlok II cardfile and all associated peripheral equipment should be periodically inspected for signs of equipment degradation.
- ❖ These inspections should be performed with scheduled inspections of other related vital equipment.
- ❖ US&S recommends that these inspections be performed at least on an annual basis.
- ❖ As a minimum, the following checks should be performed:

CAUTION

WHEN HANDLING ANY MICROLOK II CIRCUIT BOARD OR BOARD COMPONENT, OBSERVE ALL ELECTROSTATIC DISCHARGE (ESD) PRECAUTIONS. IMPROPER HANDLING OF BOARDS OR COMPONENTS MAY RESULT IN DAMAGE TO STATIC SENSITIVE CIRCUITRY.

CAUTION

DO NOT INSTALL OR REMOVE ANY MICROLOK II PRINTED CIRCUIT BOARD WITH BATTERY POWER APPLIED TO THE CARDFILE. DAMAGE TO THE CIRCUIT BOARD OR THE CARDFILE BACKPLANE MAY RESULT.

- ❖ Clean the outside of the cardfile/enclosure using a clean, lint-free cloth.
- ❖ Inspect the cardfile/enclosure for dents and scratches. When dents are found, inspect for internal damage.
- ❖ Make certain that the cardfile and all peripheral modules are properly mounted and that all mounting hardware is present and securely fastened.
- ❖ Remove all printed circuit boards from the cardfile. Inspect the cardfile backplane for loose or damaged connectors. Also, thoroughly inspect each printed circuit board for physical damage, discolored or damaged components and wiring insulation, cracked or broken component leads and copper traces. Questionable circuit boards should be replaced from the spares inventory.
- ❖ If necessary, vacuum the interior of the cardfile without disturbing any wiring. Use a nonmetallic, insulated vacuum head.

- ❖ Reinstall the circuit boards into the cardfile. Tighten the board retaining screws finger tight.
- ❖ Check all power input and signal supply leads for frayed or discolored insulation and loose connections. Also check all lightning arrestor/voltage suppressor devices for any signs of physical degradation.
- ❖ Visually examine all wire and cable harnesses for proper bundling and slack.
- ❖ Remove the VCOR relay from the installation and inspect it.

8.4 CORRECTIVE MAINTENANCE

WARNING

DO NOT ATTEMPT TO REPAIR ANY MICROLOK II SYSTEM PRINTED CIRCUIT BOARD OR PERIPHERAL DEVICE IN THE FIELD. THIS EQUIPMENT MUST BE RETURNED TO US&S FOR REPAIR OR REPLACEMENT. ANY ATTEMPT TO FIELD REPAIR THE MICROLOK II SYSTEM MAY JEOPARDIZE THE SAFETY-RELATED FUNCTIONS OF THE SYSTEM.

- ❖ Corrective maintenance on the Microlok II system is limited to the correction of basic wiring and hardware problems and the replacement of modular system components.
- ❖ Shop testing and repair procedures for the modular components of the Microlok II system are not available to US&S customers. These vital components require specialized factory test equipment and procedures.
- ❖ If a component has been determined to be faulty, return it to US&S for repair or replacement. For service information, contact:

Union Switch & Signal Pvt Ltd,

SLV Complex, AVS Compound,
#35, 80 Feet Road, IV Block, Koramangala,
Bangalore-560034
Phone 080- 25525737,25531034, 25532038,
Fax 080-25525732
info@switch-ind.com

8.5 WEEKLY MAINTENANCE

8.5.1 MEASURING VOLTAGES

(Performed by Signal Maintainer)

Sl.N o.	Date	12V DC MLK II Card file Supply		24V DC MLK II I/O Supply		Observation	Signature
		At IPS	At MLK II Rack	At IPS	At MLK II Rack		

1	14.06.04	15.5V	13.5V	30V	28V		
2	21.06.04	15.5V	13.5V	30V	28V		

8.5.2 FUSE CHECKING

(Performed by Signal Maintainer)

Sl.No	Date	Fuse Checking						Observation	Signature
		MLK II Power supply Board Fuses	MLK II I/O Board Fuses	Switching circuit Fuse	Panel supply Fuses	Converter cum isolator Fuses			
		MLK II Rack	MLK II & Relay Racks	MLK II Rack	Relay Rack	MLK II Rack			
1	14-06-04	OK	OK	OK	OK	OK			
2	21-06-04	OK	OK	OK	OK	OK			

8.5.3 BACKUP SCHEDULES

(Performed by signal engineer)

- ❖ The User Data Log, Event Log & Error Log backup to be taken in Hard disk as well as floppy disk for remote storage

Sl.No	Backup Date	User Log Backup	Event Log Backup	Error Log Backup	Observation	Signature
1	14-06-04	Done	Done	Done		

8.6 MONTHLY MAINTENANCE**8.6.1 SYSTEM CHANGEOVER**

(Performed by Signal Engineer)

Sl.No	Date	System Changeover		Observation	Signature
		A → B	B → A		
1	14-06-04	✓			
2	14-07-04		✓		

- ❖ During Changeover, SGE block instrument must be kept in TOL condition
- ❖ Ensure Synchronization Microlok II clock time with Maintenance PC time after changeover. (Refer Section 5.7 of this document)

8.6.2 MEASURING EARTH RESISTANCE VALUE

(Performed by Signal Engineer)

Sl.No	Date	Earth Resistance Value								Observation	Signature
		Pit 1	Pit 2	Pit 3	Pit 4	Pit 5	Pit 6	Pit 7	Pit 8		
1	14-06-04	0.3 ohm	0.9 ohm	0.5 ohm	0.7 ohm	0.4 ohm	0.6 ohm	0.8 ohm	0.2 ohm		
2	14-07-04	0.3 ohm	0.9 ohm	0.5 ohm	0.7 ohm	0.4 ohm	0.6 ohm	0.8 ohm	0.2 ohm		

- ❖ Earth Resistance value should be less than **1 ohm**

8.7 ANNUAL MAINTENANCE

(Performed by signal engineer)

- ❖ Replace the Lithium battery
- ❖ Check the converter cum isolator
- ❖ Perform the inspection activities mentioned in section 8.3

8.8 FIVE YEARS MAINTENANCE

(Performed by signal engineer)

- ❖ Inspect surge protection devices, replace if found deteriorated

8.9 SYSTEM FAILURE REGISTER

Sl.no	Failure			Changeover		Interlocking Down Time	Equipment or Component Failed	Corrective Action			
	Type	Date	Time	Date	Time			Description	Date	Time	By
1	System Reset	14.06.04	11:00	14.06.04	11:03	3 Minutes	CPU-RAM error	CPU replaced	14.06.04	11:00	US&S

9. ERROR CODES

9.1 CPU Board Error/Event codes Refer Service Manual 6800C Appendix A