



SEAR Ili Internal Event Recorder Field Manual

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NOTES, CAUTIONS, AND WARNINGS

Throughout this manual, notes, cautions, and warnings are frequently used to direct the reader's attention to specific information. Use of the three terms is defined as follows:

WARNING

INDICATES A POTENTIALLY HAZARDOUS SITUATION WHICH, IF NOT AVOIDED, COULD RESULT IN DEATH OR SERIOUS INJURY. WARNINGS ALWAYS TAKE PRECEDENCE OVER NOTES, CAUTIONS, AND ALL OTHER INFORMATION.

CAUTION

REFERS TO PROPER PROCEDURES OR PRACTICES, WHICH IF NOT STRICTLY OBSERVED, COULD RESULT IN A POTENTIALLY HAZARDOUS SITUATION AND/OR POSSIBLE DAMAGE TO EQUIPMENT. CAUTIONS TAKE PRECEDENCE OVER NOTES AND ALL OTHER INFORMATION, EXCEPT WARNINGS.

NOTE

Generally used to highlight certain information relating to the topic under discussion.

If there are any questions, contact Siemens Technical Support.

ELECTROSTATIC DISCHARGE (ESD)

PRECAUTIONS

Static electricity can damage electronic circuitry, particularly low voltage components such as the integrated circuits commonly used throughout the electronics industry. Therefore, procedures have been adopted industry-wide that make it possible to avoid the sometimes invisible damage caused by electrostatic discharge (ESD) during the handling, shipping, and storage of electronic modules and components. Siemens has instituted these practices at its manufacturing facility and encourages its customers to adopt them as well to lessen the likelihood of equipment damage in the field due to ESD. Some of the basic protective practices include the following:

- Ground yourself before touching card cages, assemblies, modules, or components.
- Remove circuit boards (modules) from card cages by the ejector lever only. If an ejector lever is not provided, grasp the edge of the circuit board but avoid touching circuit traces or components.
- Handle circuit boards by the edges only.
- Never physically touch circuit board or connector contact fingers or allow these fingers to come in contact with an insulator (e.g., plastic, rubber, etc.).
- When not in use, place circuit boards in approved static-shielding bags, contact fingers first. Remove circuit boards from static-shielding bags by grasping the ejector lever or the edge of the board only. Each bag should include a caution label on the outside indicating static-sensitive contents.
- Cover workbench surfaces used for repair of electronic equipment with static dissipative workbench matting.
- Use integrated circuit extractor/insertion tools designed to remove and install electrostatic-sensitive integrated circuit devices such as PROM's (OK Industries, Inc., Model EX-2 Extractor and Model MOS-40 Inserter (or equivalent) are highly recommended).
- Utilize only anti-static cushioning material in equipment shipping and storage containers.

For information concerning ESD material applications, please contact the Siemens Rail Automation Technical Support Staff in Rancho Cucamonga, California. ESD Awareness Classes and additional ESD product information are also available through the Technical Support Staff.

SECTION 1 – INTRODUCTION

The Siemens Internal Event Recorder (SEAR Ili) is a non-vital module of the 4000 GCP. This module:

- provides continuous real-time status and event recording of the 4000 GCP and the grade crossings monitored by the GCP
- receives and transmits data via Echelon Lontalk[®] Protocol
- has a standard memory capacity of 180,000 stored events
- memory may be expanded to 390,000 stored events
- provides the heel and front dry contacts of two internal non-vital relays for external applications
- provides 6 RTU outputs
- monitors and records:
 - two user-defined digital inputs on the front panel
 - 61 channels on the backplane
 - temperature
 - battery voltage

WARNING

THE SEAR Ili IS A NON-VITAL MODULE.
DO NOT USE FOR VITAL
APPLICATIONS.

CAUTION

**THE MODEL 4000 GCP AND ALL
DEVICES CONNECTED TO THE LAN
SHOULD BE CONTAINED ENTIRELY
WITHIN THE SAME SIGNAL CASE OR
BUNGALOW.**

NOTE

Additional LAN protocols may be accommodated. For information contact Siemens Systems Applications Engineering.

The SEAR Ili is always subnode 99 and device 01. The 4000 GCP ATCS address must always be the same 7RRRLLGGG as the SEAR Ili. Unless specified otherwise the GCP subnode number is 16. The GCP device number is not user selected. To set the 4000 GCP ATCS address, see Siemens's SIG-00-08-10, Microprocessor Based Grade Crossing Predictor Model 4000 Family Field Manual in the **ATCS Site ID Entry** section.

With MCF gcp-t6x-01-2.MCF and earlier, the default ATCS address of the GCP that is stored aboard the SEAR Ili is 7.000.000.000.16 and therefore must be changed to match the local site address in order to communicate with the GCP.

With MCF gcpt6x-02-1.MCF and later, the default address in the SEAR Ili and the GCP are the same.

If the location is not equipped with external communications, the industry method does not have to be used. Then the SEAR Ili default address 7.620.100.100.99.01 and GCP 4000 default address 7.620.100.100.16 may then be used.

1.1 RECORDED DATA ACCESS

Recorded information and monitored states can be accessed:

- internally from the 4000 GCP Display Module
- externally via the front panel serial connectors

1.2 EXTERNAL COMMUNICATION

SEAR Ili may communicate with external equipment. via:

- the GCP **LONTALK® PROTOCOL** LAN connector
 - establishes own LAN node identification
 - employs ATCS Specification 200 nested within Lontalk® Protocol
- front panel serial ports
 - ATCS MCP radio with RS232 port
 - spread-spectrum radio (SSR)
 - telephone dial-up modem
 - serial printer
 - computer

1.3 SITE CONFIGURATION

The SEAR Ili is fully configurable for each installation site. Configuration is accomplished using:

- the SEAR Ili Keypad available on the 4000 GCP Display Module
- a computer running any standard terminal emulation program such as HyperTerminal

SEAR configuration includes selection of:

- site information
 - ATCS identification number
 - local time
 - location (with DOT Crossing Number, milepost number, site name, and site type)
- office ATCS address
- communication data
- input activation and selection

1.3.1 ATCS Address

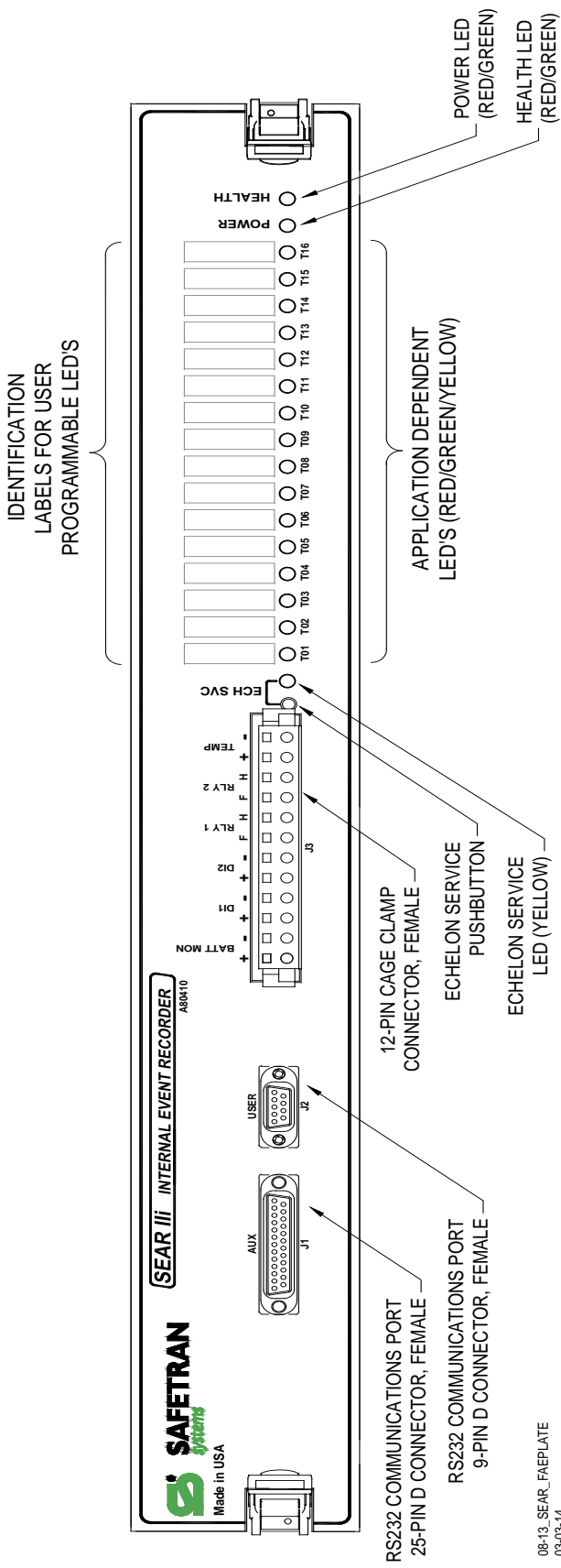
The ATCS address follows a railroad industry method of identifying specific locations and equipment at that location. In the address 7.RRR.LLL.GGG.99.01:

- RRR is the railroad number
- LLL is the line number
- GGG is the group number, which generally is the location
- 99 is a sub-node at the location, and
- The 01 is the device number

1.4 STATUS LED'S

The 19 front-panel LED's display LAN, SEAR Ili and event status are depicted in Figure 1-1:

- **ECH SCV** LED flashes yellow until SEAR III is initialized, then turns off
- **POWER** LED lights green while power is applied
- **HEALTH** LED
 - Flashes green if backup battery output is within acceptable voltage range.
 - Flashes red if backup battery is below minimum acceptable voltage.
 - Off while SEAR III is inoperative.
 - Flashes yellow while compiling.
- 16 application dependent event LEDs (**T01 – T16**):
 - Light when programmed event occurs
 - Light red, green, or yellow
 - Event color predetermined by program
 - Event label area provided above each LED



**Figure 1-1:
Internal Event Recorder Front Panel**

08-13_SEAR_FAEPLATE
03-03-14

SECTION 2 – OPERATION

2.1 CONTROLS

Operational control of the SEAR Ili is maintained by an internal microprocessor.

- The executive software and programming instructions are stored in flash memory.

2.1.1 Event Memory

Events are stored in battery-backed SRAM (Static Random Access Memory).

- The event memory capacity in the standard SEAR Ili configuration is 180,000 events.
- With the memory expansion option, the memory capacity is 390,000 events.

2.1.2 Real Time Clock

An internal real-time clock maintains SEAR Ili time and date.

- SEAR Ili Time and date are normally set using the SEAR Ili keypad available on the 4000 GCP Display Module
 - may also be set by means of a computer connected to the USER port
 - clock automatically adjusts for leap years
 - automatic daylight savings adjustments are under user control
- The time and date is used to timestamp events in the Event Log.
- internal back-up battery accurately maintains time and date in event of power failure

NOTE

The internal memory and the real-time clock contain random data when the unit is powered up for the first time in the field. Time/Date adjustments should be performed immediately following the initial power-up sequence.

2.1.3 Internal Battery

An internal lithium battery maintains power to the SRAM and real-time clock when power is removed from the unit.

The SEAR Ili stores event log data and some programmable parameters in battery-backed RAM. The backup battery maintains the memory contents when power is removed from the system. When the backup battery is low, the SEAR Ili provides a low battery indication by displaying a message on the display, periodically beeping, and optionally sending an alarm message to a back-office alarm management system.

The SEAR II/Ili low battery indication alone is not a reliable means to determine when to replace the backup battery. There are situations where the battery may fail to maintain the memory contents once power is removed but the low

battery indication is not asserted. The battery must be replaced on a schedule, regardless of the low battery indication.

- Under normal circumstances, the memory contents will be kept for a minimum of 2 months without power applied to the recorder.

CAUTION

TO PREVENT LOSS OF POWER TO THE MEMORY AND REAL-TIME CLOCK DURING BATTERY REPLACEMENT, A NEW BATTERY SHOULD BE INSERTED INTO THE EMPTY HOLDER BEFORE REMOVING THE OLD BATTERY.

NOTE

The SEAR Ili uses a standard 3.6 V AA-size lithium battery. SEAR Ili module is shipped from the factory with the lithium battery electronically disconnected from the circuit. Although the SEAR Ili comes with two battery holders only one holder contains a battery. The battery is automatically connected when the Model 4000 GCP is first powered up in the field.

The battery should be replaced:

- After every 2 years of operation
- After the unit has been powered off for longer than 2 months

2.1.3.1 Battery Replacement

Refer to the battery replacement procedure on the following page to replace the Lithium battery in the SEAR Ili.

**Table 2-1:
Lithium Battery Replacement**

TABLE 2-1: LITHIUM BATTERY REPLACEMENT

Step 1	Use the ejector clips at each end of the SEAR Ili front panel to release the PC board from the 4000 GCP case assembly connectors.
Step 2	Pull the SEAR Ili assembly far enough out of the 4000 GCP case to expose the battery (see figure 9-2 below).
Step 3	Install a new battery in the spare battery clip (observe proper polarity).
Step 4	Remove the old battery from the other battery clip.
Step 5	Reinstall the SEAR Ili assembly in the 4000 GCP case. Make sure connectors are properly seated.
Step 6	Return the ejector clips to the locked position.

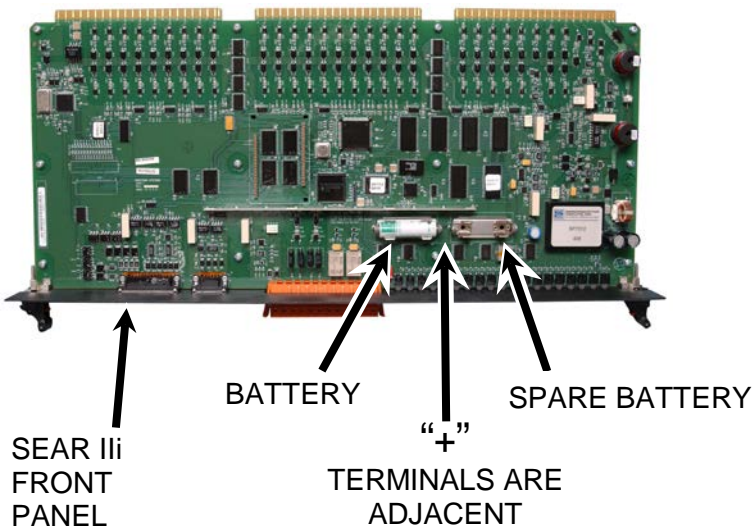


Figure 2-1: Battery Location on SEAR III

2.1.4 Digital Inputs

The two digital inputs may be used to monitor signals up to 120V DC/AC.

Each input:

- is independently opto-isolated
- energizes (turns on) when the input voltage exceeds 6V DC

2.1.5 Relay Outputs

The two sets of relay terminals provide independently isolated front (**F**) and heel (**H**) dry contacts.

- Contacts are rated for 5A at 30VDC or 120VAC.

2.1.6 Data Ports

SEAR III data may be accessed via the front panel serial port connectors:

- A telephone dial-up modem or a radio connected to the **AUX J1** port may be used to remotely access:
 - Inputs
 - outputs
 - diagnostics
 - event logs
 - configuration menu
- Serial printers and computers connected to **USER J2** port may be used to:
 - access data for printout and/or display
 - upload executive and application programs

NOTE

For modem applications the Siemens DC-powered A53413 14.4K Mighty Modem is recommended for use with the SEAR III.

- For information on the A53413 Modem, refer to Siemens's Mighty Modem, A53413, COM-00-97-09.

For radio applications Siemens's A53325 Ethernet Spread Spectrum Radio (ESSR) is recommended for use with the SEAR III.

- For further information on Spread Spectrum Radios, see Siemens's A53325-01 and -04 Ethernet Spread Spectrum Radios, COM-00-05-05.

SECTION 3 – STARTUP

3.1 SEAR Ili STARTUP

SEAR Ili startup occurs when power is applied to the 4000 GCP. Startup sequentially enables:

- SEAR Ili boot monitor operation
 - verifies data bus
 - verifies address bus
 - validates executive CRC
- download of new executive software
- access to SEAR Ili debugger function
- start of SEAR Ili executive software

3.1.1 Boot Monitor Screen

The boot monitor screen, Figure 3-1:

- displays the boot operational sequence
- may be accessed as described in procedure 2

```
SEAR Ili - HyperTerminal
File Edit View Call Transfer Help
Boot Monitor Version 9V726-A01.C - Oct 23 2003
SEAR Ili Booting...
Testing data bus...passed.
Testing address bus...passed.
Checking the executive CRC...valid (607C80B2)

Boot Options (Valid Executive)
1. Download Executive
2. Run Debugger
3. Run Executive
Choice > _

Connected 00:02:45  ANSI  9600 8-N-1  SCROLL  CAPS  NUM  Capture  Print echo
R111403_0001
11-14-02
```

**Figure 3-1:
SEAR Ili Boot Monitor Screen**

NOTE

The SEAR Ili **USER J2** serial port and the computer COMM port settings must match in order to communicate.

- Default settings: **9600, 8, N, 1**

**Table 3-1:
Boot Monitor Screen Access**

TABLE 3-1: BOOT MONITOR SCREEN ACCESS

Step 1	Connect a standard nine-pin, RS-232 serial cable between the SEAR Ili USER J2 serial port (DB9 male) and the computer serial COMM port (DB9 female).
Step 2	Configure the terminal emulation software to communicate with the SEAR Ili.
Step 3	Cycle power to the 4000 GCP. The boot monitor screen, figure 9-3, displays. After 5 seconds the following message is added to the display: Boot Monitor complete. Running SEAR Ili Executive.

NOTE

HyperTerminal or any other available terminal emulation software may be used. HyperTerminal is included on most computers with a standard Windows® 9x/NT/2000/XP installation.

The SEAR Ili uses ANSI terminal emulation with line wrap turned off.

3.1.2 Upgrading The Executive Software

Upgrading the Executive software can only be performed from the Boot Monitor Screen.

- To download new Executive software, follow Procedure 3.

NOTE

Downloading a new Executive must be started within 5 seconds after the **Choice >** prompt is displayed by the initial Boot Monitor Screen.

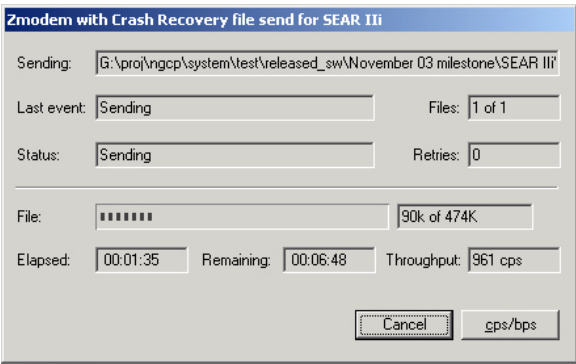
Prior to initiation of Procedure 9-3, make sure that the new Executive is ready for download.

- Only 1 minute is allowed to initiate the download after **Download Executive** selection.
- When using the HyperTerminal, file download is initiated from the **Send File** item of the **Transfer** drop-down menu.

**Table 3-2:
Upgrading the Executive Software**

TABLE 3-2: UPGRADING THE EXECUTIVE SOFTWARE

Step 1	Connect a standard nine-pin, RS-232 serial cable between the SEAR Ili USER J2 serial port (DB9 male) and the computer serial COMM port (DB9 female).
Step 2	Configure the terminal emulation software to communicate with the SEAR Ili.
Step 3	Cycle power to the 4000 GCP or remove and re-insert the SEAR Ili. The Boot Monitor Screen, figure 9-3, displays.
Step 4	At the Choice > prompt select 1 (within 5 seconds). The terminal screen displays: Waiting for executive download...
Step 5	Using the terminal emulator Transfer command, initiate download of the new Executive binary file. A typical transfer window using the ZModem protocol is shown in figure 9-4. After the Executive software is downloaded and stored in the SEAR flash memory, the boot options are again displayed. A typical HyperTerminal screen display is shown in figure 9-5.



RI 11803_0832
11-18-03

**Figure 3-2:
Zmodem Transfer Window**

```
SEAR III - HyperTerminal
File Edit View Call Transfer Help

Boot Monitor Version 9V726-A01.C - Oct 23 2003
SEAR III Booting...
Testing data bus...passed.
Testing address bus...passed.
Checking the executive CRC...valid (607C80B2)

Boot Options (Valid Executive)
1. Download Executive
2. Run Debugger
3. Run Executive
Choice > 1
Waiting for executive download...done.
Checking the executive CRC...valid (607C80B2)
Erasing existing executive...done.
Programming new executive...done.
Checking the executive CRC...valid (607C80B2)

Boot Options (Valid Executive)
1. Download Executive
2. Run Debugger
3. Run Executive
Choice >
Boot Monitor complete. Running SEAR III Executive.
-
```

Connected 00:10:07 ANCIW 9600 8-N-1 SCROLL CAPS NUM Capture Print echo

RT 11003_0009
11-18-03

Figure 3-3:
SEAR III Executive Software Download Screen
(HyperTerminal)

SECTION 4 – TERMINAL INTERFACE & PROGRAMMING

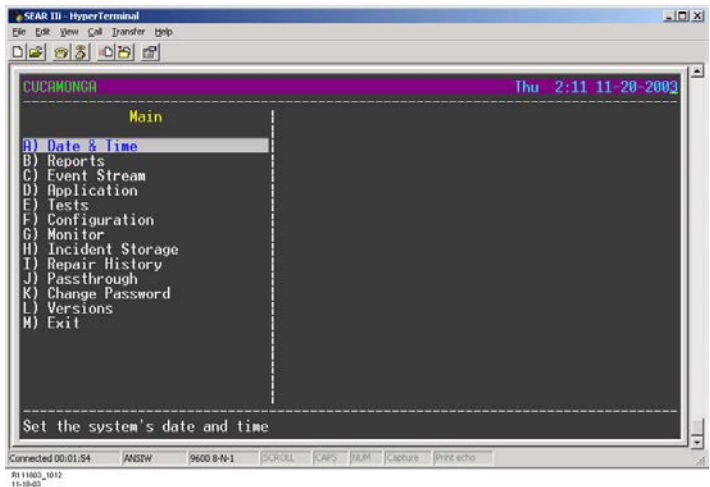
4.1 TERMINAL INTERFACE

The Terminal Interface provides computer access to the SEAR Ili configuration function menu.

4.1.1 Terminal Interface Main Menu

The Terminal Interface Main Menu, Figure 4-1:

- provides a menu item for each SEAR Ili configuration option
- displays when **Ctrl+L** is pressed from the Boot Monitor Screen, Figure 4-1



**Figure 4-1:
SEAR Ili Terminal Interface Main Menu**

4.1.1.1 Menu Navigation

Menu navigation is implemented as follows:

- Menu items allow navigation to other menus and/or data edit fields.
- Menu items may be selected by:
 - highlighting an entry using the up or down arrows and pressing Enter
 - entering the letter designation to the left of the entry
- Submenu titles bracketed by arrows (<- title ->) indicate that corresponding data edit fields may be sequentially accessed using the right or left arrows.
- Pressing the **Esc** key exits the current screen and returns the display to the previous screen.
- Pressing **Ctrl + X** exits the terminal session.
- Pressing **Ctrl + R** refreshes the terminal screen.
- From a blank screen, pressing **Ctrl + L** will start or restart the terminal session.
- Position arrows (←, →, ↑, and ↓) may be used to:
 - highlight items within a menu
 - move the cursor through a data field
 - deletes each selected text entry position
 - change the entry field to another preset value

NOTE

If no action is performed on the terminal interface for more than 10 minutes, the session is automatically terminated.

If data is changed and no further action is performed for 10 minutes, a prompt is displayed requesting that the changes be saved.

- If no response is initiated for an additional 10 minutes, all changes are discarded and the prior configuration remains in effect

4.1.1.2 Entering Terminal Data

The Terminal Interface Menu data field types:

- data field
 - Selected data field is identified by brackets []
 - Data field(s) are changed by:
 - pressing left arrow (←) key to clear each successive data field
 - entering new data from keyboard
 - Data field accepted by pressing **Enter**
- list field
 - Selected list field is identified by brackets [] followed by ^v symbols
 - Arrows (←, →, ↑, and ↓) are used to make selection
 - List field accepted by pressing **Enter**

4.1.2 Menu Structure

The Main menu provides access to additional menus as shown in Figure 4-2 through Figure 4-4.

These menus are described in Table 4-1.

NOTE

CDL = Control Descriptor Language

LLW = Ladder Logic Instruction

LLB = Ladder Logic Labels

**Table 4-1:
SEAR Ili Menu Items**

TABLE 4-1: SEAR Ili MENU ITEMS

SCREENS			FUNCTION / DESCRIPTION
LEVEL 1	LEVEL 2	LEVEL 3	
A) Date & Time			Sets SEAR date and time
B) Reports	A) Standard Report		Displays standard format event report
	B) Field Report		Displays condensed format event report.
	C) Configuration Report		Displays SEAR configuration data
	D) Incident Report		Displays report of all saved GCP incidents
	E) Repair History Report		Displays a report of GCP repair history
	F) Application Report		Displays a report of application messages
	G) Inspection Report		Displays automated inspection results
	H) Version Report		Displays SEAR Executive and Application versions
	I) GCP 3000 Parameters		Displays GCP3000 parameter settings
	J) Bitmap Labels		Displays ladder logic bitmap labels
	K) Exit		Returns display to Main menu
C) Event Stream			Displays events as they occur in real time

TABLE 4-1: SEAR III MENU ITEMS

SCREENS			FUNCTION / DESCRIPTION	
LEVEL 1	LEVEL 2	LEVEL 3		
D) Application	A) Download File to SEAR		Downloads new CDL program (overwrites existing file)	
	B) Upload File from SEAR		Uploads CDL , LLW, and LLB file using ZModem protocol	
	C) Print/Capture CDL		Dump CDL file to printer or file	
	D) Erase Application File		Erases Application Files	
	E) Compiler Log		Lists compiler messages	
	F) Site Setup		Terminal Site Setup	
	G) Exit		Returns display to Main menu	
E) Tests	A) View Results		Displays results for user, automated, and manual tests	
	B) Manual entry		Allows manual test results to be manually entered	
	C) Force test		Forces a user test or automated inspection to run	
	D) Save Tests		Saves user defined tests	
	E) Import test dates		Transfer test dates file to SEAR	
	F) Exit		Returns display to Main menu	
F) Configuration	A) Site Information		Allows SEAR site specific information to be edited	
	B) Communication		Allows communication settings between SEAR and office to be edited	
	C) Serial Port	A) Edit		Allows editing of displayed SEAR communication port settings
		B) Exit		Returns display to level 1 sub menu
	D) Digital Inputs	A) Edit		Allows editing of SEAR digital input settings
		B) Exit		Returns display to level 1 sub menu

TABLE 4-1: SEAR III MENU ITEMS

SCREENS			FUNCTION / DESCRIPTION
LEVEL 1	LEVEL 2	LEVEL 3	
	E) Battery Inputs	A) Edit	Allows displayed SEAR battery monitor input settings to be edited
		B) Exit	Returns display to level 1 sub menu
	F) Relay Outputs	A) Edit	Allows selected relay output settings to be edited
		B) Exit	Returns display to level 1 sub menu
	G) Test LEDs	A) Edit	Allows displayed test LED settings to be edited
		B) Exit	Returns display to Test LEDs menu entry
	H) LED Mode		Allows LED display mode to be changed
	I) Modules	A) Add Module	Add a module to the network
		B) Change Module	Change the network settings of a module
		C) Replace Module	Replace a network module
		D) Re-install Module	Re-install a network module
		D) Remove Module	Remove a module from network
		E) Identify Module	Identify a module on network
		F) Exit	Returns display to the Configuration menu
J) Restore Defaults		Returns all settings to factory default	
K) Save Changes		Saves changed configuration data	
L) Exit (no save)		Returns the display to the Main menu without saving changes	
G) Monitor	A) Onboard I/O		View SEAR I/O status in real time
	B) Onboard LED's		View/control SEAR onboard LED status in real time

TABLE 4-1: SEAR III MENU ITEMS

SCREENS			FUNCTION / DESCRIPTION
LEVEL 1	LEVEL 2	LEVEL 3	
	C) Module Comm. Status		View SEAR comm status of network modules
	D) Ladder Logic Bitmap		View/control SEAR bitmap status in real time
	E) Module I/O		View SEAR network module I/O in real time
	F) Exit		Returns display to Main menu
H) Incident Storage	A) View		View a previously saved incident report
	B) Save		Save an incident report
	C) Delete		Delete an incident report
	D) Exit		Returns display to the Main menu
I) Repair History	A) View		View the repair history
	B) Add		Add a manual repair entry
	C) Exit		Returns display to the Main menu
J) Pass through			Pass through to another port
K) Change Password			Change one of the passwords
L) Version			View a software version number
M) System	A) Reset System		Reset the SEAR unit
	B) System Log Display	A) SysLog Dump	Dump current SEAR system log to terminal
		B) SysLog Stream	Show SEAR system log entries as they occur
		C) Dump ->Stream	Dumps the SEAR system log stream
		D) SysLog viewer	Views the SEAR System Log
		E) Exit	Returns display to the Level 2 Menu
	C) Reset Log		Resets the System Log to either On Screen, Z-Modem transfer, or Print/Capture

TABLE 4-1: SEAR Ili MENU ITEMS

SCREENS			FUNCTION / DESCRIPTION
LEVEL 1	LEVEL 2	LEVEL 3	
	D) Stack Usage		Displays the Task Stack Status
	E) Exit		Returns display to the Main menu
M) Exit			Exit the Main menu

4.2 PROGRAMMING

NOTE

The SEAR application will not run unless Site Setup is completed.

4.2.1 Site Setup

The SEAR site setup is accessed from the Main Status Screen by pressing the **SEAR** button. When the SEAR keypad window is displayed, press the SITE SETUP button.

There are three stages of all application programs that must be completed to setup the SEAR Ili. The 1st and 3rd stage apply to all application programs. The 2nd stage may be either a “generic” configuration or one that is “specific” to the railroad’s application program.

Entries for the three stages are defined in the following tables. Each table is identified in the table header as to whether it applies to a specific application program, the generic application program (9V864) or all application programs.

4.2.2 Entering Information on the SEAR Keypad Display

The entries are made on the SEAR setup keypad screen shown above. The keypad has 10 alpha-numeric keys similar to a telephone, (i.e., the number 2, and letters A, B, C are on one key, etc). Words are formed in the same way as entering names or telephone numbers in a mobile telephone phonebook. Pressing a key repeatedly will change the character from the number to a letter to the next letter on the key (i.e., pressing the #2 key three times enters the letter “B”, etc.).

**Table 4-2:
Stage 1 (for all application programs)**

TABLE 4-2: STAGE 1 (FOR ALL APPLICATION PROGRAMS)

QUESTION	OPTIONS/RANGE	TYPICAL CONFIGURATION
DATE / TIME	Current date & time	Current date & time

TABLE 4-2: STAGE 1 (FOR ALL APPLICATION PROGRAMS)

QUESTION	OPTIONS/RANGE	TYPICAL CONFIGURATION
AUTOMATIC DST ADJUSTMENT?	YES, NO	YES
TIME ZONE?	Eastern, Central, Mountain, Pacific, Alaska, Hawaii, Atlantic, Saskatchewan, Newfoundland	Eastern
SITE NAME?	Site Name, e.g. Siemens Systems Corp.	Enter Site Name
MILE-POST?	e.g., 1234.56	Enter Milepost
DOT #?	e.g., 123456A	Enter DOT crossing number
TESTER TYPE?	Crossing, Wayside	Crossing
DATE FORMAT?	mm-dd-yyyy, dd-mm-yyyy	mm-dd-yyyy
TEMP. FORMAT?	Fahrenheit, Celsius	Fahrenheit
INDICATE HOLD (SEC)?	0 - 99	0
INDICATE REFRESH (SEC)?	0 - 999	180
SITE ATCS ADDRESS?	7.RRR.LLL.GGG.99.01	All locations must be programmed with a unique address assigned by the RR if ATCS communications are used. However, default address of 7.620.100.100.99.01 may be used at stand alone locations (No Communication)
SITE TYPE?	No Communication Bullhorn/ModBus, Dial-up, Polling Recorder, Node, Collector, CDS-902X	No Communication
POLL ID?	1-999	Typically 1 for SITE TYPE = Dial up, Bullhorn/ModBus or Collector
OFFSET	0-9	Typically 0 for SITE TYPE = Polling Recorder

TABLE 4-2: STAGE 1 (FOR ALL APPLICATION PROGRAMS)

QUESTION	OPTIONS/RANGE	TYPICAL CONFIGURATION
SIZE	0-9	Typically 1 for SITE TYPE = Polling Recorder
RESPONSE TIMEOUT	0-9000ms	Typically 10000 for SITE TYPE = Polling Recorder
SHORT POLL DELAY	0000-9000ms	Typically 1000 for SITE TYPE = Polling Recorder
LONG POLL DELAY	00000-90000ms	Typically 10000 for SITE TYPE = Polling Recorder
RECALL DELAY	0-90	Typically 70 for SITE TYPE = Polling Recorder
INIT STRING?	Optional Hayes Modem Initialization String	SITE TYPE = Dial-up or OFFICE COMM. DEVICE = Dial modem (RS232)
OFFICE ATCS ADDRESS?	2.RRR.NN.DDD D	Typically 2.RRR.00.0000. SITE TYPE = Node or Collector
PRIMARY HOP ADDRESS?	7.RRR.LLL.GGG .00.01	Primary hop address 7.620.100.100.00.01 SITE TYPE = Node
BACKUP HOP 1?	7.RRR.LLL.GGG .00.01	Secondary Hop address. 7.620.100.100.00.01 SITE TYPE = Node
BACKUP HOP 2?	7.RRR.LLL.GGG .99.01	Third hop address. SITE TYPE = Node
FIELD COMM. DEVICE?	VHF Comm (Echelon), Spread-Spec (RS232), WAG (Echelon), VHF Comm (RS232), None	SITE TYPE = Node or Collector
MODE?	Gen/ATCS, Genisys	SITE TYPE = Collector
WAMS XID?	Enabled, Disabled	SITE TYPE = Collector
OFFICE COMM. DEVICE?	Direct (RS232), MCM (RS232), WAG (Echelon), MCM (Echelon), Dial modem (RS232), S200 Radio (RS422)	SITE TYPE = Collector

TABLE 4-2: STAGE 1 (FOR ALL APPLICATION PROGRAMS)

QUESTION	OPTIONS/RANGE	TYPICAL CONFIGURATION
RADIO ATCS ADDR?	7.000.000.000.0 0.00 to 7.999.999.999.9 9.99	OFFICE COMM. DEVICE = MCM (RS232), MCM (Echelon) or WAG (Echelon)
PHONE #	Phone number of WAMS	OFFICE COMM. DEVICE = Dial Modem (RS232)
USER PORT	Baud, Data bits, Parity, Stop Bits, Flow Control	Typically 57600, 8,N,1,N
USER PORT DATA BITS?	0-9	8
USER PORT PARITY?	None, Odd, Even	None
USER PORT STOP BITS?	0-9	8
USER PORT FLOW CONTROL	None, Hardware, Radio	None
AUX PORT BAUD?	300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600	57600
AUX PORT DATA BITS?	0-9	8
AUX PORT PARITY?	None, Odd, Even	None
AUX PORT STOP BITS?	0-9	8
AUX PORT FLOW CONTROL	None, Hardware, Radio	None

The ATCS address follows a railroad industry method of identifying specific locations and equipment at that location. In the address 7.RRR.LLL.GGG.99.01:

- RRR is the railroad number
- LLL is the line number
- GGG is the group number, which generally is the location
- 99 is a sub-node at the location, and
- the 01 is the device number

NOTE

The SEAR is always subnode 99 and device 01. The ATCS address of the GCP 4000 must always be the same 7RRRLLLGGG as the SEAR Ili. And unless specified otherwise the GCP subnode number is 16. The GCP device number is not user selected. Setting the GCP 4000 ATCS address is discussed the Model 4000 GCP Field Manual, SIG-00-08-10.

With MCF gcp-t6x-01-2.MCF and earlier, the default ATCS address of the GCP that is stored aboard the SEAR Ili is 7.000.000.000.16 and therefore must be changed to match the local site address in order to communicate with the GCP.

With MCF gcpt6x-02-1.MCF and later, the default address in the SEAR Ili and the GCP are the same.

If the location is not equipped with external communications, the industry method does not have to be used. Then the SEAR Ili default address 7.620.100.100.99.01 and GCP 4000 default address 7.620.100.100.16 may be used.

**Table 4-3:
Stage 2 (for generic application
9V864-A01X, 9V864-A01X.CDL only)**

**TABLE 4-3: STAGE 2 (FOR GENERIC APPLICATION
9V864-A01X, 9V864-A01X.CDL ONLY)**

QUESTION	OPTIONS / RANGE	CONDITION FOR MENU DISPLAY
RESET NAMES / MODULES	YES/NO	NO
RAILROAD NUMBER?	1 - 999	0
CROSSING CONFIGURATION?	NORMAL, SPLIT GATE, EXTERNAL ENTRANCE GATE CONTROLLE R(S)	NORMAL
AND1 USED AS XR?	YES, NO	YES
AND2 USED AS XR?	YES, NO	YES
AND3 USED AS XR?	YES, NO	YES
AND4 USED AS XR?	YES, NO	YES
AND5 USED AS XR?	YES, NO	YES
AND6 USED AS XR?	YES, NO	YES
AND7 USED AS XR?	YES, NO	YES
AND8 USED AS XR?	YES, NO	YES
ENTRANCE GATES?	0 - 8	0
XR CONTROLLED BY 2 ND CROSSING?	AND1 thru AND8	CROSSING CONFIGURATION = DUAL CROSSING

**TABLE 4-3: STAGE 2 (FOR GENERIC APPLICATION
9V864-A01X, 9V864-A01X.CDL ONLY)**

QUESTION	OPTIONS / RANGE	CONDITION FOR MENU DISPLAY
XR CONTROLLED BY FOREIGN RR?	AND1 thru AND8	CROSSING CONFIGURATION = SPLIT GATE
ISLAND CONTROLLED BY 2 ND CROSSING?	ISLAND1 thru ISLAND6	CROSSING CONFIGURATION = DUAL CROSSING
GATE CONTROLLED BY FOREIGN RR?	NONE, TSS2, TSS3, TSS4	CROSSING CONFIGURATION = SPLIT GATE
GATE POSITION FAIL TIME (SECONDS)?	10 - 60	GATES>0
GATES NOT STARTING TIME (SECONDS)?	10 - 20	RAILROAD= 005
CROSSING ACTIVE TIME (MINUTES)?	20 - 30	RAILROAD= 005
RING THRU TIME (SECONDS)?	10 - 15	RAILROAD= 005
BATTERY BANKS?	1 - 3	
BATT MON USED?	YES, NO	
OB RESOLUTION?	0.2, 0.5, 1.0	RAILROAD= 125
X-B RESOLUTION?	0.2, 0.5, 1.0, NOT PRESENT	RAILROAD= 125
BATT MON RESOLUTION?	0.2, 0.5, 1.0, NOT PRESENT	RAILROAD= 125
INTERNAL CROSSING CONTROLLERS?	0 - 2	
EXTERNAL CROSSING CONTROLLERS?	0 - 2	
VHF COMMUNICATOR?	YES, NO	
DTMF ACTIVATION?	YES, NO	RAILROAD<>103
ALLOW DTMF CONTROL?	YES, NO	RAILROAD=103
DIGIT #1?	0 - 9	ALLOW DTMF CONTROL=YES
DIGIT #2?	0 - 9	ALLOW DTMF CONTROL=YES
DIGIT #3?	0 - 9	ALLOW DTMF CONTROL=YES

TABLE 4-3: STAGE 2 (FOR GENERIC APPLICATION 9V864-A01X, 9V864-A01X.CDL ONLY)

QUESTION	OPTIONS / RANGE	CONDITION FOR MENU DISPLAY
DIGIT #4?	0 – 9	ALLOW DTMF CONTROL=YES
DIGIT #5?	0 – 9	ALLOW DTMF CONTROL=YES
DTMF TIME-OUT?	30 – 240	ALLOW DTMF CONTROL=YES
DTMF OUTPUT 2 DELAY?	0 – 20	ALLOW DTMF CONTROL=YES
ACTIVATION CODE?	1 – 999	VHF COMMUNICATOR= YES
ACTIVATION TIMEOUT (SEC.)?	1 – 600	VHF COMMUNICATOR= YES
iLOD MODULES?	0 – 4	
ANY LED BULBS USED?	YES, NO	iLOD MODULES>0
AUTO INSPECTIONS?	YES, NO	
BELL SENSORS?	0 – 8	
BELL SENSOR TSS1?	YES, NO	BELL SENSORS>0
BELL SENSOR TSS2?	YES, NO	BELL SENSORS>0
BELL SENSOR TSS3?	YES, NO	BELL SENSORS>0
BELL SENSOR TSS4?	YES, NO	BELL SENSORS>0
BELL SENSOR TSS5?	YES, NO	BELL SENSORS>0
BELL SENSOR TSS6?	YES, NO	BELL SENSORS>0
BELL SENSOR TSS7?	YES, NO	BELL SENSORS>0
BELL SENSOR TSS8?	YES, NO	BELL SENSORS>0
BELL ON?	GATES LOWERING, GATES MOVING, ALWAYS	BELL SENSORS>0
GFT'S?	YES, NO	
BATTERIES ON GFT1?	1 – 2	GFT'S?=YES
GATE TIP SENSORS?	YES, NO	GATES>0
RTU?	YES, NO	
VHF VOICE CHANNEL?	1 – 8	VHF COMMUNICATOR= YES

TABLE 4-3: STAGE 2 (FOR GENERIC APPLICATION 9V864-A01X, 9V864-A01X.CDL ONLY)

QUESTION	OPTIONS / RANGE	CONDITION FOR MENU DISPLAY
VHF DATA CHANNEL?	1 – 8	VHF COMMUNICATOR= YES
USE CELL MODEM NON-CRITICAL FEATURE?	YES, NO	
FULL APPROACH MOVE ALARMS?	ACTIVATE, DO NOT ACTIVATE	

**Table 4-4: Stage 2
(for 9V814-A01X, UPX0XX.CDL only)**

TABLE 4-4: STAGE 2 (FOR 9V814-A01X, UPX0XX.CDL ONLY)

QUESTION	OPTIONS/RANGE	TYPICAL CONFIGURATION
RESET NAMES AND MODULES	Yes, No	YES for initial setup
EXT XING CONTROLLER?	0-3	0
BATTERY BANKS?	1-3	2
BATTERY MON USED?	NO, YES	NO
LOW BATT PERCENTAGE?	75%, 90%	75%
HI BATT PERCENTAGE?	110%, 120%	110%
ILOD MODULES?	0-8	2
LAMPS OUT?	1-2	2
TEMPERATURE ALARM?	NO, INT, EXT, BOTH	NO
BULL-HORN USED?	NO, YES	NO
HEALTH REPORT? DAYS	0-30	0
LA ALARM ENABLED?	YES, NO	YES

TABLE 4-4: STAGE 2 (FOR 9V814-A01X, UPX0XX.CDL ONLY)

QUESTION	OPTIONS/RANGE	TYPICAL CONFIGURATION
GD ALARM ENABLED?	YES, NO	YES
GU ALARM ENABLED?	YES, NO	YES
TR ALARM ENABLED?	YES, NO	YES
BA ALARM ENABLED?	YES, NO	YES
EO ALARM ENABLED?	YES, NO	YES
PK ALARM ENABLED?	YES, NO	YES
DO ALARM ENABLED?	NO, YES	NO
TP ALARM ENABLED?	NO, YES	NO
AF ALARM ENABLED?	YES, NO	YES
VH ALARM ENABLED?	NO, YES	NO
GF ALARM ENABLED?	NO, YES	NO

Table 4-5: Stage 3 (for all application programs)

TABLE 4-5: STAGE 3 (FOR ALL APPLICATION PROGRAMS)

QUESTION	OPTIONS/RANGE	TYPICAL CONFIGURATION
EDIT DIGITAL INPUTS	No, Yes	NO
EDIT BATTERIES	No, Yes	NO
EDIT RELAYS	No, Yes	NO
EDIT TEST LEDS	No, Yes	NO
EDIT MODULES	No, Yes	NO
GCP4K NODE?	1-16	

Remaining SEAR Ili parameters are specific to customer application programs as indicated in each table header.

**Table 4-6: Echelon Node Address
(specific for 9V814.A01X, UPX0XX.CDL only)**

**TABLE 4-6: ECHELON NODE ADDRESS
(SPECIFIC FOR 9V814.A01X, UPX0XX.CDL ONLY)**

ASSEMBLY	DESCRIPTION	NODE ADDRESS
A80410	SEAR Ili Module	99
A80271	ILOD Module	7-14
A91210	SSCC III or SSCC IV	4-6
A80403	GCP 4000 CPU II	16*
Reserved	Reserved	3

- The MAIN and STANDBY CPU utilize the same ATCS Address and node number.

**Table 4-7:
SEAR Ili LED Descriptions (for generic
application 9V864-A01X, 9V864-A01X.CDL only)**

**TABLE 4-7: SEAR III LED DESCRIPTIONS (FOR GENERIC
APPLICATION 9V864-A01X, 9V864-A01X.CDL ONLY)**

LED	ALARM NUM. ¹	DESIGNATOR	NOTES
T01	5, 17-19, 34-38, 47	POWER	2, 3, 4
T02	6, 8, 9, 20, 21, 28, 44, 53, 55	GATE	2, 3, 4
T03	1, 11-14, 16, 25, 30, 45, 46, 66-69	WARNING DEVICES	2, 3, 4
T04	2, 3, 4, 15, 22, 23, 26, 33, 50-52, 60, 61, 70-89, 103, 170 - 174	CROSSING	2, 3, 4
T05	7, 56	ANALYZER FAILURE	2, 3, 4
T06		RESERVED	
T07		RESERVED	
T08	240	ONLINE	5, 6
T09		234.249: GROUND TEST	7-10
T10		234.251: STANDBY POWER	7-10
T11		234.253: FLASHING LIGHT UNITS	7-10
T12		234.255: GATE ARM AND GATE MECHANISMS	7-10
T13		234.257: WARNING SYSTEM OPERATION	7-10
T14		234.259: WARNING TIME	7-10
T15		234.261: TRAFFIC PREEMPTION	7-10
T16		MONTHLY MANUAL INSPECTIONS	7-10

TABLE 4-7: SEAR III LED DESCRIPTIONS (FOR GENERIC APPLICATION 9V864-A01X, 9V864-A01X.CDL ONLY)

LED	ALARM NUM. ¹	DESIGNATOR	NOTES
1.	See alarm descriptions, (LEDs T01 – T07 only)		
2.	No Alarm / Reserved = LEDs are GREEN (LEDs T01 – T07 only)		
3.	In Alarm = LEDs FAST FLASH RED (LEDs T01 – T07 only)		
4.	Alarm Stop = LEDs SLOW FLASH RED (LEDs T01 – T07 only)		
5.	User Test Mode (LED T08 only)		
6.	User Test Mode (LED T08 only)		
7.	Test Pending = LEDs are YELLOW (LEDs T09 – T16 only)		
8.	Test Ready to Run = LEDs SLOW FLASH YELLOW (LEDs T09 – T16 only)		
9.	Test Passed = LEDs FAST FLASH GREEN (LEDs T09 – T16 only)		
10.	Test Failed = LEDs are RED (LEDs T09 – T16 only)		

**Table 4-8:
SEAR Ili LED Descriptions
(specific for 9V814-A01X, UPX0XX.CDL only)**

**TABLE 4-8: SEAR III LED DESCRIPTIONS
(SPECIFIC FOR 9V814-A01X, UPX0XX.CDL ONLY)**

LED	ALARM LABEL	DESIGNATOR	CHECKED	NOTES
T01	LA, CL	LONG ACTIVATION ALARM	ALWAYS	1-4
T02	RESERVED	RESERVED	RESERVED	RESERVED
T03	RESERVED	RESERVED	RESERVED	RESERVED
T04	GD	GATE DOWN ALARM	TRAIN MOVE	1-3
T05	GU	GATE UP ALARM	TRAIN MOVE	1-3
T06	TR	TROUBLE LITE	ALWAYS	1-3
T07	BA	BATTERY	ALWAYS	1-3
T08	EO	LITE OUT	ALWAYS	1-3
T09	IP, PK, OP	POWER OFF	ALWAYS	1-5
T10	DO	DOOR ALARM	ALWAYS	1-3, 6
T11	TP	TEMPERATURE	ALWAYS	1-3
T12	AF	ANALYZER FAILURE	ALWAYS	1-3
T13	VH	VEHICLE DETECTOR HEALTH	ALWAYS	1-3
T14	GF	GROUND FAULT	ALWAYS	1-3
T15	NO	NORMAL OPERATION	ALWAYS	2,3
T16	OL	ONLINE	ALWAYS	7,8
1. LEDs are OFF when alarm is disabled 2. LEDs are GREEN when alarm is enabled 3. LEDs are RED when alarm condition exists 4. LEDs are YELLOW when CL or IP condition exists 5. LEDs are GREEN SLOW FLASH if OP condition exist 6. LEDs are GREEN FAST FLASH when door is opened and DO alarm is armed 7. LEDs are GREEN if online 8. LEDs are RED if offline				

**Table 4-9:
SEAR Ili Alarm Configuration (for generic
application 9V864-A01X, 9V864-A01X.CDL only)**

**TABLE 4-9: SEAR Ili ALARM CONFIGURATION
(FOR GENERIC APPLICATION
9V864-A01X, 9V864-A01X.CDL ONLY)**

ALARM NUMBER	RAILROAD NUMBER	NAME	DESCRIPTION
1	n/a	Crossing Controller Failure	Any crossing controller reports a Vital Health error or communications error and POK1 is ON for 30 seconds.
2	n/a	Warning Time TK1	Time between Crossing Active and Island 1 Occupied. Sent to office if less than 20 seconds and no train stop is detected since last train move.
3	n/a	Possible Tail Ring	Crossing Active Island Occupied Valid warning time Within 40 seconds Crossing Active No Island drop Crossing Inactive Activations on same track
4	n/a	Crossing Active For xx	Crossing has been active for 20 minutes or longer. **user configurable time if RAILROAD=005**
5	n/a	AC Power Off For 20 Minutes	POK1 has been off for 20 minutes or more.
6	n/a	Gate Not Up After Crossing Clear	All gates are not reporting UP or any tip reporting LEVEL after crossing was clear for at least 2 minutes. *Entrance gates only
7	n/a	Analyzer failure	MTSS, GFT, VHF or iLOD stops communicating with SEAR Ili.

**TABLE 4-9: SEAR Iii ALARM CONFIGURATION
(FOR GENERIC APPLICATION
9V864-A01X, 9V864-A01X.CDL ONLY)**

ALARM NUMBER	RAILROAD NUMBER	NAME	DESCRIPTION
8	n/a	Fail 3 Second Test	A gate started down less than 3 seconds after Crossing Active. *Entrance gates only
9	n/a	Gate Position Fail	Gate Control activates Gate position fail time has elapsed All gates are not DOWN All tips are not LEVEL Or any tip sensor turns OFF while island occupied *Entrance gates only
10	n/a	User Test Mode Enabled	Application alarms will be bypassed while enabled
11	n/a	Two Bulbs Out	Crossing Active for > 11 seconds or Foreign Railroad active > 11 seconds. Island Occupied for > 4 seconds (not required for foreign train move) A two bulb out condition exists **ANY LED BULBS USED=NO**
12	n/a	Multiple Bulbs Out	Crossing Active for > 11 seconds or Foreign Railroad active > 11 seconds Island Occupied for > 4 seconds (not required for foreign train move) A multiple bulb out condition exists **ANY LED BULBS USED=NO**

**TABLE 4-9: SEAR Iii ALARM CONFIGURATION
(FOR GENERIC APPLICATION
9V864-A01X, 9V864-A01X.CDL ONLY)**

ALARM NUMBER	RAILROAD NUMBER	NAME	DESCRIPTION
13	n/a	Flash Rate Too Slow	Crossing Active for > 11 seconds or Foreign Railroad active > 11 seconds. Island Occupied for > 4 seconds (not required for foreign train move) Flash rate is less than 35 flashes per minute
14	n/a	Flash Rate Too Fast	Crossing Active for > 1 seconds or Foreign Railroad active > 11 seconds. Island Occupied for > 4 seconds (not required for foreign train move) Flash rate is greater than 65 flashes per minute
15	n/a	Possible Pre-Ring	Crossing Active No Island/Train Stop Crossing Inactive Crossing Active Island Occupied within 4 minutes
16	n/a	Bell Not Ringing	Crossing Active and BELL OUT ON and TSS Bell Audio or TSS Bell Power FALSE for at least 3 seconds. Crossing has been active for 5 seconds with no island and BELL OUT is OFF.
17	22	MB Ground Fault Alarm	BAT 1 (Battery Channel 1) on GFT1 is in FAULT state. This alarm is sent to the office once every 24 hours until it is cleared.
	125	OB Ground Fault Alarm	
	400	B10 Ground Fault Alarm	
	550, 103 or 260	B12 Ground Fault Alarm	

**TABLE 4-9: SEAR Iii ALARM CONFIGURATION
(FOR GENERIC APPLICATION
9V864-A01X, 9V864-A01X.CDL ONLY)**

ALARM NUMBER	RAILROAD NUMBER	NAME	DESCRIPTION
	671	MB-12 Ground Fault Alarm	
18	22	Low MB	Battery Channel 1 is less than 85% of calibrated voltage for at least 20 seconds.
	125	Low OB	
	400	Low B10	
	550, 103 or 260	Low B12	
	671	Low MB-12	
19	22	Low 1XB	Battery Channel 2 is less than 85% of calibrated voltage for at least 20 seconds.
	125	Low X-B	
	400	Low 1XB12	
	550, 103 or 260	Low B16	
	671	Low XB-14	
20	n/a	Gates Not Starting	All Entrance Gates have not started down within 10 seconds of Crossing Active. **user configurable time if RAILROAD=005** *Entrance gates only
21	n/a	Fail 5 Second Test	Any gate not DOWN or any tip not LEVEL within 5 seconds prior to Island Occupied after Crossing Active for at least 15 seconds. *Entrance gates only
22	n/a	Preemption Alarm	Crossing Active and Preemption Health Input is Energized.
23	n/a	False Detection	Crossing Active No Island/Train Stop/Tail Ring Crossing Inactive No train on same track for 30 minutes

**TABLE 4-9: SEAR III ALARM CONFIGURATION
(FOR GENERIC APPLICATION
9V864-A01X, 9V864-A01X.CDL ONLY)**

ALARM NUMBER	RAILROAD NUMBER	NAME	DESCRIPTION
25	n/a	Bell On During Island	Crossing Active > 20 seconds and Island Occupied and (TSS bell audio ON or BELL OUT ON) BELL ON MENU OPTION <> "ALWAYS".
26	n/a	Slow Train – Possible Switching Move	Train stop is detected prior to Crossing Active or average train speed < 15 mph and warning time is less than 20 seconds.
28	n/a	Hold Clear Fail	TSS gate up input toggles > 10 times after Crossing Inactive.
30	n/a	Bell Sensor Error	Bell Sensor detects audio or power when Bell Output is off.
33	n/a	Possible Ring-thru	All islands unoccupied. The last island active has been unoccupied for 10 seconds and crossing is still active. **user configurable time if RAILROAD=005**
34	22	1XB Ground Fault Alarm	BAT 2 (Battery Channel 2) on GFT1 is in FAULT state. This alarm is sent to the office once every 24 hours until it is cleared.
	125	X-B Ground Fault Alarm	
	400, 103 or 260	1XB12 Ground Fault Alarm	
	550	B16 Ground Fault Alarm	
		XB-14 Ground Fault Alarm	

**TABLE 4-9: SEAR III ALARM CONFIGURATION
(FOR GENERIC APPLICATION
9V864-A01X, 9V864-A01X.CDL ONLY)**

ALARM NUMBER	RAILROAD NUMBER	NAME	DESCRIPTION
35	22	Low 2XB	Battery Channel 3 is less than 85% of calibrated voltage for at least 20 seconds.
	125	Low XB-2	
	400, 103 or 260	Low 2XB12	
	550	Low B16A	
	671	Low BATT3	
36	22	Low Batt Mon	Battery Channel 4 is less than 85% of calibrated voltage for at least 20 seconds.
	103	Low Batt Mon	
	125	Low Batt Mon	
	260	Low Batt Mon	
	400	Low Batt Mon	
	550	Low Batt Mon	
	671	Low Batt Mon	
37	22	2XB Ground Fault Alarm	BAT 1 (Battery Channel 3) on GFT2 is in FAULT state. This alarm is sent to the office once every 24 hours until it is cleared.
	125	X-B2 Ground Fault Alarm	
	400, 103 or 260	2XB12 Ground Fault Alarm	
	550	B16A Ground Fault Alarm	
	671	BATT3 Ground Fault Alarm	
38	22	Batt Mon Ground Fault Alarm	BAT 2 (Battery Channel 4) on GFT2 is in FAULT state. This alarm is sent to the office once every 24 hours until it is cleared.
	103	Batt Mon Ground Fault Alarm	
	125	Batt Mon Ground Fault Alarm	

**TABLE 4-9: SEAR Iii ALARM CONFIGURATION
(FOR GENERIC APPLICATION
9V864-A01X, 9V864-A01X.CDL ONLY)**

ALARM NUMBER	RAILROAD NUMBER	NAME	DESCRIPTION
	260	Batt Mon Ground Fault Alarm	
	400	Batt Mon Ground Fault Alarm	
	550	Batt Mon Ground Fault Alarm	
	671	Batt Mon Ground Fault Alarm	
44	n/a	Vehicle Detector Health Alarm	Vehicle Detector Health input is deenergized for 8 seconds.
---	n/a	Bulb Out	Crossing Active for > 11 seconds or Foreign Railroad active > 11 seconds. Island Occupied for > 4 seconds (not required for foreign train move) A single bulb out condition exists **not sent to office** **ANY LED BULBS USED=NO**
--	n/a	Lamp current dropped .7A - 1.4A	Crossing Active for > 11 seconds or Foreign Railroad active > 11 seconds. Island Occupied for > 4 seconds (not required for foreign train move) The iLODs record a total current drop of .7A - 1.4A. **not sent to office** **ANY LED BULBS USED=YES**

**TABLE 4-9: SEAR Iii ALARM CONFIGURATION
(FOR GENERIC APPLICATION
9V864-A01X, 9V864-A01X.CDL ONLY)**

ALARM NUMBER	RAILROAD NUMBER	NAME	DESCRIPTION
45	n/a	Lamp current dropped \geq 2.1A	Crossing Active for > 11 seconds or Foreign Railroad active > 11 seconds. Island Occupied for > 4 seconds (not required for foreign train move) The iLODs record a total current drop of \geq 2.1A. **ANY LED BULBS USED=YES**
46	n/a	Lamp current dropped 1.4A – 2.1A	Crossing Active for > 11 seconds or Foreign Railroad active > 11 seconds. Island Occupied for > 4 seconds (not required for foreign train move) The iLODs record a total current drop of 1.4A – 2.1A. **ANY LED BULBS USED=YES**
47	n/a	AC Power Not On After Test	POK1 did not come back on after FRA standby power test ended.
50	n/a	Warning Time TK2	Time between Crossing Active and Island 2 Occupied. Sent to office if less than 20 seconds and no train stop is detected since last train move.

**TABLE 4-9: SEAR Ili ALARM CONFIGURATION
(FOR GENERIC APPLICATION
9V864-A01X, 9V864-A01X.CDL ONLY)**

ALARM NUMBER	RAILROAD NUMBER	NAME	DESCRIPTION
51	n/a	Warning Time TK3	Time between Crossing Active and Island 3 Occupied. Sent to office if less than 20 seconds and no train stop is detected since last train move.
52	n/a	Warning Time TK4	Time between Crossing Active and Island 4 Occupied. Sent to office if less than 20 seconds and no train stop is detected since last train move.
53	n/a	Exit Gate Not Down	Island Occupied and Exit Gates are not down.
55	n/a	Interior Gate Not Down	Island Occupied and Interior Gate is not down.
56	n/a	GCP4K Comm Bad	GCP4K stops communicating with the SEAR Ili
60	n/a	WARNING TIME TK5	Time between Crossing Active and Island 1 Occupied. Sent to office if less than 20 seconds and no train stop is detected since last train move.
61	n/a	Warning Time TK6	Time between Crossing Active and Island 6 Occupied. Sent to office if less than 20 seconds and no train stop is detected since last train move.

**TABLE 4-9: SEAR Iii ALARM CONFIGURATION
(FOR GENERIC APPLICATION
9V864-A01X, 9V864-A01X.CDL ONLY)**

ALARM NUMBER	RAILROAD NUMBER	NAME	DESCRIPTION
66*	n/a	Lamp current dropped \geq 2.1A	<p>Crossing Active for > 11 seconds or Foreign Railroad active > 11 seconds.</p> <p>Island Occupied for > 4 seconds (not required for foreign train move)</p> <p>The iLODs record a total current drop of \geq 2.1A.</p> <p>*ENTRANCE GATES=0</p> <p>**ANY LED BULBS USED=YES**</p>
67	n/a	Lamp current dropped 1.4A – 2.1A	<p>Crossing Active for > 11 seconds or Foreign Railroad active > 11 seconds.</p> <p>Island Occupied for > 4 seconds (not required for foreign train move)</p> <p>The iLODs record a total current drop of 1.4A – 2.1A.</p> <p>*ENTRANCE GATES=0</p> <p>**ANY LED BULBS USED=YES**</p>

**TABLE 4-9: SEAR Iii ALARM CONFIGURATION
(FOR GENERIC APPLICATION
9V864-A01X, 9V864-A01X.CDL ONLY)**

ALARM NUMBER	RAILROAD NUMBER	NAME	DESCRIPTION
68	n/a	Two Bulbs Out	Crossing Active for > 11 seconds or Foreign Railroad active > 11 seconds. Island Occupied for > 4 seconds (not required for foreign train move) A two bulb out condition exists *ENTRANCE GATES=0 **ANY LED BULBS USED=NO**
69	n/a	Multiple Bulbs Out	Crossing Active for > 11 seconds or Foreign Railroad active > 11 seconds Island Occupied for > 4 seconds (not required for foreign train move) A multiple bulb out condition exists *ENTRANCE GATES=0 **ANY LED BULBS USED=NO**
70	n/a	POSSIBLE TAIL RING TK2 **	Crossing Active Island Occupied Valid warning time Within 40 seconds Crossing Active No Island drop Crossing Inactive Activations on same track
71	n/a	Possible Tail Ring TK3 **	Crossing Active Island Occupied Valid warning time Within 40 seconds Crossing Active No Island drop Crossing Inactive Activations on same track

**TABLE 4-9: SEAR Iii ALARM CONFIGURATION
(FOR GENERIC APPLICATION
9V864-A01X, 9V864-A01X.CDL ONLY)**

ALARM NUMBER	RAILROAD NUMBER	NAME	DESCRIPTION
72	n/a	Possible Tail Ring TK5 **	Crossing Active Island Occupied Valid warning time Within 40 seconds Crossing Active No Island drop Crossing Inactive Activations on same track
73	n/a	Possible Tail Ring TK6 **	Crossing Active Island Occupied Valid warning time Within 40 seconds Crossing Active No Island drop Crossing Inactive Activations on same track
74	n/a	Possible Pre-Ring TK2 **	Crossing Active No Island/Train Stop Crossing Inactive Crossing Active Island Occupied within 4 minutes
75	n/a	Possible Pre-Ring TK3 **	Crossing Active No Island/Train Stop Crossing Inactive Crossing Active Island Occupied within 4 minutes
76	n/a	Possible Pre-Ring TK4 **	Crossing Active No Island/Train Stop Crossing Inactive Crossing Active Island Occupied within 4 minutes
77	n/a	Possible Pre-Ring TK5 **	Crossing Active No Island/Train Stop Crossing Inactive Crossing Active Island Occupied within 4 minutes
78	n/a	Possible Pre-Ring TK6 **	Crossing Active No Island/Train Stop Crossing Inactive Crossing Active Island Occupied within 4 minutes

**TABLE 4-9: SEAR III ALARM CONFIGURATION
(FOR GENERIC APPLICATION
9V864-A01X, 9V864-A01X.CDL ONLY)**

ALARM NUMBER	RAILROAD NUMBER	NAME	DESCRIPTION
79	n/a	False Detection TK2	Crossing Active No Island/Train Stop/Tail Ring Crossing Inactive No train on same track for 30 minutes
80	n/a	False Detection TK3	Crossing Active No Island/Train Stop/Tail Ring Crossing Inactive No train on same track for 30 minutes
81	n/a	False Detection TK4	Crossing Active No Island/Train Stop/Tail Ring Crossing Inactive No train on same track for 30 minutes
82	n/a	False Detection TK5	Crossing Active No Island/Train Stop/Tail Ring Crossing Inactive No train on same track for 30 minutes
83	n/a	False Detection TK6	Crossing Active No Island/Train Stop/Tail Ring Crossing Inactive No train on same track for 30 minutes
84	n/a	Possible Ring Thru TK2	All islands unoccupied. The last island active has been unoccupied for 10 seconds and crossing is still active. (User configurable time if RAILROAD=005)

**TABLE 4-9: SEAR III ALARM CONFIGURATION
(FOR GENERIC APPLICATION
9V864-A01X, 9V864-A01X.CDL ONLY)**

ALARM NUMBER	RAILROAD NUMBER	NAME	DESCRIPTION
85	n/a	Possible Ring Thru TK3	All islands unoccupied. The last island active has been unoccupied for 10 seconds and crossing is still active. (User configurable time if RAILROAD=005)
86	n/a	Possible Ring Thru TK4	All islands unoccupied. The last island active has been unoccupied for 10 seconds and crossing is still active. (User configurable time if RAILROAD=005)
87	n/a	Possible Ring Thru TK5	All islands unoccupied. The last island active has been unoccupied for 10 seconds and crossing is still active. (User configurable time if RAILROAD=005)
88	n/a	Possible Ring Thru TK6	All islands unoccupied. The last island active has been unoccupied for 10 seconds and crossing is still active. (User configurable time if RAILROAD=005)
89	n/a	Possible Tail Ring TK4 **	Crossing Active Island Occupied Valid warning time Within 40 seconds Crossing Active No Island drop Crossing Inactive Activations on same track

**TABLE 4-9: SEAR III ALARM CONFIGURATION
(FOR GENERIC APPLICATION
9V864-A01X, 9V864-A01X.CDL ONLY)**

ALARM NUMBER	RAILROAD NUMBER	NAME	DESCRIPTION
231	n/a	Full Approach Move	Crossing Active Island Occupied No train stop is detected prior to Crossing Active
232	n/a	Slow Train On Island	Island Occupied within 5 seconds prior to or 2 seconds after Crossing Active. Some alarms will be suppressed.
233	n/a	GCP Transferred	GCP4K has transferred.
234	103	DTMF Station Track 1 Control Received	Station stop one is enabled.
235	103	DTMF Station Track 2 Control Received	Station stop 2 is enabled.
236	103	DTMF Maintenance Control Received	Maintenance is enabled.
237	103	DTMF Time-Out	DTMF activation has timed out.
238	103	DTMF Stop Control Received	Stop DTMF activation control has been received
239	103	DTMF Off Due To Island	DTMF activation has halted due to island drop.
240	n/a	Low EZ When XING Activated XX	The EZ at start of train move is ≤ 33 , the average speed is above 15 mph, and warning time is < 20 seconds. Bypassed if any UAX is DOWN or a Prime de-energizes after the XR drops.

**TABLE 4-9: SEAR Ili ALARM CONFIGURATION
(FOR GENERIC APPLICATION
9V864-A01X, 9V864-A01X.CDL ONLY)**

ALARM NUMBER	RAILROAD NUMBER	NAME	DESCRIPTION
241	n/a	Train Accelerated XX	Island speed – detected speed is ≥ 5 mph, the average speed is above 15 mph, the starting EZ is >33 , and the warning time is less than 20 seconds. Bypassed if a Prime de-energizes after the XR drops.

Table 4-10: SEAR Ili Alarm Configuration (specific for 9V814-A01X, UPX0XX.CDL only)

**Table 4-10:
SEAR Ili Alarm Configuration
(specific for 9V814-A01X, UPX0XX.CDL only)**

**TABLE 4-10: SEAR III ALARM CONFIGURATION
(SPECIFIC FOR 9V814-A01X, UPX0XX.CDL ONLY)**

ALARM NUMBER	ALARM LABEL	DESIGNATOR	CONDITION
1	LA	LONG ACTIVATION ALARM	XING active for more than 20 minutes
2	N/A	Reserved	Reserved
3	N/A	Reserved	Reserved
4	GD	GATE DOWN ALARM	Gate not down 45 seconds after Xing is active
5	GU	GATE UP ALARM	Gate not UP 180 seconds after Xing clears
6	TR	TROUBLE LITE	Trouble light off and POK1,2 on for more than 60 seconds

**TABLE 4-10: SEAR III ALARM CONFIGURATION
(SPECIFIC FOR 9V814-A01X, UPX0XX.CDL ONLY)**

ALARM NUMBER	ALAR M LABEL	DESIG-NATOR	CONDITION
7	BA	BATTERY	Any battery input that is below or above the user defined thresholds for more than 10 minutes. Low Battery Threshold 75% to 90% of normal operating battery. High Battery Threshold 110% to 120% of normal operating battery
8	EO	LITE OUT	1 or 2 bulbs out or flash rate <35 or >65
9	IP	INITIAL POWER OFF	POK off for more than 20 minutes
10	PK	POWER OFF	POK off for more than 2 hours
11	DO	DOOR ALARM	Intrusion alarm. See description on page 57)
12	TP	TEMPERA-TURE	Temperature Above 150 Degrees Fahrenheit
13	AF	ANA-LYZER FAILURE	SEAR losses communications with any of its installed Echelon nodes, Ground fault detectors or TSS units
14	VH	VEHICLE DETEC-TOR HEALTH	Vehicle health output down for more than 15 seconds
15	GF	GROUND FAULT	Ground fault detected for more than 20 seconds
101	CL	XING CLEARED	Indicates Xing cleared for 5 minutes after long activation alarm
102	OP	POWER	POK ON for 5 minutes after a IP or PK alarm

**TABLE 4-10: SEAR III ALARM CONFIGURATION
(SPECIFIC FOR 9V814-A01X, UPX0XX.CDL ONLY)**

ALARM NUMBER	ALARM LABEL	DESIGNATOR	CONDITION
103	NO	ONLINE	Pressing the clear alarms key once causes SEAR to go offline and no alarms are reported during this time. Pressing clear alarms key a second time causes the SEAR to go online and reset all alarms. Note SEAR always powers up online after a 2 minute delay and if left offline it will automatically return online in 60 minutes. Also, the unit will set itself offline if the GCP transfers for 2 minutes to allow the GCP to power up.
104	CK	UNIT HEALTH	Sends a health message to the office on a periodic time base as determined by the user.

NOTE

All alarms and Clear alarms are both recorded and displayed.

SEAR Ili logs cannot be cleared by maintenance personnel.

**Table 4-11:
SEAR Ili Alarm Clears (for generic application
9V864-A01X, 9V864-A01X.CDL only)**

**TABLE 4-11: SEAR III ALARM CLEARS (FOR GENERIC
APPLICATION 9V864-A01X, 9V864-A01X.CDL ONLY)**

ALARM NUMBER	RAIL-ROAD NUMBER	NAME	DESCRIPTION
101	n/a	Crossing Controller Normal	Crossing Controller Failure Alarm Clears
102	n/a	Warning Time Normal TK1	Warning Time TK1 alarm clears.
103	n/a	TAIL RING CLEAR TK1	Possible Tail Ring TK1 alarm clears.
104	n/a	CROSSING NORMAL	<i>Crossing Active Too Long</i> alarm clears.
105	n/a	AC POWER BACK ON	POK1 back on for at least 1 minute.
106	n/a	GATE NOT UP CLEAR	<i>Gates Not Up After Crossing Clear</i> alarm clears.
107	n/a	ANALYZER NORMAL	<i>Analyzer Failure</i> alarm clears.
108	n/a	FAIL 3 SECOND TEST CLEAR	<i>Fail 3 Second Test</i> alarm clears.
109	n/a	GATE POSITION FAIL CLEAR	<i>Gate Position Fail</i> alarm clears.
111	n/a	BULBS NORMAL	<i>Two Bulbs Out or Multiple Bulbs Out, Lamp Current Dropped 1.4 A - 2.1A, Lamp Current Dropped $\geq 2.1A$,</i> alarm clears.
113	n/a	FLASH RATE NORMAL	<i>Flash Rate Too Slow</i> alarm clears.
114	n/a	FLASH RATE NORMAL	<i>Flash Rate Too Fast</i> alarm clears.
115	n/a	PRE-RING CLEAR TK1	Possible Pre-Ring TK1 alarm clears.
116	n/a	BELL NOT RINGING CLEAR	Bell Not Ringing alarm clears.
117	n/a	GFT NORMAL	<i>Ground Fault</i> alarms clear.
118	22	MB Normal	<i>Low Battery Channel 1</i> alarm clears for 5 seconds.
	125	OB Normal	
	400,	B10 Normal	
	550, 103 or 260	B12 Normal	
	671	MB-12 Normal	

TABLE 4-11: SEAR III ALARM CLEARS (FOR GENERIC APPLICATION 9V864-A01X, 9V864-A01X.CDL ONLY)

ALARM NUMBER	RAIL-ROAD NUMBER	NAME	DESCRIPTION
119	22	1XB Normal	<i>Low Battery Channel 2</i> alarm clears for 5 seconds.
	125	X-B Normal	
	400, 103 or 260	1XB12 Normal	
	550	B16 Normal	
	671	XB-14 Normal	
120	n/a	Gates Not Starting Clear	Gates Not Starting alarm clears.
121	n/a	Fail 5 Second Test Clear	Fail 5 Second Test alarm clears.
122	n/a	Preempt Normal	Preemption Fail alarm clears.
125	n/a	Bell Normal	Any <i>Bell</i> alarm clears.
128	n/a	Hold Clear Normal	Hold Clear Fail alarm clears.
130	n/a	BELL SENSOR ERROR CLEAR	Bell Sensor Error alarm clears.
133	n/a	RING THRU CLEAR TK1	Possible Ring Thru TK1 alarm clears.
135	22	2XB Normal	<i>Low Battery Channel 3</i> alarm clears for 5 seconds.
	125	X-B2 Normal	
	400, 103 or 260	2XB12 Normal	
	550	B16A Normal	
	671	BATT3 Normal	
136	22	Batt Mon Normal	<i>Low Battery Channel 4</i> alarm clears for 5 seconds.
	103	Batt Mon Normal	
	125	Batt Mon Normal	
	260	Batt Mon Normal	
	400	Batt Mon Normal	
	550	Batt Mon Normal	
	671	Batt Mon Normal	

TABLE 4-11: SEAR III ALARM CLEARS (FOR GENERIC APPLICATION 9V864-A01X, 9V864-A01X.CDL ONLY)

ALARM NUMBER	RAIL-ROAD NUMBER	NAME	DESCRIPTION
150	n/a	WARNING TIME NORMAL TK2	Warning Time TK2 alarm clears.
151	n/a	WARNING TIME NORMAL TK3	Warning Time TK3 alarm clears.
152	n/a	WARNING TIME NORMAL TK4	Warning Time TK4 alarm clears.
153	n/a	Exit Gate Not Down Clear	Exit Gate Not Down alarm clears.
155	n/a	Interior Gate Not Down Clear	Interior Gate Not Down alarm clears.
156	n/a	GCP4K Comm Good	GCP4K Comm Bad clears
160	n/a	WARNING TIME NORMAL TK5	Warning Time TK5 alarm clears.
161	n/a	WARNING TIME NORMAL TK6	Warning Time TK6 alarm clears.
170	n/a	TAIL RING CLEAR TK2	Possible Tail Ring TK2 alarm clears.
171	n/a	TAIL RING CLEAR TK3	Possible Tail Ring TK3 alarm clears.
172	n/a	TAIL RING CLEAR TK4	Possible Tail Ring TK4 alarm clears.
173	n/a	TAIL RING CLEAR TK5	Possible Tail Ring TK5 alarm clears.
174	n/a	TAIL RING CLEAR TK6	Possible Tail Ring TK6 alarm clears.
174	n/a	PRE-RING CLEAR TK2	Possible Pre-Ring TK2 alarm clears.
175	n/a	PRE-RING CLEAR TK3	Possible Pre-Ring TK3 alarm clears.
176	n/a	PRE-RING CLEAR TK4	Possible Pre-Ring TK4 alarm clears.
177	n/a	PRE-RING CLEAR TK5	Possible Pre-Ring TK5 alarm clears.
178	n/a	PRE-RING CLEAR TK6	Possible Pre-Ring TK6 alarm clears.
179	n/a	FALSE DETECTION CLEAR TK2	False Detection TK2 alarm clears.
180	n/a	FALSE DETECTION CLEAR TK3	False Detection TK3 alarm clears.
181	n/a	FALSE DETECTION CLEAR TK4	False Detection TK4 alarm clears.
182	n/a	FALSE DETECTION CLEAR TK5	False Detection TK5 alarm clears.

TABLE 4-11: SEAR III ALARM CLEARS (FOR GENERIC APPLICATION 9V864-A01X, 9V864-A01X.CDL ONLY)

ALARM NUMBER	RAIL-ROAD NUMBER	NAME	DESCRIPTION
183	n/a	FALSE DETECTION CLEAR TK6	False Detection TK6 alarm clears.
184	n/a	RING THRU CLEAR TK2	Possible Ring Thru TK2 alarm clears.
185	n/a	RING THRU CLEAR TK3	Possible Ring Thru TK3 alarm clears.
186	n/a	RING THRU CLEAR TK4	Possible Ring Thru TK4 alarm clears.
187	n/a	RING THRU CLEAR TK5	Possible Ring Thru TK5 alarm clears.
188	n/a	RING THRU CLEAR TK6	Possible Ring Thru TK6 alarm clears.

4.3 INTRUSION ALARM OPERATION (SPECIFIC FOR 9V814-A01X, UPX0XX.CDL ONLY)

4.3.1 Enabling the alarm:

Alarm is enabled by setting up a door1 or door2 input on the GCP 4000.

- LED T10 indicates green to show that the intrusion alarm is enabled.

4.3.2 Arming the alarm:

The alarm is automatically armed when LED T10 indicates green and the door is closed for 10 seconds

- “Intrusion alarm armed” appears in log
- CRTU 4 output energizes for 2 seconds.
- This output may be connected to a buzzer to audibly indicate the intrusion alarm is armed.

4.3.3 Disarming the alarm:

Upon Entering an armed site, LED T10 will be flashing green at a fast rate to indicate that the alarm must be disarmed within 60 seconds or an intrusion alarm will occur.

- Touch display screen to activate screen.
- Press **MORE** button until **SEAR** button is displayed at top of screen.
- Press **CLEAR ALARM** button once (on SEAR Ili interface screen).
- This will **not** take the SEAR Ili off line.

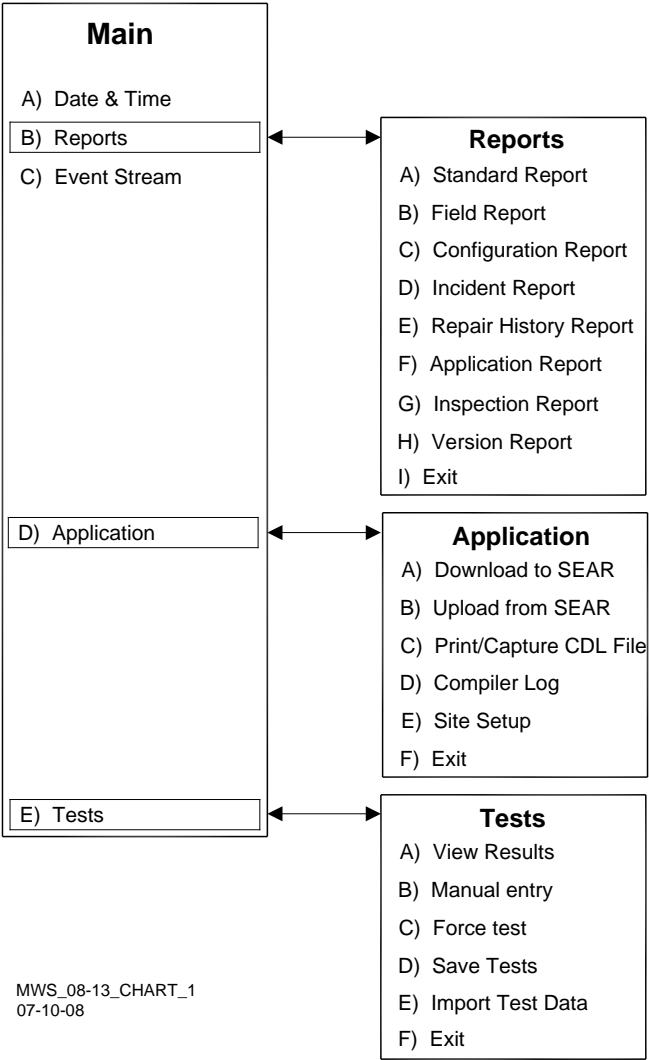
NOTE

Closing the door will not stop the alarm timer if the door has been opened for more than 2 seconds. The 2 seconds of debounce is intended to prevent vibration from falsely activating the alarm.

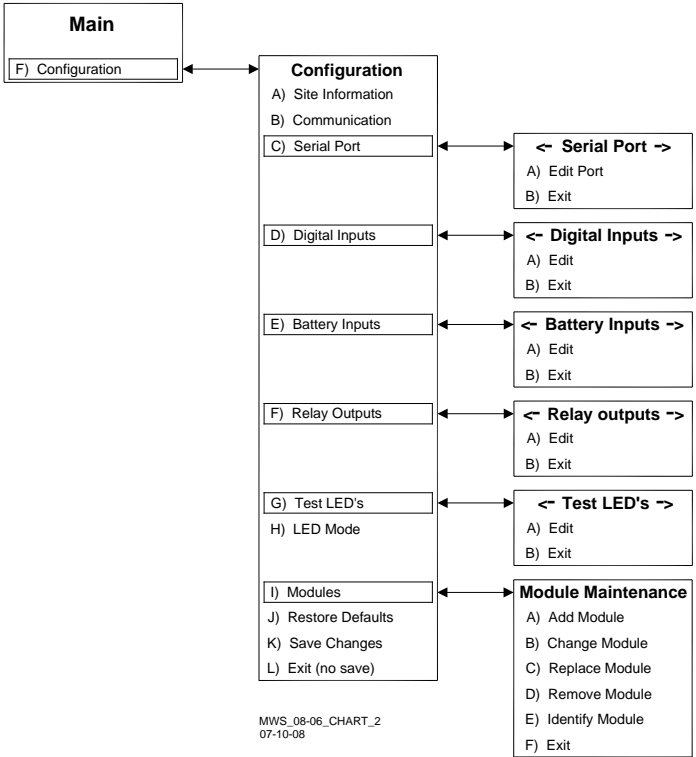
4.3.4 Intrusion alarm operation:

If the alarm is not disarmed in time:

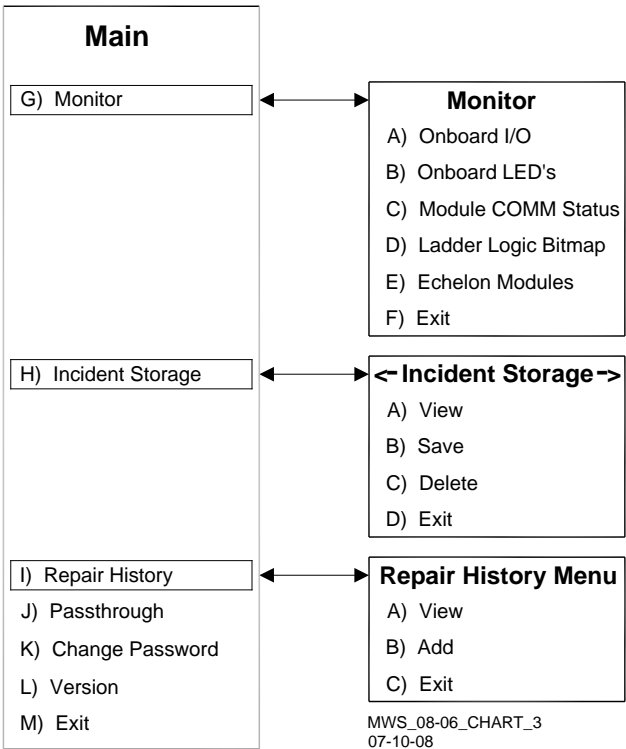
- The log will indicate that a DO alarm has occurred and LED T10 will indicate red.
- Closing the door will not rearm the system until the alarm is cleared by pressing **CLEAR ALARM** button once.
- LED T10 will indicate green and if the door was the only alarm active, a NO will occur as well.
- This will **not** take the SEAR Ili offline or **clear** the alarm.



**Figure 4-2:
Main Menu (Reports, Application, & Tests)**



**Figure 4-3:
Main Menu (Configuration)**



**Figure 4-4:
Main Menu
(Monitor, Incident Storage, & Repair History)**

SECTION 5 – DOWNLOADS

5.1 SEAR Ili DOWNLOADS

The information in the SEAR Ili can be viewed in two ways:

- Information on the display
- Download SEAR Ili information to a PC

The following paragraphs explain both methods.

5.1.1 Viewing SEAR Ili Information on Display

The SEAR button is on the top row of the track status screen. (Figure 5-1)



Figure 5-1: Track Status Screen SEAR Button

When SEAR is selected, a SEAR screen is displayed, as shown in Figure 5-2).

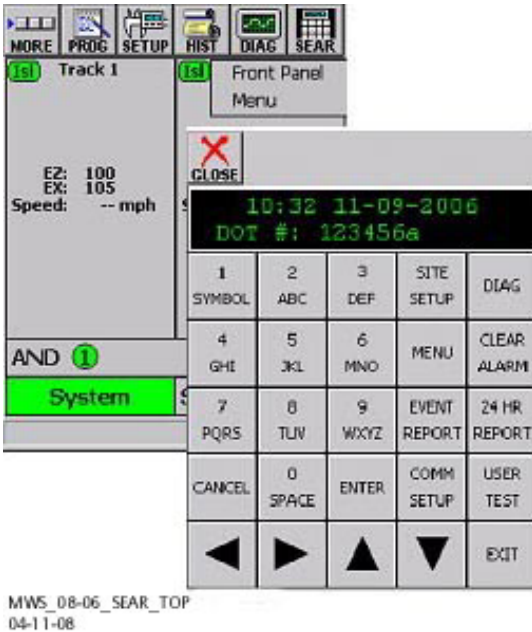


Figure 5-2: SEAR Opening Screen

From the MENU screen the MAIN MENU can be accessed. (Figure 5-3).

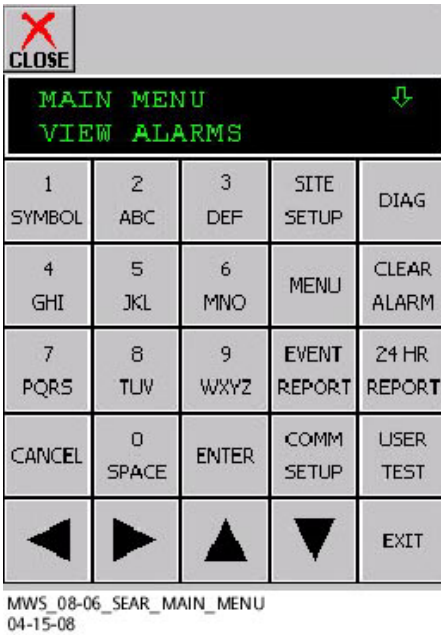


Figure 5-3: SEAR Main Menu Screen

The options on the MAIN MENU are:

- VIEW ALARMS
- DATE/TIME
- SITE SETUP
- REPORTS
- EVENT STREAM
- TESTS
- CONFIGURATION
- DIAG/MONITOR
- INCIDENT STORAGE
- REPAIR HISTORY
- CHANGE PASSWORD
- FACTORY TEST
- VERSIONS
- EXIT

Most frequently, REPORTS will be useful for maintenance.

Event reports are displayed for a range of time, one line at a time. (Figure 5-4)

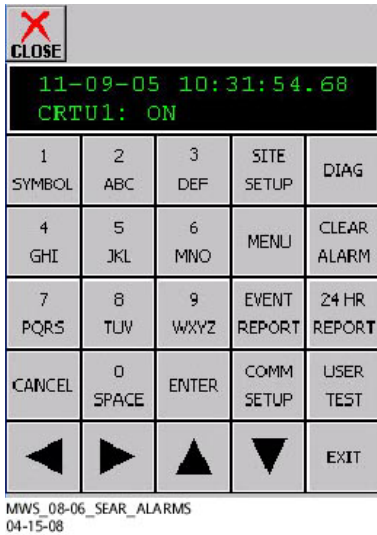


Figure 5-4: Event Report Example Line

The EVENT STREAM displays events as they occur in real time. A more efficient method of viewing SEAR Ili information is on a PC.

5.1.2 Downloading SEAR Ili Information to a PC

The SEAR Ili computer interface may be accessed with terminal emulation software such as HyperTerminal, which is included on most computers with a standard Windows® installation. It generally can be found by selecting START/ Programs/ Accessories/ Communications/ HyperTerminal.

The SEAR II I USER J2 serial port and the computer COMM port settings must match in order to communicate. The default SEAR Ili settings are:

- 9600 baud
- 8 data bits
- No parity bits
- 1 stop bit

It recommended that the baud rate be increased to 57600. The COMM port settings are changed in the HyperTerminal program by selecting FILE then PROPERTIES. In the properties window select CONFIGURE. The next window is PORT SETTINGS. Set the port settings as desired and select OK until it returns to the HyperTerminal screen.

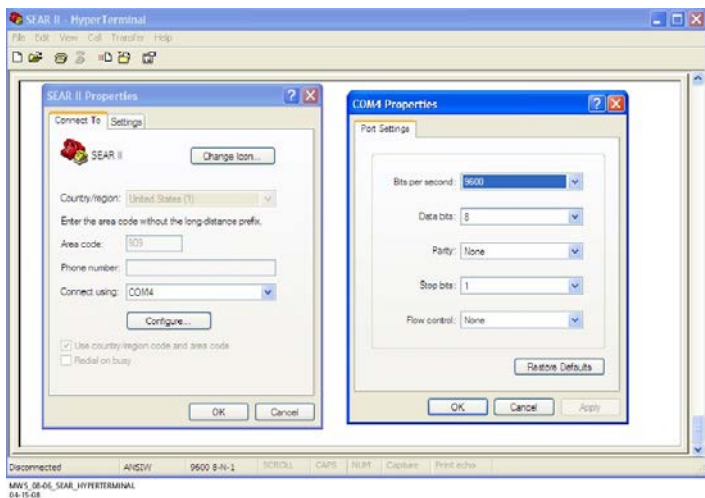


Figure 5-5: Comm Port Settings

Once HyperTerminal is running, enter **CTRL L** on the computer to initiate the communication session with the SEAR Ili. The following screen will be displayed.

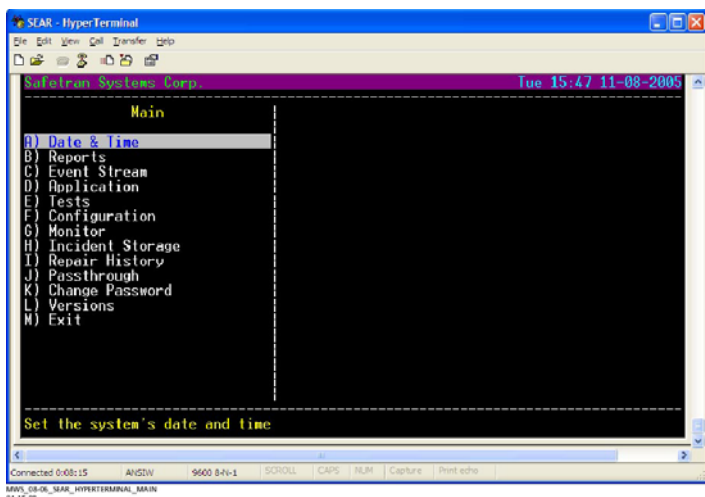


Figure 5-6: SEAR Ili Main Menu on HyperTerminal

The options are selected by entering the option's letter, or using the keyboard ARROW keys and ENTER. Enter B for Reports, etc. The Reports screen appears as shown in Figure 5-7.

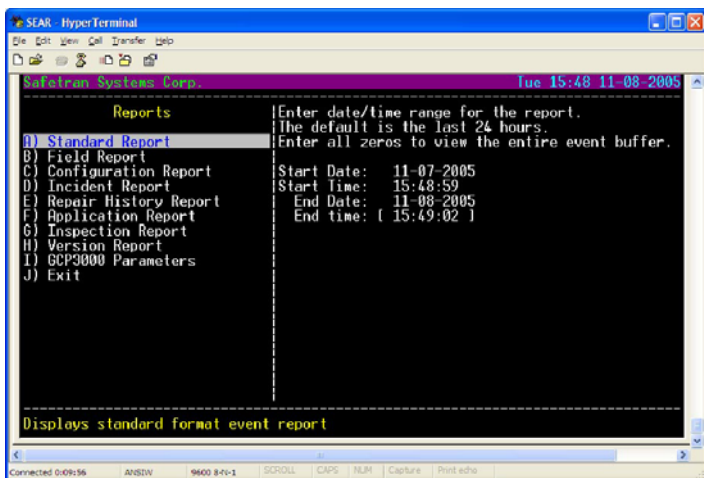


Figure 5-7: SEAR Ili Reports Screen

The default time range is the previous 24 hours. The date and time range may be changed as each item is selected. The Start Date appears first. The date may be changed by moving the cursor over the entry that is to be changed and typing over. Hit ENTER to move to the Start Time, and so on. After the End Time is entered, a Format option to view On Screen or Print/Capture is displayed. The options can be switched by the UP or DOWN ARROW keys, then pressing ENTER.

The report is a complete list of all GCP 4000 activity during that period. (See Figure 5-8).

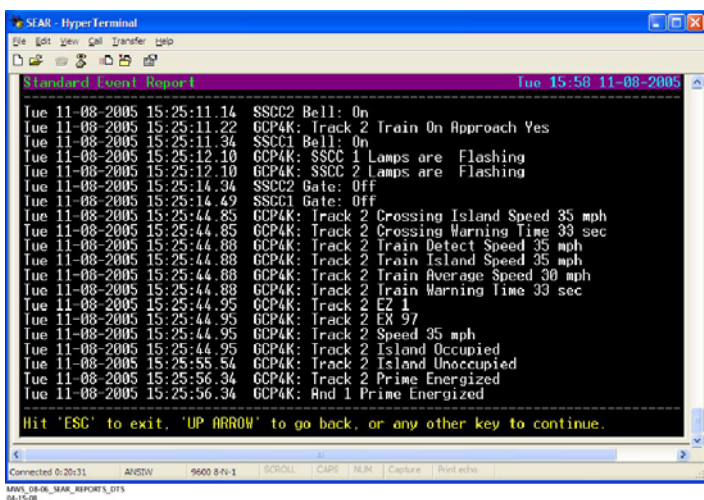


Figure 5-8: Example Report Screen

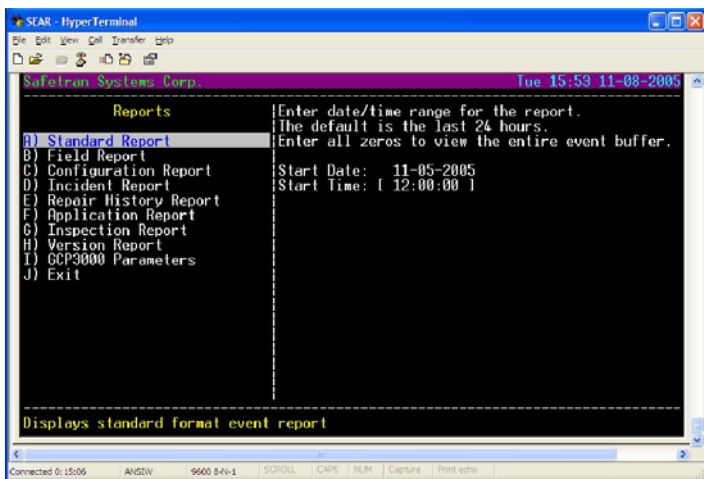


Figure 5-9: Report Selection

Capturing reports on the computer allows retrieval at a later date. Figure 5-10 is an example of the PRINT/CAPTURE option.

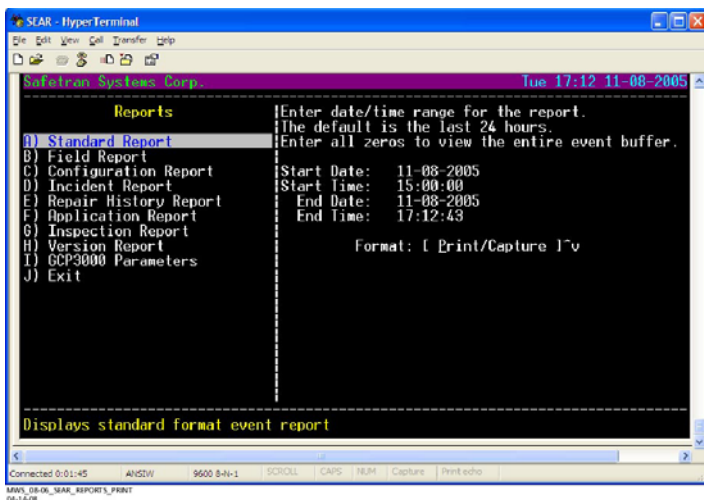


Figure 5-10: Print/Capture Option

Use the ARROW key to switch (toggle) from On Screen to PRINT/CAPTURE, then hit ENTER. The next screen requires enabling text capture BEFORE proceeding.

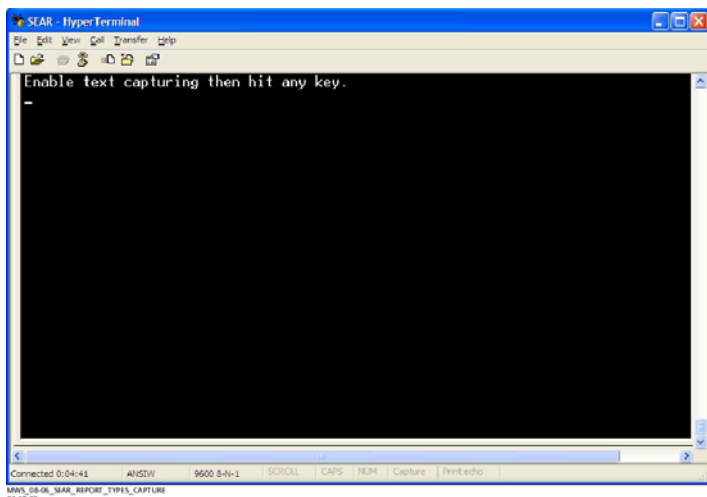
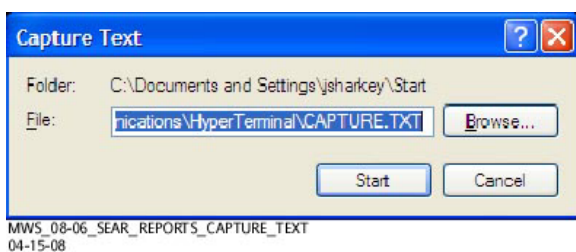


Figure 5-11: Text Capture Message

Select TRANSFER on the menu bar, then select CAPTURE TEXT.

A standard dialog box appears that allows the user to choose the location the file will be saved to. (Figure 5-12)

Figure 5-12: Capture Text Dialog Box



Then press START and any other key. The text file of the report will be saved in the specified location.

5.1.3 Configuration Report

The CONFIGURATION REPORT is useful for storing all the parameters entered into the SEAR Ili. A portion of the text file is shown below.

```

config - Notepad
File Edit Format View Help
:configuration Report Tue 11-08-2005 17:27:53
Site Name: Safetran Systems Corp. Time Zone: Central (-6:00)
Milepost: 1234.56 Executive: 9V725-AD1R
DOT #: 123456A Tester: Crossing
Logic File: none CDL File: none
Label File: none ATF File: none

Factory boot: Sat 05-28-2005 10:56:03
Field boot: Thu 01-20-2000 18:15:04
Serial #: 0786
Part #: A80411
Configuration Version: 1.3

Memory: Standard

Auto DST Adjust: YES
GMT Offset: -6:00
Date Format: mm-dd-yyyy
Temperature Format: Fahrenheit
Indication Holdoff: -1

No application program

communication settings:

Site type: No Communication
site address: 7.620.100.100.99.01

serial Port Settings:

COMM: 9600 8-N-1 None
AUX: 9600 8-N-1 None
USER: 9600 8-N-1 None
DISPLAY: 9600 8-N-1 None

onboard Digital Inputs:

channel: 1
Algorithm: Discrete
Name: Maint call
Tag: MAINT
off state name: On
on state name: Off
Toggling state name: Toggling
On debounce (ms): 100
off debounce (ms): 100
Toggle period (ms): 1000

```

MWS_08-06_SEAR_CONFIG_RPT
04-15-08

Figure 5-13: Configuration Report Sample Text File

5.1.4 Incident Storage

INCIDENT STORAGE is an important feature in the SEAR Ili. The SEAR Ili is capable of storing a range of events after an incident in a file that can be securely stored. Each line of data in the file is identified by a security code that validates that the data has not changed.

Select INCIDENT STORAGE on the main menu.

```

SEAR - HyperTerminal
File Edit View Call Transfer Help
Safetran Systems Corp. Tue 17:35 11-08-2005
-----
Main
A) Date & Time
B) Reports
C) Event Stream
D) Application
E) Tests
F) Configuration
G) Monitor
H) Incident Storage
I) Repair History
J) Passthrough
K) Change Password
L) Versions
M) Exit
-----
Save/view incident reports
-----
Connected 0:24:09 Avd32V 9600 8-4-1 SCROLL CAPS NUM Capture Print echo
MWS_08-06_SEAR_PICD_STO
04-15-08

```

Figure 5-14: Incident Storage Menu Selection

To save an incident, select SAVE and ENTER.

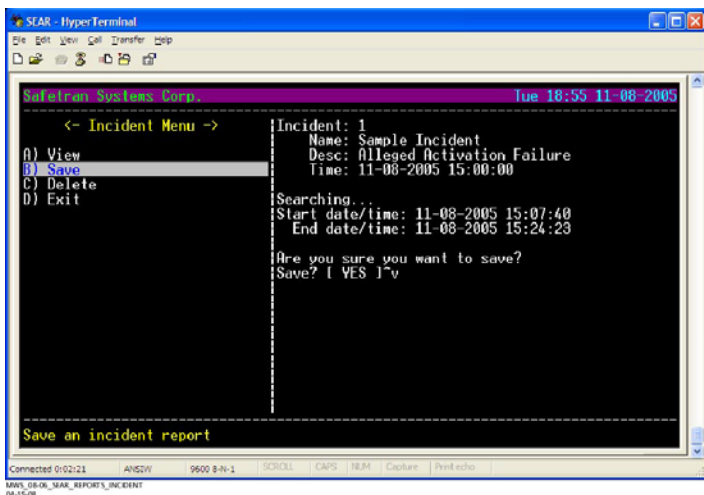


Figure 5-15: Incident Save Selection

Fill in the requested information.

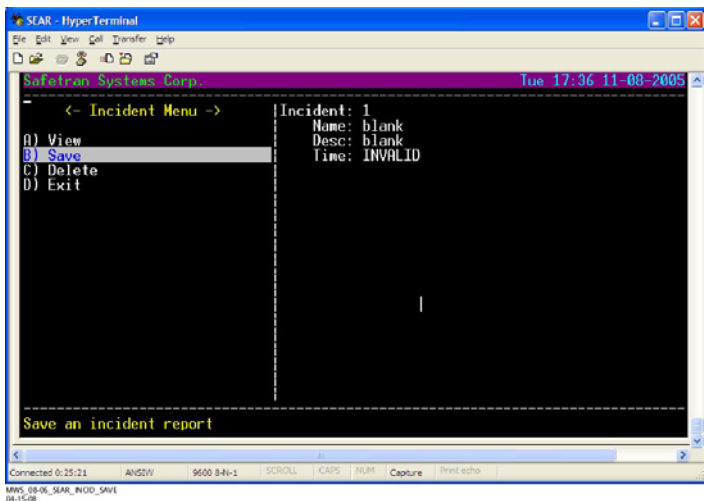


Figure 5-16: Incident File Information Screen

The Incident will be saved in the SEAR Ili and can be captured and saved on a computer. The report can be displayed by selecting the VIEW option. (Figure 5-17)

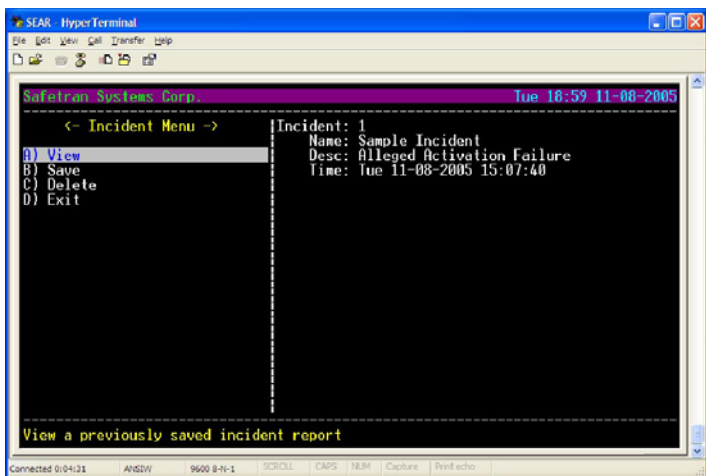


Figure 5-17: Viewing the Saved Incident Report
 An example of the report is shown in Figure 5-18.

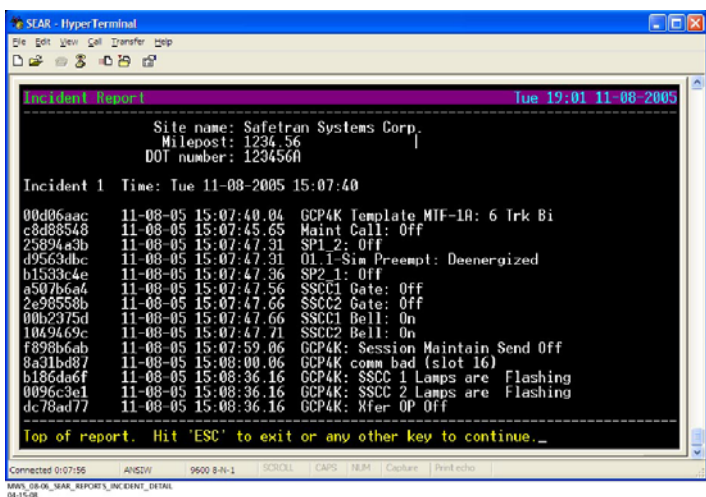


Figure 5-18: Example of Viewing a Saved Incident Report

NOTE

An incident can be named, described, stored using the Display Module for later retrieval to a computer. If in doubt, store the incident.

The remainder of the selections on the main menu can be selected, viewed, or captured in the same manner. Similarly, the selections can be selected and displayed on the display module. To end the HyperTerminal session select EXIT.

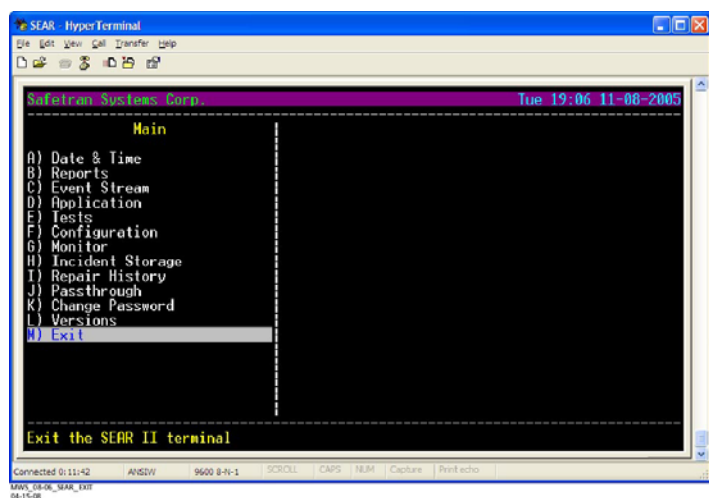


Figure 5-19: Ending the HyperTerminal Session

SECTION 6 – SEAR INTERFACE

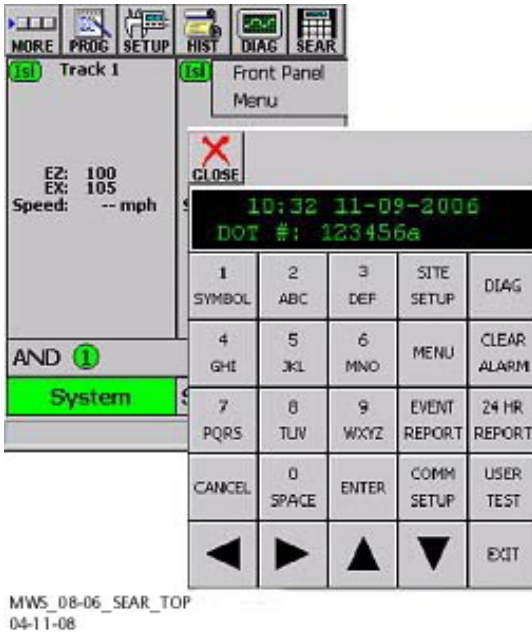
6.1 SEAR INTERFACE



Selecting the SEAR button at the top of the 4000 GCP Status Screen brings up the SEAR interface, Figure 6-1.

- The interface may also be accessed by selecting the **Site Setup** item from the **SEAR** or the **TEMPLATE: SEAR** windows.

Figure 6-1: SEAR Ili Interface



NOTE

The SEAR interface may be accessed only from the A80407 Display Module Diagnostic Terminal.

The SEAR Ili interface consists of:

- 2-line function screen
- 20-characters per line
- displays configuration and menu data
- 25-key, touch-screen keypad
- may be used to enter:
 - text and numbers
 - special functions commands
 - menu selection commands
 - menu navigation commands

6.1.1 Function Screen Top-Level Display

The top level of the function screen display is the initial/default display mode of the SEAR Ili. This display consists of a:

- fixed top line
 - displays time and date
- scrolling second line
 - displays sequential system information

- site identification
- milepost designation
- Department of Transportation (DOT) number
- Event storage data
- ratio of stored events to event storage capacity
- optional application program messages

NOTE

If there is no keypad activity for 5 minutes while a lower menu level is displayed, the display will automatically return to the top level.

6.1.2 SEAR Ili Interface Menu Access

Interface menus are accessed via the keypad.

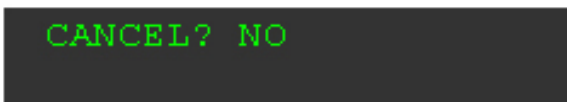
6.1.2.1 Interface Menu Navigation

Navigation between items of the SEAR Ili interface menus is accomplished using the keypad direction keys (◀▶▲▼).

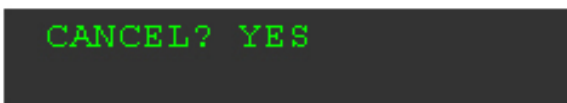
Menu item selection and parameter acceptance is accomplished using the **ENTER** key

To return to the top-level display from any other menu level, initiate the following key sequence:

- press the **CANCEL** key
- the following prompt displays:



- press a direction key
- the prompt changes as follows:



- press the **ENTER** key
- top level function screen displays
- To exit the current menu item without changing the existing setting press the **EXIT** key

6.1.2.2 Interface Menu Data Entry

The keypad number/letter keys are used to enter menu numeric and text values.

- The left (◀) and right (▶) direction keys are used to move through a text or number string.
- The up (▲) and down (▼) keys are used to modify the character above the cursor.

WHEN ENTERING DATA IN AN ALPHANUMERIC FIELD, SUCCESSIVE PRESSING OF A NUMBER KEY PRODUCES A STRING OF THE CHARACTERS REPRESENTED BY THAT KEY.

- Example: pressing the **2 ABC** key in succession produces a repeating sequence of **2, A, B, C, a, b, c**
 - numeric fields will display only numbers
 - text fields will display only alpha characters

- After a character is changed and the number keys remain inactive for 1 second, the cursor moves to the next character position.
- Option fields allow a value to be selected from a list of options.
 - Indicated by a flashing block cursor over the first character of the field.
 - Option fields are navigated using the direction keys
 - The up (▲) and down (▼) keys are used scroll through the options list
 - The left (◀) and right (▶) keys may be used to move through the list eleven items at a time.
- The **ENTER** key is used to
 - accept: changes and temporarily store the changes in memory as they are made
 - accept and permanently store interface menu changes
 - acceptance initiated by the user in response to menu prompt

6.1.2.3 Interface Menu Shortcut Keys

Eight Shortcut keys allow direct access to specific menu options:

- **SITE SETUP** key – opens the **SITE SETUP** submenu (see Figure 6-2 and Figure 6-6, (Charts AA and AB))
- **DIAG** key – opens the **DIAG/MONITOR** submenu (see Figure 6-33, (Chart MA))
- **MENU** key – opens the **MAIN MENU**
- **CLEAR ALARM** key – clears an alarm condition from the report
 - alarm parameters are set by the application program
- **EVENT REPORT** key – opens the **STARTING TIME** function screen of the **EVENT REPORT** submenu (see Figure 6-22, (Chart FD))
 - Submenu provides access to user specified event reports
- **24 HR REPORT** key – displays all event reports for the previous 24-hour period
- **COMM SETUP** key – opens the **SITE TYPE** function screen of the Communications submenu (see Figure 6-32, (Chart LB))
- **USER TEST** – displays and/or initiates program defined tests.

6.1.3 Site Setup Menu Structure

The Site Setup menu structure is shown in Figure 6-2 and Figure 6-6.

6.1.3.1 SITE SETUP Key

Activating the **SITE SETUP** key provides accesses to the Site Setup menu (see Figure 6-2, (Chart AA)).

- This menu:
 - Is described in Table 6-1
 - may be accessed from the Main menu (see Figure 6-2 and Figure 6-6, Charts AA and AB)

**Table 6-1:
SITE SETUP Menu**

TABLE 6-1: SITE SETUP MENU

SCREENS			FUNCTIONS / DESCRIPTIONS
LEVEL 1	LEVEL 2	LEVEL 1	LEVEL 2
DATE/TIME			SEAR date and time
AUTO-MATIC DST ADJUSTMENT?			Automatic daylight saving time (DST) option
TIME ZONE?			Site time zone selection
SITE NAME?			Site name designation
MILE POST?			Site mile post designation
DOT #?			Department of Transportation crossing number assigned to site
TESTER TYPE?			Type of tests being performed list: Crossing Wayside
DATE FORMAT?			Date Format: mm-dd-yyyy dd-mm-yyyy
TEMP. FORMAT?			Temperature Scale: Fahrenheit Celsius
INDICATE HOLD (SEC)?			Duration of holds 0-99 seconds
INDICATE REFRESH (SEC)?			Refresh Rate: 0-999 seconds
SITE ATCS ADDRESS?			7.RRR.LLL.GGG. 99.01
SITE TYPE?			Site type list: No Communication Bullhorn/Mod-Bus Dial-up Node Collector CDS-902X

TABLE 6-1: SITE SETUP MENU

SCREENS			FUNCTIONS / DESCRIPTIONS
LEVEL 1	LEVEL 2	LEVEL 1	LEVEL 2
USER PORT BAUD?			USER port baud list: 57600 38400 19200 9600 4800 2400 1200 600
USER PORT DATA BITS?			USER port data bits selection 7 8
USER PORT PARITY?			USER port party set list: None Odd Even
USER PORT STOP BITS?			USER port stop bits selection 1 2
USER PORT FLOW CTRL?			USER port flow control list: None Hardware Radio
AUX POART BAUD?			AUX port baud list: 57600 38400 19200 9600 4800 2400 1200 600
AUX PORT DATA BITS?			AUX port data bits selection
AUX PORT PARITY?			AUX port party set list: None Odd Even
AUX PORT STOP BITS?			AUX port stop bits selection
AUX PORT FLOW CTRL?			AUX port flow control list: None Hardware Radio

TABLE 6-1: SITE SETUP MENU

SCREENS			FUNCTIONS / DESCRIPTIONS
LEVEL 1	LEVEL 2	LEVEL 1	LEVEL 2
EDIT DIGITAL INPUTS?			<p>Digital input edit options: NO (default) YES</p> <p>Sixty-three digital inputs may be sequentially edited when YES is selected from the edit option list. Selecting NO advances the menu screen to EDIT BATTERIES?</p>
EDIT DIGITAL INPUTS? (cont.)	INPUT TAGS?		<p>Digital input tags edit function list: Default Manual Entry</p> <p>Optional name that may be listed by the application program. Entry for each digital input tag option may be sequentially displayed when YES is selected from the corresponding input tags edit function list</p>
		TAG?	<p>Edit digital input tag assignment</p> <p>Entry for each digital input displays only when Manual Entry is selected from the corresponding digital input tags edit function list</p>
		FULL NAME?	<p>Edit digital input name assignment, for example: Default: Maint Call</p> <p>Entry for each digital input name displays only when Manual Entry is selected from the corresponding digital input tags edit function list</p>

TABLE 6-1: SITE SETUP MENU

SCREENS			FUNCTIONS / DESCRIPTIONS
LEVEL 1	LEVEL 2	LEVEL 1	LEVEL 2
		OFF LABEL?	<p>Edit digital input OFF label assignment Default: Off</p> <p>Entry for each digital input Off label displays only when Manual Entry is selected from the corresponding digital input tags edit function list</p>
EDIT DIGITAL INPUTS? (cont.)	INPUT TAGS? (cont.)	ON LABEL?	<p>Edit digital input ON label assignment Default: On</p> <p>Entry for each digital input On label displays only when Manual Entry is selected from the corresponding digital input tags edit function list</p>
		TOGGLE LABEL?	<p>Edit digital input TOGGLE label assignment Default: Toggling</p> <p>Entry for each digital input Toggle label displays only when Manual Entry is selected from corresponding digital input tags edit function list</p>
EDIT BATTERIES?			<p>Battery edit options: NO (default) YES</p> <p>Five batteries may be sequentially edited when YES is selected from the battery edit option list</p> <p>Selecting NO advances the menu display to EDIT RELAYS?</p>

TABLE 6-1: SITE SETUP MENU

SCREENS			FUNCTIONS / DESCRIPTIONS
LEVEL 1	LEVEL 2	LEVEL 1	LEVEL 2
EDIT BATTERIES ?	BATTERY TAG?		Battery tags edit function list: Default Manual Entry Entry for each battery may be sequentially displayed when YES is selected from the battery edit option list
EDIT BATTERIES ? (cont.)	BATTERY TAG? (cont.)	TAG?	Edit battery tag assignment Entry for each battery displays only when Manual Entry is selected from the corresponding battery tags edit function list
		FULL NAME?	Edit battery name assignment Entry for each battery displays only when Manual Entry is selected from the corresponding battery tags edit function list
EDIT RELAYS?			Relay edit options: NO (default) YES Sixteen relays may be sequentially edited when YES is selected from the relay edit option edit function list Selecting NO advances the menu display to EDIT TEST LEDS?

TABLE 6-1: SITE SETUP MENU

SCREENS			FUNCTIONS / DESCRIPTIONS
LEVEL 1	LEVEL 2	LEVEL 1	LEVEL 2
	RELAY TAGS?		Relay tags edit function list: Default Manual Entry Entry for each relay Tag may be sequentially displayed when YES is selected from the corresponding relay tags edit option list
EDIT RELAYS? (cont.)	RELAY TAGS? (cont.)	TAG?	Edit relay tag assignment name Entry for each relay displays only when Manual Entry is selected from the corresponding relay tags edit function list
		FULL NAME?	Edit input name assignment Entry for each relay displays only when Manual Entry is selected from the corresponding relay tags edit function list
		OFF LABEL?	Edit relay OFF label assignment Default: Open Entry for each relay displays only when Manual Entry is selected from the corresponding relay tags edit function list
		ON LABEL?	Edit relay ON label assignment Default: Closed Entry for each relay displays only when Manual Entry is selected from the corresponding relay tags edit function list

TABLE 6-1: SITE SETUP MENU

SCREENS			FUNCTIONS / DESCRIPTIONS
LEVEL 1	LEVEL 2	LEVEL 1	LEVEL 2
		TOGGLE LABEL?	Edit relay TOGGLE label assignment Default: Toggling Entry for each relay displays only when Manual Entry is selected from the corresponding relay tags edit function list
EDIT RELAYS?	RELAY TAGS?	PULSE LABEL?	Edit relay PULSE label assignment Default: Pulse Entry for each relay displays only when Manual Entry is selected from the corresponding relay tags edit function list
EDIT TEST LEDS? (cont.)			LED edit options: NO (default) YES Sixteen LED's may be sequentially edited when YES is selected from the LED edit option list Selecting NO advances the menu display to EDIT MODULES?
	TEST LED TAGS? (cont.)		LED tags edit function list: Default Manual Entry Entry for each LED TAG may be sequentially displayed when YES is selected from the corresponding

TABLE 6-1: SITE SETUP MENU

SCREENS			FUNCTIONS / DESCRIPTIONS
LEVEL 1	LEVEL 2	LEVEL 1	LEVEL 2
		TAG?	Edit LED Tag assignment name Entry for each LED Tag displays only when Manual Entry is selected from the corresponding test LED tags edit function list
		FULL NAME?	Edit input name assignment Entry for each LED displays only when Manual Entry is selected from the corresponding LED tags edit function list
EDIT TEST LEDS? (cont.)	TEST LED TAGS? (cont.)	OFF LABEL?	Edit relay Off label assignment Default: Off Entry for each LED displays only when Manual Entry is selected from the corresponding LED tags edit function list
		RED LABEL?	Edit LED red label assignment Default: Red Entry for each LED displays only when Manual Entry is selected from the corresponding LED tags edit function list
		GREEN LABEL?	Edit LED green label assignment Default: Green Entry for each LED displays only when Manual Entry is selected from the corresponding LED tags edit function list

TABLE 6-1: SITE SETUP MENU

SCREENS			FUNCTIONS / DESCRIPTIONS
LEVEL 1	LEVEL 2	LEVEL 1	LEVEL 2
		YELLOW LABEL?	Edit LED yellow label assignment Default: Yellow Entry for each LED displays only when Manual Entry is selected from the corresponding LED tags edit function list
		RED SLOW LABEL?	Edit LED red label assignment Default: Red slow Entry for each LED displays only when Manual Entry is selected from the corresponding LED tags edit function list
EDIT TEST LEDS? (cont.)	TEST LED TAGS? (cont.)	GRN SLOW LABEL?	Edit LED green slow label assignment Default: Grn slow Entry for each LED displays only when Manual Entry is selected from the corresponding LED tags edit function list
		YLW SLOW LABEL?	Edit LED yellow slow label assignment Default: Ylw slow Entry for each LED displays only when Manual Entry is selected from the corresponding LED tags edit function list

TABLE 6-1: SITE SETUP MENU

SCREENS			FUNCTIONS / DESCRIPTIONS
LEVEL 1	LEVEL 2	LEVEL 1	LEVEL 2
		RED FAST LABEL?	Edit LED red label assignment Default: Red fast Entry for each LED displays only when Manual Entry is selected from the corresponding LED tags edit function list
		GRN FAST LABEL?	Edit LED green fast label assignment Default: Grn fast Entry for each LED displays only when Manual Entry is selected from the corresponding LED tags edit function list
		YLW FAST LABEL?	Edit LED yellow FAST label assignment Default: Ylw fast Entry for each LED displays only when Manual Entry is selected from the corresponding LED tags edit function list

TABLE 6-1: SITE SETUP MENU

SCREENS			FUNCTIONS / DESCRIPTIONS
LEVEL 1	LEVEL 2	LEVEL 1	LEVEL 2
EDIT MODULES?			<p>Module edit options: NO (default) YES</p> <p>Selecting YES brings up the MODULE MENU screen.</p> <p>Six edit functions may be sequentially accessed from this screen: ADD MODULE CHANGE MODULE REPLACE MODULE REMOVE MODULE IDENTIFY MODULE FACTORY CAL iLOD</p> <p>Selecting NO initiates a SAVING CONFIGURATION display followed by a user interactive setup routine. At the completion of the routine, SITE SETUP COMPLETE displays briefly before returning the Function Screen to the Top Level Display.</p>
	MODULE MENU ADD MODULE		Allows modules to be installed on the 4000 GCP Echelon network
		MODULE TYPE	<p>Module type list: Digital I/O (default) Analog Input iLOD GCP 4000 SSCC GCP 3000 VHF Comm Spread Spec MCM Not configured</p>

TABLE 6-1: SITE SETUP MENU

SCREENS			FUNCTIONS / DESCRIPTIONS
LEVEL 1	LEVEL 2	LEVEL 1	LEVEL 2
EDIT MODULES? (cont.)	MODULE MENU ADD MODULE (cont.)	MODULE NAME	Allows a name to be assigned to the added module Default: DIO1
		EDIT INPUT NAMES (applies to Digital I/O Module, 80258)	Input name edit options: NO (default) YES Input names may be chosen and edited when YES is selected from the edit option list Selecting NO advances the menu display to EDIT OUTPUT NAMES? menu item
		INPUT TO EDIT? (applies to Digital I/O Module, 80258)	Input name selection list: 01: N1 DI01 thru 24: N1 DI24 Entry for each input may be sequentially accessed when Yes is selected from the Input name edit options list
		INPUT (Name) Tags? (applies to Digital I/O Module, 80258)	Input tags edit function list: Default Manual Entry Entry displays only when Yes is selected from the Input name edit options list
		TAG? (applies to Digital I/O Module, 80258)	Edit input tag assignment name Entry for each input displays only when Manual Entry is selected from the input tags edit function list

TABLE 6-1: SITE SETUP MENU

SCREENS			FUNCTIONS / DESCRIPTIONS
LEVEL 1	LEVEL 2	LEVEL 1	LEVEL 2
EDIT MODULES? (cont.)	MODULE MENU ADD MODULE (cont.)	FULL NAME? (applies to Digital I/O Module, 80258)	Edit input name assignment Entry for each input displays only when Manual Entry is selected from the input tags edit function list
		OFF LABEL? (applies to Digital I/O Module, 80258)	Edit input OFF label assignment Default: OFF Entry for each input displays only when Manual Entry is selected from the input tags edit function list
		ON LABEL? (applies to Digital I/O Module, 80258)	Edit input ON label assignment Default: On Entry for each input displays only when Manual Entry is selected from the input tags edit function list
EDIT MODULES? (cont.)	MODULE MENU ADD MODULE (cont.)	EDIT OUTPUT NAMES (applies to Digital I/O Module, 80258)	Output name edit options: NO (default) YES Output names may be chosen and edited when YES is selected from the edit option list Selecting NO initiates a SAVING CONFIGURATION display followed by a user interactive setup routine. At completion of routine, SITE SETUP COMPLETE displays briefly before returning the Function Screen to the Top Level Display.

TABLE 6-1: SITE SETUP MENU

SCREENS			FUNCTIONS / DESCRIPTIONS
LEVEL 1	LEVEL 2	LEVEL 1	LEVEL 2
		<p>OUTPUT TO EDIT? (applies to Digital I/O Module, 80258)</p>	<p>Output name selection list: 01: N1 DI01 02: N1 DI02 03: N1 DIO3 04: N1 DI04 Exit</p> <p>Entry for each output may be sequentially accessed when Yes is selected from the Output name edit options list</p>
		<p>OUTPUT (Number) Tags? (applies to Digital I/O Module, 80258)</p>	<p>Output tags edit function list: Default Manual Entry</p> <p>Entry displays only when Yes is selected from the Output name edit options list</p>
EDIT MODULES? (cont.)	MODULE MENU ADD MODULE (cont.)	<p>TAG? (applies to Digital I/O Module, 80258)</p>	<p>Edit Output tag assignment name</p> <p>Entry for each input displays only when Manual Entry is selected from the Output Tags edit function list</p>
		<p>FULL NAME? (applies to Digital I/O Module, 80258)</p>	<p>Edit Output name assignment</p> <p>Entry for each input displays only when Manual Entry is selected from the Output Tags edit function list</p>
		<p>OFF LABEL? (applies to Digital I/O Module, 80258)</p>	<p>Edit Output OFF label assignment Default: OFF</p> <p>Entry for each output displays only when Manual Entry is selected from the Output Tags edit function list</p>

TABLE 6-1: SITE SETUP MENU

SCREENS			FUNCTIONS / DESCRIPTIONS
LEVEL 1	LEVEL 2	LEVEL 1	LEVEL 2
		ON LABEL? (applies to Digital I/O Module, 80258)	Edit Output ON label assignment Default: On Entry for each output displays only when Manual Entry is selected from the Output Tags edit function list
	MODULE MENU CHANGE MODULE		Allows the input and/or output name of a module installed on the 4000 GCP Echelon network to be changed.
EDIT MODULES? (cont.)	MODULE MENU CHANGE MODULE (cont.)	MODULE TO CHANGE (applies to Digital I/O Module, 80258)	Module list: DI01 DI02 DI03 DI04 DI05 DI06 Exit
		MODULE NAME	Allows an existing module name to be selected Default: DIO1
		EDIT INPUT	Input name edit options: NO (default) YES Input names may be chosen and edited when YES is selected from the edit option list Selecting NO advances the menu display to EDIT OUTPUT NAMES? Menu item

TABLE 6-1: SITE SETUP MENU

SCREENS			FUNCTIONS / DESCRIPTIONS
LEVEL 1	LEVEL 2	LEVEL 1	LEVEL 2
		INPUT TO EDIT?	Input name selection list: 01: N1 DI01 thru 24: N1 DI24 Entry for each input may be sequentially accessed when Yes is selected from the Input name edit options list
		INPUT 01 thru 24 Tags?	Input tags edit function list: Default Manual Entry Entry displays only when Yes is selected from the Input name edit options list
EDIT MODULES? (cont.)	MODULE MENU CHANGE MODULE (cont.)	TAG? (applies to Digital I/O Module, 80258)	Edit input tag assignment name Entry for each input displays only when Manual Entry is selected from the input tags edit function list
		FULL NAME? (applies to Digital I/O Module, 80258)	Edit input name assignment Entry for each input displays only when Manual Entry is selected from the input tags edit function list
		OFF LABEL? (applies to Digital I/O Module, 80258)	Edit input OFF label assignment Default: OFF Entry for each input displays only when Manual Entry is selected from the input tags edit function list
		ON LABEL? (applies to Digital I/O Module, 80258)	Edit input ON label assignment Default: On Entry for each input displays only when Manual Entry is selected from the input tags edit function list

TABLE 6-1: SITE SETUP MENU

SCREENS			FUNCTIONS / DESCRIPTIONS
LEVEL 1	LEVEL 2	LEVEL 1	LEVEL 2
EDIT MODULES? (cont.)	MODULE MENU CHANGE MODULE (cont.)	EDIT OUTPUT NAMES (applies to Digital I/O Module, 80258)	Output name edit options: NO (default) YES Output names may be chosen and edited when YES is selected from the edit option list Selecting NO returns the display to the MODULE MENU CHANGE MODULE screen.
		OUTPUT TO EDIT? (applies to Digital I/O Module, 80258)	Output name selection list: 01: N1 DI01 02: N1 DI02 03: N1 DIO3 04: N1 DI04 Exit Entry for each output may be sequentially accessed when Yes is selected from the Output name edit options list
		OUTPUT (number) Tags? (applies to Digital I/O Module, 80258)	Output tags edit function list: Default Manual Entry Entry displays only when Yes is selected from the Output name edit options list
		TAG? (applies to Digital I/O Module, 80258)	Edit Output tag assignment name Entry for each input displays only when Manual Entry is selected from the Output Tags edit function list
EDIT MODULES? (cont.)	MODULE MENU CHANGE MODULE (cont.)	FULL NAME? (applies to Digital I/O Module, 80258)	Edit Output name assignment Entry for each input displays only when Manual Entry is selected from the Output Tags edit function list

TABLE 6-1: SITE SETUP MENU

SCREENS			FUNCTIONS / DESCRIPTIONS
LEVEL 1	LEVEL 2	LEVEL 1	LEVEL 2
		OFF LABEL? (applies to Digital I/O Module, 80258)	Edit Output OFF label assignment Default: OFF Entry for each output displays only when Manual Entry is selected from the Output Tags edit function list
		ON LABEL? (applies to Digital I/O Module, 80258)	Edit Output ON label assignment Default: On Entry for each output displays only when Manual Entry is selected from the Output Tags edit function list
		MODULE TO CHANGE (applies to Digital I/O Module, 80258)	Module list: DI01 DI02 DI03 DI04 DI05 DI06 Exit
	MODULE MENU REPLACE MODULE		Allows a module installed on the 4000 GCP Echelon network to be replaced. Selecting EXIT from this screen initiates a SAVING CONFIGURATION display followed by a user interactive setup routine.
EDIT MODULES? (cont.)	MODULE MENU REPLACE MODULE	MODULE TO REPLACE (dependent on modules installed)	Module list: DI01 DI02 DI03 DI04 DI05 DI06 Exit

TABLE 6-1: SITE SETUP MENU

SCREENS			FUNCTIONS / DESCRIPTIONS
LEVEL 1	LEVEL 2	LEVEL 1	LEVEL 2
	MODULE MENU RE-INSTALL MODULE		Allows a module to be re-installed on the 4000 GCP Echelon network. Selecting EXIT from this screen initiates a SAVING CONFIGURATION display followed by a user interactive setup routine.
		MODULE TO RE-INSTALL	Module list: DI01 DI02 DI03 DI04 DI05 DI06 Exit
	MODULE MENU REMOVE MODULE		Allows a module installed on the 4000 GCP Echelon network to be removed. Selecting EXIT from this screen initiates a SAVING CONFIGURATION display followed by a user interactive setup routine.
EDIT MODULES? (cont.)	MODULE MENU REMOVE MODULE (cont.)	MODULE TO REMOVE	Module list: DI01 DI02 DI03 DI04 DI05 DI06 none7 Exit
		REMOVE (Module)	Remove module options: NO (default) YES Selected module is removed from the 4000 GCP Echelon network when YES is selected. Selecting NO returns the display to the MODULE MENU REMOVE MODULE screen.

TABLE 6-1: SITE SETUP MENU

SCREENS			FUNCTIONS / DESCRIPTIONS
LEVEL 1	LEVEL 2	LEVEL 1	LEVEL 2
	MODULE MENU IDENTIFY MODULE		Allows the name and type of an installed module to be identified by the 4000 GCP Echelon network. Selecting EXIT from this screen initiates a SAVING CONFIGURATION display followed by a user interactive setup routine.
	MODULE MENU FACTORY CAL ILOD		For Siemens Factory use only. Selecting EXIT from this screen initiates a SAVING CONFIGURATION display followed by a user interactive setup routine.

6.1.3.2 MENU Key

Activating the **MENU** key provides accesses to the Main Menu (see Figure 6-19 through Figure 6-22).

- This menu:
 - Is described in Table 6-2
 - May be accessed directly from the Top Level Display by selecting the **ENTER** key.

**Table 6-2:
MAIN MENU**

TABLE 6-2: MAIN MENU

SCREENS			FUNCTION / DESCRIPTION
LEVEL 1	LEVEL 2	LEVEL 1	LEVEL 2
MAIN MENU VIEW ALARMS			Alarm incident display
MAIN MENU DATE & TIME	DATE / TIME		SEAR date and time
	AUTO-MATIC DST ADJUST-MENT?		Automatic daylight saving time (DST) option
	TIME ZONE?		Site time zone selection

TABLE 6-2: MAIN MENU

SCREENS			FUNCTION / DESCRIPTION	
LEVEL 1	LEVEL 2	LEVEL 1	LEVEL 2	
	SAVE NEW DATE / TIME?		Option to save date and time changes	
	SAVING DATE TIME		Automatic date/time save. Occurs when response to SAVE prompt is YES. Bypassed when response is NO.	
MAIN MENU SITE SETUP	SITE SETUP MENU ALL SETUP		Provides access to SITE SETUP key menu, Table 6-1.	
	SITE SETUP MENU BATTERY CALIBRATION		Provides access to battery calibration sequence.	
MAIN MENU SITE SETUP (CONT)	SITE SETUP MENU LAMP CALIBRATION		Provides access to monitored lamp calibration sequence.	
	SITE SETUP MENU EXIT		Returns display to MAIN MENU SITE SETUP screen.	
	REPORT MENU INCIDENT REPORT (CONT)	VIEW ENTRY SLOT 1 thru SLOT 5		Selects incident entry to be viewed
		Site:		Designates incident site
		Milepost DOT #:		Designates milepost and DOT number of incident site
		Incident Time:		Designates time of incident
		Incident Report		Sequential list of incident reports
		ENTRIES TO VIEW?		Selects entries to be viewed
		Site:		Designates repair site
		Milepost DOT #:		Designates repair site DOT number

TABLE 6-2: MAIN MENU

SCREENS			FUNCTION / DESCRIPTION
LEVEL 1	LEVEL 2	LEVEL 1	LEVEL 2
		Part #:	Designates part number of item repaired
		Serial #:	Designates serial number of item repaired
		Latest Exec:	Designates the executive software of the item repaired
MAIN MENU REPORTS (CONT)	REPORT MENU EVENT REPORTS		Provides access to EVENT REPORT Key menu, Table 6-3.
MAIN MENU REPORTS (CONT)	REPORT MENU INCIDENT REPORT (CONT)	Latest App:	Designates the application software of the item repaired
		Repair Time:	Designates time of repair
		Repair(s) Report	Sequential list of repair reports
MAIN MENU REPORTS	REPORT MENU EXIT		Returns screen to MAIN MENU REPORTS
MAIN MENU EVENT STREAM			Displays events as they are entered into log
MAIN MENU TESTS			Displays user defined tests
MAIN MENU CONFIGURATION	CONFIGURATION SITE REPORT	SITE NAME?	Site name selection
		MILEPOST?	Site mile post selection
		DOT #	Enter Department of Transportation crossing number selection
		TESTER TYPE?	Crossing, Wayside
		DATE FORMAT?	mm-dd-yyyy, dd-mm-yyyy
		TEMP. FORMAT?	Fahrenheit, Celsius
		INDICATE HOLD (SEC)?	0 - 99

TABLE 6-2: MAIN MENU

SCREENS			FUNCTION / DESCRIPTION
LEVEL 1	LEVEL 2	LEVEL 1	LEVEL 2
		INDICATE REFRESH (SEC)?	0 - 999
		SITE ATCS ADDRESS ?	7.RRR.LLL.GGG. 99.01
		SITE TYPE?	No Communication, Bullhorn/ModBus, Dial-up, Polling Recorder, Node, Collector, CDS- 902X
MAIN MENU CONFIGURATION (CONT)	CONFIGURATION SERIAL PORTS	EDIT PORT? AUX	AUX PORT BAUD? List: 57600 38400 9600 (default) 4800 2400 1200 600
			AUX PORT DATA BITS? List: 0 thru 9 Default: 8
			AUX PORT PARITY? List: None (default) Odd Even
			AUX PORT STOP BITS? List: 0 thru 9 Default: 1
			AUX PORT FLOW CONTROL? List: None (default) Hardware Radio
		EDIT PORT? USER	Same as AUX Port

TABLE 6-2: MAIN MENU

SCREENS			FUNCTION / DESCRIPTION
LEVEL 1	LEVEL 2	LEVEL 1	LEVEL 2
MAIN MENU CONFIGURATION (CONT)	CONFIGURATION DIGITAL INPUTS	INPUT TO EDIT?	Selection of one of 63 digital inputs
		INPUT (Number) ALGORITHM?	Select digital input algorithm: Discrete (default) TSS (trackside sensor) GFT (Ground Fault Tester)
		INPUT (Number) TAGS?	Designates the tag assigned to the selected digital input
MAIN MENU CONFIGURATION (CONT)	CONFIGURATION DIGITAL INPUTS	ON DEBOUNCE (MS)?	Sets the number of milliseconds that an input must be energized to be designated as ON Default: 100 ms Range: 0 to 99999 ms
		OFF DEBOUNCE (MS)?	Sets the number of milliseconds that an input must be de-energized to be designated as OFF Default: 100 ms Range: 0 to 99999 ms
		TOGGLE PERIOD (MS)?	Sets the toggling interval in milliseconds An input changing state four or more times during set period is determined to be TOGGING Default: 1000 ms Range: 0 to 99999 ms
MAIN MENU CONFIGURATION (CONT)	CONFIGURATION BATTERY INPUTS	BATTERY TO EDIT	Battery list: 01: VBN (default) 02: SSCC1 03: SSCC2 04: Int. Temp 05: Ext. Temp 06: Batt Mon Exit
		BATTERY (number) TAGS?	Battery (type) tag list: Default Manual Entry

TABLE 6-2: MAIN MENU

SCREENS			FUNCTION / DESCRIPTION
LEVEL 1	LEVEL 2	LEVEL 1	LEVEL 2
		TAG? (type)	Battery (type) tag Entry displays only when Manual Entry is selected from battery (type) tag list
MAIN MENU CONFIGURATION (CONT)	CONFIGURATION BATTERY INPUTS (CONT)	FULL NAME?	Battery type) name Entry displays only when Manual Entry is selected from battery (number) tag list
		(Battery Type) SAMPLE PERIOD (MS)?	Set battery voltage or temperature sample period. Default: 100 ms Range: 0 to 99999 ms
		(Battery Type) RESOLUTION (V)?	Sets the change in voltage or temperature (degrees Fahrenheit) required to initiate event log entry Default: 100 Range: 0 to 99999
		(Battery Type) AVERAGE SAMPLES ?	Sets the number of consecutive 10 ms samples to average to determine battery voltage 32 samples (default) 16 samples 8 samples 4 samples 2 samples no averaging
MAIN MENU CONFIGURATION (CONT)	CONFIGURATION RELAY OUTPUTS	RELAY TO EDIT	Relay list: 01: RTU1 (default) 02: RTU2 03: RTU3 04: RTU4 05: RTU5 06: RTU6 07: RLY1 08: RLY2

TABLE 6-2: MAIN MENU

SCREENS			FUNCTION / DESCRIPTION
LEVEL 1	LEVEL 2	LEVEL 1	LEVEL 2
		RELAY (Number) TAGS?	Relay (number) tag list: Default Manual Entry
MAIN MENU CONFIGURATION (CONT)	CONFIGURATION RELAY OUTPUTS (CONT)	RELAY TO EDIT	Relay list: 01: RTU1 (default) 02: RTU2 03: RTU3 04: RTU4 05: RTU5 06: RTU6 07: RLY1 08: RLY2
		RELAY (Number) TAGS?	Relay (number) tag list: Default Manual Entry
		TAG?	Relay (type) tag Entry displays only when Manual Entry is selected from relay tag list
		FULL NAME?	Relay (number) name Entry displays only when Manual Entry is selected from relay tag list
		OFF LABEL?	Relay (number) OFF label Entry displays only when Manual Entry is selected from relay tag list
		ON LABEL?	Relay (number) ON label Entry displays only when Manual Entry is selected from relay tag list
		TOGGLE LABEL?	Relay (number) toggle label. Entry displays only when Manual Entry is selected from relay 1 tag list

TABLE 6-2: MAIN MENU

SCREENS			FUNCTION / DESCRIPTION
LEVEL 1	LEVEL 2	LEVEL 1	LEVEL 2
MAIN MENU CONFIGURATION (CONT)	CONFIGURATION RELAY OUTPUTS (CONT)	PULSE LABEL?	Relay (number) pulse label. Entry displays only when Manual Entry is selected from relay 1 tag list
		ON PULSE TIME (S)?	Sets the relay ON pulse time (in seconds) Default: 1 sec. Range: 0 to 9999 sec.
		OFF PULSE TIME (S)?	Sets the relay OFF pulse time (in seconds) Default: 1 sec. Range: 0 to 9999 sec.
		TOGGLE PERIOD(S)?	Sets the interval between relay toggle cycles in seconds Toggle cycle: a relay state change from ON to OFF to ON Default: 1 sec. Range: 0 to 9999 sec.
		DUTY CYCLE (%)?	Sets the percentage of time that the relay is in the ON state during a toggle cycle Default: 50% Range: 0 to 99%
MAIN MENU CONFIGURATION (CONT)	CONFIGURATION TEST LED'S	LED TO EDIT	LED list: 01: T1 (default) thru 16: T16
		TEST LED TAGS?	LED (number) tag list: Default Manual Entry
		TAG?	LED (number) tags TAG entries display only when Manual Entry is selected from the LED TAGS list

TABLE 6-2: MAIN MENU

SCREENS			FUNCTION / DESCRIPTION
LEVEL 1	LEVEL 2	LEVEL 1	LEVEL 2
MAIN MENU CONFIGURATION (CONT)	CONFIGURATION TEST LED'S	FULL NAME?	LED name Full Name entries display only when Manual Entry is selected from the LED TAGS list
MAIN MENU CONFIGURATION (CONT)	CONFIGURATION MODULES	MODULE MENU ADD MODULE	Same as EDIT MODULES? screen of Site Setup menu. See Table 6-1.
MAIN MENU CONFIGURATION (CONT)	CONFIGURATION RESTORE DEFAULTS	LOOSE ALL SETTINGS AND RESTORE DEFAULTS?	Allows the: current settings to be cleared all screens to be returned to their default settings
MAIN MENU CONFIGURATION (CONT)	CONFIGURATION SAVE CHANGES		Allows configuration changes to be saved.
MAIN MENU DIAG / MONITOR			Provides access to DIAG Key menu. See Table 6-5.
MAIN MENU INCIDENT STORAGE	INCIDENT STORAGE VIEW	VIEW ENTRY (SLOT 1 thru 5)	Allows sequential access to each of five incident reports.
MAIN MENU INCIDENT STORAGE	INCIDENT STORAGE SAVE	SAVE ENTRY (SLOT 1 thru 5)	Allows incidents to be saved in one of five sequentially accessible slots. Supervisor password is required to initiate the save operation.
MAIN MENU INCIDENT STORAGE	INCIDENT STORAGE DELETE	DELETE ENTRY (SLOT 1 thru 5)	Allows incidents to be deleted from one of five sequentially accessible slots. Supervisor password is required to initiate the delete operation.

TABLE 6-2: MAIN MENU

SCREENS			FUNCTION / DESCRIPTION
LEVEL 1	LEVEL 2	LEVEL 1	LEVEL 2
MAIN MENU REPAIR HISTORY	REPAIR HISTORY VIEW	ENTRIES TO VIEW	Allows repair history entries to be viewed for the following selectable parameters: All Init Exec S/W UDT S/W APP S/W Factory Module RTC Manual
MAIN MENU REPAIR HISTORY	REPAIR HISTORY ADD	REPAIR ENTRY	Allows an entry to be made to the repair log
MAIN MENU CHANGE PASS- WORD	WHICH PASS- WORD?		Allows current password to be changed. Three passwords may be changed: Maintenance Supervisor Siemens personnel To change a password both the old and new passwords must be entered.
MAIN MENU FACTORY TEST			Reserved for Siemens factory tests.
MAIN MENU VERSIONS			Alternately displays the current executive and application software version.

6.1.3.3 EVENT REPORT Key

The Interface menu screens that may be accessed by activating the **EVENT REPORT** key are shown in Figure 6-22 (Chart GA) and Table 6-3 depicts the information shown.

**Table 6-3:
EVENT REPORT Key Menu**

TABLE 6-3: EVENT REPORT KEY MENU

SCREENS			FUNCTION / DESCRIPTION
LEVEL 1	LEVEL 2	LEVEL 3	
STARTING TIME			Report start time
STARTING DATE			Report start date
ENDING TIME			Report ending time
ENDING DATE			Report ending date
EVENT(S)			Sequential list of events

6.1.3.4 COMM Setup Key

The Interface menu screens that may be accessed by activating the **COMM SETUP** key are:

- shown in Figure 6-32, (Chart LB)
- described in Table 6-4

Table 6-4: COMM SETUP Key Menu

TABLE 6-4: COMM SETUP KEY MENU

SCREENS			FUNCTION / DESCRIPTION
LEVEL 1	LEVEL 2	LEVEL 3	
SITE ATCS ADDRESSES?			7.RRR.LLL.GGG.99.01 . All locations must be programmed with a unique address assigned by the RR if ATCS communications are used. However, default address of 7.620.100.100.99.01 may be used at stand alone locations (No Communication)
SITE TYPE?			Site type list: No Communication Bullhorn/Mod-Bus Dial-up Node Collector CDS-902X
USER PORT BAUD?			USER port baud list: 57600 38400 19200 9600 4800 2400 1200 600

TABLE 6-4: COMM SETUP KEY MENU

SCREENS			FUNCTION / DESCRIPTION
LEVEL 1	LEVEL 2	LEVEL 3	
USER PORT DATA BITS			USER port data bits selection
USER PORT PARITY?			USER port parity set list: None Odd Even
USER PORT STOP BITS			USER port stop bits selection
USER PORT FLOW CONTROL			USER port flow control list: None Hardware Radio
AUX PORT BAUD?			AUX port baud list: 57600 38400 19200 9600 4800 2400 1200 600
AUX PORT DATA BITS			AUX port data bits selection
AUX PORT PARITY?			AUX port parity set list: None Odd Even
AUX PORT STOP BITS			AUX port stop bits selection
AUX PORT FLOW CONTROL?			AUX port flow control list: None Hardware Radio

6.1.3.5 DIAG Key

The Interface menu screens that may be accessed by activating the **DIAG** key are:

- shown in Figure 6-33, (Chart MA)
- described in Table 6-5

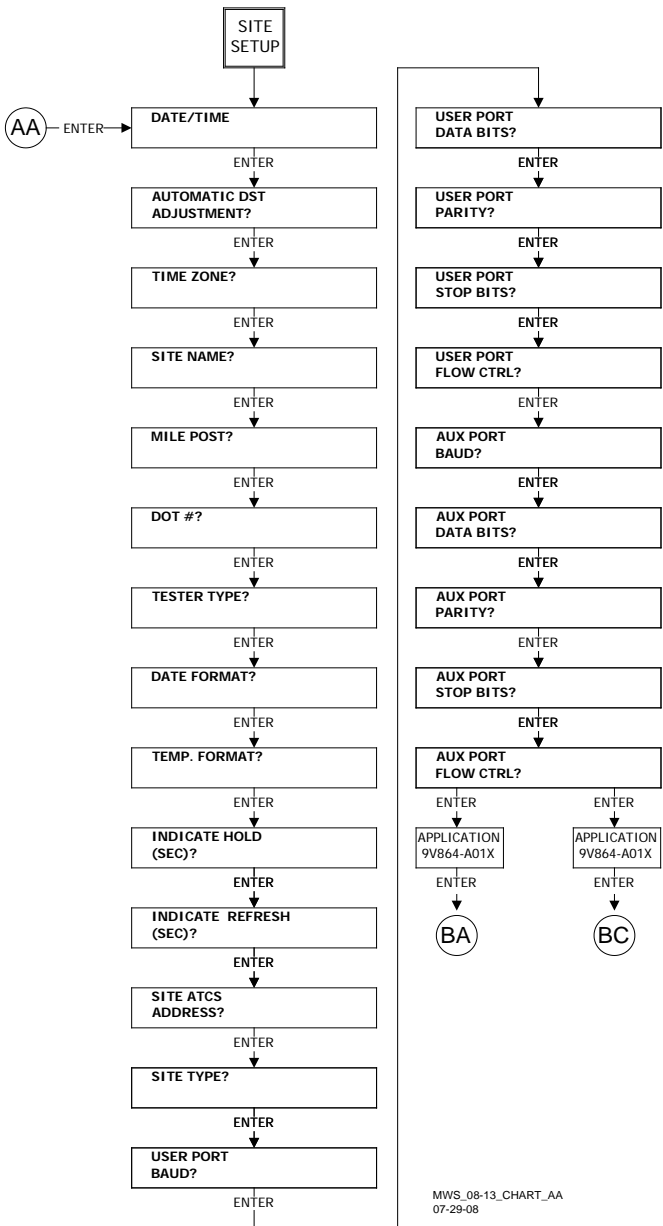
**Table 6-5:
DIAG Key Menu**

TABLE 6-5: DIAG KEY MENU

SCREENS			FUNCTION / DESCRIPTION
LEVEL 1	LEVEL 2	LEVEL 3	
DIAG / MONITOR DIGITAL INPUTS	VIEW MODE?		Digital input monitor function list: ALL INPUTS SINGLE INPUT When ALL INPUTS is selected, the binary states of the digital inputs may be serially displayed. When SINGLE INPUT is selected the state of each digital input may be individually displayed.
DIAG / MONITOR BATTERIES	BATTERY?		Battery input monitor function list: VBN SSCC1 SSCC2 Int. Temp Ext. Temp BATT MON A value displays for each selected item.
DIAG / MONITOR RELAYS	RELAY?		Relay monitor list: RTU1 RTU2 RTU3 Int. Temp Ext. Temp BATT MON Operational parameters display for each selected item.
DIAG / MONITOR NETWORK I/O	MODULE TO MONITOR?		Module monitor list: DI01 DI02 DI03 DI04 DI05 DI06 EXIT View Mode screens display for each selected module.
		VIEW MODE? INPUTS 1-12	Displays the binary state of inputs 1 thru 12 for the selected module.

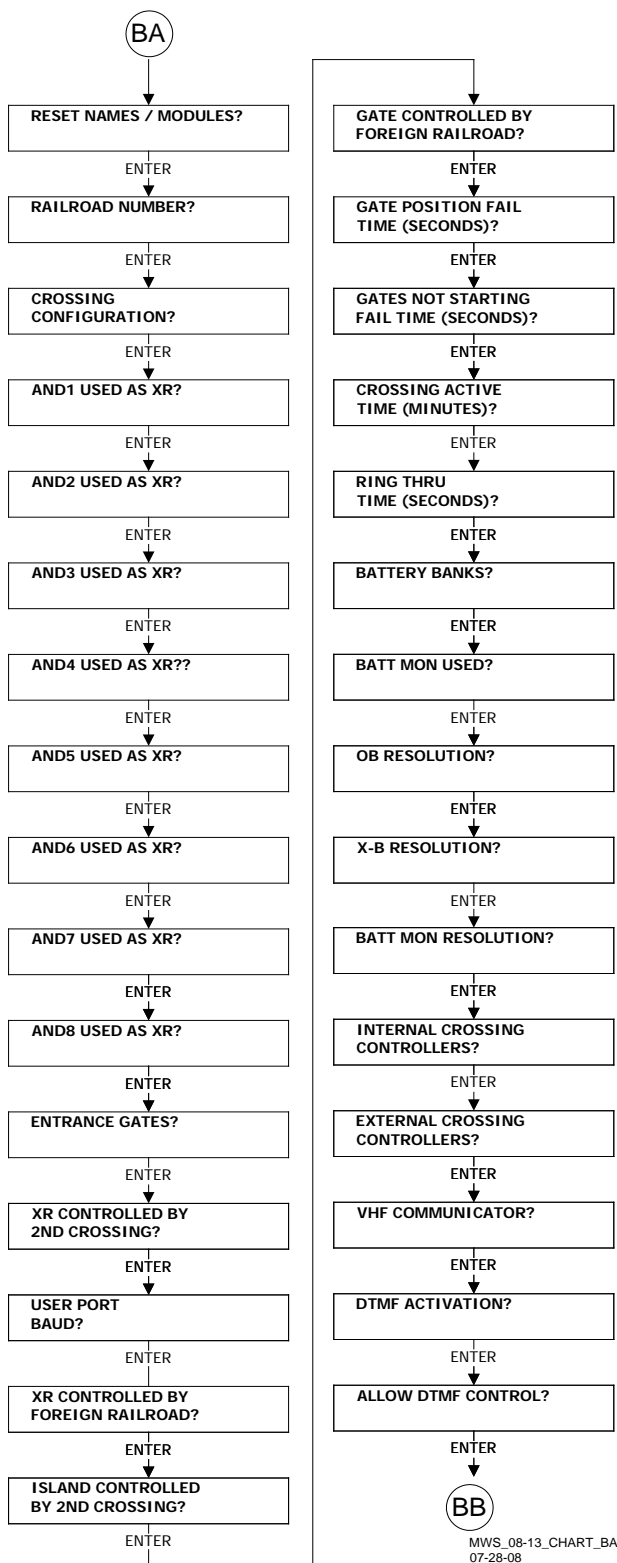
TABLE 6-5: DIAG KEY MENU

SCREENS			FUNCTION / DESCRIPTION
LEVEL 1	LEVEL 2	LEVEL 3	
		VIEW MODE? INPUTS 13-24	Displays the binary state of inputs 13 thru 24 for the selected module.
		VIEW MODE? SINGLE INPUT	Displays the binary state of selected module input.
	MODULE TO MONITOR?	VIEW MODE? ALL OUTPUTS	Displays the binary state of all 4 outputs.
		VIEW MODE? SINGLE OUTPUT	Displays the binary state of a selected output.
		VIEW MODE? COMM STATUS	Displays the communication status of the selected module.
DIAG / MONITOR FIELD COMM			Displays the SEAR field communications TX and RX status.



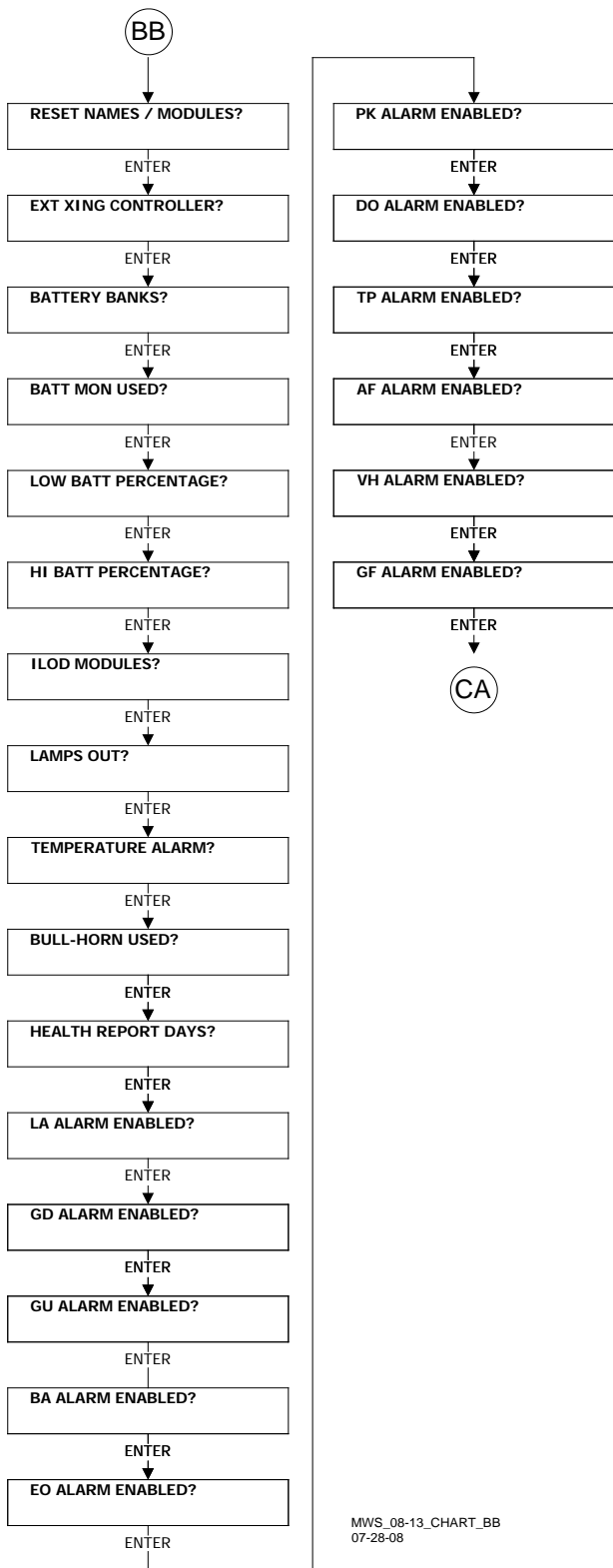
**Figure 6-2:
Chart AA – Site Setup Menu (Stage 1 All CDLs)**

- Link AA is found on Chart FA (Figure 6-21)
- Link BA for CDL 9V864-A01X is found on Chart BA (Figure 6-3)
- Link BC for CDL 9V814-A01X is found on Chart BC (Figure 6-5)



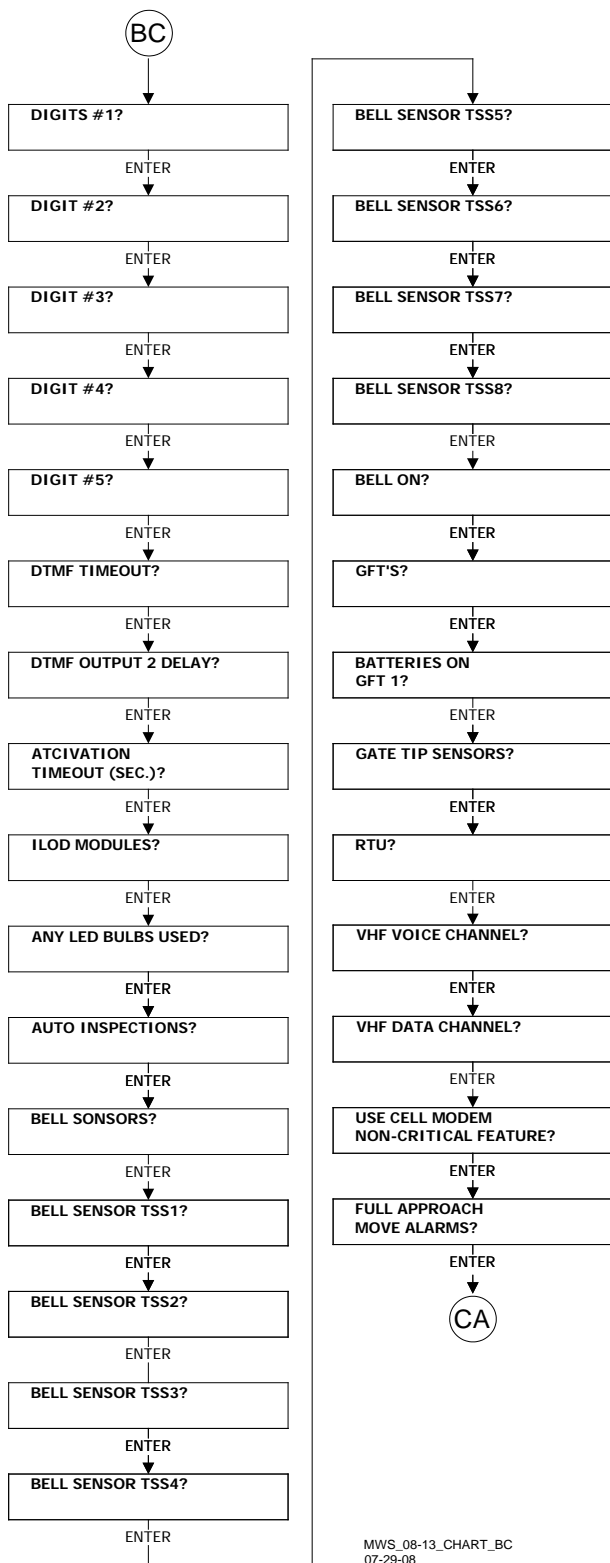
**Figure 6-3:
Chart BA – Site Setup Menu
(Stage 2 – For generic application 9V864-A01X)**

- Link BA is found on Chart AA (Figure 6-2)
- Link BB is found on Chart BB (Figure 6-4)



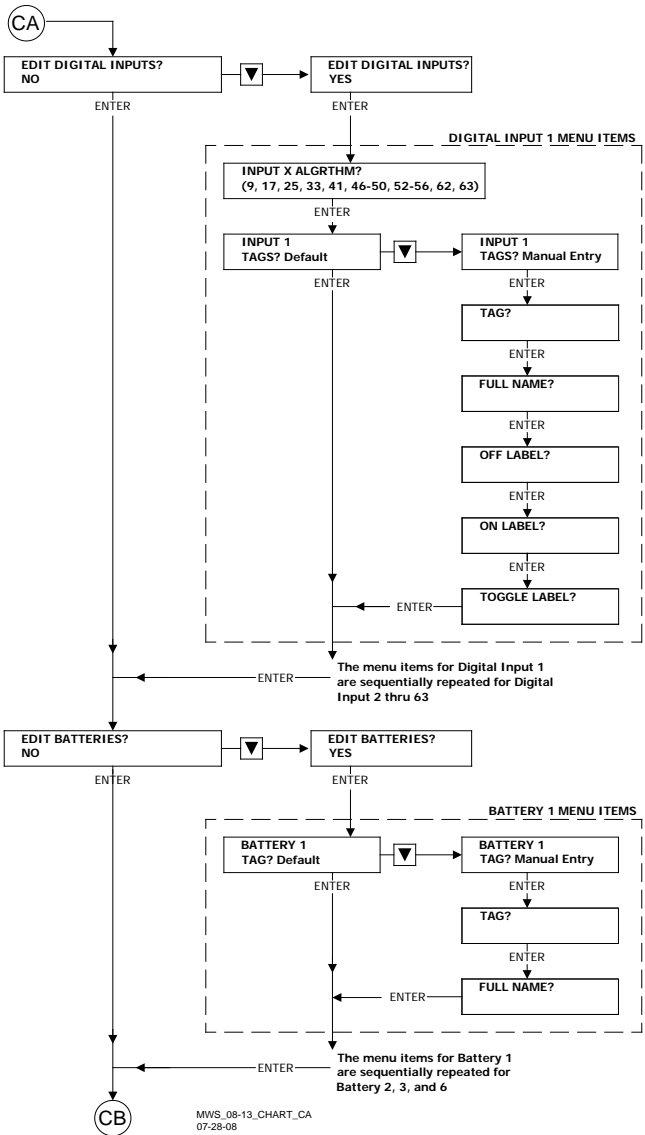
**Figure 6-4:
Chart BB – Site Setup Menu
(Stage 2 – For generic application 9V864-A01X)**

- Link BB is found on Chart BA (Figure 6-3)
- Link CA is found on Chart CA (Figure 6-6)



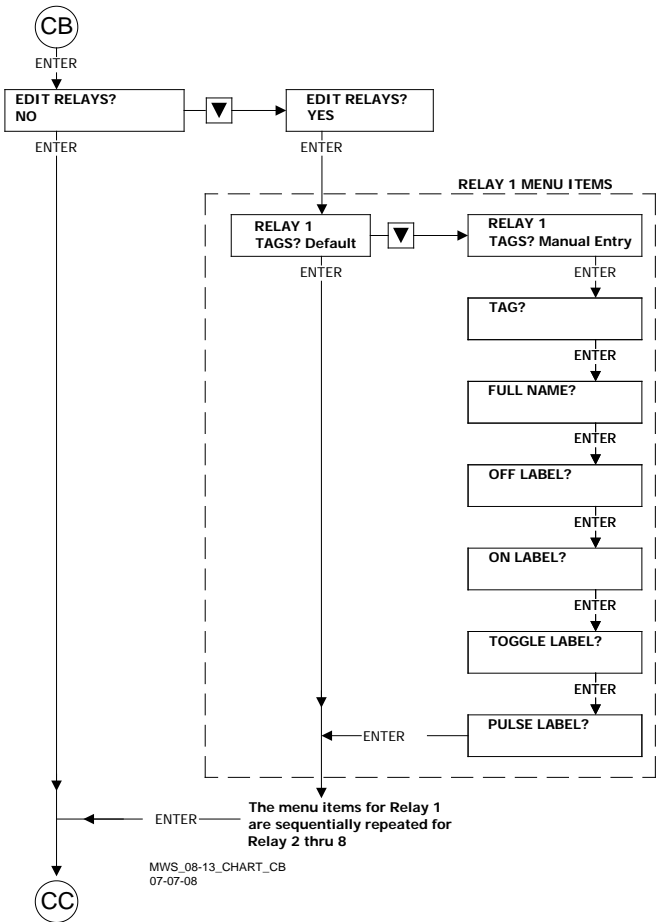
**Figure 6-5:
Chart BC – Site Setup Menu
(Stage 2 – For application 9V814-A01X only)**

- Link BC is found on Chart AA (Figure 6-2)
- Link CA is found on Chart CA (Figure 6-6)



**Figure 6-6:
Chart CA– Site Setup Menu (Stage 3, Part 1)**

- Link CA for CDL 9V864-A01X is found on Chart BB (Figure 6-4)
- Link CA for CDL 9V814-A01X is found on Chart BC (Figure 6-5)
- Link CB is found on Chart CB (Figure 6-7)



**Figure 6-7:
Chart CB – Edit Relays (Stage 3, Part 2)**

- Link CB is found on Chart CA (Figure 6-6)
- Link CC is found on Chart CC (Figure 6-8)

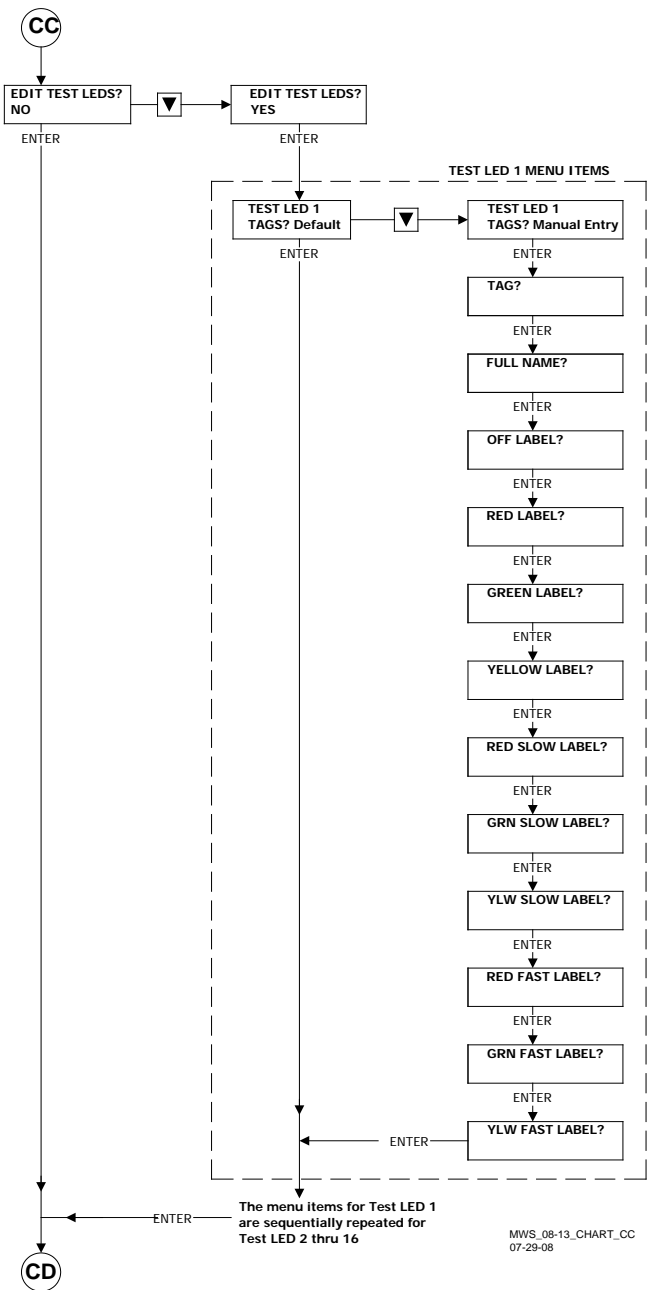
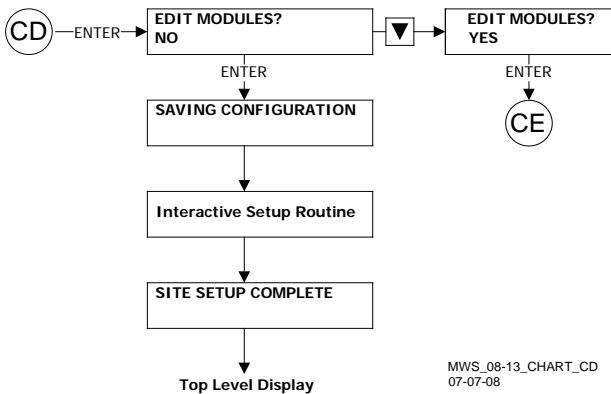


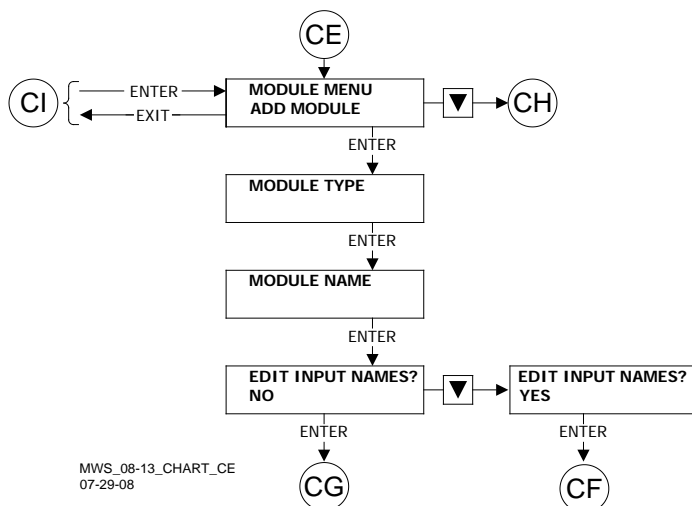
Figure 6-8:
Chart CC – Test LED Menu (Stage 3, Part 3)

- Link CC is found on Chart CB (Figure 6-7)
- Link CD is found on Chart CD (Figure 6-9)



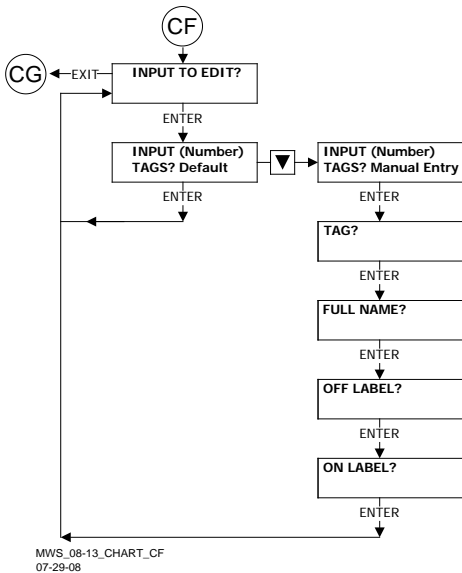
**Figure 6-9:
Chart CD – Edit Modules No/Yes (Stage 3, Part 4)**

- Link CD is found on Chart CC (Figure 6-8)
- Link CE is found on Chart CE (Figure 6-10)



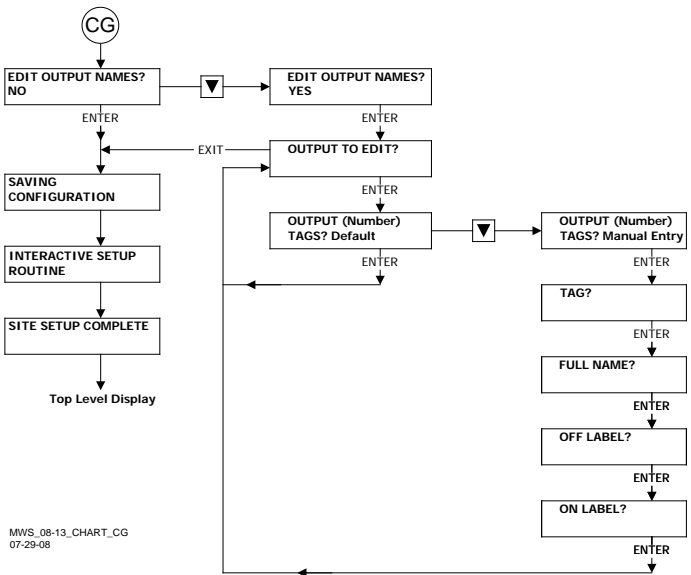
**Figure 6-10:
Chart CE – Edit Modules / Add Module
(Stage 3, Part 5)**

- Link CE is found on Chart CD (Figure 6-9)
- Link CF is found on Chart CF (Figure 6-11)
- Link CG is found on Chart CF (Figure 6-11) and on Chart CG (Figure 6-12)
- Link CH is found on Chart CH (Figure 6-13)
- Link CI is found on Chart NA (Figure 6-28)



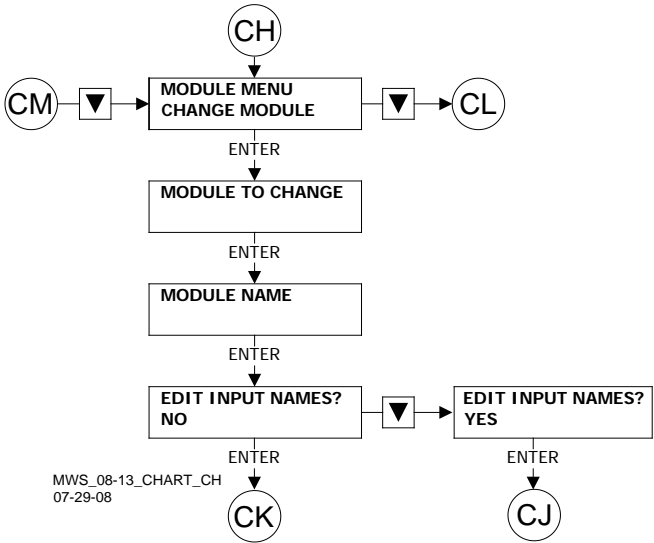
**Figure 6-11:
Chart CF – Add Module Input Names
(Stage 3, Part 6)**

- Link CF is found on Chart CE (Figure 6-10)
- Link CG is found on Chart CE (Figure 6-10) and is also found on Chart CG (Figure 6-12)



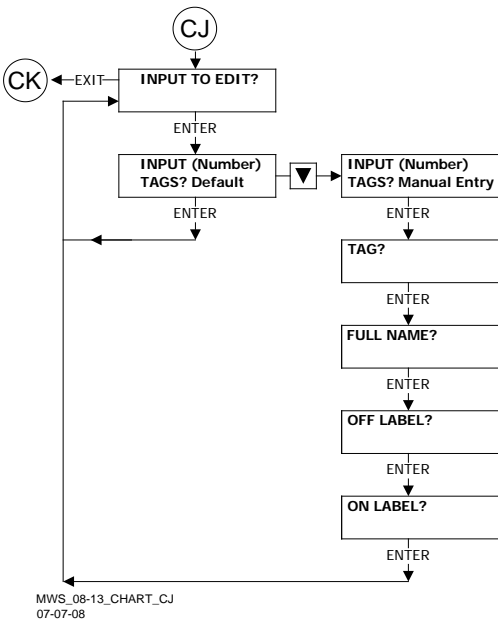
**Figure 6-12:
Chart CG – Add Module Output Names
(Stage 3, Part 7)**

- Link CG is found on Chart CE (Figure 6-10) and is also found Chart CF (Figure 6-11)



**Figure 6-13:
Chart CH – Edit Module / Change Module
(Stage 3, Part 8)**

- Link CH is found on Chart CE (Figure 6-10)
- Link CJ is found on Chart CJ (Figure 6-14)
- Link CK is found on Chart CJ (Figure 6-14) and is also found on Chart CK (Figure 6-15)
- Link CL is found on Chart CL (Figure 6-16)
- Link CM is found on Chart CK (Figure 6-15)



**Figure 6-14:
Chart CJ – Change Module Input Names
(Stage 3, Part 9)**

- Link CJ is found on Chart CH (Figure 6-13)
- Link CK is found on Chart CH (Figure 6-13) and also on Chart CK (Figure 6-14)

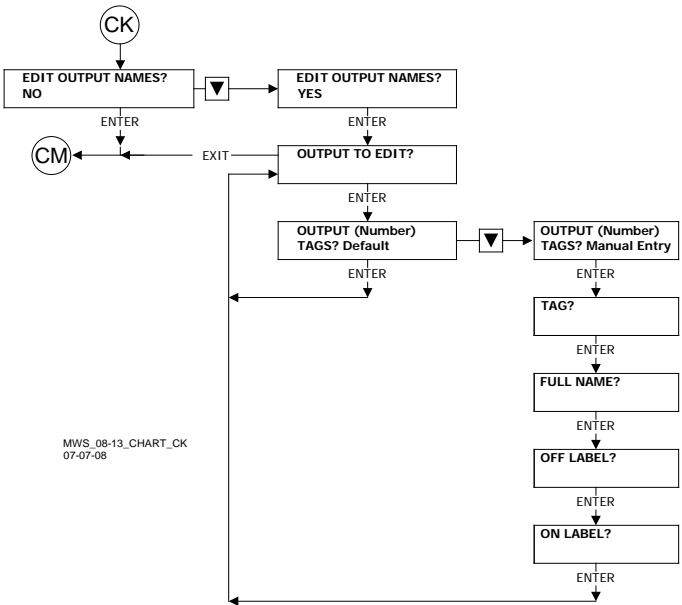


Figure 6-15:
Chart CK – Change Module Output Names
(Stage 3, Part 10)

- Link CK is found on Chart CH (Figure 6-13) and also on Chart CJ (Figure 6-13)
- Link CM is found on Chart CH (Figure 6-13)

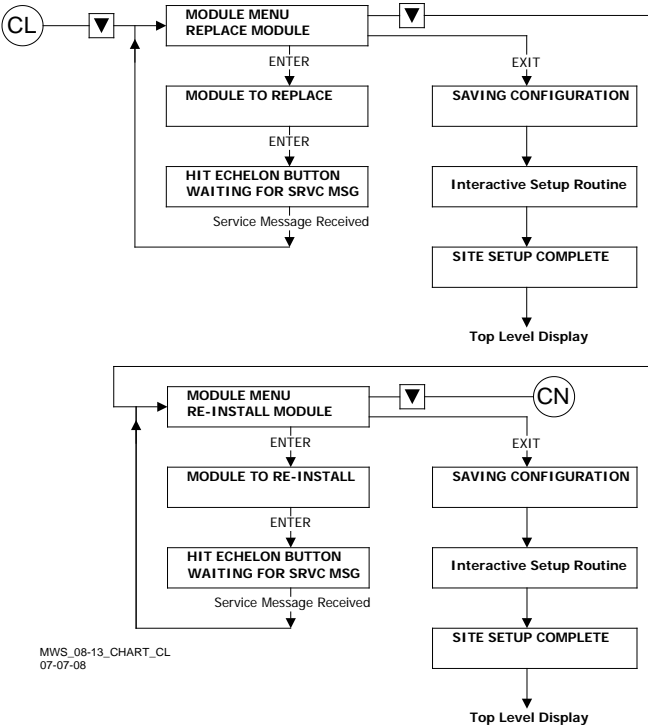
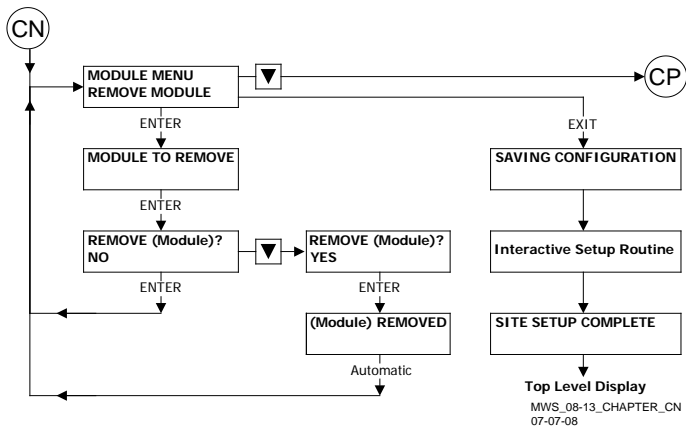


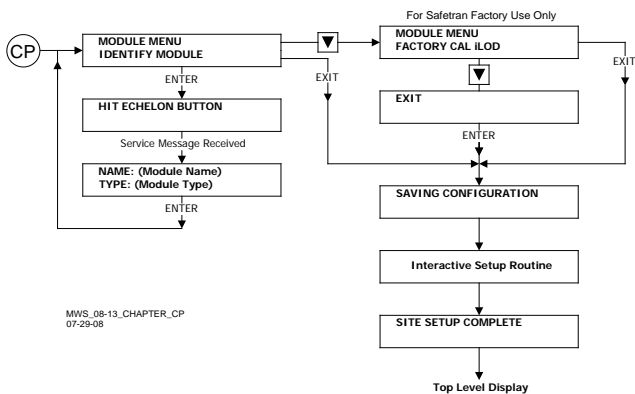
Figure 6-16:
Chart CL – Replace Module
(Stage 3, Part 11)

- Link CL is found on Chart CH (Figure 6-13)
- Link CN is found on Chart CN (Figure 6-17)



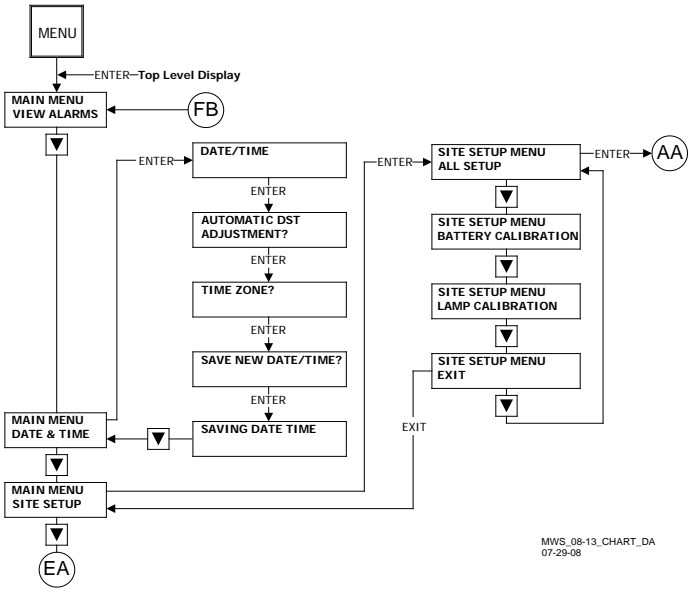
**Figure 6-17:
Chart CN – Remove Module
(Stage 3, Part 12)**

- Link CN is found on Chart CL (Figure 6-16)
- Link CP is found on Chart CP (Figure 6-18)



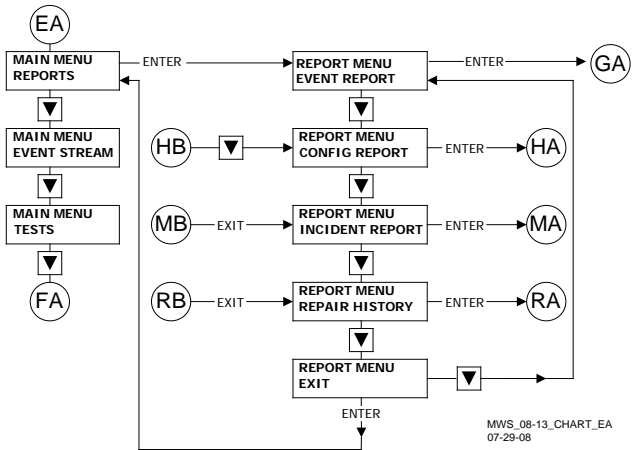
**Figure 6-18:
Chart CP – Identify Module
(Stage 3, Part 13)**

- Link CP is found on Chart CN (Figure 6-17)



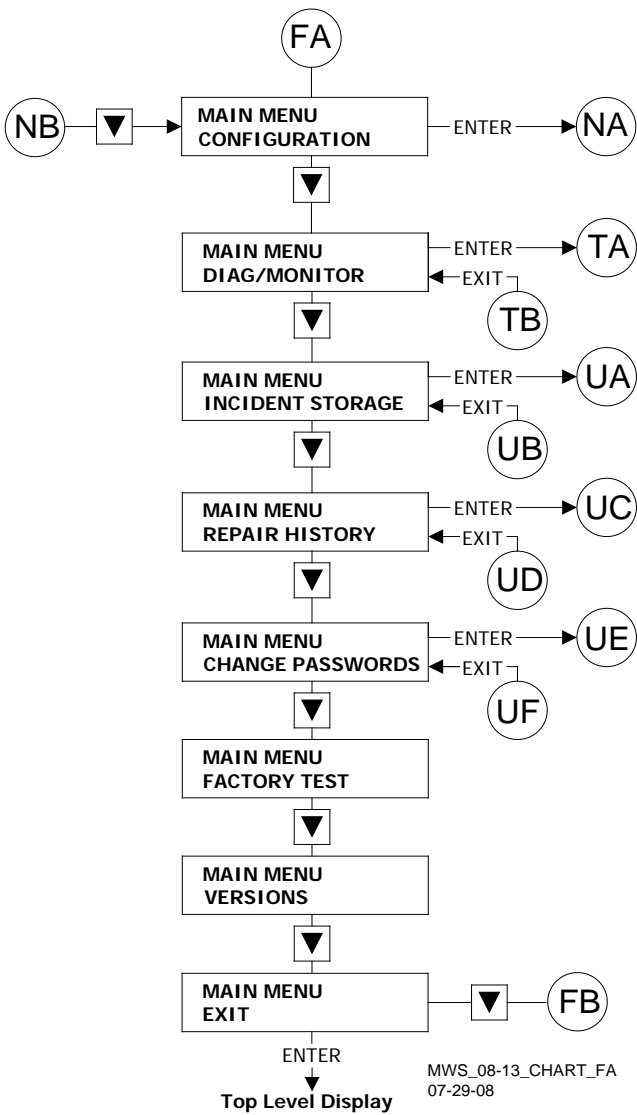
**Figure 6-19:
Chart DA – Main Menu – Part 1, Alarms**

- Link AA is found on Chart AA (Figure 6-2)
- Link EA is found on Chart EA (Figure 6-20)
- Link FB is found on Chart FA (Figure 6-21)



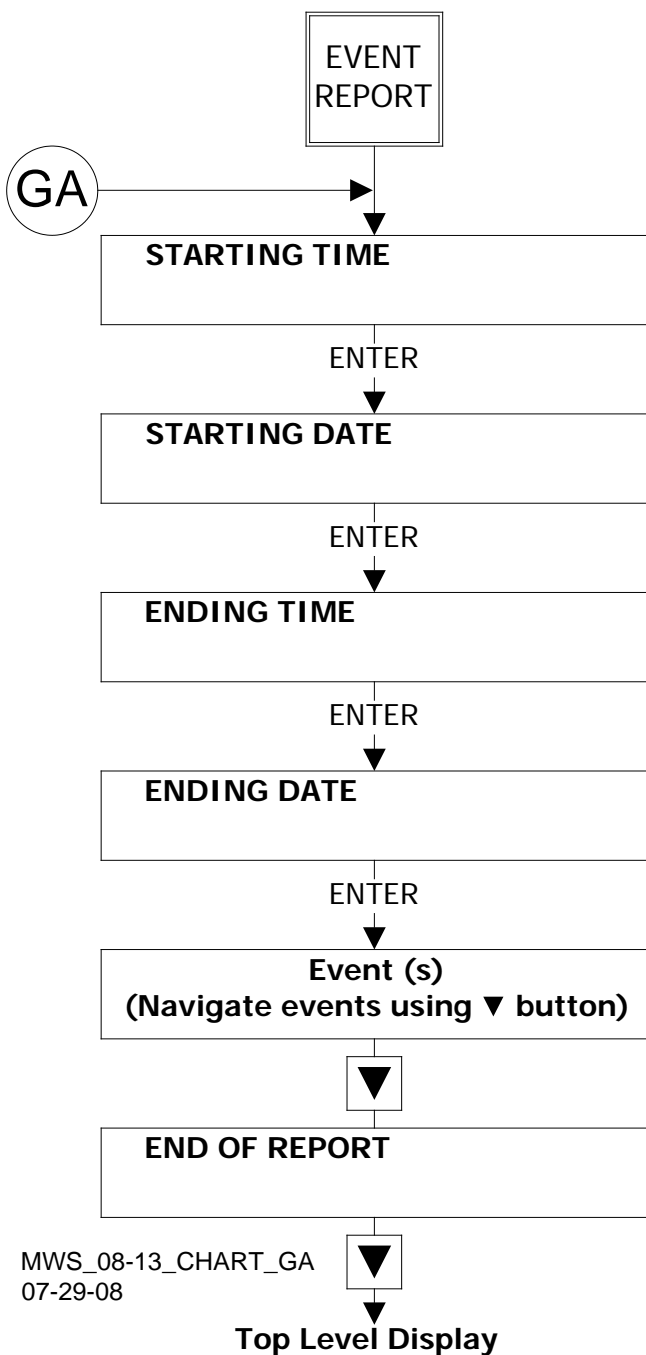
**Figure 6-20:
Chart EA – Main Menu – Part 2, Reports**

- Link EA is found on Chart DA (Figure 6-19)
- Link FA is found on Chart FA (Figure 6-21)
- Link GA is found on Chart GA (Figure 6-22)
- Link HA is found on Chart HA (Figure 6-23)
- Link HB is found on Chart LA (Figure 6-26)
- Link MA is found on Chart MA (Figure 6-27)
- Link MB is found on Chart MA (Figure 6-27)
- Link RA is found on Chart RA (Figure 6-31)
- Link RB is found on Chart RA (Figure 6-31)



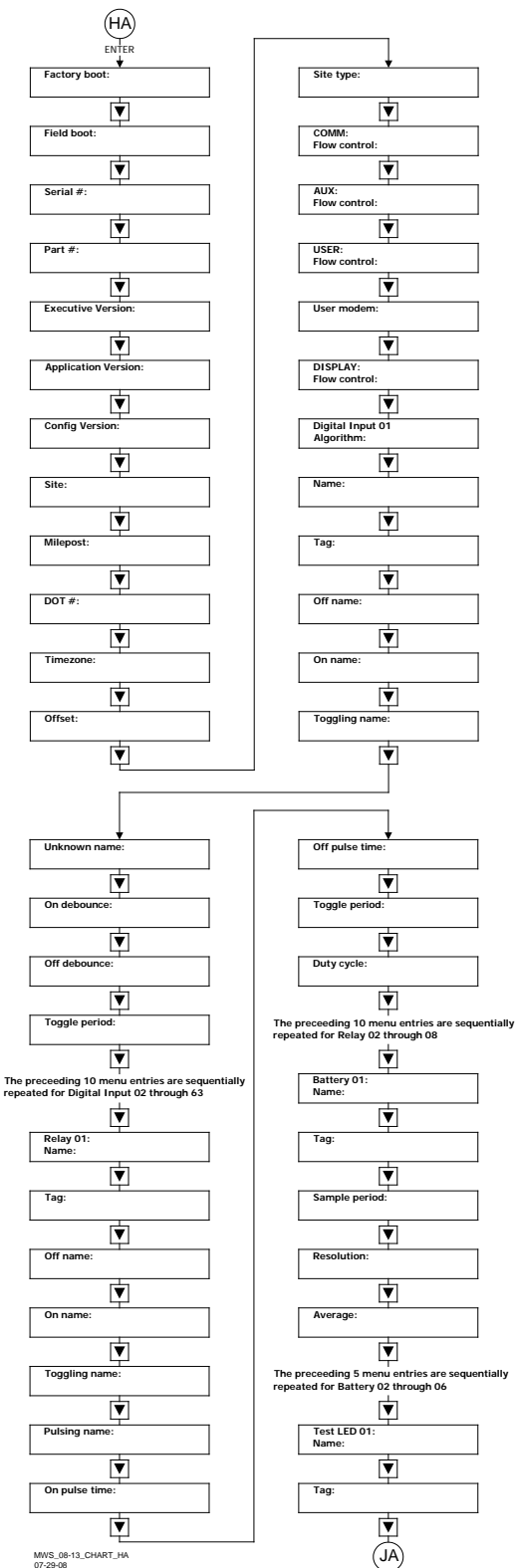
**Figure 6-21:
Chart FA – Main Menu – Part 3, Configuration**

- Link FA is found on Chart EA (Figure 6-20)
- Link NA is found on Chart NA (Figure 6-28)
- Link NB is found on Chart NA (Figure 6-28)
- Link TA is found on Chart TA (Figure 6-33)
- Link TB is found on Chart TA (Figure 6-33)
- Link UA is found on Chart UA (Figure 6-34)
- Link UB is found on Chart UA (Figure 6-34)
- Link UC is found on Chart UA (Figure 6-34)
- Link UD is found on Chart UA (Figure 6-34)
- Link UE is found on Chart UA (Figure 6-34)
- Link UF is found on Chart UA (Figure 6-34)
- Link FB is found on Chart DA (Figure 6-19)



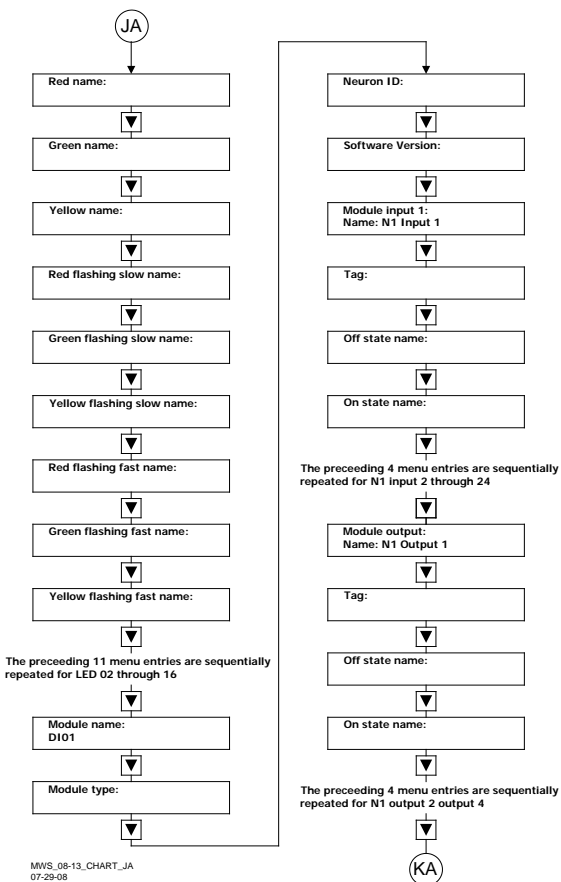
**Figure 6-22:
Chart GA – Main Menu – Events**

- Link GA is found on Chart EA (Figure 6-20)



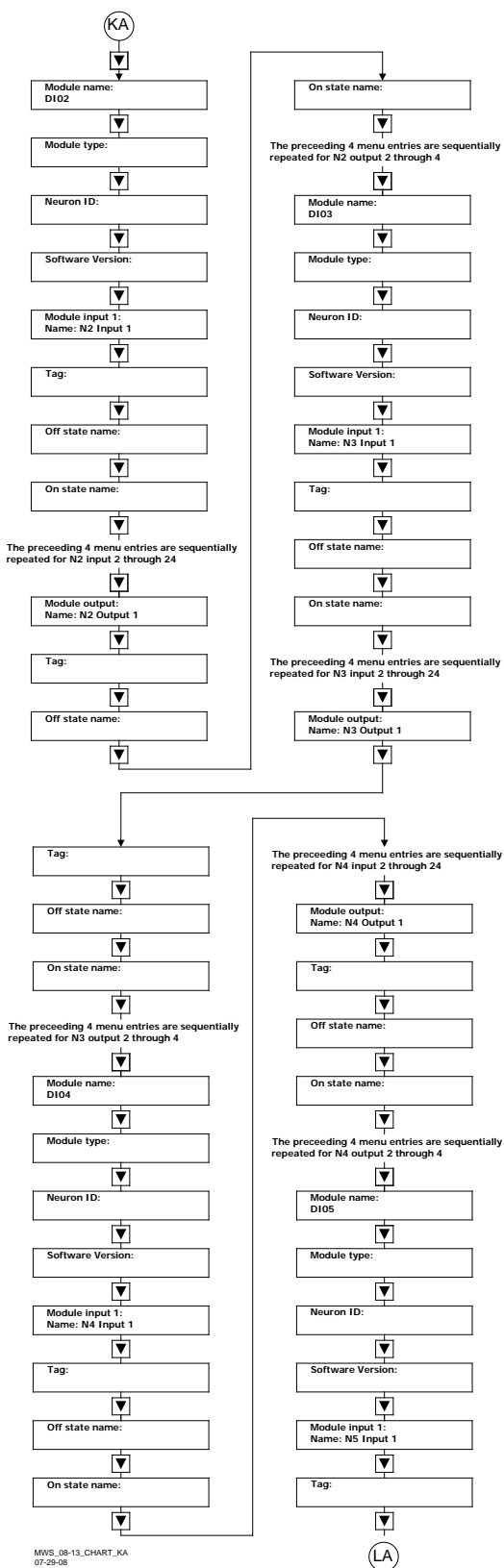
**Figure 6-23:
Chart HA – Digital Inputs, Part 1**

- Link HA is found on Chart EA (Figure 6-20)
- Link JA is found on Chart JA (Figure 6-24)



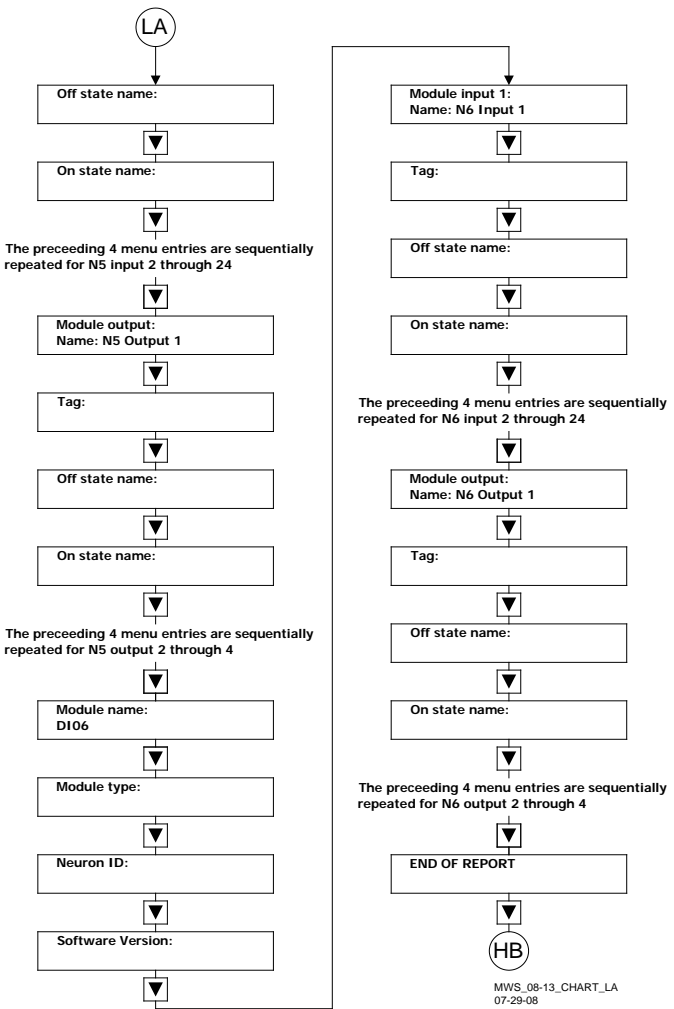
**Figure 6-24:
Chart JA – Digital Inputs, Part 2**

- Link JA is found on Chart HA (Figure 6-23)
- Link KA is found on Chart KA (Figure 6-25)



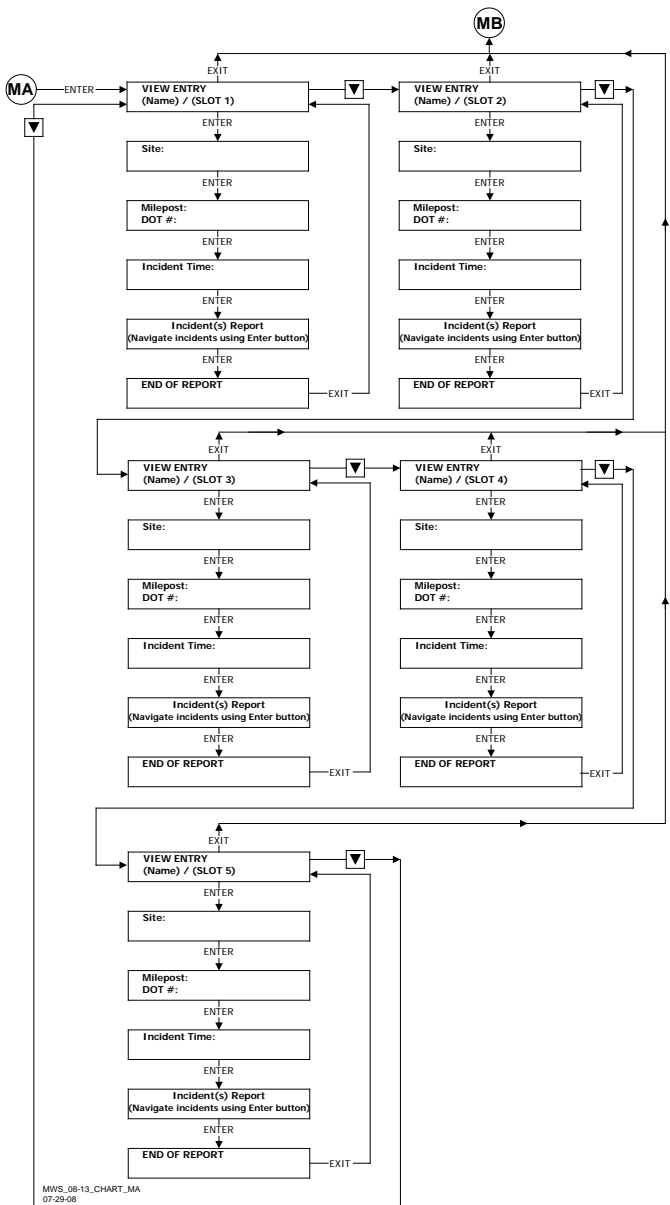
**Figure 6-25:
Chart KA – Digital Outputs, Part 1**

- Link KA is found on Chart JA (Figure 6-24)
- Link LA is found on Chart LA (Figure 6-26)



**Figure 6-26:
Chart LA – Digital Outputs, Part 2**

- Link LA is found on Chart KA (Figure 6-25)
- Link HB is found on Chart EA (Figure 6-20)



**Figure 6-27:
Chart MA – Module List by Slot**

- Link MA is found on Chart EA (Figure 6-20)
- Link MB is found on Chart EA (Figure 6-20)

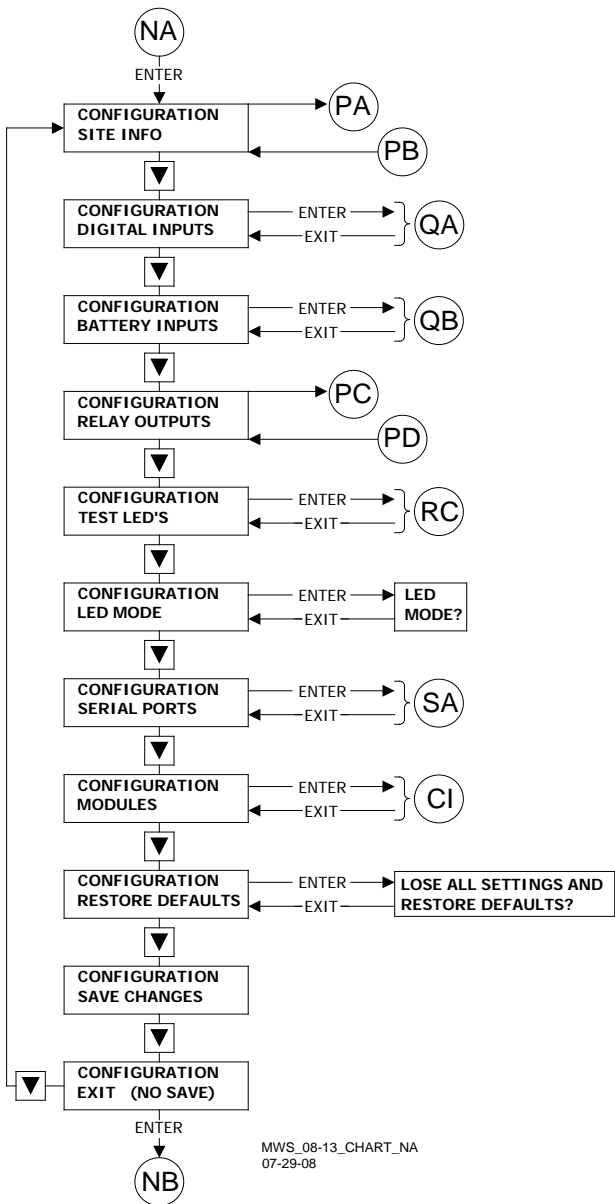
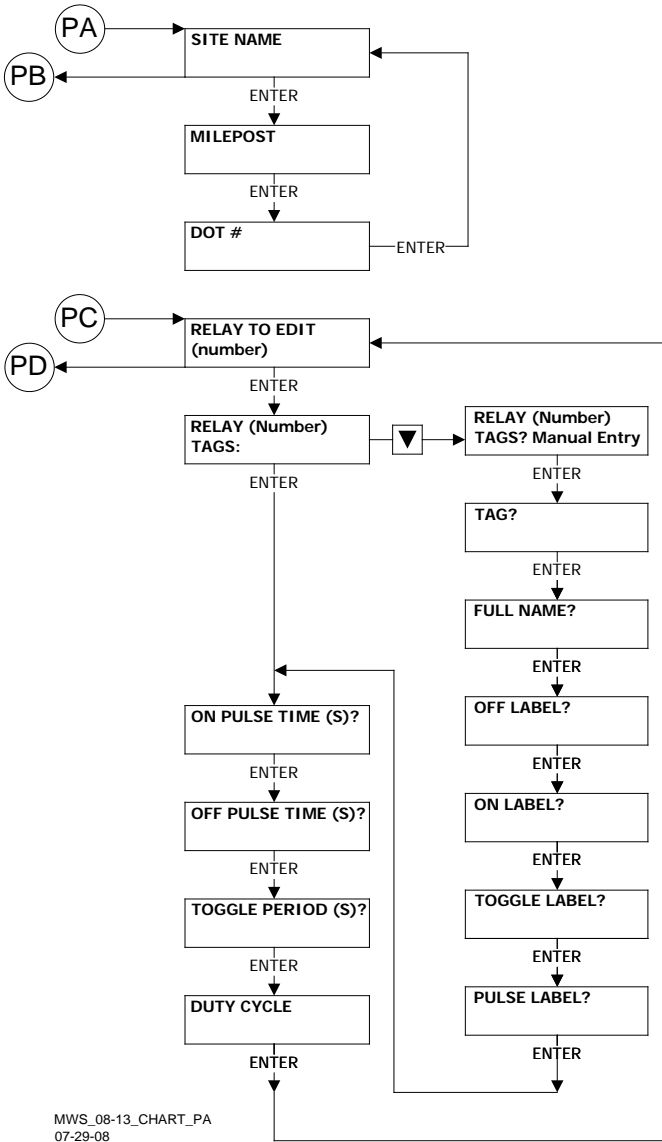


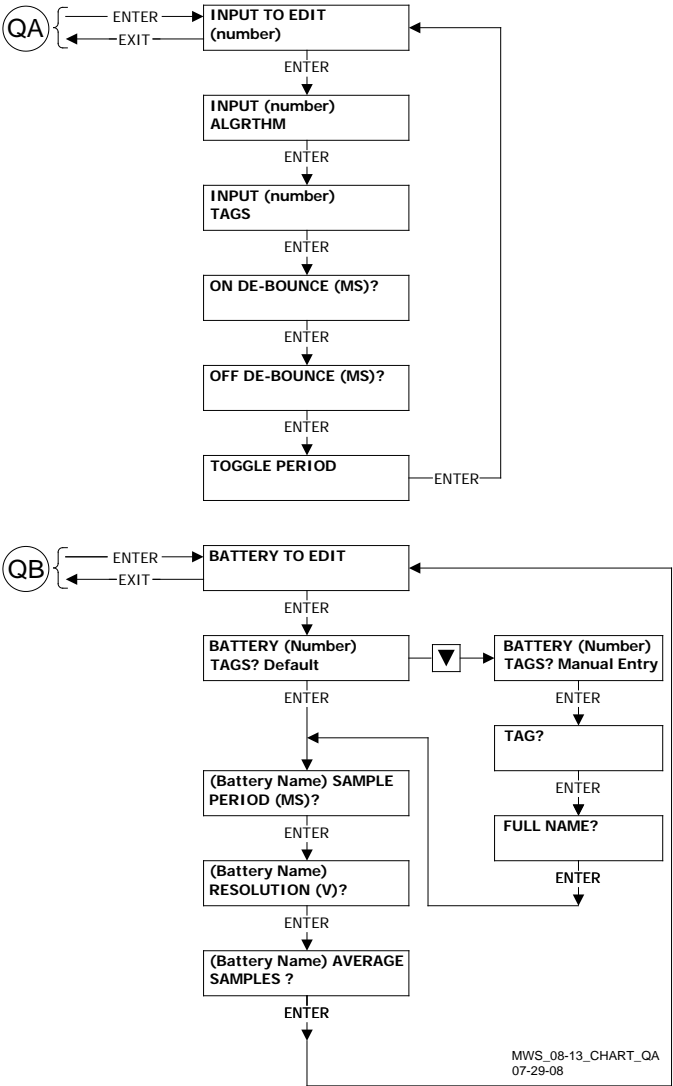
Figure 6-28:
Chart NA – Configuration Menu, Part 1

- Link NA is found on Chart FA (Figure 6-21)
- Link PA is found on Chart PA (Figure 6-29)
- Link PB is found on Chart PA (Figure 6-29)
- Link QA is found on Chart QA (Figure 6-30)
- Link QB is found on Chart QA (Figure 6-30)
- Link PC is found on Chart PA (Figure 6-29)
- Link PD is found on Chart PA (Figure 6-29)
- Link RC is found on Chart RA (Figure 6-31)
- Link SA is found on Chart SA (Figure 6-32)
- Link CI is found on Chart CE (Figure 6-10)
- Link NB is found on Chart NA (Figure 6-28)



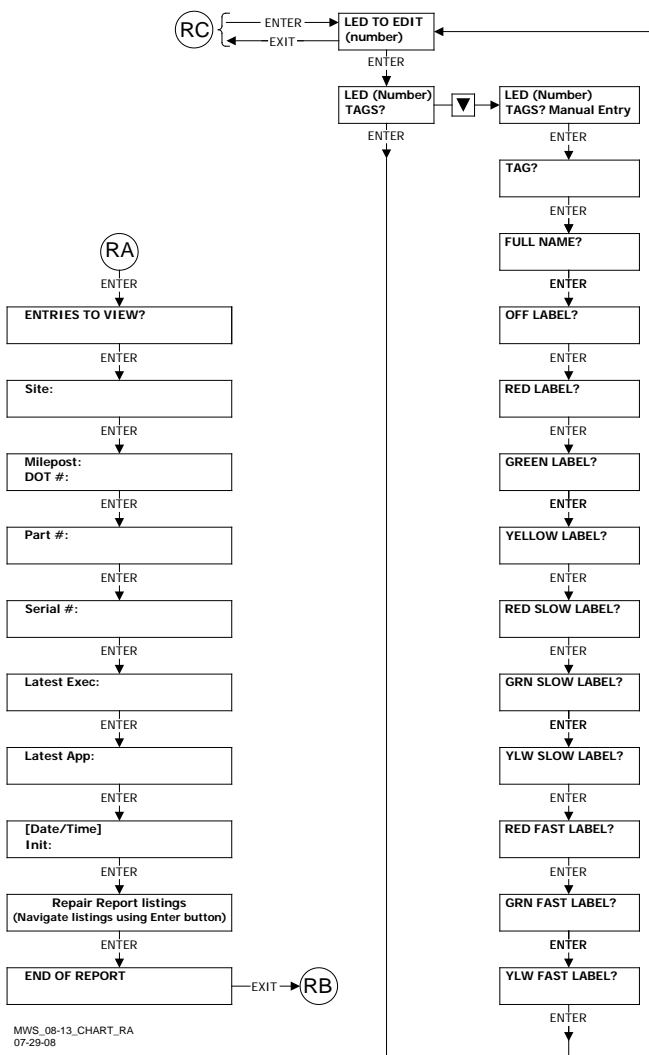
**Figure 6-29:
Chart PA – Configuration Menu, Part 2**

- Link PA is found on Chart NA (Figure 6-28)
- Link PB is found on Chart NA (Figure 6-28)
- Link PE is found on Chart NA (Figure 6-28)
- Link PF is found on Chart NA (Figure 6-28)



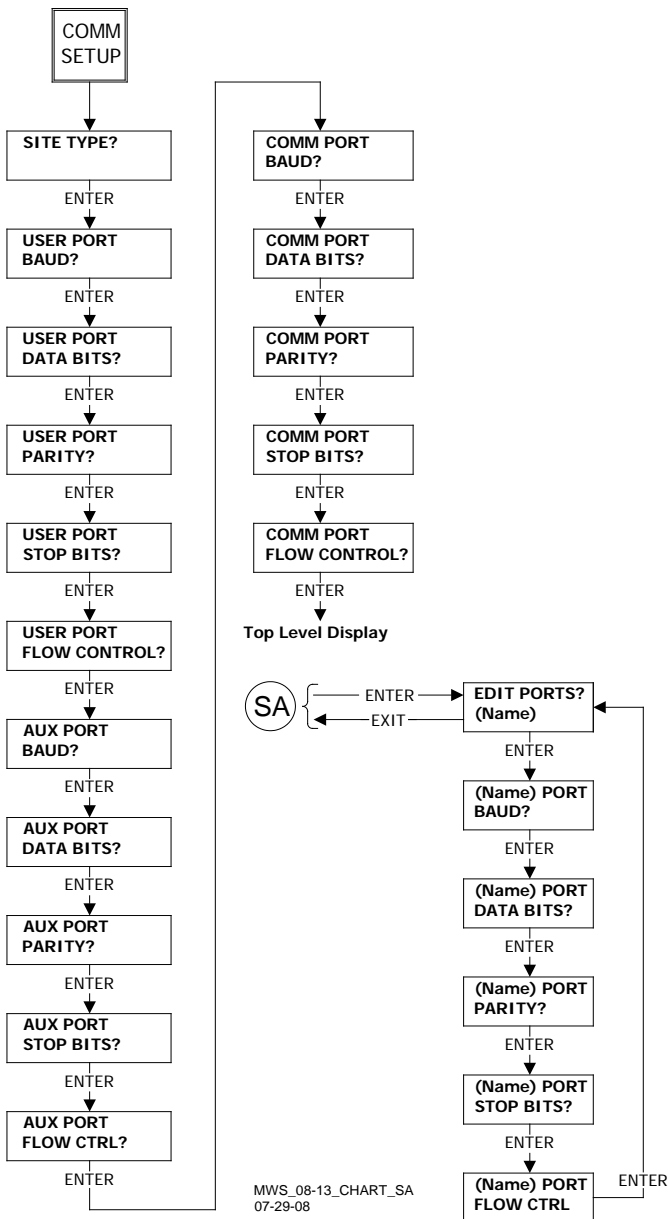
**Figure 6-30:
Chart QA – Configuration Menu, Part 3**

- Link QA is found on Chart NA (Figure 6-28)
- Link QB is found on Chart NA (Figure 6-28)



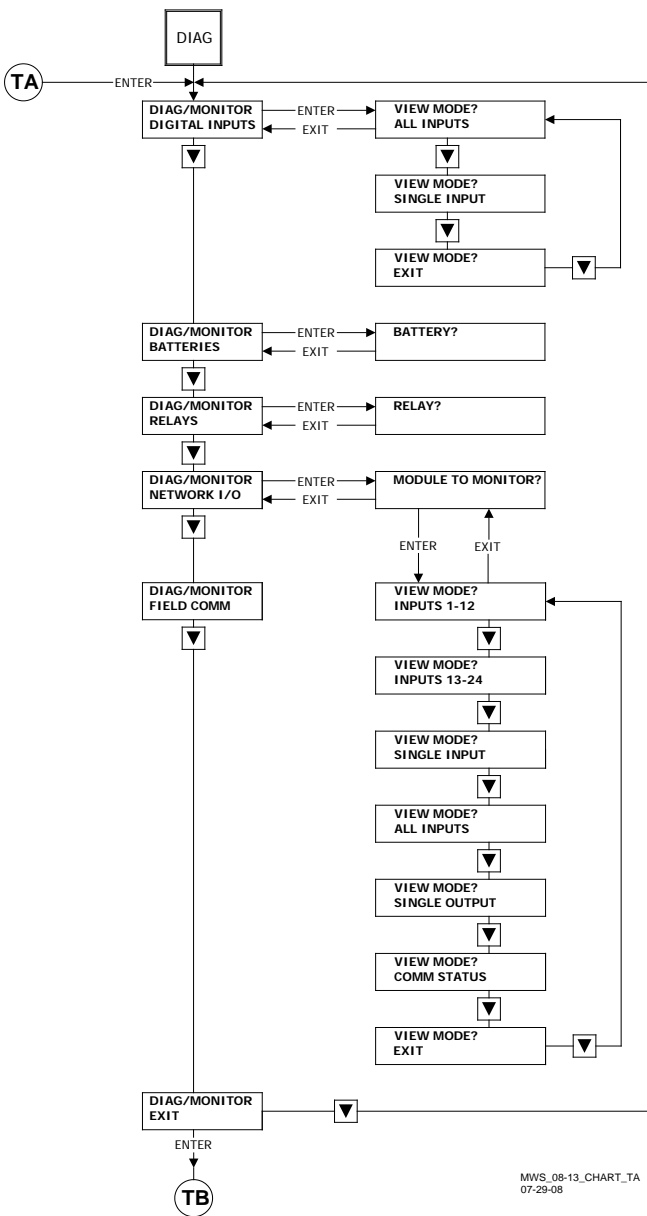
**Figure 6-31:
Chart RA – View Entries and Edit LED
Assignments**

- Link RA is found on Chart EA (Figure 6-20)
- Link RB is found on Chart EA (Figure 6-20)
- Link RC is found on Chart NA (Figure 6-28)



**Figure 6-32:
Chart SA – COMM Setup and Edit Port Data**

- Link SA is found on Chart NA (Figure 6-28)



**Figure 6-33:
Chart TA – Diag / Monitor Data**

- Link TA is found on Chart FA (Figure 6-21)
- Link TB is found on Chart FA (Figure 6-21)

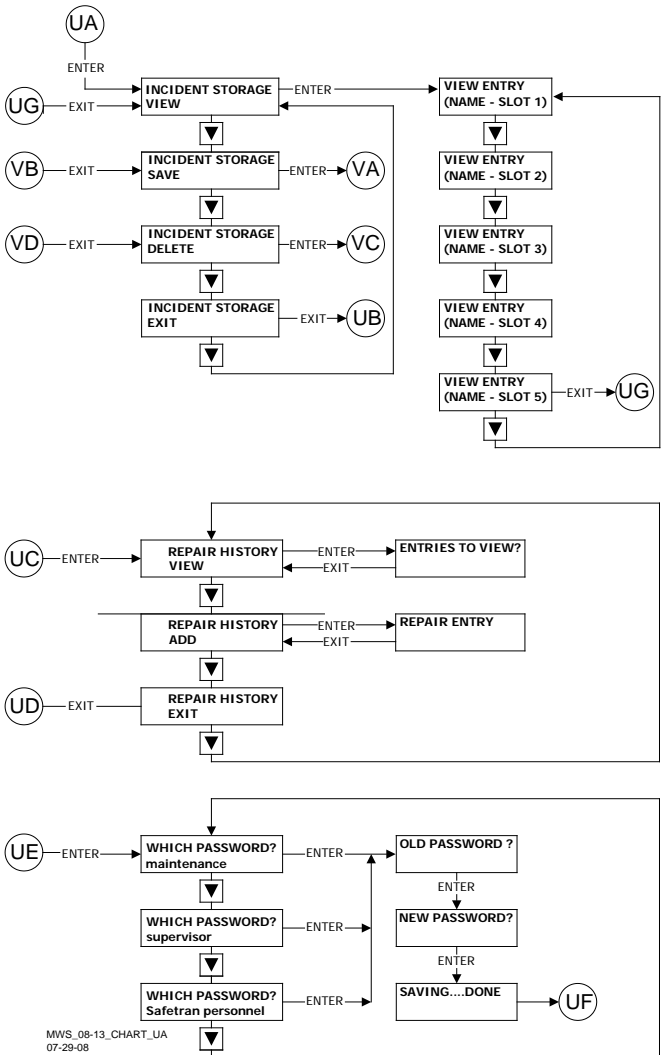
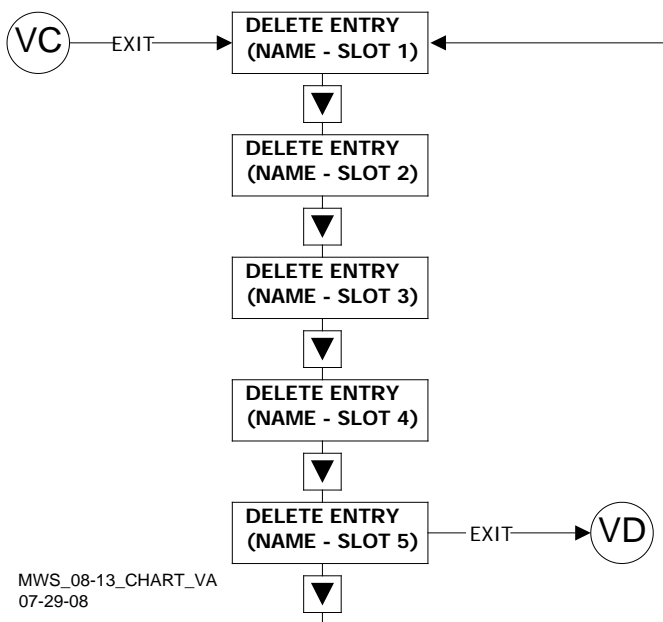
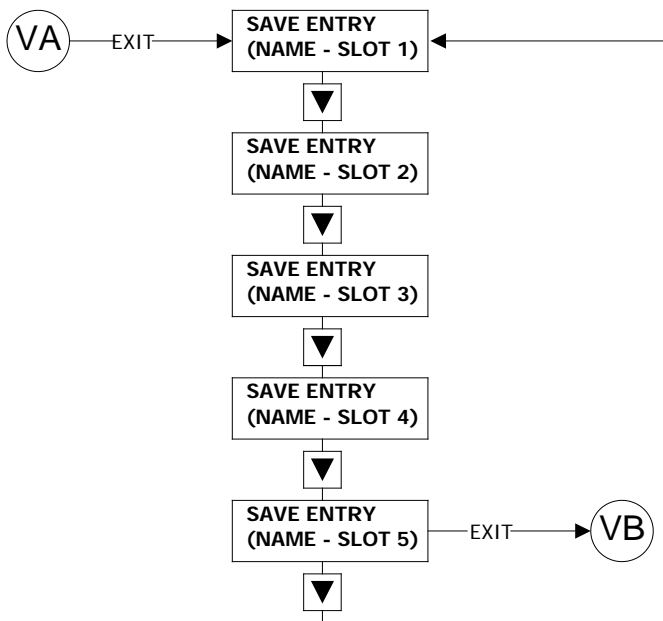


Figure 6-34:
Chart UA – Incident, Repair, and Password Data

- Link UA is found on Chart FA (Figure 6-21)
- Link UB is found on Chart FA (Figure 6-21)
- Link UG is only found on this chart
- Link VA is found on Chart VA (Figure 6-35)
- Link VB is found on Chart VA (Figure 6-35)
- Link VC is found on Chart VA (Figure 6-35)
- Link VD is found on Chart VA (Figure 6-35)
- Link UC is found on Chart FA (Figure 6-21)
- Link UD is found on Chart FA (Figure 6-21)
- Link UE is found on Chart FA (Figure 6-21)
- Link UF is found on Chart FA (Figure 6-21)



MWS_08-13_CHART_VA
07-29-08

**Figure 6-35:
Chart VA – Save and Delete Incident Data**

- Link VA is found on Chart UA (Figure 6-34)
- Link VB is found on Chart UA (Figure 6-34)
- Link VC is found on Chart UA (Figure 6-34)
- Link VD is found on Chart UA (Figure 6-34)

SECTION 7 – GLOSSARY

GLOSSARY

Advance Preemption:	Notification of an approaching train is forwarded to the highway traffic signal controller by railroad equipment in <u>advance</u> of activating the railroad active warning devices.
Advance Preemption Time:	This period of time is the difference in the Maximum Preemption Time required for highway traffic signal operation and the Minimum Warning Time needed for railroad operation.
AF:	Audio Frequency
AFO:	Audio Frequency Overlay
AND:	AND circuits require all inputs to be energized for the output to be energized.
AND ENABLE:	An internal function that can be used to 'connect' an input to an AND circuit.
AND 1 XR:	The AND function that controls the local crossing. Is equivalent to the XR relay.
AND 2 thru 8:	Internal functions that are used to combine inputs.
AREMA:	American Railway Engineering and Maintenance-of-way Association
ATCS:	<u>Advanced Train Control System</u> – An industry standard used in the 4000 GCP for communications.
CCN:	<u>Configuration Check Number</u> – The 32 bit CRC of the configuration data.
CDL:	<u>Control Descriptor Language</u> – The programming language used by application engineers to customize the operation, settings, and behavior of a SEAR II/III.
CHK:	<u>CHECK</u> receiver on a track module connected to transmit wires that perform track wire integrity checks.
CHK EZ:	<u>Check EZ</u> is a signal value compared to main receiver EZ that is useful in troubleshooting.
CIC:	<u>Chassis Identification Chip</u> - A non-volatile memory chip that is installed adjacent to the ECD on the GCP backplane. Stores site specific information for both Main and Standby operations.

GLOSSARY

Computed Approach Distance:	The track approach length calculated by the GCP. The calculated distance between the wire connections on the rail and the termination shunt connections.
CP:	<u>Communications Processor</u> – One of two microprocessors on the CPU11+ module, processes external communications for the GCP 4000.
CRC:	<u>Cyclical Redundancy Check</u> - Used to determine that data has not been corrupted.
CRTU:	Cellular Remote Telemetry Unit
DAX:	Acronym for <u>Downstream Adjacent Crossing (Xing)</u> . DAX outputs are used to send prediction information from an upstream GCP to a downstream GCP when insulated joints are in the approach circuit.
dB:	Decibels
DIAG:	Diagnostic
DOT Number:	<u>Department Of Transportation</u> crossing inventory number assigned to every highway-railroad crossing that consists of six numbers with an alpha suffix.
DT:	Diagnostic Terminal – The Diagnostic Terminal (DT) is a Siemens developed Windows® based software that can run on the Display Module or on a PC, which allows the user to perform programming, calibration, and troubleshooting.
DTMF:	<u>Dual Tone Multi-Frequency</u> - The tones on a telephone or radio keypad.
ECD:	<u>External Configuration Device</u> – The non-volatile memory device on the GCP backplane used for storing the module configuration file.
Echelon:	A Local Area Network, LAN, used by the 4000 GCP.
EGOM:	<u>Exit Gate Operating Mode</u> – A dynamic mode in which the exit gate operation is based on the presence and detection of vehicles between the stop bar or entrance gate and the exit gate.
Enhanced Detection:	User selectable process that detects nonlinear fluctuations in track signal due to poor shunting and temporarily switches the track module from predictor to motion sensor.

GLOSSARY

Entrance Gate:	A gate used at the entrance to a highway-railroad grade crossing, which is designed to release and lower by gravity from the full vertical position to the horizontal position under a loss of power condition or when the control energy (GC) is removed.
EX:	The EX value is a numerical indication of track ballast conditions relative to the leakage resistance between the rails. A value of 100 represents nominal good ballast. A value of 39 represents very poor ballast.
Exit Gate:	A gate used at the exit from a highway-railroad grade crossing with Four Quadrant Gates to restrict wrong direction vehicular movements, which is designed to raise by gravity from the horizontal position to a vertical position great enough to allow vehicle clearing under a loss of power condition or when the control energy (GC) is removed.
EZ:	The track signal value that varies with approach track impedance that indicates the relative train position within an approach. 100 represents nominal value with no train in the approach, 0 represents nominal value for a train occupying the island.
FAR GATE:	On the same surge panel, the 'far gate' is the flashing light signal or gate with the largest voltage drop in the cable circuit. In general, if both signals have the same number and type of lamps and the same size cable conductors, the 'far gate' is the location with the longest cable run. The 'far gate' circuit on the surge panel does not have an adjustable resistor in series with L1 and L2 that provides voltage adjustment.
Field Password:	The password set that allows field maintenance personnel access to field editable parameters.
Flash Memory:	A type of non-volatile memory that can be reprogrammed in-circuit via software.
FLASH SYNC:	The two wire circuit that synchronizes the alternating flash of an external crossing controller with the internal crossing controller, SSCC IIIi or the external crossing controller, SSCCIV.
Gate Delay Period:	The programmable time period from when the lights begin to flash until the gates begin to descend.
GC:	Gate Control

GLOSSARY

GCP:	<u>Grade Crossing Predictor</u> – A train detection device used as part of a highway-railroad grade crossing warning system to provide a relatively uniform warning time.
GCP APP:	<u>GCP Approach</u> length calibration into a hardwire shunt located at the termination shunt.
GCP CAL:	<u>GCP Calibration</u> into a termination shunt.
GCP LIN:	<u>Approach Linearization</u> calibration into a hardwire shunt located at the 50% point on the approach.
GD:	<u>Gate Down</u> , input energized when gate arm is horizontal.
GFT:	<u>Ground Fault Tester</u> – An optional external device connected to the Echelon LAN that constantly monitors up to two batteries for ground faults and indicates battery status to the SEAR Ili.
GP:	<u>Gate Position</u> – Input energized when gate is vertical.
GU:	<u>Gate Up</u> – Used in a user defined SEAR Ili application program, (the same as GP).
Highway-Railroad Grade Crossing Advance Warning Sign:	A traffic control sign (round yellow sign with RR and a black X) placed by the highway agency in advance of many highway-railroad grade crossings
Healthy:	The GCP system, modules and track circuit are operating as intended. Health is generally indicated by a yellow LED flashing at 1 Hz (approximately the same flash rate as the FLASH SYNC on a controller or a flashing light signal). Unhealthy conditions are indicated by faster flash rates (2 Hz and 4 Hz) or a dark Health LED.
Hz:	<u>Hertz</u> – Common reference for cycles per second or flashes per second.
iLOD:	<u>Intelligent Light Out Detector</u> – used for measuring lamp current.
Interconnection:	The electrical connection between the railroad active warning system and the traffic signal controller for the purpose of preemption.
IO or I/O:	Input/Output
ISL:	Island
ISL CAL:	Island calibration
kHz:	<u>kilohertz</u> – 1000 Hz or 1000 cycles per second.

GLOSSARY

LAMP 1 VOLTAGE:	Voltage on 1L1 or 2L1 lamp output of the crossing controller module, SSCC IIIi.
LAMP 2 VOLTAGE:	Voltage on the lamp 1L2 or 2L2 lamp output of the crossing controller module, SSCC IIIi.
LAN:	<u>Local Area Network</u> – A limited network where the data transfer medium is generally wires or cable.
Linearization:	The linearization procedure compensates for lumped loads in the GCP approach that affects the linearity (slope) of EZ over the length of the approach.
Linearization Steps:	A calibration value that allows the GCP to compensate for non-linear EZ values within the approach circuit.
LOS:	<u>Loss of Shunt</u> – Commonly due to rust and / or rail contamination. LOS timers provide a pick up delay function.
Lumped Load:	A section of track that has a lower ballast resistance than the rest of the approach because of switches, crossings, contamination, etc.
MAIN:	The primary GCP Modules (CPU, Track, and RIO Modules) that are in a dual GCP chassis.
MBT:	Abbreviation for Master Boot file
MCF:	<u>Module Configuration File</u> – The GCP application logic file.
MEF:	<u>Module Executable File</u> – The GCP executive software program.
Module:	Physical package including PCBs and input/output terminals for connecting to external devices and equipment.
MS:	<u>Motion Sensor</u> – A train detection device used as part of a highway-railroad grade crossing warning system to provide a detection of a train approach.
MTSS:	<u>Mini Trackside Sensor</u> – A device located in the gate mechanism that combines input information from gate contacts, bell, and gate tip sensor and sends the information to the SEAR IIIi.

GLOSSARY

NEAR GATE:	On the <u>same</u> surge panel, the 'near gate' is the flashing light signal or gate with the lowest voltage drop in the cable circuit. In general, if both signals have the same number and type of lamps and the same size cable conductors, the 'near gate' is the location with the shortest cable run. The 'near gate' circuit on the surge panel has an adjustable resistor in series with L1 and L2 that provides additional voltage adjustment.
NVRAM:	Non-Volatile Random Access Memory
OCCN:	<u>Office Configuration Check Number</u> – The 32 bit CRC of the configuration data, excluding items that are protected by the Field Password.
OCE:	<u>Office Configuration Editor</u> – The PC version of the DT that can be used to create configuration package files (Pac files) for the GCP 4000 system.
Offset Distance:	The distance between the track circuit connections of the remote GCP (sending DAX information) to the island track connections of the UAX GCP (receiving the information).
Out Of Service:	The process for taking one or more GCP approach circuits and / or approach and island circuits out of service.
Pac File:	A GCP 4000 configuration <u>Package File</u> that can either be created in the office using the OCE, or downloaded from a GCP 4000 system via the CP.
PCB:	Printed Circuit Board
Pick Up Delay:	An internal delay time between when an input receives the signal to pickup and when it actually responds.
POK:	<u>Power Off</u> Indication
Positive Start:	Activate crossing devices when EZ level is less than a programmed value.
Preemption:	The transfer of normal operation of traffic signals to a special control mode.
PRIME:	PRIME may be de-energized by a Track's prime predictor, UAX, advance preempt, and/or island, if zero offset is selected.

GLOSSARY

PSO-II, PSO-III, PSO4000:	Different models of Siemens's Phase Shift Overlay – a track circuit (transmitter at one location and receiver at another location) that supplies track occupancy information for crossing warning devices and other train or vehicle detection systems.
RADIO DAX:	DAX information transmitted via Spread Spectrum Radio or other communications devices.
RIO:	Relay Input Output Module
RS232:	Industry standard serial port.
RTU:	Remote Telemetry Unit
RX:	Receive
SEAR Ili Application Program:	Programming for SEAR Ili that controls alarms.
Simultaneous Preemption:	Notification of an approaching train is forwarded to the highway traffic signal controller unit or assembly and railroad active warning devices at the same time.
SIN:	<u>Site (Subnode) Identification Number</u> - A twelve-digit ATCS address representing the module as a subnode on the network.
Spread Spectrum:	A method of radio transmission in which the transmitted energy is evenly spread over the complete bandwidth of the radio, resulting in a low RF profile.
SSCC:	Solid State Crossing Controller
SSR:	<u>Spread Spectrum Radio</u> – A radio that utilizes spread spectrum transmission.
Standby:	The GCP Backup Modules (e.g., CPU, Track, and RIO modules) that are in a dual GCP chassis.
Supervisor Password:	The password set that allows application design personnel access to office editable parameters.
True RMS AC+DC:	A scale on a multimeter that measures the effective combined AC and DC portions of the total voltage. Used to measure the pulsed output of a crossing controller. Measured as VRMS.
TX:	Transmit

GLOSSARY

UAX:	Acronym for <u>Upstream Adjacent Crossing (Xing)</u> . UAX inputs are used to receive prediction information from an upstream GCP as inputs to a downstream GCP when insulated joints are in the approach circuit.
USB Port:	Universal Serial Bus Port
USB Drive:	A memory device that plugs into a USB port which are commonly called flash drives or memory sticks.
VHF Communicator:	Communications device used for remote operations and calibration as well as data communications.
VLP:	<u>Vital Logic Processor</u> – One of two microprocessors on the CPUII+ module, processes GCP vital system logic.
VRMS:	<u>Volt Root Mean Square</u> – See True RMS AC + DC above.
WAG:	<u>Wayside Access Gateway</u> – The Siemens A53457 assembly converts Echelon® messages to Ethernet messages allowing Siemens equipment to use Ethernet Spread Spectrum radios A53325 for communications. WAG assembly A53457 also converts Echelon received messages to RS232 messages allowing the system to use modems for communication between Siemens equipment.
WAMS:	<u>Wayside Alarm Management System</u> – An office based application that communicates with and receives data from specially equipped crossings.
WCM:	<u>Wayside Control Module</u> – The Siemens A53105 assembly that centrally controls the functions of a Wayside Communications Package (WCP).
Wrap:	Common reference for a track circuit, or combination of track circuits that extend to or beyond the limits of a GCP approach, which provides train detection. Used to signify that a certain system function is being overridden based upon the state of a vital input.
Z Level:	An Island calibration value. A calibrated island will have a nominal Z Level of approximately 250. The Z Level approaches 0 when shunted.

CHANGE NOTICE

The following change(s) have been made to the Field Manual for the SEAR Ili Internal Event Recorder, dated July 2008, Document No. SIG-00-08-13, Version A.

Version A.1, DATED 02-13-09

Page 15, paragraph 2.1.6, NOTE:

Deleted: ...the A53325 Siemens Spread Spectrum Ethernet Radio (SSER).... Inserted: ...Siemens's A53325 Ethernet Spread Spectrum Radio (ESSR)...

Page 82, Table 6-1, Line SITE ATCS ADDRESS

Deleted: Date Format: mm-dd-yyyy; dd-mm-yyyy. Inserted: 7.RRR.LLL.GGG.99.01

Version A.2, DATED 03-04-14

Pages 11 – 13, Section 2.1.3, including Table 2-1

Rewrote entire section

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Siemens Rail Automation Corporation

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