SIEMENS

USER GUIDE

OFFICE CONFIGURATION EDITOR (OCE)

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FCC RULES COMPLIANCE

The equipment covered in this manual has been tested and found to comply with the limits for Class A digital devices, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his/her own expense.

DOCUMENT HISTORY

Version	Release Date	Sections Changed	Details of Change
X.1	Jan 2010		Preliminary
A	Nov 2014	ALL	Initial Release **OCE Version 1.9.5**
B	Aug 2017	ALL	Added sections supporting GCP and CPU III, enhanced layout for clarity and accessibility, and removed inapplicable material.
B.1	Feb 2017	2.1, 4.5.1.3, - 4.5.1.3.3	Added material for GCP 3000+ as well as compatibility with Windows 10. Section 2.1 added compatibility with Windows 10. Section 4.5.1.3 GCP 3000+ Sites. Section 4.5.1.3.1 Site Configuration. Section 4.5.1.3.2 GCP Programming. Section 4.5.1.3.3 Display Settings. Updated Figures 2-1 through 2-6 to non-Admin version of Office Configuration Editor.
B.2	Nov 2018	5.2.1	Added PTC General parameter description and updated to Siemens Mobility branding.
B.3	Jun 2022	3.3.1 4.0 4.5.7 All	Added product selection section. Added updated site configuration editor information throughout. Added configuration section. Performed general formatting throughout.

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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 Mobility, Inc. Application Engineering

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 which 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 Mobility, Inc. 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 power from card cages and assemblies before removing or installing modules.
- 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/inserter 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 Technical Support Staff at 1-800-793-7233. ESD Awareness Classes and additional ESD product information are also available through the Technical Support Staff.

GLOSSARY

TERM	DESCRIPTION
AAR:	Association of American Railroads – An organization that establishes uniformity and standardization among different railroad systems.
AREMA:	American Railroad Equipment Manufacturing Association – An organization that supersedes AAR.
Aspect:	(Signal Aspect) The name given to a signal aspect used in PTC interface.
ATCS:	Advanced Train Control System – A set of standards compiled by the AAR for controlling all aspects of train operation.
BCM	Base Control Module
BCP	Base Communication Package or Base Station
Boot	Startup sequence for the microprocessor. On the GEO system this can be accomplished by removing, then reseating the CPU module or by pulling the 30 A chassis fuse for a few seconds.
CAD	Computer Aided Dispatch. An automated system for processing dispatch business and automating many of the tasks typically performed by a dispatcher. Abbreviated CAD (not to be confused with computer-aided design which is also known as CAD) is application software with numerous features and functions.
CDL	Control Descriptor Language – The programming language used by application engineers to customize operation, settings, and behavior.
CDMA	Code Division Multiple Access - A protocol used in cellular telephony.
Checksum	A simple way to protect the integrity of data by detecting errors in data that are sent through space (telecommunications) or time (storage). It works by adding up the basic components of a message, typically the asserted bits, and storing the resulting value. Anyone can later perform the same operation on the data, compare the result to the authentic checksum and (assuming that the sums match) conclude that the message was most likely not corrupted.
CETC	Centralized Electrification & Train Control
CLS	Color Light Signal – The GEO module used to control and monitor Color Light Signals.
Configuration File	When changes are made to the default settings in the MCF (Master Configuration File), the custom settings are maintained in the configuration file.

TERM	DESCRIPTION
CPU III	Next Generation GEO central processing unit (CPU) module.
CRC	Cyclical Redundancy Check – Used to determine that data has not been corrupted.
CTC	Centralized Traffic Control –This is also known as CAD for Computer Aided Dispatch. This is the system in the office used to control and monitor the railroad signaling system.
Datagram	In general, any ATCS packet. Several types of datagrams are defined for specific functions within an ATCS environment.
dB	Decibels
dBi	Abbreviation for decibels referenced to an isotropic (unipole) antenna.
dBm	Abbreviation for decibels above (or below) one milliwatt.
DC offsets	Condition in which one rail is kept at one voltage relative to the other even when the track circuit is disconnected.
Debounce	The amount of time an input must remain constant to be considered a valid input. Debounce prevents random spikes of electrical energy from energizing an input.
DIAG	Diagnostic
DNS	Domain Name Server
DOT Number	Department of Transportation crossing inventory number assigned to every highway-railroad crossing in the United States. The number consists of six numbers with an alpha suffix.
Drop Delay	An internal delay time between when a function is ordered off and when it actually de-energizes.
DSU	Data Service Unit
DT	Diagnostic Terminal – Siemens' PC-based diagnostic software.
DTMF	Dual Tone Multi-Frequency - The tones on a telephone or radio keypad.
ECD:	External Configuration Device – A serial EEPROM (Flash Memory) device mounted inside the chassis of the GEO unit. The ECD is used to store site-specific configuration data (MCF, SIN, UCN, and card parameters) for the CPU.
Echelon®	A Local Area Network, LAN, used by Siemens equipment.

TERM	DESCRIPTION
EEPROM	Electrically Erasable Programmable Read-Only Memory. A type of non-volatile memory used in computers and other electronic devices to store small amounts of data that must be saved when power is removed. When larger amounts of static data are to be stored, a specific type of EEPROM called a flash memory is used.
ELS	Serial Link extension board
EMP	Edge Messaging Protocol - A common message format used for edge integration. Examples of integration edges are wireless transports and various messaging systems that may be used by the various railroads (e.g., using EMP to communicate between mobile applications and back office applications using wireless communications). EMP defines the message format, header, and operating rules which facilitate interoperable message transmission, reception, decoding, and routing.
Firmware	Software saved in ROM within a module and moved into main memory RAM for runtime use when the system is powered up.
FRA	Federal Railroad Administration - The purpose of FRA is to: promulgate and enforce rail safety regulations; administer railroad assistance programs; conduct research and development in support of improved railroad safety and national rail transportation policy; and consolidate government support of rail transportation activities.
GCP	Grade Crossing Predictor – A train detection device used as part of a highway-railroad grade crossing warning system to provide a relatively uniform warning time.
GEO®	Geographic Signaling System - GEO® is a vital microprocessor controlled
GENI (F)	Genisys Field Protocol
GENI (O)	Genisys Office Protocol
GFT	Ground Fault Tester – An optional external device connected to the Echelon LAN that constantly monitors up to two batteries for ground faults and indicates battery status.
GMT	The time as measured on the prime meridian running through Greenwich, England: used in England and as a standard of calculation elsewhere. Also called Greenwich Mean Time, Greenwich Civil Time, Universal Time
GOL	Geographic Object Library
GPS	Global Positioning System

TERM	DESCRIPTION
HMAC	Keyed-Hash Message Authentication Code – A type of message authentication code (MAC) calculated using a specific algorithm involving a cryptographic hash function in combination with a secret key.
HS	Home Signal
Hz	Hertz – Common reference for cycles per second of flashes per second.
Interconnection:	The electrical connection between the railroad active warning system and the traffic signal controller for the purpose of preemption.
IP:	Internet Protocol - ISO Model Layer 3 (network) protocol that performs proper routing of packets.
ITC:	Interoperable Train Control
ITCM:	Interoperable Train Control Message.
Interlocking:	An automatic or manual arrangement of signals and appliances so interconnected that their movements must succeed each other in proper sequence and for which interlocking rules are in effect.
IO or I/O:	Input/Output
kHz:	Kilohertz – 1000 Hz or 1000 cycles per second.
LAN:	Local Area Network – A limited network where the data transfer medium is generally wires or cable.
LCP:	Local Control Panel – A control and display interface device that allows field personnel to perform maintenance and troubleshooting procedures at a location.
LED:	Light-Emitting-Diode - A solid-state indicator.
LIN:	Line - The GEO module used to transmit and receive coded track patterns over cable.
LOD:	Light Out Detector - A device that monitors current flowing in a circuit such as a signal light, switch, etc., for the purpose of detecting a fault condition in the circuit.
LOR:	Lamp Out Relay - A GEO status indication using the DTU or the maintainer's interface that a signal lamp filament has been tested with current and failed.
LUI	Local User Interface – Refers to the character display and keypad on the front panel of Siemens equipment.

TERM	DESCRIPTION
MCF:	Module Configuration File – The site-specific configuration information created by the WCCT and downloaded into the ECD via the CPU II+ and Diagnostic Terminal Utility (DT), or CPU III WebUI.
MEF:	Module Executable File – The executive software running in the CPU. The user can download the MEF through the DTU port to update the software.
Module	Physical package including PCBs and input/output terminals for connecting to external devices and equipment.
NTP	Network Time Protocol – The NTP is a protocol used to synchronize the clocks in millions of servers, workstations, and PCs of the public internet and private networks.
OCG:	Office Communication Gateway
OCE:	Office Configuration Editor – A program used to create configuration package files (PAC files) for iVIU PTC GEO, iVIU, VIU, GEO, CPU III, and GCP equipment.
Out Of Service:	The process for taking one or more pieces of equipment out of service for repair and/or maintenance.
PAC File:	A configuration package File that can either be created in the office using the OCE.
PCB:	Printed Circuit Board
Pick Up Delay:	An internal delay time between when an input receives the signal to pick up and when it actually responds.
PTC:	Positive Train Control – An automated control system for railways that ensures the safe operation of rail vehicles using data communication between various control entities that make up the system.
RailFusion	An office based application that communicates with and receives data from specially equipped crossings.
Reboot	To cause the system to restart by removing power for a few seconds then reapplying power.
RJ-45:	Industry standard Ethernet port
RIO:	Relay Input Output Module
RS232:	Industry standard serial port.
RS-485:	A higher speed version of RS-232 that supports longer distances and multiple devices.

TERM	DESCRIPTION
RTU:	Remote Telemetry Unit
RX:	Receive
RXD:	Receive Data
Serial bus:	The communication path that carries messages between the CPU and I/O modules installed in the GEO chassis. The serial bus is a set of solder runs on the motherboard (backplane) of the chassis.
Signal aspect:	The appearance of a fixed signal conveying an indication as viewed from the direction of an approaching train; the appearance of a cab signal conveying an indication as viewed by an observer in the cab.
SIN:	Site (Subnode) Identification Number - A twelve-digit ATCS address representing the module as a subnode on the network.
SNMP	Simple Network Management Protocol – A simplified version of NTP where storage of state data is not required.
SNTP:	Simple Network Time Protocol - A simplified version of NTP where storage of state data is not required
SSH	Secure Shell – SSH is a network protocol for secure data communication and remote command execution.
TCP/IP Network:	Transmission Control Protocol / Internet Protocol -The suite of communications protocols used to connect hosts on the Internet. TCP/IP uses several protocols, the two main ones being TCP and IP. TCP/IP is built into the UNIX operating system and is used by the Internet, making it the de facto standard for transmitting data over networks.
Track circuit:	Defined by AREMA as “An electrical circuit of which the rails of a track form a part.” A track circuit’s limits are established by the use of insulated rail joints.
TRK:	Track – The GEO module used to transmit and receive coded track patterns for railroad track circuits.
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.
TSR:	Temporary Speed Restriction
TX:	Transmit
TXD:	Transmit Data

TERM	DESCRIPTION
UAX:	Acronym for Upstream Adjacent Crossing (Xing). 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.
UCN:	Unique Check Number – A number is used to detect file corruption.
UDP:	User Datagram Protocol - A transport protocol used primarily for the transmission of network management information. Not as reliable as TCP.
ULCP:	Universal Local Control Panel – Same as LCP.
USB Port:	Universal Serial Bus Port
USB Drive:	Types of memory devices that plug into a USB port. These devices are commonly called flash drives or memory sticks.
UTC:	Coordinated Universal Time
VHF Communicator:	Communications device used for remote operations and calibration as well as data communications.
VIU:	Vital Interface Unit - A device that monitors switch positions and signal aspects and then generates vital status messages reflecting the current state of the monitored equipment.
VLAN:	Virtual Local Area Network
VLO:	Vital Lamp Output – A software-driven vital hardware output which drives a lamp on a Colorlight Signal to display a commanded aspect and verifies the lamp is operational (not shorted or out).
VLP:	Vital Logic Processor -- The processor mounted on the CPU module that is responsible for vital processing.
VPI:	Vital Parallel Input – A vital input to a module, designed primarily to read the state of a vital signaling relay.
VRMS	Volt Root Mean Square – See True RMS AC + DC above.
VTP:	Virtual Local Area Network (VLAN) Trunk Protocol. A Cisco proprietary Layer 2 messaging protocol that manages the addition, deletion, and renaming of VLANs on a network-wide basis. VTP reduces administration in a switched network. When you configure a new VLAN on one VTP server, the VLAN is distributed through all switches in the domain. This reduces the need to configure the same VLAN everywhere.
WAMS:	Wayside Alarm Management System – refer to RailFusion definition.

TERM	DESCRIPTION
WCC/FPD:	Wayside Cluster Controller/Field Protocol Device. The WCC/FPD is often referred to as the packet Switch. This equipment manages clusters of base stations and other communications links to the field. The WCC/FPD is installed in the office.
WCCMaint:	Software that runs on a PC used to configure and manage a network of WCC/FPD equipment. WCCMaint is often used to manage other communications equipment as well such as WCPs and BCPs.
WIU:	Wayside Interface Unit. Term used to refer to the VIU in PTC applications.
WSM:	Wayside Status Messages. Messages in EMP format reflecting the status of vital functions at a wayside location. These vital functions include signal aspects and switch positions.

SECTION 1 GENERAL DESCRIPTION

1.0 GENERAL DESCRIPTION

1.1 INTRODUCTION

The Office Configuration Editor (OCE) provides a means for users to create application configurations in the office for the following products when not directly connected to the equipment:

- GEO
- VIU
- IVIU and PTC Console
- WayConneX using CPU III
- GCP 4000
- GCP 5000
- GCP 3000+
- SGCP 4000/MS 4000

The configuration parameters can be set in the OCE and then the files created can be copied to a USB drive or laptop computer and uploaded in the field via the USB or Web UI, as appropriate.

For GEO/WayConneX/VIU applications, the OCE calculates the UCN (Unique Check Number).

If the location is PTC enabled, the OCE calculates the PTC UCN (WIU Config CRC) and creates the WIU Config xml.

The OCE generates configuration reports detailing the parameters set by the user.

The OCE provides the ability to create the configuration when the iVIU or PTC Console is used to PTC-enable GEO installations. When used for PTC-enabling of GEO installations, the OCE reads information from a master PTC database containing the details of the GEO MCFs. This allows the OCE to automatically populate many MCF configuration items. An approved master PTC GEO database will be supplied by Siemens Application Engineering.

For GCP applications, the OCE creates the PAC file that can be loaded into the GCP and calculates the OCCN (Office Configuration Check Number).

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SECTION 2 SOFTWARE INSTALLATION

2.0 SOFTWARE INSTALLATION

2.1 PREREQUISITE INSTALLATION

Prior to installing the OCE software, it will be necessary to install the following software:

- Microsoft® DotNet Framework 4.6 (the OCE installation will install the .NET framework if not already installed).

The OCE 2.6.3 is compatible with Windows 7 and 10 on 32 or 64 bit machines. The OCE 2.6.3 is not compatible with Windows XP.

The OCE 2.6.3 is compatible with the following browsers:

- Mozilla Firefox 20.10.2
- Google Chrome

2.2 OCE INSTALLATION

An installation wizard will direct the OCE installation. It is recommended to use the default directories if possible. Use the following procedure to install OCE:

1. Click on the Setup.exe icon to start the installation wizard. Click **Next** on the welcome screen to continue.

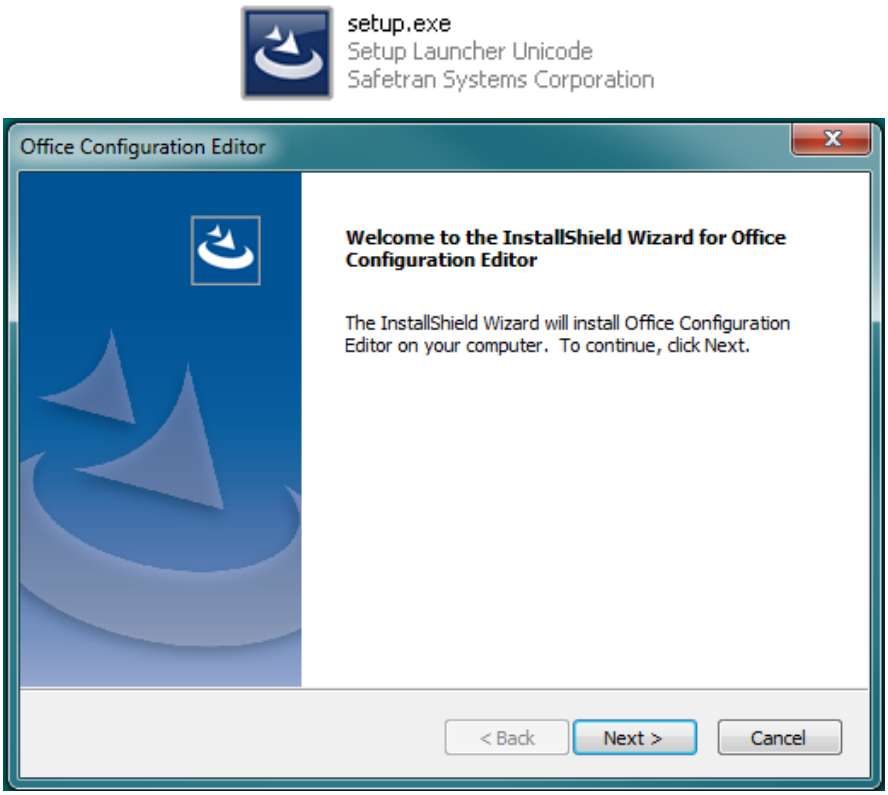

Figure 2-1 OCE Setup Wizard

2. Click on the **Yes** button to accept the licensing agreement and to continue.

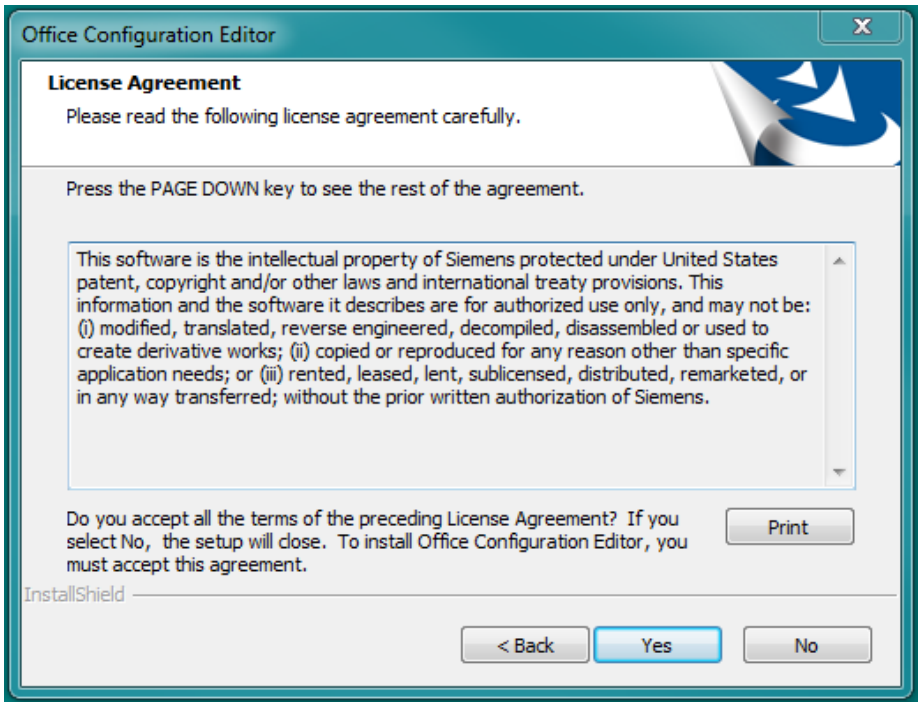

Figure 2-2 OCE License Agreement

3. The Wizard will continue installing the OCE. Click the **Next** button to continue.

4. The OCE program is ready to install. Verify the installation settings and click **Install** to complete the installation or click **Back** to make any changes.

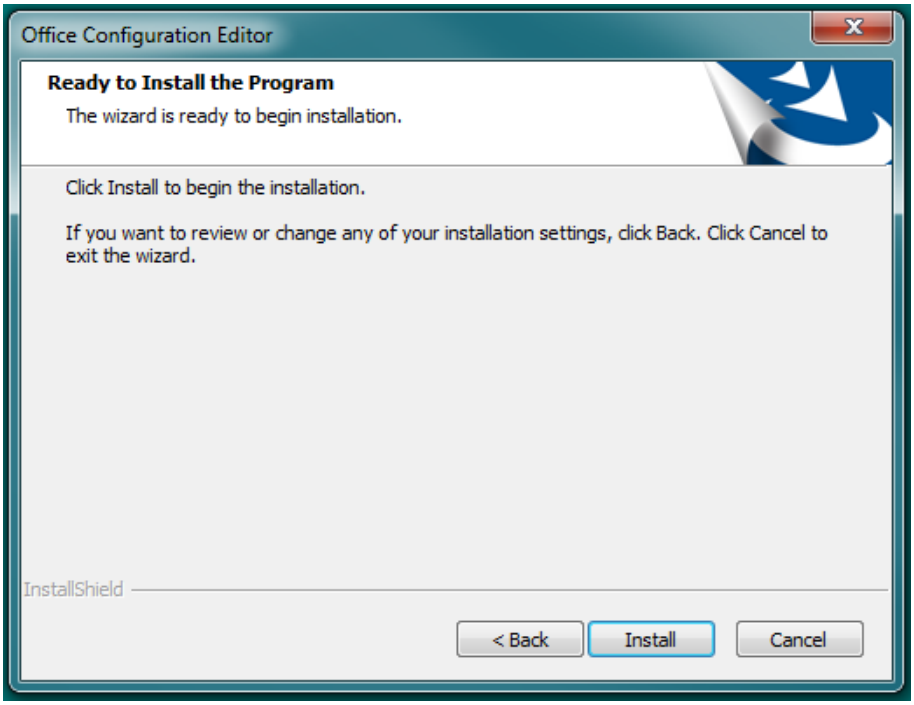

Figure 2-3 Begin Installation

5. The Wizard will install the OCE files. A progress bar will display the progress of the installation.

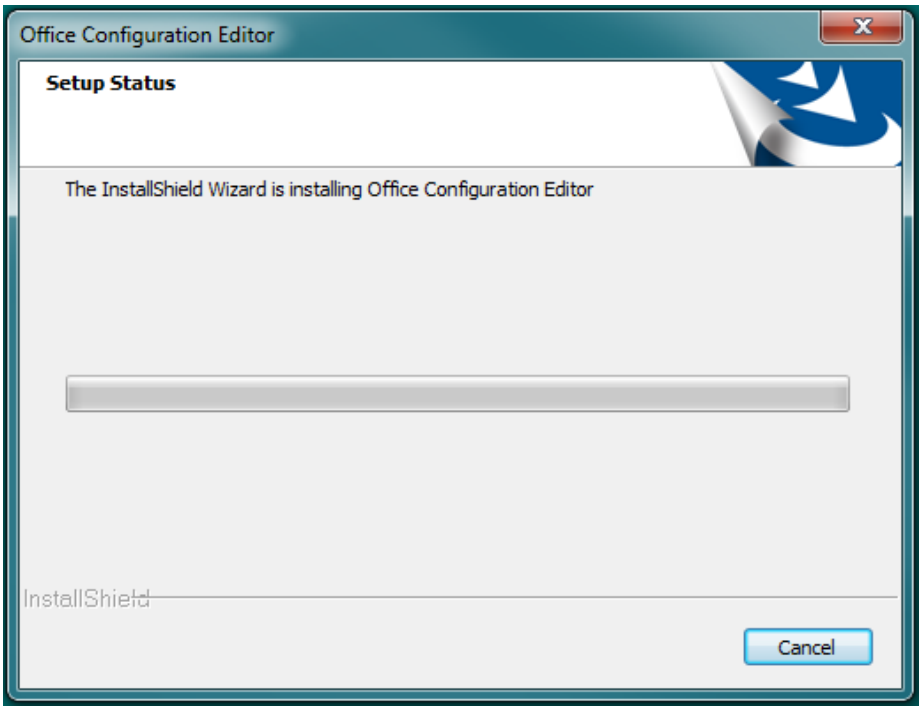

Figure 2-4 OCE File Installation

6. Office Configuration Editor is now installed. The computer must be restarted prior to using the OCE.

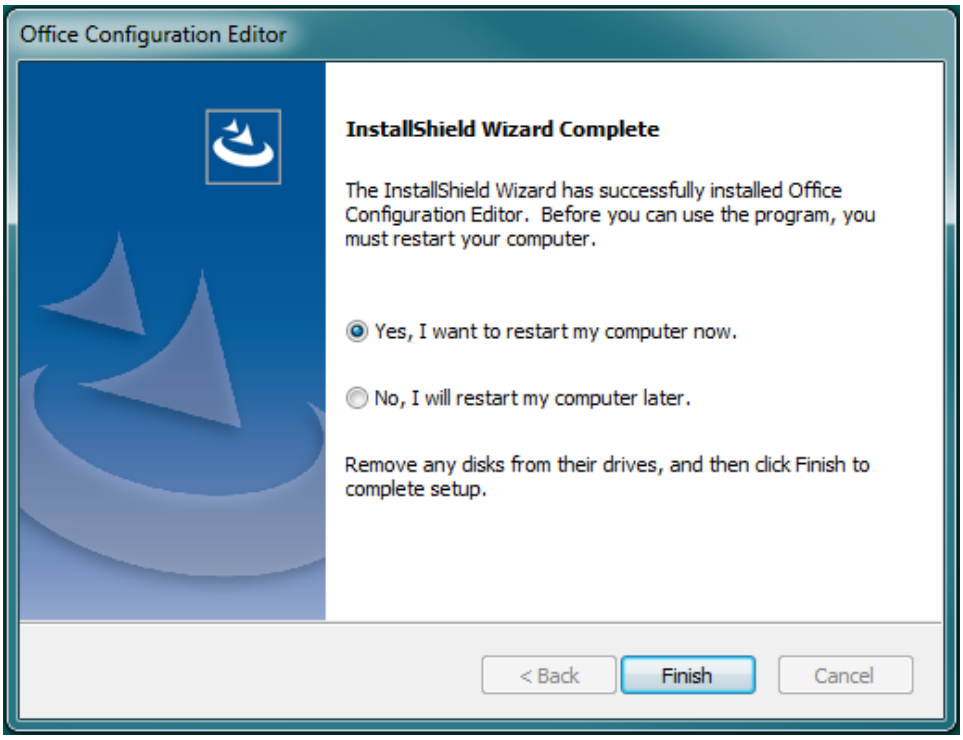

Figure 2-5 Finish OCE Installation

NOTE

NOTE

It is necessary to restart the computer before using the OCE program.

SECTION 3 OPERATION

3.0 OPERATION

3.1 STARTING THE OCE

1. Click on the OCE Server.bat icon on the desktop screen to start the OCE program.

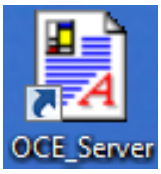

Figure 3-1 Desktop Icon

2. A command prompt screen will appear displaying the starting of the OCE Mongrel server. The server will operate in the background.

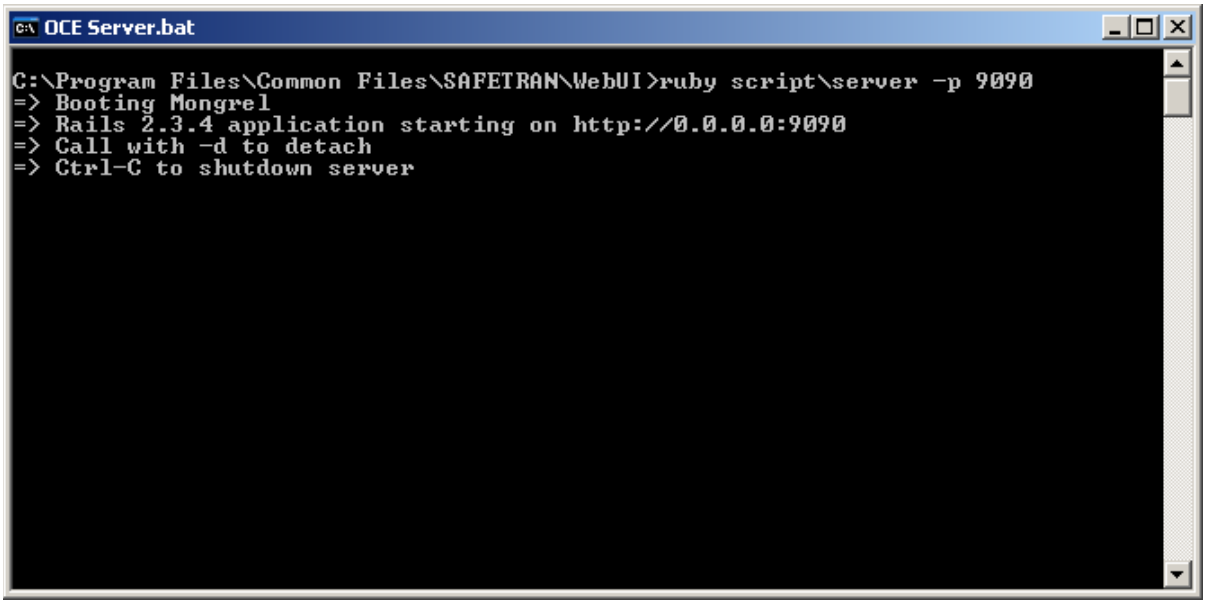

Figure 3-2 Mongrel Server Boot up

3. Open an internet browser (Internet Explorer, Firefox, Chrome, etc.) and enter **"http://localhost:9090/"** in the browser's URL text box and press ENTER to open the WebUI Screen

Figure 3-3 OCE URL

4. The Siemens WebUI screen will appear. Select the User Name **admin** and enter the assigned password (default is Siemens).

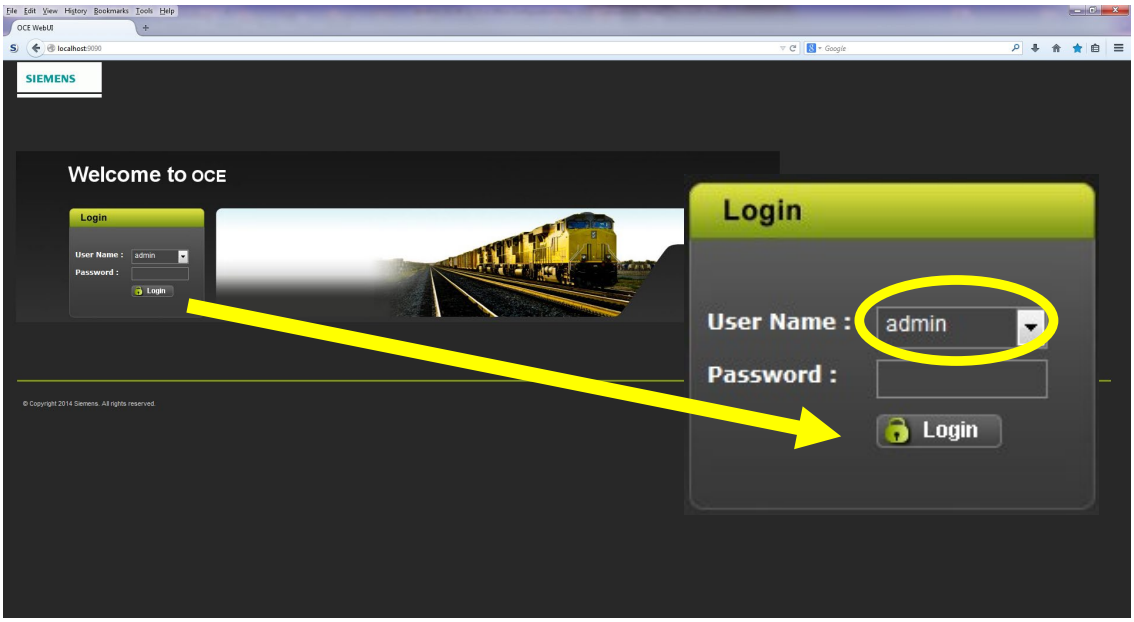

Figure 3-4 Login Page

3.2 INITIAL OCE SETUP

Depending on the type of configurations to be created, the OCE may need to be set up before it can be used for the first time. For GEO, iVIU, VIU, and WC CPU III configurations, no specific setup is generally needed. For GCP sites and iVIU PTC GEO, see the instructions in the following sections.

The user may find it convenient to set up templates for different applications so that a common set of railroad-specific defaults can be used. For GCP 4000 and 5000 templates, see Section 4.5.3; for all other template see Section 4.5.4.

3.2.1 OCE Setup for iVIU PTC GEO

For an iVIU PTC GEO configuration, a master PTC database is required. The OCE installation does not include master databases as these are customer specific. These are supplied by Siemens as a customer-specific ZIP file which is imported into OCE.

3.2.1.1 Installation of Databases and MCFs

To install the databases / MCFs, go to the Maintenance / File Manager screen and select **Import Files**, then use **Browse** to select the customer-specific ZIP file provided by Siemens as shown in the following figure.

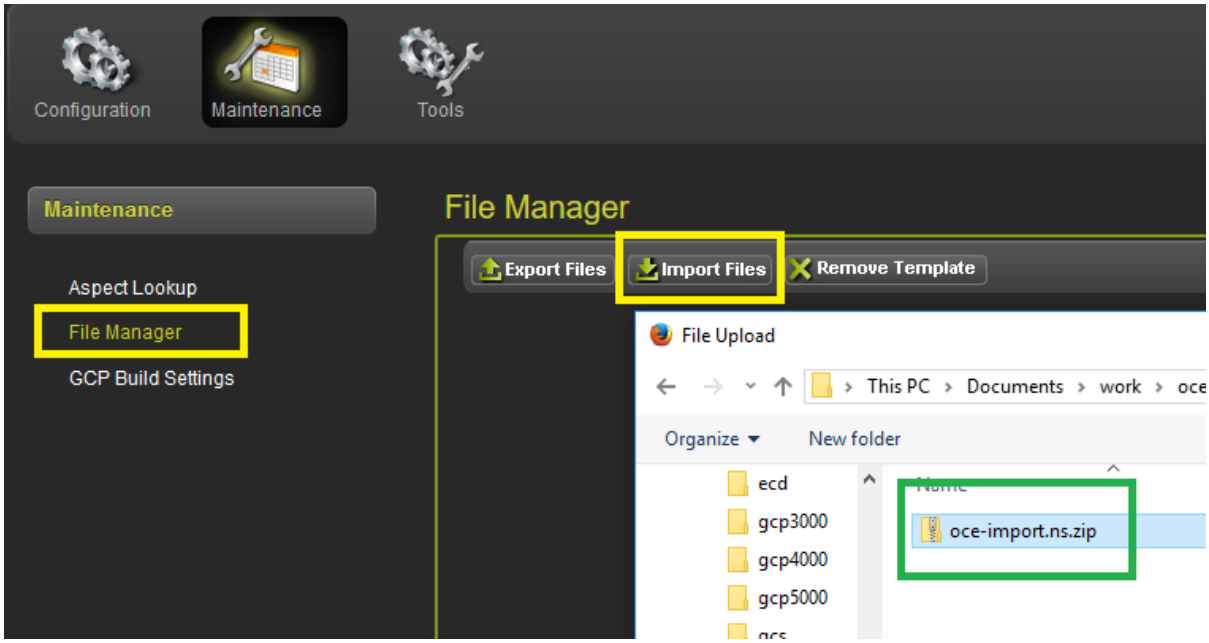

Figure 3-5 Selecting to Import PTC Database and MCF

The OCE will indicate which of the files are imported successfully, (as shown in the following figure). If a file already exists, the choice of whether to overwrite it or not will appear. The imported ZIP file will also contain files called: AspectLookupTable.rr.x.txt and PTCAspectValues.rr.x.txt where rr is the railroad and x is a version number.

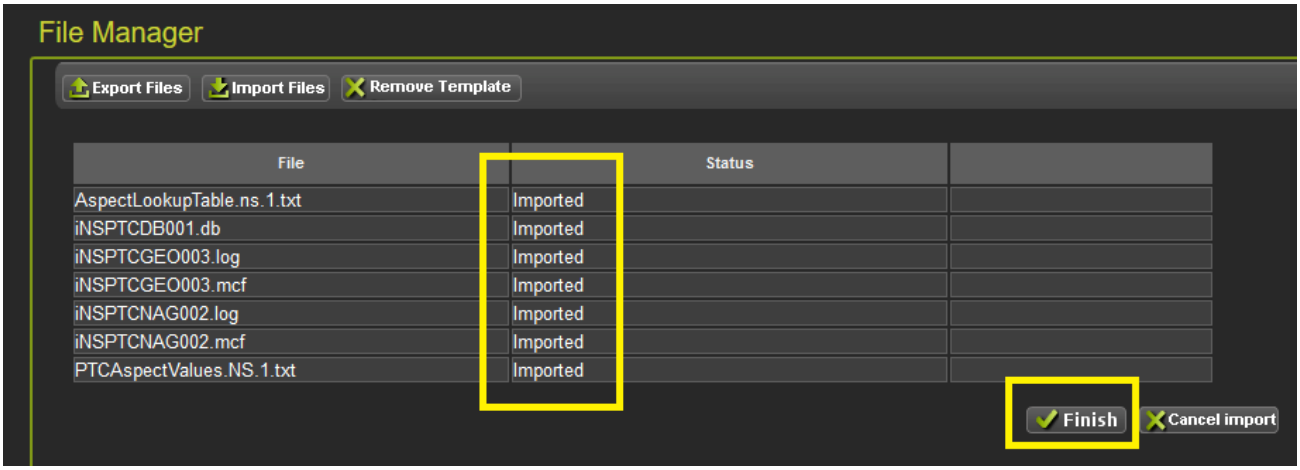

Figure 3-6 Importing PTC Database and MCF

3.2.1.2 Aspect Lookup Table/PTC Aspect Values

The AspectLookupTable file contains a list of Aspect names as found in the GEO GC files and a mapping of the PTC aspect names that correspond to the GEO names. The PTCAspectValues file contains a list of the PTC aspects and the values of the PTC code associated with each aspect. These files must not be edited. The OCE allows them to be updated independently from the actual OCE source code as the AspectLookupTable file is railroad specific.

When the ZIP file is installed, the version of the AspectLookupTable.rr.x.txt and PTCAspectValues.rr.x.txt will be made the current file to use. If there are multiple copies in the ZIP file, the latest version will be made the current one. If, in the future, there are multiple versions of any of these files, the user can go to the Maintenance / Aspect Lookup screen and select the version to use.

The user should go to the Aspect Lookup menu and ensure that the latest version for the correct railroad is selected. Press the **Save** button to save the changes if different files are chosen.

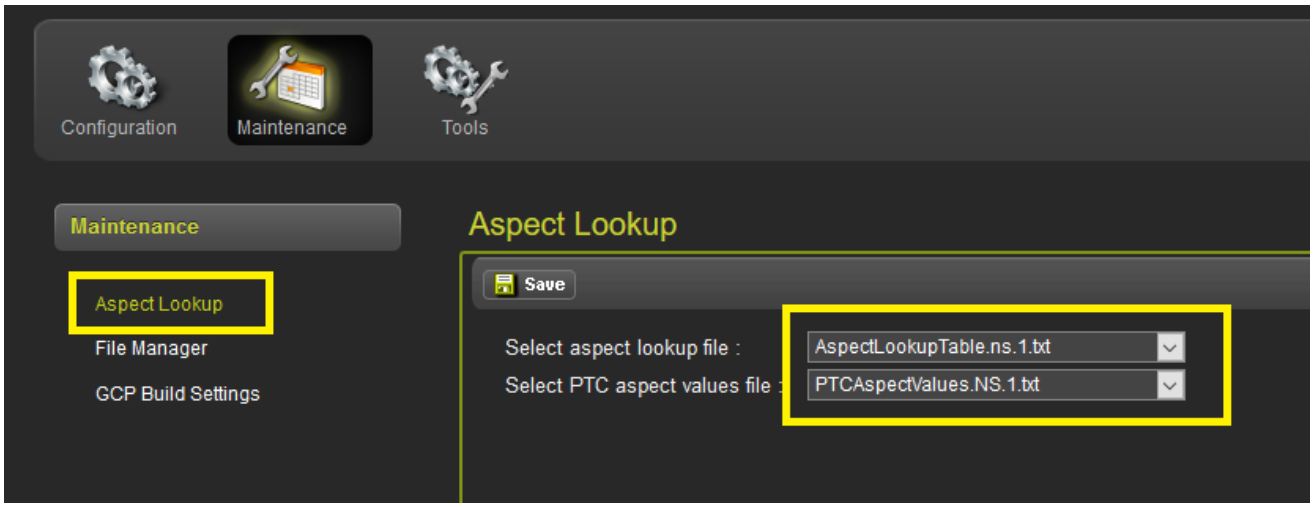

Figure 3-7 Aspect Lookup

3.2.2 OCE Setup for GCP

If the OCE is going to be used to create GCP sites, first go to the Maintenance / GCP Build Settings menu. From here, enter the Output Build path (shown in the green box in the figure below). This is the path where the output files (ZIP file, PAC file, reports) will be stored when a GCP site is built. To fill out this field, it is recommended to cut and paste the file path from Windows explorer rather than typing it out. If the user does not set up a specific path for the OCE, it will create a default workspace located here: C:\Siemens\oce\workspace.

NOTE

NOTE

Each time a new version of the OCE is installed it will revert back to the default workspace location. If a custom workspace is required it will need to be set anytime a new version of the OCE is installed.

Select the check boxes, shown in blue in the following figure, to configure which reports will be included in the installation ZIP file that is created when the GCP configuration is built.

NOTE

NOTE

Template report and relay logic are not applicable to GCE.

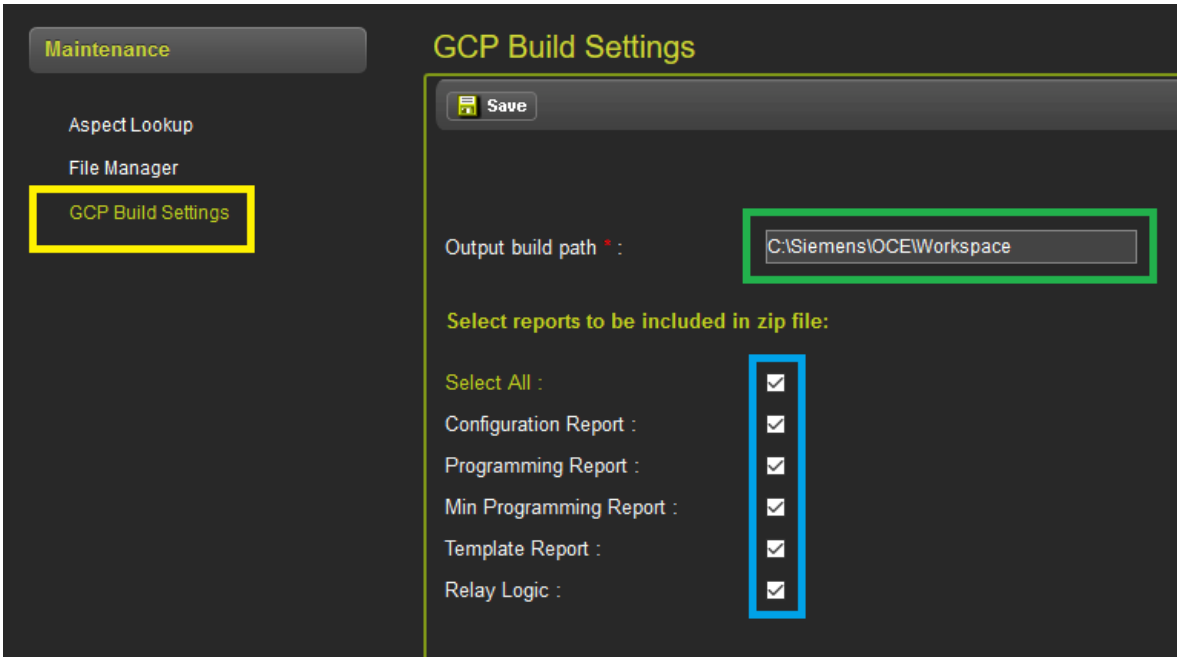

Figure 3-8 GCP Build Settings

3.2.3 Replicating an OCE Installation

If the OCE is already installed on one PC with all the correct files and the user wants to install a copy of the OCE on another PC and set it up with all the same files, use the following procedure:

1. Go to the Maintenance / File Manager screen and select the Export Files option. The web Browser will allow the file to be saved, the exact manner depends on the web browser used.

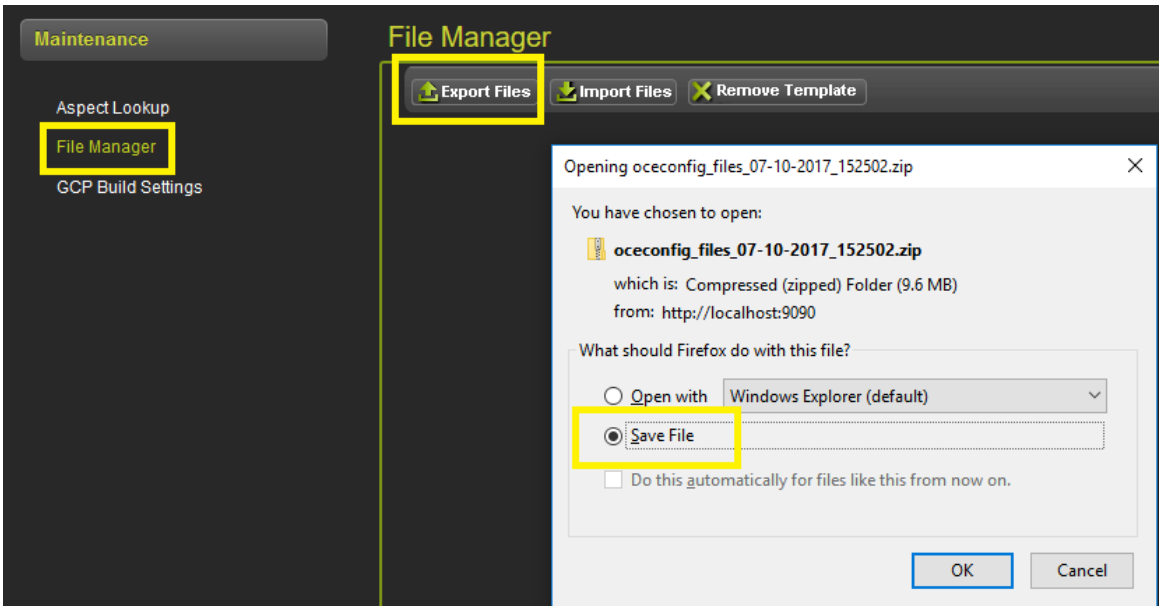

Figure 3-9 File Manager Export

2. This will create a ZIP file containing all the MCFs, templates and files for PTC GEO (master databases and lookup files). Copy this file over to the second PC.
3. Next, install the OCE on the second PC (See Section 2.0 for details).
4. Go to the Maintenance / File Manager and select **Import Files** and then select the ZIP file exported from the first PC. This will install all the MCFs, templates, and PTC related files on the second PC. The OCE may give warnings if the files already exist on the new PC.

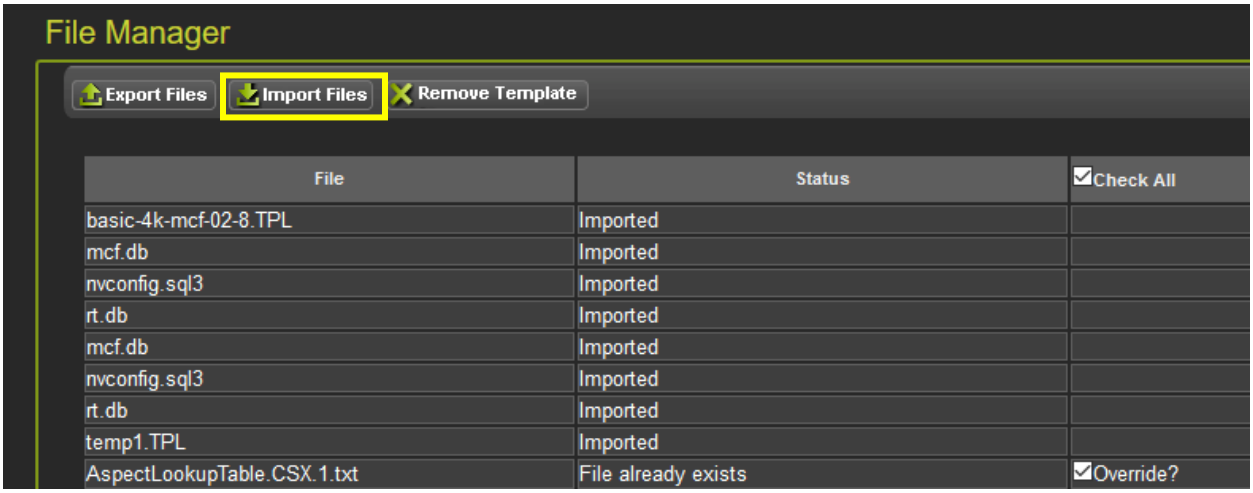

Figure 3-10 File Manager Import

NOTE

Copying the OCE will not transfer specific site information from the original file on the first PC to the second PC, it will be necessary to enter the site information during the configuration process.

3.2.4 Using Templates

The OCE allows the user to create template files for different types of sites. By using a template, the railroad can create their own set of default values to be used across applications for a certain site type, rather than having to set the values specifically for each site created in the OCE.

For GCP 3000+, GCP 4000, GCP 5000, and GCE, a template allows vital (MCF parameters) and non-vital configuration to be set in the template. See section 4.5.3 for details of GCP templates.

For sites other than the GCP 3000+, GCP 4000, GCP 5000, and GCE, the OCE allows the user to create a template for the non-vital configuration portion only. This template will only include the railroad-specific defaults for the non-vital configuration parameters. A separate template can be created for iVIU, iVIU PTC GEO, VIU or WC CPU III Sites. Since GEO sites do not have uploadable, non-vital configuration parameters, there is no template for them.

1. To create a template, first create a site of the desired type (iVIU, iVIU PTC GEO, VIU or WC CPU III) see Sections, 4.1, 4.2, 4.3, and 4.4.
2. Next, enter the values for the non-vital configuration parameters that are required as defaults for all sites of this type.
3. Then go to the Manage Site button and select **Set Template**. This will save the non-vital configuration data base file containing the defaults that were set as a template.

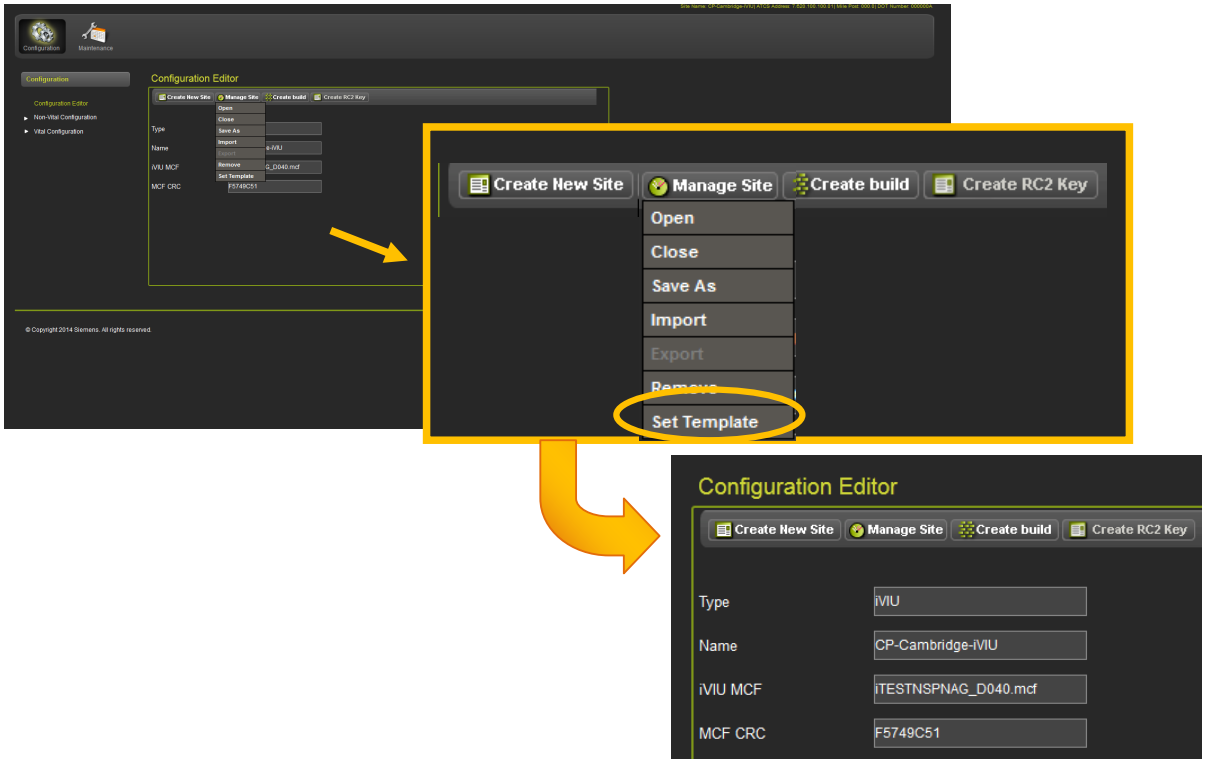

Figure 3-11 Manage Site - Creating a Template

Whenever a new site is created of this type, the template's non-vital configuration database file will be used. The OCE will indicate that it is using a template by showing **Template used** on the Configuration Editor Screen when the site is first created, as shown in the following figure.

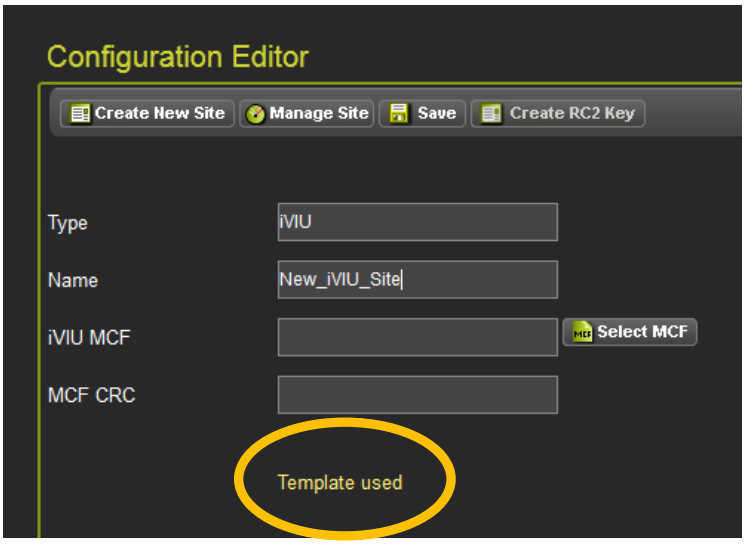

Figure 3-12 New iVIU Site Using a Template

If the template needs to be updated, create a site that uses the template, update the non-vital configuration parameters, then select Manage Site / Set Template (as shown in the following figure) to save it.

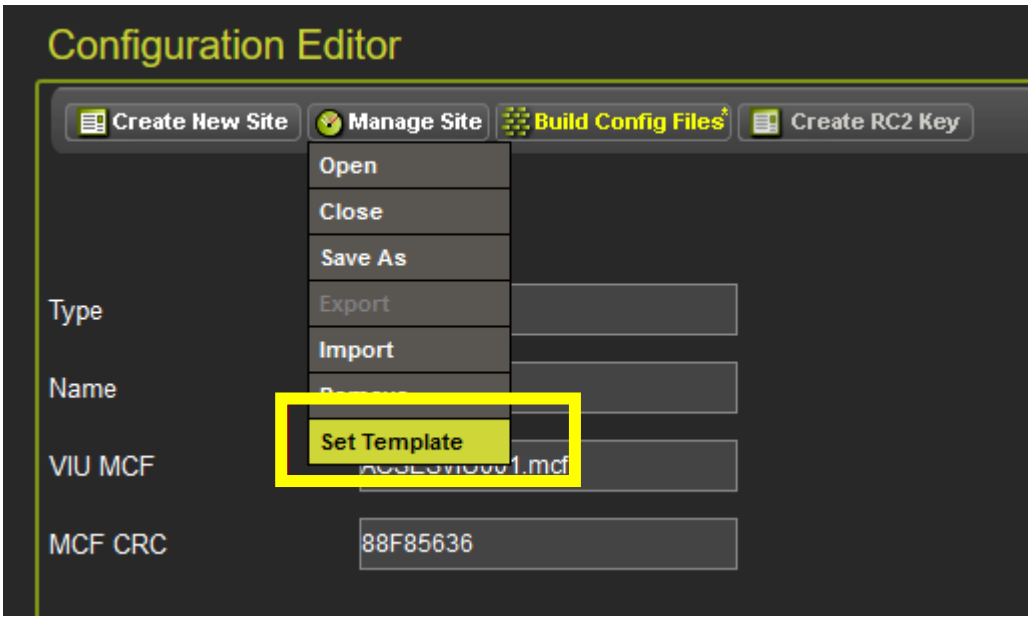

Figure 3-13 Set Template

If the template values are not required for a particular site, selecting the **Set to Default** function will restore the actual default values, rather than using the values from the template (See Figure 3-30).

If the template is no longer required, go to Maintenance / File Manager and select the **Remove Template** button and then select which template is to be removed as shown in the following figure.

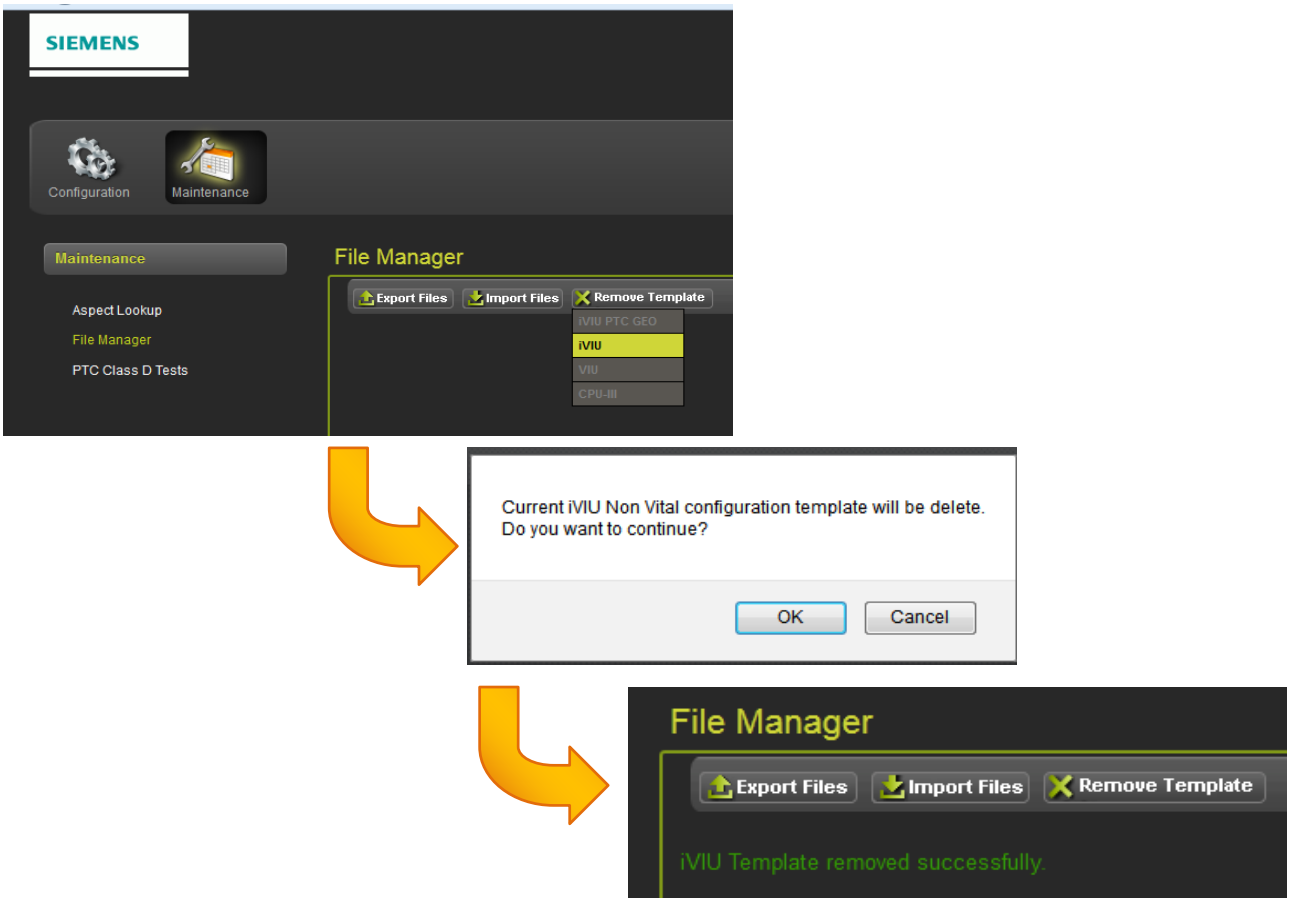

Figure 3-14 Removing a Template

Since a template file is likely to be needed by multiple users, the templates created on one PC may be copied to other machines. To do this, either copy the files directly from Windows explorer on one PC to the other (the template files are stored in a subfolder under: C:\Program Files (x86)\Common Files\SIEMENS\WebUI\oce_configuration\templates\) or go to the File Manager screen, export the files, and import the ZIP file into the second machine. See section 6.1.2 for more details.

3.2.5 OCE File Structure

It may occasionally be useful to know where the OCE files are on the PC. The following assumes the OCE is installed in its normal default folder of C:\Program Files\Common Files\Siemens.

When the user creates a site, a folder for the site is created under:

C:\Program Files\Common Files\Siemens\WebUI\oce_configuration\admin

Master Database is in:

C:\Program Files\Common Files\Siemens\WebUI\Masterdb

The AspectLookupTable.rr.x.txt and PTCAspectValues.rr.x.txt used for iVIUPTC GEO sites are in:

C:\Program Files\Common Files\Siemens\WebUI\doc\geo_aspects

C:\Program Files\Common Files\Siemens\WebUI\doc\ptc_aspects

The MCF files are kept under a specific folder for each site type:

C:\Program Files\Common Files\Siemens\WebUI\oce_configuration\mcf\gcp

C:\Program Files\Common Files\Siemens\WebUI\oce_configuration\mcf\viu

C:\Program Files\Common Files\Siemens\WebUI\oce_configuration\mcf\iviu

C:\Program Files\Common Files\Siemens\WebUI\oce_configuration\mcf\geo

C:\Program Files\Common Files\Siemens\WebUI\oce_configuration\mcf\CPU III

The templates files are kept under a specific folder for each site type:

C:\Program Files\Common Files\Siemens\WebUI\oce_configuration\templates\viu

C:\Program Files\Common Files\Siemens\WebUI\oce_configuration\templates\iviu

C:\Program Files\Common Files\Siemens\WebUI\oce_configuration\templates\iviu ptc geo

NOTE

NOTE

The folder paths listed above are used by 32-bit Windows machines. When a 64-bit machine is used the path will include ‘(x86)’ as shown in the following example:

C:\Program Files (x86)\Common Files\Siemens…

3.3 CONFIGURATION EDITOR

After logging into the OCE, the main screen opens with the Configuration Editor screen. There are four choices listed: Select Product, Create New Site, Manage Site, and Create RC2Key.

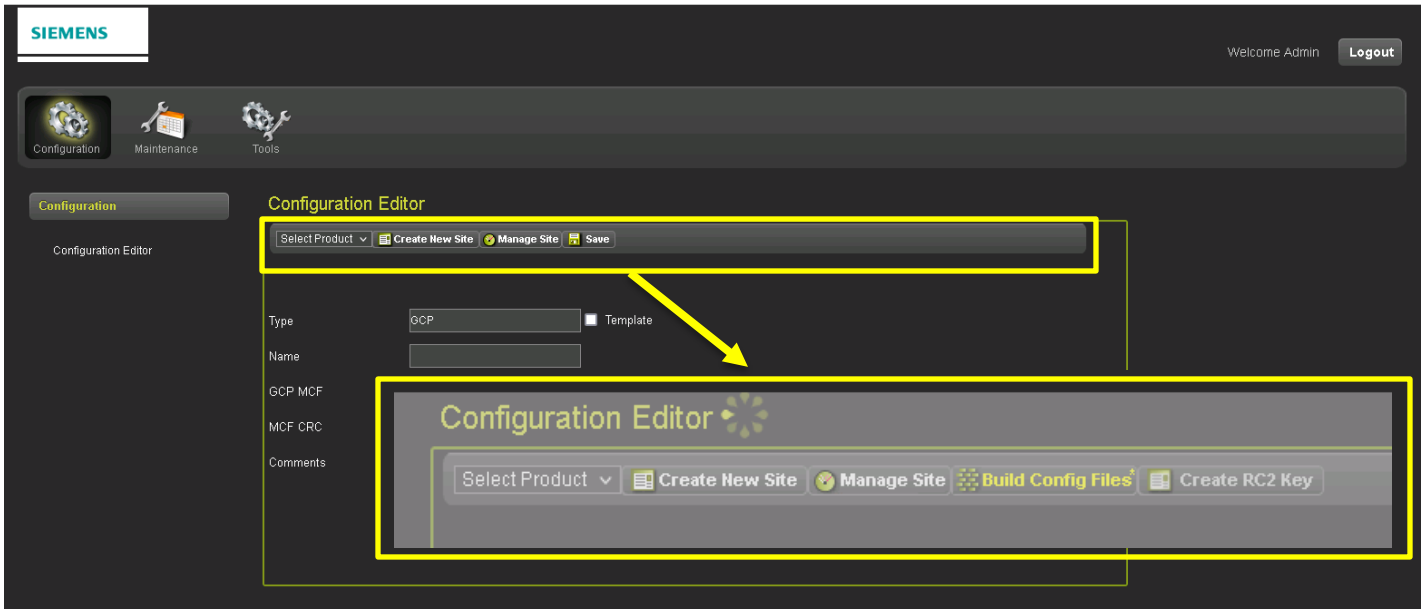

Figure 3-15 Configuration Editor Opening Screen

3.3.1 Select Product

The following selections are available:

iVIU PTC GEO is used to create the configuration for the iVIU or PTC Console to PTC Enable an existing GEO location.

iVIU is used when the iVIU Console or PTC Console is used in a stand-alone application.

VIU is used to create the configuration for VIU devices (e.g. VIU 20, VIU 20e VIU 16i/8i, VIU-CAT).

GEO is used to obtain the UCN for a specific GEO location and obtain the Configuration Report containing the site configuration settings.

NOTE

The OCE 2.6.3 does not support the older, Non-Appliance Model GEO applications.

GCP is used to create the configuration for GCP 4000, GCP 5000, GCP 3000+, or SGCP 4000/MS 4000 locations.

WC CPU3 is used to create MCF configurations for WayConneX CPU III based applications.

Select the required product from here. The OCE will retain this setting, and it is used to customize the other menus so that only applicable options for the product are shown. The user can change the product selection, as necessary.

3.3.2 Create New Site

Create New Site is the starting point of creating a brand new installation. When the user presses Create New Site, the site Type is automatically populated with the Product Type selected. The last used MCF for the specific product is also populated. Thus, for example, if the user has an approved GCP MCF that was used for their last project, the new project will default to the same MCF. If a different MCF is required, press the Select MCF button to change it.

Detailed information for creating a site of each specific application type is found in Section 4.0.

3.3.3 Manage Site

Manage Site is used to perform operations on a previously created site. Manage Site has the following options:

- Open
- Close
- Save As
- Export
- Import
- Remove
- Set Template (not visible in GCP and GEO)

Open is used to open a site that has previously been created. The Product type is automatically set based upon the type that was chosen previously, but may be changed here if necessary.

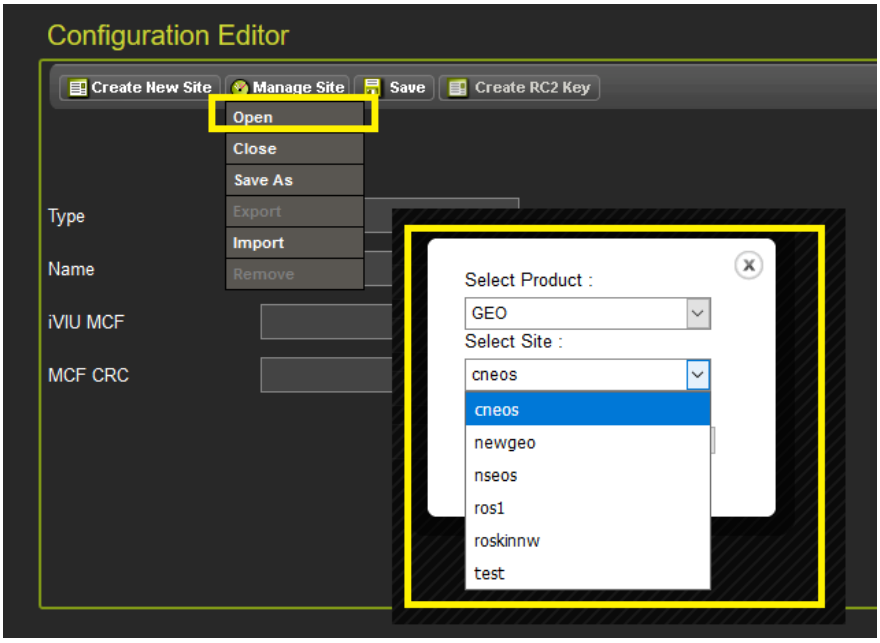

Figure 3-16 Manage Site 'Open' Menu

Close is used to close the site that is currently open in the OCE.

Save As is used to make a copy of the currently open site with a new name.

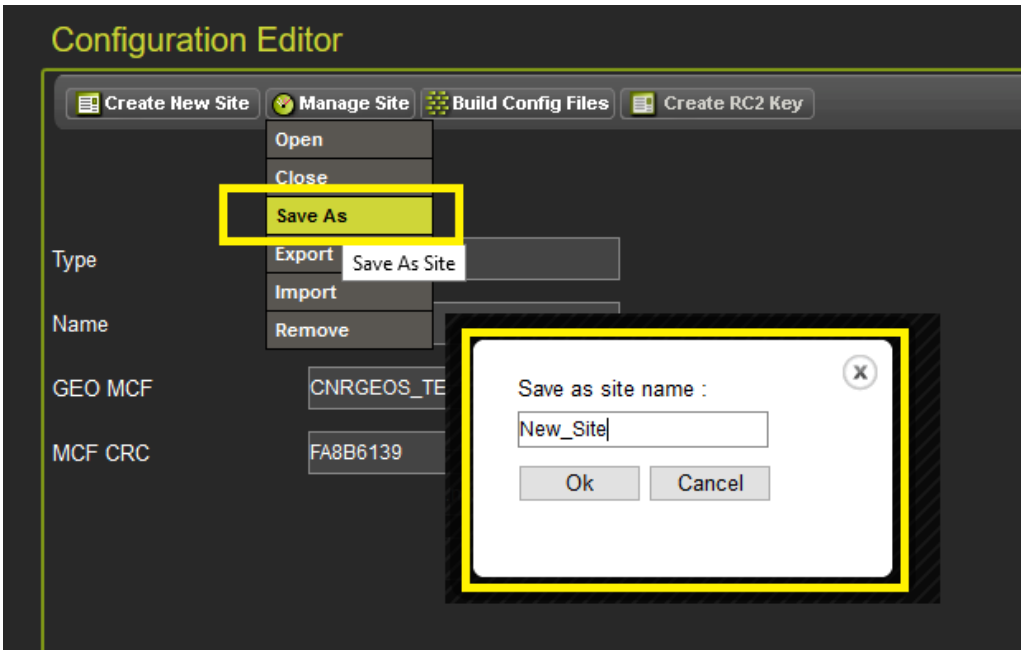

Figure 3-17 Manage Site 'Save As' Menu

Export is used to create a ZIP file of the currently open site which contains all the site files, so that it can be copied to a new machine or installed in the field. Because the OCE is a Web/Server type application, when a file is downloaded, it is saved in the default path set for the type of web browser being used.

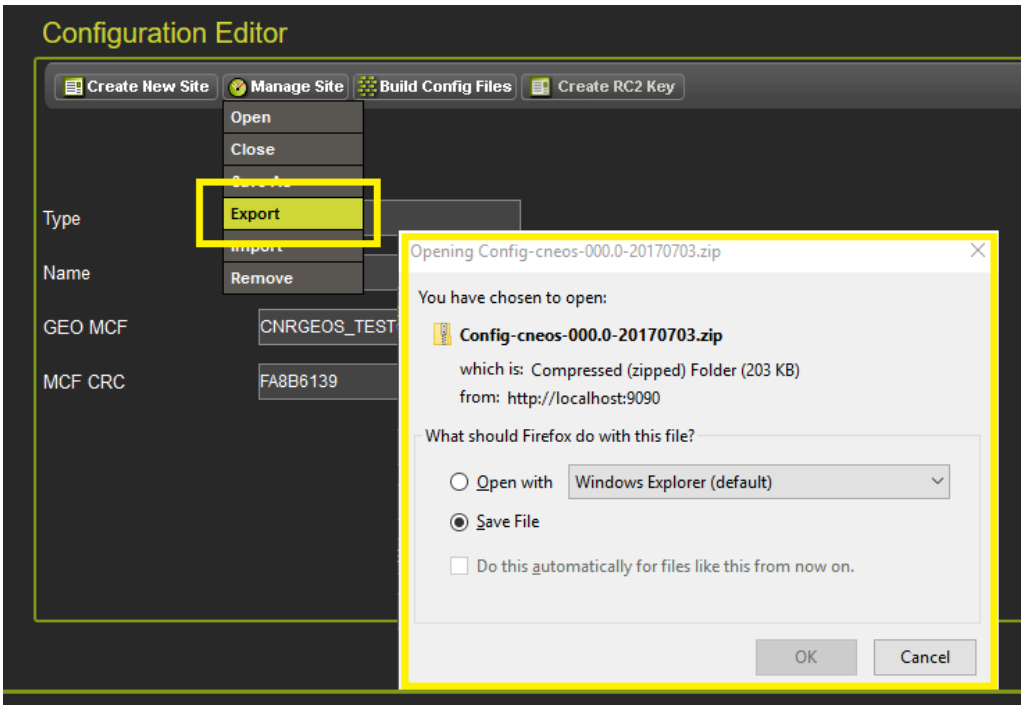

Figure 3-18 Manage Site 'Export' Menu

Import is used to create a new site from a ZIP file copied to an external source (i.e. another PC, exported from another site, etc.). Select **Browse** on the Import File window to select the ZIP file to be imported.

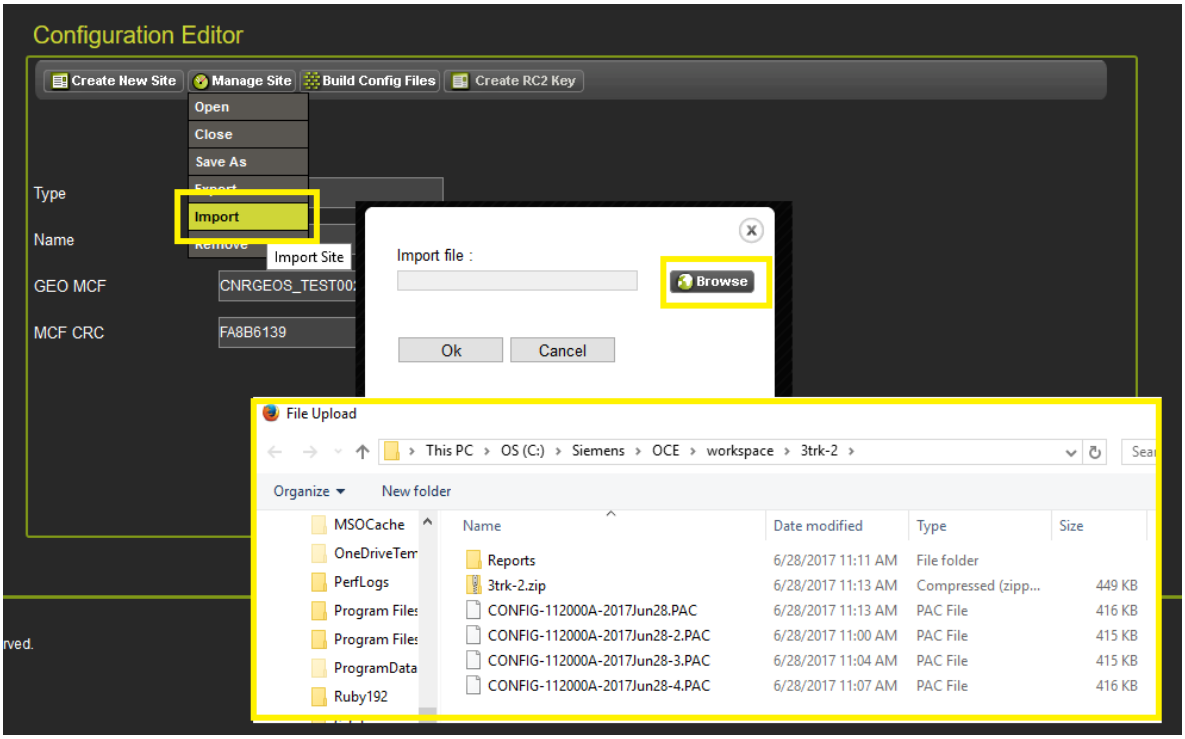

Figure 3-19 Manage Site 'Import' Menu

Remove is used to delete all the files for the currently open site. When **Remove** is selected the OCE will ask for confirmation before the site is deleted.

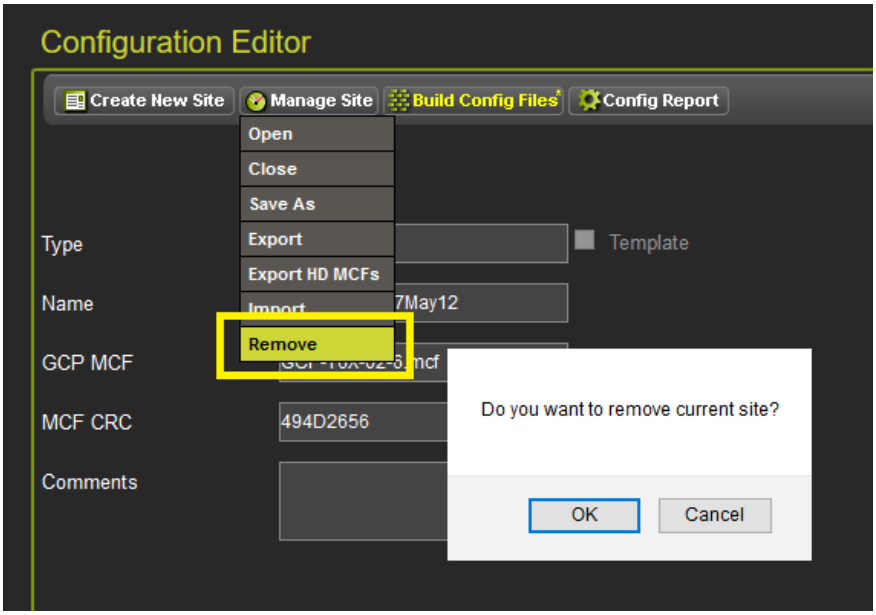

Figure 3-20 Manage Site 'Remove' Menu

3.3.4 Create an RC2Key File

The OCE can be used to create a file containing the RC2Key used in PTC applications. This function is available without having to create configurations for a specific site; hence it could be used by separate personnel in the railroad, so that the designers creating specific configurations do not need to know the specific RC2Keys being used.

Click on the **Configuration** icon and select the **Create RC2Key** button.

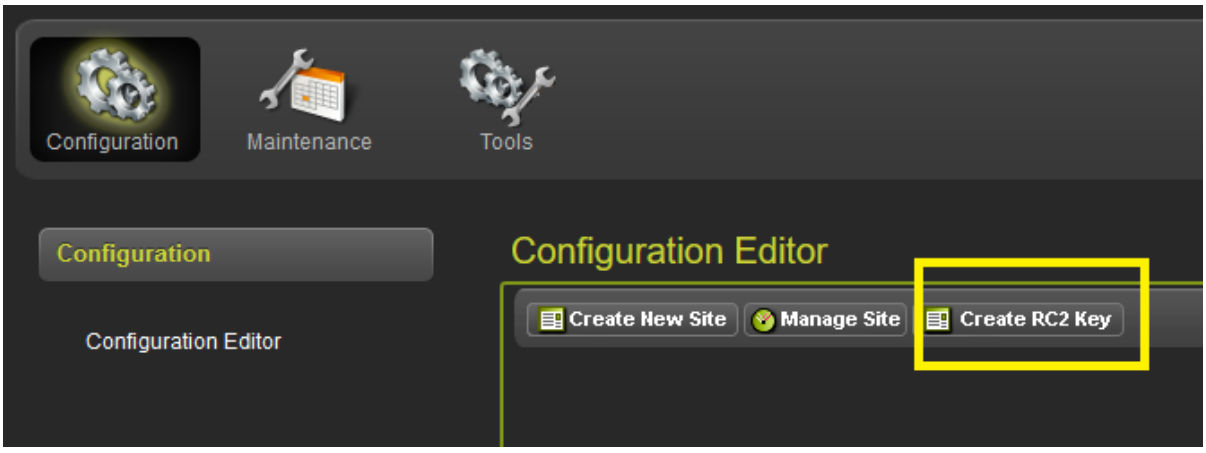

Figure 3-21 Create RC2Key

Then enter the desired RC2Key and re-enter in the confirmation box as shown in the following figure.

After entering the RC2Key, press the **Create RC2Key File** button. The OCE will indicate success and will show the CRC of the RC2Key file.

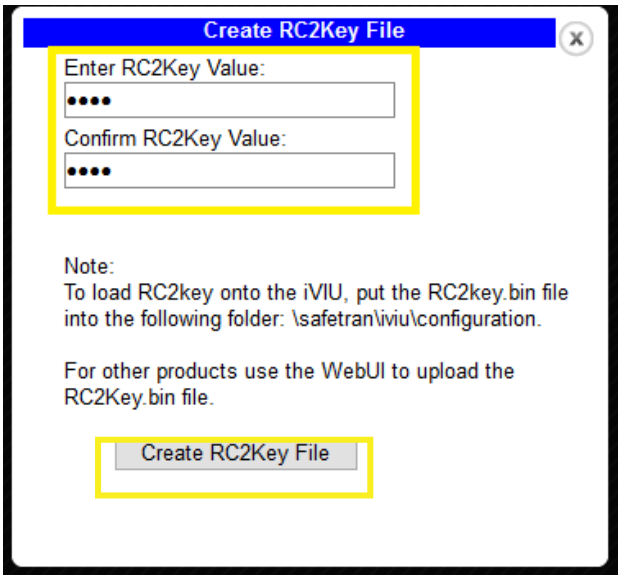

Figure 3-22 Creating an RC2Key

This CRC can be used to identify that the correct file is being loaded into the box, or listed on the plans, etc. without having to disclose the actual RC2key value. Select the download button to save the file. To change the value in this file, enter a new RC2Key and press update.

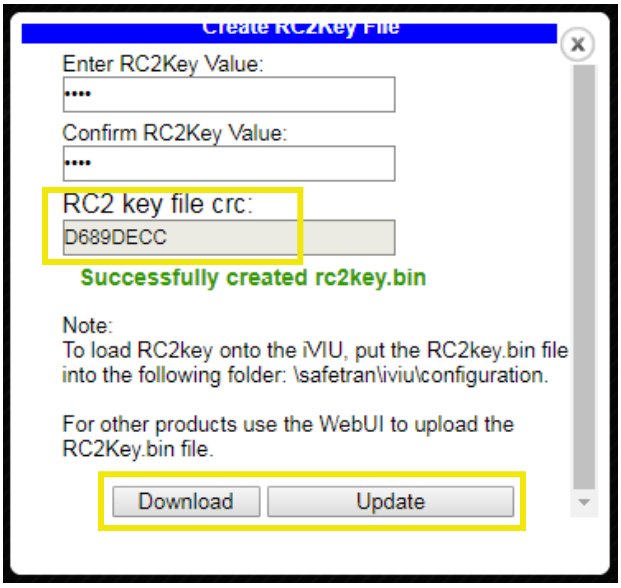

Figure 3-23 RC2Key CRC

If the RC2Key file is opened in the text editor, the CRC of the file is visible. The actual RC2Key is kept in encrypted format in the file so it cannot be read.

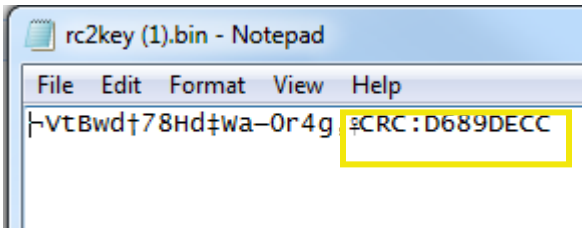

Figure 3-24 RC2Key.bin CRC

3.3.5 Non-Vital Configuration

This section describes common features of the non-vital configuration menu that are available for the iVIU PTC GEO, iVIU, VIU and WC CPU III. For GCP see section 4.5.1.2.

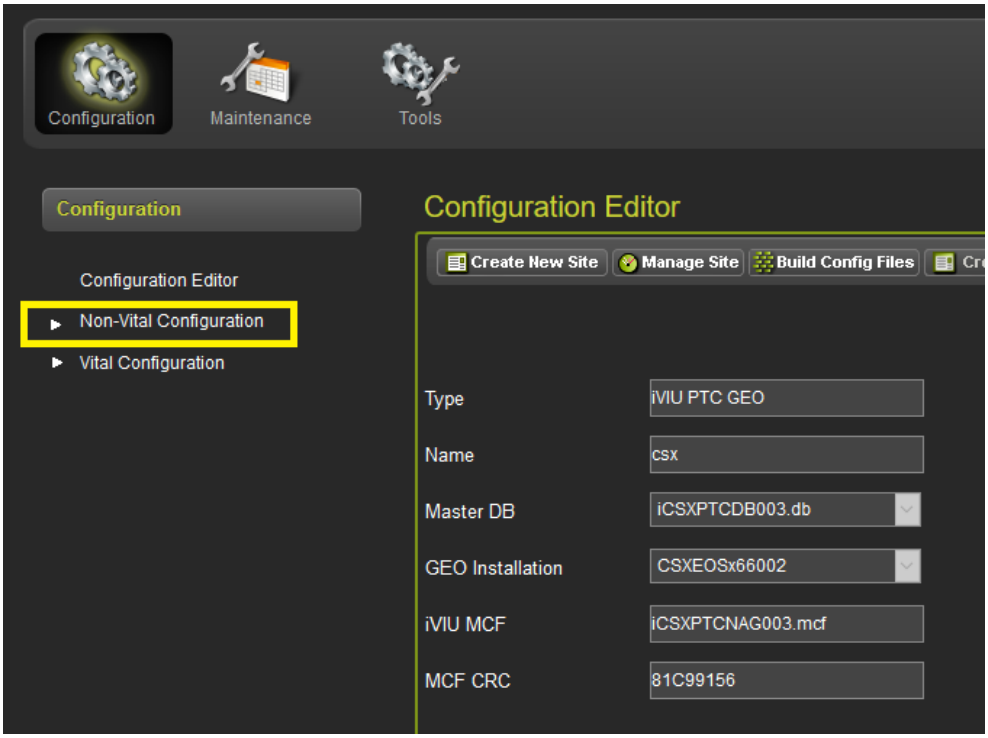

Figure 3-25 Non-Vital Configuration Menu

The following figure shows example menus found under the Non-Vital Configuration options.

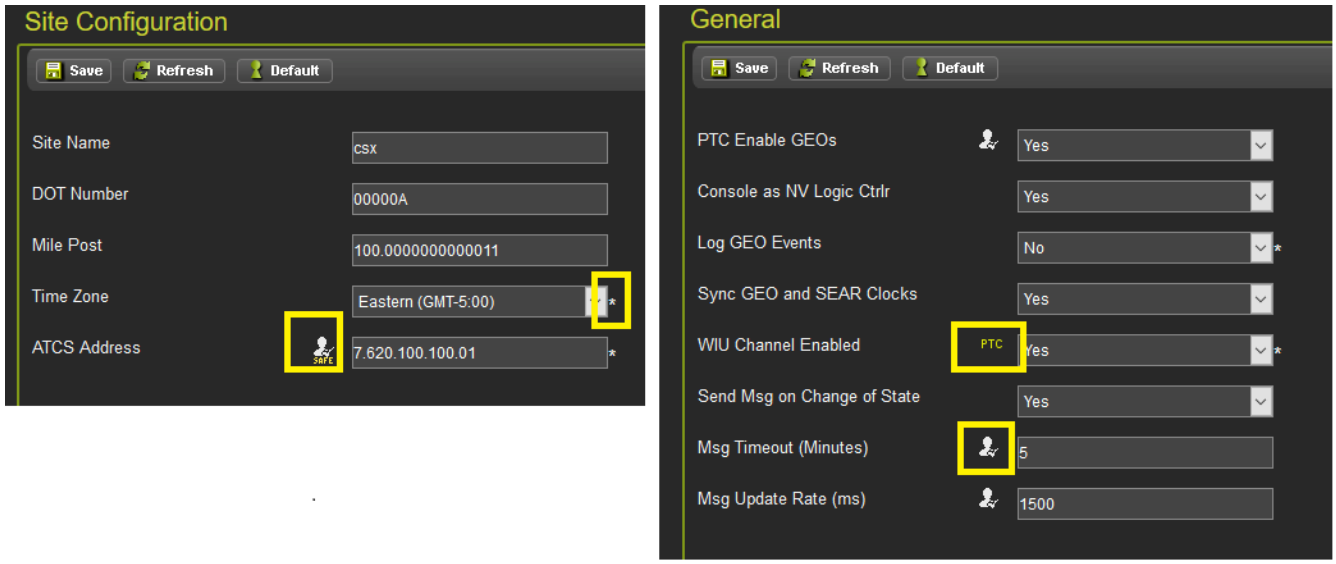

Figure 3-26 Example Non-Vital Configuration Menu

The above symbol indicates that the parameter requires local user presence to be changed when on the equipment installed in the field and that the unit be put into Edit mode, i.e. the vital processor is taken offline, which will cause the system to go into a restrictive state, (controlled signal will go to Stop and crossing will activate). This symbol is generally only used on fields that the vital processor uses.

The above symbol indicates that the parameter requires local user presence to be changed when on the equipment installed in the field, but Edit mode is not required, so the system will not go restrictive.

The Web UI can still be used to change the actual value, but someone first has to confirm that they are at the unit in the field by pressing a button on the unit in the field. The specific button will depend on the actual equipment; see appropriate equipment manuals for more details.

The above symbol indicates that the value of this parameter is used in the PTC UCN.

The asterisk (*) symbol on the right of the parameter values indicates that the parameter is listed at its default value.

Each parameter screen has some basic control buttons and alerts common to all. Figure 3-27 displays typical control buttons and alerts for saving or discarding changes made to the configuration.

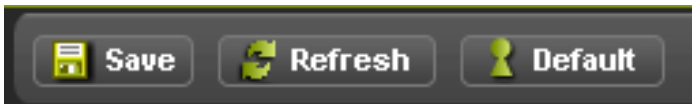

Figure 3-27 Basic Control Buttons

The **Save** button saves configuration parameters, the **Refresh** button refreshes the page, and the **Default** button returns all parameters on the page to default values.

After parameters on a page have been changed, click the **Save** button to save the changes. If the user tries to navigate away from a page before saving the changes, the OCE will give a warning message asking whether to save or discard the changes.

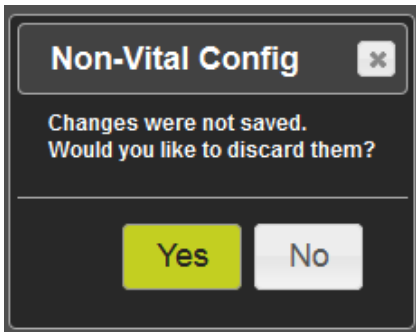

Figure 3-28 Basic Alert

For general text-based fields, type in the appropriate new value: the OCE will provide warnings such as the ones show in the Figure 3-29 if the entered data is out of range.

To set the fields on a specific non-vital configuration page back to defaults, select the **Default** button at the top of the page (as shown in the following figure). The OCE does not ask for confirmation for this action.

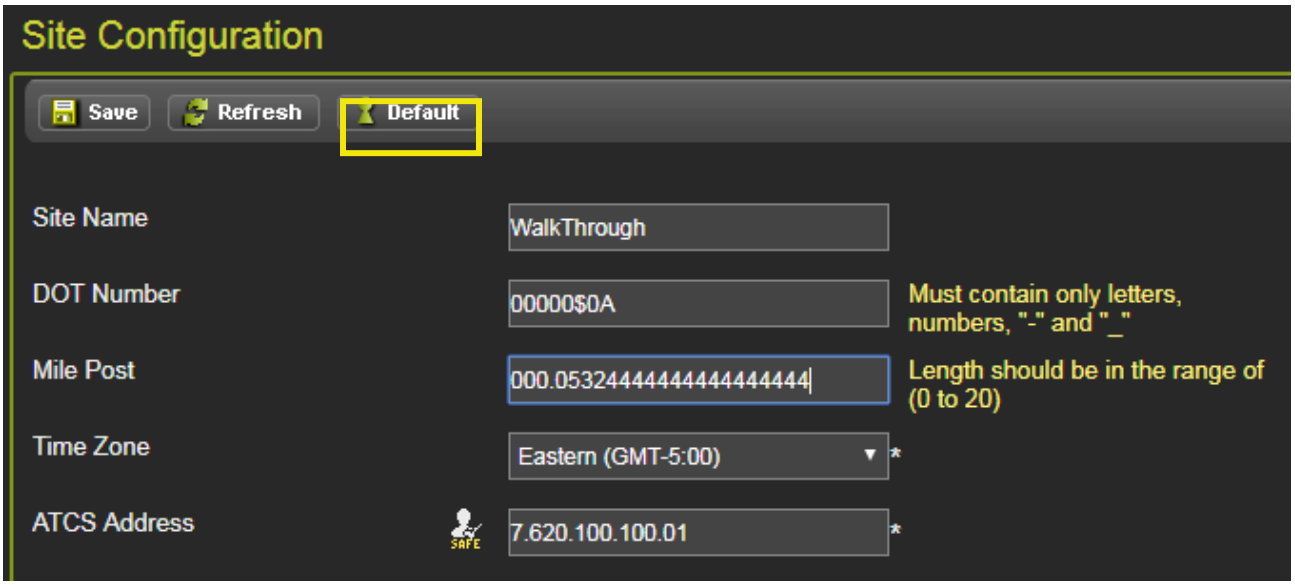

Figure 3-29 Data Entry Warning Messages

To set the non-vital configuration on all pages back to default, first select the **Set to Default** menu from the menu on the left, this will bring up the **Set to Default** screen, then select the **Default** button. The OCE will ask the user to confirm the command to set the non-vital configuration parameters back to default.

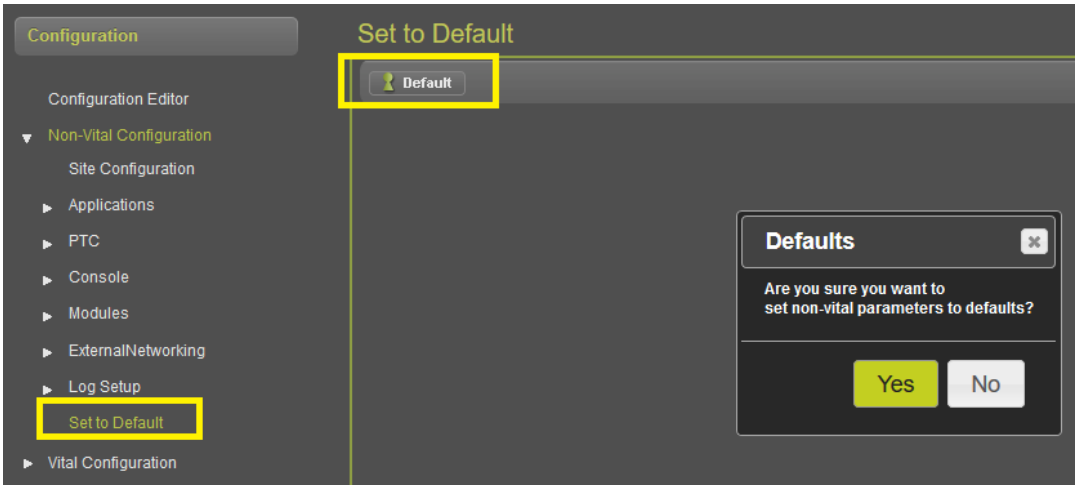

Figure 3-30 Set to Default

3.3.6 Vital Configuration

Each different product type, excepting the GCPs (see Section 4.5), will have a Vital Configuration menu. The submenus under this and the parameters on the submenus will depend on which MCF is used. Generally, the Vital Configuration menu has:

- Logical Configuration section under which are configuration parameters and timers specific to the MCF application logic
- Physical Configuration section under which are configuration parameters related to specific I/O module types used in the application
- Site Configuration: this section is shown for products that do not have a Non-Vital Configuration section, such as GEO
- Unique Check Number (UCN) is grayed out as this is not set in the OCE, it is only set in the field

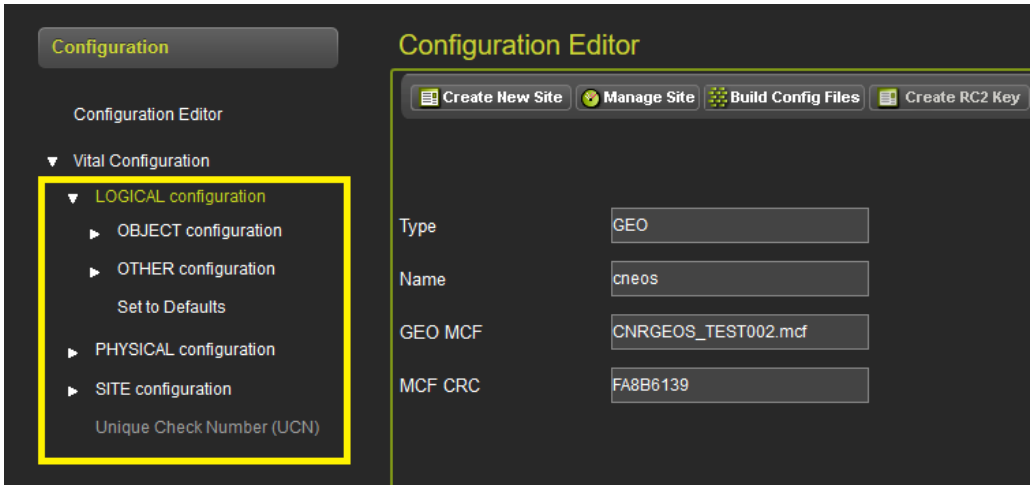

Figure 3-31 Vital Configuration Menus

The Vital Configuration menus will use many of the same symbols as the non-vital (described in the previous section) it will, however, also have the symbol shown in the following figure.

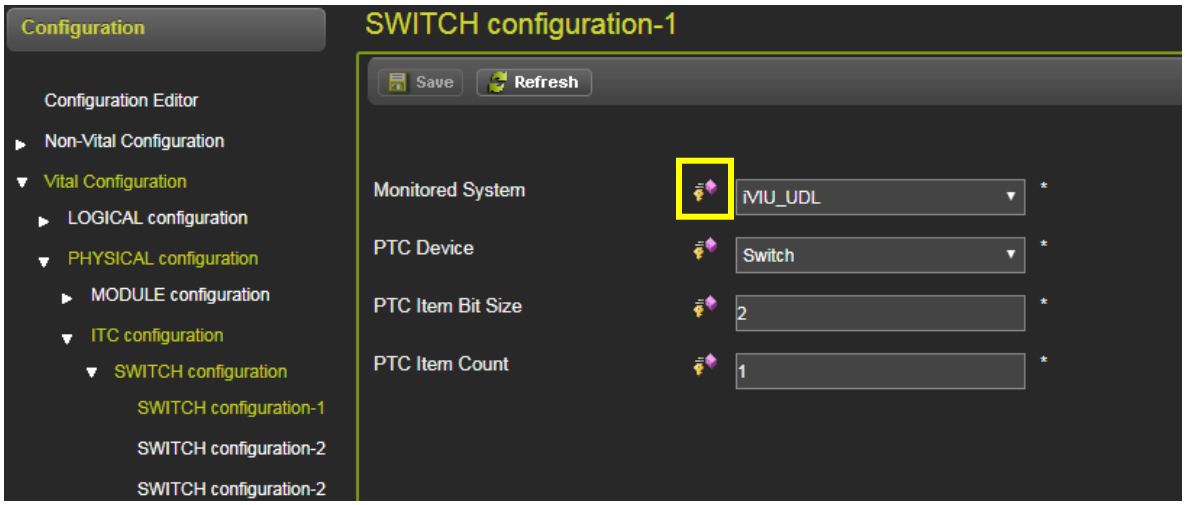

Figure 3-32 Vital Configuration Symbols

This symbol indicates the parameter is included in the UCN. To set the vital configuration parameters back to default in GEO/VIU/iVIU/IVIU PTC GEO, use either the **Set to Defaults** under Physical Configuration or the one under Logical Configuration. They will both set all the configuration parameters back to their default values.

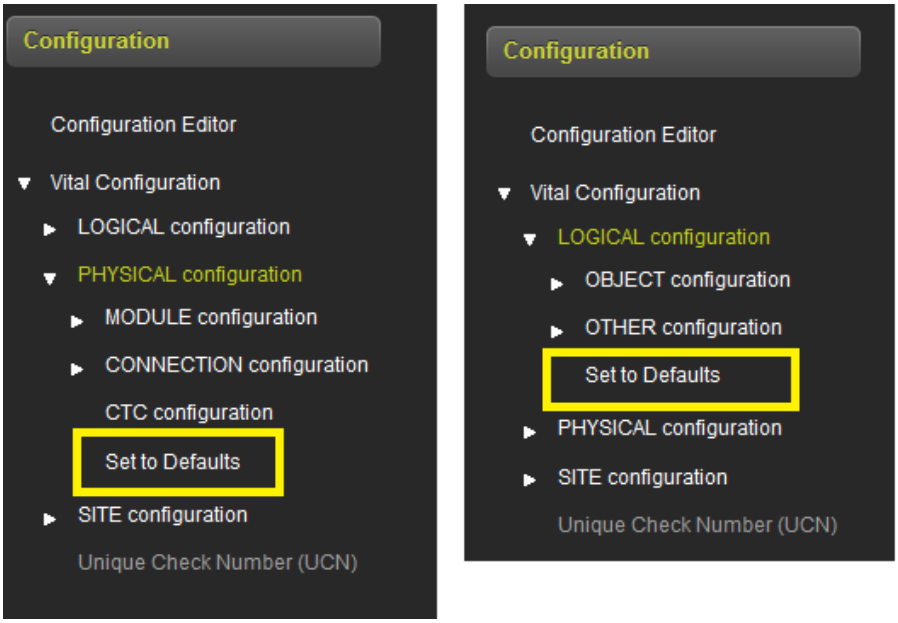

Figure 3-33 Vital Set to Defaults

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SECTION 4 CREATING PRODUCT-SPECIFIC CONFIGURATIONS

4.0 CREATING PRODUCT-SPECIFIC CONFIGURATION

4.1 IVIU PTC GEO SITES

The OCE can be used to create an iVIU PTC GEO installation for applications in which the iVIU Console (A80615) or PTC Console (A80672) is used to PTC-enable GEO systems. The OCE is used to:

- Automatically set the vital MCF parameters in the iVIU MCF from settings in the master GEO database for the chosen GEO installation
- Automatically set the Modules in the non-vital configuration based upon the chosen GEO installation
- Set the PTC related parameters, e.g., Class D settings, EMP settings, WIU message layout
- Set other non-vital configuration parameters
- Obtain the UCN for the specific installation
- Obtain the PTC UCN for the specific installation
- Obtain the configuration report containing the configuration settings
- Create the configuration files that can be loaded onto the Console using the Web UI or USB

The following procedure will provide step-by-step instructions on building an iVIU PTC GEO site.

1. From the Configuration screen, click on the **Product** button and select IVIU PTC GEO on the drop-down menu.
2. Then click on the **Create New Site** button.

Figure 4-1 Create iVIU PTC GEO Site

3. The OCE will show the screen illustrated in the following figure. Enter the name for the site (the name can be up to 20 characters, including spaces).
4. Select the appropriate Master PTC database using the **Master DB** drop-down menu. The Master PTC database does not come installed with the OCE, it is provided separately to each user.

Figure 4-2 iVIU PTC GEO Site Configuration Editor

5. After the Master database has been selected, choose the GEO Installation from the drop-down list of installations within the selected database.

NOTE

NOTE

The **Product** button is shown to the left of the **Create New Site** button on all OCE Configuration Editor screens. This button is not shown in the following figures.

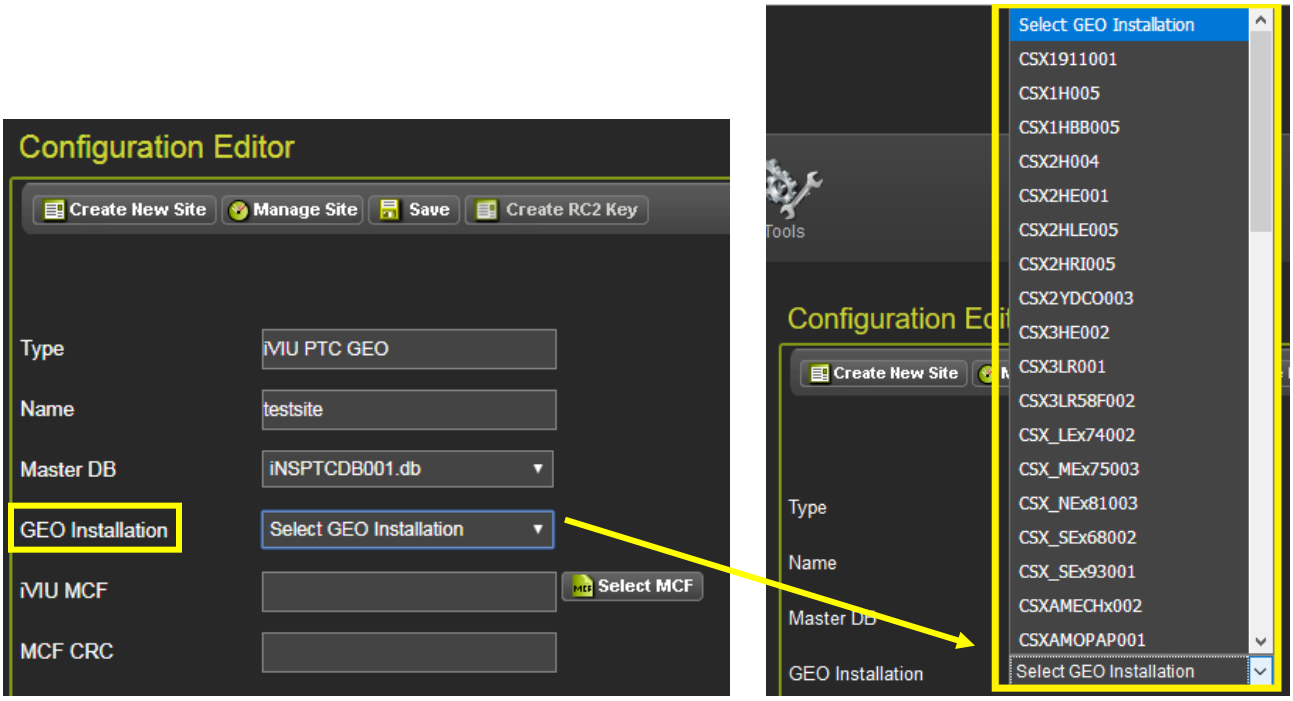


Figure 4-3 iVIU PTC GEO Site Select GEO Installation

6. After the GEO installation has been selected, the OCE will indicate whether this is an Appliance Model or a Non-appliance model GEO.
7. Next, press the Select MCF button. The OCE will bring up a screen where the MCF and MCF CRC can be selected.

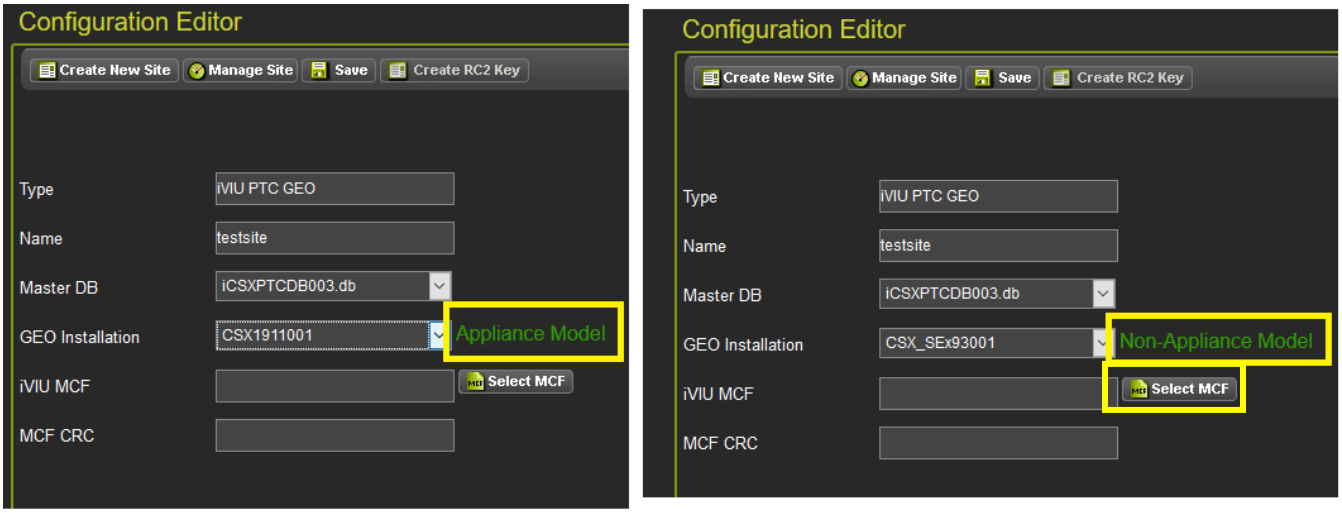


Figure 4-4 iVIU PTC GEO Appliance vs Non-Appliance

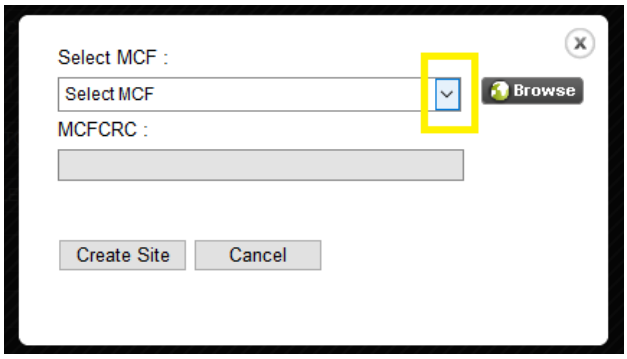


Figure 4-5 iVIU PTC GEO Select MCF

8. The correct iVIU MCF for the type of GEO installation has to be selected on this screen. For Non-Appliance GEO Installations the MCF name has 'NAG' in it, as shown in the following figure on the left. For Appliance GEO Installations the MCF name has 'GEO' in it, as shown in the following figure on the right. Choose the applicable MCF.

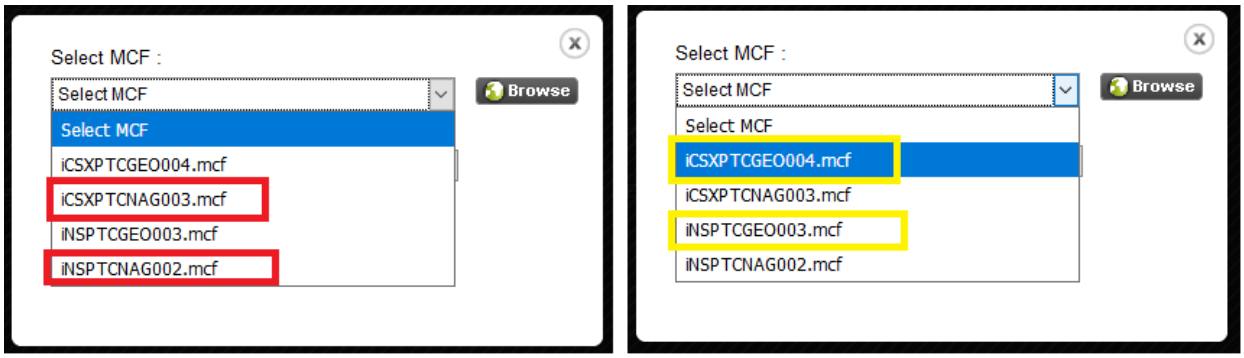


Figure 4-6 iVIU PTC GEO Appliance versus Non-Appliance

The OCE will automatically fill in the MCF CRC as shown in the following figure. Next press the **Create Site** button. The OCE will process the files and, after a few seconds, return to the main Configuration Editor screen.

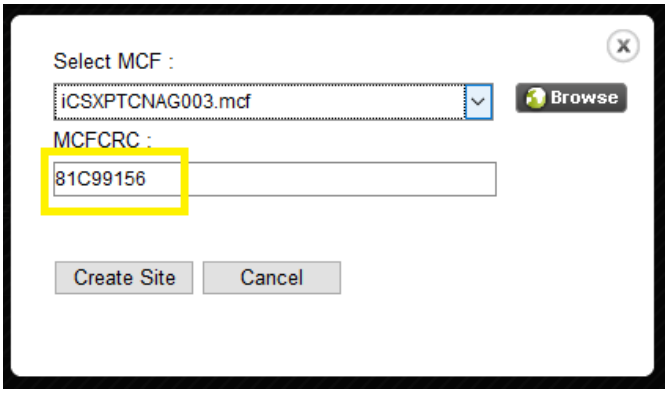


Figure 4-7 MCF CRC

NOTE

When creating a new site, the OCE will ask for a MCF. The OCE keeps a repository of MCFs by site type, so if a MCF has been previously used or has been imported using the File Manager, the MCF will appear in the drop-down menu. After selecting the appropriate MCF, OCE will automatically fill in the MCF CRC if the .log file is present in the repository. If the MCF has not been used before it is necessary to click on the **Browse** button to find the MCF and manually enter the MCF CRC which is obtained from the MCF's log file. The OCE will then copy the MCF over to its repository, so that if it is used again, it is accessible from the drop-down menu.

4.1.1 Vital Configuration

The Vital Configuration menu for iVIU PTC GEO appears as illustrated in the following graphic.

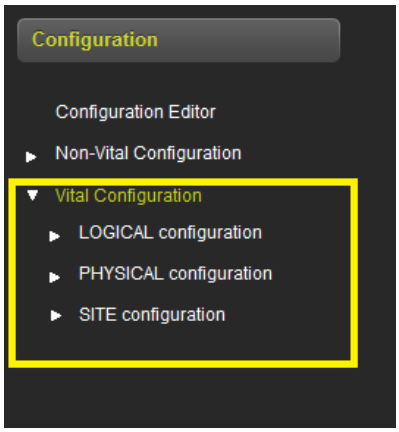


Figure 4-8 Vital Configuration Menu

4.1.1.1 Logical Configuration: Non-Appliance Model GEO

Under the Logical Configuration/Object Configuration are shown parameters associated with Signals, Switches, and Hazard Detectors. The information displayed on this screen will depend upon whether the MCF is an appliance model or a non-appliance model MCF.

The following screen shows the signal object information from a non-appliance model GEO, some of the values on this screen are automatically derived from the PTC database and some need to be entered by the user.

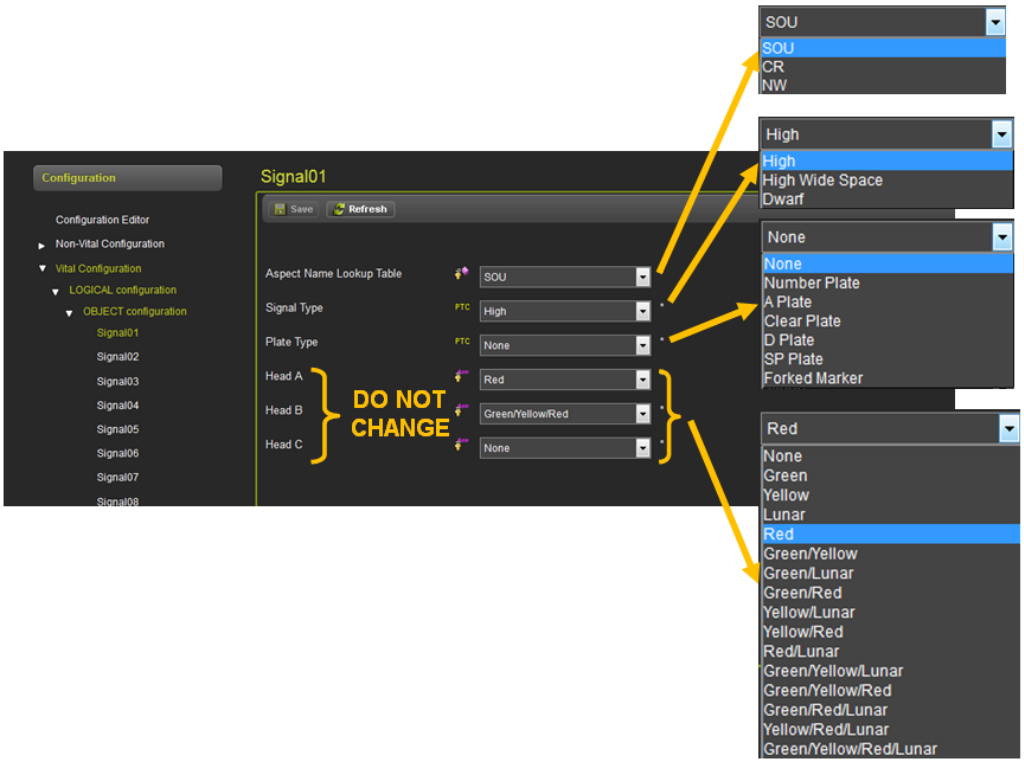


Figure 4-9 Signal Object Configuration Menus Non-Appliance Model GEO

The following list details which parameters can be user adjusted and which should not be modified:

- Aspect Name Lookup Table 1 – can be changed by the user
- Aspect Name Lookup Table 2 – can be changed by the user
- Signal Type – can be changed by the user
- Plate Type – can be changed by the user
- Head A – set by OCE from master database information, **DO NOT CHANGE**
- Head B – set by OCE from master database information, **DO NOT CHANGE**
- Head C – set by OCE from master database information, **DO NOT CHANGE**
- Debounce Timer – can be changed by the user

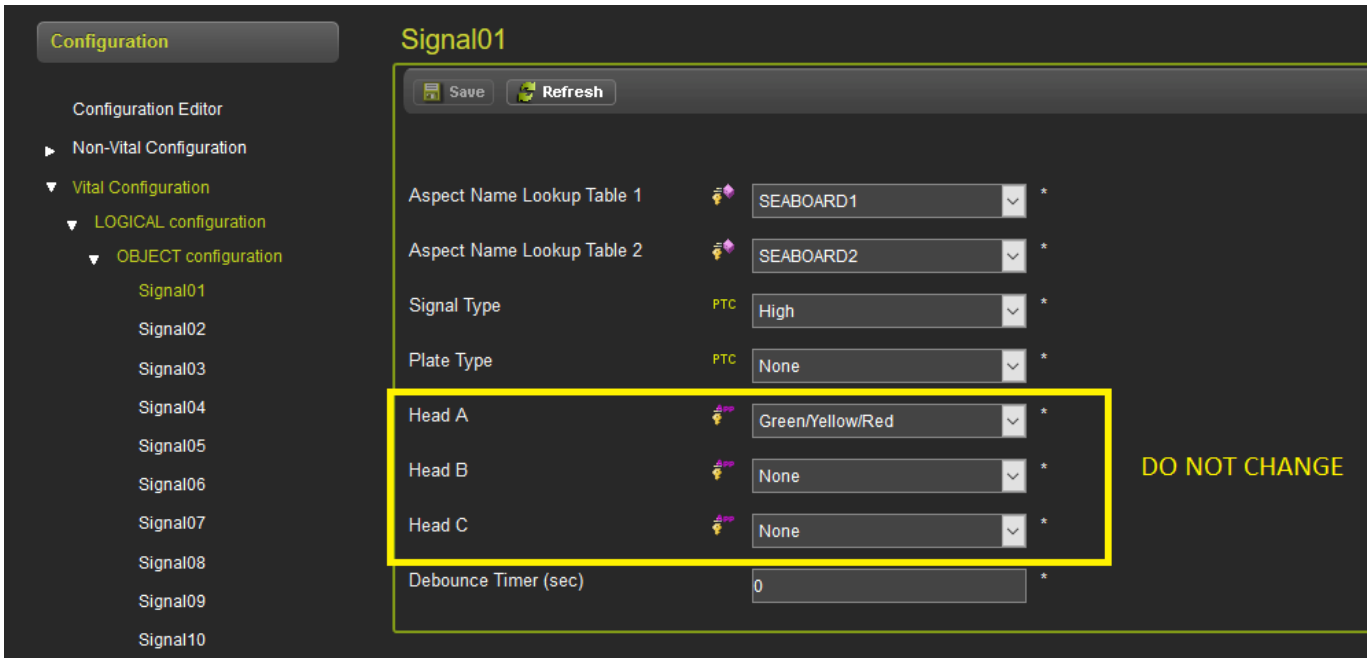


Figure 4-10 Parameters: Do Not Change

The Debounce Timer can also be set for the Switch and Block Fault (Hazard Detector) objects. For an example see Figure 4-11.

Figure 4-11 Switch Object Configuration Menus Non-Appliance Model GEO

4.1.1.2 Logical Configuration: Appliance Model GEO

Under the Logical Configuration/Object Configuration are shown parameters associated with Signals, Switches, and Hazard Detectors.

The following screen shows the Logical Configuration/Object Configuration/Signal Aspects screen.

CAUTION

DO NOT CHANGE ANY PARAMETERS UNDER SIGASPECTS IN THE LOGICAL CONFIGURATION AS THESE VALUES ARE AUTOMATICALLY SET FROM THE VALUES IN THE PTC MASTER DATABASE.

Figure 4-12 SigAspects Configuration Menu Appliance Model GEO

The following screen shows the Logical Configuration/Object Configuration/Signal Screen for Signal01. Select the value of the Debounce Timer required, but do not change anything else.

CAUTION

DO NOT CHANGE ANY PARAMETERS UNDER SIGNAL01, 02, ETC. IN THE LOGICAL CONFIGURATION, EXCEPT FOR THE DEBOUNCE TIMER, AS THESE VALUES ARE ALL AUTOMATICALLY SET FROM THE VALUES IN THE PTC MASTER DATABASE.

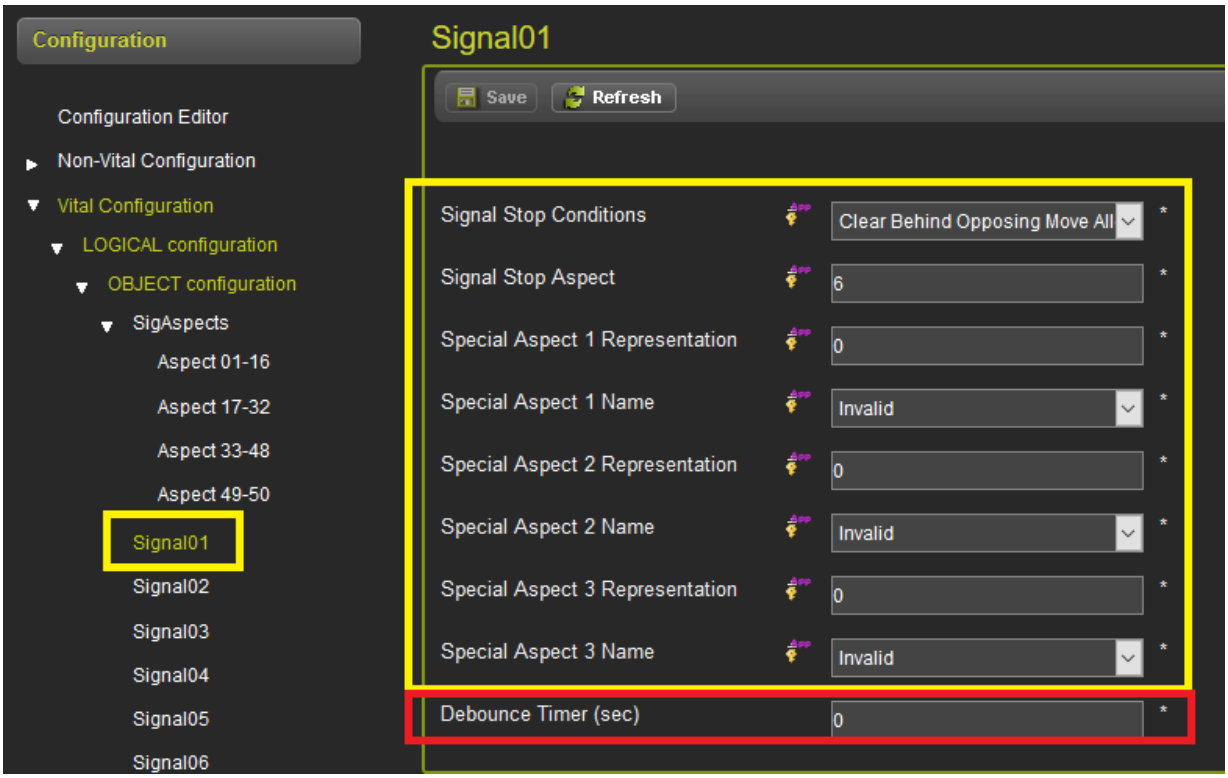


Figure 4-13 Signal Configuration Menu Appliance Model GEO

The following screen shows the Logical Configuration/Object Configuration/Switch and BlockFault screens. Select the value of the Debounce Timer required.

Figure 4-14 Switch Configuration Menu Appliance Model GEO

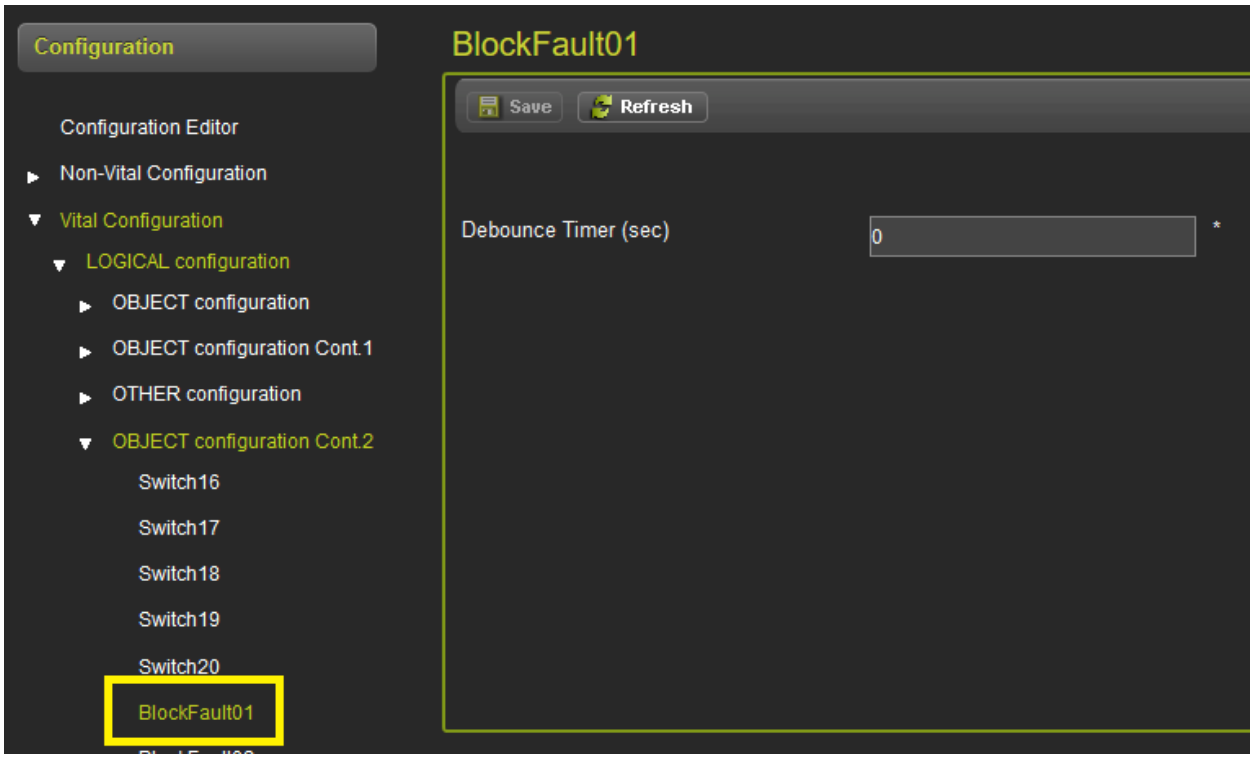


Figure 4-15 Block Fault Configuration Menu Appliance Model GEO

4.1.1.3 Physical Configuration

Under the Physical Configuration/Modules are the different submenus shown in the following figure. For iVIU PTC GEO applications, there are no parameters that required change under any of these menus.

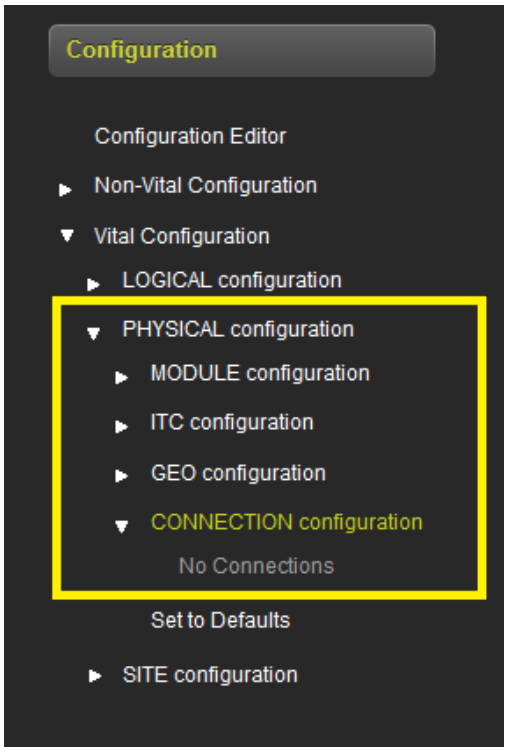


Figure 4-16 Physical Configuration Menus

⚠ CAUTION

CAUTION

DO NOT CHANGE ANY PARAMETERS UNDER PHYSICAL CONFIGURATION/GEO CONFIGURATION AS THESE VALUES ARE ALL AUTOMATICALLY SET FROM THE VALUES IN THE PTC MASTER DATABASE.

⚠ CAUTION

CAUTION

DO NOT CHANGE ANY PARAMETERS UNDER THE PHYSICAL CONFIGURATION/ITC CONFIGURATION AS THESE VALUES ARE AUTOMATICALLY CHANGED WHEN THE WIU MESSAGE LAYOUT UNDER THE NON-VITAL CONFIGURATION IS CHANGED.

The Site Configuration has Object and Card Name menus, these are not applicable for iVIU PTC GEO applications.

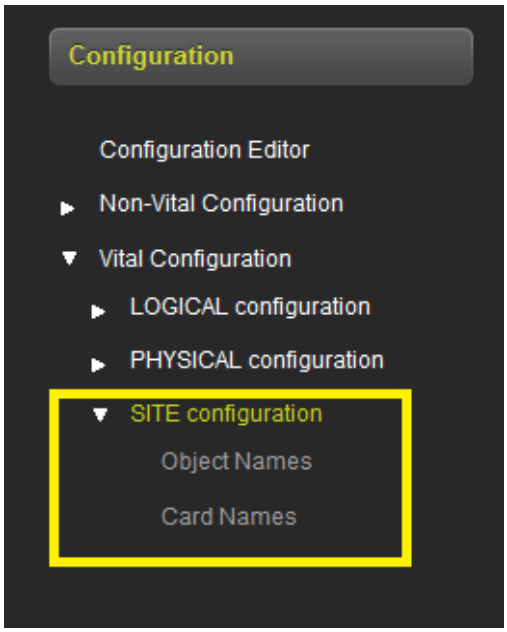


Figure 4-17 Vital Site Configuration Menu

4.1.2 Non-Vital Configuration

The Non-Vital Configuration has many submenus containing information that needs configuring for an iVIU PTC-enable GEO installation. This section will outline the main changes but will not discuss in detail the parameters on each screen. Refer to the PTC Console Manual (SIG-00-13-12A) and iVIU Console Manual (SIG-00-11-05A) for specific details on each parameter.

4.1.2.1 Site Configuration Menu

In the Site Configuration menu set:

- The Site Name – the OCE will automatically set the name of the site entered when the site was created (see Figure 4-31) but this name can be changed here if needed.
- The DOT number if applicable
- The Mile post if applicable
- The Time Zone
- The ATCS address of the unit. This address should have the same ATCS railroad, line, and group number as the GEOs that are being PTC-enabled.

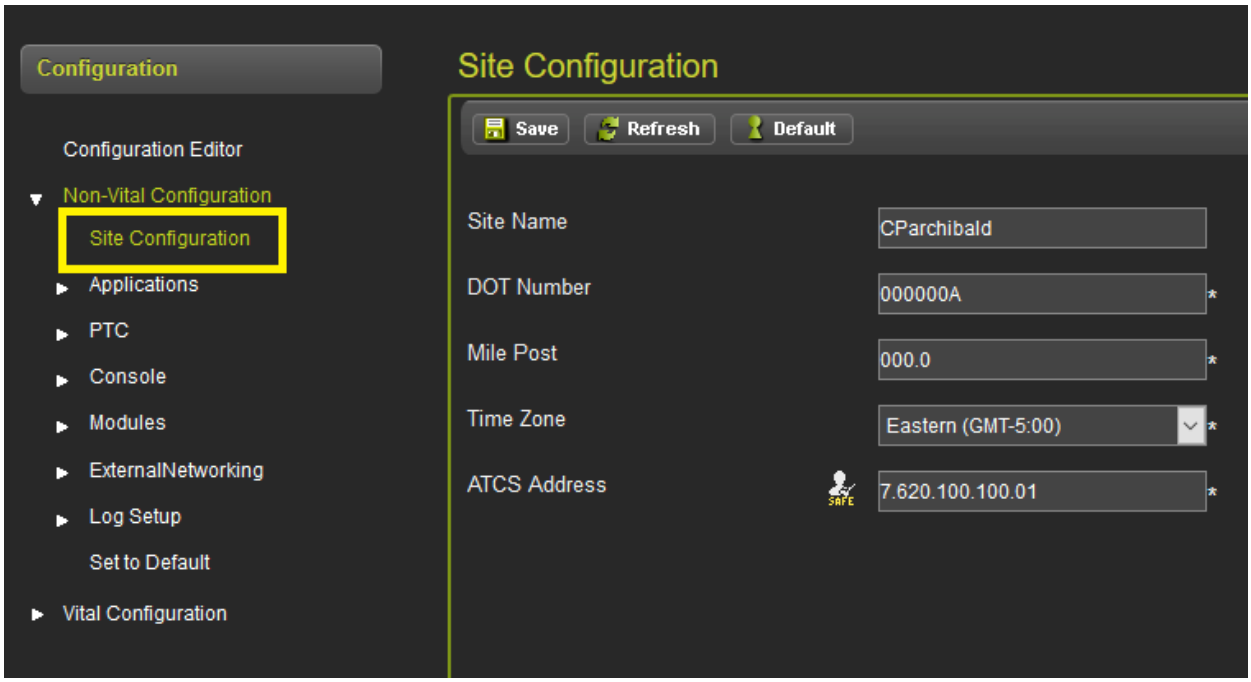


Figure 4-18 Non-Vital Site Configuration Menu

4.1.2.2 Applications Menu

If system management is being used for this location, it is necessary to load and set up the CDL. Go to the applications / CDL menus to perform this. Section 5.1 contains details on how to setup CDL applications.

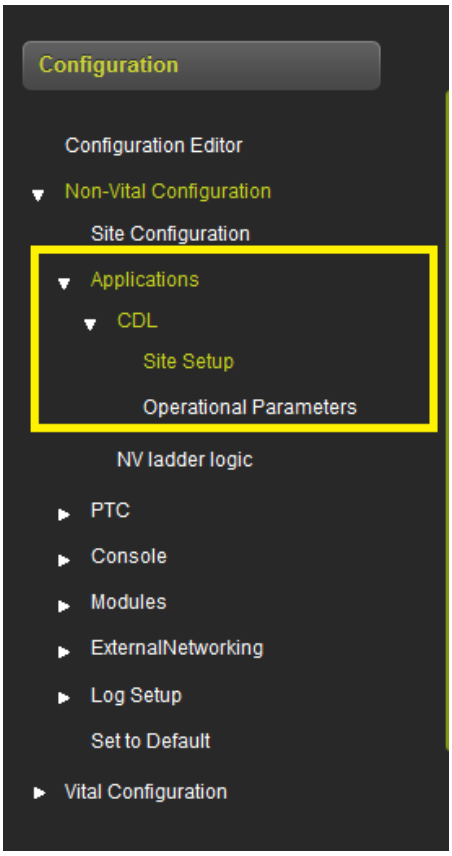


Figure 4-19 Non-Vital: Application Menu

The NV Ladder Logic menu is not used in the iVIU PTC GEO applications.

4.1.2.3 PTC Menu

The PTC submenus are where most changes will be required for iVIU PTC GEO applications. Section 5.2 describes how to set the PTC parameters.

If the railroad has specific defaults values that they want to use for the PTC fields which don't match the default values provided in the OCE, a template can be set up for the application; see Section 3.2.4 for information on how to set up a template.

The Class D Test parameters are configured under the Maintenance / PTC Class D Tests menu.

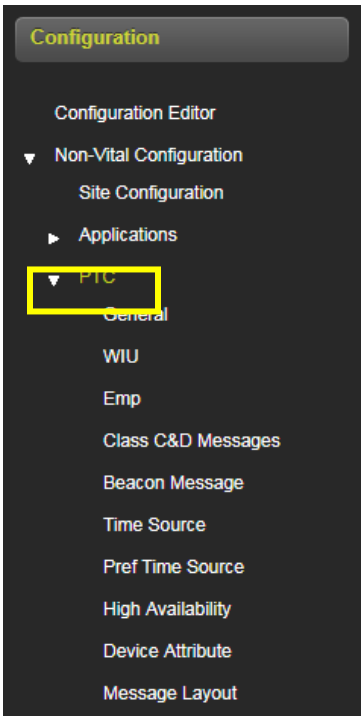


Figure 4-20 Non-Vital: PTC Menu

4.1.2.4 Console Menu

The Console menu has the submenus shown in the following figure.

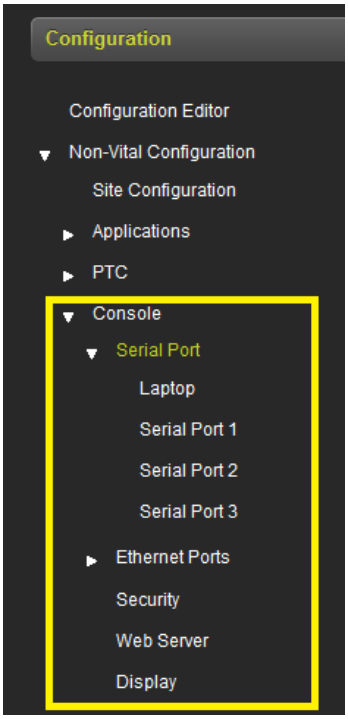


Figure 4-21 Non-Vital: Console Menu

The OCE automatically sets up the defaults for iVIU/PTC GEO assuming that the Console will be used to PTC enable a GEO system that uses the CPU II+ (A80403). In this case, the Console and CPU II+ communicate via the Echelon network.

However, if the iVIU/PTC Console is being used to PTC enable a GEO non-appliance model system that uses a CPU I (A53268), a serial port on the iVIU will be connected to the diagnostic port on the CPU I. In this case the OCE can be used to set the Serial Port protocol for the port to be used, as shown in the following figure.

Figure 4-22 Non-Vital: Setting Serial Protocol

Refer to the PTC Console manual (SIG-00-13-12A) and iVIU Console Manual (SIG-00-11-05A) for further details.

4.1.2.5 Modules Menu

The Modules menu is used to set up which modules the Console is communicating with. For iVIU PTC-enable applications, the information about the GEO is filled in from the PTC database. The only field that the user needs to fill in is the UCN field.

To set the UCN field up:

1. Select the first GEO module by clicking on the blue arrow next to it (shown in the green box in the following figure).
2. Find the ATCS subnode for this GEO (shown in the yellow box in the following figure).
3. From the GEO plans, obtain the UCN for the GEO with this subnode.
4. Enter the UCN for this GEO in the UCN field (shown in the red box in the following figure).
5. Repeat this for each GEO module shown.

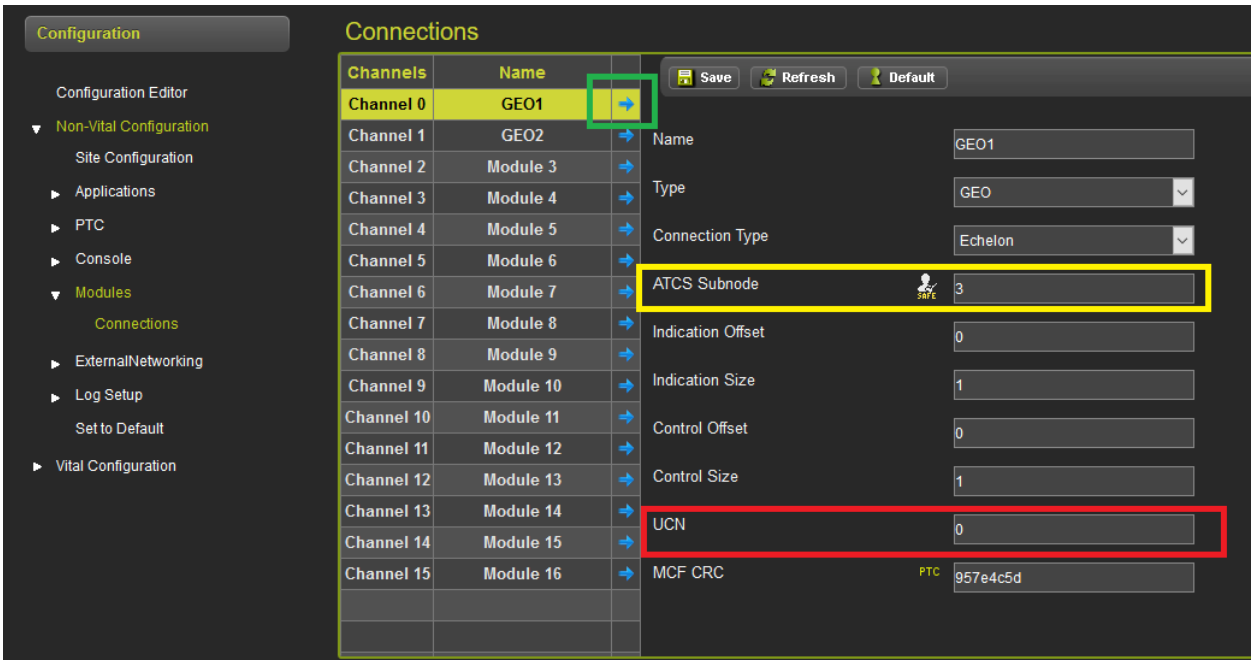


Figure 4-23 Setting the GEO UCN

If the iVIU/PTC Console is being used to PTC-enable a GEO non-appliance model system that uses a CPU I (A53268), the Connection Type will also need to be changed from Echelon to Serial. Repeat this action for each GEO module.

Figure 4-24 Setting the GEO Connection Type

4.1.2.6 External Networking Menu

The main use of the External Networking menu in iVIU PTC-enable applications, is to set the SNMP parameters required for system management, as shown in the following figure.

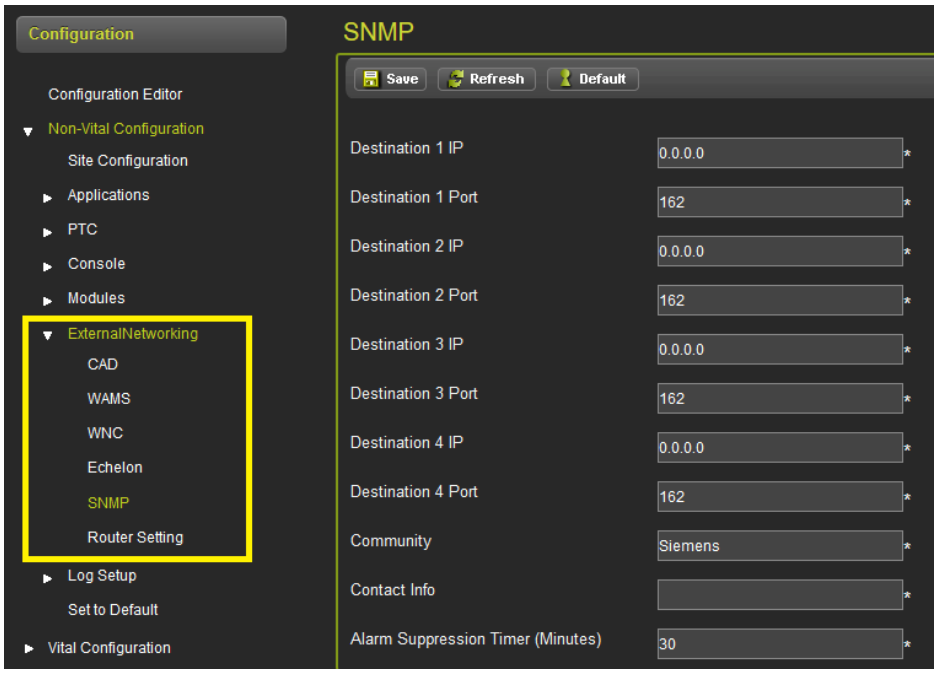


Figure 4-25 Non-Vital: External Networking/SNMP Menu

4.1.2.7 Log Setup

The Consolidated Logging feature is not used in iVIU PTC-Enable applications as only 1 Console is used.

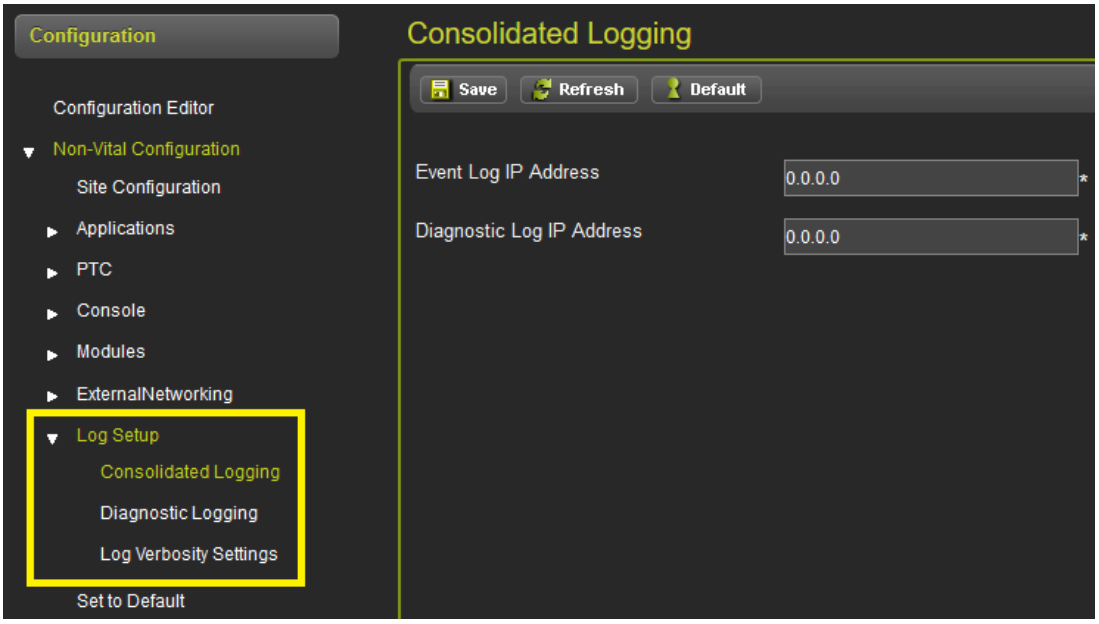


Figure 4-26 Non-Vital: Log Setup

4.1.3 Building Configuration Files

After the configuration values in the Non-Vital and Vital Configuration have been entered, return to the Configuration Editor menu and select the **Build Config Files** button shown in the following figure. After a few seconds, the OCE will show a message indicating Build Created Successfully.

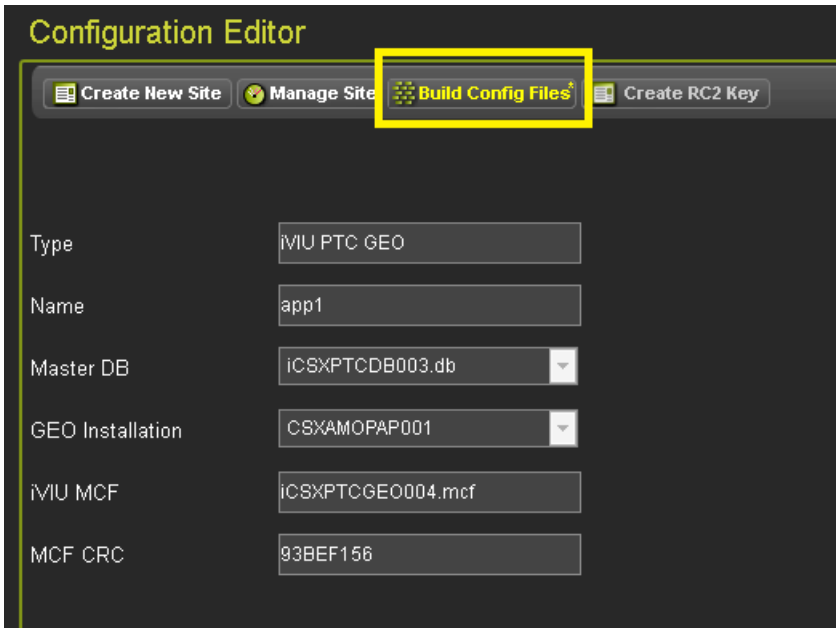


Figure 4-27 Build Config Files

The OCE will then show the Config Report button. To view the report, click the **Config Report** button and the file can be either downloaded or viewed.

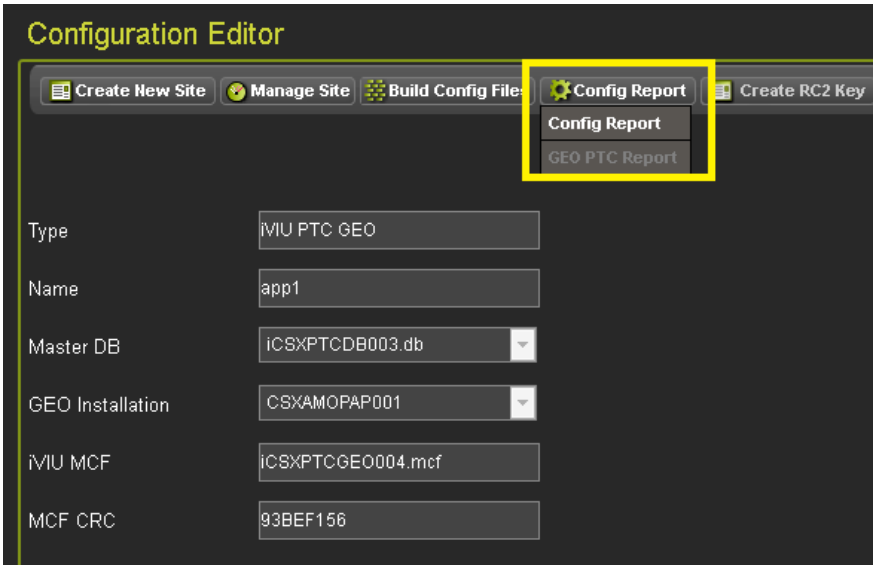


Figure 4-28 Config Reports Button

WARNING

THE CONFIGURATION REPORT MUST BE CHECKED TO ENSURE THAT THE PARAMETERS THAT AFFECT SYSTEM SAFETY ARE CORRECTLY SET.

At the end of the configuration report the UCN for the location is printed. This will need to be entered into the unit in the field via the Web UI or Local UI. To ensure that the correct configuration is downloaded into the correct site, it is not downloaded automatically as part of the ZIP file. The report also contains the PTC UCN, this also will need to be manually set for the equipment in the field.

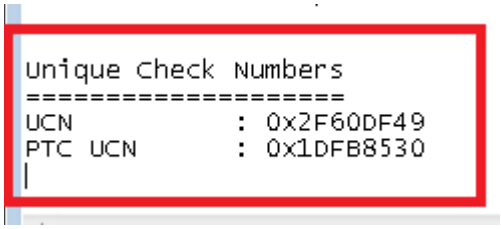


Figure 4-29 UCN/PTC UCN in Configuration Report

4.2 IVIU SITES

The OCE can be used to create installations for sites where the iVIU or PTC console is used standalone; for example, it may be used to monitor a switch in dark territory.

The OCE is used to create an iVIU installation for applications in which the iVIU Console (A80615) or PTC Console (A80672) is used in a standalone mode (i.e. not associated with a GEO installation. The OCE is used to:

- Set the vital MCF parameters
- Set the PTC related parameters, e.g. Class D settings, EMP settings, WIU message layout
- Set other non-vital configuration parameters
- Obtain the UCN for the specific installation
- Obtain the PTC UCN for the specific installation
- Obtain the configuration report containing the configuration settings
- Create the configuration files that can be loaded onto the Console using the Web UI or USB

To create an iVIU Site, the following procedure provides a step by step process:

1. From the Configuration Editor screen, select iVIU on the **Product window.**
2. The Select **Create New Site** drop menu is shown in the following figure.

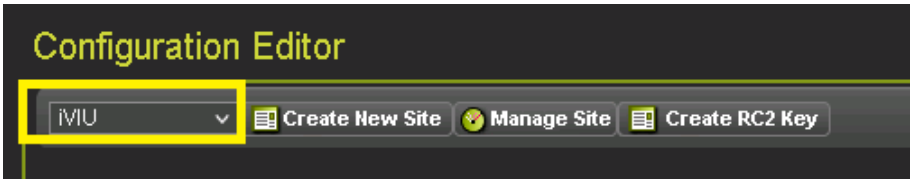


Figure 4-30 Creating a New iVIU Site

3. The first parameter (Type) is already filled in by OCE. Enter a name for the site. The name can be up to 20 characters including spaces.

NOTE

NOTE

The **Product** button is shown to the left of the **Create New Site** button on all OCE Configuration Editor screens. This button is not shown in the following figures.

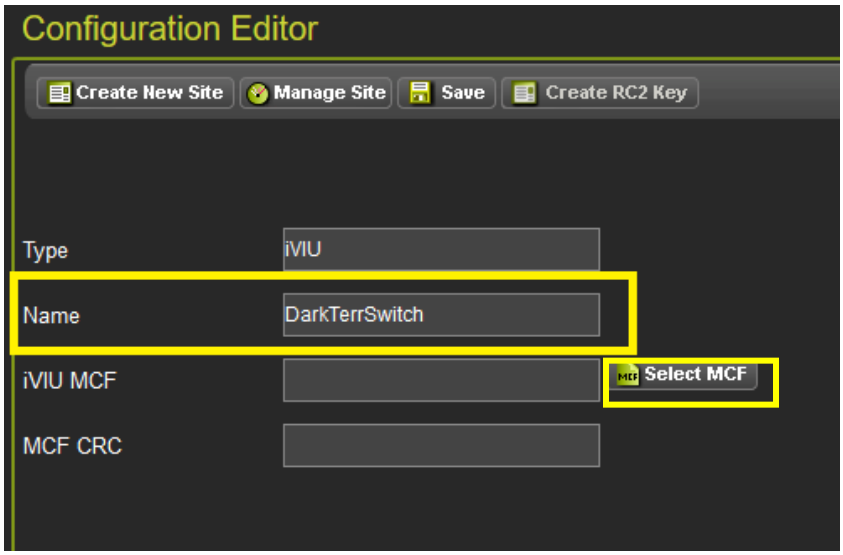


Figure 4-31 iVIU Site Name

4. Then press the **Select MCF** button (shown in the figure above). The OCE will show the screen illustrated in the following figure. From here, either select the drop-down arrow next to Select MCF, which will allow selection of an MCF that has already been used by the OCE or use the Browse button to select the MCF.

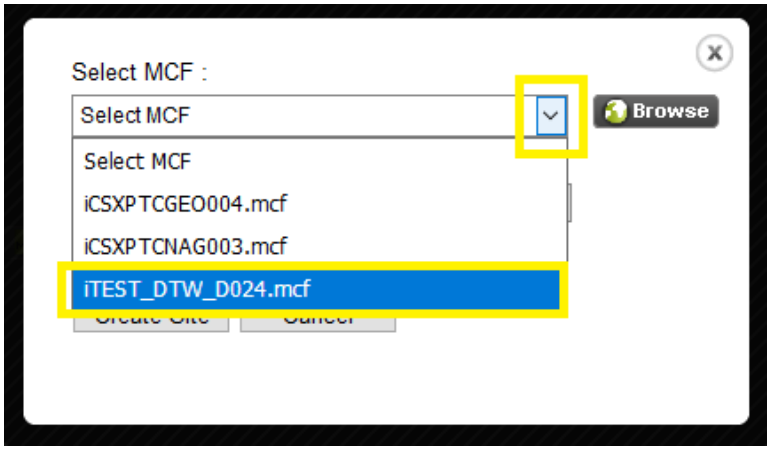


Figure 4-32 iVIU Select MCF

5. If the **Browse** button has been selected, then obtain the MCF CRC (from the MCF log file) and enter it in the MCFCRC field. If the drop-down arrow is used, the MCFCRC will automatically be filled in.

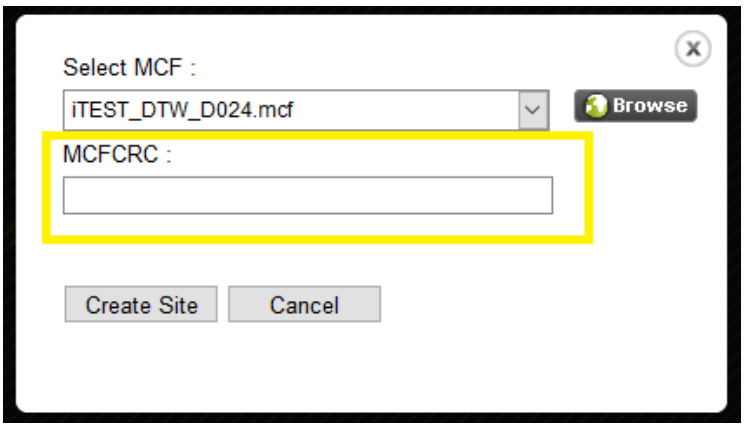


Figure 4-33 iVIU Enter MCF CRC

6. Then press the **Create Site** button (shown in the graphic above.) The OCE will then process the MCF and return to the Configuration Editor screen and show the Non-Vital and Vital Configuration menus on the left.

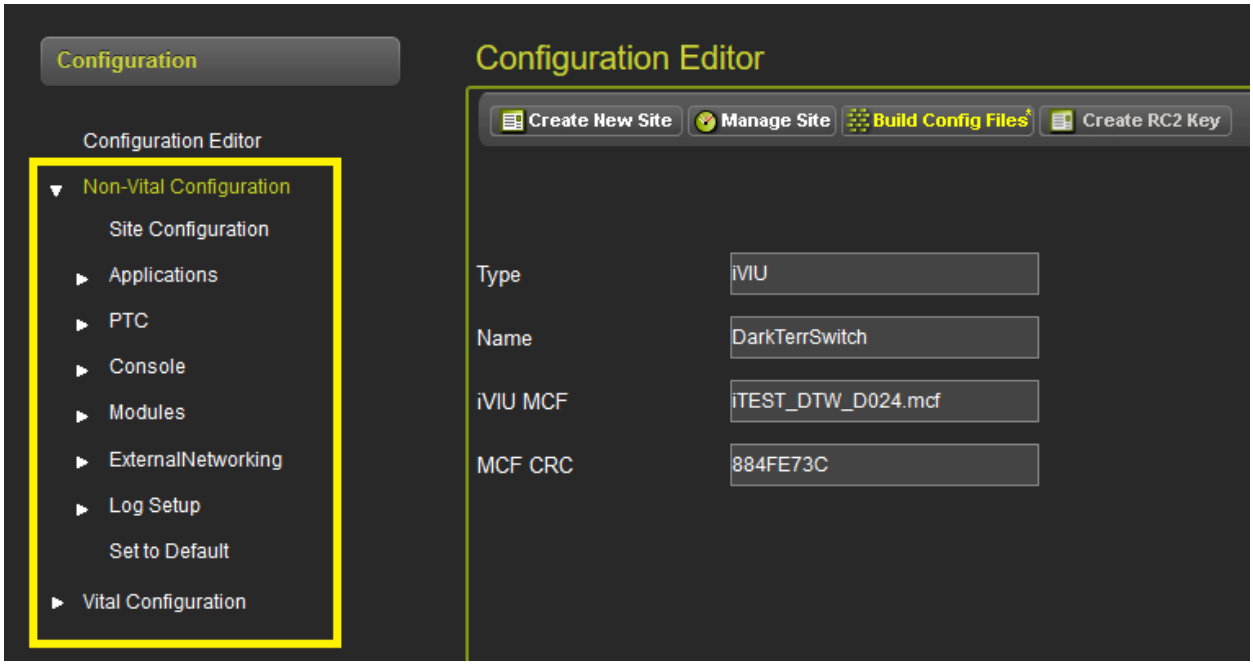


Figure 4-34 Ready for Configuration of iVIU

4.2.1 Vital Configuration

1. First, go to the Vital Configuration / Physical Configuration and select the required Physical Layout as shown in the following figure. In general there will only be one Physical Layout in iVIU MCFs, however, since this value potentially affects all other menus and settings, check that the correct one is chosen before proceeding.

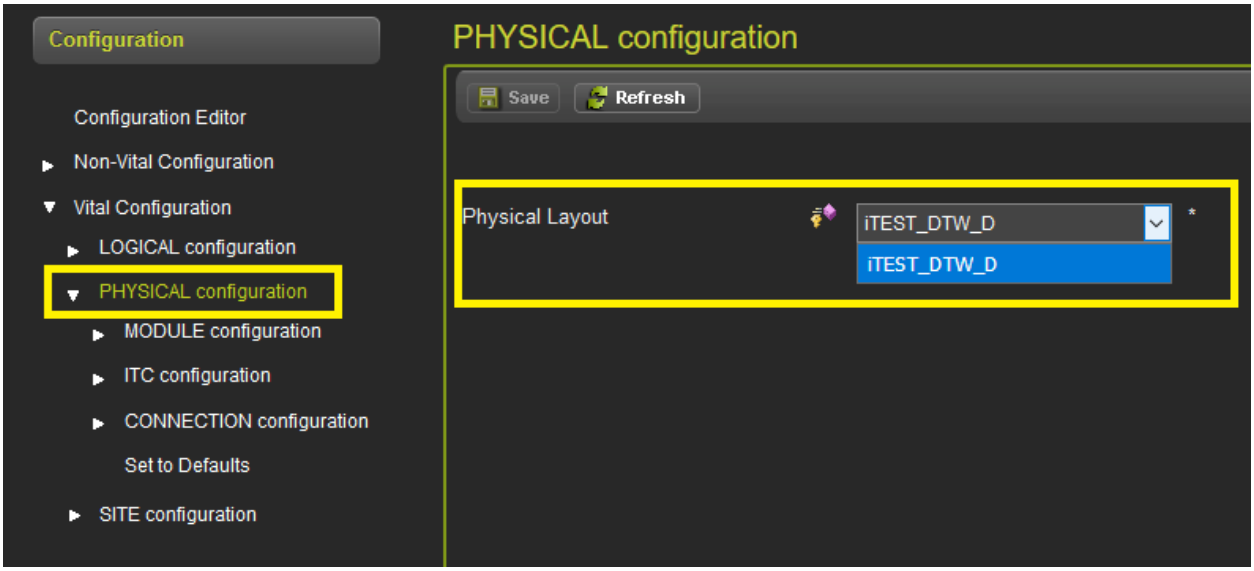


Figure 4-35 iVIU Setting Physical Layout

NOTE

NOTE

Each Physical Layout has its own sets of menus and parameters and possibly PTC devices. The correct Physical Layout must be selected prior to setting any other Vital Configuration parameters or setting Non-Vital Configuration PTC Device or Layout settings.

2. Typically an iVIU site will have very few Vital Configuration parameters to change. Go to the Vital Configuration/Logic Configuration/Object Configuration menu and check to see if there are any parameters to configure. In the case shown in the following figure, there are none.

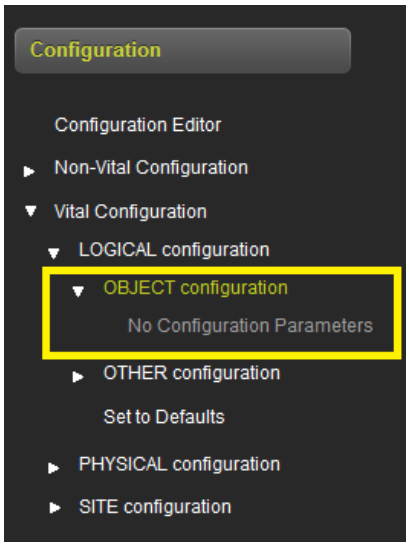


Figure 4-36 iVIU Object Configuration

3. Next go to the Vital Configuration / Physical Configuration / Module Configuration / SLOT 1. The only parameter that is used for iVIU applications is the Debounce. This is the debounce timer for the 2 inputs on the Console. Select the required value.

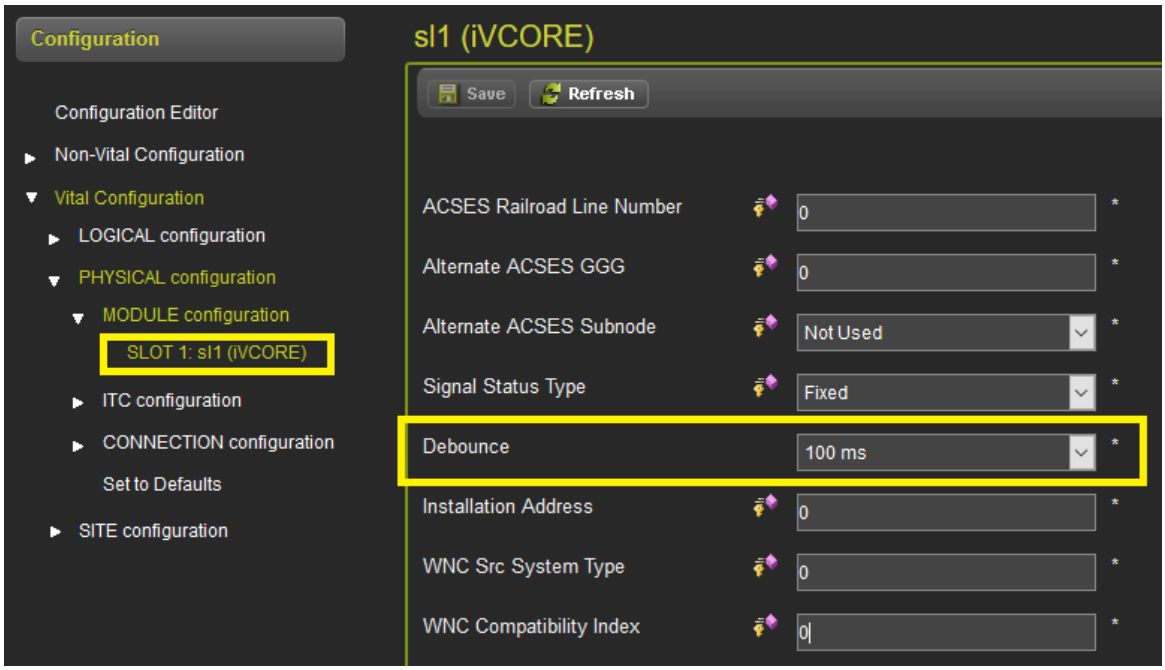


Figure 4-37 iVIU Module/Slot 1 Configuration

⚠ CAUTION

CAUTION

DO NOT CHANGE ANY PARAMETERS UNDER THE PHYSICAL CONFIGURATION/ITC CONFIGURATION AS THESE VALUES ARE AUTOMATICALLY CHANGED WHEN THE WIU MESSAGE LAYOUT UNDER THE NON-VITAL CONFIGURATION IS CHANGED.

4.2.2 Non-Vital Configuration

The Non-Vital Configuration has many submenus containing information that needs configuring for an iVIU installation. This section will outline the main changes but will not discuss in detail the parameters on each screen. Refer to the PTC Console Manual (SIG-00-13-12A) and iVIU Console Manual (SIG-00-11-05A) for specific details on each parameter.

4.2.2.1 Site Configuration Menu

In the Site Configuration menu set:

- The Site Name. The OCE will automatically set the name of the site entered when the site is created (see Figure 4-31) but this name can be changed here if needed.
- The DOT number if applicable
- The Mile post if applicable
- Time Zone
- The ATCS address of the unit if applicable.

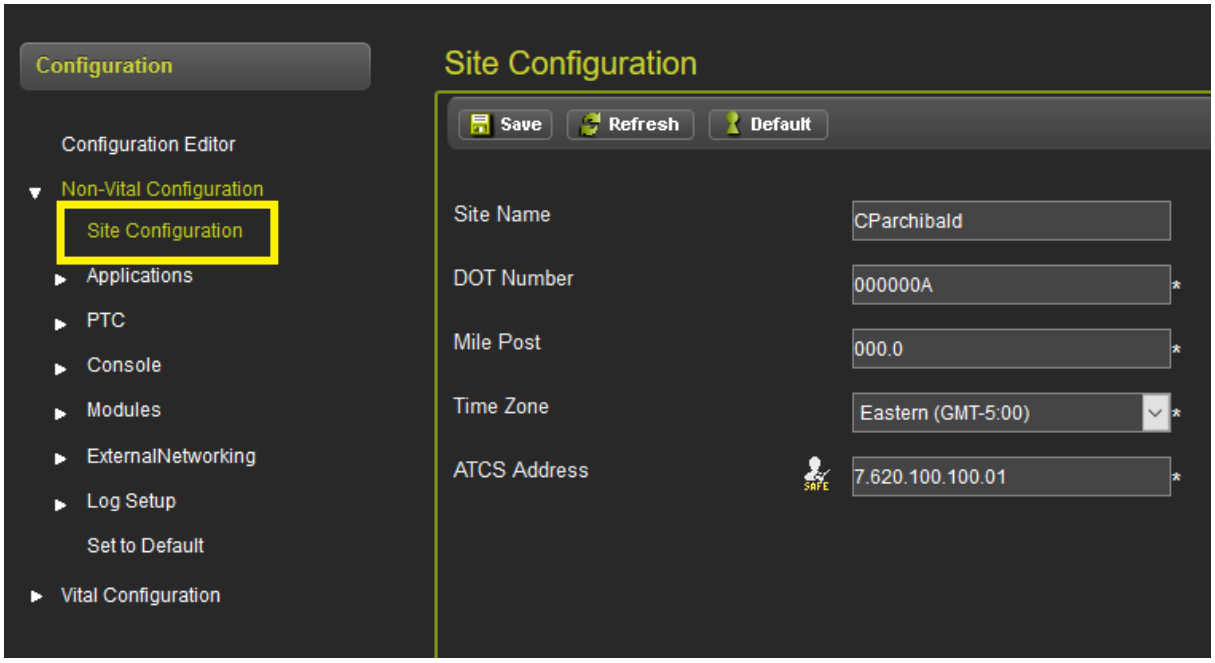


Figure 4-38 Non-Vital: iVIU Site Configuration Menu

4.2.2.2 Applications Menu

If systems management is being used for this location, it is necessary to load and set up CDL. Go to the applications/CDL menus to perform this. Section 5.1 contains details on how to setup CDL applications.

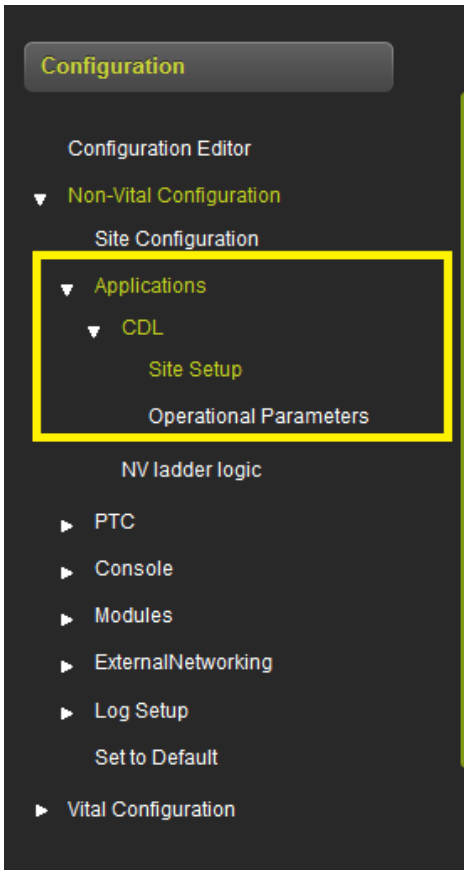


Figure 4-39 Non-Vital: Application Menu

The NV Ladder Logic menu is not used in iVIU applications.

4.2.2.3 PTC Menu

The PTC submenus are where most changes will be required for iVIU applications. See the PTC Section 4.3.2.2 for more detailed information about these screens.

If the railroad has specific defaults values that they want to use for the PTC fields which do not match the default values in the OCE, save the desired settings as a template that can be used for future applications; see section 3.2.4.

NOTE

NOTE

Class D Test parameters are configured under the Maintenance / PTC Class D Tests Menu.

4.2.3 Building Configuration Files

After the configuration values in the Non-Vital and Vital Configuration menus have been entered, select the **Build Config Files** button shown in the following figure. After a few seconds the OCE will show a message indicating Build Created Successfully.

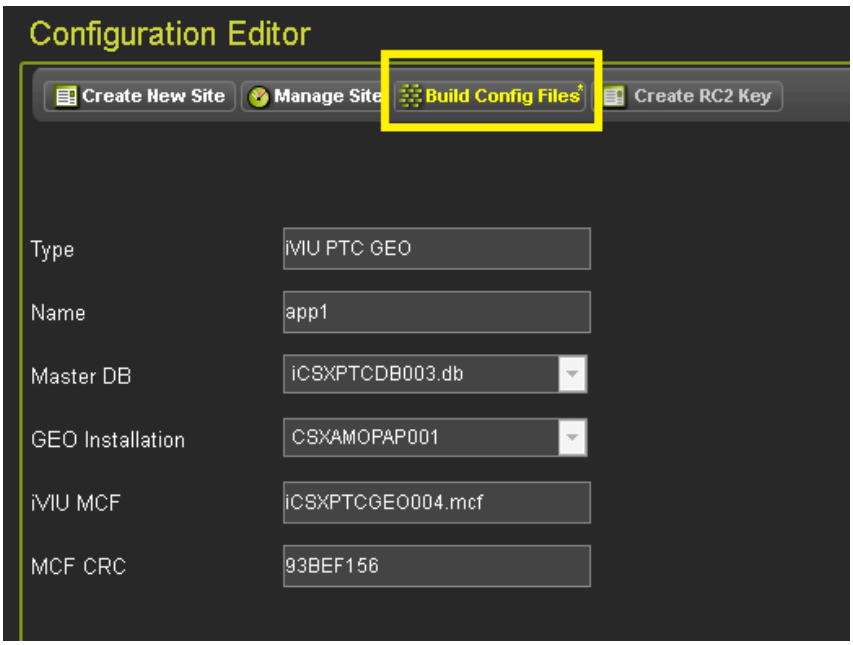


Figure 4-40 Build Config Files

The OCE will then show the **Config Reports** button. To view the report, click the button and the file can be either downloaded or viewed.

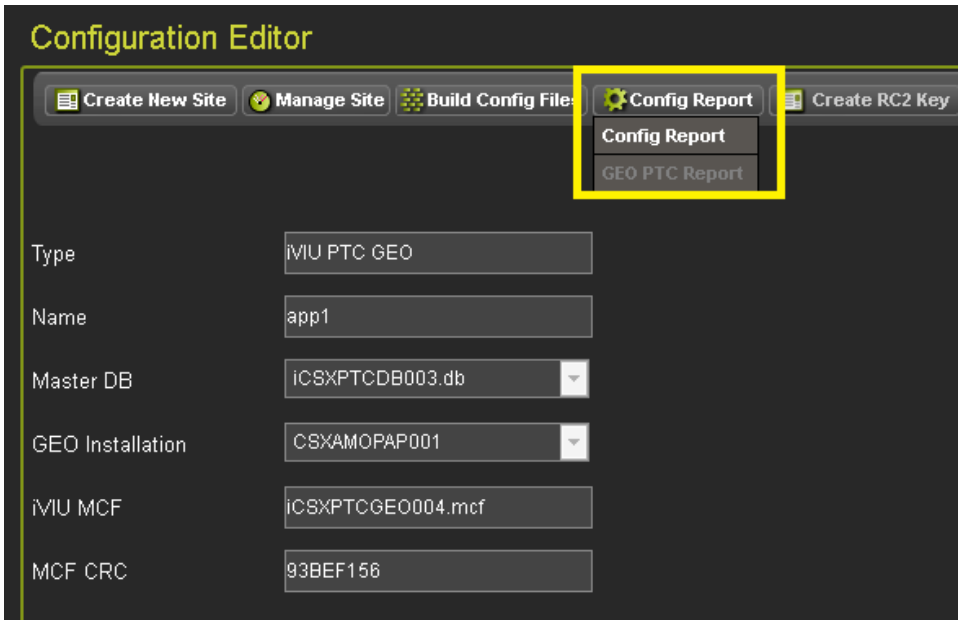


Figure 4-41 Config Reports button

WARNING

THE CONFIGURATION REPORT MUST BE CHECKED TO ENSURE THAT THE PARAMETERS THAT AFFECT SYSTEM SAFETY ARE CORRECTLY SET.

At the end of the configuration report, the UCN for the location is printed. This will need to be entered into the unit in the field via the Web UI or Local UI. To ensure that the correct configuration is downloaded into the correct site, it is not downloaded automatically as part of the ZIP file. The report also contains the PTC UCN, this will also need to be manually set for the equipment in the field if the iVIU is used in a PTC application. The PTC UCN is 0 for a non-PTC application.

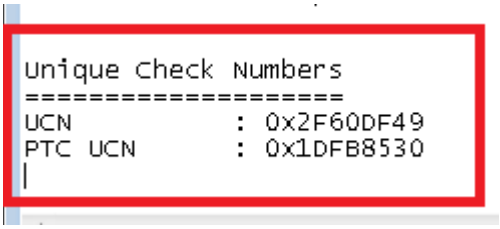


Figure 4-42 UCN/PTC UCN in Configuration Report

4.3 VIU SITES

The OCE can be used to create a VIU installation. The OCE is used to:

- Set the vital MCF parameters for the VIU MCF
- Set the PTC related parameters, e.g. Class D settings, EMP settings, WIU message layout
- Set other non-vital configuration parameters
- Obtain the UCN for the specific installation
- Obtain the PTC UCN for the specific installation
- Obtain the configuration report containing the configuration settings
- Create the configuration files that can be loaded onto the VIU using the Web UI or USB.

To create a VIU Site, the following procedure provides a step by step process:

1. Select VIU on the **Select Product** drop menu shown in Figure 4-43.
2. Then select **Create New Site**.

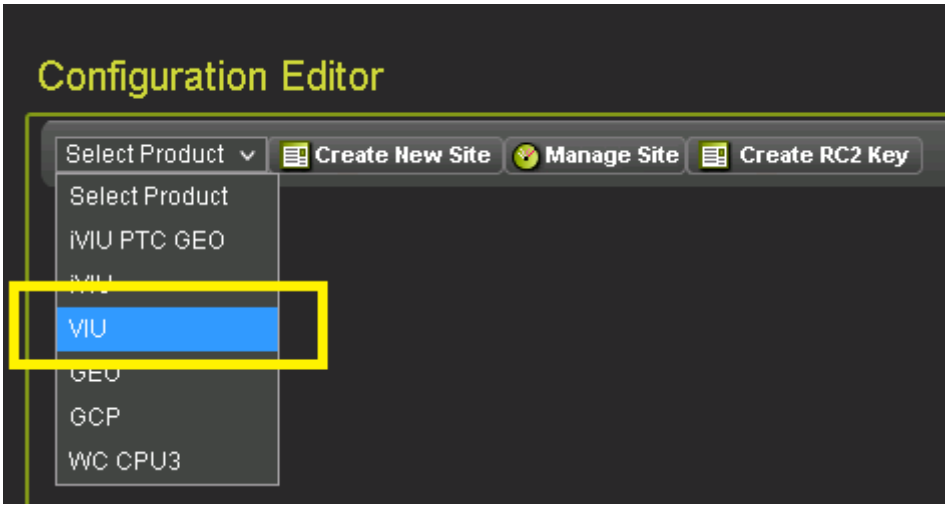


Figure 4-43 Creating a VIU Site

3. A Site Configuration Editor screen will appear listing four parameters with text boxes and drop menus for establishing the site Name, VIU MCF, and the MCF CRC. Enter the site name in the **Name** text box.

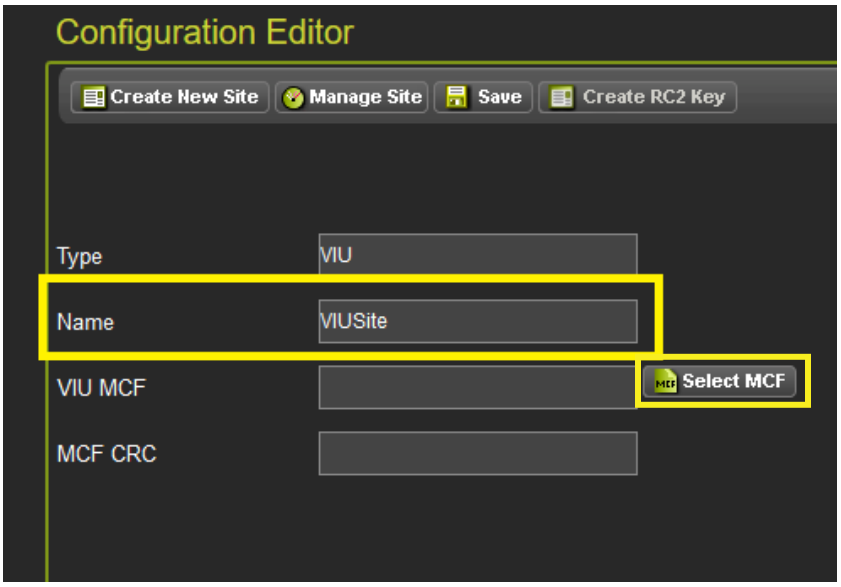


Figure 4-44 VIU Editor Window

4. Then press the **Select MCF** button shown above. The OCE will show the screen illustrated in the following figure. From here either select the drop-down arrow next to **Select MCF**, which will allow selection of an MCF that has already been used by the OCE or use the **Browse** button to select the MCF.

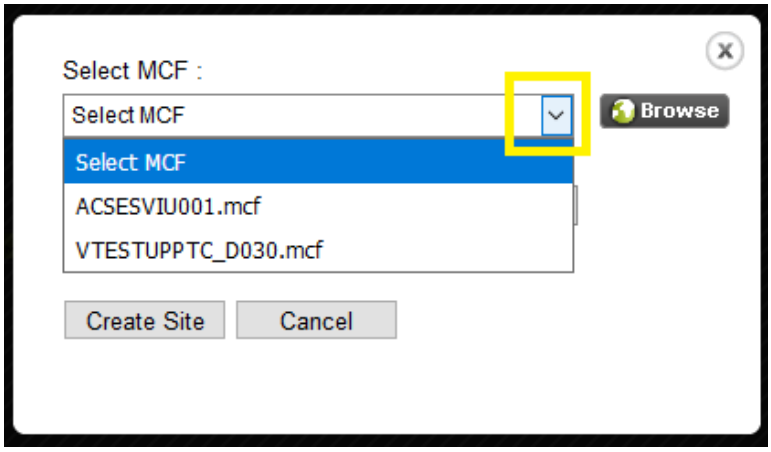


Figure 4-45 iVIU Select MCF

5. If the **Browse** button has been selected, obtain the MCF CRC from the MCF log file and enter it in the MCF CRC field. If the drop-down arrow is used, the MCF CRC will automatically be filled in.

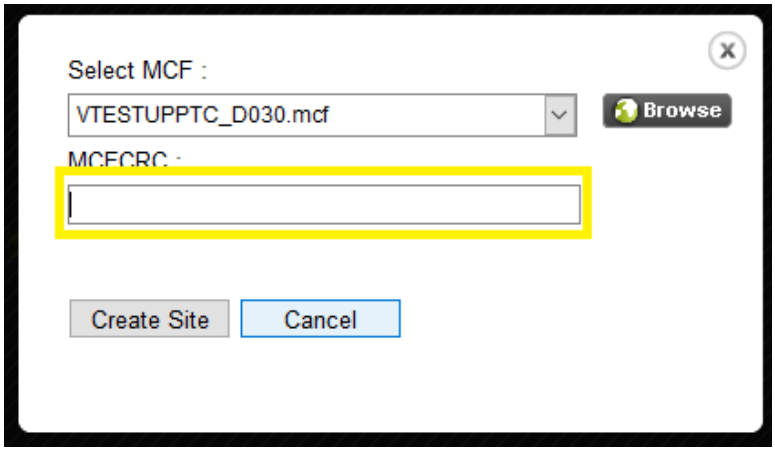


Figure 4-46 iVIU Enter MCF CRC

6. Select the **Create Site** button (shown above). The OCE will then process the MCF and return to the Configuration Editor screen and show the Non-Vital and Vital Configuration menus on the left.

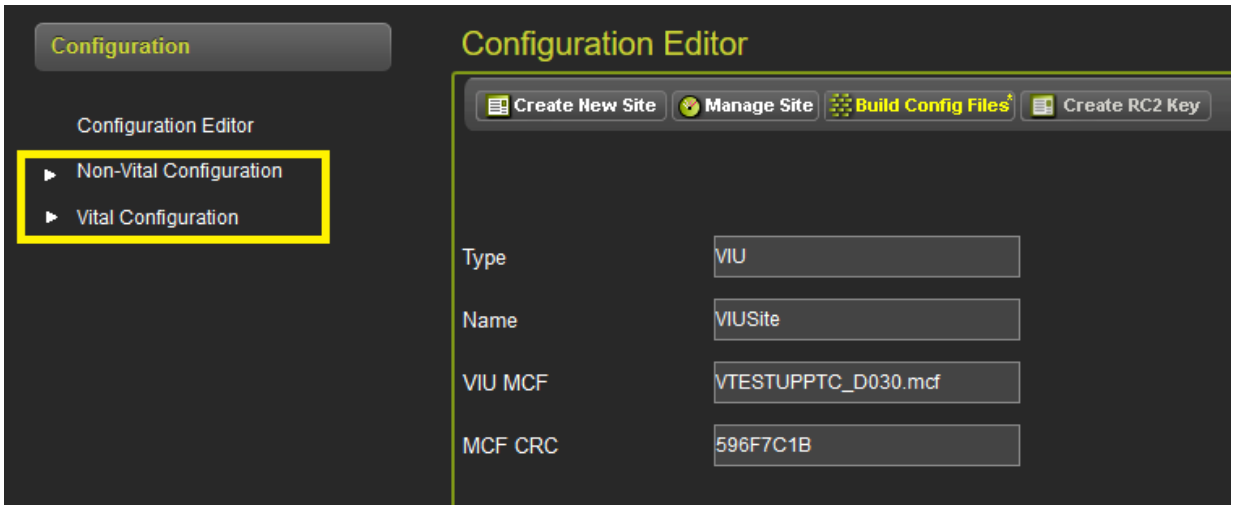


Figure 4-47 VIU Configuration

4.3.1 Vital Configuration

The information in the vital configuration menus for VIU site will vary considerably depending on the type of VIU used and its application. Some VIUs are used for PTC, other for ACSES, and some as general I/O controllers.

First, go to the Vital Configuration / Physical Configuration and select the required Physical Layout as shown in Figure 4-48. Because the Physical Layout value potentially affects all other vital menus and settings, check that the correct one is chosen before proceeding.

NOTE

Each Physical Layout has its own sets of menus. The correct Physical Layout must be selected prior to setting any other Vital Configuration parameters or the Non-Vital Configuration PTC Device and Layout parameters.

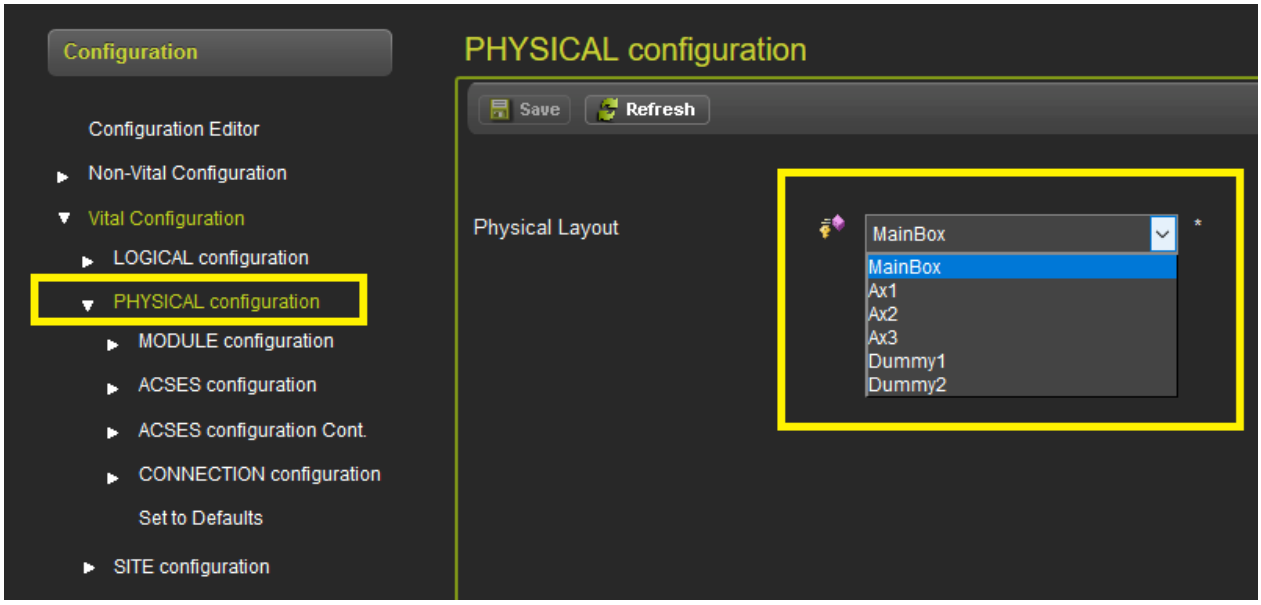


Figure 4-48 VIU Physical Configuration Selection

4.3.1.1 PTC Applications

Unlike in iVIU PTC GEO applications, the information for VIU has to be explicitly configured. Go through the Logical Configuration / Object Configuration and set the information needed for each signal, switch and block fault (hazard detector).

The order of the PTC devices reported in the PTC message can be changed. To change this order requires two separate steps:

a) Change the vital MCF parameters in the Physical Configuration ITC configurations which will cause the vital process to send out the message in the correct format.

b) Change the Message Layout under the Non-Vital Configuration / PTC menu, this will allow the VIU non-vital to interpret the PTC message so that it can display the PTC device status correctly and allow the WIU Config xml to be created.

To set the PTC device order for the vital configuration, first the correct number of PTC devices has to be set for each PTC device category. To enter this, adjust the PTC Item Count under the Vital Configuration / Physical Configuration / ITC Configuration / ITC_Signal_Configuration_1 to reflect the number of signals used.

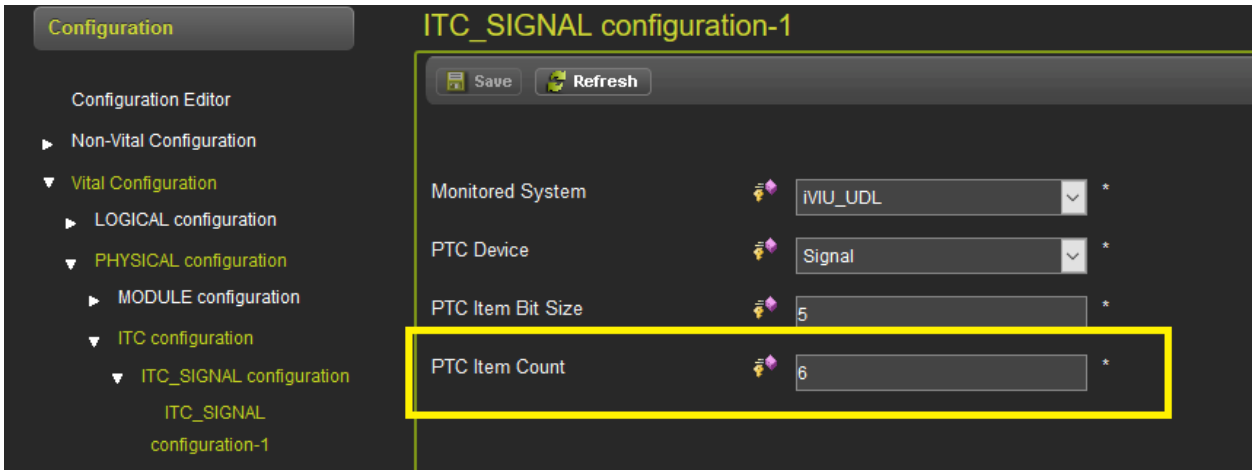


Figure 4-49 VIU Setting PTC Item Count

Similarly, set the PTC Item Count values on the ITC_SWITCH_Configuration_1 and ITC_BLKFLT_Configuration_1 menus to reflect the number of switches and block faults used.

After the PTC Item Count values are properly inputted, the PTC order fields have to be set correctly. These are set automatically when the message layout is adjusted under the Non-Vital Configuration / PTC / Message Layout menu. See section 4.3.2.9 for further details. The following figure illustrates the automatic message layout.

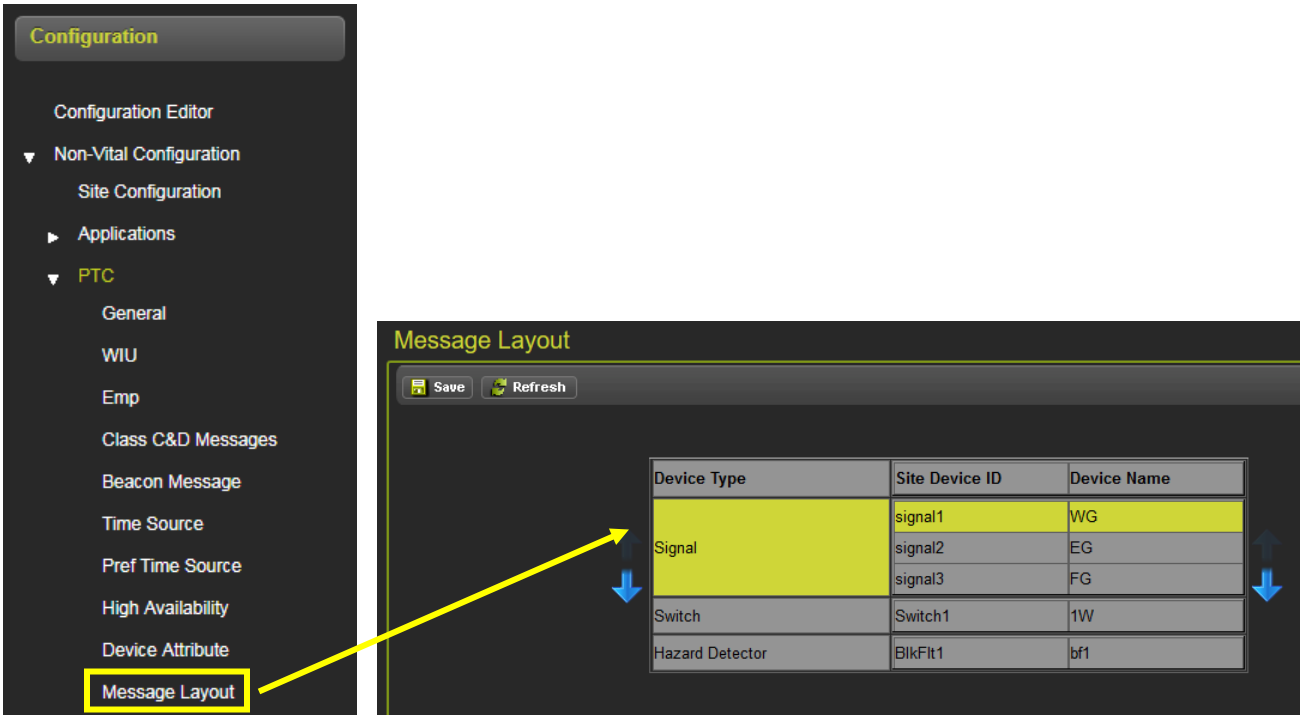


Figure 4-50 VIU Setting PTC Message Layout

The automatic message layout will result in the values illustrated in the following figure being set for PTC order.

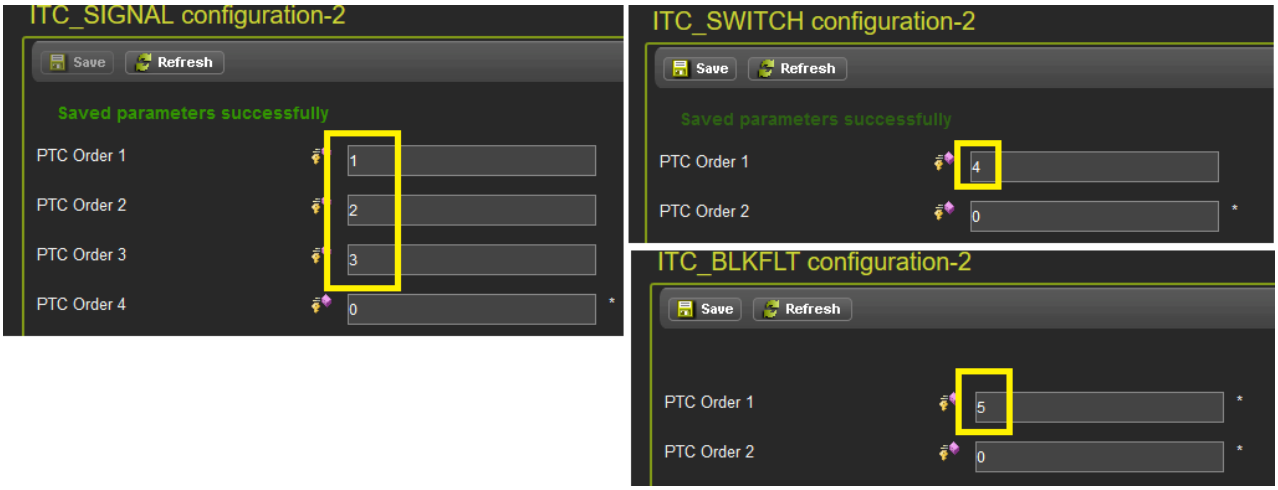


Figure 4-51 VIU Setting PTC Order

CAUTION

DO NOT MANUALLY EDIT THE PTC ORDER PARAMETERS UNDER VITAL CONFIGURATION/PHYSICAL CONFIGURATION/ITC CONFIGURATION AS THESE ARE SET BY CHANGING THE MESSAGE LAYOUT IN THE NON-VITAL CONFIGURATION/PTC CONFIGURATION.

To set the Beaconing parameters on the VIU, use the parameters under Vital Configuration / Physical Configuration / WIU Channel Configuration. If **Beacon Continuous** is set to No, the values of **Beacon Bit Time**, **Beacon End Time** and **Max Beacon Interval** are not used.

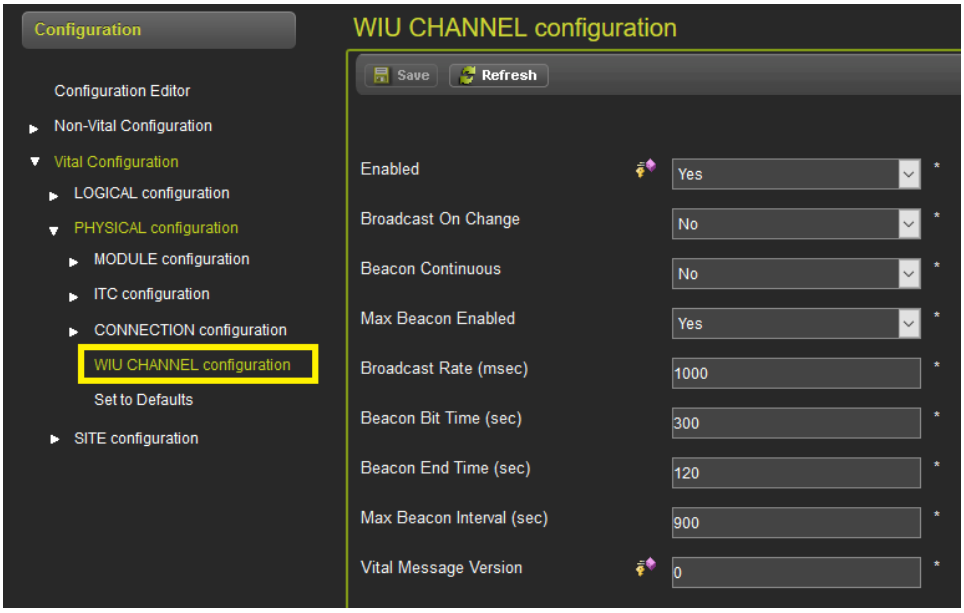


Figure 4-52 VIU WIU Channel Configuration

4.3.1.2 Vital ATCS Connections

When the VIU MCF has vital ATCS connections to other VIU modules, these connections can be configured under the PHYSICAL configuration / CONNECTION configuration, (see Figure 4-53). For further details on these parameters, reference the equipment manual.

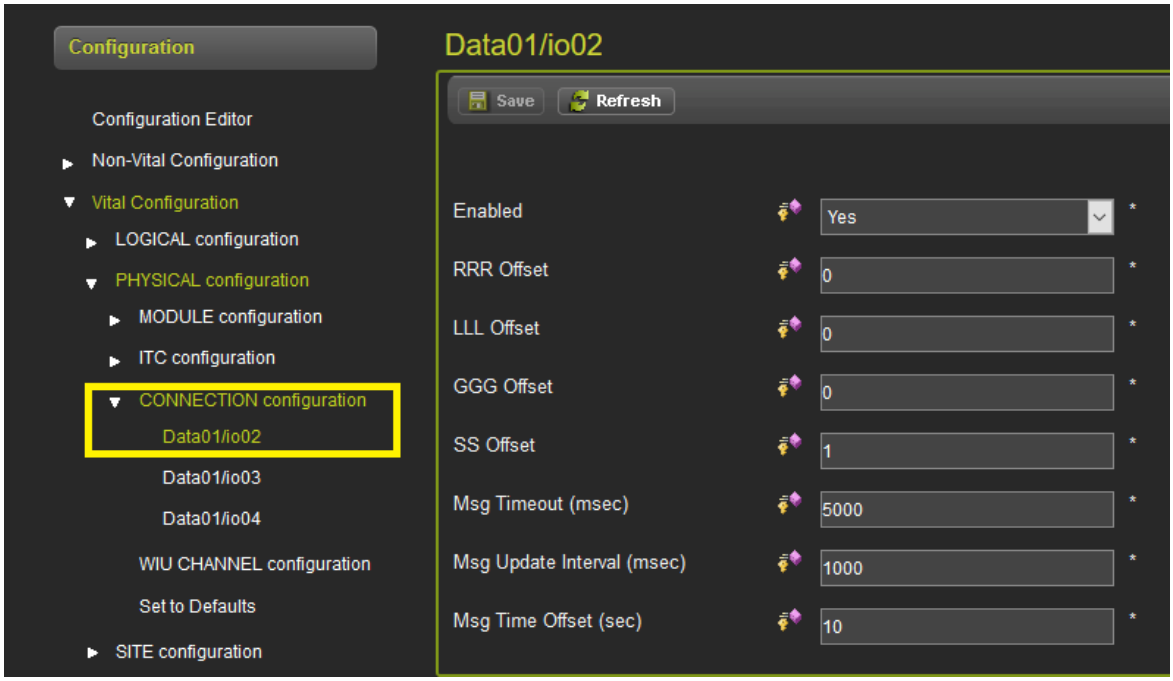


Figure 4-53 VIU Connection Configuration

4.3.1.3 ACSES Applications

When the VIU MCF is for an ACSES application (i.e. for a VIU20e) set up the routes and signals under the LOGICAL configuration / OBJECT configuration; see the following figure for menu examples.

Figure 4-54 VIU20e Object Configuration

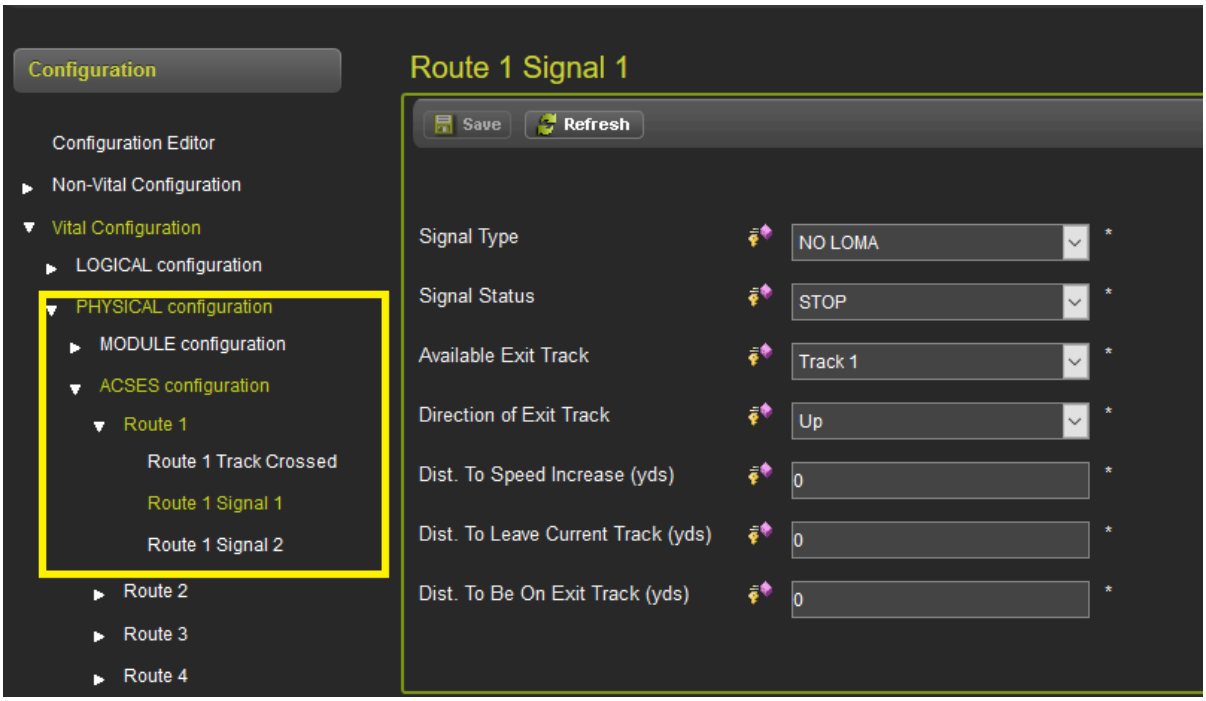


Figure 4-55 VIU20e ACSES Configuration

Set the ACSES Railroad Line Number under the PHYSICAL configuration/MODULE configuration/SLOT 1 menu.

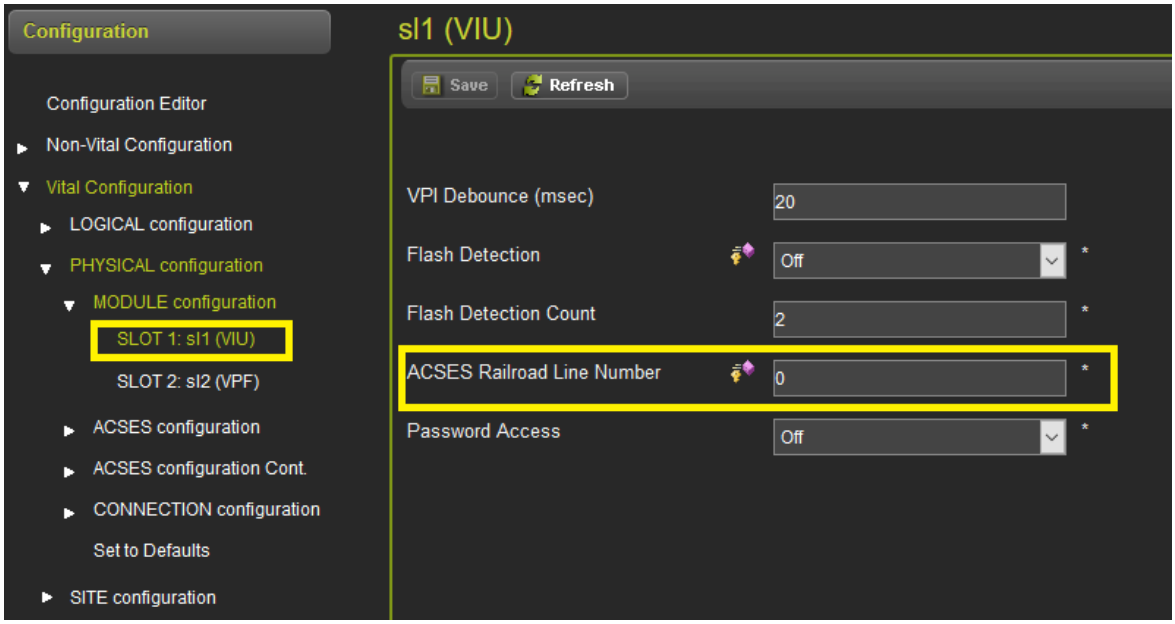


Figure 4-56 VIU20e ACSES Railroad Line Number

4.3.2 Non-Vital Configuration

The VIU Non-Vital Configuration has the options shown in the following figure; however, not all of these are needed for each type of application.

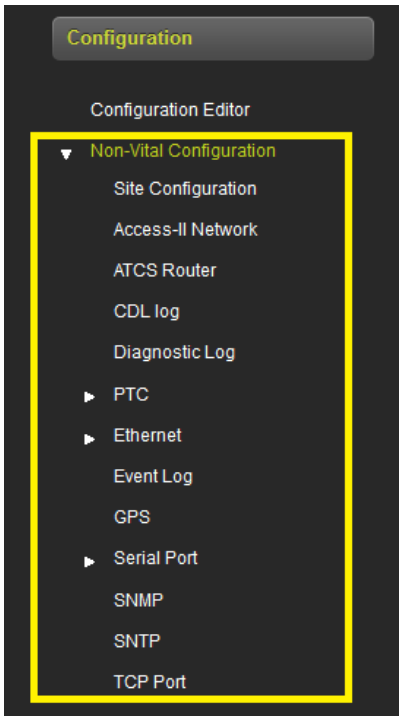


Figure 4-57 VIU20e Non-Vital Configuration

4.3.2.1 Site Configuration

On the Site Configuration screen set the site name (defaults to name chosen on Configuration Editor), milepost, DOT number (if used) and time zone.

NOTE

Unlike most other products, the MCF CRC for the VIU can be set on the Site Configuration page. In most other products the MCF CRC has to be entered by the user in the field.

The Site ATCS address must also be set for the VIU on this page.

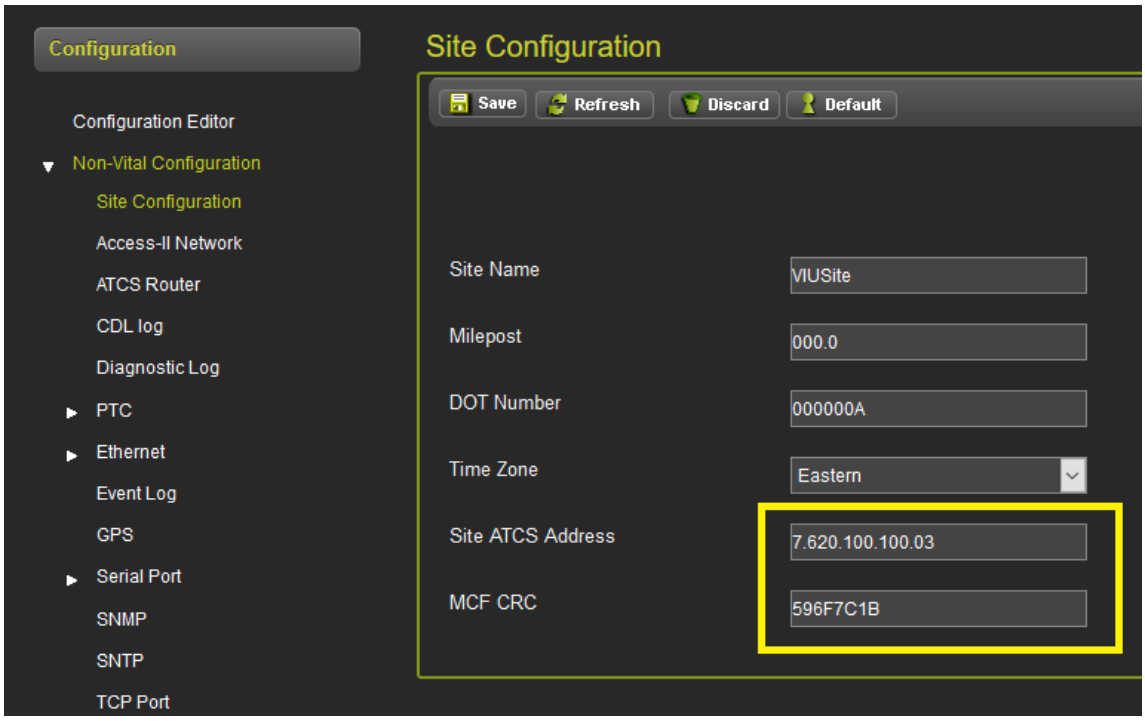


Figure 4-58 VIU Non-Vital Site Configuration

4.3.2.2 PTC

The VIU provides the following submenus for setting the non-vital PTC parameters. It may be useful to set up a template for VIU sites so that common settings for the PTC parameters can be used for all sites, see section 3.2.4 for details.

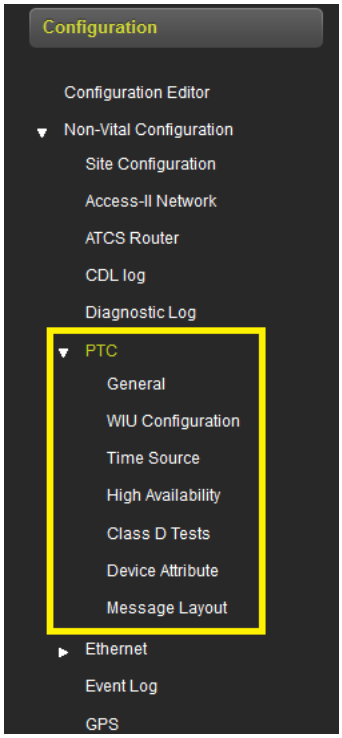


Figure 4-59 VIU Non-Vital PTC Configuration

4.3.2.3 PTC - General

Click on the General menu to open the WIU parameters screen. The parameters on this screen are used to fill in fields in the WIU Config xml file.

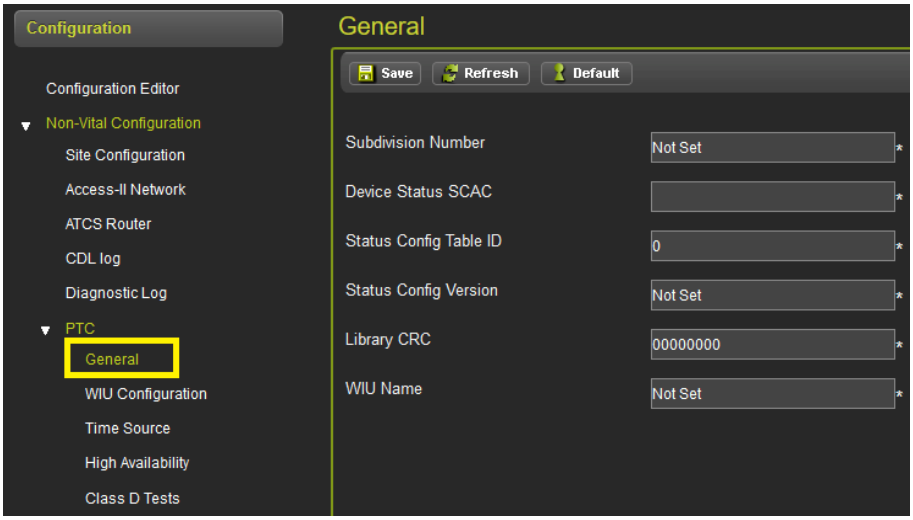


Figure 4-60 PTC Configuration – General Parameters

4.3.2.4 WIU Configuration

Click on the **WIU Configuration** menu to open the WIU Configuration parameters screen. Use the scroll bar on the left to see all the parameters.
The WIU Address field, shown in the yellow box in the following figure, is used to set the WIU Address in the vital payload portion of the PTC message. The HMAC and RC2Key (shown in the red box in the following figure) can also be entered on this screen. When it is entered, it is not displayed to the user, hence the user has to re-enter it to confirm it. Entering the RC2Key will cause an RC2Key.bin file to be created for the site. The railroad may choose to have a common RC2Key across many sites or choose to have different personnel set the RC2 for the person setting up the site. In which case they can use the Create RC2Key button in the Configuration Editor and create the RC2Key independently of a specific site.

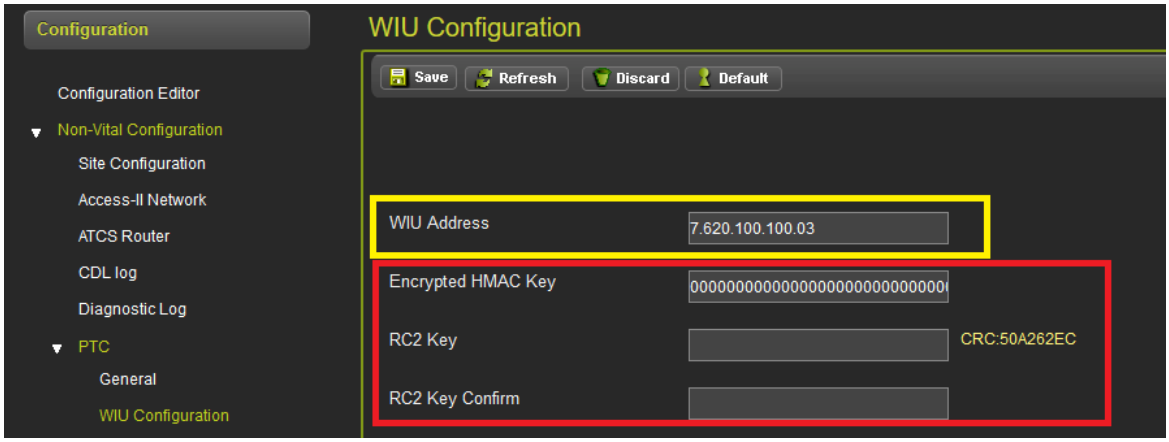


Figure 4-61 PTC Configuration – WIU Configuration

The fields shown in the green box in the following figure are used to set values in the EMP header fields in the PTC message.

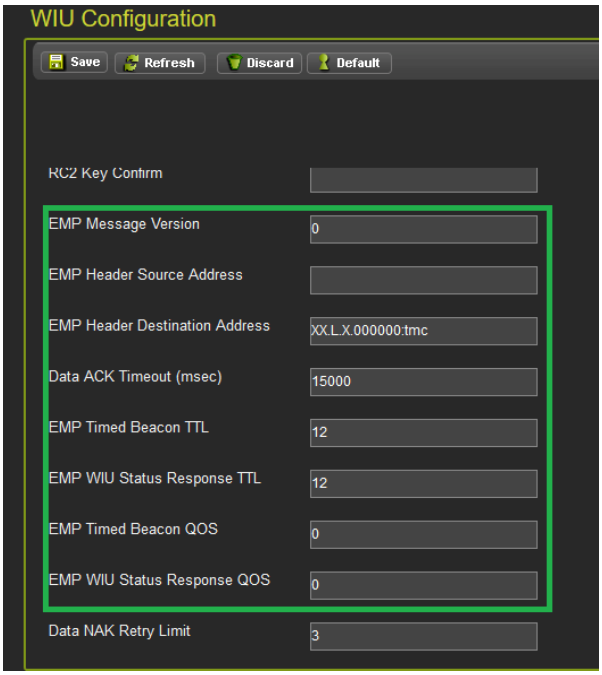


Figure 4-62 PTC Configuration – WIU Configuration EMP Parameters

The fields shown in the blue box in the following figure are used to configure the class D connection.

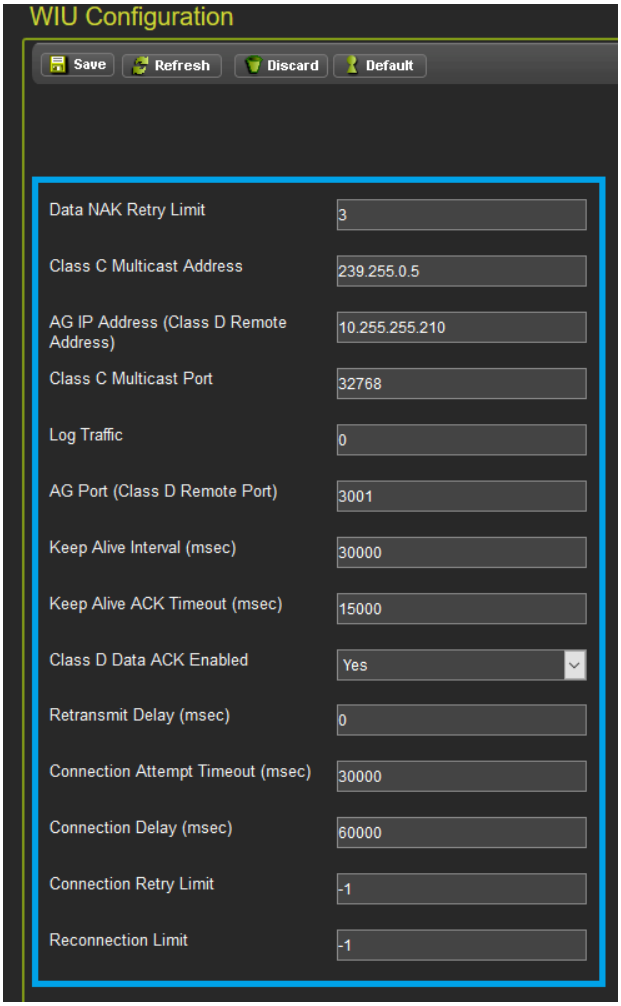


Figure 4-63 PTC Configuration - WIU Configuration Class D Parameters

4.3.2.5 PTC – Time Source

Click on the **Time Source Configuration** menu to open the screen where the preferred time source can be set up. When Preferred Time Source Enable is set to **Yes**, select up to six separate time sources.

NOTE

NOTE

The choice of which type of time source is used in VIU is done on the Non-Vital Configuration / GPS screen.

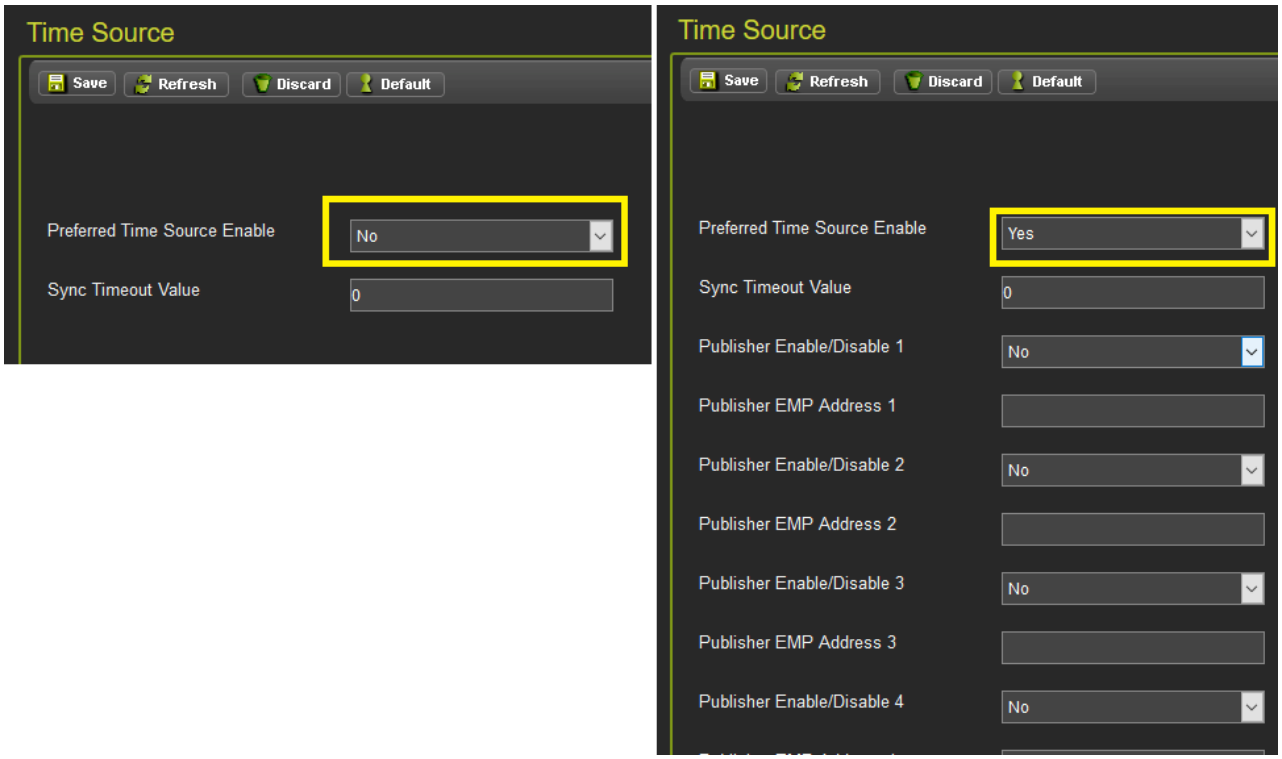


Figure 4-64 PTC Configuration - Time Source

4.3.2.6 PTC – High Availability

Click on the High Availability Configuration menu to open the screen where the high availability options can be set. When Enable/Disable HA is set to **Yes**, up to 12 separate servers can be set up. In IP Name/Range fields, either a single IP address (e.g. 192.168.255.10) can be entered or a range of IP addresses separated with a dash, e.g. 192.168.255.10-192.168.255.20.

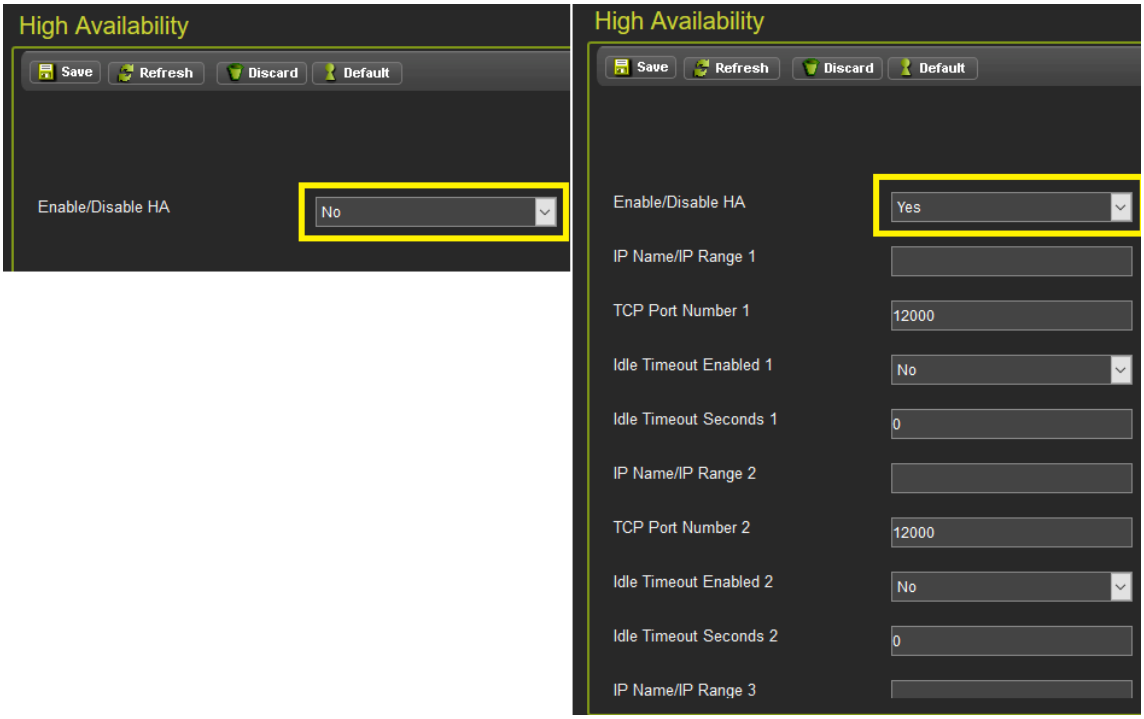


Figure 4-65 PTC Configuration - High Availability

4.3.2.7 PTC – Class D Tests

Click on the Class D Test to configure the Class D Test options.

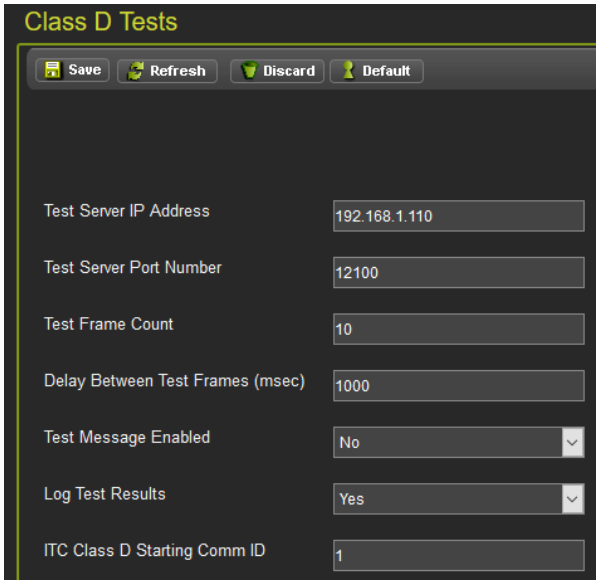


Figure 4-66 PTC Configuration - Class D Tests

4.3.2.8 PTC – Device Attributes

The PTC/Device attributes screen is used to define which PTC Devices are being used.

NOTE

NOTE

In VIU PTC applications the PTC devices have to be created in the non-vital configuration independent of the vital configuration.

Use the **Add** buttons shown in the following figure to create specific types of PTC device. The number of PTC devices must match that defined in the vital configuration. Fill in the site device ID, device names, and set the other attributes. These fields are used to fill in the WIU Config xml file.

To delete a PTC device that has already being added, click on the X under the add column for that device, the press the **Save** button.

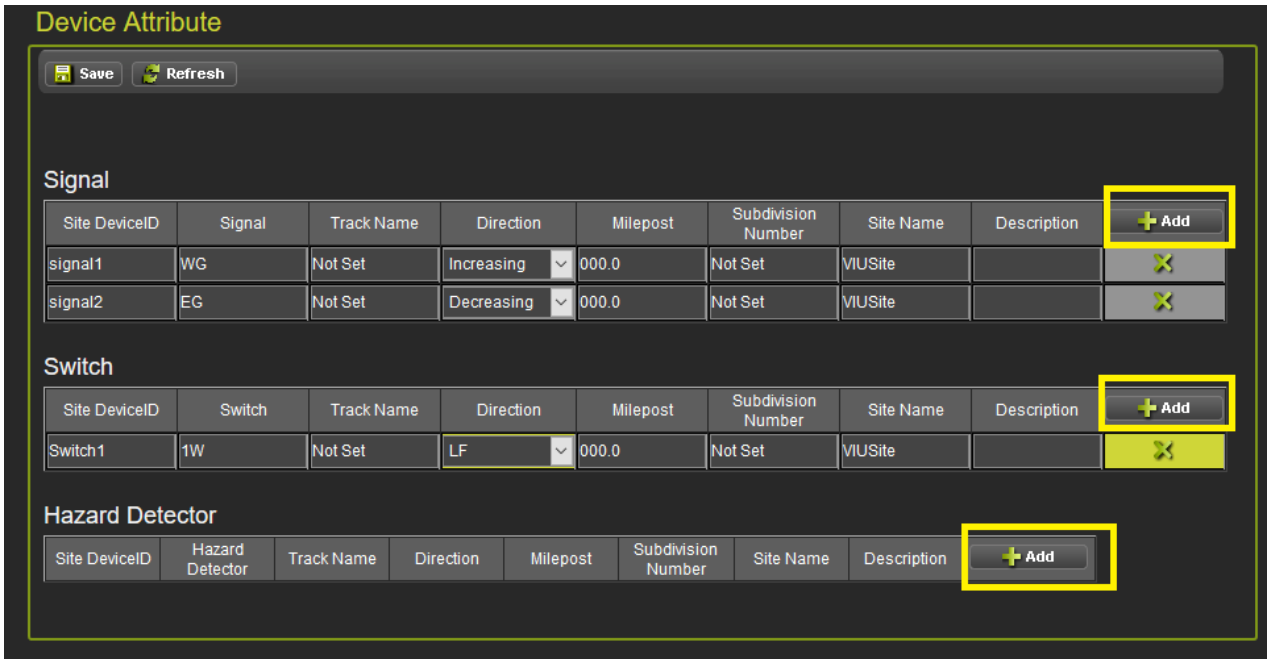


Figure 4-67 PTC Configuration - Device Attribute

4.3.2.9 PTC – Message Layout

The PTC / Message Layout screen displays the PTC devices included in the WIU message. This screen allows the user to specify the layout of the WIU message by rearranging the positions of the PTC Devices in the message (see Section 5.2.3.7 for further details). The user can choose which type of PTC device is reported first: signal, switch, hazard detector. The user can choose the order of the signals from within the block of signals. Use the arrows on the left (shown in yellow box) to change the order of the device types, and arrows on the right (in green box) to change the order of the specific devices within that type.

Select the **Save** button to change the new values.

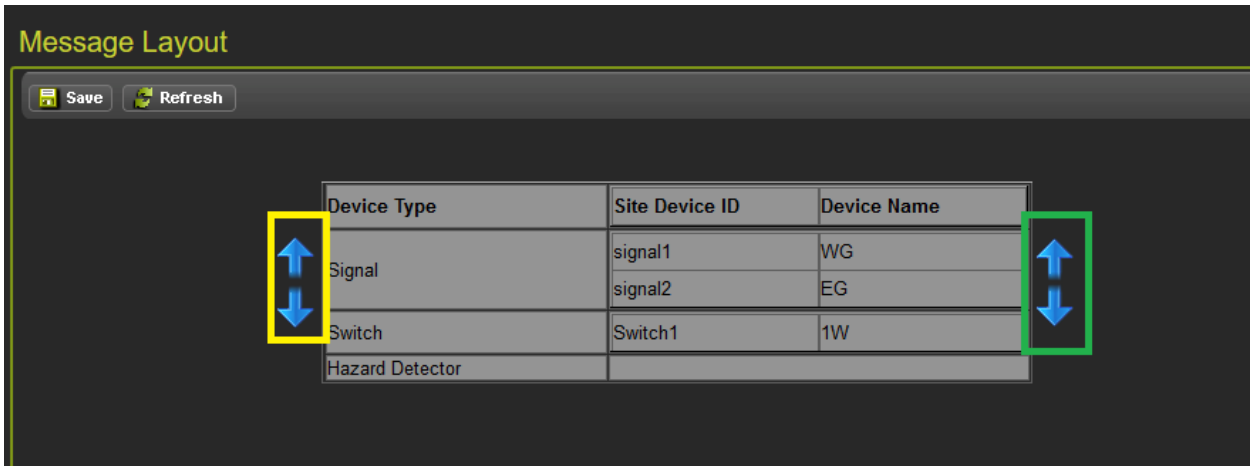


Figure 4-68 PTC Configuration - Message Layout

CAUTION

CHANGING THE ORDER OF DEVICES IN THE MESSAGE LAYOUT WILL AFFECT THE VALUES OF THE VITAL CONFIGURATION/ITC CONFIGURATION PARAMETERS.

The ITC configuration parameters under the vital configuration menu are used by the vital processor to define the layout of WIU message. When the message layout is changed using the blue arrows above, the OCE will automatically update the ITC configuration parameters to set the required message format.

NOTE

If the message layout is changed, the vital configuration must be re-built using the Configuration Editor/Build Config Files.

4.3.2.10 Ethernet Configuration

To configure the Laptop Ethernet port or Ethernet Ports one and two, select the appropriate submenu under Non-Vital Configuration / Ethernet.

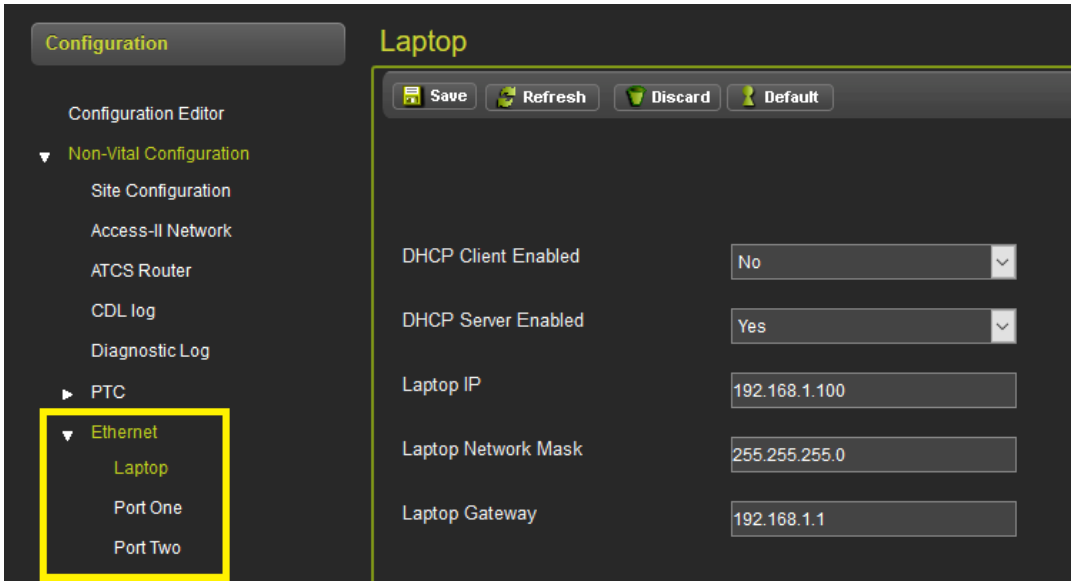


Figure 4-69 Non-Vital Configuration - Ethernet

4.3.2.11 Event Log

The VIU can be set up so that all the VIU modules on one Ethernet network log their events into one specified VIU module's event log. From the event log menu, set up the IP address of the VIU that is to provide the consolidated log. This address does not need to be set in VIU module that has the consolidated log.

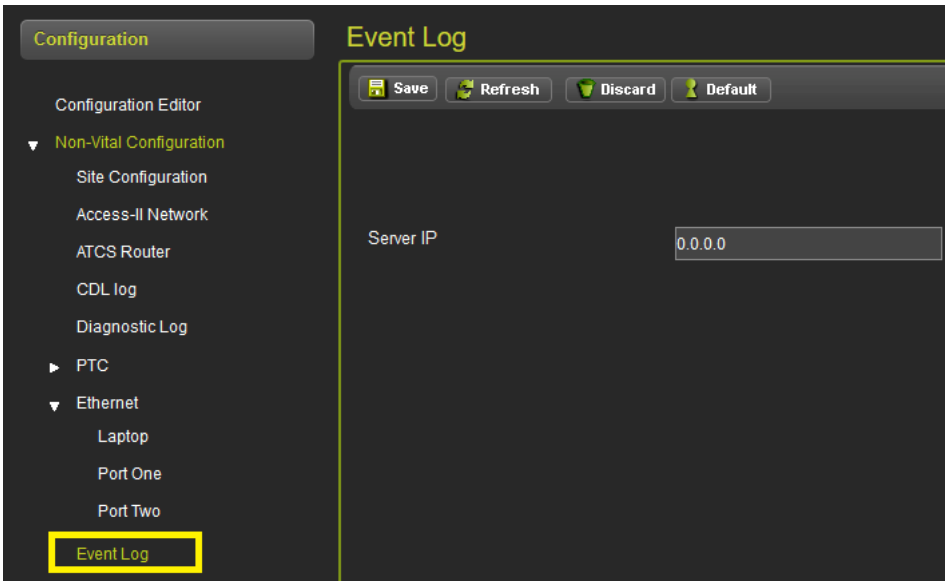


Figure 4-70 Non-Vital Configuration - Event Log

4.3.2.12 GPS

Use the GPS menu to select the options for the time source used by the VIU. The default option for the GPS time source is to use the VIU's own internal GPS. In practice, the more common options for PTC and ACSES system are:

- External Via Class C/D messages
- SNTP Client

If SNTP is selected, the parameters on the Non-Vital Configuration / SNTP page will need completing as well.

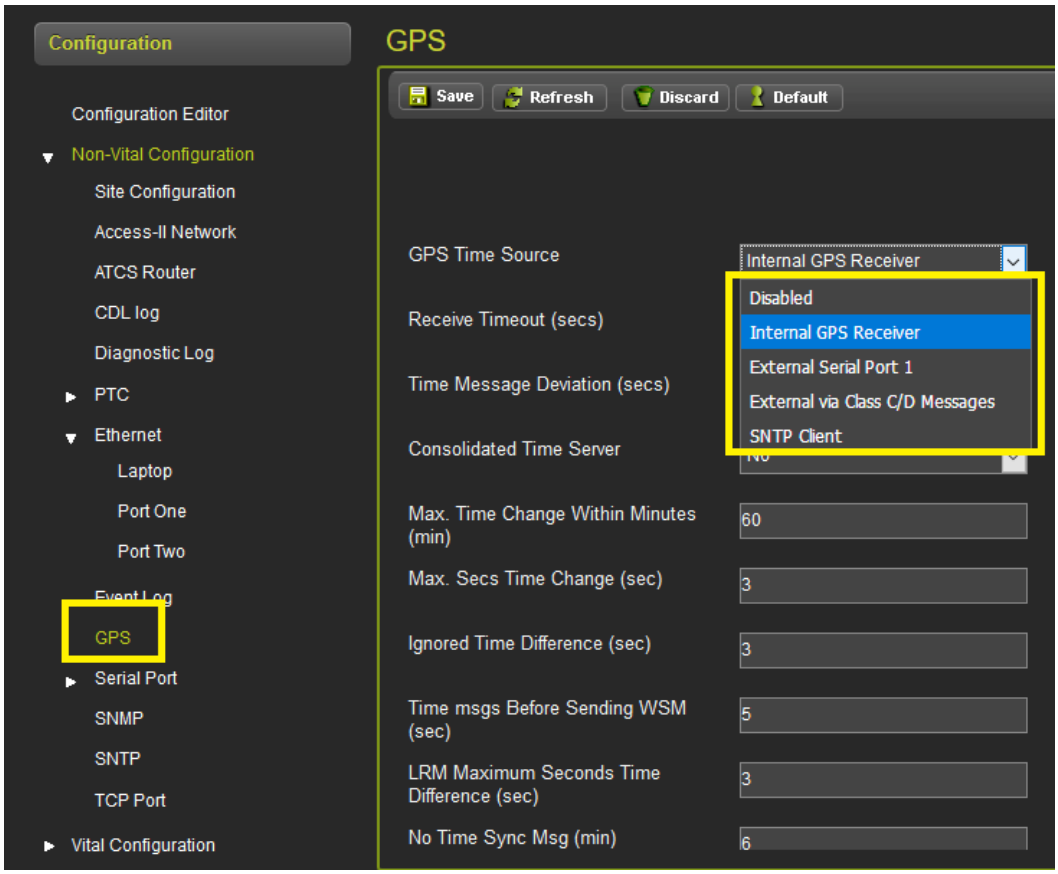


Figure 4-71 Non-Vital Configuration – GPS

4.3.2.13 Serial Port

Use the Serial Port menu to select the options for the Laptop Serial Port and Serial Port.

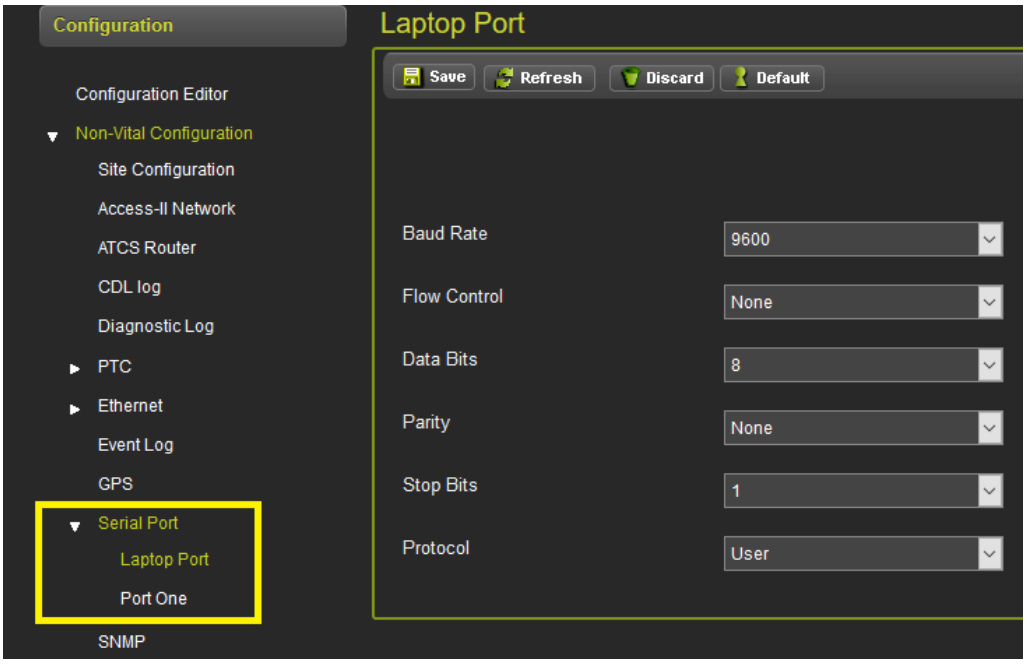


Figure 4-72 Non-Vital Configuration - Serial Port

4.3.2.14 SNMP

Use the SNMP menu to set the connection information from the VIU to the back office for sending SNMP based information.

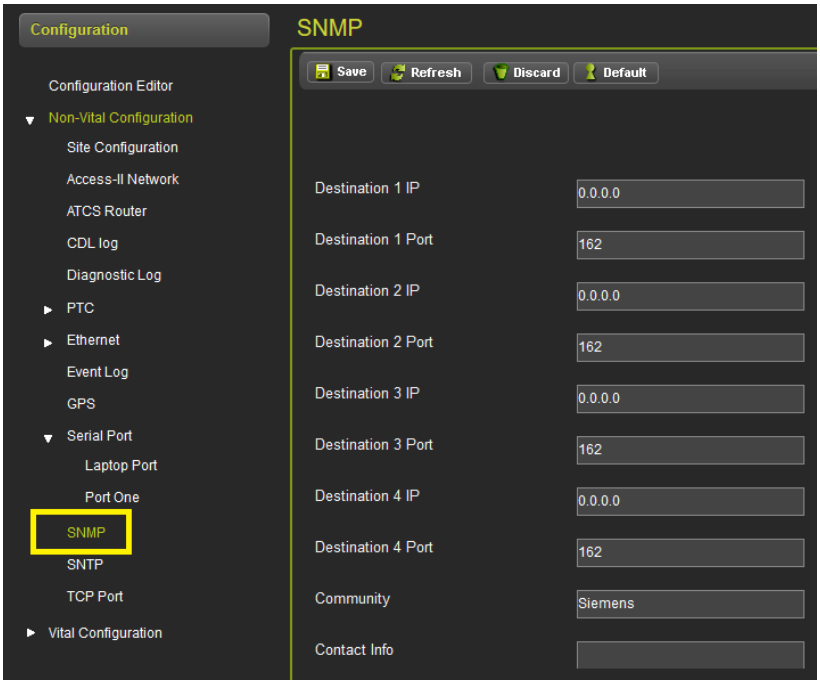


Figure 4-73 Non-Vital Configuration – SNMP

4.3.2.15 SNTP

If the SNTP Client has been selected as the GPS Time Source (see section 4.3.2.12) use the SNTP menu to set associate SNTP parameters. If GPS Time Source is not the SNTP, these parameters are not used.

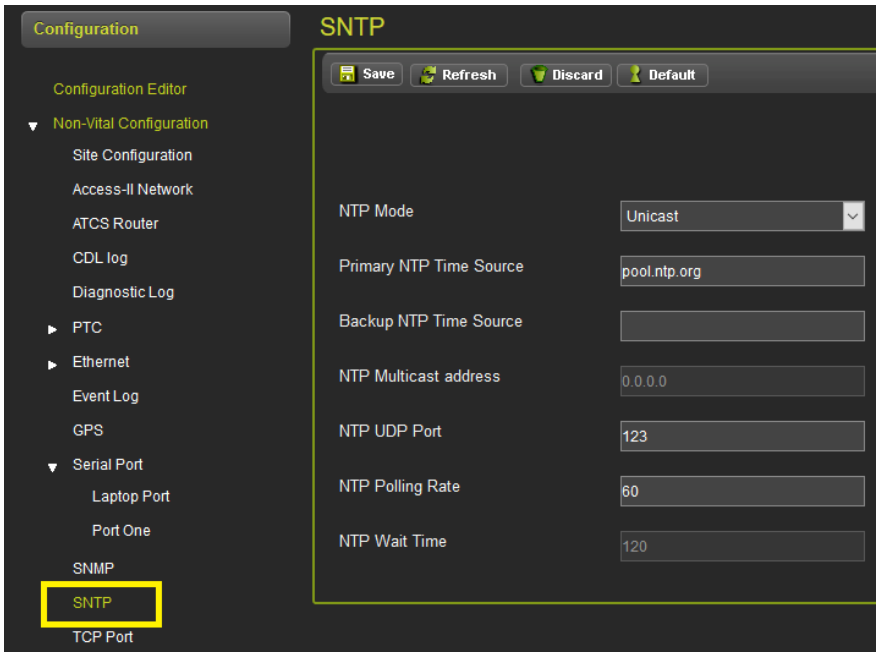


Figure 4-74 Non-Vital Configuration – SNTP

4.3.2.16 TCP

Use the TCP menu to set parameters related to AServer connectivity, see VIU manual for details.

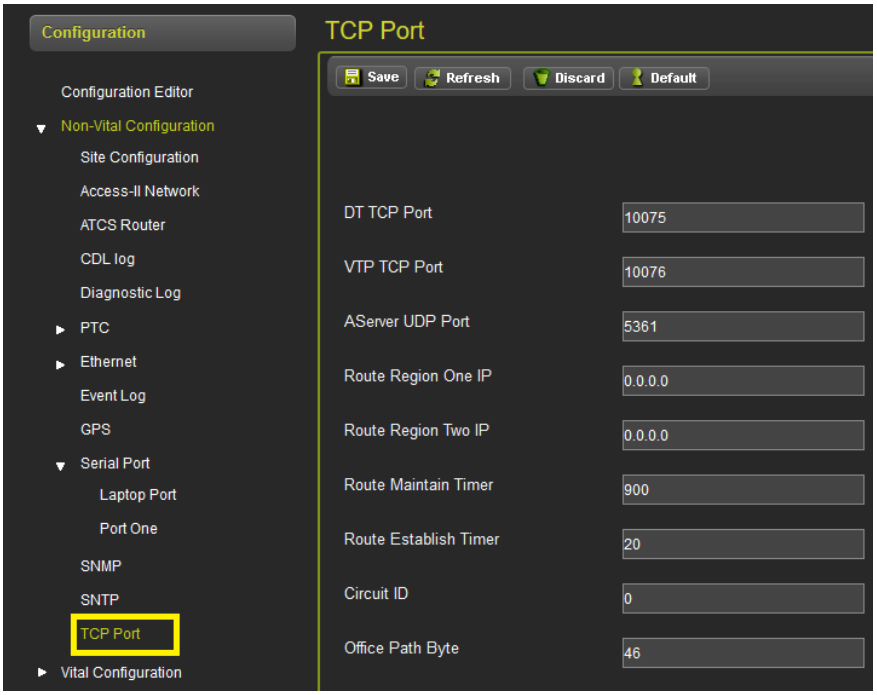


Figure 4-75 Non-Vital Configuration - TCP

4.3.3 Building Configuration Files

After the configuration values in the Non-Vital and Vital Configuration have been entered, select the **Build Config Files** button shown in the following figure. After a few seconds the OCE will show a message indicating Build Created Successfully.

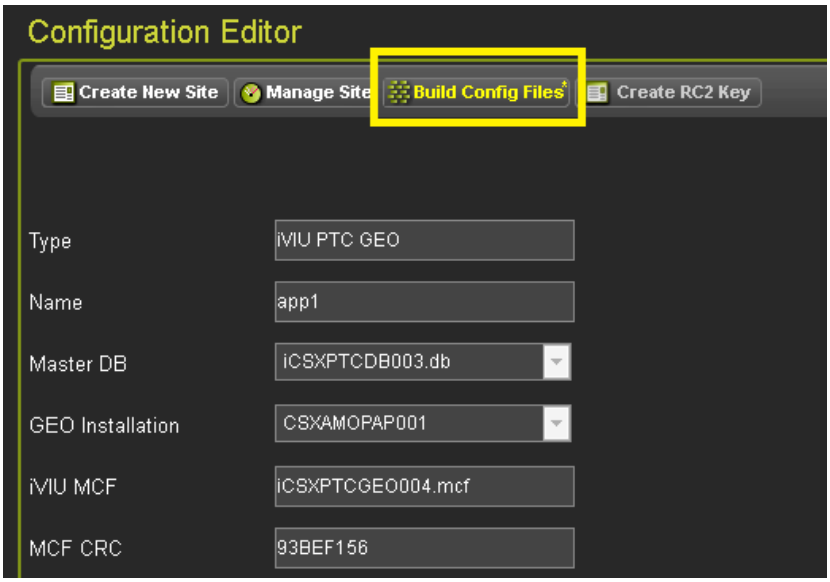


Figure 4-76 Build Config Files

The OCE will then show the Config Reports button. To view the report, click the button and the file can be either downloaded or viewed.

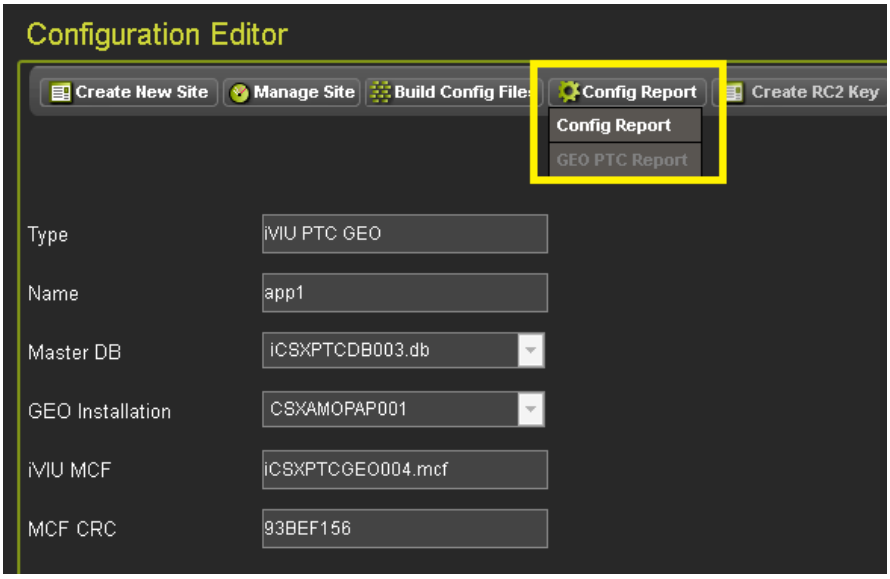


Figure 4-77 Config Reports Button

WARNING

THE CONFIGURATION REPORT MUST BE CHECKED TO ENSURE THAT THE PARAMETERS THAT AFFECT SYSTEM SAFETY ARE CORRECTLY SET.

At the end of the configuration report, the UCN for the location is printed. This will need to be entered into the unit in the field via the Web UI or Local UI. To ensure that the correct configuration is downloaded into the correct site, it is not downloaded automatically as part of the ZIP file. The report also contains the PTC UCN, this also will need to be manually set for the equipment in the field if the iVIU is used in a PTC application. The PTC UCN is 0 for a non-PTC application.

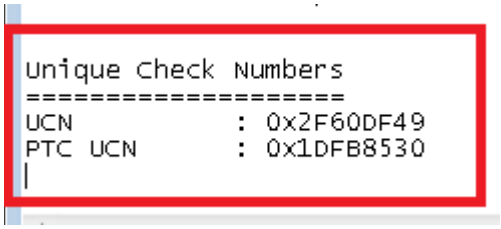


Figure 4-78 UCN/PTC UCN in Configuration Report

4.4 GEO SITES

The OCE is used in GEO applications:

- To obtain the UCN for the specific GEO installation
- To obtain the configuration report containing the configuration settings

NOTE

NOTE

The OCE 2.6.3 does not support the older Non-Appliance Model GEO applications.

The following procedure will provide step-by-step instructions on building a GEO Site.

1. Click on the **Select Product** button and select GEO from the drop-down menu.
2. Click on the **Create New Site** button.

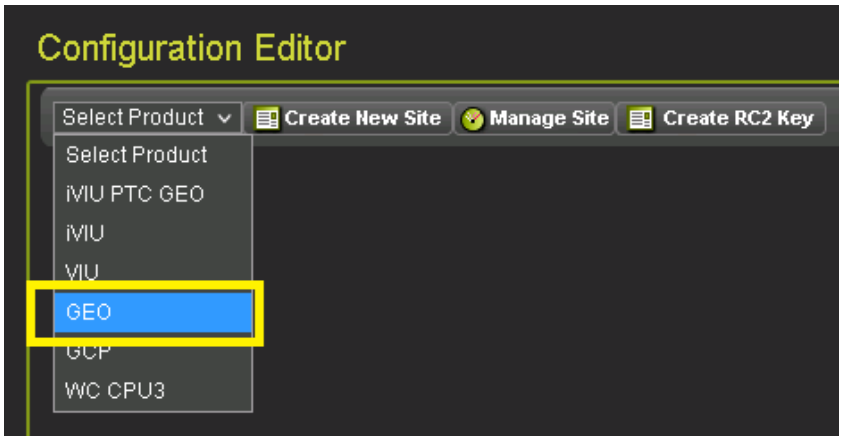


Figure 4-79 Creating a GEO Site

3. The OCE will show the following screen where the site name and MCF details can be entered. First enter the site name (up to 20 characters) then press the **Select MCF** button.

NOTE

NOTE

The Product button is shown to the left of the Create New Site button on all OCE Configuration Editor screens, this button is not shown in the following figures.

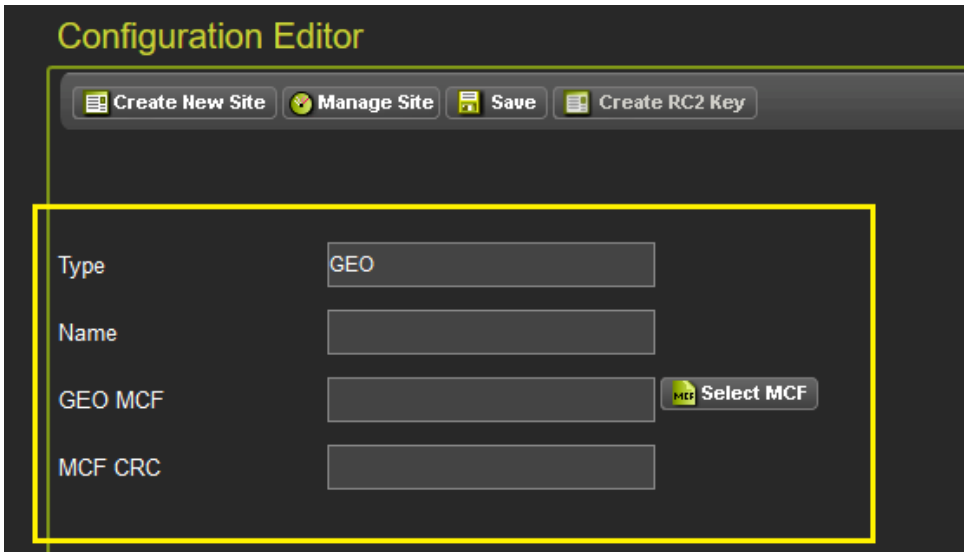


Figure 4-80 GEO Site Configuration Editor

4. On the MCF Selection screen, either select a new MCF using the browse button, or use the drop-down arrow (right) which will show MCFs that have already been used before by the OCE.

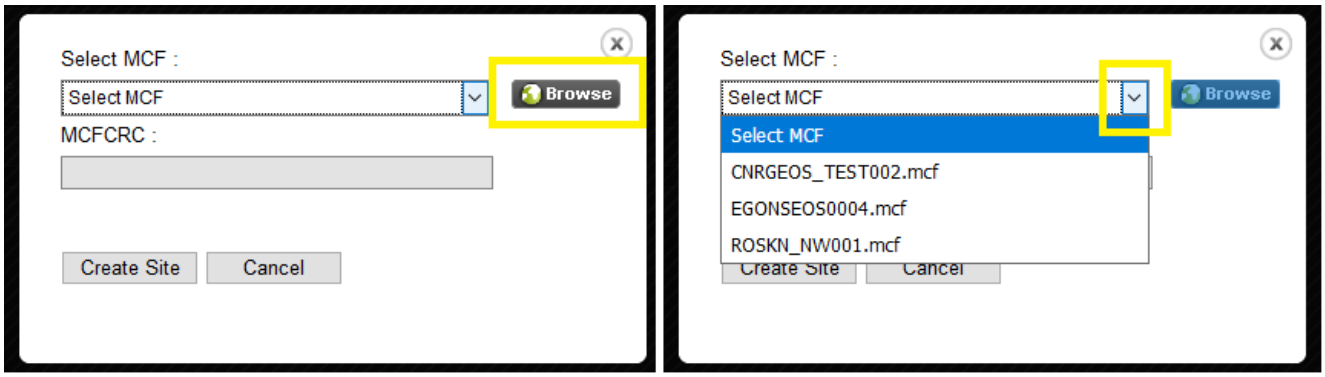


Figure 4-81 Selecting MCF

If the browse button is used, enter the MCF CRC obtained from the GEO MCF log file. The MCF is chosen from the drop-down menu, the OCE will automatically fill in the MCF CRC. Next press the **Create Site** button (shown above). The OCE will process the files for a few seconds then return to the main Configuration Editor screen.

NOTE

NOTE

When creating a new site OCE will ask for an MCF. The OCE keeps a repository of MCFs by site type, so if an MCF has been previously used or has been imported using the File Manager, the MCF will appear in the drop-down menu. After selecting the appropriate MCF, OCE will automatically fill in the MCF CRC if the .log file is present in the repository. If the MCF has not been used before it will be necessary to click on the Browse button to find the MCF and manually enter the MCF CRC which is obtained from the MCF's log file. The OCE will then copy the MCF over to its repository, so that if it is used again, it will be accessible from the drop-down menu.

Prior to setting parameters, go to the Vital Configuration / Physical Configuration and select the required Physical Layout as shown in Figure 4-82. Because the Physical Layout value potentially may affect all other vital menus and settings, check that the correct one is chosen before proceeding.

NOTE

NOTE

Each Physical Layout has its own sets of menus. The correct Physical Layout must be selected prior to setting any other Vital Configuration parameters.

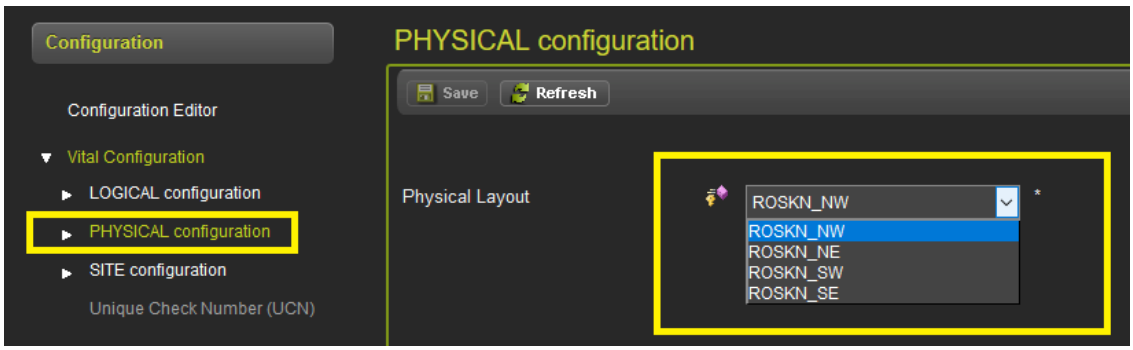


Figure 4-82 GEO Physical Configuration Selection

Next, go to the Vital Configuration menu and change the parameters as necessary.

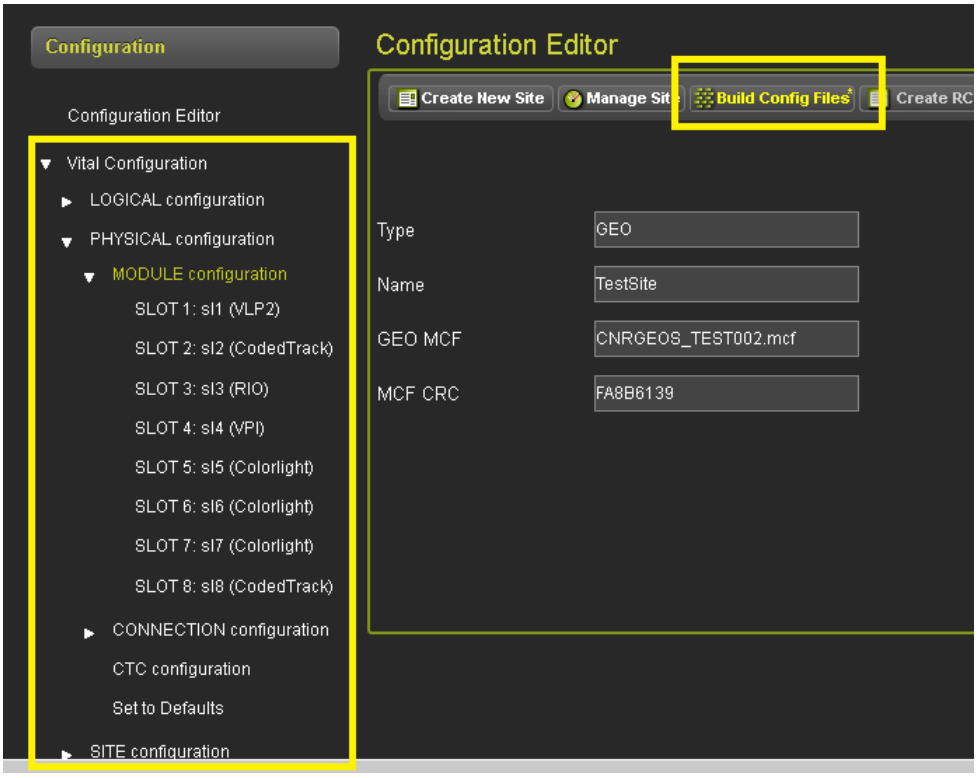


Figure 4-83 GEO Vital Configuration Menu

After all the Vital Configuration parameters have been entered and saved, create the build files by selecting the Build Config Files button (highlighted in Figure 4-83). The OCE will process the files for a few seconds and then display the following pop up message “Build Created Successfully.” Close this window and the OCE will now show the Config Report button. Select this to download the configuration report.

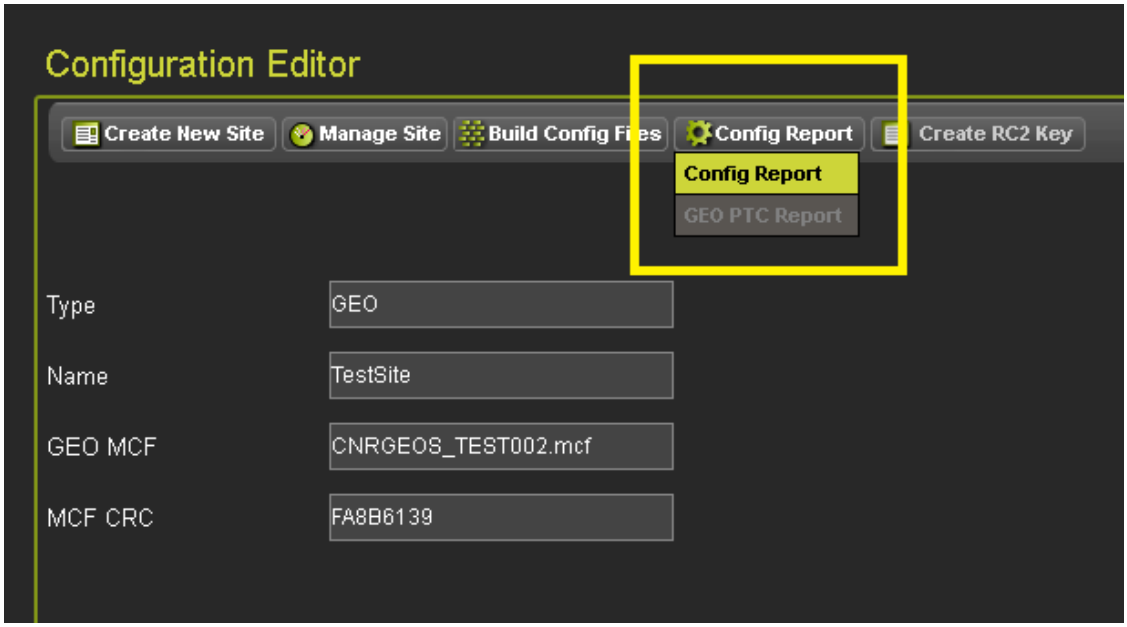


Figure 4-84 GEO Config Report

For GEO installations, the configuration properties have to be set in the field when connected to the GEO system according to the values on the configuration report, then the UCN entered.

The UCN can be viewed at the very end of the Configuration Report.

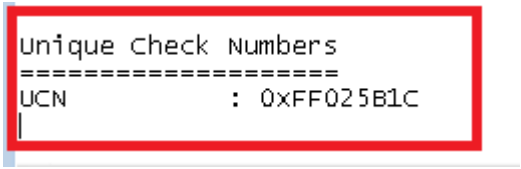


Figure 4-85 GEO Config Report UCN

NOTE

NOTE

For GEO installations, the configuration properties have to be set in the field when connected to the GEO system according to the values on the Configuration Report. After configuration of the GEO, the UCN can be entered.

4.5 GCP SITES

The OCE can be used to create a GCP 5000, GCP 4000, GCP 3000+, MS 4000, or GCE installation. The OCE is used to:

- Set the vital MCF parameters from the GCP MCF.
- Set other non-vital configuration parameters.
- Select a CDL and answer the CDL setup questions.
- Obtain the OCCN for the specific installation.
- Obtain the configuration report containing the configuration settings.
- Create the configuration files (PAC and ZIP files) that can be loaded onto the GCP using the Web UI or USB.
- Compare two PAC files to see the differences.
- Create templates so that the same railroad specific parameters can be reused.

⚠ WARNING

WARNING

THE CONFIGURATION REPORT MUST BE CHECKED TO ENSURE THAT THE PARAMETERS THAT AFFECT SYSTEM SAFETY ARE CORRECTLY SET.

Previously, the existing Diagnostic (DT) program was used to create a PAC file offline. This could be uploaded using the DT or Display Module into a GCP in order to program the GCP in the field. The PAC file could also be downloaded back from the GCP and opened in the DT.

The OCE also allows the user to create PAC files or read a PAC file from an existing GCP; however, the OCE also creates an installation ZIP file. This ZIP file contains the following:

- PAC file.
- Selected GCP MCF that was used in PAC file.
- Selected reports.

The Display module (A80485) or CPU III (A80903) allow the user to select the ZIP file, and this will first upload the MCF into the GCP and then upload the PAC file.

The railroad may find it more convenient to configuration manage the ZIP file rather than the PAC file, as the first file contains both the reports and PAC file itself. Because different railroads may have different requirements on what reports they want to keep, the OCE allows the user to select which reports are included in the ZIP file.

The following sections describe how to:

- Create a new GCP site by selecting the MCF (equivalent to how DT was used).
- Open an existing PAC file.
- Use templates to set up railroad specific default values.
- Update a site to a new MCF.
- Compare PAC / ZIP files.

4.5.1 Creating a New Site from MCF

1. Click on the **Select Product** button and select GCP as shown in Figure 4-86.
2. Click on the **Create New Site** button.

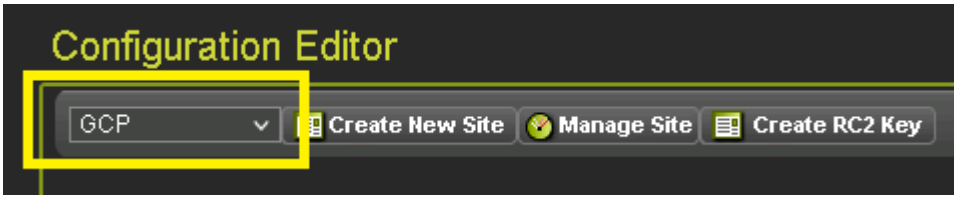


Figure 4-86 Creating a GCP Site

A Site Configuration Editor screen will appear with text boxes and drop-down menus for establishing the site Name, GCP MCF, and the MCF CRC. Enter the site name in the Name text box.

NOTE

NOTE

The **Product** button is shown to the left of the **Create New Site** button on all OCE Configuration Editor screens. This button is not shown in the following figures.

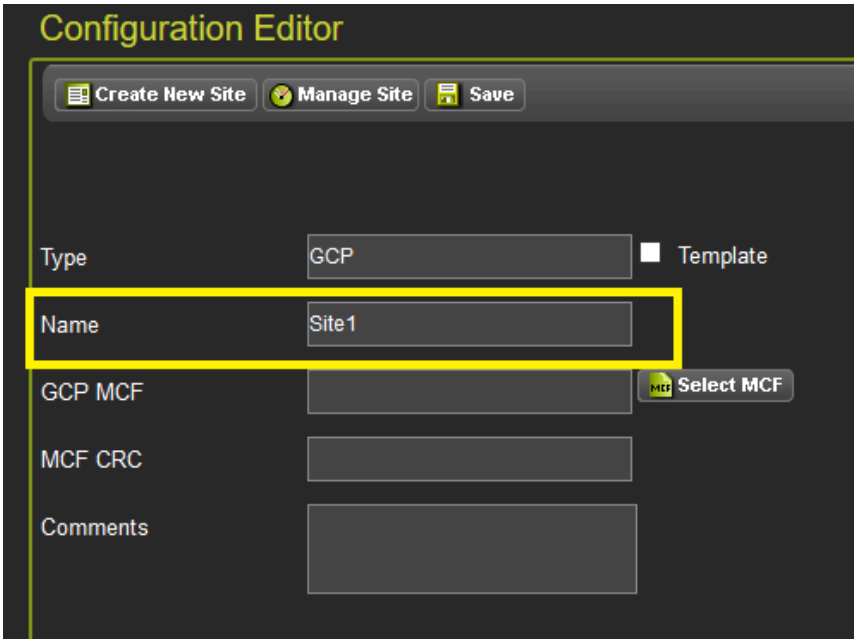


Figure 4-87 GCP Editor Window

3. The next parameter is selection of the GCP MCF file. This field is automatically filled in with the last GCP MCF used. To change the MCF or to select a template to use, press **Select MCF** and the OCE opens the window shown in the following figure.

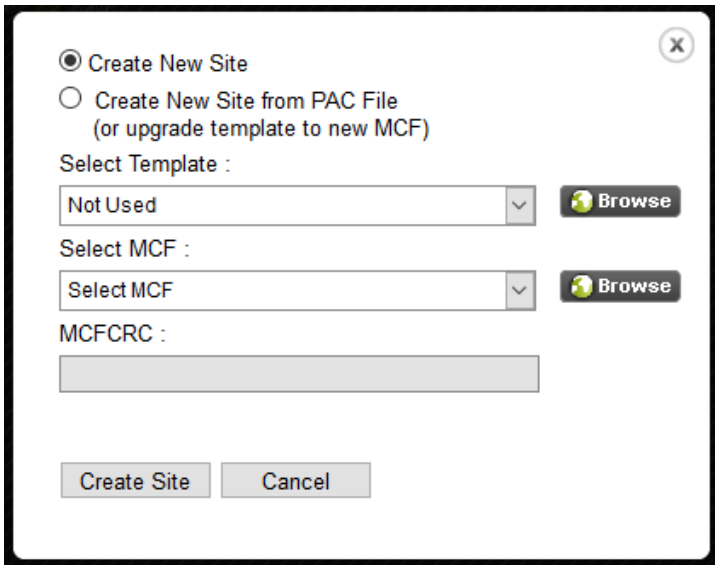


Figure 4-88 Create GCP Site Window

This window allows the new site to be created from either the MCF, or by selecting an existing PAC file that could have been created by the OCE or downloaded from a GCP.

The window also allows the user to choose a template they have created previously, see section 4.5.3 for details of creating and using templates.

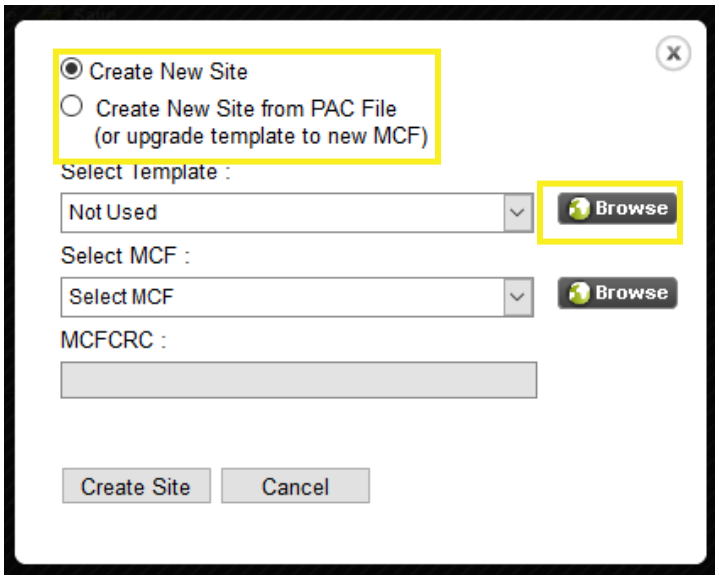


Figure 4-89 Create GCP from PAC File

Several options exist for site creation, the first addressed is creating a site based upon the MCF with no template.

Click the drop-down arrow on the **Select MCF** field; this will bring up a list of all the pre-defined MCFs that were installed with the OCE. The OCE will come installed with all the GCP MCFs available to date, if a new GCP MCF is required, use the browse button to find the MCF and enter its CRC. This will install the MCF, so that next time it is used it will be available in the drop-down list.

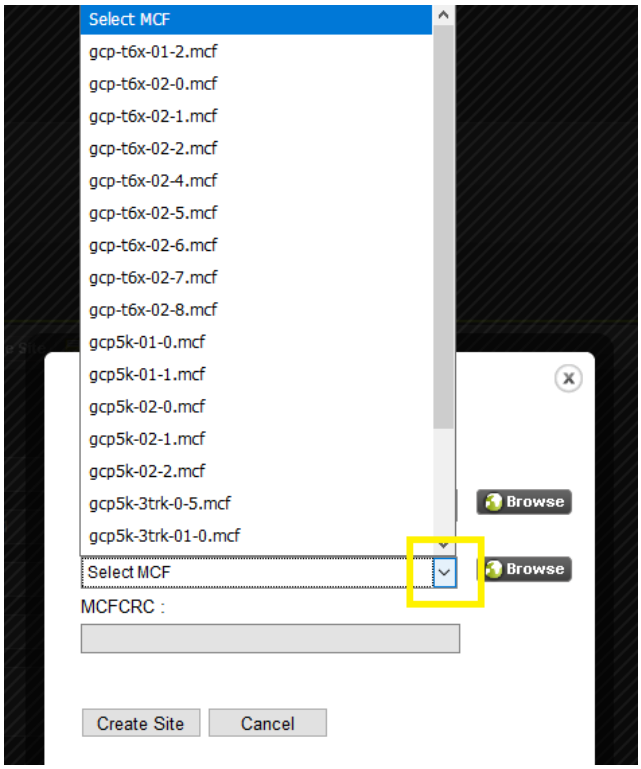


Figure 4-90 Select GCP MCF

Once the MCF has been selected, click **Create Site** and the OCE will then generate the site with the default configuration from the MCF.

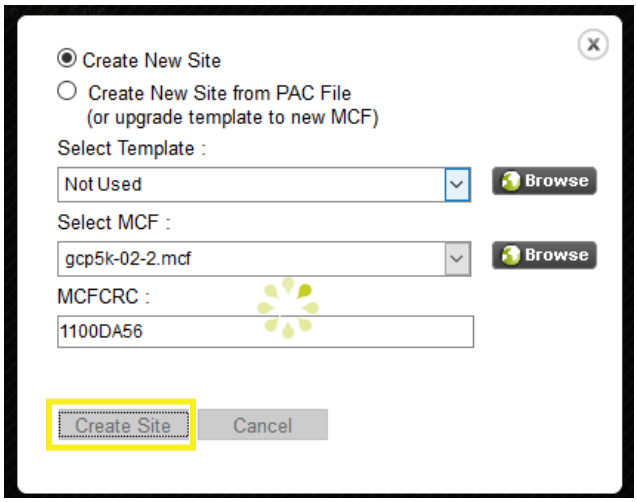


Figure 4-91 GCP MCF Selected

After a few seconds, the OCE will go back to the Configuration Editor screen and show the available menus; for example Site Configuration, GCP programming, SEAR programming, Display Programming—the exact menus displayed depends on the type of MCF selected: GCP 5000, GCP 4000, GCP 3000+, or GCE.

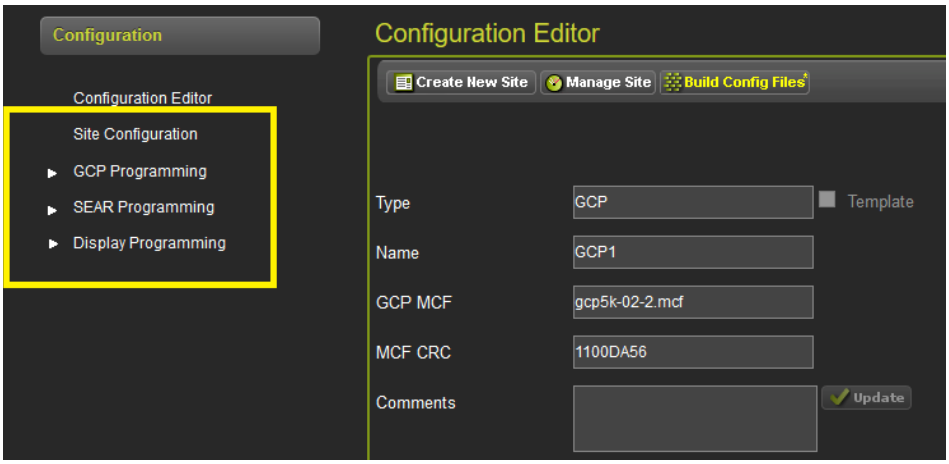


Figure 4-92 GCP Configuration Editor

4.5.1.1 GCP 4000 Sites

All the GCP 4000 Programming is done under the GCP Programming menu.

The first step in the GCP programming is to set the Template from the Setup Wizard. Go to the TEMPLATE programming menu and select the appropriate template that best fits the geometry of the crossing being designed and press the **Save** button.

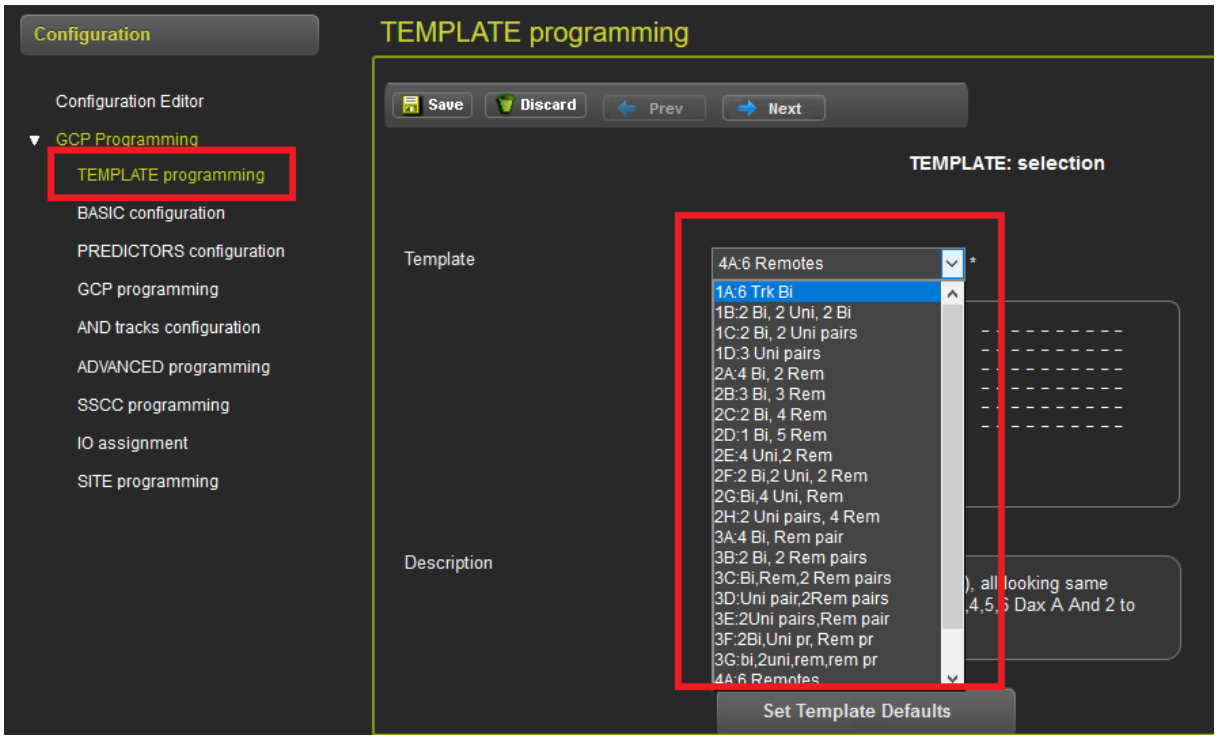


Figure 4-93 GCP 4000: GCP Programming

The OCE will provide the warning illustrated in the following figure. Select **OK** to continue.

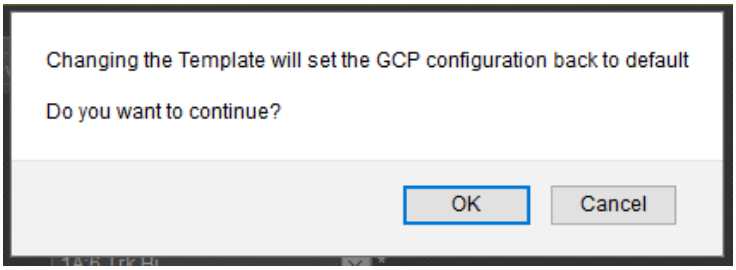


Figure 4-94 GCP 4000: Template Change Warning

The OCE will show the messages indicating that the configuration is being set back to default. Each GCP MCF template has a specific set of default values and menus associated with it. When the template is changed, the GCP programming parameters are set back to the default values for this template so this value must be set before any other GCP Programming parameters can be changed.

NOTE

The term: **Template** is used in two different contexts in the OCE. It is used:

1. in a general OCE sense, to define a set of default values that can be saved by the user and used across multiple sites
2. in a GCP MCF-specific sense, to select a specific layout and configuration of unidirectional and bidirectional tracks related to the geometry of a crossing

At this point the user can choose to go through each of the TEMPLATE menus under TEMPLATE programming as a way to set the parameters that are most likely to require setup for the crossing e.g. frequencies, and warning times. Use the **Next** and **Previous** buttons at the top of the template pages to move through each Template screen in a cyclic manner. When the last template page is reached, **Next** will go back to the first Template page.

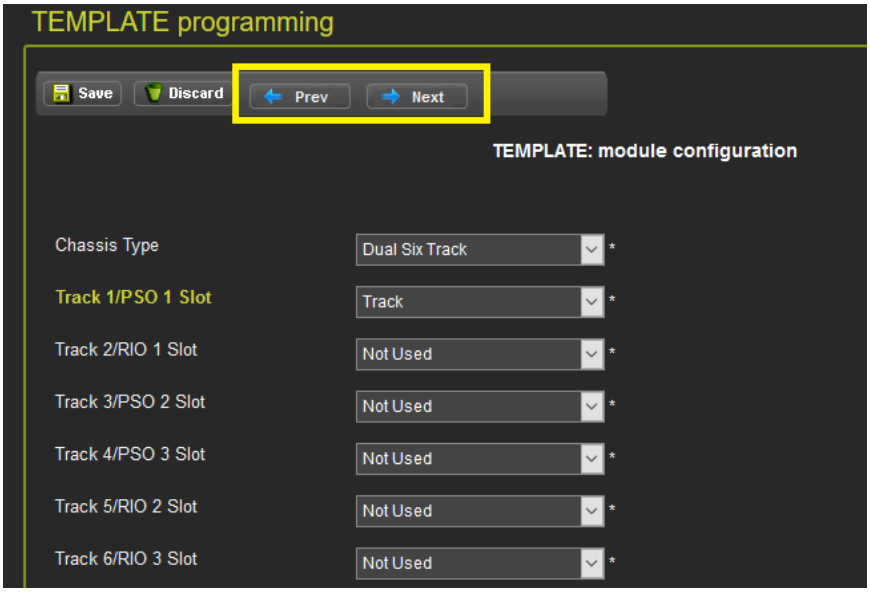


Figure 4-95 Template Parameters

To change parameters that are not included in the template menus, select the appropriate menus from the menu on the left of the screen and then press the **Next** button to get to the required page.

The **Next** button is designed so that starting on the Basic Configuration screen and pressing **Next** repeatedly will show each active screen until the final Site programming screen is shown. Pressing **Next** as this point goes to the Template page.

The **Prev** button is designed so that starting on the last screen (Site Programming) screen and pressing **Prev** repeatedly will cycle back and show each active screen until the Basic Configuration screen is shown. Pressing **Prev** at this point goes to the Last Template page.

The asterisk to the right of an item indicates that the parameter is set to its default value.

The ATCS Address and Location parameters are handled differently from the rest of the GCP Programming parameters.

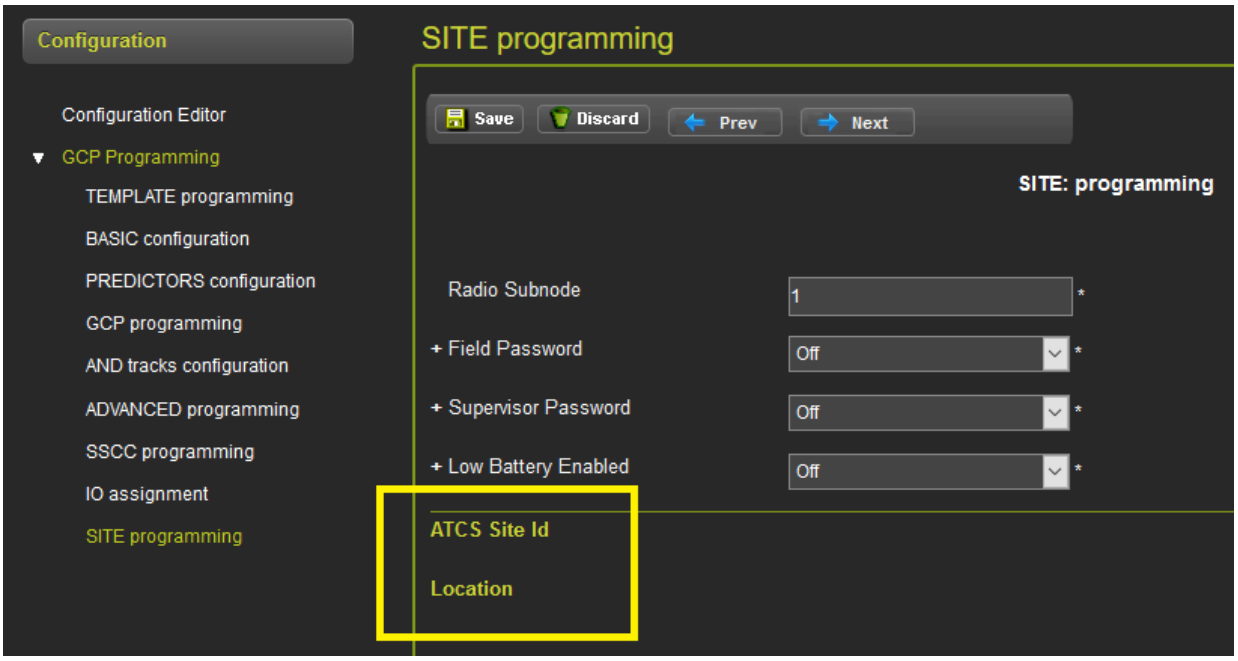


Figure 4-96 GCP 4000: Site Programming

To set the ATCS Address for the GCP, go to the SITE programming and select the ATCS Site ID menu item, enter the ATCS address in the format: 7.RRR.LLL.GGG.SS

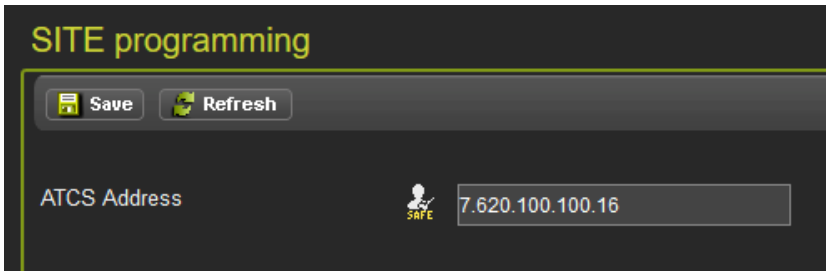


Figure 4-97 GCP 4000: ATCS Address

To set the location information, go to the SITE programming and select the Location menu and enter the Site Name, DOT Number and Milepost. The Site Name defaults to the name of the site chosen when the site was created (see Figure 4-87).

Figure 4-98 GCP 4000: Location Information

4.5.1.2 GCP 5000 Sites

4.5.1.2.1 Site Configuration

The Site Name will default to the name chosen for the site, as shown in the following figure. Change this if necessary. Set the DOT if applicable, this is used in the default name for the Configuration (PAC) files. If Vital ATCS communications will be used between GCP systems, or the SEAR IIi uses ATCS communications to external equipment, then set the appropriate ATCS address 7.RRR.LLL.GGG.SS where:

- The RRR is set using the ATCS Railroad parameter.
- The LLL is set using the ATCS Line parameter.
- The GGG is set using the ATCS Group parameter.
- The SS is set using the ATCS CPU Subnode parameter.
- In the GCP 5000 the SEAR IIi and CPU will obtain their ATCS information from this one place, unlike the GCP 4000 where the ATCS addresses have to be set independently of each other.

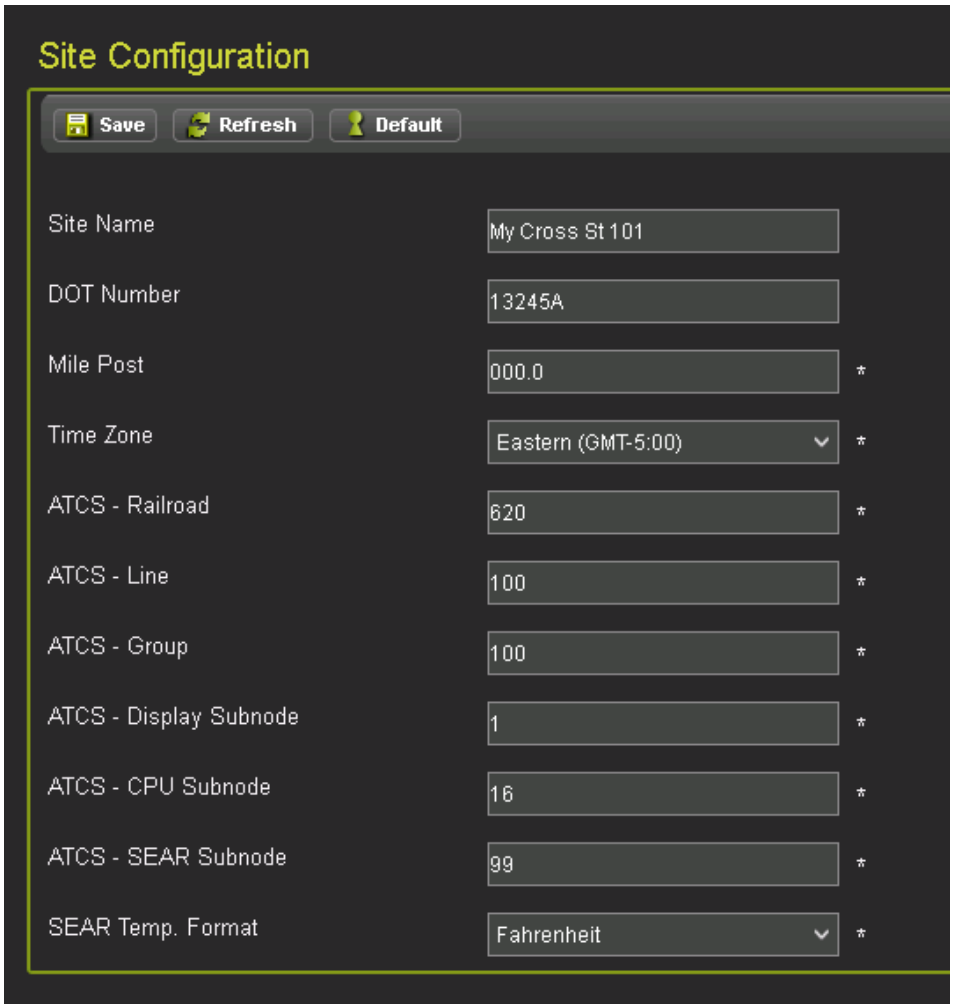


Figure 4-99 GCP 5000 Site Configuration

4.5.1.2.2 GCP Programming

The first step in the GCP programming is to set the Template from the Setup Wizard. Go to the GCP Programming / Setup Wizard and select the appropriate template that best fits the geometry of the crossing being designed.

NOTE

Each GCP MCF template has a specific set of default values and menus associated with it. When the template is changed, the GCP programming parameters are set back to the default values for this template so this value must be set before any other GCP Programming parameters can be changed to avoid loss of inputted data.

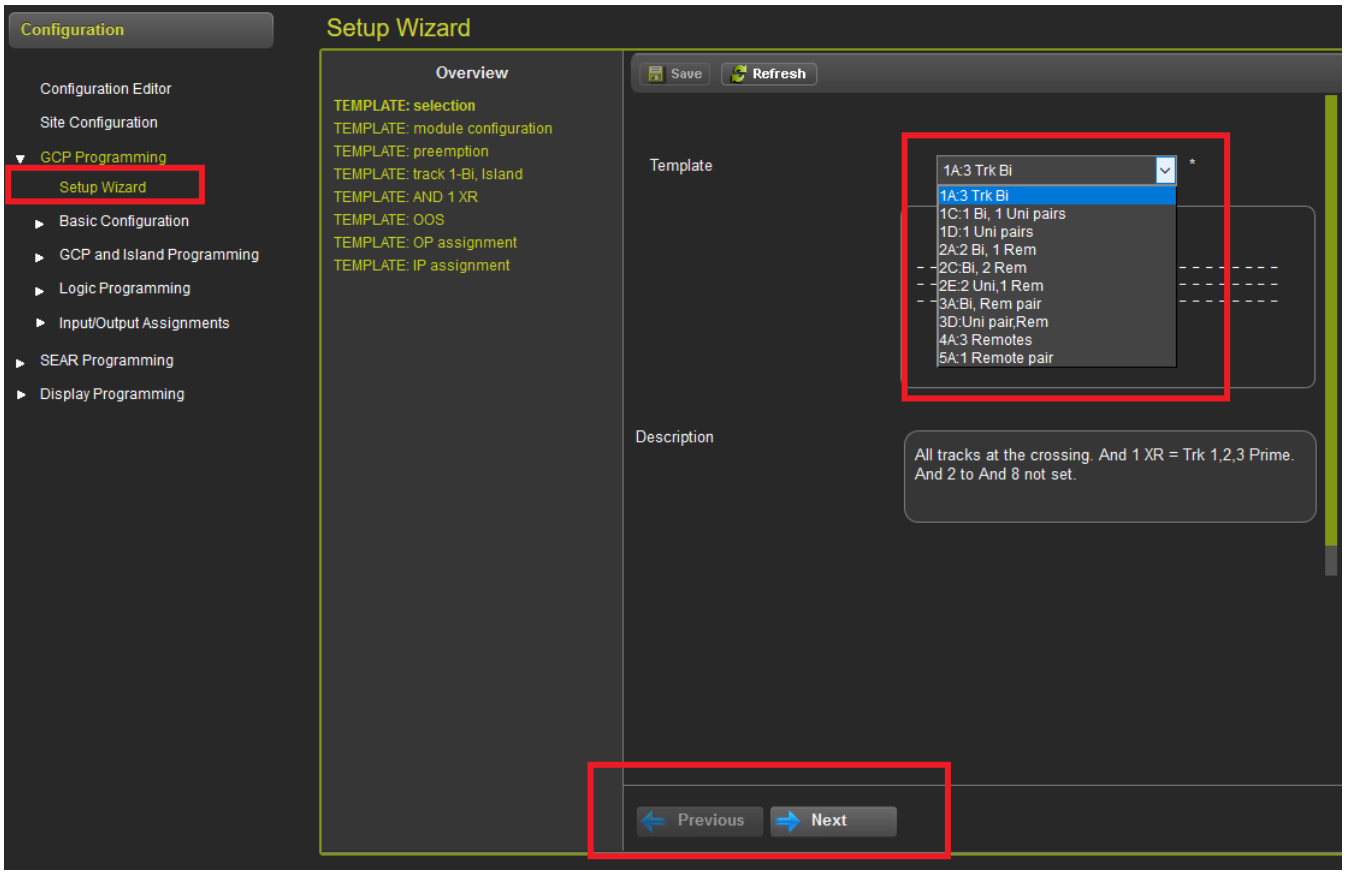


Figure 4-100 GCP MCF Template Selection

At this point the user can choose to go through each of the TEMPLATE menus in the Setup Wizard as a way to set the parameters that are most likely to require setup for the crossing, e.g. frequencies, and warning times. Use the **Next** and **Previous** buttons at the bottom of the template screens to move through each Template screen in a cyclic manner.

To change parameters that are not included in the template menus, select the appropriate menus from the left menus.

The asterisk (*) to the right of an item indicates that the parameter is set to its default value.

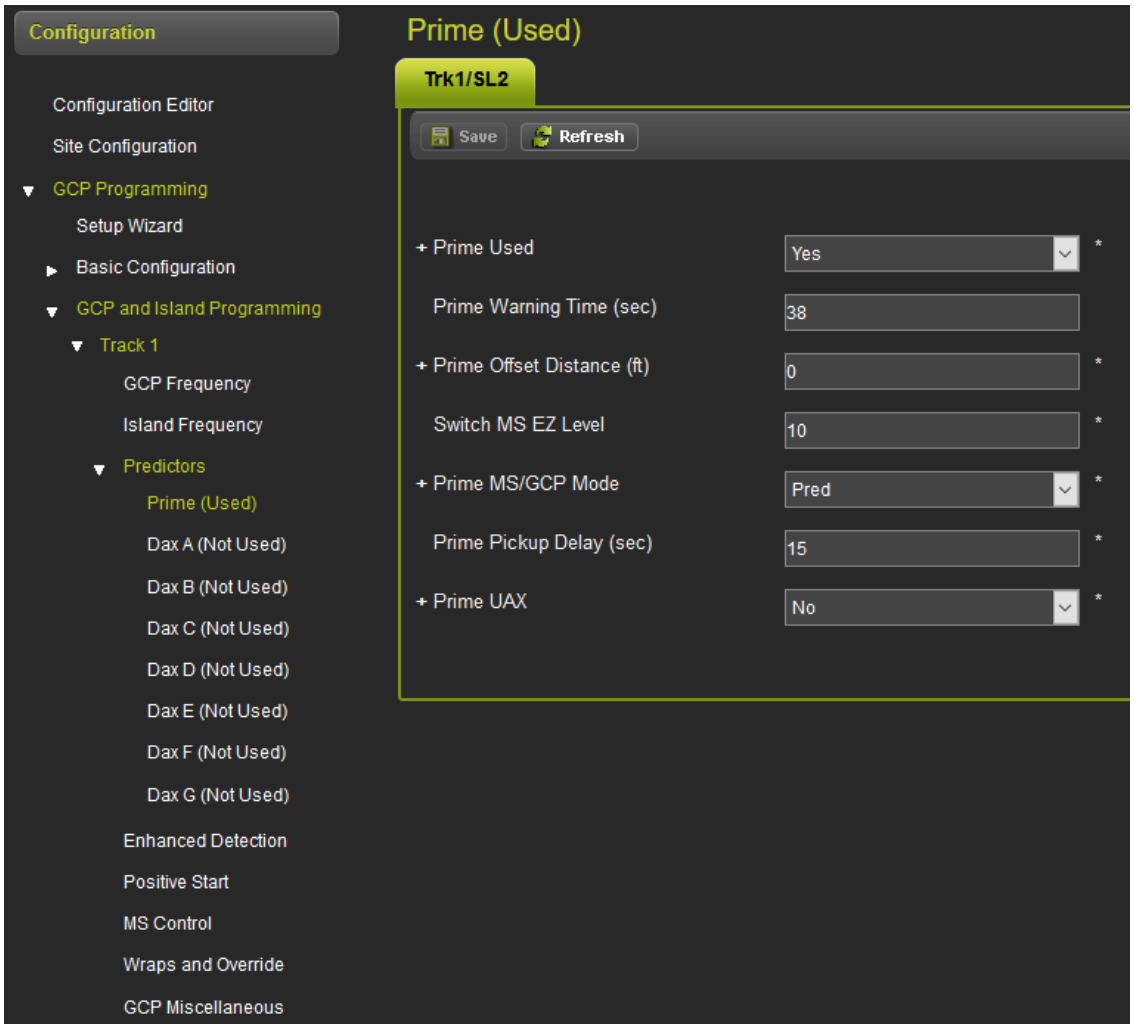


Figure 4-101 GCP Programming Menus

The plus sign to the left of an item indicates that changing this parameter will cause other parameters to be shown or hidden, for example: if Prime UAX is set to **Yes** and the change saved, the new parameter for the Prime UAX Pickup will be displayed as shown in the following figure.

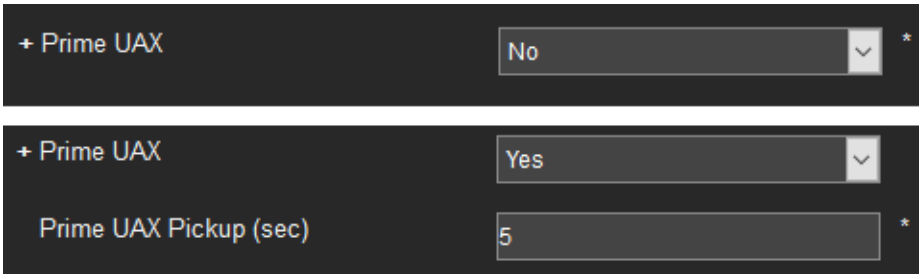


Figure 4-102 GCP Programming Hidden Parameters

NOTE

A hidden parameter will not be seen until the value of the parameter which causes it to be hidden is saved.

If a parameter value is shown with a red box with an exclamation (!) mark, this indicates that this setting is not valid. The generally occurs because another parameter has been changed which makes this choice invalid, for example, in the following case, the T1 Prime UAX was first enabled, then it was assigned to an input. Then the T1 Prime UAX was disabled, making the Input assignment invalid. If the user comes across these they should correct the configuration so that there are no invalid assignments.

Figure 4-103 Invalid Setting

4.5.1.2.3 SEAR Programming

As part of the SEAR programming, the user can select a CDL file, and setup the CDL questions, see section 5.1 for details.

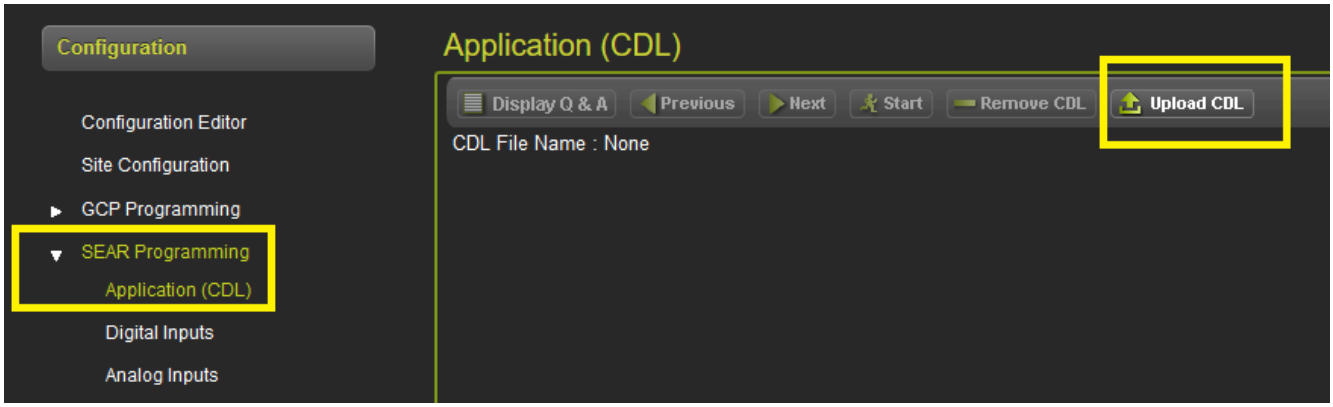


Figure 4-104 SEAR CDL Selection

On the GCP 5000, the OCE allows the user to set the values for digital inputs on the SEAR.

The SEAR IIi has 63 digital inputs, two of these are accessible on the front of the SEAR IIi. The remaining 61 are connected to traces on the back plane of the chassis that allow the SEAR IIi to monitor the GCP I/O with requiring any external wiring.

The Channels column indicates the name on the GCP chassis terminals. The names shown in the Channels column will depend on what type of module is defined in the module configuration.

If a track module is defined, the OCE will show the channel names relating to what is seen on the Mylar for each I/O point on the chassis, for example: OUT 1.1, TRK 2 RCV. If the slot is empty, the channels are labeled as spares (SP_x_y), where x indicates the slot number and y indicates the I/O point starting from the top connector and working down.

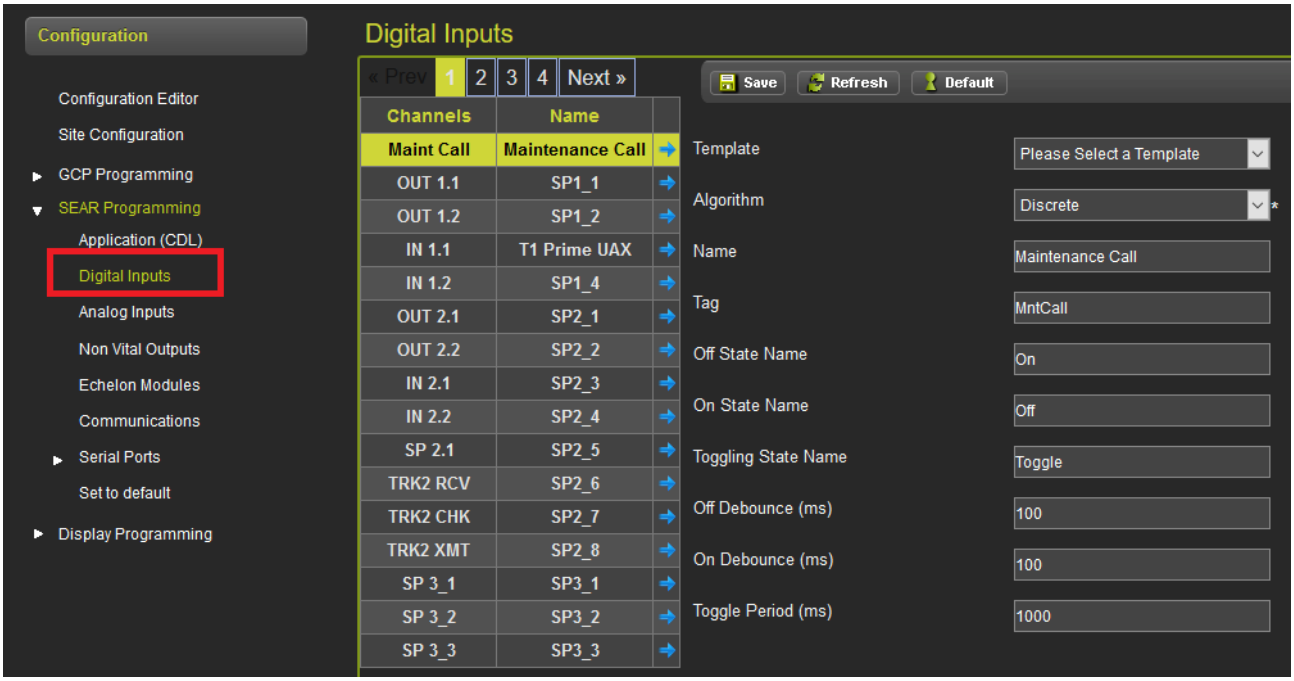


Figure 4-105 SEAR Digital Inputs

The Name column indicates the function the digital input is being used for. If the GCP programming has already assigned an input or output function for this channel, the OCE will show this channel as pre-assigned and show the function assigned in the GCP programming in the Name column, for example:

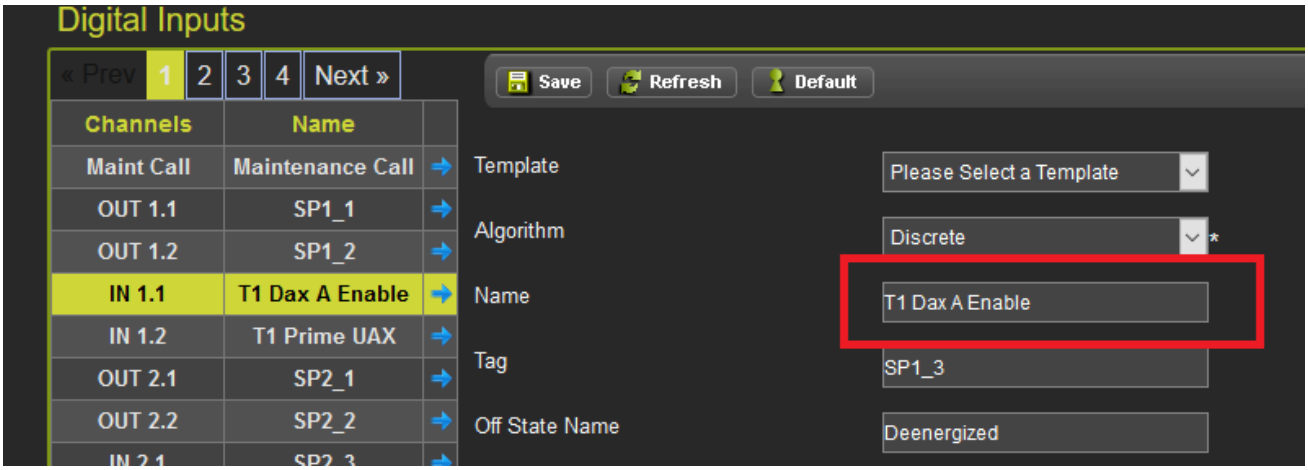


Figure 4-106 SEAR Digital Inputs

CAUTION

DO NOT CHANGE THE TEMPLATE FOR DIGITAL INPUTS THAT ARE ASSIGNED BY THE GCP PROGRAMMING.

Spare inputs can be used to monitor outputs from other sources that can be wired into unused GCP I/O connectors. Use the Template parameter to choose one of the predefined input types.

4.5.1.2.4 Display Programming

The Display programming menu has many options, but most will rarely be changed in the OCE.

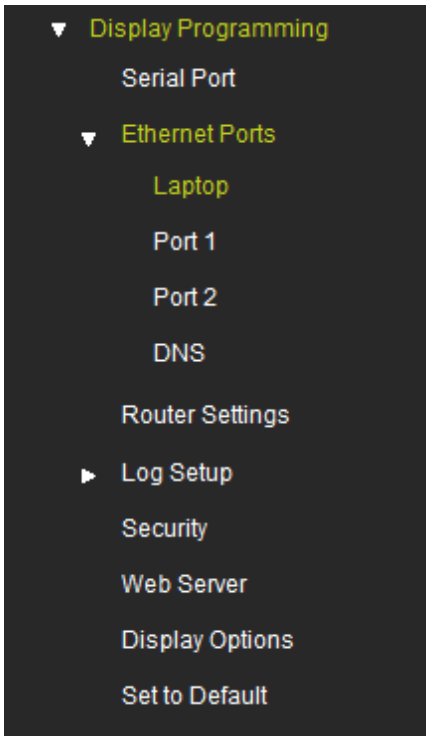


Figure 4-107 Display Programming

The most common parameters changed in the OCE are:

- Laptop Ethernet Port DHCP Configuration, used to select whether the display is a DHCP server or client
- Security Maintainer or Supervisor Password, used to enable or disable password protection

4.5.1.3 GCP 3000+ Sites

4.5.1.3.1 Site Configuration

The Site Name will default to the name chosen for the site, as shown in the following figure. Change this if necessary. Set the DOT if applicable, this is used in the default name for the Configuration (PAC) files. If an event recorder is used, such as the Argus, set the appropriate ATCS address that will be used to communicate to the Argus: 7.RRR.LLL.GGG.SS where:

- The RRR is set using the ATCS Railroad parameter.
- The LLL is set using the ATCS Line parameter.
- The GGG is set using the ATCS Group parameter.
- The SS is set using the ATCS CPUII+ Subnode parameter.
- The ATCS – SEAR Subnode is used to set the ATCS Subnode that the external event recorder is on.

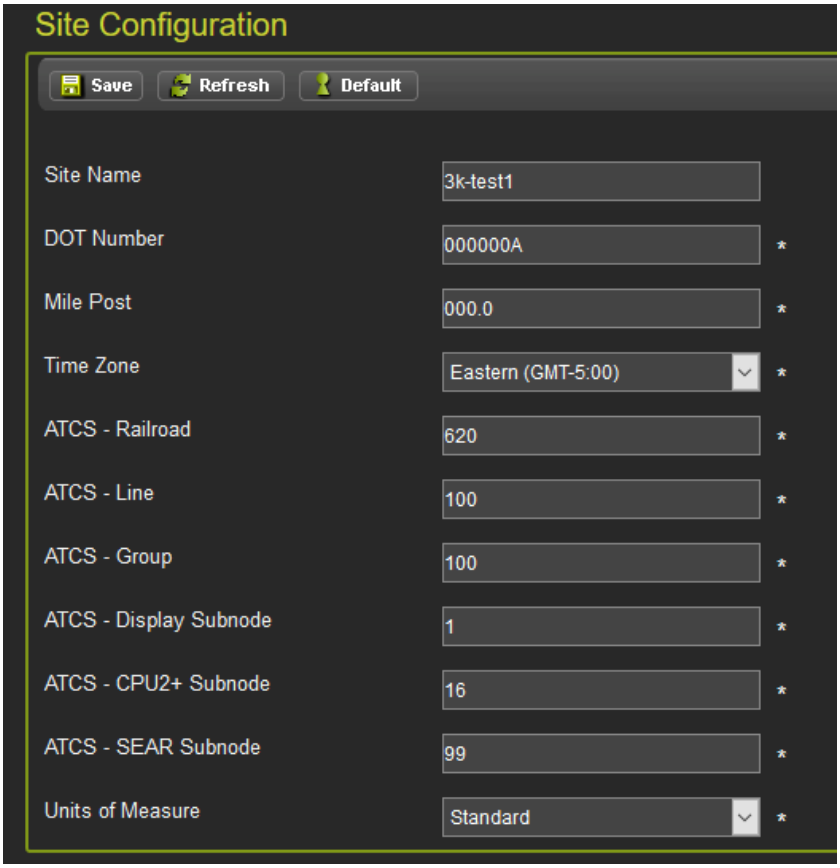


Figure 4-108 GCP 3000+ Site Configuration

4.5.1.3.2 GCP Programming

All the GCP 3000+ Programming is done under the GCP Programming menu. Start at the **General Configuration** page and go through each menu in turn, setting the required values.

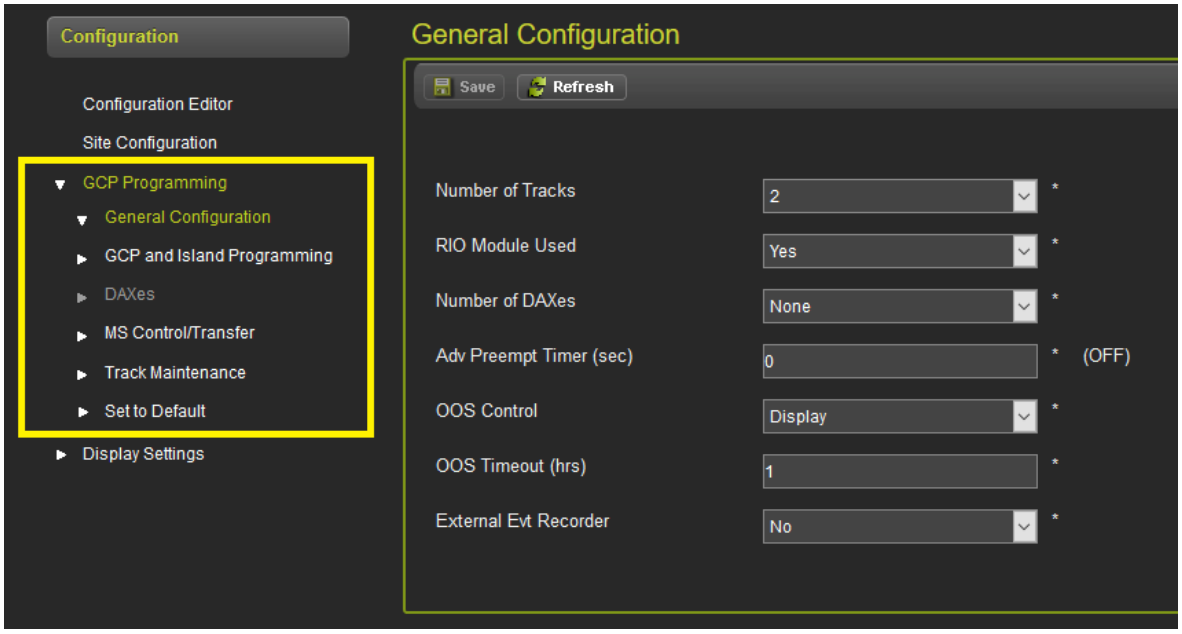


Figure 4-109 GCP 3000+ Programming

4.5.1.3.3 Display Settings

Use the Display Settings menu to:

- Check the default, uneditable IP address (see Figure 4-110)
- Enable the maintainer password
- Set the Session Inactivity Timeout
- Set the Display Settings back to default

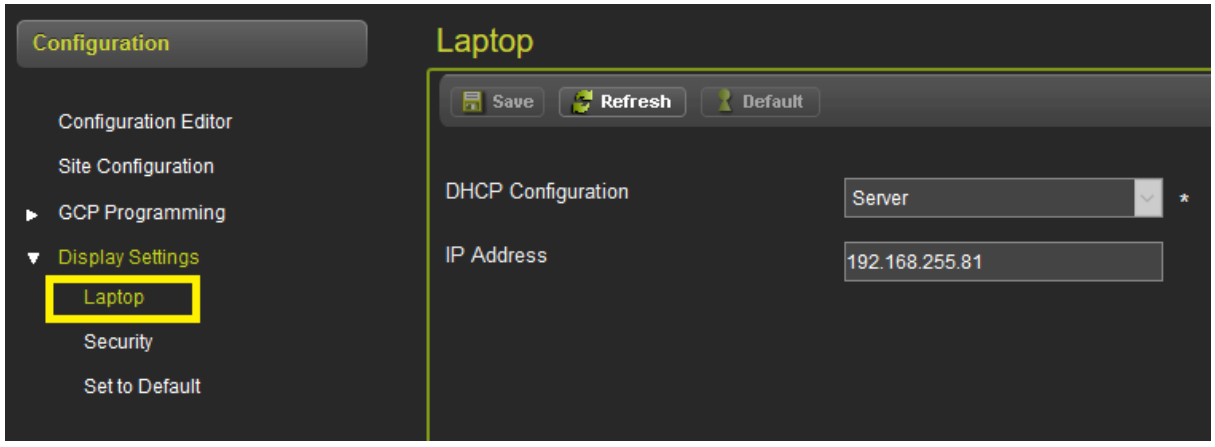


Figure 4-110 GCP 3000+ Display Settings: Laptop

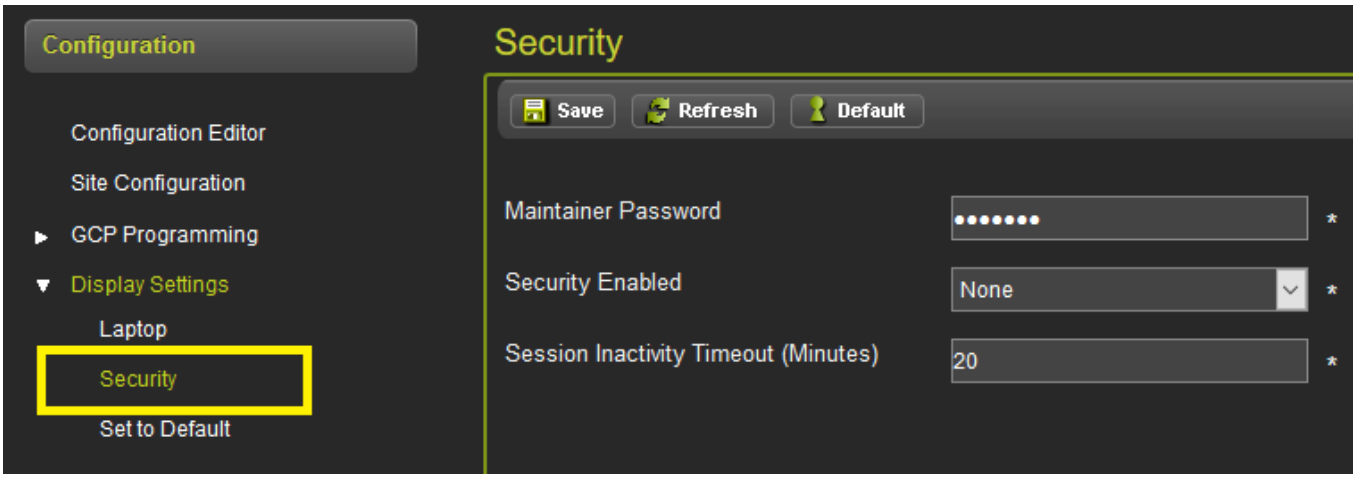


Figure 4-111 GCP 3000+ Display Settings: Security

4.5.1.4 GCP 5000 (GCE) SITES

4.5.1.4.1 Site Configuration

The Site Name will default to the name chosen for the site, as shown in the following figure. Change this if necessary. Set the DOT if applicable, this is used in the default name for the Configuration (PAC) files. If Vital ATCS communications will be used between GCE systems, or the SEAR IIi uses ATCS communications to external equipment, then set the appropriate ATCS address 7.RRR.LLL.GGG.SS where:

- The RRR is set using the ATCS Railroad parameter.
- The LLL is set using the ATCS Line parameter.
- The GGG is set using the ATCS Group parameter.
- The SS is set using the ATCS CPU Subnode parameter.
- In the GCP 5000 (GCE) the SEAR IIi and CPU will obtain their ATCS information from this one place, unlike the GCP 4000 where the ATCS addresses have to be set independently of each other.

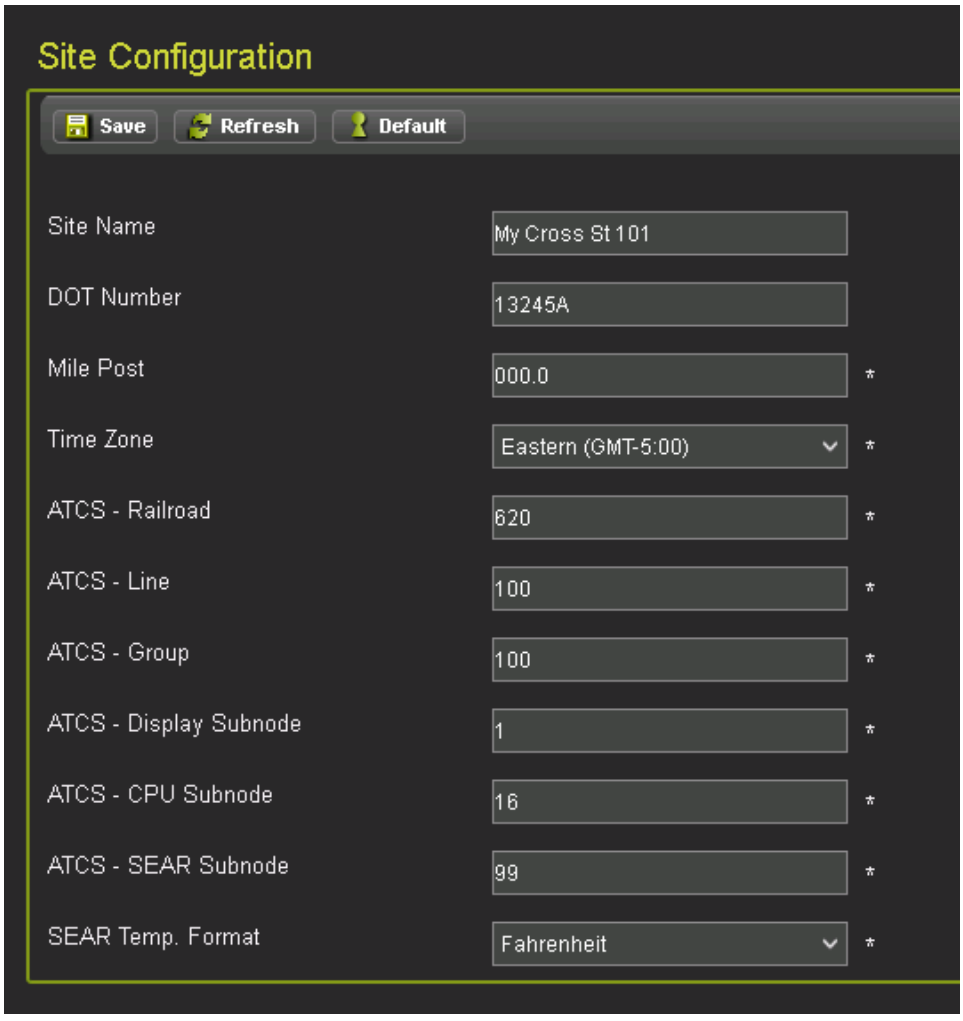


Figure 4-112 GCP 5000 (GCE) Site Configuration

4.5.1.4.2 GCP PROGRAMMING

The GCP programming menu when using the GCE will start selection of the Modules in the system.

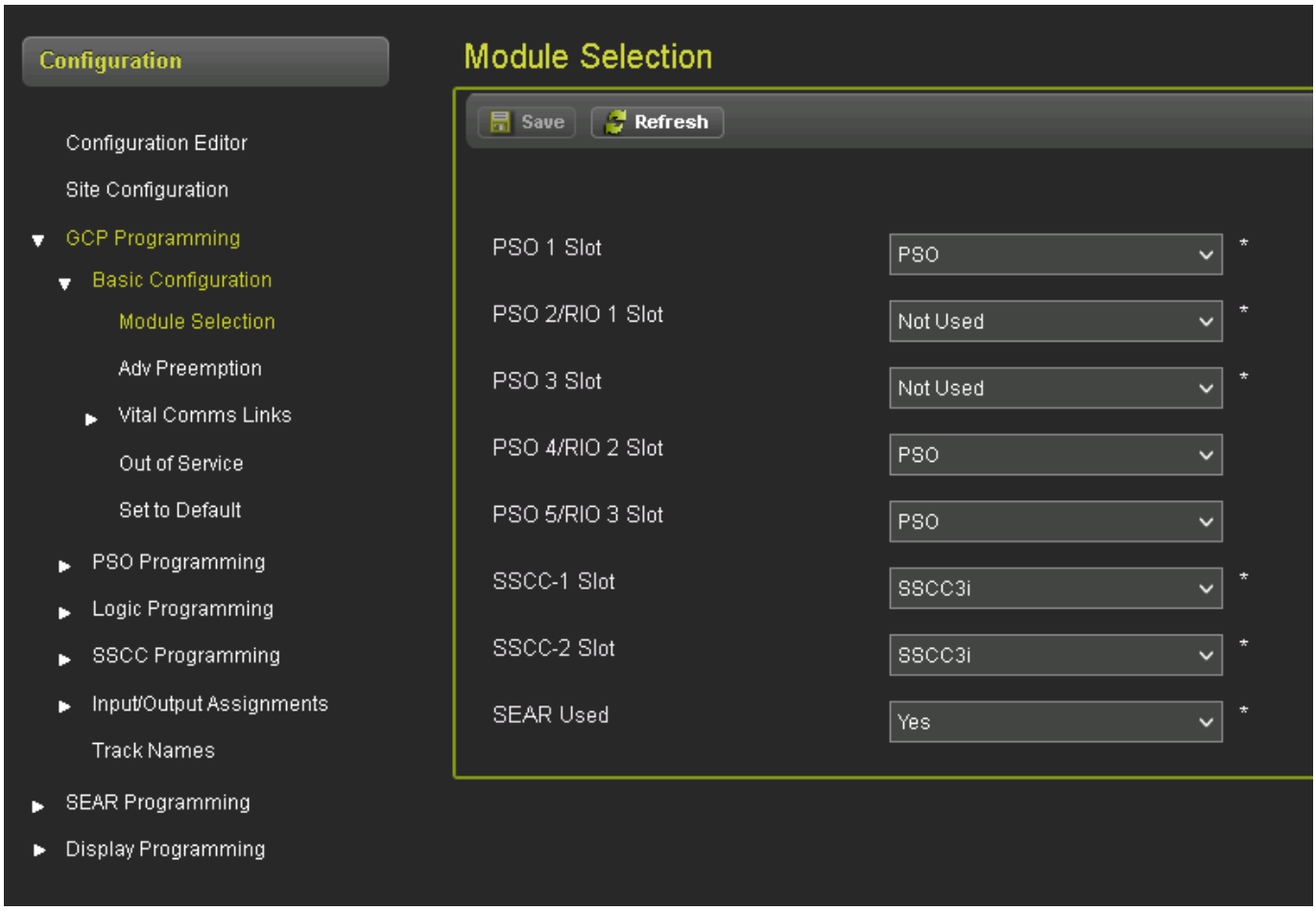


Figure 4-113 GCP Programming Menus for GCE Application

The plus sign to the left of an item indicates that changing this parameter will cause other parameters to be shown or hidden. For example, if Preempt Logic is set to Advance and the change saved, new parameters will be displayed, as shown in the following figure.

Figure 4-114 GCP Programming Hidden Parameters

NOTE

A hidden parameter will not be seen until the value of the parameter which causes it to be hidden is saved.

If a parameter value is shown in a red box with an exclamation (!) mark, this indicates that this setting is not valid. This generally occurs when another parameter has been changed, which makes this choice invalid. For example in the following case, the T1 Prime UAX was first enabled, and then it was assigned to an input. The T1 Prime UAX was then disabled, making the Input assignment invalid. If the user comes across these, the configuration should be corrected so that there are no invalid assignments.

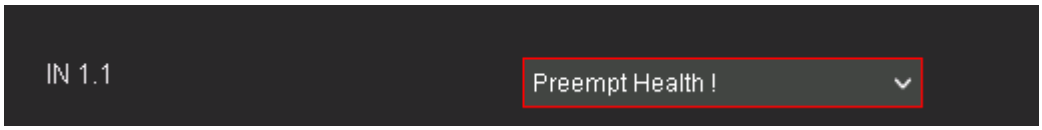


Figure 4-115 Example of an Invalid Setting

4.5.1.4.3 SEAR Programming

As part of the SEAR programming, the user can select a CDL file, and setup the CDL questions, refer to section 5.1 for details.

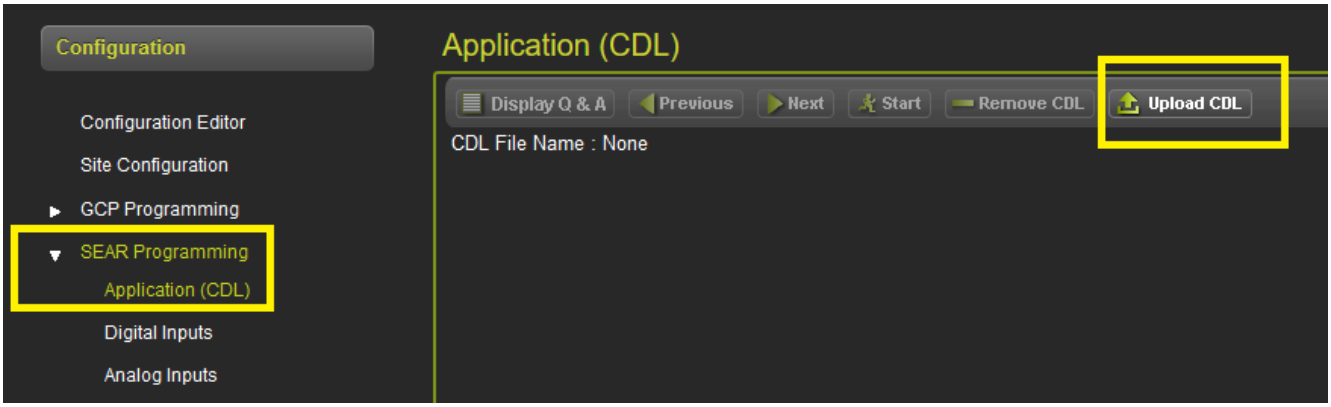


Figure 4-116 SEAR CDL Selection

On the GCP 5000 (GCE), the OCE allows the user to set the values for digital inputs on the SEAR.

The SEAR IIi has 63 digital inputs, two of which are accessible on the front of the SEAR IIi. The remaining digital inputs are connected to traces on the back plane of the chassis, that allow the SEAR IIi to monitor the GCE I/O, without requiring any external wiring.

The Channels column indicates the name on the GCP 5000 (GCE) chassis terminals. The names shown in the Channels column will depend on what type of module is defined in the module configuration.

If a PSO module is defined, the OCE will show the channel names relating to what is seen on the mylar for each I/O point on the chassis. For example, OUT 1.1, PSO2 1 RCV. If the slot is empty, the channels are labeled as spares (SP_x_y), where x indicates the slot number and y indicates the I/O point starting from the top connector and working down.

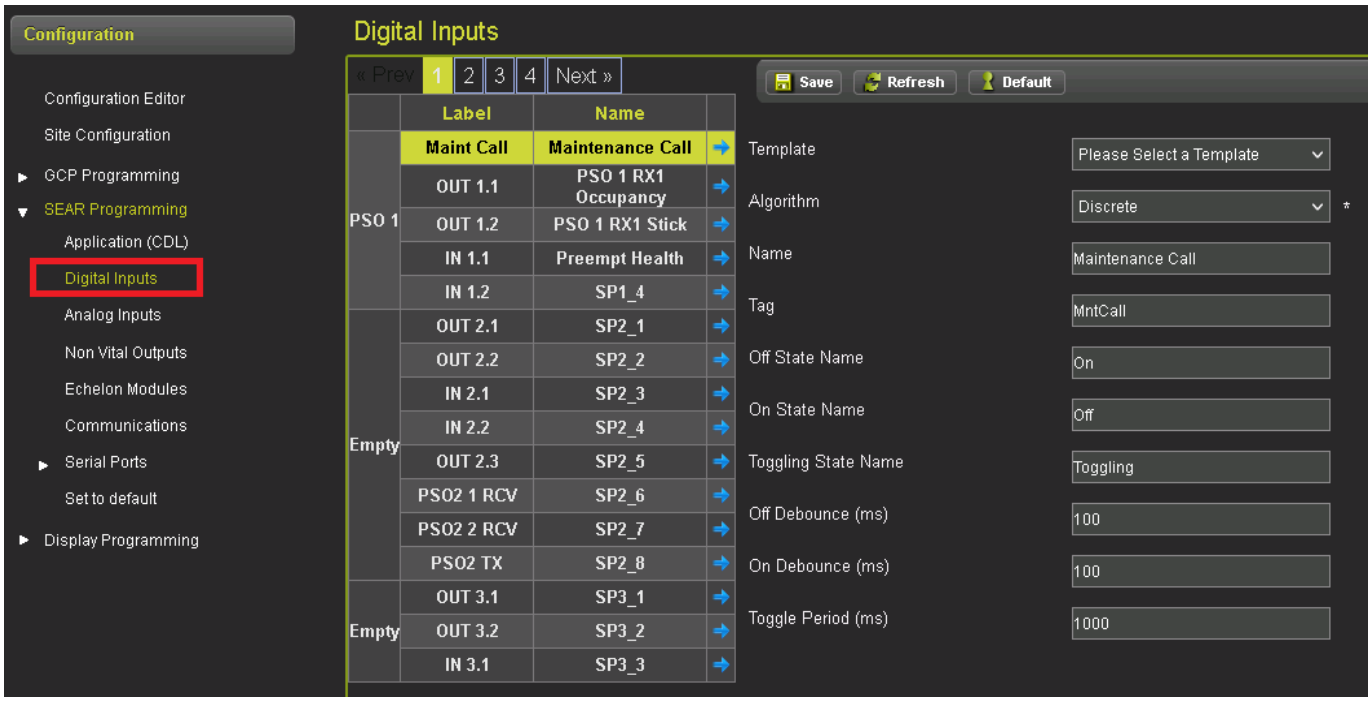


Figure 4-117 SEAR Digital Inputs Screen

The Name column indicates the function that the digital input is being used for. If the GCP programming has already assigned an input or output function for this channel, the OCE will show this channel as pre-assigned and show the function assigned in the GCP programming in the Name column. For example:

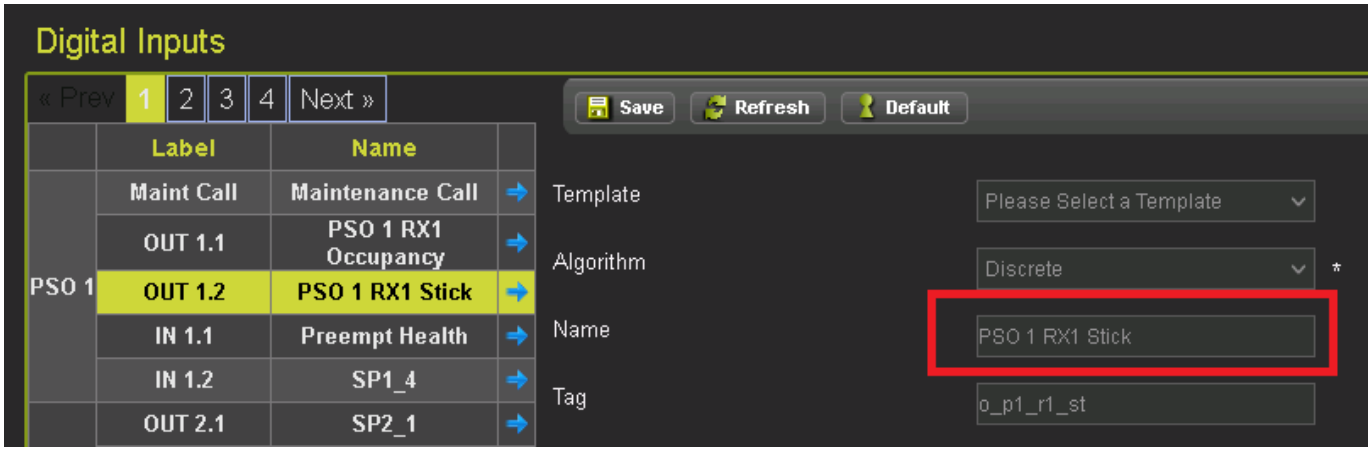


Figure 4-118 SEAR Digital Inputs Screen - Example

CAUTION

CAUTION

DO NOT CHANGE THE TEMPLATE FOR DIGITAL INPUTS THAT ARE ASSIGNED BY THE GCP PROGRAMMING.

Spare inputs can be used to monitor outputs from other sources that can be wired into unused GCP I/O connectors. Use the Template parameter to choose one of the predefined input types.

4.5.1.4.4 Display Programming

The Display programming menu has many options, but most will be changed rarely in the OCE.

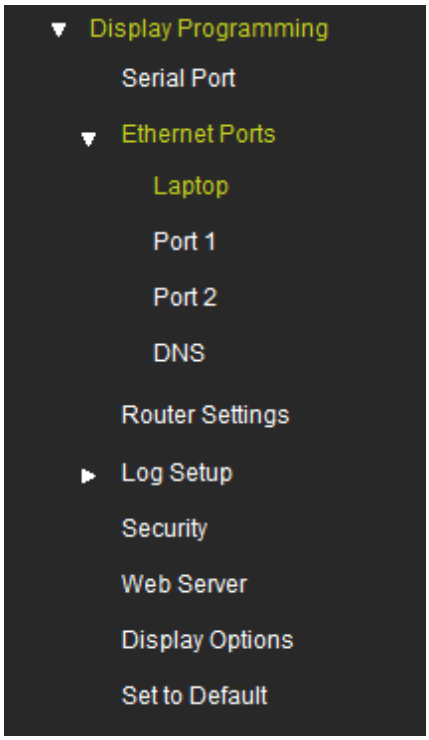


Figure 4-119 Display Programming

The most common parameters changed in the OCE are:

- Laptop Ethernet Port DHCP Configuration, used to select whether the display is a DHCP server or client.
- Security Maintainer or Supervisor Password, used to enable or disable password protection.

4.5.1.5 Build Configuration Files

When all the parameters have been set, return to the Configuration Editor menu and select the **Build Config Files** button.

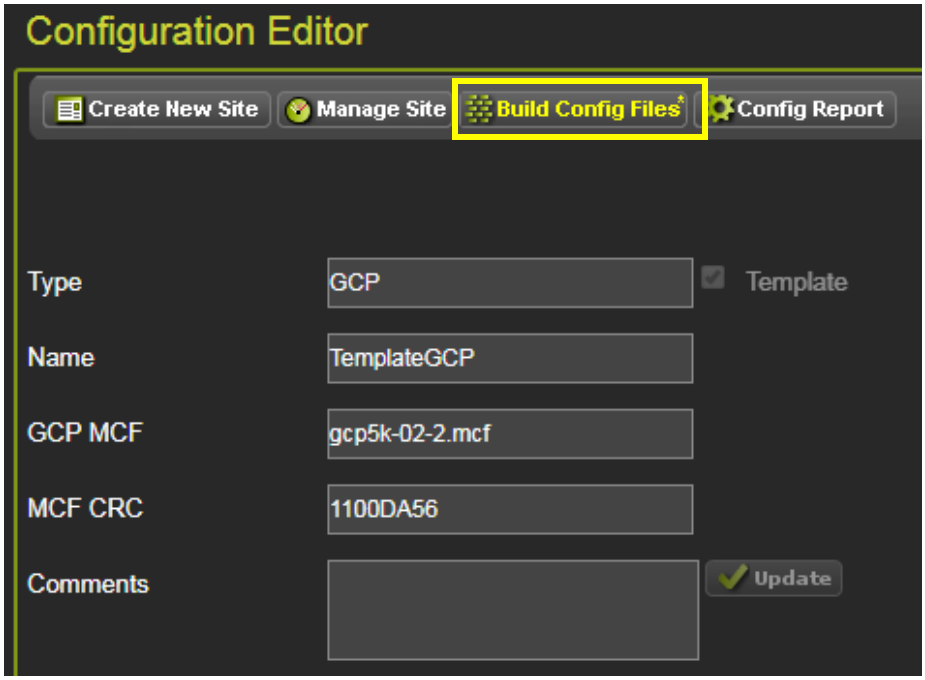


Figure 4-120 Build Config Files

The OCE will give a warning message that it will set hidden parameter values back to default. This is done so that when the configuration is set in the field, the OCCN from the field will match the one from the office. If a parameter is changed from its default value and then gets hidden by another menu item, it is very difficult for field personnel to determine why the OCCNs do not match. Select **OK** to proceed.

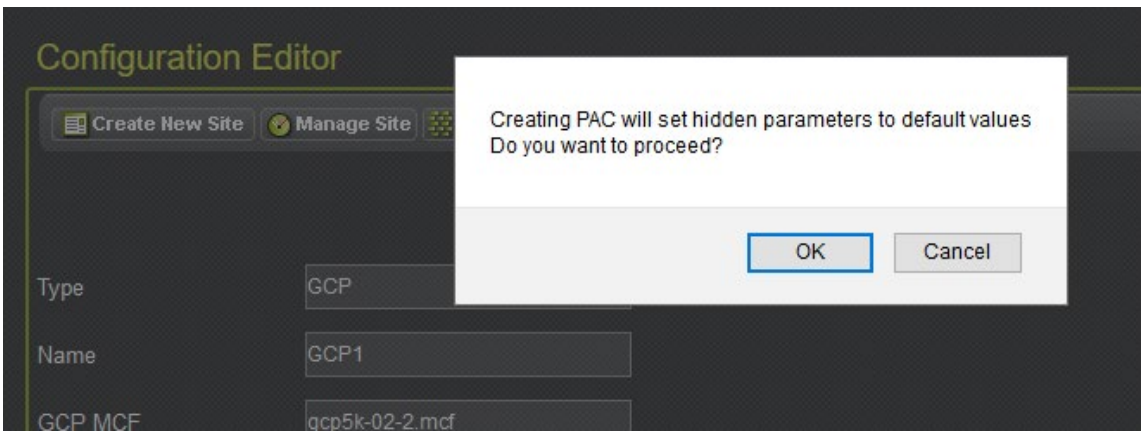


Figure 4-121 Hidden Parameter Default Warning

After selecting **OK**, the OCE will prompt the user to enter a name for the PAC file. The default naming convention is:

CONFIG–{DOT Number}–{Date}.PAC

Where the {DOT number} is the value of the DOT number entered in the Site Configuration menu. Since the user may want to adapt a different convention, or the railroad does not use DOT number (e.g. in Canada), the user gets the option to enter their own name at this point.

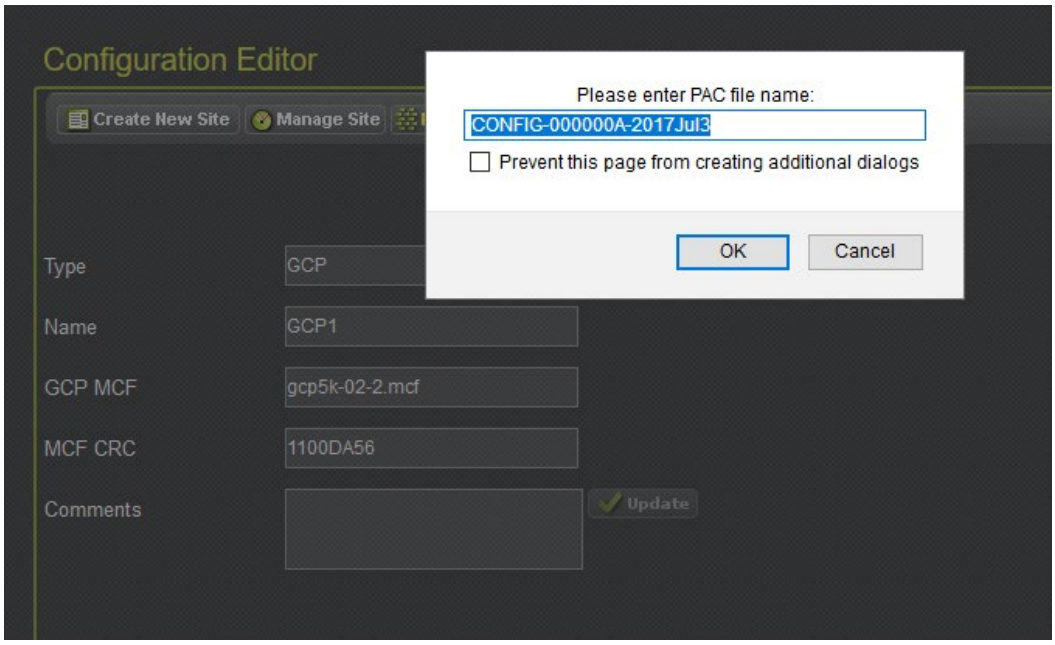


Figure 4-122 Naming the PAC file

After selecting **OK** the OCE will process the files for a few seconds then pop up a dialogue box indicating the build was created successfully.

For GCP locations, the output files created by the build process are put at the location set in the Maintenance / GCP Build Settings / Output Build Path (see section 3.2.2); this location defaults to c:\siemens\oce\workspace.

The OCE will create a folder named after the location name under the output build path. In this folder the OCE will put the PAC file, the ZIP file and a subfolder containing the reports.

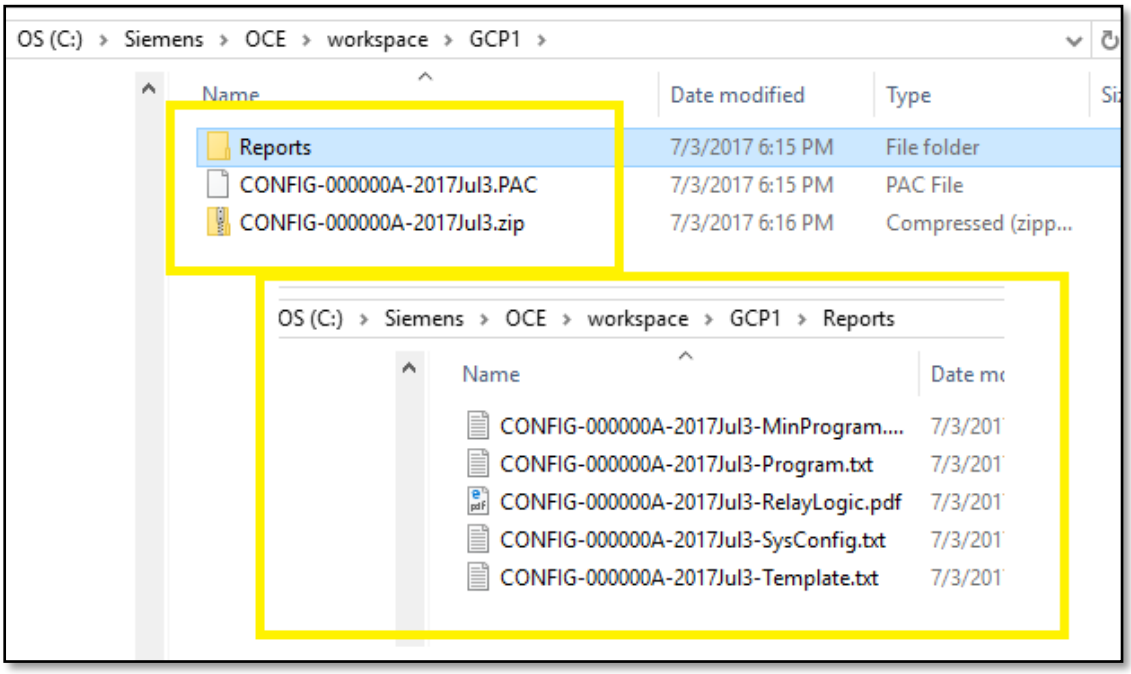


Figure 4-123 GCP Build Outputs

The ZIP file can be loaded onto a USB and used to program the GCP. It will contain the MCF and the PAC file under the directory structure required by the GCP. The ZIP file will also contain the report files and relay logic diagram. The OCE allows the user to choose which report files to save in the ZIP file as different railroads want to keep different reports, this is also set on the Maintenance / GCP Build Settings page, see section 6.1.3.

4.5.2 Creating a Site from a PAC File / Modifying Existing PAC File

The OCE provides two ways of opening an existing PAC (or ZIP) file.

a) The PAC or ZIP file can be imported; this is the most convenient method if the PAC file is just going to be looked at and not modified, or if it is going to be modified with no change to the MCF.

b) A new GCP site can be created and an existing PAC file used to populate the data. This method is more useful if the PAC file is going to be upgraded to a new MCF. The disadvantage of this method, if the MCF is not going to be changed, is that the reports are not available to be looked at without recompiling.

4.5.2.1 Importing a PAC/ZIP File

To open an existing PAC file or ZIP file, select the Manage Site / Import:

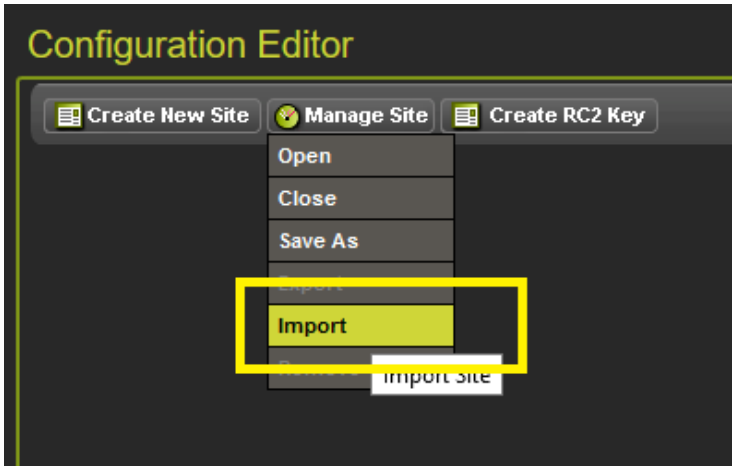


Figure 4-124 Import PAC File

Then, next to the Import file, click **Browse** and select either the PAC or the ZIP file to be opened. The OCE will fill in the Site Name with the name of the PAC file. The user can change site name here as required, then select **OK**.

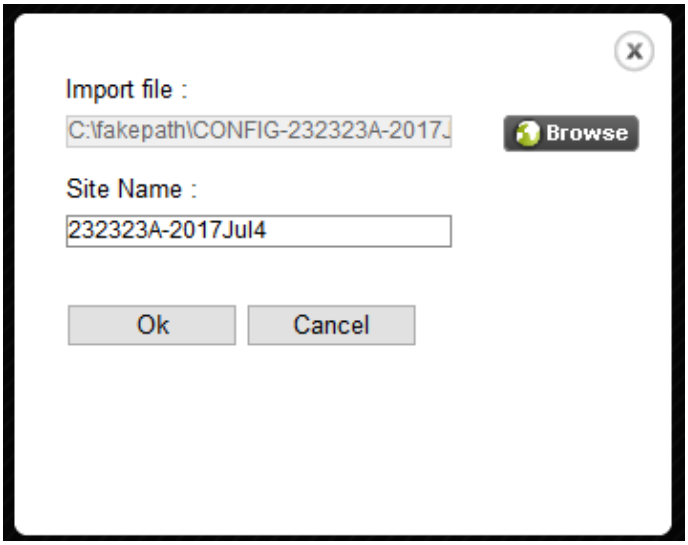


Figure 4-125 Select PAC or ZIP to Import

The OCE will return to the Configuration Editor and show the site has been opened. To look at the configuration reports, select the **Config Report** button.

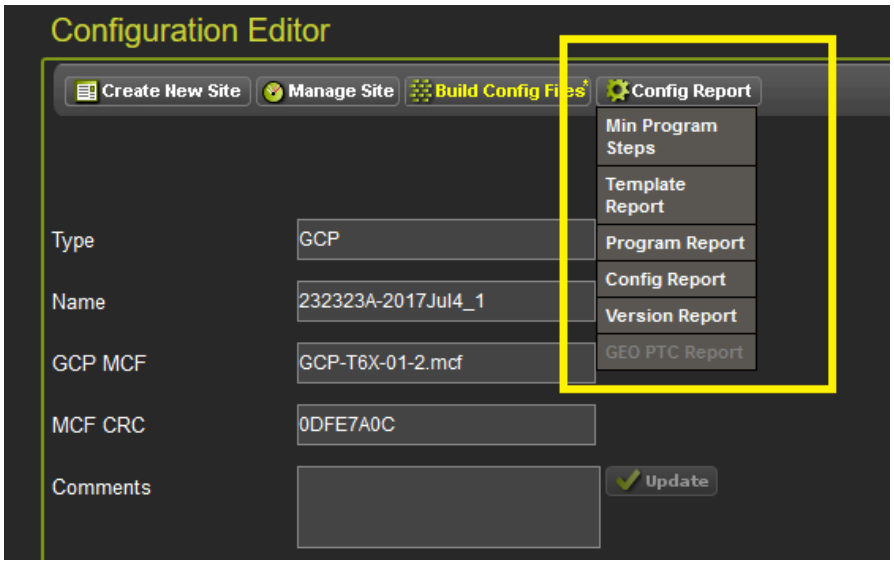


Figure 4-126 Show Report

From this point the user can modify the configuration if desired and rebuild it by pressing the **Build Config Files** and create a new PAC / ZIP file.

4.5.2.2 Creating New Site from PAC file / Upgrading PAC to Different MCF

The second method of opening a PAC file it to first create a new site and open the PAC file. This method is better suited to upgrading a PAC file from an old MCF to a new one, because the reports are not available to view without first rebuilding the configuration.

1. Select GCP on the **Create New Site** drop menu shown in Figure 4-127.

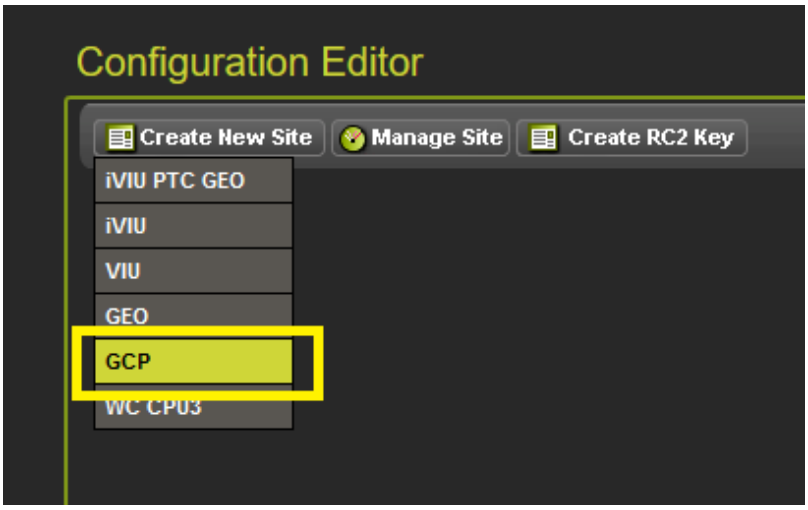


Figure 4-127 Creating a GCP Site

2. Enter a name for the site.

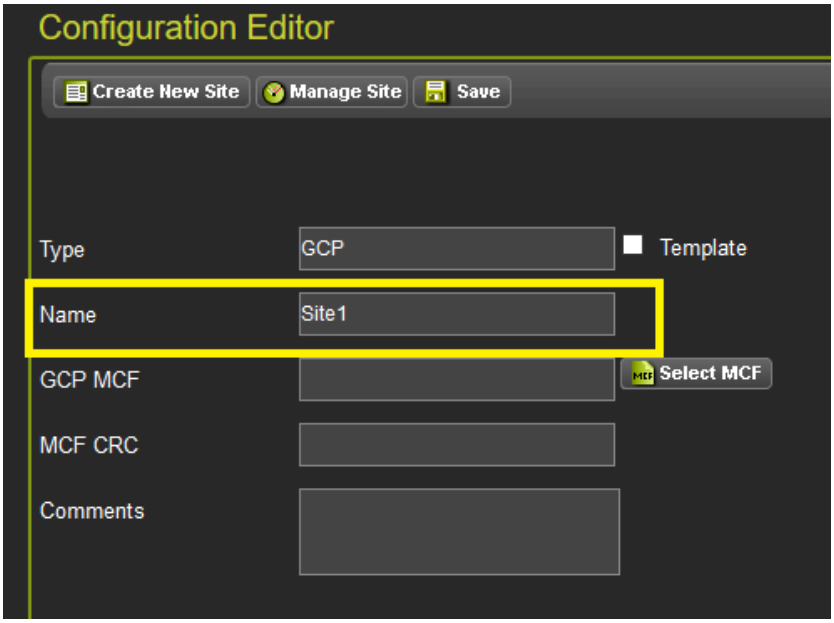


Figure 4-128 GCP Editor Window

3. Press the **Select MCF** option shown in the figure above and then select the option to **Create New Site from PAC File**.

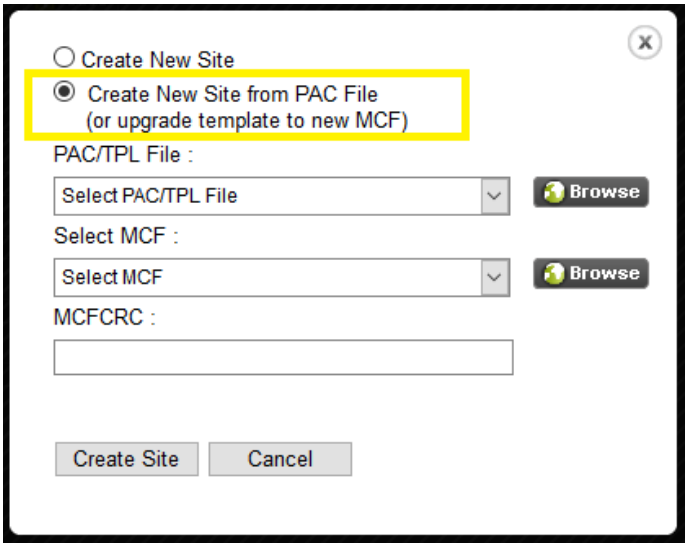


Figure 4-129 Create GCP Site Window

4. Select the **Browse** button next to the PAC/TPL File field and then navigate to the location where you have your PAC file and select it.

NOTE

If the drop-down arrow next to Select PAC/TPL File is selected, the drop-down list will show all the PAC files that exist in sites that have already being created under C:\Program Files (x86)\Common Files\SAFETRAN\WebUI\Oce_configuration\admin.

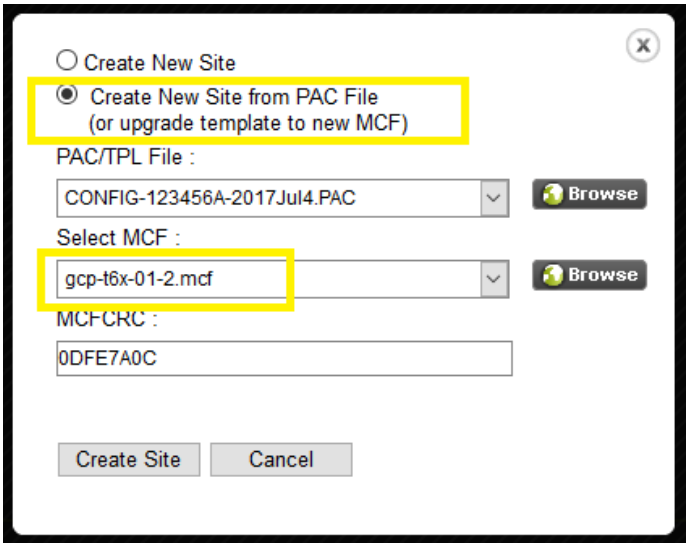


Figure 4-130 PAC File Selection

5. Once the PAC file has been selected, the OCE will automatically fill in the MCF and MCF CRC information from that used to create the PAC file.
6. In order to upgrade to a new MCF, select the new MCF using the down arrow under **Select MCF**.

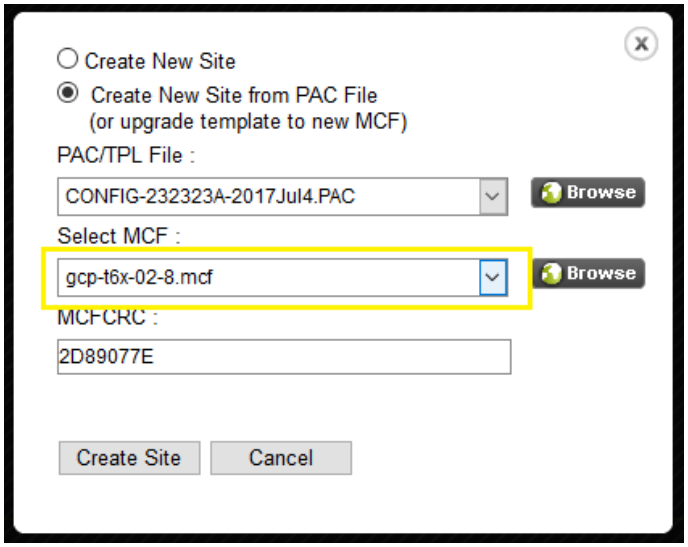


Figure 4-131 Change MCF

7. Once the correct MCF has been selected, click the **Create Site** button (shown in Figure 4-131) and the OCE will create the site with the newly selected MCF, but based upon the configuration settings in the original PAC file.

The OCE will create an import report and store it under the name of the site in:

C:\Program Files (x86)\Common Files\Siemens\WebUI\Oce_configuration\admin\.

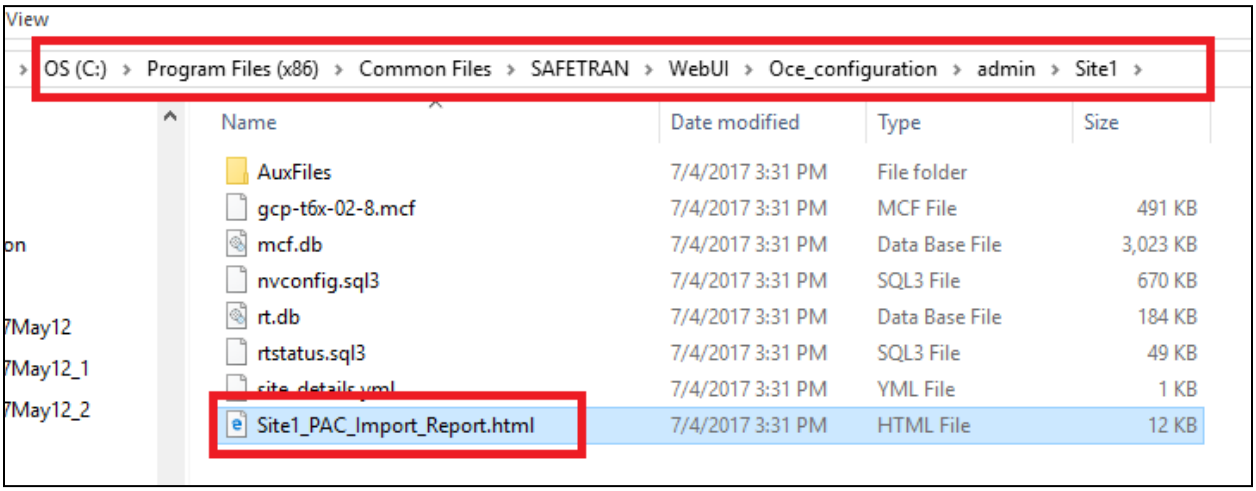


Figure 4-132 Import Report Location

The import report will contain details of what happened during the conversion of the PAC file from the old MCF to new one. It will detail exactly which parameters changed and which did not; for instance, the new MCF may have new parameters that were not present in the old MCF. Some parameters may be renamed, or values not found, so the import report and new configuration needs to be checked in detail to ensure the new configuration is correct.

For example, in the conversion from the old MCF (GCP-T6X-01-2.MCF) to a much later MCF (GCP-T6X-02-8.mcf) the parameter “Poor Shunting Level,” which had a numerical value, has been changed to “Inbound PS Sensitivity” which has an enumerated value; this example information is shown in the report.

PAC File Import

Current Configuration	Imported PAC File
MCF Name: GCP-T6X-02-8.mcf MCFCRC: 2D89077E MCF Revision: 028	PAC File Name: CONFIG-123456A-2017Jul4.PAC MCF Name: GCP-T6X-01-2.mcf MCFCRC: DFE7A0C MCF Revision: 012
Warnings	**Description**
MS4000 Advanced	
Track 1 : Inbound PS Sensitivity = Max	Updated from PAC File. (Old Name: Poor Shunting Level, Old Value: 2)
GCP: track 1	
Track 1 : Island Distance = 199 ft	Updated from PAC File.
GCP: track 1 enhanced det	
Track 1 : Trailing Switch Logic = Off	Updated from PAC File.
Track 1 : Outbound PS Timer = 10 sec	Updated from PAC File. (Old Name: Station Stop Timer)
GCP: track 2	
Track 2 : Island Distance = 199 ft	Updated from PAC File.
GCP: track 2 enhanced det	
Track 2 : Trailing Switch Logic = Off	Updated from PAC File.
Track 2 : Inbound PS Sensitivity = Max	Updated from PAC File. (Old Name: Poor Shunting Level, Old Value: 2)
Track 2 : Outbound PS Timer = 10 sec	Updated from PAC File. (Old Name: Station Stop Timer)

Figure 4-133 Import Report

4.5.3 Creating Templates

The GCP MCFs are generic application files for GCP 4000, GCP 5000 GCP 3000+, or SGCP 4000/MS 4000s. The MCF contains default values for all configuration parameters. Different railroads may have different default values they wish to use for some of these parameters. Rather than have the user set these for every GCP location created with the OCE, the OCE allows the user to create templates where these values are preset, then select to create the location based upon this.

For example, if the railroad wants to use the following default values:

- Prime Warning time of 25 s (normal default is 35 s).
- Prime Pickup Delay of 30 s (normal default is 15 s).
- Dax Warning Time of 30 s (normal default is 15 s).

NOTE

NOTE

At this point in the development of the OCE, the default values are specific to a particular MCF template (e.g. MTF-1A, MTF-2A etc.) so that when the user creates a template to be used by the OCE, as described in the following steps, the results are specific to a particular MCF template.

The user can create a template for a specific MCF containing the custom settings using the following procedure:

1. Create a new GCP site from the **Create New Site** menu.
2. Check the **Template** check box.
3. Chose a name that reflects the template. The result of creating the template is a template PAC file which is named later, so this name may not be required in future.

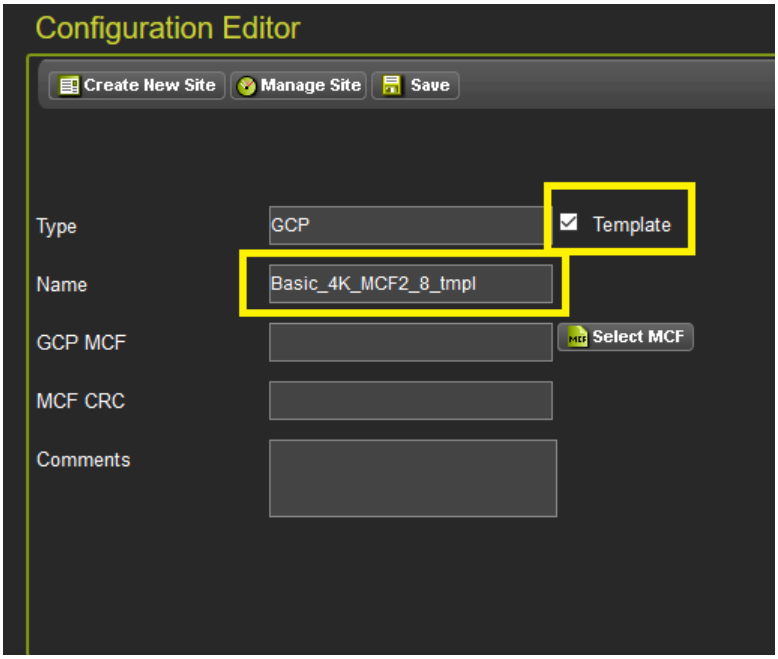


Figure 4-134 PAC File loaded

4. Select the **Create New Site** option and choose the MCF the template is based upon, then click **Create Site**.

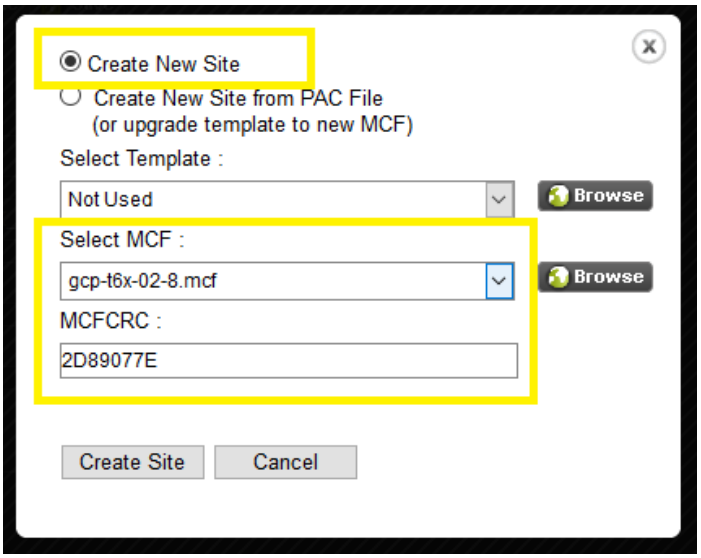


Figure 4-135 Selecting MCF for Template

5. The OCE will create the site and return to the Configuration Editor.
6. Select the GCP template from the TEMPLATE: selection screen. The new default values will apply as illustrated in the following figure.

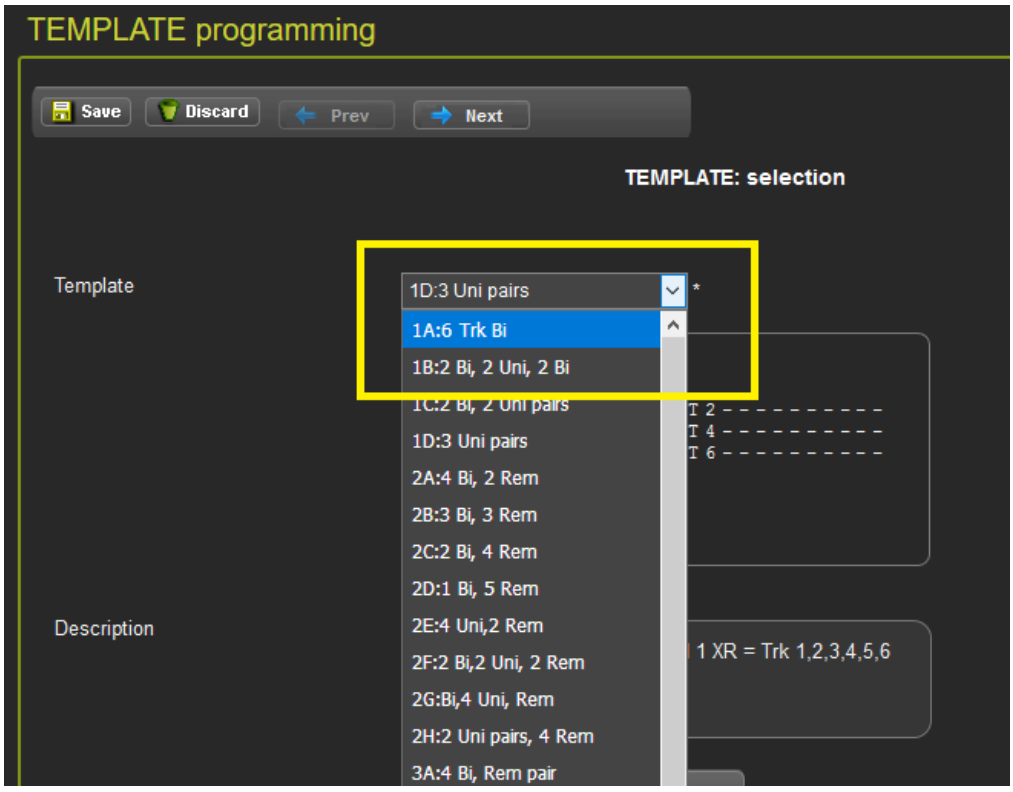


Figure 4-136 Enable all Tracks and Predictors

7. In the example shown in Figure 4-136, the user wanted to change the default Prime and Dax parameters. To do this, enable each Track from the Basic configuration screen and then set each **Dax Used** to **Yes** for each track.

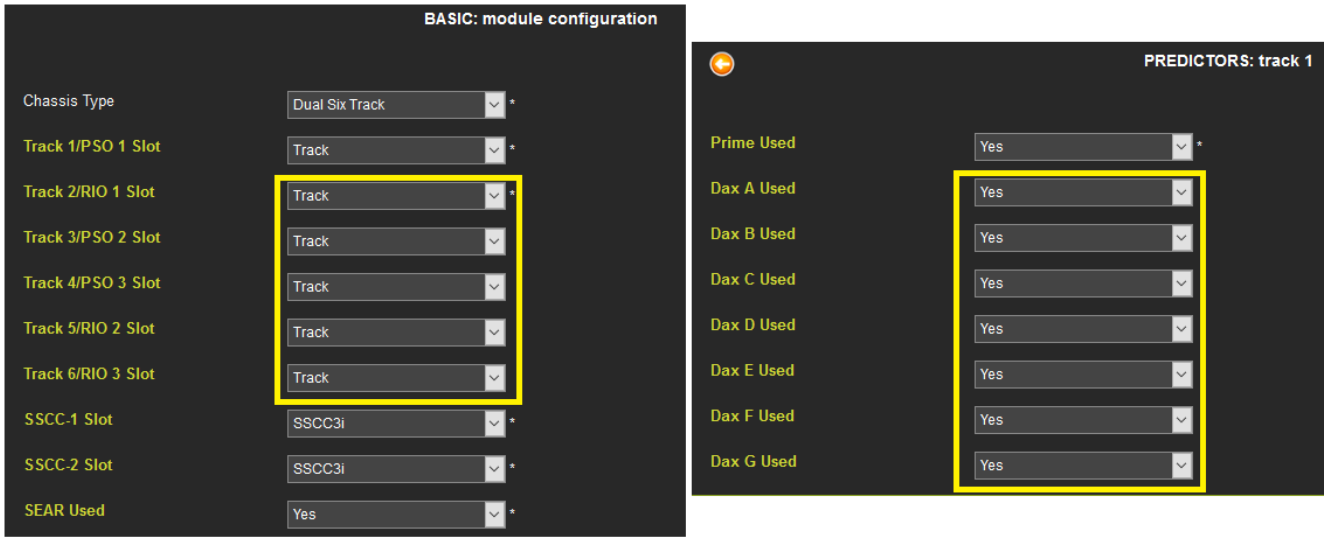


Figure 4-137 Enable all Tracks and Predictors

8. Then navigate to each parameter that requires a change to the default and set the new value.

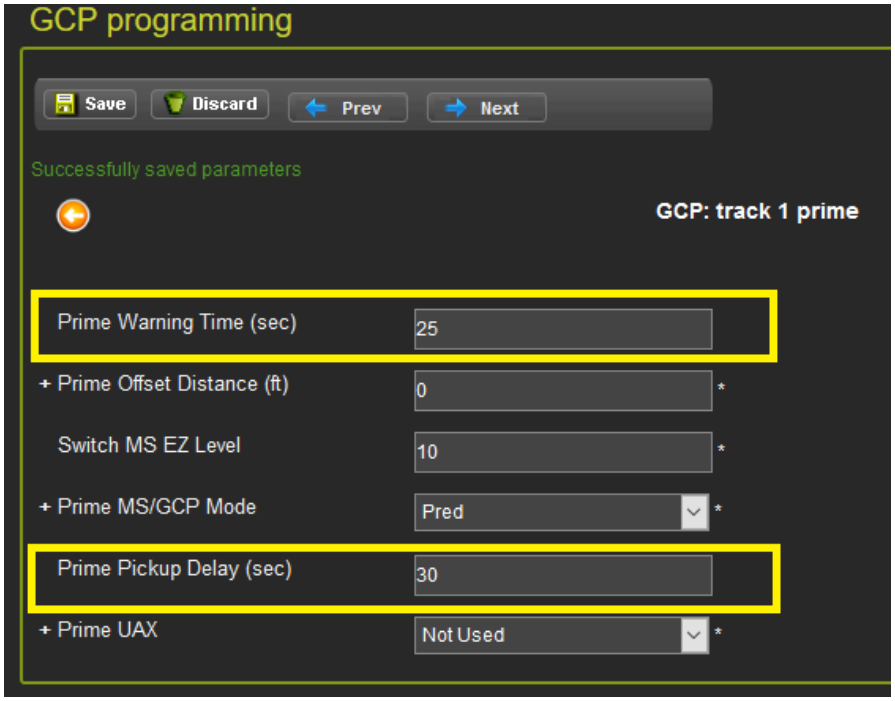
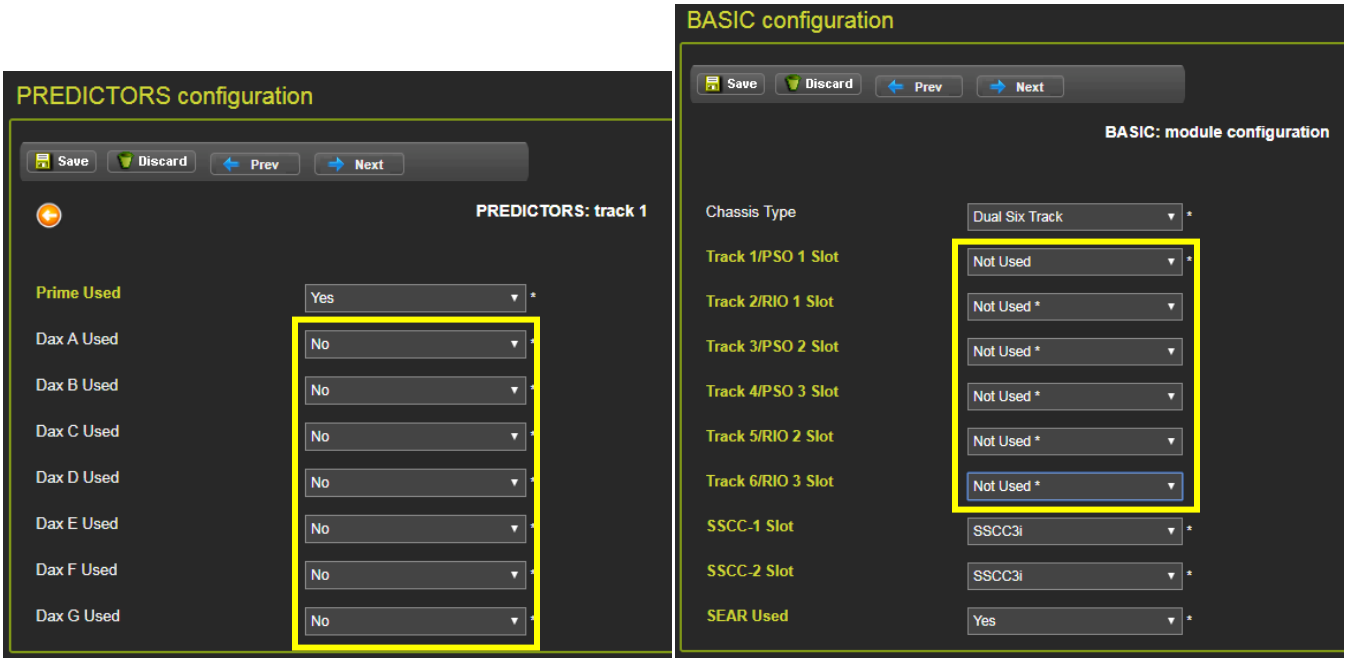


Figure 4-138 Changing Default Values for Template

9. Now go back and set each **Dax Used** to **No** as required and turn off the tracks that won't be typically required when using this template. The default values the user sets for these hidden Daxes and tracks will remain set.



10. After turning off unused tracks, go back to the Configuration Editor and select **Build Config Files**.

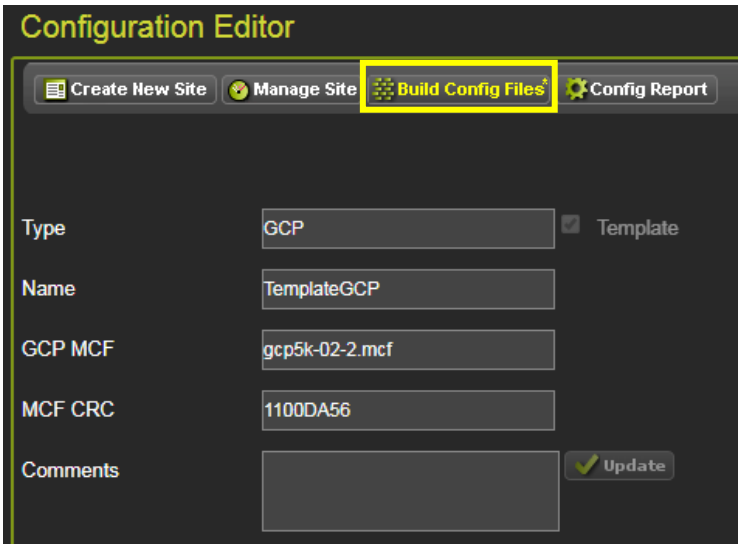


Figure 4-139 Build Config Files

11. The OCE will ask for the name of the template. It is recommended to choose a name that reflects which system (4K or 5K), which MCF (e.g. 02-8) and which MCF template is used (e.g. 1A), as different templates may be created for different MCFs and different MCF templates.

12. Then select **Create Template**. The OCE will display the following pop up message "Template updated successfully."

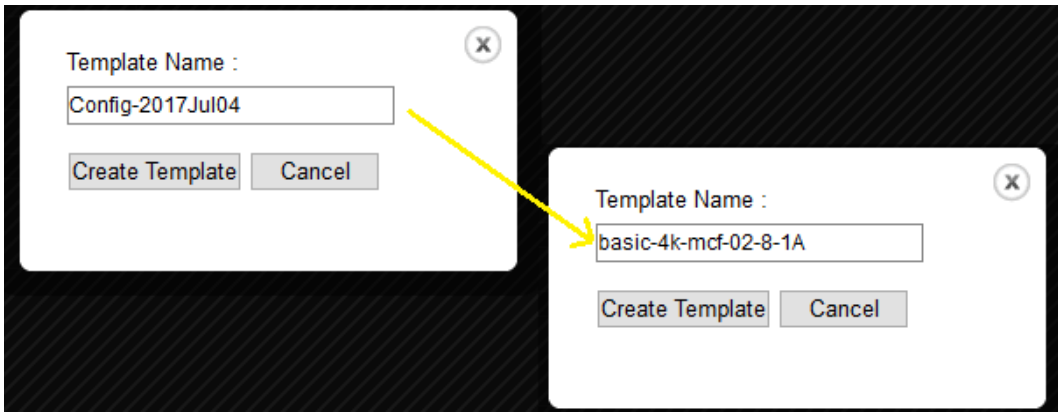


Figure 4-140 Set Template Name

The template files are stored in folders under:
C:\Program Files (x86)\Common Files\Siemens\WebUI\Oce_configuration\templates\gcp.

NOTE

NOTE

The folder path listed above is used by 32-bit Windows machines. When a 64-bit machine is used, the path will not include '(x86)'.

If there are templates that are no longer needed, delete the folder from the above directory. To delete all the templates, use the Maintenance / File Manager / Remove Template option (see 6.1.2.3).

4.5.4 Using a Template

To use a template, select **Create New Site** and select GCP. Enter the Name as shown in Figure 4-87; keep the Template check box unchecked. Then press **Select MCF**. Click the drop-down arrow next to Select Template to get a list of all the templates available.

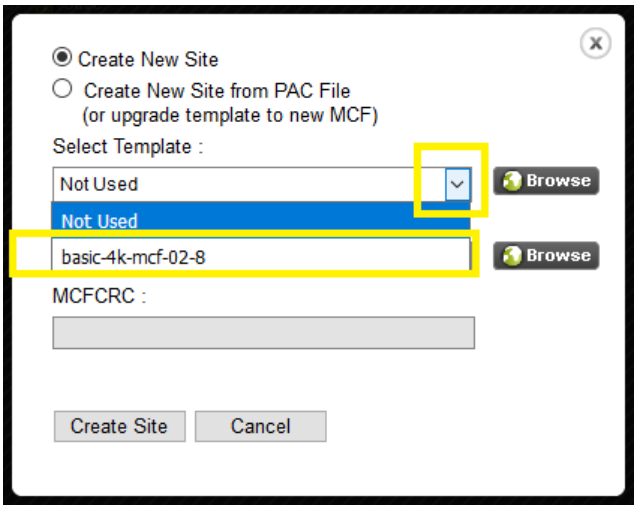


Figure 4-141 Select Template to Use

Select the template to be used and the OCE will automatically fill in the MCF information based upon that used in the template, then select **Create Site**. The customer-defined defaults in the template will be applied to the new site.

NOTE

NOTE

If the GCP MCF Template selected on the **TEMPLATE: selection** screen shown below (which is distinct from the OCE template the site is built on) is changed, the default values from the OCE template will be lost. This is because selecting a new GCP MCF Template in the **TEMPLATE: selection** screen will override the OCE Template's default values.

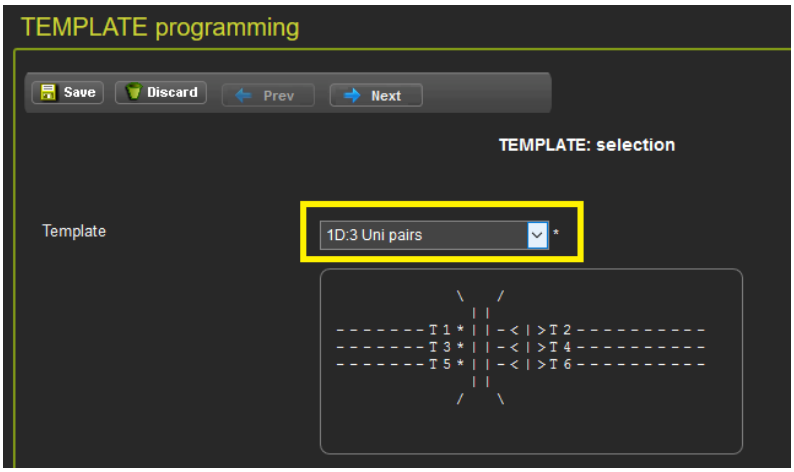


Figure 4-142 TEMPLATE: Selection Screen

To avoid problems for the GCP 4000 and 5000, the user should create a corresponding OCE template for each GCP MCF Template, to ensure the site will match the default values used in the GCP MCF template.

4.5.5 Updating a Site to use a new MCF

The OCE allows a site created with one MCF to be upgraded to use a different MCF. To do this, open the site to be updated, then select the 'Upgrade MCF' button.

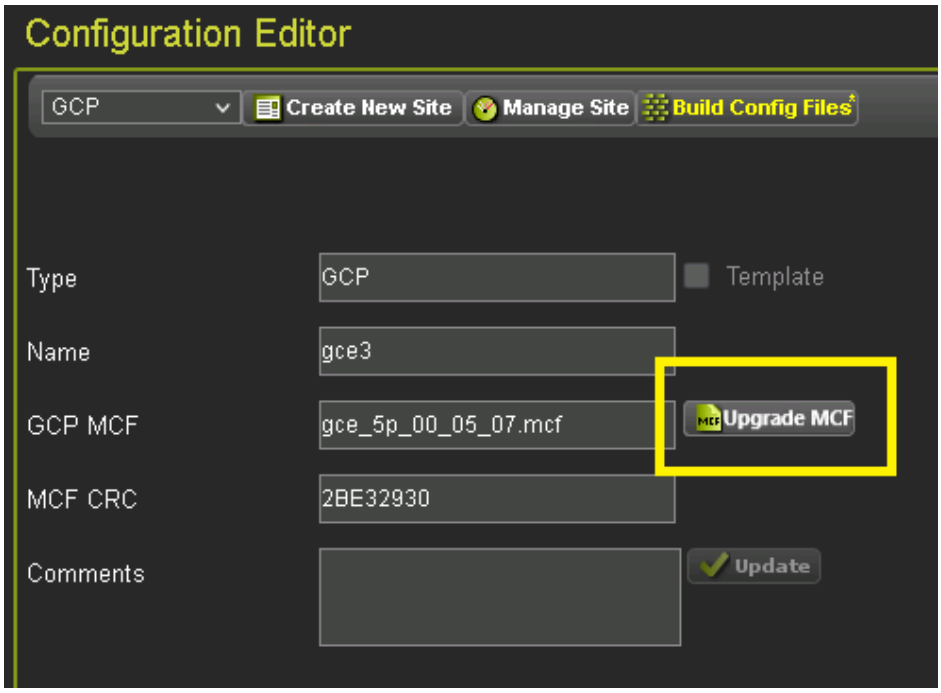


Figure 4-143 Upgrade MCF Button

This will open the Upgrade MCF menu. From here:

- Select the new MCF to be upgraded to, using either the drop down menu (if the MCF has already been used), or using the browse button(if this is the first time this MCF has been used in the OCE).
- Enter the CRC if necessary (new MCF).
- Then, select the Upgrade Site button.

Figure 4-144 Upgrade MCF Menu

The site will be upgraded to use the new MCF. After upgrading, check the configuration carefully to ensure it is correct as the new MCF may include new parameter or change default values.

Note that at this point, MCF upgrades have to be within the same family, i.e., a GCP 4000 site can only be upgraded with a different GCP 4000 MCF, or a GCP 5000 to a different GCP 5000 MCF etc.

Also note major changes to MCF functionality will prevent upgrades being possible:

It is not possible to update sites created with MCF gcp_t6x_02-1.mcf and earlier to use a later MCF.

All GCP 5000 MCFs can be upgraded to later ones.

All GCE MCFs can be upgraded to later ones.

4.5.6 Comparing PAC/ZIP files

It is useful to be able to compare PAC files to:

a) see changes from one version to a later version after modifications have been made
b) compare a PAC file downloaded from the field to the one created in the office

To compare PAC files select the **Tools** icon from the top level menu. This will bring up the Compare PAC files screen as shown in the following figure.

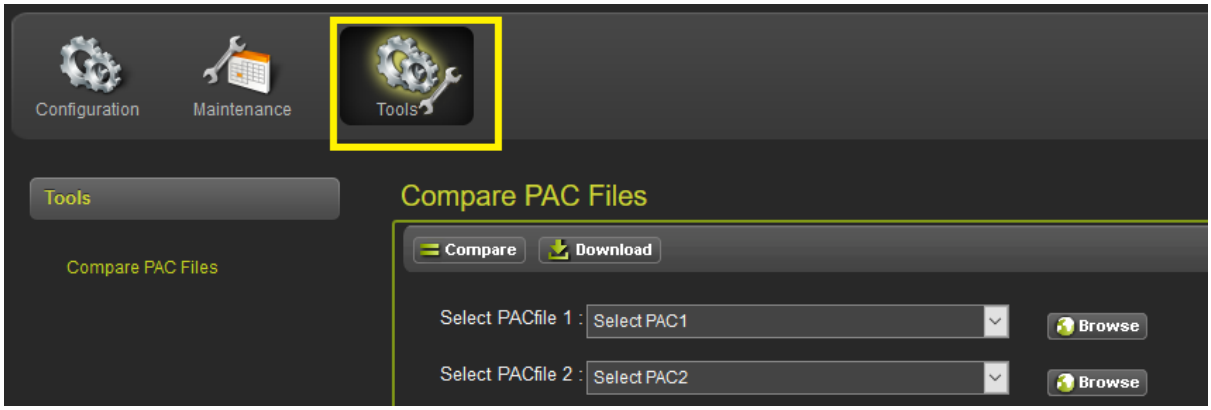


Figure 4-145 Compare PAC Files

Select the PAC files to be compared using the **Browse** buttons, then select the **Compare** button.

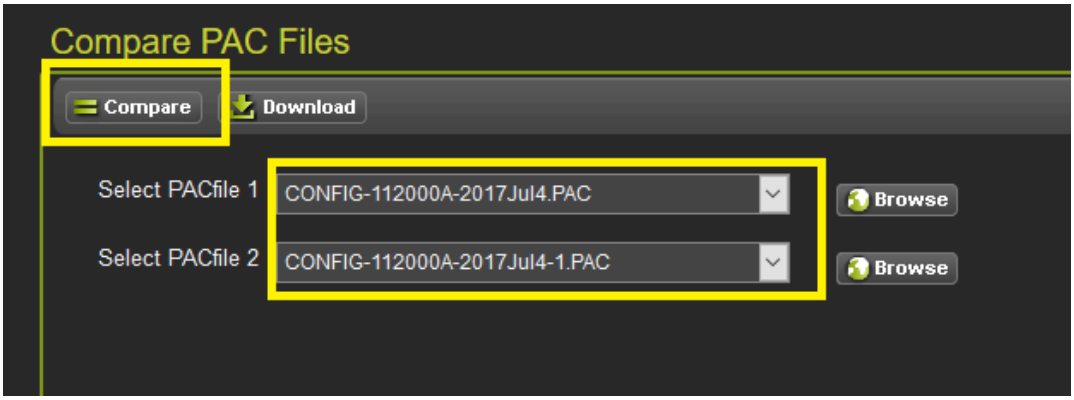


Figure 4-146 Compare two PAC Files

The OCE will compare the files. If the files are identical, the OCE will show the following:

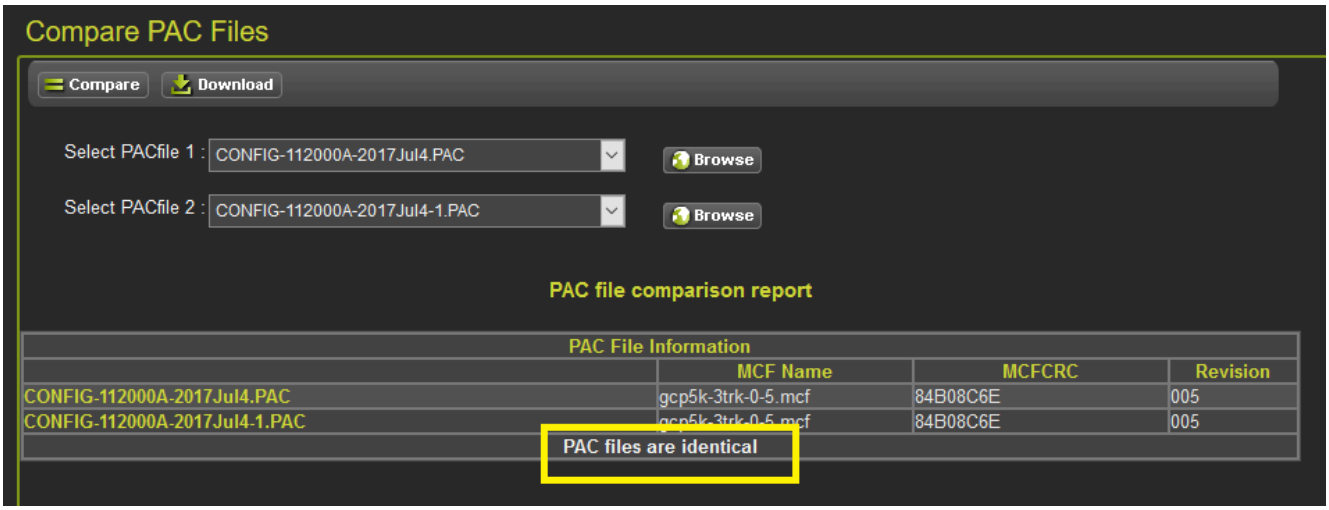


Figure 4-147 Comparison of two Identical PAC Files

If the PAC files are not identical, the OCE will show the differences in red, as illustrated in Figure 4-148. The comparison report shows two columns, one for each PAC file, the differences between the files are shown in these columns. Use the scroll bar on the right to scroll down. The OCE shows differences in the vital MCF and non-vital portions of the configuration.

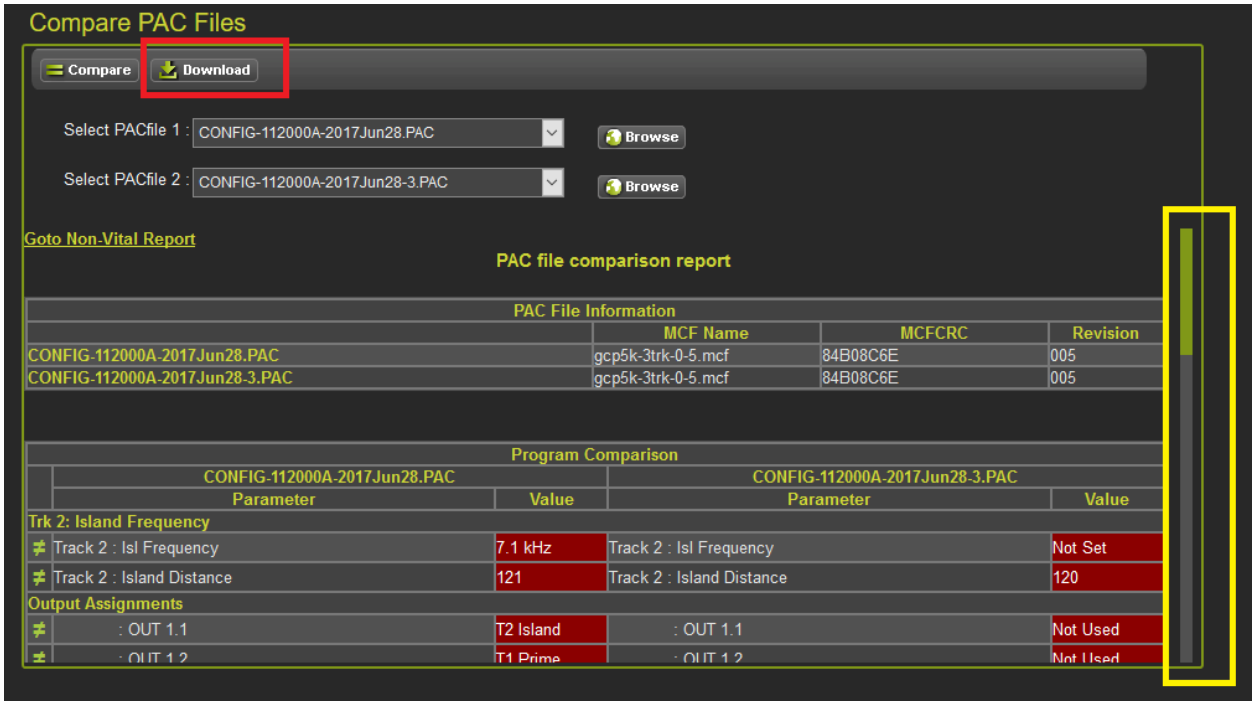


Figure 4-148 Comparison of Non-Identical PAC Files

The comparison report can be saved by selecting the **Download** button. The **Save** option will save the file to the default download location for the browser with the name PAC_comparison_Report.html.

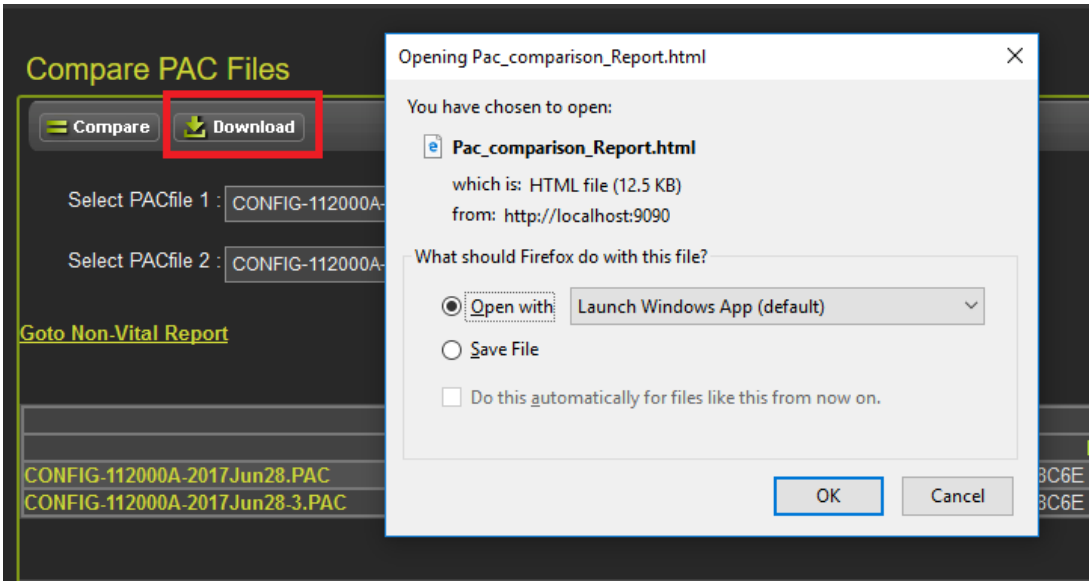


Figure 4-149 Download Comparison Report

Compare can be used to compare PAC files created with a different MCF. Newer GCP MCFs may have had new configuration parameters added to them, or parameter names may have changed. The **Compare** option allows the user to visually identify any differences in parameters. New parameters will have a plus symbol in the far left column, and then the new parameter title and values are shown as below on the right side (in the yellow box). Changed parameters are highlighted in red.

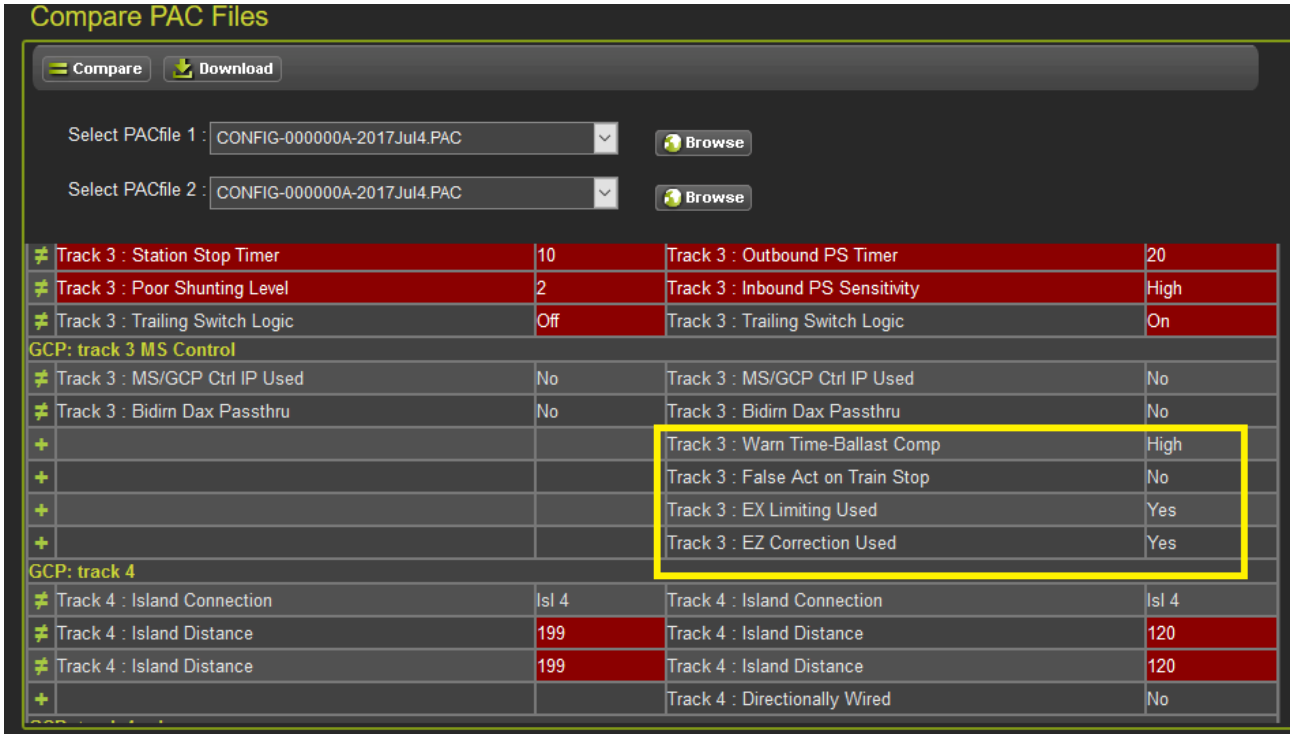


Figure 4-150 Comparison between PAC Files Using Different MCFS

Since the user may choose to keep the ZIP files under configuration management rather than the PAC files, the PAC file comparison can also be used to compare the PAC file included in a ZIP files, so that the user doesn't have to unzip and extract the PAC first.

To do this, simply select the ZIP files instead of the PAC file, and then click **Compare** as before. The OCE will automatically extract the PAC file from the ZIP then perform the comparison.

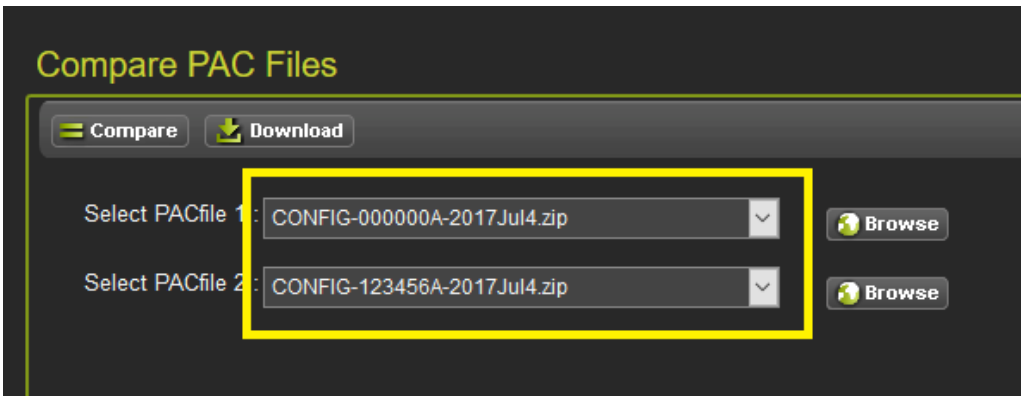


Figure 4-151 Comparison between ZIP and PAC Files

The **Compare** will also allow comparison between a ZIP file and a PAC file, for example, if you have a PAC file downloaded from the field and the ZIP file created in the office.

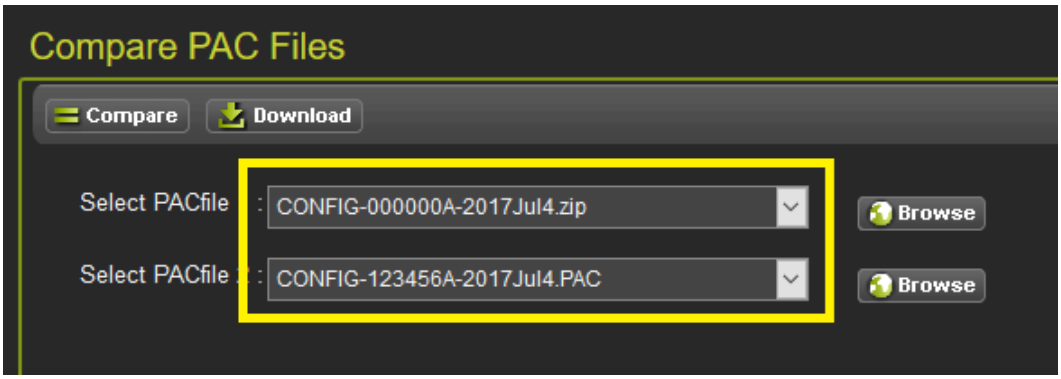


Figure 4-152 Comparison between ZIP and PAC Files

4.5.7 Configuration

The Configuration menu options will depend on the type of GCP. The top level options differ, as shown in the following figure.

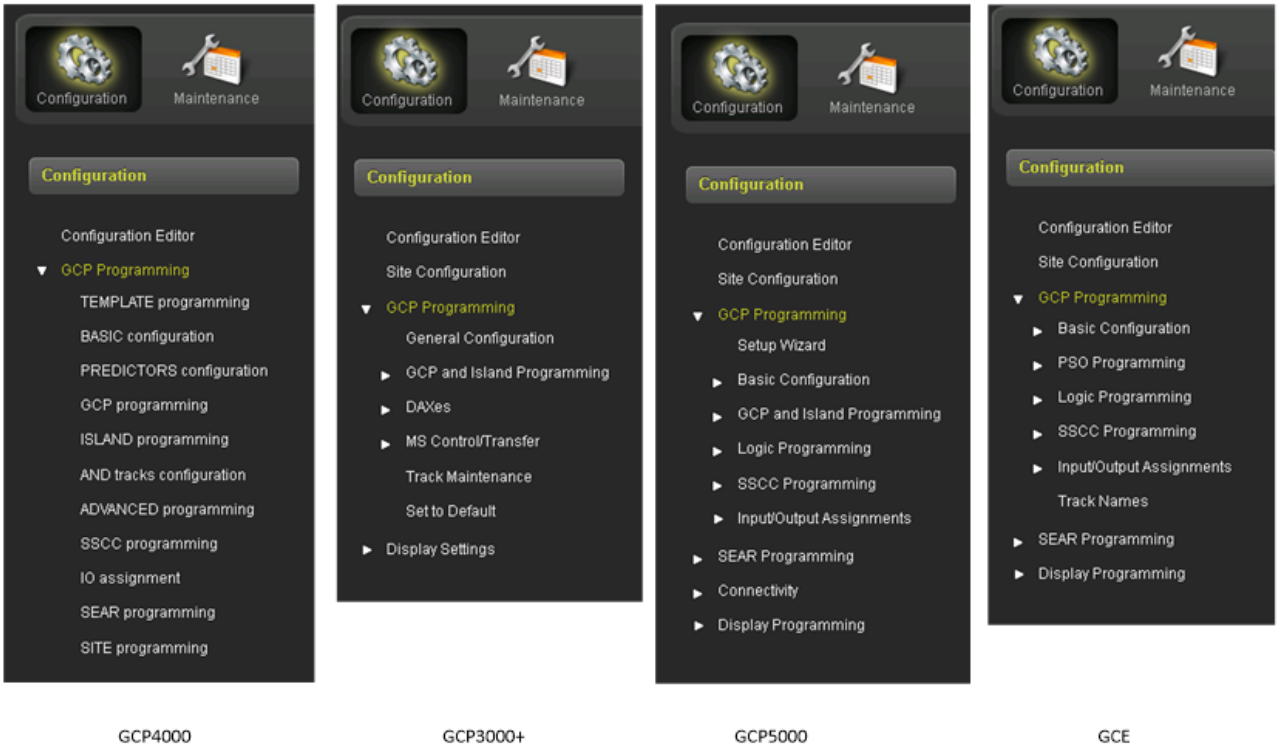


Figure 4-153 Configuration Menus for GCP 4000, 3000+, 5000 & GCE

The GCP Programming section contains the specific menus from the type of MCF selected.

With the GCP 4000, the site configuration parameters, such as Location name, DOT, milepost are set under the GCP Programming – Site Programming menu. With the other GCP products these are all set in the Site Configuration menu.

NOTE

NOTE

When a GCP 5000 site is created, the Site Configuration screen can show the EMP Address parameter, to be used with the Connectivity functionality. This functionality is not currently released with the GCP 5000. Therefore, this parameter is not functional at this time.

The OCE does not support programming of the display or the SEAR in the GCP 4000.

The GCP 3000+ has no SEAR IIi, so there is no SEAR programming menu.

The GCP 5000 and GCE support the option to program the SEAR IIi by using the SEAR Programming menu.

The latest GCP software supports options for connectivity. These options are not applicable to display builds prior to 1.6.x (i.e., 1.5.26 and earlier). The GCE does not support connectivity options. For description of the connectivity menus see 4.3.1.2.

With the GCP 3000+, 5000, and GCE, the OCE generates a PAC file that is primarily intended to be loaded via the A80485 display modules, as it sets the display and SEAR configuration. If the A80485 display module is not present, or has failed, the PAC file could be loaded into the CPU III, but in this case it will not set the display or the SEAR configuration.

With the GCP 4000 and SGCP 4000/MS 4000, the PAC file can be loaded via the display or DT.

4.5.7.1 SEAR Programming

The SEAR Programming menu provides the following options.

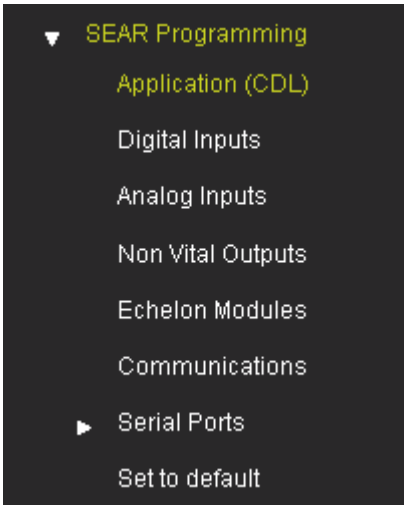


Figure 4-154 SEAR Programming menus for GCP 5000 and GCE

4.5.7.1.1 CDL

As part of the SEAR programming, the user can select a CDL file.

Figure 4-155 SEAR CDL Selection

Once the CDL has been loaded, the user can answer the CDL questions by pressing the Start button, and pressing Next to move to the next question, as shown in the following figure.

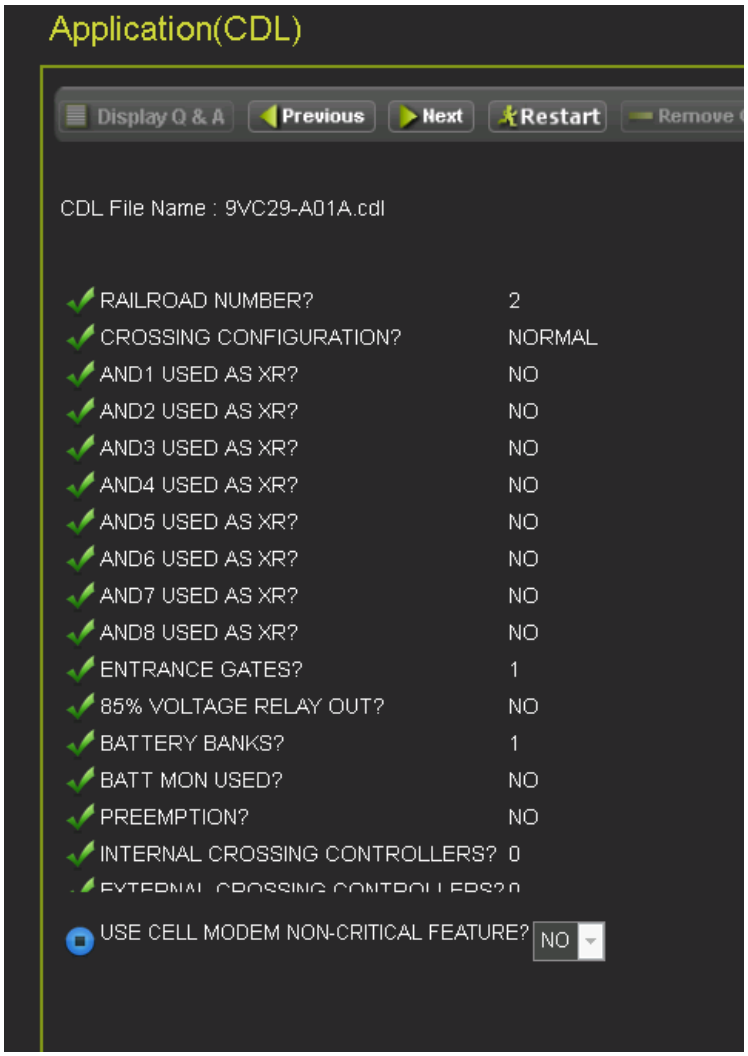


Figure 4-156 SEAR CDL Questions

Once all of the questions have been answered, the user can compile the CDL, as shown in the following two figures.

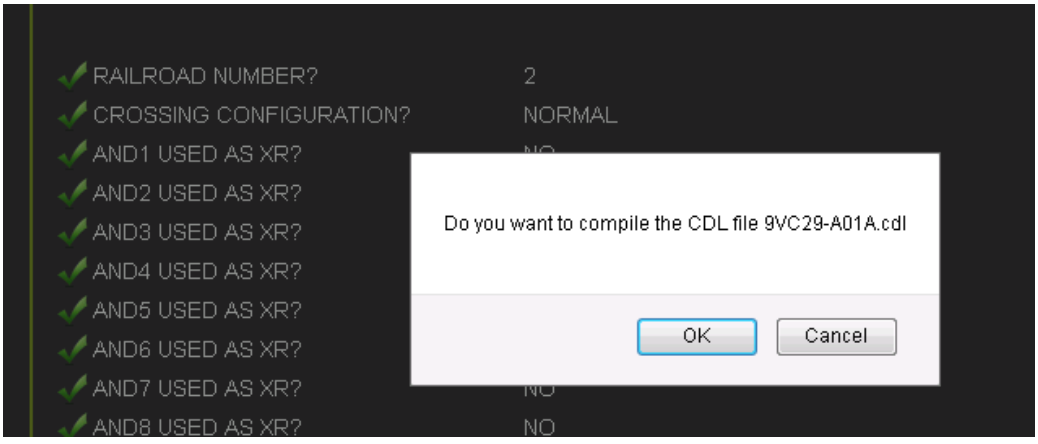


Figure 4-157 SEAR CDL Compile Message

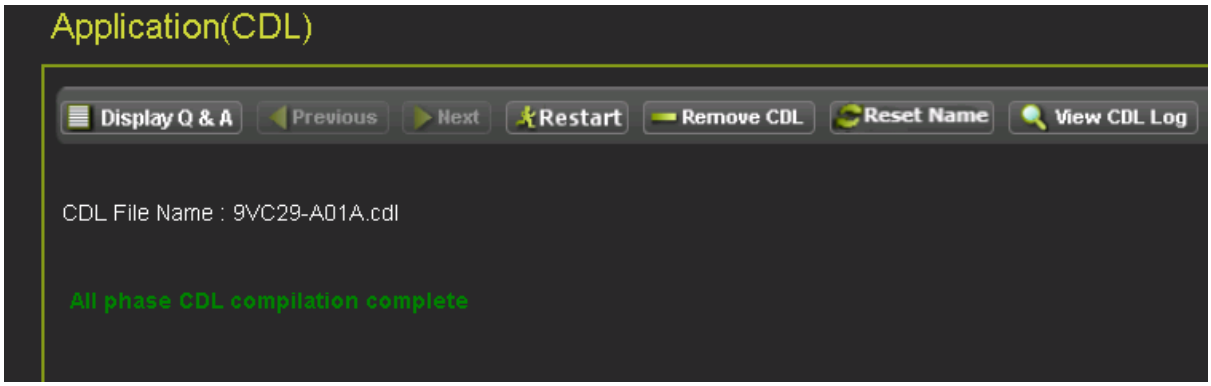


Figure 4-158 SEAR CDL Compile Complete

NOTE

NOTE

The SEAR application will not run unless CDL setup is completed.

NOTE

NOTE

At this time, the OCE does not show any changes to the answers to the CDL questions, in the Minimum Program Report.

CDLs are specific to the crossing application.

4.5.7.1.2 Digital Inputs

The Digital Inputs menu allows the user to configure the digital inputs on the SEAR IIi. The SEAR IIi monitors the I/O points of the modules in the GCP chassis. If the GCP is not using the I/O point for a vital function (i.e. it has not been set in the I/O assignments in the GCP Programming menus), then this I/O point can be connected to an external source and monitored by the SEAR IIi.

The first column shows the type of module in the chassis or if the slot is empty. If the slot on the chassis is empty, all 8 I/O points are available for use by the SEAR IIi. Note that with the GCP 5000, the OCE is not looking at the chassis type, so this screen will show all 6 slots, when not all slots may actually be available if a 2 track ,3 track, or 5 track chassis is used.

The next label column shows the name of the I/O point as observed on the GCP chassis. The labels will change depending on whether there is a A80418 GCP module, A80428 PSO (in GCE), or RIO in the slot, as it assumed the chassis will be appropriately labelled with the RIO specific mylars having been attached

The Name column shows the name of the function assigned to this input. If the function is being used by the GCP Programming, the name will be automatically filled out. For example, the T1 Prime and AND 1 XR, and this digital input's properties will be locked, as they cannot be changed by the user. This is shown in the following figure.

NOTE

If a CDL loaded, it may also assign functions to digital inputs, and change their name, tag, and other properties. At this time, the OCE does not update the Digital Inputs screen with the values that are set by the CDL.

When the CDL is loaded into the display module and the PAC file loaded, the CDL will, at that point, set any digital input states it has defined. If it is required to make the reports created by the OCE consistent with what will be seen in the field, the Digital Input changes set in the CDL, can be manually set in these screens.

Figure 4-159 Digital Input Menu

If the GCP Programming is not using the Digital Input, then the user can select the function of it by selecting one of the options in the template menu as shown in the following figure.

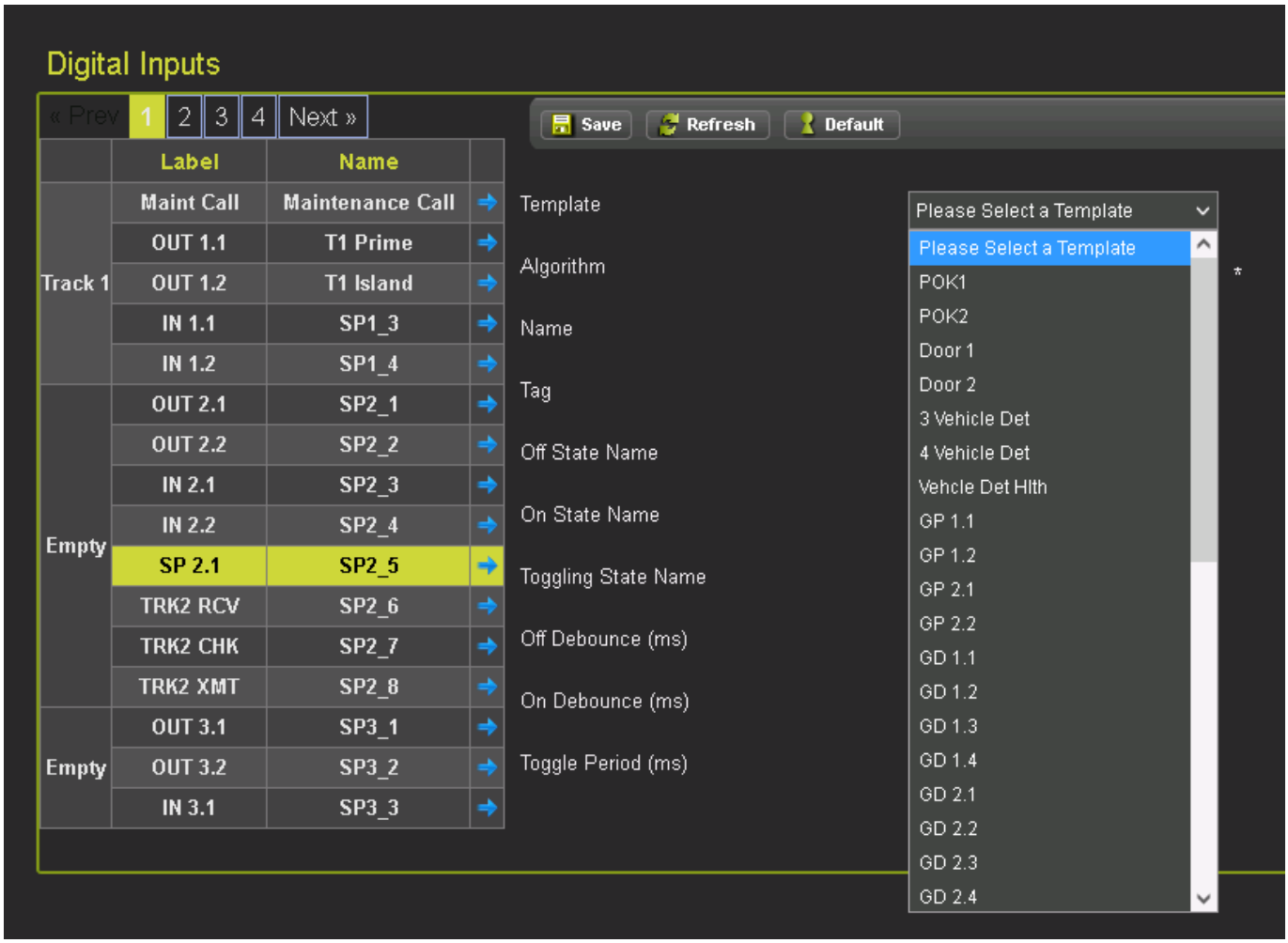


Figure 4-160 Digital Input Menu showing Template Options

A default set of properties is set when a template is selected, such as the default tag name. The user can edit these as desired.

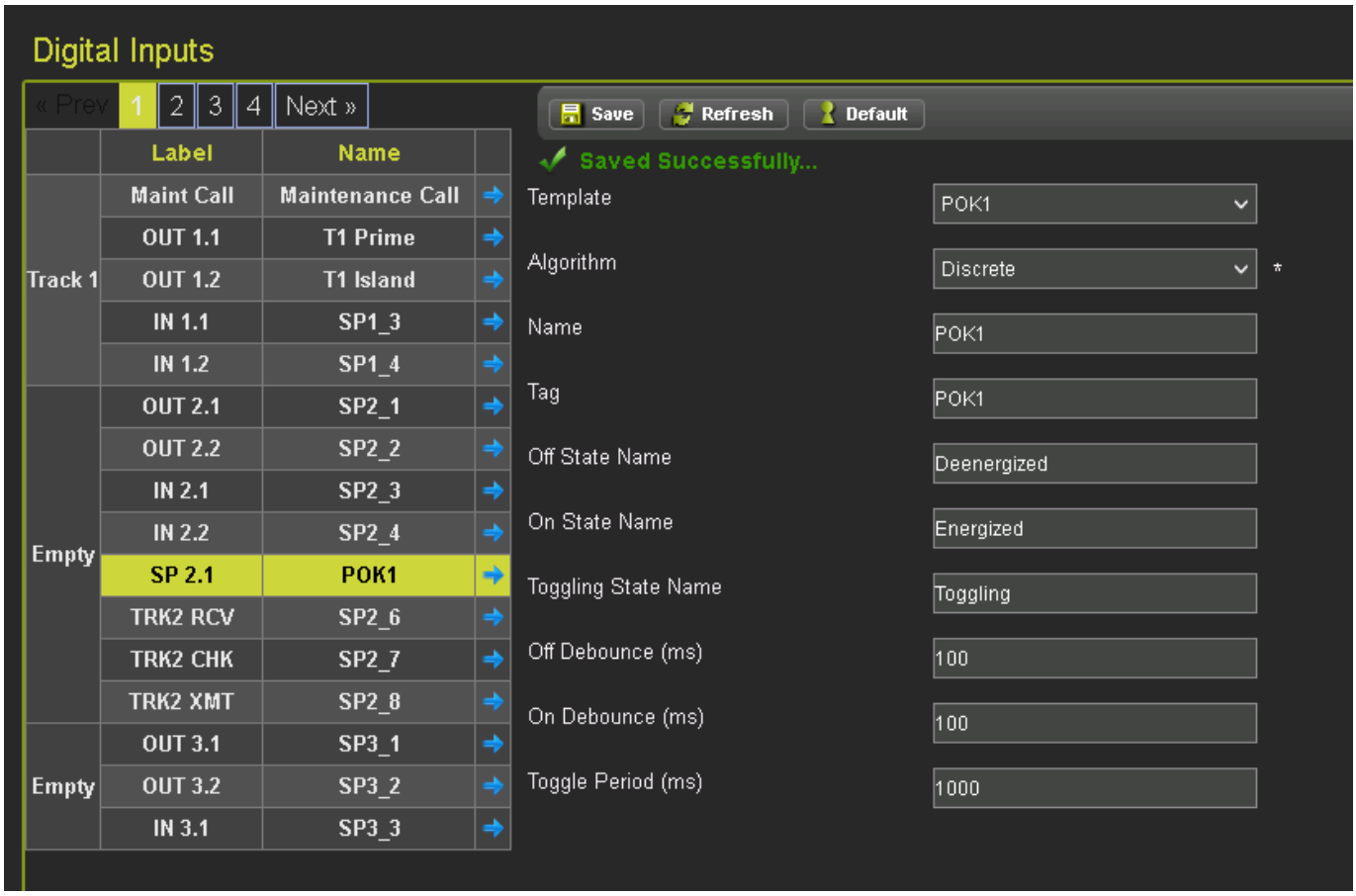


Figure 4-161 Digital Input Menu Discrete Options

For the GCP 5000: the option to use the Trackside Sensor (TSS) and Ground Fault Tester (GFT) as digital inputs is restricted as follows:

1. Track 2 SP 2.1
2. Track 3 SP 3.1
3. Track 4 SP 4.1
4. Track 5 SP 5.1
5. Track 6 SP 6.1
6. SSCC1 IN 7.1 to IN 7.5
7. SSCC2 IN 8.1 to IN 8.5
8. DI 1 (J3)
9. DI 2 (J3)

For the GCE: the option to use the Trackside Sensor (TSS) and Ground Fault Tester (GFT) as digital inputs is restricted as follows:

10. Track 2 SP 2.1
11. Track 3 SP 3.1
12. Track 4 SP 4.1
13. Track 5 SP 5.1
14. SSCC1 IN 7.1 to IN 7.5
15. SSCC2 IN 8.1 to IN 8.5
16. DI 1 (J3)
17. DI 2 (J3)

The SEAR IIi has two inputs available on its J3 front connector, these are available on the above screen as DI1 (J3) and DI2 (J3) as shown in the following figure.

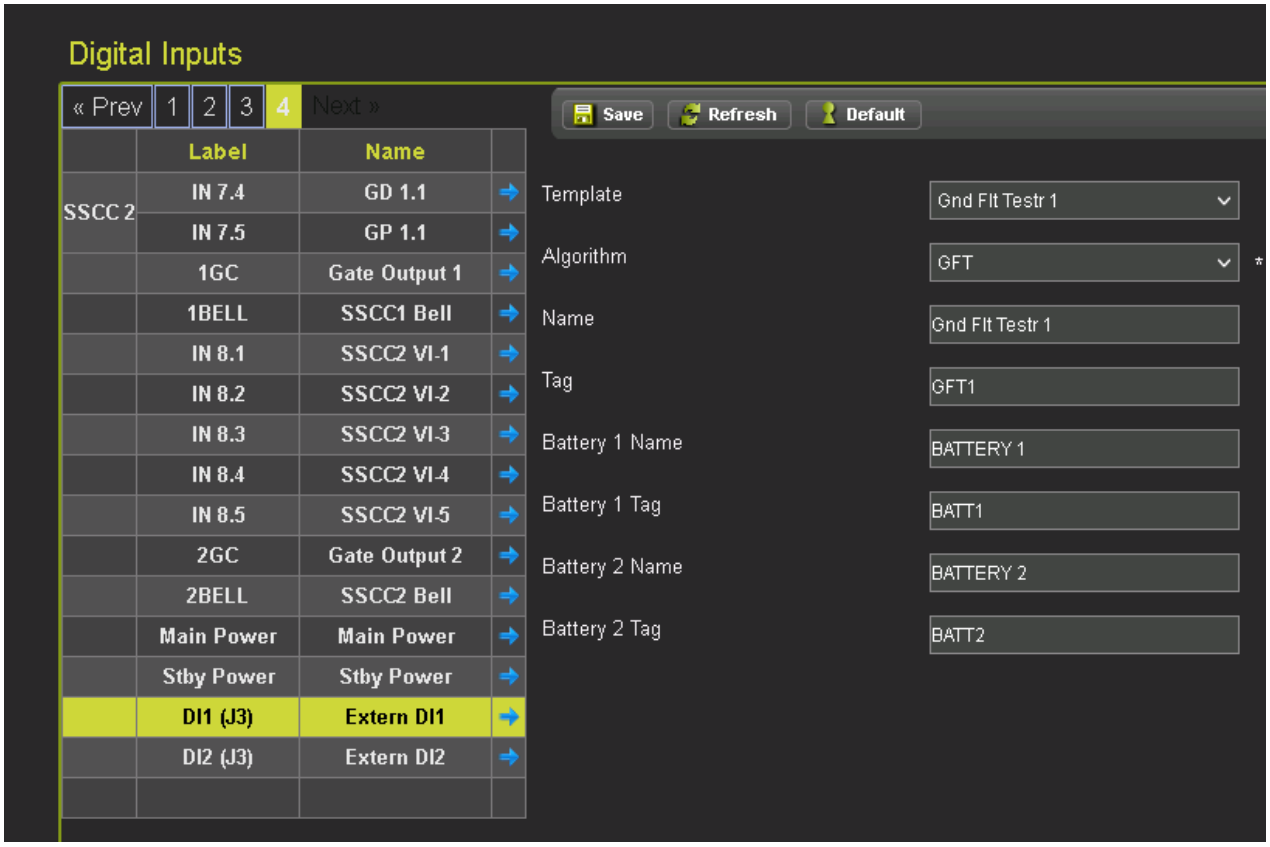


Figure 4-162 Digital Input DI1(J3)

When the Digital Input has an algorithm type of:

1. Discrete
2. MTSS
3. GFT

This is automatically set based upon the template. When the Algorithm is set to Discrete, the user can configure:

1. Name
2. Tag
3. Off State Name
4. On State Name
5. Toggling State Name
6. Off Debounce
7. On Debounce
8. Toggle Period

The Name, and On, Off, and Toggle state names will be used to describe a state change on this input in the SEAR log.

The Tag is how this input will be referenced in the CDL. When the Algorithm is set to GFT, the user can configure:

9. Name
10. Tag
11. Battery 1 Name
12. Battery 1 Tag
13. Battery 2 Name
14. Battery 2 Tag

The Name, and Battery 1 and 2 Names, will be used to describe a state change on this input in the SEAR log.

The Tag, Battery 1 and 2 Tag, is how this GFT input will be referenced in the CDL. When the Algorithm is set to MTSS, the user can configure strings for the following:

15. Name
16. Tag
17. Bell Audio Off
18. Bell Audio On
19. Bell Power Off

20. Bell Power On
21. Gate Up Off
22. Gate Up On
23. Gate Down Off
24. Gate Down On
25. Gate Tip Off
26. Gate Tip On

The Tag is how this input will be referenced in the CDL. The configured strings will be used in the SEAR log.

NOTE

When the PAC file is loaded into the currently released versions of the GCP 5000, display versions 1.5.26r and earlier, the Digital Inputs screens will not show the type of card in a slot or whether the slot is empty or not. Empty slots will be labeled with the SP x.y nomenclature, rather than showing the labels on the chassis.

Similarly, when the PAC file is loaded into a display, the display will show slightly different naming for the digital inputs on the front of the SEAR, the non vital outputs, and the analog inputs, as it will not show the connector numbers.

The next release of the display software will resolve this and make the naming consistent.

4.5.7.1.3 Analog Inputs

The Analog Input menu, shown in the following figure, allows the user to set the names and tag for the 6 Analog inputs available in the SEAR IIi. The 'Label' column shows the fixed name of the input. Two of these inputs are available on the front J3 connector of the SEAR IIi, the TEMP(J3) and BATT MON (J3) inputs.

The analog inputs can be used to monitor the voltage on standard 12 VDC and 24 VDC batteries. They may also be used to monitor any DC voltage from 0 VDC to 36 VDC. There are six battery monitor channels which are used as follows:

1. General purpose on the front of the SEAR (BATT MON).
2. Monitoring the GCP CPU and I/O module power (VBN).
3. Monitoring each SSCC IIIi module power (SSCC1 and SSCC2).
4. Monitoring the internal system temperature (Int. Temp).
5. Monitoring the external system temperature (Ext. Temp).

NOTE

NOTE

If a CDL loaded, it may also assign functions to Analog Inputs, and change their name, tag, and other properties. At this time, the OCE does not update the Analog Inputs screen with the values that are set by the CDL.

When the CDL is loaded into the display module and the PAC file loaded, the CDL will, at that point, set any Analog Input states it has defined. If it is required to make the reports created by the OCE consistent with what will be seen in the field, the Analog Input changes set in the CDL, can be manually set in these screens..

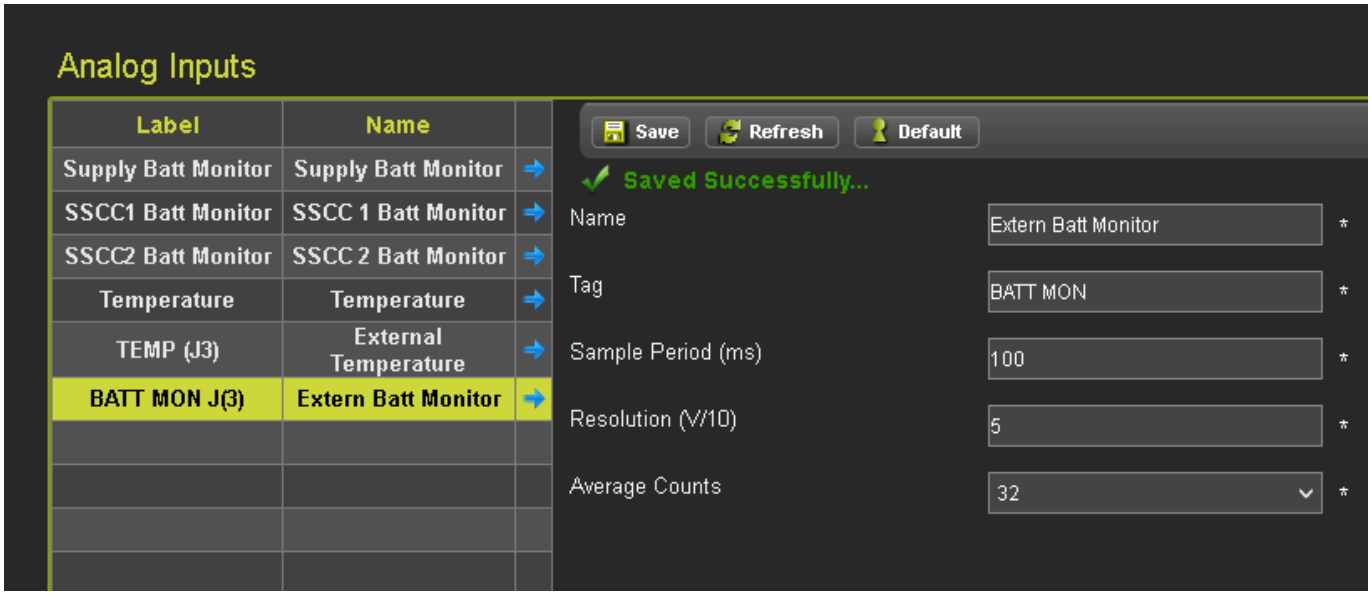


Figure 4-163 Analog Input Menu

Table 4-1 Battery Input Settings

Setting	Description
Name	Up to 20 characters long and used to describe the input but not used in event reports.
Tag	Up to 10 characters long and used to identify the input in event reports and local menus.
Sample Period	Number of milliseconds between processing of the input. Events for the input can be logged on this interval only. Internally, the SEAR IIi samples the inputs every 10 milliseconds regardless of this setting.
Resolution	Specifies the change in volts (or degrees Fahrenheit) required before an event will be logged into the SEAR IIi event buffer.
Samples to Average	Specifies the number of consecutive 10 millisecond samples to average together to determine the voltage present on the input. This value can be set to no averaging, 2 samples, 4 samples, 8 samples, 16 samples, or 32 samples.

4.5.7.1.4 Non Vital Outputs

The Non Vital Output menu, shown in the following figure, allows the user to set functions for the 8 non vital outputs available on the SEAR IIi. The first six shown are wired to the AUX DB25 J1 connector using the pin numbers shown. The RLY1 and RLY2 are available on the front of the SEAR on the J3 connector.

Non Vital outputs can be controlled to the OFF state, ON state, TOGGLING state, or PULSED state. In the OFF state, the relay contacts are open. In the ON state, the relay contacts are closed. In the TOGGLING state, the relay contact is opening and closing at the user specified duty cycle and period. The settings for each relay output are described in Table 4-2.

NOTE

NOTE

If a CDL loaded, it may also assign functions to Non Vital Outputs, and change their name, tag, and other properties. At this time, the OCE does not update the Non Vital Outputs screen with the values that are set by the CDL.

When the CDL is loaded into the display module and the PAC file loaded, the CDL will, at that point, set any Non Vital Output states it has defined. If it is required to make the reports created by the OCE consistent with what will be seen in the field, the Non Vital Output changes set in the CDL, can be manually set in these screens.

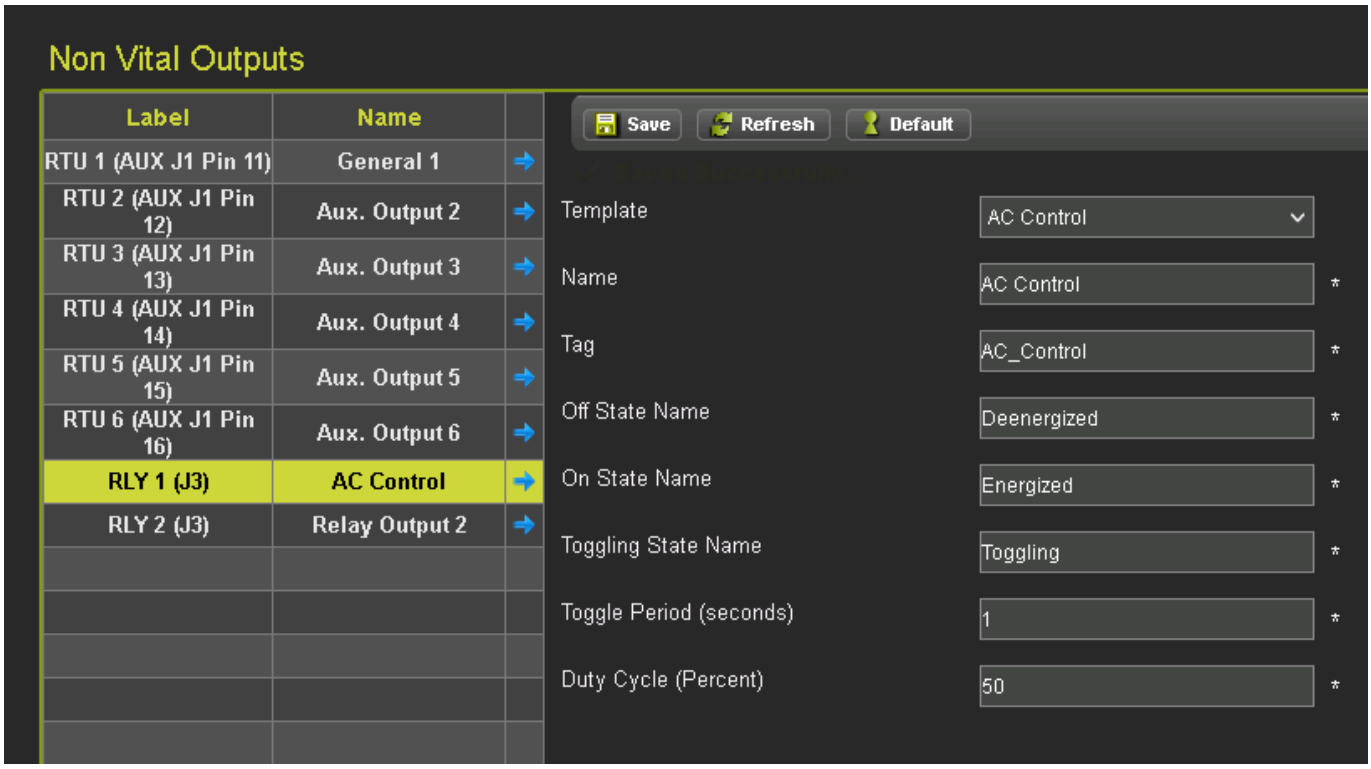


Figure 4-164 Non Vital Outputs Menu

The user can configure the template setting, which has the following options:

1. General 1
2. General 2
3. General 3
4. General 4
5. AC Control
6. Ground Flt Test
7. Maint Call

The Names are used in the SEAR log entries. The Tag is use by the CDL.

Table 4-2 Relay Output Settings

Setting	Description
Name	Up to 20 characters long and used to describe the relay but not used in event reports.
Tag	Up to 10 characters long and used to identify the relay in event reports and local menus.
State Names	Up to 12 characters in length and displayed in event reports and local menus.
Toggle Period	Specifies the time between cycles of toggling the relay output from off to on, and back to off in seconds.
Duty Cycle	Specifies the percentage of time the relay is in the ON state when toggling.

4.5.7.1.5 Echelon Modules

The SEAR IIi is capable of communicating with 16 modules via the Echelon. The Echelon module menu, shown in the following figure, is used to select which modules are used.

The SEAR IIi supports the following Node Types: iLOD, GCP 5000, SSCC, VHFC, WAG, and MCM.

Slot 16 is by default the GCP that the SEAR IIi is monitoring. This will have echelon node number 16 by default.

NOTE

NOTE

The SEAR IIi can only monitor one GCP 5000, so only one module should be set with type GCP 5000.

NOTE

NOTE

If the CPU Subnode is changed in the Site Configuration page, the Node Number for the GCP 5000 module will need to be set manually to the same value on this page.

NOTE

NOTE

The default name for module 16 is GCP4K, not GCP5K. The reason for this is to be backward compatible with CDL programs written for the GCP 4000. If the name is changed here, the CDL must be changed to match.

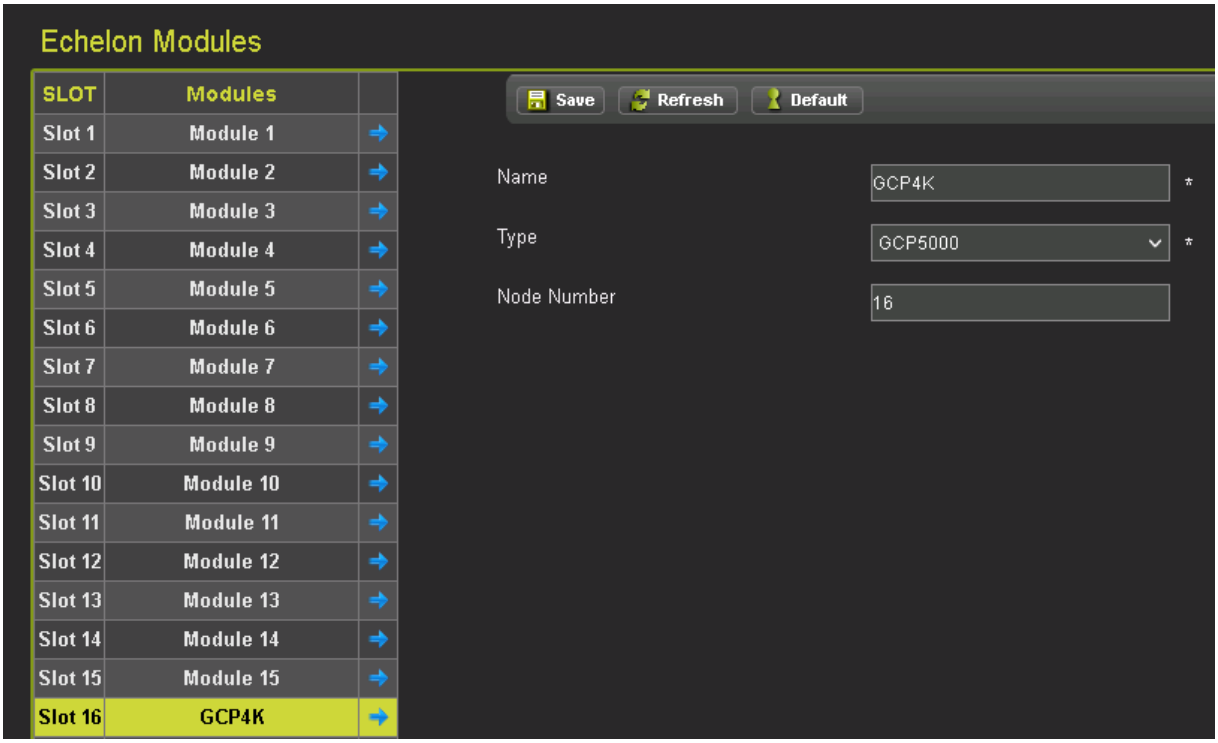


Figure 4-165 Echelon Modules: Type GCP 5000

When type is set to iLOD, the user can configure the items shown in the following figure.

The flash rate in Flashes per Minute sets the message resolution for the lamps being monitored. This means that if the flash rate varies by as much as this number per minute, then an event message will go from the iLOD to the SEAR IIi.

The current resolution determines how much of a shift in current will generate a message to the SEAR IIi. Refer to the iLOD, A80271 User Guide, SIG-00-03-05 for more details.

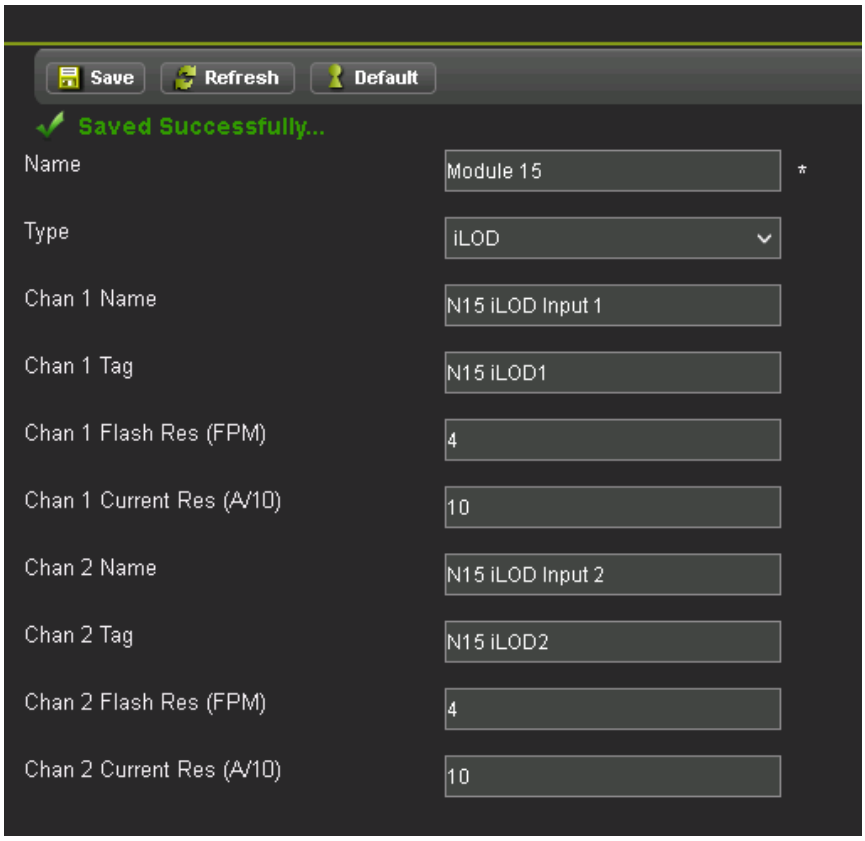


Figure 4-166 Echelon Modules: Type iLOD

When type is set to SSCC, the user can configure the items, as shown in the following figure.

The SEAR IIi can be used to monitor an external SSCC module. When SSCC is selected, the parameters shown in the following figure, are available. The user needs to configure the ATCS address of the SSCC module and the Echelon node (which should correspond to the Subnode fields in the ATCS Address).

Figure 4-167 Echelon Modules: Type SSCC

The user can specify the following:

- Vital Inputs 1 – 8:
  - Name, default Vital Input x (where = 1..8),
  - Tag, default VIx (where = 1..8)
  - Off State Name, default Off
  - On State Name, default On
- Vital Outputs Bank A
  - Lamp 1 Name, default 1 Lamp Output 1
  - Lamp 1 Tag, default 1 L1
  - Lamp 1 Burned Out Name, default Burned Out
  - Lamp 1 Flashing Name, default Flashing
  - Lamp 1 Off State Name, default Off

- Lamp 1 On State Name, default On
- Lamp 2 Name, default 1 Lamp Output 2
- Lamp 2 Tag, default 1 L2
- Lamp 2 Burned Out Name, default Burned Out
- Lamp 2 Flashing Name, default Flashing
- Lamp 2 Off State Name, default Off
- Lamp 2 On State Name, default On
- Bell Name, default 1 Bell Output
- Bell Tag, default 1 Bell
- Bell Off State Name, default Off
- Bell On State Name, default ON
- Gate Ctrl Name, default 1 Gate Control
- Gate Ctrl Tag, default 1 GC
- Gate Ctrl Off State Name, default De-energized
- Gate Ctrl On State Name, default Energized

• Vital Outputs Bank B

- Lamp 1 Name, default 2 Lamp Output 1
- Lamp 1 Tag, default 2 L1
- Lamp 1 Burned Out Name, default Burned Out
- Lamp 1 Flashing Name, default Flashing
- Lamp 1 Off State Name, default Off
- Lamp 1 On State Name, default On
- Lamp 2 Name, default 2 Lamp Output 2
- Lamp 2 Tag, default 2 L2
- Lamp 2 Burned Out Name, default Burned Out
- Lamp 2 Flashing Name, default Flashing
- Lamp 2 Off State Name, default Off
- Lamp 2 On State Name, default On
- Bell Name, default 2 Bell Output
- Bell Tag, default 2 Bell
- Bell Off State Name, default Off
- Bell On State Name, default ON
- Gate Ctrl Name, default 2 Gate Control
- Gate Ctrl Tag, default 2 GC

- Gate Ctrl Off State Name, default De-energized
- Gate Ctrl On State Name, default Energized

- Non-Vital Inputs:
  - Flash Sync
  - Name, default Flash Sync
  - Tag, default Flash Sync
  - Off State Name, default De-energized
  - On State Name, default Energized
  - Maint Call Sync
  - Name, default Maint Call
  - Tag, default Maint Call
  - Off State Name, default De-energized
  - On State Name, default Energized

When type is set to VHFC, the user can configure the items shown in the following figure.

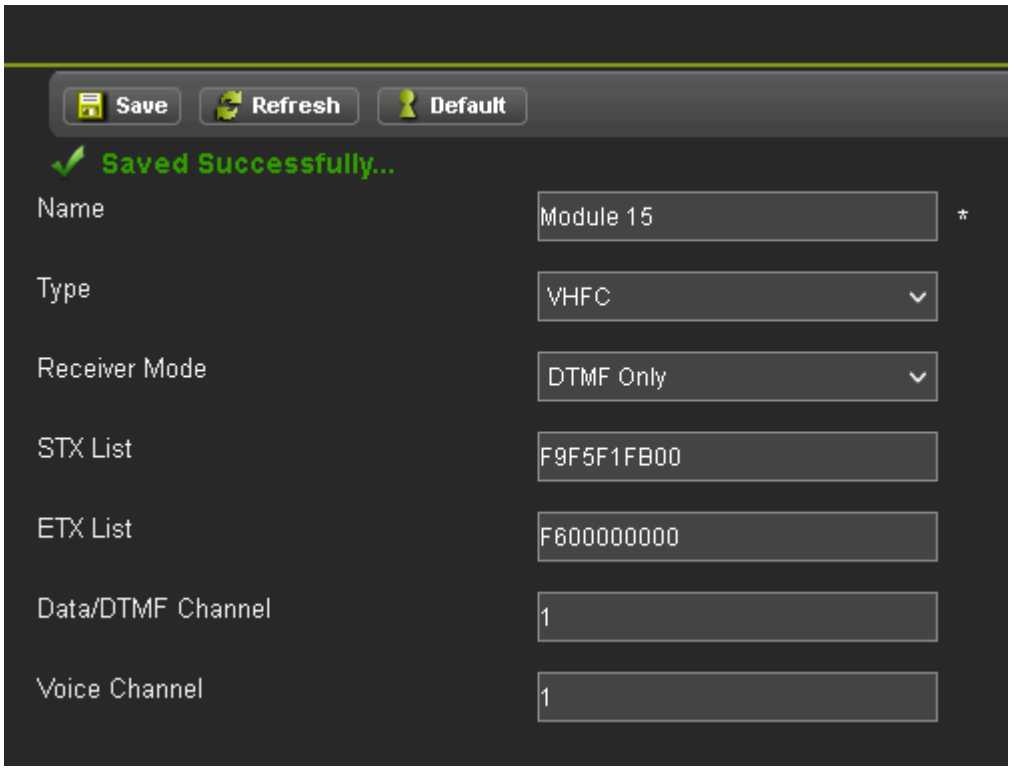


Figure 4-168 Echelon Modules: Type VHFC

Table 4-3 Echelon Modules: Type VHFC Settings

Setting	Possible Values	Default Value	Description
Receiver Mode	DTMF Only Framed Stream	DTMF Only	Determines method the VHF Communicator will use to packetize the incoming data. See descriptions of types below. In DTMF only mode, no data will be received.
STX List	0 – FF (hex) for each of 5 values	F5 F9 FB F1 00	This setting is only applicable if Rx Type is set to Framed. List of up to 5 possible byte values that can represent the start of a valid frame of data. An entry with a value of zero is not used.
ETX List	0 – FF (hex) for each of 5 values	F6 00 00 00 00	This setting is only applicable if Rx Type is set to Framed. List of up to 5 possible byte values that can represent the end of a valid frame of data. An entry with a value of zero is not used.
Date/DTMF Channel	1 – 8	1	Specifies the channel of the radio that will be used to send and receive data packets and DTMF tones.
Voice Channel	1-8	1	Specifies the channel of the radio that will be used to transmit digitized speech.

For more details regarding the VHFC, refer to the VHF Communicator, A80276, User Guide, SIG-00-03-002.

When type is set to WAG, the user can configure the items shown in the following figure.

When a WAG is selected, the Node number is available. The range is 1-99, this is the Subnode on the Echelon of the WAG. By default, this is 1.

The user may give the WAG a name, which the SEAR will use when logging entries related to this module.

Figure 4-169 Echelon Modules: Type WAG

When type is set to MCM, the user can configure the items shown in the following figure.

When an MCM is selected, the Node number is available. The range is 1-99, this is the Subnode on the Echelon of the MCM. By default, this is 1.

The user may enter a name for the MCM, which the SEAR will use when logging entries related to this module.

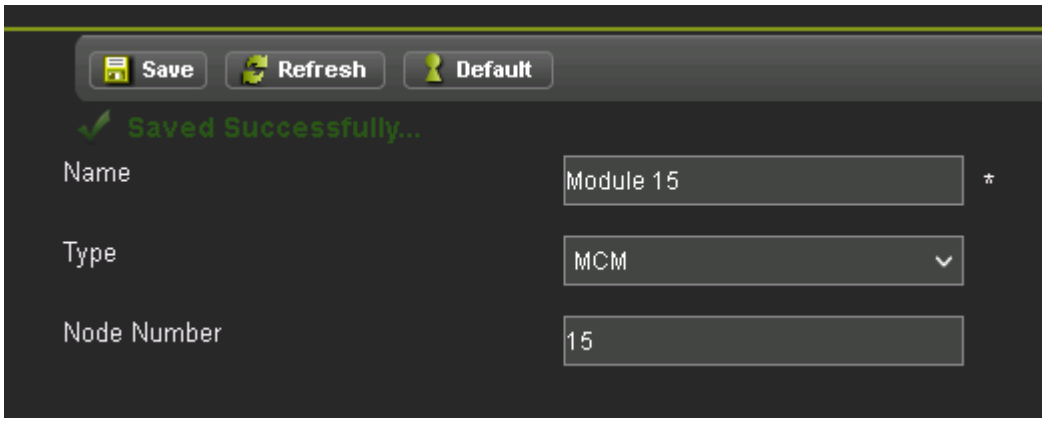


Figure 4-170 Echelon Modules: Type MCM

4.5.7.1.6 Communications

The OCE allows the user to select the site type as shown in the following figure. The Sear IIi may be configured to operate with external communication devices. For more details on communication networks, refer to the Event Analyzer Recorder (SEAR II) A80273, SIG-00-02-07 manual.

The communications parameters are configured on the Communication tab, shown in the following figure.

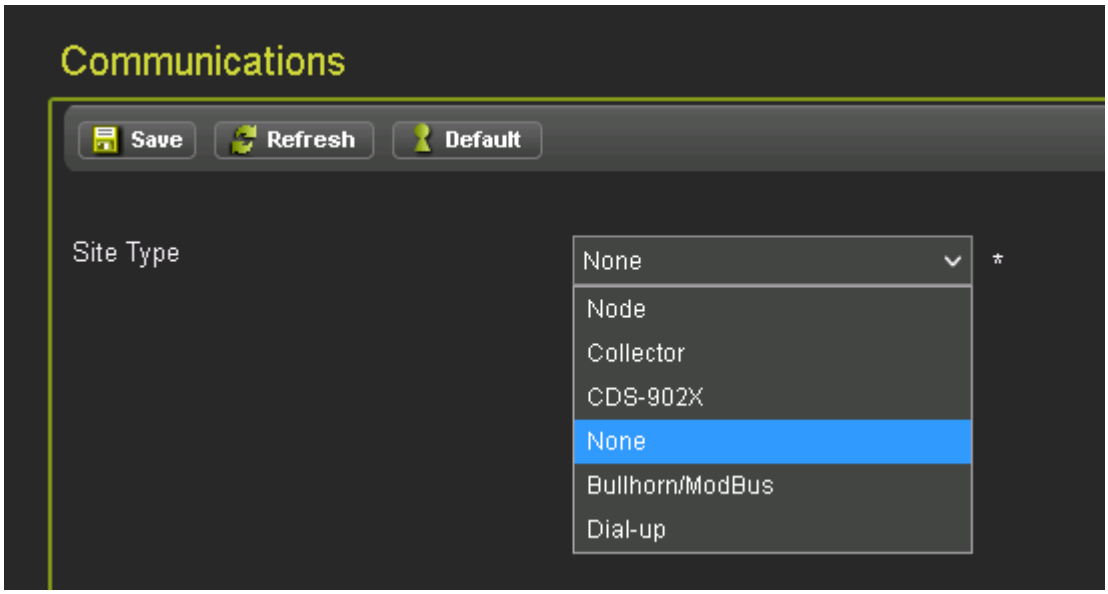


Figure 4-171 Communications Settings Screen

Table 4-4 Communications Settings

Site Type	Settings
No Communication	N/A
Bullhorn/MODBUS	POLL ID
NODE	Site address, office address, office site, backup site 1, backup site 2, field device
Collector	Site address, office address, poll ID, office device, office port, field device
CDS-902X (Cellular Modem)	none
Dial-up	Modem init string

4.5.7.1.7 Node

A SEAR IIi module with the site type set to Node is a slave unit in the ATCS enhanced routing protocol used to “hop” alarms to a Collector. Messages may hop from one Node to the next until they reach a collector where they will be forwarded to the office system. The Node settings are listed in the following table.

Table 4-5 Node Settings

Setting	Description
Site Address	ATCS address of this site. The address is a type 7 field address with the following format: 7.RRR.LLL.GGG.SS.DD.
Office (WAMS) ATCS Addr	ATCS address of the Wayside Alarm Management System software. The address is a type 2 office address with the following format: 2.RRR.NN.DDDD.
Primary Hop ATCS Addr	ATCS address of the primary site to send message bound for the office system. This site may be the Collector or another Node that is closer to the Collector. The address is a type 7 field address with the following format: 7.RRR.LLL.GGG.SS.DD.
Backup1 Hop ATCS Addr	ATCS address of the first site to route messages through if communication is lost with the Office Site. The address is a type 7 field address with the following format: 7.RRR.LLL.GGG.SS.DD.
Backup2 Hop ATCS Addr	ATCS address of the second site to route message through if communication is lost with both the Office Site and Backup Site 1. The address is a type 7 field address with the following format: 7.RRR.LLL.GGG.SS.DD.
Field Device	The device used to communicate with other SEAR II sites in the network. This setting can be any of the following: VHFC Comm (Echelon) SSR (Spread Spectrum Radio) (RS232) WAG (Echelon) VHF Comm (RS232) None

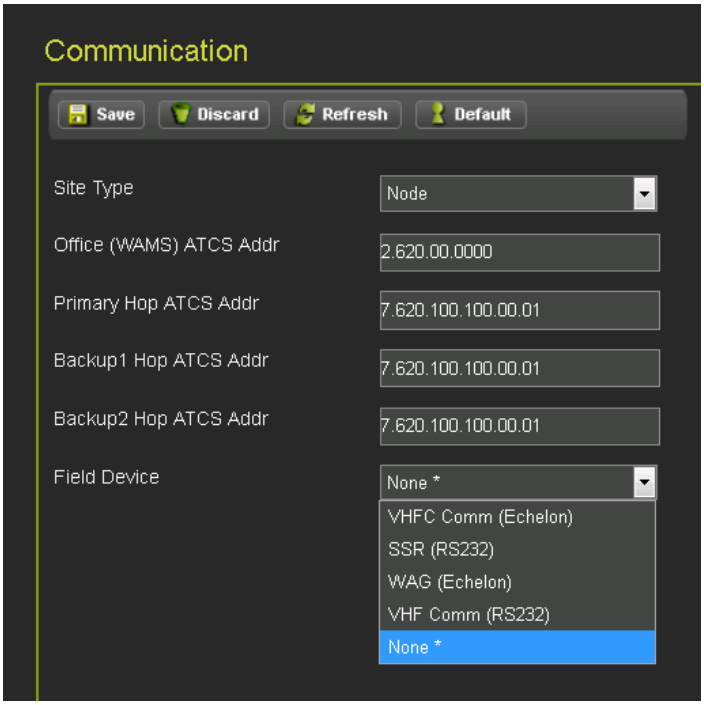


Figure 4-172 SEAR Communications: Node

When configuring communications, if the user picks an Echelon device such as the VHF communicator for the communications medium, the user must also add that module in the Echelon configuration.

No Communication

A SEAR IIi with the site type set to No Communication has no link to an office system and no alarms or messages are handled by the unit.

Collector (master)

A SEAR IIi with the site type set to Collector is the master unit in the ATCS enhanced routing protocol that has a direct link to the office system. SEAR IIi modules configured as Nodes report their alarms and status to this site. The unit then forwards the messages to the office system.

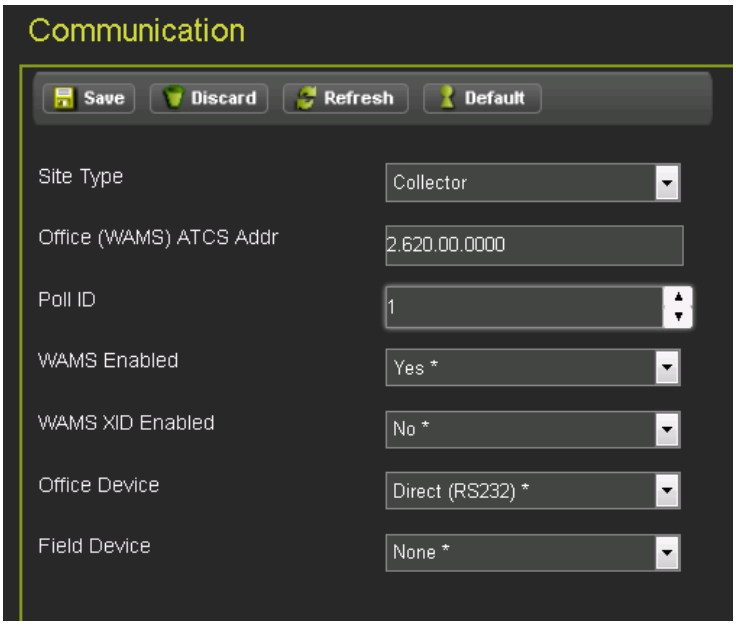


Figure 4-173 SEAR Communications: Collector

A Collector site has the settings shown in the following table.

Table 4-6 Collector Site Settings

Setting	Description
Office (WAMS) ATCS Address	ATCS address of the Wayside Alarm Management System software. The address is a type 2 office address with the following format: 2.RRR.NN.DDDD.
Poll ID	The Genisys protocol poll ID of this site.
WAMS Enabled	Enables or disables communication with the back-office Wayside Alarm Management System
WAMS XID Enabled	Enables or disables the WAMS XID messages. Typically, this can be left to No and is not used.
Office Device	The device used to communicate with the office. This setting can be any of the following: Direct (RS232) MCM (RS232) WAG (Echelon) MCM (Echelon) Dial Modem (RS232)

Modem Phone Number	If the selected office device is Dial Modem (RS232), the phone number for the office system must be specified.
Modem Init String	If the selected office device is Dial Modem (RS232), an initialization string for the modem may be specified. NOTE: Auto answer for the modem must be disabled. The SEAR IIi handles phone answering.
Field Device	The device used to communicate with Node SEAR IIi sites in the network. This setting can be any of the following: VHFC Comm (Echelon) SSR (Spread Spectrum Radio) (RS232) WAG (Echelon) VHF Comm(RS232) None

CDS-902X

A SEAR IIi configured with a site type of CDS-902X sends alarm messages to the office system using the Data remote CDS-902X cellular modem. The messages are sent to the office using the Short Message Service (SMS) or the phone system. There are no additional settings.

Bullhorn/Modbus

A SEAR IIi configured with a site type of Bullhorn/Modbus communicates with the office using a Bullhorn cellular unit and the Modbus protocol. A Bullhorn/Modbus site has the following settings.

Table 4-7 Bullhorn/Modbus Settings

Setting	Description
Poll ID	Modbus protocol poll identifier. 1-255

4.5.7.1.8 Serial Ports

The SEAR IIi has two serial ports, the USER port and the AUX port. These are configured from the Serial Port tab.

Table 4-8 Serial Port Settings

Setting	Description
Baud Rate	300, 600,1200,2400,4800,9600 (default),19200,38400, 57600
Data Bits	7,8 (default)
Parity	None (default), odd, even
Stop Bits	1 (default), 2
Flow Ctrl	None, Hardware, Radio

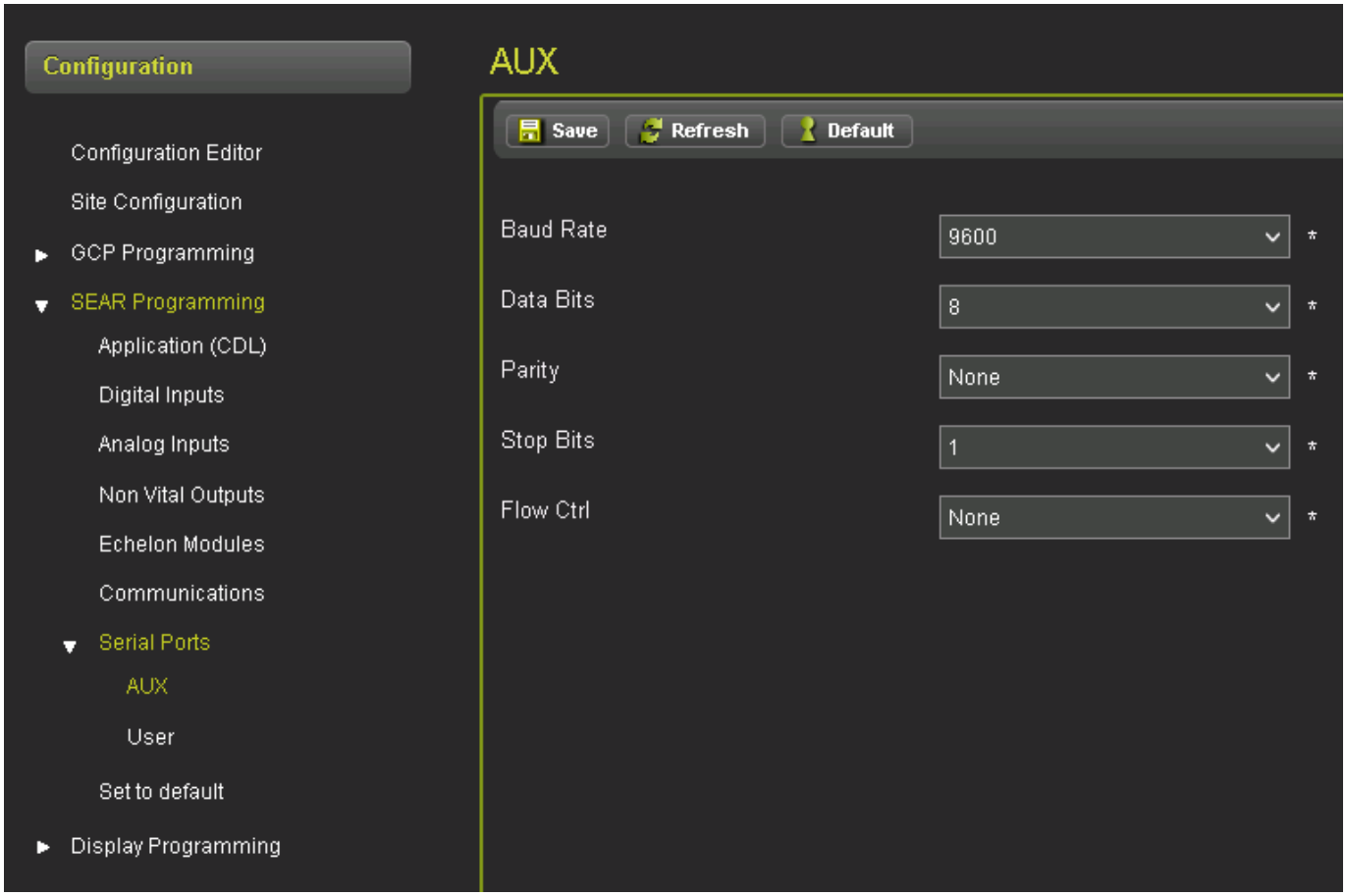


Figure 4-174 Serial Ports: AUX port

Set to Default:

This can be used to set all SEAR configuration to its defaults settings.

4.5.7.2 Connectivity

The Connectivity programming has the following submenus. The Connectivity functionality will provide the ability to communicate between the GCP and the office using the standard EMP/Class D protocols. This feature is currently under site trial and is not available in the standard released GCP 5000. It only is functional with A80485 Display build: ng5k_mef_1.6.28r.tgz. Please leave these parameters at their default values until this feature is fully supported by the GCP 5000.

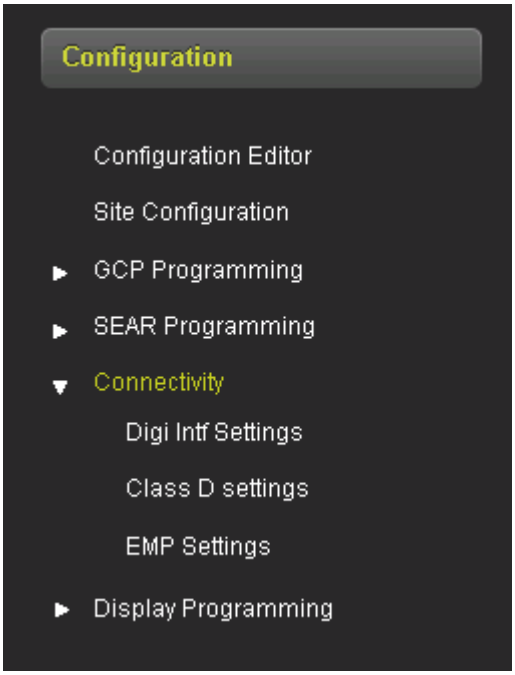


Figure 4-175 Connectivity Menu

4.5.7.3 Display Programming

The display programming has the following submenus.

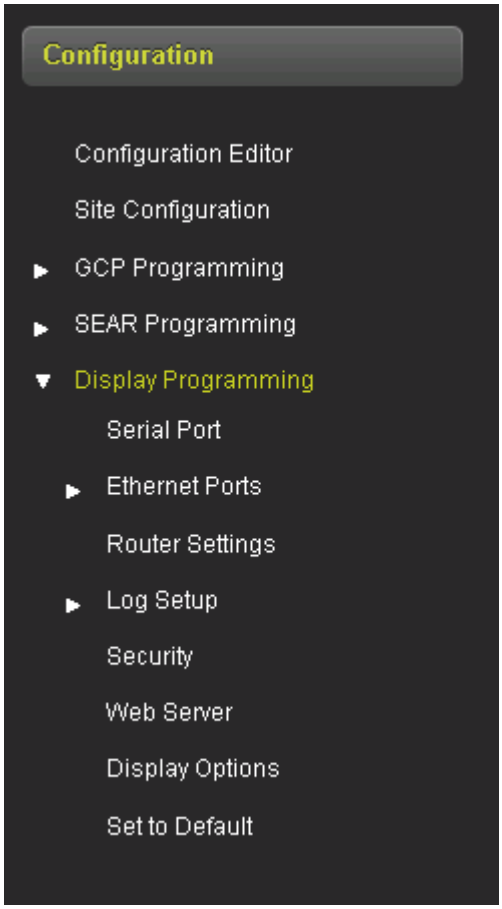


Figure 4-176 Display Programming Menu

4.5.7.3.1 Serial Port

The serial port menu allows the user to configure the serial port connected to the DIAG connector on the chassis, as shown in the following figure. This port is used when the user is loading new software into the CPU II+ or I/O modules. The DIAG port on the front of the Display module is not user-configurable.

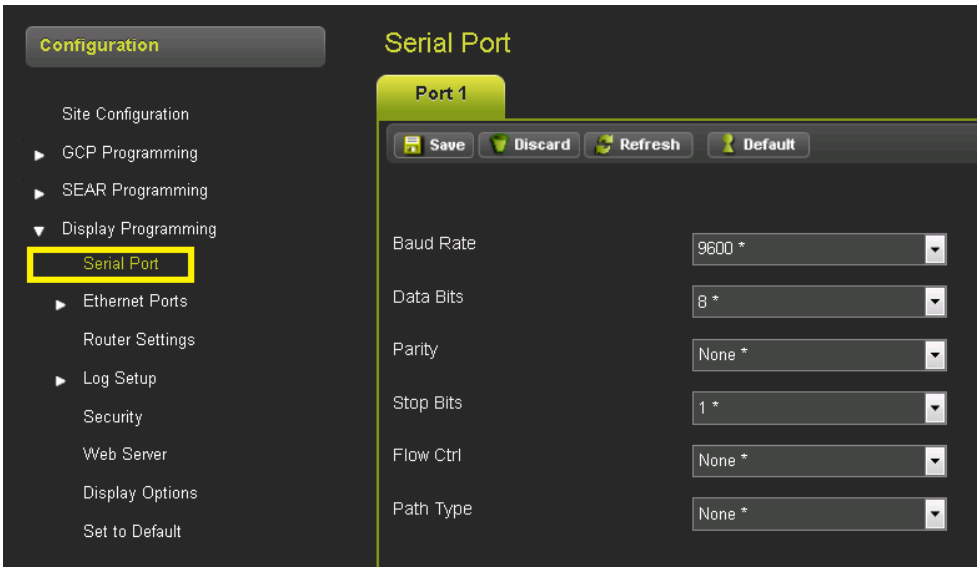


Figure 4-177 Display Programming Serial Port

4.5.7.3.2 Ethernet Ports

The Display Module has three Ethernet ports. The laptop port should be accessed from the front of the Display Module. Ethernet port 1 and 2 should be accessed from the RJ45 connectors on the GCP Chassis if they are available.

NOTE

NOTE

For Ethernet Ports 1 and 2, use the appropriate RJ45 connections on the GCP 5000 chassis. Do not use the RJ45 connections on the front of the display module, these are only used in a GCP 4000.

Laptop Ethernet Port:

This menu allows the user to select between Disabled, DHCP Server, or DHCP Client mode. The default setting is as a DHCP Server with IP Address 192.168.255.81.

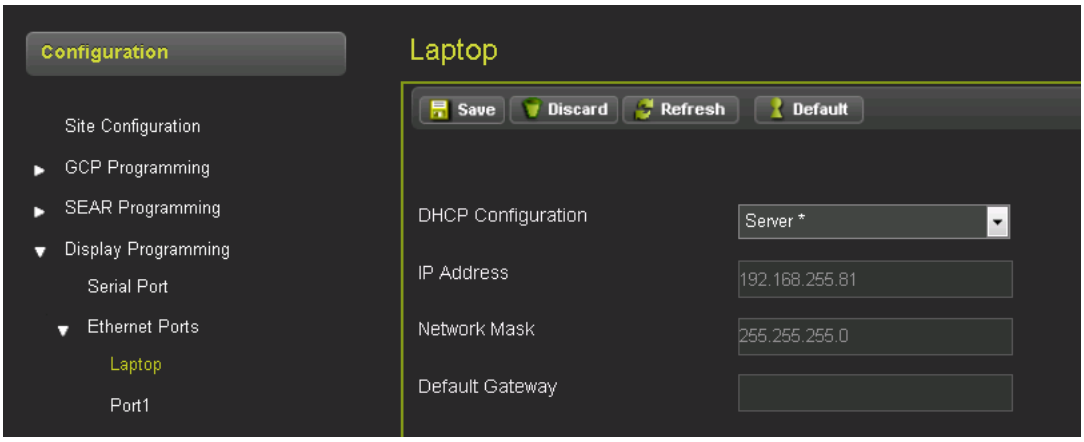


Figure 4-178 Display Programming Laptop Ethernet Port

Ethernet Port 1:

This menu allows the user to select options for Ethernet port 1. The user can choose between Disabled and DHCP Client mode. When Disabled, the port has the fixed IP address as default, as shown in the following figure. This screen also allows the user to check the status of the connection.

This port would typically be used when connecting the GCP to a cell modem for remote monitoring.

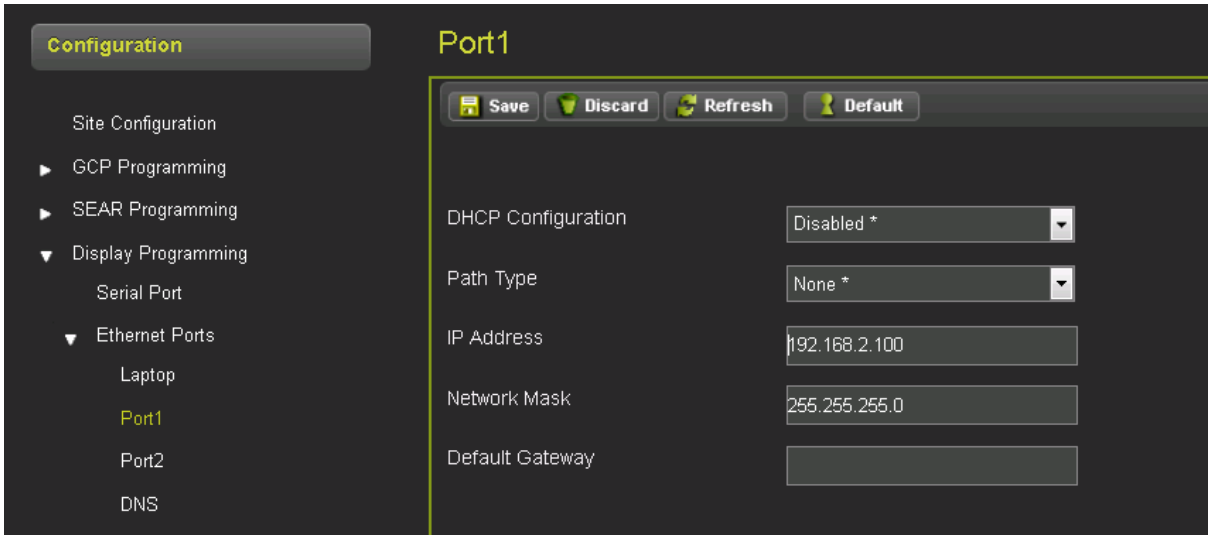


Figure 4-179 Display Programming Port 1 Ethernet Port

Ethernet Port 2:

This menu allows the user to select options for Ethernet port 1. The user can choose between Disabled and DHCP Client mode. When Disabled, the port has the fixed IP address as default, as shown in the following figure.

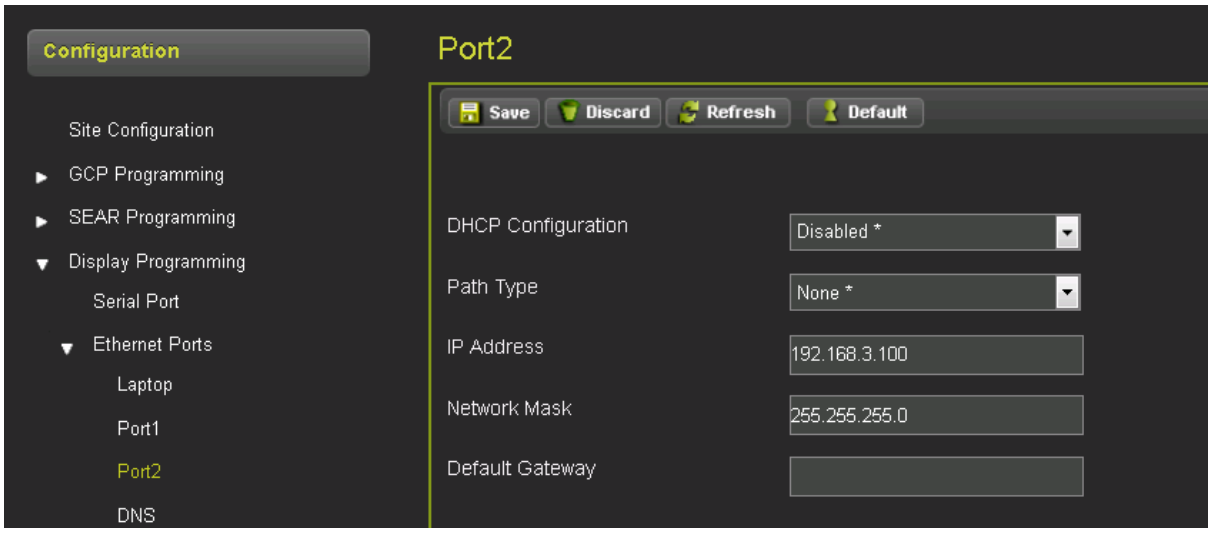


Figure 4-180 Display Programming Port 2 Ethernet Port

DNS:

The DNS menu allows the user to set the IP address of name servers used for the domain name system.

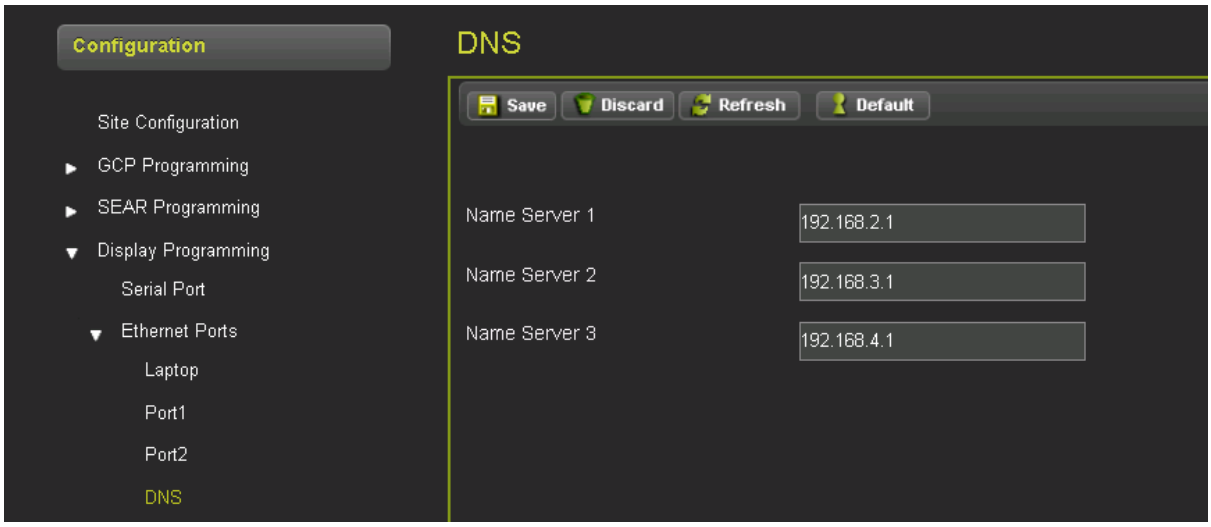


Figure 4-181 Display Programming DNS

4.5.7.3.3 Router Settings

The Router Settings page is used when there is a CPU III in the system. This controls the routing of vital ATCS messages from the CPU IIII when vital communication links are used. When the parameter is set here, it is sent to the CPU III and then stored in the CIC, so that the CPU III can read it on boot up, regardless of whether the display module is present.

ATCS IP Field Interface has options of None, Echelon, and Ethernet. The default setting is Echelon. This controls the routing of the vital ATCS messages. If it is set to Echelon, the CPU III will send vital messages out of the Echelon port. If it is set to Ethernet, the CPU III will send vital messages out of the laptop port.

ATCS IP Field UDP Port Number is the Ethernet port number used when the Field interface is set to Ethernet. The default setting is 13000.

The **Route Table Entry timeout** is used by the display module to delete ATCS route entries in the route table if they are no longer used. The settings range is 0 -172800 s, and the default is 400 s.

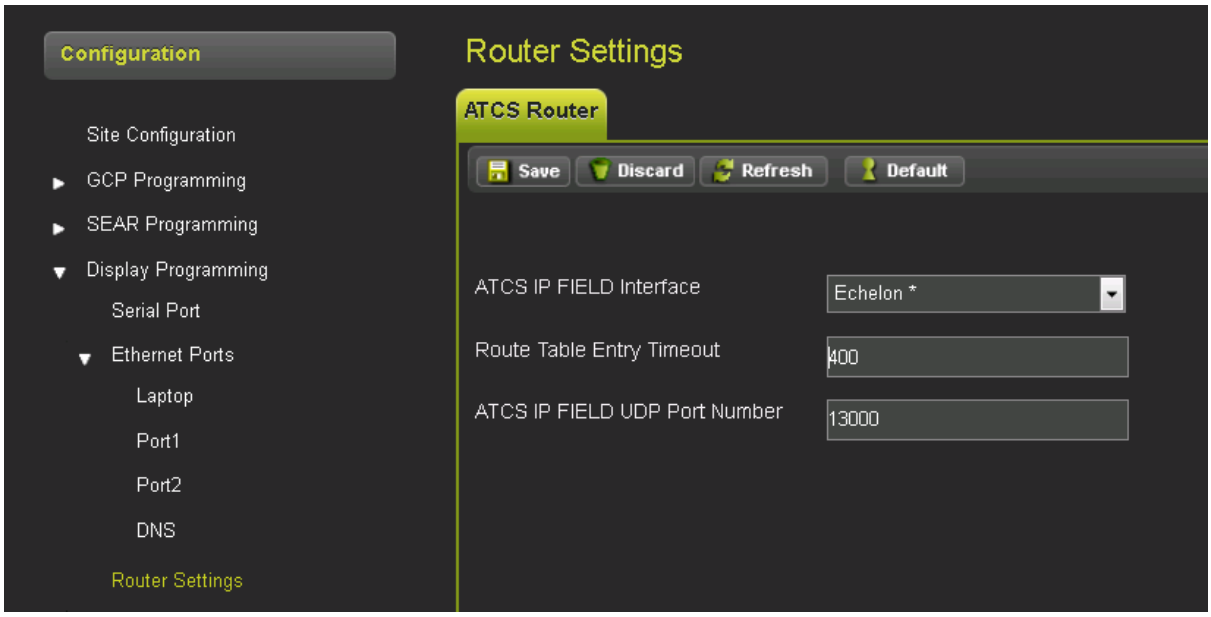


Figure 4-182 Display Programming Router Settings

4.5.7.3.4 Log Setup

Consolidated Logging

If multiple GCPs are present at a site, the display is able to consolidate the logs for all of these, into one. On the screen shown in the following figure, enter the IP address of the display where the Event log and Diagnostic log are to be stored. These may be stored on separate display modules.

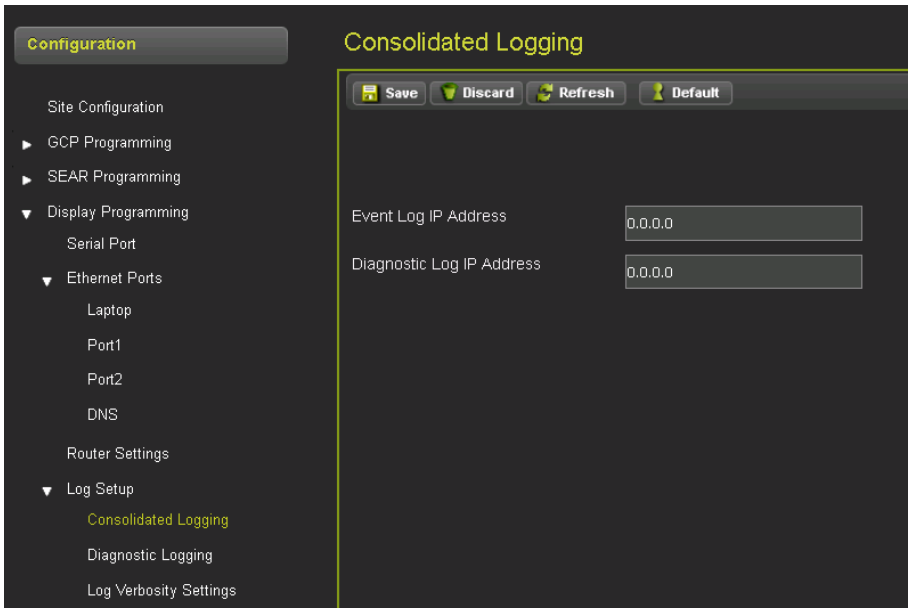


Figure 4-183 Display Programming Consolidated Logging

Diagnostic Logging

The following options are applicable to the GCP 5000:

EZ/EX Logging: this has the values Change, None, and Periodic. The default setting is Change. This is used to control the logging on the CPU that occurs when a train move is in process.

- If the value is set to Change, a new entry will be added to the log when EZ or EX change by more than the value set by EZ/EX change.
- If the value is set to Periodic, a new entry will be added to the log when EZ or EX change by more than the value set by EZ/EX change, or periodically with an interval set by the EZ/EX Logging Interval (only visible when value is Periodic).
- If the value is set to None, the EZ/EX entry is not logged.

EZ/EX Point Change: the settings range is 1-5 seconds and the default setting is 3 seconds. This is used to set the change needed to log an EZ/EX entry when EZ/EX Logging is set to Change or Periodic.

EZ/EX Logging Interval: the settings range is 1-5 seconds and the default setting is 4 seconds. This is used to set the interval between logging EZ/EX entries, when EZ/EX Logging is set to Periodic.

EZ/EX Recording: the setting options are Enabled or Disabled. The default is Enabled. This is used to turn on the feature where the display continuously stores a record of the EZ/EX, island, and predictor states for each track in a file that can be downloaded as a csv.

The remaining options on the Diagnostic Logging screen, as shown in the following figure, are for Siemens use for diagnostics. They should remain at the default values.

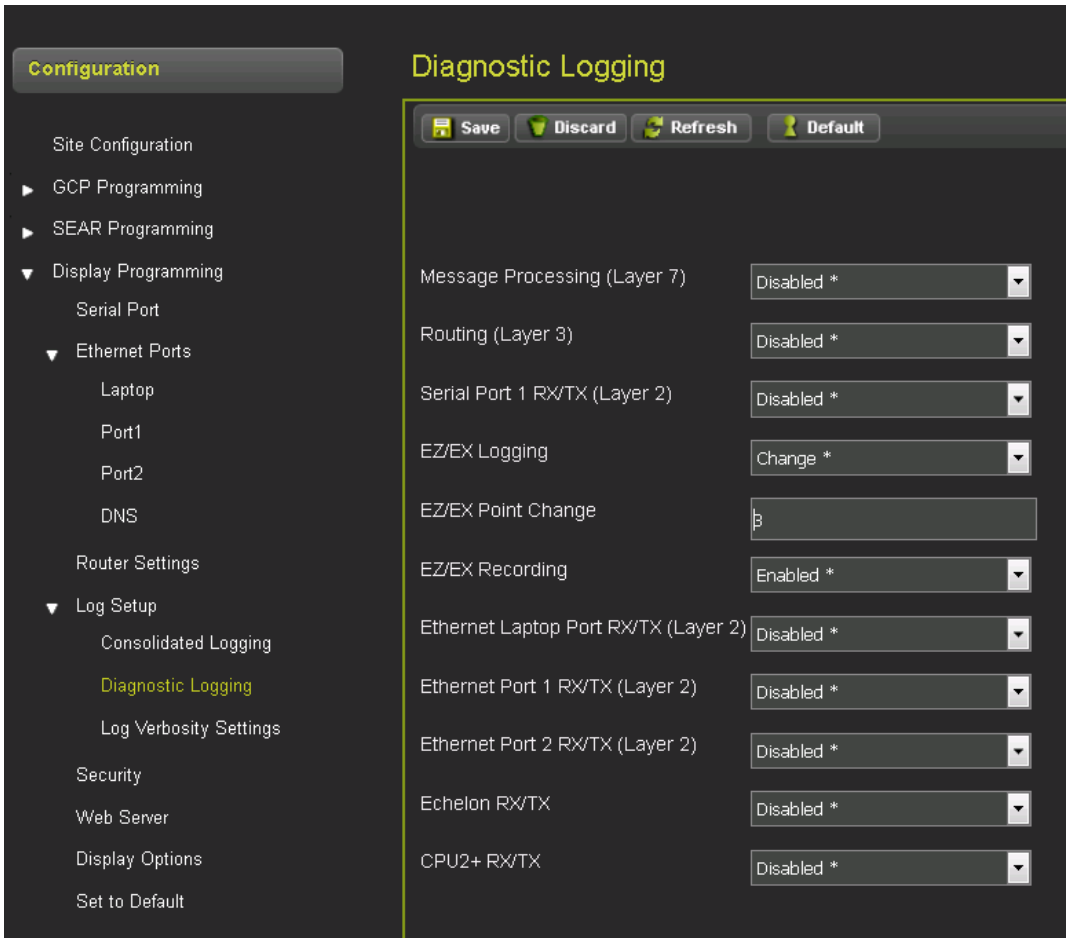


Figure 4-184 Display Programming Diagnostic Logging

Log Verbosity Settings

This screen is used to set the verbosity (the detail of the logging) of the Diagnostics, CPU, and I/O module logs.

For the CP and I/O modules, the default verbosity is 1, the value should be kept at this unless Siemens requires more detailed log information to diagnose a specific problem.

CP Verbosity: the settings range is 1-2, and the default is 1.

VLP, Slot 1-6, SSCC IIIi Verbosity: the settings range is 1-5, and the default is 1.

The Display Diagnostic Log Verbosity controls the detail of logging to the Display module's display log. The setting options are Basic, Error, Warning, Info, and Debug. The default is Info.

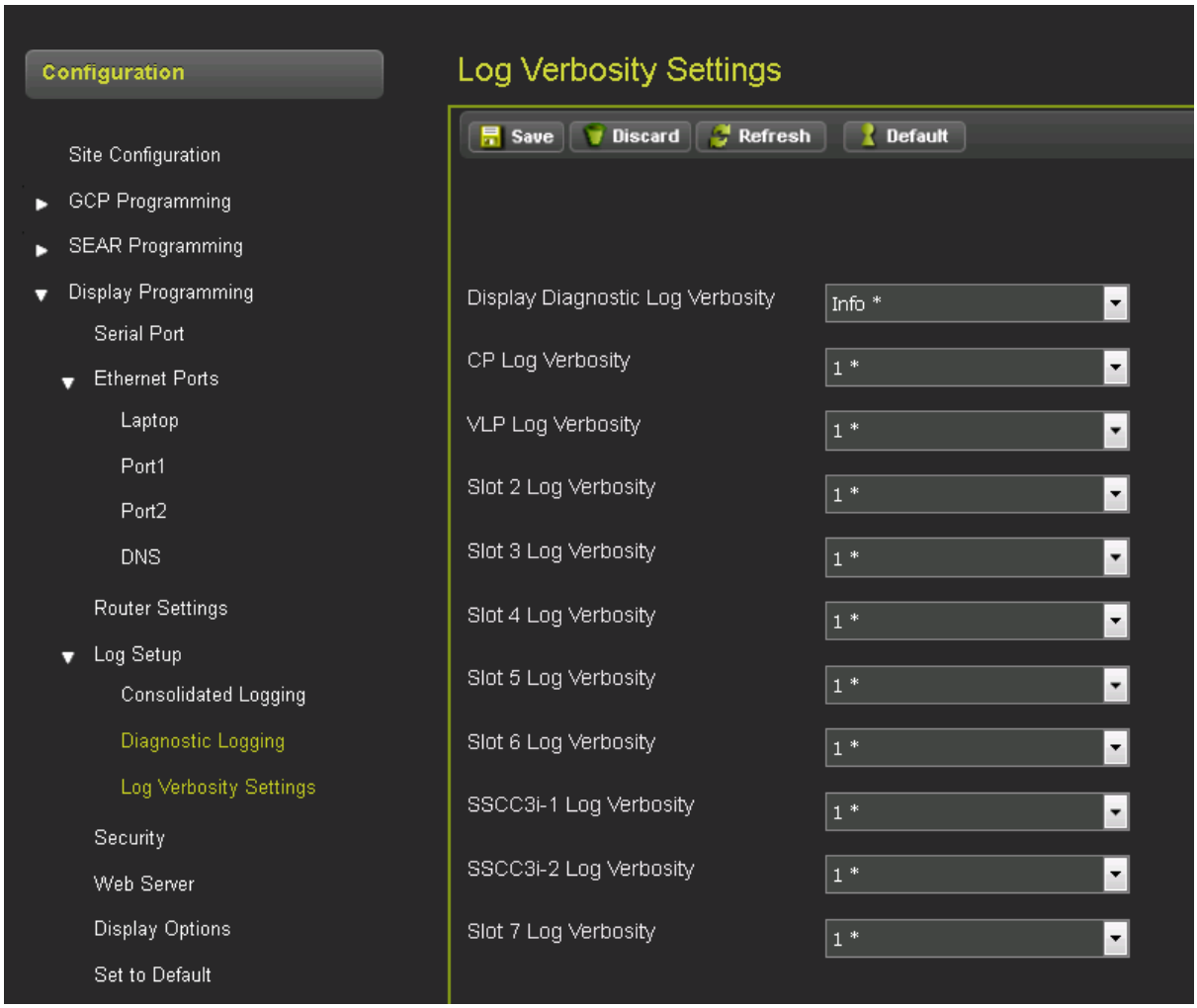


Figure 4-185 Display Programming Log Verbosity Settings

4.5.7.3.5 Security

The security page allows the user to enable or disable the Maintainer password protection using the Security Enabled field. This defaults to None. When the Security Enabled is set to Maintainer the Maintainer Password field appears and the user can type in the required password.

On returning to this screen, the password cannot be edited unless the correct password is entered. See Section 3.1 for further details.

If security has been enabled, the user will need to enter this password on the local user interface, to be able to edit GCP MCF parameters. Also, the user will need to log into the Web UI with this password, to be able to edit GCP MCF parameters. The user can still log into the Web UI using the default GCP 4000, GCP 5000, or GCP 3000+ password, but the configuration will be set to read only.

Session Inactivity Timeout: The settings range is 5 to 60 minutes, and the default is 20 minutes. This is used to timeout the WebUI if there is no activity on the GCP for the configured time.

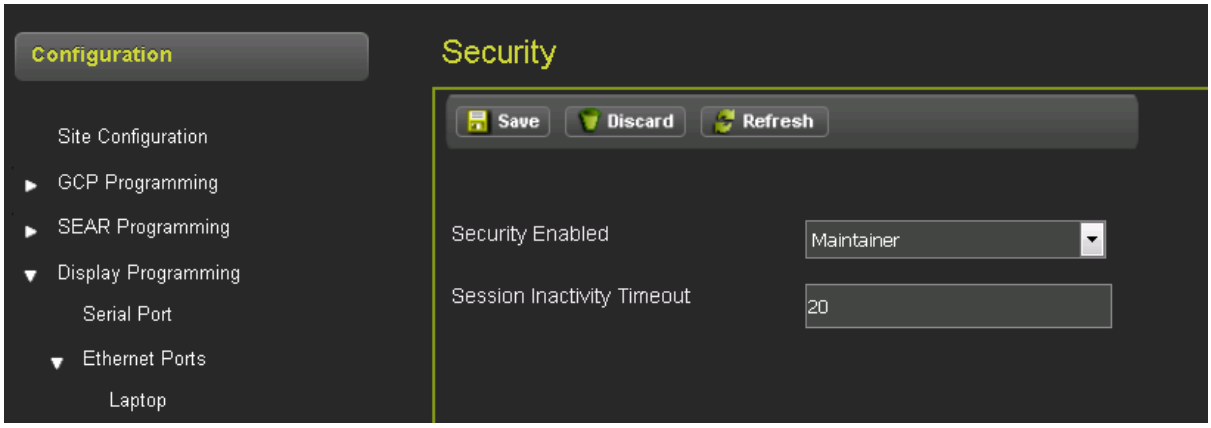


Figure 4-186 Display Programming Security

4.5.7.3.6 Web Server

This is used to control whether the Web UI uses secure (https) or non-secure (http) access. The default is secure access for Display builds prior to 1.6.0. For display builds after 1.6.0, the default has been set to http.

NOTE

NOTE

Recent (January 2022) updates to many browsers (Chrome, Firefox, Edge) have resulted in these browsers not being usable with the display (and CPU III) when the display (or CPU III) is set to https. The default for these has now been set to http.

Https operation will be restored in a future build.

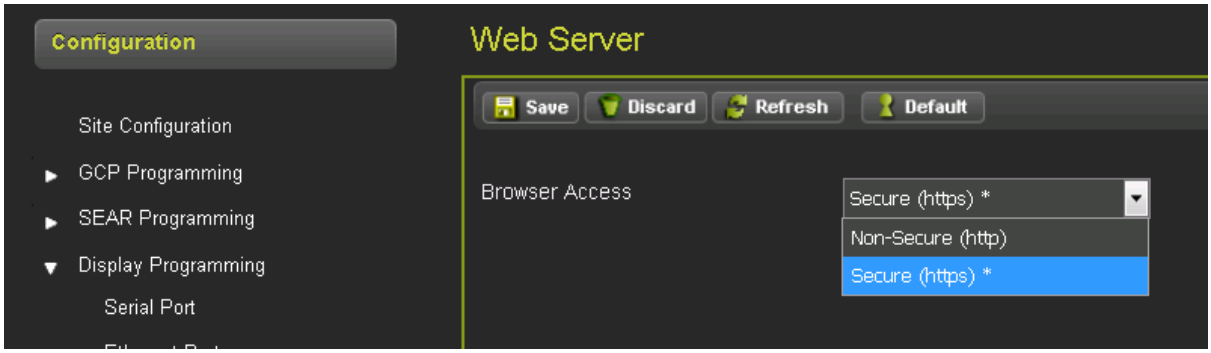


Figure 4-187 Display Programming Web Server

4.5.7.3.7 Display Options

Display Buzzer Enable: Setting options are Yes, or No, and the default is Yes. This is used to enable or disable the buzzer on the display.

Display Hibernation Time (minutes): The settings range is 5-60, and the default is 15. This is used to darken the display when there has been no activity.

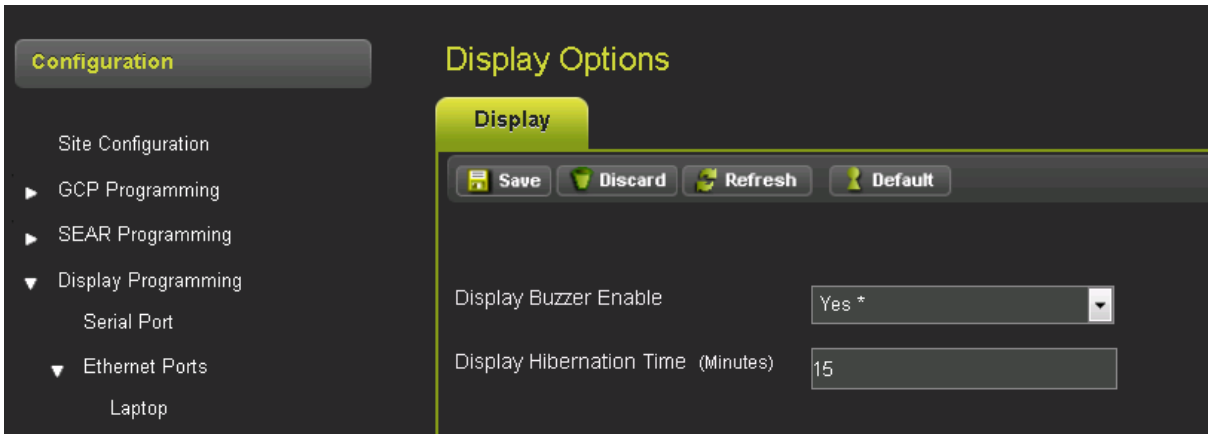


Figure 4-188 Display Programming Display Options

4.5.7.3.8 Set to Defaults

This setting is used to set the Display parameters back to the default settings. The parameters under GCP and SEAR Programming are unaffected.

4.6 WayConneX Sites

The OCE can be used to create a WayConneX installation. The OCE is used to:

- Set the vital MCF parameters for the WayConneX MCF
- Set the PTC related parameters, e.g. Class D settings, EMP settings, WIU message layout
- Set other non-vital configuration parameters
- Obtain the UCN for the specific installation
- Obtain the PTC UCN for the specific installation if it is used for PTC
- Obtain the configuration report containing the configuration settings
- Create the configuration files that can be loaded onto the CPU III using the Web UI

To create a site, select the product as **WC CPU3**, then select **Create New Site**.

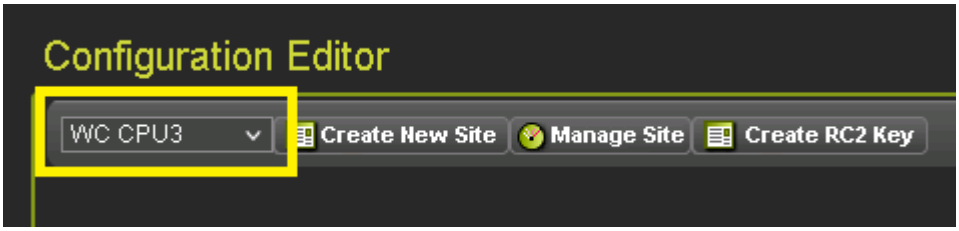


Figure 4-189 WayConneX Site

The OCE will open the **Select MCF** window. Select the WayConneX MCF either by:

- using the drop-down arrow which will show MCFs that have already been used before, or
- by selecting **Browse** and choosing the MCF and manually entering the MCF CRC from the MCF's log file.

Select **Create Site** and the OCE will process the MCF and return to the Configuration Editor Screen and show the non-vital and vital configuration menus.

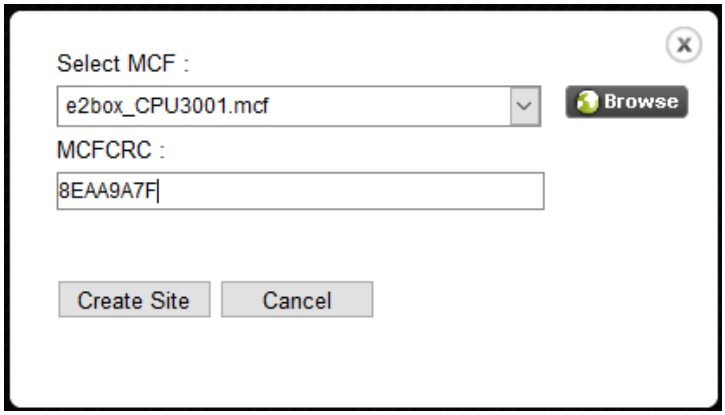


Figure 4-190 Select WayConneX MCF

NOTE

When creating a new site, the OCE will ask for an MCF. The OCE keeps a repository of MCFs by site type, so if a MCF has been previously used or has been imported using the File Manager, the MCF will appear in the drop-down menu.

After selecting the appropriate MCF, OCE will automatically fill in the MCF CRC if the .log file is present in the repository. If the MCF has not been used before, it will be necessary to click on the **Browse** button to find the MCF and manually enter the MCF CRC, which is obtained from the MCF's log file. The OCE will then copy the MCF over to its repository, so that if it is used again, it will be accessible from the drop-down menu.

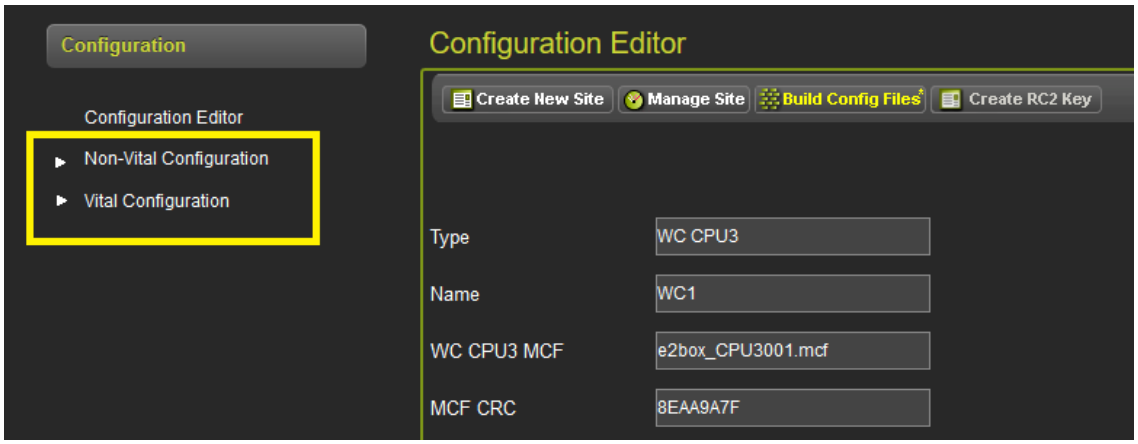


Figure 4-191 Configuration Menu

4.6.1 Vital Configuration

The Vital Configuration menu may have many submenus, as shown in the following figure, the exact ones depend on the MCF. The following are some example variations:

- PTC application – Vital PTC Configuration menu shown
- Non-vital controller present– CTC Connection Configuration menu shown
- Vital Comms session between WayConneX units – Vital Comms Configuration menu shown

The Logic Configuration contains configuration parameters specific to the MCF and will usually show the Properties and Timers menu as illustrated in the following figure.

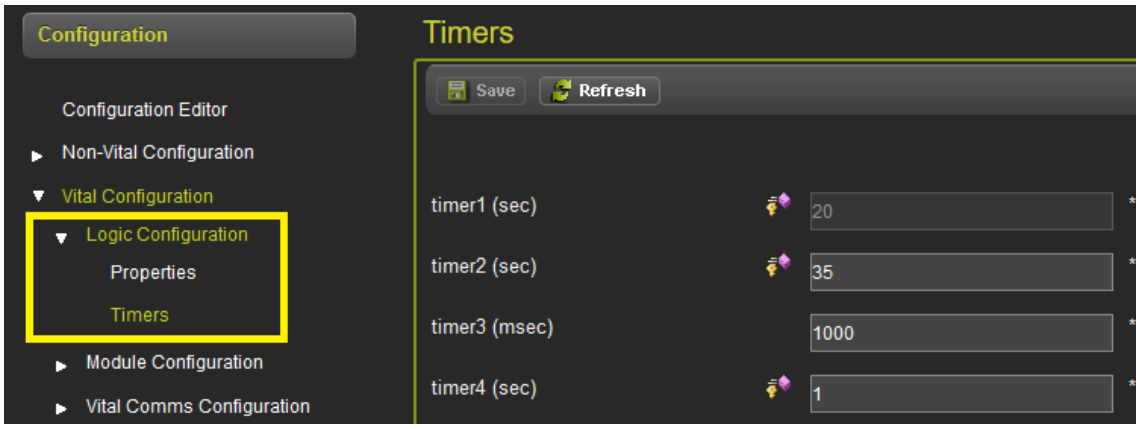


Figure 4-192 Timers Menu

The Module Configuration contains configuration parameters for each module in the chassis.

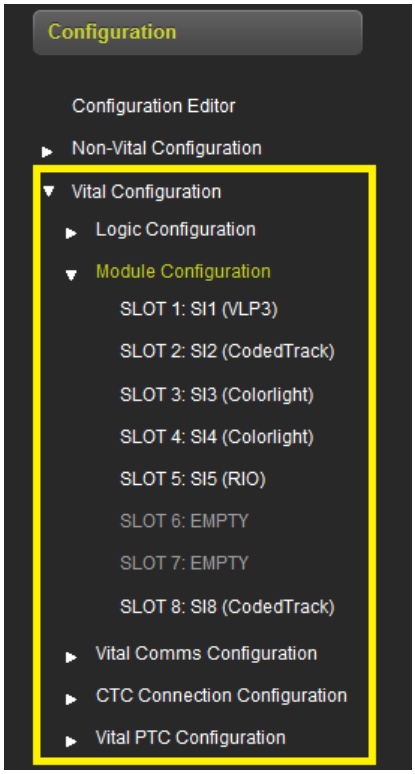


Figure 4-193 WayConneX Vital Configuration Menu

Edit the vital configuration and change the parameters to the desired values.

NOTE

NOTE

In PTC-enable applications the parameters under the Vital Configuration / Vital PTC Configuration are read only, these values are automatically changed when the WIU message layout under the Non-Vital configuration / PTC / Message Layout is changed.

4.6.2 Non-Vital Configuration

The Non-Vital Configuration has many submenus containing information that may need configuring for a WayConneX installation. This section will outline the main changes but will not discuss in detail the parameters on each screen. Refer to the WayConneX Manual (SIG-00-15-04) for specific details on each parameter.

4.6.2.1 Site Configuration Menu

In the Site Configuration menu set:

- The Site Name – this defaults to name of project
- The DOT number if applicable
- The Mile post if applicable
- Time Zone
- The ATCS address of the unit if applicable.

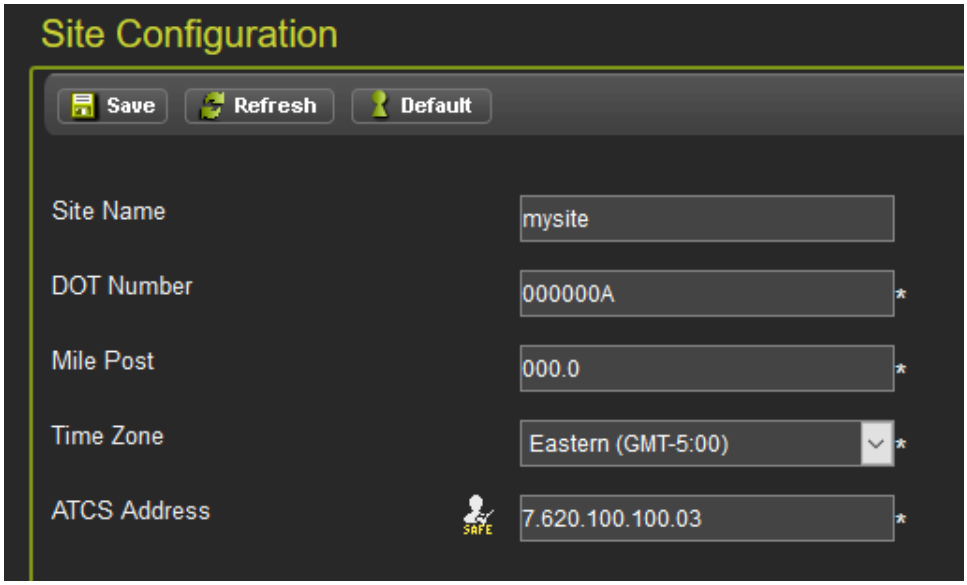


Figure 4-194 Non-Vital: WC Site Configuration Menu

4.6.2.2 Applications Menu

If systems management is being used for this site it is necessary to load and set up CDL. Go to the applications / CDL menus to perform this. Section 5.1 contains details on how to setup CDL applications.

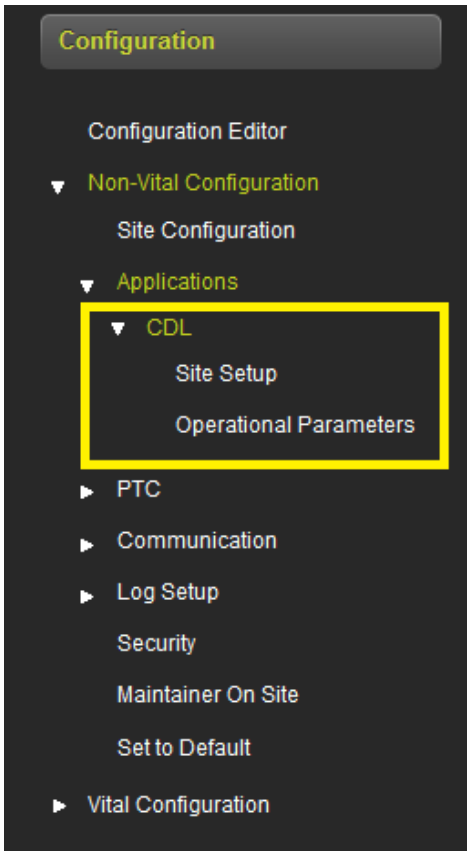


Figure 4-195 Non-Vital: WayConneX Application Menu

4.6.2.3 PTC Menu

The PTC submenus are where most changes will be required for WayConneX applications. See the PTC section (5.2) for more detailed information about these screens.

If the railroad has specific defaults values that they want to use for the PTC (or other non-vital) fields which do not match the standard default values, save these as a template (see section 3.2.5) and use the template for future applications.

NOTE

NOTE

Class D Test parameters are configured under the Maintenance / PTC Class D Tests menu.

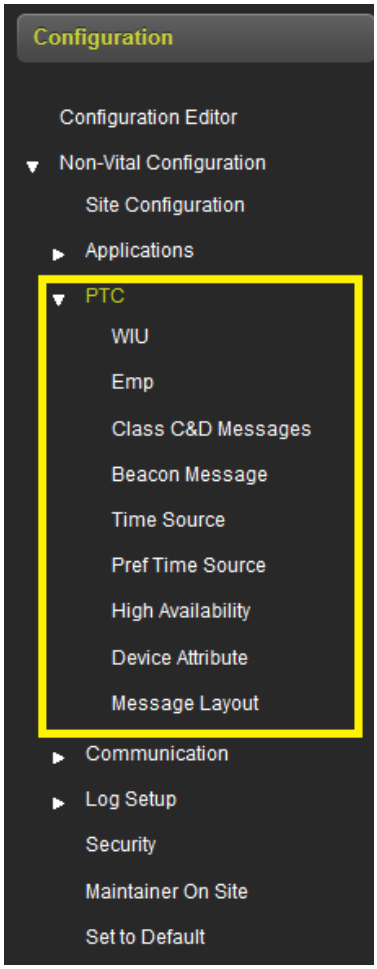


Figure 4-196 Non-Vital: WayConneX PTC Menu

4.6.2.4 Communication

The Communication submenu is used to set up:

- The CPU III Ethernet and serial port
- DNS names for the IP ports
- SNMP options for reporting data to the office
- Router Settings, for example whether to route vital messages via the Ethernet or Echelon.

See the WayConneX Manual (SIG-00-15-04) for details of how to use these parameters.

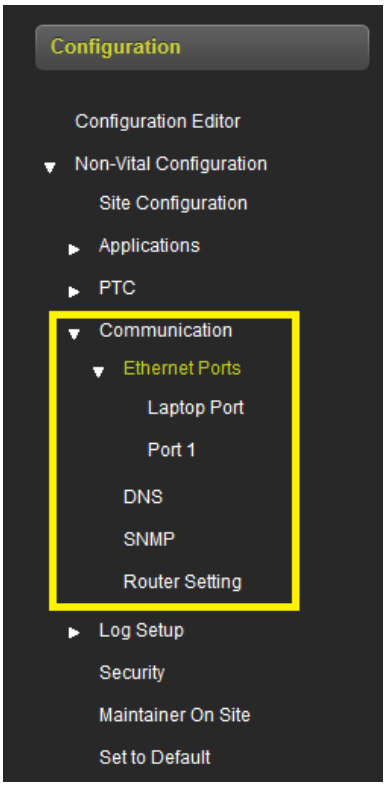


Figure 4-197 Non-Vital: WayConneX Communication Menu

4.6.2.5 Log Setup

The Log Setup menu is generally only used by Siemens personnel for diagnosing issues in the field; in general these parameters won't be changed in the OCE.

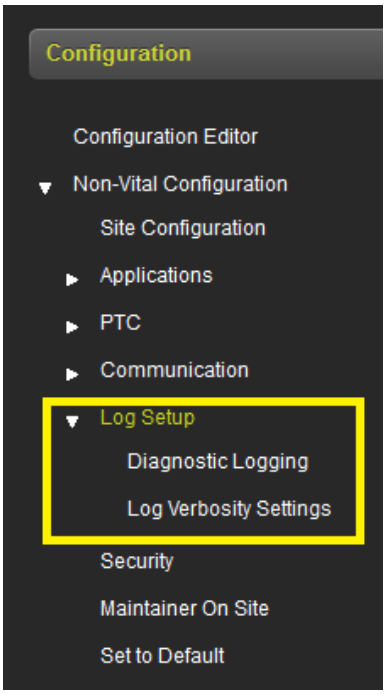


Figure 4-198 Non-Vital: WayConneX Log Setup Menu

4.6.2.6 Security

The Security menu is used to set the password for the Web UI and to set the session inactivity timer. See the WayConneX Manual (SIG-00-15-04) for further details on security setup.

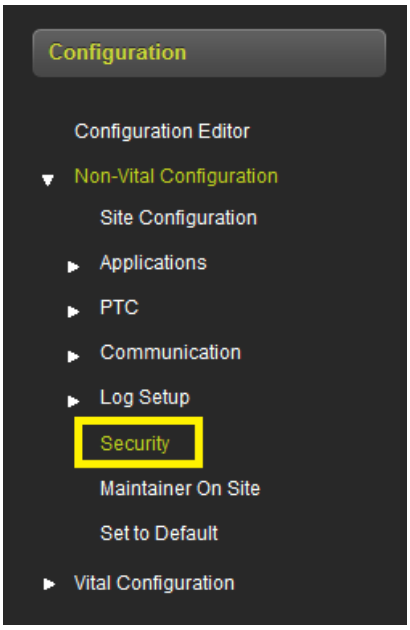


Figure 4-199 Non-Vital: WayConneX Security Menu

4.6.2.7 Maintainer On Site

The **Maintainer On Site** menu is used to set a timer to suppress Door alarms when the maintainer is on site. See the WayConneX Manual (SIG-00-15-04) for further details on Door alarms.

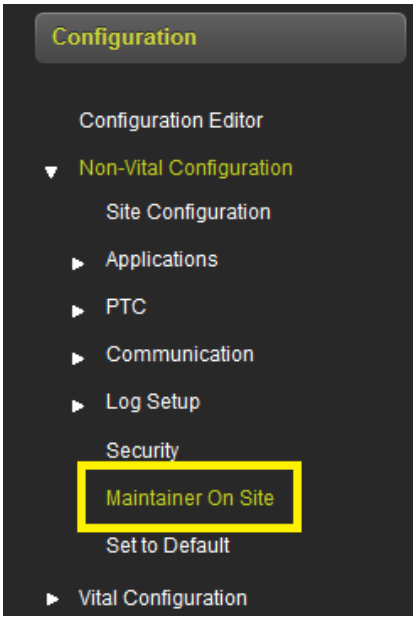


Figure 4-200 Non-Vital: WayConneX Maintainer On Site Menu

4.6.3 Build Configuration Files

After the configuration values in the Non-Vital and Vital Configuration have been entered, select the **Build Config Files** button shown in the following figure. After a few seconds the OCE will show a message indicating build created successfully.

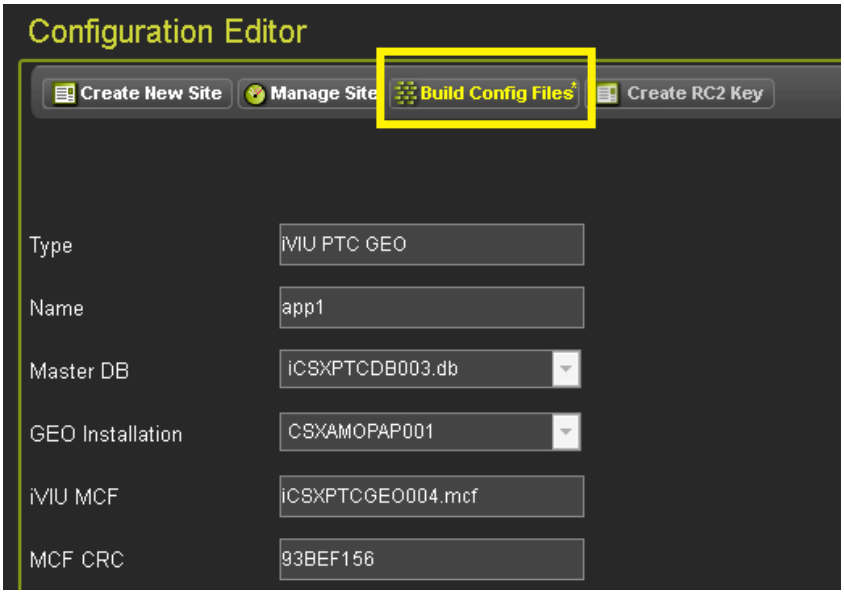


Figure 4-201 Build Config Files

The OCE will then show the Config Reports button. To view or download the report click the **Config Report** button and select the desired option.

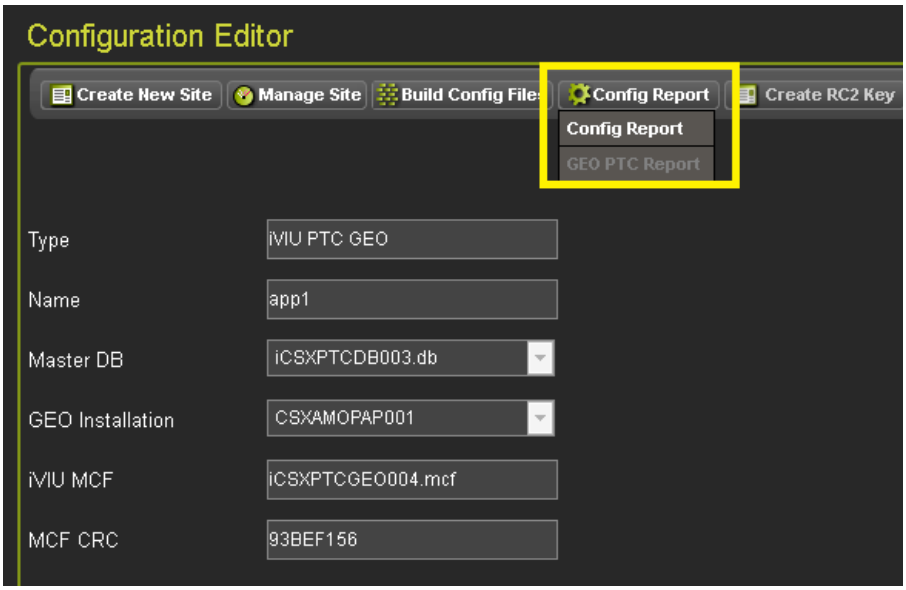


Figure 4-202 Config Reports Button

WARNING

THE CONFIGURATION REPORT MUST BE CHECKED TO ENSURE THAT THE PARAMETERS THAT AFFECT SYSTEM SAFETY ARE CORRECTLY SET.

At the end of the configuration report the UCN for the location is printed. This will need to be entered into the unit in the field via the Web UI or Local UI. To ensure that the correct configuration is downloaded into the correct site, it is not downloaded automatically as part of the ZIP file. The report also contains the PTC UCN, this also will need to be manually set for the equipment in the field if the iVIU is used in a PTC application. The PTC UCN will be 0 for a non-PTC application.

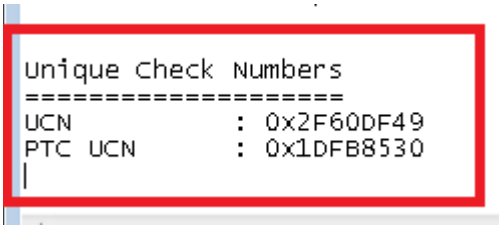


Figure 4-203 UCN/PTC UCN in Configuration Report

SECTION 5 NON-VITAL CONFIGURATION

5.0 NON-VITAL CONFIGURATION

5.1 CDL

The following set of procedures will detail the installation of a CDL application file, the setup and compilation of a CDL file, viewing CDL Logs, and the removal of a CDL file. The setup of CDL Operational Parameters (if applicable to the CDL application file) will also be shown.

First, select the CDL menu under Non-Vital Configuration / CDL to get to the CDL screens. The figure on the left shows menus from a WC CPU III, and the figure on the right from a GCP 5000 site.

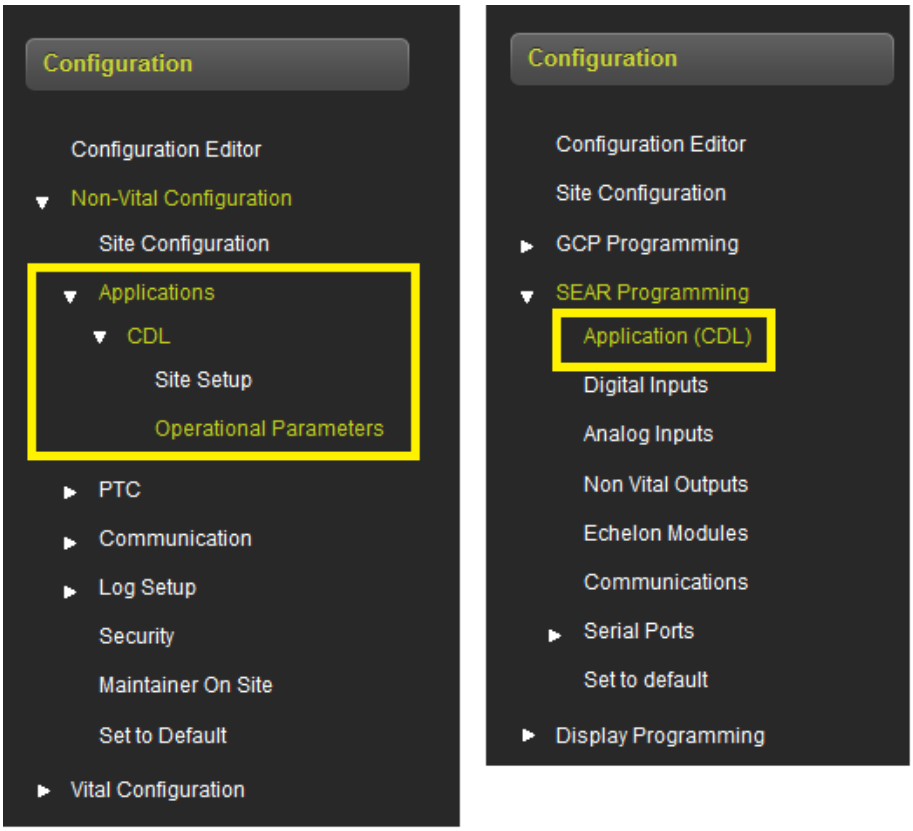


Figure 5-1 CDL Menu

When the Site Setup or Application (CDL) is selected the OCE will show the screen illustrated in the following figure. From this screen select the **Upload CDL** button.

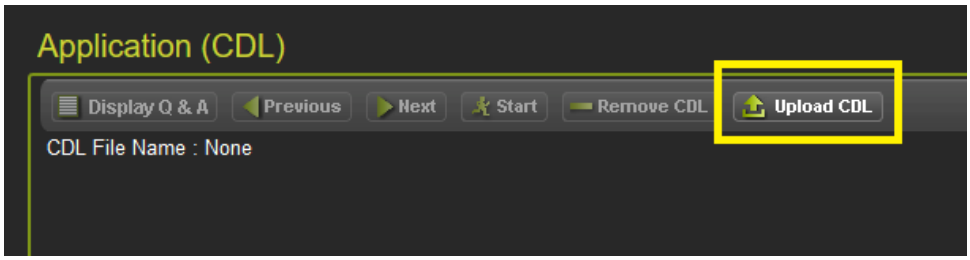


Figure 5-2 Upload CDL

The OCE will show the following screen which allows the CDL to be selected using the **Browse** button.

Figure 5-3 Browse for CDL

When the CDL has been selected, it will show in the CDL file text box and an **Update** button will appear. Press the **Update** button.

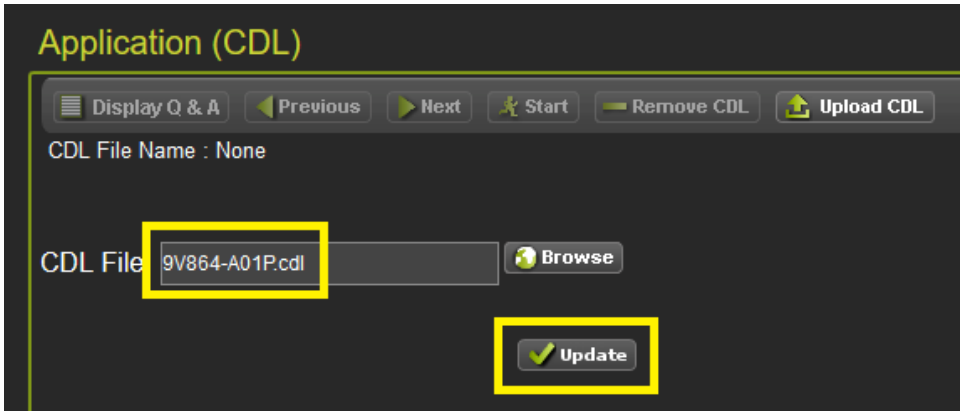


Figure 5-4 Update CDL

The OCE will now show the name of CDL that has been loaded. Now press the **Start** button.

Figure 5-5 Start CDL

The OCE will ask to reset the Names/Modules, select the appropriate answer. The OCE will then sequence through the list of questions (if present) from the CDL. Answer each in turn, pressing **Next** between each question. To return to a previous question select the **Previous** button, or to start all the questions again, press the **Restart** button.

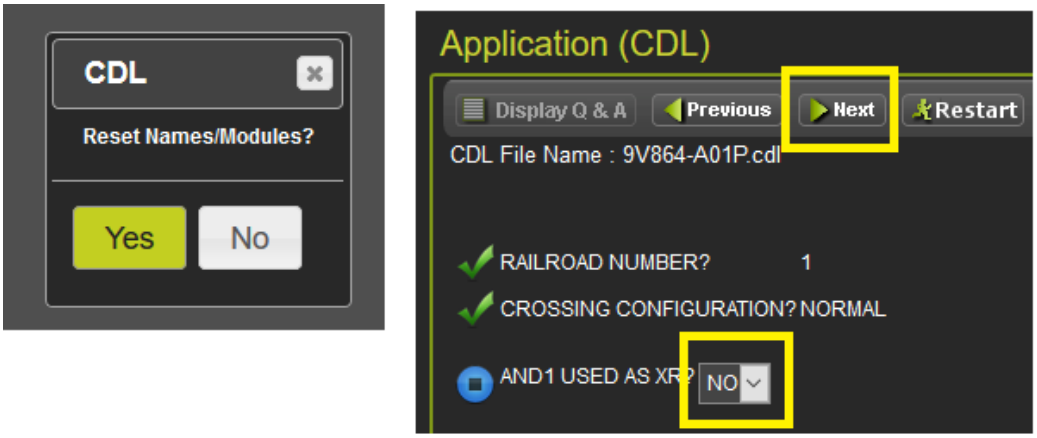


Figure 5-6 CDL Questions

When all the questions have been answered, the OCE will ask to compile the file. Select **Yes** to continue the process. The OCE will the show a message indicating whether the compilation was successful or not.

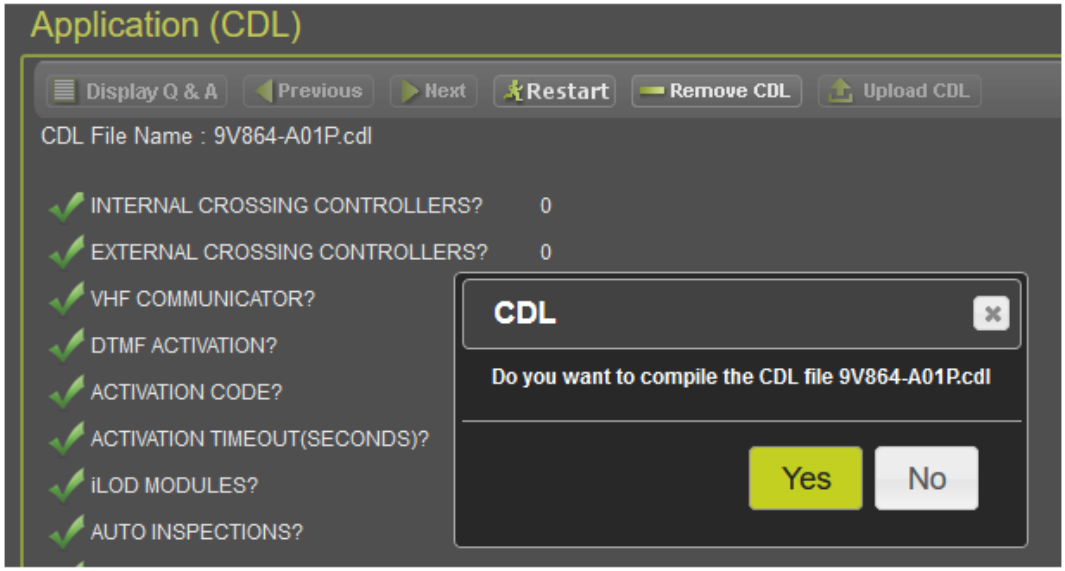


Figure 5-7 Compile CDL Message

To check the answers to questions, press the **Display Q&A** button.

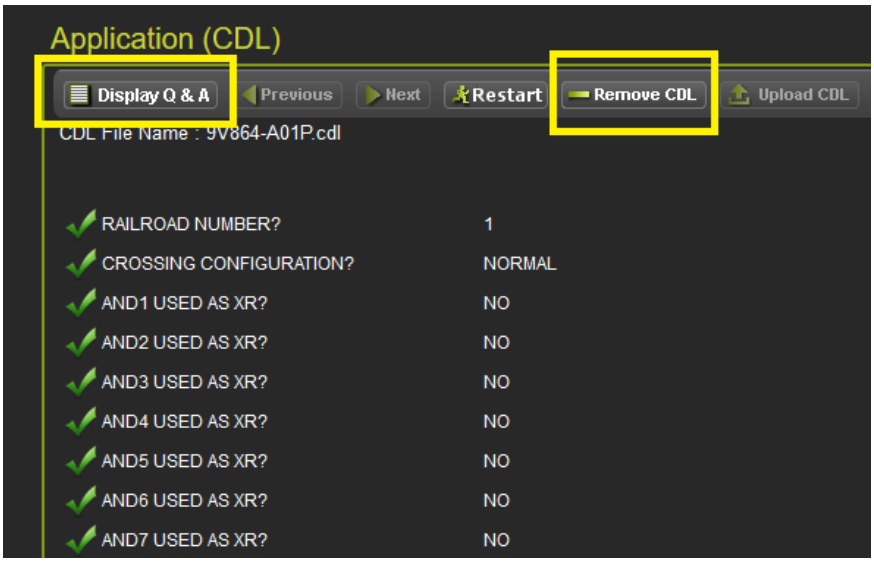


Figure 5-8 Display Q&A

Use the **Remove CDL** button to remove the CDL, this will enable the **Upload CDL** option so a different CDL can be loaded.

In iVIU PTC GEO, iVIU, or WayConneX applications the CDL may also have operational parameters. To select these, first load the CDL and compile it as described above, then go to the Operational Parameter menu. Set the operational parameters as required. The CDL has to be compiled prior to adjusting the operational parameters. If it is not compiled, the operational parameters will not be visible.

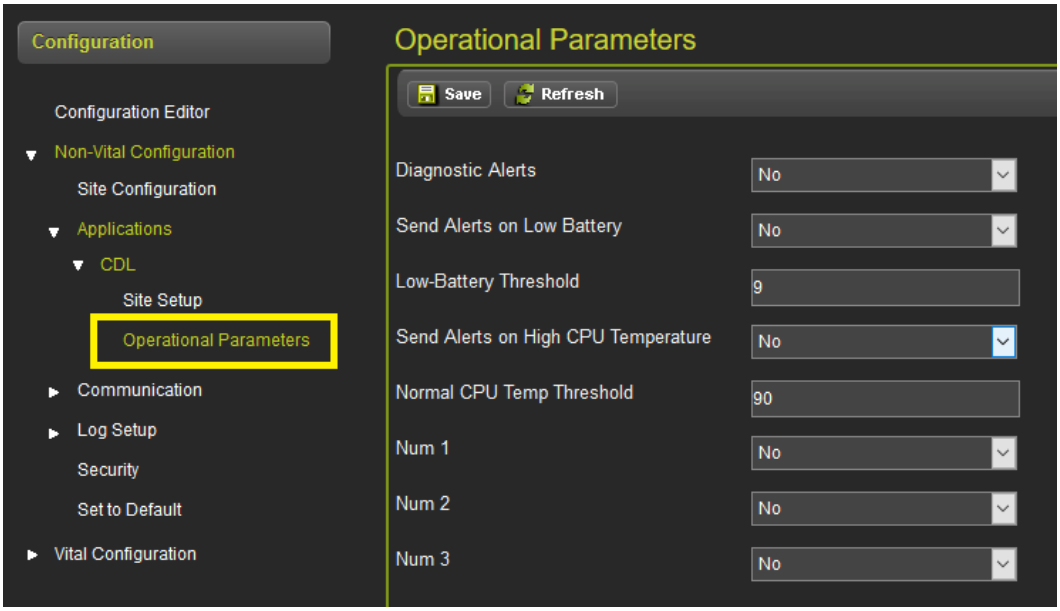


Figure 5-9 CDL Operational Parameters

5.2 IVIU PTC GEO/IVIU/WC-CPU III PTC MENU

This section discusses the Non-Vital Configuration PTC menu used in iVIU, iVIU PTC GEO, and WC CPU III sites. The PTC menus for VIU sites have a different layout, see sections 4.3.2.2 to 4.3.2.9 for details.

Class D Test parameters for these types of sites are configured under the Maintenance / PTC Class D Tests menu; see section 6.1.4.

Click on the **Non-Vital Configuration PTC** menu to see the PTC submenus.

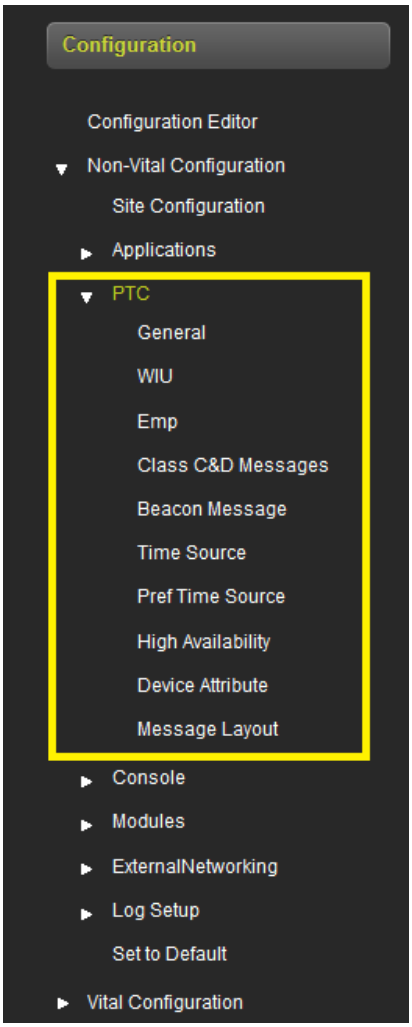


Figure 5-10 Non-Vital Configuration - PTC Menu

5.2.1 PTC – General

PTC Enable GEOs: set to **Yes** for PTC enabled GEO applications (set to **Yes** automatically by OCE).

Console as NV Logic Ctrlr: **Yes**, **No**, defaults to **No**. Leave as **No** as this feature is not currently supported.

Log GEO Events: **Yes**, **No**, defaults to **Yes**. This is used to select whether the GEO sends events to the Console for logging in the Console Event Log. In general, this can be set to **Yes**. Would only set to **No** on a very large GEO set up with many GEO units being monitored by one Console where the Echelon link is near capacity.

Sync GEO and SEAR clocks: **Yes**, **No**, defaults to **No**. Used to select whether that the Console should send time updates to the GEO and SEAR to synchronize their time from that of the Console.

WIU Channel Enabled: **Yes**, **No**, defaults to **Yes**. Used to enable the Console to send PTC messages. Keep as **Yes**.

Send Msg on Change of State: **Yes**, **No**, defaults to **Yes**. When set to **Yes** the GEO will send an updated state to the Console when the state of the data sent to the console changes. When set to **No**, the GEO will not send on change of state.

Msg Timeout (minutes): 5-240, defaults to 5 minutes. This is the message timeout on the GEO from the Console. If the GEO does not receive a valid message from Console in this time, it will set the link to **Out of Session** and stop sending messages to the Console. This is only used as a **Keep Alive** message so that the GEO will stop sending messages if the Console is removed, meaning, this is a non-vital function. The vital timeout on the Console is set using the **Msg Update Rate** (see below).

Msg Update Rate (ms): 500-3000ms, default 1500ms. This sets the message update rate on the GEO for messages sent to the Console. The Console will set a message timeout to the (2 * Msg Update Rate) + 100ms. If the Console receives no valid messages from the GEO in this message timeout, it will set the link to **Out of Session** and report the PTC devices associated with this GEO as restrictive.

5.2.1.1 iVIU PTC GEO Site

For these sites, PTC Enable GEOs is automatically set to **Yes**. See iVIU Console Manual (SIG-00-11-05A) and PTC Console Manual (SIG-00-130-12A) for details of how to set these parameters.

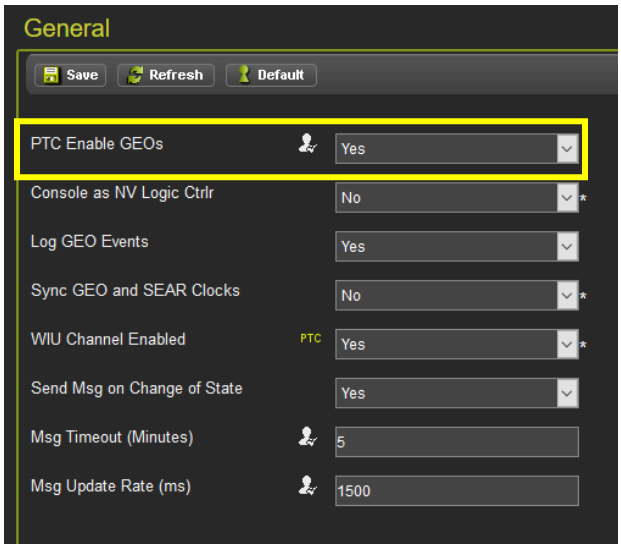


Figure 5-11 PTC Configuration - General Parameters or iVIU PTC GEO

5.2.1.2 iVIU Site:

For iVIU sites, PTC Enable GEOs is automatically set to **No**. No further changes will be needed on this screen.

5.2.1.3 WC-CPU III Sites:

There are no General screens in WC-CPU III site applications.

5.2.2 PTC – WIU

Click on the WIU menu to open the WIU parameters screen. The parameters on this screen are used to fill in fields in the WIU Config xml file.

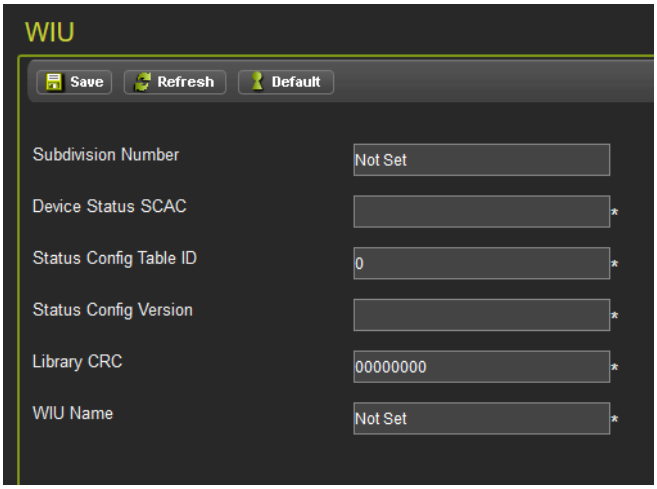


Figure 5-12 PTC Configuration - WIU Parameters

5.2.3 PTC – EMP

Click on the EMP menu to open the EMP parameters screen.

The WIU Addr field, shown in the yellow box, is used to set the WIU Address in the vital payload portion of the PTC message.

The fields shown in the green box are used to set values in the EMP header fields in the PTC message.

The HMAC key is also entered on this screen.

The RC2Key can also be entered here, when it is entered it is not displayed to the user, hence the user has to re-enter it to confirm. Entering the RC2Key will cause an RC2Key.bin file to be created for the site. The user may choose to have a common RC2Key across many sites, or they may choose to have different personnel set the RC2 for the person setting up the site, in which case they can use the **Create RC2Key** button in the Configuration Editor and create the RC2Key independently of a specific site.

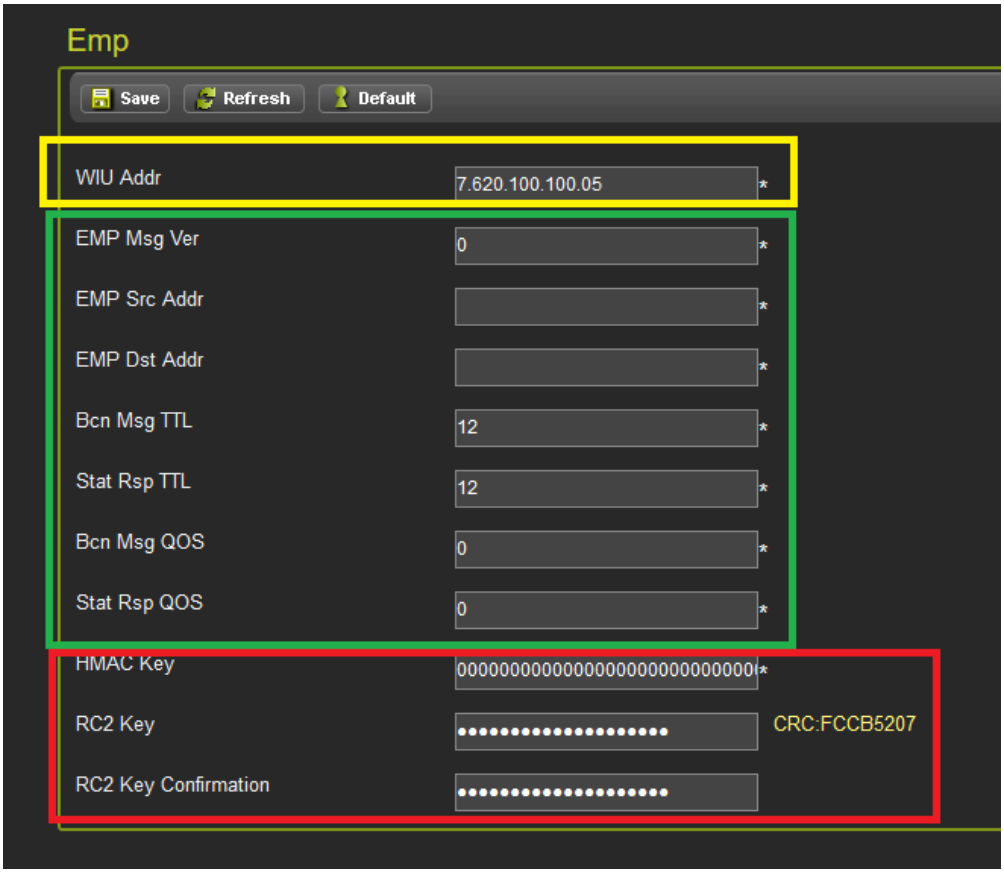


Figure 5-13 PTC Configuration - EMP Parameters

5.2.3.1 PTC Configuration – Class C & D Messages

Click on the Class C&D Messages menu to open the Class C&D Messages parameters window. Use the scroll bar on the right to scroll down to other parameters. See the iVIU manual (SIG-00-11-05A), PTC Console Manual (SIG-00-130-12A), or WayConneX CPU III (SIG-00-15-04) manuals for details on how to use these parameters.

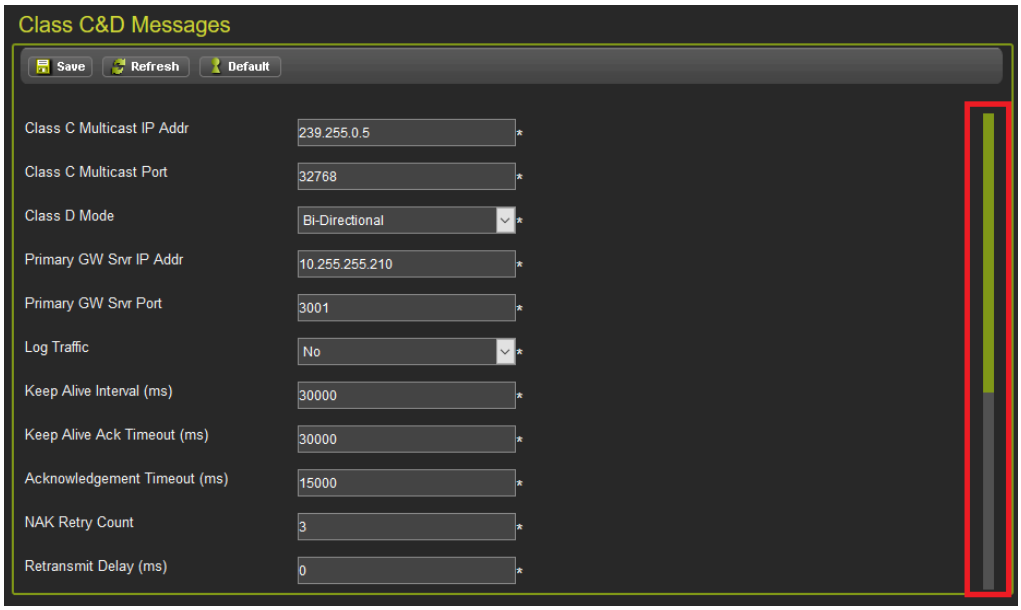


Figure 5-14 PTC Configuration - Class C&D Messages Parameters

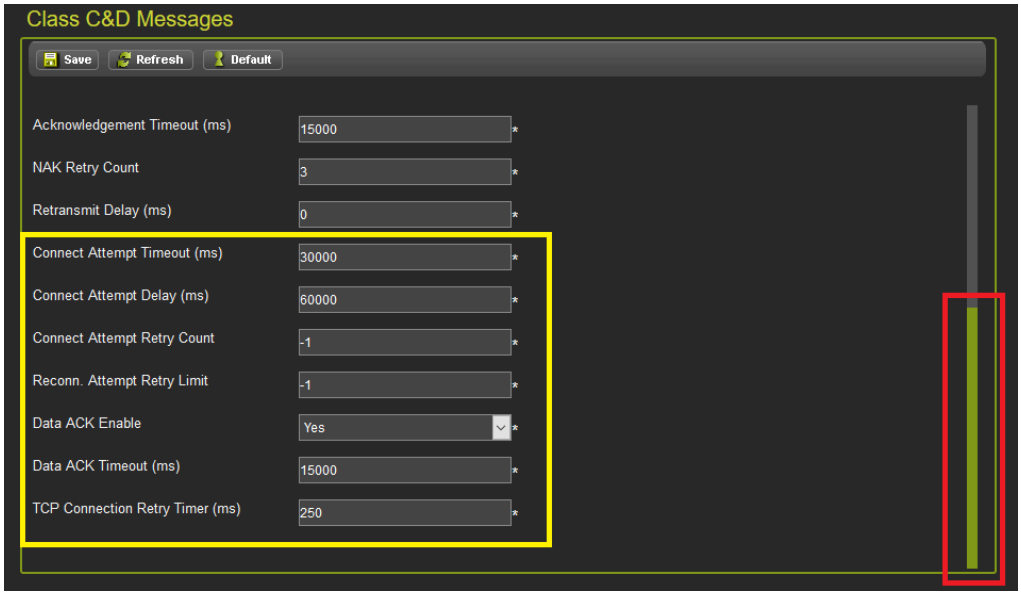


Figure 5-15 PTC Configuration - Class C&D Messages Parameters Continued

5.2.3.2 PTC Configuration - Beacon Message

Click on the Beacon Message menu to open the Beacon Message parameters. The parameters on this screen are used to setup the way that beaconing is performed. The parameters displayed depend on the whether the **Beacon Continuous** mode is set to **Continuous** or **Times Out**.

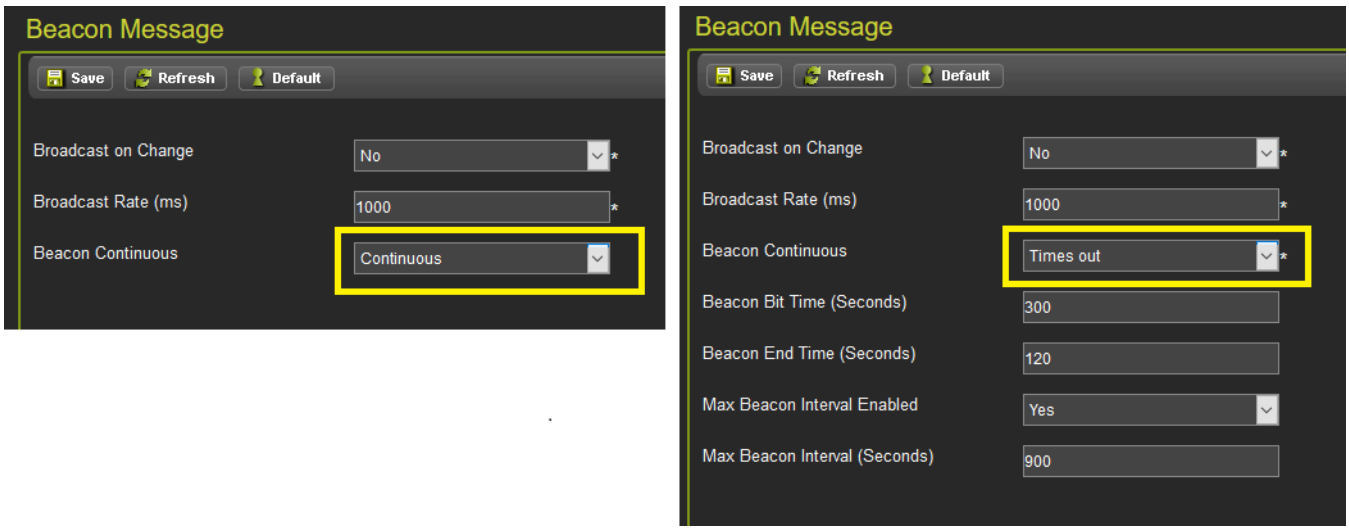


Figure 5-16 PTC Configuration - Beacon Message

5.2.3.3 PTC Configuration – Time Source

Click on the **Time Source** menu to open the **Time Source** parameters. Time source options include None, EMP, NTP, and Internal Receiver. In practice, the only two options likely to be used for PTC applications are EMP and NTP. When NTP is selected for **Time Source** the additional parameters shown on the right are displayed.

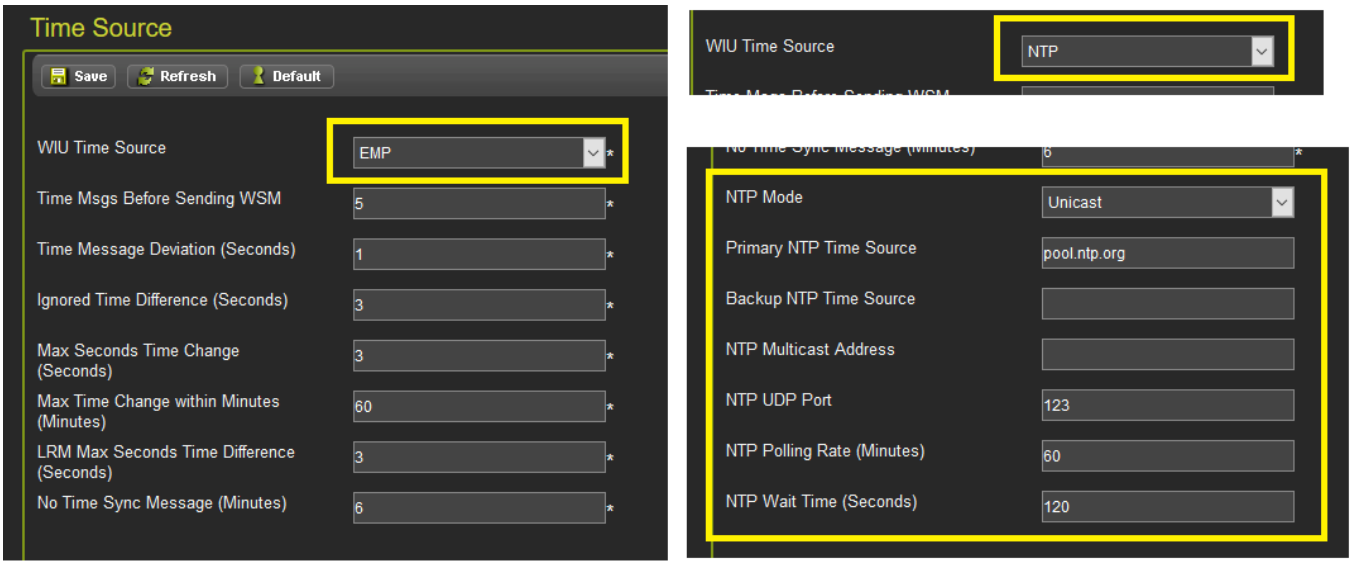


Figure 5-17 PTC Configuration - Time Source Parameters

5.2.3.4 PTC Configuration – Preferred Time Source (Pref Time Source)

Click on the **Pref Time Source** menu to open the Preferred Time Source parameters. The default has no preferred time source enabled (see figure on the left). When the preferred time source is enabled, up to six time source IP Addresses and priority levels can be configured. Use the scroll bar on the right to see the remaining parameters.

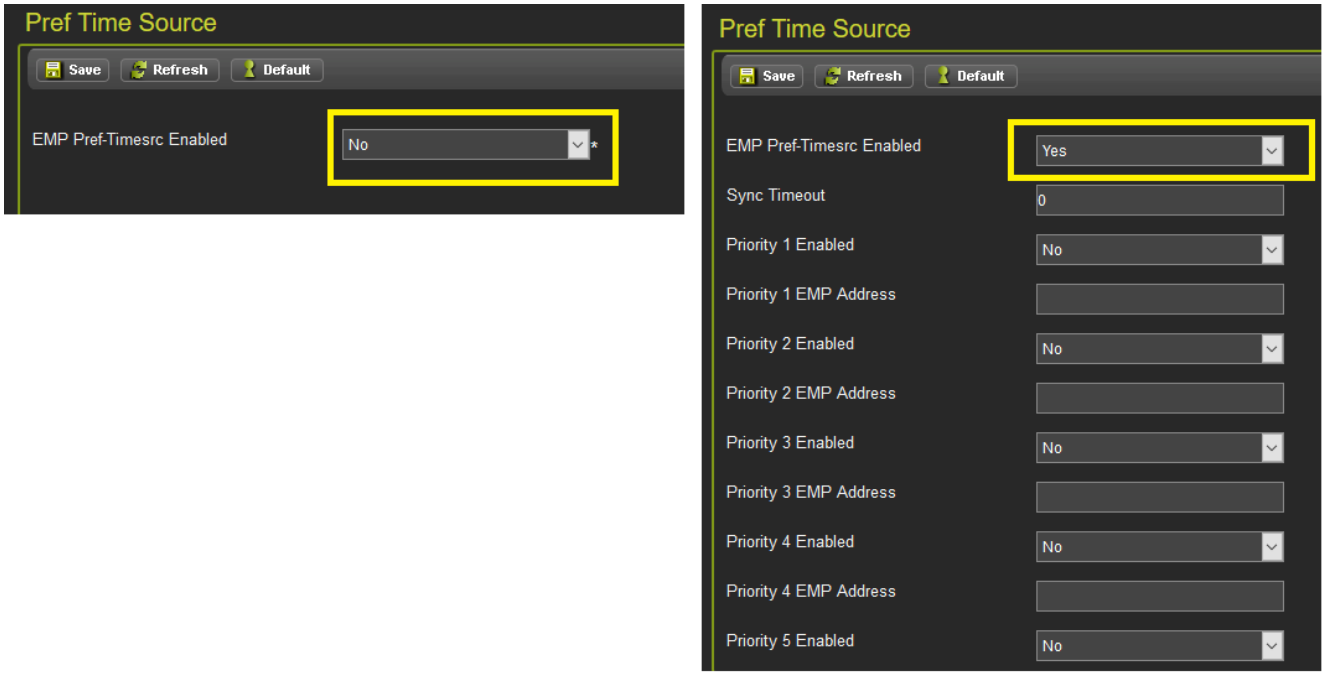


Figure 5-18 PTC Configuration - Preferred Time Source Parameters

5.2.3.5 PTC Configuration – High Availability

High Availability enables the user to configure multiple ranges of IP addresses and TCP (Transmission Control Protocol) port numbers which establish a TCP connection to the first Application Gateway that it locates when scanning those IP addresses. In the event that an IP Address and TCP port becomes unavailable, the system will attempt to secure a new communication link via one of the alternate IP Addresses.

The High Availability function can be enabled by selecting **YES** on the drop-down menu as shown in Figure 5-19.

The following parameters can be set for up to 12 servers as shown on the right. Use the scroll bar to scroll down to see the addition fields:

- IP address
- Port
- Idle timeout
- Idle enable

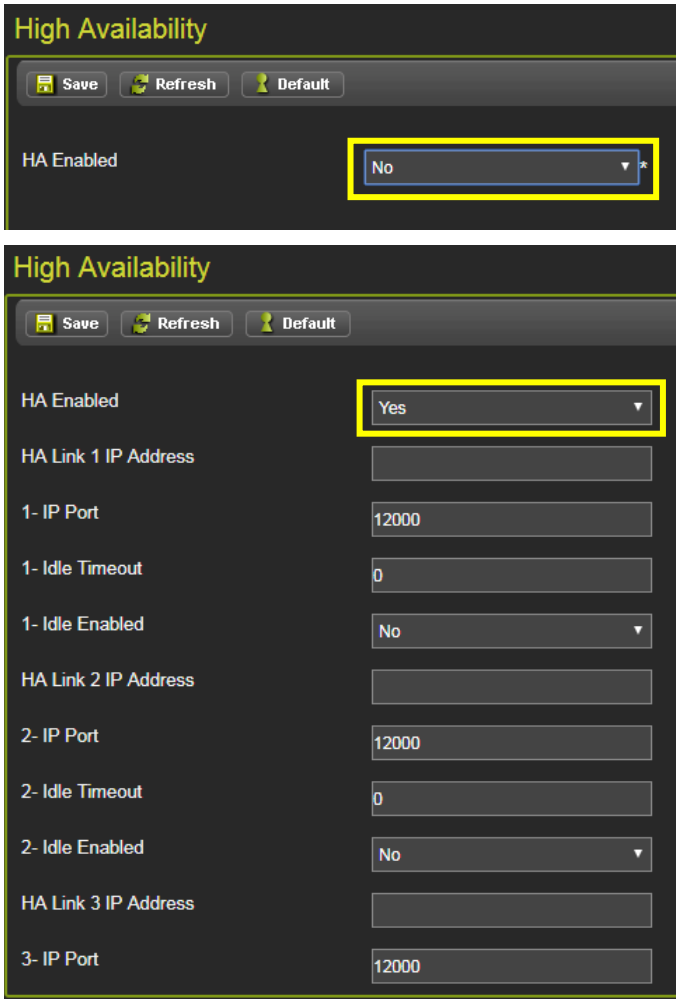


Figure 5-19 PTC Configuration - High Availability

5.2.3.6 PTC Configuration – Device Attribute

Click on the **Device Attribute** menu to open the Device Attribute parameters. In the following figure, signals and switch PTC devices are displayed relevant to the installation. The screen allows the user to add information for each PTC device that will be included in the WIU config xml file, namely:

- Site Device ID
- Signal / Switch / Hazard detector name
- Track number
- Direction
- Milepost – this will default to the value set on the Site Information page
- Subdivision number
- Site name – this will default to the value on the Site Information page
- Description

NOTE

NOTE

If the Vital Configuration has different Physical Layouts, these may have different PTC Devices associated with them. The correct physical layout must be chosen before information is set on this screen (see section 4.2.1).

The far right column is labeled **Include** and has a check box to select to include the device in the WIU message or uncheck the box to exclude the device from the WIU message.

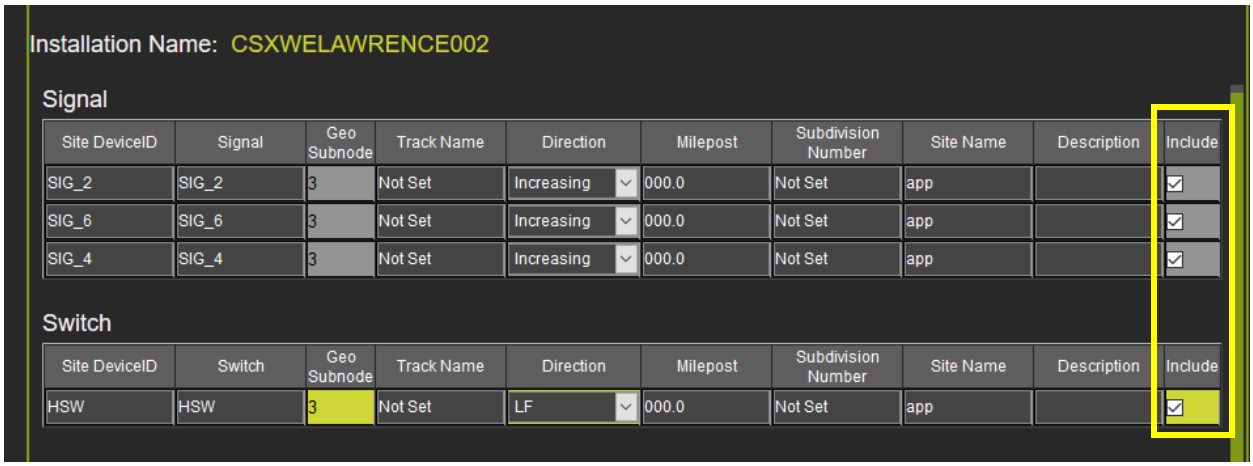


Figure 5-20 PTC Configuration - Device Attributes

NOTE

NOTE

Changing the Include check box value results in changes to the vital parameters in Physical Configuration/ITC Configuration. So if changes are made here, the user must rebuild configuration files using the **Build Config Files** button on the Configuration Editor.

When an IVIU PTC GEO site is created for an Appliance model GEO installation, the Device Attributes screen will also show the aspects information extracted from the GEO MCF and how it relates to the PTC Aspects. This information may be viewed but cannot be altered in this menu.

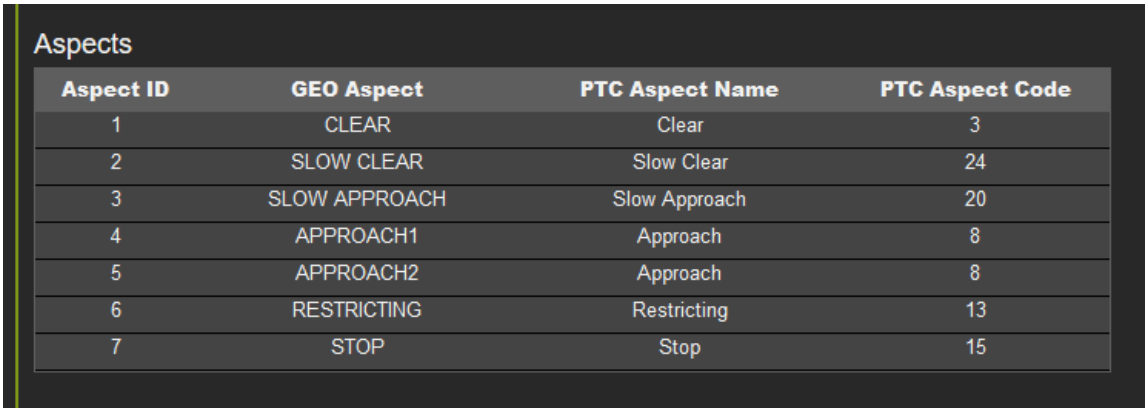


Figure 5-21 PTC Configuration - Device Attributes Aspects

5.2.3.7 PTC Configuration – Message Lay-out

The Message Layout screen displays the PTC devices included in the WIU message. This screen allows the user to specify the layout of the WIU message by rearranging the positions of the PTC Devices in the message. The user can choose which type of PTC device is reported first: signal, switch, or hazard detector. The user can choose the order of the signals from within the block of signals. Use the arrows on the left to change the order of the device types, and arrows on the right to change the order of the specific devices within that type.

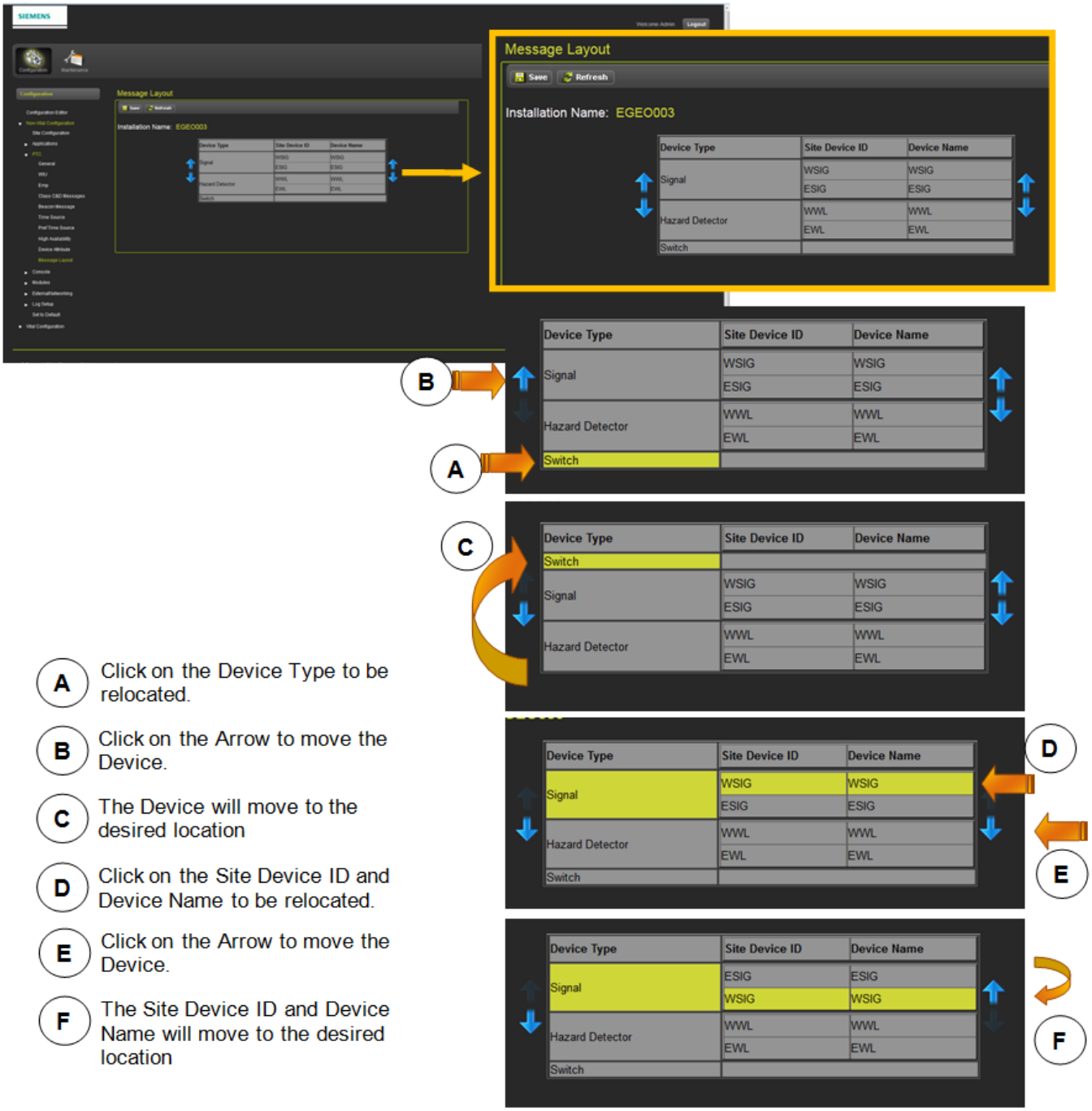


Figure 5-22 PTC Configuration - Message Layout Rearrange Positions

NOTE

NOTE

Changing the order of the devices on the Message Payout page and pressing **Save** will update the values of the Vital Configuration / Physical Configuration / ITC Configuration parameters. If changes are made here, the Configuration files must be rebuilt from the Configuration Editor page in order for changes to take effect.

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SECTION 6 MAINTENANCE

6.0 MAINTENANCE

6.1 MAINTENANCE

The Maintenance application of OCE can be accessed by clicking on the Maintenance icon. The Maintenance menu has the sub-menus shown in the following figure.

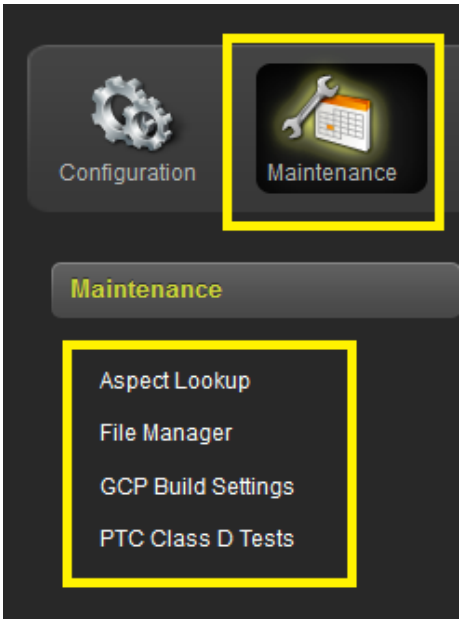

Figure 6-1 Maintenance Menu

- The Aspect Lookup menu is only used for iVIU PTC GEO sites.
- The GCP Build Settings menu is only used for GCP sites.
- The PTC Class D Tests menu is only used for iVIU PTC GEO, iVIU and WC CPU III sites.

6.1.1 Aspect Lookup

The Aspect Lookup function enables the selection of Aspect Lookup Tables and PTC Aspect Values for use in OCE. The list of Tables and Values will display files installed in OCE. The files are installed by importing the customer specific ZIP file for iVIU PTC GEO provided by Siemens. The user should choose the latest file applicable to them.

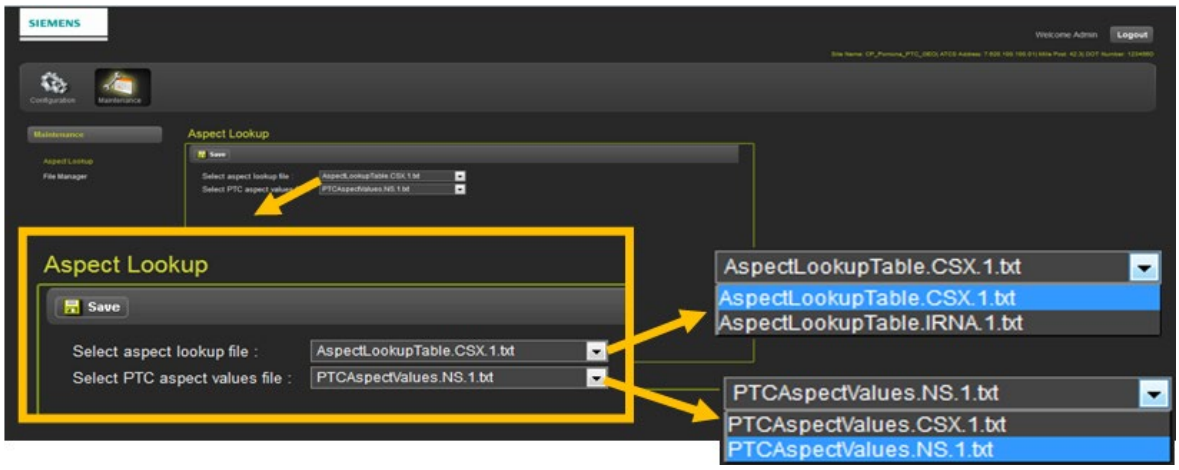

Figure 6-2 Aspect Lookup Tables and PTC Aspect Values Selection

When the OCE is used for the first time, the OCE may ask for selection of Aspect Lookup Tables. The following figure details the procedure to set up Aspect Lookup Tables.

A. Click on the **Select** button to bring up the Aspect Lookup screen
B. Select the Aspect Lookup file from the drop-down menu
C. Select the PTC Aspect Values file
D. Click on the **Save** button to save the selections

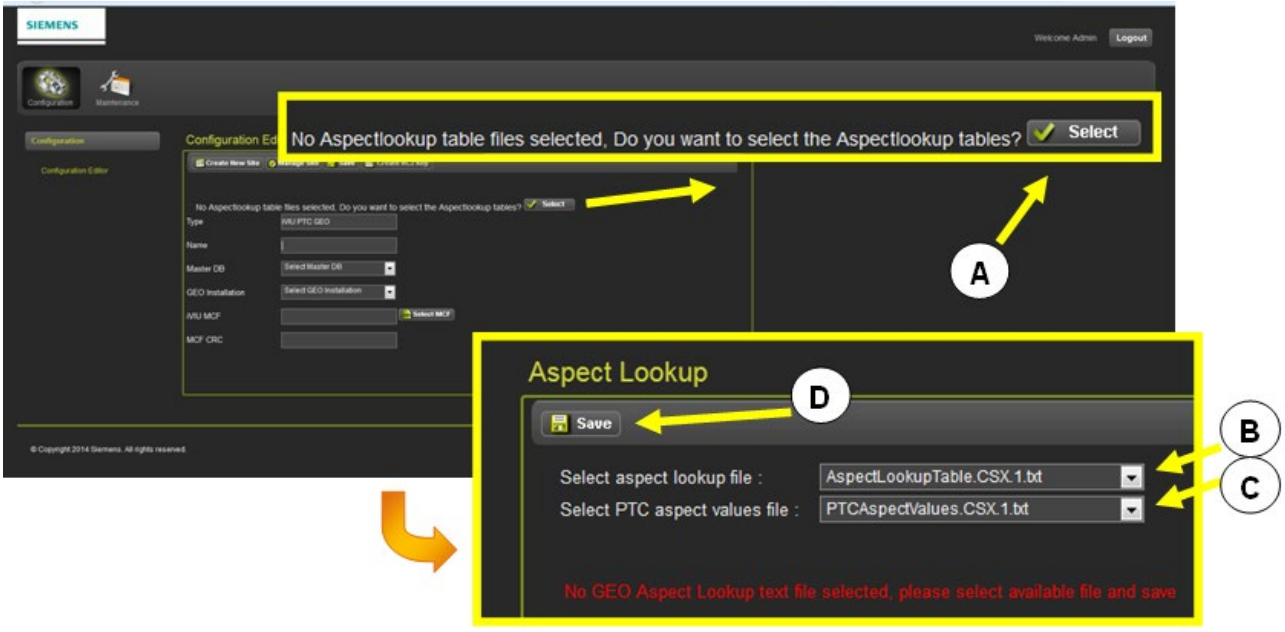

Figure 6-3 Selecting Aspect Lookup and PTC Aspect Value File Selection

6.1.2 Files Manager

The File Manager enables the user to Export and Import files or to remove any templates that have been saved and will no longer be used.

Figure 6-4 File Manager

6.1.2.1 Export Files

This is typically used if the user wants to replicate the OCE installation on another computer. The files are exported from one computer and imported into another. OCE files are exported in a .ZIP file. The OCE ZIP file includes the MCFs, master databases, PTC and Aspect Lookup files and templates. Click on the **Export Files** button and select to open or save the file as shown in the following figure.

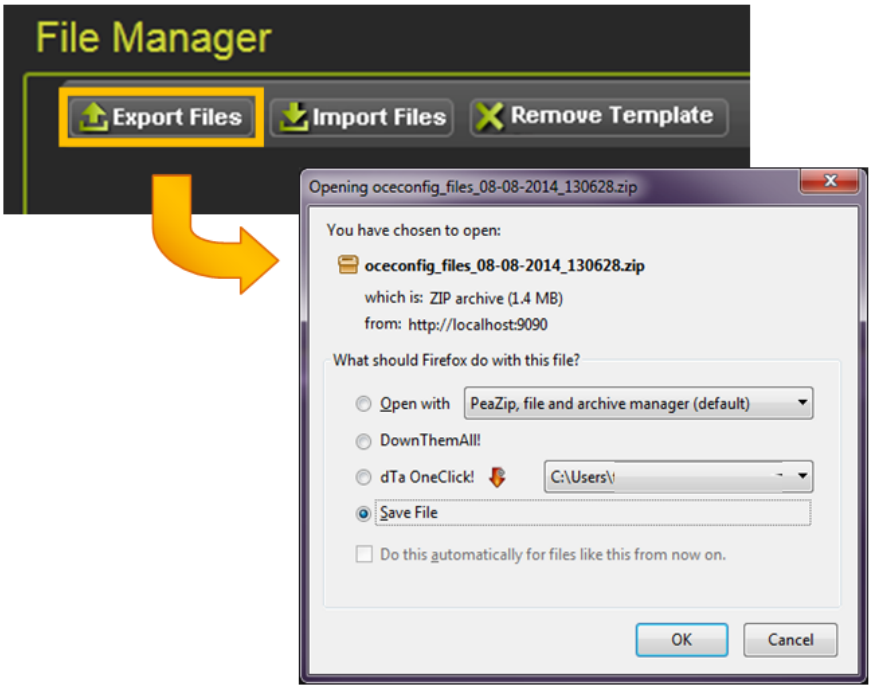

Figure 6-5 Export Files

6.1.2.2 Import Files

Files can be imported into the OCE using the **Import Files** function. The Import Files function is typically used to set up the OCE after initial installation with an import ZIP file provided by Siemens, or a file created on another computer installed with OCE. Click on the **Import Files** button and select the desired file. The file must be in a .ZIP format to import into OCE as shown in the file below.

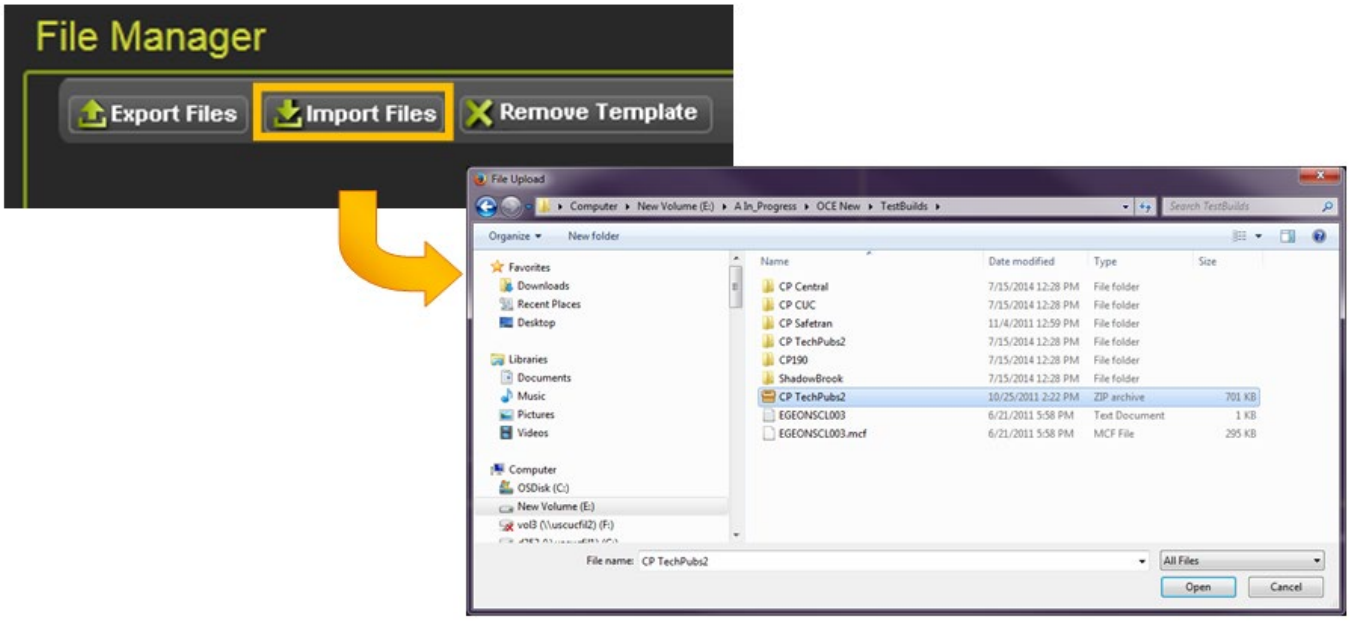

Figure 6-6 Importing Files

6.1.2.3 Remove Template Function

The **Remove Template** function will remove any created templates saved in the OCE repository. A highlighted menu indicates a template has been created for that type of site. To remove a created template, click on the site-type the template was created for. A confirmation pop-up will appear verifying the template is to be removed: click **OK**. A confirmation text will appear verifying the template was removed.

Figure 6-7 Remove a Template

CAUTION

REMOVED TEMPLATES CANNOT BE RECOVERED. ENSURE REMOVAL OF A TEMPLATE WILL NOT IMPACT CURRENT OR FUTURE BUILDS.

6.1.3 GCP Build Settings

The GCP Build Settings screen is used to set the Output Build path (shown in the green box in the following figure). This is the path where the output files (ZIP file, PAC file, reports) will be stored when a GCP site is built. It is recommended to cut and paste the file path directly from the windows explorer window into this field, rather than typing the path out by hand.

The GCP Build Settings Screen is also used to select which report files are included in the installation ZIP file that is created when the GCP configuration is built.

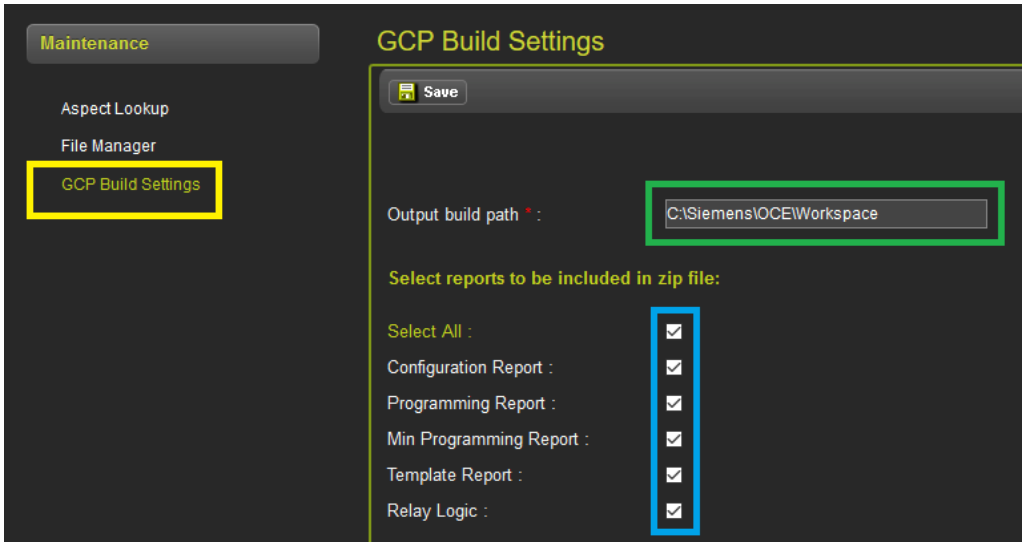

Figure 6-8 GCP Build Settings

6.1.4 PTC Class D Tests

For iVIU PTC GEO, iVIU, and WC CPU III site, the PTC Class D tests are configured using the Maintenance / PTC Class D Tests page. For VIU this information is under the Non-Vital Configuration / PTC menus.

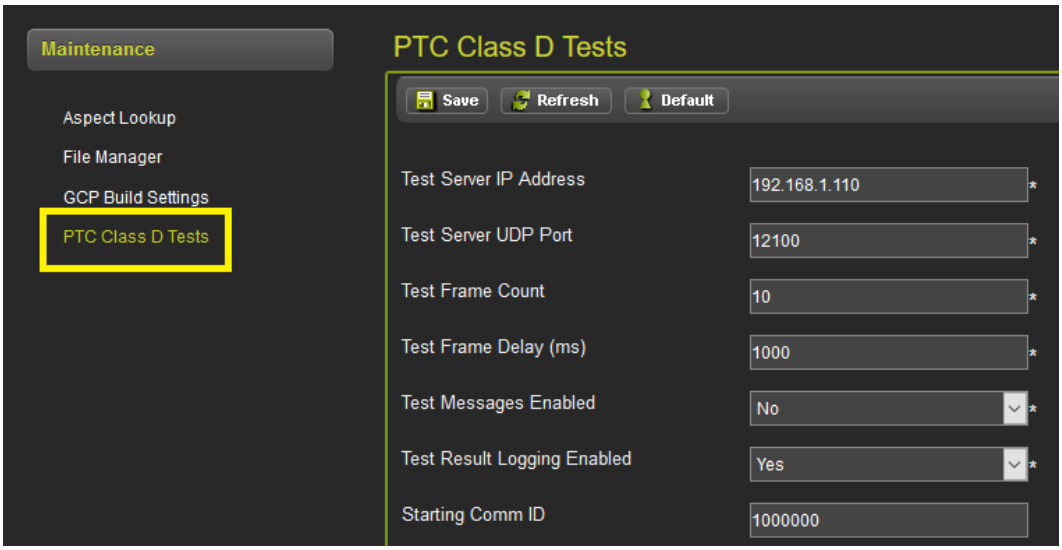

Figure 6-9 PTC Class D Tests

SECTION 7 SHUTDOWN OCE SERVER

7.0 SHUTDOWN OCE

7.1 LOGGING OUT

To log out of the OCE, simply click on the Logout button in the upper right corner as shown in the following figure. The OCE Welcome screen will appear when the logout is completed.

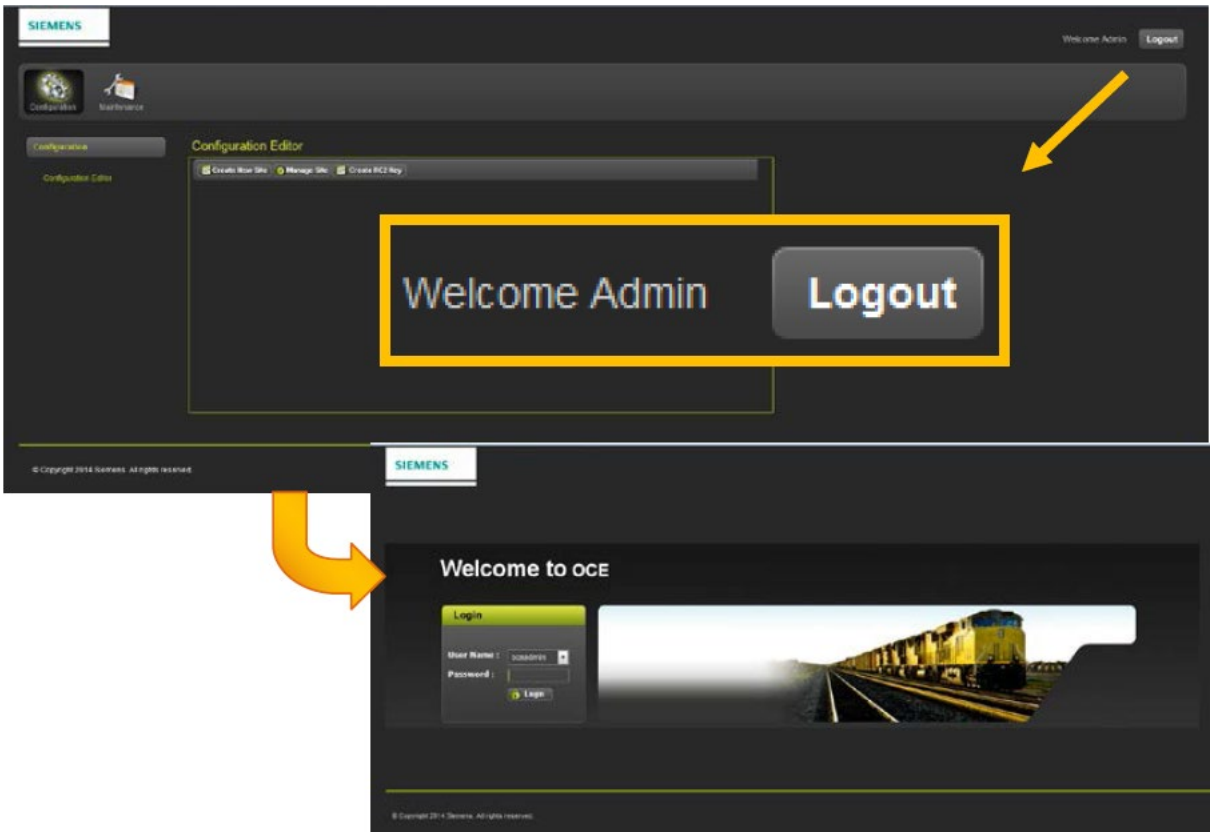

Figure 7-1 Logging Out of OCE

7.2 SHUTTING DOWN THE OCE SERVER

To shut down the OCE Server, which has been running in the background, maximize the DOS screen with the OCE Server information as shown in the following figure.

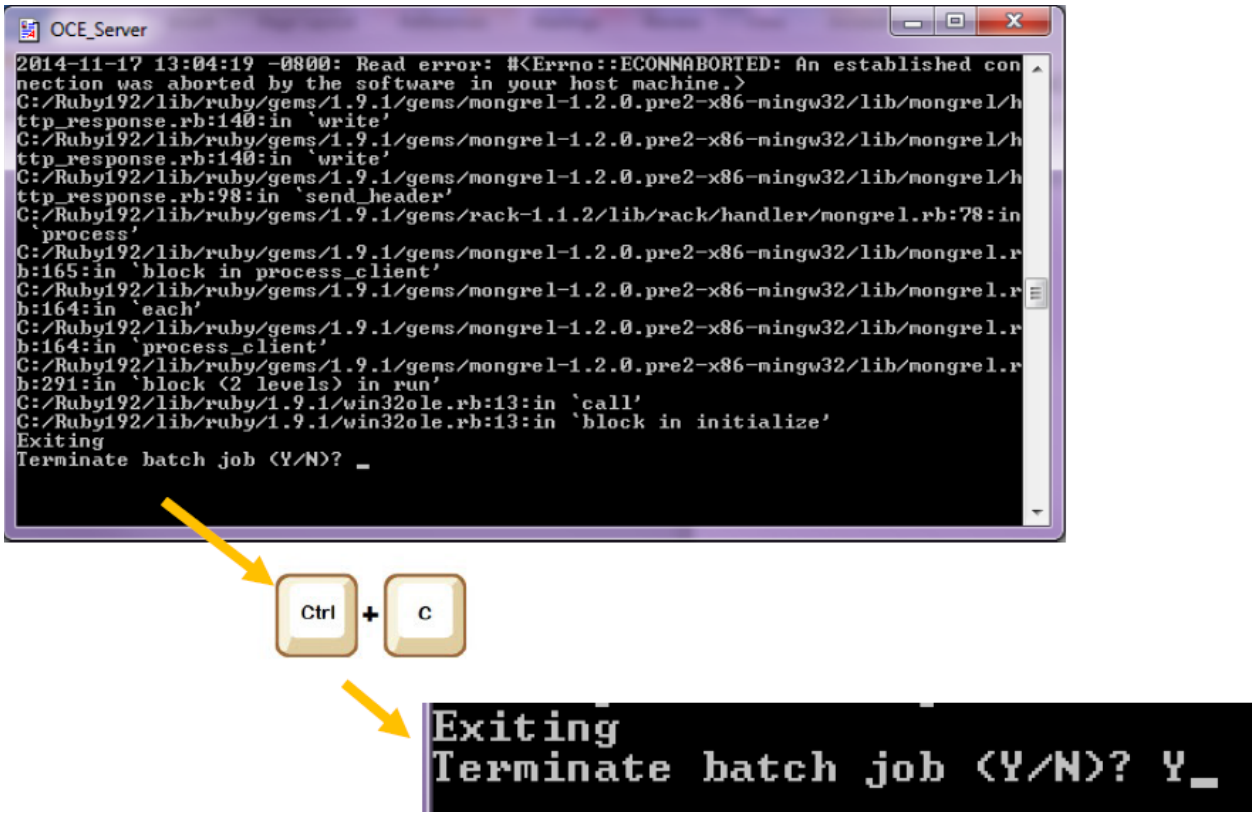

Figure 7-2 Shutting Down the OCE Server