ERICSSON

Mobile Communications
PC Programming

EDACS™
Monitor Module (MOM)
Version 2.11

For
IBM PC/XT
Or True PC Compatible

Operations Guide

PERSONAL COMPUTER PROGRAMMING

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INTRODUCTION

Ericsson GE Mobile Communications Inc. welcomes you to the world of mobile communications. We believe there is no equal to Ericsson GE products and have made a commitment to our customers to ensure that product satisfaction and reliable service is our number one priority.

Quality built and dependable, the Monitor Module (MOM) PC is a tool designed to monitor/configure the multi-site switch.

This manual has been written to give you a clear and concise understanding of the EGE MOM PC and will discuss:

- o the steps necessary to install the program,
- o the procedures to set up and operate the MOM PC.

CHAPTER 1
BEFORE YOU BEGIN

ABOUT THIS MANUAL

This document describes the MOM PC user interface and functions. It is intended to aid the user in performing various MOM functions (switch configuration, viewing node status data, etc...). The various screens the user may encounter are walked through and explained in full detail.

Configuration:

- TDM Bus Slots - Configures bus slots for site and console interfaces for audio routing.
- Console User Profiles - Configures all consoles and up to three shifts of user specific data.
- Conventional EE Pots - Adjusts conventional incoming/outgoing audio levels.
- MOM Configuration - Sets all MOM interface baud rates and enables/disables data logging.
- Time and Date - Sets system time and date. This is broadcast throughout the entire switch for time synchronization.
- System Manager Data - Interface used to obtain system unit, group, and site databases.
- Trunked Channel Configuration - Adjusts audio levels for site and console interfaces.

Monitoring Functions:

- View Node Statistics - Used to view error reports on a node by node basis. Also reports Global Serial Channel (GSC) loading.
- View System Configuration - Used to view devices (CIM / MIM), their assignments, and associated GSC node address.

FEATURES

One of the most important features of the MOM PC is its ability to log data. All data that is placed on the GSC in the switch is logged at the MOM controller. The controller then periodically dumps its data log buffer to the MOM PC serially. The MOM PC writes this data to its hard disk, where it can be extracted/viewed off-line. The functions are:

CALLS.EXE	Used to extract all calls made within the switch.
GSCMON.EXE	Used to extract all messages from the logged data.

COMMONLY USED MNEMONICS

CI - Conventional Interface

CIM - Console Interface Module

GSC - Global Serial Channel

LID - Logical ID

MIM - Master II Interface Module

MOM - Monitor Module

NOVRAM - Non-volatile RAM

TDM - Time Division Multiplex

CHAPTER 2
INSTALLATION

UNPACKING

Upon unpacking this package you should be sure you have received the following:

Monitor Module PC Software, to include:

- One double-sided, double-density 5-1/4 inch diskette. (Labeled "MOM Disk"). Or, a single 3-1/2 inch diskette.

MOM PC SOFTWARE REQUIREMENTS

The following hardware and software is required to operate the MOM PC:

A. IBM PC/XT/AT or any true compatible with MS-DOS version 3.0 or later, and having the following minimum configuration:

   1. Two Disk Drives. A single floppy drive with a fixed (hard) disk drive system.

   2. 640K Internal RAM.

   3. Serial Port.

B. CGA Card or better (i.e., VGA, EGA).

DISKETTE HANDLING

While working with your diskette you may want to consider the following handling procedures:

- Always store your diskette in the envelope.
- Insert diskette into the drive carefully.
- Use only felt tipped pens to write on diskette label.
- Store your diskette at a comfortable room temperature.
- Refrain from touching the recording surface.
- Do not bend the diskette.
- Do not allow any form of liquid to come in contact with the diskette surface.
- Keep diskette away from magnetic force fields as found in electronic equipment.

If you follow these simple guidelines you will receive long service from your diskette.

MAKING BACKUPS

This software is provided to you on a double-sided double-density 5-1/4 inch or 3-1/2 inch diskette labeled "MOM Disk". This diskette is very sensitive and fragile and therefore, should be handled with care and stored in a secure area.

We recommend that, upon receipt of your diskette, you copy the original diskette to another diskette or a fixed disk and store the original in a safe place. This ensures the availability of an accurate program should the copy fail during program applications.

NOTE

It is important to use the Diskcopy command when making a backup and not the Copy or Xcopy command. The diskette contains a volume label that is required for the installation process. Copy and Xcopy do not copy volume labels so please refrain from using these commands.

SYSTEM HOOK-UP

Connect all peripheral equipment to your computer prior to configuring the software items. Remember to refer to the operating manuals of each device for correct installation procedures.

If your system is already established, check to see that you have all the equipment necessary to execute the program. Isolate all cables connecting computer to devices to prevent tangling, interference and damage.

LOADING THE SOFTWARE

The software can be installed on a fixed drive or run from floppy diskettes in a dual floppy drive configuration.

To install the MOM PC Software on your PC:

Step 1 Place the diskette labeled MOM PC in Drive A:

Step 2 Type A: INSTALL

NOTE

Floppy Disk Users should operate the program from the previously created backup disk.

Once you have completed the installation procedure, the following steps may be taken to access the MOM PC Software:

Hard Disk Users:

Type: **C: <enter>**
cd \MOMPC

This step will ensure that the current drive is the MOM PC drive.

Type: **O_MOMPC <enter>**

The MOM PC Software is now loaded into memory and an introductory screen appears identifying the program.

Floppy Disk Users:

Type: **A: <enter>**

This step will ensure that the current drive is the MOM PC drive.

Type: **O_MOMPC <enter>**

The MOM PC Software is now loaded into memory and the log in prompt appears on the screen.

CHAPTER 3
SETTING UP THE PROGRAM

3.0 MOM Options

Type O_MOMPC to execute the MOM PC program (refer to "LOADING THE SOFTWARE" in the previous section for more information). You will be prompted for a username and password before execution of the program will continue. The default username is "MOMUSER" and the default password is "GUEST". These log in defaults are provided in the password.dat file that comes with the MOM PC installation disk. This disk should be safeguarded by the system administrator after the installation is complete. It is recommended that you delete the default log in username and create some of your own. Multiple functional access levels are supported. See chapter 3-6 User Account Maintenance for details.

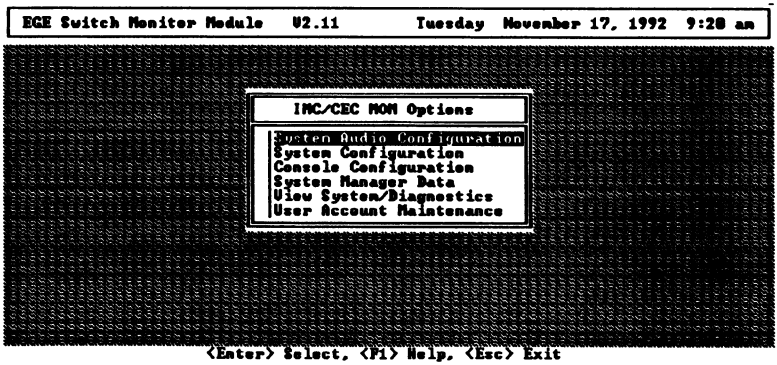

Figure 3-1 - MOM Options Window

After successfully logging in, the MOM PC main menu (shown above) displays all the different options available to the user. The user may select any one of the options by simply highlighting (using the arrow keys) the desired option and pressing the ENTER key. Each specific field is discussed below.

Refer to Appendix C for system default value information.

3.1. System Audio Configuration

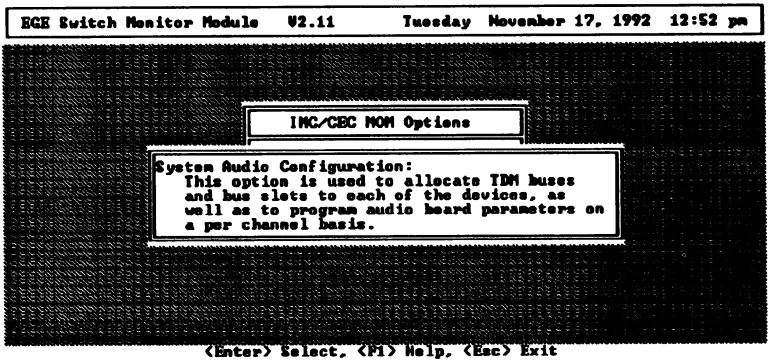

Figure 3.1-1 Audio Configuration Help Screen

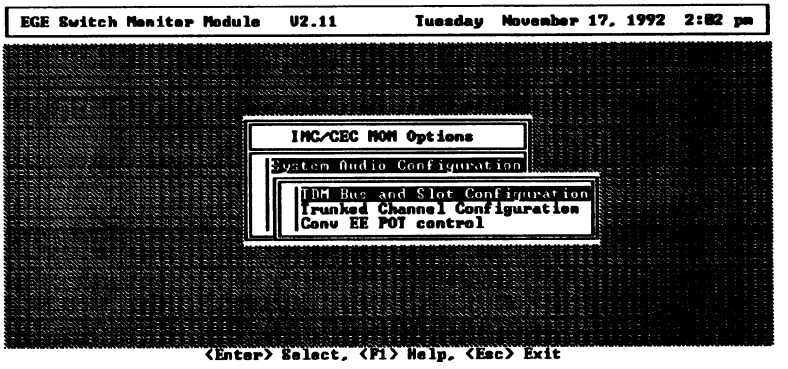

Figure 3.1-2 System Audio Options Menu

3.1.1. TDM Bus and Slot Configuration

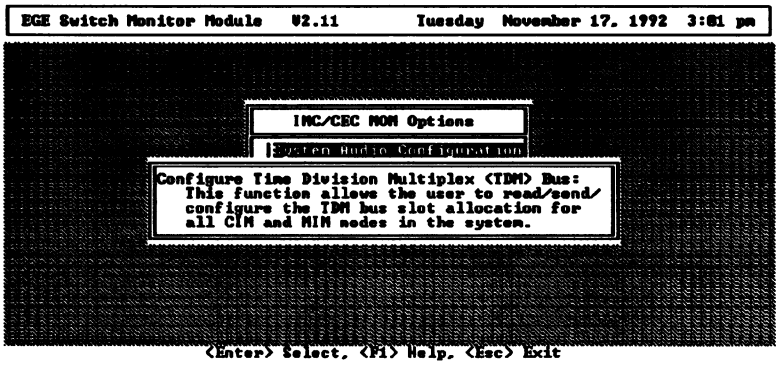

Figure 3.1-3 TDM Bus Help Screen

This option may be selected in order to read/configure/send the number of Time Division Multiplex (TDM) buses and the TDM bus slot allocations. Slots and buses may be configured in any order but it is more efficient to configure the buses prior to configuring slot allocations. Pressing the HELP key from the MOM Options menu displays the message shown above. The TDM bus slot allocation is the key means for which audio is routed throughout the switch. If enough slots are not allocated for each device, audio will not be routed on all calls. The number of slots to allocate depend on the device type and number of channels connected to that device. For instance, a MIM device is connected to a trunked site. If that site has 25 channels then 25 slots need to be allocated for that MIM. For a CIM device, one slot is sufficient since there is only one transmit channel.

An important note: The default bus configuration is 8 bus. It is **necessary** for switches with 4 bus audio boards to enter this option and set the number of audio TDM buses to 4. If the MOM controller board's Non Volatile RAM (NOVRAM) is reset (or not yet initialized), the switch will assume an 8 bus system until instructed otherwise. Again, a switch with 4 bus audio boards will not route audio correctly if configured as an 8 bus system.

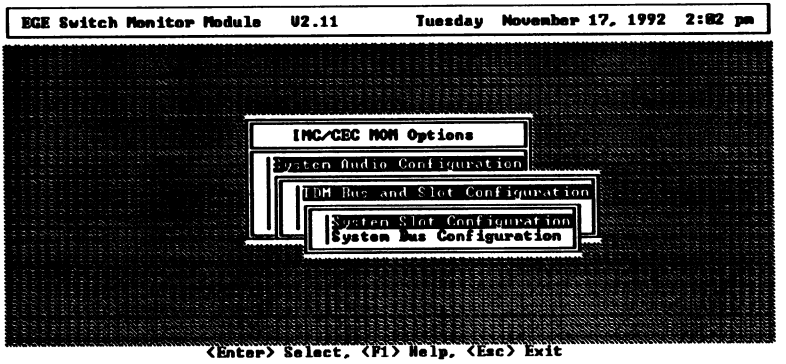

Figure 3.1-4 TDM Bus and Slot Menu

3.1.1.1. System Slot Configuration

3.1.1.1.1. Read Slots

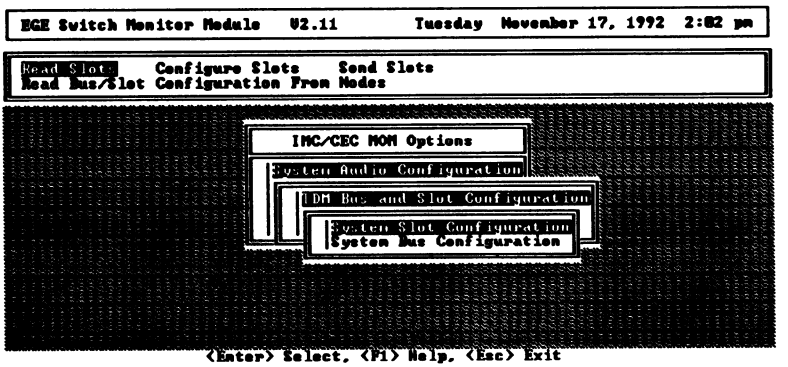

Figure 3.1-5 Read Slots Screen

This option is selected if the user wishes to read the current configuration from the MOM controller. The MOM controller stores the configuration in its NOVRAM for power up / reset conditions. It is important to read the slots before you make any changes to the configuration to make sure you are dealing with the most recent data.

If the user elects to read slots from the MOM controller the following acknowledgment will occur if the read was successful. The user must now enter **<Esc>** (Escape) to return to slot configuration.

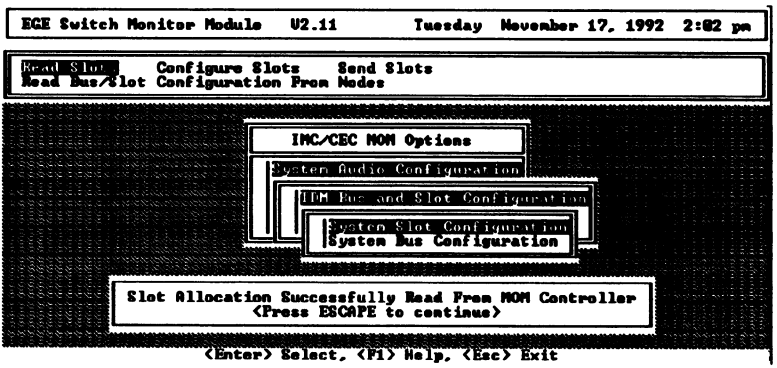

Figure 3.1-6 Read Slots Reply Screen

If the user elects to read slots from the MOM controller and for some reason the MOM controller doesn't respond (not serially connected, MOM controller down, etc...), the following message will appear. The user must now enter **<Esc>** (Escape) to return to slot configuration.

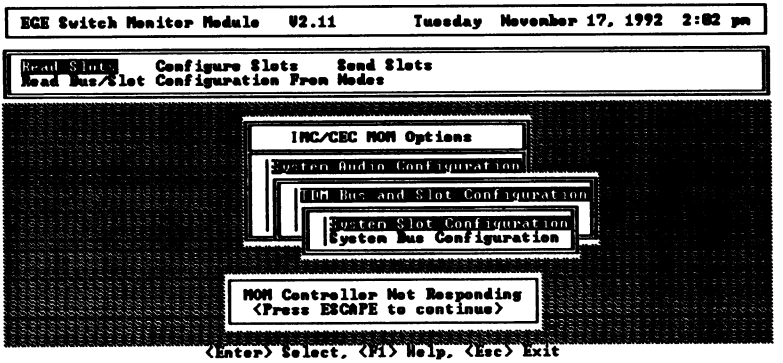

Figure 3.1-7 Read Slots Error Message Screen

3.1.1.1.2. Configure Slots

This option is used to configure the TDM bus slot allocations for each node in the system. When the "Configure Slots" option is selected the following menu will be displayed. The option given to the user is to configure console slots or site slots. Selecting "Console Slots" allows the user to configure TDM bus slots for each console in the system. Selecting "Site Slots" allows the user to configure TDM bus slots for each site, trunked or conventional, in the system.

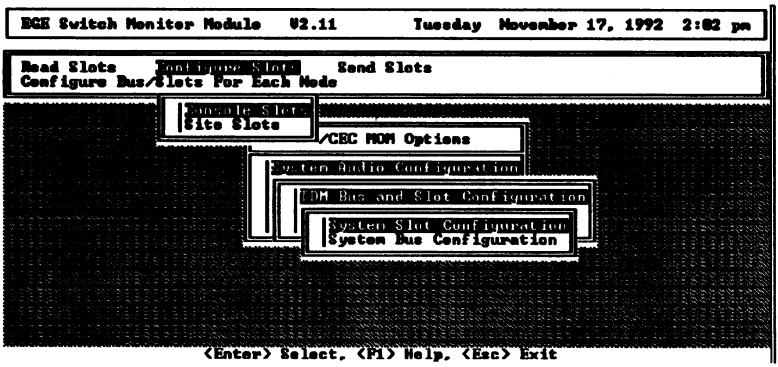

Figure 3.1-8 Configure Slots Window

If the user elects to configure console slots, the following screen will appear. As mentioned earlier, only one slot is required for each console since there is only one transmit channel per console. The **"Slots Available"** field indicates the number of slots left that are available for allocation.

Using the Ctrl-Page-Up and Ctrl-Page-Down keys allows the user to page between console groups. Each screen displays 16 consoles. There are a maximum of 32 consoles supported by the switch. After completing console configuration, the user must press **<Esc>** to return to the previous menu. The user may then elect to configure site slots or send the new configuration to the MOM controller. Unless the user elects to send the new configuration, the MOM controller will never receive this new data.

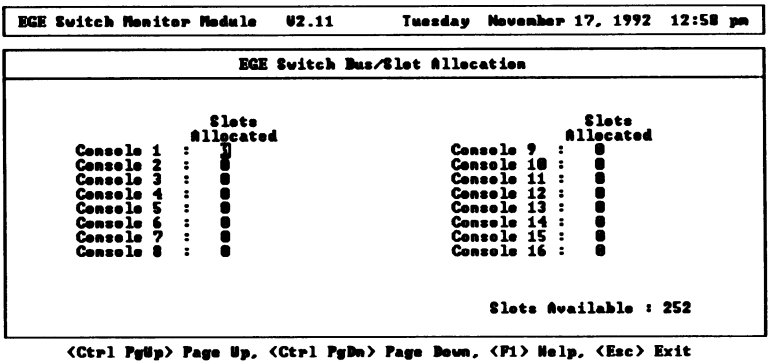

Figure 3.1-9 Console Slots Window

If the user elects to configure site slots the following screen will appear. As mentioned earlier, the slot allocation here depends upon the number of channels the site connected to each MIM supports. If the site connected to MIM 3, for instance, supports 25 channels, then 25 slots must be allocated for this MIM. The same holds true for the conventional MIM. If 15 base stations are supported by MIM 10, then 15 slots must be allocated for MIM 10. The "Slots Available" field indicates the number of slots left that are available for allocation.

Using the Ctrl-Page-Up and Ctrl-Page-Down keys allows the user to page between site groups. Each screen displays 16 sites. There are a maximum of 32 sites supported by the switch. After completion of site configuration, the user must press **<Esc>** to return to the previous menu. The user may then elect to configure console slots or send the new configuration to the MOM controller. Unless the user elects to send the new configuration, the MOM controller will never receive this new data.

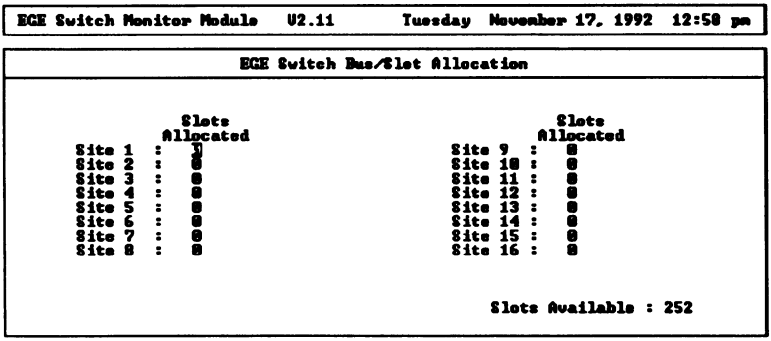

Figure 3.1-10 Site Slots Window

3.1.1.1.3. Send Slots

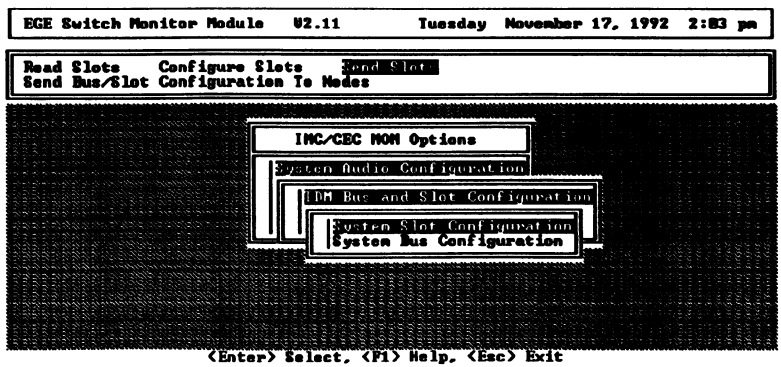

Figure 3.1-11 Send Slots Window

This option is used to send the new TDM bus slot configuration to the MOM controller. The MOM controller will not receive this data unless it is specifically sent using this command.

An important note: The nodes in the system will not receive the new configuration unless they are reset. You may either cycle power on the system or reset each node individually in order to disperse the new configuration.

If the user elects to "Send Slots" to the MOM controller and no slots were allocated, the following message will appear. This message is used to prevent clearing the MOM controller's slot allocation database accidentally.

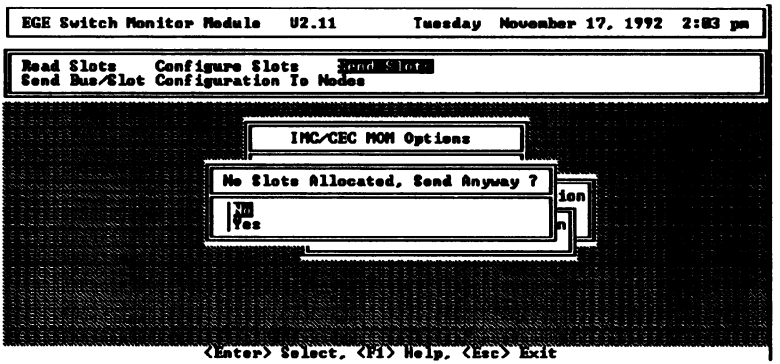

Figure 3.1-12 Send Slots Selection Screen

Upon successful transmission of the TDM bus slot allocation to the MOM controller, the following message will appear. This indicates that the MOM controller received the new allocation.

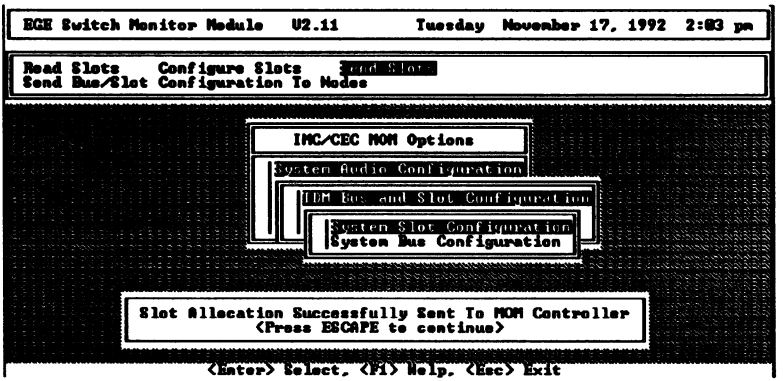

Figure 3.1-13 Send Slots Successful Reply Screen

3.1.1.2. Configure System TDM Bus

3.1.1.2.1. Read Bus Configuration

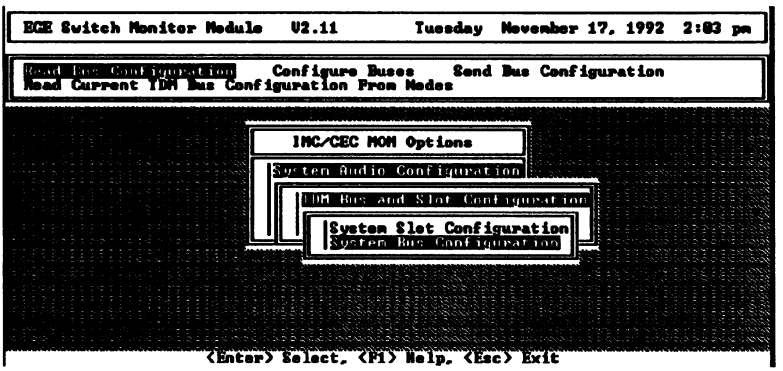

Figure 3.1-14 Read Bus Configuration Screen

This option is selected if the user wishes to read the current bus configuration from the MOM controller. The MOM controller stores the configuration in its NOVRAM for power up / reset conditions. It is important to read the number of buses before you make any changes to the configuration to make sure you are dealing with the most recent data.

If the user elects to read the bus configuration from the MOM controller the following acknowledgment will occur if the read was successful. The user must now enter **<Esc>** (Escape) to return to bus configuration.

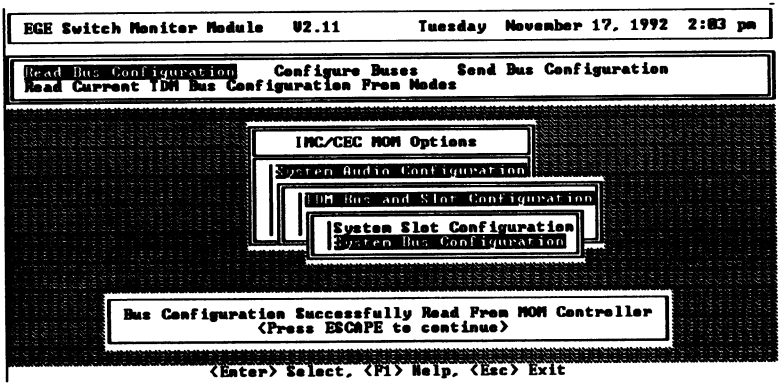

Figure 3.1-15 Bus Configuration Read Successfully Screen

If the user elects to read the bus configuration from the MOM controller and for some reason the MOM controller doesn't respond (not serially connected, MOM controller down, etc...), the following message will appear. The user must now enter **<Esc>** (Escape) to return to bus configuration.

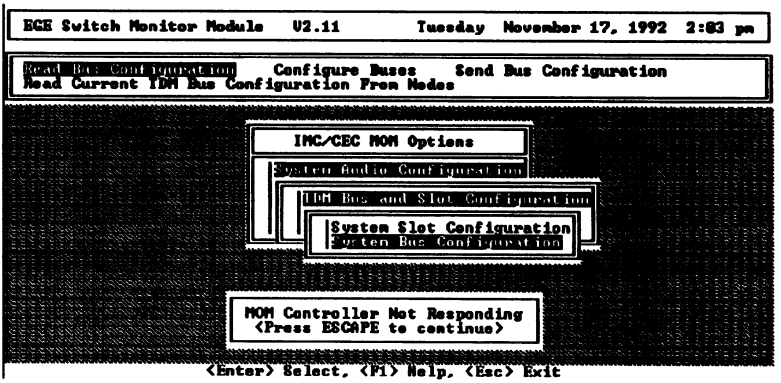

Figure 3.1-16 Unsuccessful Bus Read Screen

3.1.1.2.2. Configure Buses

This option is used to configure the number of TDM buses in the system. The following screen will appear if the "Configure Buses" option is selected. Use the "+" or "-" key to toggle between 4 and 8 buses. The user must know if the audio boards in the switch are 4 or 8 bus compatible. An 8 bus system may be configured as a 4 bus system, but a 4 bus system will not operate correctly as an 8 bus system.

An important note: The default bus configuration is 8 bus. It is **necessary** for switches with 4 bus audio boards to enter this option and set the number of audio TDM buses to 4. If the MOM controller board's Non Volatile RAM (NOVRAM) is reset (or not yet initialized), the switch will assume an 8 bus system until instructed otherwise. Again, a switch with 4 bus audio boards will not route audio correctly if configured as an 8 bus system.

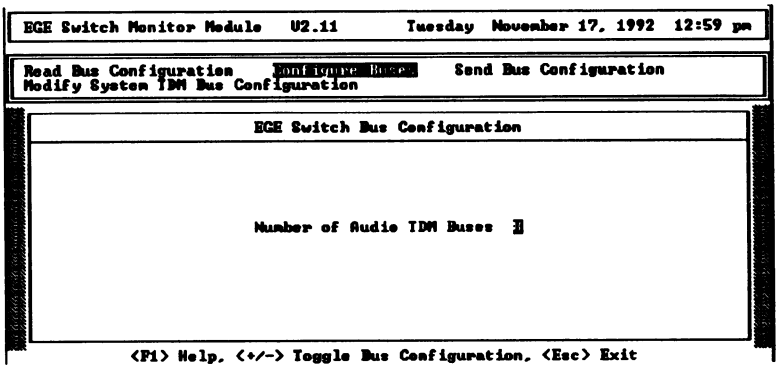

Figure 3.1-17 Configure Buses Screen

3.1.1.2.3. Send Bus Configuration

This option is used to send the new TDM bus count to the MOM controller. The MOM controller will not receive this data unless it is specifically sent using this command. The following screen will appear when the "Send Buses" option is selected and the bus configuration is transmitted to the switch.

An important note: The nodes in the system will not receive the new bus and slot configuration unless they are reset. You may either cycle power on the system or reset each node individually in order to disperse the new configuration. This should be done after the bus configuration and the slot configuration have been sent to the MOM controller.

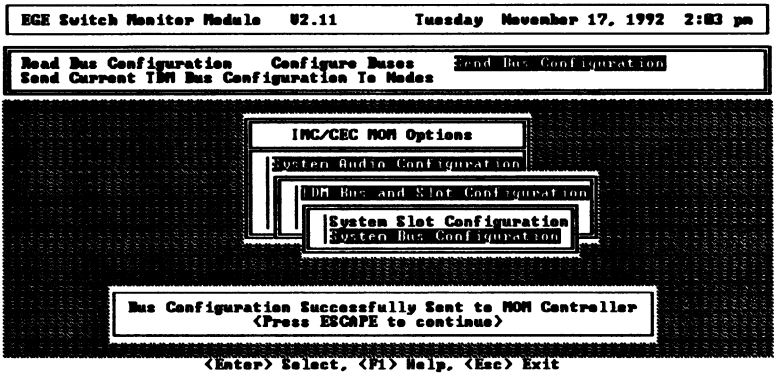

Figure 3.1-18 Bus Configuration Successful Sent Screen

3.1.2. Trunked Channel Configuration

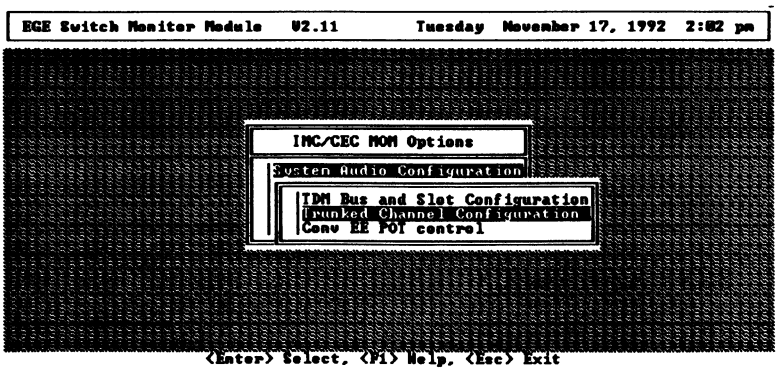

Figure 3.1-19 Trunked Channel Configuration Option

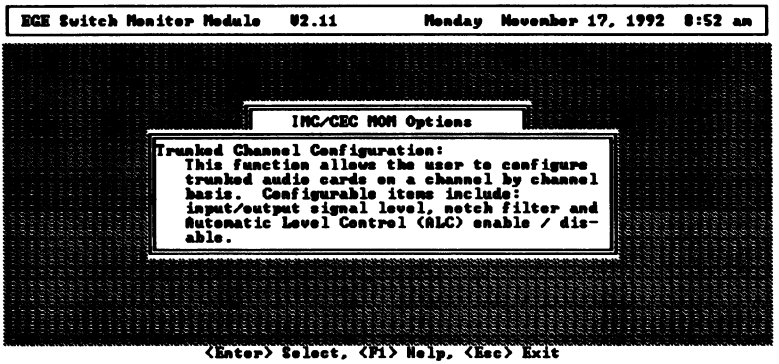

Figure 3.1-20 Trunked Channel Configuration Help

This option allows the user to adjust the audio signal levels for all trunked channels within the switch. The input signal level can be set and the Automatic Level Control (ALC) can be enabled or disabled for Console channels. There are more options for site channels. The input signal may be set, the desired output signal may be set, the ALC can be enabled or disabled, and the site signalling mode can be set ("Tone","M", "Both", or "Off"). If "M", "Tone", or "Both" site signalling method is selected, a screen will appear which allows the 2175 Hz notch filter to be enabled or disabled, as well as the level for the secure tone to be set (makes sense for "Tone" only). The above screen will appear if the user selects HELP for "Trunked Channel Configuration".

After the user has selected "Trunked Channel Configuration", the decision must now be made to configure console channels or site channels. The following sub menu prompts the user for the desired selection.

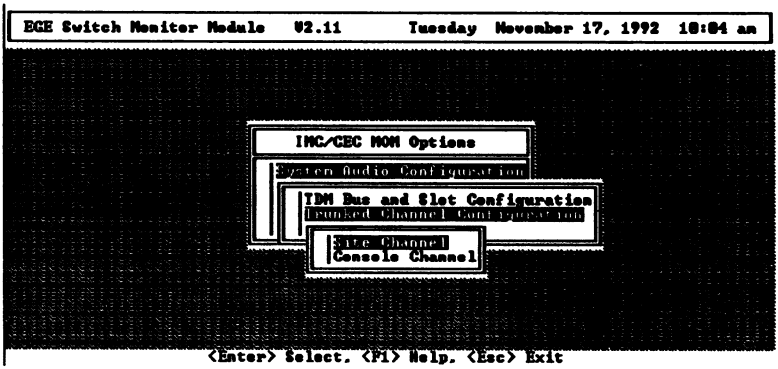

Figure 3.1-21 Trunked Channel Configuration Sub Menu

Upon entering the site or console trunked channel configuration screen, the MOM PC will send a request for current configuration data to the switch. Each request is for 4 channels of data. If the data fields on the screen are flashing, the current configuration data has not been received by the MOM PC for that site or console.

If the data fields are flashing, one of the following four possibilities exists.

- There is no site or console with the requested device number.
- The request for data was sent before the devices had reported to the MOM PC.
- The serial link from the MOM PC to the switch is down.
- The controller board for the site or console has been reset since the data was requested.

To request the data again, either exit the trunked channel configuration screen and reenter or, change the site or console number to another device and then change it back.

3.1.2.1 Site Trunked Channel Configuration

If the user selects "Site Channel" configuration the following screen will appear. As discussed previously, the user has the option of setting the input signal levels, adjusting the desired output signal levels, choosing the site signalling mode, and enabling / disabling the Automatic Level Control circuitry. This option is used to configure trunked channels for "site" type devices. Currently, these include MIMs, NIMs, VMIMs, and CTIMs.

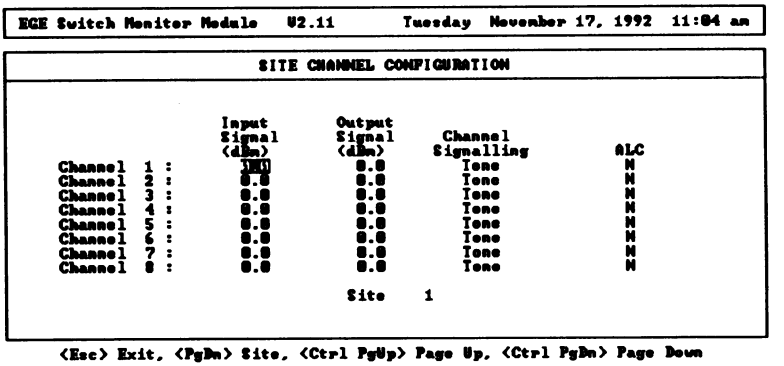

Figure 3.1-22 Site Channel Configuration Screen

Configurable Fields:

Input Signal Level

This is the signal level (in dBm) coming into the switch. The input signal level should be measured with a 600 ohm termination (subtract 1.5 dBm if the Automatic Level Control (ALC) is disabled).

Valid Range is -25.0 dBm to 12.0 dBm in 0.5 dBm increments.

Output Signal Level (Site Channels Only)

This is the desired signal level (in dBm) from the switch to the site. A 600 ohm load output impedance is assumed. The input signal level must be measured and reported correctly on this form to obtain the desired output signal level.

Valid range is -25.0 dBm to 13.0 dBm.

Channel Signalling

(For NIMs, this field is replaced by "Channel Equipped" - see below)

Use "+/-" keys to select the method for signalling and holding a site audio channel. The possible selections are "M", "Off", "Tone", or "Both". If "Tone", "M", or "Both" is chosen and the enter key is pressed, a screen will appear so that the 2175 Hz secure tone level can be adjusted, and the 2175 Hz notch filter can be enabled or disabled (see figure 3.1-23).

Automatic Level Control (ALC)

Use this field to enable or disable the ALC. Enable the ALC to reduce the variance in the level of an input signal.

WARNING:
The ALC must NOT be enabled on 19D903302P1 audio boards.

Channel

Each page of this form contains 8 audio channels. Thirty two channels may be cycled through by entering "Ctrl Page Up" and "Ctrl Page Down". It is only possible to configure these channels if they are supported by the site.

Site

Change the site number by using the "Page Down" or the arrow keys to position the cursor on the site field. Enter the new site number, and then enter "Page Up". If a Network Interface Module (NIM) device is chosen, the following changes to the Site Channel Configuration screen will appear. The "Channel Signalling" field is replaced by the "Channel Equipped" field. The "NIM->" prompt will appear next to the "Site" prompt to indicate that this device is a NIM.

3.1.2.1.1. NIM Channel Configuration

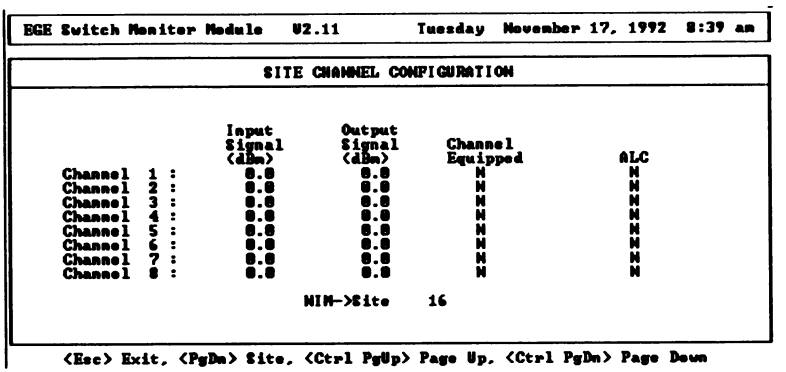

Figure 3.1-23 NIM Channel Configuration Screen

Channel Equipped

This field is unique to NIM devices. This field must be a "**Y**" for each installed inter switch voice channel and a "**N**" for all other channels.

3.1.2.1.2 Site Channel Signalling

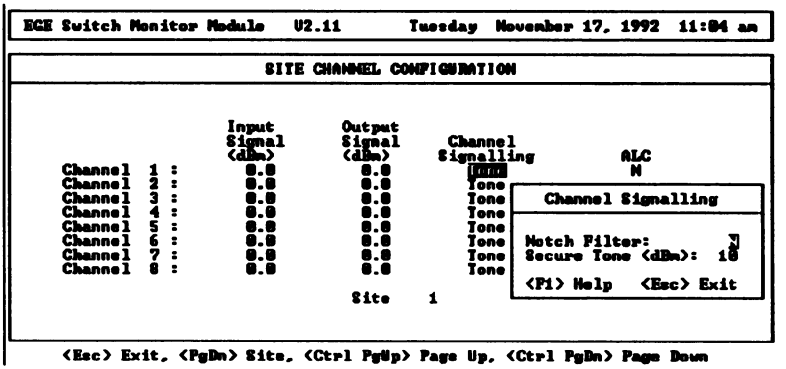

Figure 3.1-24 2175 Hz Tone Adjustment Screen

Configurable Fields on the Channel Signalling Form:

Notch Filter

Use this field to enable or disable the 2175 Hz notch filter. Enable the notch filter to eliminate the "talk down" to a site channel.

WARNING:
The notch filter must NOT be enabled on 19D903302P1 audio boards.

Secure Tone

Enter the signal level in dBm for the 2175 Hz secure tone. Valid range is -10 dBm to 11 dBm. This is only necessary if "Tone" signalling has been selected. The 2175 Hz function tone level will be 10 dBm below the secure tone level. The 2175 Hz hold tone level will be 20 dBm below the function tone.

Note: The 2175 Hz secure tone level is set on a per card basis (i.e. setting the secure tone level for channel 1 to 5 dBm affects channels 2, 3 and 4 also).

Press **<Esc>** to return to the site trunked channel configuration screen.

3.1.2.2 Console Trunked Channel Configuration

If the user selects "Console Channel" configuration the following screen will appear. As discussed previously, the user has the option of setting the input signal levels, and enabling / disabling the Automatic Level Control circuitry.

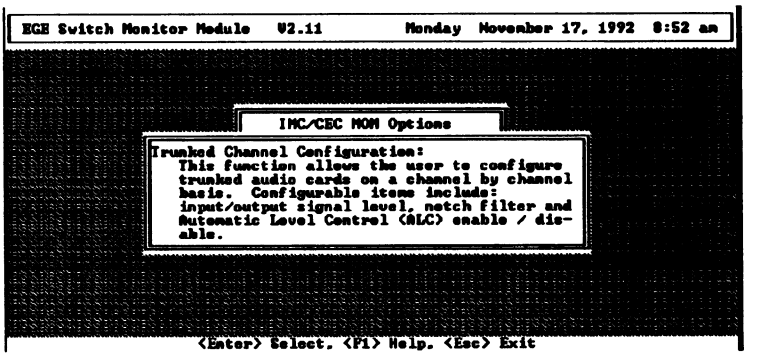

Figure 3.1-25 Trunked Channel Configuration Help Screen

Configurable Fields:

Input Signal Level

This is the signal level (in dBm) coming into the switch. The input signal level should be measured with a 600 ohm termination (subtract 1.5 dBm if the Automatic Level Control (ALC) is disabled).

Valid Range is -25.0 dBm to 12.0 dBm in 0.5 dBm increments.

Automatic Level Control (ALC)

Use this field to enable or disable the ALC. Enable the ALC to reduce the variance in the level of an input signal.

Console

Change the console number by using the "Page Down" or the arrow keys to position the cursor on the console field. Enter the new console number, and then enter "Page Up".

Channel

There are two pages to this form with each page containg 8 audio channels. Twelve channels may be cycled through by entering "Ctrl Page Up" and "Ctrl Page Down". It is only necessary to configure the channels that are supported by the console.

Note: The output signal level for consoles is controlled by the console's module volume bar settings.

3.1.3. Conventional Signal Level Adjustment

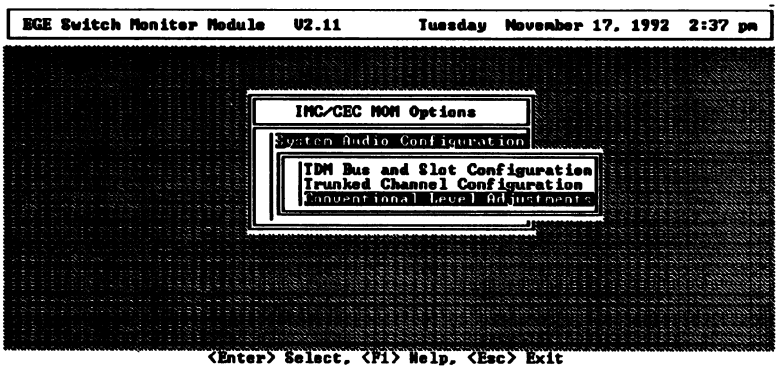

Figure 3.1-26 Conventional Signal Level Adjustment Option

This function allows the user to adjust the 2175 Hz hold tone and VOX threshold levels for each conventional channel in the system. Up to 64 conventional channels are supported per multisite switch. The following screen is displayed when **HELP** is selected for the "Conventional Level Adjustments" option.

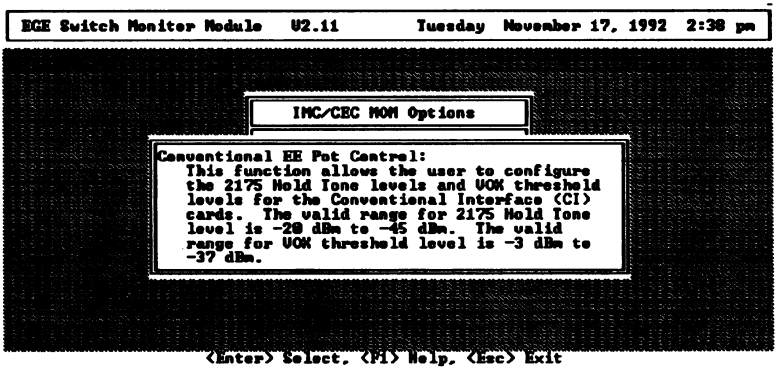

Figure 3.1-27 Conventional Level Adjustments Help

Upon entering the conventional level adjustment screen, the MOM PC will send a request for current configuration data to the switch. If the data fields on the screen are flashing, the current configuration data has not been received by the MOM PC from the Conventional MIM (VMIM).

If the data fields are flashing, one of the following possibilities exists.

- The serial link between the VMIM and the CCI is down
- The serial link from the MOM PC to the switch is down

To request the data again, exit the conventional Level Adjustment screen and reenter.

Note: The SECURE tone level is +30 dB above the HOLD tone. The FUNCTION TONE is +20 dB above the HOLD tone.

Note: The VOX threshold is the level in dBm that will cause a VOX trip. The level required to "unkey" the VOX is approximately 4 dB lower than the listed value.

Levels may be set to a specific value by simply entering the desired value. If the values are not changing, the link to the CI board may not be correct. Verify the link.

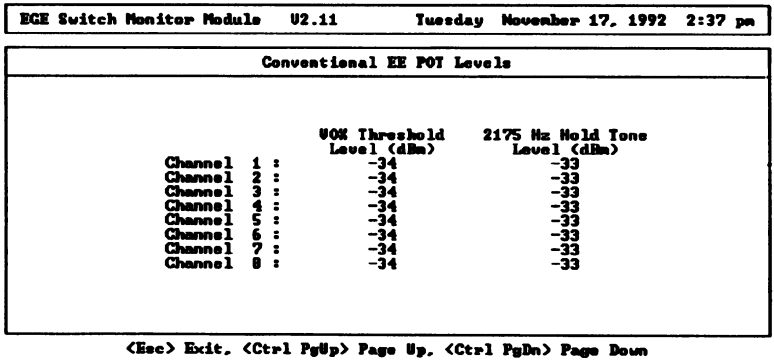

Figure 3.1-28 Conventional EE Pot Control Option

3.2. System Configuration

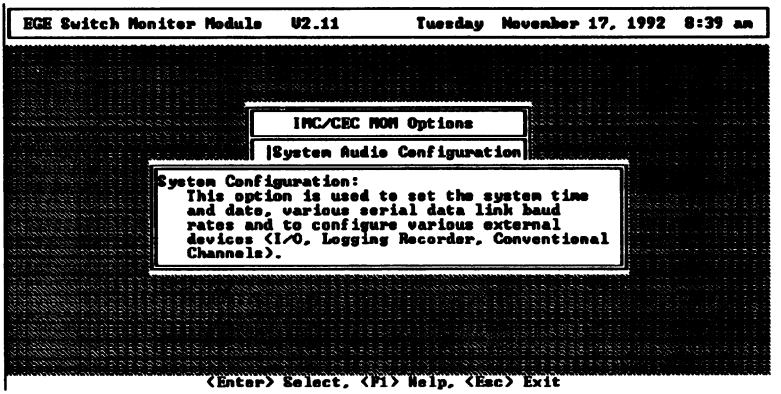

Figure 3.2-1 System Configuration Help Screen

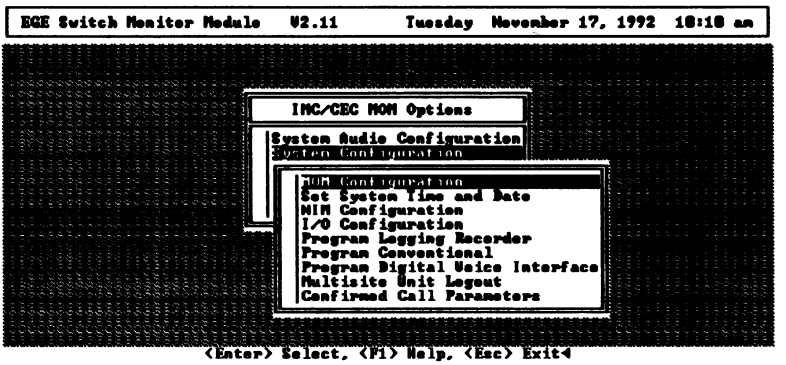

Figure 3.2-2 MOM Configuration Screen

3.2.1. MOM Configuration

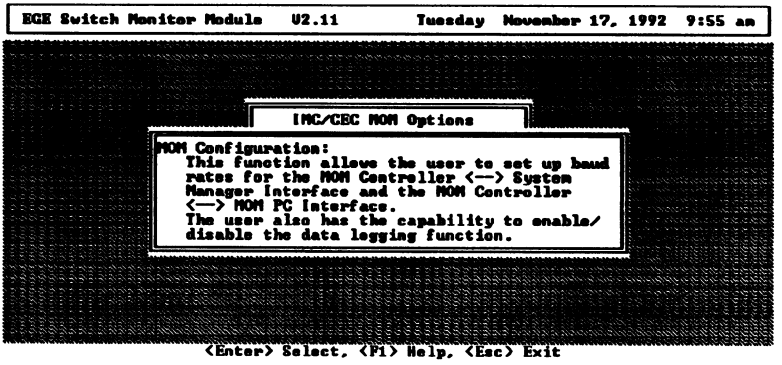

Figure 3.2-3 MOM Configuration Help Screen

This function allows the user to adjust baud rates and enable/disable data logging, Printer Status, Redundant Clocks, and Unit Logout Timers. Baud rate interfaces may be adjusted between the MOM PC and MOM controller and between the MOM controller and the System Manager. Selecting HELP on this function displays a help screen shown above.

The following screen is displayed when the user elects to configure the MOM. The baud rate interfaces may be adjusted by pressing the "+" or "-" keys. Currently the baud rates supported are 19.2k baud and 9600 baud. Data logging, the redundant clock feature, and the Unit Logout Timers may be enabled / disabled in the same manner. If the MOM controller's NOVRAM is cleared, the redundant clock feature must be reset from the MOM PC.

WARNING:
The redundant clock feature must NOT be enabled if any 19D903302P1 Rev J or earlier audio boards are installed in the CEC/IMC.

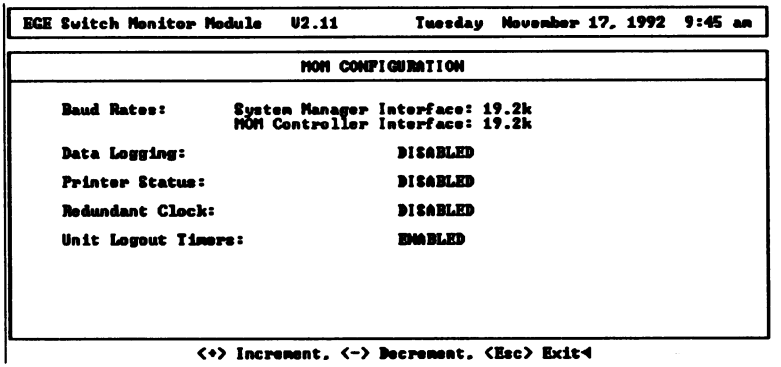

Figure 3.2-4 MOM Configuration Window

3.2.2. Set System Time and Date

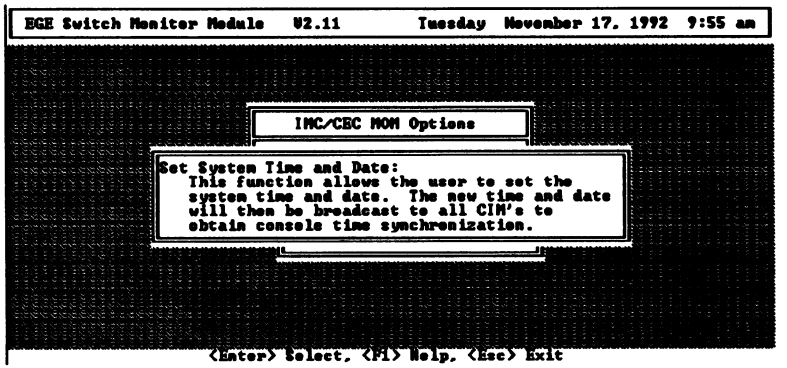

Figure 3.2-5 Set System Time and Date Help Screen

This function is used to alter the system time and date. This time and date is broadcast throughout the entire switch for time syn-chronization. Selecting HELP on this option will display the above help screen.

Selecting the "Set System Time and Date" option will bring up the following sub menu. The user must now select between the time and date options.

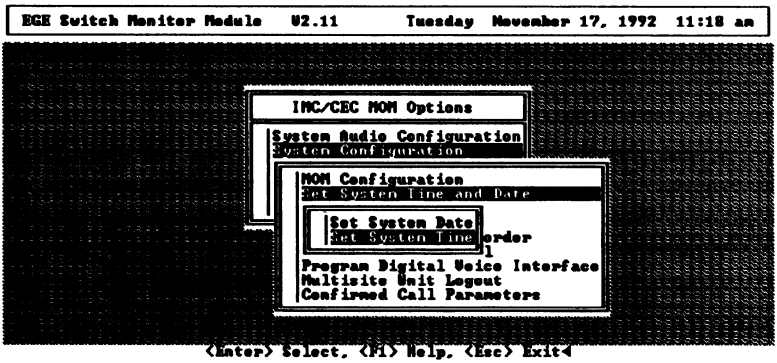

Figure 3.2-6 Set System Time and Date Screen

If the user selects the "Set System Time" option the following screen will appear. The format required for the time is shown below. The time needs to be entered in a 24 hour format (i.e. 11:00:00 at night would be entered as 23:00:00).

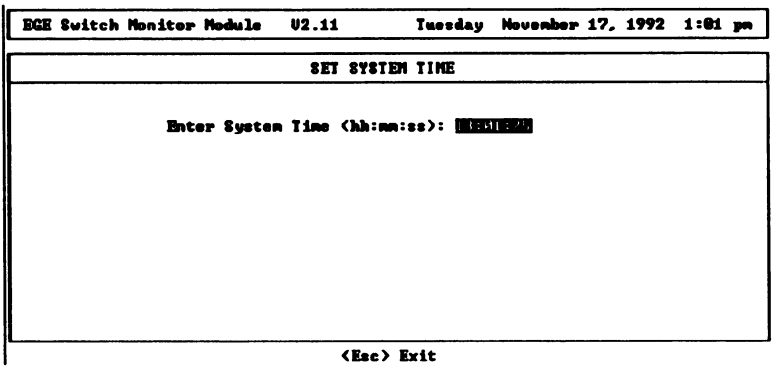

Figure 3.2-7 Set System Time Window

If the user selects the "Set System Date" option the following screen will appear. The format required for the date is shown below.

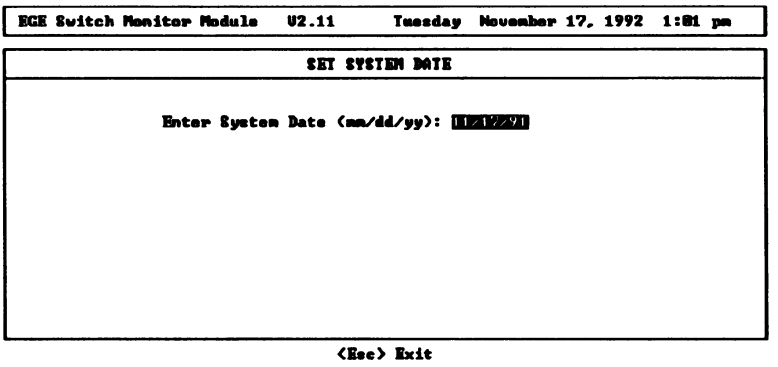

Figure 3.2-8 Set System Date Window

3.2.3. NIM (Node Interface Module) Configuration

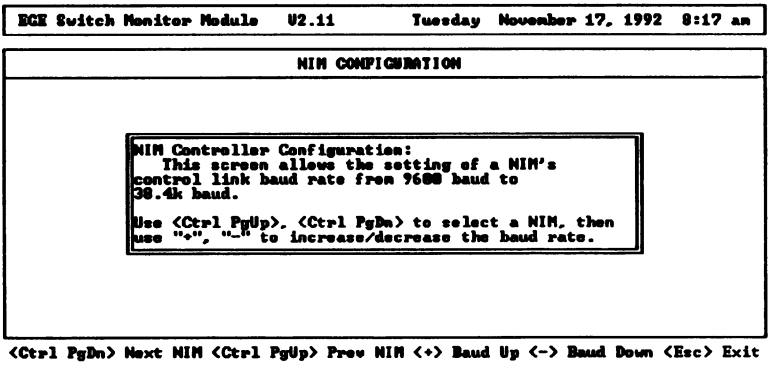

Figure 3.2-9 NIM Configuration Help Screen

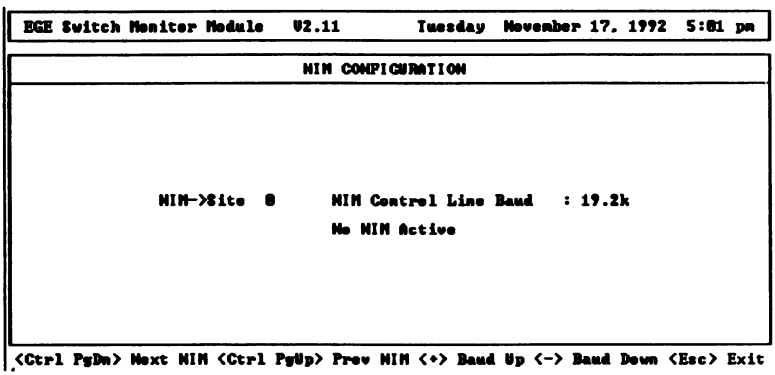

Figure 3.2-10 NIM Configuration Screen

This function allows setting of a NIM's inter node control link baud rate. This link is the control connection between Network Interface Modules (NIM) coupling two IMC/CECs together. The NIM on each end of the link must be manually set to the same baud rate. Use the <Ctrl PgDn> and <Ctrl PgUp> keys to select an active NIM if there is more than one NIM in the system. If no active NIM is found the warning message shown in the screen shot will be displayed. The available baud rates are selected by pressing the "+" or "-" keys.

3.2.4. I/O Configuration

This function is used to program the auxiliary I/O ports available on all controller boards.

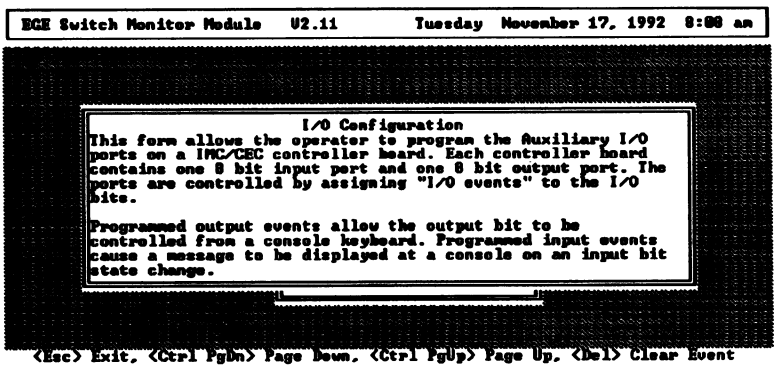

Figure 3.2-11 I/O Configuration Help
(System Configuration Menu)

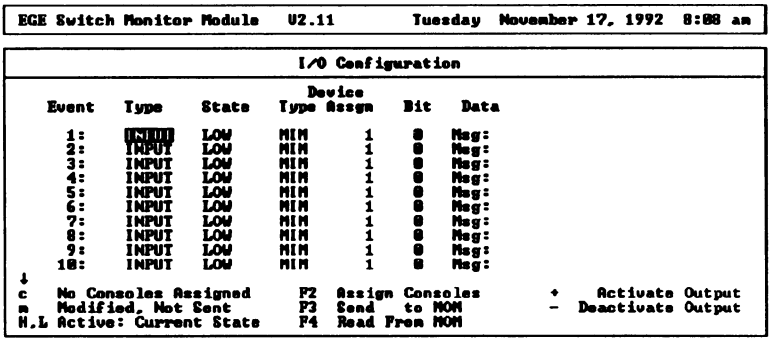

Figure 3.2-12 I/O Configuration Main Screen

This screen displays 10 I/O events at a time. Each event can be assigned to a particular port/bit anywhere in the system. Output events are then assigned a trigger code to allow control from a console. Input events are assigned a 25 character or fewer string for display at consoles when the input event goes active. Consoles are then assigned to the events to specify which will be able to control or monitor the event.

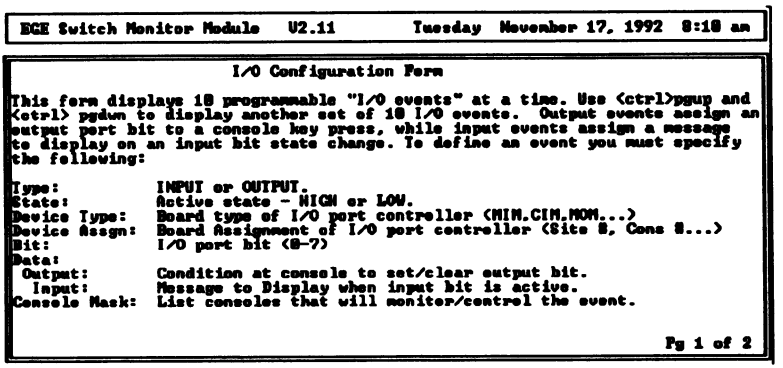

Figure 3.2-13 I/O Configuration Main Help Page 1

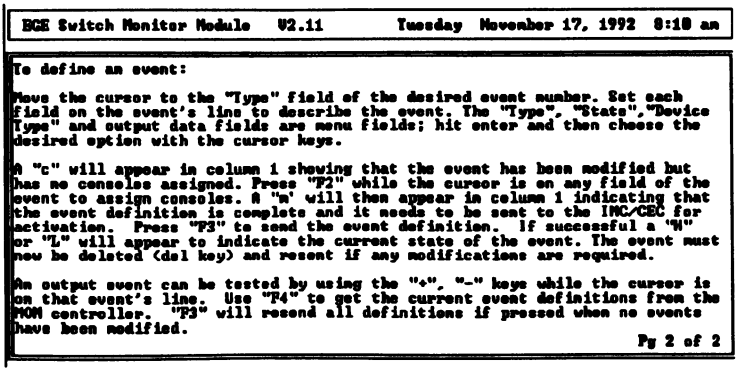

Figure 3.2-14 I/O Configuration Main Help Page 2

For each event the type, active state, and port controller device type must be specified. The type specifies an input bit versus an output bit. The active state specifies if the event is considered active when the bit is in a HIGH (1) or a LOW (0) state. Output events will be set to their active state when the specified trigger event is encountered at an assigned console. An input event's display message will be shown at assigned consoles whenever the input bit transitions to its active state. The device type specifies the type of controller board to which the I/O equipment will be wired. The following three figures show the selection menus for these parameters.

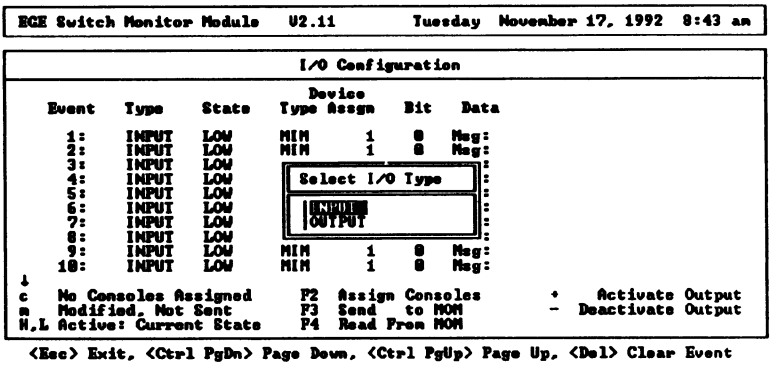

Figure 3.2-15 I/O Event Type Selection Menu

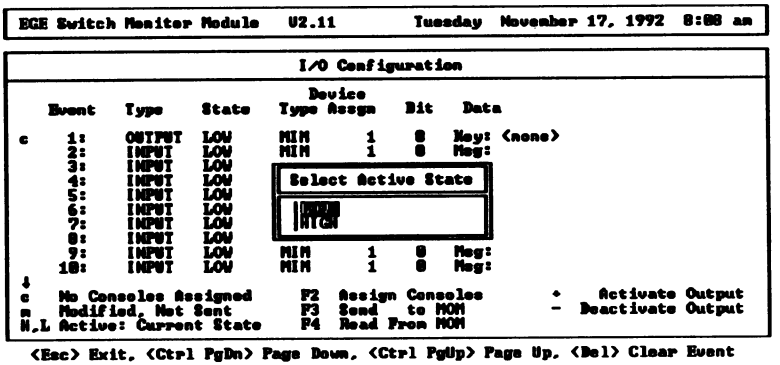

Figure 3.2-16 I/O Active State Selection Menu

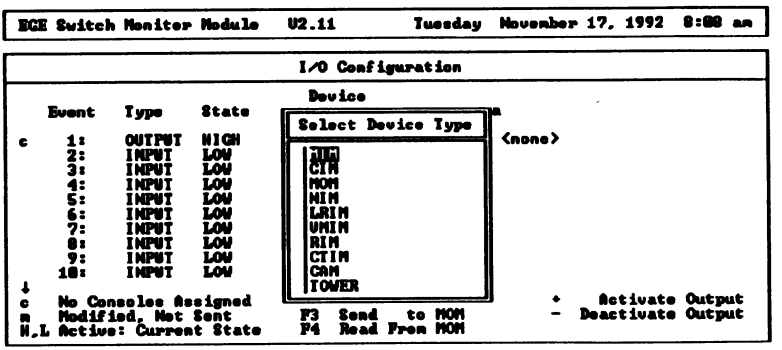

Figure 3.2-17 Device Type Selection Menu

The device assign field uniquely identifies the controller board to which the I/O equipment will be wired. The bit field specifies which bit (0-7) of the input or output port to use. There is one 8 bit input port and one 8 bit output port per controller board.

The previous parameters defined the physical characteristics of the I/O event. Next the console control and monitoring parameters must be set. For input events you simply type in the message to display for the event in the "Msg:" field. For output events a selection menu of all possible trigger conditions will be displayed. (Press enter while on the "Key:" field). The activate condition will cause the output event to be set to its active state on occurrence. The deactivate condition specifies when to set the output back to its inactive (opposite) state. For a momentary output activation choose a key press code for the activation, and "<unkey>" for the deactivation. For an output event that needs to be left on (latched) for any significant period of time choose a key press for the activation, then choose the same key press for the deactivation. This causes the output state to toggle with each press of the assigned key. The deactivate selection menu is just like the activate menu except it only contains key press codes. Console condition codes such as "Station Busy" and "Emergency" deactivate when the condition clears.

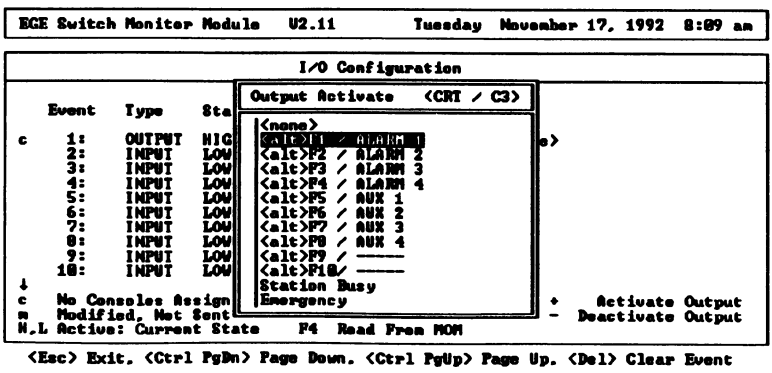

Figure 3.2-18 Output Trigger Selection Menu

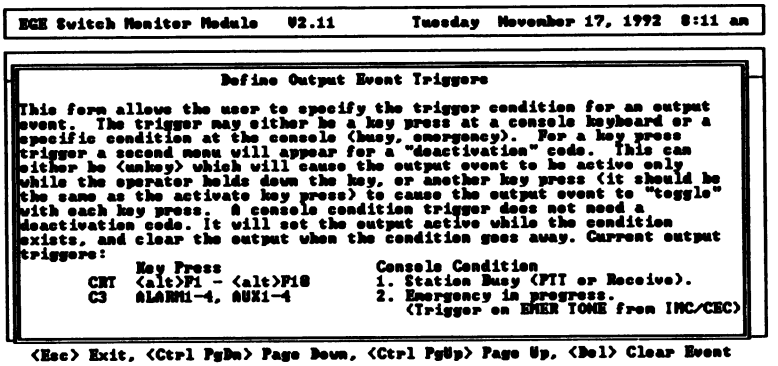

Figure 3.2-19 Output Trigger Help Screen

Once all parameters of an I/O event are specified you must assign consoles to the event. Each console assigned to an event will be able to control or monitor the event. Enter a "Y" for each console you wish to assign to the event.

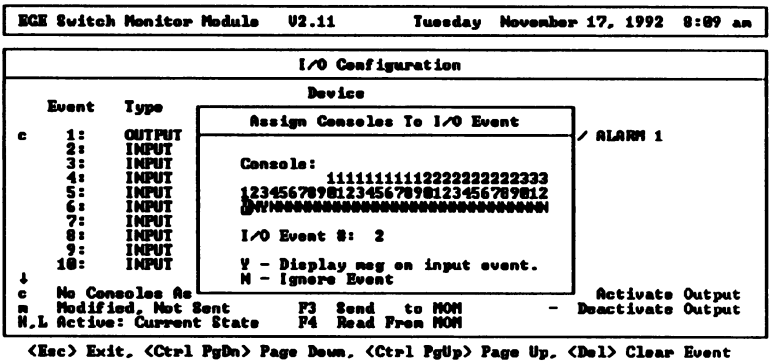

Figure 3.2-20 Assign Consoles To I/O Event

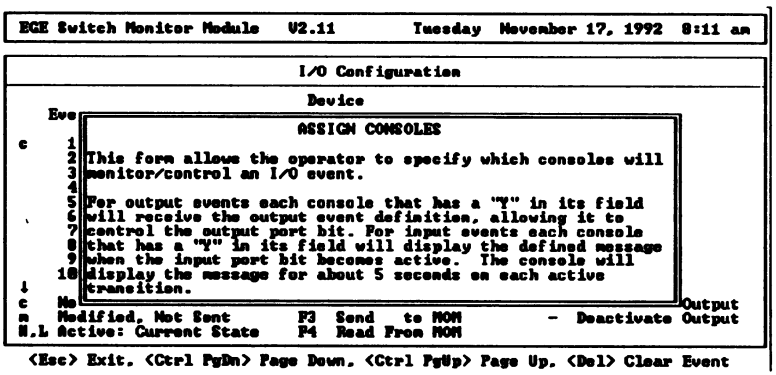

Figure 3.2-21 Assign Consoles Help Screen

Once an I/O event is defined the definition must be sent to the MOM controller. Use **F3** to send the modified definition. The MOM controller will broadcast the definition so the I/O port controller board, and any assigned consoles can store it. The I/O port controller board must acknowledge receipt of the definition or a "MOM Communication Error" or "Device not active" dialog box will pop up. The port controller must be in the system and active on event definition.

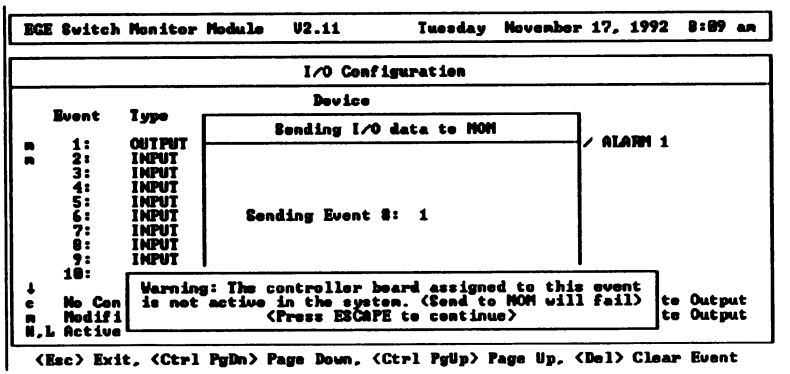

Figure 3.2-22 Send I/O Configuration To MOM.
(With Failure Alert Box)

Normally only modified event definitions are sent to the MOM. If F3 is used when no event definitions have been modified a dialog box is displayed asking if you wish to resend all definitions. This is useful to refresh all I/O definitions if a controller board or console has lost its definitions.

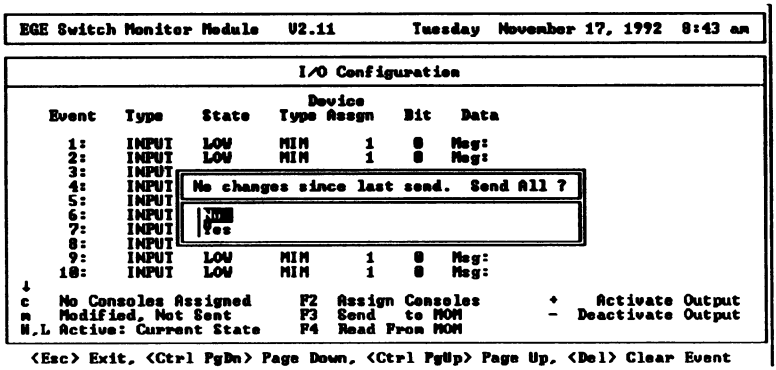

Figure 3.2-23 Send ALL To MOM Confirmation

The MOM controller stores all I/O event definitions in its non volatile RAM. To read the current MOM controller data press F4. This will overwrite all I/O definitions at the MOMPC. A confirm dialog box is displayed to allow you the chance to back out.

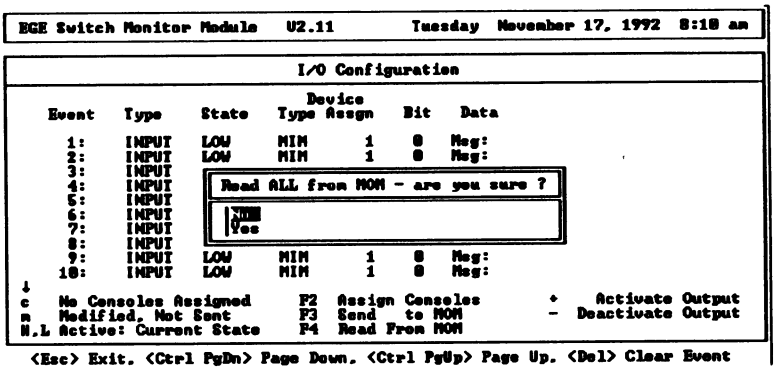

Figure 3.2-24 Read from MOM Confirmation

3.2.5. Logging Recorder

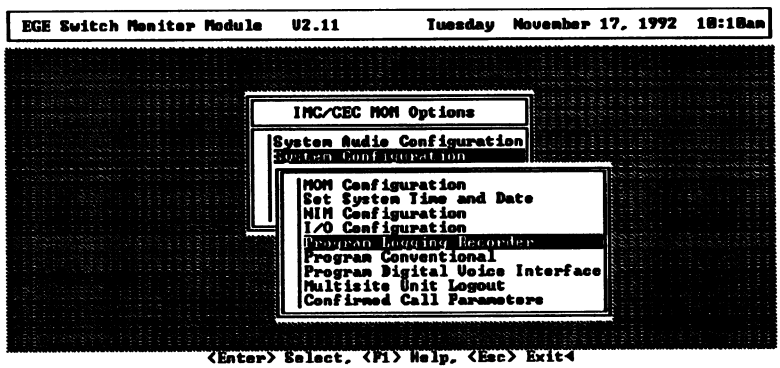

Figure 3.2-25 Logging Recorder Interface

This option is used to program the Logging Recorder Interface (LRIM) to the EGE multisite switch. The LRIM interface is used for recording audio for selected units, groups and conventional channels. The switch supports five LRIM devices, each device supporting up to 64 modules and 32 channels. The following screen is displayed when the **HELP** key is pressed on the MOM Options Menu.

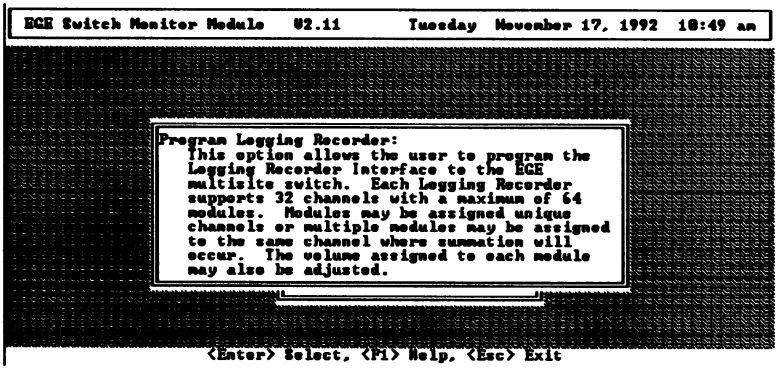

Figure 3.2-26 Logging Recorder Help Screen

The following screen shows the MOM PC Logging Recorder Interface. This interface was designed to emulate the console programming interface as closely as possible.

The Logging Recorder currently supports the programming of units, groups, and conventional channels. Phone lines and consoles will be supported in the future.

Summation may be obtained by assigning multiple modules to the same channel. By assigning each module a unique channel number, summation will not occur. The volume level for each module is also adjustable. Volume levels between 0 and 32 are valid (where 0 is no volume and 32 is MAX volume). The PROGRAMMED field is the program status at the Logging Recorder. A "**Y**" indicates the LRIM has programmed the module. An "**N**" indicates the module is NOT programmed.

To select the appropriate Logging Recorder, page down to the Logging Recorder prompt and enter a number between 1 and 5. Control Page Down will cycle through the valid modules to program.

The definition of each function key (**F1 - F10**) is defined on the bottom of the form. Function keys **F6** and **F8** are not supported. Function keys **F4** and **F5** will be supported in the future.

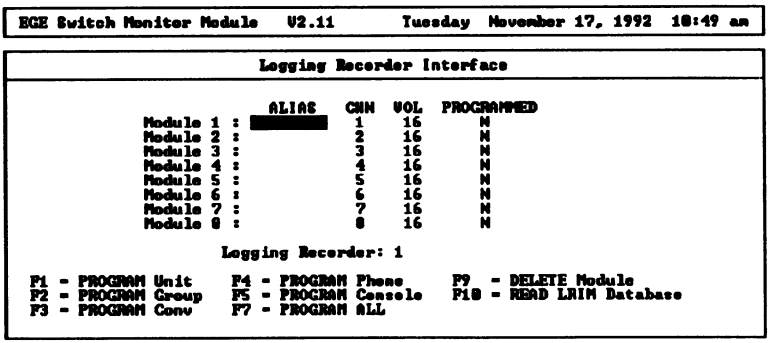

Figure 3.2-27 Logging Recorder Program Screen

To program a module, simply select the module you wish to program and press one of the valid function keys. Entering **F1 (PROGRAM UNIT)** will display the following screen. The unit aliases will be displayed in alphabetical order. The first item in the list is the LID of the currently selected unit. Select the unit you wish to program and press "**<Enter>**". This will automatically program the Logging Recorder to the module you previously selected at the volume level displayed for that module. The unit alias should be displayed on the module you just programmed and the "PROGRAMMED" field should update to "**Y**". If this does not occur then the interface to the Logging Recorder is not correct and needs to be checked.

Volume levels may be adjusted by selecting the volume for the module you wish to adjust and entering the new volume.

Reminder: Summation will occur if modules are assigned the same channel number. If you do not desire summation, assign each module a unique channel number (between 1 and 32).

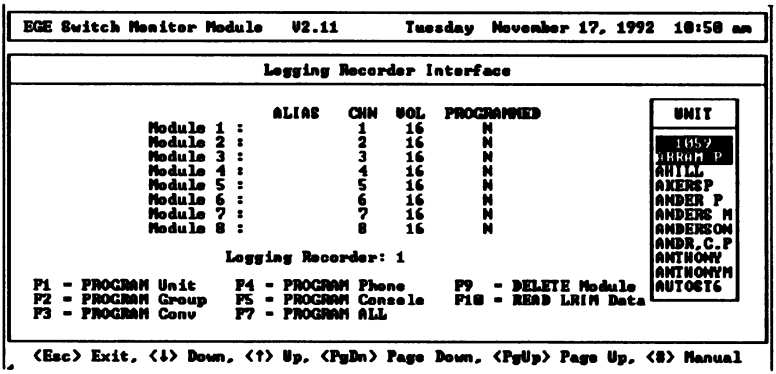

Figure 3.2-28 Logging Recorder Program Unit Screen

Programming groups **F2** and conventional channels **F3** are performed in the same manner as units. The following forms will appear if these options are selected.

Additional Function Key Support:

F7 Reprograms LRIM with current MOM PC database. This function is very important during software upgrades. Part of the upgrade procedure is to clear NOVRAM on all boards in the switch. This function allows you to reprogram the LRIM after the NOVRAM has been cleared.

F9 Deletes the currently selected module from the LRIM database.

F10 Read the programming database from the LRIM. This will overwrite the MOM PC database of what the LRIM has programmed.

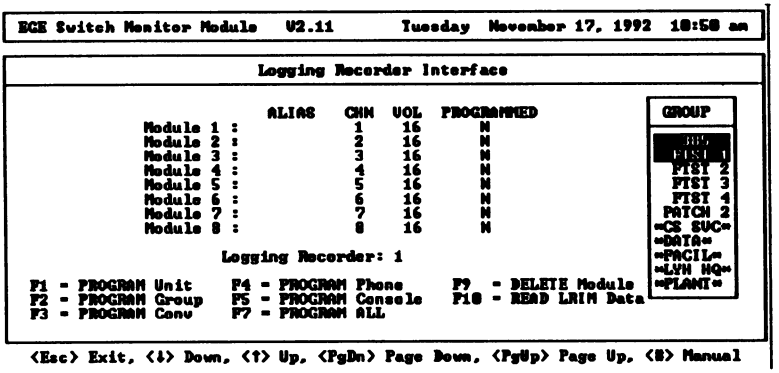

Figure 3.2-29 Logging Recorder Program Group Screen

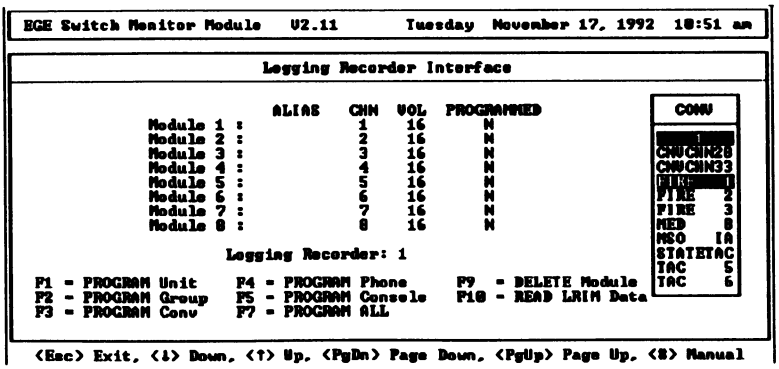

Figure 3.2-30 Logging Recorder Program Conventional Screen

In addition to list programming, the LRIM may be programmed manually with the use of the "#" key. This key allows the user to manually enter the id (unit, group, or conventional channel) without having to scroll through the individual lists.

The following screen shows a user manually programming group 273 to the LRIM. To execute this command the user had to PROGRAM Group (**F2**), displaying the GROUP window, enter "#", displaying the ID window, and enter 273, to program group 273.

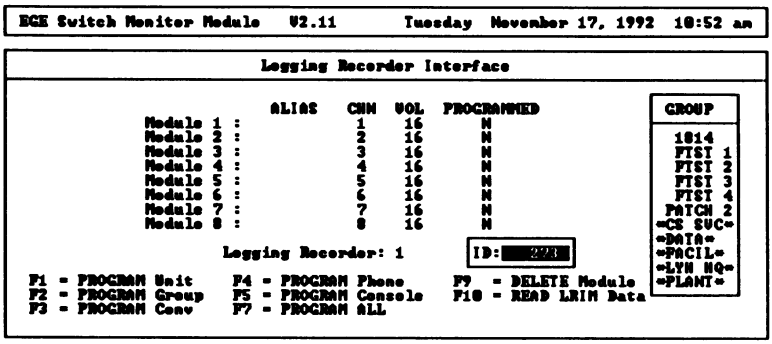

Figure 3.2-31 Logging Recorder Program Group Manually Screen

The following screen shows the Logging Recorder Interface display with five modules programmed. The **ALIAS** for each programmed module is displayed and the **PROGRAMMED** field is updated to "**Y**". Audio for group "FTST 1" will be routed to channel one of the logging recorder. Audio for unit "16 PLUS" will be routed to channel 2 and audio for conventional channel "800MUTAD" will be routed to channel 3. To demonstrate how summation is accomplished, notice how modules 4 and 5 (groups ENGR 1 and ENGR 2) are assigned the same channel (4). All audio received on these groups will be summed together and routed to channel 4.

The LRIM also handles the patch / simulselect feature of the switch. If multiple groups are patched / simulselected together then audio transmitted on the SAID (System Assigned Id) will be routed to each of those groups programmed at the LRIM.

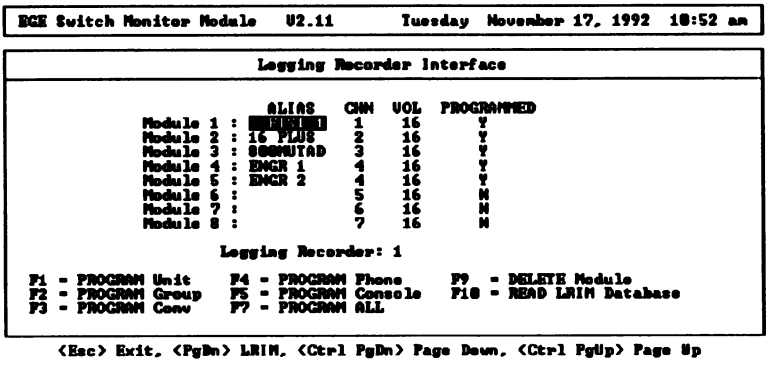

Figure 3.2-32 Logging Recorder Interface Database Screen

3.2.6. Program Conventional

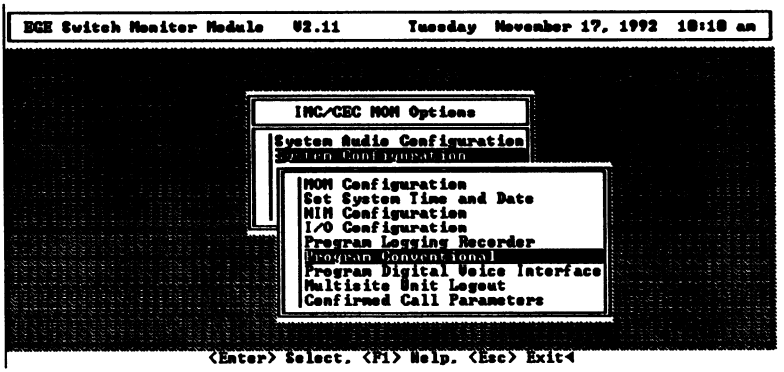

Figure 3.2-33 Program Conventional Interface Screen

This option is used to program the conventional channels to the Conventional Controller Interface (CCI) of the EGE multisite switch. The CCI will in turn program the appropriate Conventional Interface (CI) cards associated with the channel programmed. The CCI and CI cards reside in a separate backplane from the switch. The CCI card is serially connected to a Conventional MIM device of the EGE multisite switch. Each CCI is capable of controlling up to 32 conventional channels, eight CI boards with four channels per board. A maximum of two CCI boards may be connected to any switch for a maximum of 64 conventional channels. Both CCI and all CI boards may reside in the same backplane (separate from the switch).

The following screen is displayed when the **HELP** key is pressed on the IMC/CEC MOM Options menu.

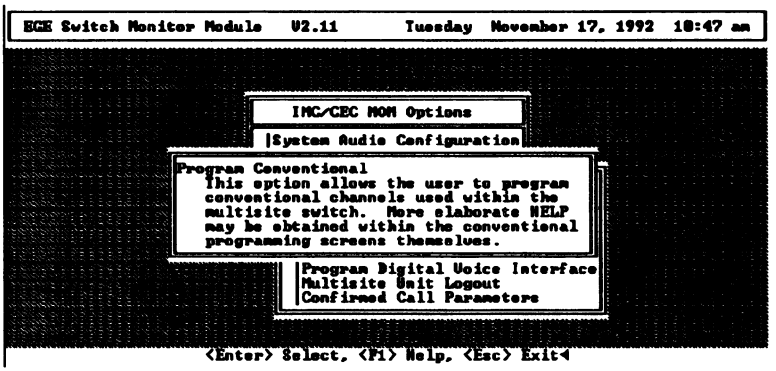

Figure 3.2-34 Program Conventional Help Screen

The following screen shows the high-level programming data for the conventional channel. Field definitions are as follows:

Field	Definition
Channel	Conventional channel (range 1 - 64).
Alias	8 character alias associated with channel.
Switch Site	Conventional MIM assignment (range 1 - 32).
Type	Channel configuration type:

Tone
Standard tone signaling.

Tone (E&M PTT)
Standard tone signaling except on PTTs. E&M signaling on PTTs.

Tone (Tone/E&M PTT)
Standard tone signaling on all functions. PTTs include both tone and E&M signaling.

DC

Standard DC signaling.

DC (E&M PTT)

Standard DC signaling except on PTTs. E&M signaling on PTTs.

DC (Tone/E&M PTT)

Standard DC signaling on all functions. PTTs include both DC and E&M signaling.

Configuration

Various configuration options:

2 / 4 wire configuration

Tx/Rx lines coupled / NOT coupled

Coupled:

Changing either Tx or Rx causes both Tx and Rx to change.

NOT Coupled:

Tx and Rx frequencies may be changed independent of each other.

VOX / COR Enable

If VOX enabled, conventional calls trip on presence of audio. If COR (Carrier Operated Relay) enabled, calls tripped on relay.

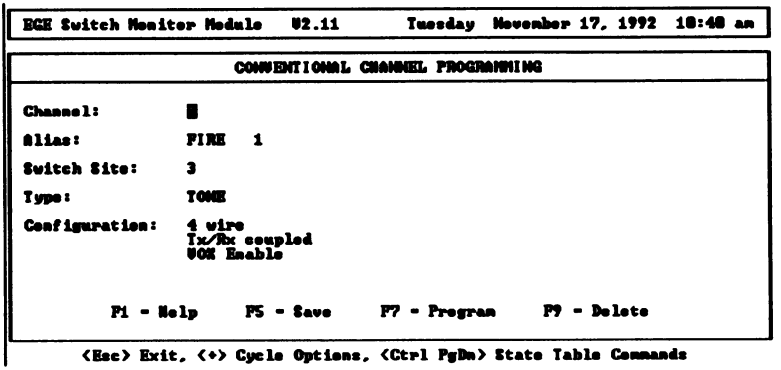

Figure 3.2-35 Program Conventional Configuration Screen

The following four screens display the conventional programming **HELP**. Use the Page Down and Page Up keys to cycle between pages. Read the HELP screens for information on the supported key entries.

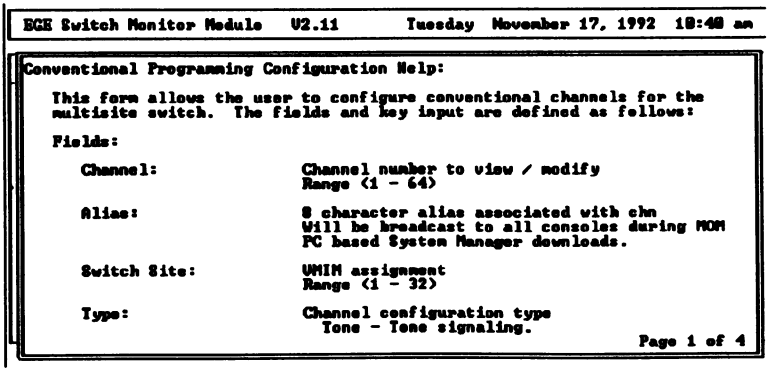

Figure 3.2-36 Program Conventional Configuration Help Screen 1

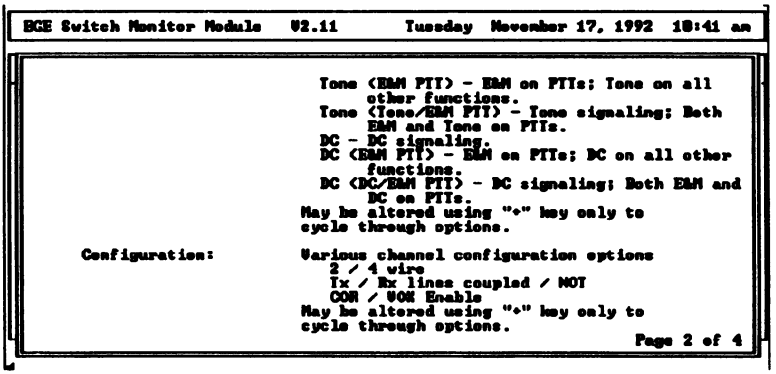

Figure 3.2-37 Program Conventional Configuration Help Screen 2

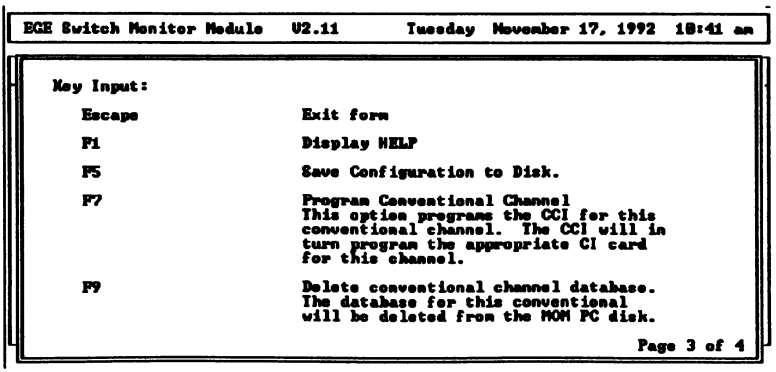

Figure 3.2-38 Program Conventional Configuration Help Screen 3

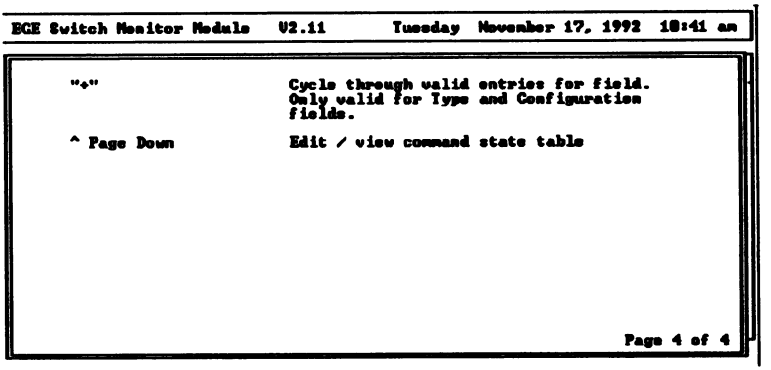

Figure 3.2-39 Program Conventional Configuration Help Screen 4

Entering Ctrl Page Down displays the low-level programming data for the conventional channels. A "Please Wait" window will flash while these forms are being built. The following two screens show an example of tone and DC configured channels. The channel and alias fields cannot be edited here. The user must escape back to the previous form to change these fields. The following commands are supported on both tone and DC configurations:

Command	Definition
SET TX FREQ 1	Transmit on frequency 1.
SET TX FREQ 2	Transmit on frequency 2.
SET TX FREQ 3	Transmit on frequency 3.
SET TX FREQ 4	Transmit on frequency 4.
SET TX FREQ 5	Transmit on frequency 5.
SET TX FREQ 6	Transmit on frequency 6.
SET TX FREQ 7	Transmit on frequency 7.
SET TX FREQ 8	Transmit on frequency 8.
SET RX FREQ 1	Set receive frequency to frequency 1.
SET RX FREQ 2	Set receive frequency to frequency 2.
SET RX FREQ 3	Set receive frequency to frequency 3.
SET RX FREQ 4	Set receive frequency to frequency 4.
SET RX FREQ 5	Set receive frequency to frequency 5.
SET RX FREQ 6	Set receive frequency to frequency 6.
SET RX FREQ 7	Set receive frequency to frequency 7.
SET RX FREQ 8	Set receive frequency to frequency 8.
REPEAT ENABLE	Enable Repeater.
REPEAT DISABLE	Disable Repeater.
CG ENABLE	Enable Channel Guard.
CG DISABLE	Disable Channel Guard.
CG MON ENABLE	Enable Channel Guard Monitor (disabled on PTTs).
CG MON DISABLE	Disable Channel Guard Monitor.
SCAN ENABLE	Scan Enable.
SCAN DISABLE	Scan Disable.
SIM MON ENABLE	Enable simultaneous monitor.
SIM MON DISABLE	Disable simultaneous monitor.

The low level screens map to a state table located on the CI card for the selected channel. This state table is what the CI card uses to control the base station.

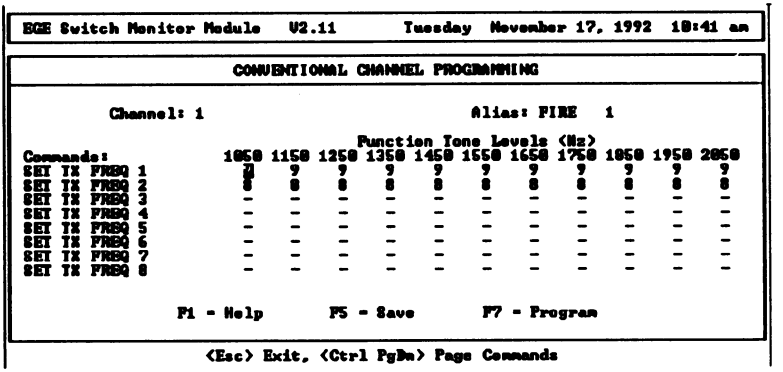

Figure 3.2-40 Program Conventional Tone Frequencies Screen

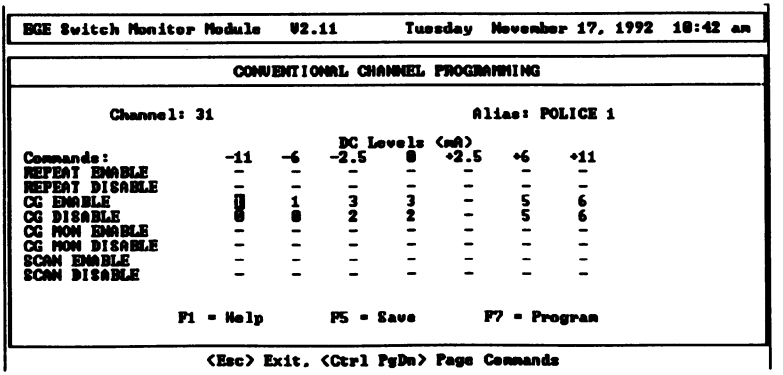

Figure 3.2-41 Program Conventional DC Levels Screen

The following **HELP** screens are available for low-level channel programming. It is important to read these prior to programming each channel. These screens will aid in correctly programming the channels and inform you of the various keys supported on the programming screens.

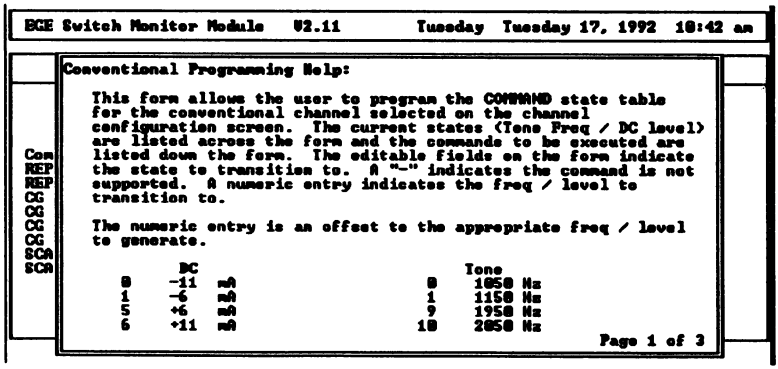

Figure 3.2-42 Program Conventional Help Screen 1

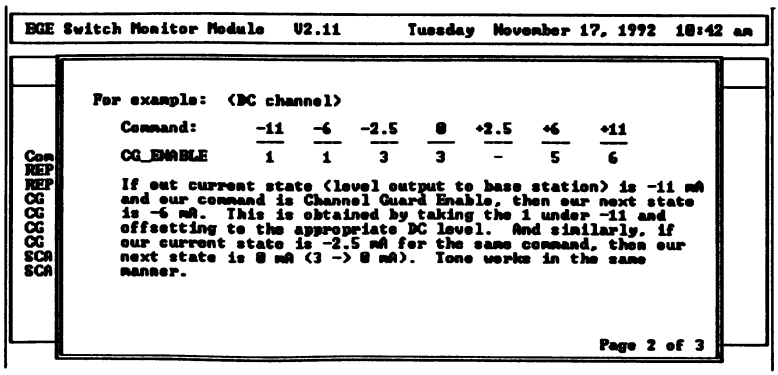

Figure 3.2-43 Program Conventional Help Screen 2

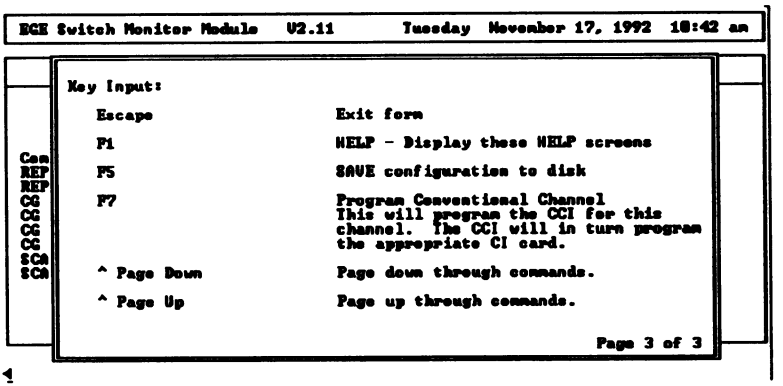

Figure 3.2-44 Program Conventional Help Screen 3

Elaborating on the example from page 2 of the HELP screens, we have the following station configuration:

FUNCTION	CONTROL CURRENT IN MILLIAMPS					
2 FREQ TX 2 FREQ RX WITH CHANNEL GUARD DISABLE	-11	-6	-2.5	0	+6	+11
	RX-F2 CG DISABLE	RX-F2 WITH CG	RX-F1 CG DISABLE	RX-F1 WITH CG	TX-F1	TX-F2

The DC channel programming data will be as follows:

Note: +2.5 mA not supported in this example.

DC Levels (mA)
Commands: -11 -6 -2.5 0 +2.5 +6 +11
SET TX FREQ 1 5 5 5 5 5 5 5
SET TX FREQ 2 6 6 6 6 6 6 6
SET RX FREQ 1 2 3 2 3 - 5 6
SET RX FREQ 2 0 1 0 1 - 5 6
CG ENABLE 1 1 3 3 - 5 6
CG DISABLE 0 0 2 2 - 5 6

DC Level Mapping:

Offset	DC Level	Offset	DC Level
0	-11 mA	4	+2.5 mA
1	-6 mA	5	+6 mA
2	-2.5 mA	6	+11 mA
3	0 mA		

Explanation of programming:

Commands

SET TX FREQ 1 5 on all fields because anytime console dispatcher keys on freq 1, +6 mA needs to be produced, regardless of the current state.

SET TX FREQ 2 6 on all fields because anytime console dispatcher keys on freq 2, +11 mA needs to be produced, regardless of the current state.

	Current State	Desired State	DC Offset Map
SET RX FREQ 1	RX-F2 CG DISABLE (-11 mA)	RX-F1 CG DISABLE (-2.5 mA)	Offset 2
	RX-F2 WITH CG (-6 mA)	RX-F1 WITH CG (0 mA)	Offset 3
	RX-F1 CG DISABLE (-2.5 mA)	RX-F1 CG DISABLE (-2.5 mA)	Offset 2 (already there)
	RX-F1 WITH CG (0 mA)	RX-F1 WITH CG (0 mA)	Offset 3 (already there)
	TX-F1 (+6 mA)	TX-F1 (+6 mA)	Offset 5 (never override transmissions)
	TX-F2 (+11 mA)	TX-F2 (+11 mA)	Offset 6 (never override transmissions)
SET RX FREQ 2	RX-F2 CG DISABLE (-11 mA)	RX-F2 CG DISABLE (-11 mA)	Offset 0 (already there)
	RX-F2 WITH CG (-6 mA)	RX-F2 WITH CG (-6 mA)	Offset 1 (already there)
	RX-F1 CG DISABLE (-2.5 mA)	RX-F2 CG DISABLE (-11 mA)	Offset 0

	Current State	Desired State	DC Offset Map
	RX-F1 WITH CG (0 mA)	RX-F2 WITH CG (-6 mA)	Offset 1
	TX-F1 (+6 mA)	TX-F1 (+6 mA)	Offset 5 (never override transmissions)
	TX-F2 (+11 mA)	TX-F2 (+11 mA)	Offset 6 (never override transmissions)
CG ENABLE	RX-F2 CG DISABLE (-11 mA)	RX-F2 WITH CG (-6 mA)	Offset 1
	RX-F2 WITH CG (-6 mA)	RX-F2 WITH CG (-6 mA)	Offset 1 (already there)
	RX-F1 CG DISABLE (-2.5 mA)	RX-F1 WITH CG (0 mA)	Offset 3
	RX-F1 WITH CG (0 mA)	RX-F1 WITH CG (0 mA)	Offset 3 (already there)
	TX-F1 (+6 mA)	TX-F1 (+6 mA)	Offset 5 (never override transmissions)
	TX-F2 (+11 mA)	TX-F2 (+11 mA)	Offset 6 (never override transmissions)

	Current State	Desired State	DC Offset Map
CG DISABLE	RX-F2 CG DISABLE (-11 mA)	RX-F2 CG DISABLE (-11 mA)	Offset 0 (already there)
	RX-F2 WITH CG (-6 mA)	RX-F2 CG DISABLE (-11 mA)	Offset 0
	RX-F1 CG DISABLE (-2.5 mA)	RX-F1 CG DISABLE (-2.5 mA)	Offset 2 (already there)
	RX-F1 WITH CG (0 mA)	RX-F1 CG DISABLE (-2.5 mA)	Offset 2
	TX-F1 (+6 mA)	TX-F1 (+6 mA)	Offset 5 (never override transmissions)
	TX-F2 (+11 mA)	TX-F2 (+11 mA)	Offset 6 (never override transmissions)

If we were to program a tone station with the same configuration, the station programming may look like:

FUNCTION	FREQUENCY (Hz)
Tx-Frequency 1	1950
Tx-Frequency 2	1850
Rx-Frequency 1	1750
Rx-Frequency 2	1650
Channel Guard On	1550
Channel Guard Off	1450

The tone channel mapping will be as follows:

	Function Tone Levels (Hz)										
Commands:	**1050**	**1150**	**1250**	**1350**	**1450**	**1550**	**1650**	**1750**	**1850**	**1950**	**2050**
SET TX FREQ 1	**9**	**9**	**9**	**9**	**9**	**9**	**9**	**9**	**9**	**9**	**9**
SET TX FREQ 2	**8**	**8**	**8**	**8**	**8**	**8**	**8**	**8**	**8**	**8**	**8**
SET RX FREQ 1	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**
SET RX FREQ 2	**6**	**6**	**6**	**6**	**6**	**6**	**6**	**6**	**6**	**6**	**6**
CG ENABLE	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
CG DISABLE	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**

Tone Level Mapping:

Offset	Freq	Offset	Freq
0	1050 Hz	6	1650 Hz
1	1150 Hz	7	1750 Hz
2	1250 Hz	8	1850 Hz
3	1350 Hz	9	1950 Hz
4	1450 Hz	10	2050 Hz
5	1550 Hz		

Explanation of programming:

With tone stations, commands are controlled with secure-it, function and hold (PTT only) tones. There is no real definition of current state. Therefore, regardless of the "current state" of the station, the same tone will always be generated for a requested command.

Commands

SET TX FREQ 1	9 on all fields to generate 1950 Hz.
SET TX FREQ 2	8 on all fields to generate 1850 Hz.
SET RX FREQ 1	7 on all fields to generate 1750 Hz.
SET RX FREQ 2	6 on all fields to generate 1650 Hz.
CG ENABLE	5 on all fields to generate 1550 Hz.
CG DISABLE	4 on all fields to generate 1450 Hz.

Anytime a tone offset is entered for a command, the offset is automatically displayed under all function tone levels for that command. This is a safeguard to prevent accidental programming errors.

When programming is complete for a channel you may save this configuration to disk using the **F5** function key. The following screen will be displayed for save verification.

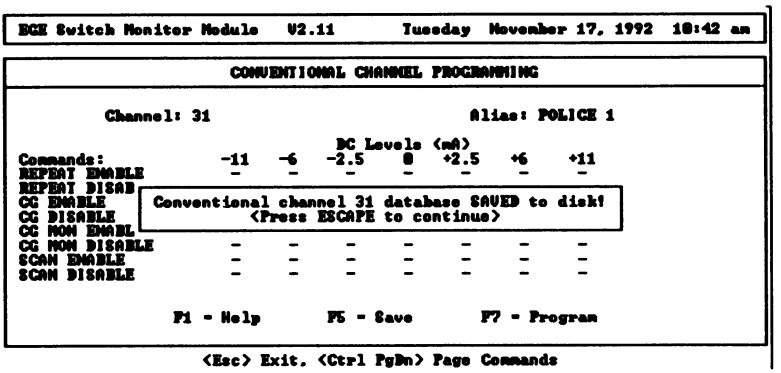

Figure 3.2-45 Save Verification

Deleting conventional channel databases is performed using the **F9** function key. A delete confirmation window is displayed first to verify desired function, shown below. If you do not wish to delete the database select **No** or simply press the **Escape** key. It is recommended to only have those conventional channels actually in use in your system to be in your database. This will minimize conventional database downloads to consoles when requested.

NOTE

This function may only be executed from the high-level programming data screen.

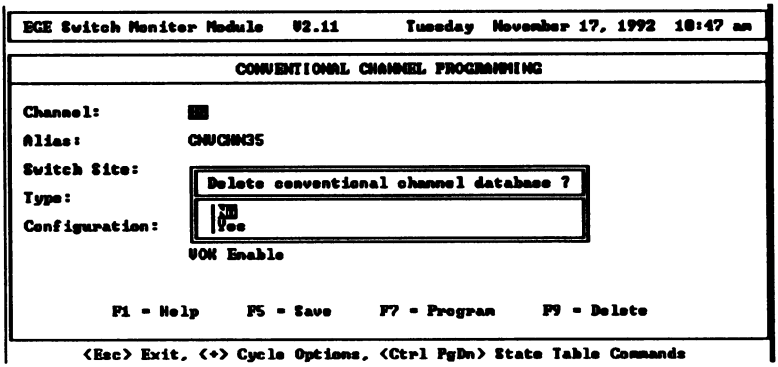

Figure 3.2-46

Selecting **Yes** will delete the conventional channel database from the MOM PC hard disk. The following window will appear for verification.

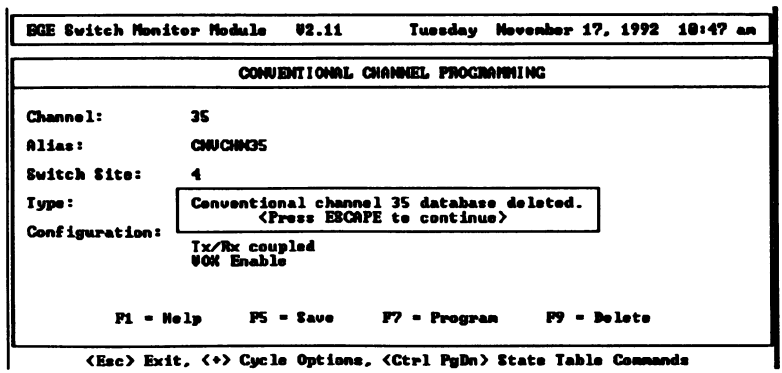

Figure 3.2-47

If the database has never been saved to the MOM PC hard disk, the following window will be displayed informing this occurrence.

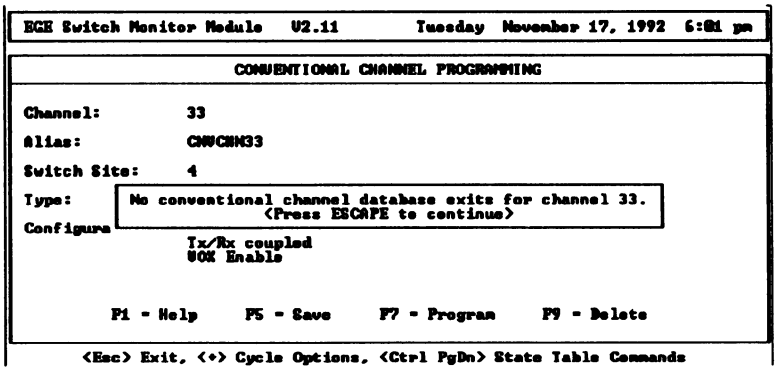

Figure 3.2-48

If the user has changed the programming data and attempts to exit without saving, the following window will be displayed to prevent accidental loss of data. If you wish to save the data select **Yes**, otherwise select **No**. Selecting **Yes** will display the save verification as discussed previously.

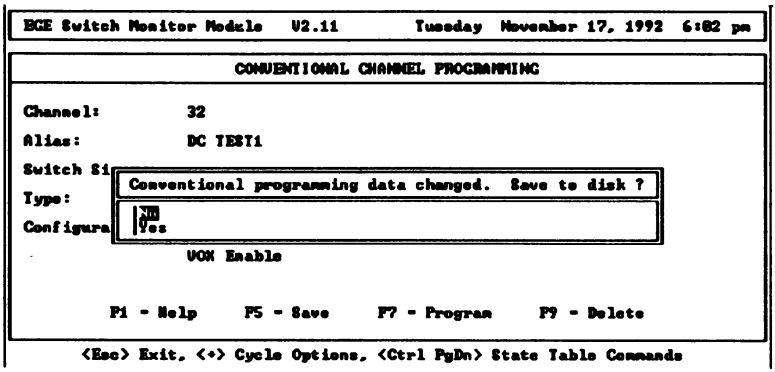

Figure 3.2-49

The CCI and associated CI board may be programmed at any time using the **F7** function key. The boards will be programmed according to the current configuration. If the channel database has been changed and the user exits without saving the new configuration, then the database on the MOM PC will differ from the database on the CCI/CI boards.

ALWAYS SAVE THE DATABASE AFTER CONFIGURING TO PREVENT CONFUSION.

The following window will be displayed for programming verification. Absence of this window is an indication of a link failure with the CCI board. Check this link and reprogram the channel.

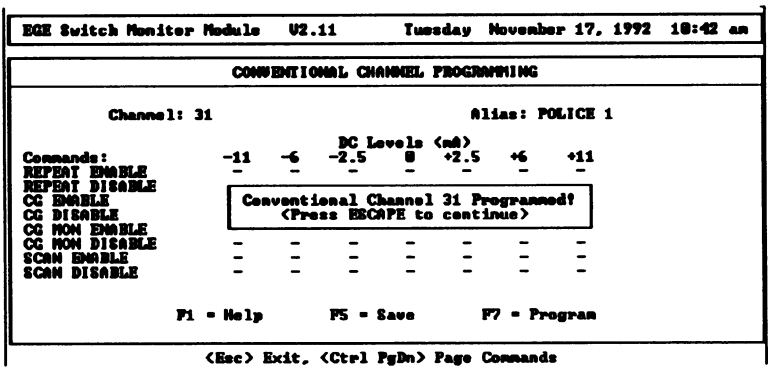

Figure 3.2-50

After programming the conventional channels, it is recommended that a MOM PC based System Manager download is executed. This will transmit necessary information to all consoles in the system for correct operation. Reference section on **System Manager Data / Request from MOM PC**.

It may also be necessary to check the Console Privilege List data for each console to verify programming privileges. Reference section on **Console Configuration / Console Privilege List**.

3.2.7 Program Digital Voice Interface

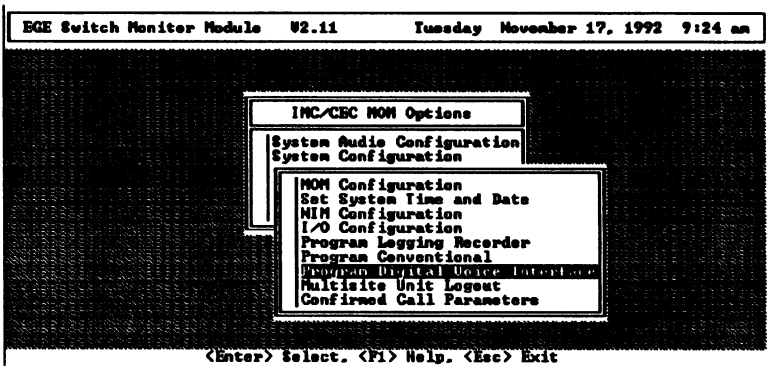

Figure 3.2-51 Program Digital Voice Interface

This option is used to configure the EDACS IMC/CEC for console digital voice dispatch. This will allow the IMC/CEC and associated consoles to process clear voice as well as encrypted audio. In order to support digital voice console dispatch, the IMC/CEC must be equipped with at least one Digital Voice Interface Module (DVIM). Each DVIM supports up to 32 digital voice channels. There may be as many as 4 DVIMs in the IMC/CEC. The purpose of this option is to configure the available digital voice channels to suit your system needs. Each digital voice audio channel that is to be used is connected to a Digital Voice Interface Unit (DVIU). This DVIU is used to encrypt/decrypt audio depending upon the control signal received from the audio board.

DVIM Channel Allocation - Each channel supported by the DVIM will require one bus slot. The ideal configuration would be one slot (channel) per voice guard/AEGIS group, however, this is not a requirement. The DVIM will support both dynamic and dedicated channel allocations.

Dynamic Channels - In this mode of operation, the DVIM processes voice guard and AEGIS calls that are not assigned to dedicated channels. The DVIM assigns the call to the first available non-dedicated channel. The only limitation with this mode of operation is that all dynamic channels must have the same DVIU key.

Dedicated Channels - Dedicated channels will always process calls assigned to that channel. This allows DVIUs to be dedicated to voice guard/AEGIS groups. Therefore, a system, agency, fleet or group call may be assigned a dedicated DVIM channel, each of which may have a different DVIU crypto key. For example, an agency may be assigned to channel 1 of the DVIM and a group within that agency may be assigned to channel 2 of the DVIM. The agency calls will be encrypted/decrypted by the DVIU connected to channel 1 of the DVIM and the group calls will be encrypted/decrypted by the DVIU connected to channel 2. The 2 DVIUs may have different crypto keys.

Whenever the **F1** key is pressed while the Program Digital Voice Interface option of the System Configuration menu is highlighted, the following help screen will be displayed.

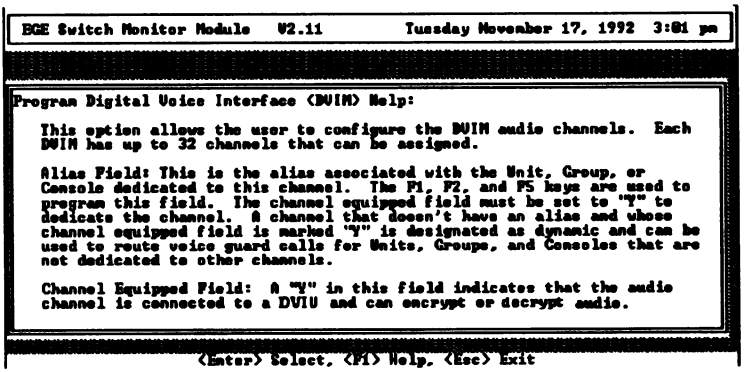

Figure 3.2-52 Program Digital Voice Interface Help Screen

To configure a dynamic channel, change the channel equipped field for that channel to a "**Y**" (this channel must be connected to a DVIU). Leaving the alias field blank when the channel equipped field is set to "**Y**" indicates that it is for dynamic allocation. See the description of dynamic channels above. Press the **F7** key to send the configuration to the DVIMs. See Figure 3.2-56 to see how to determine if the upload was successful.

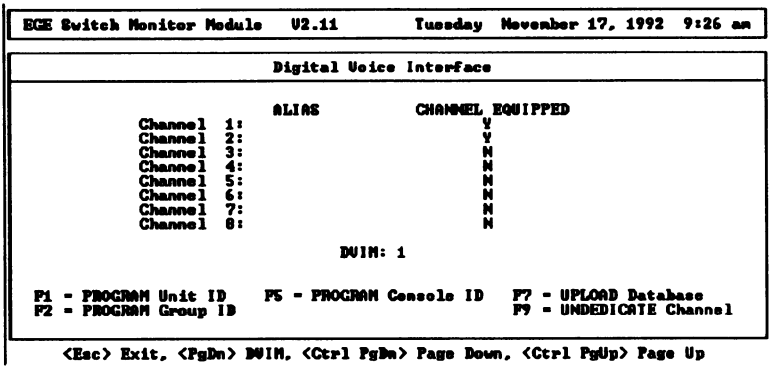

Figure 3.2-53 Digital Voice Configuration Screen

To dedicate a DVIM channel to a specific entity, set the channel equipped field to "**Y**" and put the entity in the alias field (**F1** for units, **F2** for groups). To dedicate a channel to a group for example, press the **F2** key. A list of the groups in the group database will be displayed as seen in Figure 3.2-54. The group can be dedicated and placed in the alias field by either highlighting the desired group and pressing **<Enter>** or, pressing the "#" key followed by the group number and then pressing **<Enter>**. Assuming that the desired group is 397, move the highlight bar down to FTST 4 using the up/down arrow, and press **<Enter>** (see Figure 3.2-54 below). After pressing **<Enter>**, the alias will be displayed as in Figure 3.2-55. A warning message will be displayed if the entity is already dedicated to a DVIM channel. To undedicate a channel, highlight the field and press the **F9** key. The channel (if previously equipped) will become dynamic and the alias field will become blank.

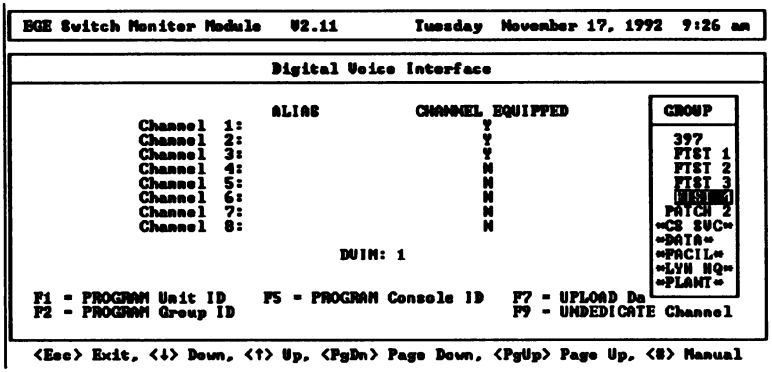

Figure 3.2-54 Dedicate Group

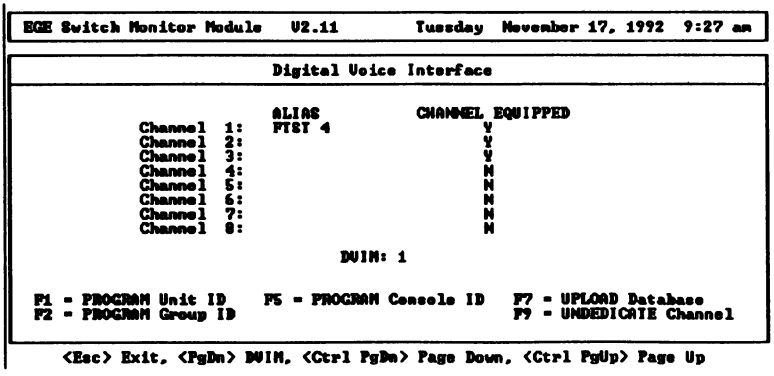

Figure 3.2-55 DVIM 1 Configuration

When the channels are configured, the configuration must be sent to the DVIMs. To do this, press the **F7** key. The following screen will be displayed indicating that the upload to the DVIMs is in progress. When complete, the DVIMs that have successfully received the data will be displayed on the screen as well. Make sure that all the DVIMs in the IMC/CEC respond to the upload. Each DVIM stores the database in its Non Volatile RAM (NOVRAM) so that it will remain present after resets. The data does not have to be uploaded again unless the configuration is changed or the NOVRAM is reset on the DVIM.

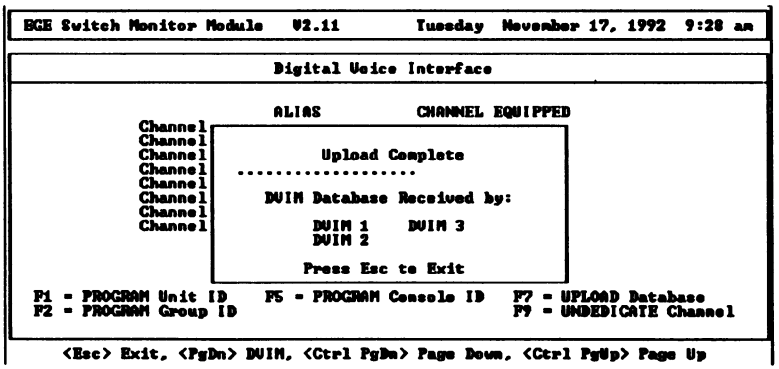

Figure 3.2-56 DVIM Database Upload

Upon exiting this function, you will be prompted whether or not to save the database if there have been any changes. Highlight the desired response and press **<Enter>**.

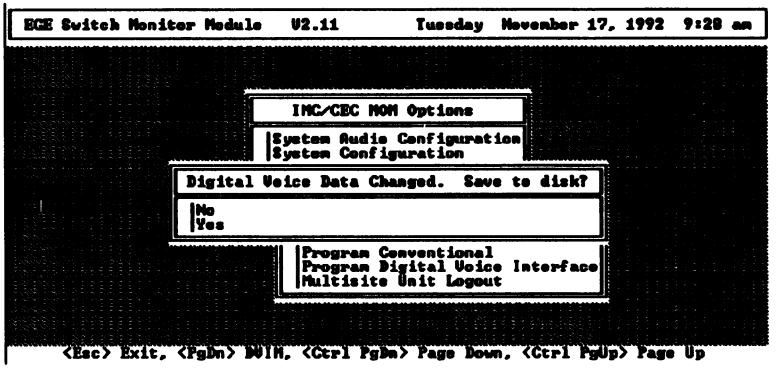

Figure 3.2-57 DVIM Database Save Prompt

3.2.8 MULTISITE UNIT LOGOUT

Multisite Unit Logout is a system feature that improves multisite efficiency and operation by reducing unnecessary call routing. Calls are routed to a site when a unit (subscriber) is logged onto the site and wide area calls are generated to the unit or an entity (group/fleet/agency) that the unit is a member of. This means that calls may be routed to a site unnecessarily when the unit is powered down or is not being monitored. It can be avoided if the IMC/CEC logs the unit off all sites when there is no activity from the unit (timer based unit logout) or when commanded by an operator. The operator commanded logout is required because some units may be monitoring without showing any activity. In this case, it is not desirable to automatically log the unit out at all. Instead, the unit is logged out manually, when commanded by the operator. In order to support this feature it is also necessary to master disable unit logout and to view unit/group locations.

Figure 3.2-58 shows how Multisite Unit Logout can be selected from the System Configuration menu.

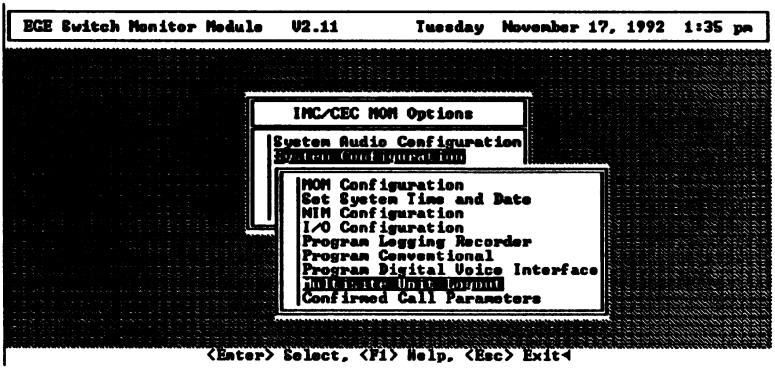

Figure 3.2-58 Multisite Unit Logout Interface

Multisite Unit Logout has two modes of operation:

1. Timed logout (**F1**) - A Unit Timer is maintained for each unit, and has the following characteristics:
   A) Set at the MOMPC and stored in MOM Controller NOVRAM.
   B) Set from 0 to 24 hours in 15 minute increments.
   C) Set ALL timers to the same value by selecting **F6**.
   D) SEND timers by selecting **F7**.
   E) Unit Timers set to 0 (ZERO) never log off. This is used for units that show very little activity.
   F) Unit Timers decrement each minute but reset when a unit shows activity.
   G)ACTIVITY is defined as a PTT or radio login.
   H) ALL unit timers can be suspended from decrementing by toggling "Unit Logout Timers" to DISABLED at the MOM Configuration Screen. See Figure 3.2-4 This does not reset unit timers or change unit timer reset values, so if "Unit Logout Timers" is toggled back to ENABLED the unit timers will again decrement from the previously set values.

2. Command Logout (F2) - When it is not desired to have units automatically log off the IMC/CEC, the COMMAND LOGOUT option can be selected to mark and logoff operator selected units.

   Note that these two modes are NOT exclusive. If a situation develops where a unit must be COMMAND logged off, this can be done regardless of the Logout Timer status. Figure 3.2-59 shows the HELP screen for multisite Unit Logout.

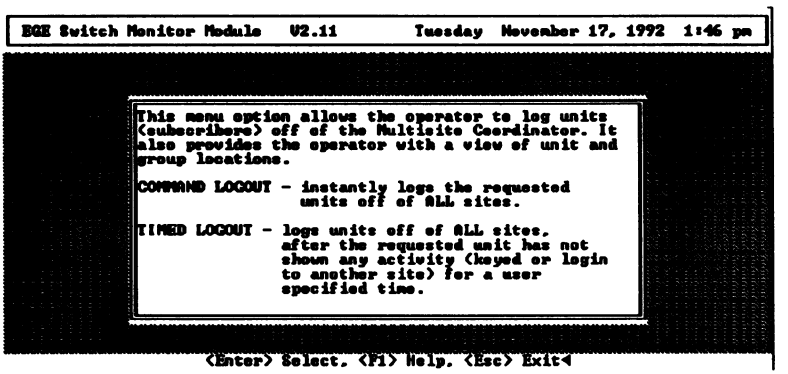

Figure 3.2-59 Multisite Unit Logout HELP Screen

From the MAIN Screen of Multisite Unit Logout the operator can select from five (5) options. These are shown in Figure 3.2-60.

While Multisite Unit Logout is selected unit location data is able to be viewed from any of the unit based displays. If the Unit Logout Screens are exited, the group and site data is cleared. This allows the operator to retreive an updated snapshot of unit locations when necessary.

The following terms are used to describe unit logout functions:

1. Activity - A PTT or Radio Login
2. PTT - Push to Talk, keying a radio.

3. Radio Login - Site message generated when units auto login. This can occur when a unit powers up or changes groups/sites and the unit is programmed for auto login capability.
4. Unit locate - Defined by group and site that a unit is logged into.
5. Group locate - Defined by number of units logged onto a group. This "Unit Count" is reported by each site.

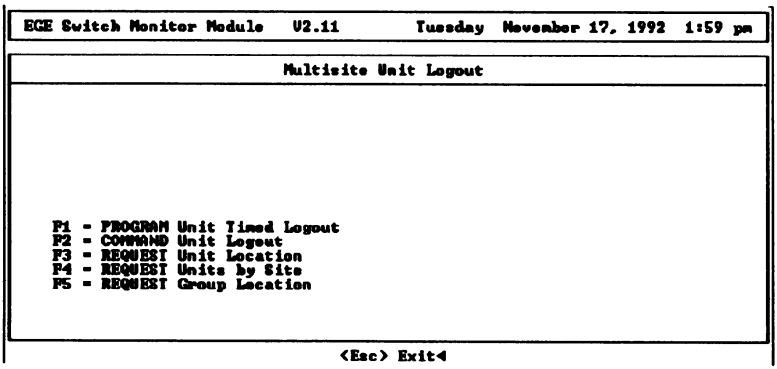

Figure 3.2-60 Multisite Unit Logout MAIN Screen

3.2.8.1 Timer Based Unit Logout

F1 = PROGRAM Unit Timed Logout
Unit logout timers are set at the MOMPC by selecting "F1 = PROGRAM Unit Timed Logout". The screen shown in Figure 3.2-61 will be displayed. Upon selection, one of the units will be highlighted (GREY background). The operator can select another unit by using the cursor keys until the desired unit is highlighted or choose to reset the unit timer for the highlighted unit by pressing **<Enter>**. When **<Enter>** is pressed the highlighted unit will become "selected" and be displayed in yellow letters. Now the timer can be increased or decreased by using the arrow keys. When the desired timeout value is displayed either **<Enter>** or **<Esc>** may be pressed to send the new timeout value to the MOM Controller.

F6 = PROGRAM All Unit Timers
If it is necessary to set ALL timers to the same value, the operator can select "F6 = PROGRAM All Unit Timers", after setting one timer to the desired valu pressing **F6** will cause ALL timers to be set to this new default timer setting and transmit the new timers to the MOM Controller. The new timer setting becomes the default setting so any new units added to the database will have this default.

F7 = SEND Unit Timers
If all the timers are set to the desired values, but the operator needs to send/start the timers then "F7 = SEND Unit Timers" should be selected. The transmission of the timers to the MOM Controller occurs at a rate of 3/second.

By scrolling through the Unit Logout Timer database, the "Timeout" value that is displayed for the highlighted unit is the MOM Controller NOVRAM stored time.

F3 = REQUEST Unit Location
The "F3 = REQUEST Unit Location" is available at any time from this screen. The Unit, Group, and Site ID's displayed in row one are the ID's for the highlighted unit.

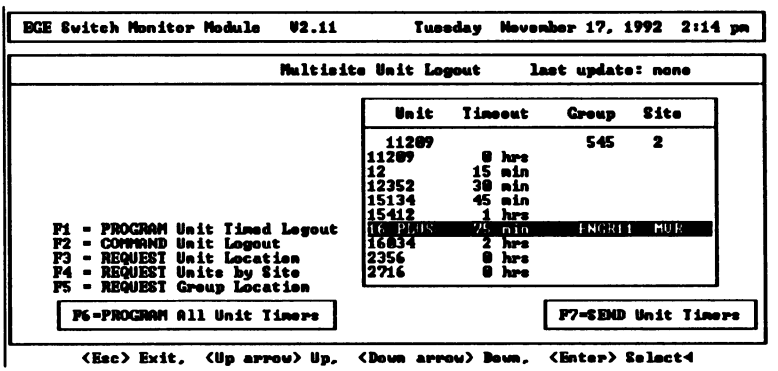

Figure 3.2-61 PROGRAM Unit Timed Logout

3.2.8.2 Command Unit Logout

F2 = COMMAND Unit Logout
The command logout function allows the operator to logoff a specified unit instantly, without waiting for inactivity logout. It is selected by pressing "F2 = COMMAND Unit Logout". Once selected, the operator moves the cursor with the arrow keys until one of the desired units is highlighted. By pressing **<Enter>** the unit will become "selected" (yellow highlight). While "selected", the unit can be toggled between "**YES**" and " ". This procedure can be repeated for as many units as necessary until ALL units that need to be logged off are MARKED "**YES**".

F9 = SEND Logout Command
Once ALL units that need to be logged off are MARKED "**YES**", the "F9 = SEND Logout Command" button can bepressed at any time while still in the Multisite Unit Logout menu. ALL the MARKED units will be logged off of the Multisite Coordinator and the MOMPC will update to show this change in unit location when the **F9** button is pressed.

F3 = REQUEST Unit Location
The "F3 = REQUEST Unit Location" is available at any time from this screen. The unit that is highlighted when **F3** is hit will be updated until any other key is pressed.

The Unit, Group, and Site ID's displayed in row one are the ID's for the highlighted unit.

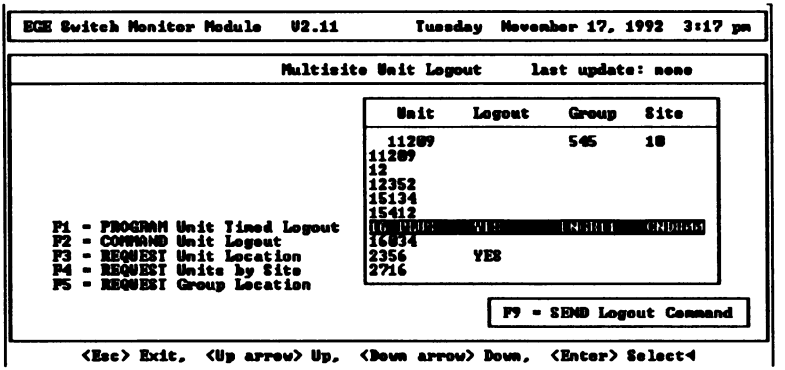

Figure 3.2-62 COMMAND Unit Logout

3.2.8.3 REQUEST Unit Location

F3 = REQUEST Unit Location
When the Unit ALIAS or ID is known but the SITE and/or GROUP is unknown this option can be selected by the operator to find the location of a particular unit. Location for a unit is defined as the group and site that the unit is currently logged onto.

The unit that is highlighted will have a Unit Location Request sent to the MOM Controller about once each second. This update will continue until the operator moves the cursor keys to highlight another unit.

Note that the Location response from the MOM Controller is also sent to the System Manager

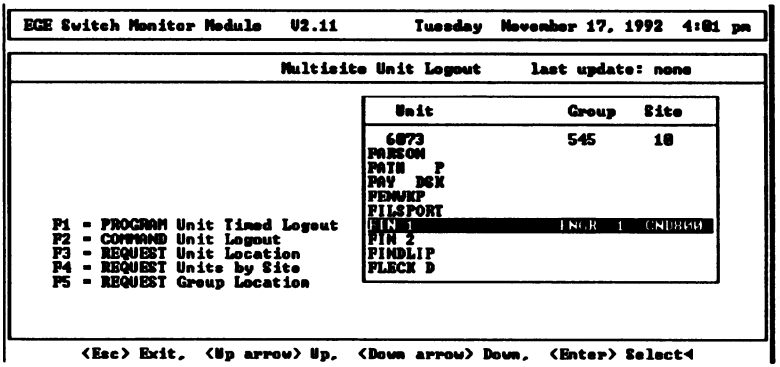

Figure 3.2-63 REQUEST Unit Location

3.2.8.4 REQUEST Unit Location by Site

F4 = REQUEST Units by Site
When the SITE is known and UNIT is unknown this option can be used to obtain a list of all units on a particular site. The list can also be filtered to display only units that are logged onto a particular group or display all units in all groups on the site of interest.

In order to use this function the site and group of interest are selected by the operator from the "site select" and "group select" screens. These screens are activated with the **F6** and **F7** keys respectively.

F8 = SEND Location Request
Once the desired site and group are displayed in the information boxes then the "F8 = SEND Location Request" is pressed and the unit database window will update with the location responses from the MOM Controller.

F6=SITE: ABCDEFGH
By pressing **F6**, the site selection screen will be activated and a site can be chosen from the existing MOM PC site database. While the screen is active the operator can move the cursor (highlight grey) to the site of interest.

When the site of interest is highlighted in grey the operator presses **<Enter>** or **<Esc>**. This will select that site and the SITE ALIAS (8 characters or less) will be displayed in the information box.

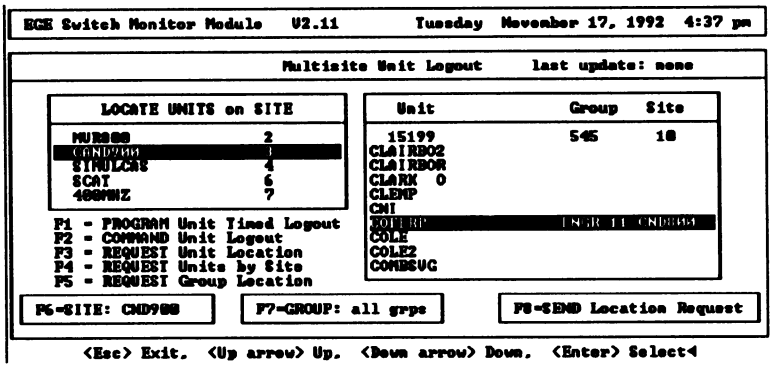

Figure 3.2-64 REQUEST Units by Site (SITE Select)

F7=GROUP: ABCDEFGH

By pressing **F7**, the group selection screen will be activated and a group can be chosen from the existing MOM PC group database. While the screen is active the operator can move the cursor (highlight grey) to the group of interest. When the group of interest is highlighted in grey the operator presses **<Enter>** or **<Esc>**. This will select that group and the GROUP ALIAS (8 characters or less) will be displayed in the information box.

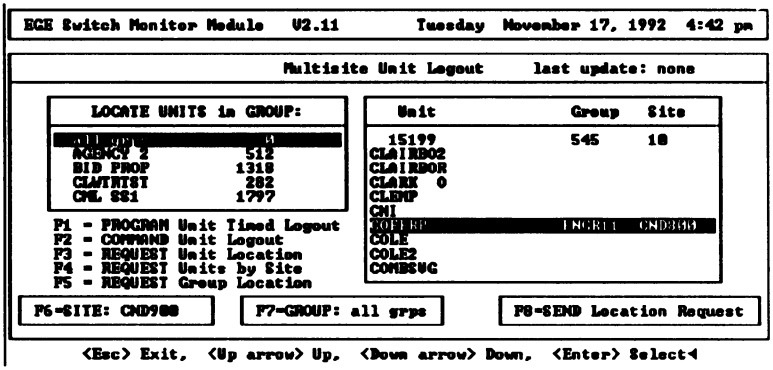

Figure 3.2-65 REQUEST Units by Site (GROUP Select)

F8=SEND Location Request
Once the desired group and site have been selected **F8** is pressed to send the location request to the MOM Controller. The queried site MIM will respond with location responses for each unit logged in.

3.2.8.5 REQUEST Group Location

Group locations are defined as the number of units logged onto the group of interest for each site. Note that unless this count of units on a group is ZERO calls will always be routed to a secondary site if the site is wide area enabled.

F5 = REQUEST Group Location
The group location screen is activated by pressing **F5**. Once active, the group of interest can be selected by pressing **<Enter>** so that the Group ALIAS and ID are highlighted in yellow. The cursor keys can be used by the operator to scroll through the group database until the group of interest is displayed. When the **<Enter>** key is pressed again the GROUP ALIAS and ID will be highlighted in grey and the group location responses for each site will be displayed in the group location window

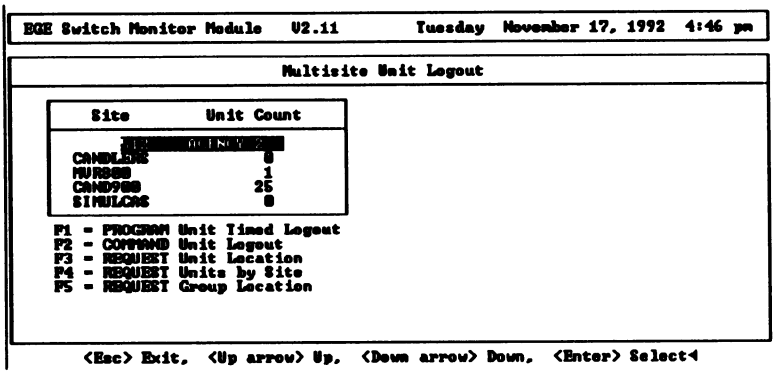

Figure 3.2-66 REQUEST Group Location

3.2.8 CONFIRMED CALL PARAMETERS

This option is used to modify the behavior of the IMC/CEC confirmed call tracking database. From this form specific sites may be "Exempted" from the call confirmation process, and the option of removing sites that are determined to be in FAILSOFT 2 (IMC/CEC to site link not working) or not present in the system (MIM not active) from the confirmed call expected response data may be enabled or disabled.

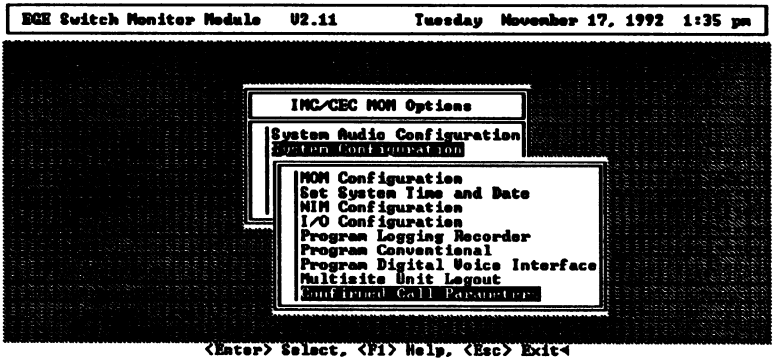

Figure 3.2-67 Confirmed Call Parameters Option

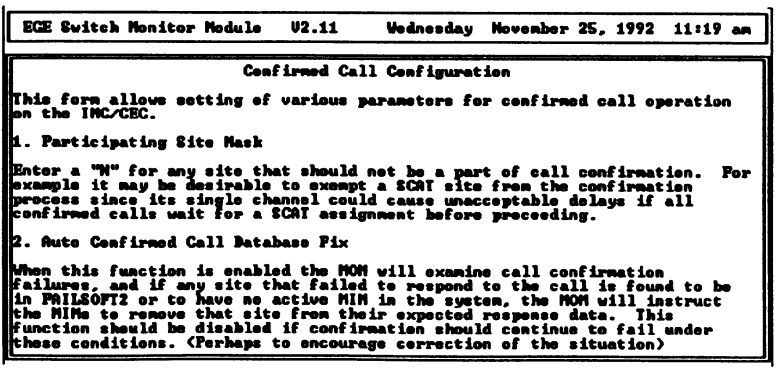

Figure 3.2-68 Confirmed Call Parameters - Online Help

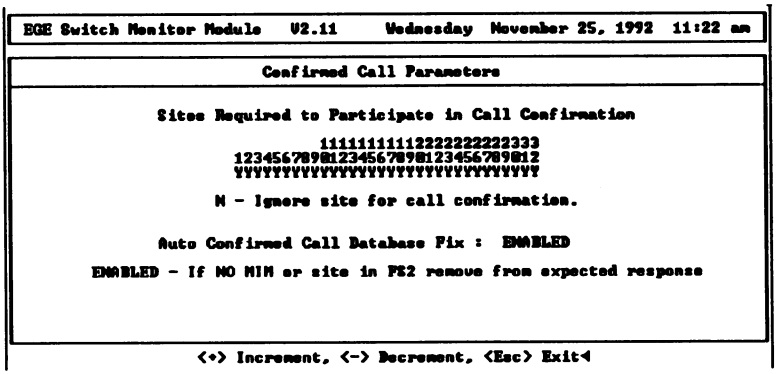

Figure 3.2-69 Confirmed Call Parameters Form

A unit that performs a confirmed call will not be allowed to transmit until all sites that should pick up the call have responded with a working channel assignment. If there are sites that may cause excessive delays (for example a SCAT single channel site), exempting that site from the confirmation process will allow calls to proceed without waiting for the exempted site's channel assignment.

The MOM normally removes sites that are determined to be either in FAILSOFT 2 (IMC/CEC to site link down), or that do not have an active MIM in the system, from the confirmed call expected response database. This causes confirmed calls to fail once for either of these error conditions, and then to proceed successfully. If this option is disabled confirmed calls will continue to fail (10 second delay on every call) until the failed site is restored.

3.3. Configure Consoles

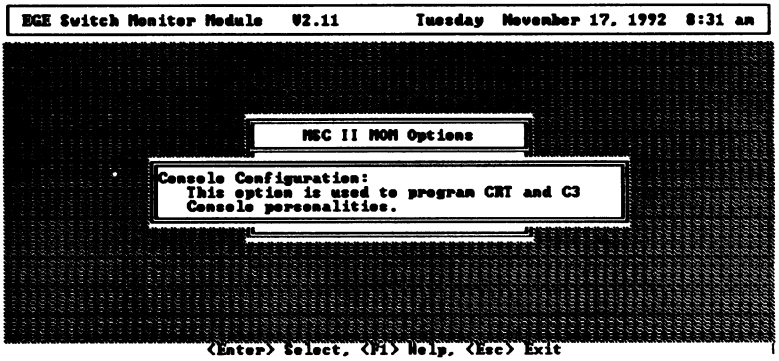

Figure 3.3-1 Console User Profile Help Screen

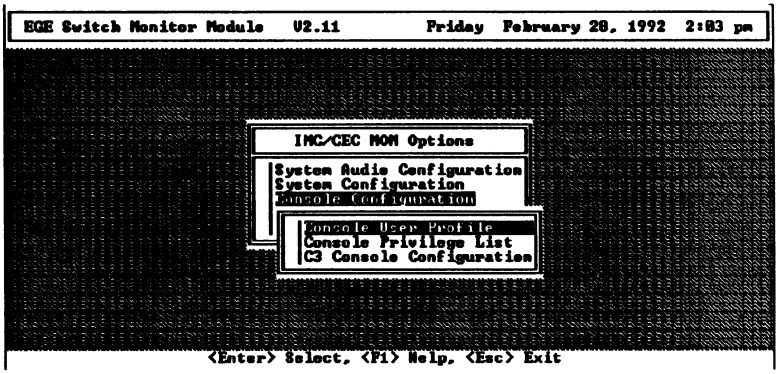

Figure 3.3-2 Console Configuration Sub Menu

3.3.1. Console User Profile

This option is used to configure each console in the system and their associated user profiles. Three shifts worth of data are supported for each console having three unique personalities. The above screen is displayed when the HELP key is pressed on the MOM Options Menu.

The following screen shows the console's user profile configuration and adjustable fields.

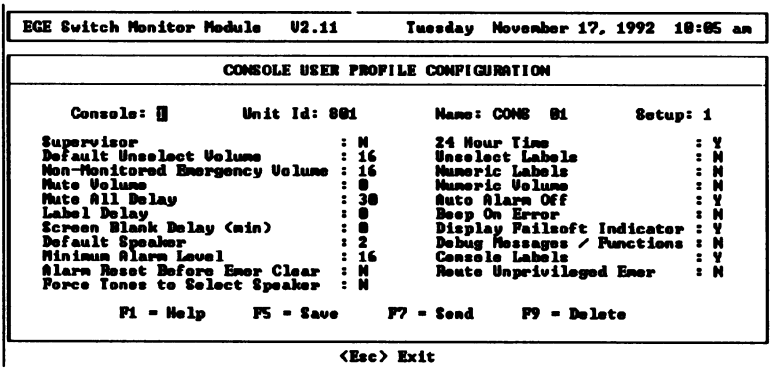

Figure 3.3-3 Console User Profile Window

The **"Console"** field selects which console you are configuring (1 - 64). The **"Unit Id"** field is the unit number associated with this console. This number must be in the range (1 - 16382) and must not conflict with other unit id's in the system manager database. 16383 is the default for uninitialized consoles and indicates to the MOM controller that the console is not configured. All consoles with a unit ID less than 16383 are contained in the console unit ID data base and will be uploaded from the MOM PC to the MOM controller if so requested from the MOM PC option under the System Manager Data main menu option. In a trunked configuration, this id should match the console's unit id in the system manager database. In a pure conventional system, there is no system manager database and therefore this id must not conflict with any conventional id in the system. The **"Name"** field allows the user to define an 8-character alias for each console. The default alias is "CONS XX". This alias is also used for display purposes. If a console initiates a call, his alias will be displayed on other consoles who are monitoring the call.

The **"Setup"** field is used to configure shift specific data at each console. Three setups are supported at each console. All the following data is "Setup" specific.

Supervisor
Used to indicate if the user on this shift is a supervisor or not. Certain privileges are allocated to Supervisory Consoles that are not allocated to Non-Supervisory Consoles.

Default Unselect Volume
Default volume setting on the unselect speaker for incoming calls.

Non-Monitored Emergency
Default volume setting for incoming non-monitored emergency calls.

Mute Volume
Volume used when an incoming call is received at the console at a node that is muted. Some dispatchers may want zero volume when they mute a module and others may want just a lower volume than the previous volume.

All Mute Delay
The time, in seconds, the modules are muted after the ALL MUTE button is pressed. After delay expires, volumes will return to original levels.

Label Delay
Time delay, in seconds, that the CALLER is displayed after the call has dropped. This delay allows the dispatcher to see who made the call for a short time after the call was dropped. There is a built in 2 second delay for C3 Consoles. A value in this field will be added to that delay.

Screen Blanker Timeout
Time delay, in minutes, that the screen waits, without activity, before blanking. This function is designed to extend the life of the console's monitor. A value of zero disables the screen blanker function.

Unprogrammed Call Audio Chn
This is the unselect speaker number for unprogrammed or non-monitored incomming calls. Valid options are speakers 2 through 12. Speaker 1 is for select calls.

Minimum Alarm Level
This is the minimum level at which an emergency tone will be heard. The greater of the module volume or this volume will be used for the emergency tone level.

Alarm Reset Before Emerg Clear
Enabling this field forces the dispatcher to reset the emergency alarm before he may clear the emergency itself.

Force Tones to Select Speaker
Enter "Y" to force confirmation tones and error tones to the select speaker.

24 Hr Time
Used to indicate whether or not the dispatcher wants its time displayed in 24 hour format or 12 hour format.

Unselect Labels
Used to indicate whether or not the dispatcher wants labels displayed on all incoming calls or just on selected incoming calls.

Label Lids
This allows the dispatcher to display labels vs logical ids.

Numeric Volume
This allows the dispatch to select a numeric volume vs a volume bar.

Auto Alarm Off
If enabled, the audible portion of the EMERGENCY tone will go away when the EMERGENCY is cleared. If disabled, the tone will remain until cleared by dispatcher.

Beep On Error
This enables/disables the error tone. When the console determines an error has occurred this function enables/disables the error tone.

Display Failsoft Indicator
This option enables / disables the multisite switch operational status. If enabled, the console will display one of the following states.

TRNK - Trunked Operation
TRFS - Combined Trunk / Failsoft Operation
FS2 - Failsoft Operation

Debug Messages / Functions
If enabled, the console will display debug messages and functions.

Console Labels
A "Y" in this field forces alphanumeric alias display for all incoming console originated calls. A "N" forces logical display of console originated calls. This field is only for C3 Consoles.

Route Unprivileged Emerg
Enter "Y" in this field to route all emergencies to the console regardless of the privilege list entries. Enter "N" in this field to route only emergencies from entities within the console's privilege list to the console. This field is always "N" for non-supervisor consoles. Used on C3 consoles only. Determines whether to display labels on console originated calls (incoming from another console).

Entering **<F1>** will display HELP for each individual high-lited field.

After the console user profile configuration is conplete the **<F5>** function key should be used to save the profile to disk. Failure to perform this function may result in loss of configuration database for this console. The following window will appear for save verification.

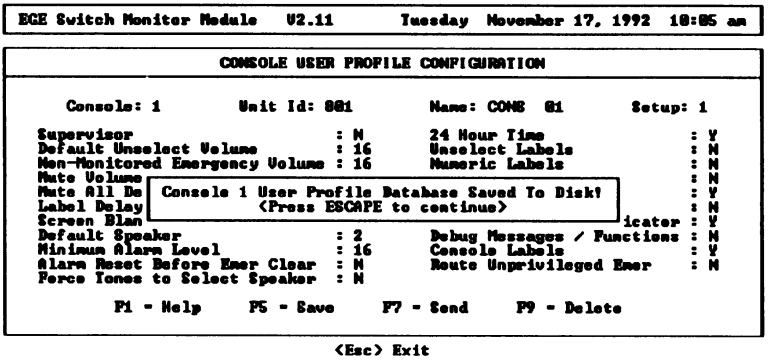

Figure 3.3-4 Console User Profile Save Verification Window

There is a mechanism to prevent accidental loss of data. If the user has changed the configuration and attempts to exit or reconfigure another console without saving the data, the following screen will appear. Selecting **No** on this screen will result in loss of data. Selecting **Yes** will save the data to disk and display the "Saved" window discussed earlier.

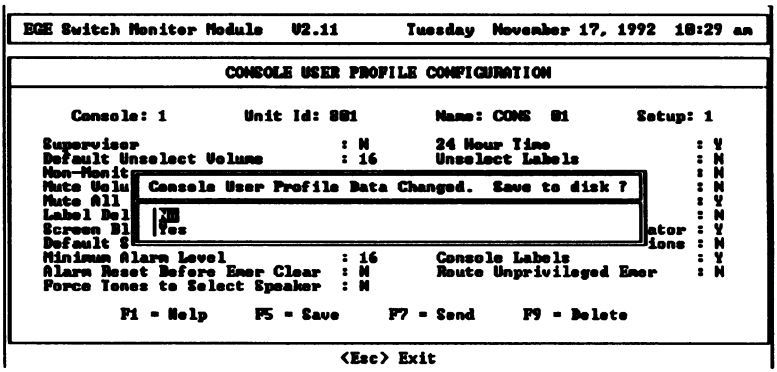

Figure 3.3-5 Console User Profile Data Changed Window

The <F9> function key is used to delete the console user profile database from disk. If this console is no longer in use or this console never existed, then the database for this console should be deleted. The following window will be displayed when the <F9> function key is entered. This window is intended to prevent accidental user profile deletions.

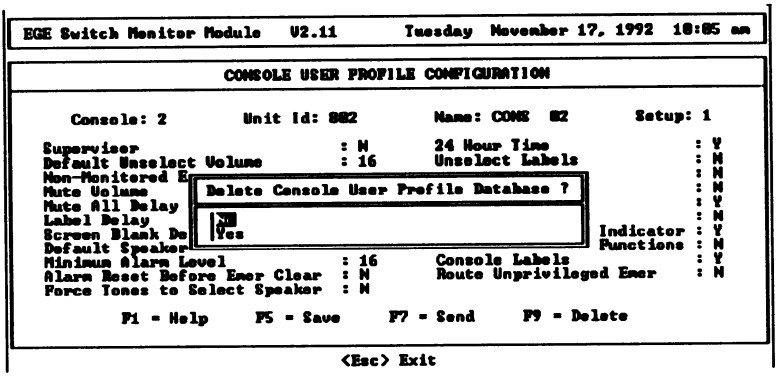

Figure 3.3-6a Console User Profile Delete Window

Selecting **No** will not delete the database. Selecting **Yes** will delete the database and display the following window for delete verification.

NOTE

Deleting the console user profile database also deletes the console privilege list and C3 console configuration databases.

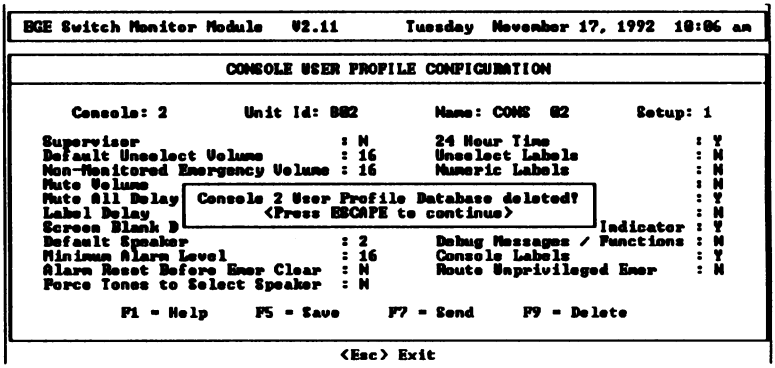

Figure 3.3-6b Console User Profile Delete Verification Window

The user profile configuration database will need to be sent to the console before this configuration will be in effect. The **F7** function key is used for this purpose. The following window will be displayed to verify console receipt of configuration data. If this window does not appear the following conditions may be the cause:

The link to the console is broken,
The console itself is offline,
The CIM node for this console is absent or not executing.

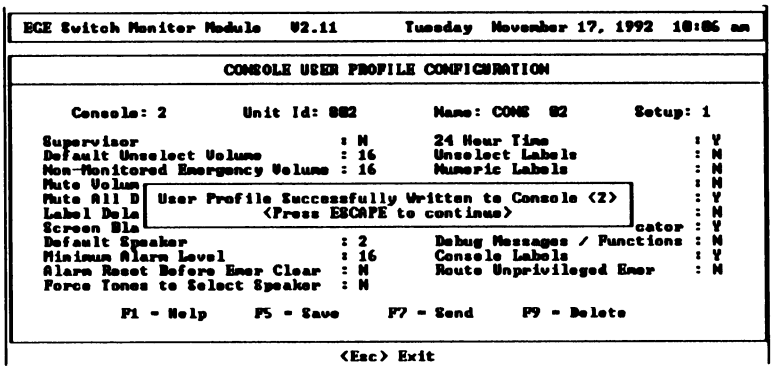

Figure 3.3-7 Console User Profile Database Receipt Window

If an error occurs sending the data to the console the following window will appear. Resend the data.

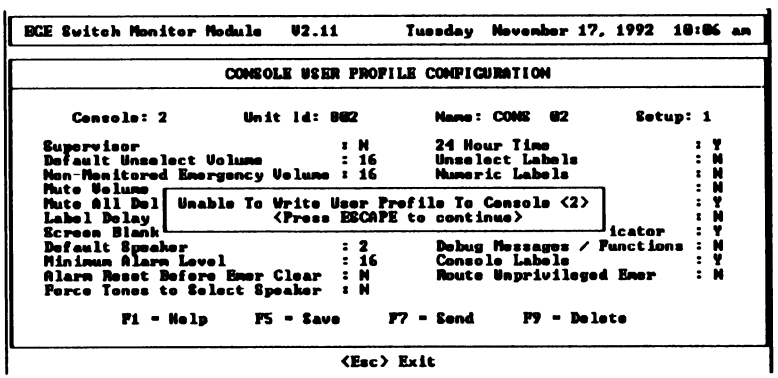

Figure 3.3-8 Console User Profile Database Error Window

3.3.2. Console Privilege Lists

This interface is used to define the units, groups, conventional channels and phone lines that the console is allowed to program. The console list is currently not supported.

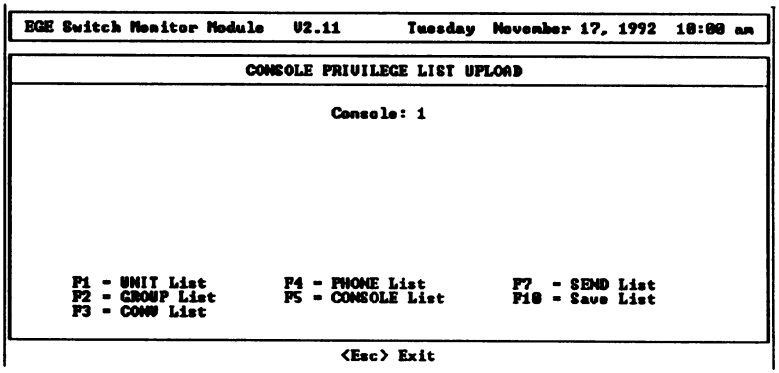

Figure 3.3-9 Console Privilege List Screen

To change the console selection, Page Up to the console prompt and enter the desired console.

3.3.2.1 Unit Privilege List

To edit the unit privilege list database for the selected console enter **F1**. The following screen will appear (Your unit database will not match the one displayed). An asterik at the far right of the field indicates the unit is enabled for programming. Pressing the enter key on the selected field toggles the asterick on (enabling programming) and off (disabling programming). The entire unit database may be paged through to determine which are programmable and which are not. Different consoles may have different privilege lists. The number in the first row of the Unit window is the unit id of the field high-lited.

To disable all units from being programmed enter **F9**. All the astericks on the right should disappear. This function is handy when only a limited amount of units will be allowed to be programmed. Now only the few units allowed to be programmed must be modified.

To enable all units to be programmed enter **F10**. All the astericks on the right should be displayed. This allows the dispatcher to program any unit. This function is handy when only a few units will not be allowed to be programmed. Now only those units that need to be disabled need to be modified.

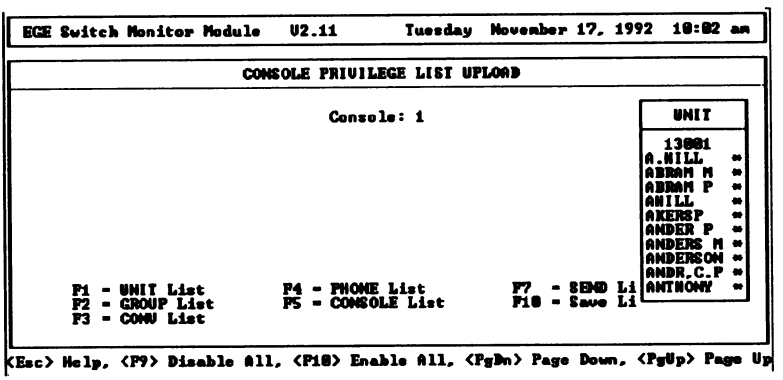

Figure 3.3-10 Console Privilege List Unit Screen

The group, conventional channel and phone line privilege lists are edited in the same manner. The screen for each type is displayed below.

3.3.2.2 Group Privilege List

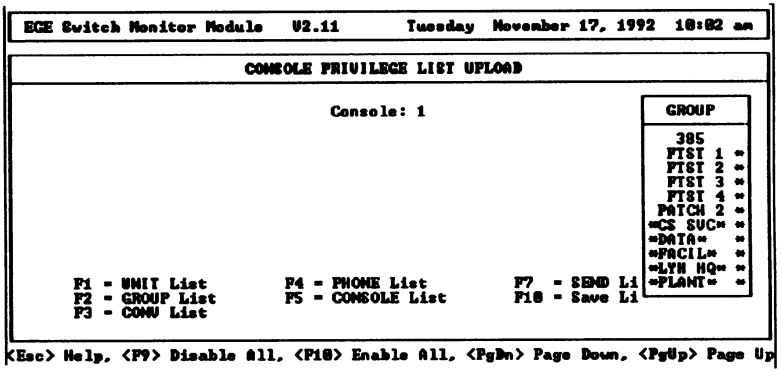

Figure 3.3-11 Console Privilege List Group Screen

3.3.2.3 Conventional Channel Privilege List

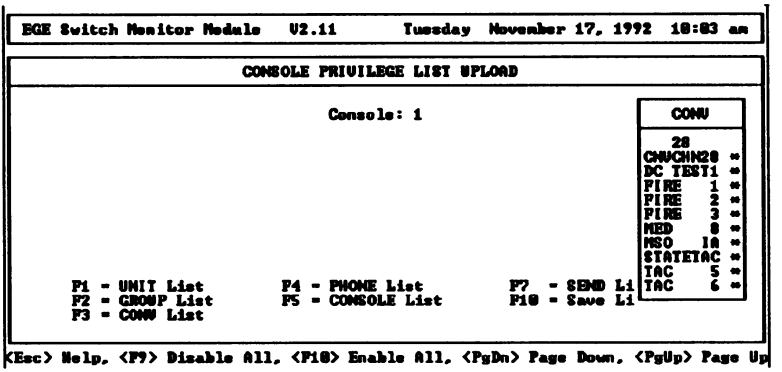

Figure 3.3-12 Console Privilege List Conventional Screen

3.3.2.4 Phone Line Privilege List

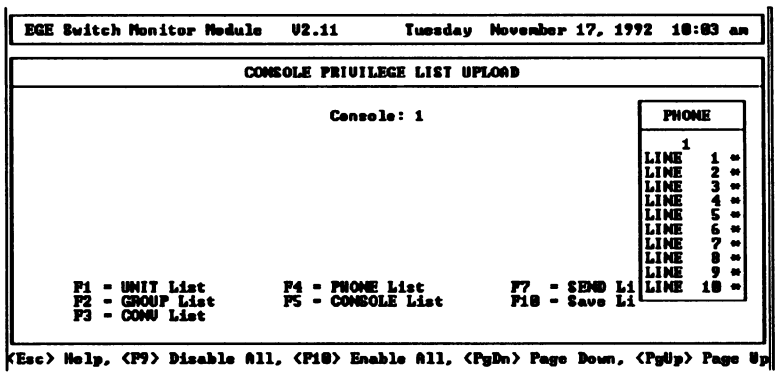

Figure 3.3-13 Console Privilege List Phone Line Screen

3.3.2.5 Uploading Console Privilege List Data

To upload the privilege list data to the console enter **F7**. The following screen will appear. Each "." is an indication of eight privilege bits. The console will need to be online for this function to execute successfully. The entire privilege list will be uploaded to the console. The user at the console will need to log out and log back in again after this operation (In case a non-valid module is already programmed).

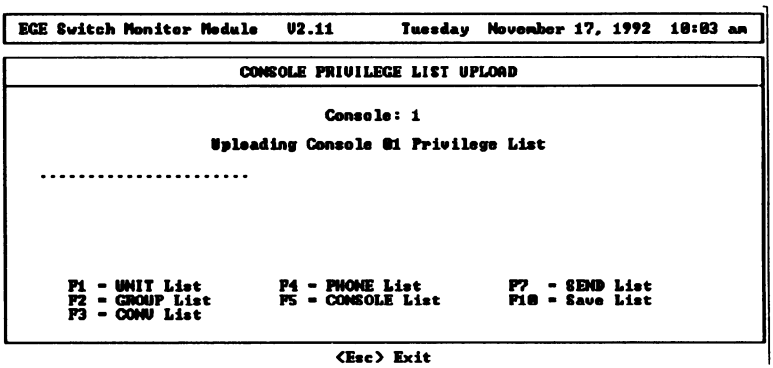

Figure 3.3-14 Console Privilege Uploading Screen

If there is a problem with the MOM PC <--> MOM controller serial link the following message will be displayed. The upload was not successful and need to be retransmitted. Before retransmitting, check serial link and baud rates and correct necessary problems.

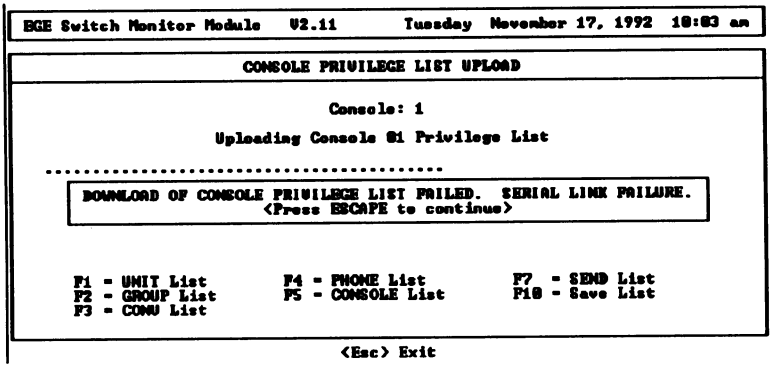

Figure 3.3-15 Console Privilege Upload Failure Screen

When the upload is complete the following message will be displayed.

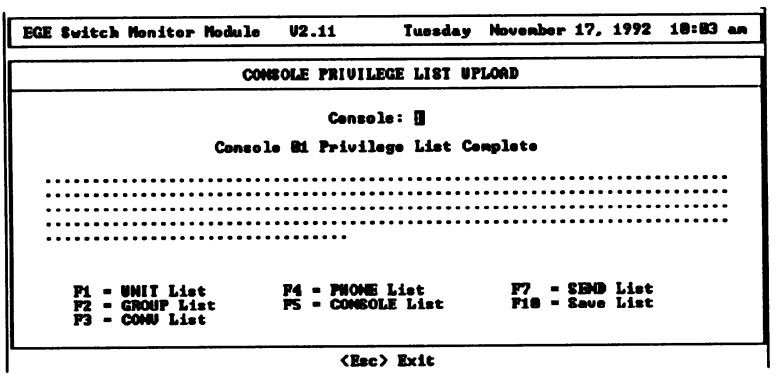

Figure 3.3-16 Console Privilege Upload Complete Screen

After reconfiguring the privilege list the new configuration needs to be saved. Enter **F10** to save the data to disk. The following screen will appear for save verification.

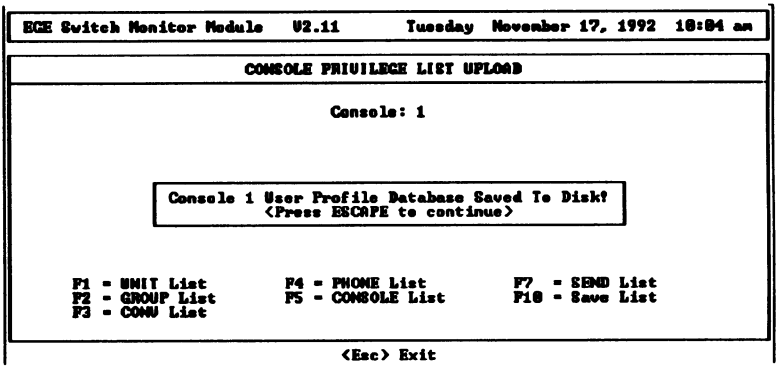

Figure 3.3-17 Console Privilege Data Saved Screen

3.3.3. C3 Console Configuration

C3 consoles are configured using the following screen. The MODULE TYPE field is one of two types, TRNK or CONV. TRNK indicates a trunked unit or group may be programmed into that module. CONV indicates that a conventional channel may be programmed into that module. The "+" or "-" keys toggle between the valid states. The DISPLAY TYPE field is also one of two states, ALPHA or FIXED. ALPHA indicates the module has an alphanumeric programmable display. FIXED indicates the module has a fixed display (non-programmable - possible a label). These fields are toggled with "+/-" also. The MODULE PRESENT field is used to indicate whether the module actually exits. Each C3 console may support up to 64 modules, but the MODULE PRESENT field should only have a **Y** for the modules actually present.

Use the Ctrl Page Up / Down keys to cycle through the modules.

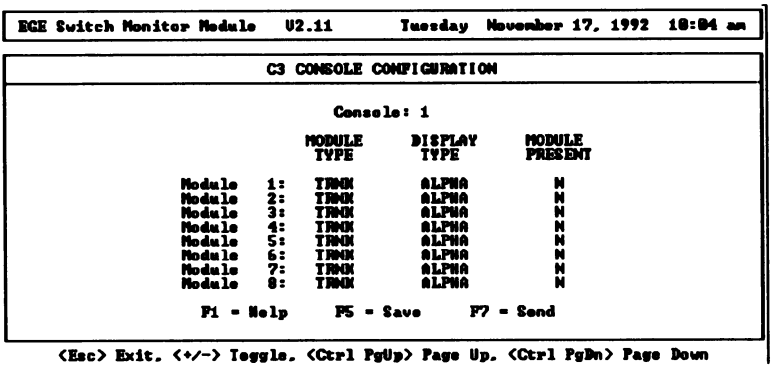

Figure 3.3-18 C3 Console Configuration Screen

Use the **F7** key to download the C3 console configuration to the console translator. Successful downloads display the following form. Unsuccessful downloads will display the error screen. Successful downloads are an indication of receipt of download by the C3 console translator. The translator databases this configuration information in NOVRAM and will not require another download unless the configuration changes.

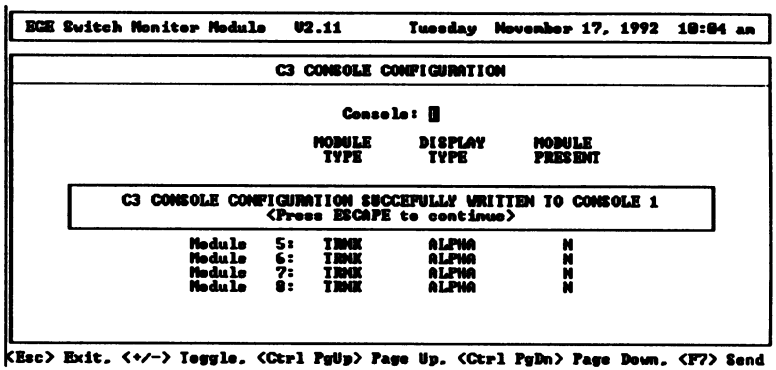

Figure 3.3-19 C3 Console Configuration Write Successful Screen

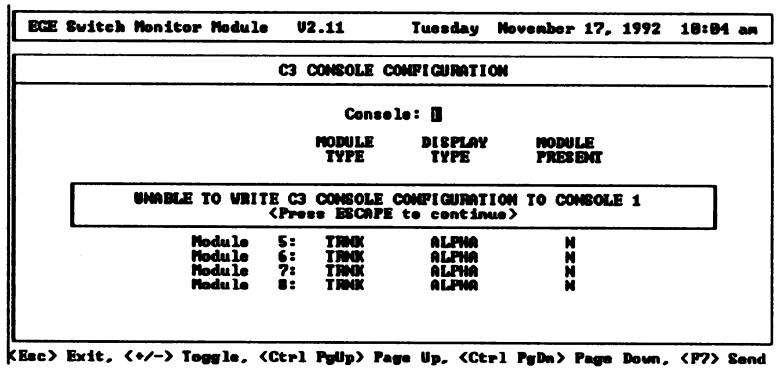

Figure 3.3-20 C3 Console Configuration Write Unsuccessful Screen

After reconfiguring the C3 console, use the **F5** key to save the new configuration to disk. The following screen will appear for save verification.

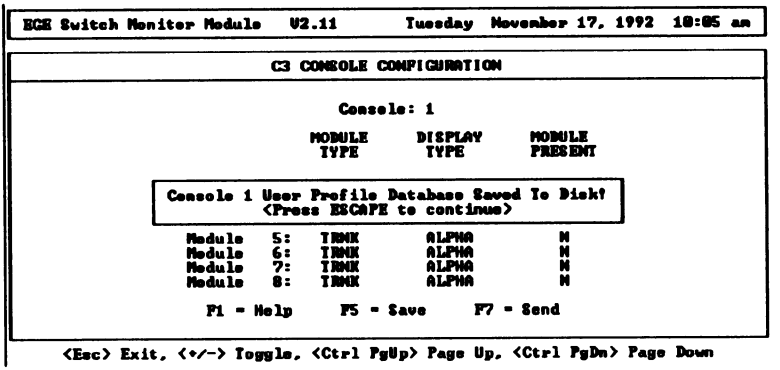

Figure 3.3-21 C3 Console Configuration Data Saved Screen

3.4. System Manager Data

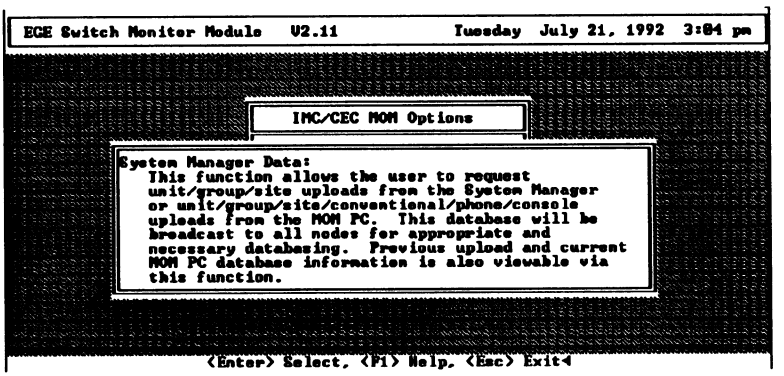

Figure 3.4-1 System Manager Data Help Screen

This function allows the user to request unit, group, and site download data from the system manager or unit, group, and site data along with conventional, phone line, and console unit ID databases from the MOM PC's hard disk. The upload data is broadcast to all nodes. If the data is requested from the system manager it is also stored to the MOM PC hard disk. The help screen in figure 3.4-1 will be displayed if the user requests HELP (presses the **F1** key).

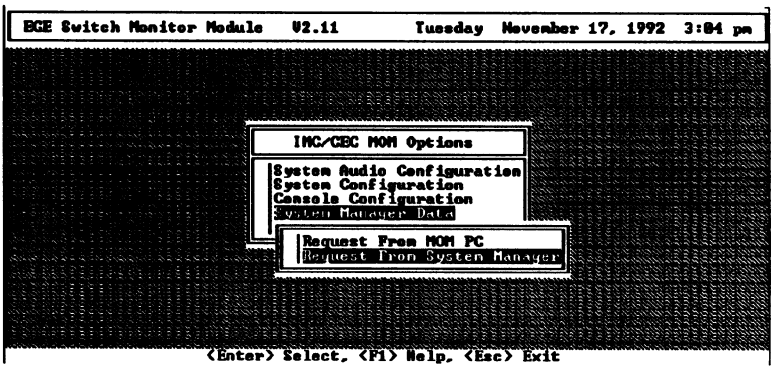

Figure 3.4-2 System Manager Data Select Screen

If the user selects the "System Manager Data" option, the screen in figure 3.4-2 will appear. The user must now select the source for the upload. If the user selects the System Manager, all upload data will be requested from the System Manager. If the user selects the MOM PC, all upload data will originate from the MOM PC hard disk (stored from a previous System Manager upload).

3.4.1. Request From System Manager

Selecting the "Request from System Manager" menu option will result in the screen shown in figure 3.4-3. The user may now select either unit upload **F1**, group upload **F2,** or site upload **F6**.

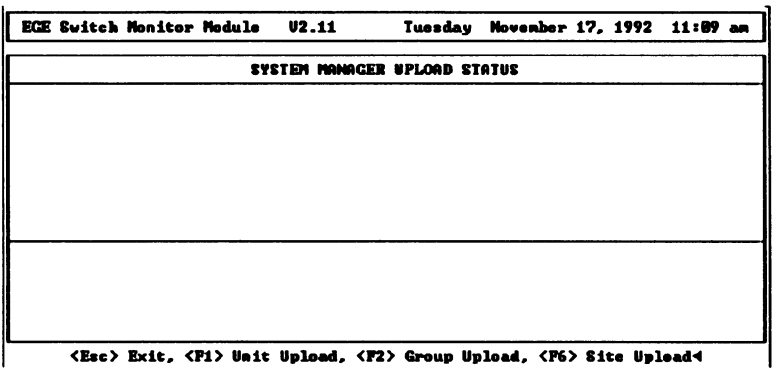

Figure 3.4-3 System Manager Upload Status Screen

If the "Unit Upload" option is chosen, the screen in figure 3.4-4 will appear. This screen displays unit upload and database status and allows the user to request full and partial unit uploads from the System Manager.

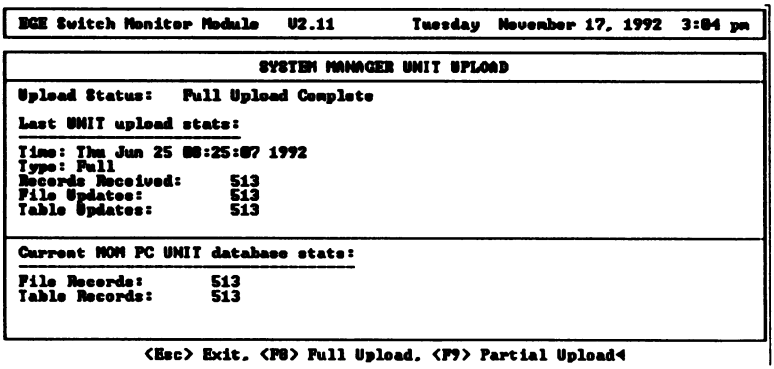

Figure 3.4-4 System Manager Unit Upload Screen

The Upload Status field displays information regarding any current uploads, such as whether a full or partial upload request has been sent, is currently in progress, or has completed.

The fields under Last Upload Stats give information about the last upload received at the MOM PC, including the date and time when the first record in the upload was received, whether it was full or partial, the number of records received, the number of records in the database file that were updated, and the number of records in the table that were updated. This information is written to disk at the end of each upload so that it may be retained for viewing if the MOM PC program is exited and restarted. During normal operation, the number of file and table updates should always be equal. For full uploads, these values should also be equal to the records received value. For partial uploads, these values may or may not be equal to the records received value.

The fields under Current Database Stats give information about the number of records currently residing in the database file and table at the MOM PC. The database table is a structure which is built upon MOM PC startup and updated whenever a System Manager upload is received. It is composed of lists sorted by name and ID, containing additional data not received in an upload, which are used by various functions at the MOM PC. During normal operation, the number of file and table records should always be equal.

Function keys **F8** and **F9** are used to request full and partial uploads, respectively, from the System Manager.

Figure 3.4-5 shows the screen that will appear if the "Group Upload" option is chosen. It is similar in appearance and functionality to the unit upload screen.

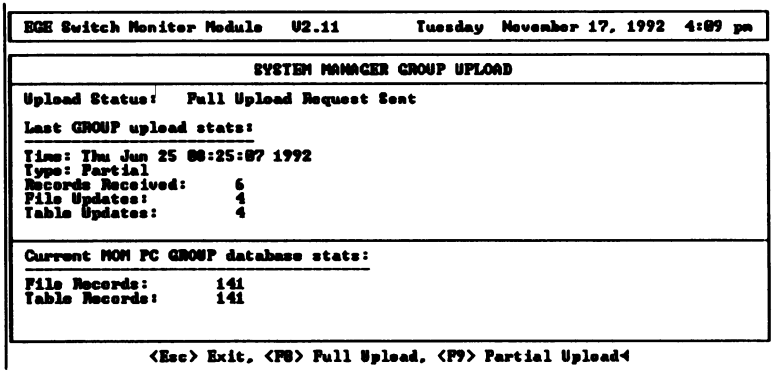

Figure 3.4-5 System Manager Group Upload Screen

In this figure, a partial upload has been received. Note that the file and table updates values do not equal the records received value. This normally only occurs when records marked as deleted are received in a partial upload, but no matching ID field can be found in any of the MOM PC's database file and table records.

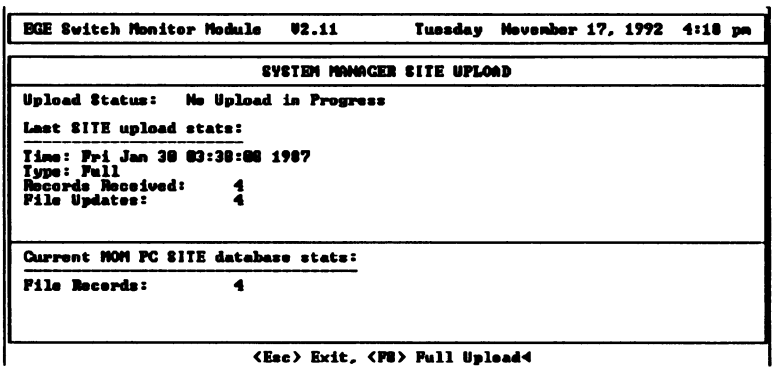

Figure 3.4-6 System Manager Site Upload Screen

If the user selects the "Site Upload" option, the screen shown in Figure 3.4-6 will appear. It is similar in appearance and functionality to the unit and group upload screens with the exceptions that no table is associated with sites, and partial site uploads may not be requested from the System Manager.

A couple of notes of interest. (1) It is not necessary for the previous upload to complete before requesting a different upload. In other words, you may request a unit upload immediately followed by a group and site upload, or any combination thereof. (2) It is also not necessary to remain on the screen from which the upload was requested while the databases are being uploaded. You may request the data and then proceed to another screen to perform some other action.

3.4.2. Request From MOM PC

The request from MOM PC option works basically the same as the request from system manager option except that the uploaded data originates from the MOM PC's hard disk. The unit, group, and site databases are databased on the MOM PC's hard disk from previous uploads from the system manager. Additionally, phone line, conventional, and console unit ID data bases can be uploaded from the MOM PC. Unlike system manager uploads which allow partial upload requests for units and groups, only full uploads are supported here.

The screen shown in figure 3.4-7 will appear if the "Request from MOM PC" option is chosen.

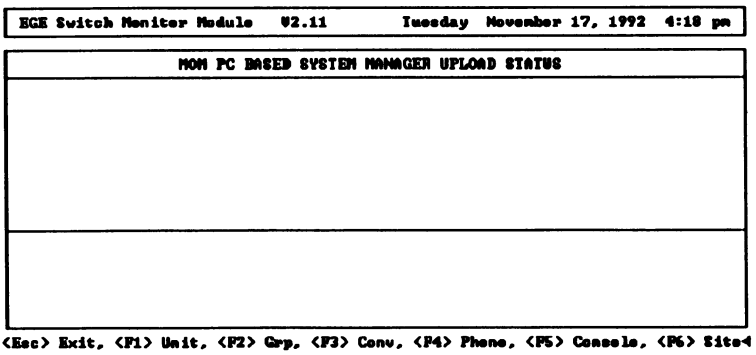

Figure 3.4-7 MOM PC System Manager Upload Status Screen

From this screen, one of six possible upload options are available. If **F1** Unit is chosen, the screen displayed in Figure 3.4-8 will appear. This screen displays unit upload and database stats and allows the user to request full unit uploads from the MOM PC.

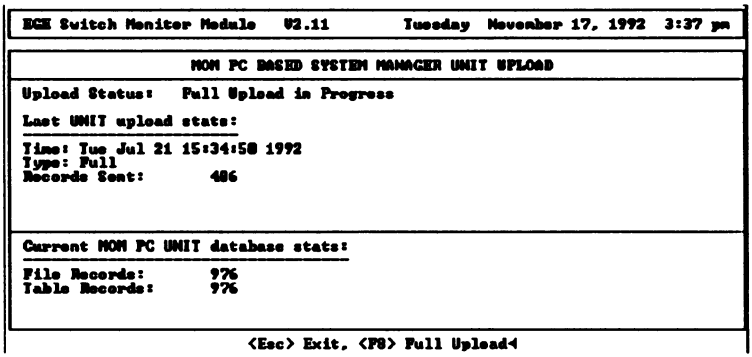

Figure 3.4-8 MOM PC System Manager Upload Status Screen

The Upload Status field displays information regarding any current MOM PC based uploads, such as whether a full upload request is queued, is currently in progress, has completed, or has been aborted. An upload will be aborted if a full upload from the System Manager begins while the MOM PC based upload is in progress, or if a database file read error occurs. If, while a MOM PC based upload is in progress, a partial System Manager upload occurs, a MOM PC based upload request will be queued, and then restarted from the first record in the database file after the partial upload has completed.

The fields under Last Upload Stats give information about the last upload issued at the MOM PC, including the date and time when the first record in the upload was sent, the type of upload, which will always be "Full", and the number of records sent. Unlike the System Manager Upload Stats, this information is not written to disk at the end of each upload. Once the MOM PC is exited, this information is lost.

The fields under Current Database Stats give information about the number of records currently residing in the database file and table. Under normal operation, the number of file and table records should always be equal.

Function key **F8** is used to request a full upload from the MOM PC.

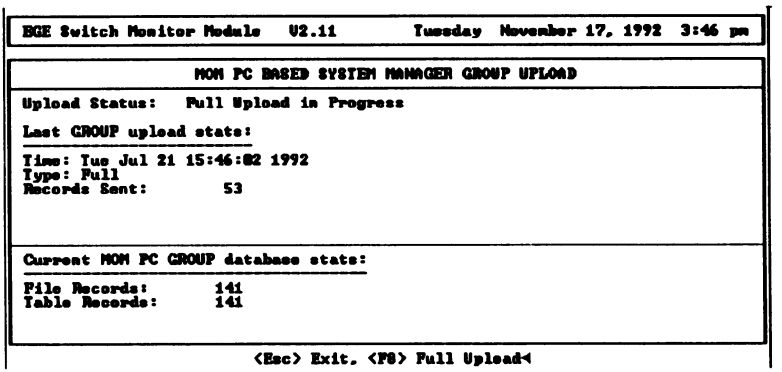

Figure 3.4-9 MOM PC System Manager Group Upload Screen

If **F2** Grp is selected from the MOM PC System Manager Upload screen, the screen shown in Figure 3.4-9 will be displayed. It is similar in appearance and function to the MOM PC System Manager Unit Upload screen.

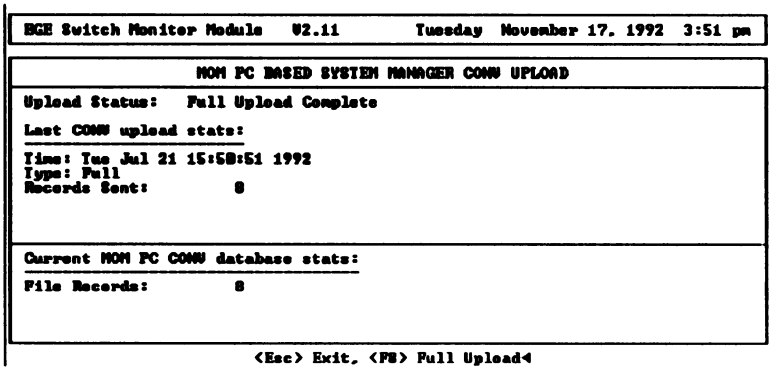

Figure 3.4-10 MOM PC System Manager Conventional Upload Screen

Selecting **F3** Conv from the MOM PC System Manager Upload screen will result in the screen shown in Figure 3.4-10 being displayed. It is similar in appearance and function to the MOM PC System Manager Unit Upload screen except that no table is associated with the conventional database.

The conventional database is built using the "Program Conventional" menu option from the "System Configuration" screen.

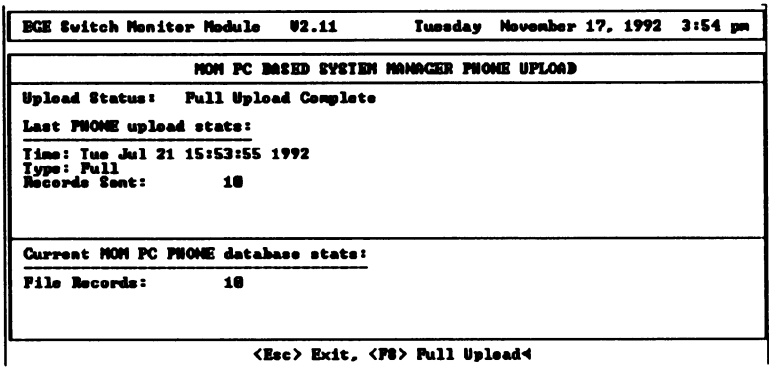

Figure 3.4-11 MOM PC System Manager Phone Upload Screen

The **F4** Phone option on the MOM PC System Manager Upload screen will invoke the screen shown in Figure 3.4-11. It is similar in appearance and function to the MOM PC System Manager Unit Upload screen except that no table is associated with the phone line database.

The phone line database is built manually outside of the MOM PC program using a text editor.

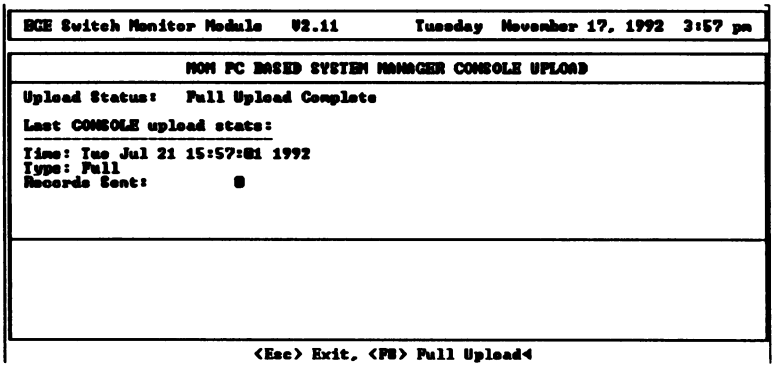

Figure 3.4-12 MOM PC System Manager Console Upload Screen

If **F5** Console is selected from the MOM PC System Manager Upload screen, the screen shown in Figure 3.4-12 will be displayed. It is similar in appearance and function to the MOM PC System Manager Unit Upload screen except that no table is associated with the console database, and no indication is given on the screen of the number of records currently in the database.

The console database is built using the "Console User Profile" menu option from the "Console Configuration" screen.

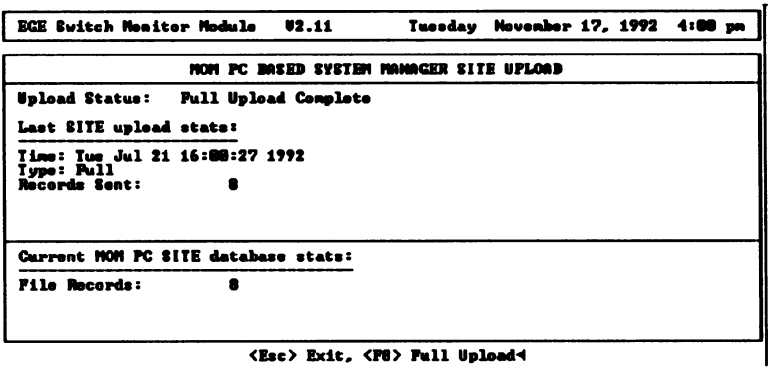

Figure 3.4-13 MOM PC System Manager Site Upload Screen

Selecting **F6** Site from the MOM PC System Manager Upload screen will invoke the screen shown in Figure 3.4-13. It is similar in appearance and function to the MOM PC System Manager Unit Upload screen except that no table is associated with the site database.

As mentioned in the System Manager Upload section, it is not necessary for the previous upload to complete before requesting a different upload. In other words, you may request a unit upload immediately followed by a conventional upload, or any combination of the six options. Each request will be queued, and upload will begin when the previous upload has completed. It is also not necessary to remain on the screen from which the upload was requested while the databases are being uploaded. You may request the data and then proceed to another screen to perform some other action.

There are various messages that may appear on any of the System Manager Data screens. These messages indicate an error condition with a particular database file or table that may affect the proper operation of other functions on the MOM PC. Here is a brief description of each of those messages:

"Invalid Record Received "- an upload record was received that contained an ID value larger than the defined maximum. This record is not added to the database file or table.

"Table Full" - no more upload records may be added to the table.

"Table Write Error" - an error was encountered while writing upload record data to the table. On or more table records may contain erroneous data or table may be missing entries.

"Table Allocation Error" - RAM/disk space could not be allocated to increase the size of the table to accommodate more upload records.

"Error Writing to File" - an error was encountered while writing upload record data to the database file. One or more file records may contain erroneous data or file may be missing entries.

"Error Reading File" - an error was encountered while reading data from the database file.

"Table Corrupted" - a check on the table encountered an unrecoverable inconsistency. Either exit and restart the MOM PC, or request a full upload from the System Manager.

"Incompatible File Format" - the database file resident on the hard disk is of a format from a previous version of MOM PC that is not compatible with the current version's format. A full upload must be obtained from the System Manager.

3.5. View System/Diagnostics

3.5.1. System Display Screen

Selecting the View System/Diagnostics option from the main menu will invoke the System Display screen, as shown in figure 3.5-1. This allows the user to view the total controller board (device) configuration of the EGE IMC/CEC on a single screen.

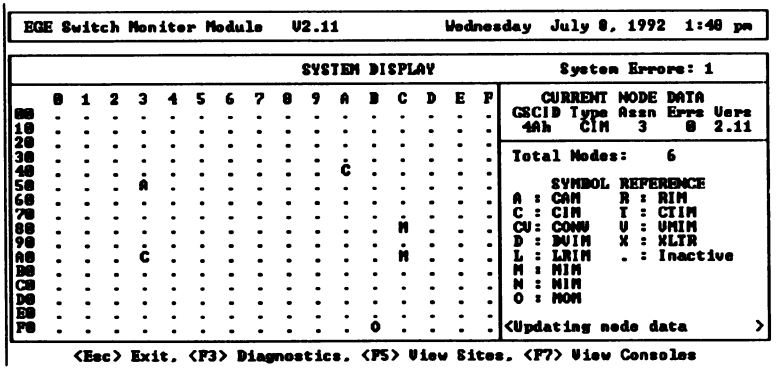

Figure 3.5-1 - View System Screen

The screen is divided into 4 main sections, or boxes: Header, Node Matrix, Current Node Data, and Information. Each box is detailed below.

3.5.1.1. Header Box

This box contains a description of the screen currently being displayed and also a count of all current errors in the system. This count is the sum of all errors for each individual node, plus the number of all global system errors. If this value is greater than 0, then conditions which are detrimental to normal system operation are currently in existence, and should be evaluated and corrected immediately.

3.5.1.2. Node Matrix Box

This box is the main focus of the screen, containing a 16x16 matrix of all possible hexadecimal GSC node addresses in the system. The cursor can be moved around within this matrix to get detailed information on a device at a particular GSC node address.

Use the left, right, up, and down arrow keys to move the cursor to any hexadecimal node address in the range 00h to EFh, plus the node FBh, which is the permanent address of the MOM controller. Nodes F0h thru FAh, and FCh thru FFh are reserved, and cannot be accessed.

Each element in the matrix will display either a '.', indicating an inactive node address (no device responding), or a 1 or 2 character symbol, indicating an active device at that address. A cross reference of symbols to device types is listed in the information box located at the far right of the screen under SYMBOL REFERENCE. In figure 3.5-1, there are 6 active nodes: 1 CAM at address 53h, 2 CIMs at addresses 4Ah and A3h, 2 MIMs at addresses 8Ch and ACh, and the MOM at address FBh.

Errors at each node are indicated by a flashing symbol. Global system errors, which affect all nodes, will cause all active nodes to flash. A global system error will also cause the cursor to flash on any node, active or inactive.

3.5.1.3. Current Node Data Box

This box, located in the upper right portion of the screen, contains data about the node where the cursor is currently located in the GSC node matrix. As the cursor is moved, the data changes to reflect the new position of the cursor.

The GSCID field displays the current hexadecimal GSC node address (i.e. cursor position).

The TYPE and ASSN fields display the device type and setting of the device's assignment dip switches, respectively, at the current address, if the node is active. If the node is inactive, both fields will display '-'.

The ERRS field displays the number of errors currently existing that affect the current node. This count will include errors that affect only the current node, plus the number of global system errors. In some instances, the sum of all the values displayed in this field for each individual node will be greater than the value displayed in the SYSTEM ERRORS field. This will occur whenever a global system error currently exists, since each global system error is counted as a single error in the SYSTEM ERRORS field, but is counted as a single error in each individual node error count as well.

The VERS field displays the major and minor version number of the 80C186 software installed in the device at the current node. Since the version number was not resident in the source code prior to version 2.00, any previous versions (1.00 through 1.10) of software installed will result in "????" being displayed in this field.

3.5.1.4. Information Box

The lower right box contains a count of the total active nodes in the system, a cross reference of node matrix symbols to device types, as mentioned previously, and a status field, which may display any of the following values:

MOM NOT RESPONDING - no messages have been received from the MOM via the serial link within the last 8 seconds. This indicates that the MOM controller is inactive, or the serial link is not connected or is not working correctly. When this condition happens after communications with the MOM have been previously established, an additional warning message will be displayed, indicating the last time any data was received from the MOM. This is to serve as a reminder that the current configuration displayed in the GSC node matrix was the state of the system at the time indicated, and may or may not be correct now.

UPDATING NODE DATA - the MOM controller is currently sending a dump of its GSC node database. This will occur whenever the MOM PC starts up, the MOM controller is reset, a dump request is issued by the user, or when either the MOM or MOM PC thinks that serial communication has been disrupted. This is done to ensure the integrity of the MOM PC's GSC node database.

MOM RESET - The MOM controller has been reset, or has not received proper response from the MOM PC to its polled inquiry. Since this message is immediately followed by the "Updating node data" message, it may only be displayed for a brief instant, or not at all.

INCOMPATIBLE MOM SW - The MOM controller contains 80C186 ROM software version prior to version 2.00. If this is the condition, the MOM PC will not be able to get the current system device configuration. Also any diagnostics information received by the MOM PC may not be accurate.

MOM LINK: UP - This is the normal state of operation, indicating no problems with the serial link to the MOM, and no GSC node database dump occurring.

3.5.1.5. Hot Keys

There are various hot keys that may be pressed at any time:

E - If pressed while the cursor is on an active node, a list of all current **E**rrors for that node will be displayed. If pressed while the cursor is on an inactive node, a list of all current errors for the overall system will be displayed.

H - invokes the **H**DLC channel B statistics screen for the current node.

I - invokes the Board **I**dentification Window.

N - invokes the GSC **N**ode statistics screen for the current node.

U - requests an **U**pdate (dump) of the GSC node database from the MOM controller.

V - issues a request to the current node for a copy of its **V**ersion stamp. If the node responds, a pop-up window will display the version number of the 80C186 software currently installed at the node, and a date and time when the executable file was created. Note that any node with an 80C186 source code version prior to 2.00 (indicated by "????" in the VERS field of the Current Node Data box) will not respond to this request.

3.5.1.6. Function Keys

The following function keys may be pressed at any time:

F1 - Invokes the help screen.

F3 - Invokes the diagnostics menu, allowing viewing of errors, warnings,and statistics for the system.

F5 - Toggles between the SYSTEM DISPLAY and SITE DISPLAY screens. The SITE DISPLAY screen changes the format of the GSC node matrix to allow viewing of site numbers of all active MIM-type (MIM, VMIM, CTIM, and NIM) devices on a single screen.

F7 - Toggles between the SYSTEM DISPLAY and CONSOLE DISPLAY screens. The CONSOLE DISPLAY screen changes the format of the GSC node matrix to allow viewing of console numbers of all active CIM devices on a single screen.

ESC - Returns to the main menu.

3.5.2. Site Display Screen

The Site Display screen allows the user to view the site numbers of all active MIM-type devices installed in the EGE IMC/CEC system on a single screen, as shown in figure 3.5-2. Devices that are considered "MIM-type" are MIMs, VMIMs, CTIMs, and NIMs. This screen is invoked by pressing function key **F5** from the System Display or Console Display screens.

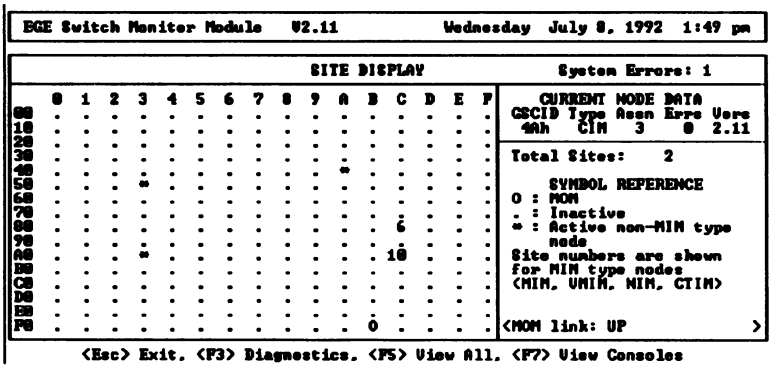

Figure 3.5-2 Site Display Screen

The functionality of this screen is essentially the same as that for the System Display screen, with the exceptions detailed below. Please refer to the System Display section for a description of the basic functionality.

For the site display screen, each element in the matrix will display either a '.', indicating an inactive node address (no device responding), a '*', indicating that the device is active but is not a MIM-type device, or a decimal value, which is the site number of the MIM-type device. The MOM is always shown on the screen as an 'O'. The number of active sites is displayed in the Information Box.

In figure 3.5-2, there are 6 active nodes, 2 of which are sites: 2 MIMs at addresses 8Ch and ACh, with site numbers 6 and 10, respectively, 3 other non MIM-type devices at addresses 4Ah, 53h, and A3h, and the MOM at address FBh.

3.5.3. Console Display Screen

The Console Display screen allows the user to view the console numbers of all active CIM devices installed in the EGE MSC-II system on a single screen, as shown in figure 3.5-3. This screen is invoked by pressing function key <F7> from the System Display or Site Display screens.

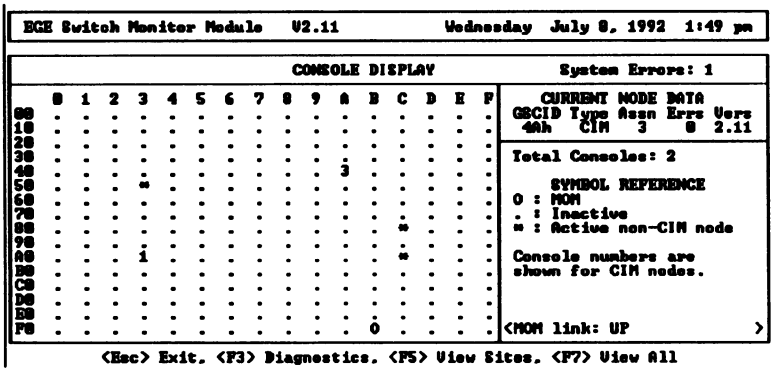

Figure 3.5-3 Console Display Screen

The functionality of this screen is essentially the same as that for the System Display screen, with the exceptions detailed below. Please refer to the System Display section for a description of the basic functionality.

For the console display screen, each element in the matrix will display either a '.', indicating an inactive node address (no device responding), a '*', indicating that the device is active but is not a CIM device, or a decimal value, which is the console number of the CIM device. The MOM is always shown on the screen as an 'O'. The number of active consoles is displayed in the Information Box.

In Figure 3.5-3, there are 6 active nodes, 2 of which are consoles: 2 CIMs at addresses 4Ah and A3h, with console numbers 3 and 1, respectively, 3 other non CIM devices at addresses 53h, 8Ch, and ACh, and the MOM at address FBh.

3.5.4. Diagnostics Menu

The Diagnostics Menu is invoked by pressing function key **F3** from the System, Site, or Console Display screens.

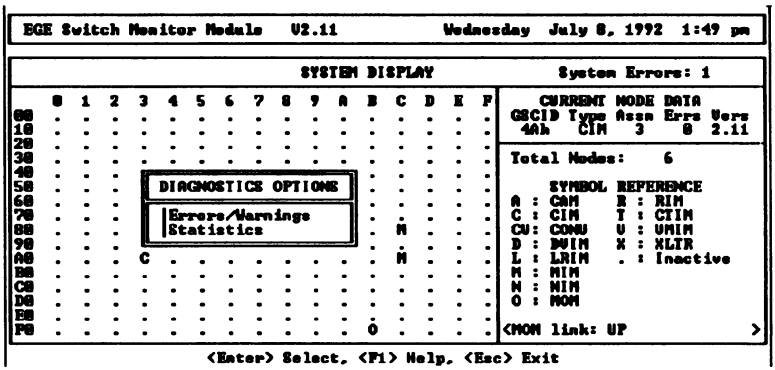

Figure 3.5-4 Top Level Diagnostics Menu

The Errors/Warnings option allows the user to generate reports about current and past errors and warnings generated in the IMC/CEC. The Statistics option allows viewing, in real time, of quantitative data related to various entities within the IMC/CEC. Either option calls up a sub-menu that lists the available reports and displays available.

3.5.4.1. Errors/Warnings Diagnostics Submenus

The submenu displayed when the errors/warnings diagnostics option is chosen is dependent on the screen from which the diagnostics menu was invoked.

There are 3 basic types of error/warning reports available: errors that currently exist, logged errors over a user-specified time interval, and logged warnings over a user-specified time interval. These 3 report types can be generated for a single node, all nodes, all sites, or all consoles, as shown in Figures 3.5-5 thru 3.5-7.

Figure 3.5-5 shows the errors/warnings submenu displayed when the diagnostics menu is invoked from the System Display screen. These options allow the user to generate error or warning reports for either the current node, which is the GSC address displayed in the Current Node Data box, or all GSC nodes.

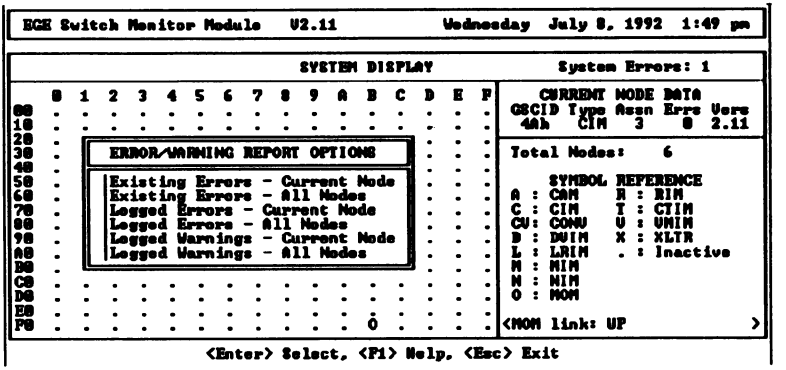

Figure 3.5-5 Errors/Warnings Diagnostics Submenu for System Display Screen

Figure 3.5-6 shows the errors/warnings submenu displayed when the diagnostics menu is invoked from the Site Display screen. These options allow the user to generate error or warning reports for either the current node, which is the GSC address displayed in the Current Node Data box, or all nodes with MIM-type devices.

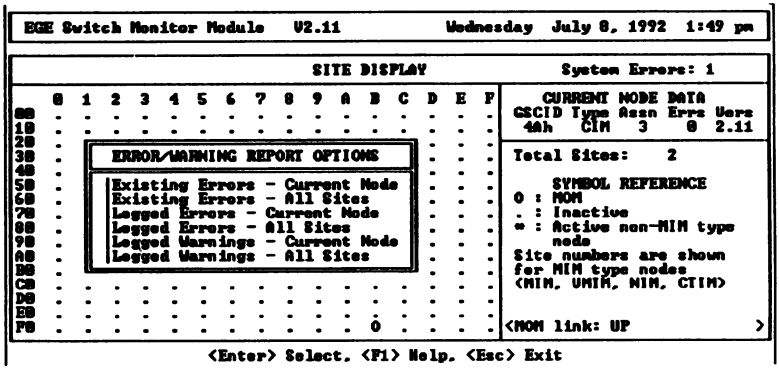

Figure 3.5-6 Errors/Warnings Diagnostics Submenu for Site Display Screen

Figure 3.5-7 shows the errors/warnings submenu displayed when the diagnostics menu is invoked from the Console Display screen. These options allow the user to generate error or warning reports for either the current node, which is the GSC address displayed in the Current Node Data box, or all nodes with CIM devices.

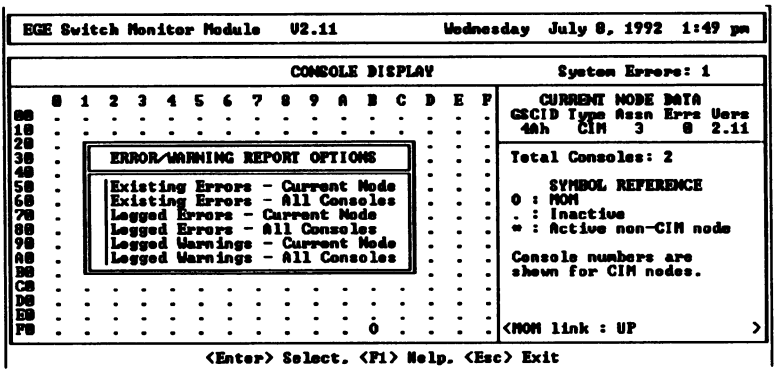

Figure 3.5-7 Errors/Warnings Diagnostics Submenu for Console Display Screen

3.5.4.1.1. Existing Errors Report

Figure 3.5-8 shows an example of the existing errors report screen. The report format is the same for a single node, all nodes, all sites, or all consoles. The example shown in the figure is a report on existing errors for all nodes.

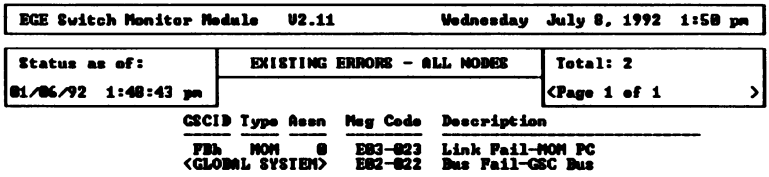

Figure 3.5-8 Existing Errors Report Screen

The header box, at the top center of the screen, indicates which existing error report option was chosen from the submenu.

The status box, located in the upper left corner of the screen, displays the system date and time when the errors were calculated. This is usually the time when this screen is invoked, except in the case where communication has been lost with the MOM controller. In this case, the time displayed will be the last time a message was received from the MOM, since the system error status may have changed since communication was lost.

The box in the upper right corner of the screen contains the total number of errors found, and a status line (reverse video text found between the '<' and '>' characters). Usually this will be the current page (screen) number and the total number of pages in the report, as shown here, but sometimes it will display other information of importance to the user.

The remainder of the screen is used to display the errors found. If the number of errors found exceeds the screen capacity, the report will be continued on the next page, or screen. The other pages are accessed by using the Page-Up and Page-Down keys. To print the entire report directly to the printer, press the **F7** function key. To print the entire report to a file for later viewing or printing, press the **F5** function key.

Each entry in the report details the source of the error, the related message code number, and a short description:

The GSC address (GSCID), device type (Type), and device assignment (Assn) columns provides the user with an exact location of the source of the error. For the case of a global system error, the text "<GLOBAL SYSTEM>" will be displayed across these 3 columns, since this type of error affects all nodes. Global system errors are included in all existing error reports, whether it is a single node, all sites, all consoles, or all nodes report (this is not the case for logged error reports).

The message code number is used as a reference to obtain further information on the error being reported. It consists of a single character followed by 2 decimal values separated by a '-'. The character 'E' refers to an error message code (there are also message codes for warnings, indicated by a 'W' as the first character). The first decimal value specifies a certain class of error, such as a bus failure, or a communications link failure. The second decimal value is the type of entity to which the error refers, such as the GSC bus, or the MOM PC. The short description following the message code reflects this format.

All current possible errors are listed in the screen's help file, indexed by the message code number. The help file is invoked by pressing function key **F1**. In most instances, though, the short description given will provide enough information to indicate the reason for the error.

It is important to note that the existing error report screen is not updated if the system error status changes. To generate a new report, this screen must be exited by using the **<ESC>** key, and re-entered.

3.5.4.1.2. Logged Errors/Warnings Report

All warning and error messages generated in the system are sent to the MOM PC where they are stored in the warning or error datalog file, repectively. The errors/warnings report function allows the user to extract entries from either of these files for a specific time range for viewing.

The procedures for creating a logged errors or a logged warnings report are exactly the same. The following will describe how to generate a logged errors report but the same description applies to logged warnings report generation as well. Any differences between the two will be indicated.

There are 2 screens associated with logged errors/warnings report generation. The first one, which is always displayed first when this report option is invoked, is the time range entry screen, which allows the user to enter the range of times over which to generate report entries. This screen is identified by the "Enter range" text displayed on the status line in the upper right box, as shown in Figure 3.5-9.

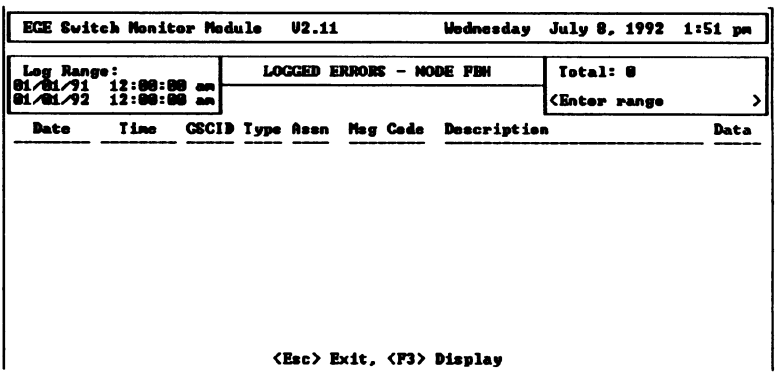

Figure 3.5-9 Time Range Entry Screen for Logged Errors Report

The Log Range Box, located in the upper left corner, is where the dates and times specifying the time range for the report are entered. Times may be entered in 24-hour format or with an "AM" or "PM" suffix as shown in the figure. When the range has been entered, press function key **F3** to generate the report.

The amount of time required to generate the report depends on the following factors:

1) Time range specified - larger time range requires more processing.
2) Size of datalog file - the more entries in the file, the more searching required, although this can be minimized by specifying a narrow time range.
3) Serial link activity - large amounts of traffic on MOM <-> MOM PC serial link will take away processing time from report generation.
4) Hard disk/controller throughput - report generation requires a large amount of disk access, both reading and writing. Slow drive or controller will result in longer processing time.

As the report is being generated, a "Please Wait" window is displayed. If the number of entries in the report exceeds 1000, the current entry count, in increments of 1000, is then displayed, as shown in Figure 3.5-10. To stop processing, press any key. All entries found so far will then be displayed, and the ending date and time of the log range will be updated to reflect the time of the last entry processed.

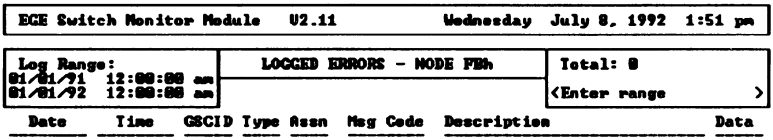

Figure 3.5-10 Entry Display Count During Report Generation

The second type of screen, the report display screen, is shown in Figure 3.5-11. The report format is the same for a single node, all nodes, all sites, or all consoles. The example shown in the figure is a report on logged errors for node FBh (MOM controller).

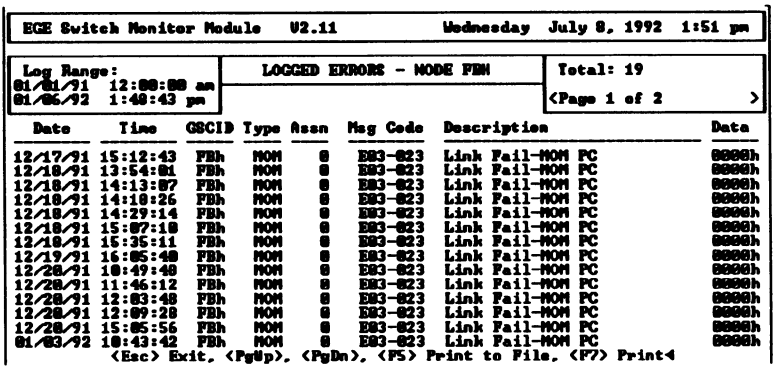

Figure 3.5-11 Report Display Screen for Logged Errors Report

The log range box, located in the upper left corner of the screen, displays the time range over which the report was generated. As mentioned previously, the ending date and time will be that of the last entry processed if report generation is interrupted by the user, or some condition occurs which prevents completion of the report, such as a disk full condition. Otherwise, the date and time will be the same as that entered.

The box in the upper right corner of the screen contains the total number of entries in the report, and a status line (reverse video text found between the '<' and '>' characters). Usually this will be the current page (screen) number and the total number of pages in the report, as shown here, but sometimes it will display other information of importance to the user.

The remainder of the screen is used to display the entries found. If the number of entries found exceeds the screen capacity, the report will be continued on the next page, or screen. The other pages are accessed by using the Page-Up and Page-Down keys. To print the report directly to the printer, press the **F7** function key. To print the entire report to a file for later viewing or printing, press the **F5** function key. To generate a new report, press **F3** to enter a new time range, or **<ESC>** to return to the menu and select a different report type.

The report format for errors and warnings is where the major difference lies between the two report generations. Each format is discussed separately here.

For error reports, each entry in the report details the time and source of the error, the related message code number, a short description, and a data value (see Figure 3.5-11):

The date and time indicates when the error was received by the MOM PC, and in most cases will be the time of occurrence. This will not be the case if the message is lost due to a serial link overflow or MOM GSC receive buffer overflow. Since a device will retransmit an error message every 60 seconds until it receives acknowledgement from the MOM PC, all error messages will eventually be logged, but in high message traffic conditions, the time stamp may not reflect the actual time of occurrence.

The GSC address (GSCID), device type (Type), and device assignment (Assn) columns provide the user with an exact location of the source of the error. For the case of a global system error, the text "<GLOBAL SYSTEM>" will be displayed across these 3 columns, since this type of error affects all nodes. Global system errors are included only in an all nodes report. Reports for a single node, all sites, or all consoles will not contain these types of errors!

The message code number is used as a reference to obtain further information on the error being reported. It consists of a single character followed by 2 decimal values separated by a '-'. The character 'E' refers to an error message code (there are also message codes for warnings, indicated by a 'W' as the first character). The first decimal value specifies a certain class of error, such as a bus failure, or a communications link failure. The second decimal value is the type of entity to which the error refers, such as the GSC bus, or the MOM PC. The short description following the message code reflects this format.

All current possible errors are listed in the screen's help file, indexed by the message code number. The help file is invoked by pressing function key **F1**. In most instances, though, the short description given will provide enough information to indicate the reason for the error.

The last field, the data field, may or may not contain relevant information. See the description for the particular message code in the help file for further details.

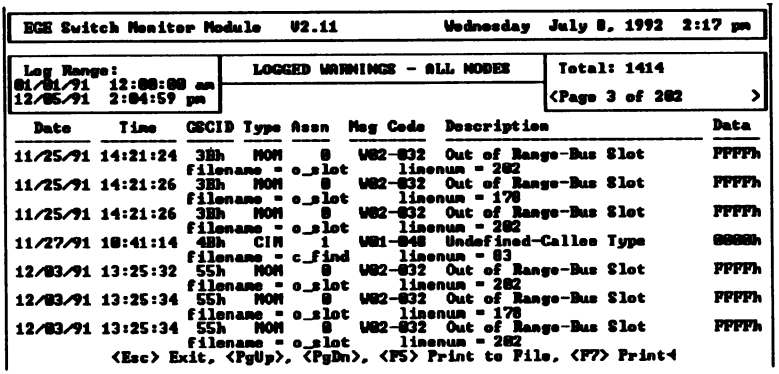

Figure 3.5-12 Report Display Screen for Logged Warnings Report

Figure 3.5-12 shows an example of the warning report screen. Each entry in the report consists of two lines of information detailing the time and source of the warning, the related message code number, a short description, a data value, and the source filename and line number from where the warning was issued:

The date and time indicates when the warning was received by the MOM PC and is the same as the time of occurrence. Unlike errors, warning messages are not acknowledged by the MOM PC. If the warning message does not reach the MOM PC, it is not retransmitted.

The GSC address (GSCID), device type (Type), and device assignment (Assn) columns provide the user with an exact location of the source of the warning. Unlike errors, there are no global system warnings.

The message code number is used as a reference to obtain further information on the warning being reported. It consists of a single character followed by 2 decimal values separated by a '-'. The character 'W' refers to a warning message code. The first decimal value specifies a certain class of warning, such as an out-of-range value, or unsupported message group value. The second decimal value is the type of entity to which the warning refers, such as an audio channel, or a message group. The short description following the message code reflects this format.

All current possible warnings are listed in the screen's help file, indexed by the message code number. The help file is invoked by pressing function key **F1**. In most instances, though, the short description given will provide enough information to indicate the reason for the warning.

The data field usually contains the value that caused the warning to be issued. See the description for the particular message code in the help file for further details.

The second line of the entry displays the source code filename and line number where the warning was generated. This is used mainly for debugging potential code data flow problems.

3.5.4.2. Statistics Diagnostics Submenu

The submenu displayed when the statistics option is chosen from the diagnostics menu is displayed in figure 3.5-13. There are currently 4 types of statistics available for viewing: HDLC channel A, HDLC channel B, GSC node, and NIM. A request is sent to the device at the current GSC node address to begin updating the stats screen with the appropriate data as soon as the menu option is chosen. If the cursor was positioned on a NIM (Network Interface Module) when the diagnostics submenu was opened, the fourth option - "NIM" will be displayed on the statistics display options menu. This screen will display channel usage statistics for the NIM, and is only available on systems that use a NIM (Stargate systems).

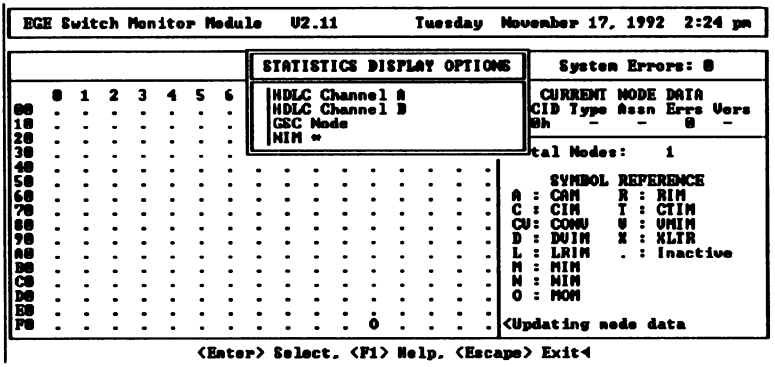

Figure 3.5-13 Statistics Diagnostics Submenu

All statistics screens have the top area of the screen in common, as shown in 3.5-14. The "Last Cleared" box in the top left corner of the screen contains the time when the device's statistics variables were reset to zero. These variables are cleared upon device reset or when commanded by the user by pressing function key **F7** from this screen. The box in the top right corner of the screen displays the source device of the data, and a status line, which communicates any information of interest to the user.

Data updates are sent from the device every 2 seconds once the initial request has been issued. The status line will display the time the last update was received.

3.5.4.2.1. HDLC Statistics

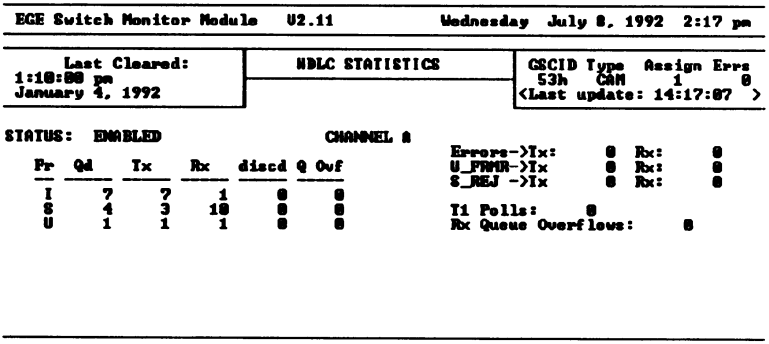

Figure 3.5-14 HDLC Channel A Statistics Screen

The HDLC statistics screen displays data in real-time about either HDLC channel A, which is the communications link from the IMC/CEC to an external device, (currently only used by the CAM), or HDLC channel B, which is used for communications between controller and audio boards. See Figures 3.5-14 and 3.5-15. Here are descriptions of each of the fields:

STATUS - This indicates whether the current channel is enabled or disabled. If disabled, no communications are possible on the channel.

Fr - describes HDLC protocol frame type, either I, S, or U

Qd - count of I, S, or U frames placed in the respective transmit queue

Tx - count of I, S, or U frames copied from the respective transmit queue to the HSCX chip transmit FIFO

Rx - count of valid I, S, or U frames received, where a valid frame is defined as one in which the HSCX chip receive status (RSTA) register contains the following bit values:

VFR = 1 (valid frame received)
CRC = 1 (CRC check OK)

RAB = 0 (received frame was not aborted from transmitting station)

discd - count of received I, S, or U frames discarded due to the following:

I-frames - N(R) or N(S) error, address byte indicated a response (I-frames are always commands), or station in a state that doesn't accept I-frames.

S-frames - N(R) error, unrecognized command/response, or station in a state that doesn't accept S-frames.

U-frames - unrecognized command/response, address byte indicated a command for a response, or vice-versa.

Q Ovf - count of I, S, or U frames lost due to transmit queue full condition.

Tx errors - count of all frame types that had to be retransmitted due to an XMR (Transmit Message Repeat) interrupt from the HSCX chip

Rx errors - count of invalid frames received, where an invalid frame is defined as one in which the HSCX chip receive status (RSTA) register contains one or more of the following bit values:

VFR = 0 (invalid frame received)

CRC = 0 (CRC check failed)

RAB = 1 (received frame was aborted from transmitting station)

U_FRMR Tx/Rx - count of U-frame FRMR (frame reject) responses transmitted and received

S_REJ Tx/Rx - count of S-frame REJ commands/responses transmitted and received

T1 Polls - count of polls issued to the remote station due to its failure to acknowledge an I-frame, U-frame command, or polled S-frame command within a given time limit. For channel B, this count also includes the number of polls issued to all remote stations when no messages have been transferred over the link after a given time interval.

Rx Queue Overflows - count of received frames lost due to a full receive queue condition.

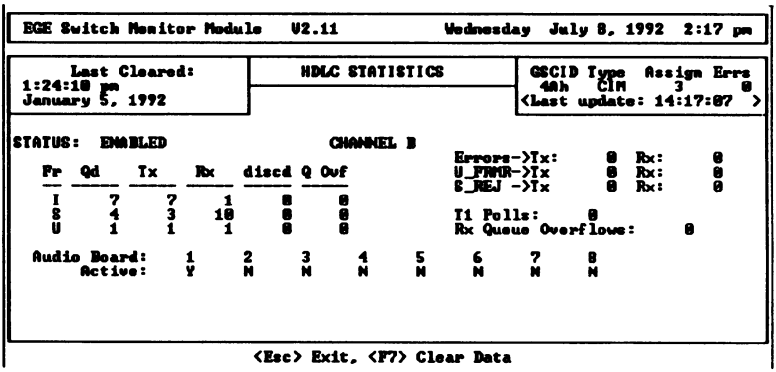

Figure 3.5-15 HDLC Channel B Statistics Screen

In addition to the fields described above, the channel B HDLC statistics screen also contains information on up to 8 audio boards that may be assigned to the current controller board. These fields display '**Y**' to indicate an active audio board (a response is being received via the HDLC link), or '**N**' to indicate an inactive audio board (no reponse is being received via the HDLC link).

3.5.4.2.2. GSC Node Statistics

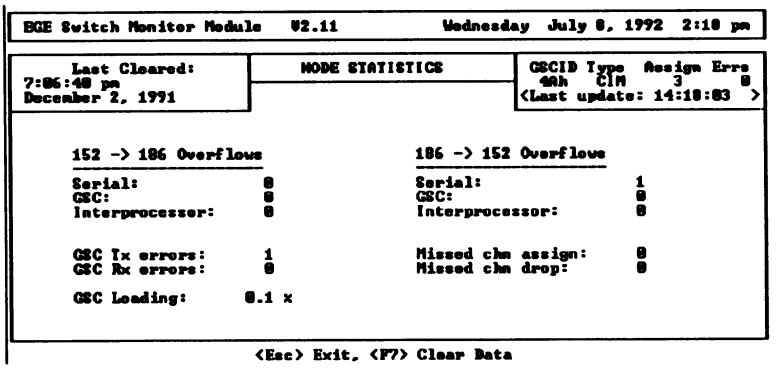

Figure 3.5-16 GSC Node Statistics Screen

The GSC node statistics screen displays various node specific data as shown in Figure 3.5-16. Here are descriptions of each of the fields:

Dual Port Buffer Overflows - number of times dual port buffer is full when attempt is made to place message in buffer. Stats are shown for overflows for the following messages:

152->186:

Serial - data received from 80C152 serial port for 80C186 processing.

GSC - data received from 80C152 GSC for 80C186 processing.

Interprocessor - internal 80C152 message for 80C186 processing.

186->152:
Serial - data the 80C186 wishes to transmit out the 80C152 serial port.
GSC - data the 80C186 wishes to transmit onto the 80C152 GSC
Interprocessor - internal 80C186 message for 80C152 processing.

Missed channel assignments (MIM-type devices only) - count of channel assignments received by MIM on a channel the MIM currently has marked as active.

Missed channel drops (MIM-type devices only) - count of channel drops received by the MIM on a channel on which the MIM has no activity.

GSC transmit errors - count of transmit error interrupts received on the 80C152.

GSC receive errors - count of receive error interrupts received on the 80C152.

GSC loading - measurement of loading for the effective bandwidth. Where a 27% loading on the total GSC bandwidth is the maximum, due to excessive collisions, this will be displayed as 100% loading of effective bandwidth.

3.5.4.2.3. NIM Statistics

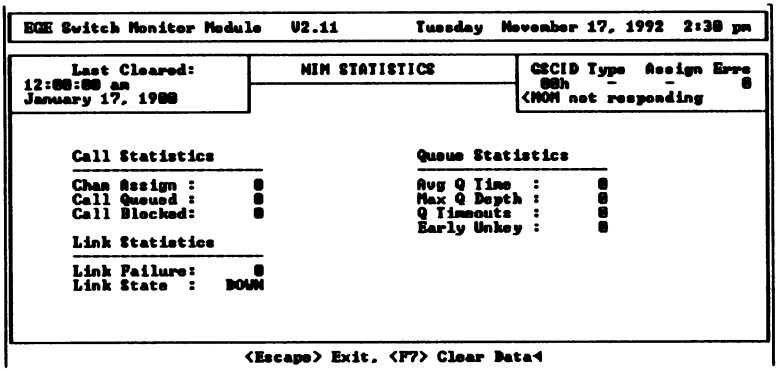

Figure 3.5-17

The NIM statistic screen displays the following NIM data. The data is updated continuously (about once per second) while the screen is displayed. The data can be reset with the **F7** key. All counts are since the last reset.

- Chan Assign - Calls routed over NIM interface.
- Call Queued - Call attempts queued due to no channel available.
- Call Blocked - Call attempts blocked, no equipped channels or queue full.
- Avg Q Time - Average waiting time of last four queued calls.
- Max Q Depth - Maximum number of simultaneous queued call attempts.
- Early Unkey - Originator unkeyed while call was still queued.
- Link Failure - Number of control link failures.
- Link State - Current control link state (UP,DOWN).

3.5.5. Board Identification Window

The hot key 'I' may be pressed at any time from the System Display Screen. Pressing '**I**' while the cursor is on an active node will invoke one of the Board Identification Windows shown in Figures 3.5-18, 19, 20, or 21.

The cursor keys can be used to maneuver the cursor within the Board Identification Window. To select a board, move the cursor under its corresponding prompt and press '**Y**'. For example, pressing '**Y**' under the 'Audio Board 1' prompt will select the first audio board.

All selected boards' ID LEDs will begin to flash immediately upon pressing **<Enter>.** Any board that was unselected will be sent a message clearing its ID LED. Thus if the ID LED was previously flashing it will now turn off.

Pressing **<Esc>** will close the Board Identification Window and clear out all ID LED's on boards associated with that node. In other words, once the window is closed, all ID LED's will be turned off.

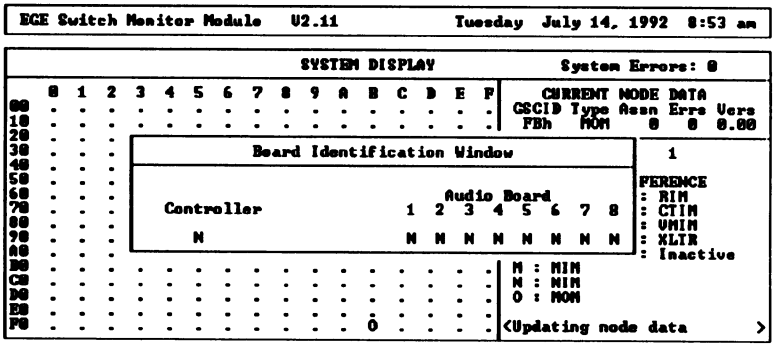

Figure 3-5.18 Board Identification Window for MOM, LRIM, VMIM, CTIM, DVIM, and NIM

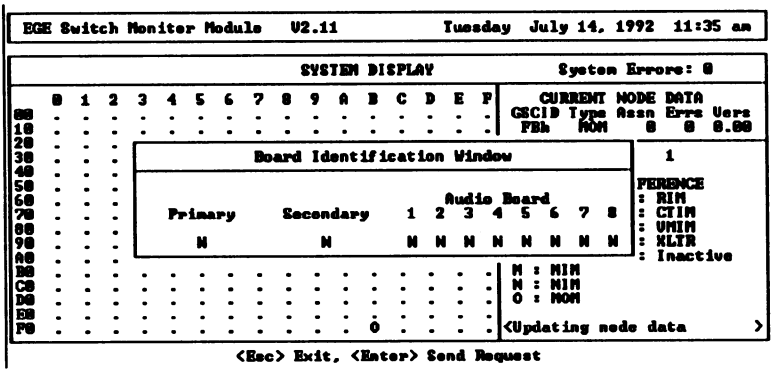

Figure 3-5.19 Board Identification Window for MIM only

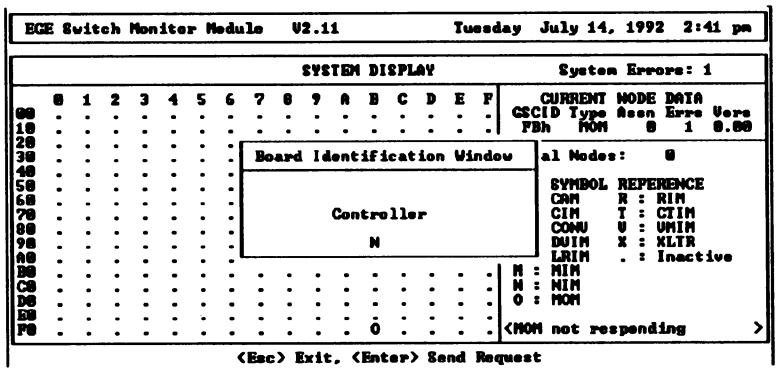

Figure 3-5.20 Board Identification Window for RIM or CAM

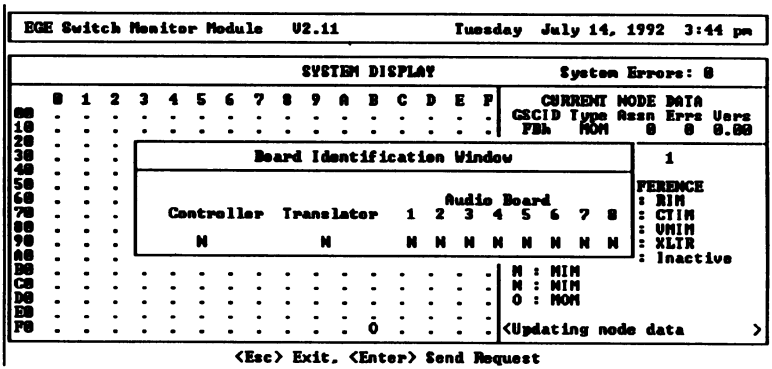

Figure 3-5.21 Board Identification Window for CIM only

3.6. User Account Maintenance

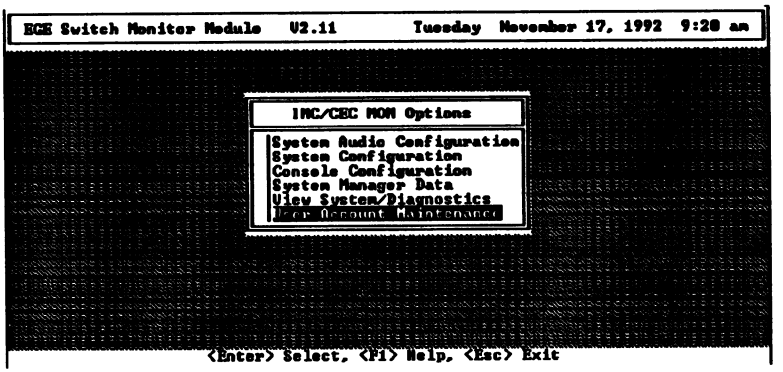

Figure 3.6-1 User Account Maintenance

The user account maintenance function allows the MOM PC to be configured for up to 12 different user accounts with 4 different access levels. The access levels are "System Administrator", "Console Administrator", "General Maintenance", and "User". Refer to Figure 3.6-3 for a description of the functional access levels.

An access denied message is displayed whenever a menu option is chosen for which the currently logged in user doesn't have the required functional access level. The deliverable MOM PC installation diskette comes with a password.dat file which has a default username "MOMUSER" and a default password "GUEST". It is recommended that you delete the default username and create some of your own. The default password.dat (on the delivered installation diskette) should be safeguarded by the system administrator. It may be used as a back up in the event that passwords are forgotten or if the installed password.dat file is deleted.

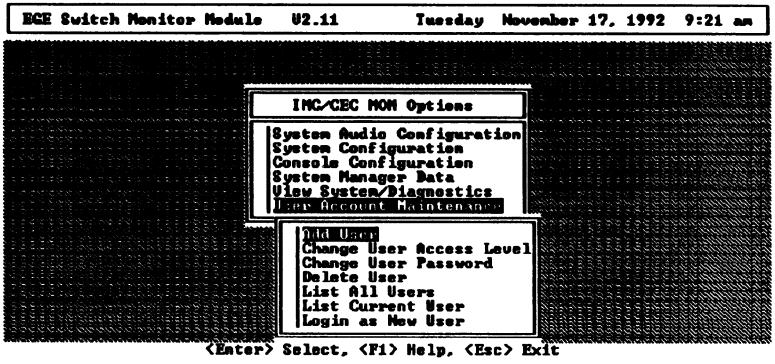

Figure 3.6-2 User Account Maintenance Options

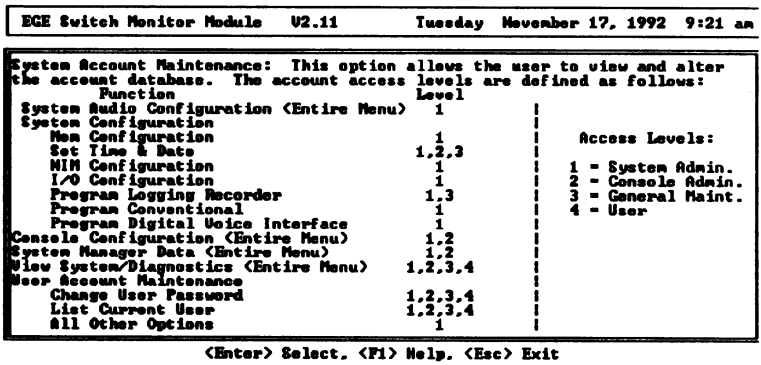

Figure 3.6-3 User Account Maintenance Help Screen

3.6.1 Add User

This option is used to add a new user account. You will be prompted for a user name, password, and a user access level. Refer to Figure 3.6-3 for functional access level descriptions. This system supports up to 12 user accounts. Only users with system administrator access levels (access level = 1) may access this function.

3.6.2 Change User Access Level

This option is used to change the access level of a given user account. You will be prompted for a username and a new user access level. Only users with system administrator access levels (access level = 1) may access this function.

3.6.3 Change User Password

Use this option to change the password of an existing account. If you are currently logged in as a user with a system administrator access level, you will be prompted for a username and a new password. Users that do not have a system administrator access level can only change their own password and will not be prompted for a username.

3.6.4 Delete User

System administrators can use this option to delete user accounts.

3.6.5 List All Users

System administrators can use this option to list all of the user account names and their access levels. See Figure 3.6-4 for an example listing. Also, see Figure 3.6-3 for a description of functional access levels.

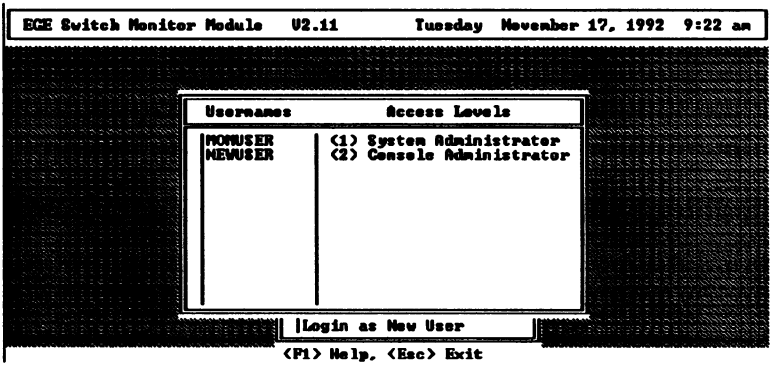

Figure 3.6-4 Lise All Users

3.6.6 List Current Userl

Use this option to see the username and access level of the currently logged in user. See the example in Figure 3.6-5.

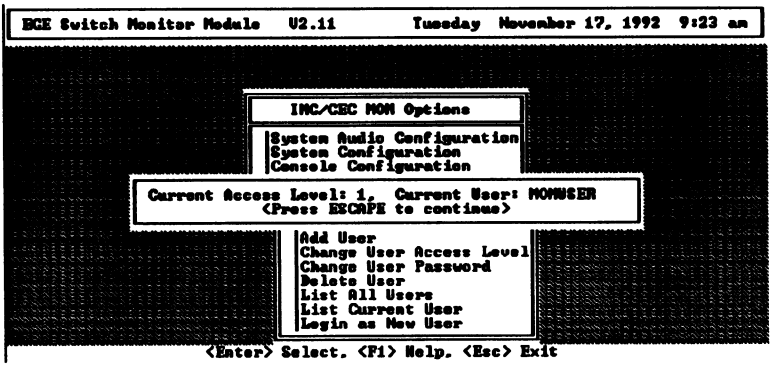

Figure 3.6-5 List All Current User

3.6.7 Login as New User

You may log in under a different username at any time without exiting the MOM PC program provided that you know the password.

3.7. Exit MOM

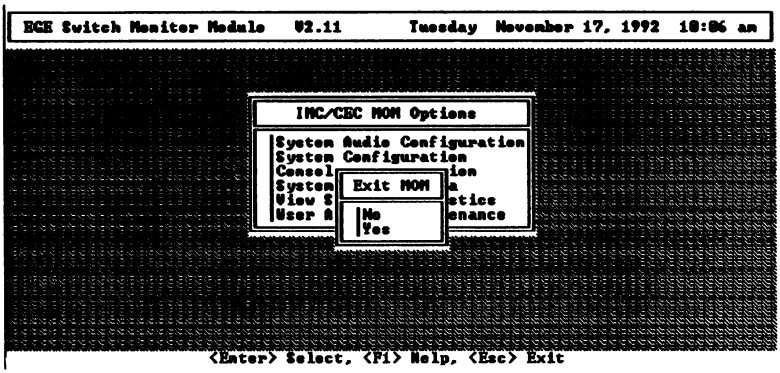

Figure 3.7-1 Exit MOM Screen

To exit the MOM PC software, the user must enter **ESC** (Escape) from the **MOM Options** window. The above sub-menu will appear prompting the user for verification of exit. To exit select "**Yes**", if not select "**No**". Selecting "**No**" will return to the **MOM Options** window. Selecting "**Yes**" will exit the program. This exit may take some time. If data logging is enabled, the software will write the last bit of data to the data log buffer on the hard disk.

CHAPTER 4
OPERATION

4.1 MOM Off-Line functions

The MOM has two off-line functions used to extract data from the data log buffer stored on the hard disk.

CALLS.EXE	used to extract all calls made within the switch
GSCMON.EXE	used to extract all messages from the log
Important Note:	**It is recommended that the data log files be backed up to a floppy network weekly and removed from the hard disk. This eliminates the hard disk from filling up and disabling data logging.**

4.2 CALLS.EXE

The **CALLS** function is used to extract channel assignment / drop messages from the data log buffer. It can be a vital tool in tracing calls through the system.

The user may obtain help for the **CALLS** function by using the "**/h**" option on the command line. For example:

calls /h

The following help message will be dumped:

calls - extract channel assignment/drop data from data log buffer
Syntax: calls [<<options>>]
Options:

/bhh:mm:ss	start time of data extraction
/ehh:mm:ss	stop time of data extraction
/dmm-dd-yy	date of data log file
/s	softcopy output requested
/h	display help file then exit

The output from the **CALLS** function displays the **time** of the assignment / drop, accurate to 480 msec, the TDM **bus** and **slot** the call is / was on, the **channel** the **host** used to process the call, the host (site or console) the call

was made to / from, the **message group** and **sub group** of the type of call, a **call variant** field for console originated /IMC/CEC originated / radio originated, and the **CALLEE** and **CALLER** involved in the call.

Valid message groups and sub groups are:

CHN ASS	Channel Assignment
GCV	Clear Voice (CV) Group
EGCV	Emergency CV Group CALL
GVG	Voice Guard (VG) Group
EGVG	Emergency VG Group
ICV2	ICall II CV
IVG2	ICALL II VG
IDA	Data ICall
GDA	Data Group
SGCV	Special Call Group CV
SG I	Special Call Group Interconnect
SGVG	Special Call Group VG
SGVGI	Special Call Group VG Inter
SICV	Spevial Call Individual CV
SI I	Special Call Indiv Inter
SIVG	Special Call Indiv VG
SIVGI	Special Call Indiv VG Inter
ICV	ICall CV
IVG	ICall VG
ACVMT	System All Call CV, msg trunked
ACVTT	System All Call CV, Tx trunked
ACVMTU	System All Call CV Update, msg trunk
ACVTTU	System All Call CV Update, Tx trunked
AVGMT	System All Call VG, msg trunked
AVGTT	System All Call VG, Tx trunked
AVGMTU	System All Call VG Update, msg trunked
AVGTTU	System All Call VG Update, Tx trunked
CTI	Indiv Inter (CTIS)
CTIVG	Indiv Inter (CTIS) VG
CTG	Group Inter (CTIS)
CGGVG	Group Inter (CTIS) VG
ECTG	Emergency Group Inter (CTIS)
ECTGVG	Emergency Group Inter (CTIS) VG
SCTI	Special Inter (CTIS)
SCTIVG	Special Inter (CTIS) VG
EIDA	Emergency Data ICALL
EGDA	Emergency Data Group

GVC	Voice Guard Clear Voice (VGCV) Group
EGVC	Emergency VGCV Group
IVC2	ICall II VGCV
SGVCI	Special Call Group VGCV
SGVCI	Special Call Group VGCV Inter
SIVC	Special Call Indiv VGCV
SIVCI	Special Call Indiv VGCV Inter
IVC	ICall VGCV
AVCMT	System All Call VGCV, Msg trunked
AVCTT	System All Call VGCV, Tx trunked
AVCMTU	System All Call VGCV Update, Msg trunked
AVCTTU	System All Call VGCV Update, Tx trunked
CTIVC	Indiv Inter (CTIS) VGCV
CTGVC	Group Inter (CTIS) VGCV
ECTGVC	Emergency Group Inter (CTIS) VGCV
SCTIVC	Special Inter (CTIS) VGCV

SEC ACK	Secondary Acknowledgement - Used to indicate secondary sites involved
CHN UKY	Channel Unkey No valid sub group
CHN DRP	Channel Drop
DROP	Channel Drop

A sample output of the **CALLS** function using the following command line will look like:

calls /d09-12-91 /b14:00:00 /e15:00:00 /s

TIME	BUS	SLOT	CHN	HOST	MSG GROUP	MSG SUB GROUP	CALL VAR	CALLEE	CALLER
14:12:01.44	0	3	1	1	CHN ASS	GCV	80	CNV 1	IND 45
14:12:01.44	0	3	1	1	CHN DRP	DROP	80	CNV 1	IND 45
14:12:01.44	0	3	1	1	CHN ASS	GCV	80	CNV 1	IND 45
14:12:01.44	0	3	1	1	CHN DRP	DROP	80	CNV 1	IND 45
14:20:17.76	3	1	4	10	CHN ASS	GCV	0	GRP 273	IND 1955
14:20:19.68	3	1	4	10	CHN DRP	DROP	0	GRP 273	IND 1955
14:20:20.16	0	1	1	10	CHN ASS	GCV	0	GRP 273	IND 1955
14:20:23.04	0	1	1	10	CHN DRP	DROP	0	GRP 273	IND 1955
14:20:23.04	2	1	3	10	CHN ASS	GCV	0	GRP 273	IND 1955
14:20:24.48	2	1	3	10	CHN DRP	DROP	0	GRP 273	IND 1955
14:20:24.48	3	1	4	10	CHN ASS	GCV	0	GRP 273	IND 1955
14:20:27.84	3	1	4	10	CHN DRP	DROP	0	GRP 273	IND 1955
14:20:28.32	0	1	1	10	CHN ASS	GCV	0	GRP 273	IND 1955
14:20:34.08	0	1	1	10	CHN DRP	DROP	0	GRP 273	IND 1955
14:20:34.56	2	1	3	10	CHN ASS	GCV	0	GRP 273	IND 1955
14:20:35.52	2	1	3	10	CHN DRP	DROP	0	GRP 273	IND 1955
14:36:48.48	1	8	3	1	CHN ASS	GCV	80	GRP 273	IND 45
14:36:48.48	1	8	3	1	CHN DRP	DROP	80	GRP 273	IND 45
14:36:48.96	1	8	4	1	CHN ASS	GCV	80	GRP 273	IND 45
14:36:48.96	1	8	4	1	CHN DRP	DROP	80	GRP 273	IND 45
14:36:48.96	1	8	1	1	CHN ASS	GCV	80	GRP 273	IND 45
14:36:48.96	1	8	1	1	CHN DRP	DROP	80	GRP 273	IND 45
14:36:48.96	1	8	3	1	CHN ASS	GCV	80	GRP 273	IND 45
14:36:49.44	1	8	3	1	CHN DRP	DROP	80	GRP 273	IND 45
14:36:49.44	1	8	4	1	CHN ASS	GCV	80	GRP 273	IND 45
14:36:49.44	1	8	4	1	CHN DRP	DROP	80	GRP 273	IND 45
14:36:55.68	1	8	1	1	CHN ASS	GCV	80	GRP 2047	IND 45
14:36:56.16	1	8	1	1	CHN DRP	DROP	80	GRP 2047	IND 45
14:36:56.16	1	8	3	1	CHN ASS	GCV	80	GRP 2047	IND 45
14:36:56.16	1	8	3	1	CHN DRP	DROP	80	GRP 2047	IND 45
14:36:56.16	1	8	4	1	CHN ASS	GCV	80	GRP 2047	IND 45
14:36:56.64	1	8	4	1	CHN DRP	DROP	80	GRP 2047	IND 45
14:36:56.64	1	8	1	1	CHN ASS	GCV	80	GRP 2047	IND 45
14:36:56.64	1	8	1	1	CHN DRP	DROP	80	GRP 2047	IND 45
14:37:02.40	2	1	3	10	CHN ASS	GCV	0	GRP 2047	IND 16383
14:37:02.40	2	1	3	10	CHN DRP	DROP	0	GRP 2047	IND 16383
14:38:08.64	3	1	4	10	CHN ASS	GCV	0	GRP 2047	IND 16383
14:38:08.64	3	1	4	10	CHN DRP	DROP	0	GRP 2047	IND 16383
14:41:49.92	1	8	1	1	CHN ASS	EGCV	82	GRP 273	IND 45
14:41:49.92	1	8	1	1	CHN UKY	-	80	GRP 273	IND 45

4.3 GSCMON.EXE

The **GSCMON** function is used to extract all messages from the data log buffer. It can be a vital tool in tracing calls through the system.

The user may obtain help for the **GSCMON** function by using the **"/h"** option on the command line. For example:

gscmon /h

The following help message will be dumped:

GSC Monitor - extract all GSC activity
Syntax: gscmon [<options>]
Options:

/bhh:mm:ss	start time of data extraction
/ehh:mm:ss	stop time of data extraction
/dmm-dd-yy	date of data log file
/s	softcopy output requested
/n	suppress node active messages
/h	display help file then exit

The output from the **GSCMON** function displays the **time** of the message and the message contents. The node ids seen at the hardware gsc monitor are not output. The expected input filename is **mm_dd_yy.dlg**. The output filename is **mm_dd_yy.mon**.

gscmon /d12-30-92 /b09:10:00 /e09:10:08

TIME	DATA
09:10:00.00	82 2C 01 0E 00 00 40 09
09:10:00.00	82 12 01 07 00 00 40 09
09:10:00.00	82 1F 04 01 00 00 50 09
09:10:00.00	82 0B 01 06 00 00 60 09
09:10:00.00	82 14 01 0C 00 00 40 09
09:10:01.44	66 01 02 17 01 01 0E 31 03 02 00 3A 06 01 00
09:10:01.92	82 50 01 01 00 00 40 09
09:10:01.92	82 1F 04 01 00 00 50 09
09:10:01.92	82 47 05 02 00 00 69 09
09:10:01.92	82 6D 01 09 00 00 40 09
09:10:01.92	82 3B 00 01 00 00 49 09
09:10:01.92	82 57 01 0B 00 00 40 09
09:10:03.36	66 05 00 15 01 01 02 31 03 02 00 1E 06 01 00
09:10:03.84	82 1F 04 01 00 00 50 09
09:10:03.84	82 7D 01 02 00 00 40 09
09:10:03.84	82 7A 01 05 00 00 40 09
09:10:03.84	82 91 01 0D 00 00 40 09
09:10:03.84	82 89 01 08 00 00 40 09
09:10:03.84	82 A5 01 04 00 00 40 09
09:10:04.80	66 05 00 17 01 01 02 31 03 02 00 1E 06 01 00
09:10:05.76	82 DF 01 03 00 00 40 09
09:10:05.76	82 BB 01 0A 00 00 40 09
09:10:05.76	82 1F 04 01 00 00 50 09
09:10:07.20	10 02 FB 00 04 00 00 09
09:10:07.68	82 2C 01 0E 00 00 40 09
09:10:07.68	82 14 01 0C 00 00 40 09
09:10:07.68	82 1F 04 01 00 00 50 09
09:10:07.68	82 0B 01 06 00 00 60 09
09:10:07.68	82 12 01 07 00 00 40 09

gscmon /d12-30-92 /b09:10:00 /e09:11:00 /n

TIME	DATA														
09:10:01.44	66	01	02	17	01	01	0E	31	03	02	00	3A	06	01	00
09:10:03.36	66	05	00	15	01	01	02	31	03	02	00	1E	06	01	00
09:10:04.80	66	05	00	17	01	01	02	31	03	02	00	1E	06	01	00
09:10:07.20	10	02	FB	00	04	00	00	09							
09:10:08.64	66	06	00	15	01	01	03	31	03	02	00	1E	06	01	00
09:10:11.04	66	06	00	17	01	01	03	31	03	02	00	1E	06	01	00
09:10:11.04	66	07	00	15	01	01	04	31	03	02	00	3A	06	01	00
09:10:14.40	66	07	02	15	01	02	06	A4	07	02	00	06	00	03	00
09:10:15.36	66	07	02	17	01	02	06	A4	07	02	00	06	00	03	00
09:10:23.52	10	02	FB	00	04	00	00	09							
09:10:32.16	66	07	00	17	01	01	04	31	03	02	00	3A	06	01	00
09:10:32.64	66	01	01	15	01	01	06	31	03	02	00	1E	06	01	00
09:10:35.04	66	01	01	17	01	01	06	31	03	02	00	1E	06	01	00
09:10:39.84	10	02	FB	00	04	00	00	09							
09:10:53.76	66	01	03	15	01	02	08	08	00	03	00	08	00	03	00
09:10:55.20	66	07	02	15	01	02	06	A4	07	02	00	06	00	03	00
09:10:55.68	66	07	02	17	01	02	06	A4	07	02	00	06	00	03	00
09:10:55.68	66	07	02	15	01	02	06	A4	07	02	00	06	00	03	00
09:10:55.68	10	02	FB	00	04	00	00	09							
09:10:56.16	66	01	03	17	01	02	08	08	00	03	00	08	00	03	00
09:10:56.64	66	07	02	17	01	02	06	A4	07	02	00	06	00	03	00
09:10:58.08	66	07	02	15	01	02	06	A4	07	02	00	06	00	03	00
09:10:58.56	66	05	01	15	01	01	0A	31	03	02	00	3A	06	01	00
09:10:59.04	66	07	02	17	01	02	06	A4	07	02	00	06	00	03	00

CHAPTER 5
MOMPC/Netclock Interface Option

5.0 Netclock Interface (optional)

In order to provide Coordinated Universal Time (UTC) synchronization, a software component is available for the MOMPC. This software is a Terminate Stay Resident (TSR) that responds to COMM port interrupts, reads the 26 character ASCII time code via RS232 serial link from the Spectracom Netclock II and resets the MOMPC system time. The MOMPC resets the IMC/CEC MOM Controller time, so the IMC/CEC and consoles will be synchronized to the WWVB time received by the Netclock II.

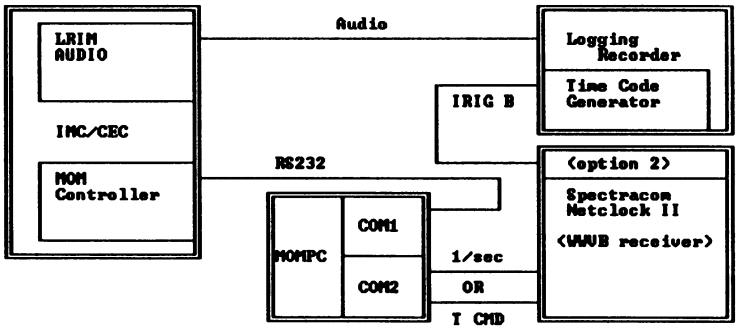

Figure 5.0-1 Netclock Configuration

5.1 Netclock Installation

The following components must be modified in order to implement Netclock II time synchronization:

1. O_NETCLK.COM installed on the MOMPC in directory c:\netclock.

2. MOMPC autoexec.bat modified to execute c:\netclock\O_NETCLK.COM

3. COM2 port on the MOMPC must be available.

4. Spectracom NETCLOCK II connected to the MOMPC COM2 port.

The Netclock II has two RS232 level serial interfaces. One of these is an output that transmits the 26 character ASCII time/date code in format 0 or format 1 each second. This is called the 1/sec interface or REMOTE Output. The other interface responds to commands from the MOMPC and will transmit the 26 character ASCII time/date code in format0, format1, or format2 on the next even second after receiving the ASCII "T" from the MOMPC. This is the T-CMD or Serial Communications Interface. Refer to section 3.4.2 of the Netclock II instruction manual for details on the Netclock data formats.

NOTE

Only format 1 is recognized by the MOMPC.

5.1.1 Hardware Installation Notes

BAUD Rate Selection - The Netclock interface that executes on the MOMPC initializes COM2 to 9600 baud since this will ensure the most accurate time received. This requires that the baud rate selected on the Netclock II also be set at 9600.

The T-CMD interface (RS232 communications) requires a 9 pin male connector at the netclock. The MOMPC end will be either 9 pin female or 25 pin female, depending on the specific configuration of the PC. The following figures are provided to assist in making the proper connections:

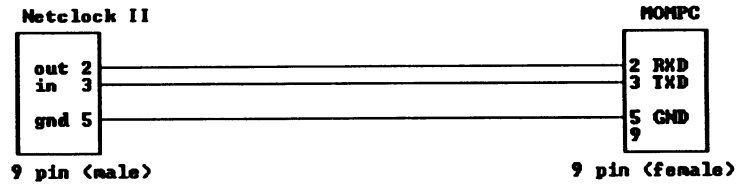

Figure 5.0-2 T-CMD (GE part 801348P2)

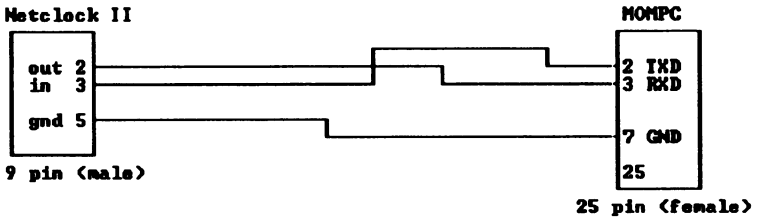

Figure 5.0-3 T-CMD (25 pin at MOMPC)

NOTE

A character consists of 1 start, 8 data, and 2 stop bits.

The 1/sec (REMOTE OUTPUT) requires a 9 pin male connector at the netclock. The MOMPC end will be either 9 pin female or 25 pin female, depending on the specific configuration of the PC. The following figures are provided to assist in making the proper connections:

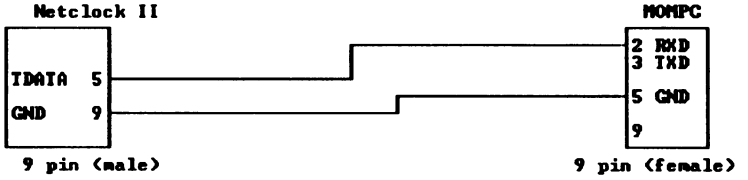

Figure 5.0-4 REMOTE OUTPUT (9 pin)

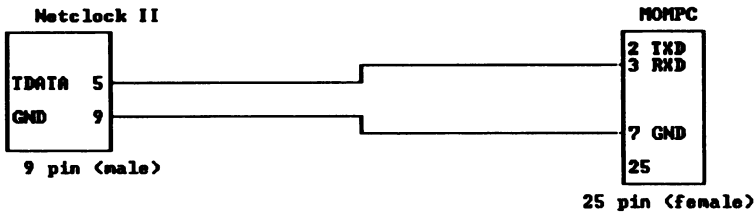

Figure 5.0-5 REMOTE OUTPUT (25 pin at MOMPC)

NOTE

A character consists of 1 start, 8 data, and 2 stop bits.

5.1.2 Software Installation Notes

The Netclock II interface is installed from the MOMPC diskette by typing the following command at the root of the disk drive that the diskette was inserted (be sure to change directory to A: or B:):

netclock\install auto

This installation procedure copies the TSR into the correct hard drive directory and automatically updates the autoexec.bat. If desired, the user can deny permission and install the TSR manually each time the PC is rebooted or manually update the autoexec.bat by using the following command instead:

netclock\install noauto

5.1.3 Additional Considerations

The following topics are important and should be reviewed in the Netclock II Instruction Manual prior to connecting the Netclock II and the MOMPC, in order to ensure correct operation.

TOPIC	Netclock II Instruction Manual
1. Format Selection	page 3-15
2. Propagation Path Delay Calculation	page 2-3
3. Path Delay Switches	page 3-10
4. Time Zone Switches	page 3-10
5. Baud Rate Selection	page 3-10
6. Antennae Installation	page 4-17

In order to remove the Netclock Interface completely, verify that the command O_NETCLK.COM is NOT in the autoexec.bat then reboot the MOMPC.

5.2 Installation Verification

Before Connecting the Netclock to the MOMPC, the operator should verify that the 3 LED indications on the front panel are green. A red antennae LED indicates that there has been a loss of antennae continuity. A red signal LED means that the signal is weak (carrier lock is lost). This LED can be expected to flash red occasionally. This is only a problem if it stays red more than 7 hours. This means TIME SYNC is lost and the far right LED goes red. As long as the TIME SYNC LED is red the Netclock will not send valid times and the MOMPC will ignore the invalid data.

When O_NETCLK.COM is executed the operator will see "NETCLOCK Interface Installed" at the DOS prompt. This indicates that the TSR has initialized the UART and Interrupt Controller then terminated. It will execute when the Netclock transmits time code data via COM2 port. It also periodically transmits a "T" to the Netclock to satisfy the T-CMD interface. The TSR will not execute in DOS so the operator should not expect to see the system time update unless an application is executing.

Within 15 minutes of executing O_MOMPC.EXE, the system time should update to match the NETCLOCK time.

APPENDIX A
TERMS

Cursor Keys - The keys on the right hand side of the keyboard marked with arrows (Up Arrow, Right Arrow, Down Arrow and Left Arrow keys). They are used to control the direction of the cursor.

Default Value - The software provides predetermined (default) values in a majority of the data entry fields within the program. The default values assume that the program will be used without optional features. Before changing these default values, we recommend that you be familiar with the operational implications of adding a particular feature or option.

Failsoft - Refers to the mode of operation of the trunked system when the site controller is not operational.

Field - Refers to the area of the screen which allows data entry. This area is readily identifiable by a reverse video bar when moving the cursor across the screen.

Function Keys - Function keys are the keys, often found on the left-hand portion of your PC's keyboard, which begin with the prefix F. The function keys are used in the MOM Software to execute a particular command.

Screen - Refers to a major or parent data entry process and is used to show position within the program. Each screen is divided into three distinct areas: (1) screen title, (2) screen windows, and (3) active function keys. The title tells you where you are in the program hierarchy. The screen windows are provided for input of data to the screen. The active function keys provide access to the commands (or actions) available within that screen. The function key commands are labeled along the bottom of the screen. Only the function keys with labels are enabled in a given screen.

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APPENDIX B
FUNCTION KEYS

F1

F1 Help - Provides on-line help.

F1 Program Unit - Enables unit to accept program as defined.

F2

F2 Program Group - Enables group to be programmed as defined.

F3

F3 Modify - Rename/modify/edit item selected.

F3 Program Conv - Enables conventional unit to be programmed as defined.

F3 Site Upload - Uploads data into site specified.

F3 Write EE Pot - Enables potentiometer to be programmed as defined.

F5

F5 Console Config - Configures console selected as designated.

F5 Group Upload - Selects a group upload.

F5 Mark - Toggles marking for current item.

F5 Program Console - Enables console to be programmed as defined.

F7

F7 Cancel - Cancel markings or edit changes.

F7 Clear Errors - Returns field to previous setting.

F7 Program All - Programs all features selected.

F7 Send - Sends designated selection.

F7 Unit Upload - Selects upload option.

F9

F9 Delete Module - Removes highlighted module.

F9 Mode - Used to change modes.

OTHER KEYS

<ENTER> - Allows selection of field or entry.

<ESC> - Used to back up to a previous window level or exit the program.

<PgUp/PgDn> - Causes cursor to advance to the first or last setting in the window.

<Ctrl PgUp/Ctrl PgDn> - Causes cursor to advance to the previous or following page.

Arrow Keys - Causes the cursor to move from one field to another one position at a time.

<TAB> - Cycles through menus or screens.

<DEL> - Removes an item.

Backspace - Deletes a character to the left of the cursor.

<+> - Increment a setting.

<-> - Decrement a setting.

APPENDIX C
ACCEPTABLE VALUES

Input Field	Acceptable Values	Default Value
MOM OPTIONS SCREEN		
Configure System Parameters Configure System System Slot Configuration Configure Slots Console Slots		
Slots Allocated	0 - 5	0
Site Slots		
Slots Allocated	0 - 32	0
System Bus Configuration Configure Buses		
	4,8	8
Console User Profile		
Console	1 - 32	1
Unit ID	1 - 16382	8XX where XX is equal to one number less than the current console number
Name	Any eight character	CONS__XX where _ is a space and XX is equal to the selected console number.

Input Field	Acceptable Values	Default Value
MOM OPTIONS SCREEN		
Console User Profile (Cont)		
Shift	1 - 3	1
Supervisor	Y or N	N
Default Unselect Vol	0 - 32	16
Non-Monitored Emergency Volume	1 - 32	16
Mute Vol	0 - 32	0
All Mute Delay	0 - 120	30
Label Delay	0 - 5 seconds	0
Screen Blanker Timeout (min)	0 - 15 minutes	0
24 Hr Time	Y or N	Y
Unselect Labels	Y or N	N
Label Lids	Y or N	N
Numeric Volume	Y or N	N
Auto Alarm Off	Y or N	Y
Beep On Error	Y or N	N
Console Labels	Y or N	Y
Conventional EE Pot Control		
Conventional Site 1		
Receive Pot		
Level	0 - 99	00
Transmit Pot		
Level	0 - 99	00

Input Field	Acceptable Values	Default Value
MOM OPTIONS SCREEN		
Conventional Site 2 Receive Pot		
Level	0 - 99	00
Transmit Pot		
Level	0 - 99	00
Mom Configuration		
System Manager Interface	9600 or 19.2K	19.2K
MOM Controller Interface	9600 or 19.2K	19.2K
Data Logging	Enabled or Disabled	Enabled
Network Interface		
NIM Channel Configuration		
NIM Configuration	9600 or 19.2K	19.2K
View NIM Configuration		
Program Logging Recorder		
Alias		blank
Chn	1 - 32	Number that corresponds to the module number
Vol	0 - 32	16
Programmed	Y or N	N
Logging Recorder	1 - 5	1

Input Field	Acceptable Values	Default Value
MOM OPTIONS SCREEN		
Set System Time and Date		
Set System Date	mm/dd/yy	current date
Set System Time	hrs/mn/sec	current time
Trunked Channel Configuration Console Channel		
INPUT SIGNAL	-25 to +12 dBm	0.0 dBm
OUTPUT SIGNAL	N/A	N/A
CHANNEL SIGNALLING	N/A	N/A
ALC	Y/N	N
Console	1 - 32	1
Site Channel		
INPUT SIGNAL	-25 TO +12 dBm	0 dBm
OUTPUT SIGNAL	-25 TO +13 dBm	0 dBm
CHANNEL SIGNALLING	TONE/E&M/ BOTH/OFF	TONE
2175 Level	-10 to +11 dBm	0 dBm
ALC	Y/N	N
Notch	Y/N	N
Site	1 - 32	1

Input Field	Acceptable Values	Default Value
MOM OPTIONS SCREEN		
View Node Statistics		
Enter GSC Node	0 - FF hex	blank
View System Configuration		
View CIM Configuration		
Node ID	0 - FF hex	blank
View MIM Configuration		
Node ID	0 - FF hex	blank

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