

User's Guide

EDACS[®]

**Enhanced Local Interconnect (ELI)
GTI Configurator Software**

REVISION HISTORY

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INTRODUCTION

This manual describes how to installation and use the GTI (Global Telephone Interconnect) Configurator software to configure the GTI units used in the ELI option. A companion manual, the EDACS Enhanced Local Interconnect (ELI) system manual (LBI-39076), describes the installation, configuration, and operation of the ELI option. The information in this manual is presented in the sequence you should need it. Do not skip over any section until you are sure you understand it. If more information is needed for Call Detail file format, see Appendix A in LBI-38965 for the Billing Correlation Unit.

Keyboard instructions in this manual are given in either of two ways. One way instructs you to type whatever is shown between a set of quotation marks. For example, type "a:" means for you to press the key for the letter A and then hold down the **Shift** key while you press the key for the colon. The other way instructs you to push a specific key using its common name such as: **Esc** key, **Shift** key, **Enter** key, Space bar, or Down Arrow key. Bold type is used for specific key names as they appear on a key, and for menu selections as they appear in a menu.

DESCRIPTION

The GTI Configurator software is used to run a multi-system, multi-channel, telephone-interconnect management system on an IBM-compatible office PC, referred to as the GTI Configurator. The software allows you to manage the GTI DID user database for each system, manage the interconnect billing information from each system, monitor call data from each system in real time, and remotely make level and hybrid balance adjustments to each telephone line. The software is supplied on both 3-1/2" and 5-1/4" floppy disks for your convenience. Once the software is installed in the office PC and the PC is connected to a GTI unit in the system, you can run it at any time.

INSTALLATION

This section describes the installation of the GTI Configurator software. The installation has been divided into the following topics:

- Office PC Requirements
- First Time Installation Instructions
- Upgrade Installation Instructions
- Separate Billing File Directory

OFFICE PC REQUIREMENTS

The GTI Configurator software has been written to operate on an IBM-compatible PC using an MS-DOS operating system. This PC must be equipped as follows:

- Microprocessor - 80386 or higher recommended
- Operating System - MS-DOS version 3.2 or higher
- Hard Disk - 10 Mbytes minimum free memory space
- RAM - 640 Kbytes minimum, but 2 Mbytes recommend
- Floppy Drive - 1.2 Mbyte 5-1/4" or 1.44 Mbyte 3-1/2"
- Monitor - monochrome or color

If you intend to connect a printer, the office PC must have an available parallel port. If the office PC is to be located more than 50 feet from the GTI units, you will also need one or two modems (see the Data Link to GTI Units section).

FIRST TIME INSTALLATION

CAUTION

As soon as the GTI Configurator software is installed for the first time, anyone who can read this manual will have access to all operations, including the assignment of all passwords. Therefore, be sure to have the overall system administrator assign User passwords as soon as the installation is complete. For details, see the Passwords section of this manual.

If this is the first time the GTI Configurator software is being installed in your office PC, use the following procedure:

1. Turn on the office PC to be used as the GTI Configurator, and wait until the characters C:\>_ are displayed on the screen. If the office PC is already on, exit any program that may be running, type "CD\<", and press the **Enter** key. The characters C:\>_ should then be displayed on the next line of the screen.
2. Insert either the 5-1/4" or 3-1/2" GTI Configurator software disk into an available floppy drive. For this procedure, it has been assumed that drive A is used.
3. Type "A:" and press the Enter key. The characters A:\>_ should now be displayed on the next line of the screen.
4. Type "INSTALL" and press the Enter key.
5. The INSTALL program will prompt you to enter the path and name of the directory you wish to use for the GTI Configurator software files. GTICON is the recommended directory name, but you may use whatever name suits you. The INSTALL program will use the default path and name of C:\GTICON if you press the **Enter** key without making a change. Follow the on-screen instructions. The INSTALL program will create the directory if it does not exist, then copy the GTI Configurator software files to the directory. When the installation is complete, a message will be displayed on the screen telling you that the installation is complete. Then press the **Enter** key, and C:\GTICON>_ will be displayed on the screen.
6. To make sure the program runs, type "GTICON", press the **Enter** key, and wait for the Main Menu screen (see Figure 1) to appear (it may take a few moments).
7. To exit the program, press the **Esc** key twice. The message *** End of processing *** should then appear on the screen followed by C:\GTICON>_.
8. Have the overall system administrator assign User passwords for each of the four access levels. For directions, see the Passwords section starting on page 33.

UPGRADE INSTALLATION

CAUTION

DO NOT copy a newer version of GTI Configurator software directly into an old GTICON directory using the COPY command. If this is done, user-entered data in the old GTICON directory will be lost.

If an earlier version of the GTI Configurator software has already been installed in your office PC, and you want to upgrade it to a newer version of the software, use the following procedure:

1. Turn on the office PC being used as the GTI Configurator, and wait until the characters C:\>_ are displayed on the screen. If the office PC is already on, exit any program that may be running, type "CD\", and press the **Enter** key. The characters C:\>_ should then be displayed on the next line of the screen.
2. Type "CD", press the Space bar, type "GTICON" (or whatever other name was given to the directory where the GTI Configurator software files were installed), and press the **Enter** key. The characters C:\GTICON>_ (or C:\whatever>_) should then be displayed on the next line of the screen.
3. Type "GTICON", press the **Enter** key, and wait until the Main Menu screen appears. (If passwords have been assigned, you will need to enter your password in the password screen before the Main Menu screen appears.)
4. Select (highlight) the **Retrieve Billing** operation from the **Comm** group of operations in the Main Menu screen and press the **Enter** key. Then follow the on-screen instructions to retrieve all current call detail records (if the information is important to you).
5. Select (highlight) the **Backup** operation from the **File** group of operations in the Main Menu screen and press the **Enter** key. Then follow the on-screen instructions to backup these call detail records to a floppy disk.
6. Press the **Esc** key two or more times until the characters C:\GTICON>_ (or C:\whatever>_) are displayed on the screen.
7. Type "CD" and press the **Enter** key. The characters C:\>_ should then be displayed on the next line of the screen.
8. Insert the new 5-1/4" or 3-1/2" GTI Configurator software disk into an available floppy drive (for this procedure, it is assumed to be drive A)
9. Type "A:", and press the **Enter** key. The characters A:\>_ should then be displayed on the next line of the screen.
10. Type "INSTALL" and press the **Enter** key.
11. The INSTALL program will prompt you to enter the name of the directory for the GTI Configurator software. Enter the name of the directory where the old GTI Configurator has been installed, and follow the on-screen instructions. The INSTALL program will convert the old database .dat files into a format compatible with the new version of software being installed. A back-up of the old database files will be created by the INSTALL program before the conversion takes place.
12. When the installation is complete, make sure the program runs by typing "GTICON", pressing the Enter key, and waiting for the menu screen to appear. (If passwords have been assigned, you will need to enter your password in the password screen before the Main Menu screen appears.) Verify that the database information was converted successfully to the format of the new software by spot checking the **View** group of operations. The *.bak, *.bef and *.aud backup files created during the installation process may be deleted after the database information has been verified. However, the safest approach is to save these files for a trial period - say six months - so that you can easily go back to where you were, if some problem occurs. (*.bak are backups of the "old" *.dat files, and *.bef are backups of the "old" *.def files. The *.aud files contain information regarding the conversion of one database to another.)
13. When the upgrade installation is complete, the Database Manager password (used by the GTI Configurator to access the GTI units) will need to be reprogrammed. To assign a new Database Manager password (or re-establish the old one), select the **Other** operation from the **Comm** group in the **Main** menu and press the **Enter** key. Then select the desired system in the **INDEX** window and press the **Enter** key. When communication has been established with a GTI unit in the system, select **Set** and **Password** in the **Other** menu, press the **Enter** key, and follow on-screen instructions. See the DATABASE MANAGER PASSWORD heading (page 38) for more details.

SEPARATE BILLING FILE DIRECTORY

Billing files for Call Detail Records will be stored in the GTICON (or whatever you called it) directory unless a separate directory named GTIBILL is set up. The GTI Configurator software will first look for a separate GTIBILL directory. If that directory has been set up, the GTI Configurator software will put the billing files there. If that directory has not been set up, it will put the billing files in the GTICON (or whatever you called it) directory. If you will be using the Zebra billing package, you must set up a separate GTIBILL directory. (For more information, see the Zetron manual for the Zebra billing package.) To set up a separate GTIBILL directory, use the following procedure:

1. Turn on the office PC being used as the GTI Configurator, and wait until the characters C:\>_ are displayed on the screen. If the office PC is already on, exit any program that may be running, type "CD\", and press the **Enter** key. The characters C:\>_ should then be displayed on the next line of the screen.
2. Type "MKDIR", press the Space bar, type "GTIBILL", and press the **Enter** key. The characters C:\>_ should then be displayed on the next line of the screen.
3. Type "DIR" and press the **Enter** key. A list of all files and directories stored in the main (root) directory of the C drive should then be displayed on the screen. Look for the GTIBILL directory (last entry in directory list) to verify that a separate GTIBILL directory is now set up.

GETTING STARTED

This section is an introduction to the operation of the GTI Configurator software. It describes the general operation, language, and screens you will be expected to be familiar with before attempting the specific operations described in later sections. The introduction has been divided into the following topics:

- Running the Software
- Keyboard Commands
- Main Menu Screen
- Edit Group
- View Group
- Comm Group
- File Group
- Other Group

RUNNING THE SOFTWARE

After the GTI Configurator software has been installed, use the following procedure whenever you need to start running the software:

1. Turn on the office PC being used as the GTI Configurator, and wait until the characters C:\>_ are displayed on the screen. If the office PC is already on, exit any program that may be running and/or type: "CD\" and press the **Enter** key. The characters C:\>_ should then be displayed on the next line of the screen.
2. Type: "CD", press the Space bar, type: "GTICON" (or whatever other name was given to the directory where the GTI Configurator software files were installed) and press the **Enter** key. The characters C:\GTICON>_ (or C:\whatever>_) should then be displayed on the next line of the screen.
3. Type: "GTICON", press the **Enter** key, and wait until the Main Menu screen appears. (If passwords have been assigned, you will need to enter your password in the password screen before the Main Menu screen appears.)

NOTE

If you run GTICON in a DOS window under Windows, you will need to set some parameters in the PIF Editor found in Main program group. Refer to Windows manual on how to use the PIF Editor. We recommend Windows 3.1 rather than 3.0. Set the execution to 'Background' to allow GTICON to perform tasks in the background while you may have another application active in the foreground. Also, if you are doing communications, you must make sure the 'Detect Idle Time' check box is not checked. This is to let GTICON work without needing key input to keep it active under Windows.

KEYBOARD COMMANDS

The GTI Configurator program responds to keyboard commands only - no mouse. Therefore, entry to and exit from all screens, windows, and fields must be done with keys or combinations of keys. Table 1 shows the responses to expect when the listed keys (or key combinations) are pressed while the cursor (blinking short vertical bar) is in the various windows. The index windows will be labeled INDEX on the screen. The data windows will be labeled SYSTEM_CONFIG, TELCO CONFIGURATION, or DID NUMBERS on the screen. The responses of these keys in other windows are similar to those listed for the data window, although some keys may not apply and therefore have no effect.

Table 1 - Keyboard Commands

KEY NAME	INDEX WINDOW	DATA WINDOW
Enter or Return	Move to data window	Enter typed data into field and move to next data field
Up Arrow or ↑ *	Previous record	Previous data field
Down Arrow or ↓ *	Next record	Next data field
Left Arrow or ← *	Previous index field	Back one character
Right Arrow or → *	Next index field	Forward one character
Home	Top of index window	Top of data window
End	Bottom of index window	Bottom of data window
Page Up or PgUp	Back one index window	Previous data record
Page Down or PgDn	Forward one index window	Next data record
Insert or Ins	Insert new data record	Insert one character
Delete or Del	Delete data record	Delete one character
Tab	Next index field	Enter default data and move to next data field
Back-Tab	Previous index field	Enter default data and move to previous data field
Escape or Esc	Back to main menu	Back to index window
Backspace	Previous index field	Back one character
F1 to F10	F1=Guide info on Fn keys	F1=Guide info on Fn keys
Shift-F8	Advance Menu	Toggles Country data in and out of the Edit and View groups.
Shift-Fn	No effect	Fill fields with template n (n is a number from 0 to 9)
Alt-Fn	No effect	Assign fields to template n (n is a number from 0 to 9)

* To use the arrow keys on the numeric keypad, make sure that the Num Lock feature is toggled off with the **Num Lock** key.

When the message "Guide Window: F1" appears in the **HELP** window, a **GUIDE** window can be toggled in and out of view by pressing the **F1** key. This **GUIDE** window describes which function keys (**F1** through **F12**) are accessible at that time and their function.

SCREEN ORGANIZATION

The Main Menu screen is the first screen displayed after you start running the GTI Configurator software. (If passwords have been assigned, you will need to enter your password in the password screen before the Main Menu screen appears.) The Main Menu screen contains the following five parts:

- The **software identification line** is located across the top of the screen, and identifies the name and version of the software. The security level is displayed at the right end of the line (level 4 is identified as SUPERVISOR mode).
- The **group menu line** is located below the software identification line, and lists the five operational groups that can be selected.
- The **operation menu window** is located just below the selected (highlighted) group in the group menu line, and lists the individual operations that can be selected within the selected group.
- The **HELP window** is located just above the lower left corner of the screen, and prompts you with information about the selected (highlighted) individual operation.
- The single-line **alert and status message field** is located just below the **HELP** window, and is used to give additional information for the combination of circumstances that exist at the moment (the message field is blank when there is no message). Messages may alert you to special actions, or the status of the operation you have requested.

Figure 1 shows the Main Menu screen as it first appears, with the **Edit** group selected (highlighted) in the group menu line and the **System config** operation selected (highlighted) in the operation menu window. To select some other group, press the right (or left, to backtrack) arrow key until the desired group is highlighted. To select some other operation from the operation menu window, press the down (or up, to backtrack) arrow key until the desired operation is highlighted. If you press the up arrow key one too many times, the operation menu window will disappear. Press the down arrow key and it will re-appear. Selecting another operation will change the information in the HELP window. Selecting another operational group will change the list of operations in the box below the selected operational group.

MAIN MENU - EDIT GROUP

The **Edit** group of operations is the first group shown in the **Main** menu. A sample Main Menu screen with the **Edit** group selected is shown in Figure 1. When the **Edit** group is first selected, the **System config** operation is automatically selected. Selecting another operation will change the information in the **HELP** window.

```

EDACS GTI Configurator/Database Manager V2.1                (SUPERVISOR mode)
∞  Edit  View  Comm  File  otHer  ∞
  System config
  Telco config
  DID numbers
  Country data

=HELP=
Select item with arrow keys and
ENTER or capital letter. ESC to quit

Edit System Config allows the System
Configuration data to be changed.
Additions, deletions and modifications
can be done. Then use Comm Update.

```

Figure 1 - Sample Main Menu screen with the Edit Group Selected

The **Edit** group of operations allows you to make additions, deletions, and modifications to various parts of the GTI database. This group includes the following specific operations:

- The **System config** operation is used for parameters that are common to a specific system of GTI units at a specific location.
- The **Telco config** operation is used for parameters that are specific to an individual telephone line connected to a GTI unit.
- The **DID numbers** operation is used for parameters that are specific to DID use on a specific system of GTI units at a specific location.
- The **Country data** operation is used for parameters that are common to a specific telephone system used by the GTI system at a specific location. (The **Country data** operation is toggled in and out of the **Main** menu by pressing **Shift-F8**.)

When the desired operation is selected (highlighted), press the **Enter** key and follow the on-screen instructions, including any directions in the **HELP** window and any message in the alert and status message field. Press the **Esc** key one or more times to return to the **Main** menu. After editing the system configuration database, select the **Update** operation from the **Comm** group in the **Main** menu, press the **Enter** key, and follow the on-screen directions to send the new configuration to the GTI units.

MAIN MENU - VIEW GROUP

The **View** group of operations is the second group shown in the **Main** menu. A sample Main Menu screen with the **View** group selected is shown in Figure 2. When the **View** group is first selected, the **System config** operation is automatically selected. Selecting another operation will change the information in the **HELP** window.

```
EDACS GTI Configurator/Database Manager V2.1 (SUPERVISOR mode)
∞ Edit View Comm File otHer ∞
  System config
  Telco config
  DID numbers
  Country data

=HELP=
Select item with arrow keys and
ENTER or capital letter. ESC to quit

View System Config allows the System
Configuration data to be viewed and
edited, but not saved.
```

Figure 2 - Sample Main Menu Screen with the View Group Selected

The **View** group of operations allows you to look at and make changes to the screen to allow you to view all possible selections for each field on the screen. However, no changes will be saved to the GTI Configurator database or any GTI database. This group includes the following specific operations:

- The **System config** operation is for parameters that are common to a specific system of GTI units at a specific location.
- The **Telco config** operation is for parameters that are specific to an individual telephone line connected to a GTI unit.
- The **DID numbers** operation is for parameters that are specific to DID use on a specific system of GTI units at a specific location.
- The **Country data** operation is for parameters that are common to a specific telephone system used by the GTI system at a specific location. (The **Country data** operation is toggled in and out of the **Main** menu by pressing **Shift-F8**.)

When the desired operation is selected (highlighted), press the **Enter** key and follow the on-screen instructions, including any directions in the **HELP** window and any message in the alert and status message field. Press the **Esc** key one or more times to return to the Main Menu screen.

MAIN MENU - COMM GROUP

The **Comm** group of operations is the third group shown in the **Main** menu. A sample Main Menu screen with the **Comm** group selected is shown in Figure 3. When the **Comm** group is first selected, the **Update** operation is automatically selected. Selecting another operation will change the information in the **HELP** window.

```
EDACS GTI Configurator/Database Manager V2.1 (SUPERVISOR mode)
∞ Edit View Comm File otHer ∞
Update
get/Verify
Retrieve Billing
Monitor
Status info.
Balance and levels
Other

HELP
Select item with arrow keys and
ENTER or capital letter. ESC to quit
Update updates the selected system
with configuration data.
```

Figure 3 - Sample Main Menu Screen with the Comm Group Selected

The **Comm** group of operations requires communication with a GTI unit in the system via a local or remote data link, to send and/or receive information about the system's configuration or performance. If two or more GTI Configurators are permitted to access a specific system, only one can have access at a time. This group includes the following specific operations:

- The **Update** operation is used to send the latest changes in the GTI database to the GTI units in the selected system.
- The **get/Verify** operation is used to get the current GTI database from the GTI units in the selected system, and verify it against the current GTI database for that system in the GTI Configurator.
- The **Retrieve Billing** operation is used to retrieve call detail billing data from the selected system.
- The **Monitor** operation is used to look at the ongoing interconnect activity in the selected ELI system.
- The **Status info.** operation is used to retrieve, display, and store status information for each repeater associated with a GTI unit in the selected system. The status information is stored in a file named STATXXX.INF, where XXX is the system number.
- The **Balance and levels** operation is used to balance the audio hybrid for a two-wire telephone line and set the audio levels.

- The **Other** operation is used for miscellaneous functions such as changing passwords, setting the date/time, clearing the call detail buffer, and changing the modem initialization string.

After you have selected (highlighted) one of the operations from the **Comm** group, press the **Enter** key. The next screen you will see contains an **INDEX** window and a **HELP** window. In the **INDEX** window, select (highlight) the system where you want the selected operation performed, and press the **Enter** key. The next screen you will see contains a **STATUS** window. The **STATUS** window will inform you of the GTI Configurator's progress as it attempts to connect to a GTI unit in the selected system. If the Database Manager password for the GTI unit has not been set, the message "Note: Unit password is not secured." will appear as the third line of text in the **STATUS** window each time the GTI Configurator establishes communications with a GTI unit in the system. When the connection is made to the GTI unit in the system, the screen or additional menu for the selected operation will be displayed.

After you have finished an operation from the **Comm** group, you will be given the chance to select another operation from the **Comm** group before dropping the connection to the system. If you select another operation in the **Comm** group without dropping the connection to the system, the original connection information will no longer be displayed in the **STATUS** window, but the "Still connected to System" message just below the **HELP** window will show that the GTI Configurator is still connected to the GTI unit in the selected system. If communications to the GTI unit is terminated due to inactivity or some technical difficulty, the "Error communicating w/ unit" message will appear just below the **HELP** window instead. The screens and additional menus for the operations in the **Comm** group are described next.

Update Menu - Global

Use the **Global** operation from the **Update** menu to send the latest changes in all parts of the GTI database to the GTI units in the selected system. A sample **Update** menu screen with **Global** selected is shown in Figure 4. When **Global** is first selected, the **Changes** operation is automatically selected. Selecting another operation will change the information in the **HELP** window.

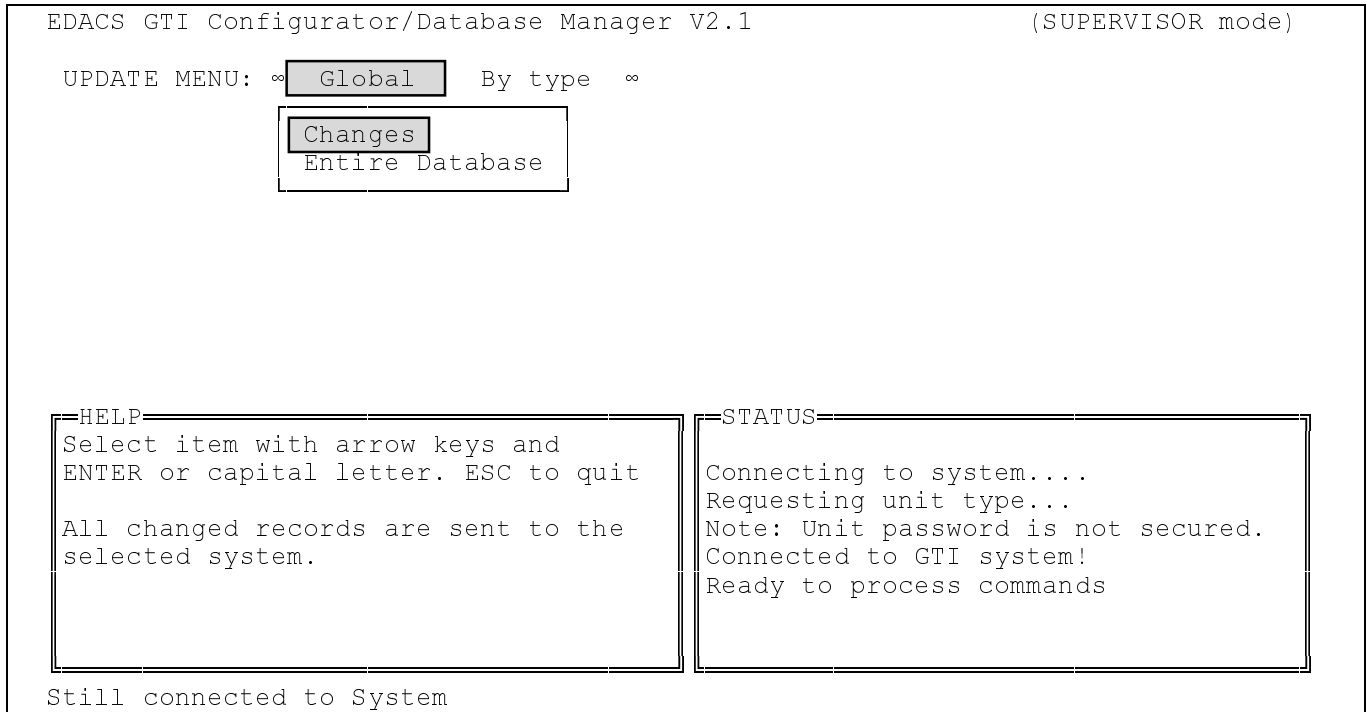


Figure 4 - Sample Update Menu with Global Selected

The **Global** category of operations continues to require communication with a GTI unit in the system via a local or remote data link, to send and/or receive information about the system's configuration or performance. This category includes the following specific operations:

- The **Changes** operation is used to send the latest changes in the GTI database to the GTI units in the selected system.
- The **Entire Database** operation is used to send the entire GTI database to the GTI units in the selected system. Use this operation if this is the first time you are updating the system.

Update Menu - By Type

Use the **By Type** operation from the **Update** menu to send the latest changes in a specific part of the GTI database to the GTI units in the selected system. A sample **Update** menu with **By type** selected is shown in Figure 5. When **By type** is first selected, the **System config** operation is automatically selected. Selecting another operation will change the information in the **HELP** window.

```

EDACS GTI Configurator/Database Manager V2.1                (SUPERVISOR mode)

UPDATE MENU: ∞ Global  By type ∞
                   System config
                   Telco config
                   DID numbers

--HELP--
Select item with arrow keys and
ENTER or capital letter. ESC to quit

Update System Config allows the System
Configuration data to be sent to all
units at the selected system.

--STATUS--
Connecting to system...
Requesting unit type...
Note: Unit password is not secured.
Connected to GTI system!
Ready to process commands

Still connected to System

```

Figure 5 - Sample Update Menu with By Type Selected

The **By type** category of operations continues to require communication with a GTI unit in the system via a local or remote data link, to send and/or receive information about the system's configuration or performance. This category includes the following specific operations:

- The **System config** operation is used to send just the system configuration data in the GTI database to the GTI units in the selected system.
- The **Telco config** operation is used to send just the telco configuration data in the GTI database to the GTI units in the selected system.
- The **DID numbers** operation is used to send just the DID number data in the GTI database to the GTI units in the selected system.

If you get the message like "No bus master, cannot clone data" this means that the unit you updated cannot perform the automatic cloning function to the other GTIs on the Subscriber Bus. If you are in your shop working with one unit, then ignore the message. If you have dialed your system, then either the subscriber master is inoperative, a subscriber bus cable is faulty, or you have not installed the Master Card into one of the units (refer to the ELI System Manual).

Get/Verify Menu - Entire

Use the **Entire** operation from the **GET/Verify** menu to get all parts of the current GTI database from the GTI units in the selected system, and verify it against the current GTI database for that system in the GTI Configurator. A sample **Get/Verify** menu screen with **Entire** selected is shown in Figure 6. When **Entire** is first selected, the **Database Verify** operation is automatically selected. Selecting another operation will change the information in the **HELP** window.

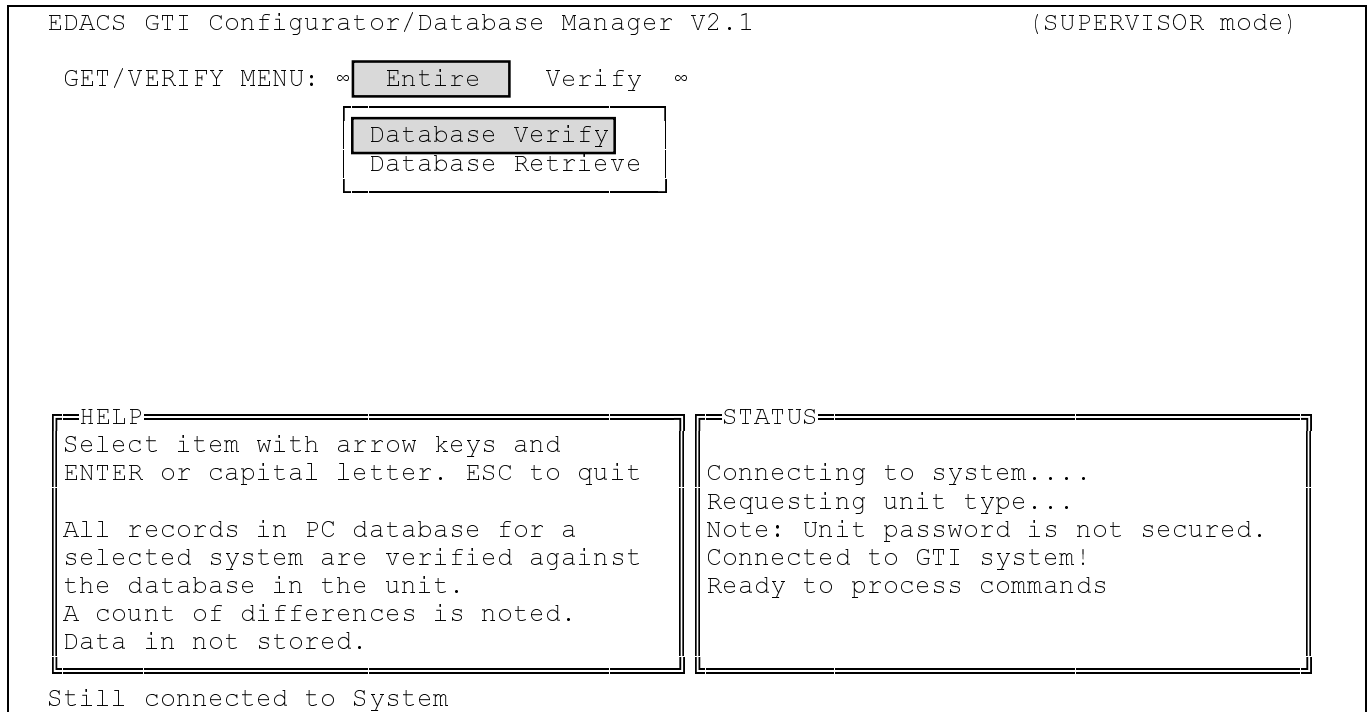


Figure 6 - Sample Get/Verify Menu Screen with Entire Selected

The **Entire** category of operations continues to require communication with a GTI unit in the system via a local or remote data link, to send and/or receive information about the system's configuration or performance. This category includes the following specific operations:

- The **Database Verify** operation is used to check the GTI Configurator database files against the RAM contents of the GTI units in the selected system. If one or more discrepancies are found, the GTI Configurator will notify you on the computer screen. No new database is created, but the differences are written to an ASCII file named VERXXX.INF (where XXX identifies the system number). For more information, refer to ELI Release Notes.
- The **Database Retrieve** operation is used to retrieve the RAM contents of the GTI units in the selected system, and store it as a new system named VERIFIED in the GTI Configurator database files. Country Database is written to an ASCII file named RETRXXX.INF (where XXX identifies the system number).

NOTE

Selecting the **Database Retrieve** operation from the **Entire** category retrieves data from all connected GTI units, even if they have not yet been configured by the GTI Configurator. The unconfigured GTI units will report their unconfigured telco and system databases, derived from their powerup hardware configuration.

Get/Verify Menu - Verify

Use the **Verify** operation from the **Get/Verify** menu to get a specific part of the current GTI database from the GTI units in the selected system, and verify it against the current GTI database for that system in the GTI Configurator. A sample **Get/Verify** menu screen with **Verify** selected is shown in Figure 7. When **Verify** is first selected, the **System config** operation is automatically selected. Selecting another operation will change the information in the **HELP** window.

```

EDACS GTI Configurator/Database Manager V2.1                (SUPERVISOR mode)

GET/VERIFY MENU: ∞ Entire  Verify ∞
                        System config
                        Telco config
                        DID numbers

--HELP--
Select item with arrow keys and
ENTER or capital letter. ESC to quit

Verify System Config allows the System
Configuration data to be compared to
the selected system PC database.
A count of differences is noted.
Data is not stored.

--STATUS--
Connecting to system....
Requesting unit type...
Note: Unit password is not secured.
Connected to GTI system!
Ready to process commands

Still connected to System

```

Figure 7 - Sample Get/Verify Menu Screen with Verify Selected

The **Verify** category of operations continues to require communication with a GTI unit in the system via a local or remote data link, to send and/or receive information about the system's configuration or performance. This category includes the following specific operations:

- The **System config** operation is used to verify just the system configuration data in the GTI database files against the RAM contents of the GTI units in the selected system. If one or more discrepancies are found, the GTI Configurator will notify you on the computer screen. No new database is created.
- The **Telco config** operation is used to verify just the telco configuration data in the GTI database files against the RAM contents of the GTI units in the selected system. If one or more discrepancies are found, the GTI Configurator will notify you on the computer screen. No new database is created.
- The **DID numbers** operation is used to verify just the DID number data in the GTI database files against the RAM contents of the GTI units in the selected system. If one or more discrepancies are found, the GTI Configurator will notify you on the computer screen. No new database is created.

Retrieve Billing

Use the **Retrieve Billing** operation to retrieve call detail billing data from a selected ELI system. For more information, see the BILLING FILES section (page 80).

Monitor

Use the **Monitor** operation to look at the ongoing interconnect activity in the selected ELI system. A sample Interconnect Monitor screen is shown in Figure 8.

```

COMM : MONITOR (SUPERVISOR mode)
Interconnect Monitor -- System 003 -- 20 Dec 1995 -- 10:08:26

```

LINE #	STATUS	TIME	CHANNEL	MOBILE	LINE #
01	UNUSED				01
02	UNUSED				02
03	UNUSED				03
04	UNUSED				04
05	UNUSED				05
06	UNUSED				06
07	BUSY	23:53	11M	*0038	07
08	FREE				08
09	BUSY	04:13	11L	00541	09
10	TEST	03:32	03L	*0626	10
11	UNUSED				11
12	UNUSED				12
13	UNUSED				13
14	UNUSED				14
15	UNUSED				15
16	UNUSED				16

Hit ESC to quit, PGDN to other screen

Figure 8 - Sample Interconnect Monitor Screen

The two **LINE #** columns show 16 telephone line numbers at a time, with line numbers 1-16 on one screen and line numbers 17-32 on another screen. (Use the **PgUp** and **PgDn** keys to move between the two screens.) The **STATUS** column shows whether the telephone line is unused (not equipped), free (available), busy (with an interconnect call), or being used for test (communication with GTI Configurator). The **TIME** column shows when the call was started. The **CHANNEL** column shows the radio channel number and the origination of the call (L (Land) for telephone-originated or M (Mobile) for radio-originated). The **MOBILE** column shows the GID or LID number of the radio.

During peak periods, you can watch system activity and see traffic congestion as radios move from one channel to another. If you want a printed copy of the display, press the **Print Screen** key. Make sure that a printer is attached to the parallel LPT1 port, and that the printer is on-line and ready for printing. Press the **Esc** key to return to the Main Menu screen.

Status Info. (Normal GTI)

Use the **Status Info.** operation to retrieve, display, and store status information for each repeater associated with a GTI unit in a selected ELI system. The status information is stored in a file named STATXXX.INF, where XXX is the system number. A sample Status Information screen for a normal GTI unit is shown in Figure 9.

```
COMM : STATUS INFO. (SUPERVISOR mode)

GTI UNIT 8 -- SYSTEM 003 STATUS INFO
Unit Time Reported: 20-Dec-1995 17:02:36
GTI Firmware Ver: 2.13 C552 Ver: 2.3 DSP Ver: 2.03

BUS Status: Unit Type-Slave Frame Sync Source-Slave Lost F/S Count-0

DIP Switch Settings On Reset: ( SW2: 1[^-----^]8 SW1: 1[---^----]8 )
Unit: 08 RS-232 Baud: 9600 Telco: End-to-End Loop
DIP Switch Settings Right Now: ( SW2: 1[^-----^]8 SW1: 1[---^----]8 )
Unit: 08 RS-232 Baud: 9600 Telco: End-to-End Loop

Units on bus: 07 08 09 10 IAM
Free local memory (bytes): 41599
Auto-Balance Counts: Silence Not Detected-16 Dialtone Not Detected-0

Hit PGUP/PGDN other units, ESC to quit
```

Figure 9 - Sample Status Info. Screen for a Normal GTI Unit

Status Info. (Master GTI)

Use the **Status Info.** operation to retrieve, display, and store status information for each repeater associated with a GTI unit in a selected ELI system. The status information is stored in a file named STATXXX.INF, where XXX is the system number. A sample Status Information screen for the Master GTI unit is shown in Figure 10.

```

COMM : STATUS INFO.                                     (SUPERVISOR mode)

          GTI UNIT 7 -- SYSTEM 003 STATUS INFO
          Unit Time Reported: 20-Dec-1995 17:02:36
GTI Firmware Ver: 2.13          C552 Ver: 2.3          DSP Ver: 2.03

BUS Status: Unit Type-Master  Frame Sync Source-Master  Lost F/S Count-0
GTI Master Version: 1.04

DIP Switch Settings On Reset: ( SW2: 1[^-----^]8 SW1: 1[^^^-----]8 )
  Unit: 07 RS-232 Baud: 9600 Telco: End-to-End Loop
DIP Switch Settings Right Now: ( SW2: 1[^-----^]8 SW1: 1[^^^-----]8 )
  Unit: 07 RS-232 Baud: 9600 Telco: End-to-End Loop

Units on bus: 07 08 09 10 IAM
Free local memory (bytes): 41599
Auto-Balance Counts: Silence Not Detected-16 Dialtone Not Detected-0
PC connected to this unit

Hit PGUP/PGDN other units, ESC to quit
    
```

Figure 10 - Sample Status Info. Screen for the Master GTI Unit

Status Info. (IAM)

Use the **Status Info.** operation to retrieve, display, and store status information for each repeater associated with a GTI unit in a selected ELI system. The status information is stored in a file named STATXXX.INF, where XXX is the system number. A sample Status Information screen for the IAM is shown in Figure 11.

```
COMM : STATUS INFO. (SUPERVISOR mode)
ACCOUNTING MANAGER -- SYSTEM 003 STATUS INFO
Accounting Manager Firmware Version: 1.3
DIP Switch Settings On Reset: ( SW1: 1[-----]8 )
  Front Panel Baud: 9600  Printer Baud: 9600
  Test: N  Printer: ON  XON/XOFF-Only: ON  Alarm Relay: NORM. CLOSED
DIP Switch Settings Right Now: ( SW1: 1[-----]8 )
  Front Panel Baud: 9600  Printer Baud: 9600
  Test: N  Printer: ON  XON/XOFF-Only: ON  Alarm Relay: NORM. CLOSED
RAM ICs (#)OK, (*)Bad: (1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16)
Number of free blocks: 670, Percent Space Used: 3%
Number of records for each telco line:
  1:      2:      3:      4:      5:      6:      7:543    8:448
  9:760   10:528   11:      12:      13:      14:      15:      16:
  17:      18:      19:      20:      21:      22:      23:      24:
  25:      26:      27:      28:      29:      30:      31:      32:
Hit PGUP/PGDN other units, ESC to quit
```

Figure 11 - Sample Status Info. Screen for the IAM

Balance and Levels

Use the **Balance and levels** operation to balance the audio hybrid for a two-wire telephone line and set the audio levels in a selected ELI system. A sample Hybrid Balance Monitor screen is shown in Figure 12.

```

COMM : BALANCE AND LEVELS (SUPERVISOR mode)

Hybrid Balance Monitor -- System 003

```

LN #	STATUS	TYPE	ADJ. COMPLETED	LN #	STATUS	TYPE	ADJ. COMPLETED
01				17			
02				18			
03				19			
04				20			
05				21			
06				22			
07	IN USE	EndtoE	b	23			
08	FREE	DID	b	24			
09	IN USE	E&M 4W		25			
10	BALANCE	E&M 2W		26			
11				27			
12				28			
13				29			
14				30			
15				31			
16				32			

HELP FILE

enter ESC to exit....

Figure 12 - Sample Hybrid Balance Monitor Screen

For more information about this operation, see the HYBRID BALANCE AND LEVEL SETTINGS section later in this manual.

Other Menu - Set

Use the **Set** operation from the **Other** menu to set the date/time, change the passwords, and change the modem initialization string. A sample **OTHER MENU** screen with **Set** selected is shown in Figure 13. When **Set** is first selected, the **Time** operation is automatically selected. Selecting another operation will change the information in the **HELP** window.

```

EDACS GTI Configurator/Database Manager V2.1                (SUPERVISOR mode)

OTHER MENU: ∞ Set Clear Reset View ∞
  Time
  Password
  Modem string

--HELP--
Select item with arrow keys and
ENTER or capital letter. ESC to quit

Set user-entered or automatic time
on unit.

--STATUS--
Connecting to system....
Requesting unit type....
Note: Unit password is not secured.
Connected to GTI system!
Ready to process commands

Still connected to System

```

Figure 13 - Sample Other Menu Screen with Set Selected

The **Set** category of operations continues to require communication with a GTI unit in the system via a local or remote data link, to send and/or receive information about the system's configuration or performance. This category includes the following specific operations:

- The **Time** operation is used to set the date and time in the GTI units. If you want the PC's internal time and date to be sent to the GTI units whenever this operation is selected, the "Use Auto Time Set?" field in the System Configuration screen (see Figure 34) must contain a "Y" for yes. If you want to manually enter the time and date to be sent to the GTI units whenever this operation is selected, the "Use Auto Time Set" field in the System Configuration screen must contain a "N" for no. It is very important that you set the time and date when you install GTI units, since some of the advanced operating features of the GTI units utilize its built-in clock chip that keeps track of the time of day and day of week (such as telephone call detail date and time-of-day marking). The year is entered as the last two digits of the year, and is supported until the year 2079.
- The **Password** operation is used to change the Database Manager password in the system of GTI units. When this operation is used to select a new password, it will be changed in the database of the GTI units and the GTI Configurator. (If you only want to change the password in the GTI Configurator, select the **change Database manager password** operation from the **Other** group in the Main Menu screen.)
- The **Modem string** operation is used to change the modem initialization string from a GTI unit to an external modem connected to its front panel port.

Other Menu - Clear

Use the **Clear** operation from the **Other** menu to clear the call detail buffer. A sample **OTHER MENU** screen with **Clear** selected is shown in Figure 14. When **Clear** is selected, **Call detail** is the only operation available.

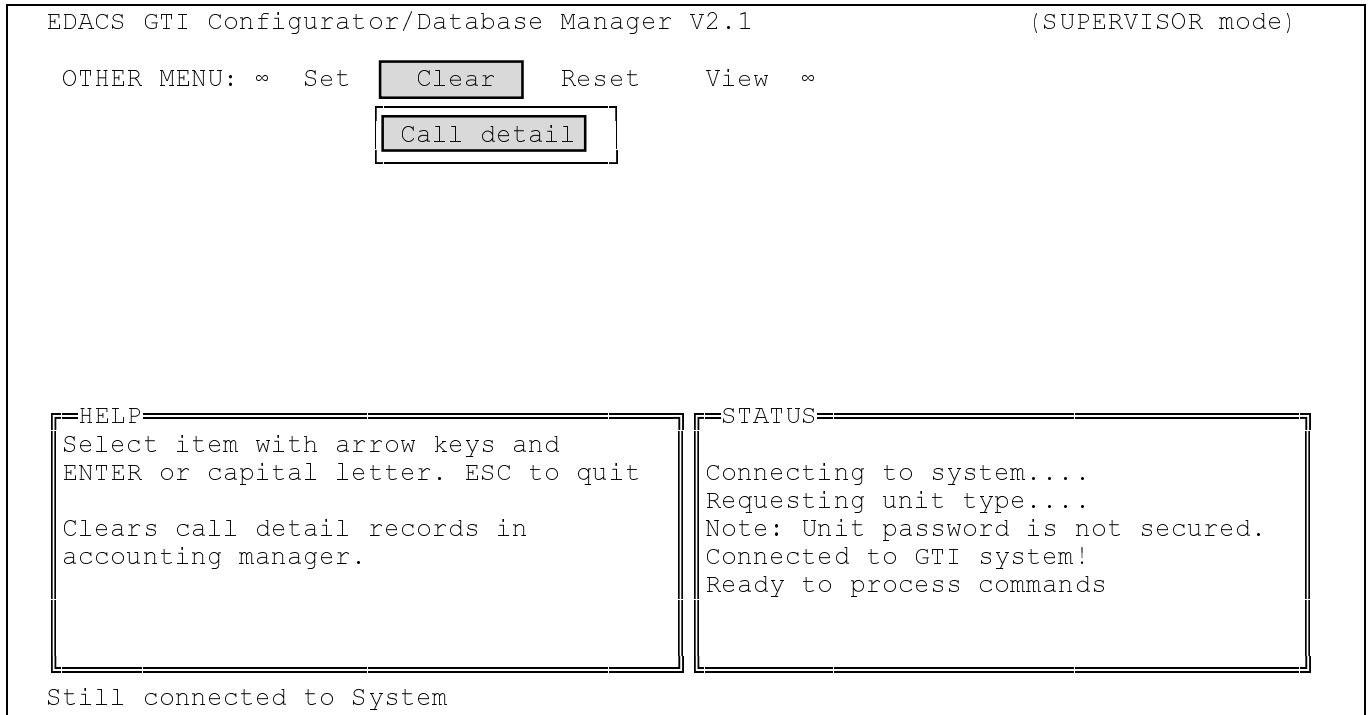


Figure 14 - Sample Other Menu Screen with Clear Selected

The **Clear** category of operations continues to require communication with a GTI unit in the system via a local or remote data link, to send and/or receive information about the system's configuration or performance. This category is limited to the following operation:

- The **Call detail** operation is used to clear the call detail records in the optional IAM unit.

Other Menu - Reset

Use the **Reset** operation from the **Other** menu to reset all the GTI units in the system. A sample **OTHER MENU** screen with **Reset** selected is shown in Figure 15. When **Reset** is first selected, the **Units, soft** operation is automatically selected. Selecting another operation will change the information in the **HELP** window.

```

EDACS GTI Configurator/Database Manager V2.1                (SUPERVISOR mode)

OTHER MENU: ∞  Set      Clear  Reset  View  ∞
           Units, soft
           Units, hard

--HELP--
Select item with arrow keys and
ENTER or capital letter. ESC to quit

Reset units, soft attempts to reset
all units at the system. Caution: If
the units have not been properly
configured or connected, there is no
guarantee that all units will reset.

--STATUS--
Connecting to system....
Requesting unit type....
Note: Unit password is not secured.
Connected to GTI system!
Ready to process commands

Still connected to System

```

Figure 15 - Sample Other Menu Screen with Reset Selected

The **Reset** category of operations continues to require communication with a GTI unit in the system via a local or remote data link, to send and/or receive information about the system's configuration or performance. This category includes the following specific operations:

- The **Units, soft** operation is used to reset all the GTI units in the system.
- The **Units, hard** operation is used to reset and clear all the GTI units in the system.

Other Menu - View

Use the **View** operation from the **Other** menu to monitor the messaging of the GTI unit (used for debugging purposes only). A sample **OTHER MENU** screen with **View** selected is shown in Figure 16. When **View** is selected, **Unit Activity** is the only operation available.

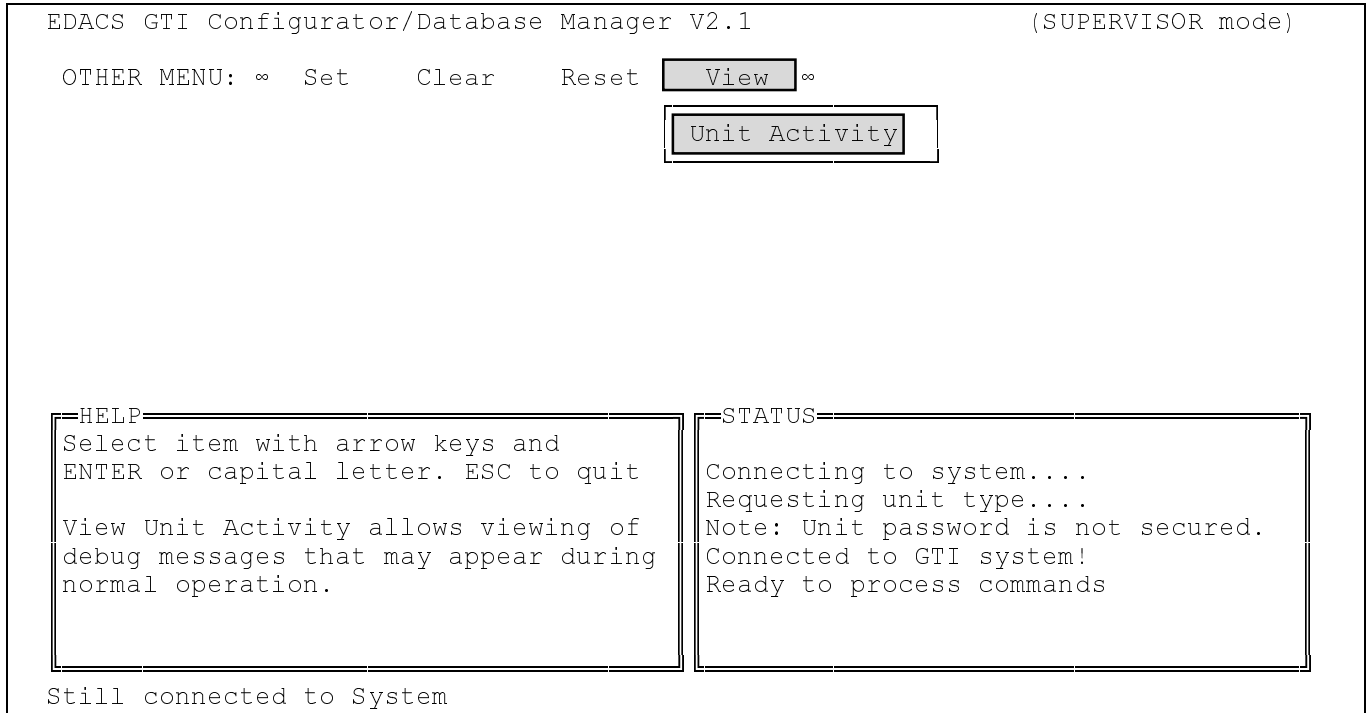


Figure 16 - Sample Other Menu Screen with View Selected

The **View** operation continues to require communication with a GTI unit in the system via a local or remote data link, to send and/or receive information about the system's configuration or performance. This category includes the following specific operations:

- The **Unit Activity** operation is used to monitor the messaging of the GTI unit (used for debugging purposes only).

MAIN MENU - FILE GROUP

The **File** group of operations is the fourth group shown in the Main Menu. Figure 17 shows a sample Main Menu screen with the **File** group selected. When this group is first selected, the **Print** operation is automatically selected. Selecting another operation will change the information in the **HELP** window.

```
EDACS GTI Configurator/Database Manager V2.1 (SUPERVISOR mode)
∞ Edit View Comm File otHer ∞
Print
Backup
Restore

HELP
Select item with arrow keys and
ENTER or capital letter. ESC to quit
Print allows various database contents
to be printed. The contents may be
printed directly to a printer or a
file. Select this item to choose from
databases to print.
```

Figure 17 - Sample Main Menu Screen with File Group Selected

The **File** group of operations allows you to print, save, and restore large blocks of the GTI Configurator database files as they exist(ed) at a specific point in time. This group includes the following specific operations:

- The **Print** operation is used to print GTI database information for all systems directly to a printer or a file.
- The **Backup** operation is used to save current GTI database information and call detail files for all systems to diskette(s).
- The **Restore** operation is used to restore GTI database information and call detail files from diskette(s) previously made with the backup operation. Information and data in the current database files will be overwritten (destroyed).

After you have selected (highlighted) one of the operations from the **File** group, press the **Enter** key and you will see an additional menu for the specific operation selected. These additional menus are described next.

Print Menu - By Type

Use the **Print** operation to select which type of GTI Configurator database file you want printed. Figure 18 shows a sample **PRINT MENU** screen having the single **By Type** category. When this category is first shown, the **System config** operation is automatically selected. Selecting another operation will change the information in the **HELP** window.

```
EDACS GTI Configurator/Database Manager V2.1 (SUPERVISOR mode)
PRINT MENU: ∞ By Type ∞
  System config
  Telco config
  DID numbers
  Country data

=HELP=
Select item with arrow keys and
ENTER or capital letter. ESC to quit
Print System Config allows the System
Configuration data to be printed.
```

Figure 18 - Print Menu Screen with System Config Selected

The **Print** category of operations includes the following specific operations:

- The **System config** operation prints the System Configuration files for all systems.
- The **Telco config** operation prints the Telco Configuration files for all systems.
- The **DID numbers** operation prints the DID Numbers files for all systems.
- The **Country data** operation prints the Country data files for all systems. (The **Country data** operation is toggled in and out of the **Print** menu by going to the **Main** menu and pressing **Shift-F8**.)

After you have selected (highlighted) one type of GTI Configurator database file from the Print menu, press the **Enter** key. The next screen allows you to arrange the file by any parameter in the file. After you have selected the arrangement, press the **Enter** key to print the arranged file to a printer connected to the GTI Configurator, or save to a disk file.

Backup Menu - Data Type

Use the **Backup** operation to select which type of GTI Configurator database file you want backed up. A sample Backup Menu screen is shown in Figure 19. When the Backup Menu screen is first shown, the **Configuration data** operation is automatically selected. Selecting another operation will change the information in the **HELP** window.

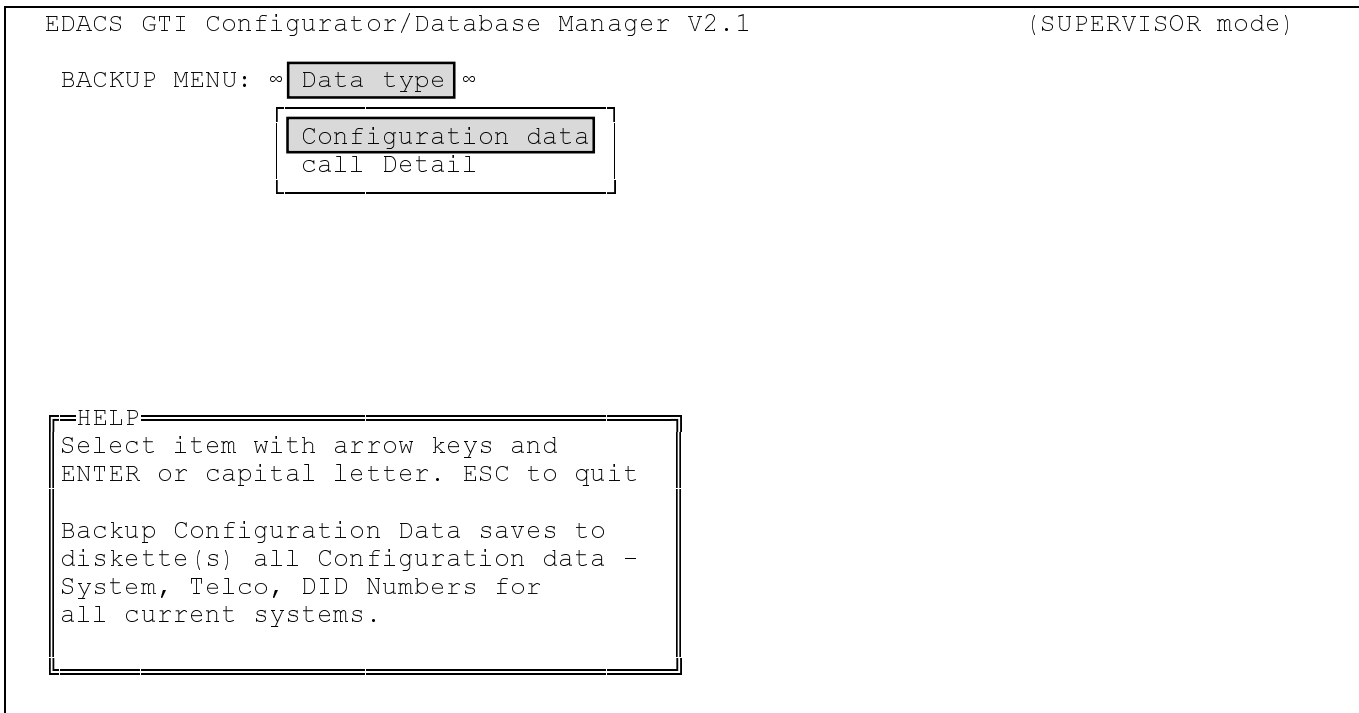


Figure 19 - Backup Menu Screen with Configuration Data Selected

It is very important that you periodically save a copy of your subscriber database on floppy diskettes. If your hard disk has trouble, or if you accidentally delete one of the GTI Configurator files, or if some other disaster occurs, you will be very happy to have a recent copy of the database. We recommend that you do this each time changes are made, but not more than once a day. Every time you edit the database, the dat files (named ---.dat) change on the computer hard disk. As a rule, you should leave a "paper trail" from which you could easily edit your last backup copy of the database. Before beginning a backup, you need to prepare fresh diskettes with DOS compatible formatting information. You will need approximately one 360KB diskette for every 1000 DID users. So format enough blank diskettes before you start the backup process (use the FORMAT A: command from the DOS C> prompt). The Configuration data and call Detail data types must be stored on separate diskettes. The **Backup** category of operations includes the following specific operations:

- The **Configuration data** operation saves to diskette(s) all Configuration data (System, Telco, and DID Numbers) for all current systems.
- The **call Detail** operation saves to diskette(s) Call Detail Files for all systems.

After you have selected (highlighted) one data type from the Backup menu, press the **Enter** key. The next screen prompts you to specify the floppy drive you will use. Insert an empty formatted diskette into a floppy drive, type the letter of the drive, and press the Enter key. If the selected data type requires more than one diskette, follow the on screen instructions. Label each diskette with the date, data type, and disk sequence number. As you remove each backup diskette from the computer, "write protect" the diskette (black label covering the notch on 5-1/4" media; shutter open on 3-1/2" media). Keep more than one set of backups and rotate through them. For example, you might keep sets for the odd and even days of the month. That way, if one set becomes damaged, you still have the other set.

Restore Menu - Data Type**WARNING**

Restoring previous data to the GTI Configurator database files will overwrite current data in those files. If you do not want to lose the current data, make a backup. Configuration data from one revision of GTI Configurator software cannot be used to restore configuration data to another revision of GTI Configurator software.

Use the **Restore** operation to restore previous data to the GTI Configurator database files from backup diskette(s). Figure 20 shows a sample **RESTORE MENU** screen having the single **Data type** category. When this category is first shown, the **Configuration data** operation is automatically selected. Selecting another operation will change the information in the **HELP** window.

```

EDACS GTI Configurator/Database Manager V2.1                (SUPERVISOR mode)

RESTORE MENU: ∞ Data type ∞
                Configuration data
                call Detail

HELP
Select item with arrow keys and
ENTER or capital letter. ESC to quit

Restore Configuration Data, restores
from diskette(s) all Configuration
data -
Warning - old data in the current dir.
will be overwritten (destroyed).

```

Figure 20 - Restore Menu Screen with Configuration Data Selected

The **Restore** category of operations includes the following specific operations:

- The **Configuration data** operation restores from diskette(s) all Configuration data. (Warning: old data in the current directory will be overwritten.)
- The **call Detail** operation restores from diskette(s) Call Detail Files for all systems. (Warning: old data in the current directory will be overwritten.)

After you have selected (highlighted) one data type from the Restore menu, press the **Enter** key. The next screen prompts you to specify the floppy drive you will use. Insert the backup diskette into a floppy drive, type the letter of the drive, and press the **Enter** key. If the backup GTI Configurator data is on more than one diskette, start with the first diskette and follow the on screen instructions. Make sure to insert the correct set of backups (if you have more than one set), and in the correct order. Before you insert each backup diskette into the computer, check to make sure it is "write protected" (black label covering the notch on 5-1/4" media; shutter open on 3-1/2" media).

MAIN MENU - OTHER GROUP

The Other group of operations is the fifth group shown in the Main Menu screen. Figure 21 shows a sample Main Menu screen with the **otHer** group selected. When this group is first selected, the **change PC modem parameters** operation is automatically selected. Selecting another operation will change the information in the **HELP** window.

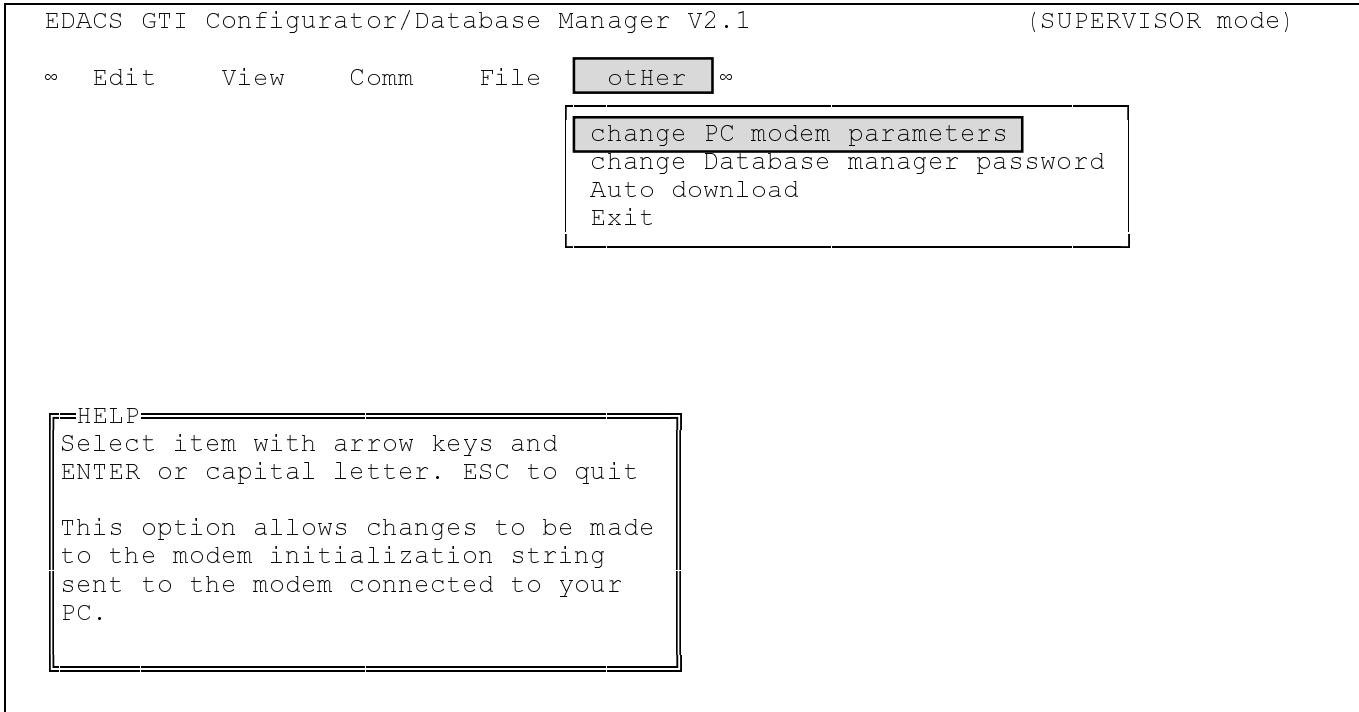


Figure 21 - Sample Main Menu Screen with the Other Group Selected

The **otHer** group of operations allows you to make additions, deletions, and modifications to various parts of the GTI Configurator database (not the GTI database). This group includes the following specific operations:

- The **change PC modem parms** operation is used to make changes to the modem initialization string. This initialization information is sent by the GTI Configurator to the connected modem when a remote data link is used to connect the GTI Configurator to a GTI unit. Using a Hayes-compatible modem will minimize (if not eliminate) the need to make changes to this string.
- The **change Database manager password** operation is used to change the password used by the GTI Configurator to access the GTI units. This operation only changes the password in the database of the GTI Configurator, not the GTI units. Therefore, only use this operation for a second GTI Configurator to be used to manage the same system of GTI units.

To make changes to the password in the database of the first GTI Configurator and the GTI units, use the **Password** operation from the **Other** operations in the **Comm** group. A separate password can be used for each system, or the same password can be used for more than one system.

- The **Auto download** operation is used to automatically download call detail records from an IAM (if one is present) in the system, to the GTI Configurator at a pre-selected hour.
- The **Exit** operation is used to exit from the GTI Configurator software. This also can be accomplished by pressing the **Esc** key one or more times, depending upon where you are in what operation.

PASSWORDS

CAUTION

As soon as the GTI Configurator software is installed for the first time, anyone who can read this manual will have access to all operations, including the assignment of all passwords. Before you spend any time on any operation, have the overall system administrator assign passwords to avoid possibly being locked out of the software - either accidentally or deliberately. If this happens before anyone has spent much time on any operation, it's easy to fix. If this happens after a lot of time has been spent on operations to set up the database, it will be harder to fix. For more information, see the Restoring Passwords heading later in this section.

Now that you are familiar with the general operations available through the GTI Configurator software and where in the Main menu to find them, the first order of business is assigning passwords to protect the systems managed by the GTI Configurator(s). There are two types of passwords used. The first type, used by authorized personnel to access the GTI Configurator(s), is called a User password. The second type, used by the GTI Configurator to access the GTI units, is called the Database Manager password. Although assigning passwords is an easy task, it is equally easy to get into trouble if you are not careful. Pay particular attention to the cautions in this section before assigning any passwords.

USER PASSWORDS

The first type of password is a User password. A User password is used by authorized personnel to access the GTI Configurator software operations. One of up to four User passwords can be used to access one of up to four different functional levels of the GTI Configurator software. Each functional level allows access to a different set of operations, representing a different area of responsibility. This allows many personnel with various responsibilities to use the same GTI Configurator software, yet only have access to those operations within their area of responsibility.

Functional Levels

There are four functional levels (level 4 through level 1) for which a User password can be assigned, and one functional level (level 0) for which no user password can be assigned. Although functional level 4 has access to all operations and functional level 0 has access to almost none, the functional levels represent different areas of responsibility rather than access to an increasing number of operations. Each functional level allows access to a different set of operations, representing a different area of responsibility. These areas of responsibility for each functional level are shown in Table 2. The functional level required to access each specific operation is shown in Table 3.

Table 2 - Area of Responsibility for Each Functional Level

LEVEL	AREA OF RESPONSIBILITY
0	System operator (Monitor and Status information only)
1	Managing system and telco information in database
2	Managing DID user information in database
3	Managing call detail records for billing
4	Overall system administration

Table 3 - Functional Level Required for Each Operation

GROUP	OPERATION			LEVEL	
Edit	System config			1+4	
	Telco config			1+4	
	DID numbers			2+4	
	Country data			1+4	
View	System config			1+4	
	Telco config			1+4	
	DID numbers			2+4	
	Country data			1+4	
Comm	Update	Global	Changes	1+2+4	
			Entire Database	4	
		By Type	System config	1+4	
			Telco config	1+4	
	DID numbers		2+4		
	get/Verify	Entire	Database Verify	1+2+4	
			Database Retrieve	1+4	
		Verify	System config	1+4	
			Telco config	1+4	
			DID numbers	1+2+4	
	Retrieve Billing	Call Detail Records		3+4	
	Monitor				0-4
	Status info.				0-4
	Balance and Levels				1+4
	Other		Set	Time	1+3+4
				Password	1+3+4
				Modem string	1+3+4
Clear			Call detail	1+3+4	
Reset			Units, soft	1+3+4	
			Units, hard	1+3+4	
View	Unit Activity	1+3+4			
File	Print	By Type	System config	1+4	
			Telco config	1+4	
			DID numbers	2+4	
			Country data	1+4	
	Backup	Data type	Configuration data	1+2+4	
			call Detail	2+3+4	
	Restore	Data type	Configuration data	4	
call Detail			4		
Other	change PC modem parameters			1+4	
	change Database manager password			4	
	Auto download			1+3+4	
	Exit			0-4	

Assigning Passwords

To assign User passwords, press the **Shift** and **F9** keys at the same time while viewing the Main Menu screen. The GTI Configurator will then display a **HELP** window and a **Passwords** window. Before passwords have been assigned, the Passwords window will be as shown in Figure 22.

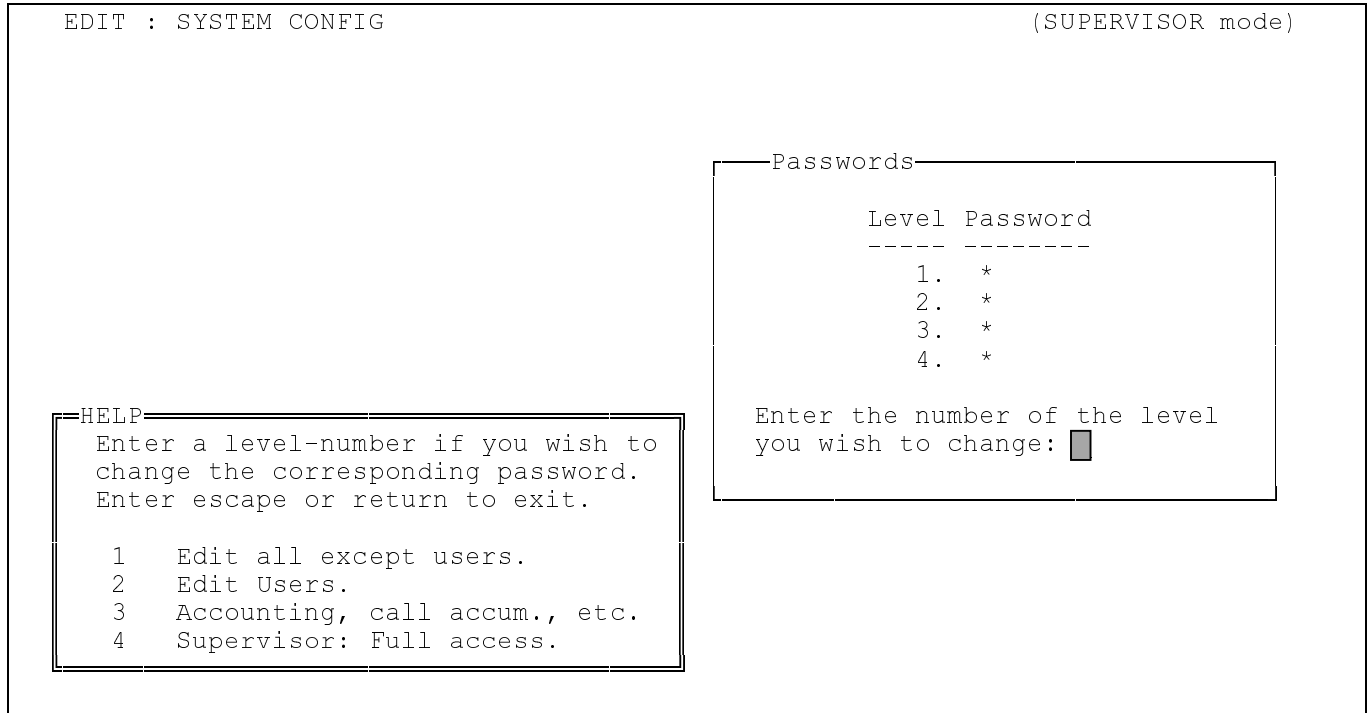


Figure 22 - Password Screen before Passwords Have Been Assigned

After passwords have been assigned, the asterisk following each functional level number will be replaced by the currently assigned password for that functional level, and only users with the password for functional level 4 will have access to all four passwords. Users with the password for functional level 1, 2, or 3 will only have access to their specific password. Passwords must meet the following requirements:

- No spaces are allowed within a password. Any space typed will not be displayed and will not be part of the password. The password will be only those characters shown.
- A password must be between one and eight ASCII characters long. After the eighth ASCII character, no more typed characters will be displayed. The password will be only those characters shown.
- A password cannot start with the word HELP (in any combination of upper and lower case). The characters will be displayed as they are typed, but will be erased as soon as you press the Enter key.
- A password consisting of a single asterisk is not a password. Although a single asterisk can be typed, entered, and displayed just like any valid password, it is a special feature to be described in a moment and not a password.

If, as you are typing a password you make a mistake, press the **Delete** key to erase one character at a time, or press the **Esc** key to cancel the entry altogether. A password should be entered for each functional level that is to be password protected. If you assign the same password to more than one level, a user with that password will have access to each level with that password. If you accidentally make a typo while typing the level 4 password and exit the software before you suspect what must have happened (or if you just forget your password), see the Restoring Passwords heading later in this Passwords section.

CAUTION

Be sure to check the passwords as they are displayed in the Passwords window before you move on to another operation. Better yet, write them down - exactly as they appear. Be especially careful with letters of the alphabet since the upper and lower cases of a specific letter of the alphabet are different ASCII characters in a password. Also, be especially careful not to mistake a period for a comma, or a colon for a semi-colon (or vice-versa).

The single asterisk character will be accepted as if it is a valid password. However, it is not. Assigning a single asterisk (as if it was a password) to functional level 1, 2, or 3 is a special feature that makes the set of operations for that functional level accessible to all users, except for those operations that also belong to a set of operations for a functional level that is still password protected.

CAUTION

Assigning a single asterisk (as if it was a password) to functional level 4 is also a special feature, but is very different. If a single asterisk is assigned to functional level 4, all users will have complete access to all operations including all password assignments, even when other functional levels have passwords assigned and appear to be password protected.

Using Passwords

After passwords have been assigned, each user attempting to access the GTI Configurator software (by typing "GTICON" and pressing the **Enter** key), will see a **STATUS** window on the screen as shown in Figure 23. At this point the user must type a valid password and press the **Enter** key, or just press the **Enter** key.

```
EDACS GTI Configurator/Database Manager V2.1
```

```
==STATUS==
Please Enter Your Password
At The Prompt -
(Press 'Enter' to access Level 0)

Password:█
```

Figure 23 - Status Window Used to Prompt User Password

If the user types and enters an invalid password or just presses the **Enter** key, the user will be given access to a severely abbreviated set of operations for functional level 0, and see a severely abbreviated menu in the Main Menu screen. If the user types and enters a valid password for functional level 1, 2, or 3, the user will be given access to a partial set of operations for the functional level of the password used, and see a partial menu in the Main Menu screen. If the user types and enters a valid password for functional level 4, the user will be given access to the complete set of operations, and see the complete menu in the Main Menu screen.

The user cannot be given access to the set of operations for another functional level without first exiting the GTI Configurator software, and then re-entering with the valid password for the other functional level. The only exceptions to this would be the special case where both functional levels have been assigned the same password, or the other special case where a single asterisk has been used in place of a password assignment (making that level accessible to all users).

Any user with a valid password can change that password by pressing the **Shift** and **F9** keys at the same time while viewing the Main Menu screen. If a user leaves the GTI Configurator unattended without exiting the software, an unauthorized user could obtain the current password without the first user's knowledge (or even change it) by pressing the **Shift** and **F9** keys at the same time while viewing the Main Menu screen. To prevent unauthorized access to the GTI Configurator, authorized users should never leave the GTI Configurator unattended without first exiting the GTI Configurator software.

Restoring Passwords

If you are a user of functional level 1, 2, or 3 and forget the password for that functional level, the system administrator can use the password for functional level 4 to access the GTI Configurator software, look at all four user passwords, and tell you what your password is. However, if you are the system administrator and you forget the password for functional level 4, you're in trouble. To get out of trouble, enter the four characters in the word **HELP** as your password and record the five digit Locked number displayed in the **STATUS** screen for the user password. It will look similar to Figure 24, except that the Locked number will be different.

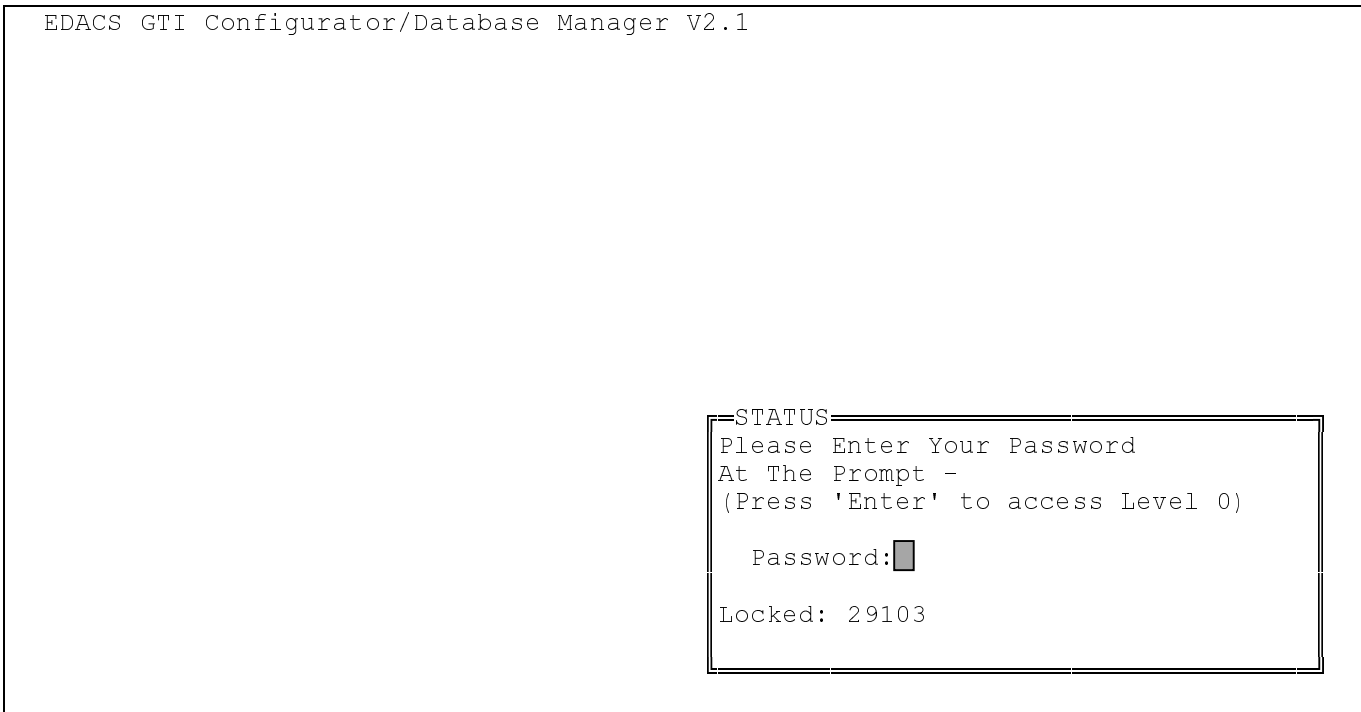


Figure 24 - Status Window Showing Locked Number

This Locked number will change each time you exit the GTI Configurator software and try to re-access the software using HELP as your password. So record only the last Locked number, if you have entered HELP more than once. Then call a customer support engineer at 1-800-528-7711 and give the engineer the Locked number you have recorded. The engineer will tell you what to do from there. Meanwhile DO NOT let anyone enter HELP as a password until after you have done what they tell you to do.

DATABASE MANAGER PASSWORD

The second type of password is the Database Manager password. A Database Manager password is used by the GTI Configurator to access a GTI unit in a specific system when you select an operation from the **Comm** group in the main menu. The password must be set up (or changed) in the database for both the GTI Configurator and the GTI units. The purpose of the password is to prevent an unauthorized GTI Configurator from communicating with a GTI unit in your system(s). A separate password can be used for each system, or the same password can be used for more than one system.

If the Database Manager password for the GTI unit has not been set, the message “Note: Unit password is not secured.” will appear as the third line of text in the STATUS window each time the GTI Configurator establishes communications with a GTI unit in the system. To assign a Database Manager password to the database of both the GTI Configurator and the GTI units, select the **Other** operation from the **Comm** group in the main menu and press the **Enter** key. Then select the desired system in the **INDEX** window and press the **Enter** key. When communication has been established with a GTI unit in the system, select **Set** and **Password** from the **Other** menu, press the **Enter** key, and follow the on-screen instructions.

If a second GTI Configurator is also to be authorized to communicate with the same system of GTI units, the assignment of the Database Manager password to the database of this second GTI Configurator must be done by a different operation. To assign a Database Manager password to the database of the second GTI Configurator, select the **change Database manager password** operation from the **Other** group in the main menu and press the **Enter** key. Then select the desired system in the **INDEX** window and press the **Enter** key. When communication has been established with a GTI unit in the system, follow the on-screen instructions. This operation only changes the password in the GTI Configurator database, not in the GTI units.

DATA LINK TO GTI UNIT

CAUTION

DO NOT remove the data link between the GTI Configurator and a GTI unit in the system (serial cable or modem connection) during a communications session. To end a communications session, do one of the following:

- Press the **Esc** key several times until “*** End of Processing ***” and “C:\GTICON>_” appear on the screen, or
- Select (highlight) the **Exit** operation from the **otHer** group in the Main Menu screen and press the **Enter** key.

Failure to properly end a communications session before breaking the data link will result in GTI Configurator lock-out, which can only be fixed by resetting the ELI system (pushing the reset button on the front of the Master GTI unit).

The GTI Configurator must be able to communicate with one GTI unit in a system. If two or more GTI Configurator are permitted to access a specific system, only one can have access at a time. Any changes made to the user database in this GTI unit will also be made in the remaining GTI units via the PCM/Data bus. The GTI Configurator can communicate with a GTI unit in a system in one or more of the following three ways (listed in order of increasing difficulty):

- Local RS-232 Link - Requires the following:
 - Available serial COM port on GTI Configurator (PC)
 - Interconnect cable (PC to GTI) no more than 50 feet long
- Remote RS-232 Link with Internal GTI Modem - Requires the following:
 - Available serial COM port on GTI Configurator (PC)
 - Interconnect cable (PC to modem)
 - Hayes (or Hayes compatible) modem (1200 bps)
 - Interconnect cable (modem to telephone line)
 - Available telephone line (GTI Configurator (PC) end)
- Remote RS-232 Link with External GTI Modem - Requires the following:
 - Available serial COM port on GTI Configurator (PC)
 - Interconnect cable (PC to modem)
 - Hayes (or Hayes compatible) modem (recommend 9600 bps)
 - Interconnect cable (modem to telephone line)
 - Available telephone line (GTI Configurator (PC) end)
 - Available telephone line (GTI unit end - in addition to the normal telephone line going to the GTI unit for interconnect calls)
 - Interconnect cable (telephone line to external GTI modem)
 - External GTI modem (recommend 9600 bps - must match modem at PC end)
 - Interconnect cable (external GTI modem to GTI unit)

NOTE

If you find that operation at more than 9600 baud is unreliable for a slower computer, reduce the baud rate until reliable communication is obtained.

LOCAL DATA LINK

If the distance between the GTI unit and GTI Configurator is short, a cable (no longer than 50 feet) can be connected from the RS-232 port on the rear panel of the GTI unit directly to a serial COM port on the GTI Configurator. This connection can be used when the GTI Configurator is located with the system of GTI units or in a nearby office. To set up the local RS-232 link, use the following procedure:

1. If the COM port on the GTI Configurator is a male DB-9 connector, connect it to the RS-232 port on the GTI unit, as shown in Figure 25. If the COM port on the GTI Configurator is a male DB-25 connector, connect it to the RS-232 port on the GTI unit, as shown in Figure 26. A 10-foot RS-232 cable with male and female DB-9 connectors is supplied with the ELI option.

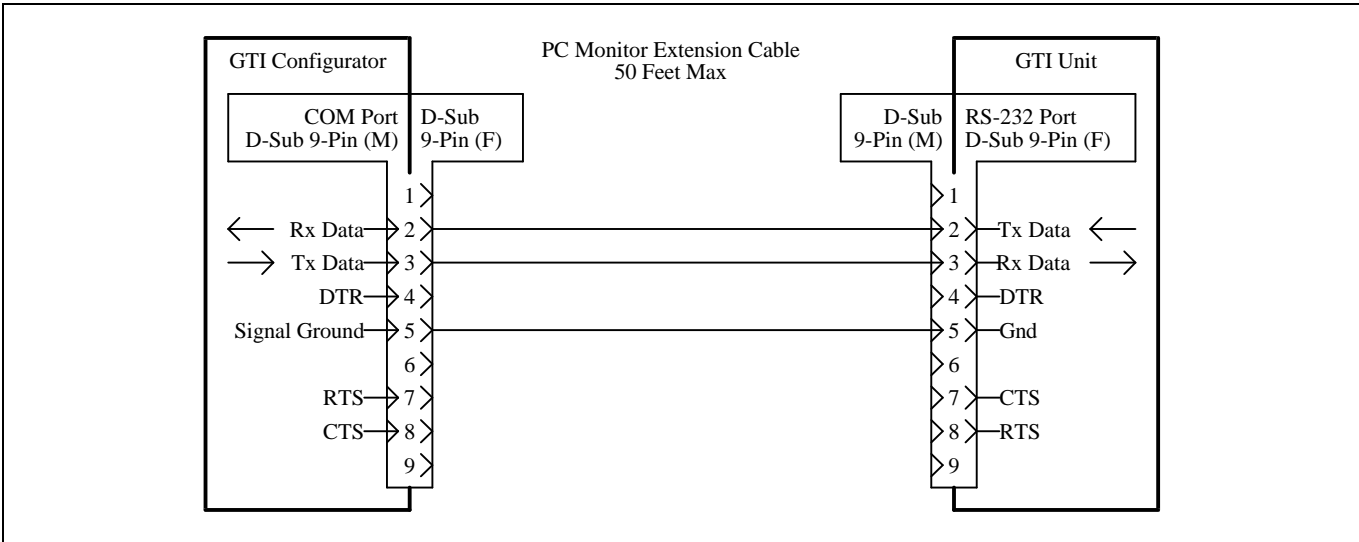


Figure 25 - Communication Setup for Local Data Link to 9-Pin COM Port

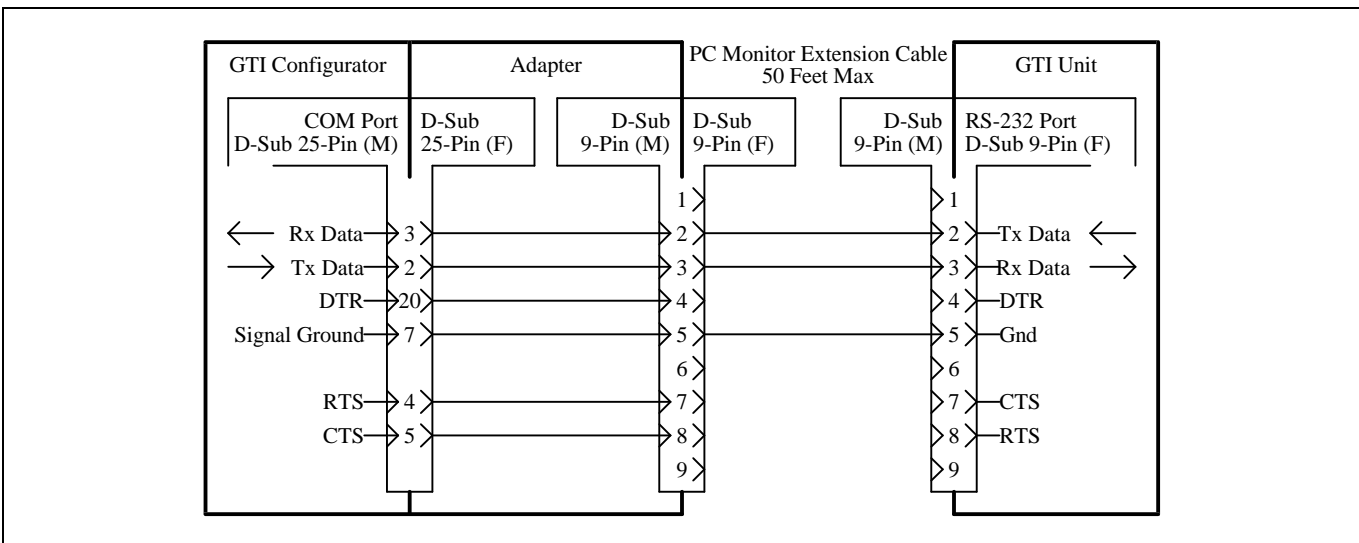


Figure 26 - Communication Setup for Local Data Link to 25-Pin COM Port

- Set the baud rate for the RS-232 port on the GTI unit using DIP switch SW2 sections 6, 7, and 8 located on the right side of the GTI unit. To get to the DIP switch after the GTI unit has been mounted in an EDACS repeater cabinet, remove four screws in front and two in back. Then slide the GTI unit forward just enough to reach the DIP switch. If there is enough slack in the connecting cables, it isn't necessary to disconnect them or power from the GTI unit. The layout of the DIP switch sections is shown in Figure 27. The DIP switch settings for various baud rates are shown in Table 4. The recommended baud rate is 9600 bps. After you have set the DIP switch sections, press the RESET button on the GTI unit to force it to read the new DIP switch settings.

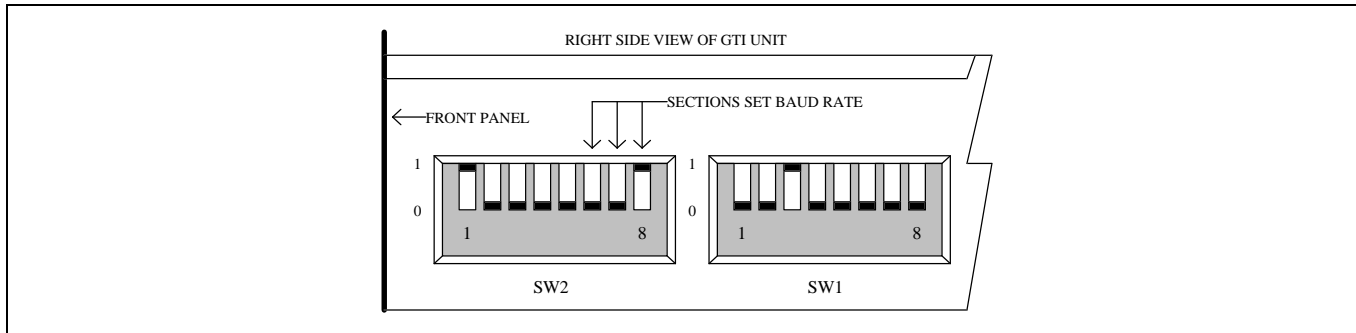


Figure 27 - Location of DIP Switches on Side of GTI Unit

Table 4 - DIP Switch Settings for Various Baud Rates

RS-232 Port Baud Rate	SW2 Section 6	SW2 Section 7	SW2 Section 8
300 bps	Down	Down	Down
1200 bps	Up	Down	Down
2400 bps	Down	Up	Down
4800 bps	Up	Up	Down
9600 bps	Down	Down	Up
19200 bps	Up	Down	Up

- Using the GTI Configurator, select the **System config** operation from the **Edit** group in the Main Menu screen, and press the **Enter** key to display the System Configuration screen. In the **INDEX** window, select the system for which you are setting up communications, and press the **Enter** key to move to the **SYSTEM CONFIG** window for that system. Select (highlight) the **System Access** field, type "L" (for local), and press the **Enter** key. A **LOCAL** pop-up window will appear just below the **System Access** field to tell you the currently configured baud rate. If this is not the baud rate you want, press the **Enter** key again and a second pop-up window will appear to the right of the first, giving you a selection of baud rates. Select (highlight) the same baud rate used to set the DIP switch sections in step 2, and press the **Enter** key to move on to the PC Comm Port field back in the **SYSTEM CONFIG** window. Type in the number of the serial COM port you will use, and press the **Enter** key. The System Configuration screen, showing the **LOCAL** pop-up window and the second pop-up window, is shown in Figure 28.

```

EDIT : SYSTEM CONFIG (SUPERVISOR mode)

INDEX
Num   System Name   Country  Nod
001  SHARP TOP      USA      002
002  HIGH PEAK     USA      001
003  APPLE ORCHARD USA      002
004  CHANDLERS     USA      001

SYSTEM_CONFIG
System Number: [001]
System Name: [SHARP TOP ]

Country: [USA ]
Node Number: [002]
Node Name: BEDFORD

System Access: [L] ... PC Comm Port:1
Use Auto Tin: LOCAL
Disconnect o Baud Rate: 9600 300
Dial Tone Re 1200
Min. Call Time to Store: 020 2400
Should Interconnect continue, 4800
when billing data is lost: Y 9600
Narrowband - 12.5 kHz?: N 19200
Edit Voice Prompts:Y ...
Edit Dial Plan Table:N ...
Enable Auto Retrieve Billing:N ...
Create Date: 08/30/94
Alter Date: 09/06/94

HELP
Select item with arrow keys and
press ENTER/RETURN.
Esc key exits.

Del key deletes field and exits.

```

Figure 28 - System Configuration Screen Showing LOCAL Pop-up Window

- Select (highlight) the **Monitor** operation from the Comm group in the Main Menu screen and press the **Enter** key. A new screen then replaces the Main Menu screen. Select (highlight) the desired system from the **INDEX** window in this new screen and press the **Enter** key. The **INDEX** window then disappears and a **STATUS** window appears giving you the ongoing status as the System Configurator attempts to establish contact with the GTI unit through the local RS-232 connection you have just made. Initially this **STATUS** window will show the following two statements: "Connecting to system..." and "Requesting unit type...". If the GTI Configurator does not receive a response from the GTI unit, the **STATUS** window will show the following additional statement: "ERROR: No response, resending pkt.". Each time the GTI Configurator tries and fails to establish contact, the **STATUS** window will show the following additional statement: "ERROR: No response, resending pkt.". If the GTI Configurator fails to establish contact with the system after three attempts, the **STATUS** window will show the following additional statements: "ERROR: Exceeded packet retries", "**** GTI Unit was never detected ****", "Check cables or COM port settings", and (after a pause) "Session Completed, Disconnected". If the GTI Configurator establishes contact with the system, it will briefly show the following two additional statements: "Connected to GTI system!" and "Ready to process commands", and then display the Interconnect Monitor screen. A sample Interconnect Monitor screen is shown in Figure 29.

COMM : MONITOR (SUPERVISOR mode)

Interconnect Monitor -- System 003 -- 20 Dec 1995 -- 10:08:26

LINE #	STATUS	TIME	CHANNEL	MOBILE	LINE #
01	UNUSED				01
02	UNUSED				02
03	UNUSED				03
04	UNUSED				04
05	UNUSED				05
06	UNUSED				06
07	BUSY	23:53	11M	*0038	07
08	FREE				08
09	BUSY	04:13	11L	00541	09
10	TEST	03:32	03L	*0626	10
11	UNUSED				11
12	UNUSED				12
13	UNUSED				13
14	UNUSED				14
15	UNUSED				15
16	UNUSED				16

Hit ESC to quit, PGDN to other screen

Figure 29 - Interconnect Monitor Screen

5. The presence of the Interconnect Monitor screen means that the communications path is OK. You may now use it to transfer user database parameters (such as System Config, Telco Config, and DID User Config information) to the system, retrieve billing files from the system, and balance hybrids and set levels in the system. For more information about these specific operations, see their respective sections later in this manual.

NOTE

If the GTI Configurator fails to make contact with the GTI unit, try the following:

- Check the cabling.
- Check the COM port selection.
- Verify that the interrupt jumpers for the COM port are set right: IRQ4 for COM1 or IRQ3 for COM2.
- Check (possibly lower) baud rate.
- See the Communication Activity File heading (under the ADJUSTMENTS heading later in this section).

REMOTE DATA LINK WITH INTERNAL MODEM

If the distance between the GTI unit and GTI Configurator is longer than 50 feet, modems will be needed on each end of a telephone circuit between them. The simplest method is to utilize the 1200 bps modem built into the GTI unit. This will require the following additional equipment:

- 1200-baud, Hayes-compatible modem at GTI Configurator location (internal or external to the GTI Configurator - cable also required if an external modem is used).
- Available telephone line at GTI Configurator location and a cable to connect from the telephone line to the modem.

Note that when the GTI Configurator is communicating with the GTI unit in the system, one less line will be available for interconnect calls (because it is in use by the GTI Configurator). If this is a problem, you may want to consider using an external modem at the system connected to the RS-232 port of a GTI unit. This will require an additional telephone line to the system, but will not reduce the number of lines available for interconnect calls. See the REMOTE RS-232 LINK WITH EXTERNAL GTI MODEM heading later in this section for more information.

Normal Setup

To set up a remote RS-232 link with the internal GTI modem, use the following procedure:

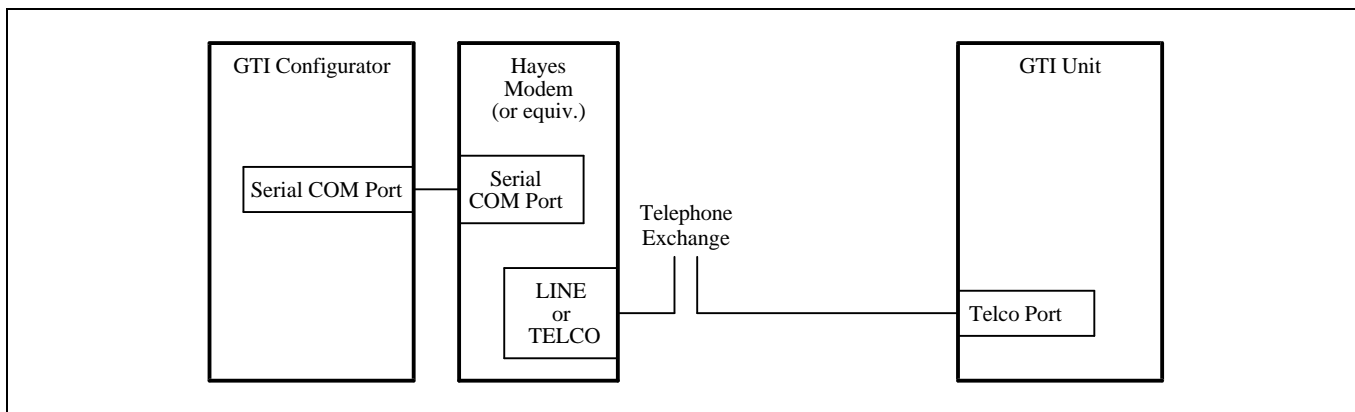


Figure 30 - Communication Setup for Remote Data Link with Internal Modem

1. Connect the cables and equipment as shown in Figure 30. Most computer stores carry the necessary modem cables, but pay particular attention to the gender of the connectors. Most modems have a female DB-25 connector, so the cable probably will have a male DB-25 connector on the modem end. Most PC Serial COM ports have a male DB-25 connector (but some have a male DB-9 connector), so the cable may have a female DB-25 or DB-9 connector on the PC end. Make sure you connect to a serial port on your PC, not a parallel port. Most PC's have a female DB-25 connector for the parallel port.

Connect the line between the telephone exchange and the modem to the connector labeled **LINE** or **TELCO** (not the connector labeled **PHONE** or **LOCAL**). Do not bypass the telephone exchange by connecting directly from the **LINE** or **TELCO** connector on the modem to the **TELCO** Port on the GTI unit. The modems are designed to interface with a telephone exchange, not with each other.

2. Set up the modem (at the GTI Configurator end) for the telephone line type to be connected to it. See the modem manufacturer's manual for directions.
3. Using the GTI Configurator, select (highlight) the **System config** operation from the **Edit** group in the Main Menu screen, and press the **Enter** key to display the System Configuration screen. In the **INDEX** window, select (highlight) the system for which you are setting up communications, and press the **Enter** key to move to the **SYSTEM CONFIG** window for that system. Select (highlight) the **System Access** field, type "I" (for internal modem), and press the **Enter** key to display the **INT_MODEM** pop-up window (just below the **System Access** field). The **INT_MODEM** pop-up window contains a **Phone #** field and a **Baud Rate** field. Type the telephone number (of the line connected to the GTI unit for which you are setting up communications) into the **Phone #** field, and press the **Enter** key to move on to the **Baud Rate** field. If the number shown in the **Baud Rate** field is 1200, press the Down Arrow key. If the number shown in the Baud Rate field is not 1200, press the **Enter** key to display a second pop-up window (to the right of the first) giving you a selection of baud rates. Select (highlight) 1200 and press the **Enter** key to move on to the **PC Comm Port** field back in the **SYSTEM CONFIG** window. Type in the number of the serial COM port you will use, and press the **Enter** key. The System Configuration screen, showing the **INT_MODEM** pop-up window and the second pop-up window, is shown in Figure 31.

```

EDIT : SYSTEM CONFIG (SUPERVISOR mode)

INDEX
Num System Name Country Nod
001 SHARP TOP USA 002
002 HIGH PEAK USA 001
003 APPLE ORCHARD USA 002
004 CHANDLERS USA 001

HELP
Select item with arrow keys and
press ENTER/RETURN.
Esc key exits.

Del key deletes field and exits.

SYSTEM_CONFIG
System Number: [002]
System Name: [HIGH PEAK ]

Country: [USA ]
Node Number: [001]
Node Name: LYNCHBURG

System Access: [I] ... PC Comm Port:1
Us INT_MODEM
Di Phone #:9486563
Di Baud Rate: 1200 300
Mi 1200

Should Interconnect ... nue,
when billing data is lost: Y
Narrowband - 12.5 kHz?: N
Edit Voice Prompts:Y ...
Edit Dial Plan Table:N ...
Enable Auto Retrieve Billing:N ...
Create Date: 08/30/94
Alter Date:

```

Figure 31 - System Configuration Screen with Internal Modem Pop-up Window

4. Select (highlight) the **Monitor** operation from the **Comm** group in the Main Menu screen and press the **Enter** key. A new screen then replaces the Main Menu screen. Select (highlight) the desired system from the **INDEX** window in this new screen and press the **Enter** key. The **INDEX** window then disappears and a **STATUS** window appears giving you the ongoing status as the GTI Configurator attempts to establish contact with the GTI unit through the local RS-232 connection you have just made. Initially this **STATUS** window will show the following two statements: "Connecting to system...." and "Requesting unit type...". If the GTI Configurator does not receive a response from the GTI unit, the **STATUS** window will show the following additional statement: "ERROR: No response, resending pkt.". Each time the GTI Configurator tries and fails to establish contact, the **STATUS** window will show the following additional statement: "ERROR: No response, resending pkt.". If the GTI Configurator fails to establish contact with the system after three attempts, the **STATUS** window will show the following additional statements: "ERROR: Exceeded packet retries", "*** GTI Unit was never detected ***", "Check cables or COM port settings", and (after a pause) "Session Completed, Disconnected". If the GTI Configurator establishes contact with the system, it will briefly show the following two additional statements: "Connected to GTI system!" and "Ready to process commands", and then display the Interconnect Monitor screen. A sample Interconnect Monitor screen is shown in Figure 29.
5. The presence of the Interconnect Monitor screen means that the communications path is OK. You may now use it to transfer user database parameters (such as System Config, Telco Config, and DID User Config information) to the system, retrieve billing files from the system, and balance hybrids and set levels in the system. For more information about these specific operations, see their respective sections later in this manual.

NOTE

If the GTI Configurator fails to make contact with the GTI unit, try the following:

- Check the cabling.
- Check the COM port selection.
- Verify that the interrupt jumpers for the COM port are set right: IRQ4 for COM1 or IRQ3 for COM2.
- Check the baud rate DIP switch setting on the GTI unit.
- Make sure your modem is powered on.
- Check the number of the telephone line connected to the GTI unit.
- See the Communication Activity File heading (under the ADJUSTMENTS heading later in this section).
- See the Audio Level Adjustment, Initial Command String Change, and Originate Mode Change headings (under the ADJUSTMENTS heading later in this section).

REMOTE DATA LINK WITH EXTERNAL MODEM

If the distance between the GTI unit and GTI Configurator is longer than 50 feet, modems will be needed on each end of a telephone circuit between them. If the 1200 bps modem built into the GTI unit isn't fast enough for your application, or you don't want to reduce the number of lines available for interconnect calls while the GTI Configurator is communicating with the GTI unit in the system, you can use an external modem connected to the RS-232 port of the GTI unit. This will require the following additional equipment:

- External modem at the GTI unit location and a cable to connect it to the RS-232 port on the back of a GTI unit
- Matching modem at the GTI Configurator location (internal or external - cable required if external)
- Available telephone line or other communication circuit and a cable to connect from it to the modem (at both locations)

Normal Setup

To set up a remote RS-232 link with an external GTI modem, use the following procedure:

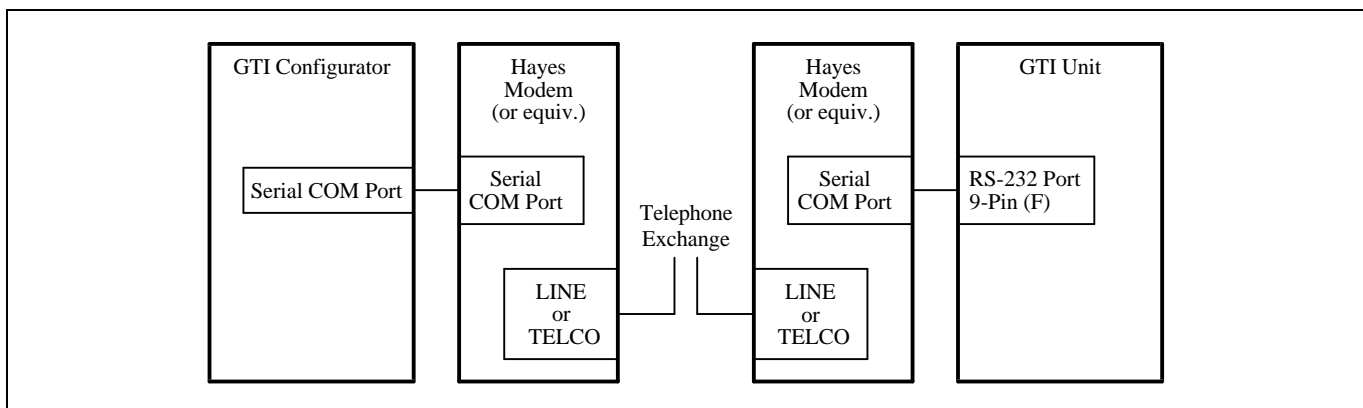


Figure 32 - Communication Setup Using External Modem

1. Connect the cables and modems between the GTI Configurator and the GTI unit as shown in Figure 32. The modem at the GTI Configurator end is shown separate from the GTI Configurator, but could be built into the GTI Configurator. It is preferable to use identical modems at both ends to minimize compatibility problems.

- Use a standard modem cable between the GTI Configurator (DTE equipment) and the modem (DCE equipment). The standard modem cable connects each pin at one end to the same pin at the other end.
 - Use a null modem cable between the GTI unit (DCE equipment) and the modem (DCE equipment). The null modem cable connects each pin at one end to the same pin at the other end, except for pins 2 and 3 which are crossed. Be sure to use a cable containing the DTR wire (pin 4 in DB-9 connector). The DTR line will be used, instead of the escape code, to tell the modem when to hang up.
 - Connect the lines between the telephone exchange(s) and each modem to the connector on the modem labeled **LINE** or **TELCO** (not the connector labeled **PHONE** or **LOCAL**). Do not bypass the telephone exchange by connecting directly from modem to modem. The modems are designed to interface with a telephone exchange, not with each other.
 - Be sure that each modem is plugged in, but wait to turn them on until after they have been configured.
2. Configure the external modem at the GTI unit end as follows (see the modem manufacturer's manual for directions):
 - Set the modem for normal DTR operation. This line will be used to tell the modem when to hang up.
 - Set the modem to send verbal result codes. The GTI unit does not recognize numeric result codes.
 - Set the modem to automatically answer incoming calls.
 - Set the modem to not echo off line commands.
 - Set the modem to suppress the addition of /ARQ to the end of commands such as CONNECT9600, CONNECT2400, etc. This addition will make the commands unrecognizable to the GTI unit.
 3. Set the baud rate for the RS-232 port on the GTI unit using DIP switch SW2 sections 6, 7, and 8 located on the right side of the GTI unit. To get to the DIP switch after the GTI unit has been mounted in an EDACS repeater cabinet, remove four screws in front and two in back. Then slide the GTI unit forward just enough to reach the DIP switch. If there is enough slack in the connecting cables, it isn't necessary to disconnect them or power from the GTI unit. The layout of the DIP switch sections is shown in Figure 27. The DIP switch settings for various baud rates are shown in Table 4. The recommended baud rate is 9600 bps.
 4. Turn on the external modem at the GTI unit end. Then press the **RESET** button on the GTI unit, to force it to read the new DIP switch settings and issue "AT" commands to program the external modem. For this to work, the modem must be powered up before you reset the GTI unit. After the GTI unit is on, it sends the AT command to the external modem at the GTI unit end every few minutes and looks for the OK response (meaning the modem is ready and listening).
 5. Using the GTI Configurator, select (highlight) the **System config** operation from the **Edit** group in the Main Menu screen, and press the **Enter** key to display the System Configuration screen. In the **INDEX** window, select (highlight) the system for which you are setting up communications, and press the **Enter** key to move to the **SYSTEM CONFIG** window for that system. Select (highlight) the **System Access** field, type "X" (for external modem), and press the **Enter** key to display the **EXT_MODEM** pop-up window (just below the **System Access** field). The **EXT_MODEM** pop-up window contains a **Phone #** field and a **Baud Rate** field. Type the telephone number (of the line connected to the external modem at the GTI unit end) into the **Phone #** field, and press the **Enter** key to move on to the **Baud Rate** field. If the number shown in the **Baud Rate** field is the rate you want, press the Down Arrow key. If the number shown in the **Baud Rate** field is not the rate you want, press the **Enter** key to display a second pop-up window (to the right of the first) giving you a selection of baud rates. Select (highlight) the rate you want and press the **Enter** key to move on to the **PC Comm Port** field back in the **SYSTEM CONFIG** window. Type in the number of the serial COM port you will use, and press the **Enter** key. The System Configuration screen, showing the **EXT_MODEM** pop-up window and the second pop-up window, is shown in Figure 33.

6. Turn on the modem at the GTI Configurator end.
7. Select (highlight) the **Monitor** operation from the **Comm** group in the Main Menu screen and press the **Enter** key. A new screen then replaces the Main Menu screen. Select (highlight) the desired system from the **INDEX** window in this new screen and press the **Enter** key. The **INDEX** window then disappears and a **STATUS** window appears giving you the ongoing status as the System Configurator attempts to establish contact with the GTI unit through the local RS-232 connection you have just made. Initially this **STATUS** window will show the following two statements: "Connecting to system..." and "Requesting unit type...". If the GTI Configurator does not receive a response from the GTI unit, the STATUS window will show the following additional statement: "ERROR: No response, resending pkt.". Each time the GTI Configurator tries and fails to establish contact, the **STATUS** window will show the following additional statement: "ERROR: No response, resending pkt.". If the GTI Configurator fails to establish contact with the system after three attempts, the **STATUS** window will show the following additional statements: "ERROR: Exceeded packet retries", "*** GTI Unit was never detected ***", "Check cables or COM port settings", and (after a pause) "Session Completed, Disconnected". If the GTI Configurator establishes contact with the system, it will briefly show the following two additional statements: "Connected to GTI system!" and "Ready to process commands", and then display the Interconnect Monitor screen. A sample Interconnect Monitor screen is shown in Figure 29.

EDIT : SYSTEM CONFIG (SUPERVISOR mode)

Num	System Name	Country	Nod
001	SHARP TOP	USA	002
002	HIGH PEAK	USA	001
003	APPLE ORCHARD	USA	002
004	CHANDLERS	USA	001

SYSTEM CONFIG (SUPERVISOR mode)

System Number: [004]
 System Name: [CHANDLERS]
 Country: [USA]
 Node Number: [001]
 Node Name: LYNCHBURG

SYSTEM Access: ... PC Comm Port: 1
 Us EXT MODEM
 Di Phone #: 9486563
 Di Baud Rate: 2400
 Mi 300
 1200
 2400
 Should Interconnect when billing data i 4800 e,
 Y
 Narrowband - 12.5 kHz 9600
 Edit Voice Prompts: Y 19200
 Edit Dial Plan Table
 Enable Auto Retrieve Billing: N ...
 Create Date: 08/30/94
 Alter Date:

HELP
 Select item with arrow keys and press ENTER/RETURN.
 Esc key exits.
 Del key deletes field and exits.

Figure 33 - System Configuration Screen with External Modem Pop-up Window

8. The presence of the Interconnect Monitor screen means that the communications path is OK. You may now use it to transfer user database parameters (such as System Config, Telco Config, and DID User Config information) to the system, retrieve billing files from the system, and balance hybrids and set levels in the system. For more information about these specific operations, see their respective sections later in this manual.

NOTE

If the GTI Configurator fails to make contact with the GTI unit, try the following:

- Check the cabling.
- Check the COM port selection.
- Verify that the interrupt jumpers for the COM port are set right: IRQ4 for COM1 or IRQ3 for COM2.
- Check the baud rate DIP switch setting on the GTI unit.
- Make sure your modem is powered on.
- Check the number of the telephone line connected to the GTI unit.
- See the Communication Activity File heading (under the ADJUSTMENTS heading later in this section).
- See the Audio Level Adjustment, Initial Command String Change, and Originate Mode Change headings (under the ADJUSTMENTS heading later in this section).

ADJUSTMENTS**Communication Activity File**

Each time the GTI Configurator software is run (a GTI Configurator session) and a communication session with a GTI unit is attempted (any operation in the **Comm** group), all communication activity is captured and stored in a file named SESSION.AUD in the GTICON directory. All attempted, aborted, and completed communication sessions are included for the entire GTI Configurator session. The file is overwritten for each new GTI Configurator session that includes one or more attempted, aborted, or completed communication sessions. This file can be used to understand why a communication session could not be established, was interrupted, or what type of problem occurred. To view this file, exit the GTI Configurator software by pressing the **Esc** key several times until the command prompt C:\GTICON>_ is shown on the screen. Then type "EDIT", press the space bar, type "SESSION.AUD", and press the **Enter** key. Use the up and down arrow keys to scroll through the file. When finished, press sequentially the **Alt**, **F**, and **X** keys to return to the command prompt C:\GTICON>_.

Audio Level Adjustment

If the data link to the GTI Configurator is to come through a telephone line and the modem in one of the GTI units, the software and hardware gains in that GTI unit must be set high enough so that the audio levels between this GTI unit and the telephone line are high enough to permit the modem to operate. See the Hybrid Balance and Level Settings heading for the procedure to adjust these audio levels, before attempting to connect to the GTI unit through the internal modem.

Initial Command String Change

The GTI Configurator and the modem on the GTI Configurator side of the telephone exchange require an initial exchange of data, or handshake. The default handshake parameters in the GTI Configurator have been set for a Hayes or Hayes-compatible modem. If the modem you are using does not respond to the Hayes "ATZ" and "ATDT" commands, you may have to change the initialization command string sent by the GTI Configurator to the modem. To change the initialization command string, select (highlight) the **Change PC Modem Parms** operation from the **Other** group in the Main Menu screen, and press the **Enter** key to display a new screen. In the **STATUS** window, type in the new initialization command string, following the on-screen instructions.

Originate Mode Change

Entering "I" (for internal modem) in step 3 of the above procedure, tells the GTI Configurator that the modem at the GTI Configurator end will send the originate tones to the modem inside the GTI unit. This is called the Reverse originate mode. The modem inside the GTI unit may also be accessed in the Normal originate mode, where the GTI unit's internal modem

sends the originate tones. This is useful if your office modem is not capable of communicating with the GTI unit's modem in Reverse originate mode. To enable this feature, use the following procedure:

1. If the GTI units in the system are connected only to DID lines, it will be necessary for you to first program one item using the local RS-232 link. You must enter a DID user number that will be reserved for modem access. See the DID User Information and Database Transfers headings in the Database section of this manual.
2. Using the GTI Configurator, select (highlight) the **System config** operation from the **Edit** group in the Main Menu screen, and press the **Enter** key to display the System Configuration screen. In the **INDEX** window, select (highlight) the system for which you are setting up communications, and press the **Enter** key to move to the **SYSTEM CONFIG** window for that system.
3. Select (highlight) the **System Access** field, type "X" (for external modem, even though you will be using the GTI's internal modem), and press the Enter key to display the **EXT_MODEM** pop-up window (just below the **System Access** field). The **EXT_MODEM** pop-up window contains a Phone # field and a **Baud Rate** field.
4. If you entered a DID user number that will be reserved for modem access in step 1, type that number into the **Phone #** field, and press the Enter key to move on to the **Baud Rate** field. If you skipped step 1 because you will be using an End-to-End line to connect to the GTI unit, type in the telephone number of the line connected to the GTI unit followed by a semicolon and the digits 88888. (This is the overdial access number to instruct the GTI unit to connect its internal modem.)
5. If the number shown in the **Baud Rate** field is 1200, press the Down Arrow key. If the number shown in the **Baud Rate** field is not 1200, press the **Enter** key to display a second pop-up window (to the right of the first) giving you a selection of baud rates. Select (highlight) 1200 and press the **Enter** key to move on to the **PC Comm Port** field back in the **SYSTEM CONFIG** window. Type in the number of the serial COM port you will use, and press the **Enter** key. The System Configuration screen, showing the **INT_MODEM** pop-up window and the second pop-up window, is shown in Figure 31.
6. After selecting an operation from the **Comm** group in the Main Menu screen and selecting the system, you will need to wait for the answer prompt, then press the **Enter** key to tell the GTI Configurator to send the overdial digits to connect the internal modem and begin sending the originate tone.

DATABASE

The **Edit** group of operations allows you to add to, change, or delete information in the GTI Configurator user database. Management of this information is divided into the following operations:

- System config - One System Configuration record is required for each system. Until user-configured values are uploaded to the system (see the DATABASE TRANSFERS heading later in this section), the GTI units in the system will use default values programmed into their firmware at the factory. When user-configured values are uploaded to the system, they will be retained in each GTI unit's battery-backed RAM until the GTI Configurator uploads new values, the battery runs down, or the GTI Configurator instructs the GTI units to cycle through a Hard Reset. (Loss of AC power will not cause a loss of user configured values.)
- Telco config - One Telco Configuration record is required for each GTI unit that is connected to a telephone line. Until user-configured values are uploaded to the system (see the DATABASE TRANSFERS heading later in this section), the GTI units in the system will use default values programmed into their firmware at the factory. When user-configured values are uploaded to the system, they will be retained in each GTI unit's battery-backed RAM until the GTI Configurator uploads new values, the battery runs down, or the GTI Configurator instructs the GTI units to cycle through a Hard Reset. (Loss of AC power will not cause a loss of user configured values.) Each GTI unit uses only the values that apply to that specific GTI unit number (set by DIP switch SW2 on the GTI unit). If the telephone line type information in the Telco Configuration file does not agree with the telephone line type set by DIP switch SW1 on the GTI unit, the GTI unit will use the DIP switch information.
- DID numbers - One DID Numbers record is required for each system using DID telephone lines. Until user-configured values are uploaded to the system (see the DATABASE TRANSFERS heading later in this section), the GTI units in the system will not respond to DID calls. When user-configured values are uploaded to the system, they will be retained in each GTI unit's battery-backed RAM until the GTI Configurator uploads new values, the battery runs down, or the GTI Configurator instructs the GTI units to cycle through a Hard Reset. (Loss of AC power will not cause a loss of user configured values.)
- Country data - One Country Data record is required for each system. Until user-configured values are uploaded to the system (see the DATABASE TRANSFERS heading later in this section), the GTI units in the system will use default values programmed into their firmware at the factory. When user-configured values are uploaded to the system, they will be retained in each GTI unit's battery-backed RAM until the GTI Configurator uploads new values, the battery runs down, or the GTI Configurator instructs the GTI units to cycle through a hard reset. (Loss of AC power will not cause a loss of user configured values.)

This section describes the information managed by each of these operations under the SYSTEM INFORMATION, TELCO INFORMATION, DID USER INFORMATION, and COUNTRY DATA INFORMATION headings, followed by the procedure to upload the information to the system under the DATABASE TRANSFERS heading.

SYSTEM INFORMATION

System information is information common to all of the system. To edit system information, select the System config operation from the **Edit** group in the Main Menu screen, and press the **Enter** key. The next screen you will see is the System Configuration screen. A sample System Configuration screen is shown in Figure 34.

If no system number is shown in the **INDEX** window, no system has been configured yet in the database, and the cursor will be positioned in the System Number field in the **SYSTEM_CONFIG** window. If you are configuring a system for the first time, the user data fields will be filled with default values. Type the desired user data into each field and press the **Enter** key to advance to the next field. When the cursor is positioned in a field followed by three dots, pressing the **Enter** key may advance the cursor to a pop-up window with additional related fields (not all entries may cause the window to pop-up). A pop-up window is sometimes used to help you select a valid entry for a field (a **HELP** window message will direct you to this type of pop-up window when it is available). When you have finished with the record for the first system you must save the record by pressing the **F10** key. To start a record for a second system, press the **F9** key and repeat the process. To delete a record, press the **F7** key. To see other options, press the **F1** key.

```

EDIT : SYSTEM CONFIG                                     (SUPERVISOR mode)
-INDEX
Num      System Name      Country  Nod
001 SHARP TOP             USA      002
002 HIGH PEAK             USA      001
003 APPLE ORCHARD         USA      002
004 CHANDLERS             USA      001

-HELP
Edit: press ENTER/RETURN/<-|
Guide Window: F1
Done: Esc

SYSTEM_CONFIG
System Number: [001]
System Name: [SHARP TOP ]

Country: [USA ]
Node Number: [002]
Node Name: BEDFORD

System Access:L ... PC Comm Port:1
Use Auto Time Set?: Y ...
Disconnect on 2nd Dial Tone:Y
Dial Tone Required:Y ...
Min. Call Time to Store: 020
Should Interconnect continue,
  when billing data is lost: Y
Narrowband - 12.5 kHz?: N
Edit Voice Prompts:Y ...
Edit Dial Plan Table:N ...
Enable Auto Retrieve Billing:N ...
Create Date: 07/28/94
Alter Date: 08/26/94

```

Figure 34 - System Configuration Screen

If a system is currently configured, you must select a specific system in the **INDEX** window before you can view or edit its user data fields. The **INDEX** window shows four user data fields for up to nine systems at a time. Use the **Page Down** or **Page Up** key to jump ahead or back nine systems at a time. Each of the four user data fields shown in the window can be used to sort the data file. Use the left or right arrow key to select a field to sort. Use the up or down arrow key to select the desired system. The current configuration for that system will then be displayed in the **SYSTEM_CONFIG** window. To edit the current configuration, move the cursor to the **SYSTEM_CONFIG** window by pressing the **Enter** key. (Press the **Esc** key once if you need to return to the **INDEX** window.) The **SYSTEM_CONFIG** window contains the following user data fields:

- System Number - This field defines the number of the ELI system. It is used to identify which GTI Configurator database and which call records are for which ELI system. Use a different three-digit number from 001 to 032. Default is blank)

- System Name - This field defines the name of the ELI system. It is not required, but a name is usually easier to remember than a number. Use up to 20 characters. Default is blank.
- Country - This field defines certain internal telco parameters that may vary from country to country. If you press the **Enter** key when the cursor is in this field, a pop-up window will appear displaying a list of countries from which you may make a selection. Use the arrow keys to select the country, then press the **Enter** key. Default is USA.
- Node Number - This field defines the number of the node to which the ELI system belongs. It is used to identify a group of ELI systems. Use a three-digit number from 001 to 255. Default is blank.
- Node Name - This field defines the name of the node to which the ELI system belongs. It is not required, but a name is usually easier to remember than a number. Use up to 20 characters. Default is blank.
- System Access - This field defines which type of data link is to be used to communicate with a GTI unit in the system. Use L for a local RS-232 link, use I for a remote link with internal GTI modem, or use X for a remote link with external GTI modem. Default is L. If you use L, I, or X, a LOCAL, INT_MODEM, or EXT_MODEM pop-up window will appear respectively, displaying the following two additional fields:
 - Phone # - (This field is not present if you use L.) This field defines the telephone number of the subscriber line connected to a GTI unit in the system (when the internal modem is selected), or to an external modem in the system (when the external modem is selected). Default is blank.
 - Baud Rate - This field defines the baud rate to be used when communicating with the system. Press the Enter key and select the rate you want from a second pop-up window. Default is 9600 for local, 1200 for internal modem, and 2400 for external modem)
- PC Comm Port - This field defines which of the GTI Configurator's COM ports is to be used to communicate with a GTI unit in the system. Use a one-digit number from 1 to 4. Default is 1.
- Use Auto Time Set? - This field defines if the time and date in the PC is to be sent to GTI units each time the **Time** operation is selected from the **Set** group in the **Other** menu for the **Other** operation in the **Comm** group. Use Y for yes, or use N for no (time is to be manually set each time the **Time** operation is selected). Default is Y. If you use Y, a TIME_SET pop-up window will appear displaying the following two additional fields:
 - Hours Difference - This field defines the time zone correction between the GTI Configurator's location and the system's location. Use a two-digit number from 01 to 12 (hours). Default is 00 (hour).
 - Earlier or later in relation to this time zone? - This field defines if the system's time is to be earlier than (use E), later than (use L), or the same as (use S) the GTI Configurator's time. Default is S.
- Disconnect on Call Progress Tone - This field defines if the GTI unit is to hang up when it detects a second Dial Tone, Busy Tone, or Reorder Tone. Use Y for yes (the GTI unit is to treat a call progress tone as a telephone hang-up), use N for no. Default is Y. Note that the Busy Tone and the Reorder Tone must be programmed in the Cadence Tone Table located in the Country Data. Also note that this disconnect only applies to call progress tones after all of the digits have been dialed out to the telephone company. (This is not to be confused with Secondary Dial Tone Support for Eastern Europe.) For more information, see the ELI Release Notes.
- Dial Tone Required - This field defines if the GTI unit must detect dial tone before dialing or not. Use Y for yes (the GTI unit will dial out only after detecting dial tone), or N for no (the GTI unit will dial out as soon as it detects dial tone, or as soon as the dial tone seek time is up). Default is Y. If you use N, a DT_SEEK pop-up window will appear displaying the following additional field:
 - Dial Tone Seek Time - This field defines the amount of time that the GTI will wait for a dial tone before starting to dial out anyway. Range is from 00.0 to 20.0 (seconds). Default is 00.5 (second).

- Min. Call Time to Store - This field defines the time that a call must be in progress before it is stored as a Call Detail record. This feature can be used to save call detail storage space by not storing incomplete and erroneous calls. Range is from 0 to 999 (seconds). Default is 020 (seconds).
- Should Interconnect continue, when billing data is lost - This field defines whether you want the system to continue processing interconnect calls after the GTI detects a problem with support hardware and it becomes unable to store Call Detail records. Use Y for yes, N for no. Default is Y.
- Narrowband - 12.5 kHz? - This field defines if the ELI system is to be used with narrowband MASTR II repeaters. It is used to set audio levels correctly for the repeaters. Use Y for yes, or use N for no. Default is N.
- Edit Voice Prompts - This field defines if the current voice prompts are to be edited. Use Y for yes, or use N for no. Default is Y. If you use Y, a **PROMPTS** pop-up window will appear displaying the following additional fields:
 - Security Code - This field defines the security code that must be overdialed when accessing voice prompt programming from a telephone. Programming is not enabled if the overdialed value is incorrect. Applies for all line types. Use a number from 0000 to 9999, or leave blank to disable the security code requirement. Default is blank.
 - Use - This field (for each prompt message) defines what type of prompt it is. Use N for no prompt, use T for a tone prompt, or use V for a voice prompt. If V is used but a voice message is not programmed, the tone message will be given in its place. Default is V for messages 1 through 7, and T for message 8.
 - Tone Level - This field (for each prompt message) defines how loud the message is played. Use a number from 1 to 7 (where 7 is the loudest). Default is 5.
 - Vc Tm - This field (for each prompt message) defines the amount of time allocated for the voice prompt. Use a number from 01 to 25 (seconds), but the total time for the sum of all voice prompt messages recorded cannot exceed 30 seconds. Default is 05 (seconds).

NOTE

Voice prompts must also be enabled on a per-line basis before voice prompts will be played. See the **Voice Prompts:** field in the telco configuration screen.

- Edit Dial Plan Table - This field defines the dial plan table to be used in radio-initiated, multi-frequency dialing applications to reduce dialing time. Use C to edit the dial plan, use D to select the default North American dial plan, or use N to disable the dial plan. The number being dialed is compared to the dial plan table. As soon as a match is found, the number will start to be dialed without waiting for all the digits. Default is N. If you use C, a **DP_CUST** pop-up window will appear displaying ten 16-digit telephone number fields. Fill one or more fields with any combination of the following characters:
 - 0 through 9 = allowed digits
 - A = 0 or 1 only
 - X = all values from 0 to 9
 - M = all values from 1 to 9
 - N = all values from 2 to 9
- Enable Auto Retrieve Billing - This field defines if call detail billing information is to be automatically downloaded. Use Y for yes, or use N for no. An IAM must be present in this system to use this feature. Default is N. If you use Y, an **AUTO_RTRV** pop-up window will appear displaying the following additional fields:

- Number of Entries - This field defines how many extra times the system will be called if the first time the call retrieval failed due to either a busy line or communications failure during call detail retrieval. Use a two-digit number from 00 to 10. Default is 04.
- Internal Modem Autodial Delay - This two-character field is used to define the overdial delay in seconds for internal modem in originate mode. Enter a number from 00 to 20. Default is 08.
- Create Date - This 8-character field defines when the system record was first made. It is automatically filled in with the current date when the system record is first made (but can be manually changed if necessary). Default is blank.
- Alter Date - This 8-character field defines when the system record was last changed. It is automatically filled in with the current date whenever the system record is changed (but can be manually changed if necessary). Default is blank.

When you have finished configuring a system for the first time, or after reconfiguring one or more parameters for a previously configured system, press the **F10** key to save the record. You may continue to enter new records for systems or change existing ones. When the system records are configured the way you want them, press **Esc** key twice to return the Main Menu screen.

TELCO INFORMATION

Telco information is information about the individual telephone lines connected to the GTI units in the system. To edit the telco information, select the **Telco config** operation from the **Edit** group in the Main Menu screen, and press the Enter key. Then select the system you want to edit from the **INDEX** window in the next screen, and press the **Enter** key. The next screen you will see is the Telco Configuration screen for the system you selected. A sample Telco Configuration screen is shown in Figure 35.

```

EDIT : TELCO CONFIG                                     (SUPERVISOR mode)
INDEX
L# L
05 E
06 E
07 E

SYSTEM 001
TELCO CONFIGURATION

Telco Line #: 05]

Voice Prompts:Y
Auto Balance hybrid:N ...
Edit C.O. Numbers:N ...

Telco Line Type:[E] ...

HELP
Edit: press ENTER/RETURN/<-|
Guide Window: F1
Done: Esc

3 records in database

```

Figure 35 - Telco Configuration Screen

The Telco Configuration screen allows you to add, change, or delete Telco information in the GTI Configurator database. Each GTI unit in a system will store the telco information for all telephone lines in that system. The DIP switches on the side of each GTI unit tell each GTI unit which telephone line is connected to it. Upon hard reset, the GTI units self configure themselves based on the DIP switch settings. In this case, the telco configuration for all units is not stored in each unit. If a telco configuration is incorrectly programmed from the configurator, the unit will not use the programming information, but its actual hardware configuration information to handle telco operations. If the database is retrieved in such a case, the actual hardware configuration will not be returned (the actual defaults will only be returned if they haven't been programmed from the configurator yet). The Telco Configuration screen contains the following user data fields:

- **Telco Line #:** - This field defines the telephone line number for the system (number of the radio channel connected to the GTI unit). Range is from 01 to 32. Default is blank.
- **Voice Prompts:** - This field defines if voice prompts are to be used with this telephone line. Use Y for voice prompts, or use N for no voice prompts. If you use Y, you must have voice prompts recorded. If you use N, tone prompts will be used (if the prompt table was configured that way). Default is Y.
- **Auto Balance Hybrid:** - This field defines if you want the hybrid balanced automatically at a certain hour of each day. Use Y for yes (automatic adjustment), or N for no (you will manually balance the hybrid as needed using the

Balance and Levels operation in the **Comm** group). Default is N. If you use Y, the **BALANCE_HYBRID** pop-up window will appear, displaying the following two additional fields:

- Phone number to call: - This field stores the telephone number (up to 7 digits) of a device that will automatically answer and provide a “quiet termination” for the hybrid balance operation. The silence number is normally a number provided by the local C.O. (Central Office). Contact your phone company to determine this number. Default is none.
- Time of day to balance: - This field defines the time of day to attempt to balance the hybrid. If the line is busy at the appointed hour, the hybrid will be balanced when the line becomes free. The time must be entered as 24-hour time in hours and minutes. The number will be called every 24 hours at the given time. Default is none.
- Edit C.O. Numbers: - This field stores the telephone numbers for the hybrid balance and adjust level operations. Enter N if you don't; Y if you do. Default is N. If you entered a Y, the **CO_NUMBERS** pop-up window will appear displaying the following two additional fields:
 - Silence Number: - This field stores the telephone number (up to 12 digits) of a device that will automatically answer and provide a “quiet termination” for the hybrid balance operation. Default is none.
 - Milliwatt Number: - This field stores the telephone number (up to 12 digits) of a device that will automatically answer and provide a 1 milliwatt test tone level for the level adjustment operation. Default is none.
- Telco Line Type: - This field defines the telephone line type. Use N for none, E for End-to-End, D for DID, or M for E&M. (If this field does not agree with the Telco line type defined by the positions of DIP switches SW2-1 through SW2-4 on the GTI Unit, the GTI unit will use the line type defined by the DIP switch positions and default values for the related line parameters, instead of any selections made using the GTI Configurator software. To avoid confusion, be sure that the line type selected here agrees with the DIP switch positions on the GTI Unit.) (Select the **Monitor** operation in the **Comm** group to view the line types, and press the **Print Screen** key to make a copy if a printer is connected.) Default is E. If you use E, D, or M, a pop-up window will appear displaying the following additional fields:

End-to-End Lines: - If you entered an E for End-to-End:

- Line Supervision Type: This field defines the handshake protocol required for the DID line (this information should be provided by the phone company when the line is purchased). Use L for Loop Start or G for Ground Start. Default is L.
- End of Call Conditions: This field defines if the GTI unit is to interpret momentary battery removal as the end of the call (far end goes on-hook). Use Y if the C.O. temporarily removes battery voltage at the end of the call. Otherwise use N. Default is Y.
- Dial Click Decode Mode: This field defines the method to be used to decode overdialed digits (LIDs and GIDs) for a telephone-originated call. Use N for DTMF dialing, or one of the following for pulse dialing:
 - 0 Decode clicks Mode 0.
 - 1 Decode clicks Mode 1 (default).
 - 2 A leading 0 is required to calibrate the software. (A zero needs to be dialed before the normal 5-digit LID/GID is overdialed.)
 - 3 A leading 1 and 0 are required to calibrate the software. (A one and a zero need to be dialed before the normal 5-digit LID/GID is overdialed.)
- Connect Time Required: This field defines the amount of time that the connect signal must be stable to recognize the start of an incoming call. Set to about 0.5 (second) for End-to-End lines. Range is 0 to 2.50 (seconds). Default is 0.50 (second).

- Delay Before Prompt: This field defines the delay between when line supervision is detected and when prompts are played (voice or tone). Range is 0 to 5.0 (seconds). Default is 0.5 (seconds).
- Dial-Out Mode: This field defines the dial out method. Use D for DTMF dialing, P for pulse dialing, or M for MF (Multi-Frequency) dialing. Default is D.

DID Lines - If you entered a D for DID:

- Line Supervision Type: This field defines the handshake protocol required for the DID line (this information should be provided by the phone company when the line is purchased). Use I for Immediate Start (the C.O. sends feed digits immediately after the line is answered), or W for Wink Start (the C.O. waits until the GTI unit "winks" the line before sending the feed digits). Default is I.
- Signaling Type: This field defines the type of signaling used by the C.O. to send the feed digits to the GTI unit. Use D for DTMF dialing, P for Pulse dialing, or M for MF (Multi-Frequency) dialing. Default is D.
- Number of Feed Digits: This field defines the number of feed digits expected from the C.O. Range is from 2 to 4. Default is 4.
- Connect Time Required: This field defines the amount of time the connect signal must be stable to recognize the start of an incoming call. Set to about 0.6 (second) for DID lines. Range is 0 to 2.50 (seconds). Default is 0.60 (second).
- Base DID Adder: This field defines the base phone number used to access this DID line. This number is typically a seven digit number. The last X digits (where X is the number of feed digits) are zero (see example). Five rows of DID range specifications are provided to support multiple ranges of numbers for a given phone line.
- Range of DID numbers-low: This field defines the low limit for the last X digits (where X is the number of feed digits), indicating the starting number sent by the phone company (see example). Five rows of DID range specifications are provided to support multiple ranges of numbers for a given phone line.
- Range of DID numbers-high: This field defines the high limit for the last X digits (where X is the number of feed digits), indicating the ending number sent by the phone company (see example). Five rows of DID range specifications are provided to support multiple ranges of numbers for a given phone line.

EXAMPLE: If you have a three digit feed, the phone company feeds you numbers 300-499, and a typical number to access the line is 7893401, then you would use the following:

- Base DID Adder = 7893000
- Range of DID numbers-low = 0000300
- Range of DID numbers-high = 0000499

E&M Lines - If you entered an M for E&M:

- Line Supervision Type: This field defines the handshake protocol required for the DID line (this information should be provided by the phone company when the line is purchased). Use I for Immediate Start (the C.O. sends feed digits immediately), or use W for Wink Start (the C.O. waits until the GTI unit "winks" the line before sending the feed digits). Default is I.
- Signaling Type: This field defines the type of signaling used by the C.O. to send the feed digits to the GTI unit. Use D for DTMF dialing, P for Pulse dialing, or M for MF (Multi-Frequency) dialing. Default is D.
- Number of Feed Digits: This field defines the number of feed digits expected from the C.O. Range is from 2 to 4. Default is 4.

- Line Description: Use N for normal E&M lines (disconnect when GTI unit sees E-lead go idle), or use 1 for Type I lines (disconnect when GTI unit sees E-lead go idle, but only after receiving Answer Supervision). Default is N.
- Connect Time Required: This field defines the amount of time the connect signal must be stable to recognize the start of an incoming call. Set to about 0.06 (second) for E&M lines. Range is from 0 to 2.50 (seconds). Default is 0.06 (second).
- Dial-Out Mode: This field defines the dial out method. Use D for DTMF dialing, P for pulse dialing, or M for MF (Multi-Frequency) dialing. Default is D.

When you have finished configuring a system for the first time, or after reconfiguring one or more parameters for a previously configured system, press the **F10** key to save the record. You may continue to enter new records for systems or change existing ones. When the system records are configured the way you want them, press **Esc** key twice to return the Main Menu screen.

DID USER INFORMATION

DID user information is information equating user numbers with users. To edit the DID user information, select the **DID numbers** operation from the **Edit** group in the Main Menu screen, and press the **Enter** key. Then select the system you want to edit from the **INDEX** window in the next screen, and press the **Enter** key. The next screen you will see is the DID Numbers screen for the system you selected. A sample DID Numbers screen is shown in Figure 36.

```

EDIT : DID NUMBERS                                     (SUPERVISOR mode)
-----INDEX-----
DID NUM EDACS      NAME      S
7893300 *0100 DAY SHIFT      N
7893301 *0101 NIGHT SHIFT    N
7893302 00100 MRS. A        N
7893303 00101 MR. B         N
7893304 00102 MS. C         N
7893305 00103 MR. D         N
7893306 00104 MISS E        N

-----HELP-----
Edit: press ENTER/RETURN/<-
Guide Window: F1
Done: Esc

SYSTEM 001-----
DID NUMBERS
DID Number: [7893300]
LID/GID
EDACS ID:[*0100]
Name: [DAY SHIFT      ]
Special Access: [N]
Create Date: 09/06/94
Alter Date: 09/06/94

```

Figure 36 - DID Number Screen

The DID Numbers screen allows you to add, change, or delete DID Number information in the GTI Configurator database. Each GTI unit in a system will store the DID Number information for all DID users in that system. The DID Number screen contains the following user data fields:

- **DID Number** - This field defines the DID number. It is used to dial the user directly.
- **EDACS ID** - This field defines the user's LID or the users' GID to be dedicated to this DID number. For a GID, use a * followed by a number from 0 to 2047. For a LID, just use a number from 0 to 16383.
- **Name** - This field defines the user name. It is not required, but a name is usually easier to remember than a LID or GID number. Use up to 20 characters. Default is blank.
- **Special Access** - This field defines how this number is to be used. Use N for normal, if the DID number has no special access capability and is used as a user number. Use B for balance, if the DID number is reserved for hybrid balancing and level setting. Use V for voice prompt, if the DID number is reserved for voice prompt programming access (an over dial code may also be needed in addition to this number). Use M for modem, if the DID number is reserved for the GTI's internal modem as an access number (if this number is called, the internal modem will output tones after connection). Normally, there is no need to use B, M, or V for more than one DID number each.

Templates

As you set up your database for the first time or add new records to a working database, you will soon find that many records look alike. To save you typing time, you can define a set of 10 different "data templates" with the **Alt-Fn** key (where n is a number from 0 to 9). Then you can retrieve a template to fill in a new data record with the **Shift-Fn** key (where n is a number from 0 to 9). Your templates are automatically saved along with the database information when you complete your editing so you can use them next time.

Defining a Template

1. Press **F9** to start a new record.
2. Fill the template in the data window with information that stays the same for your users. (leave the DID number field blank).
3. Press and hold the **Alt** key, then press one of the ten **Fn** keys. This will assign the template to the **Fn** key you select.

Using a Template

1. Press **F9** to start a new record.
2. Press and hold the **Shift** key, then press one of the ten **Fn** keys. This will fill the fields on the screen with the info. from the template. If a field in the template is blank, the information on the screen for that field will not be affected.

Find/Search

When your DID user database gets large (more than a few hundred users), it is difficult to locate a particular user by scrolling up and down the database with the **PgUp** and **PgDn** keys. To make your life easier, the GTI configurator can search and find a particular user by their DID number. To find a particular user:

- Go to the **INDEX** Screen.
- Select (highlight) the desired system and press the **Enter** key.
- Press the **F8** key to move the cursor into the DID Number field in the DID NUMBERS window.
- Type the desired DID number into the field and press the **Enter** key.
- If a record for the desired DID number is found, it will be shown in the DID NUMBERS window.
- If a record for the desired DID number is not found, the record for the closest DID number found will be shown and the GTI configurator will beep and display the message "CAUTION! Not exact match".

COUNTRY DATA INFORMATION

Country data information contains advanced parameters that are usually specific to a country, but could also be site or location specific. These parameters should seldom (if ever) need to be changed, so the operation is normally “hidden” in the Main Menu screen. To show the **Country data** operation in the Main Menu screen, press **Shift-F8** when either the **Edit** or **View** group of operations is selected (highlighted). To edit the country data information, select the **Country data** operation from the **Edit** group in the Main Menu screen, and press the **Enter** key. The next screen you will see is the **COUNTRY DATA** screen. A sample **COUNTRY DATA** screen is shown in Figure 37.

```

EDIT : COUNTRY DATA                                     (SUPERVISOR mode)
-----INDEX-----
Country      Comments
USA
-----HELP-----
Edit: press ENTER/RETURN/<-
Guide Window: F1
Done: Esc

1 records in database

COUNTRY_FILE (SUPERVISOR mode)
COUNTRY-SPECIFIC CONFIGURATION:

Country: USA ]

Edit Pulse Mode?:Y ...
Edit DTMF Mode?:Y ...
Edit MF Mode?:Y ...
Edit Cadence Table?:Y ...
Edit Wink Parameters Mode?:Y ...

Dial Click Detect Gain:005.0
Digital Hybrid Enable:Y
Digital Hybrid Mode:0

Pre-digit Required to
Access Outside Line?:N ...

Comments: [ ]

```

Figure 37 - Country Data Screen

The **COUNTRY DATA** screen allows you to add, change, or delete country data information in the GTI Configurator database. Select (highlight) the applicable country in the **INDEX** window using the arrow keys, and press the **Enter** key to move to the **COUNTRY_FILE** window. The **COUNTRY_FILE** window contains the following user data fields:

- **Country** - This field is used to identify the country data record. This name is used in the Country field of the System Configuration.
- **Edit Pulse Mode** - This field is used to define if you want to edit the pulse dial mode parameters. Enter Y for yes, N for no. (Default = Y) If you enter a Y, a PULSE_MODE pop-up window will appear displaying the following additional fields:
 - **On Time** - This field is used to define the make (on) time for the pulses (dial clicks) generated when the GTI is dialing in pulse mode. (Range: 30 - 200, Default: 40ms)
 - **Off Time** - This field is used to define the break (off) time for the pulses (dial clicks) generated when the GTI is dialing in pulse mode. (Range: 30 - 200, Default: 60ms)
 - **Interdigit Time** - This field is used to define the pulse interdigit time for the pulses (dial clicks) generated when the GTI is dialing in pulse mode. (Range: 200 - 900, Default: 800ms)

- Edit DTMF Mode - This field is used to define if you want to edit the DTMF dial mode parameters. Enter Y for yes, N for no. (Default = Y) If you enter a Y, a DTMF_MODE pop-up window will appear displaying the following additional fields:
 - On Time - This field is used to define the DTMF on time for the DTMF tones generated when the GTI is dialing in DTMF mode. (Range: 50 - 250, Default: 60ms)
 - Off Time - This field is used to define the DTMF off time for the DTMF tones generated when the GTI is dialing in DTMF mode. (Range: 30 - 250, Default: 40ms)
 - Regenerated DTMF Level - This field is used to define the DTMF tone regeneration level. A level of 20 produces the loudest DTMF tones. (Range: 1 - 20, Default: 12)
- Edit MF Mode - This field is used to define if you want to edit the MF (MultiFrequency) dial mode parameters. Enter Y for yes, N for no. (Default = Y) If you enter a Y, a MF_MODE pop-up window will appear displaying the following additional fields:
 - Type - This field is used to define the MF mode. Enter 0 for R1 mode, 1 for R2 mode. (Default: 0) If you enter a 1, a R2_DATA pop-up window will appear displaying the following additional fields:
 - Digits in the Called Number - This field is used to define the number of digits to be received in the Called Number. (Range: 0 - 20, Default: 0)
 - Request Calling Number (if available) - This field is used to define if the Calling Line Identification (CLI) number is requested, if it is available. (Default =N)
 - Digits in the Calling Number - This field is used to define the number of digits to be received in the Calling Number. (Range: 0 - 20, Default: 0)
 - Group II category to send - This field is used to define what group II category should be sent when requested from far end. (Range: 1 - 15, Default: 1)
 - Will Calling Number be requested - This field is used to define if this site will be requested to send the Calling Line Identification (CLI). (Default: Y)
 - Calling Number to send - This field is used to define the Calling Number to send if Calling Line Identification (CLI) is requested. If this field is left blank, the 7 digit DID number of the calling mobile will be used. (Default: blank)
- Edit Cadence Table - This field is used to define if you want to edit varies tone cadence parameters and settings. Enter Y for yes, N for no. (Default = Y) If you enter a Y, a CADENCE_TBL pop-up window will appear displaying the following additional fields:
 - Busy Tone On - This field is used to define the tone on time for the busy tone. A blank in this field disables the disconnection on busy tone. (Range: 200 - 9950, or blank, Default: 500ms)
 - Busy Tone Off - This field is used to define the tone off time for the busy tone. A blank in this field disables the disconnection on busy tone. (Range: 200 - 9950, or blank, Default: 500ms)
 - Reorder Type I Tone On - This field is used to define the tone on time for the reorder type I tone (fast busy tone). A blank in this field disables the disconnection on reorder type I tone. (Range: 200 - 9950, or blank, Default: 250ms)

- Reorder Type I Tone Off - This field is used to define the tone off time for the reorder type I tone (fast busy tone). A blank in this field disables the disconnection on reorder type I tone. (Range: 200 - 9950, or blank, Default: 250ms)
- Reorder Type II Tone On - This field is used to define the tone on time for the reorder type II tone. A blank in this field disables the disconnection on reorder type II tone. (Range: 200 - 9950, or blank, Default: blank)
- Reorder Type II Tone Off - This field is used to define the tone off time for the reorder type II tone. A blank in this field disables the disconnection on reorder type II tone. (Range: 200 - 9950, or blank, Default: blank)
- Edit Wink Parameters - This field is used to define if you want to edit the wink parameters for DID operations. Enter Y for yes, N for no. (Default = Y) If you enter a Y, a WINK_TABLE pop-up window will appear displaying the following additional fields:
 - Min. Wink Time - This field is used to define the minimum acceptable length of a wink for it to be considered valid. The time is entered in 10ms steps. (Range: 3 - 255, Default: 6 [60ms])
 - Wink Completion Time - This field is used to define the total time allowed for the wink to be completed. The start and end of the wink must be detected in this frame. The time is entered in 10ms steps. (Range: 20 - 250, Default: 200 [2 seconds])
 - Wink Duration - This field is used to define the wink duration. The time is entered in 10ms steps. (Range: 3 - 255, Default: 24 [240ms])
- Dial Click Detect Gain - This field is used to define the gain of the dial click detector. (Range: 0.1 - 100.0, Default: 5.0)
- Digital Hybrid Enable - This field is used to define whether you want the system use digital audio processing for hybrid. Enter a Y to enable digital audio processing for hybrid, N to bypass digital hybrid.
- Digital Hybrid Mode - This field is used to define the mode of digital hybrid. This mode selects a trade off between audio fidelity and feedback control. Mode 0 selects the highest fidelity while mode 6 has the highest feedback control. (Range: 0 - 6, Default: 0)
- Pre-digit Required to Access Outside Line - This field is used to define if a pre-digit is required to access an outside line, AND outside dial tone must be received before any additional digits are dialed. Enter Y for yes, N for no. (Default = Y) If you enter a Y, a PREDIGSCR pop-up window will appear displaying the following additional fields:
 - Pre-digits - This field is used to define the digits used to access an outside line. Up to 3 different digits can be entered. (Range: 0 - 9, blank, Default: blank)
 - Pause Length - This field is used to define the maximum amount of time to pause looking for dial tone after a pre-digit has been dialed. (Range: 0 - 30, Default: 5 seconds)
 - Dial Tone Required - This field is used to define if the dialing proceeds after the pause length expires before dial tone is detected. Enter Y to terminate the call after the pause length expires, N to allow the dialing to proceed. (Default: Y)

DATABASE TRANSFERS

Once you have edited your system, telco and user information as needed, the GTI configurator has produced computer files on your office computer with your programming data. To send these files to your telco system, select (highlight) the **Update** operation from the **Comm** group in the Main Menu screen, and press the **Enter** key. This option will activate the modem in your office computer to dial the system, enter the passwords, and update the GTI units' databases.

Make sure that you have the System Access, Baud Rate, and PC Comm Port set correctly in the System Config for your particular installation. Remember that if you are in your shop connected through the GTI unit's front panel, set the System Access to "L". If you are dialing into your system through the GTI unit's internal modem, set System Access to "I" and fill in the system's telephone number. If you are dialing into your system through an external modem connected to the front panel of the GTI unit, set system access to `X`.

Select whether you wish to update the System Config, Telco Config, DID User number, just the Changes since the last update, or the Entire Database. The GTI configurator will give you information in the Status window as it performs the update.

If you get the message "No bus master, cannot clone data" this means that the unit you updated cannot perform the automatic cloning function to the other GTI units on the Subscriber Bus. If you are in your shop working with one unit, then ignore the message. If you have dialed your system, then you have a problem on the Subscriber Bus. Either the subscriber master is inoperative, a subscriber bus cable is faulty, or a master card has not been installed into one of the units.

When in the Comm menu, be sure to select "Other" then select "Set Time". The clocks in the GTI units must be set so that billing data will be useful.

Performing an "Update Entire Database" guarantees that the databases on all of the units match the database in the PC. The other update options are provided as a convenience but if used indiscriminately may result in mismatched data. If you suspect that the system is not programmed correctly, always try to "Update Entire Database" before proceeding.

HYBRID BALANCE AND LEVEL SETTINGS

OVERVIEW

There are no physically-adjustable controls on the GTI unit to balance the audio hybrid or adjust audio levels. All adjustments are made electronically through the GTI Configurator software.

CAUTION

It is possible to misadjust the audio hybrid balance or audio levels beyond their normal operating range, making the operation of the telephone interconnect unreliable or completely inoperative. You **MUST** know what you are doing before performing these adjustments.

HYBRID BALANCE MONITOR SCREEN

To balance the audio hybrid or adjust audio levels, select (highlight) the **Balance and Levels** operation from the **Comm** group in the Main Menu screen, and press the **Enter** key. Select (highlight) the desired system in the **INDEX** window and press the **Enter** key. The **STATUS** window will show the ongoing status as the GTI Configurator software attempts to establish a communication session with a GTI unit in the selected system. Initially the **STATUS** window will show the following two statements: "Connecting to system..." and "Requesting unit type...". If the GTI Configurator software is unable to establish a communication session with a GTI unit in the selected system, the **STATUS** window will show the following additional statement: "ERROR: No response, resending pkt.". Each time the GTI Configurator software tries and fails to establish a communication session, the **STATUS** window will show the following additional statement: "ERROR: No response, resending pkt.". If the GTI Configurator software fails to establish contact with the system after three attempts, the **STATUS** window will show the following additional statements: "ERROR: Exceeded packet retries", "**** GTI Unit was never detected ****", "Check cables or COM port settings", and (after a pause) "Session Completed, Disconnected".

If the GTI Configurator software is able to establish a communication session with a GTI unit in the selected system, it will briefly show the following two additional statements: "Connected to GTI system!" and "Ready to process commands", and then display the **Hybrid Balance Monitor** screen (see Figure 38).

LN # Column

The LN # column lists 32 telephone line numbers in the selected ELI system, whether equipped or not. Each GTI unit can be connected to one telephone line and one radio channel. The number of a telephone line connected to a GTI unit is determined by the number of the radio channel connected to that GTI unit. Unless each radio channel is equipped with a GTI unit, the equipped telephone line numbers will typically start with some number higher than 1.

STATUS Column

The STATUS column shows the current status of each telephone line connected to a working GTI unit in the selected ELI system. The status is continuously updated, so as the line's status changes, the entry in the STATUS column will change. The possible status entries are as follows:

- blank - No telephone line is connected to that GTI unit, or no GTI unit is present for that radio channel number.
- **BUSY** - Telephone line is busy with a normal call.
- **FREE** - Telephone line is currently free (available for a call or an adjustment).

```

COMM : BALANCE AND LEVELS (SUPERVISOR mode)

Hybrid Balance Monitor -- System 003

LN # STATUS TYPE ADJ. COMPLETED LN # STATUS TYPE ADJ. COMPLETED
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32
IN USE EndtoE b
FREE DID b
IN USE E&M 4W
BALANCE E&M 2W

HELP FILE

enter ESC to exit....
    
```

Figure 38 - Sample Hybrid Balance Monitor Screen

- **MODEM** - Telephone line is busy with an internal modem call.
- **VOICEP** - Telephone line is busy with voice prompt programming call.

During audio hybrid balancing and audio level adjustment operations, the following additional status entries may be seen (if not covered by the overlay window used by the operation) in the STATUS Column:

- **READY** - Telephone line is ready for an adjustment (GTI Unit has seized the line - line taken off-hook).
- **SILENCE** - Telephone line is off-hook and Silence Number is being accessed.
- **MILLIWAT** - Telephone line is off-hook and Milliwatt Number is being accessed.
- **ADJUST** - Adjustment is being performed now.
- ***ERROR*** - There is something wrong with the status of this telephone line.

When you select an adjustment from the **HYBRID BALANCE AND LEVEL SETTINGS** window, the line status may change. When the line status is FREE and a valid menu item requiring a FREE or READY line status is selected, the line will be reserved to perform an adjustment and the line status will change to READY. Once the line status is READY, no call can be placed on that line other than for an adjustment. If a Silence or Milliwatt Number is dialed, the line status will change to SILENCE or MILLIWATT. Once an adjustment starts, the line status will change to ADJUST. After adjustment, the line status will return to SILENCE or MILLIWATT (or READY if no number was called). If the line status returns to SILENCE or MILLIWATT, the line is still seized and connected to the Silence or Milliwatt Number (to allow additional adjustments to be performed without releasing control of that line). You can manually hang-up the line by selecting Hangup and the line status will return to READY. When the line status is READY and you press the **Esc** key to get out of the **HYBRID BALANCE AND LEVEL SETTINGS** window, the line status will return to FREE.

TYPE Column

The TYPE Column shows the type of telephone line (as indicated by the position of the DIP switches on the side of each GTI unit) connected to each working GTI unit in the selected ELI system. The possible line type entries are as follows:

- blank - DIP switches are set for no line.
- **EndtoE** - DIP switches are set for 2-Wire End-to-End line.
- **DID** - DIP switches are set for 2-Wire Direct Inward Dial line.
- **E&M2W** - DIP switches are set for 2-Wire E&M Signaling line.
- **E&M4W** - DIP switches are set for 4-Wire E&M Signaling line.

ADJ. COMPLETED Column

As soon as the GTI Configurator software displays the Hybrid Balance Monitor screen, it starts collecting the current level and hybrid settings from each GTI unit in the selected system. A lower case letter will appear in the **ADJ. COMPLETED** column for each telephone line number, as the GTI unit (attached to that line number) is checked.

HELP

For additional information about using the Hybrid Balance Monitor screen, select (highlight) **HELP** at the bottom of the screen using the arrow keys, and press the **Enter** key. The **INFORMATION ON BALANCING AND LEVEL SET** window will pop up in front of (and partially obscure) the Hybrid Balance Monitor screen. When done, press any key to remove the window.

FILE

To make a file of the balance and level data, select (highlight) **FILE** at the bottom of the screen using the arrow keys, and press the **Enter** key. The **WRITE BALANCE & LEVEL DATA TO A FILE** window will pop up in front of (and partially obscure) the Hybrid Balance Monitor screen, and give H###DATA.HBD (where ### is the system number) as a suggested file name under which to save the current settings. You can choose the suggested file name or enter your own file name. Then choose 'Y' to save the data to the file. When done, press any key to remove the window.

ADJUSTMENTS

To see what adjustments are available for a specific telephone line, select (highlight) the line in the **Hybrid Balance Monitor** screen using the arrow keys, and press the **Enter** key. A **HYBRID BALANCE AND LEVEL SETTINGS** window will pop up in front of (and partially obscure) the **Hybrid Balance Monitor** screen, and display a menu of adjustments from which to choose (see Figure 39). Only the highlighted adjustments are allowed for the specific line type of the telephone line number selected. Table 5 summarizes which adjustments are allowed for each line type, and the line requirements for each adjustment.

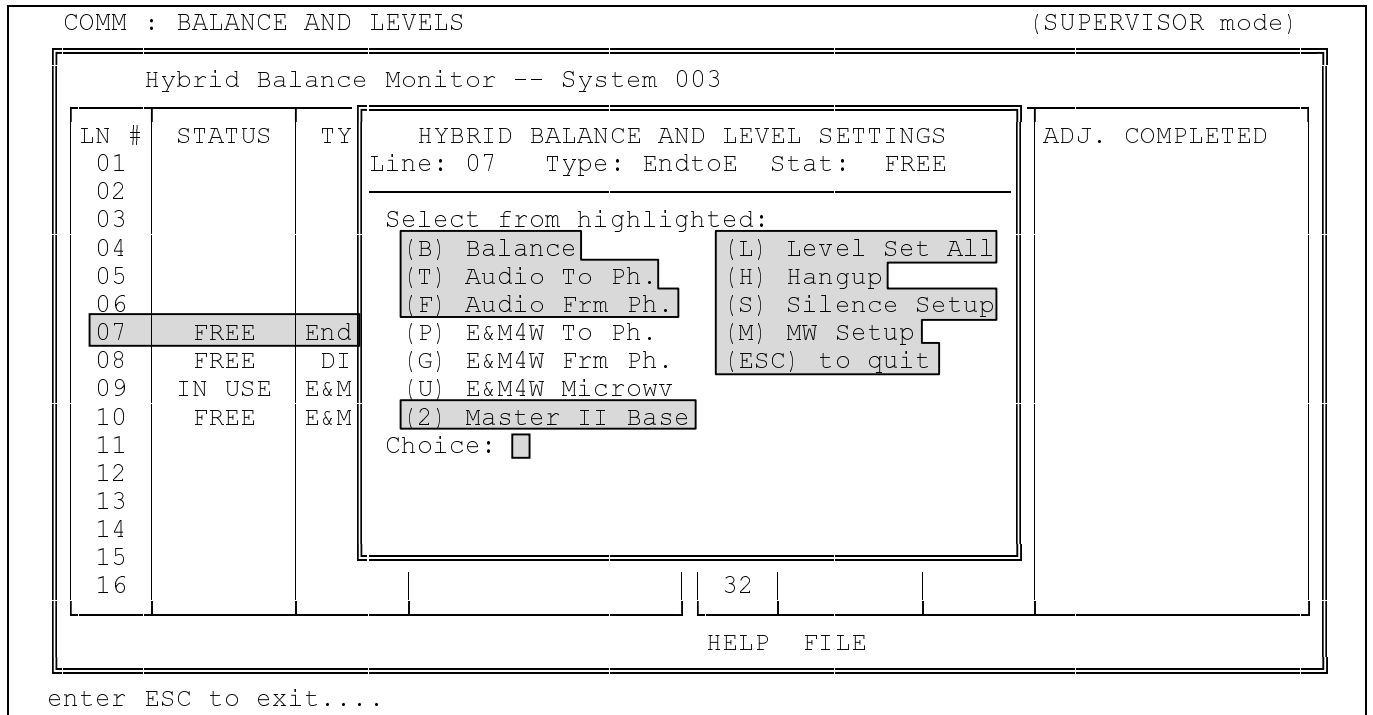


Figure 39 - Sample Hybrid Balance and Level Settings Window

Table 5 - Allowed Adjustment Operations

Adjustments	Line Types			Line Requirements		
	DID	E-E/E&M2W	E&M4W	Silence#	Milliwatt#	Line Free
(B) Balance	✓	✓		✓		✓
(T) Audio To Ph.	✓	✓	✓			
(F) Audio Frm Ph.	✓	✓	✓			
(P) E&M4W To Ph.			✓	✓		✓
(G) E&M4W Frm Ph.			✓		✓	✓
(U) E&M4W Microwv			✓	✓		✓
(2) Master II Base	✓	✓	✓			
(L) Level Set All	✓	✓	✓			
(H) Hangup		✓	✓			
(S) Silence Setup		✓	✓			
(M) MW Setup		✓	✓			

Adjustments Column of Table 5:

- (B) Balance - Balance hybrid in GTI unit (required when 2-wire line is connected to GTI unit).
- (T) Audio To Ph. - Set audio software gain in the digital signal processing (DSP) circuitry towards phone (required for all types of phone lines).
- (F) Audio Frm Ph. - Set audio software gain in the digital signal processing (DSP) circuitry from phone (required for all types of phone lines).
- (P) E&M4W To Ph. - Set audio hardware gain towards phone (required for all 4-wire E&M phone lines regardless of whether they ultimately terminate into a 2-wire or 4-wire service).
- (G) E&M4W Frm Ph. - Set audio hardware gain from phone (required for all 4-wire E&M phone lines regardless of whether they ultimately terminate into a 2-wire or 4-wire service).
- (U) E&M4W Microwv - Send tone and set level to permit the balancing of an external hybrid (may be required for any 4-wire E&M phone line that ultimately terminates into a 2-wire service).
- (2) Master II Base - Send tone to MASTR II Base Station and view returned level (required when using the GTI unit with a MASTR II EDACS repeater).
- (L) Level Set All - Set all allowed level adjustments in succession.
- (H) Hangup - Hang up (release) telephone line and return the line to READY status.
- (S) Silence Setup - Enter/change Silence Number (telephone number of a silent termination or equivalent).
- (M) MW Setup - Enter/change Milliwatt Number (telephone number of a milliwatt test tone source or equivalent).

Line Types Column of Table 5:

- DID - Direct Inward Dial
- E-E/E&M2W - End to End, or 2-wire E&M
- E&M4W - 4-wire E&M

Line Requirements Column of Table 5:

- Silence# - Silence Number must be entered before this adjustment can be made (except for DID lines).
- Milliwatt# - Milliwatt Number must be entered before this adjustment can be made.
- Line Free - Line status must be FREE or READY before this adjustment can be made.

To make an adjustment to the selected telephone line in the selected ELI system, press the key shown in parenthesis beside the desired adjustment.

To make adjustments to a different telephone line in the same ELI system, press the **Esc** key to go back to the **Hybrid Balance Monitor** screen. Then select (highlight) a different telephone line and press the **Enter** key to advance to the **HYBRID BALANCE AND LEVEL SETTINGS** window for the different telephone line in the same ELI system.

To make adjustments to a different telephone line in a different ELI system, press the **Esc** key three times to go back to the **Hybrid Balance Monitor** screen and the **Main Menu** screen, and to end communication with the current ELI system. Then press the **Enter** key two times to advance to the full **Main Menu** screen and the Index window to select an ELI system. Then select the desired ELI system and press the **Enter** key. When communication has been established with the desired ELI system, the **Hybrid Balance Monitor** screen will appear. Select (highlight) the desired telephone line and press the **Enter** key to advance to the **HYBRID BALANCE AND LEVEL SETTINGS** window for the different telephone line in the different ELI system.

Audio levels used in 2-wire phone systems are well documented and standardized. As noted previously, the only level setting required for a 2-wire line are the software gains in the digital signal processing (DSP) circuitry in the GTI unit. On the other hand, 4-wire lines do not have this standardization. Therefore, when working with 4-wire lines, in addition to the software gains used for 2-wire lines the GTI unit has hardware gains that must be adjusted to support each individual system.

The GTI unit is designed to operate with two types of 4-wire circuits. The first type of 4-wire circuit includes lines that terminate into a 4-wire service (such as Type 1 E&M lines). The second type of 4-wire circuit includes those that ultimately terminate into a 2-wire service (typically End-To-End or DID lines extended via a microwave system).

When the GTI unit is connected to a 4-wire line that ultimately terminates to a 4-wire service, the GTI hardware gains need to be set to ensure proper test tone levels to the phone network. Setting the gain towards the phone network is done by having the GTI unit generate a tone, measuring the level at the phone interface, and adjusting the gain. Setting the gain from the phone network is done by calling the milliwatt number (or other known signal source), monitoring the received level (through the configurator), and adjusting the gain. Once the hardware gains are set, additional changes to the apparent loudness may be made by varying the software gains.

The following 4-wire level setting procedures have been divided into two sections, the first for 4-wire circuits that terminate in a 4-wire telephone switch and the second for 4-wire circuits that terminate in a 2-wire circuit. Be sure to use the correct procedure.

(B) Balance

The **(B) Balance** adjustment is used to balance the audio hybrid when a GTI unit is connected to a 2-wire telephone circuit. The procedure to be used depends upon the line type. Each hybrid used with a 2-wire line must be balanced to reduce distortion and assure a high quality telephone circuit. A hollow sound to the telephone circuit (echo) is usually caused by a poorly balanced hybrid.

End-to-End or 2-Wire E&M Lines

To balance the hybrid for an End-to-End or E&M line, the GTI Configurator software must place a call through the hybrid to a Silence Number. The Silence Number may be the number of a quiet termination maintained by the telephone company, or the number of a nearby telephone with its mouth piece removed (that can easily be answered and hung up as needed). If a Silence Number is not presently in the GTI Configurator database for the selected line in the selected ELI system, a permanent number must be entered in the database or a temporary number must be entered using Silence Setup before the hybrid balance adjustment can begin (see the Silence Setup heading).

To balance the hybrid for the selected End-to-End or E&M line in the selected ELI system, press the **B** key when the status of the selected line is FREE or READY. It is possible for the line status to change to BUSY between the time you select an operation and the time the GTI unit receives your request. If that happens, you will get a message indicating that the line must be FREE or READY before you may select that operation. Wait for the line status to return to FREE and try again. If balancing succeeds, the hybrid R and C values will be displayed, but they do not correspond to values of resistance or capacitance (they are only relative indices). When hybrid balancing is complete, the lower case **b** under the ADJ. COMPLETED column will become an upper case **B**. At the end of the GTI Configurator session, the **B** will revert to a **b**. This allows you to identify which adjustment operations have been completed during the current GTI Configurator session.

DID Lines

If a 2-wire telephone line is connected to the GTI unit, the audio hybrid in the GTI unit will need to be balanced to assure a high quality audio circuit. To balance the hybrid for a DID line, a call must be placed from the telephone system to the DID number (telephone calls cannot be originated from a DID line). Therefore, no Silence Number is required to balance the hybrid for a DID line. If you have more than one DID line in the selected ELI system, you may need to leave each successive DID line off-hook after it is balanced (leave calling telephone connected) in order to balance the next line (to prevent the telephone company's rotary from selecting the same line). This would require placing successive calls from as many telephones as you have DID lines. Some telephone companies will cycle each incoming call to a new line, in which case you

will need only one telephone. Determine how your telephone company handles calls to the DID circuits and reserve the use of the appropriate number of telephones. Make sure each telephone has its mouthpiece removed, so that the GTI unit can properly detect quiet during the balance adjustment.

To balance the hybrid for the selected DID line in the selected ELI system, press the **Esc** key to return to the Main Menu screen. Using a telephone with its mouthpiece removed, call a DID number that has been programmed into the database as a line type requiring the **B (Balance)** adjustment. If the call is successful, the status of the called DID line will change to **ADJUST**, and the **HYBRID BALANCE AND LEVEL SETTINGS** window will appear with the **(B) Balance** menu item highlighted. Type **B** (for Balance) to have the GTI Configurator instruct the GTI unit to perform hybrid balance. If balancing succeeds, the hybrid R and C values will be displayed, but they do not correspond to values of resistance or capacitance (they are only relative indices). When hybrid balancing is complete, the lower case **b** under the ADJ. COMPLETED column will become an upper case **B**. At the end of the GTI Configurator session, the **B** will revert to a **b**. This allows you to identify which adjustment operations have been completed during the current GTI Configurator session.

To balance the hybrid for an additional DID line, press **Esc** key to return to the Main Menu screen. The status of the previously balanced DID line will be **READY**, and will be unavailable for additional calls. If the telephone company does not cycle incoming DID calls, keep the current telephone off-hook and dial the same DID number from another telephone with its mouthpiece removed. If the telephone company cycles incoming DID calls, hang up the telephone and redial the DID number to call the next DID line. Proceed with the adjustment procedure given in the paragraph above. Repeat this process for all DID lines. Remember to hang up all telephones when you are done.

(T) Audio To Ph.

The **(T) Audio To Ph.** adjustment is used to adjust the software gain of the GTI unit for audio to the telephone line. The GTI defaults to a gain for an average phone line and the Audio to Ph. adjustment raises or lowers the audio gain in 1 dB steps. This is a subjective adjustment and should only be adjusted if overall radio user voice levels are perceived to be soft (or loud). It should be noted that if this adjustment is too high, background noise from the radio may become excessive.

To make the Audio to Ph. adjustment for the selected line in the selected ELI system, press the **T** key (the status of the selected line does not matter for this adjustment). A bar graph will appear showing the current level setting in the GTI unit. To change the level setting, use the arrow keys to move the highlighted section of the bar graph to the left or right. For finer adjustments, press the **Ctrl** key along with the arrow keys to adjust in single increments. Once the desired level has been set, wait one second for the new level to be registered by the GTI Configurator. The GTI Configurator will send the new level to the GTI unit and receive a confirmation that the level was set. In the intervening time the bar graph will dim until it receives the confirmation. When you are satisfied with the adjustment, press the **Enter** key to return to the menu. If you press the **Enter** key before the one second delay time, any new setting will not be sent to the GTI unit.

(F) Audio Frm Ph.

The **(F) Audio Frm Ph.** adjustment is used to adjust the software gain of the GTI unit for audio from the telephone line. The GTI defaults to a gain for an average phone line and the Audio from Ph. adjustment raises or lowers the audio gain in 1 dB steps. This is a subjective adjustment and should only be adjusted if overall telephone user voice levels are perceived to be soft (or loud). It should be noted that if this adjustment is too high, background noise from the telephone may become excessive.

To make the Audio from Ph. adjustment for the selected line in the selected ELI system, press the **F** key (the status of the selected line does not matter for this adjustment). A bar graph will appear showing the current level setting in the GTI unit. To change the level setting, use the arrow keys to move the highlighted section of the bar graph to the left or right. For finer adjustments, press the **Ctrl** key along with the arrow keys to adjust in single increments. Once the desired level has been set, wait one second for the new level to be registered by the GTI Configurator. The GTI Configurator will send the new level to the GTI unit and receive a confirmation that the level was set. In the intervening time the bar graph will dim until it receives the confirmation. When you are satisfied with the adjustment, press the **Enter** key to return to the menu. If you press the **Enter** key before the one second delay time, any new setting will not be sent to the GTI unit.

(P) E&M4W To Ph.

The **(P) E&M4W To Ph.** adjustment is used to adjust the hardware gain in the GTI unit for audio to the 4-wire E&M line. Before this adjustment can be made, the telephone number of a device to measure the audio tone level across a quiet termination must be entered using **(S) Silence Setup** (or it can be entered into the GTI Configurator database).

To make the **(P) E&M4W To Ph.** adjustment for the selected line in the selected ELI system, press the **P** key (the status of the selected line must be FREE or READY for this adjustment). The GTI Configurator software will then instruct the GTI unit to call the Silence Number for the device to measure the audio tone level across a quiet termination. If the call to the Silence Number is successful, a bar graph will appear showing the current hardware gain setting in the GTI unit. The **Tab** key is used to toggle the audio tone from the GTI unit off and on. Confirm that the tone is turned on by having someone listen for the tone at the receiving end (location of the device to measure the audio tone level across a quiet termination). With the tone turned on, adjust the hardware gain to get the required level across the quiet termination (see telephone company). To change the gain setting, use the arrow keys to move the highlighted section of the bar graph to the left or right. For finer adjustments, press the **Ctrl** key along with the arrow keys to adjust in single increments. Once the desired gain has been set, wait one second for the new gain to be registered by the GTI Configurator. The GTI Configurator will send the new gain to the GTI unit and receive a confirmation that the gain was set. In the intervening time the bar graph will dim until it receives the confirmation. When you are satisfied with the adjustment, press the **Enter** key to return to the menu. If you press the **Enter** key before the one second delay time, any new setting will not be sent to the GTI unit. If the tone was left on, it will be turned off.

(G) E&M4W Frm Ph.

The **(G) E&M4W Frm Ph.** adjustment is used to adjust the hardware gain in the GTI unit for audio from the 4-wire E&M line. Before this adjustment can be made, the telephone number of a device to send a one milliwatt audio tone level must be entered using **(M) Milliwatt Setup** (or it can be entered into the GTI Configurator database).

To make the **(G) E&M4W Frm Ph.** adjustment for the selected line in the selected ELI system, press the **G** key (the status of the selected line must be FREE or READY for this adjustment). The GTI Configurator software will then instruct the GTI unit to call the Milliwatt Number. If the call to the Milliwatt Number is successful, two bar graphs will appear. The upper bar graph shows the instantaneous level (after the hardware gain in the GTI unit) of the audio test tone received from the Milliwatt Number, and the lower bar graph shows the current hardware gain in the GTI unit. The audio test tone level (shown in the upper bar graph) can be changed by adjusting the hardware gain (shown in the lower bar graph). Adjust the hardware gain to get the level required by the EDACS repeater from the telephone line (see manual for EDACS repeater). (If the upper graph is fluctuating significantly, you may have dialed the wrong number.) To adjust the hardware gain, use the arrow keys to move the highlighted section of the lower bar graph to the left or right. For finer adjustments, press the **Ctrl** key along with the arrow keys to adjust in single increments. Once the gain has been adjusted to get the desired audio test tone level, wait one second for the new gain to be registered by the GTI Configurator. The GTI Configurator will send the new gain to the GTI unit and receive a confirmation that the gain was set. In the intervening time the bar graph will dim until it receives the confirmation. You should notice that the audio level (upper graph) changes in response each new gain setting. When you are satisfied with the adjustment, press the **Enter** key to return to the menu. If you press the **Enter** key before the one second delay time, any new setting will not be sent to the GTI unit.

(U) E&M4W Microwv

The **(U) E&M4W Microwv** adjustment is used to send an audio tone to a 4-wire line that ultimately terminates into an audio hybrid and a 2-wire line, so that this remote audio hybrid can be balanced. Before this adjustment can be made, the telephone number of a quiet termination must be entered using **(S) Silence Setup** (or it can be entered into the GTI Configurator database).

To make the (U) **E&M4W Microwv** adjustment for the selected line in the selected ELI system, press the U key (the status of the selected line must be FREE or READY for this adjustment). The GTI Configurator software will then instruct the GTI unit to call the Silence Number. If the call to the Silence Number is successful, a bar graph will appear showing the current audio level received from the 4-wire line. The **Tab** key is used to toggle the audio tone from the GTI unit off and on. Confirm that the tone is turned on by having someone listen for the tone at the receiving end (location of the quiet termination). Adjust the remote hybrid balance per the manufacturer's instructions, using the current audio level received from the 4-wire line as a guide (adjust hybrid balance to get the lowest possible audio level received from the 4-wire line). When you are satisfied with the adjustment, press the **Enter** key to return to the menu. If the tone was left on, it will be turned off.

(2) Master II Base

The (2) **Master II Base** adjustment is used to have the GTI unit send a test tone to the MASTR II EDACS repeater for transmit path level adjustments in the repeater, and measure a test tone level received from the MASTR II EDACS repeater for receive path level adjustments in the repeater. This adjustment should be made when a GTI unit is connected to a MASTR II EDACS repeater, regardless of the type of telephone circuit.

To make the (2) **Master II Base** adjustment for the selected line in the selected ELI system, press the 2 key (the status of the selected line does not need to be FREE or READY, but turning on the test tone will disrupt any call using the line). A bar graph will appear showing the current audio level received from the MASTR II EDACS repeater. The **Tab** key is used to toggle the audio test tone from the GTI unit off and on. Adjust the levels to and from the MASTR II EDACS repeater using the System Alignment Guide in the maintenance manual (LBI-38853) for MASTR II Stations used in trunked systems. When you are satisfied with the adjustment, press the **Enter** key to return to the menu. If the tone was left on, it will be turned off.

(L) Level Set All

The (L) **Level Set All** adjustment is used to adjust the software gains of the GTI unit for audio to and from the telephone line, and to adjust the hardware gains in the GTI unit for audio to and from the 4-wire E&M line, all in one operation. This adjustment should only be used when one or more levels have been adjusted too low to allow calling the Silence or Milliwatt Number for an individual adjustment.

CAUTION

If you are currently making adjustments through the internal modem on the GTI unit, it is possible to adjust the levels low enough for the line you are calling on, to make the modem lose carrier and disconnect the call. If this happens, you may not be able to access that line again. You might then have to take the GTI Configurator to the site and connect it directly to one of the GTI units in order to adjust the levels high enough to allow the internal modem to function correctly once again.

(H) Hangup

The (H) **Hangup** operation is used to hang up (release) the telephone line and return it to READY status.

(S) Silence Setup

The (S) **Silence Setup** operation is used to temporarily change the Silence Number for the selected telephone line in the selected ELI system (as soon as you escape from the **HYBRID BALANCE AND LEVEL SETTINGS** window, the change will end). A Silence Number is the telephone number of a line terminating device used to facilitate the balancing of an audio hybrid in a device connected to a 2-wire telephone line. The line terminating device may be a telephone company quiet termination, or a nearby telephone (with its mouthpiece disconnected) that can easily be answered and hung up as needed. A

Silence Number will be needed by the GTI Configurator before the hybrid balance adjustment can be made. A Silence Number may be entered each time a hybrid balance adjustment is to be performed. However, if you will be using the same Silence Number for a long time, it may be easier to enter it into the GTI Configurator database, so you won't have to enter it each time a hybrid balance adjustment is to be performed.

To temporarily enter a Silence Number, press the **S** key (for Silence Setup) to view the **CHANGE SILENCE NUMBER** window, and type in the Silence Number. When finished, press the **Enter** key to return to the **HYBRID BALANCE AND LEVEL SETTINGS** window.

To enter a Silence Number into the GTI Configurator database, select the **Telco Config** operation from the **Edit** group in the Main Menu screen and press the **Enter** key. Select the desired system in the **INDEX** window and press the **Enter** key. Select the first telephone line from the next **INDEX** window and press the **Enter** key. Press the ↓ key 3 times to get to the **Edit C.O. Numbers** field and press the **Y** key. Press the **Page Down** key to move to the same field for the next telephone line and press the **Y** key. Repeat for all telephone lines. Press the **Page Up** key until you get back to the field for the first telephone line and press the **Enter** key to bring up the **CO_NUMBERS** pop-up window. Type the number (up to 12 digits) into Silence Number field. Press the **Page Down** key to move to the same field for the next telephone line and type the number into Silence Number field. Repeat for all telephone lines. When finished, press the **Esc** key 3 times to return to the Main Menu screen.

(M) MW Setup

The **(M) MW Setup** operation is used to temporarily change the Milliwatt Number for the selected telephone line in the selected ELI system (as soon as you escape from the **HYBRID BALANCE AND LEVEL SETTINGS** window, the change will end). A Milliwatt Number is the telephone number of a one milliwatt test tone source used to facilitate the setting of the received audio level in a device connected to a telephone line. The test tone source may be a telephone company test tone source, or a nearby telephone (with its mouthpiece disconnected and connected to a test tone source adjusted to the one milliwatt level at the output of the telephone) that can easily be answered and hung up as needed. A Milliwatt Number will be needed by the GTI Configurator before receive level adjustments can be made. A Milliwatt Number may be entered each time receive level adjustments are to be performed. However, if you will be using the same Milliwatt Number for a long time, it may be easier to enter it into the GTI Configurator database, so you won't have to enter it each time receive level adjustments are to be performed.

To temporarily enter a Milliwatt Number, press the **M** key (for MW Setup) to view the **CHANGE MILLIWATT NUMBER** window, and type in the Milliwatt Number. When finished, press the **Enter** key to return to the **HYBRID BALANCE AND LEVEL SETTINGS** window.

To enter a Milliwatt Number into the GTI Configurator database, select the **Telco Config** operation from the **Edit** group in the Main Menu screen and press the **Enter** key. Select the desired system in the **INDEX** window and press the **Enter** key. Select the first telephone line from the next **INDEX** window and press the **Enter** key. Press the ↓ key 3 times to get to the **Edit C.O. Numbers** field and press the **Y** key. Press the **Page Down** key to move to the same field for the next telephone line and press the **Y** key. Repeat for all telephone lines. Press the **Page Up** key until you get back to the field for the first telephone line and press the **Enter** key to bring up the **CO_NUMBERS** pop-up window. Type the number (up to 12 digits) into Milliwatt Number field. Press the **Page Down** key to move to the same field for the next telephone line and type the number into Milliwatt Number field. Repeat for all telephone lines. When finished, press the **Esc** key 3 times to return to the Main Menu screen.

VOICE PROMPTS

OVERVIEW

Voice prompts is the most flexible type of telephone call prompts available in the ELI option. (Telephone call prompts are an aid to a telephone user, and do not apply to a radio user.) Other choices are tone prompts and no prompts. The desired type of telephone call prompts can be selected on a system-wide basis or a line-by-line basis. The system-wide telephone call prompts type is selected in the PROMPTS pop-up window when you enter Y in the Edit Voice Prompts field in the System Configuration screen (see Figure 40). The line-by-line telephone call prompts type is selected in the Voice Prompts field of the Telco Configuration screen (see Figure 35). The results of telephone call prompt type selections are shown in Table 6.

```

EDIT : SYSTEM CONFIG (SUPERVISOR mode)
--INDEX
Num      System Name      Country Net
001 SHARP TOP             USA      002
002 HIGH PEAK            USA      001
003 APPLE ORCHARD        USA      002
004 CHANDLERS            USA      001

--HELP
Enter the system wide security code to
enter from the keypad once the system
has been accessed for programming the
Voice Prompts, range 0000-9999.

To disable security code requirement,
press the space bar to blank out field

SYSTEM CONFIG
System Number: [001]
System Name: [SHARP TOP ]

Country: [USA ]
Network ID: [002]
Network Name: BEDFORD

--PROMPTS
Security Code: [ ]

Message                               Use Tone Vc
                                      Levl Tm
1 Welcome, please over dial V      5 04
2 Thank You, ringing V             5 04
3 System Busy/Radio Busy V         5 04
4 Call Denied, invalid # V         5 04
5 Radio didn't answer V            5 04
6 Call is disconnecting V           5 04
7 Call queued, please wait V        5 04
8 Remaining Tones T                 5

Voice Time -- Available:030 Total:028
    
```

Figure 40 - System Configuration Screen with Prompts Pop-up Window

Table 6 - Results of Telephone Call Prompt Type Selections

SYSTEM-WIDE BASIS (SYSTEM CONFIGURATION)	LINE-BY-LINE BASIS (TELCO CONFIGURATION)	RESULTS (SPECIFIC LINE)
No Prompts Selected	Voice Prompts? - Yes	No Prompts
No Prompts Selected	Voice Prompts? - No	No Prompts
Tone Prompts Selected	Voice Prompts? - Yes	Tone Prompts
Tone Prompts Selected	Voice Prompts? - No	Tone Prompts
Voice Prompts Selected	Voice Prompts? - Yes	Voice Prompts
Voice Prompts Selected	Voice Prompts? - No	Tone Prompts

The GTI configurator provides a flexible method of allocating time among voice prompts, and designating which (if any) prompts are to be played. When you select (highlight) the **Edit Voice Prompts** field in the **SYSTEM_CONFIG** window of the **SYSTEM_CONFIG** screen, type Y, and press the **Enter** key, a **PROMPTS** pop-up window will appear (see Figure 40). This pop-up window allows you to select no prompt, a tone prompt, or a voice prompt for each of the eight prompt numbers. It also allows you to adjust the loudness (level) of each tone prompt and the allocated time for each voice prompt. The total available and total allocated times for voice prompts are shown at the bottom of this pop-up window. Once time has been allocated for voice prompts, they can be recorded by placing a telephone call to any GTI unit in the system (see Programming Access and Programming Commands headings). After voice prompts are recorded, they will automatically be cloned to the other GTI units in the system (this can take up to 20 minutes).

NOTE

If the allocated time for any voice prompt is changed, the voice messages for all prompt numbers higher than that of the changed prompt will be erased and must be re-recorded.

Each voice prompt message is designed to be played at a certain point in a call. The suggested messages, as well as the point in a call where each message is played, are shown in Table 7. Recall that voice prompts are heard only over the telephone; never over the radios.

Table 7 - Suggested Voice Prompt Messages

Prompt Number	Suggested Message	Point in a Call Where Each Message Is Played
1	Welcome, please over dial	This is heard when the GTI unit answers an incoming end-to-end line before the caller over dials the radio LID/GID.
2	Thank You, ringing	This is heard after the caller successfully over dials the radio LID/GID. The prompt is followed by ringing tones.
3	System Busy/Radio Busy	This is heard after the caller successfully over dials the radio LID/GID, but the system cannot connect to the radio for any reason (such as radio busy, channel not available, etc.).
4	Call Denied, invalid #	This is heard after the caller successfully over dials the radio LID/GID, but the system determines that the radio ID is invalid or all radio channels enabled for ELI calls are failed.
5	Radio didn't answer	This is heard after the caller successfully over dials the radio LID/GID and the radio is ringing, but the radio doesn't answer within the 10-ring time out. (The interconnect hang time in the Site Controller personality or System Manager database needs to be greater than 60 seconds in order for this prompt to be played. If this interconnect hang time is less than 60 seconds, the hang time limit is met before the 10-ring limit is met, and prompt 6 is played instead.)
6	Call is disconnecting	This is heard any time after a call is in progress and the system terminates the call for any reason.
7	Call queued, please wait	This is heard after the caller successfully over dials the radio LID/GID, but the system determines that all radio channels enabled for ELI calls are busy. (When a radio channel enabled for ELI calls becomes available, prompt 2 will be played, followed by ringing.)

PROGRAMMING ACCESS

To gain access to programming voice prompts on a GTI unit configured for an End-to-End (also E&M using End-to-End emulation) line, dial the number of the line connected to the GTI unit. Then wait for the prompt and dial 99999. To gain access to programming voice prompts on a GTI unit configured for a DID (also E&M using DID emulation) line, dial the DID user number setup specifically for Voice Prompts. In either case, the GTI unit will then respond with one of the following tone prompts:

- Two ding- dongs indicating that the GTI unit is now ready to receive voice prompt commands.
- A short burst of dial tone indicating that it is ready for you to enter the voice prompt security code, if enabled.
- A short burst of busy tone indicating that the system is busy (see below).

The process of cloning voice prompts from one GTI unit to the remaining GTI units in the system is a highly data intensive operation. For this reason, certain other GTI operations which are also data intensive cannot be active while voice prompt cloning is in progress (the converse is also true). Examples of other data intensive operations are GTI database cloning, and any active GTI Configurator session with a GTI unit in the system. (Active GTI Configurator sessions are those in the **Comm** group and include but are not limited to system monitoring, database uploads, billing retrieval, etc.). The following scenarios describe what to expect for the possible conflicts that could occur when a second data-intensive operation is attempted. Where possible, these priorities are enforced by the GTI units.

- Voice prompt programming access in general is denied (short burst of busy tone) if a GTI Configurator is involved in an active session with a GTI unit in the same system. To access voice prompt programming (to erase, play back, or record), terminate the active GTI Configurator session.
- Even after terminating an active GTI Configurator session, it is still possible that voice prompt programming may be denied for a short while. Voice prompt programming access in general is also denied (short burst of busy tone) if GTI database cloning is in progress following an Update operation as part of the just terminated active GTI Configurator session. Access for voice prompt programming is not possible until the database cloning (typically less than 5 minutes) is complete.
- If voice prompt recording is in progress, it is possible for an active GTI Configurator session to be established, and the cloning of the voice prompts will be delayed until the active GTI Configurator session is terminated. This could cause confusion if you were not aware of the active GTI Configurator session, but noticed that the voice prompts did not clone right away. The best way to avoid this confusion is to not establish an active GTI Configurator session during voice prompt recording.
- If voice prompt recording has been completed, but the cloning of these voice prompts has not yet begun, it is again possible for an active GTI Configurator session to be established, causing the same confusion as in the previous scenario. Again, the best way to avoid this confusion is to not establish an active GTI Configurator session until the entire voice prompt recording/cloning operation has been completed.
- Once voice prompt cloning has begun, the GTI Configurator will be denied access for an active session until the voice prompts cloning process has been completed (can take up to 20 minutes).

PROGRAMMING COMMANDS

There are three voice prompt programming commands, each made up of two parts. The first part says what to do. The second part says what prompt number to do it to. The following numbers are used for the first part:

- 0 Erase
- 2 Play
- 9 Record

For example, the command 05 says to erase the message for voice prompt number 5, the command 24 says to play back the message for voice prompt number 4, and the command 91 says to record the message for voice prompt number 1.

There are two additional voice prompt programming commands, each made up of one part. The following DTMF characters are used alone:

- * Stop Recording Message
- ## Hang Up Phone Line

To avoid dead time, use the star (*) key to mark the end of a message when the message is shorter than the allotted time.

NOTE

You must use the star (*) key to mark the end of a message when the message is shorter than the allotted time and your system uses dial-click signaling. Any dial-click signaling during a dead time (between the end of an unmarked message and the allotted time for that message) will not be detected.

As many prompts as you like may be recorded, played, erased, and re-recorded without hanging up (provided you don't wait more than 10 seconds in between). When you are through programming, you can speed up the start of the cloning process by pressing the pound (#) key twice to hang up (otherwise the cloning will have to wait for the 10-second timeout). The following prompts are given during programming to guide you:

- Two Ding-Dongs: - This prompt is sent when you first enter the programming mode.
- Fast Busy Tone: - This prompt is sent if you wait more than 10 seconds between programming activities. The GTI unit hangs up the line after this prompt.
- Three Ding-Dongs: - This prompt is sent after an invalid command or message number.
- Six Beeps: - This prompt is sent at the beginning of recording a message.
- Eight Beeps: - This prompt is sent to indicate a message is being erased.
- One Ding-Dong: - This prompt is sent after a message has been erased or the maximum length of the message has been recorded.

BILLING FILES

SEPARATE BILLING FILE DIRECTORY

Billing files for Call Detail Records will be stored in the GTICON (or whatever you called it) directory unless a separate directory named GTIBILL is set up. The GTI Configurator software will first look for a separate GTIBILL directory. If that directory has been set up, the GTI Configurator software will put the billing files there. If that directory has not been set up, it will put the billing files in the GTICON (or whatever you called it) directory. If you will be using the Zebra billing package, you must set up a separate GTIBILL directory. (For more information, see the Zetron manual for the Zebra billing package.) To set up a separate GTIBILL directory, use the following procedure:

1. Turn on the office PC being used as the GTI Configurator, and wait until the characters C:\>_ are displayed on the screen. If the office PC is already on, exit any program that may be running, type "CD\", and press the **Enter** key. The characters C:\>_ should then be displayed on the next line of the screen.
2. Type "MKDIR", press the Space bar, type "GTIBILL", and press the **Enter** key. The characters C:\>_ should then be displayed on the next line of the screen.
3. Type "DIR" and press the **Enter** key. A list of all files and directories stored in the main (root) directory of the C drive should then be displayed on the screen. Look for the GTIBILL directory (last entry in directory list) to verify that a separate GTIBILL directory is now set up.

RETRIEVE CALL DETAIL DATA

When an IAM (Interconnect Accounting Manager) unit is connected (through the subscriber bus) to each GTI unit in the ELI system, it will store a call detail record for each interconnect call. You can obtain the call detail records from the IAM by using the GTI Configurator software on your office computer to call a GTI Unit in your system, retrieve the data, and write computer files to your hard disk. A new computer file is created for each GTI unit's data for each retrieval session. The call detail buffer in the Accounting Manager can hold approximately 60,000 records. When the data is retrieved and stored to disk successfully, the records are automatically cleared from the IAM.

NOTE

You can get more effective use of the buffer by discarding calls that are shorter than a specified period of time. Depending upon the setting in the System Config database, you can save storage space and retrieval time by not storing short calls. Refer to the "Min. Call Time to Store" field.

You can retrieve the call detail buffers as often as you wish. Each day's retrieval is stored in a separate computer file. If you retrieve more than once per day, your data is appended to end of the data in the daily file. To manually retrieve the call detail records from the IAM, select (highlight) **Retrieve Billing** from the **Comm** menu in the Main Menu screen. The records are written into files on your hard disk in the directory named GTIBILL. If there is no directory by this name, the records are written into files on your hard disk in the directory named GTICON.

You can have the Configurator perform an automatic retrieval in two ways. Before an automatic retrieval can be performed, however, the **Enable Auto Retrieve Billing** field in the System Configuration must be set to **Y** and start time for billing retrieval (under OTHER/Auto download) must be set. The placement of the record files is the same as the manual retrieval.

1. You can invoke the retrieval via the DOS command line. Typing GTICON ESC H A W ESC ESC ESC will invoke the automatic retrieval function.
2. Select Auto download from the OTHER menu. Then select W to wait for the download to start.

CLEAR CALL DETAIL BUFFERS

If call detail retrieval is completed successfully the records are automatically cleared from the Accounting Manager. If a transfer is interrupted midstream, the records will remain intact in the Accounting Manager. If you need to clear your Call Detail Records and don't wish to retrieve them first, they can be cleared by selecting the Clear Call Detail Buffers option in the GTI configurator Comm Other menu.

BACKUP CALL DETAIL DATA

It is a good idea to backup your retrieved call detail records to removable media, such as floppy diskettes. This is especially important at the end of each billing cycle when you move the data to your billing system for posting. To perform a data backup, select File Backup Call Detail from the main menu.

Before beginning a backup, you need to prepare fresh diskettes with DOS compatible formatting information. You will need approximately one 360K diskette for every 6000 records (20,000 records on a 1.2M diskette). So format enough blank diskettes before you start the backup process (FORMAT A: from the DOS C> prompt).

It is also a good idea to put sticky labels on the diskettes that have the date and disk sequence number (GTICON SMDR - today's date - disk #n). As you remove each backup diskette from the computer, it is a good idea to "write protect" the diskette (black label covering the notch on 5-1/4" media; shutter open on 3-1/2" media).

The GTI Configurator will give you precise instruction on when to insert your formatted floppy diskettes into the computer. Make a new set of backups for each week in the billing period. That way, you always have archived data for billing should your hard disk data become damaged.

If you need to restore the database from backup diskettes onto the computer hard disk, use the File Restore Call Detail Records menu item. The GTI Configurator will give you precise instruction on when to insert your backup diskettes into the computer. Make sure to insert the correct set of backups, and in the correct order. Before you insert each backup diskette into the computer, it is a good idea to "write protect" the diskette (black label covering the notch on 5-1/4" media; shutter open on 3-1/2" media).

CALL DETAIL FILE FORMAT

Telephone call detail information, retrieved from the optional IAM unit(s), is stored as ASCII files on the GTI Configurator's hard disk. These files will be located in the GTICON directory, unless a separate billing file directory named GTIBILL was set up. Once the call detail information is loaded into these files, you may use an appropriate billing package to read the files and create billing information.

Call detail information for each GTI unit in each system is contained in a separate file. The call detail information is in the form of individual Call Detail Data Records, each being the same fixed number of bytes in length and corresponding to one telephone call handled by the line-connected GTI unit. Within each file, the individual Call Detail Data Records are sorted chronologically. The files are named C###MMDD.D\$\$, where: MMDD is the current month and day, ### is the system number, \$\$ is the telco line number, and D indicates that these are Call Detail Data Record files.

If an error occurs when retrieving the call detail information from the optional IAM unit(s), such as an interruption of the modem call, the current file will be renamed C###MMDD.T\$\$\$. If it is not possible to retrieve the call detail information completely and accurately, due to a complete failure of the GTI unit, this file can be renamed C###MMDD.D\$\$ for use by the billing package.

For more information about the Call Detail Data Record format, see the Billing Correlation Unit manual number given in the Introduction section of this manual.

SETTING TIME AND DATE

It is very important that you set the time and date when you install GTI units, since some of the advanced operating features of the GTI units utilize its built-in clock chip that keeps track of the time of day and day of week (such as telephone call detail date and time-of-day marking).

To set the time and date, select (highlight) the **Other** operation from the **Comm** group in the Main Menu screen, and press the **Enter** key to display the Other Menu screen. Then select the **Time** operation from the **Set** category in the Other Menu screen, and follow the on-screen instructions to set the time and date in the GTI units. If you want the PC's internal time and date to be sent to the GTI units whenever this operation is selected, the "Use Auto Time Set?" field in the System Configuration screen (see Figure 34) must contain a "Y" for yes. If you want to manually enter the time and date to be sent to the GTI units whenever this operation is selected, the "Use Auto Time Set" field in the System Configuration screen must contain a "N" for no. The year is entered as the last two digits of the year, and is supported until the year 2079.

MISCELLANEOUS

Any GTI communication session established and all the related communication activity are captured and stored in a file named SESSION.AUD in the GTICON directory. Any other activities, such as database editing and viewing, are not stored in this file. This file is overwritten for each GTI Configurator session.

GLOSSARY

BCU	Billing Correlation Unit
Communication Session.....	A communication session with a GTI unit takes place each time the GTI Configurator software establishes communications with a GTI unit (when any operation from the Comm group is selected). (Do not confuse with a GTI Configurator session.)
DID	Direct Inward Dial
DTMF	Dual-Tone-Multi-Frequency
EDACS	Enhanced Digital Access Communications System
ELI.....	Enhanced Local Interconnect (ELI) is a telephone interface option for a system of EDACS repeaters under the direction of the Site Controller computer.
GTI	The Global Telephone Interconnect (GTI) serves as the interface for one repeater channel, and as the interface for one telephone line, all in a single convenient unit.
GTI Configurator	The GTI Configurator is the office PC used by the system operator to run the GTI Configurator software.
GTI Configurator Session	A GTI Configurator session takes place each time the GTI Configurator software is run. (Do not confuse with a communication session with a GTI unit.)
GTI Configurator Software.....	The GTI Configurator software is a PC-based, menu-driven program that allows the system operator to set up the GTI(s) and optional IAM, retrieve GTI call records, and monitor the system activity via a monitor screen.
IAM	Interconnect Accounting Manager
Milliwatt Number	A milliwatt number is the telephone number of a one milliwatt test tone source provided to facilitate the adjustment of the received audio level from a telephone line.
POTS	Plain Old Telephone Service (also called End-to-End) is the most common subscriber line available from the telephone company in the US
PC	Personal Computer
PSTN	Public Service Telephone Network
Silence Number	A silence number is the telephone number of a passive (silent) line terminating device provided to facilitate the balancing of an audio hybrid for a telephone line.

MENU TREE

(Figure Number of Sample Screen Is Shown in ())

UPDATE MENU

Global (4)	By type (5)
Changes	System config
Entire Database	Telco config
	DID numbers

GET/VERIFY MENU

Entire (6)	Verify (7)
Database Verify	System config
Database Retrieve	Telco config
	DID numbers

MAIN MENU

Edit (1)	View (2)	Comm (3)	File (17)	otHer (21)
System config (28)(31)(33)(34)(39)	System config	Update	Print	change PC modem parameters
Telco config (35)	Telco config	get/Verify	Backup	change Database manager password
DID numbers (36)	DID numbers	Retrieve Billing	Restore	Auto download
Country data (37)	Country data	Monitor (8)(29)		Exit
		Status info (9)(10)(11)		
		Balance & levels (12)		
		Other		

OTHER MENU

Set (13)	Clear (14)	Reset (15)	View (16)
Time	Call detail	Units, soft	Unit Activity
Password		Units, hard	
Modem string			

RESTORE MENU

Data type (20)
Configuration data
call Detail

PRINT MENU

By Type (18)
System config
Telco config
DID numbers
Country data

BACKUP MENU

Data type (19)
Configuration data
call Detail

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