



**Retriever for Palm[®]
Operating Manual for use with
900 Series AMR System**

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TMRetrieverPalm 0906

OVERVIEW

About Blue Tower Communications

Blue Tower Communications is a global provider of automatic meter reading (AMR) systems for the utility industry. Through worldwide distribution agreements, Blue Tower's powerful product solutions enable water, gas, and electric utilities to improve customer service, cost-efficiency and meter reader safety through the use of automatic meter reading systems.

Blue Tower specializes in hand-held and mobile radio based automatic meter reading with a wide range of uses. Standard interfaces and protocols enable products to integrate with popular meters, hand-held computers, billing systems and route management software.

About Retriever for Palm[®]

Retriever for Palm is an inexpensive handheld solution for collection of readings from meters fitted with Blue Tower Transponders and for manual entry of meter readings. Retriever for Palm runs on Palm OS devices and is supplied by Blue Tower with a rugged handheld computer. It is an ideal entry-level application for those introducing mobile AMR. The application takes a Route file from Utility Billing or Route Management software application and returns it after the meters are read with the readings included.

Retriever for Palm is licensed to Blue Tower from Ionware, an established provider of PalmOS applications for mobile utility workers.

Features

- Compact equipment
- Flexible file format interface to Route file
- Can be used in walking or in driving mode
- Unlimited time for program evaluation. Unlock code issued after licensing for full use
- Summary screen displays number of meters in the route, number of meters read, number missed, orphans, elapsed time and percent read.
- Compatible with both Blue Tower HandTrackIT and FastTrackIT receivers

New features for 2006

- Meter reader identification
- Supports notes to and from the meter reader
- Identification of 'skipped' meters.
- Search function

PREFACE

What is the purpose of this manual?

This manual is intended to provide technical reference on the Retriever for Palm Software for meter reading personnel and for those planning the meter reading process.

Before attempting any installation, testing, or operation of the software, read this entire manual.

Who do I contact if I have a question?

Questions not covered by this manual should be directed to your Blue Tower distributor. If a distributor is not available, contact Blue Tower directly – contact info is on page ii (inside front cover).

GLOSSARY

AMR	Automatic Meter Reading
ID	Identity
LCD	Liquid Crystal Display
LED	Light Emitting Diode
MIU	Meter Interface Unit
OS	Operating System
RF	Radio Frequency

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CHAPTER 1: INTRODUCTION

This chapter provides an overview of function and ordering details.

1.1 General

The Retriever for Palm Software is used for collection of meter readings – both from meters equipped with Blue Tower Transponders and by manual entry. To help understand its place in the meter reading system, an overview of the periodic reading cycle is described below.

The Retriever package populates Route files with meter readings taken during the reading process. The Route files can come from a Utility Billing or Meter Reading Route Management Software Application. Alternatively, for small applications and trials, Route files can be prepared locally using spreadsheet applications.

There are two main software components contained within Retriever for Palm package:

FileExchange.exe – runs on PC to process routes and interpret readings coming from the handheld computer(s). This utility will usually be used in the meter reading office.

Retriever.prc - resides on PalmOS handheld and actually performs the work of entry of meter readings into route file. It allows manual entry of readings or takes readings from the radio receiver.

1.2 Overview of Meter Reading Cycle

The meter reading cycle using Retriever for Palm is as described below (see figure 1-2).

- a. The Route file is generated by Billing software (or other source) and is placed in a directory where the FileExchange application can access it.
- b. FileExchange is used on PC to process the route file into the form used by the handheld (known as RouteBIF).
- c. The RouteBIF is transferred to the handheld computer.
- d. The handheld application (Retriever) is launched and the route file is loaded ready for reading.
- e. The handheld computer is attached to the Blue Tower Receiver and the route is driven or walked.
- f. After all readings are collected, the data is unloaded (saved) by Retriever to create a file of completed readings to be sent back to the FileExchange application (known as ReadingBIF).
- g. The handheld is returned back to the utility office where the ReadingBIF is transferred back to the desktop computer.
- h. FileExchange is launched to interpret the ReadingBIF, run a report and prepare a file in a defined location so billing software can find the readings.

The cycle will repeat at the top of the next reading cycle - next month if reading on monthly cycle.

1.3 Flexibility

Retriever for Palm offers some flexibility to ease the process of integrating the package into existing systems.

- FileExchange permits you to retrieve files from any location on computer network and save completed files to any location.
- FileExchange's flexible interface feature enables interfacing with Route files in any "flat" format. Route file formats can be fixed width or delimited. Tools are provided to map the data parameters to their positions in the file format used by the utility. Formats for upload and download can be different. This avoids the need for customization of the application to enable interface with a new Route file format.
- As well as flat file formats, FileExchange can also read and write in MVRS and Enterprise 5000 format.
- Multiple data interface maps can be created and held on the PC so that the application can be used with more than one file format – eg if user is reading meters for multiple utilities.
- The package is distributed with BLUETOWER Flat and MVRS data maps as standard.

1.4 Rugged handheld computer Package

The software is usually supplied from Blue Tower in a package with rugged waterproof handheld computer. At time of writing this handheld is Meazura from Aceeca (pictured below - <http://www.aceeca.com> for details). The package includes custom interface module for serial communication and power supply to receiver.

The contents of the package are:

- Palm desktop software application
- Rugged handheld computer (including custom serial interface module, charger and cable for synchronization to PC)
- Interface cable for connection to HandTrackIT (or FastTrackIT depending on customers order)

The Retriever for Palm application can be downloaded from Blue Tower's restricted web site (www.bluetowercomms.com/restricted/retrieverforpalm). Contact Blue Tower for more details.

Connect the interface cable to the Aceeca handheld as shown in figure 1-1.

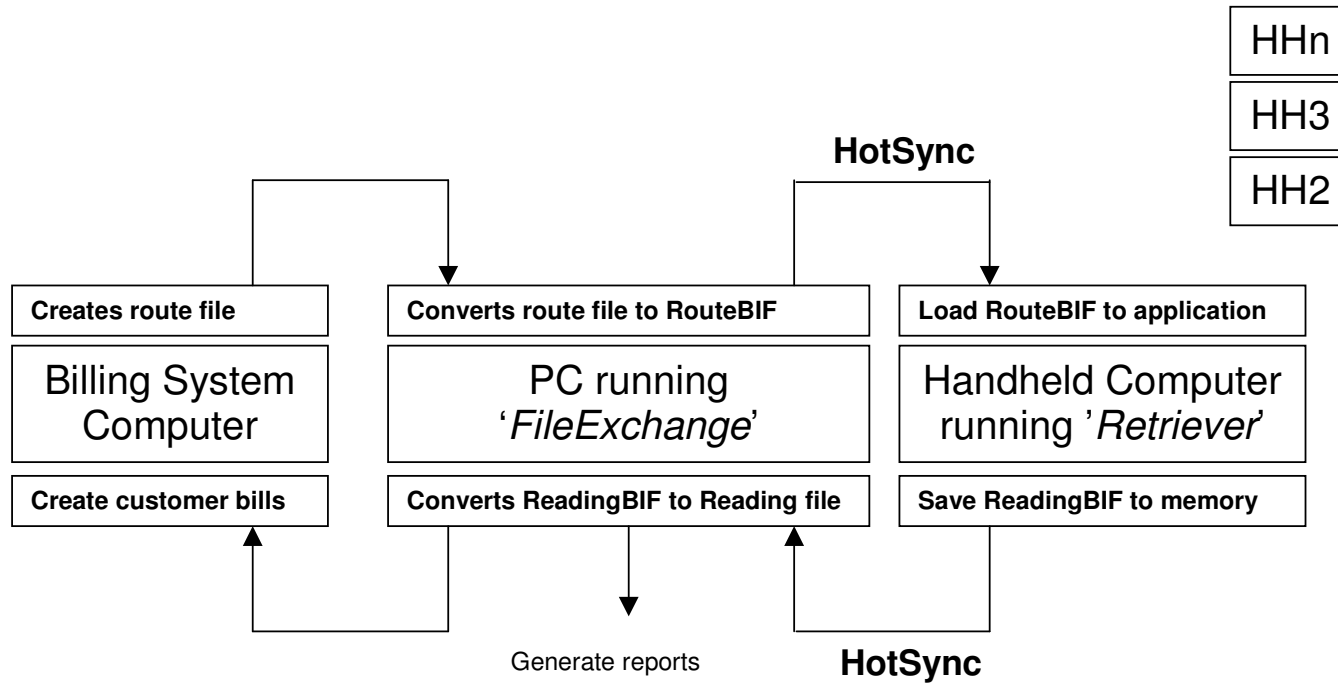


Figure 1-1: Interface cable connected to handhelds 'left' socket.

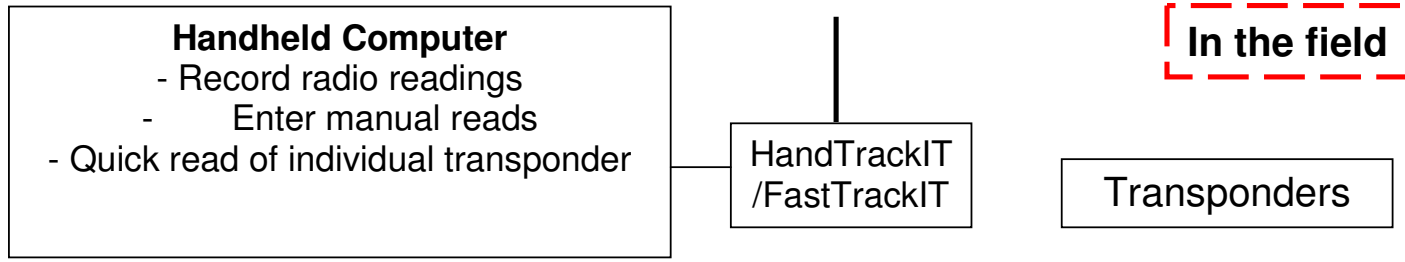
Figure 1-2: The Meter Reading Cycle

HH = Handheld Computer

In the office



HHn
HH3
HH2



In the field

1.5 Software license

The software will only run with full features enabled once a valid license code has been entered. A unique license code is required for each handheld computer. If the application was purchased as part of Retriever for Palm System (ie in package including handheld computer) this license code should be supplied with the delivery documentation. Otherwise, contact Blue Tower Technical Support for license key quoting purchase order reference (instructions provided in section 2.2.7).

The software can be loaded onto handheld computer without license code but will run in evaluation mode – this is free to use for an unlimited time. In evaluation mode the software will save data only for the first five meters in the file.

CHAPTER 2: INSTALLATION

2.1 General

This guide shows you how to install, configure and begin using Retriever for Palm. If you are using one of the data format maps supplied with the package, the process should take approximately an hour. Creating a custom data format map will take a little longer. Testing for correct data transfer with your environment will be necessary and may potentially require more time.

Before you begin, you should locate or know these items:

- Administrator password to the desktop computer (if required to install application software)
- The PalmOS handheld computer to be used for readings
- The HotSync cable used to connect the handheld to desktop computer
- The PalmOS Desktop Software
- HandTrackIT or FastTrackIT receiver.
- Serial cable for your handheld to connect to the HandTrackIT or FastTrackIT receiver.
- The Retriever for Palm install package.
- The unlock code which enables Retriever for Palm for full use (removes it from evaluation mode) – if this has not been provided, instructions are provided for acquiring it.
- File format specification for the Route file.

2.2 Installation of Software

2.2.1 Palm Desktop

Install Palm Desktop Software onto the PC. It is best to use the version that was supplied with your Palm device. If for some reason the disk is not available, go to www.aceeca.com/downloads Download the Palm Desktop software and guides for HotSync configuration.

Install following the instructions provided with the software. If using Windows XP Service Pack 2, a message may appear suggesting that some features of the program should be blocked – click the **Unblock** option.

Check that the USB option is selected.

Check that the option is set for HotSync manager to be always available.



Should appear in the PC taskbar.

When prompted for an ID of the handheld, enter the ID of your first handheld. If you are going to be using multiple handhelds for this application, choose a name that is easily identified and make sure that a different name is used for each handheld – ie: each handheld must have a unique ID. One naming convention is to identify each handheld by their unique serial number. After the handheld has been successfully synchronized with this ID (see below), the HotSync ID should appear in the top right corner of the HotSync application screen (see Fig 2-6). For ease of identification label each handheld with its ID.

2.2.2 Hotsync First Handheld

- Ensure your handheld is cabled properly. The handheld will either slide into a cradle or will have a HotSync cable attached to its base (see figures 2-1 to 2-3).
- Turn on the handheld by pressing the power button (see figure 2-4). On first start, PalmOS devices require you to align the screen. Simply tap in the middle of the 3 cross hairs as prompted. The handheld is looking for you to tap in a straight diagonal line. If your taps lie off the line significantly, you will be re-prompted with a series of three more cross hair prompts.
- After screen alignment, you will be prompted for the current date and time.
- If cradled, press the button at the base of the handheld cradle (fig 2-3). If you are not using a cradle, tap on the HotSync icon from the applications listed on the application launcher (see figure 2-5).



Figure 2-1: The Hotsync cable and charger unit

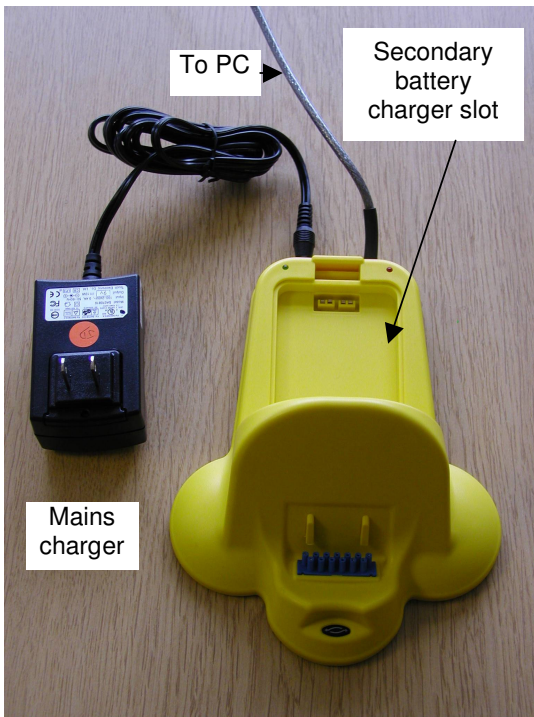


Figure 2-2: The Cradle



Figure 2-3: Handheld fitted into cradle



Figure 2-4: The Aceeca Meazura Handheld Computer (Buttons and Icons)

Note: If you cannot locate the Hotsync icon, tap on the 'house' button near the bottom of the handheld's display. This will show the application launcher screen. The application launcher is a series of icons (see figure 2-5). If you still cannot find the HotSync icon, locate the category selector in the upper right corner of the screen. It may list All, Games, System, Main, Utilities or Unfiled. Tap the category selector and select **System** from the drop down menu. The HotSync application is by default within the System category.

- Tap in the middle of the of the application screen (within the HotSync icon). The HotSync session will start.
- After the HotSync session has started, look at the desktop, the HotSync manager will prompt for the name of the handheld since the handheld's identity is not known. Click on the name of the handheld you named during the Palm Desktop installation, eg Sim (see figure 2-6)
- After completion of the HotSync session, the handheld may prompt you to restart. Tap the **Restart** button on the screen.

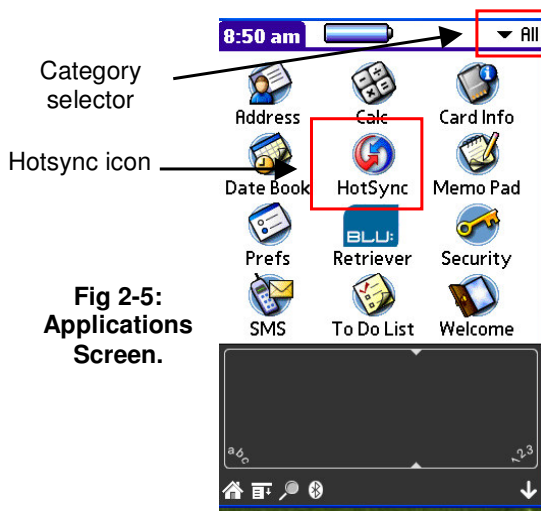


Fig 2-5:
Applications
Screen.

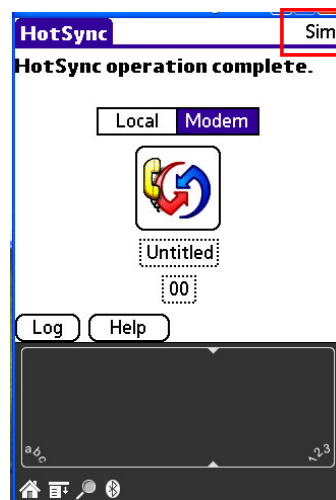


Fig 2-6:
HotSync ID
is 'Sim'

2.2.3 Hotsync Additional Handhelds (Optional)

- For each additional handheld, cable or cradle the handheld and initiate the Hotsync by tapping in the center of the HotSync icon.
- You will be prompted for a new name for the handheld on the desktop. Look on the desktop and click 'New'. Name each handheld with a unique ID (eg 2223, 3133, etc) and click **OK**. Let the handheld complete the HotSync process.
- If instructed tap **Reset** on the handheld to restart the unit.
- Repeat the hotsync process for each additional handheld.

2.2.4 Install Retriever for Palm Application to PC

Contact Blue Tower for the user name and password. On receipt log onto the Blue Tower restricted web site:

www.bluetowercomms.com/restricted/RetrieverforPalm

Click on **RetrieverForPalm.exe** and select **Open**. Follow the on screen instructions.

The default directory <c:/Program Files/BlueTower/Retriever for Palm> should be accepted – alternatively, browse and create a new directory.

A shortcut to the File Exchange program will be created in the Start menu <Start, Programs, Blue Tower, Retriever for Palm, FileExchange>.

2.2.5 Install Retriever Software onto Each Handheld

- Launch FileExchange by clicking - Start, Programs, Blue Tower, Retriever for Palm, FileExchange.
- Click **Install to Unit(s)** (see figure 2-7).
- ‘Check’ each handheld to which you would like the Retriever software installed. If using Aceeca Meazura handheld, ‘check’ the box labelled ‘Include files required for Meazura’. Then click **Install Unit(s)** – see figure 2-8.
- HotSync each handheld for which you placed a ‘check mark’.
- Verify that each handheld has received the Retriever software by going to the HotSync log – click the HotSync icon in taskbar (see figure 2-9) and select ‘**View Log**’. A window will open showing the log. Using the drop-down menu at top of window select the appropriate handheld. Check that the log shows Retriever.prc has been installed. If the check box for the Meazura files was also ticked, check that MeazuraLib_V302b.prc and MeazuraStartupPatch_V200b.prc were also installed (see figure 2-10).

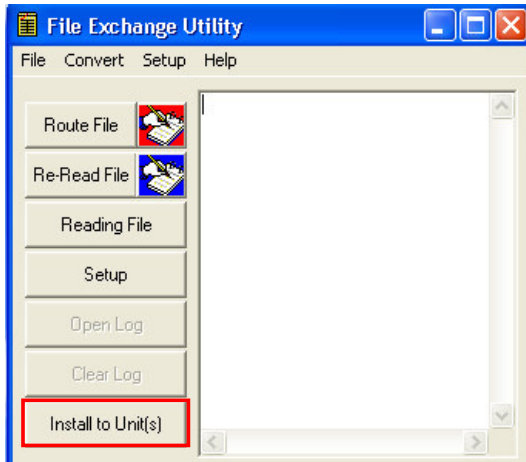


Figure 2-7: File Exchange Main Screen

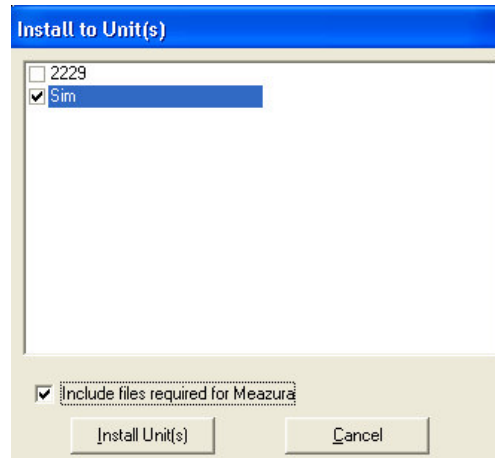


Figure 2-8: Selecting Handheld for HotSync



Figure 2-9: The HotSync icon in the task bar

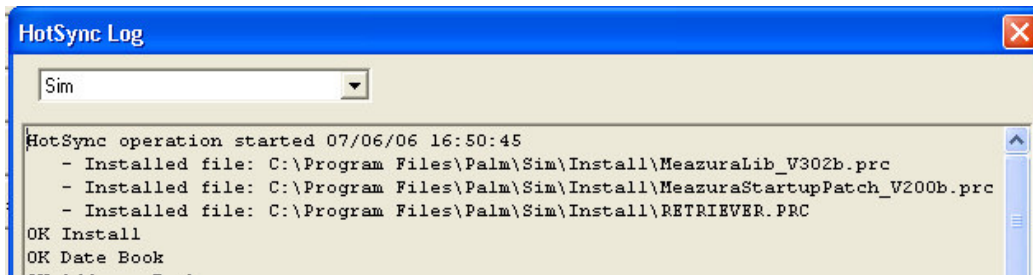


Figure 2-10: The HotSync Log (for handheld with ID ‘Sim’)

2.2.6 Setting Preferences on Handheld

Turn on the handheld and go to the Application Screen (tap the house button). Tap the Retriever icon.

If the application has not been ‘unlocked’, then a message indicating that the software is running in evaluation mode will be displayed. Acknowledge this message.

There may be a brief time-out if the handheld has been configured and is attempting to make contact with the Blue Tower Receiver. Allow the handheld to time out if necessary and tap **OK** on the warning alert.

If the handheld has not been configured, you will be prompted for the Preferences information. Tap the menu icon and then select **Options – Preferences**. The Preferences entry screen will be displayed (see figure 2-11). Enter the settings for your configuration as described in the table below and tap **OK** - the settings can be reviewed later if necessary.

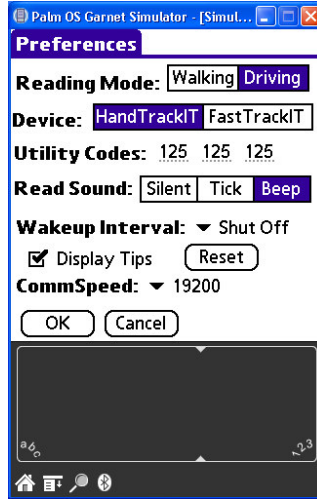


Figure 2-11: The Preferences Screen

Table 2-1: Preference Options

Name	Type	Instruction
Reading Mode	Push Button	Choose either: <ul style="list-style-type: none"> ○ Walking - Displays a route list in walking order and visually shows when a meter has been read. To be used if walking the route. ○ Driving - Does not display the route list but shows a summary screen. The summary screen displays the last meter that was read plus counters of how many meters have been read and how many remain.
Device	Push Button	Choose: <ul style="list-style-type: none"> ○ HandTrackIT - handheld receiver ○ FastTrackIT – vehicle receiver
Utility Codes	Text	Enter up to 3 numeric utility codes. The utility codes should match the utility codes programmed into the Transponders. The handheld will listen for up to 3 utility codes specified. If you have only one utility code, set the others to 000.
Read Sound	Push Button	Selection of the tone that will be emitted when a reading is collected for a meter which has not been collected previously – choose: <ul style="list-style-type: none"> ○ Silent - no sound ○ Tick - a small sound ○ Beep - a louder sound
Wakeup Interval	List	Used only for Blue Tower 434 system applications. Set to 'every 10 seconds'. For 900 series applications set to 'Shut Off'.
Display Tips	Checkbox	Controls whether tips are displayed upon entering a screen that may be unfamiliar to an operator. The Tip for that screen can be disabled to not appear anymore after viewing the tip. The default is to show tips.
Reset	Button	Tapping Reset restores tip display for all screens. To be used for re-enabling tips for a new operator.
Comm Speed	List	Set to 19200 for HandTrackIT. : Set to 115200 for FastTrackIT

2.2.7 Enter Retriever for Palm Unlock Codes

Until a valid unlock code is entered the application will operate in Evaluation Mode.

Note – Unlock codes can only be issued for Palm devices manufactured with a ‘hard’ serial number. All recently manufactured PalmOS devices include this. To check whether your handheld includes one, go to the Application Launcher (tap Home icon). Then tap the **menu** button (below House icon) and select **Info**, then **Version**. The serial number will be shown near top of screen below the PalmOS version.

While in Evaluation Mode, the software will collect all readings it obtains from the Blue Tower receiver and will load all routes. The only restriction within Evaluation Mode is that when a file is saved only the first 5 meters will be returned to the desktop.

Note – this refers to the first five meters in the file, regardless of their status – not the first five read meters.

The unlock code is tied to the serial number of the handheld and the name of the Licensed To field within the unlock screen. Contact Blue Tower Technical Support if you were not supplied an unlock code with your device. Follow the steps below:

- Tap the **menu** button on the handheld (below the ‘house’ button) and choose **Enter Unlock Code**.
- If you do not have an unlock code, contact Blue Tower Technical Support with the serial number shown on the screen and the purchase order reference against which the license is to be supplied.
- To enter the **Licence To** information first tap next to the text ‘License To’ and then tap in the code provided using the keyboard at the bottom of the form. The spaces between the words are critical.
- To enter a hyphen, space or backspace over an entry error, there are special keyboard keys at the bottom to help you. The backspace is the large left arrow near the bottom of the form.
- Next, tap on the **Unlock Code** field. Use the keyboard at the bottom of the form to enter the unlock code. The unlock code must be of the form XXXXX-YYYYY. XXXXX and YYYYY are both 5-digit codes. The hyphen between the code segments is mandatory.
- After completing the field entry, tap **Ok**. The program will report success or failure. If it fails, recheck your spelling and code entry. Again, the Licensed To value provided with your license code must be entered correctly.
- If you continue to encounter failures with the unlock procedure, please verify the values and contact Blue Tower support for resolution.

2.2.8 Backup and Restoring Handheld Configuration

Since it takes time to install the patches and applications and to license them, it is recommended that another HotSync is performed immediately to backup the handheld. Doing so will allow you to quickly restore the contents of the handheld if something were to cause loss of memory.

Restoration of the handheld configuration in the event of memory loss is by connecting the handheld to the PC and HotSyncing. The desktop will prompt for which handheld you are attempting to restore. Choose the correct one from the list and click **Ok**. The complete contents including the Retriever application, library patches, unlock codes and any meter reading data will be restored.

Nightly backups of the reading data are easily achieved by HotSyncing the handheld after each day’s usage. If your reading cycle takes several days to complete, consider Hot Syncing each day before retiring the handheld device. This ensures the complete handheld is backed up in case a problem occurs.

If memory is lost from the handheld for any reason (or another handheld needs to be substituted for the one that was being used for reading), a HotSync operation will restore its status to what it was at the time of the last HotSync.

Note on Meazura

If the handheld is switched off and then on using the power button, all data and applications are held in their current state. The same also applies if a ‘soft’ reset is applied (on Meazura pressing both power and brightness buttons simultaneously but different on other handhelds). However, disconnecting the battery on the Meazura handheld can result in immediate loss of all applications/data and restoration of factory settings. A HotSync operation will restore it to its status at time of last HotSync. There is no reason why the user needs to remove the battery on the Meazura – it has sufficient capacity for several days use with Retriever.

2.3 Configuring FileExchange

2.3.1 Introduction

To start configuring FileExchange, click on the **Setup** button within FileExchange. If FileExchange is not running, click on

Start, Programs, Blue Tower, Retriever for Palm, FileExchange.

Or double click the FileExchange desktop icon (if applicable).

If asked for a distribution file, select '**915 Blue Tower Sample.dst**'

The FileExchange Setup form has 4 tabs that are selected according to the aspect of the software to be configured.

The work in these screens should only be required upon initial configuration of the software and would only have to be modified if there were a change in how the software is expected to operate. Unless multiple route files are used, there is no reason to use the **Setup** form within the normal cycle of reading.

Notes:

The RouteBIF is an interim file used to transfer detailed meter data to the handheld for reading. Conversely, the ReadingBIF is an interim file used to transfer details of the routes, meter readings and orphans found.

Sometimes it is difficult to type paths exactly right. Variations in how users spell or space the long names of folders on the desktop can lead to a frustrating session of try and fail attempts to accurately enter a full path. When establishing file names, try to use the **Browse** button to point the software setup to the folder location. This will greatly reduce the degree of error trying to enter path names.

When specifying a route file source or destination for the form (eg 915 DEMO ROUTE.CSV), browse to the folder. If the billing software's file is already there, click on the filename and click the **Open** button. If the file does not exist but you still know the name, type the name in the File Name text box and click the **Open** button.

Similarly, when specifying an output file for the form (eg. the converted reading file), browse to the folder. There is not usually a file at the location so you will be required to type the files name (e.g. 915 READINGS.CSV). Finally click the **Save** button.

Sometimes, the paths to the file locations can be quite lengthy. If the width of the file name text fields are too small to be usable, resize the setup dialogue form by grabbing the lower, right corner of the dialogue and expanding with your mouse. The new size is retained after you exit FileExchange.

2.3.2 Route Conversion Tab

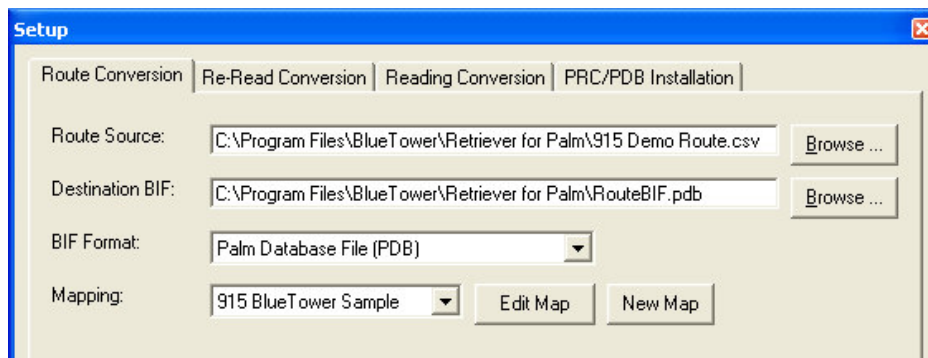


Figure 2-12: Route Conversion Tab

The **Route Conversion** tab specifies parameters for conversion of the Route file and for passing the converted route file to the handheld. There are four controls that need to be set:

a) 'Route Source'

This identifies where FileExchange should expect to find the route file prepared by the billing software.

b) 'Destination BIF' specifies where FileExchange should create the RouteBIF file be transferred to the reader. The RouteBIF is an interim file used to transfer details of the route and meters to the handheld reader.

If the handheld is Meazura or any other Palm based device that uses HotSync to exchange data with the PC then the default settings are OK. The RouteBIF file should be named RouteBIF.pdb. The default directory for this is C:\Program Files\Blue Tower\Retriever for Palm – there is no reason to change this.

If the handheld uses a Secure Digital (SD) memory card for data exchange with the PC then the RouteBIF file should be named RouteBIF.vfs. The directory for the file is user selectable and should be set for easy transfer to SD card.

c) 'BIF Format' should be set to match the file type specified for 'Destination BIF' – ie for data exchange using HotSync, set to PDB.

d) 'Mapping'. If the downward arrow to right of this option is clicked, a list will be displayed of all defined mappings that reside in the installation folder. If new maps are created, they will appear in this list. Select the mapping appropriate for your data file.

The package is distributed with four mappings

- a) BLUETOWER use for Route files with BLUETOWER flat file format
- b) BLUETOWERUK use for Route files with BLUETOWERUK flat file format
- c) 915 Blue Tower Sample use for Route files with 915 Sample flat file format
- d) MVRS use for Route files with MVRS format

Appendix A describes how to create a new map.

2.3.3 PRC/PDB Installation

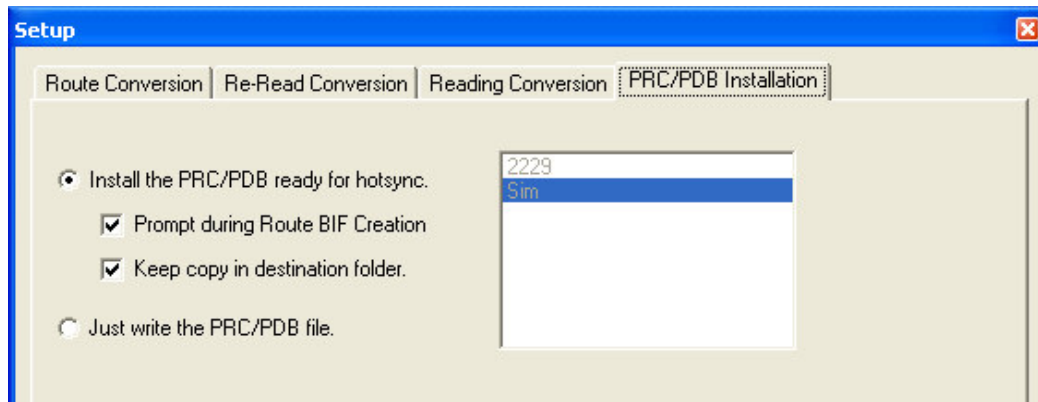


Figure 2-13: PRC/PDB Installation Tab

This tab allows the setting of the option to automatically queue the converted Route file to the handheld. The controls are as follows:

a) Install the PRC/PDB file ready for installation (recommended option). This will put the file in the HotSync queue for the handheld immediately after generation of the RouteBIF. If using more than one handheld, make sure that Tick is put against 'Prompt during RouteBIF Creation' so that the file can be sent to the correct handheld.

b) 'Just write the PRC/PDB file'. If this option is selected, the RouteBIF must be loaded manually to the handheld.

2.3.4 Reading Conversion

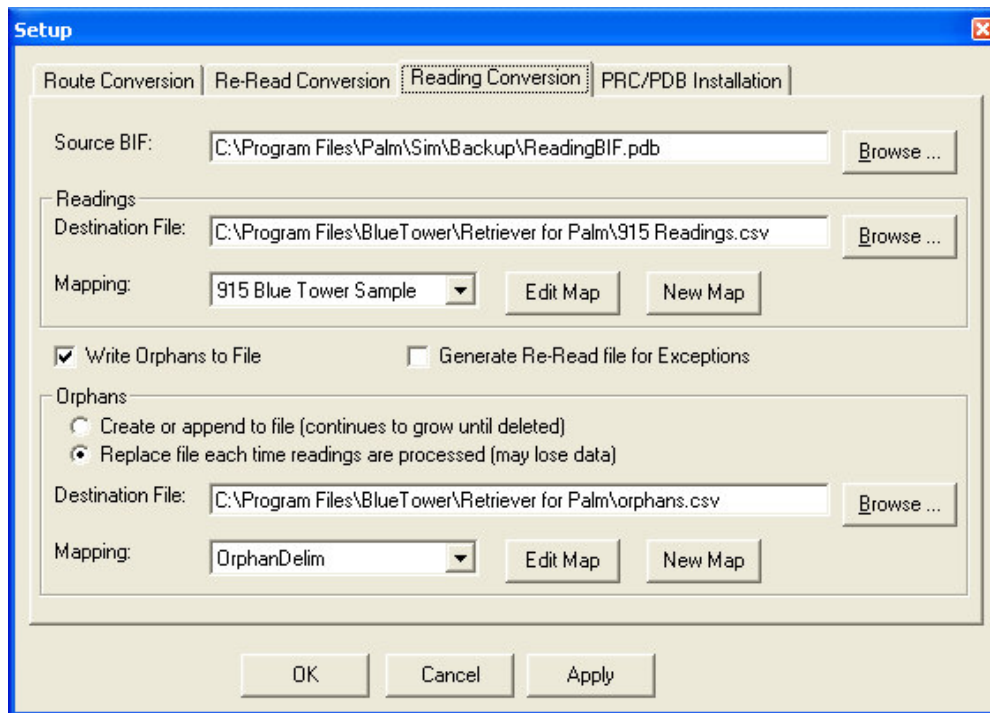


Figure 2-14: Reading Conversion Tab

The **Reading Conversion** tab specifies parameters for conversion of the ReadingBIF file returned from the handheld and for setting up the output file to be returned to the Billing software. There are three controls that need to set:

- a. 'Source BIF'
This identifies the location of the ReadingBIF file (path and file name) that the handheld has returned to the PC.

If the ReadingBIF is being returned to the desktop using HotSync, the file will be called ReadingBIF.pdb and will reside in the Backup folder of the Palm software directory for that handheld. By default, the HotSync process will return any modified file back to the desktop and store that file within the backup folder for that Palm account. This is why unique naming of the handhelds is required. The modified files that are copied from the handheld to the backup folder are ready for processing. Therefore, for 'SourceBIF', specify the exact location where the backup will be returned. The Palm Desktop Software creates a directory named c:\Program Files\Palm by default. The backup directory for handheld 'Sim' would be c:\program files\Palm\Sim\Backup or very similar. Locate this folder using the **Browse** button. In this example, the full name of the source BIF becomes c:\program files\Palm\Sim\Backup\ReadingBIF.pdb.

If the ReadingBIF is being returned using an SD Card, the folder will be the mount drive letter of the card reader. The file name will be ReadingBIF.vfs (for SD memory card).

The file names cannot be modified and should be named as instructed.

- b. 'Destination File' specifies the location and filename (eg 915 Readings.csv) where FileExchange should create the Reading data file to be posted by the billing software. Any name can be used so long as it's compatible with Windows file naming rules.

- c. 'Mapping'. If the downward arrow to right of this option is clicked, a list will be displayed of all defined maps that reside in the installation folder. If new maps are created, they will appear in this list. Select the maps appropriate for your data file.

The package is distributed with four mappings

- a. BLUETOWER use for Route files with BLUETOWER flat file format
- b. BLUETOWERUK use for Route files with BLUETOWERUK flat file format
- c. 915 Blue Tower Sample use for Route files with 915 Sample flat file format
- d. MVRS use for Route files with MVRS format

Appendix A describes how to make new mappings.

- d. Write Orphans to File. If this box is checked, another set of configuration options is shown for configuring a file for returning orphans (Orphans are Transponders that are not part of the Route file).
- e. Orphans 'Destination File' specifies the location and filename (eg: orphans.csv) where FileExchange should create the Reading data file to be posted by the billing software. The data map supplied with the package is for a CSV file.
- f. The orphans list can either be appended to an existing orphan file or a new file created depending on the option selected.
- g. Orphans 'Mapping'. If the downward arrow to the right of this option is clicked, a list will be displayed of all defined mappings that reside in the installation folder. If new maps are created, they will appear in this list. Select the mapping appropriate for your data file.

The package is distributed with one map: OrphansDelim

2.3.5 Rereading Conversion

The ReRead Conversion tab is identical in layout to the Route Conversion. The reread option is used to quickly convert a list of meters that must be reread into a small route that can be converted into a small RouteBIF to for example quickly reread missed meters.

A new data map should be created as the data provided for the ReRead function is likely to be different from the map used for Route conversion. Typically, only a few fields will be specified by the operator for ReRead. A simple reread map can be created using a delimited file format. Instructions are provided in Appendix A.

2.4 Advanced features

A number of additional configuration options have been added to the package. These are accessed within File Exchange by pressing the **Advanced** button.

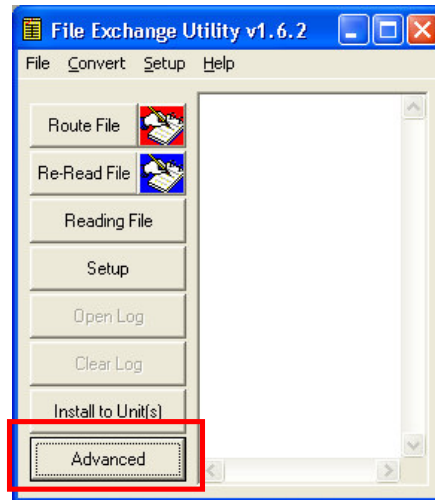


Figure 2-15: The Advanced Features

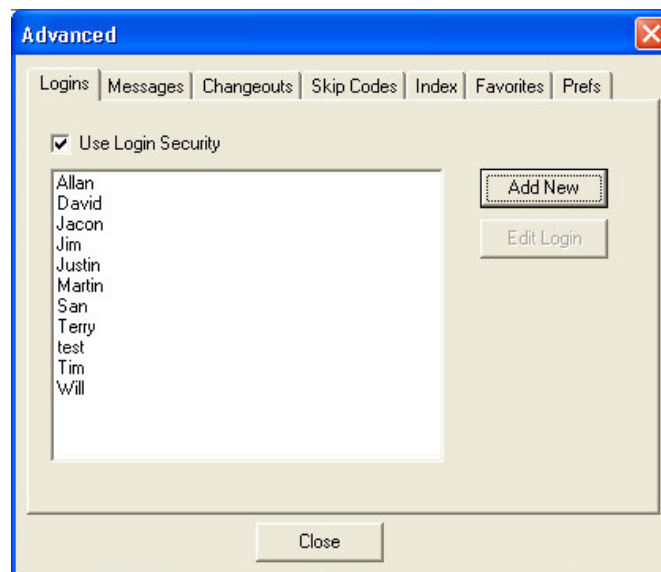


Figure 2-16: The Logins Screen

2.4.1 Logins

The main purpose of this feature is to set up handheld and desktop security. It also enables the set up of meter reader identification.

A 'supervisor' (person who is authorised to use File Exchange) assigns to each meter reader a unique identification (Login ID and password). If enabled the meter reader would then have to enter their ID on the handheld before they could read a route.

The login option also enables a 'supervisor' to be assigned a unique identification (Login ID and password). If the login option were enabled then the supervisor would first have to enter their unique ID to start File Exchange. Only supervisors can use the File Exchange program.

'Check' the 'Use Login Security' box to enable the login function. 'Uncheck' the box to disable the login function.

To add a new meter reader, click on the 'Add New' button. The following screen appears:

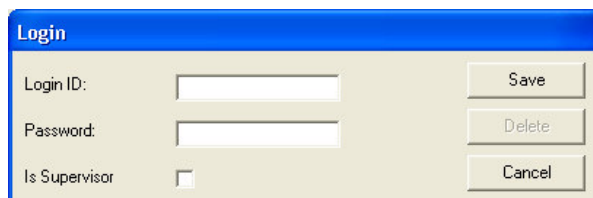


Figure 2-17: Supervisor Login Screen

Enter the users Login ID and password. If the user is going to be designated a 'supervisor', then 'check' the **'Is Supervisor'** box. Click **'Save'** when complete.

The Login ID of the new user will be listed in the main login screen.

To make changes to the entry, highlight the Login ID and click **'Edit Login'**.

To delete a user, highlight the login ID, select **'Edit Login'** and then click **'Delete'**.

Check the **'Use Login Security'** box to enable the login function.

Note: The login details of all users are transferred to the selected handheld during RouteBIF creation (see section 3). Therefore any user can use any of the handhelds associated with the host PC.

2.4.2 Messages

This function enables the supervisor to assign a message to either a customers account, transponder (Meter Tag Number) or meter. On the handheld selecting the corresponding record would display the message. The message screen is shown in figure 2-18.

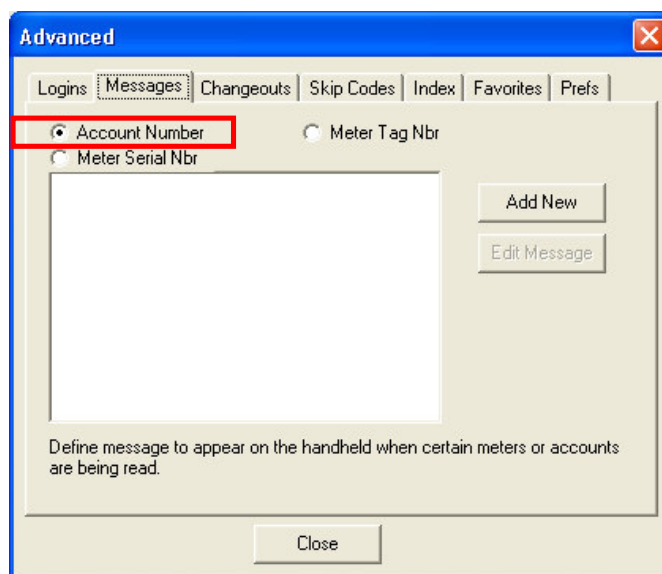


Figure 2-18: The Message Screen (Account Number selected)

To assign a message to a customers account click the radio button next to the text '**Account Number**' and then press '**Add New**'. The message entry screen is displayed.

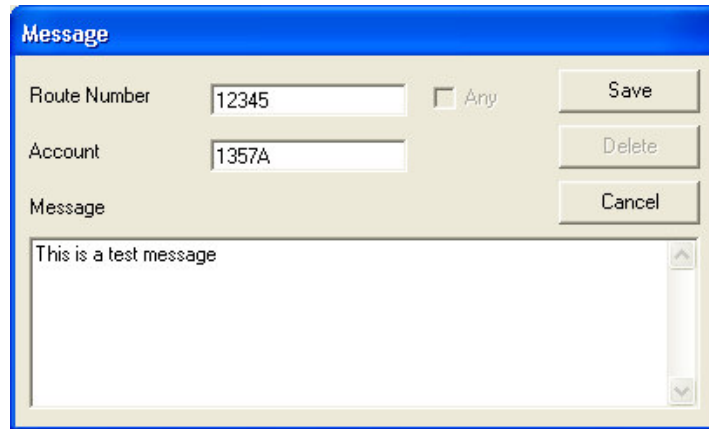


Figure 2-19: The Message Entry Screen

Enter the route and account number and then type the message in the space provided. If the route number is unknown click '**Any**'. When complete click '**Save**'. The route and account number will be listed in the main message screen. To edit the message highlight the account number and click '**Edit Message**'. To delete the message highlight the account number, click '**Edit Message**'; and then click '**Delete**'.

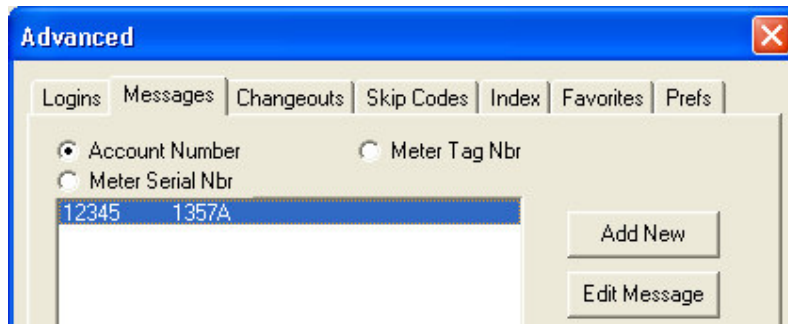


Figure 2-20: Edit an Account Message

A similar procedure is used to assign a message to a transponder (**Meter Tag Nbr**) or meter (**Meter Serial Nbr**)

2.4.3 Changeouts

This feature is not currently available.

2.4.4 Skip Codes

This feature enables the supervisor to pre-define a set of codes that explain why a meter was not read (i.e.: skipped in the reading cycle by the meter reader).

Tapping the 'Skip Code' tab displays the Skip Code Main Screen (see figure 2-21)

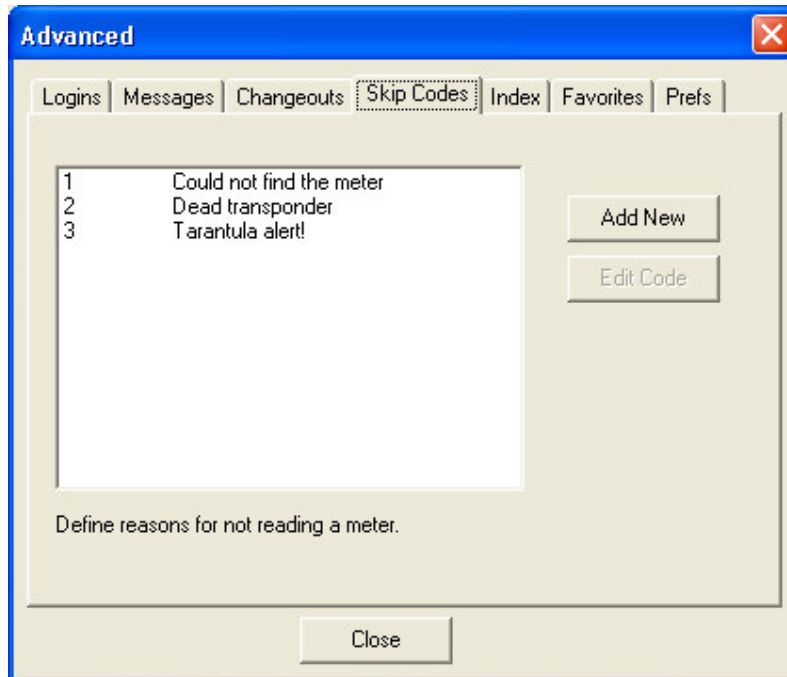


Figure 2-21: The Skip Code Main Screen

To add a new code click '**Add New**', enter the code number and the reason why the meter was skipped ^{*1}. When complete click '**Save**'. To change the text of a code highlight the specific code in the Skip Code Main Screen and then click '**Edit Code**'. To delete a specific code highlight the code and then press '**Edit Code**' then '**Delete**'.

^{*1} – The handheld displays a maximum of 18 characters.

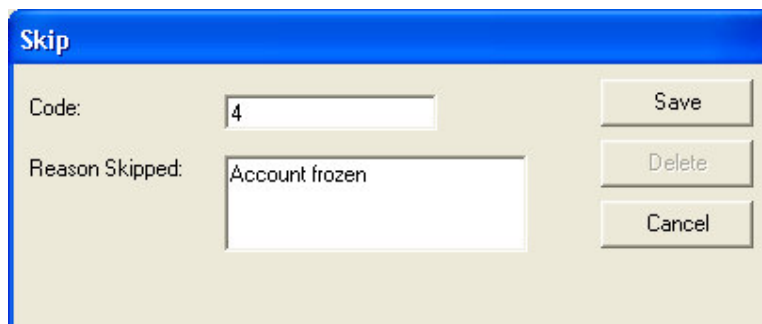


Figure 2-22: Skip Code Entry Screen

2.4.5 Index

This feature is used to facilitate rapid searches on the handheld. It includes a list of token words that should NOT be considered keywords and hence not included as part of a search. To access this feature click on the 'Index' tab. The most common search is for a specific address.

For example if the route file contained the address '1 Cirus Avenue' and the word 'CIR' was not included in the Address Index, then entering 'cir' on the handheld would list all street addresses which have CIR at the end of their street name as well (eg: 24 Tollpuddle Cir). Adding CIR to the Index would prevent '24 Tollpuddle Cir' from being included in the search resulting in a faster operation.

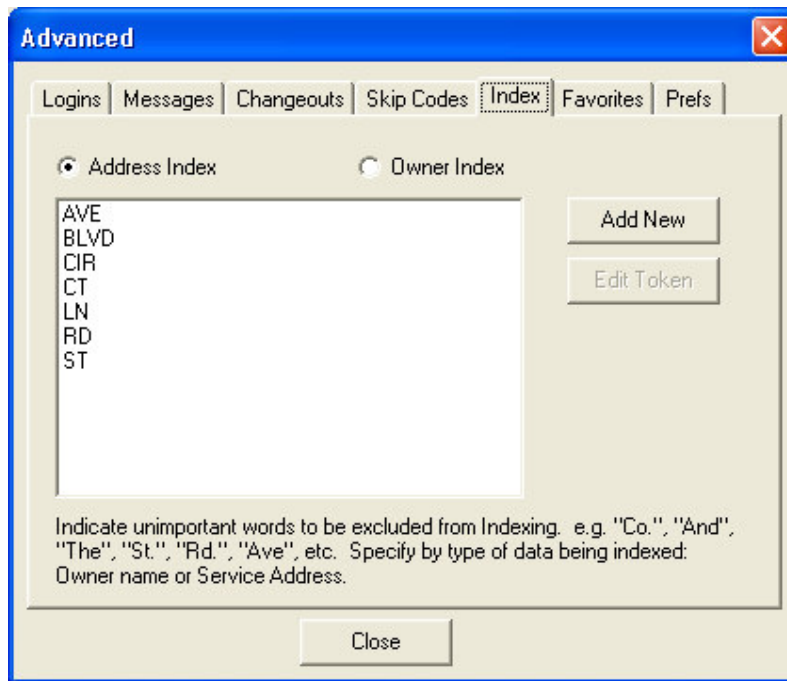


Figure 2-23: The Index Main Screen

To add a new token, check that the Address Index option is selected and then click 'Add New'. Enter the token and click 'Save'. To edit a token highlight the token in the Index Main Screen and click on 'Edit Token'. To delete a token highlight the token in the Index Main Screen, click 'Edit Token' and then click 'Delete'.

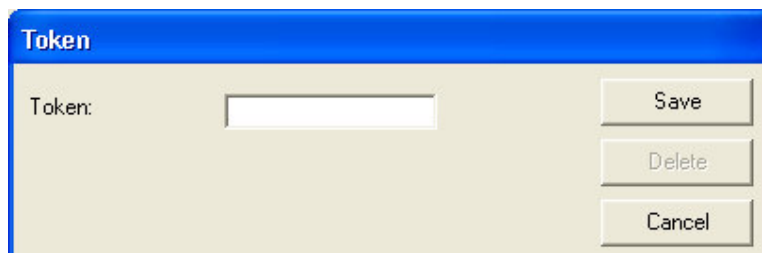


Figure 2-24: Enter Token

Other non-address related tokens can be added to the 'Owner Index'. Click on the 'Owner Index' button and type in the details. An example of an owner token could be the word 'The'. For example if the token 'The' was not included in the 'Owner Index' and the meter reader was searching for a customer called 'Theodor', then all records starting with the word 'the' would be included.

2.4.6 Favorites – Multiple Handhelds

This feature is included specifically for customers who use multiple handhelds. It’s used by the supervisor to process readings from multiple handhelds.

Click the **‘Favorites’** tab to setup the location of each handhelds reading file.

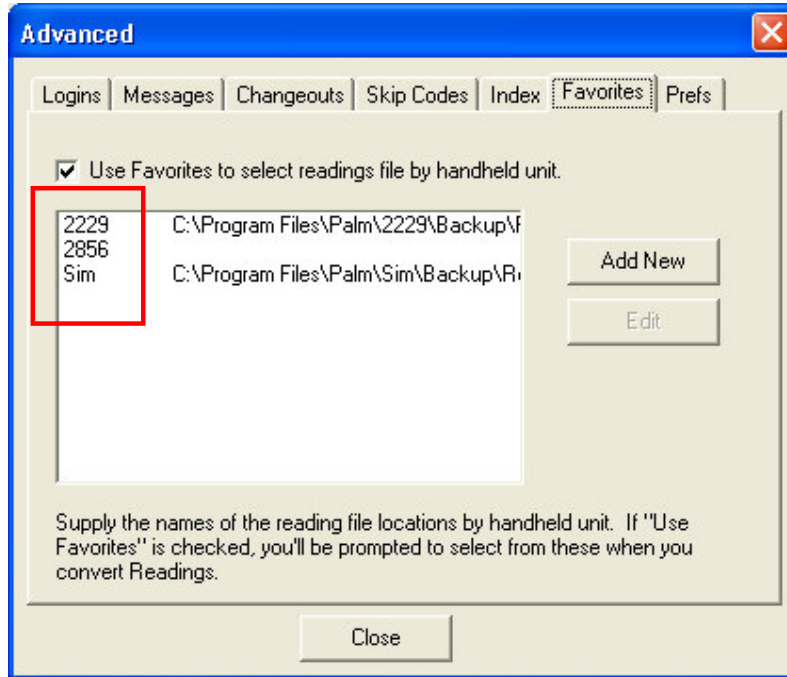


Figure 2-25: The Favorites Screen (Available handhelds are 2229, 2856 & Sim)

A list of handhelds currently available is displayed. To specify the location of a particular handhelds reading file:

- Highlight the handhelds ID (eg: 2229) then click **‘Edit’**

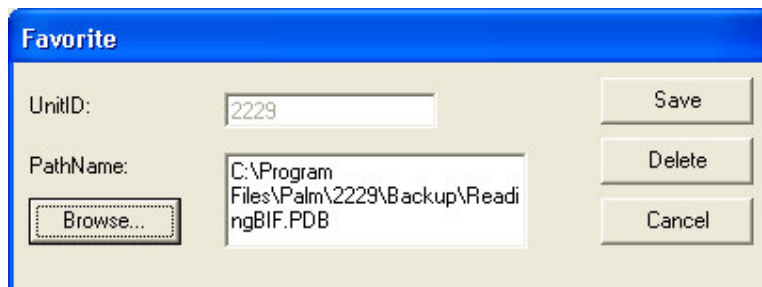


Figure 2-26: Specifying location of handhelds reading file

- Browse to the location where the reading file would be located
- Click **‘Save’** to store the information.
- Repeat the process for the other handhelds.
- **‘Check’** the box labelled **‘Use favourites to select read file by handheld unit’**
- Click **‘Close’** to exit.

2.4.7 Preferences

This feature enables the supervisor to configure the system such that the meter reader is alerted based on the following conditions - see figure 2-27.

- 1) The current meter reading is either greater than the maximum reading or less than the minimum reading for this account as specified by billing.
- 2) The meter reading has rolled over. Current reading is within the max/min limits but is less than the previous reading.
- 3) A transponder that has a non zero tamper count has just been read.

Note:

Items 1 and 2 are applicable only to a manually entered 'current' reading.

Item 3 is applicable to a radio read transponder.

The two methods used to alert the meter reader are:

- Audible 'beep'
- Popup message box

Method selection is by drop down menu that also includes an option to disable the alert function.

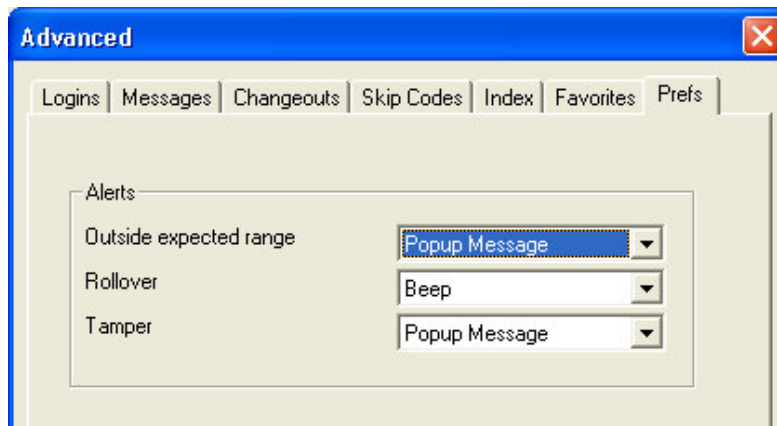


Figure 2-27: The Preferences 'Alert' Menu

CHAPTER 3: OPERATION

3.1 Preparing a Route using FileExchange

3.1.1 Preview the Route File

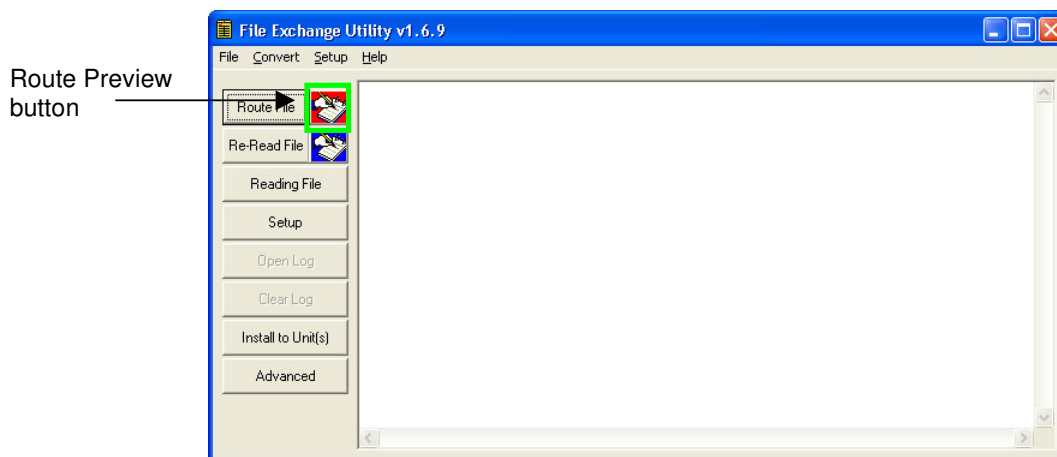


Fig 3-1 Preview Route File

When using the system for the first time and when using new Route files it's a good idea to preview the selected file to make sure it's the route you want to read. To do so, click the red button to the right of **Route File**. This will open the file prepared by the billing software with NotePad. If the file has not been prepared or if a network connection has been broken, an error message will be displayed to say that the file is not found – check Setup of Route Conversion (section 2.3.2).

3.1.2 Process the Route File

To actually prepare the RouteBIF, click on the **Route File** button. As the records are processed, a bar graph will display within the button indicating progress.

If an error occurs while preparing the RouteBIF, the errors are reported in the center window. Remedy the error and click the **Route File** button again. If you cannot resolve the error, contact your Blue Tower distributor or Blue Tower directly.

3.1.3 Automatic RouteBIF installation

If you have selected automatic RouteBIF installation (see section 2.3.3: Setup & Configuration: PRC/PDB Installation), the RouteBIF just prepared will automatically be queued for installation to the handheld. This operation will be written to the log for confirmation.

If you have configured FileExchange to prompt for which handheld to install the RouteBIF, FileExchange will prompt for the handheld. When prompted, select the handheld and click **OK**.

Once the RouteBIF has been queued for HotSync to a handheld, conversion of another Route can be performed and the RouteBIF.pdb in the <Blue Tower/Retriever for Palm> folder can be overwritten.

3.1.4 Manual RouteBIF installation

If automatic RouteBIF installation has not been chosen, locate the RouteBIF.pdb file with Windows Explorer (or on the Desktop). Double click on the file. The Palm Installer will appear. Select the handheld from the list and hit **Ok** and then **Done**. The RouteBIF will be queued for installation on the handheld during the next HotSync session.

3.1.5 Installation using SD card

RouteBIFs can be created and sent to the Handheld via SD card rather than by HotSync.

3.1.6 Conversion Log

The log records all events and settings applicable to the current command. It will report:

- Any errors and warnings
- Successful or unsuccessful conversion of the route file to the RouteBIF
- To which Handheld HotSync Queue the RouteBIF has been sent to

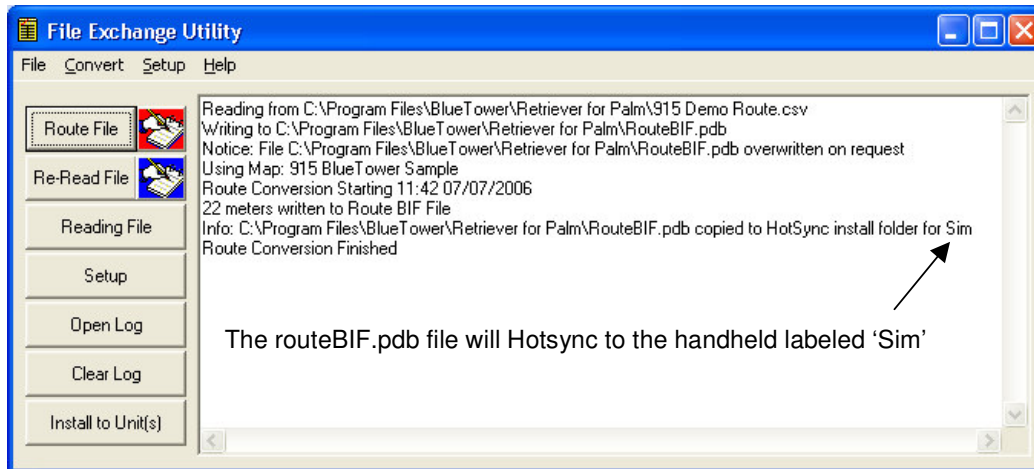


Fig 3-2 Conversion Log

The log can be exported to other applications or printed:

- Click **Open Log** to open the log within NotePad. The log can then be exported to other applications, emailed or printed.
- Click **Clear Log** to remove the entries from the log.

If there is a specific section of the log you desire to share with another application, clear the log first and then perform the command. The log section you choose to report will only exist in the log. All log entries are discarded when you exit FileExchange.

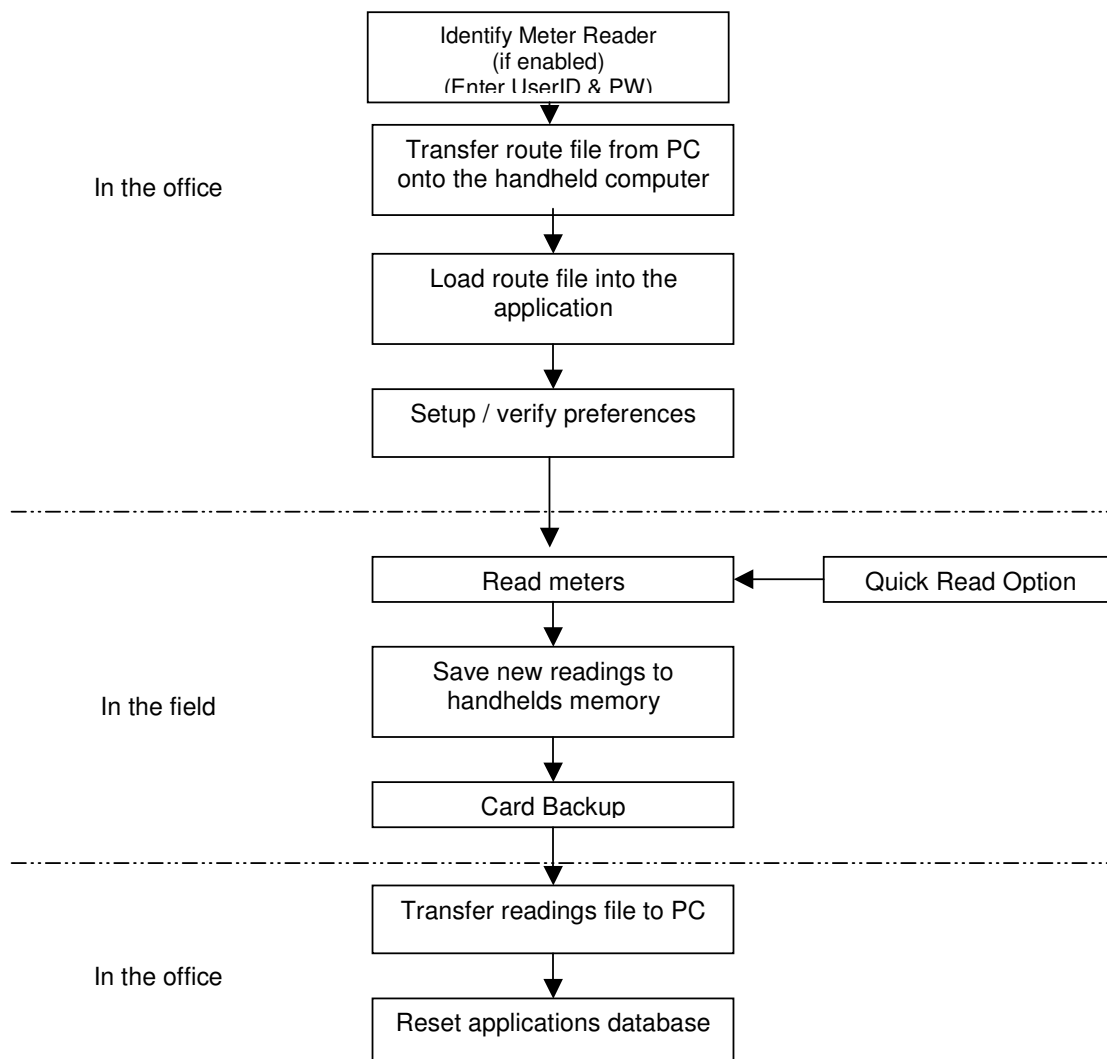
3.2 Using the Reader

3.2.1 Introduction

The reading session consists of these steps:

- Identify meter reader
- *Load* the routes into the handheld.
- *Read* the routes with the reader.
- After the route is read, *Save* the readings.
- Transfer the readings back to the desktop computer.
- After the readings are posted to the billing software and are accepted, reset the reading database on the handheld to prepare for the next route.

Figure 3-3: The Reading Cycle



3.2.2 Login Meter Reader

Turn on the handheld and start the application.

First time usage of the application does not bring up the login screen since no route has been loaded into the applications memory.

Once a route file has been loaded the following screen will be displayed. The login screen then appears every time the application is started and every time a route file is loaded.

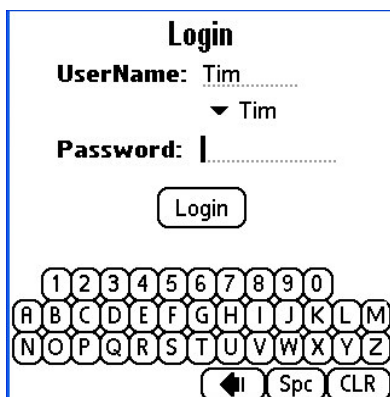


Figure x.x: Meter Reader Login Screen (UserName is 'Tim')

The meter reader can either tap out their username or select it from the drop down menu. Once entered the meter reader should then enter their unique password and click **Login**.

If accepted the summary screen will be displayed. If rejected then after 3 attempts the application will automatically exit.

3.2.3 Transferring routes to the handheld

If you are using HotSync to transfer files, HotSync the handheld once the RouteBIF has been created and loaded into the HotSync queue for that handheld. After the session is complete, you may click on the HotSync log on the PC to confirm the file was actually transferred.

3.2.4 Loading the Reader with Route

- Start Retriever program on handheld.
- If the program reports that preferences have not been set, follow instructions in section 2.2.6 for setting.
- Tap **menu** icon (below house icon), tap **Database**, and then tap **Reset Reading Databases**. Confirm when requested.
- Tap **Menu, Database, Load New Routes**. When asked 'Where is the BIF?' tap **Internal Mem** if the routes were transferred by HotSync, otherwise tap **Card** if SD card was used.
- Retriever will display a route count and meter count to be loaded as well as the source of the route file.
- If acceptable, tap **Ok**. If incorrect, tap **Cancel** and resolve the problem.
- A counter will display the progress of the load and finish showing that the index was rebuilt. Tap **Ok**.
- The login screen will then appear and the meter reader enters their details *. Click **Login** to continue
- Your routes are loaded and ready to read.

* Any one of the meter readers / supervisors can read the route so long as they enter their unique Login ID.

3.2.5 Main views

There are five main views for the application. These are as in the list below. Further information on each of the view screens is provided in the following sections. All screens have additional modes that are accessed by tapping the on screen button or pushing one of the directional arrow buttons.

- Summary or Route - if Driving mode is selected in Preferences, the Summary screen will be presented. The Route screen will be shown if Walking mode is selected. The walking mode will show a list of all meters in the route whether they are read or not. The driving mode shows a summary screen indicating how many meters are in the route, how many are read, how many remain to be read and a count of orphaned meters collected so far.
- Not Read - Lists meters that are still to be read.
- Read - Lists meters that have been read.
- Orphan - Lists meters that are orphans. An orphan is a meter whose data was collected but the ID of the meter was not in the route file downloaded to the handheld. Retriever will keep the data. The meter's identity and current reading are reported on the exception report.
- Find – Enables the meter reader to search for a customer record based on: customer name, address, transponder ID, meter ID and account number.

A set of buttons is shown at the bottom of the screen to select the views. Further information is provided in the following sections on the change of view if each button is tapped more than once. Alternatively, to save use of stylus, the physical buttons on the handheld can be used to select the views.

- a. On Meazura, the left and right arrow buttons can be used to move between the main views.
- b. On other PalmOS handhelds without left/right arrow keys, the main function physical buttons can be used as follows:
 - DateBook - Summary or Route View (depending on Walking or Driving)
 - AddressBook - Missed meters
 - ToDo - Read Meters
 - MemoPad - Orphaned

Most handhelds have up and down buttons that can be used to page up and down within a list of meters.

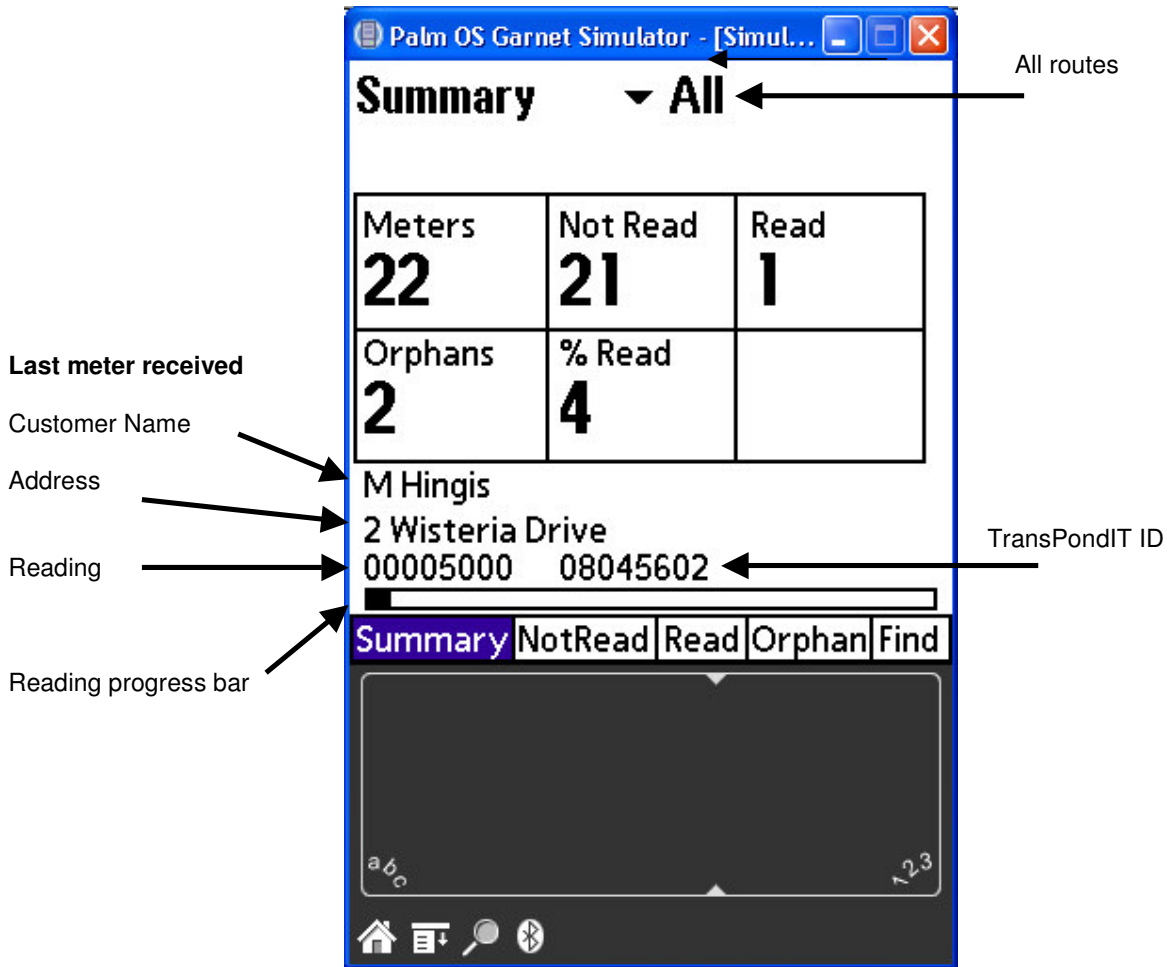


Fig 3-4 Summary Screen (Reading Mode is 'Driving')

3.2.5.1 Summary / Route View

Fig 3-4 shows an example of the **Summary** Screen – It shows the summary information for All routes. Continuing to tap 'All' shows the information for individual routes, one at a time until cycled back to the 'All' routes screen.

The Summary view is useful for driving whereas the Route view is useful when walking the route. The Summary view shows the total number of meters, number of meters read and the number of meters not read.

A bar graph is presented at the bottom of the screen to visually indicate the percentage of meters read.

As newly read meters are encountered, the owner's name and address are shown at the bottom of the screen. If a new orphan meter is detected, the words "ORPHAN! ORPHAN! ORPHAN!" is shown in the customer name field.

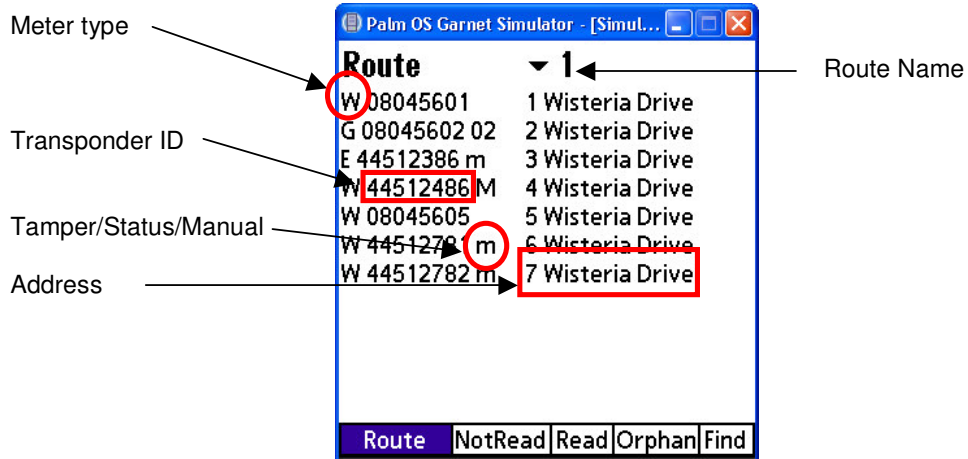


Fig 3-5 Route screen (Reading Mode is 'Walking')

Fig 3-5 shows the **Route** screen. All meters in the Route are shown, presented in reading sequence order for easy location while walking. The first view shows All routes. Continuing to tap the route name (eg: Hurn Airport) shows info for individual routes, one at a time until cycled back to the All routes screen.

The Meter Type information is shown in Table 3-1

Value	Explanation
W	Water
G	Gas
E	Electricity

The Tamper/Status/Manual information is as shown in Table 3-2.

Value	Explanation
blank	The meter is to be read using a radio receiver. The reading has not been collected yet.
m	The meter is to be read manually. The reading has not been collected yet.
p	The meter is to be read using a probe. The reading has not been collected yet.
M	The reading has been taken manually.
P	The reading has been taken using a probe.
00	The reading has been taken with a radio receiver without a tamper count error.
01-99	The reading has been taken with a radio receiver but the Transponder has a tamper count or error status.

Table 3-2 – Decoding Tamper/Status/Manual Info

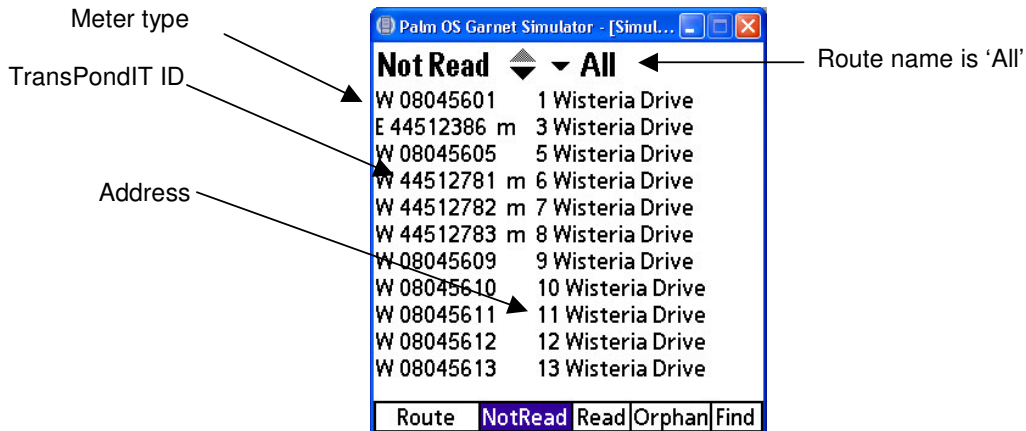


Fig 3-6 Not Read Screen

3.2.5.2 Not Read View

Fig 3-6 shows the **Not Read** screen. All Not Read meters in Route are shown, presented in reading sequence order for easy location while walking. First view shows All routes. Continuing to tap the route name (eg: All) shows the information for individual routes, one at a time until cycled back to the All routes screen.



Fig 3-7 Lst Heard screen



Fig 3-8 Read Hist screen

3.2.5.3 Read View

Fig 3-7 shows the **Read** screen. The first view (Lst Heard) is that of the last 12 meters that were read by radio or by manual read. Another tap of Read button shows the Read Hist screen as in Fig 3-8. All Read meters in Route are shown, presented in reading sequence order for easy location while walking. First view shows All routes. Continuing to tap the Read button shows the information for individual routes, one at a time until cycled back to the Lst Heard screen.

Columns presented on the screen are:

Column Number	Description
1 (single character)	Meter type. W=Water, G=Gas, E=Electric, ?=not defined
2 (up to 8 digits)	The Transponder or Meter ID
3 (up to 8 digits)	The raw meter reading collected by the receiver
4 (up to 2 digits)	Status of reading: M - taken manually S – Meter was skipped P - taken with a probe 00 - taken without tamper exception 01-99 - taken with a tamper code exception
5	Service address of meter

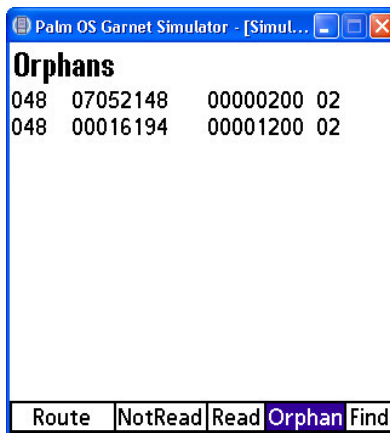


Fig 3-9 Orphans screen

3.2.5.4 Orphans View

Fig 3-9 shows the Orphans screen. First tap shows Orphans – a view of the last 12 orphans heard. Tapping Orphans again shows the Orphan History - all orphans heard since database was last reset.

Columns presented on the screen are described in Table 3-3.

Column Number	Description
1 (3 digits)	The Utility Code
2 (up to 8 digits)	The Transponder ID
3 (up to 8 digits)	The raw meter reading collected by the receiver
4 (up to 2 digits)	Tamper status transmitted by the Transponder.

Table 3-3 Description of Orphans screen

The list of orphans is returned to the desktop for exception reporting via the ReadingBIF file.

3.2.5.5 Find View

Fig 3-10 shows the **Find** screen. This screen is displayed when the user taps the Find 'soft' button from the main view screen.

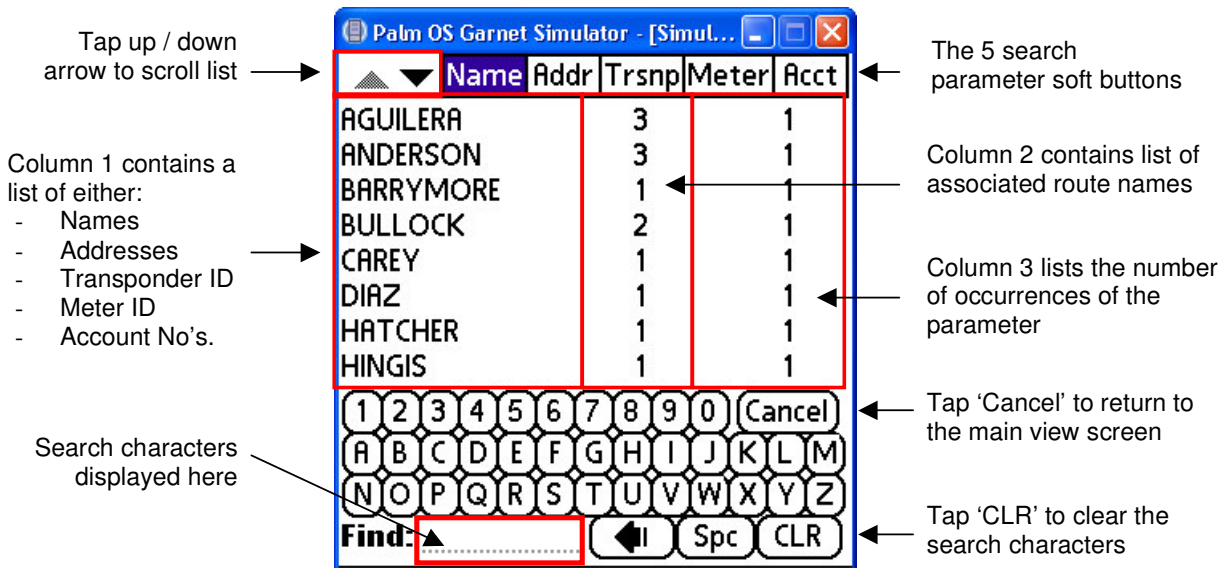


Fig 3-10: Find screen (Search parameter is 'Name')

The Find screen enables the meter reader to search for a specific account based on one of 5 parameters:

- Customer name (Name)
- Address (Addr)
- Transponder ID (Trsnp)
- Meter ID (Meter)
- Account Number (Acct)

To change the search parameter tap on the appropriate soft button at the top of the screen.

Search on Name

Tap 'Name'. - The first column is populated with a list of customer names in alphabetical order. The second column identifies the associated route and the third lists the number of times the name appears in the list.

Using the keypad tap in the name of the customer you want to find. As each letter is entered the list of names in column 1 changes such that the first name in the list contains all the letters entered. The first name that has the correct sequence of letters is highlighted.

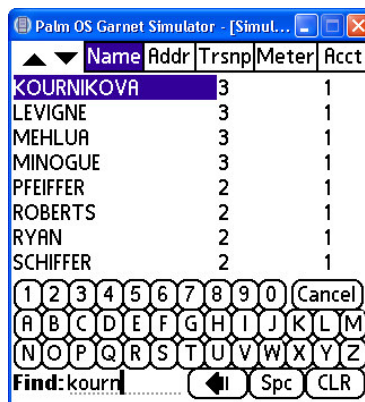


Figure 3-11: Search on Name

For example to search for the name ‘Kournikova’, select ‘Name’ and then tap in ‘kourn’. If the name exists then it will be highlighted in column 1. Column 2 indicates that the customer is in route 3 and column 3 indicates that there is only one occurrence of the name ‘Kournikova’ in the route file.

Once the name has been located tap on the name in column 1. The screen changes to display the Info View of the customer (see figure 3-12) if in ‘Walking’ mode or the ‘Summary’ screen if in Driving mode.

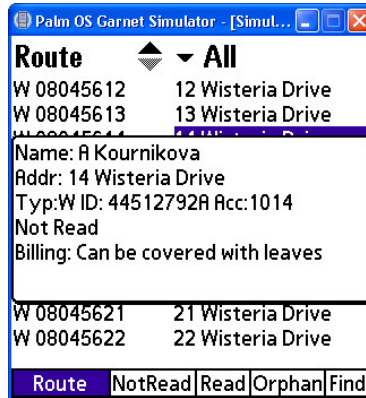


Figure 3-12: Info View (Walking Mode)

Search on Address (Addr)

Tap ‘Addr’. - The first column is populated with a list of customer addresses in alphabetical order. The second column identifies the associated route and the third lists the number of times the address appears in the specific route.



Figure 3-13: Search on Address

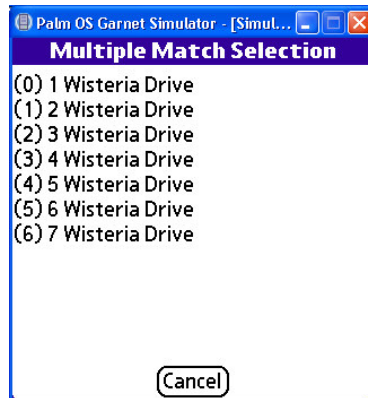


Figure 3-14: Address details

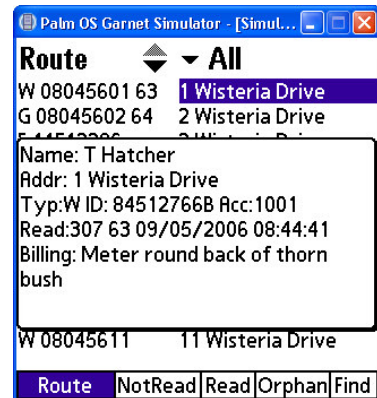


Figure 3-15: Info View

Using the keypad tap in the address to find. As each letter is entered the first record that matches the search criteria is highlighted. In the example above there are 7 addresses in route 1 that have ‘Wisteria’ as part of their full address, 6 addresses in route 2 and 9 addresses in route 3 (see figure 3-13).

To view the multiple address entries for ‘Wisteria’ in route 1 tap on the highlighted text (see figure 3-13). The multiple match selection screen is displayed (see figure 3-14). The number in () indicate the position of the record in the route file – the first record being position 0. Tap the desired address opens the Info View for that address (in walking mode).

In the example above ‘1 Wisteria Drive’ was selected and the Info View for that address is displayed (fig 3-16).

Note: If the word ‘DRIVE’ had been included in the ‘Address Index’ list (see section x.x) then only the three ‘Wisteria’ listings would be displayed in figure 3-13.

Search on Transponder ID (Trsnp)

Tap 'Trsnp'. - The first column is populated with a list of transponder ID's. The second column identifies the associated route and the third lists the number of times the transponder ID appears in the specific route.

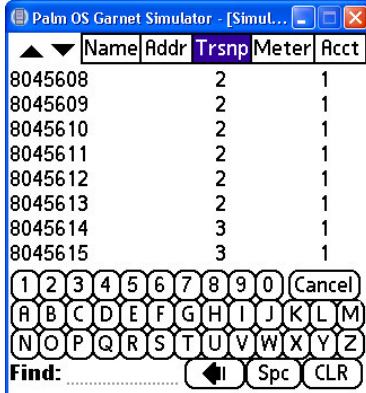


Fig 3-16: Search on Transponder

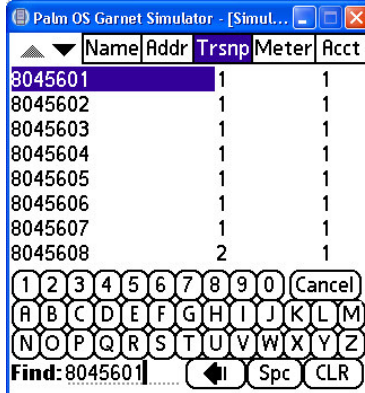


Fig 3-17: Transponder selection

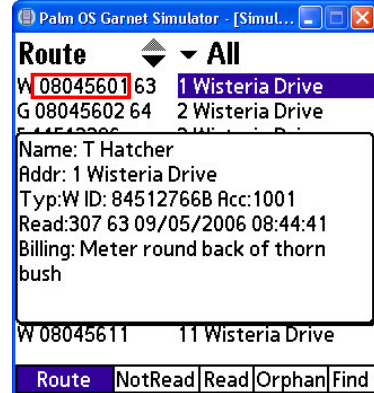


Fig 3-18: Info View

Enter the transponder ID. If it exists in the route file then it will be highlighted (see figure 3-17). Tapping on the highlighted transponder ID brings up the Info View of the specific record (see figure 3-18)

Search on Meter ID (Meter)

Tap 'Meter'. - The first column is populated with a list of Meter ID's in numerical order. The second column identifies the associated route and the third lists the number of times the meter ID appears in the specific route.

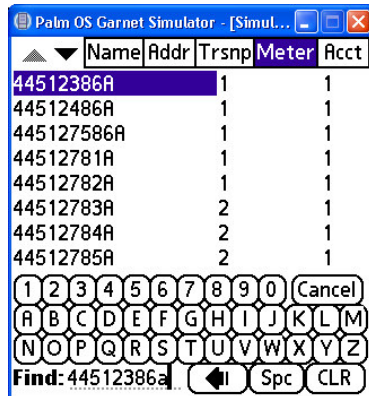


Fig 3-19: Search on Meter

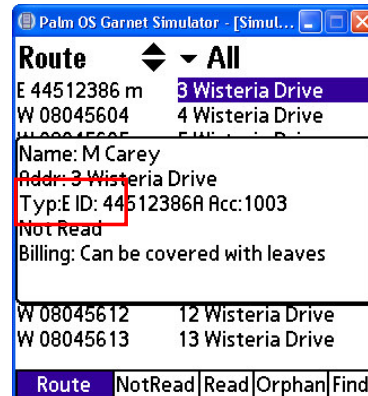


Fig 3-20: Info View for Meter ID 44512386A

Enter the Meter ID. If it exists in the route file then it will be highlighted in the list (see figure 3-19). Tapping on the highlighted Meter ID brings up the Info View of the specific record (see figure 3-20)

Search on Account Number (Acct)

Tap 'Acct'. - The first column is populated with a list of Account numbers in numerical order. The second column identifies the associated route and the third lists the number of times the account number appears in the specific route.

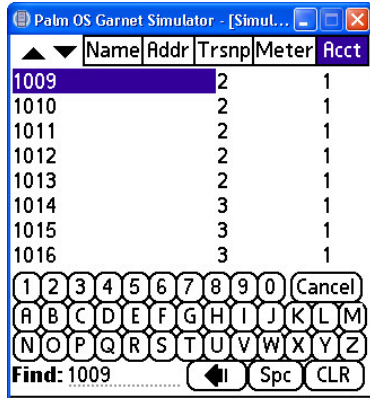


Fig 3-21: Search on account number

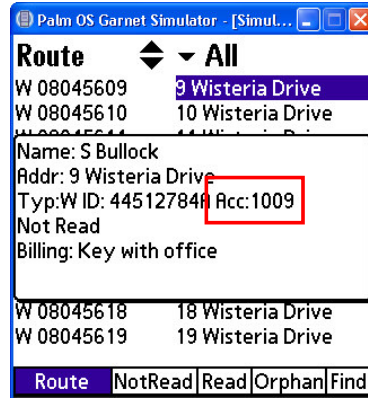


Fig 3-22: Info View for account 1009

Enter the account number. If it exists in the route file then it will be highlighted in the list (see figure 3-21). Tapping on the highlighted account number brings up the Info View of the specific record (see figure 3-22)

3.2.6 Menu Options

There are two menu options that allow access to special functions of the Retriever for Palm application: Options and Database.

The Option menu has 6 choices:

Choice	Purpose
About Retriever	Displays the current version of Retriever and who the product is licensed to.
BeamMe!	Beams the Retriever application to another handheld. The option is useful if away from the utility office and need to upgrade a handheld without returning to the office. Point the infrared window of each handheld toward each other and choose this menu option. The receiving handheld will need to answer Yes to the accept application question.
Preferences	Choice is used to set driving or walking preferences, setup which radio receiver will be used, or to setup which utility codes will be accepted by the receiver – see section 2.2.6.
Go OnLine	Choice will return the reader back to an on-line state – turn on receiver. The reader will go off-line if the menus are used. After accessing menus, Retriever will need to be placed back On Line to continue collecting readings.
Enter Unlock Code	To remove Retriever from the Evaluation mode
Quick Read	Useful if only a few meters (up to 3) need to be read using their Transponder or meter id. The 3 ids may be entered at the utility office and the handheld used in the field. The IDs are retained between program launch sessions.

The Database menu has 4 choices:

Choice	Purpose
Load New Routes	Option is used to load the routes and meters contained within the RouteBIF file. Select Card to load RouteBIF from the external SD memory card. Select Internal Mem to load RouteBIF transferred using the HotSync transfer method.
Save Readings	Option is used to save readings, unread meters, routes and orphans to the ReadingBIF file. Select Card to save the meters to the external SD memory card. Select Internal Mem to save the readings to ReadingBIF to be transferred using the HotSync transfer method.
Reset Reading Database	After the readings have been unloaded and returned to the utility office. The utility office should post the readings in the billing software. When the utility office reports the readings were accepted, choose this option to reset the reading databases (empty them) in preparation for the next reading session.
Build Sample Route	Used for training purposes, this option creates a sample RouteBIF of 4 routes and 60 meters that can be used for training and demonstration purposes. Use Load New Routes to load the sample Reading BIF. The sample ReadingBIF may be created on the external SD memory card or internal memory.

3.2.7 Manual Readings / Messages

Any meter in the route can be manually read.

A radio read meter can also be read manually but the next radio reading would overwrite the manual reading.

To take a manual read, tap on the Transponder ID column of Route or Not Read screens (see fig x.x).

If there is a note associated with the meter originating from billing or from the supervisor, then the 'Alert on this Message' window is displayed. The word 'Billing' will precede a message originating from the route file. The word 'Supervisor' will precede a message originating from the supervisor (see figure x.x).

The meter reader must acknowledge the message(s) in order to proceed to the manual entry screen.

To preview the message(s) tap the 'i' symbol to the right of the 'Next Unread' button (see figure x.x)



Fig x.x: Route View

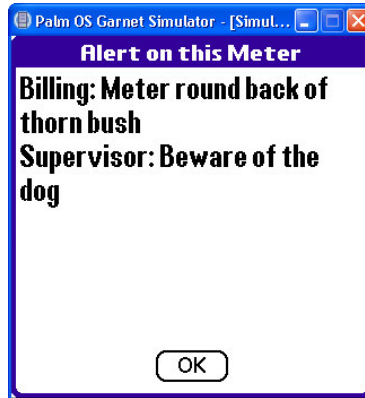


Fig x.x: 'Alert on this Meter'



Fig x-xx Manual Entry screen

Details of the meter record are displayed. Simply tap in the reading using the keypad. The number of digit boxes presented matches the 'digits' entry in the Route file. All of the empty digit boxes must be filled before the reading will be accepted. Use leading zeros if you have partial digits. For instance, if the handheld is expecting 6 digits to be read and meter reading is '307', enter '000307'.

If you make a mistake, tap the CLR button to clear the entry.

Validation at time of meter reading

When a meter reader enters a manual reading it can be validated against the max/min reading and previous reading for the record if specified in the route file. Validation can either be via an audible tone or pop-up message (refer to section x.x).

For example: The maximum reading is 8888 and the minimum reading is 100. The previous reading is 400. If the meter reader enters a reading of 9000 (OK) then the following screen is displayed (see fig x.x).



Figure x.x: Enter manual reading

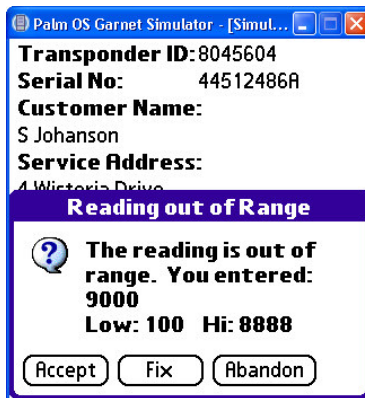


Fig x.x: Reading out of Range screen

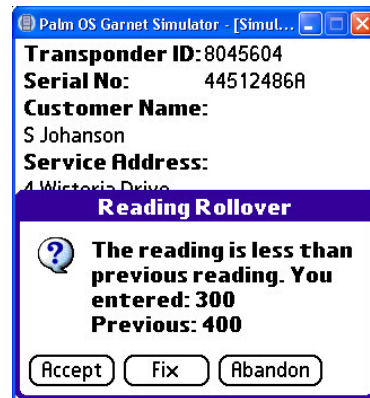


Fig x.x; Reading < Previous

Tap **'Accept'** to acknowledge the reading.
 Tap **'Fix'** to change the reading.
 Tap **'Abandon'** to exit the manual entry screen.

Meter Reading Rollover

If the reading entered (300) is within the max/min limits (8888 / 100) but is less than the previous reading (400) then the system alerts the meter reader to a possible rollover condition. The alert can either be by audible tone or pop-up message – see fig x-x. The user can 'accept', 'fix' or 'abandon' the reading.

Tamper

If the system reads a transponder that has a non-zero tamper count then the meter reader can be alerted either by an audible tone or pop-up message. The pop-up message needs to be acknowledged by the meter reader in order to continue the reading cycle.

For example transponder 08045601 has a tamper of 63. When the transponder is read the 'Tamper Alert' message is displayed. The meter reader taps OK to return to the main view screen



Figure x.x: Tamper Alert Screen

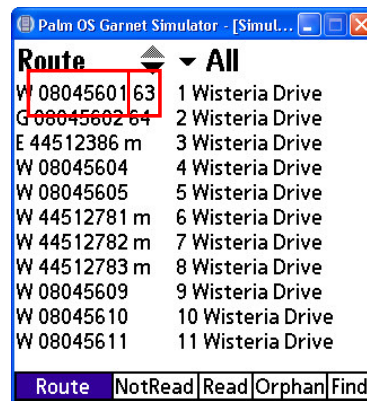


Figure x.x: Main View Screen (Walking)

Skipped Meter

If the reading cannot be taken, tap the **Skip** check box. A 'tick' appears in the check box. The text 'Exception' and a drop down menu replace the digit boxes. Click on the drop down menu and select one of the pre-defined messages (These messages were defined by the supervisor – see section x.x). Tap **OK** to accept the text.

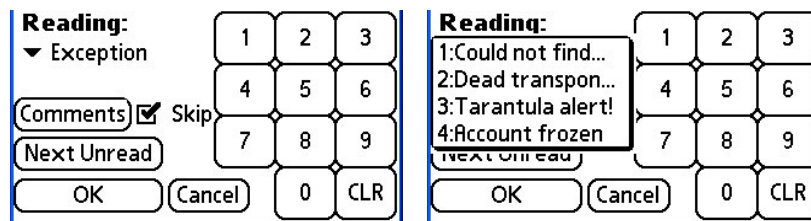


Figure x.x:

The meter will be removed from the Not Read list and added to the Read list. In the Read screen the letter **'S'** is used to denote a skipped meter.

Meter Reader Message (Comments)

Meter readers can also enter a message for the supervisors' attention. This feature is accessed through the manual entry screen. To add a message for a meter:

- Select the manual entry screen of the meter
- Tap the **Comments** button
- Tap in a comment and/or check one/both of the predefined messages.
- Tap **OK** when finished.

Once the readings are processed the meter readers' message will be seen by the supervisor in the 'Exceptions' Report.

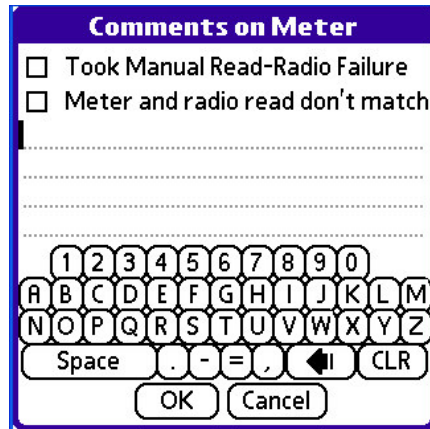


Figure x.x: The Comments Screen

3.2.8 Quick Read

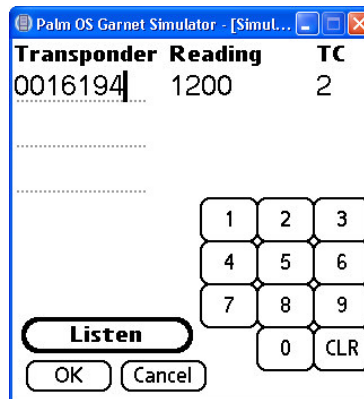


Fig 3-11 Quick Read

Quick reads are accessed from the **Options** menu. The quick read permits up to 3 transponder IDs to be entered and read by radio. Quick Reads are used primarily to test a radio upon installation, reread a meter or collect the final reading.

Tap in the transponder IDs in the Transponder column by using the numeric touch pad on the screen. After entering all IDs to be read, tap **Listen**.

As Retriever collects the reading for the transponders, it will display the reading and associated tamper count to the right of the transponder ID. The values shown will keep updating as new transponder transmissions are received. In addition every time the transponder is read the Aceeca gives an audible tone (if the preference setting for Read Sound is either 'Tick' or 'Beep'). Therefore if the default transmit interval of the transponder is not changed, then a 'tick' or 'beep' will be heard approximately every 5 seconds.

Quick Read is therefore a useful tool for debugging a meter / transponder installation – eg:

- Checking that the transponder reading tracks the consumption as indicated by the meter.
- Checking for two (or more) transponders within range with same ID – meter reading displayed will alternate between the value transmitted by the two (or more) transponders.
- Checking that the tamper / status of the transponder is 0. Investigate non-zero status before leaving installation.

Tap CLR to clear the transponder ID entry. The transponder IDs are saved between program launches - so they may be entered at the office before travelling to the service address.

3.2.9 Info View



Fig 3-12 Meter Info view

Tapping on the right side of a meter record reveals the information view. The view shows customer name, service address, meter type, meter id, account number, reading, tamper count / status code & read date/time if taken. If there are billing or supervisor messages, then these are displayed also.

Tap another record to view another meter. Switching views will close the information view.

If you tap on the left column of the record, the manual entry screen will be presented in place of the information screen.

3.2.10 Saving the readings

After the route(s) are read, follow the instructions below to save the new readings and create the ReadingBIF.pdb file:

- Tap menu (icon below house icon), tap **Database**, and then tap **Save Readings**.
- Next, tap **Internal Mem** if the readings are to be transferred with HotSync.
- Retriever will display a counter as it saves the readings. When the save is complete, a message will be displayed to confirm this.

To transfer the readings back to the desktop, HotSync the handheld.

3.2.11 Backup

Nightly backups of the reading data are easily achieved by HotSyncing the handheld after each day's usage. If your reading cycle takes several days to complete, consider HotSyncing each day before retiring the handheld device. This ensures the complete handheld is backed up in the unlikely event of a problem.

If memory is lost from the handheld for any reason (or another handheld needs to be substituted for the one that was being used for reading), a HotSync operation will restore the status to what it was at the time of the last HotSync operation.

Note: A facility has been added to the package to backup the entire content of the handhelds memory. In the unlikely event of a power failure the card backup procedure would enable the operator to restore both applications and data without the need to return to base and Hotsync the unit. Refer to section 4 for more details.

3.3 Processing Readings with FileExchange

3.3.1 Confirm presence of ReadingBIF

For new installations it is advisable to confirm that the ReadingBIF was returned back to the PC.

The ReadingBIF contents are not legible as a text file but the file can still be confirmed to be present at the appropriate location and that the location matches the Source BIF specified during setup.

If HotSync is used as the transfer method, use Windows Explorer to open the backup folder for your handheld in the Palm Desktop application directory. For example, if you are using a handheld named **Sim**, the backup folder is likely be located at **c:\program files\Palm\Sim\backup**. Using Explorer, locate that folder and open it. The ReadingBIF should be present. Next, choose **View, Details** from Explorers' menu. This will reveal the modification dates and times of the files. Ensure that ReadingBIF has a recent modification date and time and is therefore not a stale file.

Note: Confirmation steps to ensure the ReadingBIF file is present is not always necessary. Use the confirmation while the system is new to you. After you are comfortable, you do not need to confirm the file's presence. Typically, when calling for program support, the representative is likely to start with the confirmation steps to ensure the ReadingBIF is in the proper location with a recent modification date and time. If the file does not exist, FileExchange will display a message in the log to say that the file is missing.

Click the **Setup** button, then select the Reading Conversion tab. Check that the SourceBIF entry is pointing at the correct file and folder - If using multiple handhelds, check that the paths for the handhelds have been configured correctly (select **Advanced – Favourites**) for each device. Check that the Destination file entry is correct for the Route being converted.

3.3.2 Processing ReadingBIF

To convert the ReadingBIF file to a reading file acceptable to the billing software, click the **Reading File** button.

If multiple handheld operations were specified, as defined in the Advanced-Favourites option (see section 2.4.6), then the favourites window is displayed. Select the desired handheld and click '**Use**'.

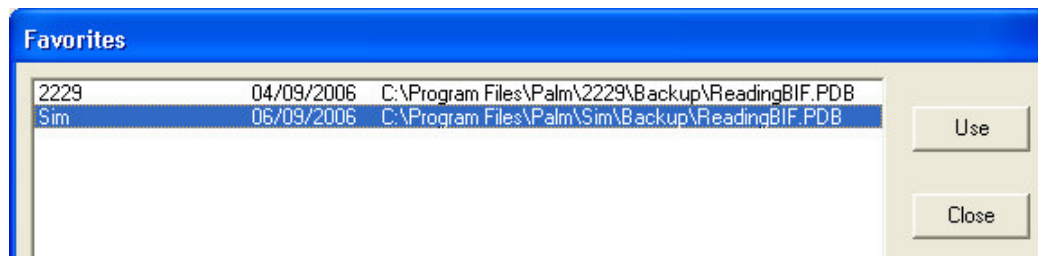


Figure 3-13: Selected the 'Sim' handheld.

If an existing reading file is present, the program will prompt to overwrite the file. If you choose not to overwrite the file, the conversion will not start.

The reports selection screen is then presented (see figure 3-14).

Four reports can be created. If a hard copy is required then check the appropriate box(s). To preview a report click on the appropriate report button. If no report is required then just click '**Continue**'.

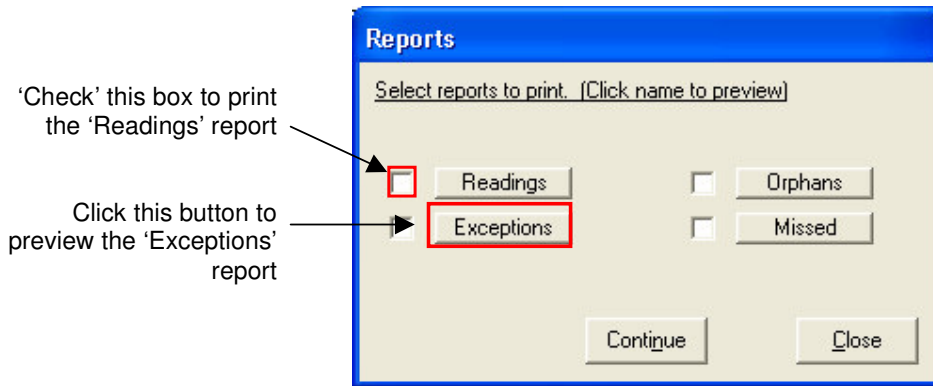


Figure 3-14: Select Report for Preview / Printing

Report Option	Purpose
Readings	Reports all readings taken during the reading session (Radio, manual, skipped).
Exceptions	Reports only readings which were taken as exceptions: manual readings
Orphans	Reports orphaned meters - readings collected for meters which were not in the RouteBIF
Missed	Report all meters that have not been read either by radio, manual or skipped

Press **Continue** to proceed with conversion.

A small bar graph will show on the button to show the progress of the conversion. When complete, a message will be displayed in the log showing the step has completed.

The reading file is now ready to be processed by the billing software.

*Note: The Reading File can be processed several times as the ReadingBIF remains behind until it's overwritten by another HotSync from the handheld. This is an advantage as the map can be modified, if necessary, to meet the requirements of the billing software. If a modification is necessary, modify the map and then click on the **Reading File** button again to reprocess the ReadingBIF. Repeat as necessary.*

3.3.3 Report

Using File Exchange a number of standard reports can be generated.

Transponder	Tamper	Reading	Previous	Min	Max	Date/Time	Account/Meter	Billing/Address	Exception
8045601	0	000307	600	100	1000	2006/09/06 11:53:33	1001 W 84512766E	T Hatcher 1 Wisteria Drive	
8045602	64	010940	20000	5000	80000	2006/09/06 11:53:28	1002 G 44512786A	M Hingis 2 Wisteria Drive	TAMPER
8045603	0	03000*	1500	1000	2000	2006/09/06 11:53:58	1003 E 44512386A	M Carey 3 Wisteria Drive	High Reading
8045604	0	0050*	400	100	300	2006/09/06 11:54:16	1004 W 44512486A	S Johanson 4 Wisteria Drive	Low Reading 1: Could not find the
8045605	0	000000		222222	888888	2006/09/06 11:54:36	1005 W 445127586A	D Barrymore 5 Wisteria Drive	Low Reading 1: Could not find the
8045606	0	000000		222222	888888	2006/09/06 11:54:56	1006 W 44512781A	R Stevens 6 Wisteria Drive	Low Reading No Shed 3: Tarantula alert!

Figure 3-15: Example Reading Report

Column No	Title	Description
1	Transponder	Transponder ID – As specified in route file
2	Tamper	Tamper Count – As read by radio from transponder
3	Reading	Current Meter Reading – Radio or Manual (* indicates that it's a manual reading)
4	Previous	Previous Meter Reading - As specified in route file
5	Min	Minimum Reading (Audit) – As specified in route file
6	Max	Maximum Reading (Audit) – As specified in route file
7	Date / time	Date and time when the reading was taken
8	Account / Meter	Account and Meter ID – As specified in route file
9	Billing / Address	Customer name and Service Address – As specified in route file
10	Exception	Message from meter reader – Entered from within the manual entry screen “High Reading” – Text displayed when the current reading > Max Reading “Low Reading” – Text displayed when the current reading < Min \ Reading 3: Tarantula – Skip code and text as defined by supervisor in File Exchange. “TAMPER” – Meter has a non-zero tamper count

Table: Format of Report

CHAPTER 4: Card Backup Application

Introduction

In the unlikely event of a power failure the Aceeca handheld computer will revert back to its default settings. The Retriever application and any route files and readings will be lost. The handheld would then have to be taken back to the office and hotsync to the host PC. The route would have to be re-read. This could cause inconvenience and additional expense to the utility.

To manage this event all Aceeca handhelds supplied by Blue Tower Communications Ltd are installed with the 'Card Backup' application. This application enables the user to backup the entire database(s) including all applications, route files and meter readings to the units' internal flash memory thus negating the need to return to the office.

The specific details of the CardBackup application are given in the following sections. It is up to the utility to decide if and when the backup facility should be used.

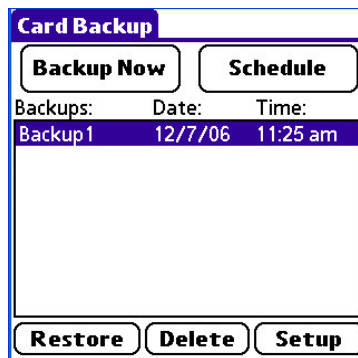
4.1 About CardBackup

CardBackup is a utility that will backup the databases on a PalmOS™ device. When used with the Aceeca Meazura handheld computer the Retriever for Palm application and all route files and readings databases will be stored in the units internal flash memory.

CardBackup will allow multiple backups to reside on a card. When it restores it will restore all the databases that were backed up, overwriting any existing ones on the handheld device. So any databases (eg new readings) that were installed on the device after the backup was made will not be removed when a restore is performed.

4.2 Main Form

Click on the CardBackup icon to start the application.

Backups:	Date:	Time:
Backup1	12/7/06	11:25 am

**Fig 4-2:
Main Form**

The main form shows all the main functions of the CardBackup. It also shows all the backups currently stored.

4.2.1 Backup Now

Tap this button to go to the Backup form to begin a backup.

Fig 4-3: Perform Backup screen

The Backup form is where you perform actual backups. Enter a backup name (e.g. Backup1) and then tap **'Begin Backup'**. If a backup of the name that you entered is already on the card CardBackup will compare it to the current Palm memory and only backup what's changed since that last backup occurred.

Tap **'Done'** to go back to the Main form.

4.2.2 Schedule

Tap this button to go to the Schedule form where automatic backups can be scheduled.

Fig 4-4: Schedule Backup screen

The Schedule form is where you can schedule backups to occur automatically. Up to seven different schedules can be configured where you can set the specific day and time that the backup will occur. Note: You must check the **'Perform Scheduled Backups'** to be able to see the rest of the form.

Enter the name of the scheduled backup (Backup1). Old backup data will be overwritten if using the same name so only the latest backup will be saved.

Select the day(s) and time that the automatic backup will occur. When the day/time comes the Aceeca will automatically turn on, perform the backup, and then turn itself off (provided the **'Turn off when finished'** box is checked).

Tap the **'Save'** button.

4.2.3 Restore

Select a backup and tap this button to go to the Restore form to restore the backup to the Aceeca

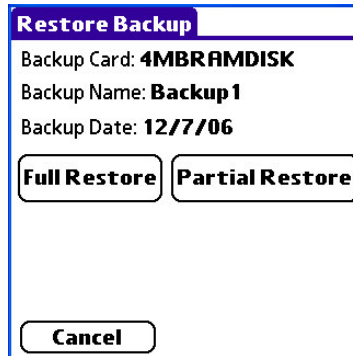


Figure 4-5: Restore Backup Screen

The Restore form is where you will restore a backup. It will show the details of the backup that was selected on the Main form when you tap the 'Restore' button.

'Full Restore' – Causes all databases in the backup to be restored to the Aceeca.

'Partial Restore' – Enables you to select which databases you want restored.

'Cancel' – Return to the Main form.

For the purposes of backing up and restoring the Retriever application including route files and readings, select 'Full Restore'.

4.2.4 Delete

Select a backup to delete and then press this button to delete it.

4.2.5 Setup

Tap this button to go to the setup configuration form.

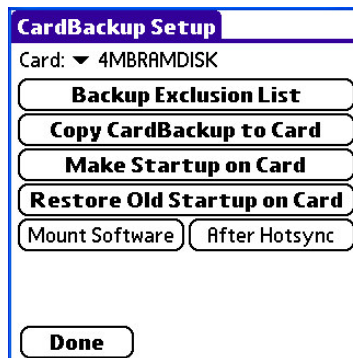


Figure 4-6: Card Backup Setup Screen

The setup of the CardBackup should not be changed except for the following (if required):

Tap 'After Hotsync', check 'After Hotsync' and enter a backup name.

Whenever a Hotsync operation is performed an automatic backup will then occur.

APPENDIX A: CREATING NEW DATA MAPPINGS

A-1 Introduction

Use of data maps to describe input data coming into FileExchange enables data to be interfaced to the billing system without the need for programming effort.

There are two types of Route Source and Destination files usable by Retriever for Palm:

- **Flat file**
A flat file has 1 meter per record and all information known about that meter is contained on one record (row). A flat file may be either a delimited file or a fixed width file. A delimited file has field delimiters such as comma (,) and semicolon(;) to delineate the fields. A fixed width flat file relies on starting columns and number of columns to describe data fields within the file. A column is 1 character.
- **MVRS-compatible**
MVRS-compatible contains more records than just meter records. Furthermore the information about a particular meter is not contained on a single record but on many records. There is no re-mapping task possible for MVRS-compatible. The layout of this format is very structured and not amendable.

Map Naming Notes:

*Maps used to describe the route, reading and reread route data are stored in simple text files within the Retriever for Palm installation folder. Route and reread Route maps will have a **.bcm** extension. Reading maps will have a **.brm** extension. The files can be opened with a text editor such as TextPad or Notepad.*

Editing: Notepad and Wordpad are the default text editors installed on most Windows computers. They are useful but do not help much in finding column positions and field widths. TextPad is suggested to help with this – it will display the precise column positions in the lower right corner as you move your cursor along the record. Download from <http://www.textpad.com/download>.

A-2 Creating and editing route maps

If you are going to create a new map, click **New Map**. If you are going to modify an existing Flat File map (eg 915 Blue Tower Sample), select that map from the dropdown list and then click **Edit Map**. Then immediately click **Save As** and enter a new file name – a package upgrade to Retriever for Palm will overwrite the 915 Blue Tower Sample map and any edits made to that map will be lost.

A number of controls are available to the user to setup the route, reread and reading map. These are described in Table A-1. One of these controls is the BIFDataFields the details of which are described in table A-2 for the route map & reread map and table A-3 for the reading map.

Section A-4 looks at an extract of the sample route file provided (915 Demo Route.csv) with the package and includes a break down of the route map (915 Blue Tower sample.bcm) used to create the RouteBIF.pdb file.

Section A-5 then takes a Reading.pdb file created using the information provided in A-4 to generate the reading file (915 Readings.csv). It includes an extract of the reading file and a break down of the associated reading map (915 Blue Tower Sample.brm) used to create said reading file.

Section A-6 gives an example of how the reread conversion option is used to target specific meters to read.

Table A-1: Continued

Constant	Text	Defines a value to be used in the RouteBIF for all meters. For example: set the number of decimals for all meters to a constant value of 2.
Name	Type	Instruction
Align	List	Applies to fixed type ReadingBIF file only. Designates if the exported data field is to be left or right justified within the width of the field.
Pad	Text	Applies to fixed type ReadingBIF file only. Designates what character is to be used to pad the remaining unused positions if the exported field does not completely fill the fixed column width. Choose either Spaces or Zeros.
Format	List	Applies to fixed and delimited type ReadingBIF file only. For example: set the date format to MMDDYY and the time format to HHMM

Table A-2 RouteBIF Data Fields Description

Field Name	Description	Notes	Form of Data
RouteNbr	Route number of meter.	Required - if field does not exist within input data, use option Map Constant to assign route value	Left Justified, Alphanumeric
Sequence	Sequence of meter within route. Input data is not required to be sorted by Sequence number. The route will appear in sequence order on the handheld.	Required - if field does not exist within input data, use option Autonumber to assign an incrementing sequence value	Right Justified, Numeric.
MeterTagNbr	Meter Tag Number is equivalent to Transponder ID.	Required. FileExchange will report error during conversion if this is not unique.	Right Justified, Numeric.
Meter Type	Indicates which type of meter is to be read. For descriptive purposes only. Any value other than 'E', 'G', 'W', 'space' will appear as ? within handheld reader and in report. 'Space' in file will be shown as 'W' in handheld.	Required, E=Electric, G=Gas, W=Water	Single character
Digits	Number of meter dials expected to be read. This value is applied to the reading after decimals are removed to truncate the reading if necessary.	3-9	Numeric, single digit.
Decimals	Number of dials from the raw reading that are to be considered decimals and discarded. A meter reading with a value 12345678 with a decimal value of 3 will yield 12345. A meter reading of 12345678 with a dial value of 6 will yield 123456.	0-9	Numeric, single digit.
Prv Reading	Previous Reading of this meter. Should be the same number of dials specified in Digits field.	Not presented in handheld reader at this time.	Right Justified, Numeric.
Max Reading, Min Reading	Either the minimum or maximum valid reading accepted during Manual Read without presenting operator with a warning message.	Not presented in handheld reader at this time.	Right Justified, Numeric.
Status	Indicates for example the status of an account	Active / Inactive	Billing file specific
Read Type	Controls which reading method should be used to collect reading data. A meter designated as manual will be collected using radio if heard by the receiver. A meter designated as radio can be collected manually as well.	M=Manual, R=Radio, P=Probe	Single character
Last Reading Date	The last date a meter reading was recorded for this meter.	Not presented in the handheld reader at this time.	Numeric, Format YYMMDD.

Table A-2: Continued

Field Name	Description	Notes	Form of Data
Utility Code	The utility code the Transponder should transmit with the Transponder ID and meter reading. No warning is issued if the utility code designated is different than the utility code heard by the receiver.	Required - If the field does not exist within the input data, use Map from Constant to force a utility code value.	Numeric, 3 digits
Lat, Long	Longitude, Latitude of the meter location.	Not presented in the handheld reader at this time.	
Pulse Prescale	Prescale value used to scale down the reading collected by the receiver before adding to Initial Reading.	Not required for 915 system Transponders – used only for European system. For example, a raw Transponder reading of 100 with a Pulse Prescale of 2 will yield 50. 50 is then added to the Initial Reading to determine the meter reading value displayed in handheld and returned in ReadingBIF to PC.	Right Justified, Numeric
Initial Reading	Initial value of meter reading when the Transponder was installed.	Not required for 915 system Transponders – used only for European system. The value is used in conjunction with Pulse Prescale to determine the reported reading.	Right Justified, Numeric.
Initial Pulse count	Initial value of TransPondIT when the unit was installed	Not required for 915 system Transponders – used only for European system.	Right Justified, Numeric.
Initial tamper count	Initial value of the tamper count when the TransPondIT was installed	Not required for 915 system Transponders – used only for European system.	Right Justified, Numeric.
Response text	A Note to be presented to the office entered by the meter reader. A typical example would be 'meter needs repair'.		Alphanumeric
Message	A Note to be presented to the reader when tapping on the meter to inspect details in Info View. Typical examples include location of meter and warnings.		Alphanumeric.
Service Address	Address or location of meter.	Required	Left Justified, Alphanumeric.
Billing Name	Customer or Business Name.	Presented in Info View on handheld reader	Left Justified, Alphanumeric.
Service UniqueID	The billing unique identifier that uniquely identifies the meter - typically the account number plus service number.	Presented in Info View on handheld reader. For presentation only.	Left Justified, Alphanumeric.

Table A-2: continued

Field Name	Description	Notes	Form of Data
Meter Serial Nbr	The serial number actually stamped onto the side of the register. Helpful for manual reads to ensure operator is reading the correct meter.	Presented in Info View on handheld reader. For presentation only.	Left Justified, Alphanumeric.
User1 - User 5	User defined fields that carry useful information for billing software. In many billing applications, more information is required for meter posting and exception reporting. The value of the fields are returned in their entirety to the Reading file.	The installer may use these fields for their purpose. They are passed to and from the handheld but are not used by the handheld application.	Left Justified, Alphanumeric.

Table A-3 ReadingBIF Data Fields Description

Field Name	Description	Notes	Form of Data
RouteNbr	Route number of meter.		Alphanumeric
Sequence	Sequence of meter within route.		Numeric.
MeterTagNbr	Equivalent to Transponder ID.		Numeric.
Meter Type	Indicates which type of meter has been read.	E=Electric, G=Gas, W=Water	Single character
Digits	Number of meter dials expected to be read.	3-9	Numeric, single digit.
Decimals	Number of dials from the raw reading that are to be considered decimals and discarded.	0-9	Numeric, single digit.
Prv Reading	Previous Reading of this meter.		Numeric.
Max Reading, Min Reading	Max or min valid reading accepted during Manual Read without presenting operator with a warning message.		Numeric.
Cur Reading	Current Reading of this meter.		Numeric.
Reading Date	Date that the current reading was taken		Various formats. E.g. MMDDYY
Reading Time	Time that the current reading was taken		Various formats. E.g. HHMM
Status	Example: Activity of an account	Active / Inactive	Customer specific
Read Type	Indicates which reading method was used to collect reading data.	M=Manual, R=Radio, P=Probe	Single character
Response Code			
Last Reading Date	The last date a meter reading was recorded for this meter.		Numeric, Format YYMMDD.
Tamper count			
Utility Code	The utility code set on the Transponder.		Numeric, 3 digits
Signal			
Lat, Long	Longitude, Latitude of the meter location.	Not presented in the handheld reader at this time.	

Table A-3: Continued

Field Name	Description	Notes	Form of Data
Pulse Prescale	Prescale value used to scale down the reading collected by the receiver before adding to Initial Reading.	Not required for 915 system Transponders – used only for European system. For example, a raw Transponder reading of 100 with a Pulse Prescale of 2 will yield 50. 50 is then added to the Initial Reading to determine the meter reading value displayed in handheld and returned in ReadingBIF to PC.	Right Justified, Numeric
Initial Reading	Initial value of meter reading when the Transponder was installed.	Not required for 915 system Transponders – used only for European system. The value is used on conjunction with Pulse Prescale to determine the reported reading.	Right Justified, Numeric.
Response Text	A Note to the office written by the meter reader		Alphanumeric.
Message	A Note to be presented to the reader when tapping on the meter to inspect details in Info View. Typical examples include location of meter and warnings.		Alphanumeric.
Service Address	Address or location of meter.	Required	Left Justified, Alphanumeric.
Billing Name	Customer or Business Name.	Presented in Info View on handheld reader	Left Justified, Alphanumeric.
Service UniqueID	The billing unique identifier that uniquely identifies the meter - typically the account number plus service number.	Presented in Info View on handheld reader. For presentation only.	Left Justified, Alphanumeric.
Meter Serial Nbr	The serial number actually stamped onto the side of the register. Helpful for manual reads to ensure operator is reading the correct meter.	Presented in Info View on handheld reader. For presentation only.	Left Justified, Alphanumeric.
Receiver Data			
User1 - User 5	User defined fields that carry useful information for billing software. In many billing applications, more information is required for meter posting and exception reporting. The value of the fields are returned in their entirety to the Reading file.	The installer may use these fields for their purpose. They are passed to and from the handheld but are not used by the handheld application.	Left Justified, Alphanumeric.

A-4 Example: 915 Blue Tower Sample (ROUTE)

1st line of '915 Demo Route.csv' file

1, T Hatcher, 1 Wisteria Drive, W, 1000, 100, 1001, 84512766B, 8045601, 6, 0, , 600, ,55, , , Meter round back of thorn bush

The Route Map

Column No.	Field Name	Contents
1	Route Number	1
2	Billing Name	T. Hatcher
3	Service Address	1Wisteria Drive
4	Meter Type	W (Water)
5	Max Reading	1000
6	Min Reading	100
7	Account No.	1001
8	Meter Serial No.	84512766B
9	Meter Tag No. / Transponder ID	8045601
10	Meter Dials	6
11	Meter Decimals	0
12	Read Type	' '
13	Previous Reading	600
14	Previous Read Date	' '
15	Utility Code	55
16	Tamper / Status	' '
17	Meter Interface	' '
18	Note to Reader (Message)	Meter round back of thorn bush

The actual route map file <915 BlueTower Sample.bcm>

```

BIF=1.1
MAPNAME=915 BlueTower Sample.bcm
MAPTYPE=2
MAPFILTER=0
MAPDELIMITER=,
MAPQUOTE=<none>
MAPTERMINATOR= 0
MAPLENGTH=0
RouteNbr=1,0,,,0
Sequence=A
MeterTagNbr=9,0,,,0
MeterType=4,0,,,0
Digits=10,0,,,0
Decimals=11,0,,,0
PrvReading=13,0,,,0
MaxReading=5,0,,,0
MinReading=6,0,,,0
ReadType=12,0,,,0
LstReadingDate=14,0,,,0
UtilityCode=15,0,,,0
Lat=N
Lng=N
ScaleFactor=N
InitReading=N
InitPulseCount=N
InitTamperCount=N
Message=18,0,,,0
ServiceAddress=3,0,,,0
BillingName=2,0,,,0
ServiceUniqueID=7,0,,,0
MeterSerialNbr=8,0,,,0
User1=N
User2=N
User3=N
User4=N
User5=N
    
```

A-5 Example: 915 Blue Tower Sample (READING)

1st line of '915 Readings.csv' file

"1", "T Hatcher", "1 Wisteria Drive", "1", 1000, 100, "1001", "84512766B", 8045601, 6, 0, R, 600, 70, 55, , 2, 10072006, 1208, "Meter round back of thorn bush", ""

The Reading Map

Column No.	Field Name	Contents
1	Route Number	1
2	Billing Name	T. Hatcher
3	Service Address	1Wisteria Drive
4	Meter Type	1
5	Max Reading	1000
6	Min Reading	100
7	Account No. (Service Unique ID)	1001
8	Meter Serial No.	84512766B
9	Meter Tag No. / Transponder ID	8045601
10	Meter Dials	6
11	Meter Decimals	0
12	Read Type	R – Radio
13	Previous Reading	600
14	Current Reading	70
15	Utility Code	55
16	N/A	""
17	Tamper / Status	2
18	Reading Date	10072006
19	Reading Time	1208
20	Message	Meter round back of thorn bush
21	Response Text	""

The actual reading map file <915 Blue Tower Sample.brm>

Note that the map delimiter (MAPDELIMITER) is a comma which is what the fields in the reading file are separated by.

BIF=1.1
MAPNAME=915 Blue Tower Sample.brm
MAPTYPE=2
MAPFILTER=0
MAPDELIMITER=,
MAPQUOTE=""
MAPTERMINATOR= 3
MAPLENGTH=0
RouteNbr=1,0,R,Z,0
Sequence=N
MeterTagNbr=9,0,R,Z,0
MeterType=4,0,R,Z,0
Digits=10,0,R,Z,0
Decimals=11,0,R,Z,0
PrvReading=13,0,R,Z,0
MaxReading=5,0,R,Z,0
MinReading=6,0,R,Z,0
CurReading=14,0,R,Z,0
ReadingDate=18,0,R,Z,24
ReadingTime=19,0,R,Z,41
Status=N
ReadType=12,0,R,Z,0
ResponseCode=N
LstReadingDate=N
TamperCount=17,0,R,Z,0
UtilityCode=15,0,R,Z,0
Signal=N
Lat=N
Lng=N
ScaleFactor=N
InitReading=N
InitPulseCount=N
InitTamperCount=N
Initials=N
ResponseText=21,0,R,Z,0
Message=20,0,R,Z,0
ServiceAddress=3,0,R,Z,0
BillingName=2,0,R,Z,0
ServiceUniqueID=7,0,R,Z,0
MeterSerialNbr=8,0,R,Z,0
ReceiverData=N
User1=N
User2=N
User3=N
User4=N
User5=N

A-6: Reread conversion

The ReRead Conversion tab is identical to the Route Conversion. The reread option is used to quickly convert a list of meters which must be reread into a small route which can be converted into a small RouteBIF to quickly reread missed meters.

A new data map should be created as the data provided for the ReRead function is likely to be different from the map used for Route conversion. Typically, only a few fields will be specified by the operator for ReRead. A simple reread map is created using delimited type. The remaining required fields can be mapped to a constant. For example, the RouteNbr can be mapped to a constant such as “REREADS”.

An example is shown below of a delimited (comma separated) file with columns Service Address, Customer Name, Meter ID, Transponder ID, Reading Type:

```
53 Hurn Way,Joe Soap,5001,1,M
55 Hurn Way,Lily Marlene,5002,2,M,Big dog
57 Hurn Way,Catherine Jones,5003,3,R
```

Field Name	Use in this example	Value of Constant	Column No
RouteNbr	Map Constant	ReRead	
Sequence	Autonumber		
MeterTagNbr (Transponder ID)	Map from Source		4
Meter Type	Map Constant	W	
Digits	Not mapped		
Decimals	Not mapped		
Prv Reading	Not mapped		
Max Reading, Min Reading	Not mapped		
Read Type	Map from source		5
Last Reading Date	Not mapped		
Utility Code	Map constant	60	
Lat, Long	Not mapped		
Pulse Prescale	Not mapped		
Initial Reading	Not mapped		
Message	Map from source		6
Service Address	Map from source		1
Billing Name	Map from source		2
Service UniqueID	Not mapped		
Meter Serial Nbr	Map from source		3
User1 - User 5	Not mapped		

APPENDIX B: COMMERCIAL INFORMATION

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