



WaveReader Software
User Manual

Please Read These Instructions First

IMPORTANT INFORMATION

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1 INTRODUCTION

1.1 Product Description

This manual provides instructions for installing and using the WaveReader software program. Using a PC, this software allows the user to search and view video directly from compatible Digital Video Multiplexers and Digital Video Recorders via the Ethernet or the telephone. This software also allows the user to view video that has been archived onto a CD-R, or recorded directly onto the hard disk of a PC. Images can be captured using the Wavestudio feature, manipulated, and printed or exported as a file.

1.2 Features

- Main window for viewing images in Fullscreen or Multiscreen formats.
- Disk Analysis window provides graphical overview of recorded data on a per camera basis.
- Search Screen window for searching and displaying data on a specific time and date.
- Event Search window for searching and displaying recorded event data.
- Wavestudio for capturing, enhancing, and exporting images.
- Text data display box.

1.3 Files Provided

The three program files are provided on either a CD-ROM, or via e-mail in a ZIP file format.

File Name	File Size
Setup.exe	138KB
Setup.lst	5KB
WaveReader.cab	1.963MB

1.4 Hardware System Requirements

The following hardware system requirements are needed before software installation:

Hardware	Specification
CPU	Pentium 166 MHz or faster
RAM (Memory)	16MB (minimum)
HARD DISK DRIVE (HDD)	6MB free hard disk space (minimum)
MONITOR (SVGA)	1024 x 768, 24 Bit colour
OPERATING SYSTEM	Windows® 95/98/NT/2000

Windows® 95/98/NT/2000 are registered trademarks of Microsoft Corporation.

1.5 About This Manual

This manual assumes that the user is familiar with Microsoft Windows, and with such terms as *Windows*, *window*, *mouse*, *pointing*, *clicking*, and *dragging*. If you don't know the meaning of any of these terms, choose the Help command from the Start menu (the button labelled Start in the lower-left corner of the screen), click the Contents tab in the Windows Help dialog box, and explore the information you find there.

Selecting With A Mouse

Any reference to *clicking* or *pressing a button* in this manual means a single click of the left mouse button, unless otherwise noted.

Moving Windows

To move a window, activate the desired window by clicking anywhere inside of it. Click and hold the title bar located at the top of the window. Drag the window to the desired location, then release the mouse button.

2 GETTING STARTED

2.1 Installation

Installing From CD-ROM

To install the Wavereader on your hard disk from a CD:

1. Place the CD in your CD-ROM drive.
2. Choose Run from the Start Menu, then type **d:\setup.exe** (where d is the drive letter of your CD-ROM) and press **OK**.
3. Follow the instructions for installation as they appear.

Installing from the ZIP files

To install the Wavereader on your hard disk from a ZIP file:

1. Copy the ZIP file to a temporary directory on the hard disk.
2. Open the ZIP file by double-clicking on it. If the WinZip® software required to open the file is not available on the PC, it is easily obtained as Shareware or Freeware from many locations on the Internet.
3. Select setup.exe by clicking on it in the WinZip® window.
4. Follow the instructions for installation as they appear.
5. When the installation is successfully completed, delete the temporary directory and its contents.

WinZip® is a registered trademark of Nico Mak Computing.

2.2 Running WaveReader

To start the Wavereader program, choose Programs from the Start menu and then choose **Wavereader** → **Wavereader**. The Main window of the Wavereader program will appear on the computer monitor.

2.3 The Main Program Window

The Main program window consists of four areas:

- **The Menu Bar:** At the top of the window.
- **The Main Viewing Area:** The large blue area.
- **The Status Bar:** At the bottom of the window.
- **The Button Panel:** The left side of the window.

This window shows a 16-way multi camera display.



The Menu Bar



The Menu Bar provides access to the programs functions and parameters, as well as access to files.

The Main Viewing Area

Pictures are displayed in this area in Multi-Camera, and Single-Camera formats. Picture display order is according to the information encoded by the unit used to create the original video data file.

Choose from the following displays:

- 16-way Multiscreen Large
- 16-way Multiscreen Medium
- 4-way Multiscreen Large
- Single Camera Large
- Single Camera Medium
- Single Camera Small

16-way Multiscreen Medium display.



4-way Multiscreen Large display.



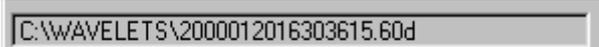
Single Camera Small display.



The Status Bar

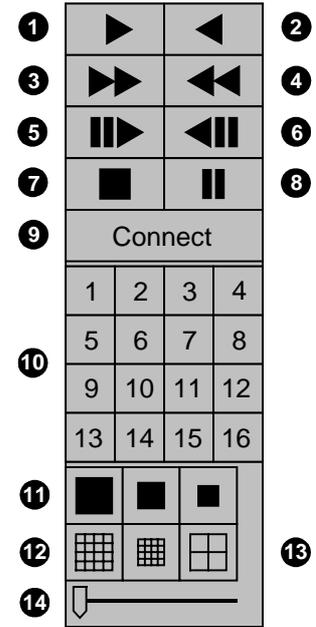
The Status Bar displays messages and current connection status information. If the user is viewing data recorded into files on a CD-ROM or stored on the user's PC, Path Name information is displayed on the status bar.

Example of the Status Bar below showing the Path and Name of the file currently being displayed:



The Button Panel

1. **Play Forward button:** Press this button to playback video at the normal record speed.
2. **Play Reverse button:** Press this button to playback video in reverse at the normal record speed.
3. **Fast Forward button:** Press this button to perform high-speed playback.
4. **Rewind button:** Press this button to perform high-speed reverse playback.
5. **Single Frame Advance button:** Press this button to advance the video a single frame while in Pause mode.
6. **Single Frame Rewind button:** Press this button to rewind the video a single frame while in Pause mode.
7. **Stop button:** Press this button to halt all playback operations, and move the Progress Bar to the start of data.
8. **Pause button:** Freezes playback until the **Pause** button is pressed again, or the **Play Forward** or **Play Reverse** buttons are pressed. The progress bar stays at the current position.
9. **Connect button:** Press this button to connect the Wavereader software to a remote unit via the Ethernet.
10. **Number buttons:** Press this button to call up individual cameras for display.
11. **Single Camera Display Size:** Choose from Small, Medium, or Large.
12. **16-way Multiscreen button:** Choose Large or Medium.
13. **4-way Multiscreen button:** Press this button to view the Large 4-way display. Subsequent presses of the button will toggle the cameras displayed in groups of four (Cameras 1-4, 5-8, 9-12, 13-16).
14. **Progress Bar:** The Progress Bar advances to the right to indicate the video playback status. The user can drag the bar to navigate forward or backward.

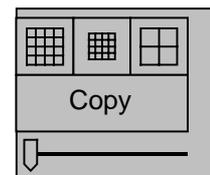


Copy Button (Optional)

The Copy button can be added to the button panel by selecting **Setup** → **Snapshot Setup** → **Display COPY button** from the Menu bar.

The Copy button copies a snapshot of the camera's image as a snap*.bmp file in the directory location of the Wavelet.exe file.

* The asterisk will be replaced with numeric characters generated by the WaveReader software after checking the default drive for previously saved snapshots. (Example: 001, 002, 003, etc.)



Activated Button Indicator

When the **Play Forward**, **Play Reverse**, **Fast Forward**, and **Rewind** buttons are clicked, the button colour changes from black to green.

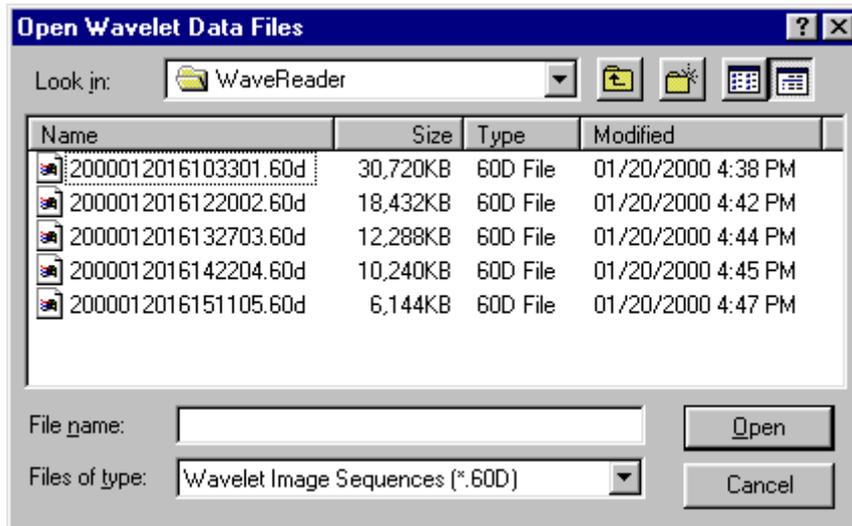
When the **Pause** button is clicked, the button colour changes from black to red.

3

VIEWING STORED VIDEO FILES

3.1 Opening A Stored Video File

From the Menu Bar, click **File**, then click **Open**. When opened from the Menu Bar (page 8), the following window will appear:



1. Select the Drive and the Directory (normally the CD-ROM drive) that contains the video files archived from the Digital Recorder. Files should appear as shown above.
2. The long file names identify the Time and the Date of the recording, and the order in which they were placed on the CD-ROM.
3. For additional information on creating Video CD-ROMs from Baxall Digital Video Recorders, consult the manual provided with the Digital Recorder Product.

EXAMPLE: 2000012016103301.60d

2000	01	20	16	10	33	01
YY	MM	DD	HH	MM	SS	No.

File Extensions

The default file extension (.60d) is defined as a Wavelet video clip in a proprietary data format.

The default file extension (.60h) is a Wavelet header file that automatically turns ON the disc analysis screen during Play mode of a Wavelet video clip.

If a .60d file is only copied from the CD to the PC hard drive, there is no .60h file available for the header information.

Both .60d and .60h files are created from the unit to the CD-ROM writer.

3.2 Selecting a File for Display

1. Select the file for display, and click on the **Open** button in this window to load the file.
2. The file will load, but initially, the video will not display until the **Play Forward** button is pressed. The **Play Forward** button turns green to indicate when play operations start.
3. When video begins to play, the display should appear similar to the image shown.

This screen is the Medium format, 16-Way Multi-Camera. See Main Viewing Area, page 8 for additional screen choices.

Clicking any camera image will display that camera image in full screen.

A red letter "A" opposite the camera number means an alarm occurred on that camera.



4 VIEWING VIDEO VIA THE ETHERNET

Wavereader allows the user to connect to an Ethernet compatible Digital Video Recorded from a PC. Video can be recorded and played back. Single frame images can be captured, enhanced, saved and printed.

4.1 TCP/IP Address Setup

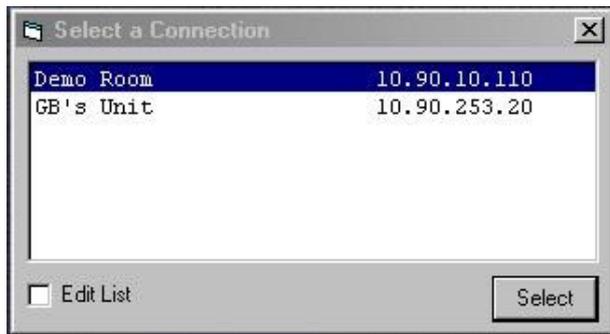
IP Address Selection

To connect to a unit via the Ethernet, the user must select the network IP address. From the menu bar, select **Setup** → **Unit Address Setup**. The **Select a Connection** box will appear.

This box allows the user to select the Internet Protocol address (IP Address) assigned to the selected unit. This is required for making a network connection.

This box displays previously selected IP addresses. To choose an IP address, click and highlight the desired address, then click the **Select** button.

The software will return to the Main window, and the **Connect** button will appear on the button panel. The user is now able to connect with a unit via the Ethernet.



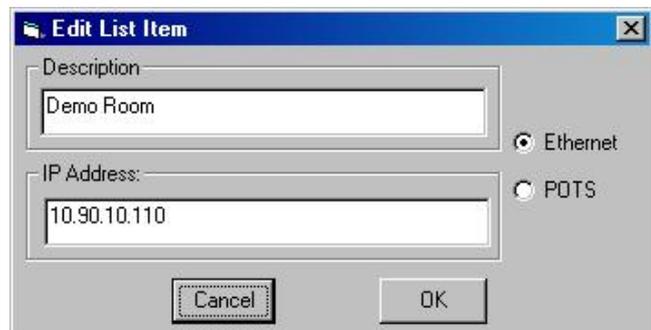
Editing And Creating IP Addresses

To edit a current IP address or create a new IP address, select the **Edit List** box in the **Select a Connection** window. The **Edit Connection List** window (shown here) will appear.

From this window, the user may choose to Add or Edit an IP address. Clicking the **Add** or **Edit** button will open the following window.



1. Enter the name you wish to assign the unit in the Description box.
2. Select **Ethernet**.
3. Enter the IP Address of the unit in the IP Address box.
4. Select **OK** or **Cancel** to complete your selection.



Copying And Removing IP Addresses

To remove an IP address, click and highlight the desired address, then press the **Remove** button.

To create a copy of an IP address in the Edit Connection List window, press the **Copy** button.

When finished, press the **Select** button to complete the selection. The software will return to the Main window, and the **Connect** button will appear on the button panel. The user is now able to connect with a unit via the Ethernet.

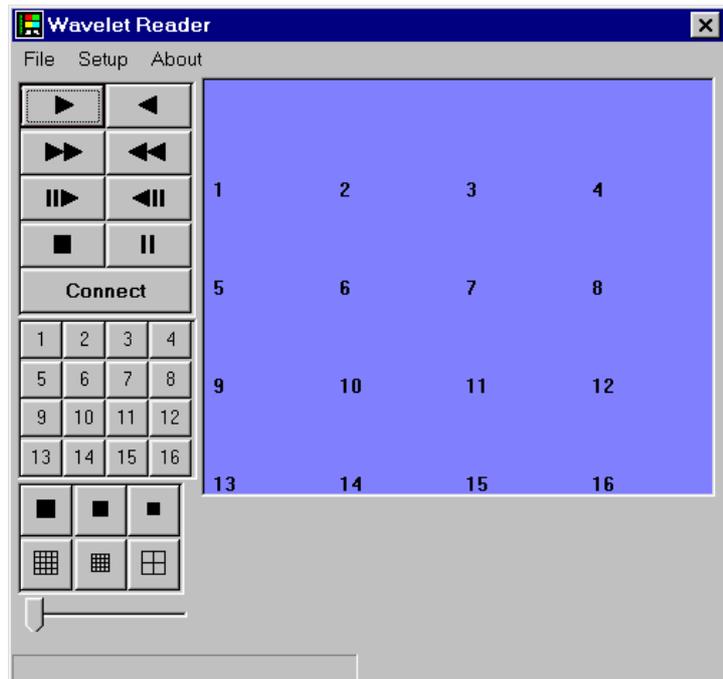


4.2 Connecting Via The Ethernet

When IP address selection has been completed the user may connect to the selected unit. Before connecting for the first time, it is recommended that the user configure the Connection Type (see section 4.3 in this manual) and Network Speed (see section 4.5 in this manual).

To connect to a unit, click the **Connect** button.

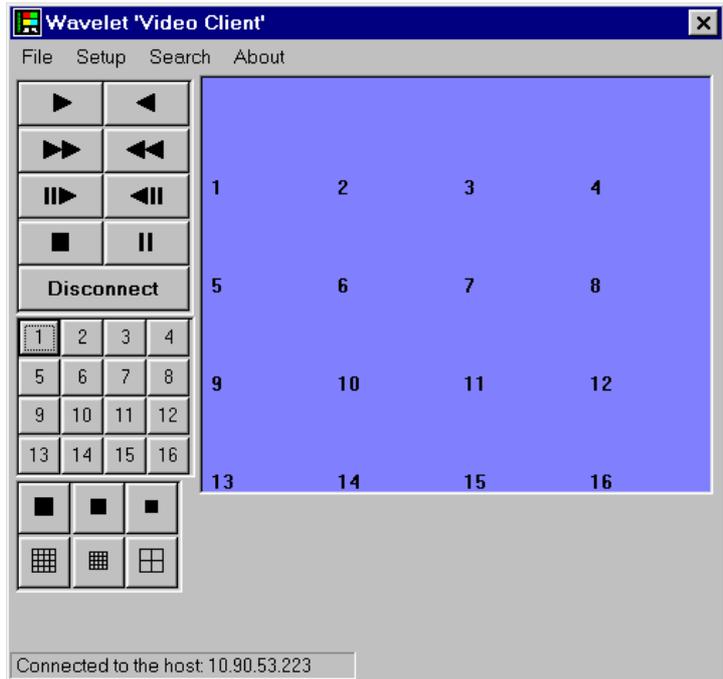
The WaveReader software will try to connect with the unit. Wait a few seconds.



Upon connection, the WaveReader's status bar will indicate the IP address of the selected unit.

The **Connect** button will be replaced with a **Disconnect** button.

WaveReader will be replaced with **Wavelet Video Client** on the title bar.

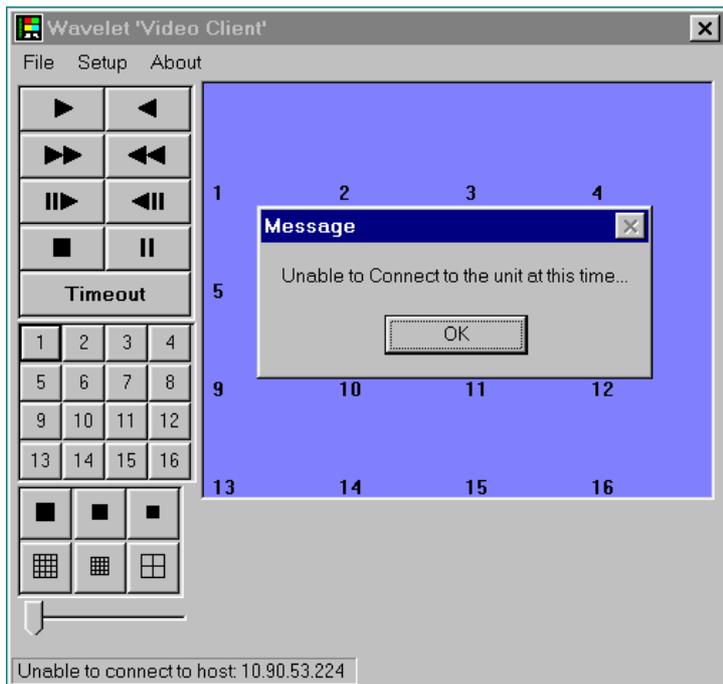


If unable to connect, a **Time-out** button appears over the **Connect** button.

A Message window appears with "**Unable to Connect to the unit at this time...**"

Press the **OK** button on the message window.

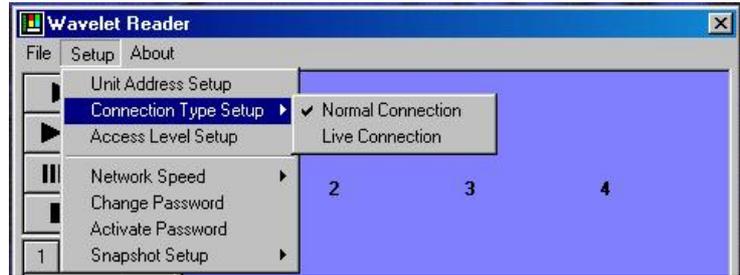
The **Time-out** button will disappear.



4.3 Ethernet Connection Type

Two types of Ethernet connections can be established between the WaveReader software and a unit.

- **Normal Connection**
- **Live Connection**



Normal Connections

When a **Normal Connection** is made, the user may select between two operating modes:

- **Playback Mode:** Allows the user to view and search recorded data from the units hard disk.
- **Live Look-in Mode:** Allows the user to view live images.

Playback Mode

Once a connection has been made, pressing the **Play** button on the button panel causes images to be received and displayed. Within a few seconds the **Data Analysis** window (see Section 4) is also displayed in this mode, unless the user has indicated that a slow speed network is being used (see Section 5.4). Playback mode is the default mode.

Live Look-in Mode

When viewing live images is desired, the software may be switched to the Live Look-in mode via the Setup menu.

This option is added to the Setup Menu only after a Normal Connection has been established. Along with the images being displayed, the units current Date, Time and Alarm status are also shown.



Entering the Live Look-in Mode

To enter Live Look-in Mode, select **Setup → Enter Live Look-in Mode** from the menu bar.

- **To begin viewing live images:** Click the **Play** button. The **Play** button will turn green to indicate that it has been selected.
- The **Pause** button functions as **Stop** button.
- The **Pause**, **Disconnect**, **Multi-Camera**, **Camera Size**, and **Camera** buttons are black and remain active. The remaining buttons turn grey and are inactive.
- The **Enter Live Look-in Mode** button is replaced with the **Leave Look-in Mode** button.
- The current Date and Time appears.
- Multi-Camera live images can be viewed in 16-Way Large or Medium formats, or 4-way Large format.
- Single Camera live images can be viewed in Large, Medium, or Small formats.
- Clicking any camera image will display that camera image in full screen.
- A red letter "A" opposite the camera number means an alarm for that camera.

Leaving the Live Look-in Mode

To leave Live Look-in Mode, select **Setup → Leave Live Look-in Mode** from the menu bar.

- Live images for each camera stop updating.
- All buttons return to black.
- The **Leave Live Look-in Mode** button is replaced with the **Enter Live Look-in Mode** button.
- WaveReader is still connected to the unit.



Live Connections

When a Live Connection is made, the user is limited to viewing live images only. The user can establish a Live Connection even if a different user has established a Normal Connection.



To establish a Live Connection, select **Setup → Connection Type Setup → Live Connection** from the menu bar.

- **To begin viewing live images:** Click the **Play** button. The **Play** button will turn green to indicate that it has been selected.
- The **Pause** button functions as **Stop** button.
- The **Pause, Disconnect, Number, Multiscreen** and **Camera Size** buttons are black and remain active. The remaining buttons turn grey and are inactive.
- The current Time and Date appear.
- Multi-Camera live images can be viewed in 16-Way Large or Medium formats, or 4-way Large format.
- Single Camera live images can be viewed in Large, Medium, or Small formats.
- Clicking any camera image will display that camera image in whatever format was last selected for viewing individual cameras.
- A red letter "A" opposite the camera number means an alarm for that camera.

4.4 Setting Up Access Levels

The Access Levels are actually priority ratings used by the unit to determine if a currently established connection should terminate when a user with a higher priority level requests a connection.

If the current user has a lower access level, the unit will break its connection after sending a message to the users PC indicating that their connection has been terminated.

The status bar at the bottom of the WaveReader main window will also indicate that the connection was terminated by the unit.



There are three levels of access that can be set up in the WaveReader software:

- 1 (lowest)
- 2
- 3 (highest)

Changing The Access Level

To change the Access Level, select **Setup** → **Access Level Setup** from the menu bar. A password box will appear.

Enter the correct password, then click the **OK** button. The **Select Access Level** window will be displayed.

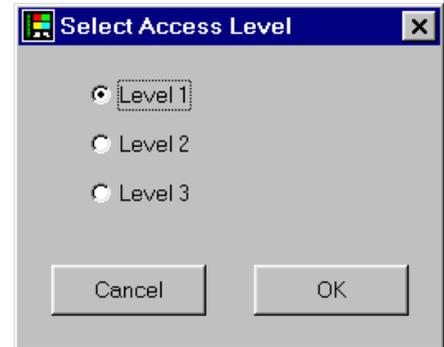
A password is provided to limit access of the standard user. Typically, this setting is changed by the Network Administrator.

By default, the password is 12345 when the software is first installed.

It is recommended that the default password be changed after installation is complete. As a security measure, store the password in the administrators secure files or in a limited access area.

Click the desired Access level then press the **OK** button.

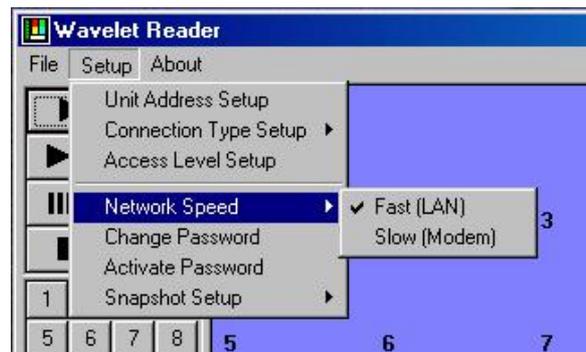
If the **Cancel** button is chosen the **Select Access Level** box will be cleared from the screen and no settings will be changed.



4.5 Setting Up The Network Speed

There are two **Network Speeds** that can be setup for connections between the WaveReader software and the unit.

- Fast speed (LAN).
- Slow speed (modem).



Fast (LAN) Connections

Most Local Area Networks and Wide Area Networks have a large bandwidth of (typically 10 Megabit or 100 Megabit). When the default **Fast (LAN)** option is chosen, the WaveReader software will download large amounts of information from the unit such as the information required to display the Data Analysis window. This normally takes only a few seconds when bandwidth is not restricted.

Slow (modem) Connections

When the **Slow (modem)** option is selected, it is normally because the bandwidth is limited. This causes delays in getting information through the network. Unless the user's Network Administrator has intentionally restricted the amount of available bandwidth, this type of limitation may be due to network connections established through modem connections or ISDN connections. In this situation it is not always advisable to burden the network with so much data.

When the **Slow (modem)** option is chosen the WaveReader does not request the large amount of data needed to display the Disk Analysis window. Playback starts at the beginning of the recorded data and proceeds to the end.

In order to compensate for the missing Data Analysis window, additional search capabilities have been incorporated within the WaveReader software. These will be covered in Section 6.

4.6 Password Setup And Usage

The WaveReader software is equipped with password protection for the **Access Level Setup** feature.

Once the WaveReader software has been started and the user has entered the password correctly when requested, the password will no longer be required to access any option until the program has been shut down and re-started again.

If password protection is required without shutting down the program, click **Activate Password**. The password will now be required to enter the **Access Level Setup** menu again.



By default, the password is 12345 when the software is first installed.

It is recommended that the default password be changed after installation is complete. As a security measure, store the password in the administrators secure files or in a limited access area.

Changing the Password

To change the Password, select **Setup → Change Password** from the menu bar. The **Enter Password** box will appear.

To change the password it is necessary to know the current password.

- Enter the correct password and then click the **OK** button. If the correct password was entered, the **Change Password** box will be displayed.

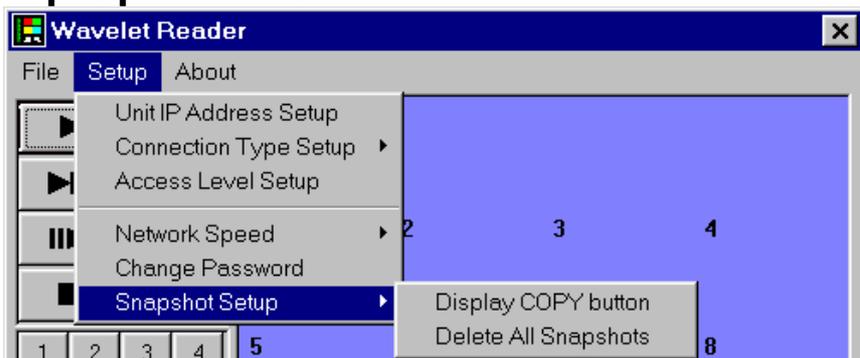


- Click the box labelled **Enter the new password**.
- Type in the new password.
- Click the box labelled **Retype the new password**.
- Type in the new password again.
- To complete the selection, click the **OK** button. If the new password was accepted the **Password Accepted** box will be displayed.
- If the **Cancel** button is chosen, the password will not be changed.



4.7 Snapshot Setup Operations

The two **Snapshot Setup** menu options can be accessed through the Setup menu.



The **Display COPY button** inserts the **COPY** button between the **Progress Slider Bar**, and the **Multi-Camera** buttons.

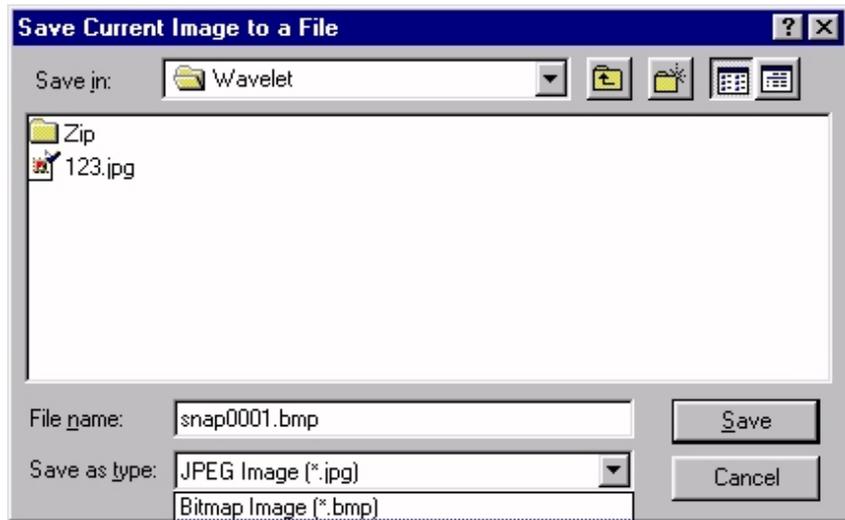
The **Delete All Snapshots** option deletes all snap*.bmp files in the directory where the WaveReader executable file is located. The asterisk will be replaced with numeric characters generated by the WaveReader software after checking the default drive for previously saved snapshots. (Example: 001, 002, 003, etc.).

The Automatic Screen Capture Option

When the Copy button is displayed, it appears above the Progress Slider Bar in the Button Panel. Clicking this button automatically copies a snapshot of the currently displayed video image as a snap*.bmp (see above) file in the directory location of the Wavelet.exe file. The screen may be a multiscreen display or a full display of a single camera image. Whatever is being displayed is saved. No interaction is required by the user, and playback operations continue without distracting the user.

The Manual Screen Capture Option

From the Menu Bar, click **File**, then click **Save**. The following menu will appear.



This window displays the above dialog box, indicating snapshots previously saved in Bitmap (*.BMP) file format on the PC's hard drive. The currently displayed video image may be saved with the user specifying the file name to be used, and the file type (*.bmp or *.jpg) to be chosen. (* An asterisk stands for a number.)

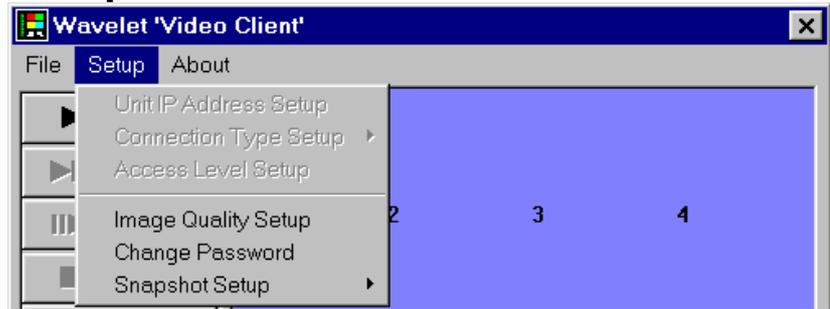
The benefit to this method is that snapshots can be saved with a more appropriate file name that better describes the picture's content rather than letting the software automatically assign a numeric sequence file name.

The disadvantage to using this method is that playback operations continue while the user is interacting with the dialog box and specifying the file name. If the user misses seeing portions of the video, it will be necessary to replay those sections again so that they may be viewed without further distractions.

4.8 Image Quality Setup

Once a connection has been established between the PC and a unit, the **Network Speed** option in the **Setup** menu is replaced with the **Image Quality Setup** option.

Clicking the left mouse button on this option causes the **Image Quality Setup** window to open.



This window allows the user to select the quality level for each type of display available in the WaveReader software.

Quality levels are adjustable from Low to High. This setting instructs the unit on how much video content data is required to display an image with the selected quality level.

Lower quality levels are more suitable for images displayed in smaller formats because the loss of fine detail in the image is not as noticeable. Higher quality levels are required for images displayed in larger formats.

The user also has the option of having the image sent as a monochrome (B/W) picture.

The update rate in pictures per second is improved by lowering the quality level or by switching to monochrome since both require less actual data to be transmitted. When both settings are combined, an even greater update rate can be achieved.

This is especially useful when limited bandwidth is available or restrictions on bandwidth use are implemented.

The Image Quality Setup Window

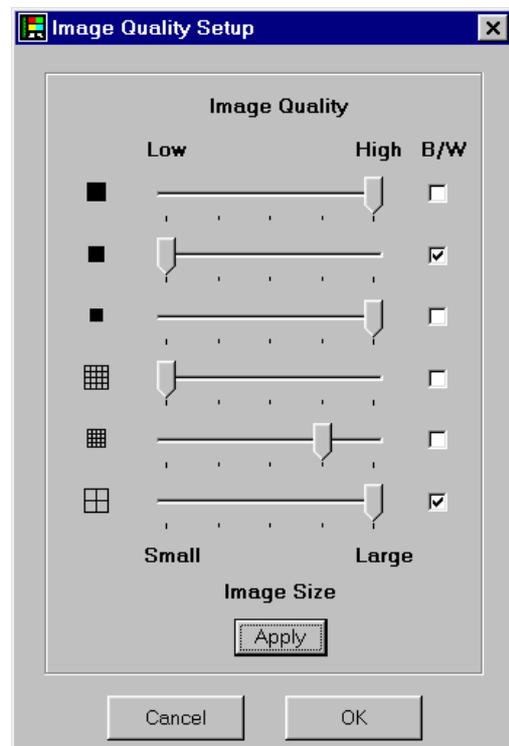
Use the slider bars to adjust the quality settings for each of the display formats.

Place a check mark in the **B/W** box for each format if pictures should be sent as monochrome images.

Click the **Apply** button to temporarily display the selected settings when an adjustment is made.

When the settings are correct, click the **OK** button to save the changes or click the **Cancel** button to discard the changes and return the settings to their previous levels.

Clicking on either **Cancel** or **OK** will clear this window and return the WaveReader software to normal operations.



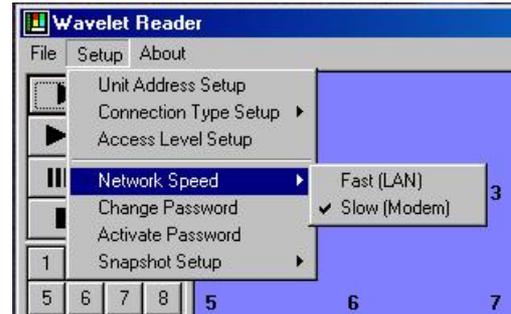
5 VIEWING VIDEO VIA THE TELEPHONE

WaveReader allows the user to connect to a POTS (Plain Old Telephone System) compatible Digital Video Multiplexer Recorder from a PC. Single frame images can be captured, enhanced, saved, and printed.

5.1 Setting Up The Network Speed

Due to the limitations of modem speed via a telephone connection, it is recommended that the Network Connection speed be set to **Slow**.

To change the Network Speed setting, select **Setup** → **Network Speed** → **Slow (Modem)** from the menu bar.



5.2 Phone Number Connection Setup

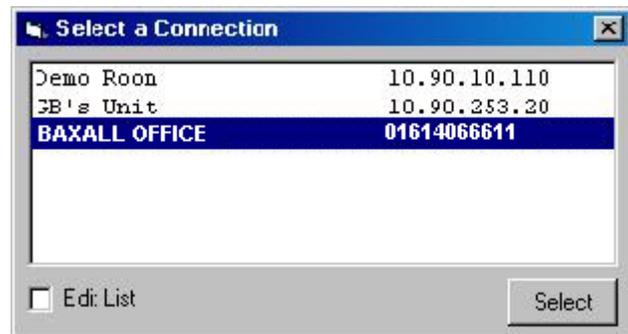
Phone Number Selection

To connect to a unit via the telephone, the user must select a telephone number. From the menu bar, select **Setup** → **Unit Address Setup**. The **Select a Connection** box will appear.

This box allows the user to select the telephone number where the unit is located. This is required for making a telephone connection.

This box displays previously selected IP addresses and telephone numbers. To choose a telephone number, click and highlight the desired number, then click the **Select** button.

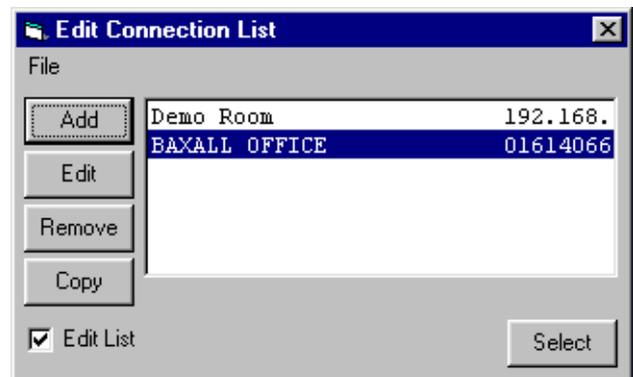
The software will return to the Main window, and the **Connect** button will appear on the button panel.



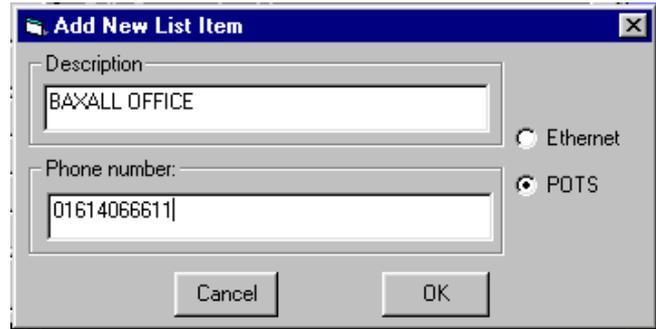
Editing And Creating Telephone Numbers

To edit a current phone number or create a new phone number, click the check the **Edit List** box in the **Select a Connection** window. The **Edit Connection List** window (shown here) will appear.

From this window, the user may choose to Add or Edit a telephone number. Clicking the **Add** or **Edit** button will open the following window.



1. Enter the name you wish to assign the unit in the Description box.
2. Select **POTS**.
3. Enter the telephone number where the unit is located the Phone number box.
4. Select **OK** or **Cancel** to complete your selection.

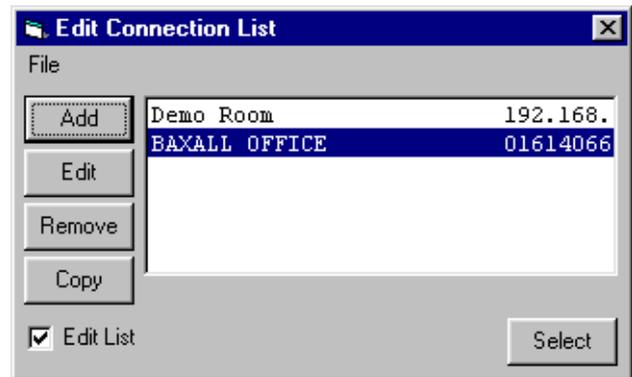


Copying And Removing Telephone Numbers

To remove a telephone number, click and highlight the desired number, then press the **Remove** button.

To create a copy of a telephone number in the Edit Connection List window, press the **Copy** button.

When finished, press the **Select** button to complete the selection. The software will return to the Main window, and the **Connect** button will appear on the button panel.

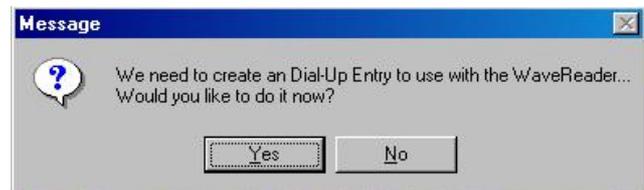


Connecting For The First Time

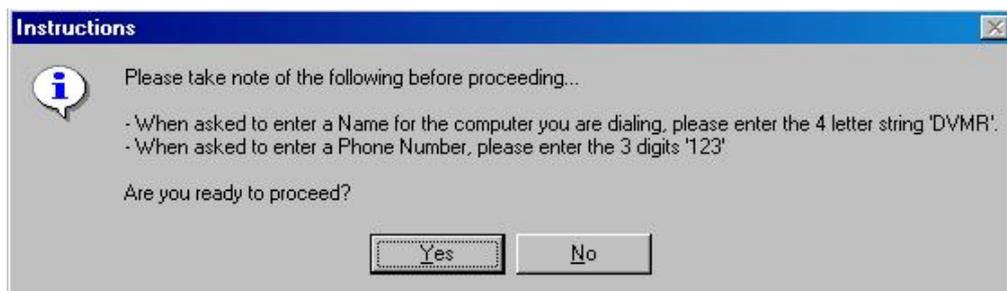
Before connecting for the first time, the computer must create a Dial-Up Networking Connection.

After a telephone number has been created and selected, pressing the **Connect** button will bring up the following message. To continue, click the **Yes** button.

The following instruction menu will appear.



Please make note of the on-screen instructions, then click the **Yes** button.



Depending on the version of Windows running, a **Network Connection Wizard** or a **Make New Connection** box will appear. Follow the on-screen instructions for creating a new dial-up networking connection. When prompted to enter a phone number, type **123**. When prompted to give the connection a name, type **DVMR**. When finished, the unit will attempt to establish a connection with the unit. This Dial-Up Networking Connection setup process is a one-time operation.

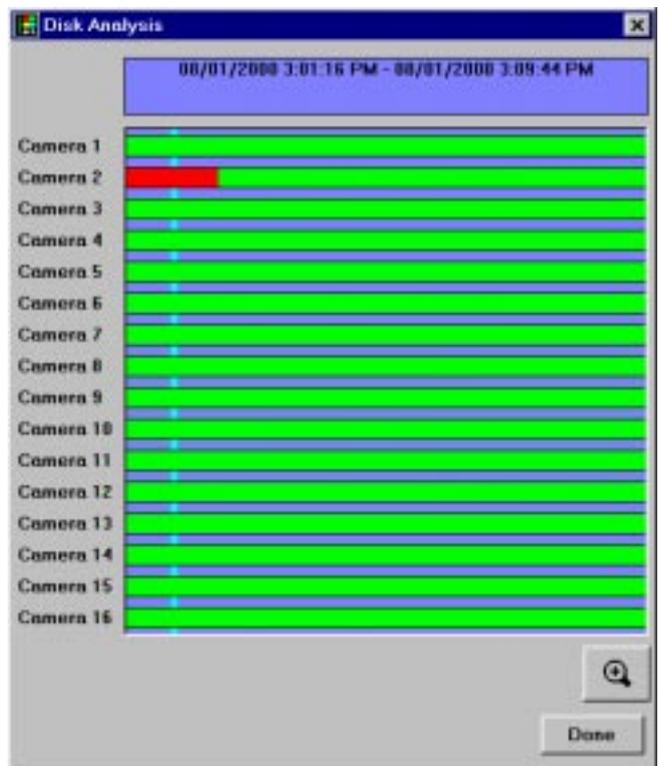
6 THE DISK ANALYSIS WINDOW

The **View** menu is not seen when the program first starts. It appears only after establishing a Normal Connection to a unit on the network, or after opening a Wavelet file with an associated header file located in the same directory. The **View** option appears between **File** and **Setup** options.

The only option available in this menu allows the user to decide if the Disk Analysis Window is to be displayed when the program is communicating with a unit, which is attached to the LAN, or if the user is playing back images recorded from a unit onto a CD-ROM.

6.1 The Initial Disk Analysis Screen Display

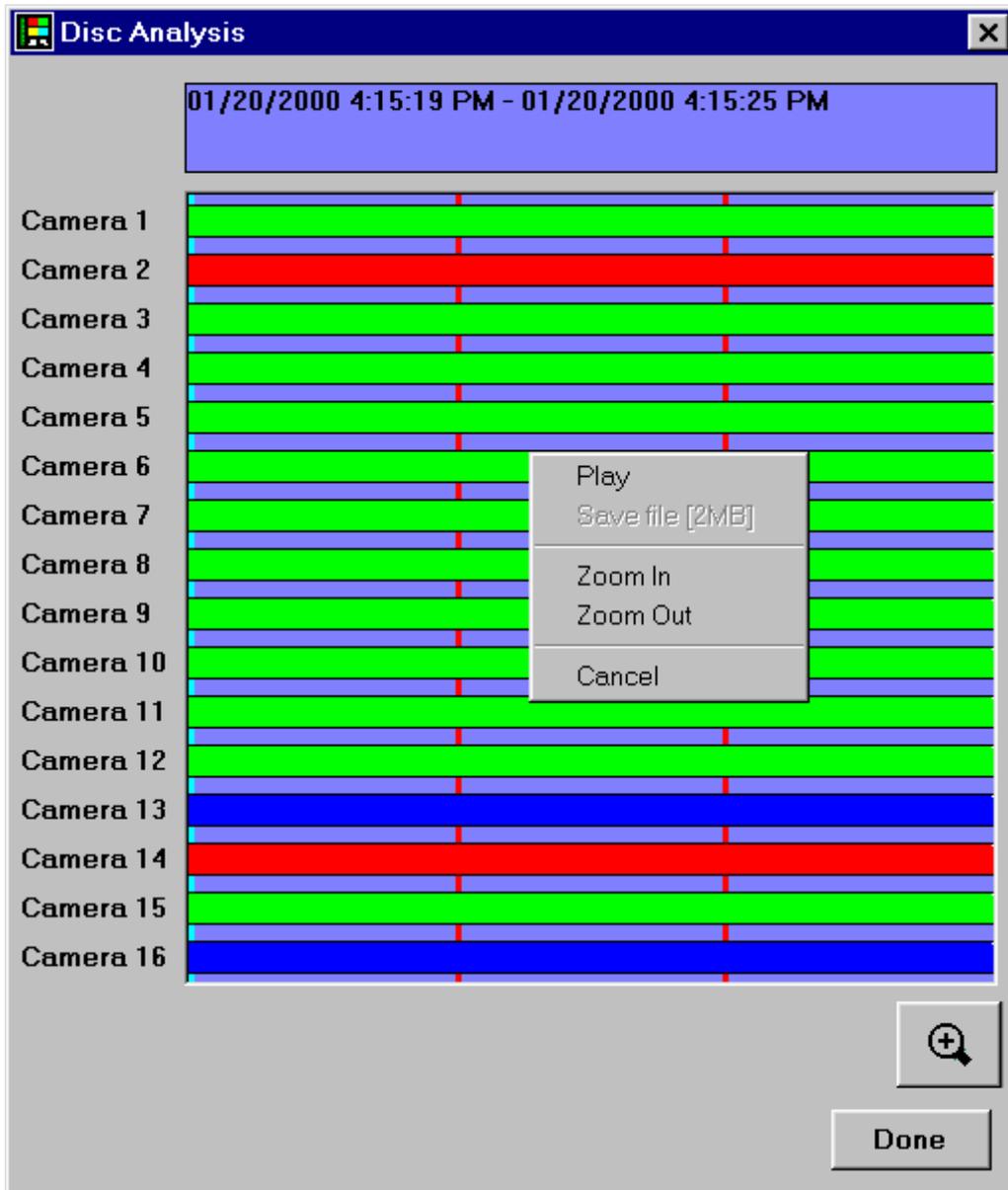
- The recording dates and times of the file appear above the horizontal bars (in .60h file extension with the same filename as .60d wavelet file).
- The light blue vertical marker indicates the current play position within the file.



The horizontal colour bars indicate:

Colour (horizontal bar)	Description
Green	Standard Video
Black	Camera Disabled/Video Loss
Red	Alarm Mode
Blue	Video Loss
White	End of disc

6.2 Working With The Disk Analysis Screen



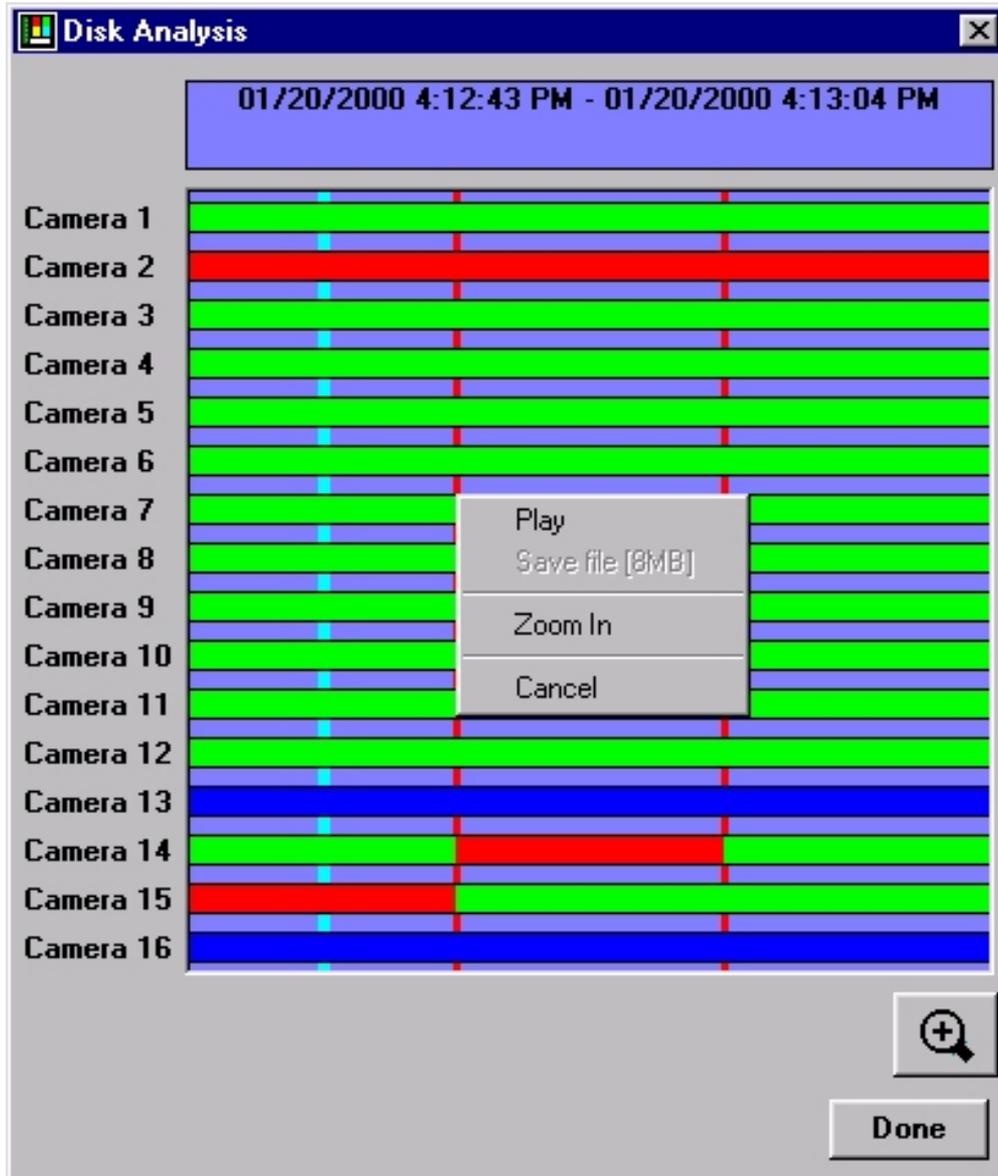
Working with the Disk Analysis Screen:

- The recording Dates and Times of the file appear above the horizontal bars.
- Place cursor on the **Disk Analysis Screen**. Clicking causes a small screen to appear, and allows the user to **Play, Zoom In, Zoom Out, and Cancel**. This will cause vertical lines to appear.
- **Play** allows the user to play a selected location of data block (between the left and right red vertical colour bar markers).
- There are only two **Zoom In** levels. On the second zoom level, **Zoom Out** is only available.
- **Zoom in** (+ magnifying glass) and **Zoom out** (- magnifying glass) allows the user to zoom in/out between the two red vertical markers during Play mode. Zooming in will narrow the time period, and also decrease the byte size.
- The **Save file (* MB)** operation is only available with the Ethernet model. An asterisk stands for a numerical amount.
- A screen appears with **Save to file** and **Cancel** buttons.
- Pressing the **Save to file** button brings up another screen to save the file.
- Type a filename, choose a file extension, and choose a directory location.
- Press the **OK** button, and a progress bar will open in the screen.
- **Cancel** (or **Done**) button shuts down the Save to file screen or Disk Analysis Screen.

The vertical colour bars in the Disc Analysis Screen indicate:

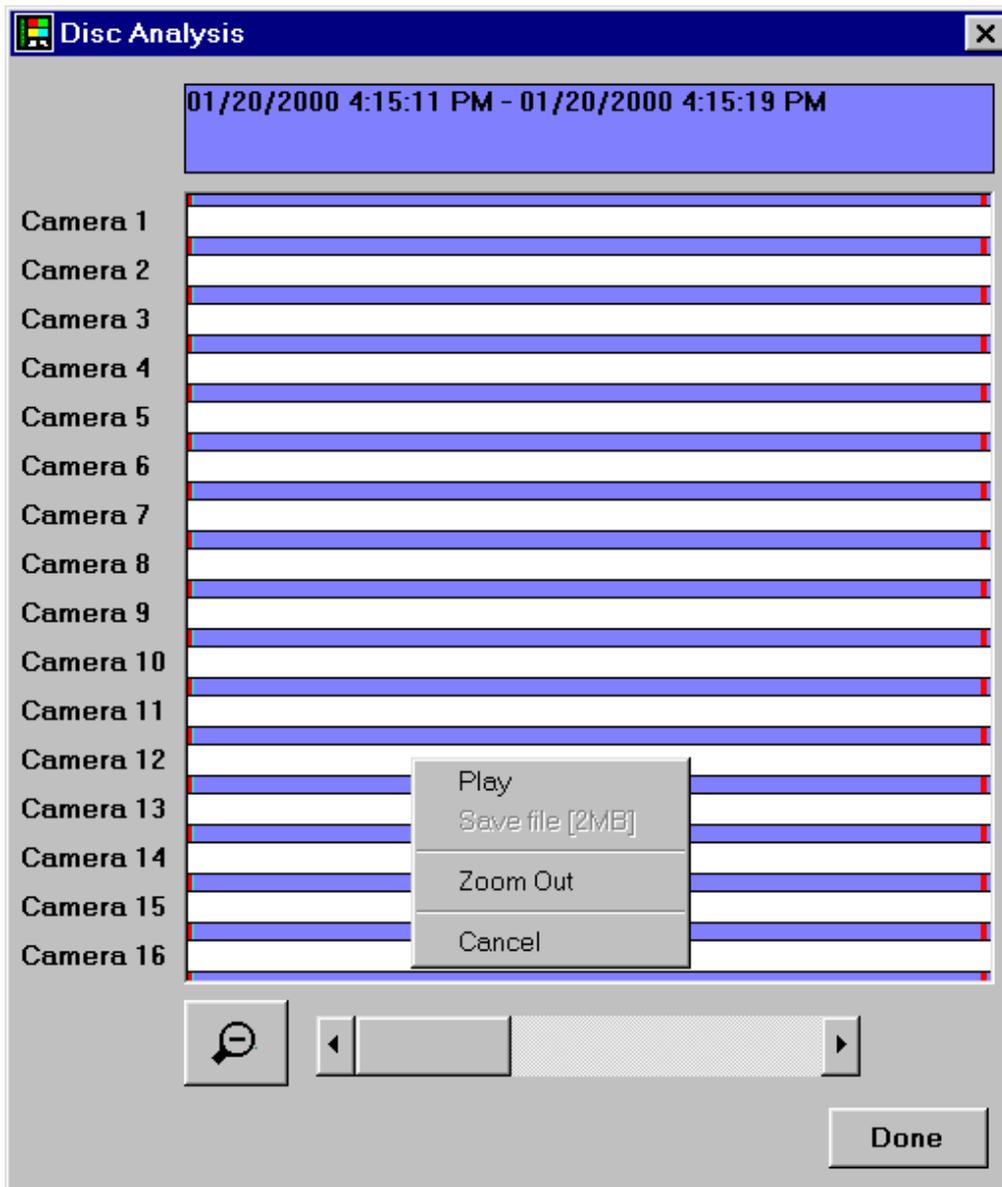
Vertical colour bar/s	Description
Light Blue (one bar)	Play indicator, positioned by progress slider bar.
Red (two bars)	Left and right markers for data block, corresponding to date and time.

First Zoom Level



- This window displays the Disk Analysis screen after the first Zoom In operation.

Second Zoom Level



- This window displays the Disk Analysis window after the first and second Zoom In operation. The Zoom In option is not available, while the Zoom out is available.

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7 REMOTE USER OPERATIONS

7.1 The Search Menu

Once a Normal Connection has been established between the PC and a unit, the **Search** option will appear in the **Menu Bar**.



The user may select from either:

- **Display Search Screen:** This feature allows the user to perform quick Go-To searches based on the Date, Time of day, or both Date and Time. This command instructs the unit to begin transmitting recorded images from the closest point to the time and/or date selected.
- **Display Event Search Filters:** This feature allows the user to search for Events based on a combination of Time, Date, Camera, and/or a specific piece of text data.

7.2 Using the Search Feature

The **Select Custom Play Position** slider control commands the unit to begin sending recorded images based on a percentage from the beginning to the end of recorded data. The window below indicates that the user has decided to view images beginning at about 8.6% in from the beginning of all recorded data.

Use the pull down selection lists to select the Month and Year values.

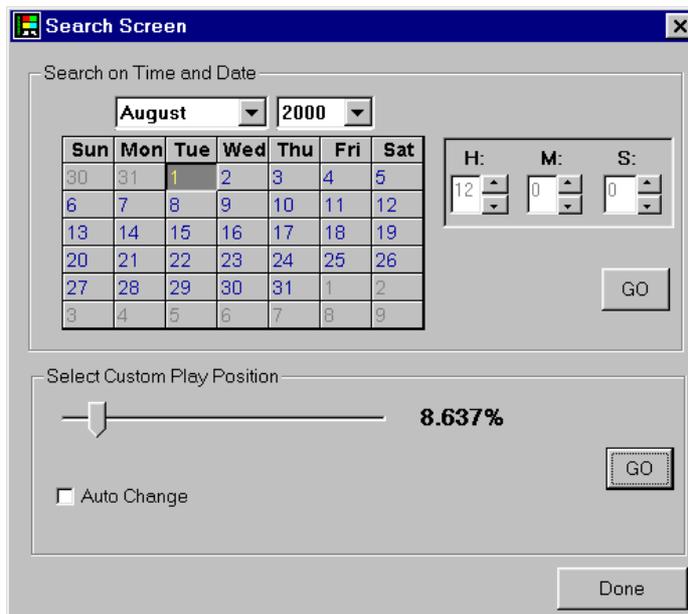
Click on one of the **Calendar Day** buttons to select the day.

Use the **Up** and **Down** scroll controls to assist in setting the **Hours (H)**, **Minutes (M)** and **Seconds (S)**.

Use the slider bar to adjust the percentage setting for Custom Play Position.

Click on **GO** to command the unit to begin sending the images.

Clicking on **Done** will clear this window and return the WaveReader software to normal operations.



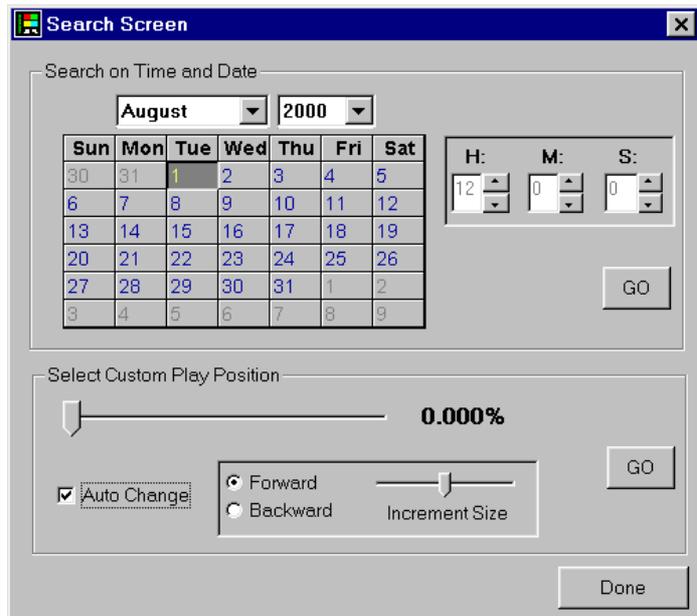
Placing a check-mark in the **Auto-Change** box causes the **Custom Play Position** point to advance either forward or backward by an adjustable level each time the **GO** button is clicked.

The **Custom Play Position** will move and the percentage indication will also change each jump

Click on **Forward** or **Backward** to determine the direction of each jump.

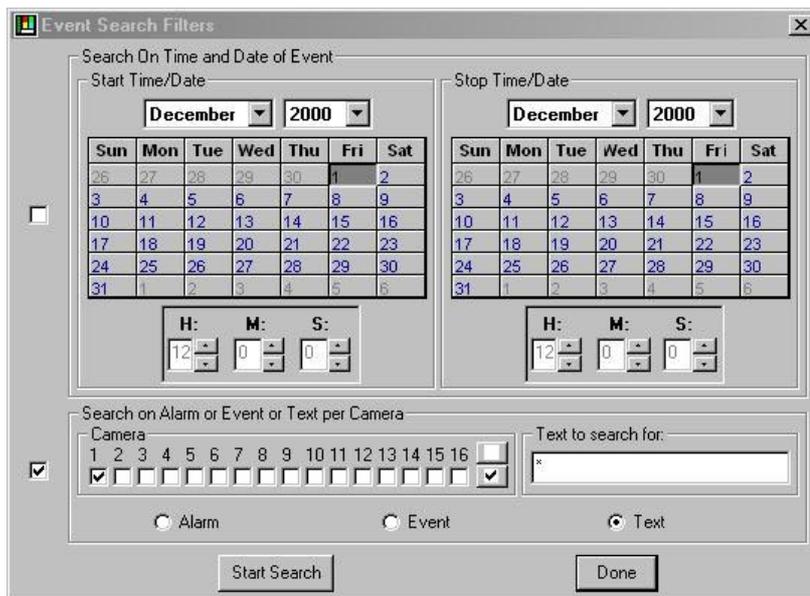
Use the **Increment Size** slider bar to adjust the size of each successive jump when the **GO** button is pressed

Clicking the **Done** button will clear this window and return the WaveReader software to normal operations.



7.3 Using the Event Search Filters

This feature allows the user to search for Events, such as RS-232 based text data from an ATM transaction, based on a combination of Time, Date, Camera, and/or a specific piece of text data.



Searching by Time:

- From the **Start Time/Date** section of the window, select the **Month** and **Year** from the drop-down list box. Select a **Start Day** by clicking on the calendar and highlighting a day. Use the **Up/Down Arrow** buttons to select the desired **Start Time**.
- From the **Stop Time/Date** section of the window, select the **Month** and **Year** from the drop-down list box. Select an **End Day** by clicking on the calendar and highlighting a day. Use the **Up/Down Arrow** buttons to select the desired **Stop Time**.
- Select the check box, located to the left of the Start Time/Date calendar, to activate the Search Time filter.

Searching by Camera:

- Select any number of cameras to search by selecting the check box below the camera number. To select all cameras, click the **Check All** button located to the right of the number 16 camera.
- To clear the checked cameras, click the **Clear Checks** button, located directly above the **Check All** button. The Number 1 camera will remain checked. One camera must remain checked at all times.
- Click the **Alarm** or **Event** option button to specify what type of information to search for.
- Select the check box, located to the left of the Camera check boxes, to activate the Search Camera filter.

Searching for Text:

- Click the **Text** option button to display the **Text to Search For** box.
- Enter the specific string of text you wish to search for into the window.
- Select the check box, located to the left of the Camera check boxes, to activate the Search Text filter.

Click the **Start Search** button to begin the search, or click the **Done** button to return to the Main screen.

Search Results

After the Start Search button is pressed, the unit will search for the specified events. After a short time, the **Event Search Results** window will appear.

The Event Search Results window displays the:

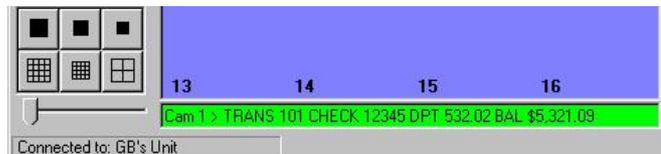
- Start and Stop Time/Date.
- The Camera Number.
- The type of information (Alarm, Event, Normal, Motion).
- The Text Data.



Start Time	End Time	Cam	Type	Text
[0] 10/24/2000 3:06:09	10/24/2000 3:06:09 PM	1	Even	TRANS 102 CHECK 23456
[1] 10/26/2000 10:56:14	10/26/2000 10:56:14 AM	1	Even	TRANS 104 CHECK 45678
[2] 10/26/2000 10:56:18	10/26/2000 10:56:18 AM	1	Even	TRANS 101 CHECK 12345
[3] 10/26/2000 10:56:20	10/26/2000 10:56:20 AM	1	Even	TRANS 102 CHECK 23456
[4] 10/26/2000 11:01:18	10/26/2000 11:01:18 AM	1	Even	TRANS 103 CHECK 34567
[5] 10/26/2000 11:01:23	10/26/2000 11:01:23 AM	1	Even	TRANS 104 CHECK 45678
[6] 10/26/2000 4:10:22	10/26/2000 4:10:22 PM	1	Even	24019 0002 10/26/200
[7] 10/26/2000 4:10:24	10/26/2000 4:10:24 PM	1	Even	
[8] 10/26/2000 4:10:30	10/26/2000 4:10:30 PM	1	Even	24019 0002 10/26/200
[9] 10/26/2000 4:10:32	10/26/2000 4:10:32 PM	1	Even	

This window will display a maximum of 99 items. To view additional items, click the **Next** or **Previous** buttons. Clicking directly on a line item will cause that item to be displayed on the main screen.

The text data is displayed near the bottom of the **Main** window in the **Text Data Display** box.



7.4 Recording Directly From The Hard Drive

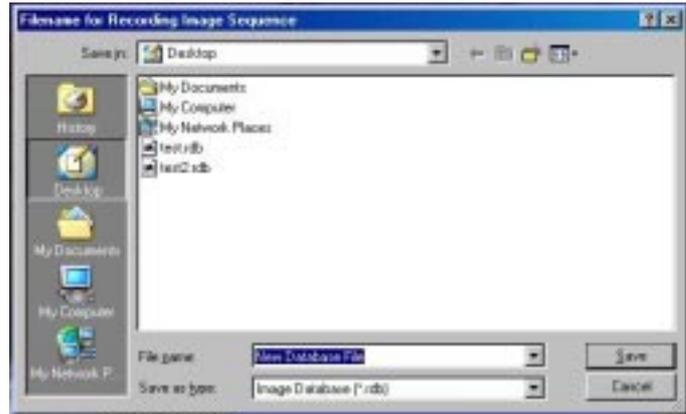
WaveReader allows the user to record directly from the hard disk via the Ethernet.

To begin Recording:

- Select **Record** → **Record Setup** from the Menu bar. A standard **Save As** menu called **Filename for Recording Image Sequence** will appear.



- Create an “.rdb” file to record the information to. Type the desired file name in the **File Name** box. Click the **Save** button.
- Begin playback from Ethernet.
- Select **Record → Start Recording** from the Menu bar to begin recording the images displayed in the Main window.
- Select **Record → Stop Recording** from the Menu bar to stop recording.



7.5 Playing Back From .Rdb File

To playback the recorded data described in the previous section:

- Select **File → Open** from the Menu bar. A window called **Open Wavelet Data Files** will appear.
- Select **Wavelet Image Recordings (.RDB)** from the **Files of Type** box.
- Select file location from **Look in** box or type file name in **File Name** box.
- Click **Open** button.
- Playback file by clicking the **Play** button.

8 USING WAVESTUDIO

WaveStudio is an image enhancement feature designed specifically for use with the WaveReader software. WaveStudio allows the user to capture an image and save images. WaveStudio also allows the user to increase or decrease contrast, zoom, sharpen lines, enhance sections of the picture, and bring out detail in dark areas.

8.1 Opening WaveStudio

From the Menu bar, select **File** → **Start WaveStudio**. The WaveStudio window will open. The WaveStudio window consists of two areas, the Main Viewing Area, and the Toolbar.

8.2 WaveStudio Toolbar

All of the functions in WaveStudio are performed using the toolbar located on the left side of the WaveStudio window.

Intensity: Changes the overall brightness (intensity) of the bitmap.

Contrast: Increases or decreases the contrast of the bitmap.

H. Contrast: Increases or decreases the contrast of the image in a bitmap, using a histogram to determine the median brightness.

This method finds the median brightness of the image; then brightens the pixels with values above the median and darkens the pixels with values below the median. This is more sophisticated (but slower) than the regular contrast method, which uses the middle possible value (128) rather than finding the actual median.

Hue: Changes the hue of colours in the bitmap by rotating the colour wheel. The user can rotate the colour wheel in either direction. A 180-degree rotation in either direction changes each colour to its complement. Positive rotation takes red toward green, green toward blue, and blue toward red. Negative rotation has the opposite effect.

Saturation: Negative values decrease the saturation of colours. Positive values increase the saturation. The saturation level is increased or decreased by a percentage of its present saturation level.

Sharpen: Increases or decreases the sharpness of the image in the bitmap. Negative values decrease the sharpness of the image. Specify -1000 for minimum sharpness. Positive values increase the sharpness. Specify +1000 for maximum sharpness.

Zoom: Clicking the **In** or **Out** button will cause the image to begin increasing or decreasing in size. Click the **Stop** button to stop the zooming. Click the **Normal** button to return the image to the original size.

Noise Removal: Changes the colour of each pixel in the bitmap to the average colour of the pixels surrounding it. This results in a blur effect.

Histogram Equalisation: Linearises the number of pixels per grey area in the bitmap. This can be used to bring out detail in the dark areas of an image.

Region Selection: Used to isolate sections of an image for enhancement. Select **Rectangular** to drag a box over the desired picture area. Select **Freehand** to draw borders around the desired area. Click **On** to activate this feature.

Copy & Paste: Use these buttons to copy images to or from the clipboard.



Undo: Click this button to undo all changes made to the image.

Done: Press this button to close the WaveStudio program.

8.3 WaveStudio Main Viewing Area

When WaveStudio is opened, it automatically captures any image currently displayed in the WaveReader Main Viewing Area.

Use the WaveReader window to find and pause the exact image you wish to edit.

Press the **Load** button to insert the image into the WaveStudio's Main Viewing Area.

Any image size or screen configuration displayed in the WaveReader Main Viewing Area can be copied to the WaveStudio Main Viewing Area.



9 WORKING WITH VIDEO CLIPS

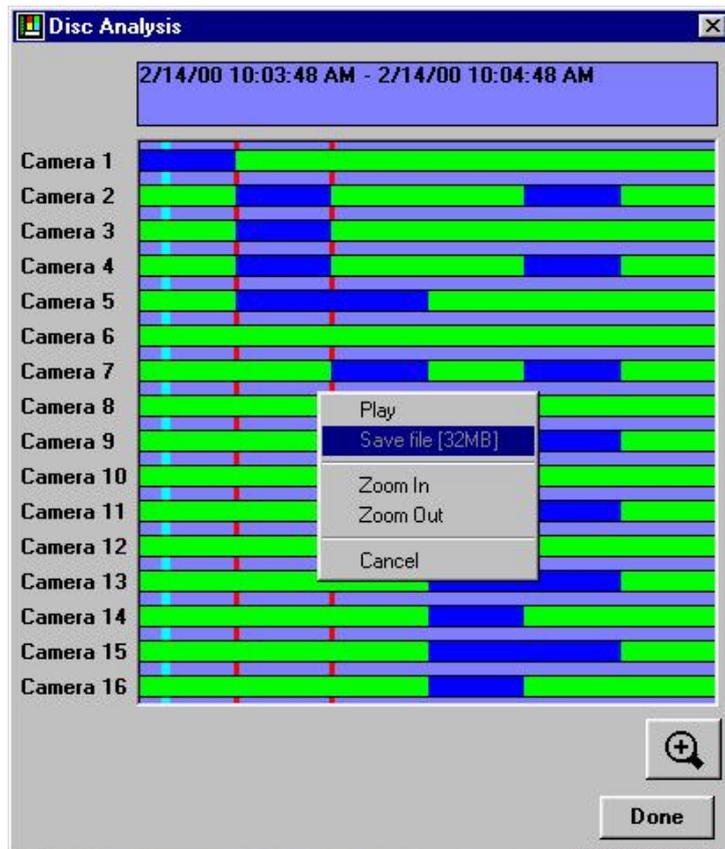
NOTE: Video clips can only be captured (saved) when the WaveReader software is communicating with a Digital Recorder through a LAN (Local Area Network) connection.

9.1 Determining What Will Be Saved

Capturing video clips requires the user to define a section of video to be captured using the Disk Analysis window. The pop-up menu that appears when the mouse button is clicked within the display area will display a **SAVE FILE [nMB]** option.

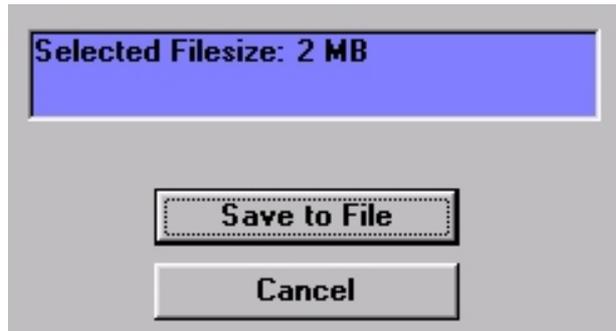
The 'n' in [nMB] indicates the size of the video clip that will be saved, and varies depending on the zoom level selected. At the first and second zoom level, the file size (nMB) will vary according to the video clip size. The file size can be changed by adjusting the two red vertical bars in the Disk Analysis Screen.

Unless the WaveReader software is communicating with a unit that is connected to the LAN, the **SAVE FILE [nMB]** option will be disabled (greyed out).

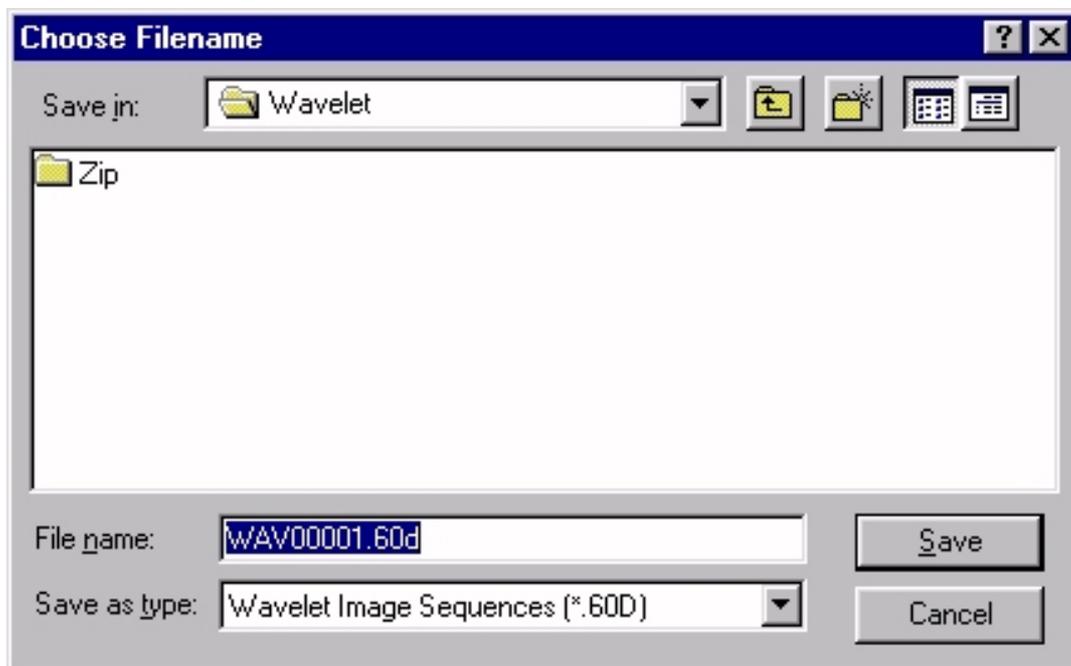


9.2 Saving The Video Clip

Once the **SAVE FILE [nMB]** option is selected, the following dialog box will appear, prompting the user to select **Save to File** or to **Cancel** the save.



Selecting the **SAVE to FILE [nMB]** option will display the following screen, which stores the clip on the user's PC after making the following selections below.



- After the file name and directory have been entered, click the **Save** button to complete the process and return to the WaveReader software.
- Click the **Cancel** button to stop the process and return to the WaveReader software.

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