

Contents

1	INTRODUCTION.....	1-1
1.1	Product Description.....	1-1
1.2	Features.....	1-1
1.3	Files Provided	1-1
1.4	Hardware System Requirements.....	1-1
1.5	About This Manual.....	1-2
2	GETTING STARTED.....	2-1
2.1	Installation.....	2-1
2.2	Running Remote Viewer.....	2-1
2.3	The Main Program Window.....	2-1
3	VIEWING STORED VIDEO FILES.....	3-1
3.1	Opening A Stored Video File	3-1
3.2	Selecting a File for Display	3-2
4	VIEWING VIDEO VIA THE ETHERNET.....	4-1
4.1	TCP/IP Address Setup.....	4-1
4.2	Connecting Via The Ethernet.....	4-2
4.3	Ethernet Connection Type	4-3
4.4	Setting Up Access Levels	4-4
4.5	Password Setup And Usage	4-5
4.6	Snapshot Setup Operations.....	4-6
4.7	Image Quality Setup	4-7
5	VIEWING VIDEO VIA THE TELEPHONE.....	5-1
5.1	Phone Number Connection Setup.....	5-1
6	THE DISK ANALYSIS WINDOW	6-1
6.1	The Initial Disk Analysis Screen Display	6-1
6.2	Working With The Disk Analysis Screen	6-2
7	REMOTE USER OPERATIONS	7-1
7.1	The Search Menu	7-1
7.2	Using the Search Feature.....	7-1
7.3	Recording Directly From The Hard Drive.....	7-2
7.4	Playing Back From .Rdb File	7-2
8	USING WAVESTUDIO	8-1
8.1	Opening WaveStudio.....	8-1
8.2	WaveStudio Toolbar	8-1
8.3	WaveStudio Main Viewing Area.....	8-2

9	WORKING WITH VIDEO CLIPS.....	9-1
9.1	Determining What Will Be Saved.....	9-1
9.2	Saving The Video Clip	9-2

1 INTRODUCTION

1.1 Product Description

This manual provides instructions for installing and using the Remote Viewer 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 This software also allows the user to view video that has been archived onto a CD-R, or recorded directly onto the hard disk of a PC.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.
- 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
DMXReader.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 color
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 labeled 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 Remote Viewer 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 Remote Viewer 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 Remote Viewer

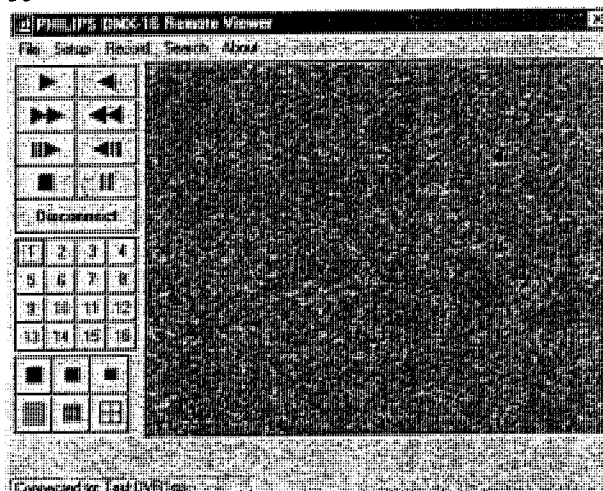
To start the Remote Viewer program, choose Programs from the Start menu and then choose **Philips DMX-16 Remote Viewer** → **Philips DMX-16 Remote Viewer**. The Main window of the Remote Viewer program will appear on the computer monitor.

2.3 The Main Program Window

The Main program window consists of five 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 an empty 16-way multicamera display.



The Menu Bar



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

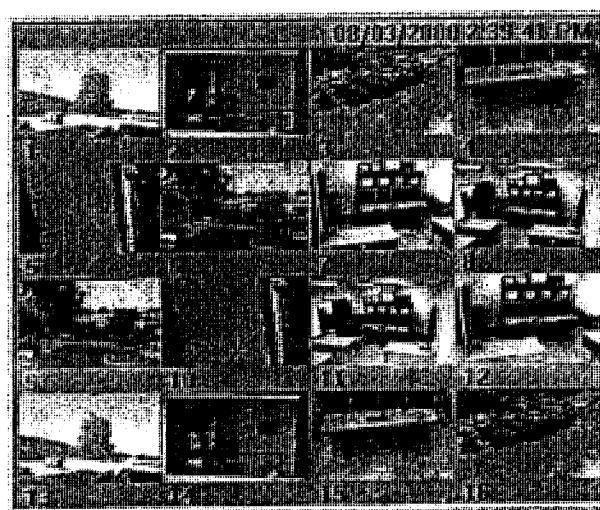
The Main Viewing Area

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

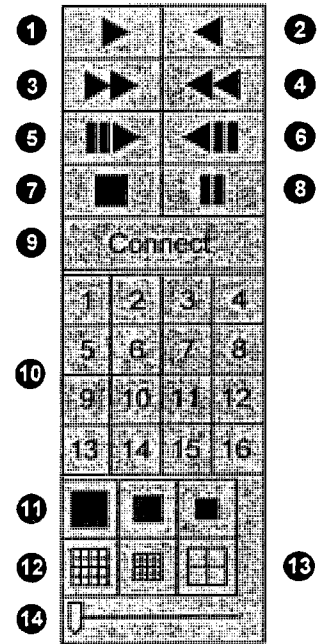
The Status Bar displays messages and current connection status information. If the user is viewing data recorded into files on a CD-ROM or stored on the user's PC, Path Name information is displayed on the status bar.

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

C:\WAVELET\S\2000012016303615.60d

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 Remote Viewer 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.

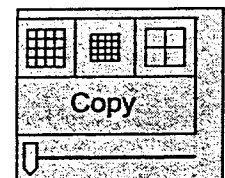


Copy Button (Optional)

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 Remote Viewer 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 color changes from black to green.

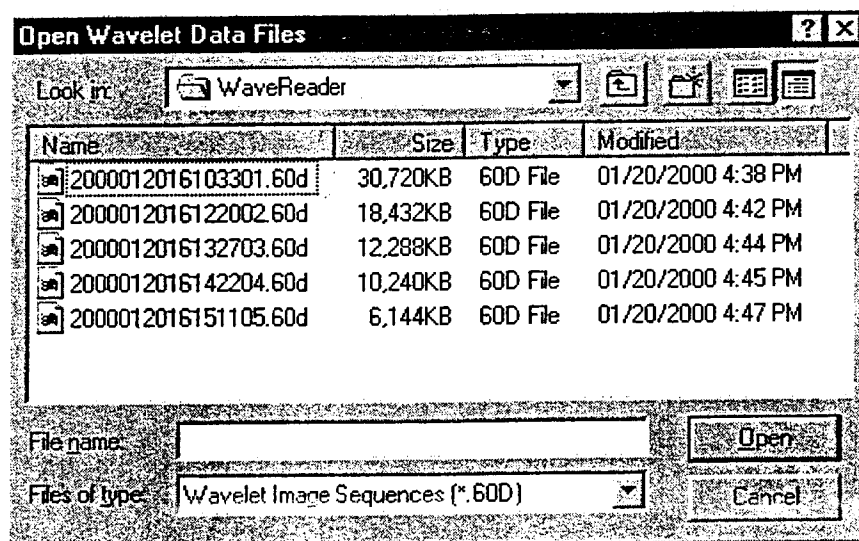
When the **Pause** button is clicked, the button color changes from black to red.

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 2-2), 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 Calibur 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.

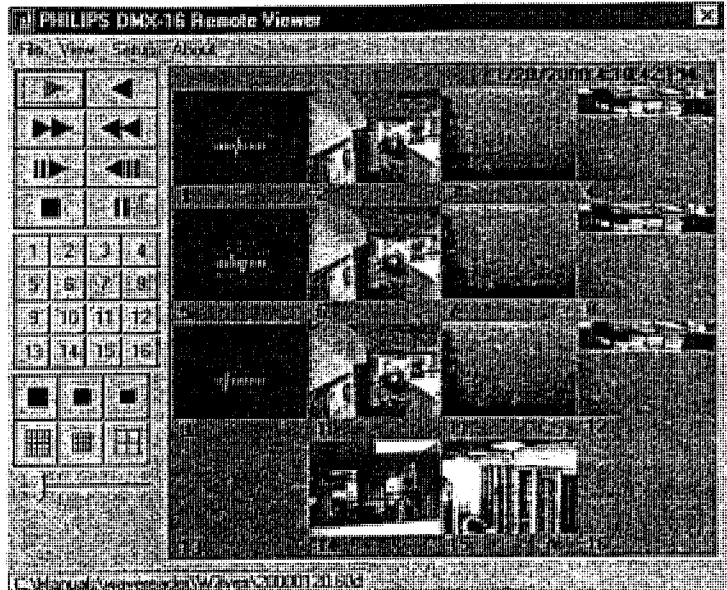
3.2 Selecting a File for Display

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 2-2 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

Remote Viewer 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

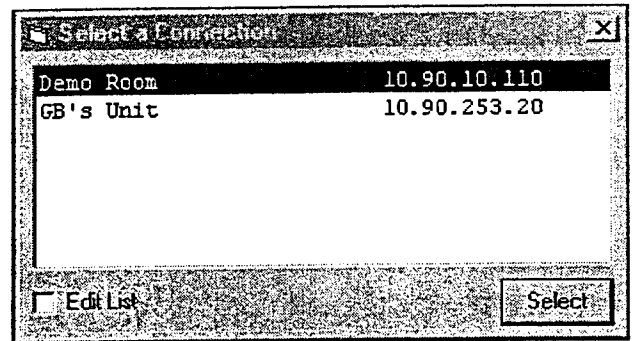
IP Address Selection

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.

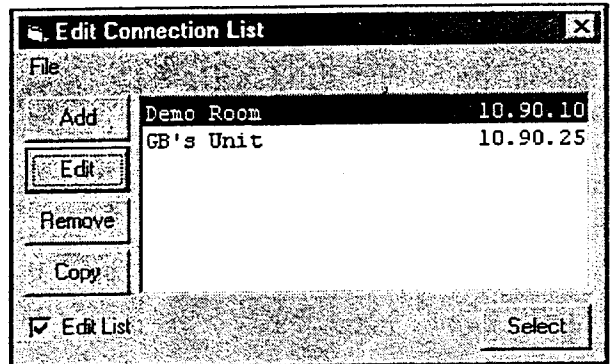
The software will return to the Main window, and the **Connect** button will appear on the button panel. The user is now able to connect with a unit via the Ethernet.



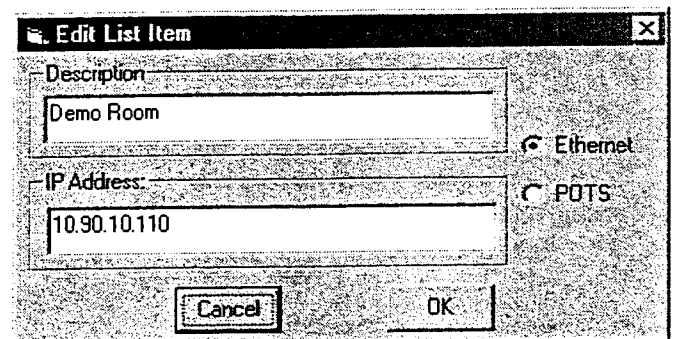
Editing And Creating IP Addresses

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.

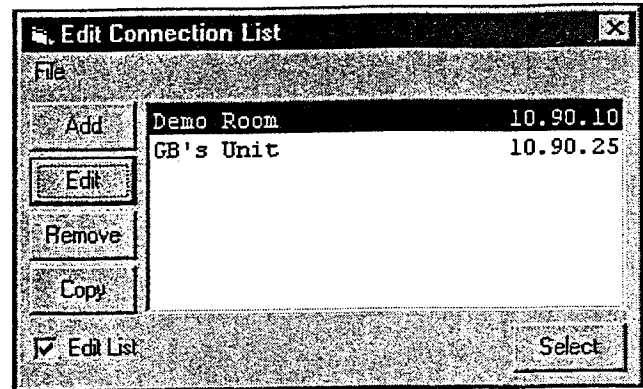


Copying And Removing IP Addresses

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.

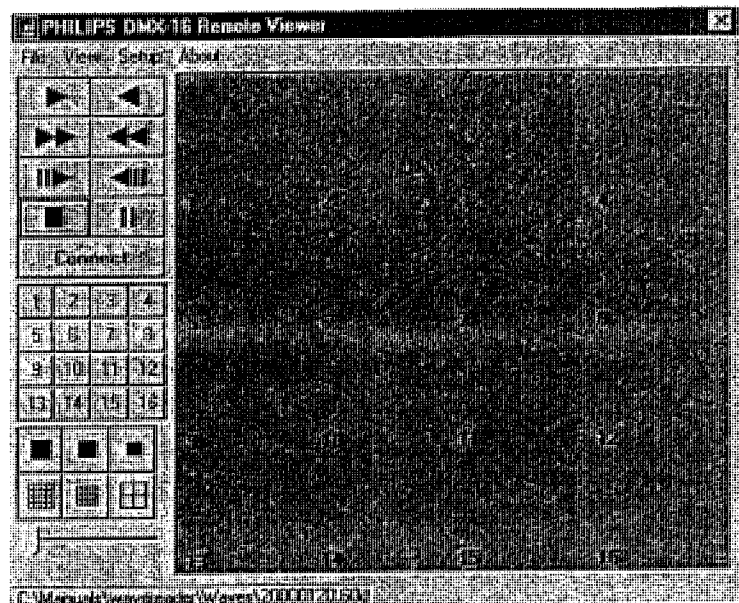


4.2 Connecting Via The Ethernet

When IP address selection has been completed the user may connect to the selected unit.

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

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



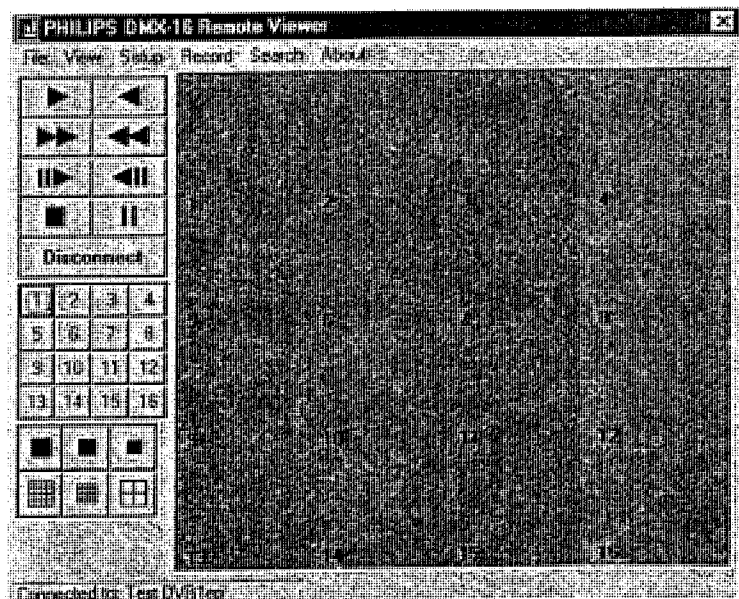
Upon connection, the Remote Viewer's status bar will indicate the IP address of the selected unit.

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

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..."**

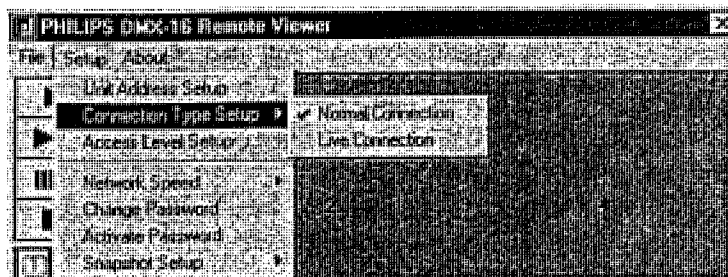
Press the **OK** button on the message window. The **Time-out** button will disappear.



4.3 Ethernet Connection Type

Two types of Ethernet connections can be established between the Remote Viewer 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.

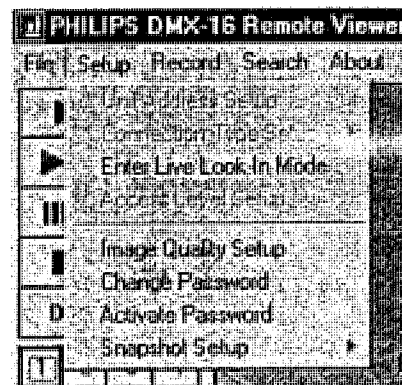
Playback Mode

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 is also. 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.

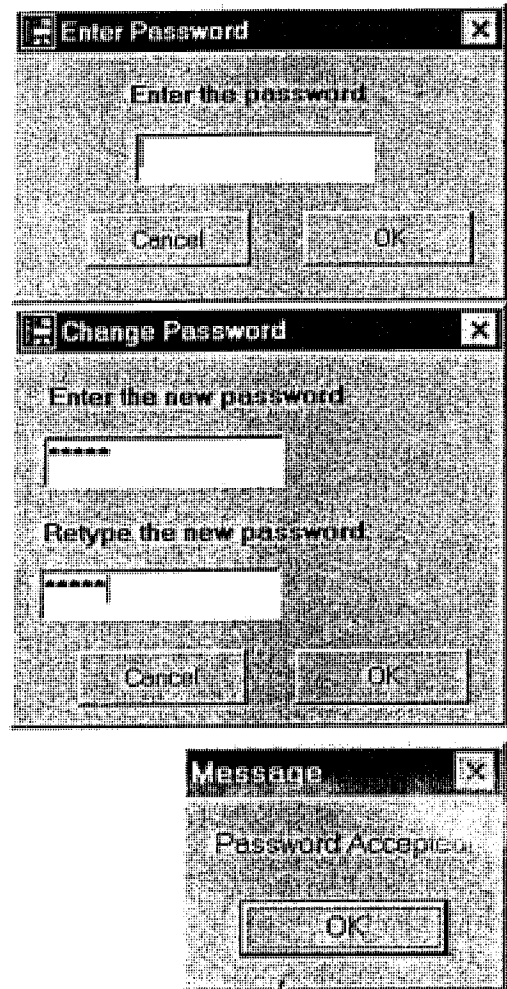
- **To begin viewing live images:** Click the **Play** button. The **Play** button will turn green to indicate that it has been selected.
- The **Pause** button functions as **Stop** button.
- The **Pause**, **Disconnect**, **Multi-Camera**, **Camera Size**, and **Camera** buttons are black and remain active. The remaining buttons turn gray 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.

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.

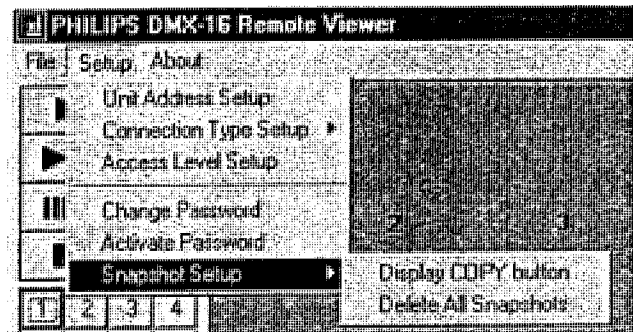
- Enter the correct password and then click the **OK** button. If the correct password was entered, the **Change Password** box will be displayed.
- Click the box labeled **Enter the new password**.
- Type in the new password.
- Click the box labeled **Retype the new password**.
- Type in the new password 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.



4.6 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 Remote Viewer executable file is located. The asterisk will be replaced with numeric characters generated by the Remote Viewer software after checking the default drive for previously saved snapshots. (Example: 001, 002, 003, etc.).

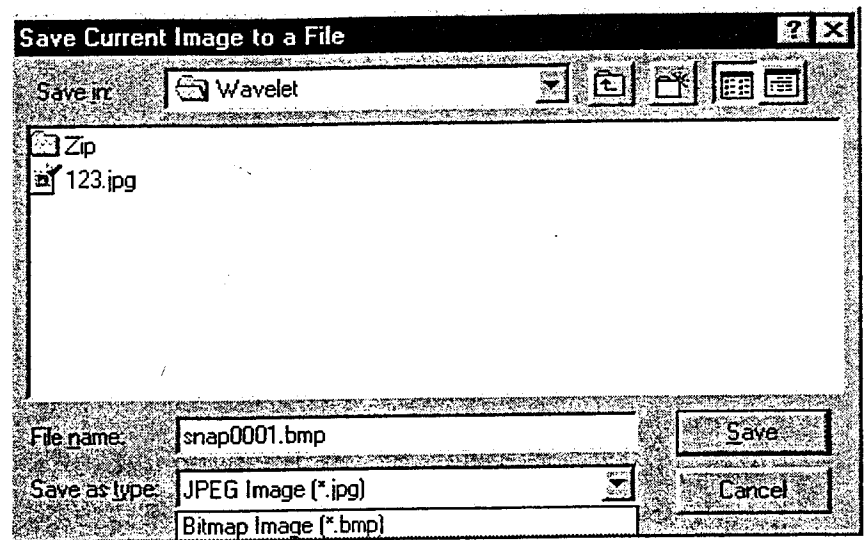
The Automatic Screen Capture Option

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.

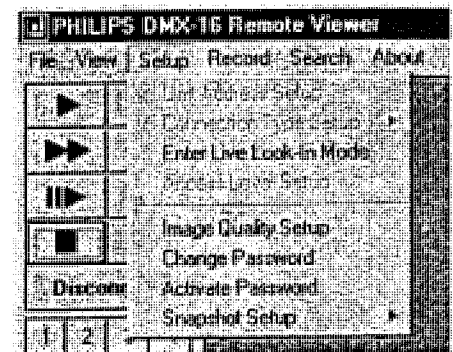
The disadvantage to using this method is that playback operations continue while the user is interacting with the dialog box and specifying the file name. If the user misses seeing portions of the video, it will be necessary to replay those sections again so that they may be viewed without further distractions.

4.7 Image Quality Setup

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

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 Remote Viewer 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

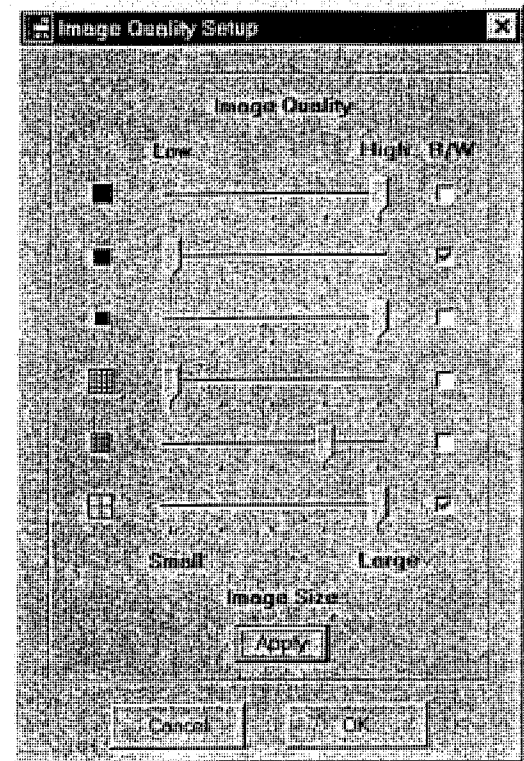
Use the slider bars to adjust the quality settings for each of the display formats.

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 Remote Viewer software to normal operations.



5 VIEWING VIDEO VIA THE TELEPHONE

Remote Viewer 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 Phone Number Connection Setup

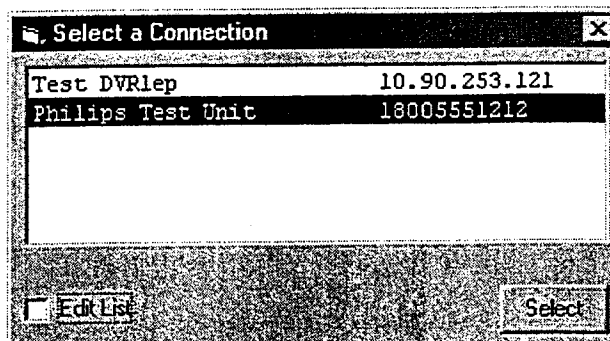
Phone Number Selection

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.

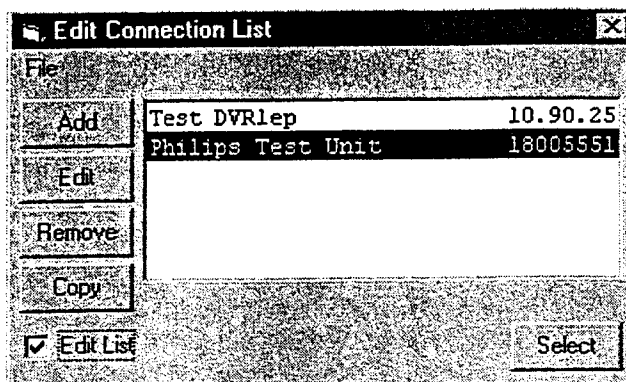
The software will return to the Main window, and the **Connect** button will appear on the button panel.



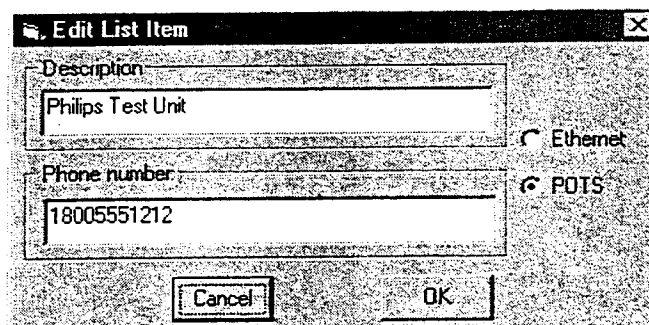
Editing And Creating Telephone Numbers

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 an 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.

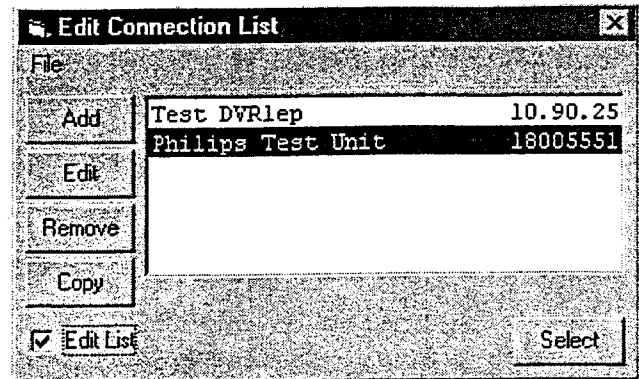


Copying And Removing Telephone Numbers

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.

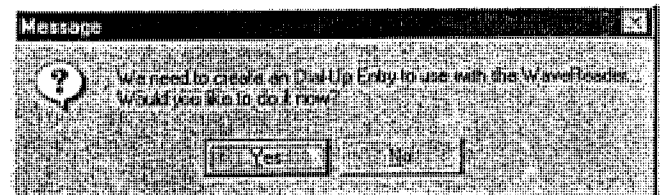


Connecting For The First Time

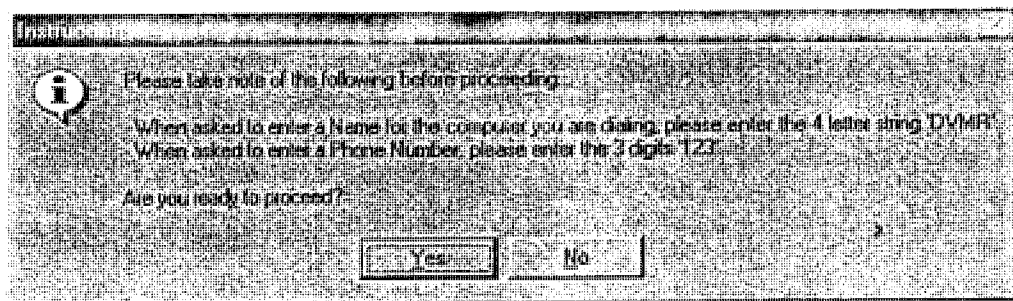
Before connecting for the first time, the computer must create a Dial-Up Networking Connection.

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

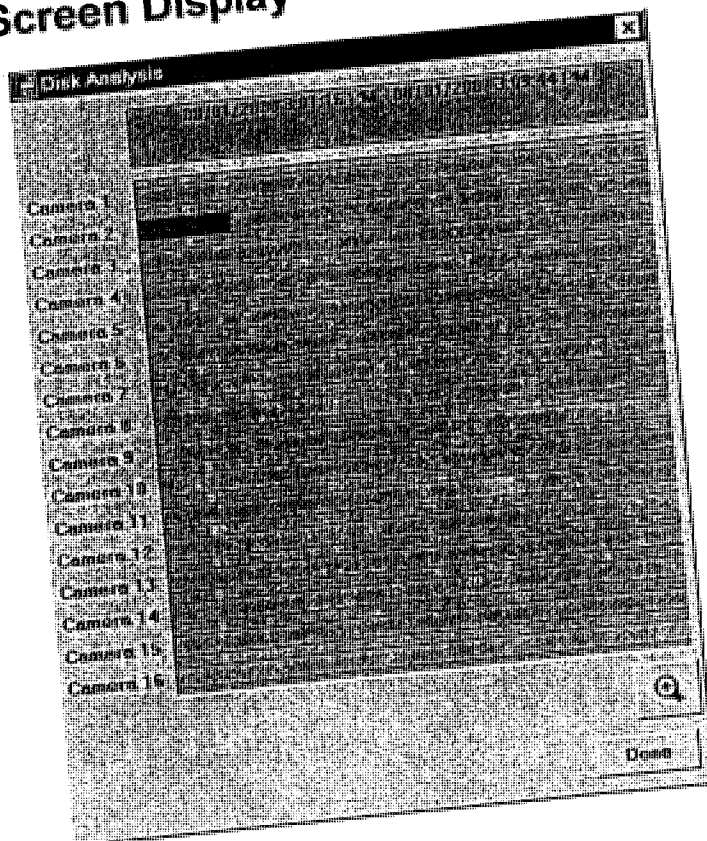
THE DISK ANALYSIS WINDOW

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.

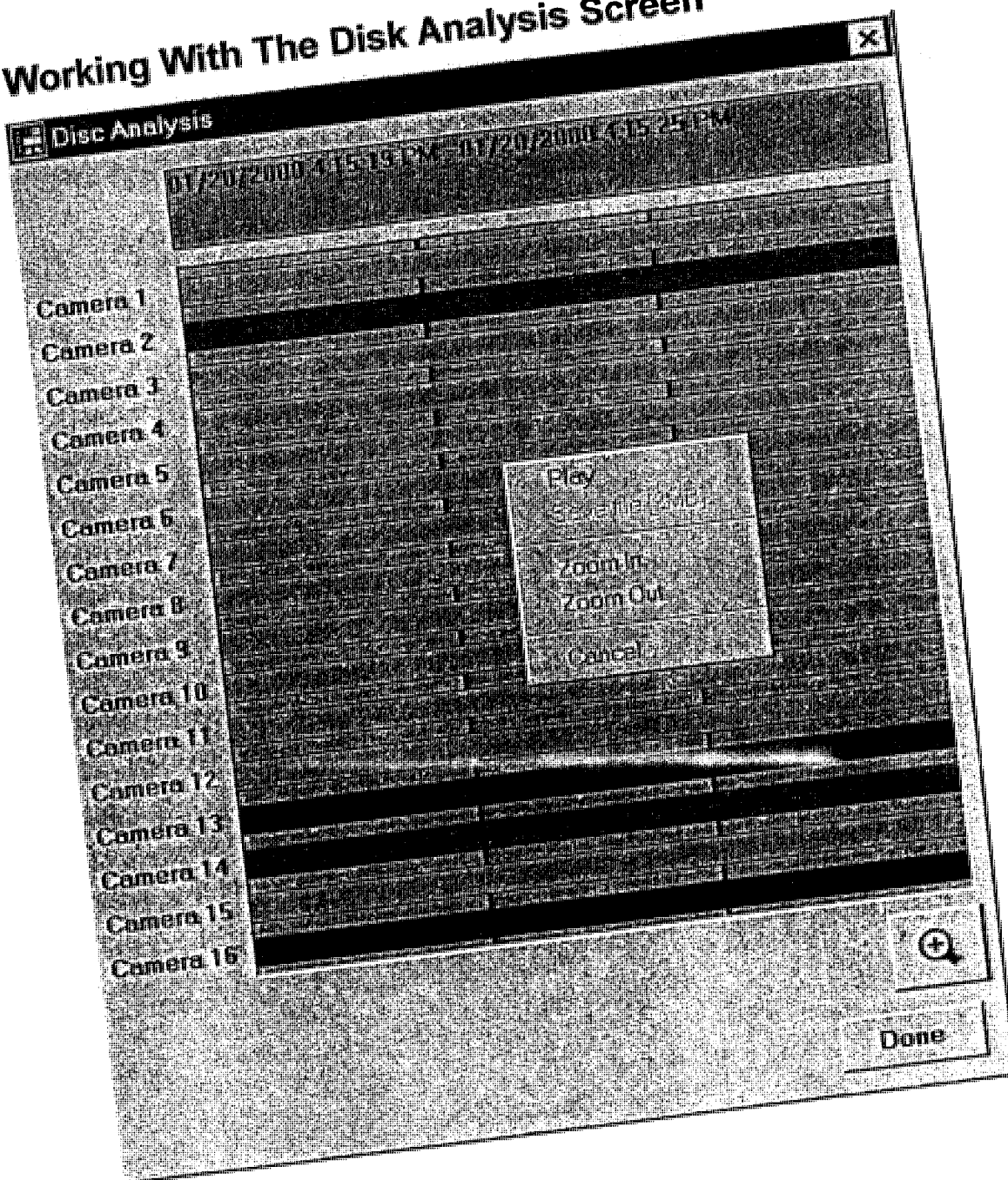


The horizontal color bars indicate:

Color (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



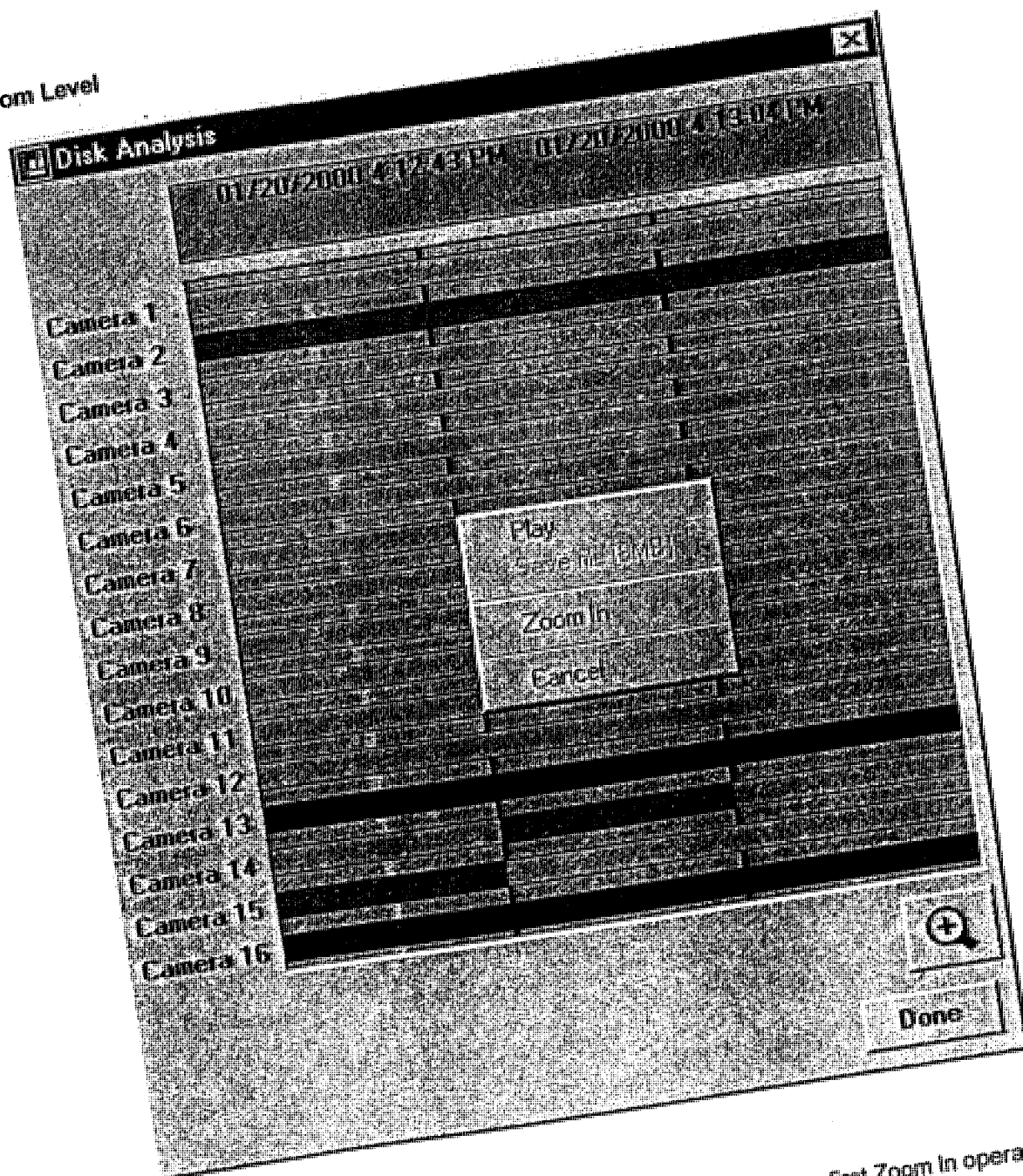
Working with the Disk Analysis Screen:

- 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 color 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**.

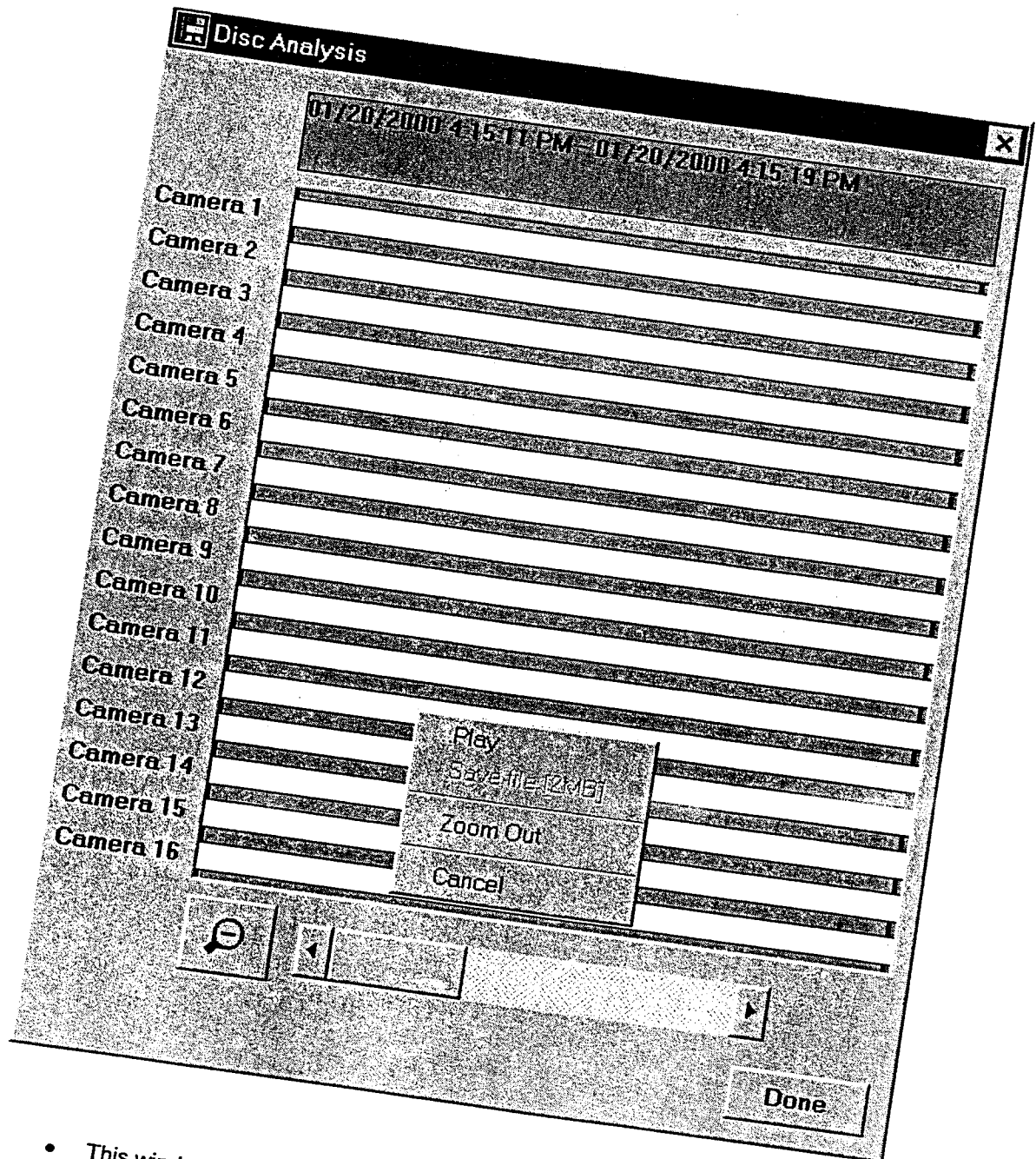
The vertical color bars in the Disc Analysis Screen indicate:

Vertical color bar/s	Description
Light Blue (one bar)	Play indicator, positioned by progress slider
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.



- 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.

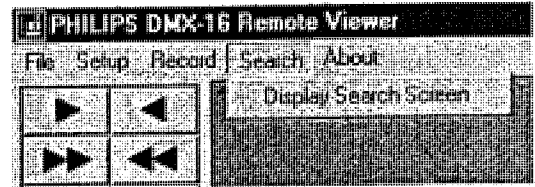
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7

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.

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.

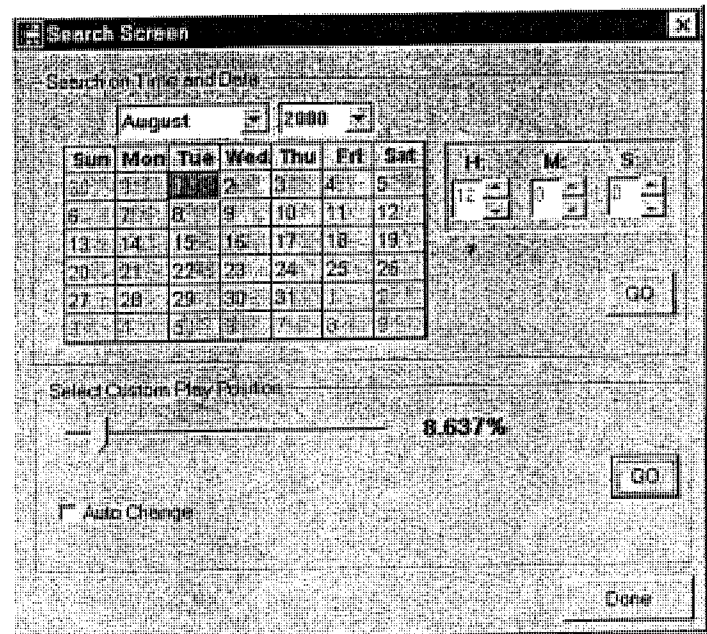
Click on one of the **Calendar Day** buttons to select the day.

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 Remote Viewer software to normal operations.



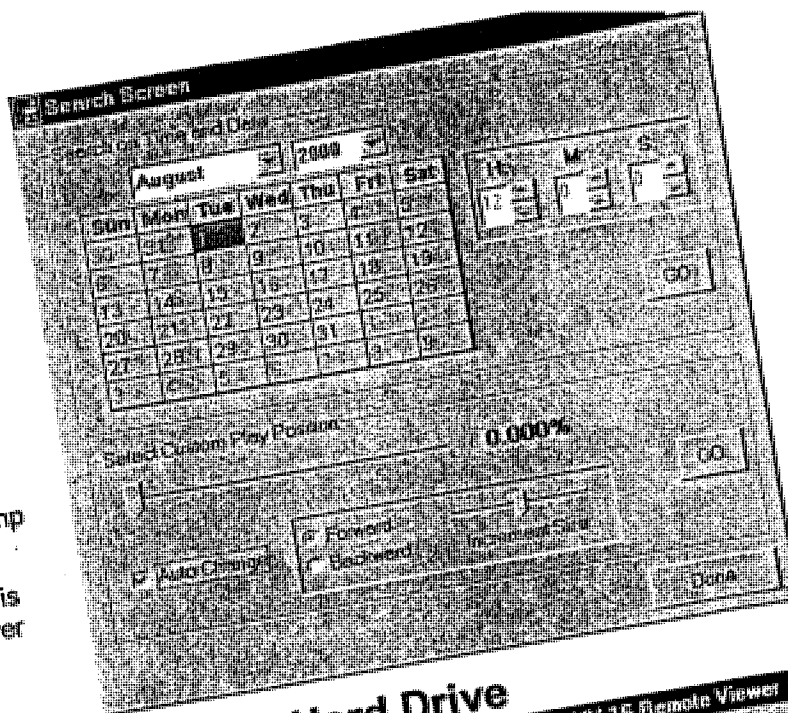
Placing a check-mark in the **Auto-Change** box causes the **Custom Play Position** point to advance either forward or backward by an adjustable level each time the **GO** button is clicked.

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 Remote Viewer software to normal operations.

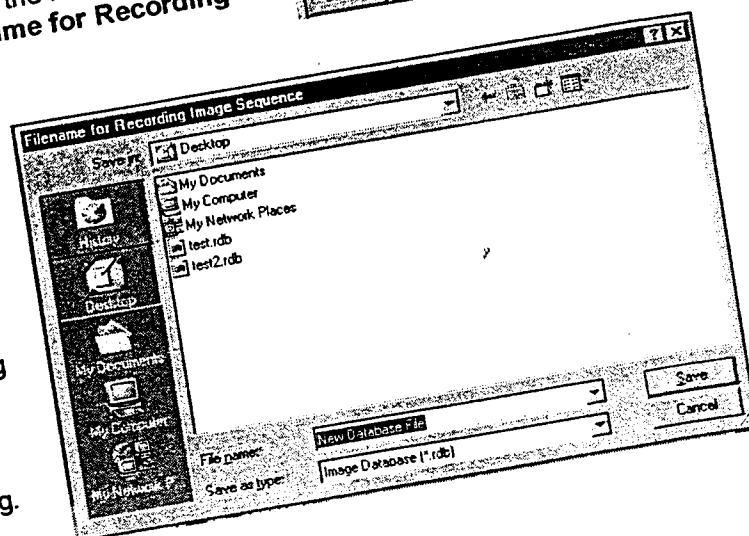
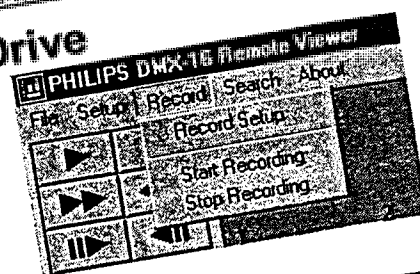


7.3 Recording Directly From The Hard Drive

Remote Viewer 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.



7.4 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 Remote Viewer 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 colors in the bitmap by rotating the color wheel. The user can rotate the color wheel in either direction. A 180-degree rotation in either direction changes each color 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 colors. 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.

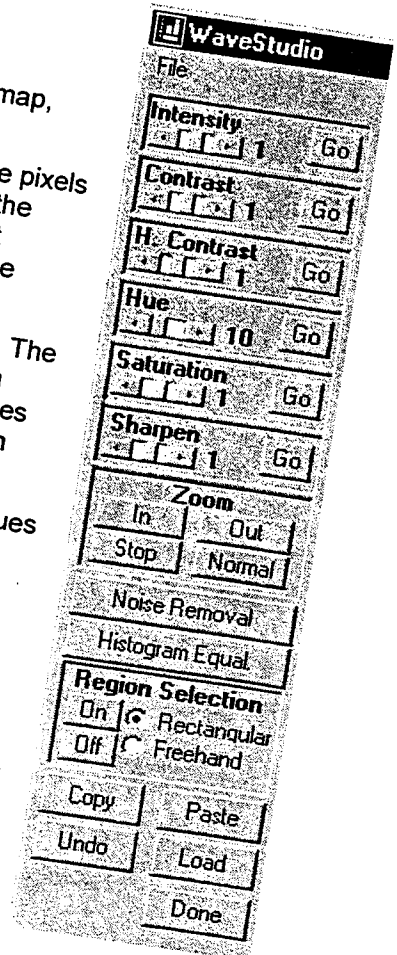
Zoom: Clicking the **In** or **Out** button will cause the image to begin increasing or decreasing in size. Click the **Stop** button to stop the zooming. Click the **Normal** button to return the image to the original size.

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

Histogram Equalization: Linearizes the number of pixels per gray area in the bit map. 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.

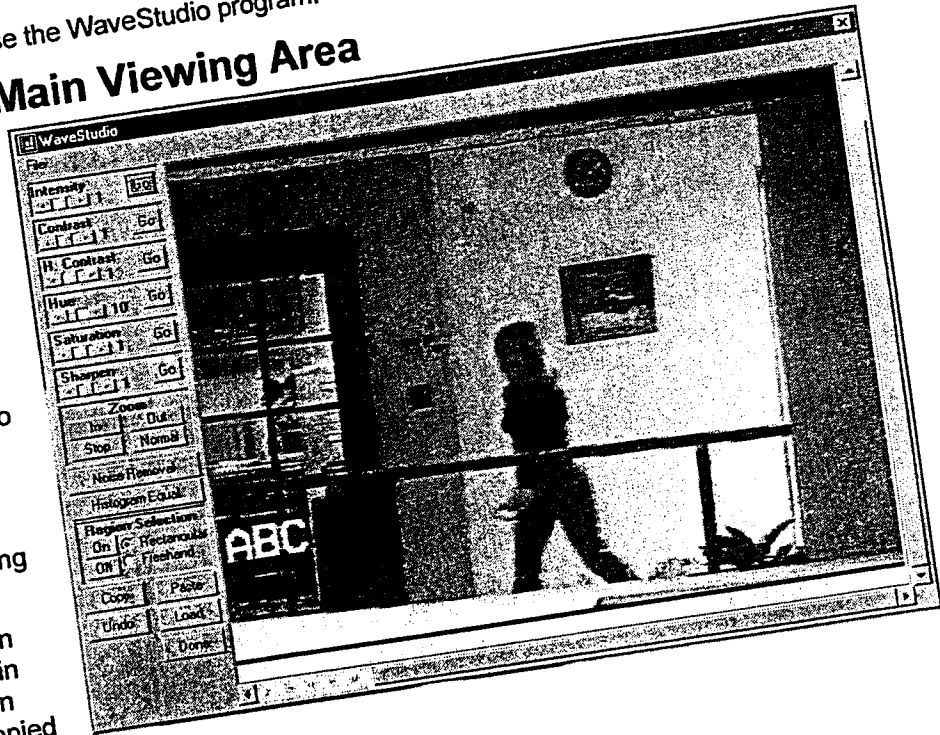
8.3 WaveStudio Main Viewing Area

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

Use the Remote Viewer 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 Remote Viewer Main Viewing Area can be copied to the WaveStudio Main Viewing Area.



9

WORKING WITH VIDEO CLIPS

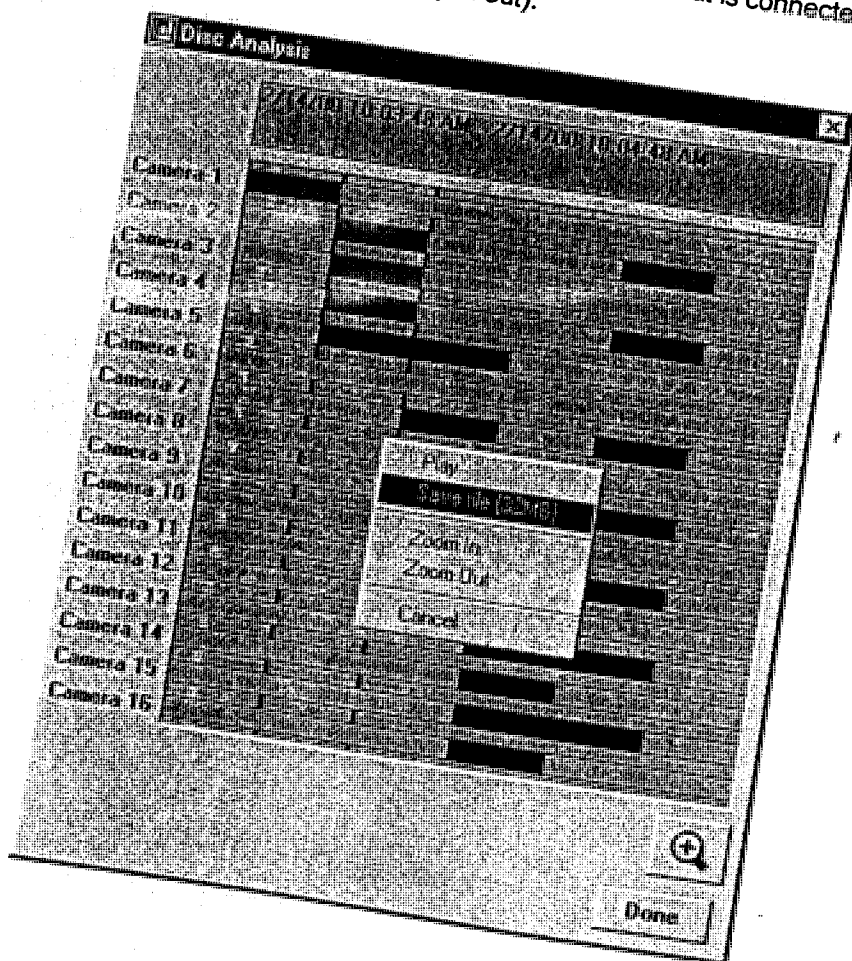
Video clips can only be captured (saved) when the Remote Viewer software is communicating with a Digital Recorder through a Network connection.

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.

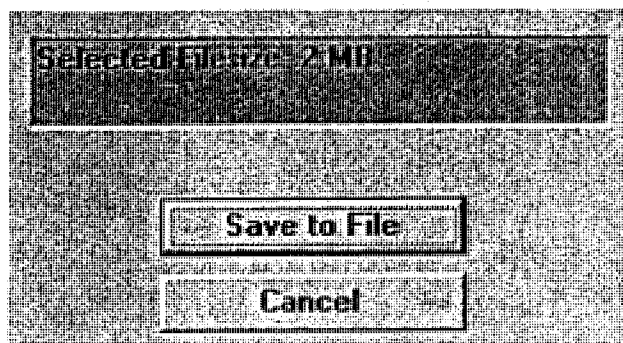
The 'n' in [nMB] indicates the size of the video clip that will be saved, and varies depending on the zoom level selected. At the first and second zoom level, the file size (nMB) will vary according to the video clip size. The file size can be changed by adjusting the two red vertical bars in the Disk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

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

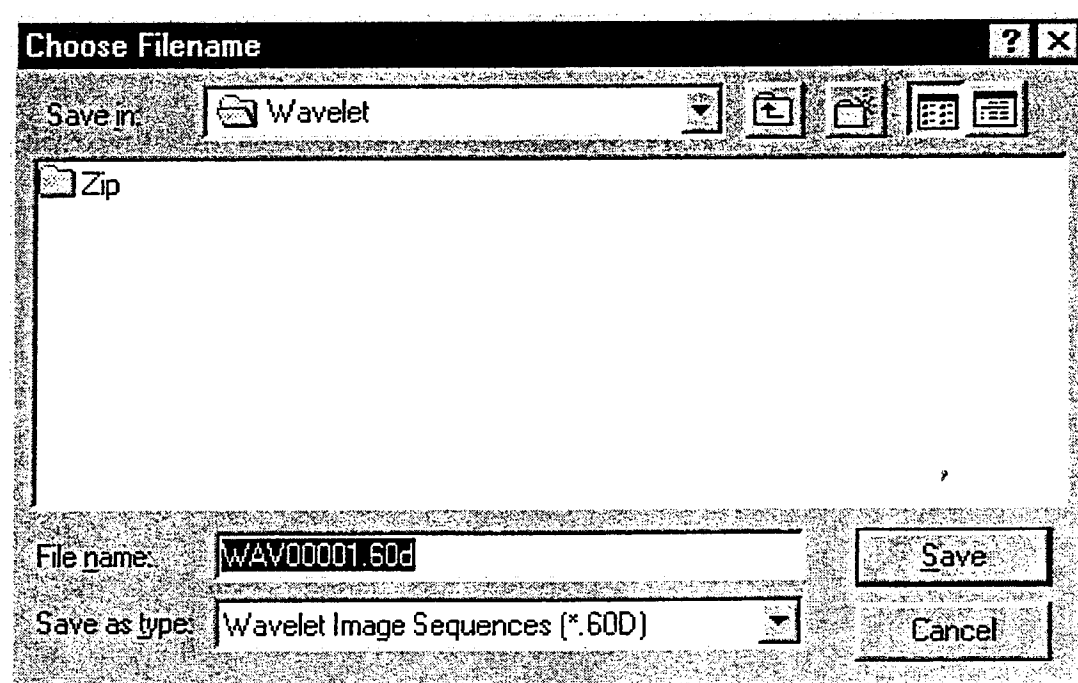


9.2 Saving The Video Clip

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 Remote Viewer software.
- Click the **Cancel** button to stop the process and return to the Remote Viewer software.