grass valley

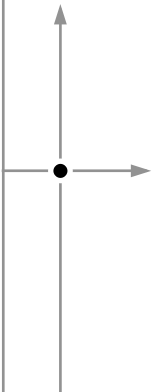# TimeDelay

APPLICATION SOFTWARE FOR PROFILE & PROFILE XP

User Guide

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Revision Status

Rev Date	Description
November, 2000	Original issue, part number 070-9518-00.
27 March 2000	Updated to include all versions up to 4.0, part number 071-8010-00.
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Preface

About TimeDelay

TimeDelay enables a Profile video file server to record incoming video and delay the playback a user-specified amount of time. Figure 1. illustrates the conceptual model for TimeDelay. Video enters the system at timecode 00:00:00:00. Record begins at a given time (according to the clock on the NT server) or is manually started. Playback is started based on the specified delay time for the playback channel. When the record channel reaches the specified delay time, playback begins. You can also start playback manually.

The maximum delay length for the Largest Delay field depends on the current available disk capacity of the disk recorder. Once the Largest Delay has been reached, playback occurs in a continuous loop.

If the censor channel is used, it can edit recorded clips that have not yet been played back. Referring to Figure 1., this means the censor channel would be positioned within the **specified delay time** limits.
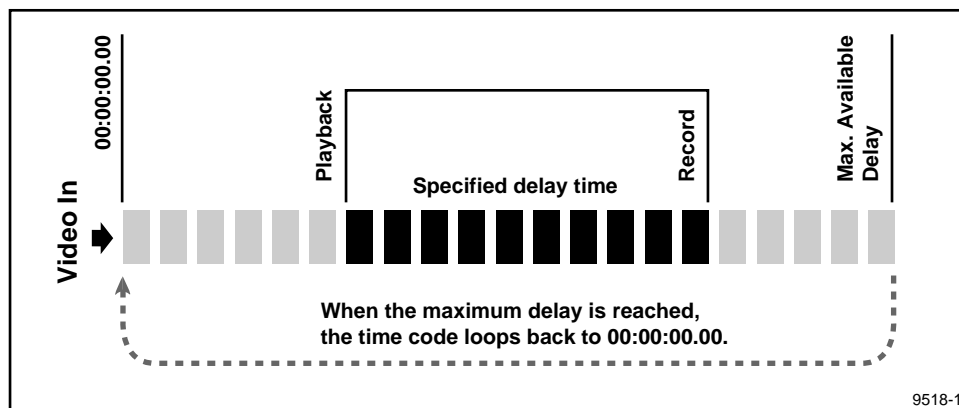
Figure 1. TimeDelay conceptual model

TimeDelay can be run in several different configurations:

- One record/playback pair. Video is recorded on the record channel (assigned to **Panel A**) and played back on the playback channel (assigned to **Panel B**) according to the time delay specified.

- Two record/playback pairs. Video is recorded on the record channel (assigned to **Panel A**) and played back on the playback channel (assigned to **Panel B**) according to the time delay specified on **Panel B**. A second video stream is recorded on the record channel (assigned to **Panel C**) and played back on the playback channel (assigned to **Panel D**) according to the time delay specified on **Panel D**. This configuration requires a disk recorder with four channels.

- One record/playback pair with one or two additional playback panels. Video is recorded on the record channel (assigned to **Panel A**) and played back on one or more of the playback channels: Panel B, Panel C, and Panel D. The delay is set on each of the playback panels. This configuration requires a disk recorder with four channels.

Selecting a version of TimeDelay

When you install TimeDelay, you must choose a version that matches your current version of Profile System Software. The TimeDelay CD-ROM contains version of TimeDelay for the 2.2.X, 2.4.X, 2.5.X, 3.X, 4.X, and 5.X versions of Profile System Software, as well as for the 1.1 version of Profile PRO Series system software.

Table 1 lists some of the fearures that are included in each version of TimeDelay. You may find this list helpful when selecting which version of Profile System Software to install.

NOTE: You must install the appropriate version of Profile System Software before installing TimeDelay.

Table 1. TimeDelay features by Profile System Software version

Profile System Software Version	TimeDelay Features
4.X, 5.X	Uses Channels defined in Configuration Manager. Profile XP support only
3.X	Only for use on Profile systems with DVCPRO support
2.5.X, 1.1 for Profile PRO Series	Full MPEG support (PDR 300 and PDR 200). Improved look and usability
2.4.X	Improved resource management. PDR 100 and PDR 200 (JPEG) only
2.2.X	First version of TimeDelay

Terminology and Conventions

Button (graphical)	Buttons shown in bold (**OK**, for example) that you click with the mouse pointer.
Button (mouse)	The two or three buttons on the top of the mouse.
Choosing	Choosing menu items, **File | Exit**, for example. (**File | Exit** means *choose the Exit menu item under the File menu.*)
Commands	Commands (**a:\setup**, for example) are shown in bold.
Clicking	Pressing and releasing the mouse button without moving the pointer.
Ctrl key	Hold **Ctrl** down while pressing other keys in a sequence.
Double-clicking	Pressing and releasing the left mouse button twice without moving the pointer.
Dragging	Pressing and holding the mouse button while moving the pointer.
Moving	Changing the location of the pointer on the screen by moving the mouse.
Pointer	An arrow or other graphic on the screen indicating the current cursor position for selecting or clicking.
Pointing	Positioning the pointer on an object on the display by moving the mouse.
Right-click	Pressing and holding the right mouse button.
Shift key	Hold **Shift** down while pressing other keys in a sequence.

Chapter **1**

Using TimeDelay for 2.5.X, 3.X, 4.X, 5.X, and PRO Series 1.X

TimeDelay is a Profile application that lets you to record incoming video, audio, or both, and to delay its playback for a specific period of time. While TimeDelay can be used in combination with other applications like ContentShare Explorer, Tool Box Editor, VDR Panel, and others, it is primarily intended for users who will dedicate all of a Profile system's resources to one or more instances of the TimeDelay application.

This chapter provides information about versions of TimeDelay which are supported by Profile system software version 2.5.X, 3.X, 4.X, and 5.X on the Profile XP, and 1.X on Profile PRO Series systems.

In this chapter you find three major sections:

• Getting Started with TimeDelay — describes how to launch TimeDelay, describes the TimeDelay project file, and describes how to select channels you define in Configuration Manager for use with TimeDelay.

• Starting the TimeDelay Process — explains how to start the TimeDelay process either manually or automatically, and provides instructions for and details about the various settings you need to make.

• Using the Interface — this is a reference section that describes each of the controls in the Record and Playback panels and each of the menu items in the File, View, and Config menus.

Getting Started with TimeDelay

Here are two different methods that you can use to launch TimeDelay:

- Double click on the TimeDelay shortcut icon on the desktop. When the TimeDelay window appears, you can use the default settings that include one record and one playback panel (see Figure 2).

- Double click on a TimeDelay project file (.tdx). This launches TimeDelay using the configuration saved in the file.

   NOTE: TimeDelay uses the standard Windows NT interface. For help with Windows NT interaction, refer to Microsoft NT manuals.

To exit TimeDelay:

- Choose **File | Quit**.
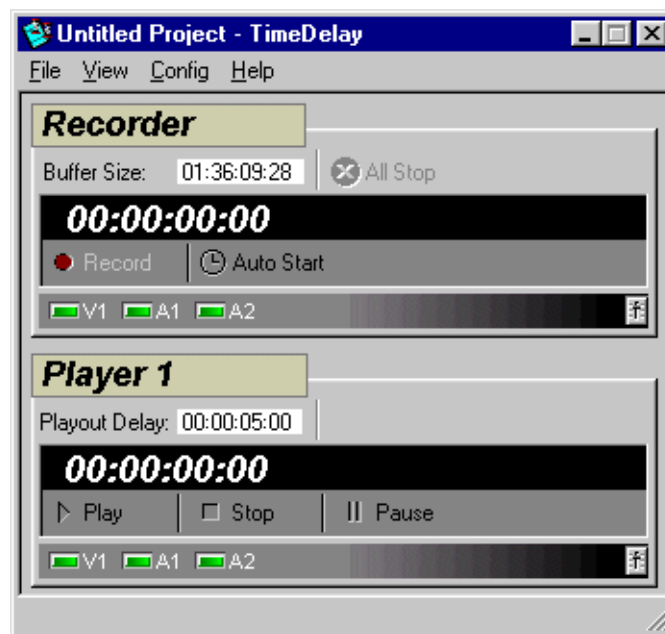
Figure 2. TimeDelay window

Working With the TimeDelay Project

A TimeDelay project includes the channel selections for record and playback panels as well as application-specific information like single or two column view, current timecode source, and information used for crash recovery. This project information is stored in a file that uses a ".tdx" file name extension.

When you start TimeDelay, a default TimeDelay project is created. Although it contains a record and playback channel, the default project is not usable until you select channels that you created with Resource Manager.

Once you save a TimeDelay project, you can use the project file to start the TimeDelay application. Launching a project file directly starts TimeDelay with the saved project settings.

Saving a TimeDelay Project

To save a TimeDelay project:

1. Choose **File | Save** or **File | Save As…**

   This opens a standard WindowsNT Save dialog box. TimeDelay projects use the *.tdx* file name extension.

2. Chose a file name and file location for the TimeDelay project. This can be anywhere on the WindowsNT network.

3. Click the **Save** button.

Opening an Existing Project

To open an existing TimeDelay project, do one of the following:

- Double-click a TimeDelay project file in the WindowsNT desktop.

- With TimeDelay running, select **File | Open…**

This opens a standard WindowsNT Open dialog box, which allows you to select an existing TimeDelay project file.

Launching a Project at Start-up

To automatically launch a TimeDelay project at start-up:

1. Configure and save a TimeDelay project.

2. Right-click the Windows NT Start button and choose the **Open** command.

3. Double-click the **Programs** icon, then open the folder.

4. Drag the saved TimeDelay project file (*.tdx*) into the Startup folder.

Copying Project Files Between Machines

Once you create a TimeDelay project file, you can copy it to any number of machines (or open it remotely). There are several issues to consider:

- When you copy a project to and run it on a PC (rather than a Profile unit), the project still references the original machine name. No matter which PC launches the project, TimeDelay connects to the same machine. A better alternative is to use **File | Import** to import another project's configuration information, then save the project again to create a project file that has a different machine name.

- When you copy a project to and run it on a Profile unit, the machine name stored in the project does not matter. TimeDelay always connects to the local machine. However, the second machine may not have the same channel definitions as the first system. Therefore, you may have to select appropriate channels on the local machine and save the project file again.

Connecting to a Remote Profile Unit

You can run TimeDelay on any PC that uses Windows NT 4.0 and connects to a remote Profile XP unit over an Ethernet local area network (LAN). When TimeDelay starts on the PC or when you choose **File | Remote Connection…**, the Remote Connection dialog box shown in Figure 3 appears.

> *NOTE: TimeDelay remote connection is allowed only when TimeDelay is running on a PC. Consequently, the "TimeDelay Remote Connection" dialog box does not appear when TimeDelay is launched on a Profile unit, and the* **File | Remote Connection…** *menu item is not available when TimeDelay is running on a Profile unit.*

To connect to a remote Profile unit:

1. Select one of the names in the Network Host List.

2. Click on **Connect**, or double-click on the name in the Network Host List.

The Connection Status dialog box appears while TimeDelay establishes a connection with the selected Profile unit. If the connection cannot be established, an error message is displayed.

- Press **Cancel** to return to the Remote Connection dialog box.
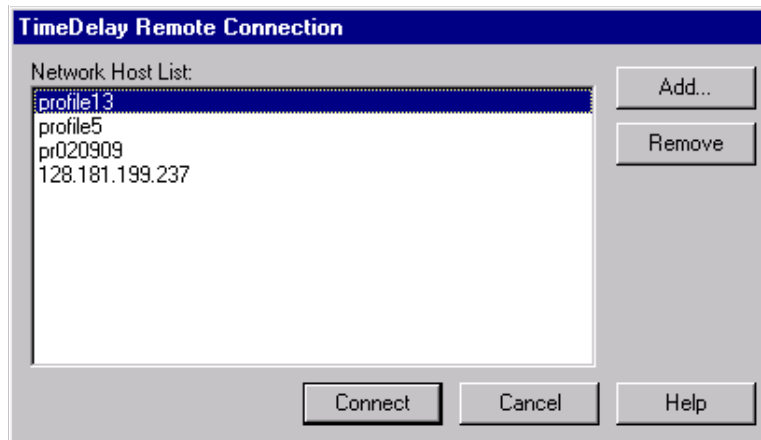
Figure 3. The Remote Connection dialog box

Changing the Remote Connection

To connect to a different machine:

1. Choose **File | Remote Connection…** to open the Remote Connection dialog box.

2. Select one of the names in the Network Host List.

3. Click on **Connect**, or double-click on the name in the Network Host List.

Changing the machine connection closes the current TimeDelay project. If you haven't saved changes to the project, you are prompted to save before TimeDelay makes the new connection. When the new connection is established, the default project settings are used.

Adding Names to the Network Host List

To add a machine to the Network Host List:

1. Click the **Add…** button to open the "Add Network Host" dialog box.
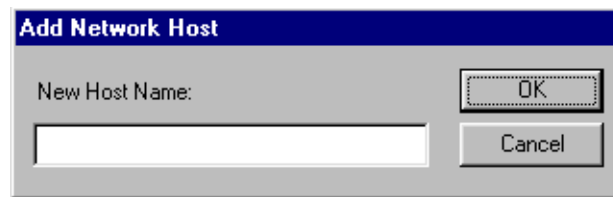
Figure 4. The Add Network Host dialog box

2. Enter the new machine name. This can either be the host name, or the machine's IP address (Ex. 128.181.199.237).

3. Click **OK** to close the Add Network Host dialog box and add the new host name to the Network Host List.

4. Click **OK** in the Remote Connection dialog box to close it and to open the connection status dialog box, which shows the progress of any new connections.

Removing Names from the Network Host List

To remove a machine from the Network Host List:

1. In the Network Host List, click the name you wish to remove.

2. Click the **Remove** button.

Avoiding a Connection Change

When you save a project file, it includes the name of the machine to which TimeDelay is connected. When you launch the project file at a later time, TimeDelay attempts to connect to the same machine. By importing a project file rather than opening it, you can use the resource configuration from the project without its connection information.

To import a project file and avoid changing the connection:

1. Choose **File | Import…** to open the Import Project dialog box, a standard WindowsNT Open dialog box.

2. Select a project file.

3. Click the **Open** button.

Unlike the Open operation, importing a project file does not change the current machine connection.

Assigning Channels to Panels with 4.X and 5.X

Before you can use a TimeDelay, you must first configure it. You must select the channels to use with your record and playout panel. A channel assigns resources such as video audio, and timecode inputs and outputs, as well as encoders and decoders to the panel. Channels are created or modified by Configuration Manager. See the *Profile XP System Guide* for more information about creating and modifying channels in Configuration Manager.

Selecting a Channel

1. Click a panel to make it active.

2. Right-click a panel name and choose **Select Channel** to open the Channel Configuration dialog box for an existing panel (Figure 5). You can also choose **Config | Add Panel** to open a new panel and select a channel.
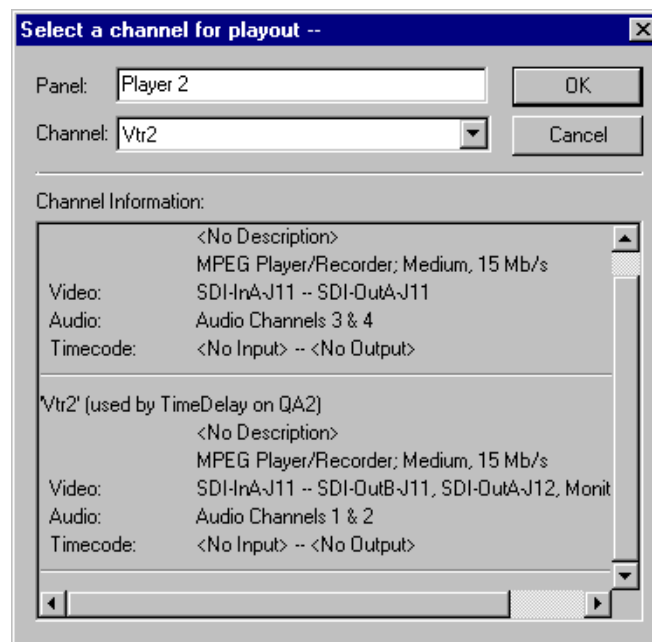
Figure 5. Channel selection dialog box

3. Select a channel for use with the panel from the Channel drop-down list box. You can scroll through the Channel Information list to see what resources are specified by each channel.

4. Name the panel according to your needs.

5. Click **OK** to have your channel selection take effect.

If you use Resource Manager to change a channel's name or resources, you must reselect the modified channel in TimeDelay for the change to take effect. You may also choose **Controller | Reacquire Channel** to update the channel for the current panel.

Configuring Channels with Resource Manager (2.5.X, 3.X, and PRO Series 1.X)

The Resource Manager is used for creating and configuring all TimeDelay channels. In TimeDelay, the first channel (labeled "Recorder" in Figure 2) is always the record channel, and all other channels are playback channels. You cannot remove the first two channels because TimeDelay always requires a record channel and at least one playback channel. You can have as many as 6 playback channels.

Changing a Panel's Name

To change a panel's name,

1. Select **Config | Resource Manager** from the TimeDelay menu.

2. Select the tab name that needs to be changed.

3. In the Name edit box, type a the new name. Names may be up to 32 characters long and may consist of any alphanumeric characters. Channel names should be, but are not required to be unique.

4. Click the OK button.

When you close the Resource Manager dialog box, the panel corresponding to the renamed channel displays the new name in the TimeDelay window. This name is saved with other resource information in the TimeDelay project file.

Modifying a Channel's Configuration

While the details of resource configuration are generally covered in "Using the Resource Manager" in the *Profile User Manual* for the version of Profile System Software that you are using (2.5.X, 3.X). TimeDelay imposes some unique restrictions when using Resource Manager to configure channels. These unique restrictions are described here.

• Since playback channels share source material with the record channel, they must have similar configurations. They should have the same number of video, audio, and timecode tracks, and must have the same video compression format. You cannot mix MPEG, DVCPRO and JPEG resources in the same TimeDelay project.

• Record and playback channels should always have at least one timecode track.

• The record channel should always use a valid timecode input. This input may come from an external VITC or LTC source, or may simply be a Profile timecode generator. Timecode display and the Auto Start feature are affected if the connected VITC or LTC source does not provide valid timecode.

• When configuring playback channels (which only play material), you do not need to select input resources for video, audio, and timecode tracks.

Handling Resource Allocation Errors

Resource conflicts can occur when another application is running on the same Profile unit as TimeDelay. TimeDelay channels might conflict with each other if the same output is used on more than one channel. When there is a resource conflict and all TimeDelay resources cannot be allocated, the warning dialog box shown in Figure 6 will appear.
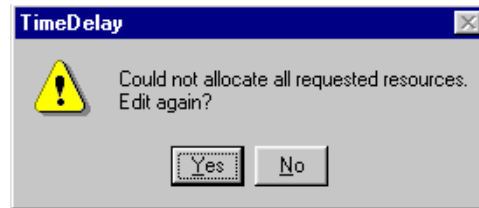
Figure 6. Warning dialog box

Click the **Yes** button to return to the Resource Manager dialog and resolve conflicts. If you click **No** and do not resolve the resource conflicts, TimeDelay cannot function correctly.

Starting the TimeDelay Process

The basic time delay process involves recording program material and playing it back after a specified time has elapsed. You accomplish this using the Record and Playback panels in the TimeDelay window. In each of the procedures that follow, it is assumed that you have already connected (if necessary) to a Profile unit if you are operating remotely, and that you have allocated the necessary resources with Resource Manager.

Manually Starting the TimeDelay Process

To start a recording with delayed playback:

1. In the Buffer Size edit box, enter a record buffer size or accept the default. See "Setting the Record Buffer Size" on page 23.

2. In the Playout Delay edit box, enter a playout delay. Repeat this action for each Playback Panel. See "Setting a Playout Delay" on page 25.

3. On the Record Panel, click the Record button.

To stop the TimeDelay process click the **All Stop** button on the Record Panel.

Automatically Starting the TimeDelay Process

When you select an external VITC or LTC signal as TimeDelay's timecode source, you can start the TimeDelay process automatically when a specific timecode value is reached. This feature allows you to synchronize multiple Profiles that are using the same external timecode source.

To automatically begin recording at a set timecode:

1. Choose **Config | Timecode Source…**

2. Select an external timecode source.

3. In the Record Panel, click the **Auto Start** button, or choose **Config | AutoStart**. The Auto Start… dialog box appears (see Figure 7).

4. Click the Auto Start check-box.

5. Enter the desired start time in the **Start Time** field. This time should be at least 10 seconds ahead of the current time.

6. Click the **Close** button.

When you activate auto start, a countdown is shown on the record panel. When the countdown gets to 00:00:00:00, recording begins.
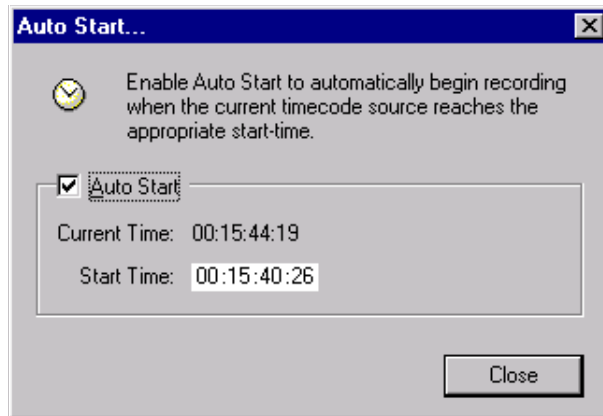
Figure 7. The Auto Start dialog box

Working with the Record Buffer

The record buffer is a quantity of storage space allocated for recording. The size of the buffer determines how much video can be stored before recording returns to the beginning of the buffer, and limits the length of delay that you can set. You can select a different drive to be the record buffer's location. and you can save the contents of the buffer as a clip.

Setting the Record Buffer Size

To set the record buffer size, enter the buffer duration in the Record Panel's Buffer Size edit box.

The record buffer must be at least 5 seconds longer than your longest playout delay. The minimum buffer size is 10 seconds; the maximum buffer size is the recording capacity of the current record buffer volume. By default, the maximum buffer size is shown when TimeDelay is started.

If you enter a buffer size that is greater than the amount of available storage, TimeDelay automatically reduces the value to reflect the largest possible duration. If you enter a buffer size that is smaller than the longest playout delay, TimeDelay automatically increases the value to reflect the smallest buffer size that can encompass the longest playout delay.

Changing the Record Buffer's Location

By default, the TimeDelay Record buffer is created on the first internal disk volume. To change the record buffer's location to a different drive:

1. Choose **File | Set Buffer Drive…** to open the dialog box shown here:
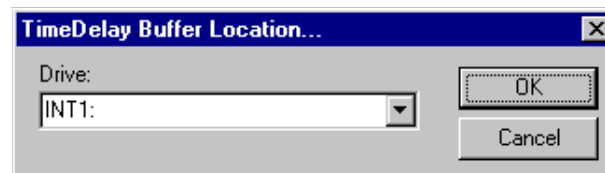
Figure 8. TimeDelay Buffer Location dialog box

2. Select the appropriate drive.

3. Click the **OK** button.

Saving the Record Buffer' Contents as a Profile Movie

Each time the TimeDelay process is started, the disk storage used by the record buffer is deleted. The Save Buffer operation allows you to save the contents of the record buffer before closing or restarting the TimeDelay process.

To save the record buffer contents as a Profile movie, do the following:

1. On the **File** menu, click **Save Buffer As…** This opens the dialog shown below:

Save TimeDelay Clip...	☒
Name:	TimeDelayClip_2	OK
Save in:	INT1:/default/ ▼	Cancel
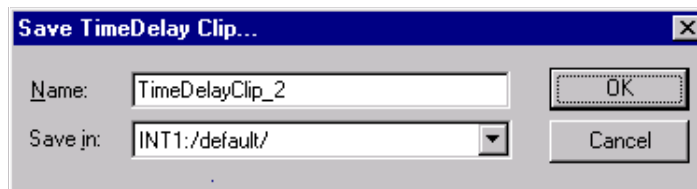
2. Enter a name for the movie.

   This movie name must be unique. When the dialog is opened, a unique default name is suggested. If you change the name and it is not unique, you will be prompted to enter a new name or cancel the save operation.

3. Use the **Save in:** combo box to choose a bin for the movie.

4. Click the **OK** button.

Saving a large record buffer as a movie will reduce the amount of available disk storage. This may effect the TimeDelay application's ability to function.

Working with the Playback Panel

The Playback Panel allows you to control the playout delay for the playback channel that it represents.

Setting a Playout Delay

To set a playout delay, enter the delay duration in the Playback Panel's Playout Delay edit box.

The minimum playout delay is five seconds; the maximum delay is five seconds less than the current record buffer size. TimeDelay automatically adjusts playout delays that are too large or too small to the closest valid value.

Starting a Playback Channel Immediately

To immediately start a playback channel:

1. Start the TimeDelay process.

2. In the appropriate playback panel, click the **Play** button.

Starting playback with the **Play** button overrides the delay time. Once the channel begins playing, the delay time is automatically adjusted to reflect the difference between the record and play positions.

Modifying a Playout Delay

To modify a playout delay after the TimeDelay process has started:

1. In the Playback Panel, click the **Stop** button. The playback channel stops and shows black.

2. In the Playout Delay edit box, enter the new delay value.

3. Click the **Play** button The playback channel restarts immediately with the new delay.

Pausing Playback

To pause playback, click the **Pause** button in the Playback Panel for the channel that you wish to pause. The playback channel's output pauses.

As the time difference between the record position and the paused playback position increases, the playout delay value also increases until it exceeds the maximum playout delay, automatically stopping the channel.

To resume playback after a pause, click either the **Pause** button or the **Play** button in the paused Playback Panel.

Working with Timecode

When TimeDelay channels are configured, one our more timecode tracks can be connected to timecode sources including external VITC and LTC signals, or an internal timecode generator.

As with all TimeDelay channel resources, the number of timecode tracks in each playback channel should match the number of timecode tracks in the record channel.

Since TimeDelay panels have a single timecode display, they can only display timecode from a single source at a time. The Select Timecode Source… dialog box shown in Figure 9 allows you to select from multiple timecode sources.
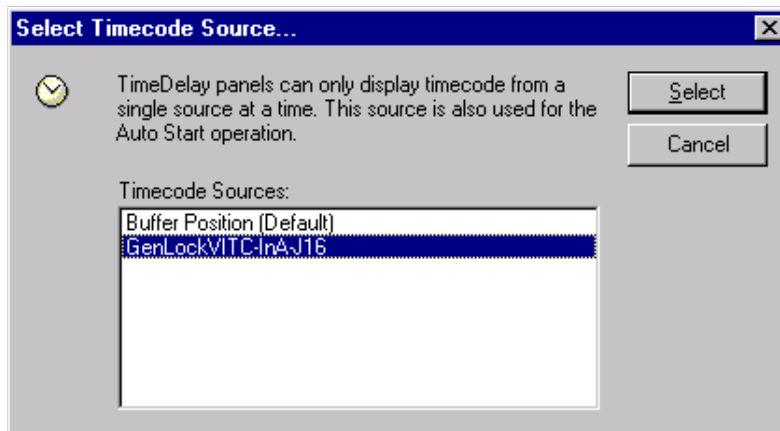
Figure 9. The Select Timecode Source… dialog box

To select a timecode source:

1. Choose **Config | Timecode Source…** to open the Select Timecode Source… dialog box.

2. Select the name of the appropriate timecode source from the Timecode Sources list, which is drawn from the record channel's timecode sources. The Buffer Position item allows you to show the record/play position relative to the beginning of the record buffer.

3. Click the **Select** button.

Crash Recovery

The Crash Recovery option adds recovery features that will restore TimeDelay to the state in which it ended. When you activate Crash Recovery, Time Delay periodically saves the project file. This allows you to add the project file to the *pdrstart.bat* file and fully recover from a crash when the Profile unit restarts. If TimeDelay is closed or crashes while recording, it will come up recording when started again; TimeDelay starts recording at the first break in the timecode and resets the playbacks to their original settings.

Choose **Config | Crash Recovery** to activate the crash recovery functionality. A check mark next to the menu item indicates that crash recovery is activated. If you have not saved the project file prior to activating Crash Recovery, the Save As dialog box appears, prompting you to save the project file.

To ensure that TimeDelay restarts in case of a crash, add the project file name to the Startup group as described in "Launching a Project at Start-up" on page 13.

Setting Audio Levels

The audio meters in the Record Panel include sliders that allow you to control the audio level as you record. Click and drag the audio level controls to the desired record level for each audio track. Similar controls in the Player panel allow you to control the playback level of the audio.
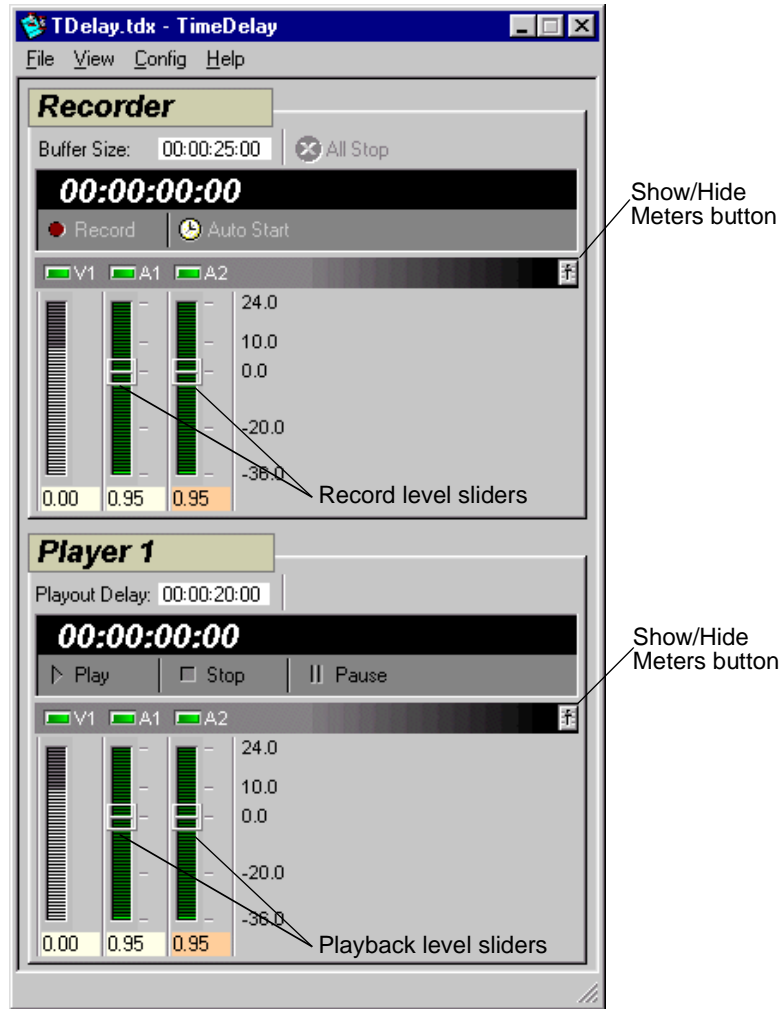
Figure 10. The audio level controls

Using the Interface

This is a reference section that contains descriptions of the operating controls and menus found in the TimeDelay window. It is divided into three sections: the Record Panel, the Playback panel, and the Menus.

The Record Panel

The following is an overview of the record panel controls:

Panel Name	Displays the record channel name. The record panel might shorten long channel names to fit in the display.
Buffer Size	This text box displays in timecode format the duration of the record buffer (the length of material recorded before the buffer fills and starts recording at the beginning of the buffer). This control allows you to set the duration of the TimeDelay buffer. The minimum buffer size is 10 seconds. The maximum buffer size is the recording capacity of the current record buffer volume. By default, the maximum buffer size is shown when TimeDelay is started.
Timecode Display	Displays the current timecode source value. Timecode sources include external VITC and LTC signals, internal timecode generators, the VITC in the house reference, or simply the offset in the record buffer.
Record Button	Starts the TimeDelay process. When you click this button the record panel starts recording and the playback panels start their delays.
Auto Start Button	Opens the Auto Start dialog box. Auto start allows you to trigger the TimeDelay process using the current timecode source. This button is enabled only when the current timecode source is a VITC or LTC signal.
Countdown Display	Shows the amount of time before the record panel automatically starts. The Countdown Display appears only when the Auto Start mode is active.
All Stop Button	Stops the TimeDelay process. If the playback has not started yet, the delayed start is canceled.
Video/Audio Status Lights	The number of status lights indicates the number of video and audio tracks in the record channel. A Video status light turns red when the corresponding video track is not receiving a signal. An audio status light turns red when the audio input signal peaks and is clipped.
Show/Hide Meters Button	Expands the panel to show video and audio meters.
Video/Audio Meters	The video meter shows the record channel's data rate relative to the maximum rate. Audio meters show the audio input level in dB.

The Playback Panel

Though TimeDelay may have multiple playback panels, each has its own set of the following controls:

Panel Name   Displays the playback channel name. The playback panel may shorten long channel names so they fit in the display.

Playout Delay   This text box shows the amount of time the playback panel waits before playing. The minimum playout delay is 5 seconds. The maximum delay is 5 seconds less than the current record buffer size. The default playout delay is 5 seconds.

Timecode Display   Shows the current timecode source value (relative to the position of the playback channel). Timecode sources include external VITC and LTC signals, internal timecode generators, the VITC in the house reference, or simply the offset in the record buffer.

Play Button   Starts the playback channel immediately, overriding the current playout delay and updating the playout delay control.

Stop Button   Stops the playback channel; when playback stops, the output channel shows black. Press the stop button to modify the playout delay after the TimeDelay process has started.

Pause Button   Pauses the playback output. The playout delay increases as long as the playback channel is paused. Press pause again or press play to resume playback.

Video/Audio Status Lights The number of status lights indicates the number of video and audio tracks in the record channel. A Video status light turns red when the corresponding video track is not receiving a signal. An audio status lights turn red when the audio input signal peaks and has to be clipped.

Show/Hide Meters Button   Expands the panel to show video and audio meters.

Video/Audio Meters   The video meter shows the record channel's data rate relative to the maximum rate. Audio meters show the audio input level in dB.

Menus

TimeDelay menus include the following:

File

Remote Connection…   Connect to a remote Profile unit.

Import   Imports the resource settings from an existing
                TimeDelay project, but keeps the current machine
                connection.

Open…   Opens an existing TimeDelay project file previously
                saved by TimeDelay with a .tdx file extension.

Save   Saves the TimeDelay project file. All TimeDelay
                project files receive a .tdx file extension. If the project
                file has not been saved before, Save works like Save
                As…

Save As…   Saves the currently open TimeDelay project file with a new file name.

Set Drive…   Selects a different disk volume for the record buffer.

Save Buffer As…   Save the record buffer as a PDR movie.

Exit   Closes TimeDelay.
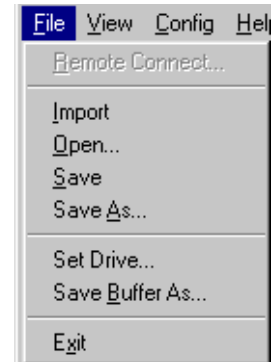
View

Single Column   Displays all the playback panels below the record panel in
                a single column. When the column becomes too large for
                the screen, scroll bars appear to allow access to hidden
                panels.
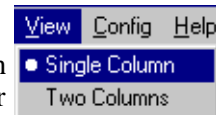
Two Columns   Displays the record and play panels in two columns as shown in Figure 11.
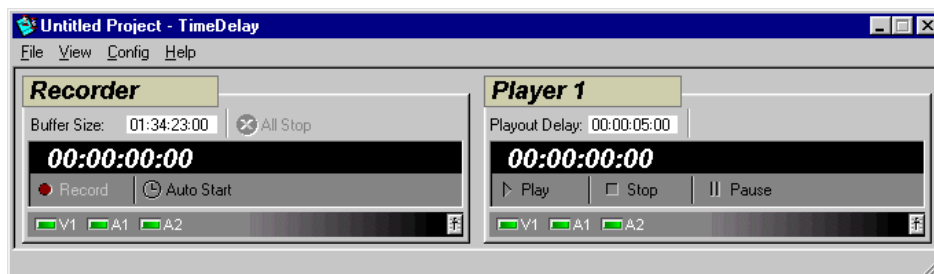
Figure 11. Two-column display
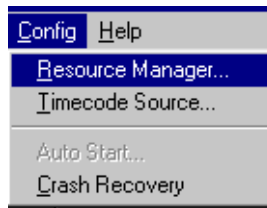
Config

Resource Manager…Opens the Resource Manager dialog box for allocation of video, audio, and timecode resources, and for adding, naming, and removing channels.

Timecode Source…Opens the timecode display selection dialog box. If the record channel has more than one timecode track, this allows you to select the one for display in the record and playback panels.

Auto Start…   Opens the auto-start setup dialog box.

Crash Recovery…Turns on "auto-restore mode."

Chapter **2**

Using TimeDelay for 2.2.X, 2.4.X

This chapter describes the versions of TimeDelay that correspond to Profile System Software versions 2.2.X and 2.4.X. If you are using Profile System Software versions 2.5.X, 3.X, or 4.X, 5.X, or Profile PRO Series 1.X, please refer to Chapter 1, "Using TimeDelay for 2.5.X, 3.X, 4.X, 5.X, and PRO Series 1.X" on page 11

Getting Started with TimeDelay

NOTE: Close VdrPanel if it is running. TimeDelay and VdrPanel use some of the same resources. Running both applications simultaneously is not recommended.

To start the TimeDelay application:

1. Double click on the **TimeDelay** shortcut icon on the desktop to start the application. Figure 12 illustrates the TimeDelay panels. TimeDelay starts in the same panel configuration as it was last saved.

NOTE: TimeDelay uses the standard Windows NT interface. For help with Windows NT interaction, refer to Microsoft NT manuals.
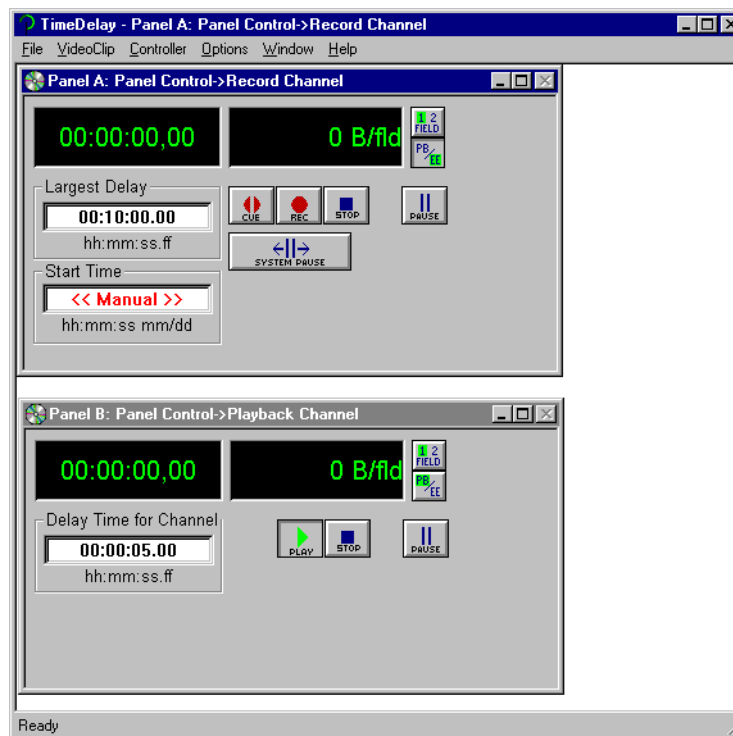
Figure 12. TimeDelay window with record/playback pair

Record Panel Controls

Figure 13 illustrates the controls on a Record panel.

1. timecode   **2. Bytes/Field**

3. Field Selection
4. Playback/E to E

5. Largest De-

6. Start Time

7.Control   But-
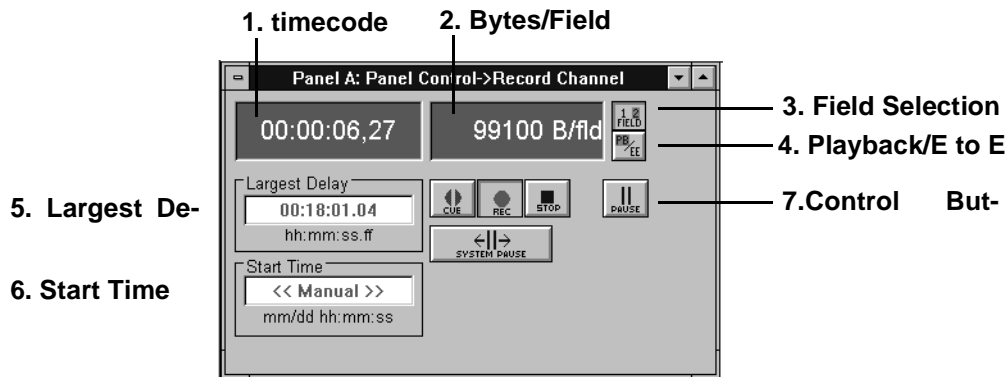
Figure 13. Record panel controls

1. **Timecode** displays the current timecode of the clip being recorded.

2. **Bytes/Field** displays the current compression rate applied to the frames in the clip. The target compression rate is set through **Controller | Configure**. If this number does not change when **Rec** is clicked, no video signal is present. Verify the cables and connections are correct on the disk recorder. Verify the Video Crosspoints are set correctly. Refer toSee "Setting up the Signal Routing" on page 43.

3. **Field Selection** toggles between one field or two fields when playing back still frames. For one field, each line in field is duplicated to form a frame.

4. **Playback or E to E** toggles between **Playback** (viewing the video input after it is recorded) and **E to E** (viewing the video input directly).

5. **Largest Delay** displays the maximum amount of delay time configured for this panel. The default value (displayed in red) shows the maximum amount available on the disk recorder. A user-specified value appears in black.

6. **Start Time** sets the start time for the clip, entered as the month, day, and time (based on the clock in the NT computer). If << *Manual* >> is displayed, the **Rec** button must be clicked to start recording.

7. Control buttons for the record channel are shown here:

   Cue places the system in record standby mode.

   With **Cue**, the system starts recording nearly instantaneously when **Rec** is clicked or the **Start Time** is reached. Otherwise, there is an up to five second delay before recording begins.

   Record begins recording the video input stream.

   Stop stops recording the video input stream on the record channel, and stops playback on all of the channels using the record channel.

Pause pauses the record channel without affecting the current playback operation of the associated playback channels.
Click on **Pause** to toggle it off and resume recording.

NOTE: If the record channel is paused longer than the delay time for the playback channel, the playback channel can catch up or even pass the recorder. If there is material stored in the clip it could be replayed.

System Pause pauses all channels on the system. Click on **System Pause** to resume panel operations.

Playback Panel Controls

Figure 14 illustrates the playback panel controls.
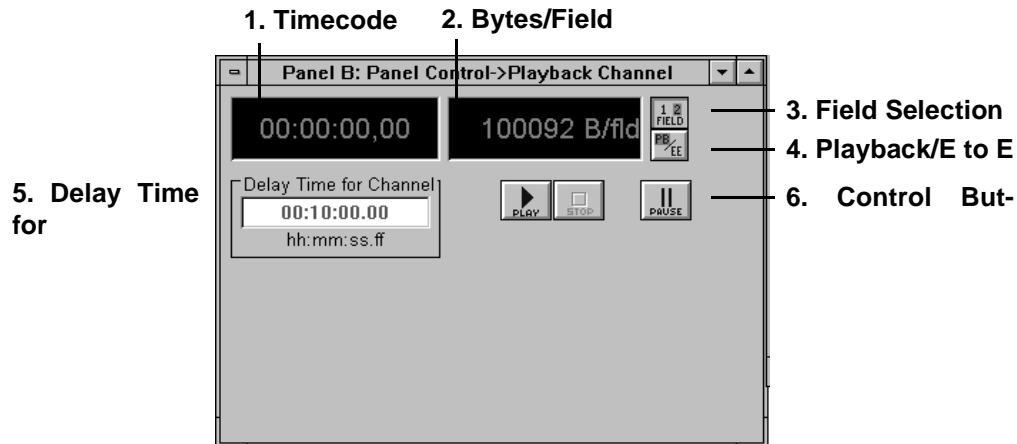
Figure 14. Playback panel controls.

The playback channel controls are explained here:

1. **Timecode** displays the current timecode of the clip being played.
2. **Bytes/Field** displays the compression rate applied to the frames. The target compression rate is set through **Controller | Configure**.
3. **Field Selection** toggles between one field or two fields when playing back still frames. For one field, each line in field is duplicated to form a frame.
4. **Playback or E to E** toggles between **Playback** (showing a still frame if the panel is stopped) and **E to E** (loops the input signal through to the output while the panel is stopped).
5. **Delay Time for Channel** sets the amount of time to delay playback of the recorded video from the record channel. Playback channel delay times cannot exceed the Largest Delay time specified on the record channel.
6. Control buttons for the playback channel are:

 Play starts playback on the channel.

 Stop stops playback on the channel.

 Pause pauses the playback channel. Click on **Pause** to toggle it off, recalculate the new delay time, and resume playback.

NOTE: If playback is paused longer than the Largest Delay time, the record channel can loop around and overtake the playback.

Censor Panel Controls

Figure 15 illustrates the controls on a censor panel.
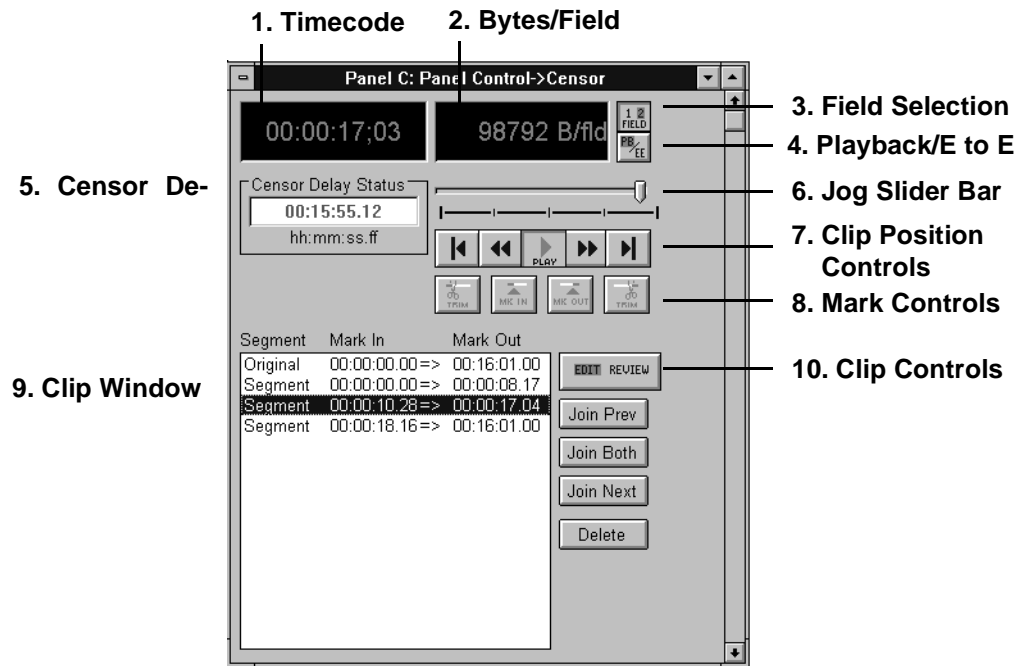
Figure 15. Censor panel controls

Censor panel controls are described here:

1. **Timecode** displays the current timecode of the clip.

2. **Bytes/Field** displays the current compression rate applied to the clip. The target compression rate is set through **Controller | Configure**.

3. **Field Selection** toggles between one field or two fields when playing back still frames. For one field, each line in field is duplicated to form a frame.

4. **Playback or E to E** toggles between **Playback** (showing a still frame if the panel is stopped) and **E to E** (loops the input signal through to the output while the panel is stopped).

5. **Censor Delay Status** sets the delay time for the censor channel.

6. **Jog Slider Bar** indicates the current position relative to the entire clip. Click and drag the bar to change the position within a clip, or use the **Clip Position Controls**.

7. **Clip Position Controls** control the current clip position:

Start Clip jumps to the start of the clip.

Jog Backward moves the clip back one frame.

Play plays the clip from the current position.

Jog Forward advances the clip one frame.

End Clip jumps to the end of the clip.

8. **Mark Controls** place in marks and out marks, and trim clip information.

Set In Mark adds an **in mark** at the current clip position. Use the Jog Slider bar or Jog controls to set the desired clip position.

Set Out Mark adds an **out mark** at the current clip position. Use the Jog Slider bar or Jog controls to set the desired clip position.

Trim to In Mark modifies the previously set in mark. Use the Jog Slider bar or Jog controls to set the desired clip position.

Trim to Out Mark modifies the previously set out mark. Use the Jog Slider bar or Jog controls to set the desired clip position.

9. **Clip Window** displays the in marks, and out marks of the segments in the current clip. As the segments are played back, they are removed from the clip window.

10. **Clip Controls** perform operations on the available segments shown in the clip window:

Edit/Review toggles the viewing mode. **Edit** enables the Clip Control. **Review** continuously plays the segments.

Join Prev joins the current segment with the **previous** segment.

Join Both joins the current segment with the **previous** and *Next* segment.

Join Next joins the current segment with the **next** segment.

Delete deletes the current segment.

NOTE: The Join buttons are used to add censored material back into the playback stream.

Exiting TimeDelay

To exit TimeDelay:

- Choose **File | Quit.**

Configuring the Panels

Click anywhere within the specific **Panel** dialog box to select the panel. The title bar is highlighted when a panel is selected. The following options are available from the Controller menu:

- **Select** sets up the panel as **Panel Control** or **Remote Control**.

- **Configure** sets the playback and record JPEG channels, audio channels and the VITC timecodes.

- **Comm Port** assigns the communications port to use if remote control is selected.

   NOTE: If you are using TimeDelay with Profile System Software version 2.4.X, please refer to the Profile Family User Manual for instructions on how to use Configuration Manager to assign resources to your TimeDelay panels.

Selecting a Controller

To select a controller:

1. Click anywhere within the specific **Panel** dialog box to select the panel.

2. Select **Controller | Select** to access a **Controller Setup** dialog box.
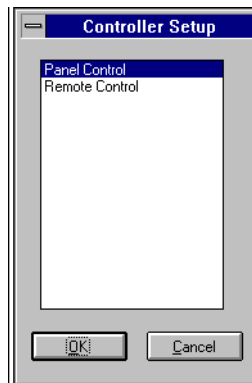
Figure 16. Controller Setup dialog box

3. Select the type of control for the channel and click **OK**.

   - **Panel Control** specifies control from the Windows NT user interface. No communication port selection or configuration is necessary.
   - **Remote Control** specifies control via the RS-422 interface. This option requires the additional configuration and communication port set up.

Selecting a Communications Port for Remote Control

To select a communications port:

1. Click anywhere within the specific **Panel** dialog box to select the panel.

   NOTE: The Communication Port dialog box is accessed automatically the first time Remote Control is selected.

2. Select **Controller | Comm Port** to access a **Controller Setup** dialog box. An example of this dialog box is illustrated in Figure 17.
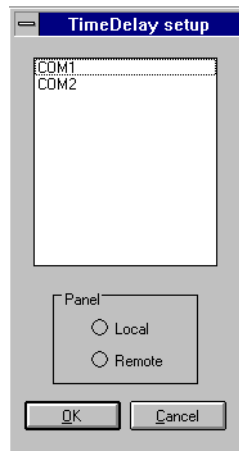
Figure 17. Communication Port dialog box

NOTE: COM1 and COM2 are available on the disk recorder back panel (RS-232 DB-9 connectors). Ports P1 through P8 are available on the RS-422 breakout panel. Any P ports used by VdrPanel should have the DIP switches set to Device. Refer to your disk recorder's installation manual for details.

3. Select the communications port and click **OK**.

Configuring a Controller

This command sets the playback and record JPEG channels, audio channels and the VITC timecodes for the selected controller.

1. Click anywhere within the specific **Panel** dialog box to select the panel.

2. Choose **Controller | Configure** to access the **Profile Options** dialog box for the selected panel. Figure 18 illustrates the standard **Profile Options** dialog box.
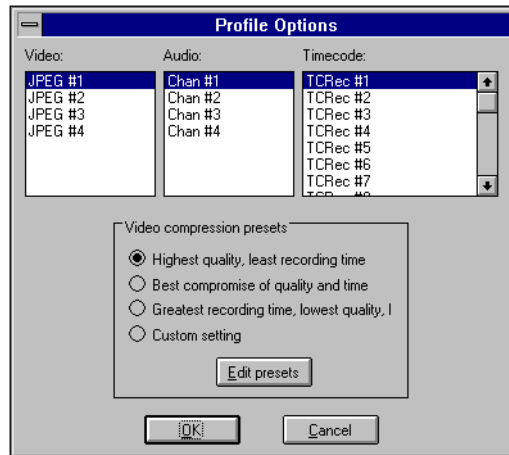
Figure 18. Profile Options (controller configuration) dialog box

3. Click on the appropriate options for your selected controller. Use the scroll bars to see more options if necessary. Typically, you assign four audio and four timecode channels to each JPEG channel.

4. Select a video compression preset. The options range from highest quality (but use the most recording time) to lowest quality (using the minimum of recording time). Custom setting (using the current presets) is also available.

5. Edit the preset values if necessary. Refer to Table 2 for the factory set Preset values. If you need to change the values, click **Edit resets** to access the **Edit Compression Presets** dialog box illustrated in Figure 19. Click **OK**.

Table 2. Factory set values of the compression presets

Preset Name	525/60 Standard			625/50 Standard		
	Lum	Chroma	Byte Rate	Lum	Chroma	Byte Rate
Highest	0.75	60.00	100000	0.75	100.00	120000
Best	0.75	60.00	75000	0.75	100.00	90000
Lowest	0.75	60.00	50000	0.75	100.00	60000
Custom	5.00	5.00		5.00	5.00	
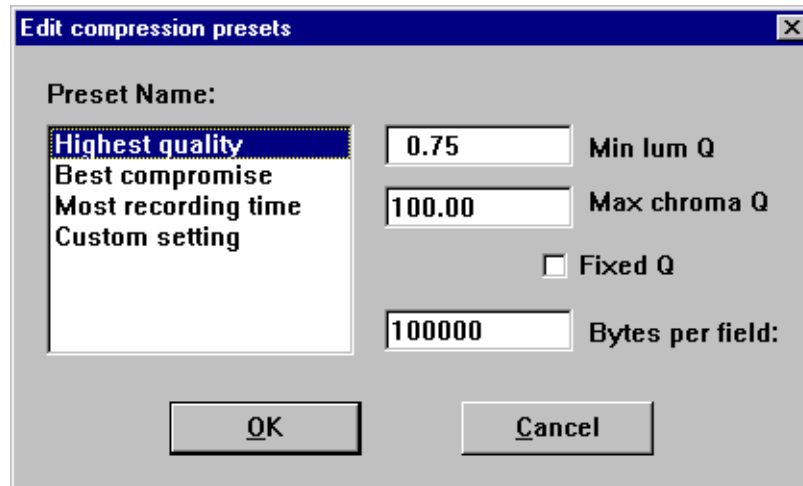
Figure 19. Edit Compression Presets dialog box

- **Min Lum Q** sets the minimum compression that can be applied to luminance in a field to meet the target data rate (typically 0.75). The lowest rate is 0.75.

- **Max Chroma** sets the maximum compression that can be applied to chrominance in a video field to meet the target data rate (typically 60).

- **Fixed Q** sets a fixed picture quality and ignores variation in field size. Use this mode for critical multi-generation work. When **Fixed Q** is selected, the other fields become fixed as **Lum Q** (fixed luminance compression) and **Chroma Q** (fixed chrominance Q). Useful starting values for **Fixed Q** and **Chroma Q** are 5.00. Verify there is sufficient available data rate headroom before using **Fixed Q** mode. The **bytes/field** target attempts to meet the Lum and Chroma goals. With **Fixed Q** mode, **bytes/field** can increase beyond the system bandwidth, causing interference with other channels.

- **Bytes per Field** is the target compression rate. Not every field requires the target rate, it is simply the average rate the Disk Recorder tries. The higher the rate, the better the picture detail. The actual **bytes/field** depends on the picture complexity, **Min Lum Q**, and **Max Chroma**. The algorithm dynamically changes **Min Lum Q** and **Max Chroma** to make the field size meet the target unless **Fixed Q** is selected.

6. Click **OK** when all options are set.

Setting up the Signal Routing

Signal routing determines which physical input and output connections are used by a panel. A crosspoint method is used to assign the physical connections to the TimeDelay software panels.

Signal routing must be set up to obtain video input and output.

> *NOTE: The Controller for each channel must be set up before assigning the crosspoints. Follow the instructions for "Configuring a Controller" on page 41.*

There are three steps:

- Setting video crosspoints.
- Setting up timecode.
- Assigning timecode crosspoints.

Assigning Video Crosspoints

Video crosspoints allow you to assign the video signal connections within the disk recorder.

- Video inputs (upper left) represent video input connectors on the back panel. Video inputs can be connected to JPEG codecs for recording onto disk, or connected to video output for display.
- Video outputs (upper right) represent video output connectors on the back panel. Video outputs can be connected to JPEG codecs for playback of recorded material from disk or direct to video inputs.

1. Select **Window| Video Crosspoint** to access the dialog box. The green boxes indicate current connections. For example, a green box at the intersection of *DComponentVideo1InA* and *JPEG# 1* connects the video signal from the back panel input labeled *IN A* to JPEG video codec #1.
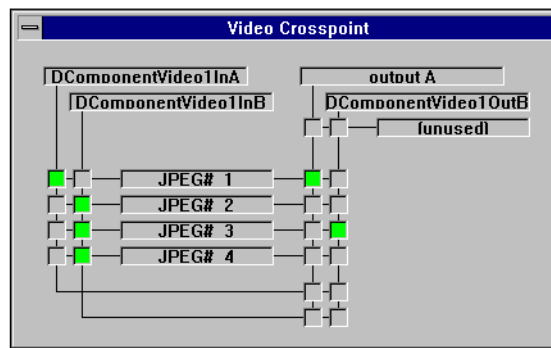
Figure 20. Video crosspoint dialog box

1. Assign each input to a JPEG channel by clicking in the intersection between the video signal and the JPEG channel. The selections turn green.

> *NOTE: Verify that you have the appropriate video signals connected to the appropriate BNC on the rear panel.*

1. Assign each output either to a JPEG channel for recording or direct to output. The direct crosspoints are those connected to the inputs by the line running beneath the JPEG selections.

1. Select **Close** from the **control menu box** in the upper-left corner of the panel, or press Alt-F4.

NOTE: To release an output for use by another application, click the box at the intersection of the output with the [unused] *box.*

Setting up Timecode

The **Set Timecode** dialog box enables you to set the timecode display and the source on a channel to the values required for your application.

1. Click anywhere within the specific **Panel dialog box** to select the panel.

2. Select **Options | Select Timecode** to access the **Timecode Setup** dialog box. The **Timecode Setup** dialog box is divided into two groups: **Display on Panel** and **Timecode Generator Settings**.
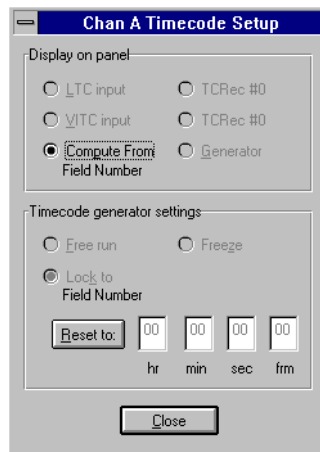
Figure 21. Timecode Setup dialog box

3. Select the timecode to be displayed on the panel from the **Display on Panel** group:

   - **LTC Input** is a separate signal input to the disk recorder via the genlock card.
   - **VITC Input** is the timecode from the VITC input signal. It may be part of the video signal being recorded.
   - **Compute from Field Number** calculates the timecode directly from the field number of the recorded video. New clips start at 00:00:00:00.
   - **TC Rec #** displays the recorded timecode.
   - **Generator** displays the timecode from the generator for the channel.

4. Set up the timecode generator used by the panel with the **Timecode Generator Settings** group:

   - **Free Run** causes the timecode generator to continue to advance regardless of the current play or record mode of the panel.
   - **Freeze** locks the timecode at the current value. The value does not advance with time or changes in the play or record mode of the panel.
   - **Lock to Field Number** causes the generator to output a timecode locked to the current position of the panel. When the panel is in stop, the value freezes. When the panel is in play or record, the timecode advances normally. During Rewind or reverse Shuttle, the timecode runs backward.
   - The **Reset To** button resets the timecode to the value entered in the box. The generator can be set to this value when Free Run, Freeze, or Lock to Field Number is selected.

5. Click **Close** when complete.

Assigning Timecode Crosspoints

The **Timecode Crosspoint** dialog box controls the connections of timecode signals within the disk recorder.

- Timecode inputs (top-left corner) represent either LTC input connectors on the back panel or VITC input signals (carried in the vertical interval of the associated video signal on a video input connector). timecode inputs can be connected to timecode recorders for recording onto disk.

- Timecode generators (below timecode inputs) represent timecode generators used by the panels. timecode generators can be connected to timecode recorders for recording onto disk or to timecode outputs.

- Timecode outputs (top-right corner) represent either LTC output connectors on the back panel, or VITC output signals (inserted into the vertical interval of the associated video signal on a video output connector). timecode outputs can be connected to timecode recorders for playback of recorded material from disk, to timecode inputs, or to timecode generators.

1. Choose **Window | Timecode Crosspoint** to access the **Timecode Crosspoint** dialog box. The green boxes indicate the current connections. For example, a green box at the intersection of *TCRec#1* and *LTC1In1* indicates the timecode signal from the back panel input *LTC1In1* is recorded by timecode recorder #1.
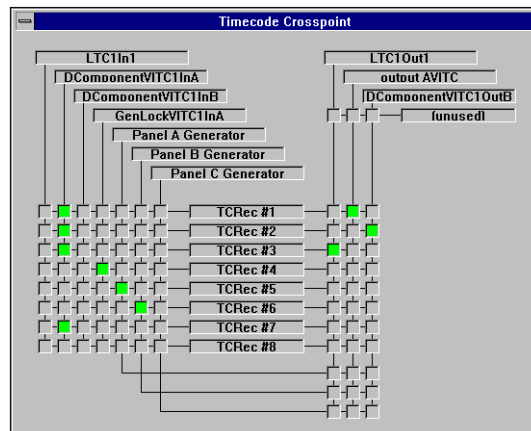
Figure 22. Timecode crosspoint dialog box

2. To assign a crosspoint, click in the intersection between the signal and the recorder channel. The selections turn green.

   NOTE: A timecode recorder must be used by a panel to be available as a timecode output.

3. Select **Close** from the *Control Menu Box* in the upper-left corner of the panel, or press Alt-F4.

   NOTE: To release a timecode output for use by another application, click the box at the intersection of the output with the unused *box.*

Setting a Delay Time

To set a delay time:

1. Select the record panel. You can use **Window | Record Capacity** to verify the maximum amount of delay time available on the system.

   *NOTE: If you have two Record Pairs (***File | New Record Pair***) remember that Panel A and Panel B form one pair, and Panel C and Panel D form the other pair. The combined Largest Delay values for Panel A and Panel C cannot exceed the maximum available time.*

2. Click in the **Largest Delay** box.

   NOTE: As a precaution, add extra time to the largest delay value, in case you need to censor or pause the playback channel. For example, if you want a 1 hour and 30 minute delay, enter 01:35:00.00.

   When the editing cursor appears, enter the time as *hh:mm:ss.ff* (hours:minutes:seconds.frame). Press Enter with no value to insert the default delay time (record capacity is the default delay). The minimum delay time is 5 minutes (00:05:00.00).

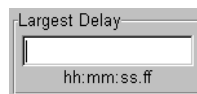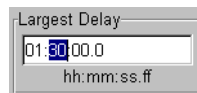   You can use the mouse or arrow keys to highlight the information to be changed, and then type the new value, or use Delete or Backspace to erase any existing information before typing the new value.
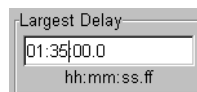
   When the information is correct, press Enter.

3. Select the playback panel.

4. Click in the Delay Time for Channel box. This value is the delay between when recording starts and when playback starts.

5. Enter the amount of delay (*hh:mm:ss.ff*) for the playback channel. Editing is performed the same as on the record panel. The minimum delay is 5 seconds (00:00:05.00). The default delay time for the playback channel is 5 seconds less than the **Largest Delay** set for the record channel.

   NOTE: You can open up to three Playback channels (on a four-channel disk recorder) with File | New Channel. Each channel can be delayed a different amount of time. Repeat steps 3. through 5. for each Playback panel.

Starting Video Recording

There are two methods to begin recording:

- *Manual* is performed by an operator clicking the **Rec** button.
- *Automatic* is performed if a time is entered in the Start Time box and the system is Cued.

Manual Recording

1. Click on **Cue** to prepare the system for recording. This step is not necessary. Cueing the system eliminates the five second delay that occurs when you click **Rec**.

   The timecode and bytes/field displays change color. Timecode starts at 00:00:00.00, the bytes/field display should be rapidly changing, indicating the JPEG codec is receiving and compressing a video stream. If bytes/field is 0, verify the cables and connections are correct on the disk recorder. Verify the Video Crosspoints are set correctly. See "Setting up the Signal Routing" on page 43.

2. Click **Rec** in the record panel. The timecode counter should start counting. A still frame appears on the playback channel.

3. At the **Delay Time** specified on the playback channel, playback begins. Once playback is complete, click **Stop** to end the recording.

Automatic Recording

1. Select the record panel.

2. Click in the Start Time box. This value is the time to automatically start recording on the channel. For example, if you want to start recording at 2:00 pm, enter the hours as 14:00.

3. Enter start time as *mm/dd hh:mm:ss* (*month/date hours:minutes:seconds*), using a 24 hour clock. For example, to start recording on November 20 at 5:20 pm, enter the time as: **11/20 17:20:00**

4. Click on **Cue** to prepare the system.

5. Playback begins at the **Delay Time** specified. Once playback is complete, click **Stop** (on the record panel) to end the recording.

   NOTE: After recording, remove or update the start time.

Changing Playback Delay Time

Once playback begins, the **Delay Time for Channel** value cannot be edited directly. There are two methods to add more playback delay time:

Pausing the Playback Panel

1. Click on **Pause** in the playback panel to freeze the video. TimeDelay increases the delay time by the amount of time playback is paused.

2. Click **Pause** again to continue playback.

Changing the Timecode

1. Click within the timecode display counter in the playback panel. This accesses the **Go to Timecode** dialog box.

   NOTE: When using this feature, the jump to the new timecode may not be clean. There may be some momentary still video.

2. Click in the Enter Timecode box. The Go To Timecode dialog box is displayed.
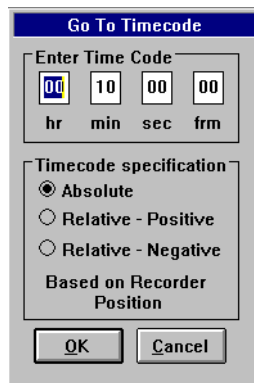
Figure 23. Go To Timecode dialog box

3. Enter a timecode value. Use the mouse or tab to move between the fields.

4. Select a **Timecode Specification:**

   - **Absolute** moves the Playback channel to the specified timecode, and computes a new **Delay Time for Channel** value relative to the record channel. Be sure to select a value lower than the current record channel timecode. Otherwise, you move playback ahead of record. Leave a minimum of five seconds delay.

   - **Relative - Positive** is not typically used, as it moves the playback channel ahead of the record channel.

   - **Relative - Negative** moves the playback channel to the record timecode minus the **Enter Timecode** value. This value is used as the new **Delay Time for Channel**.

Locking the System

When a time delay is set, the system can be locked to prevent accidental changes or playback interruptions.

1. Choose **File | Lockout Panel**. The **Panel Lockout** dialog box appears.
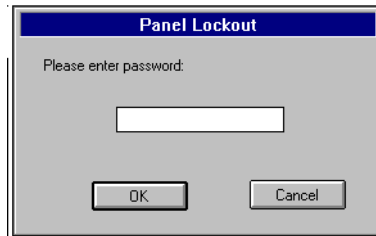
Figure 24. Panel Lockout dialog box

2. Enter a password in the box.

3. Click **OK**. This locks the system.

To unlock the system, enter the password and click **OK**.

Recording a New Clip

This sets the clip used by the recorder. If you select an existing clip, it reuses it. The default clip name for Panel A is *#TIMEDELAY#0#*, the default clip name for Panel C is *#TIMEDELAY#2#*.

1. Select a record panel.

2. Choose **VideoClip | New Clip** to access the **New Clip** dialog box (Figure 25).
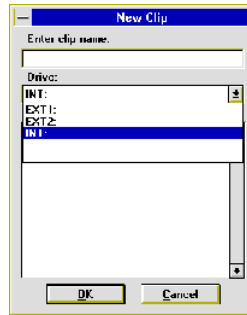
Figure 25. New Clip dialog box

3. Enter a meaningful clip name (such as *11-20delay.1*).

4. Select a drive from the **Drive** list. The number of drives available depends on your hardware.

5. Click **OK**.

6. Click the **Record** button to begin recording. The timecode and compression rate fields are updated.

   NOTE: A video input signal must be present on the selected Channel for recording to start.

7. Click **Stop** to stop recording.

Renaming a Clip

To rename a clip:

1. Choose **VideoClip | Rename Clip**. The **Rename Video Clip** dialog box appears.

2. Click on the clip to be renamed (such as *#TIMEDELAY#0#*).

3. Enter the new name in the **To** field.

4. Click **OK**.

Deleting a Clip

To delete a clip:

1. Choose **VideoClip | Delete Clip** to open the Delete Clip dialog box.

2. If the clip you want to delete is on a different drive, select it in the **Drive** box.

3. Select the clip or clips you want to delete.

4. Click **OK** when complete. A message box appears telling you which file is being deleted.

Using Drop-Frame Timecode

In NTSC, you don't actually get 30 frames per second (fps); the real number is about 29.97 fps. Timecode usually assumes 30 fps. To account for the discrepancy, drop-frame timecode skips or drops two timecode values at the beginning of every minute except every tenth minute. This allows timecode to exactly match a real-time clock on 525/60 systems. This correction is not needed on 625/50 systems because the frame rate is exactly 50 fps.

To set drop-frame timecode:

• Choose **Options | Drop-Frame** or **Options | Non-Drop-Frame**.

Auto Restore

Auto restore mode automatically restores operations to their state previous to a hardware or software crash. To invoke auto restore:

• Choose **Options | Auto Restore**.

Auto Shuttle

Auto shuttle synchronizes the play back play speed with the Record panel. To set auto shuttle to on:

• Choose **Options | Auto Shuttle Control**.

Starting the Censor Channel

The Censor channel enables you to mark and review video segments between the time they are recorded and the time they are played back. Basic editing can be performed on the segments.

The Censor channel always appears on Panel C. Panel D is disabled when the Censor channel is opened. The Censor channel window is longer than the other panels. You may have to increase the panel length to see all of the options.

To start the censor channel:

1. Choose **File | New Censor Channel**.

2. Click in Censor Delay Status box if you want to increase the delay time between the record channel and the censor channel. Five seconds is the default (and minimum) delay time.
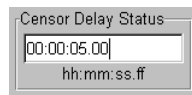
When the editing cursor appears, enter the time as ***hh:mm:ss.ff*** (hours:minutes:seconds.frame). Press enter with no specified time to use the default value. The minimum delay time is 5 seconds (00:00:05.00).
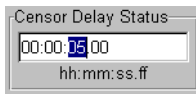
You can use the mouse or arrow keys to highlight the information to be changed, and then type the new value, or use Delete or Backspace to erase any existing information before typing the new value.

When the information is correct, press Enter.

Understanding Segments

Segments are the portions of information to be played. The original clip is the uncensored material available to be marked. When you set an out mark, you are indicating information to be edited out of the segment, when you set an in mark, you indicate information to be included in the segment.

For example, Figure 26 illustrates the *original* clip and three marked segments.

Figure 26. Segments in the clip window

• The *Original* clip is 00:16:01.00 in length.

NOTE: The Trim operations are not valid for the original clip. The Mark operations are not valid for the segments.

- The first segment includes everything from the start of the clip to the frame at 00:00:08.17. All of these frames are included in the playback.

- The frames between 00:00:08.17 and 00:00:10.28 have been censored. They are not included in the playback. Likewise, the frames between 00:00:17.04 and 00:00:18.16.

- The **Join** buttons are used to reinsert censored material back into the playback stream. For example, if Join Prev was clicked for Segment 2, the material between 00:00:08.17 and 00:00:10.28 would be reinserted. Segment 1 would change to reflect 00:00:00.00 $\Rightarrow$ 00:00:17.04, the former Mark Out for Segment 2.

Marking Segments

To make a segment:

1. Start recording. On the censor channel, a clip name *Original* is added to the clip window (Figure 27). The starting timecode is 00:00:00.00 and the ending timecode is set to the **Largest Delay** value.
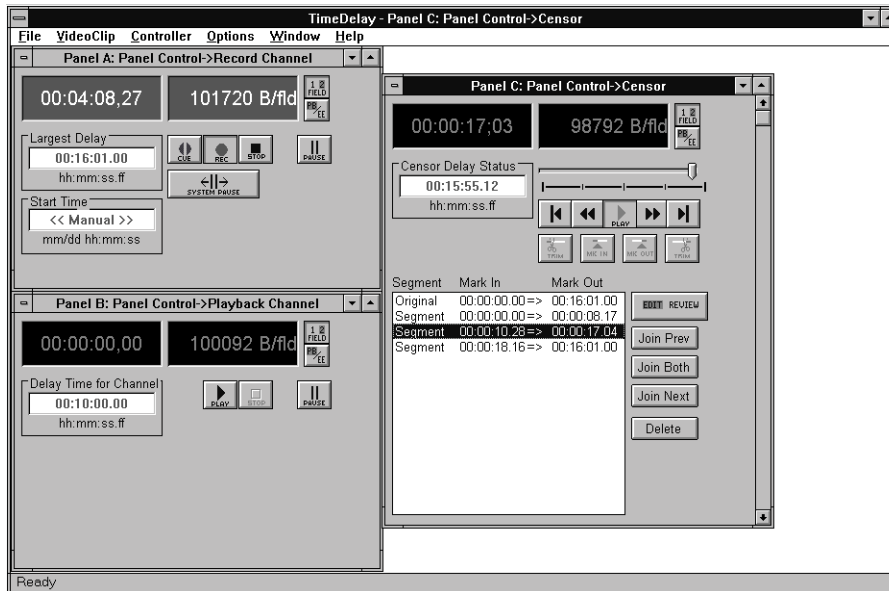
Figure 27. Censor channel

2. Watch the video input on Panel A and note reference points to facilitate marking segments when they appear on the censor channel after the **Censor Delay Status** time.

3. When the reference point is reached on the censor, click **Set Out Mark**.
   - **Set In Mark** is activated

4. To end the current censor segment, click **Set In Mark** at the next reference point.
   - **Set In Mark** is inactivated
   - a new segment is added in the clip window (starting at the **Set In Mark** timecode)

5. Continue marking segments as needed.

Reviewing Segments

Segments can be played back for review.

1. Click on a segment in the clip window. The segment plays from start to finish. The Jog Slider bar moves along the clip.

2. For review of all segments, click **Review**.

Editing Segments

Basic editing capabilities are available for the segments (not the original clip):

- Trimming segments

- Deleting segments

- Combining segments

NOTE: When you return to the original clip, the timecode display reflects the playback at the time you began editing. The Censor Delay time increases so you do not miss reviewing any of the information. Use the Jog slider to move to the appropriate time.

Marking and Trimming Segments

To mark or trim segments:

1. Click on a segment in the clip window.

2. Use **Start Clip, End Clip, Play, Jog Backward, Jog Forward,** or the **Jog Slider** bar to locate the edit points.

3. From the original clip, use **Set In Mark** and **Set Out Mark** to set beginning or ending points to create segments.

4. From a segment, use the **Trim to In Mark** and **Trim to Out Mark** buttons to modify the in and out marks for the segment.

Deleting Segments

To delete a segment:

1. Click on a segment in the clip window.

2. Click **Delete**.

Combining Segments

To combine segments:

1. Click on a segment in the clip window.

2. Click on a combining option:

   - **Join Prev** combines the selected segment with the **Previous** segment. The starting timecode of the **Previous** segment becomes the start, the ending timecode of the selected segment becomes the end.

   - **Join Both** combines the selected segment with the **Previous** and **Next** segments. The starting timecode of the **Previous** segment becomes the start, the ending timecode of the **Next** segment becomes the end.

   - **Join Next** combines the selected segment with the **Next** segment. The starting timecode of the selected segment becomes the start, the ending timecode of the **Next** segment becomes the end.

   NOTE: The Join buttons are used to add censored material back into the playback stream.

Closing the Censor Channel

Select **Close** from the control menu in the upper-left corner of the panel, or press Alt-F4.

Using Remote Control

The TimeDelay protocol commands provide TimeDelay control from a remote application via an RS-422 connection to the disk recorder. The panel must be set up for remote control. See "Selecting a Controller" on page 39.

Packet Format

The Controller sends a packet containing a command to TimeDelay and receives a packet containing one of the following:

- An **ACK**, or acknowledgment.

- A **NAK**, or negative acknowledgment.

- A TimeDelay response.

ACK, NAK and TimeDelay responses are detailed later, in the section, **Commands Returned from TimeDelay**.

TimeDelay commands use the same packet format as VTR Emulation protocol:

CMD1	Data Count	CMD2	Data_1		Data_n	Checksum

Byte	Contents
CMD1/DataCount	CMD1 is in high-order four bits of the byte and identifies the category of command. DataCount is in low-order four bits and specifies how many Data bytes follow.
CMD2	CMD2 identifies a command within the group identified by CMD1.
Data_1-Data_n	Data_1 through Data_n contain the arguments for the command. Each command may have a unique set of Data_n arguments.
Checksum	The sum of the contents of the bytes in the packet from CMD1/DataCount to Data_n, inclusive. This checksum is used to verify correct transmission of the packet.

Arguments

Most of the TimeDelay Protocol commands require a panel argument. This argument is coded in the packet as a single byte whose value is ASCII and takes on one of the following values:

A   Panel A
B   Panel B
C   Panel C
D   Panel D

Some of the commands require a *timecode* argument. This argument is coded in the packet as a four-byte BCD sequence of:***frames seconds minutes hours***

In text and on screen displays timecode always appears as ***hh:mm:ss:ff*** where:

hh   hours (on a 24-hour clock)
mm minutes
ss   seconds
ff   frames

Several of the commands require an *on/off* argument. This argument is coded in the packet as a single byte whose value is ASCII:

1   **ON**
0   **OFF**

Commands

Capacity

Capacity *drive*

Requests the remaining recording time available for the specified file partition.

Packet format: 51 30 dr cs

where: dr = *drive*
        cs = checksum

Censor

Censor

Opens a Censor Channel.

UI equivalent: **File | New Censor Channel**

Packet format: 60 33 cs

where: cs = checksum

ClipSelect

ClipSelect *panel segment#*

Moves selection highlight bar to the specified segment in the censor channel. Ignored for record and playback channels.

UI equivalent: Clicking on one of the names displayed in the censor channel's list of segments.

Packet format: 42 36 pa sn cs

where: pa = *panel*
        sn = *segment#* (one-byte numeric value)
        cs = checksum

Close

Close *panel*

Closes a record, playback or censor channel. If one of a record/playback pair is closed, both are closed (unless it is the only pair active).

UI equivalent: Choosing **Close** from the control menu.

Packet format: 61 35 pa cs

where: pa = panel
        cs = checksum

Cue

Cue *panel*

Prepares the Record Channel for recording. Valid for Record Channel only; ignored for Playback and Censor Channels.

UI equivalent: Clicking on the **CUE** button.

Packet format: 31 32 pa cs

where: pa = *panel*
                            cs = checksum

Drive

Drive *drive*

Specifies the disk partition where the recorded material is to be recorded.

UI equivalent: Changing the drive in the New Clip or Rename Clip dialog boxes.

Packet format: 41 30 dr cs

where: dr = *drive* (one-byte ASCII numeric digit: *0*, *1*, etc.)
                            cs = checksum

EE

EE *panel on/off*

Switches between end-to-end (EE on) and playback (EE off) modes.

UI equivalent: Clicking on the **PB/EE** button.

Packet format: 42 34 pa oo cs

where: pa = *panel*
                            oo = *on/off*
                            cs = checksum

EndClip

EndClip *panel*

Position to end of clip. Valid for censor channel only; ignored for record and playback channels.

UI equivalent: Clicking on the [▶|] button.

Packet format: 41 38 pa cs

where: pa = *panel*
                            cs = checksum

Frame

Frame *panel on/off*

Switches between play-by-frame (Frame on) and play-by-field (Frame off) modes.

UI equivalent:	Clicking on the **1 / 2 FIELD** button.
Packet format:	42 35 pa oo cs
where:	pa = *panel*
	oo = *on/off*
	cs = checksum

GotoTimecode

GotoTimecode *panel type timecode*

Sets the timecode value in the timecode box in the record, playback or censor channel.

UI equivalent:	Clicking in the timecode box and changing the value there.
Packet format:	46 33 pa ty ff ss mm hh cs
where:	pa = *panel*

ty = *type* (a four-bit bitmap with the following bit assignments)
bit 0:   0 = Cancel.
        1 = Perform operation.
bit 1:   0 = Set timecode for just this panel.
        1 = Set timecode for all panels.
bit2:   0 = Timecode value is absolute.
        1 = Timecode value is relative.
bit3:   0 = Timecode value is positive.
        1 = Timecode value is negative (only valid for   relative
timecodes).

ff ss mm hh = *timecode*
cs = checksum

Jog

Jog *panel #fields*

Positions the current clip *#fields* forward (if positive) or backward (if negative) from the current position. Valid for censor channel only; ignored for record and playback channels.

UI equivalent:	Manipulating the jog slider in the censor channel.
Packet format:	21 39 pa nf cs
where:	pa = *panel*
	nf = *#fields* (signed one-byte numeric value)
	cs = checksum

JoinBoth

JoinBoth *panel*

Combines the selected segment with both the previous and next segments in the list of segments. Valid for censor channel only; ignored for record and playback channels.

UI equivalent: Clicking on the **Join Both** button.

Packet format: 41 42 pa cs

where: pa = *panel*
                                  cs = checksum

JoinDelete

JoinDelete *panel*

Deletes the selected segment from the list of segments. Valid for censor channel only; ignored for record and playback channels.

UI equivalent: Clicking on the **Delete** button.

Packet format: 41 44 pa cs

where: pa = *panel*
                                  cs = checksum

JoinNext

JoinNext *panel*

Combines the selected segment with the next segment in the list of segments. Valid for censor channel only; ignored for record and playback channels.

UI equivalent: Clicking on the **Join Next** button.

Packet format: 41 43 pa cs

where: pa = *panel*
                                  cs = checksum

JoinPrevious

JoinPrevious *panel*

Combines the selected segment with the previous one in the list of segments. Valid for censor channel only; ignored for record and playback channels.

UI equivalent: Clicking on the **Join Prev** button.

Packet format: 41 41 pa cs

where: pa = *panel*
                                  cs = checksum

Lockout

Lockout

The first time this command is sent, it activates the Lockout dialog box in the TimeDelay UI, which prevents using the UI. The next time the command is sent, it removes the dialog box, thereby removing the lock.

UI equivalent:	**File	Lockout Panel**
Packet format:	60 36 cs
where:	cs = checksum

NOTE: No password is required for remote control, however, the command to disengage the lock must be sent from the same port as the original lockout command.

MarkIn

MarkIn *panel*

Sets the in point for the current clip. Valid for censor channel only; ignored for record and playback channels.

UI equivalent:	Clicking on the ![MK IN] button.
Packet format:	31 36 pa cs
where:	pa = *panel* cs = checksum

MarkOut

MarkOut *panel*

Sets the out point for the current clip. Valid for censor channel only; ignored for record and playback channels.

UI equivalent:	Clicking on the ![MK OUT] button.
Packet format:	31 37 pa cs
where:	pa = *panel* cs = checksum

NewChannel

NewChannel

Opens a new playback channel.

UI equivalent:	**File	New Channel**
Packet format:	60 31 cs
where:	cs = checksum

Pause

Pause *panel on/off*

For record channel, Pause *on* pauses recording until a Pause *off* command is sent. For playback channel, Pause *on* pauses playback until a Pause *off* command is sent. Ignored for censor channel.

UI equivalent: Clicking on the **PAUSE** button.

Packet format: 42 31 pa oo cs

where: pa = *panel*
                                oo = *on/off*
                                cs = checksum

Play

Play *panel*

Starts playing the video/audio recorded by the associated record channel. Valid for playback and censor channels only; ignored for record channel.

UI equivalent: Clicking on the **PLAY** button.

Packet format: 31 35 pa cs

where: pa = *panel*
                                cs = checksum

Record

Record *panel*

Starts recording. Valid for record channel only; ignored for playback and censor channels.

UI equivalent: Clicking on the **Rec** button.

Packet format: 31 33 pa cs

where: pa = *panel*
                                cs = checksum

RecordPair

RecordPair

Opens a new record/playback pair of channels.

UI equivalent: **File | New Record Pair**

Packet format: 60 32 cs

where: cs = checksum

Rename

Rename *name*

Renames the clip currently being used by the record panel.

UI equivalent:	**VideoClip	Rename Clip**
Packet format:	6x 30 fn...fn cs
where:	x = byte count for filename fn...fn = filename characters

SegmentReview

SegmentReview

Toggles between Edit and Segment Review in the censor channel. Valid only for censor channel; ignored for record and playback channels.

UI equivalent:	Clicking on the **Edit/Review** button.
Packet format:	60 34 cs
where:	cs = checksum

SetTime

SetTime *panel timecode*

For record channel, sets the **Largest Delay** value to *timecode*. For playback channel, sets the **Delay Time for Channel** value to *timecode*. For censor channel, sets the **Censor Delay Status** value to *timecode*.

UI equivalent:	Typing in a new time.
Packet format:	35 31 pa ff ss mm hh cs
where:	pa = *panel* ff ss mm hh = *timecode* cs = checksum

Stop

Stop *panel*

For record channel, stops recording. For playback channel, stops playing. Ignored for censor channel.

UI equivalent:	Clicking on the **STOP** button.
Packet format:	31 34 pa cs
where:	pa = *panel* cs = checksum

SysPause

SysPause *panel on/off*

Pauses both record and playback channels at their current timecodes. *panel* must be a recorder channel; otherwise the command is ignored.

UI equivalent: Clicking on the **System Pause** button.

Packet format: 41 32 pa oo cs

where: pa = *panel*
oo = *on/off*
cs = checksum

StartClip

StartClip *panel*

Position to start of clip. Valid for censor channel only; ignored for record and playback channels.

UI equivalent: Clicking on the ⏮ button.

Packet format: 41 37 pa cs

where: pa = *panel*
cs = checksum

Status

Status

Requests status information for all channels.

Packet format: 50 31 cs

where: cs = checksum

TimeSet

TimeSet *panel*

Requests current time delay setting for specified panel.

Packet format: 51 32 pa cs

where: pa = *panel*
cs = checksum

Timecode

Timecode *panel*

Requests current timecode for specified panel.

Packet format: 51 33 pa cs

where: pa = *panel*
      cs = checksum

TrimIn

TrimIn *panel*

Modifies the previously set MarkIn for the current clip. Valid for censor channel only; ignored for record and playback channels.

UI equivalent: Clicking on the button.

Packet format: 31 38 pa cs

where: pa = *panel*
      cs = checksum

TrimOut

TrimOut *panel*

Modifies the previously set MarkOut for the current clip. Valid for censor channel only; ignored for record and playback channels.

UI equivalent: Clicking on the button.

Packet format: 31 39 pa cs

where: pa = *panel*
      cs = checksum

System Control Returns

ACK

ACK

Acknowledgment.

Packet format: 20 41 cs

where: cs = checksum

NAK

NAK; {Time Out, Frame Error, Overrun, Parity Error, Checksum Error, Undefined Command}

Negative acknowledgment. Any or all errors may be returned.

Packet format: 21 4E er cs

where: er = error bits (one-byte value)
                                  cs = checksum

The error bits are defined as:

bit0:   Undefined command
bit1:   (Unused)
bit2:   Checksum error
bit3:   (Unused)
bit4:   Parity error
bit5:   Overrun
bit6:   Frame error
bit7:   Timeout

Status Responses

CapacityData

CapacityData

Response to a **Capacity** command. Returns the approximate remaining record time available for the file partition specified in the **Capacity** command.

Packet format:	74 30 ff ss mm hh cs
where:	ff ss mm hh = remaining recording time cs = checksum

StatusData

StatusData *statusA statusB statusC statusD*

Response to a **Status** command. Returns a status byte for each of the four possible channels. Each status byte consists of two parts: a two-bit state indicator (bit 0 and bit1) and a six-bit status bitmap (bit3 through bit7).

bit0/bit1:	0 = channel is reset. 1 = channel is set. 2 = channel is cued. 3 = channel is active.
bit2:	0 = is not paused. 1 = is paused.
bit3:	0 = EE is not set. 1 = EE is set.
bit4:	0 = Fields is set to 1. 1 = Fields is set to 2.
bit5:	0 = video is not valid. 1 = video is valid.
bit6:	0 = is not Recorder Channel 1 = is Recorder Channel
bit7:	0 = channel is not configured. 1 = channel is configured.
Packet format:	74 31 sA sB sC sD cs
where:	sA = status byte for panel A sB = status byte for panel B sC = status byte for panel C sD = status byte for panel D cs = checksum

TimeSetData

TimeSetData *panel timecode*

For record channel, returns the panel identifier and the **Largest Delay** value. For playback channel, returns the panel identifier and the **Delay Time for Channel** value.

Packet format:	74 32 ff ss mm hh cs
where:	ff ss mm hh = the time set in the display cs = checksum

TimecodeData

TimecodeData *panel   timecode*

Returns timecode of the panel.

Packet format: 74 33 ff ss mm hh cs

where: ff ss mm hh = the current timecode
                        cs = checksum

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