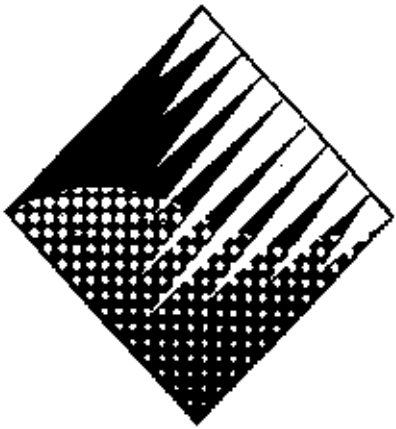
DIGITAL BROADCASTER™

WITH MEDIAFLEX™ PRODUCER



Digital Micronics, Inc.

DIGITAL BROADCASTER™

WITH
MEDIAFLEX™ PRODUCER

USER'S MANUAL

Hardware and Manual
by
Digital Micronics, Inc.
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288 Alexander Drive
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April 1, 1994
Second Printing

WARNING
DO NOT PROCEED
AND BEGIN ANY INSTALLATION
OF YOUR EQUIPMENT OR SOFTWARE
UNTIL YOU READ THIS COMPLETELY

DIGITAL BROADCASTER™ USER'S MANUAL

APRIL 1,1994 SECOND PRINTING

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TRADEMARKS

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Chapter 1

The World of Digital Video

You are about to embark on a fascinating trip into the world of digital video. Your purchase of the **Digital BroadCaster 32™** video board and its accompanying **MediaFlex™ Producer** editing software is your first step on a journey that will ease the burden of video production and allow your creative abilities to shine.

1.1 What Is Digital Video?

In the world of digital video, your analog footage is converted to digital data in a process called *digitization*. This digital information is then stored in some storage device such as a hard drive. Later, that information can be retrieved and converted back into analog video for display. This simple conversion opens up an entirely new world and presents endless new possibilities to speed video manipulation and add creative options to your video.

The primary advantage of digital video is that the digital data can be placed on a device which allows almost instantaneous access to any point within the video. Instead of long fast-forward or rewind delays, you can access any point in the video at will. Taking this concept further, you can access any point in the video during playback. This means that you can construct an edit decision list (EDL) that can access your original video and play back in real time. Your editing decisions become reality in seconds instead of hours because there is no need to re-record your video from an EDL. This is the breakthrough process called Non-Linear Editing.

Also, because the video is now present in a digital form, you can process that data as you would any other digital data with a computer. This opens up creative possibilities that are limited only by your imagination and the speed of your computer. Some examples of these creative opportunities are:

- Rotoscoping - individually processing captured frames with an image processor or paint program
- Assemble computer rendered or hand drawn images into video - replace traditional single-frame recording
- Unlimited off-line transitions and special effects - not limited by hardware
- Video in your animations and animations in your video

You have made a wise choice to enter the world of digital video riding the wave that is the **Digital BroadCaster 32™**.

Chapter 2

Concepts

The **Digital BroadCaster 32™** is a fine example of recent developments in the rapidly growing field of digital video and its applications. This chapter is devoted to informing the user about the functionality of the **Digital BroadCaster 32™** and how its design leads to its numerous benefits.

2.1 Brief Description: How the Digital BroadCaster 32™ Works

The **Digital BroadCaster 32™** is similar in function to a video tape recorder (VTR). However, it records and plays back video to and from a disk drive, rather than a tape. Use of a disk drive allows features of which VTR designers and users can only dream.

NOTE: Since the Digital BroadCaster 32™ acts as a VTR, it can only play back or record a single video channel. Real time Digital Video Effects (DVEs) or transitions require two video channels for input and one for output. Therefore, in order to do real time DVEs, multiple Digital BroadCaster 32™ systems will be required. Using off-line transitions is no problem. See Chapter 8. Please contact Digital Micronics, Inc. for more information regarding system upgrades for real-time DVEs.

2.1.1 RECORDING - DIGITIZING VIDEO

The **Digital BroadCaster 32™** accepts a composite, S-Video, or component (YUV or Y/B-Y/R-Y) analog video signal and digitizes it into a digital video signal. This is necessary since the video is saved to a disk drive, which stores only digital data.

The CCIR 601 standard determines the method for converting the analog video input to digital data to ensure the video quality. Using this standard, each second of video data requires over 30 MB (MegaBytes) of digital storage. Unfortunately, storage devices that can transfer 30 MB of data per second are not practical in a real-world application.

Dilemma: So how can the **Digital BroadCaster 32™** digitize video to a disk drive?

The answer: JPEG Compression

2.1.2 JPEG COMPRESSION

JPEG is a compression algorithm for still images. Named after the Joint Photographic Experts Group who developed the algorithm, JPEG encodes pixel information for a still image into a new data format (JPEG data) that takes up considerably less space. The **Digital BroadCaster 32™** uses real-time JPEG compression. Because JPEG compression is user definable, the user can choose a compression ratio from 6:1 to 80:1.

2.1.3 QUALITY SETTING CONSIDERATIONS

JPEG compression employs a method which the user should understand in order to obtain optimum results. The settings provided with the **Digital BroadCaster 32™** software allow user control of the QUALITY of the image. Once set, the quality will remain constant. However, because of the advantage of maintaining quality, the size of the compressed images ***WILL VARY*** from image to image and scene to scene. This means that the quality of the video will remain constant, but the compression or data rate will not. For this reason, no correlation can be made between compression ratios, data rates, and storage requirements for a given quality setting.

As an example, during one test, a scene of seals at play in the water was recorded at S-VHS 1 quality. Near the end of the recording, the scene changed to some birds in a group of trees. The size of an extracted frame from the scene of the seals was about 70 KB for a compression ratio of about 14:1 (2.1 MB/sec). A frame extracted from the bird scene was over 125 KB for a compression ratio of 8:1 (3.8 MB/sec). The particular hard drive in use had a maximum transfer rate of 3.5 MB/sec. The result was a loss of frames in the second scene because the hard drive could not keep up with the data rate from the second scene.

Therefore, we highly recommend that the video to be recorded be previewed for the most detailed shots. Test that those scenes will record at the chosen

quality on the hard drive in use. This will ensure that the entire reel of video footage will be successfully captured.

With the release of version 1.0 of the **MediaFlex™ Producer** software, the ability to simultaneously play video and audio has been finally incorporated into the **Digital BroadCaster 32™** system. However, there are special considerations when using sound:

The stock co-processor card of the Amiga 4000/040 has limits when moving data. This coupled with the 16 bit bus connection (Zorro II) on the audio card being used, means that much more bus time is being used for audio than should be necessary.

The best solution currently is to reduce the video quality requirements by approximately one level for two channels of audio and two levels for 4 channels of audio.

Digital Micronics, Inc. is investigating alternative solutions. Please contact us for more information.

2.1.4 PLAYBACK - DECOMPRESSION

Having explained the process of digitizing data and JPEG compression, playback is simple to explain: It is the reverse process of recording. During playback, the **Digital BroadCaster 32™** retrieves JPEG data from disk, decompresses the data into digital pixel data which is converted to analog video.

2.2 Benefits of the Digital BroadCaster 32™

High quality video frames may be stored to disk as separate entities in a widely-accepted standard. This will allow three substantial features to flourish- non-linear editing, playing animations without need for a single-frame VTR, and broadcast quality transmission from a disk drive.

2.2.1 NON-LINEAR EDITING

Any editor will verify that linear editing takes much time and effort. Most of that time is spent searching a video tape for the desired cut marks. When video is stored to disk, access to any frame is almost instantaneous. This substantially reduces the search time, resulting in shorter editing sessions.

2.2.2 ANIMATIONS - NO SINGLE-FRAME VTR REQUIRED

Computer animators can attest to the importance of a single-frame VTR. Animations must be recorded to tape frame-by-frame, a very time-consuming process. The **Digital BroadCaster 32™** eliminates the need for the single-frame VTR. Animators can concatenate their frames into a complete animation which can then be played by the **Digital BroadCaster 32™** for real time playback.

2.2.3. BROADCAST QUALITY VIDEO FROM A HARD DRIVE

Providing broadcast quality video from the hard disk is where Digital Micronics, Inc. has focused most of its energy in development of this product. The hardware and software have been optimized to allow for maximum data throughput, allowing JPEG compressions as low as 6:1, which provides playback quality indistinguishable from the original. Even the most demanding professionals will be overwhelmed with the quality that can be output by the **Digital BroadCaster 32™**.

Chapter 3

Installation

Installation is a complicated process and should only be attempted by an authorized dealer or Digital Micronics, Inc.

3.1 Digital BroadCaster 32™ Components

- **Digital BroadCaster 32™** Expansion Card
- Breakout Box
- Shielded Ribbon Cable
- **DBC32™** Install Disk

3.2 Hardware Requirements

- Computer: Amiga 4000
  Super Buster Rev. 11
  CPU Daughterboard Rev. 3.1
  U209 on CPU Daughterboard Rev 02
  CPU: 68030 or 68040
  RAM: 4 Megs Fast (8 or more Megs for generating transitions)
- FASTLANE Hard Drive controller from Advanced Systems & Software
- Seagate Barracuda 1.7 or 2.1 Gigabyte hard drive
- Computer monitor compatible with the above Amiga computer
- Second monitor for viewing video capable of displaying PAL or NTSC video composite, S-Video (Y/C), or component (YUV or Y/B-Y/R-Y) input.
- OPTIONAL: SunRize AD516 Sound Card

3.3 Installation of Digital BroadCaster 32™ Hardware

3.3.1 REMOVING THE COVER

To remove the cover of the Amiga 4000, take out the two screws located in the upper, rear corners of the main unit. Grasp the cover on both sides and slide it backwards and up (see Figure 3.1).

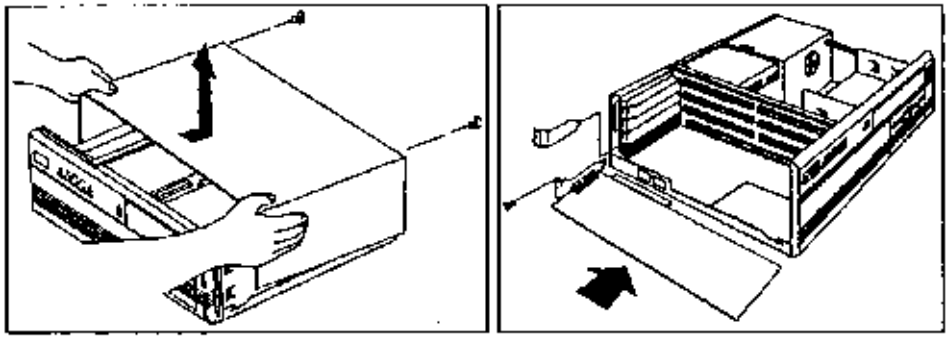


Figure 3.1 - A4000 Disassembly and Expansion Card Installation

3.3.2 INSTALLATION OF THE DIGITAL BROADCASTER 32™

The cover plates are located inside the main unit of the computer as shown in Figure 3.1. With a Phillips-head screw driver, remove the cover plate that corresponds to the slot in which the **Digital BroadCaster 32™** will be installed. Save the screw for use in installing the expansion card. Slide the **Digital BroadCaster 32™** card into the slot chosen, allowing the track to guide the card. To insure complete contact between the expansion card and the main unit, push the card until its connector is completely embedded in the connector of the main unit. Reinsert the screw into the **Digital BroadCaster 32™** bracket to secure the expansion card. Then replace the cover.

3.3.3 CONNECTING DIGITAL BROADCASTER 32™ TO THE BREAKOUT BOX

To connect the **Digital BroadCaster 32™** card and the breakout box, attach one end of the shielded ribbon cable to the **Digital BroadCaster 32™** card connector located in the cover plate opening. Note that the cable has a single screw on each side of each connector which holds the cable to the screw inserts on the open connector of the **Digital BroadCaster 32™** card and breakout box. Align one end with the **Digital BroadCaster 32™** card, matching the screw with

exposed threads with the smooth insert and vice-versa. Ensure that both screws are tightened simultaneously since screwing in one side at a time will result in a crooked alignment and an incomplete connection. Attach the other end of the ribbon cable to the breakout box connector in the same manner.

3.4 Hard Drives and Controllers

3.4.1 Hard Drive Controller

The Amiga 4000's IDE controller or add-on 16-bit SCSI-I hard drive controllers will not support the **Digital BroadCaster 32™**. Therefore, a SCSI-II controller must be purchased and installed to obtain quality video. The FASTLANE SCSI-II controller by Advanced Systems & Software is the only controller recommended for use with the **Digital BroadCaster 32™**. However, to utilize this controller, a Super Buster Revision 11 must be obtained and installed.

Also, the CPU daughter board must be revision 3.1 and U209 on this board must be revision 02.

NOTE: Do not install the Commodore A4091 controller. This controller is not compatible with the Digital BroadCaster 32™.

3.4.2 Hard Drive

The only hard drive recommended for use with the **Digital BroadCaster 32™** is the Barracuda drive from Seagate Technology, Inc. Currently the only models of this drive which are supported by the Amiga's Operating System (AmigaDOS) are the 1.7 and 2.1 Gigabyte versions. Digital Micronics, Inc. is working to sidestep this problem. Please contact us for further details.

Up to seven of these drives can be installed on one FASTLANE controller for up to 14 Gigabytes of storage.

Currently the Amiga hardware will not support multiple hard drive controllers, so additional FASTLANEs cannot be added at present.

The amount of video storage the drive will hold will depend on the quality at which the video will be recorded (See Table 5-1 for more information on quality versus storage requirements).

3.4.3 Testing the Hard Drive

To ensure that the speed of your hard drive matches those specified by the drive manufacturer, and is suitable for **Digital BroadCaster 32™** use, run the SpeedTest program in the Utils drawer. ***Before testing, installation must be accomplished as described in the software installation, section 3.6.*** This

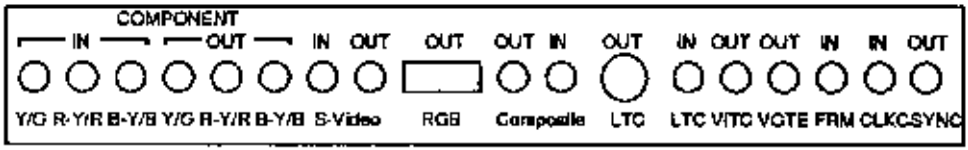
program must be run from the shell. The syntax is:

SpeedTest <Drive> [NODBC] [NODMA]

Replace <Drive> with the name of the drive being tested (followed by a colon). The NODBC option uses motherboard RAM for the test rather than the **Digital BroadCaster 32™**. The NODMA option transfers to the board or RAM via a RAM buffer. Please note that this program tests only write speed. If the results from this program indicates a discrepancy, refer to Troubleshooting Chapter 9.

3.5 Breakout Box Connectors

The breakout box serves all the input and output needs of the **Digital BroadCaster 32's** video. Figure 3.2 is a diagram of the breakout box and its connections.



Notes:
S-Video in and out are standard S-Video connectors.
RGB out is a mini-DB15 connector.
LTC in is a XLR connector.
All other connectors are standard female BNC.

Figure 3.2 - Breakout Box

3.5.1 Component In

- Provides input for Betacam component (YUV or Y/B-Y/R-Y)
- Reads Vertical Interval Time Code (VITC) input

3.5.2 Component Out

- Provides output of Betacam component (YUV or Y/B-Y/R-Y)
- Provides timecode burn-in window
- Provides VITC out

3.5.3 S-Video (Y/C) In

- Provides Y/C input
- Reads VITC input

3.5.4 S-Video (Y/C) Out

- Provides Y/C output
- Provides timecode burn-in window
- Provides VITC out

3.5.5 RGB Out

- Non-functional

3.5.6 Composite Out

- Provides composite output
- Provides timecode burn-in window
- Provides VITC out

3.5.7 Composite In

- Provides composite input
- Reads VITC input

3.5.8 LTC (Longitudinal Time Code) In

- Reads LTC input

3.5.9 LTC Out

- Provides LTC output

3.5.10 VITC (Vertical Interface Time Code) Out

- Provides VITC output

3.5.11 VGTE (VITC Gate) Out

- Provides VITC Gate output

3.5.12 FRM (Frame) In

- Non-functional

3.5.13 CLK (Click) In

- Non-functional

3.5.14 CSYNC (Composite Sync) Out

- Provides horizontal and vertical composite sync

3.6 Software Installation

3.6.1 System Requirements

- AmigaDOS 3.0 or greater
- FASTLANE Z3 Utility Software Disk
- DBC32 Install Disk

3.6.2 Installation with the FASTLANE SCSI II Controller

After installing the FASTLANE SCSI II Controller and a fast SCSI II hard drive, as described in the FASTLANE users manual, copy the FASTLANE Z3 Utility Software Disk to your hard disk. After inserting the FASTLANE Z3 Disk into the floppy drive drag it over to your Work partition. A new drawer will be created. Rename this drawer to FASTLANE. Now, insert the DBC32™ disk into the floppy drive.

Double-click the DBC32™ disk icon to open it.

Double-click on the MF_Producer_Install icon to begin the install process.

The install routine will lead you through the install procedure.

Place the FASTLANE Z3 disk in the floppy disk drive.

Double-click on the FASTLANE icon to open it. Click on the icon that says SCSIConfig, a message may appear as below:

The Device Geomatry.TotalSeclors [sic] is 0 for Unit <some number>
Reloaded:
TotalSeclors = <some number>

If it does, ignore it and click Ok.

The menu appears with SCSI drives on the left and SCSI controllers on the right. Under SCSI Drives should appear "Unit # Lun # drive manufacture ID #". Make a note of the unit number of the drive you have installed.

Unit # _____

Click on "Config Drive."

If you get a requester telling you that some information does not match, ignore this and click on Ok.

Click on "Reload Geometry."

Click on Ok to verify this operation.

Ensure Reselection is NOT selected.

Ensure Synchronous mode IS enabled.

Click Ok to accept this configuration.

Select the unit number of the newly installed drive noted above.

Click on the partition button.

Click on "Add Filesystem" to bring up the filesystem requester.

Select the "DBCFileSystem" installed above, and click OK.

The filesystem configuration window appears. Click the cycle gadget that reads "FFS" until it reads "Custom."

In the Identifier field, put "0x44424300".

Click on Ok.

The Partition window re-appears. Double-click on the partition to bring up the partition configuration window.

Change the name of the partition to "DBC#" (where # indicated

the unit number noted above) and **make sure to press the enter key** after typing the new name.

Ensure the mask is set to 0xfffffffc.

Ensure boot is **NOT** checked.

Ensure mount is checked.

Click on the cycle gadget that reads "FFS" until it reads "Custom."

Enter "0x44424300" into the Identifier field to link this partition to the chosen file system.

Change the Buffers field to read 5.

Click Ok and the previous menu will reappear.

Click Ok to accept this partition.

The main menu now appears, click "Save Changes" to write the changes to the drive.

A message will appear asking if you wish to save the changes, click on Ok.

A second message appears verifying your choice, click Ok.

Click "Quit".

A message appears asking if you wish to reboot the computer. Remove the FASTLANE Z3 disk from the computer and click Ok.

The computer will reboot and an icon will appear for the new drive with strange characters written below it.

Click once on the new icon and pull down the format disk item in the icons menu.

Change the volume name to whatever you wish.

Ensure the Put Trashcan option is NOT enabled.

Click on "Quick Format" to format the drive (DO NOT USE THE STANDARD FORMAT unless it's time for lunch!)

A requester will appear asking if it's OK to format the drive. Click "Format."

A warning will appear. Click "Format."

The window will tell you it is initializing the disk and then the DBC DOS™ icon will appear on the workbench.

Chapter 4

Getting Started

Begin by double-clicking to open the hard drive on which you installed the **MediaFlex Producer™** software. Locate the MediaFlex drawer and double-click to open the window. Double click on the MediaFlex icon to begin the program.

4.1 ScreenMode Requester

As the program initializes, a window will appear indicating that the system is being prepared. Before a screen may be opened, the user must choose the mode for this screen using the ScreenMode requester. Figure 4.1 illustrates a typical ScreenMode requester. Select a mode which your monitor will support so that the initialization process can continue (See the sidebar on Screen Modes for more information). The larger screen sizes will allow more information to be displayed at once about the video entries on the screen.

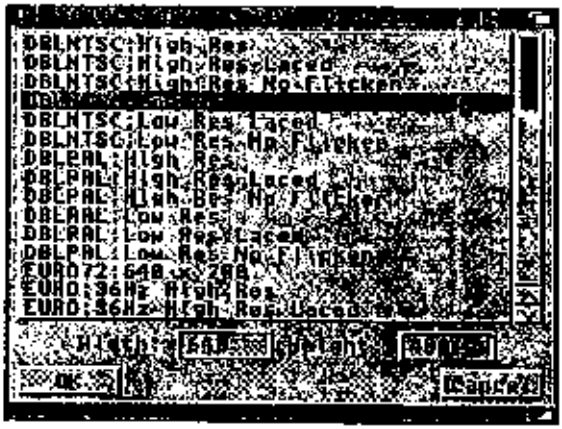


Figure 4.1 - Screenmode Requester

4.2 Startup

When the **MediaFlex Producer™** screen appears, you will be presented with a requester asking whether you are beginning a new project, or continuing work on a previous

one. Figure 4.2 shows this requester. Select "Create New" to begin a new project or "Edit Old" to continue work on a previously saved project. If this is a new project, you will be presented with the Project requester.

Screen Modes:

The entries in the requester are based on the information provided to the system at boot-up. Normally this information is provided through the use of monitor files.

The monitor files are located in two places on your system drive. The monitors currently in use are located in the Monitors drawer located inside the Devs drawer on the System or Workbench disk. Only the screen modes associated with these monitors are presented in the ScreenMode requester. In the Monitors drawer located in the Storage drawer on the System or Workbench disk, there are additional monitors which will add more screen modes.

The user must ensure that the monitor actually attached to his computer will support these modes. For example, the Commodore 1060/1084 monitor will normally only support the NTSC and PAL monitor types. The Commodore 1950/1960 will normally support the DBLNTSC, DBLPAL, EURO36, EURO72 MULTISCAN, NTSC, PAL, SUPER72 monitors. A typical VGA-type monitor will support MULTISCAN monitors. It is a good idea to move all appropriate monitors to the Devs version of the Monitors drawer.

If there is some doubt about whether a monitor will support a particular screen mode, the user can test the monitor. However, **BE AWARE THAT SOME MONITORS CAN BE DAMAGED BY ATTEMPTING TO USE SCREEN MODES THEY DO NOT SUPPORT.**

To test a monitor, move the monitor from the Storage Monitors drawer to the Devs Monitors and reboot. Then use the Overscan Preferences program to test the mode. Select the mode and click on "Edit Graphics Overscan." If the screen syncs and shows the large rectangle with boxes on the sides and in the corners, the monitor can support that mode. If the screen does *not* sync, or does not appear at all, that mode is not supported by the monitor. Pressing Escape will return the screen to normal.

Add-on cards such as the Picasso will install their own monitor files so that their modes are also made available in the ScreenMode requester.

4.3 *Starting a Project*

Figure 4.3 illustrates the project requester. Choose a name for your project and make a note if you wish (this information may be changed quickly at a later time). Select your video standard (PAL or NTSC). The video standard will default to the setting of your computer, but you may change it. The Quality setting is not yet functional. Click OK to begin work on a new project.

At this point you are ready to begin

Figure 4.2 - Entry Requester

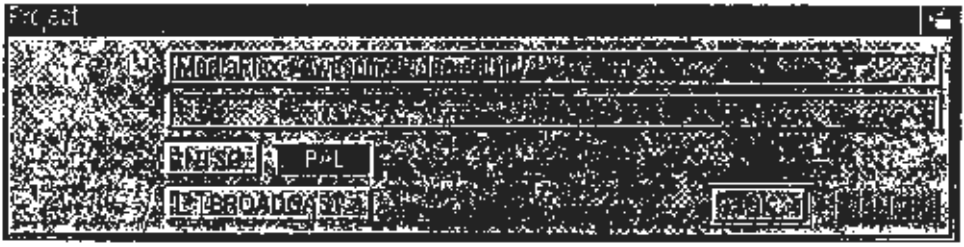


Figure 4.3 - Project Requester

your project. The first step is to record some video. Turn to Chapter 5 for instructions on recording video.

Chapter 5

Recording

The record process allows capturing video in real-time to create a video file known as a JStream (JPEG stream) or reel file. To enter record mode, click on the Record button in the upper left corner of the screen. The Record interface depicted in Figure 5.1 will appear in a few seconds. There are currently no

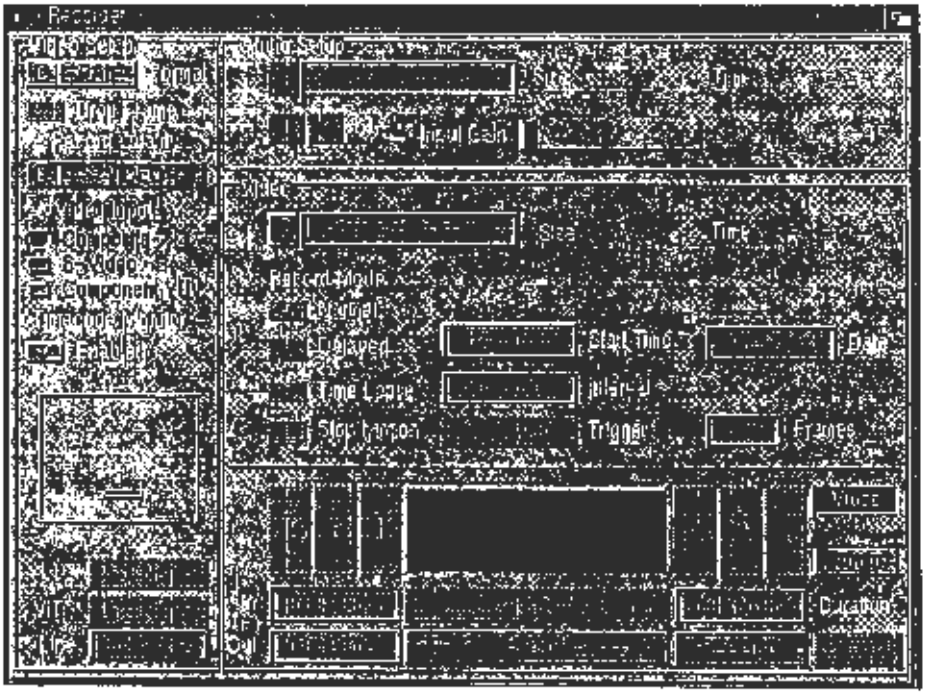


Figure 5.1 - Record Interface

keyboard equivalents for the record interface.

The screen is subdivided into four sections by function (Video Setup, Audio Setup, Video, and Control).

5.1 Video Setup

The Video Setup section controls video inputs and settings for the recording process. Controls are as follows:

5.1.1 Format

The Format control allows the user to choose the video standard being used for input. Currently NTSC and PAL standards are available.

5.1.2 Drop Frame

This control is currently non-functional. All operations are in non-drop frame mode.

5.1.3 Record Quality

The Record Quality setting allows the user to choose the level at which the video being captured will be compressed. Table 5.1 shows the approximate compression ratios, data rates, and storage capacities at the various quality settings available.

Recording at a level higher than the setup supports will result in a message indicating fields/frames were lost during recording. Trying playback with data too abundant for the system will result in a looping effect in the video. Note that the highest quality level available on a particular system will depend on a number of things:

1) Sustained transfer rate of the hard drive - Digital Micronics, Inc. recommends the Seagate Barracuda. This drive offers the highest transfer rate available at this time. Our speedtest indicates real-world transfer rates up to 5.5 MB per second.

2) Hard drive controller - Digital Micronics, Inc. recommends the FASTLANE Z3 SCSI-II Controller by Advanced Systems & Software. Only this controller works reliably with the Digital BroadCaster 32™.

3) Disk fragmentation - After continued recording and deletion of video reels (JStreams) from a hard drive, fragmentation may occur. This can cause video files to be broken and scattered around a drive rather than placed sequentially on the unit. This fragmentation can decrease hard drive efficiency

and mean lower quality levels of video. This problem can be corrected by first backing up any video already on the drive and doing a Quick Format on the video drive in question.

4) Video contents - The JPEG compression technique does not ensure a constant compression ratio across different video images. Instead, the quality of the images will be maintained while the compression varies to compensate. For example, if the video is of blue skies and fitting clouds, JPEG compression will be very efficient and compress the video more than the average listed in Table 5.1. If the image is of a field of flowers, white noise, or even is a noisy signal itself, the compression will be less efficient to maintain the desired video quality. As a result, it is possible to have video footage that will not compress sufficiently to record at a particular quality given the data rate required. In our software, this is usually indicated by a requester reporting a loss of fields/frames when the recording is stopped. This may necessitate recording at lower quality levels. See 2.1.3 for ways to optimize.

Also note that the hardware of the **Digital BroadCaster 32™** prohibits playing two clips with differing quality levels sequentially.

5) Drive storage remaining - Hard drives by their nature can transfer data faster on the outer tracks than on the inner tracks. Since most file systems (including our own) begin in the outer tracks, recording on an empty drive can often be accomplished at higher quality levels than when the drive is partially full.

6) The number of audio channels to be played - Due to the 16 bit bus architecture (Zorro II) of the audio card being used, playing audio uses more than its fair share of the bus bandwidth. As a result, playing a pair of audio tracks will usually lower the available quality level by at least one. Playing two pair will lower the available level by at least two levels. Keep this in mind since only two tracks are recorded when audio and video are recorded. As such, it is often possible to record video and audio that cannot be successfully played back with another pair of audio tracks enabled.

Our recommendation is to use the LOWEST record quality setting that is appropriate for your application. Begin with S-Video 1 and work your way up until the quality is sufficient for your needs. This will ensure that you get the longest amount of storage per gigabyte of hard drive space and not having a particular bit of video being too complex to be recorded at a very high level. Also, it avoids the problem of mixing different compression levels.

5.1.4 Video Input

The Video Input control determines which of the breakout box inputs are to be used as the video source for recording.

Table 5.1 - Quality Information

Quality Level	Approx. Compression	Approx. Storage per Gigabyte	Approx. Data Transfer Rate
Rough 1	80:1	46:00.00	375 KB/sec
Rough 2	70:1	40:16.00	444 KB/sec
Draft 1	55:1	31:38.00	565 KB/sec
Draft 2	40:1	23:00.00	777 KB/sec
VHS 1	30:1	17:15.00	1.03 MB/sec
VHS 2	25:1	14:23.00	1.24 MB/sec
S-Video 1	20:1	11:30.00	1.55 MB/sec
S-Video 2	15:1	08:37.00	2.07 MB/sec
Broadcast 1	12:1	06:54.00	2.59 MB/sec
Broadcast 2	10:1	05:45.00	3.11 MB/sec
Master 1	8:1	04:36.00	3.88 MB/sec
Master 2	7:1	04:01.00	4.44 MB/sec
Master 3	6:1	03:27.00	5.18 MB/sec

NOTE WELL: The numbers above are only rough approximations based on average video footage. ***The footage itself*** will be a major factor in determining the compression ratio and thus the data rate. This will in turn determine the highest quality a particular system can record.

5.1.5 Timecode Monitor

The Timecode Monitor Enabled check mark allows the timecode burn-in window to be turned on and off. The window can only be present on the output which is the same format (composite, Y/C, or component) as the chosen input (see Video Input above).

5.1.6 Timecode Placement

The rectangular area below the Timecode Monitor Enabled check mark allows placement of the timecode burn-in window. Simply place the mouse pointer over the thin rectangle within the larger one, hold down the left mouse button, and move the window to the desired location. Release the mouse button to release the burn-in window.

5.1.7 LTC

This control is non-functional.

5.1.8 VITC

This control is non-functional.

5.1.9 VLine

This control is non-functional.

5.2 Audio Setup

The Audio Setup area allows customization of audio settings for the record process. Audio operations are only available when using the optional sound card.

The **MediaFlex™ Producer** software supports only the AD516 sound card from SunRize Industries. Version 2.x of the SunRize software must be installed to work correctly with the **MediaFlex™ Producer** software.

5.2.1 Filename

The filename field allows specification of the base name for an audio track. The "F" button may be used to specify a filename and path from a requester or a path and filename may be entered directly into the filename field.

It is highly recommended that audio be recorded to another high speed hard drive (preferably another Barracuda) attached to the FASTLANE controller. Other hard drives, or even the video hard drive, may be used, but the level of video quality available **WILL BE SUBSTANTIALLY REDUCED**. Even when using a Barracuda and FASTLANE, the video quality may need to be reduced (see section 5.1.3 Recording Quality above).

5.2.2 Size & Time

These readouts are non-functional at this time.

5.2.3 L & R

Both L & R buttons must be depressed to record audio. Currently only stereo audio is recorded. Also note that video must be selected and present to record audio.

5.2.4 Input Gain

This control is non-functional.

5.3 Video

The Video section allows setup of the video recording mode and its accompanying options.

5.3.1 Filename

The filename field allows specification of the name for a video reel (JStream). The "F" button may be used to specify a filename and path from a requester or a path and filename may be entered directly into the filename field.

It is highly recommended that video be recorded to a high speed hard drive (preferably a Seagate Barracuda) attached to the FASTLANE controller. Other hard drives may be used, but the level of video quality available **WILL BE SUBSTANTIALLY REDUCED**. The stock IDE drive of the Amiga 4000 **CANNOT BE USED** with the Digital **BroadCaster 32™**.

5.3.2 Size & Time

The Size & Time fields indicate approximate time remaining during the record process. Currently this is the only on-screen indication of the recording process in progress.

5.3.3 Record Mode

These controls are non-functional.

5.3.4 Start Time

This control is non-functional.

5.3.5 Interval

This control is non-functional.

5.3.6 Trigger

This control is non-functional.

5.3.7 Date

This control is non-functional.

5.3.8 Frames

This control is non-functional.

5.4 Control

The Control section initiates and terminates the record process.

5.4.1 Video & Audio

These controls allow selection of recording of Video and/or Audio inputs. Currently audio cannot be recorded without video present and selected. It is recommended that to record audio only, a high compression (Rough1) is chosen, and the video reel (JStream) be deleted.

5.4.2 Record

The Record button initiates the record process. There is a slight delay between pressing this button and the first captured frame.

5.4.3 Stop

The Stop button halts the record process.

5.4.4 Remaining Controls

The remaining controls are for future use and are non-functional.

Chapter 6

EDImation™

6.1 EDImation

EDImation™ is the process of taking still images and creating a JStream reel file for playback and then editing the resulting animation into a video production. The images can come from a 3-D rendering program or a 2-D paint or drawing program. This process eliminates the need for a 24-bit display device, single-frame controller, and single-frame recorder.

6.2 Processing Using ADPro 2.5

At present, we rely on Art Department Professional (ADPro) 2.5 from ASDG. This highly flexible program provides the basics necessary to process frames into an animation, as well as perform various image manipulations on the image data. To proceed, ADPro 2.5 must be available. Contact Digital Micronics, Inc. or ASDG for product availability.

In the Scripts drawer is an AREXX script tailored for the process of converting frames to a video reel (JStream) animation. This script assumes that the frames to be converted are already created and located together in a directory. The filenames of these frames are also assumed to have a root name prefix and a sequentially numbered (leading zeros not necessary) suffix.

The format of these frames can be any supported by ADPro 2.5. If the format you are using is not supported by ADPro 2.5, ASDG has available optional kits with additional image format support which will most probably cover your format of choice.

To use this script, it is necessary that the AREXX handler called RexxMast be running. Normally this is installed on the System or Workbench drive inside the WBStartup directory, so that it is run each time the system is booted. If it is not, locate the RexxMast icon on either your installation disks or your

System/Workbench drive and move it to the WBStartup drawer. Reboot or double-click to run the AREXX handler.

Next, ensure that ADPro 2.5 is running and double-click the "Frames2JStream.adpro" script icon in the Scripts directory to begin the script.

The script will ask several questions to determine information about the frames and the video reel (JStream) it is creating.

Once the processing is complete, you can run the **MediaFlex™ Producer** software and play the video reel (JStream). On a stock A4000/040 it will take between 20 and 30 seconds per frame.

6.3 EDImation Utilities

Anyone familiar with AREXX can examine the AREXX scripts provided and will note the use of several utilities outside of ADPro 2.5 and the script itself. These are custom tools created to allow easy access to and processing of video frames. These utilities are located in the "MFUtils:" drawer.

6.3.1 Fields and Frames

Since video is always transmitted on a field-by-field basis, it is captured and handled this way as well. This allows smoother and more flexible special effects to be performed on the data. We recommend that most operations be performed on a field basis.

To operate on a frame basis, the user will need to interlace the two fields. Keep in mind however, that the two fields were actually captured at two different instants of time. Therefore any object in motion will appear in two different locations in each of the fields. The result is that viewing both fields of a frame may show a vibration as the object appears to move between its two field locations. This is perfectly normal for video. Also remember that any operation performed on the interlaced fields can cause unwanted side effects if the fields are mixed in the process (i.e. scaling a frame would mix the fields and the results would be most unpleasing).

6.3.2 ExtractJPEG

ExtractJPEG is a tool which will instantly pull any given frame (as two fields) from a video reel (JStream). The data is copied from the reel (and is thus entirely non-destructive) into two standard JFIF JPEG files. These files represent the two fields of the chosen frame. Their dimensions will be the same as the frame in width, and half the height of the full frame (i.e. NTSC frames are 720x480 and thus it's fields are each 720x240). Any program capable of loading standard JFIF JPEG files can then load and process these fields.

The extracted field filenames are constructed of the video reel (JStream) file prefix (minus the ".jst" extension) and the extensions ".jf0" and ".jf1" to indicate the even and odd fields respectively.

6.3.3 AppendJPEG

The AppendJPEG tool is a bit more complicated than ExtractJPEG. This tool allows frames (as a pair of fields) to be added to a video reel (JStream). If the JStream does not exist, it is created. Otherwise, the fields are appended to the end.

Most significantly, any frames extracted with ExtractJPEG can be added with AppendJPEG. However, creating these fields from other sources is a bit tricky.

The primary concern is that the frames being added to the JStream have the same qualities as the frames already in the JStream. The areas of concern are: dimensions, color space, sub-sampling factors, Huffman tables, and quantization tables.

6.3.3.1 Dimensions

The digital dimensions are: NTSC - 720 x 480, and PAL - 720 x 576. This means that the fields must be: NTSC - 720 x 240, and PAL - 720 x 288.

6.3.3.2 Color Space

As per the CCIR 601 standard, **the Digital BroadCaster 32™** handles video in 4:2:2 YUV format. This is the color space necessary for the JPEG data as well. In JPEG terms, this is often called YCbCr (although there is a slight difference between YUV and YCbCr, this is compensated for by the **Digital BroadCaster 32™**). Almost all implementations of JPEG utilize this color space, so this is usually not a concern. Note that Y only (gray scale) data format is not supported.

6.3.3.3 Sub-Sampling

Since the data is handled in 4:2:2, the JPEG data must also be handled in this format. In JPEG terms, this represents a horizontal sub-sampling factor of 2 and a vertical sub-sampling factor of 1. Implementations of JPEG based on the Independent JPEG group often use the default values which are a horizontal sub-sampling factor of 2 and a vertical sub-sampling factor of 2. This is equivalent to video 4:1:1 and is not compatible with the **Digital BroadCaster 32™**.

6.3.3.4 Huffman Tables

The last step of JPEG compression involves compression similar to the techniques used in programs such as ARC, LHARC, or PKZIP. This compression is based on a set of tables which must match in the encoder as well as the decoder. The JPEG standard defines a default set of tables, but allows for custom tables to be generated by the encoder. The **Digital BroadCaster 32™** supports only the default set of tables. Almost all implementations of JPEG utilize the default set of tables, so this is usually not a concern.

6.3.3.5 Quantization Tables

As mentioned above, most of the other characteristics are not a great concern since most JPEG programs use the default information provided in the JPEG specification. However, the quantization tables are a heavily customized and optimized quality of a JPEG image. It is imperative that the appended frames' quantization tables match those of the JStream into which they are being added.

Since AppendJPEG will begin a new JStream if one does not exist when the first frame is added to the file, it must determine what quantization table to begin with. The table used is that present in the first frame. Since it is only necessary for the quantization tables in the file to match, if all frames added are created with the same JPEG program, it is easy to ensure that they match.

However, since the hardware of the **Digital BroadCaster 32™** does not allow two JStreams with differing quantization tables to be played seamlessly, it is important to match quantization tables if the JStream being created will be edited into other JStreams.

6.3.4 ADPro Again

All of the above information was to provide the basic information backing the following statement: It is very difficult to generate the data needed for a video reel (JStream).

The answer to this is ADPro 2.5. ASDG was kind enough to work with Digital Micronics, Inc. and allow their JPEG saver to match its quantization table to the quantization table in the destination JStream. This option is only available from AREXX. See the ADPro 2.5 manual for syntax, and examine the scripts provided for more information on this feature.

NOTE: At press time it was discovered that the JPEG saver was incompatible with quality levels at Draft 2 and below.

Chapter 7

Non-Linear Editing

The most exciting prospect of digital video is that of a non-linear editing environment. In conventional linear editing systems, tapes must be shuttled back and forth to obtain timecode information and then re-recorded to assemble

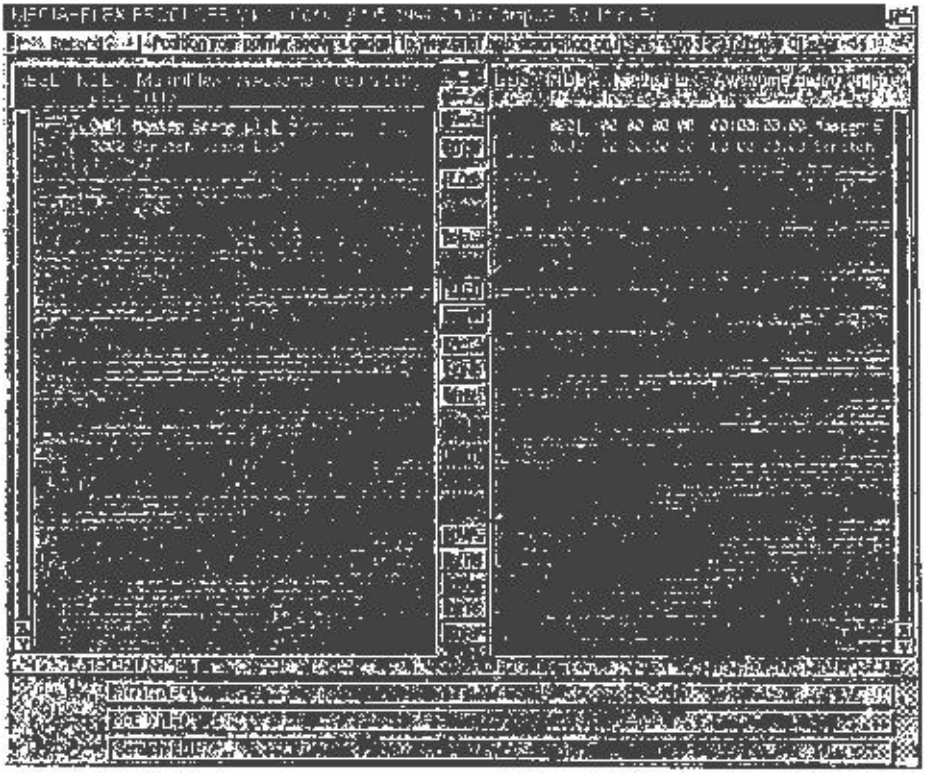


Figure 7.1 - MEDIAFLEX™ PRODUCER INTERFACE

a video production. This entire process is supplanted by the **Digital BroadCaster 32™** and it's on-line non-linear editing features.

This chapter describes the basic features of the **MediaFlex™ Producer** editing software.

The MediaFlex™ Producer interface is designed for easy and fast manipulation of video reels, scene lists, scenes, EDLs, and clips. The following is a description of the integral parts of the interface. See Chapter 10 for a Tutorial.

The screen is organized into two window work areas. Operations generally occur from left to right. Controls are located vertically between the windows.

7.1 WINDOW ORGANIZATION

Each window can display a Reel Index, a Scene List, an EDL Index, or an EDL. The Scene Lists are members of the Reel Index, and the EDLs are members of the EDL Index. The contents of the windows are controlled by the three uppermost buttons labeled [S-E], [S-S], and [E-E].

The active window is indicated by a highlighted label region above the column. Using the default palette, the highlight color is green.

The screen begins with the Reel Index to the left and the EDL Index to the right. The default configuration creates a Master and a Scratch Scene List in the Reel Index, and a Master and Scratch EDL in the EDL Index. The user is free to use these entries or create more for a given project.

Double-clicking on a Scene List will bring up the contents of that scene list in the current window. Similarly, double-clicking on an EDL will bring up the contents of that EDL in the current window. Scene Lists may contain any number of video or audio scenes. Their use is similar to that of a shot list or a bin in traditional editing. EDLs may contain any number of audio or video clips.

Copying entries from one side to another is as easy as pointing at the entry, holding the left mouse button, dragging the entry to the other side, and releasing the button. These entries can also be moved within a window using the same process.

Clicking on the heading area of a window acts as a "parent" gadget to return to the Reel or EDL Index.

Video and audio reels should be imported into the Reel Index and treated similarly to Scene Lists (see menu reference). These imported reels may then be treated as a single entity, or logged into multiple scenes for organization and editing later.

7.2 PICTURE ICONS

Picture icons (PICONS) are currently disabled.

7.3 LOGGING

By highlighting an imported reel and pressing the [LOG] button, the logging process is initiated. The column changes to show the scenes already present in the reel's Scene List, and the Digital Video Player (DVP) appears. While the DVP is being used, the [LOG] button toggles between playing and logging modes.

7.3.1 Log Mode

The logging process is simply to break a single reel into multiple scenes. When initially loaded, the reel is treated as a single scene and can be left in that form if desired. However, if the reel needs to be broken into sub-scenes log mode makes this extremely easy. If the logged video has audio associated with it, the audio will be logged as well.

7.3.2 Logging Process

When in log mode, marking an out time on the current scene creates a new scene with this time as the in time. This process can also be performed while playing. Simply begin playing and mark out times where natural breaks in the video occur. Afterwards, exit log mode and tweek the in and out times of each scene before moving the scenes to a scene list or EDL.

7.4 ITEM CONTROL

The [SPLIT] button will cut a scene in half or a clip at the point of the timeline cursor (or in half if not in a timeline or the cursor does not point to the clip), creating a second entry. The keyboard equivalent is "Right-Amiga-/".

The [DEL] button deletes the highlighted entries in the active window. The keyboard equivalent is "Right-Amiga-D".

The [DUP#] button causes the highlighted entries to be duplicated the number of times given in the numeric field below. The keyboard equivalent is "Right-Amiga-Z".

When a number of selected items are to be copied, clicking the right arrow [--->] will copy them. The keyboard equivalent is [TAB]. Also, after multiple entries are chosen, while still holding the shift key, chosen entries may be moved to the other window by dragging one entry (as described in 7.1 above).

7.5 ENTRY SELECTION

To select multiple entries, click on the first one, hold the shift button, and then click on the remaining entries.

The [ALL] button will highlight all entries in the active window. The keyboard equivalent is "A".

The [NONE] button will un-highlight all entries in the active window, except the currently selected one. The keyboard equivalent is "N".

The [INV] button will invert all entries in the active window. That is, all un-highlighted entries will be highlighted, and all highlighted entries will be un-highlighted, except the currently selected one. The keyboard equivalent is "V".

7.6 CLIP CONTROL

The [SYNC] button will link multiple clips so they may be treated as a single item. To select multiple entries, click on the first one, hold the shift button, and then click on the remaining entries. Synced clips are indicated by an "S".
[UNSYNC] unlinks the selected clip from the others in the link.

The [LOCK] button temporally locks a clip to a particular time. Locked clips are indicated by an "L".
The [UNLOCK] button frees a locked clip.

7.7 WINDOWS

There are a number of other windows which may be opened on the screen to obtain additional controls and functions. More than one of these may be open at one time. When operating with more than one window open, it may become necessary to put a window behind another. The button in the upper right corner of each window will bring that window to the front if it is not already the frontmost, or move it to the back of all other windows if it is already the frontmost. Holding the shift key when pressing this button will make the window move to the back regardless of its present level.

7.7.1 DIGITAL VIDEO PLAYER

The [DVP] button or "F6" will bring up the Digital Video Player (DVP). This window looks and acts much like a typical video control panel. From left to right,

the buttons are: move to start of reel, rewind (step back 25 frames), play reverse (non-functional), step backward, step forward, play forward, fast forward (step forward 25 frames), and move to the end of the reel.

The horizontal bar in the center represents the reel being viewed. The light blue region within the dark blue region shows the scene or clip being viewed. The red arrow indicates the location of the current frame, and the large timecode area shows the timecode of the frame.

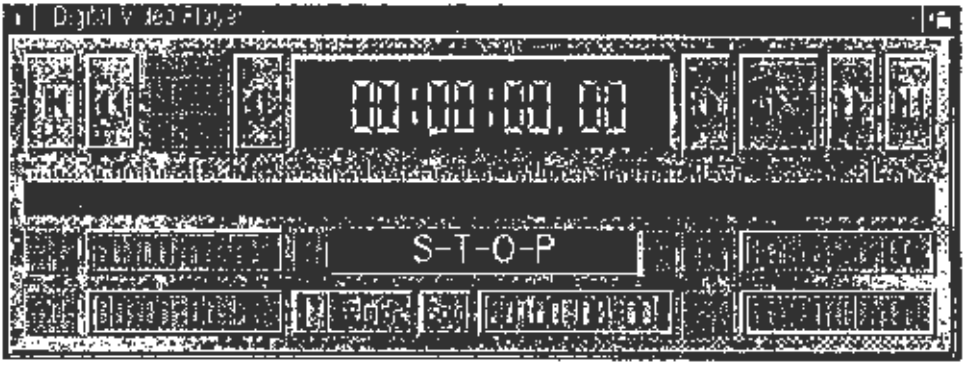


Figure 7.2 - Digital Video Player (DVP)

The center buttons allow moving to the start and end of the current scene or clip, and stopping playback.

The [In] and [Out] buttons set the in and out times respectively for the current scene or clip to the currently displayed frame. The timecode fields show the current values and allow hand setting of these times. Keyboard equivalents are the "+" and "-" keys respectively on the numeric pad.

The [Dur] button allows setting the duration of the current scene or clip. The timecode field beside this button shows the current setting.

The [Key] button sets the key frame to the currently displayed frame. The key frame is the frame shown when the entry is selected. Keyboard equivalent is the "." on the numeric keypad. The timecode fields next to this button shows the current key frame timecode.

The [Goto] button causes the frame indicated by the timecode field beside the button to be displayed.

The cycle gadget allows toggling between field and frame modes. In frame mode, both fields of a captured frame are displayed when in still mode. In field mode, the first field is displayed twice. The latter setting eliminates flickering caused by motion between the two fields, and is similar to a still image from a linear tape system. The keyboard equivalent is "Ctrl-F".

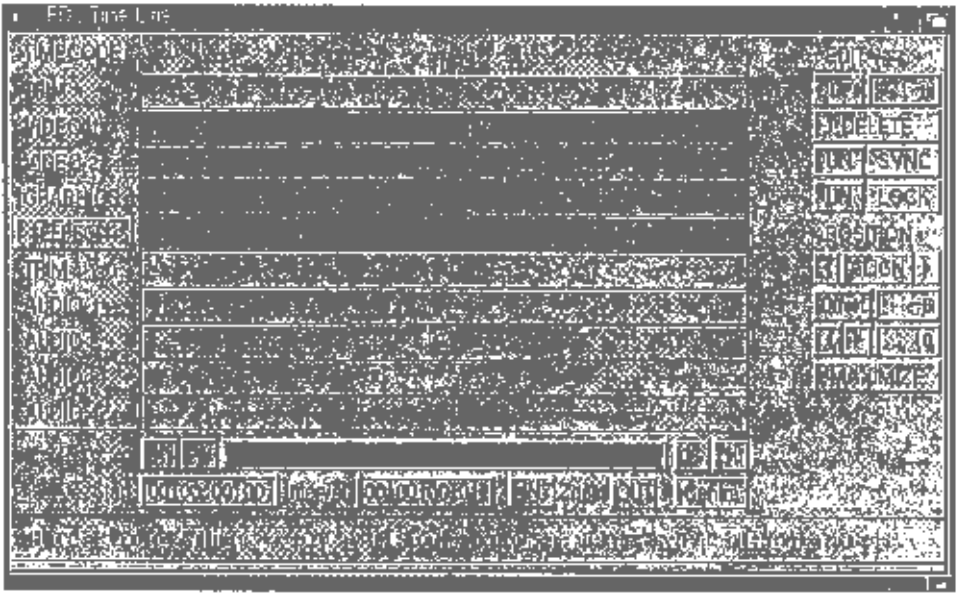


Figure 7.3 - Timeline Window

7.7.2 TIMELINE

The timeline window allows more detailed and intuitive editing of the EDL. Clicking the [TIME] button or pressing "F7" opens this window. There are two video lines for transitional purposes. The Graphics line is non-functional at present. The Effects line allows transitions to be specified (see Chapter 8 - Transitions). There are four audio lines for sound.

7.7.2.1 CLIP LINES

Clips loaded into an EDL will show up on the timeline window when it is opened. They may be moved around by pointing at the middle of the clip and holding the left mouse button to drag it around. To trim the in or out times, drag the in or out handles. The frame displayed is the frame to be used for the in or out frame. If the handles are not visible, use the zoom or center gadgets to expand the clip. When sliding a clip along a clip line, it is possible to push other clips by holding the Alt button.

7.7.2.2 EFFECT LINE

The Effect button enables transitions. When clips on the two video lines

overlap in time, a transition box is created. An information window can be displayed with "Right-Amiga-I" which will provide information to create the transition. This is appropriate for a single transition. See Chapter 9 - Transitions for information on processing transitions.

7.7.2.3 TRIM LINE

The Trim lines give a representation of the entire scene from which a selected clip comes to provide a visual indication of how much additional data is available when trimming the clip. The clip may be moved within the scene, without moving it on the timeline, by dragging the scene in the Trim line.

7.7.2.4 CONTROLS

The buttons below the timelines allow moving to the beginning of the timeline [I<], stepping back one displayed unit [<], sliding within a timeline, stepping forward one displayed unit [>], and moving to the end of the timeline [>I]. Also, the start time of the displayed area and it's size can be adjusted with the Start and Interval fields respectively. Note that the Interval represents the time between major graduations of the timeline. The Zoom [IN] and [OUT] buttons allow showing less or more timeline respectively, and the [Centre] button takes the currently selected clip and moves it to the middle of the display at a zoom level which allows it to fill about 1/3 of the displayed region.

7.7.2.5 EDIT BUTTONS

The Edit buttons to the right of the timeline display behave as their counterparts on the edit screen.

7.7.2.6 POSITION BUTTONS

The Position buttons allow precise movement of the clips.

7.7.2.6.1 ALIGN

The [Align] button aligns the in time of two clips. Select the first clip and then hold the shift clip to select the second one. The left align arrow aligns the lower clip's out time to the in time of the upper clip. The right align arrow aligns the lower clip's in time to the out time of the upper clip.

7.7.2.6.2 OFFSET

The [Offset] button and numeric field allow alignment of clips in times by frame. For example, a -6 in the numeric field will align the lower clip's in time to 6 frames before the in time of the upper clip.

7.7.2.6.3 MOVING CLIPS

The arrow keys below the Offset button allow the clip to be moved one frame. Holding down the shift while pressing the arrow keys, moves the clip precisely the number of frames expressed in the numeric field. Holding down the alt key while pressing the arrow keys, moves the clip 1 second. Holding down the shift and alt keys while pressing down the arrow keys, moves the clip precisely the number of seconds expressed in the numeric field.

7.7.2.6.4 MAXIMIZE

[Maximize] causes a clip to be extended to the full size of its scene, or the maximum room it has between two other clips.

7.7.3 TAGS

The [TAGS] button presents the tag window which allows attaching keywords to scenes.

7.7.3.1 LOAD AND SAVE

The [Load] and [Save] buttons allow loading and saving tag lists.

7.7.3.2 NONE

This button is non-functional.

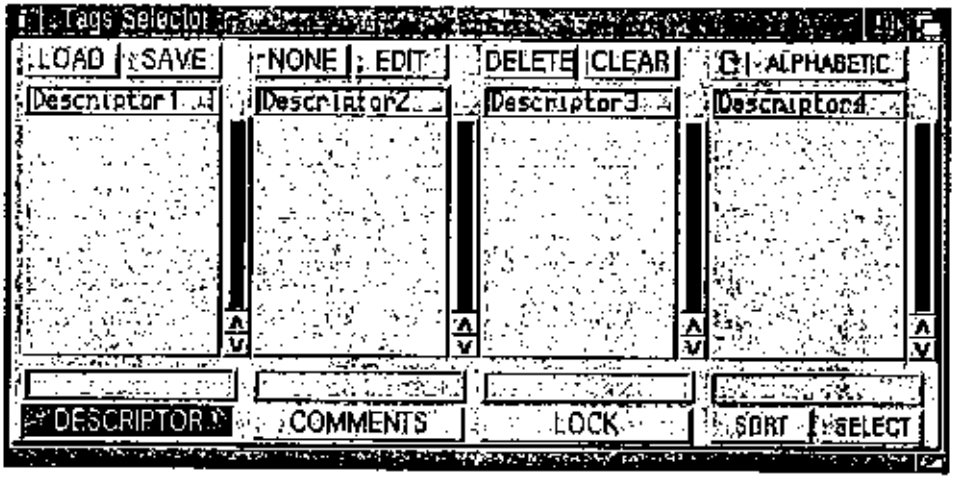


Figure 7.3 - Tags Windows

7.7.3.3 EDIT

Depressing this button allows editing a selected tag.

7.7.3.4 DELETE

Pressing this button enters delete mode. Tags pressed are highlighted and when the Delete button is pressed again, those highlighted entries are deleted.

7.7.3.5 CLEAR

This button will clear all tags and references using these tags.

7.7.3.6 ORDER BUTTON

The order cycle button allows the tags to be displayed in alphabetic order or the order in which they were entered.

7.7.3.7 DESCRIPTOR COLUMNS

Four sets of tags are available for categories of keywords to associate with scenes. The categories can be labelled above the columns and the entries are made below each column. Select a scene on the main screen and select tags in the list (multiple tags are allowed from the same list) to associate with the scene.

7.7.3.8 DESCRIPTOR/COMMENTS

The mutually exclusive [Descriptor] and [Comments] buttons allow choosing whether the Descriptor or Comment tags are being edited.

7.7.3.9 LOCK

This control is not fully functional at present.

7.8 Menus

By holding down the right mouse button, a group of menu labels becomes visible across the top of the screen. While holding the button, move the pointer to the top of the screen and the menus will become visible.

7.8.1 Project

New - Clears the current project and begins another. You are presented with the project window again to choose the project name, notes, and a video

standard (NTSC/PAL). Keyboard equivalent is "Right-Amiga-N".

Open... - Opens a requester to choose a project to load. Keyboard equivalent is "Right-Amiga-O".

Save - Saves the current project with the currently defined name. This also saves the transition script file for batch processing of transitions. If no filename is currently defined, Save defaults to Save As.... Keyboard equivalent is "Right-Amiga-S".

Save As... - Opens a requester to choose a project name for saving. This also saves the transition script file for batch processing of transitions. Keyboard equivalent is "Right-Amiga-A".

Select Screen Mode - Closes the current screen and opens a screen mode requester (see Chapter 4 - Getting Started). Keyboard equivalent is "Right-Amiga-M".

Export - The sub-menu of this item presents a list of EDL output formats. Currently only CMX is supported.

Change Screen Title - Presents the Project window again to allow changing the project's title and the note. Keyboard equivalent is "Right-Amiga-T".

About - Presents a window with program information. Keyboard equivalent is "Right-Amiga-?".

Workbench - The sub-menu for this allows opening and closing the Workbench screen. Closing this screen will save some system memory.

Quit - Exits the program after asking whether to save the current project. Keyboard equivalent is "Right-Amiga-Q".

7.8.2 Edit

New - Adds new EDL to EDL Index or Scene List to Reel Index.

Add Comment - Adds a comment line to a Reel Index, EDL Index, Scene List, or EDL.

Information - Displays information on a chosen Scene List, EDL, scene, clip, or transition. Keyboard equivalent is "Right-Amiga-I".

Log Mode - Operates the same as the [LOG] button (See 7.3 above). Keyboard equivalent is "Right-Amiga-L".

Split - Operates the same as the [SPLIT] button (See 7.4 above). Keyboard equivalent is "Right-Amiga-/".

Delete - Operates the same as the [DEL] button (See 7.4 above). Keyboard equivalent is "Right-Amiga-D".

Duplicate - Operates the same as the [DUP] button (See 7.4 above). Keyboard equivalent is "Right-Amiga-Z".

Chapter 8

Off-Line Transitions

Transitions are created off line in the **MediaFlex™ Producer** environment. This gives great flexibility to those transitions.

8.1 INDIVIDUAL TRANSITIONS

While editing, it is possible to overlap video on lines 1 and 2 of the timeline (see Chapter 7 - Non-Linear Editing). With the Effects button depressed, a transition block is created. Selecting the block and pressing "Right-Amiga-i" will bring up an information window. The information provided in this window will allow the user to create single transitions using the scripts provided for ADPro 2.5.

To create a single transition, make a note of the information provided in the information window for the transition. Run ADPro 2.5 and then double-click on the appropriate transition script located in the Scripts drawer. The AREXX script will ask a series of questions about the transition and then the transition will be created. Once finished, the transition will play back in real time.

8.2 BATCH TRANSITIONS

Multiple transitions are accomplished via a script created by the **MediaFlex™ Producer** software to run ADPro 2.5 from AREXX. This will allow the transitions to be created overnight rather than making the user wait for them to be created.

8.2.1 TRANSITION SCRIPT

The transition script file is created or altered only when a project is saved. Future versions of the software will allow control of transitions from within, instead of with AREXX scripts and ADPro 2.5.

This file contains single line instructions on what transitions must be created for a particular project. Comment lines begin with a semi-colon.

> **Editing a Text File**
>
> To edit the script file, it will be necessary to use a text editor. There are two included with the Amiga's operating system: Ed and MEmacs. Either one can be used to edit the file.
>
> Open the drawer where the **MediaFlex™ Producer** software is installed and open the Projects drawer. Click once on the transition script for that project and pull down the Icons menu item Information... or use the keyboard equivalent "Right-Amiga-i". Click in the Default Tool field and enter the editor of choice. Select Save and then double-click on the script icon to begin editing.
>
> Alter the script as noted below and use the pulldown menu to save the script and exit.

8.2.1.1 DISSOLVE (DEFAULT)

Initially, all transitions are assumed to be dissolves of the desired time between the desired clips. This dissolve information is written into the file as follows:

DIS	00:00:13.00	734	Reel1.jst	230	Reel2.jst	30	Trans.jst
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

The first entry indicates that this is a dissolve. Second is the EDL timecode for the transition. (For user reference only). The third number represents the frame in the A reel from which the transition will begin. Fourth, is the name of the A reel. Fifth is the starting frame number from the B reel. Sixth is the name of the B reel. Seventh is the number of frames in the transition, followed eighth by the name of the transition file (Note that this name will not be normal text, but instead be quite cryptic).

Leaving this script alone will allow all transitions to be created as dissolves. The transitions can be altered from the default of a dissolve.

8.2.1.2 WIPES

The quickest way to change the transition is to alter the first entry to "WIP" and add the direction (UP, DOWN, LEFT, or RIGHT) to the end:

```
WIP 00:00:13.00 734 DBC:Reel1.jst 230 DBC:Reel2.jst 30 DBC:0000.jst LEFT
```

Fields 2 through 8 should not be altered.

Be aware that this entry will be left alone the next time the project is saved UNLESS the transition itself is altered.

8.2.1.3 SLIDES

The transition can also be a slide by altering the first entry to "SLD" and adding the direction to the end:

```
SLD 00:00:13.00 734 DBC:Reel1.jst 230 DBC:Reel2.jst 30 DBC:0000.jst DOWN
```

8.2.1.4 TRANSITIONS ANIMS

Part of the power and flexibility of transitions handled off-line begins to be apparent in the use of animations as wipe templates. You can use one of the included anims by changing the first field to "TNM" and adding the full path and name of the anim as field 9:

```
TNM 00:00:13.00 734 DBC:Reel1.jst 230 DBC:Reel2.jst 30 Work:MediaFlex/Anims/DiagUL2LR.anim
```

See 8.2.2 below for more information on custom wipes.

8.2.1.5 FADE IN/OUT

The transition can also be customized to be a fade in or out (to and from black) by changing field one to "FAD" and adding "IN" or "OUT" as field 9. In this case, fields 5 and 6 are ignored in lieu of the fade.

8.2.2 CUSTOM WIPES

The creation of custom wipes is as easy as creating an animation. Several third party software packages are available to let the user create the wipes. Deluxe Paint IV and Brilliance are two examples of painting/animation programs which are best suited for the creation of these anims.

The anims should be at least the resolution of the video stream. For NTSC this is 720 x 480, and 720 x 576 for PAL. If the program of choice uses larger resolutions than these, use the upper left corner of the appropriate size (i.e. the upper left 720 x 576 of a 736 x 582 screen). The anims may be any number of colors from 2 to the number supported by the animation program.

The convention is that each pixel of an anim which is true black (0,0,0) is replaced with a pixel from the A video reel. True white pixels (255,255,255) are replaced with a pixel from the B video reel, and all other pixels are left the color of the anim. Therefore, it is easy to begin with a black frame and end with a white frame to create a wipe. There are several examples included in the Anims directory.

Smoother transitions can be created by ensuring that the animations are field rendered. To ease the creation of this type of animation, we have included an ADPro 2.5 AREXX script to convert a frame animation into a field animation. Begin by creating a full size frame animation which is double the number of frames desired in the completed animation (i.e. a 720 x 480, 60 frame anim for an NTSC 30 frame wipe). When finished, run the ADPro 2.5 AREXX script called "LaceANIM" to convert it to an interlaced anim (in this example a 720 x 480, 30 frame anim).

8.2.3 CUSTOM TRANSITIONS

With a working knowledge of AREXX, it is possible to use ADPro 2.5 to create even more spectacular transitional effects. Also, 3-D renderers can be used to create 3-D transitions from the captured video, while custom support is being developed by DMI.

NOTE: At press time it was discovered that ADPro 2.5 had difficulty generating correct transitions for video recorded at Draft 2 or below.

Chapter 9

Common Questions & Answers

This chapter attempts to save you a phone call to Digital Micronics, Inc. by answering what we have found to be the most common questions about this product.

Q. How many outputs are receiving timecode at any one time?

A. Only one output receives timecode. These are the limitations:

1. *Recording* - Whichever source is being recorded determines the output which will have the timecode burn-in window. The output format that corresponds to the chosen input format will have the timecode burn-in window. There are no exceptions to this.

2. *Playback/Editing* - Timecode is currently only present on the composite output.

Q. Can the timecode burn-in window be placed on one output, but the actual striping of the timecode done on another output?

A. No. As stated above, both must be present on the same video format.

Q. Can Titling/Text Overlay be done on the Digital BroadCaster™?

A. Yes. You have two options to do Titling/Text Overlay:

1. *Separate machine with Genlock* - The machine with the **Digital BroadCaster 32™** is using all the bandwidth of the machine so

Titling/Text overlay is not possible with that machine. A separate machine could genlock to the video output of the **Digital BroadCaster 32™** and do the character generation as needed using an external genlock.

2. *Software* - Many software packages may be used to rotoscope the individual JPEG frames of a recording/animation with text.

Q. Can I use my Toaster with the Digital BroadCaster 32™?

A. Certainly. However, there are a number of limitations which may encourage you to put it into a separate machine.

First, the Toaster takes the space of two slots and thus there is not room for the **Digital BroadCaster 32™**, FASTLANE SCSI-II Controller, and the SunRize AD516 sound card while using the Toaster.

Second, both the Toaster and the **Digital BroadCaster 32™** use the majority of the bandwidth (power) of the computer. Therefore, any simultaneous use of the Toaster and the **Digital BroadCaster 32™** will result in one or both of them being starved for CPU (computer) time. The result will be erratic or jumpy Toaster effects, and looping playback with the **Digital BroadCaster 32™**.

The Toaster may be used in the same machine as a **Digital BroadCaster 32™** to generate Lightwave animations. These frames can be placed on the hard drive and the **Digital BroadCaster 32™** utilities can be used to create the video stream. This would replace a single-frame recorder, and allow animation output in S-Video or component as well as composite.

Q. Can I use the Digital BroadCaster 32™ in an Amiga 3000 or 3000T?

A. The A3000 and A3000T are no longer recommended for the **Digital BroadCaster 32™**. The FASTLANE SCSI-II controller is the only hard drive controller available which will deliver sufficient transfer rates to deliver broadcast quality video from the **Digital BroadCaster 32™**, and the FASTLANE SCSI II controller has problems working in many A3000(T)s. Also, many of the features used in the **MediaFlex™ Producer** software are only available under AmigaDOS 3.0 and above.

Q. Can I adjust the resolution of the Digital BroadCaster 32™?

A. Currently there is no way to adjust the digital resolution of the **Digital**

BroadCaster 32™. The CCIR 601 standard for video resolution is used throughout the board. This specification identifies 13.5 MHz pixels for 720 pixels per line. The vertical resolution is a function of the data compression chips which require a vertical number divisible by 8 lines per field (16 lines per frame). This leads to the standard resolutions of 720 x 480 for NTSC, and 720 x 576 for PAL.

Q. I have an Amiga 4000/040, FASTLANE, and Barracuda. Speedtest indicates speeds less than 5.5 MB/sec on an empty drive.

A. There are numerous factors which affect transfer speed:

1) Ensure the drive is recognized as synchronous capable. This can be checked with the UnitControl utility on the FASTLANE disk. Select the drive to check and press the Special button. The button just below the sliders should read Synchronous. If it does not, click on it until it does, and then press the Set button. If the button goes back to Asynchronous, there may be probably a problem with drive termination. See the FASTLANE manual for details of termination.

It is also possible that the Synchronous check mark was not checked when installing the hard drive. Ensure it is set by using the FASTLANE SCSIConfig software. See the FASTLANE manual for details on the SCSIConfig tool.

2) Ensure the FASTLANE has the Synchronous Auto-Enable jumper set. See the FASTLANE manual for information on this jumper.

3) Ensure the drive's write cache is turned on. Many drives are shipped with the write cache turned off. The standard utilities for turning on and off the write cache do not work for the Seagate Barracuda however, so we have included a utility to turn on the write cache. This utility only needs to be run once. Open a shell by double-clicking on the Shell icon in the System drawer of the System or Workbench drive. Enter "WriteCache4 Unit 1". Replace Unit with the unit number of the drive you are dealing with (this number is usually set with jumpers directly on the drive).

4) Ensure the Handshake is set to 8 or above and that the Synchron MB/s is set to 10. This can be checked in the FASTLANE's UnitControl software under the Special window. To ensure these settings take effect each time the machine is booted up, the following command can be added to the S:User-Startup for each drive:

<path>UnitControl Unit <#> Period 10 Offset 12

Replace <path> with the full path to the UnitControl software. This assumes that the FASTLANE software has been installed on the hard drive, and the <#> with the drive unit number. For example, if you have placed the FASTLANE software on your Work hard drive in a directory called Fastlane, and you have two drives with units 1 and 3, you would add the following to your S:User-Startup (using a text editor as described in Chapter 8):

```
Work:Fastlane/UnitControl Unit 1 Period 10 Offset 12
Work:Fastlane/UnitControl Unit 3 Period 10 Offset 12
```

If you copy the FASTLANE software to your hard drive by dragging the disk icon, it is recommended that you rename the resulting drawer to eliminate the spaces in the name of the drawer.

Q. I get repeating loops of video when playing back a compiled animation. Why?

A. The system must be able to support a data throughput rate that allows the video data to be fed to the **Digital BroadCaster 32™** in real time. If this data throughput is insufficient, the **Digital BroadCaster 32™** will finish playing loaded frames before the next series of frames have finished loading. At this point the board must stall while the next set of frames are loaded. Since it must display something, it repeats the frames it already has loaded.

When compiling an animation, it is imperative that the data rate not exceed the throughput of the computer system which will play back the animation. To determine the data rate, the size of a typical compressed field can be multiplied by 60 (50 for PAL). If this rate exceeds 90% of the data rate indicated with the included SpeedTest utility, the compression must be increased to ensure loop-less playback.

For example, a typical A4000 system with a FASTLANE and a Seagate Barracuda ST12550N averages about 5.0 MB/sec. This means that it cannot support individual fields greater than approximately 80 KB (95 KB in PAL) without looping during playback. It is a good idea to pre-process the most complex bit of an animation to determine its size before committing to process an entire animation.

Q. When playing back low quality video or black and pressing stop, the video does not stop immediately. Why?

A. The memory that is used on the **Digital BroadCaster 32™** is FIFOs. When

video data is transfered from the hard drive to the **Digital BroadCaster 32™** FIFOs, it is done in large chunks. When playing low quality video or black, that amount of necessary data to transfer is much less. When playing, data is being transfered continuously. So, when the stop button is clicked, the data transfer is continued until the FIFO is empty.

Chapter 10

Tutorial

To familiarize the user with the system, the following tutorial is provided to step through the process of non-linear editing with the **MediaFlex™ Producer** software on the **Digital BroadCaster 32™**.

10.1 Startup

After starting the **MediaFlex™ Producer** software (see Chapter 4 - Getting Started), begin a new project by clicking on [Create New] in the entry requester.

Click in the text field for the Project Title and press "Ctrl-X" or "Right-Amiga-X" to clear the field. Enter the project name as "Tutorial," and a description of "My first project."

Select the appropriate video standard (NTSC or PAL) for your video source, and click OK to begin the project.

10.2 Screen Details

The title bar across the top of the screen will give you program version information. Under this is the Record button for capturing video and to the right of this is the help area. By pointing to a button on the screen, you are given a brief description of its function.

Below are two windows of information, with a control panel vertically between. The windows are labeled to show their contents. The active window is the one whose label is highlighted green.

The left column has a Reel (or Scene) index, which shows this project's list

of reels and scene lists. A newly created project begins with a Master Scene List and a Scratch Scene List. These scene lists may be renamed by selecting the list (single-click) and using the text fields at the bottom of the screen.

The right window has an EDL Index, which shows this project's list of EDLs. A newly created project begins with a Master EDL and a Scratch EDL. These EDLs may be renamed by selecting the EDL (single-click) and using the text fields at the bottom of the screen.

The lines across the bottom of the screen show the descriptors, comments, and title of the chosen item (scene list, scene, EDL, or clip). Clicking on either of the upper two lines brings up the tags requester (see Chapter 7, or below) for modifying the descriptors and comments. The title can be changed by clicking in the bottom text field and editing the text.

Double-clicking on a scene list replaces the Reel (Scene) Index with a list of scenes contained in that scene list. Similarly, double-clicking on an EDL will replace the EDL Index with a list of clips contained in that EDL.

It is sometimes desirable to move items between Scene Lists or EDLs. The [S-S] button will put scene lists in both columns while the [E-E] button will put EDLs on both sides. The [S-E] button will return the columns to their default configuration.

10.3 Recording

The first step to editing video is to capture the desired video to a hard drive.

10.3.1 Hardware

Ensure that the installation of the **Digital BroadCaster 32™** is completed in accordance with Chapter 3. Determine the format in which the video is available from your video source (composite, Y/C, or component), and connect it to the appropriate input of the breakout box. Connect a monitor to an output and you are ready to record.

If you have a SunRize audio card installed, connect your video source's audio to the input of the SunRize, and an amplifier or similar audio monitor to the output.

10.3.2 Capture

Click on the Record button in the upper left and you will be presented with the Record window. Details of each item are available in Chapter 5.

Select the appropriate video standard and video source format.

Leave the quality setting at its default of S-Video 1.

Ensure the [Video] button in the lower right is selected and click the [Audio] button if you wish to simultaneously record video and audio.

Click on the [F] button in the Video area and choose a path and filename for the video reel (JStream) to be recorded. Choose the Seagate Barracuda drive installed in accordance with Chapter 3, and give the reel the name "Tutorial1" (the filename limitation is the same as the FastFileSystem, 30 characters including any extensions). The extension ".JST" will be automatically appended to the end of the name to identify this file as a JStream.

Note the amount of free storage available on the chosen drive beside the Size label.

If you have the SunRize board installed, you can also record audio while recording video. We highly recommend that a separate fast SCSI-II hard drive be dedicated to audio. This drive does not have to be a Barracuda (although that is recommended), but it must be capable of at least 3.0 MB/sec sustained data rate to prohibit it from monopolizing the bus.

If you are recording audio as well as video, click on the [F] button in the Audio Setup area and choose a path and filename for the audio reel to be recorded. Choose the dedicated fast SCSI-II audio drive and give the reel the name "Tutorial1" to match the video reel.
Also, ensure that both the [L] and [R] buttons are depressed.

Begin providing video from your video source. You should see your video on any of the outputs of the **Digital BroadCaster 32™** as long as the correct input is chosen on the interface.

When an interesting bit of video appears, click on the [Record] button to begin recording. Ensure that the hard drive light(s) are blinking regularly. If they are not, ensure the installation process was completed correctly.
Note that the storage decreases, and an approximation of the amount of time remaining on the drive appears. Both of these indications will be updated periodically during recording to show the drive status.

Record about 1 minute of video, and then press the [Stop] button.

Close the record window by clicking the button in the upper left corner. You'll notice that the video feedthrough to your monitor stops.

10.4 Logging

Note that the video reel you just recorded is now listed in the Reel (Scene) Index column, and the first frame of that video is displayed on the video output. If you had other video or audio reels previously recorded, you could import them via the Import Options menu.

Reels in the Reel (Scene) Index can be thought of as scene lists in their own right. However, instead of having some specific detail in common (for instance a scene list of beach shots), these scenes all come from the same reel.

The reel just recorded may be treated as a single scene or divided into more scenes. This process is called logging.

Click on the [LOG] button to begin logging. Notice that the Scene List is now replaced by the contents of the reel itself. As mentioned above, the reel begins as a single scene, so only one scene is listed as belonging to this reel. Also notice that the DVP window appears to allow the logging process to begin.

The long light blue rectangle in the middle of the DVP shows the scene. You can use the controls at the top of the DVP to (from left to right) go to the start of the reel, rewind (step back 25 frames at a time), play reverse (non-functional), step back one frame, step forward one frame, play forward, fast forward (step forward 25 frames at a time), and go the the end of the reel. Also, you can randomly access any frame by clicking on the scene rectangle or just above. Note that the red cursor moves to that location to show what frame is now being displayed on the screen. You can also drag the cursor by holding down the left mouse button and dragging the mouse left and right.

You may notice that some parts of a still image in the video appear a bit blocky. When displaying a still image, it is possible to show both fields of captured video, or repeat one field twice. Typically, a linear (tape) system can only display a single field twice. However, since this is a digital system, we can display both fields if desired.

Click on the button labeled Field in the lower middle of the DVP window and note that it changes to read frame. Note that the vertical video resolution improves. However, if there is any object in the video in motion (search for something in motion if the frame you are looking for doesn't have any) you'll see a vibrating or flickering effect. Since the two fields of video actually occur at different times, any motion between them is noticeable when displaying them repeatedly.

This is a natural side-effect of all video, but only becomes visible when both fields are shown together. For this reason we have provided the means to show only a single field and eliminate the jitter.

The simplest way to begin breaking up the reel into scenes is to do some manual logging. Go to the start of the reel with the leftmost button in the upper row of controls, and press play. As the video plays, place your mouse pointer over the [Out] button on the DVP. Look to the video for natural breaks where you might want to separate scenes within the reel. Click on the [Out] button when one of these breaks occurs and note what happens on the DVP.

When the [Out] button is pressed while in logging mode, the current scene's out time is modified to the current time. Then another scene is created which spans from the out time of the previous scene to the end of the reel. In this manner, you can simply and quickly break the reel into scenes by just pressing the [Out] button while viewing the video.

After breaking the reel into several scenes, press the stop button and note what appears in the left window. Now there are several scenes listed for this reel along with some information about them. Clicking on one of these scenes will show the region of the reel they occupy in the DVP as a light blue scene rectangle on a dark blue reel rectangle. Also, the in and out time will be displayed as well as the duration of each clip.

Before experimenting with modifying the in times, out times, or duration of any scenes, click on the [LOG] button to exit logging mode.

Also note that the key frame of each scene is listed in the lower right corner when a scene is selected from the scene list. This is the frame displayed whenever the particular scene is active. The default is to use the first frame of a scene, but it is simple to move the pointer to another more appropriate frame and press the [Key] button to select an alternate key frame.

Close the DVP by clicking the button in the upper left corner of the window.

10.5 Tags

You will notice that several columns of information are displayed about each scene. Initially this information includes the scene's duration and its descriptors.

Click on the [OPTS] button to bring up the Editor Display Options window. With this window you can choose what pieces of information you want displayed about each scene. Larger displays can hold more information, while smaller displays run information out of view to the right of the columnar display.

Close the Editor Display Options window.

At this point you are probably wondering what the very informative "No Descriptors" means beside each scene. This area allows a number of key words to be associated with each scene. These key words, or tags, can be added by opening the tag window with the [TAGS] button.

Four columns of descriptors categories are presented. Each column can be labelled with information. For example, if there are people in the footage you captured, enter "People" in the upper text field of the first column (use "Ctrl-X" or "Right-Amiga-X" to clear the text field) and begin entering their names into the bottom text field (if there are not people in the scenes, you can use another category or pretend there are people for the sake of this tutorial). Note that they are added to the list.

Click on a particular scene in the scene list.

If you want to play the scene to review its contents, you can open the DVP window or use the keyboard equivalent of the "6" on the numeric keypad. The "5" will stop playback.

When you have decided which characters are in the scene, select them from the list. Notice that you can select more than one from each category and that they appear in the Descriptor column of the scene list display.

Also notice that if the list becomes too long for the Descriptor column, it extends beyond view. However, the tags are still visible if the scene is selected in the Descriptor line at the bottom of the screen.

Close the tags window.

10.6 Scene List Organization

Next you may want to organize the scenes into scene lists based on their content rather than their source (as is the case in a scene list based on a single reel). Start by returning to the Reel (Scene) Index level by clicking on the label of the left column.

Click on the [S-S] button to bring up the Reel (Scene) Index in both windows. Pull down the Edit menu item New to create a new scene list (you could just as well use one of the already existing ones as well). Click in the Notes/Title text field at the bottom of the screen and name the scene list "Tutorial Scene List."

Double-click on the Tutorial Scene List in the right window and note that it is empty.

You can copy all scenes in the Tutorial1 reel to the Tutorial Scene List. First point at the reel and press the left mouse button. Move the pointer to the right window and release the mouse button.

Any of the scenes moved can now be deleted by selecting them in the right window and pressing the [DEL] button.

Select all of the scenes in the right window by clicking on the right (to ensure the right window is the active one) and pressing the [ALL] button.

Delete all of the scenes to the right by pressing the [DEL] button.

Double-click on the Tutorial1 reel on the left to present a list of the scenes you logged earlier. To select a few scenes, begin by pointing at the first scene and clicking the left mouse button. Hold down either Shift button on the keyboard and then click on any other scenes desired.

Release the Shift button and click on the [-->] arrow button to copy the scenes to the Tutorial Scene List.

If we had more than a single reel available, we could move scenes from multiple reels into this scene list to organize them.

10.7 Edit Decision List

Finally, we want to create our Edit Decision List (EDL). Click the [S-E] button to return to the default column layout.

We could create a new EDL, however let's use the Scratch EDL. Double-click the Scratch EDL and again note that it begins empty.

Return to the Reel (Scene) Index level by clicking on the left window label.

Step into the Tutorial Scene List by double-clicking that entry.

Any or all of the scenes may be transferred to the EDL by the methods described above. Select and transfer a few.

The scenes moved to the EDL are referred to as clips and can be rearranged by just moving them within the list. Point the mouse at the uppermost clip and hold the left mouse button.

Move the clip below the bottom clip and release the mouse button. Note that it moves to that new location.

10.8 Timeline

This is not the most convenient way of moving the clips, instead a timeline would be preferable. Open the timeline by clicking the [TIME] button.

Notice that the clips from the EDL appear on the timeline along the Video 1 line. If the clips are not all next to one another, pressing the [NO GAPS] button will bring them all together.

To move the clips around, place the mouse over the middle of the clip, hold down the left mouse button, move the clip to the desired location, and release the mouse button.

On the ends of each clip are trim handles for trimming the in and out times of each clip. If they are not visible on a particular clip, click once on that clip and click the [Centre] button to expand the clip and place it in the middle of the display.

To trim a clip, grab the in or out trim handles and move them while holding the left mouse button. The video screen will show the in or out frame so you may choose the correct one.

You can also move a clip to the Video 2 line. By pressing the [Effects] button and overlapping video on Video 1 and Video 2, a transition appears on the Effects line. Do this now.

To align a pair of clips for a precise length transition (i.e. 1 second), you can click on one of the clips and use the left and right arrow buttons to the right of the timeline display to move the selected clip left or right.

To view the information available about this transition, click on the transition and press "Right-Amiga-I" to bring up the information window.

Once they are aligned, hold either Shift button and click on the other clip so that both are highlighted.

Select sync to sync these clips with their transition.

10.9 Transitions

To create a single transition, make a note of the information presented in this window, and refer to Chapter 8 - Off-Line Transitions.

To create multiple transitions (batch processing), you will need to save the project. To do this, pull down the leftmost (Project) menu by holding the right mouse button, and select the Save As... item. Release the mouse button and a requester will appear.

Click in the File text field and change the title to "Tutorial1" (use "Ctrl-X" or "Right-Amiga-X" to clear the field). When you press enter, the project will be saved along with a special file called "Tutorial1.tlist". This is a list of the transitions. See Chapter 8 - Off-Line Transitions to alter these from the defaults.

10.10 Finally, Playback

To play the EDL, press "A" on the keyboard and then press the "6" on the keypad. "5" will stop playback.

Chapter 11

Troubleshooting Guide

Should the user encounter any problems, please contact your dealer or Digital Micronics' Technical Support Hotline at:

(619) 931- 1021 VOICE
(619) 931- 8556 FAX (attn.: DBC Technical Support)

between the hours of 8:00 a.m. and 5:00 p.m. Pacific Coast Time, Monday through Friday. If questions from users become repetitive, future versions of this manual will explain these common problems, so user input is greatly appreciated.

In the meantime, here are a few problems the user is likely to encounter:

Problem: **During playback, the video has dots that appear, most notably where black should be.**

Solution: This *sparkle* effect is a result of improper communication between the Amiga and the **Digital BroadCaster™**. So far, *every* occurrence of this has been resolved by upgrading the buster chip on the Amiga motherboard to a **SuperBuster Rev. 11**. If doing this does not solve this problem, please contact Technical Support.

Problem: **The record or edit programs fail to execute and the following error message occurs:**

Missing ACK on write to SAAxxxx

Solution: Much handshaking takes place between the **Digital BroadCaster™** and its software. In some instances, the timing is such that this handshaking fails. The user should attempt to run the software again. Should this not correct the problem, the user should cycle power and try again. If the problem does not go away, the board has become defective and needs to be returned to Digital Micronics for servicing. No boards leave DMI with this problem, so the problem may have occurred during shipping.

Problem: **The results from running the SpeedTest program differ from the manufacturer's speed specifications.**

Solution: 5 MB asynchronous/10MB synchronous speeds on SCSI-II drives refer to burst transfer speeds. These speeds cannot be expected continuously from any hard drive.

Check the MASK value in the DEV:DOSDrivers/Digital BroadCaster file using a text editor. It should read 0x7ffffffe for the Amiga 3000(T) native SCSI I controller, or 0xfffffffc for the FASTLANE SCSI II controller.

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