

The Direct-to-Disk system

Direct-to-Disk outputs

You can now route Direct-to-Disk tracks and cuelists (sequence tracks containing cues) to Direct-to-Disk outputs. This is done from the Multichannel Display, the Track Display or the Audio Event Editor's Sequence Editor and Project Manager panels.

Routing to outputs

All recorded material on the Direct-to-Disk is routed to Direct-to-Disk outputs for playback. This includes Direct-to-Disk tracks as well as cuelists. A Direct-to-Disk recording cannot be routed to a Multichannel output. Only notelists recorded on the Synclavier or a MIDI device can be routed to Multichannel outputs.

Both Direct-to-Disk and Multichannel routing can be done from the Multichannel Display. The routing assignments of Direct-to-Disk tracks and cuelists appear enclosed by asterisks (*) to differentiate them from Multichannel outputs.

Direct-to-Disk tracks can also be routed to Direct-to-Disk outputs from the Track Display or the Audio Event Editor's Project Manager panel. Cuelists can be routed to Direct-to-Disk outputs from the Sequence Editor panel.

The number of available Direct-to-Disk outputs depends on the number of Direct-to-Disk voices in your system. More voices can be added.

Cuelist routing assignments are saved with the sequence. Direct-to-Disk track routing assignments are saved with the project. When you recall a project or sequence, the routing information saved with each is recalled.

Routing assignments

Source	Make routing assignments from these locations	Type of output
Direct-to-Disk tracks	Multichannel Display Track Display Project Manager panel Keyboard control panel	Direct-to-Disk
Cuelists	Multichannel Display Sequence Editor panel Keyboard control panel	Direct-to-Disk
Notelists	Multichannel Display Keyboard control panel	Multichannel

Routing Direct-to-Disk tracks from the Multichannel Display

In the upper right corner of the Multichannel Display, the instructions list the number of Direct-to-Disk outputs (**DTD Outputs**) in your system.

Direct-to-Disk tracks are listed in the lower right corner of the Multichannel Display as L1-L16. They have a default routing of L1 to Output 1, L2 to Output 2, etc.

You can change this default routing.

1. Select the Multichannel Display from the Main Menu.

The display appears on the screen. An asterisk (*) automatically appears on either side of the Direct-to-Disk output number. If no routing has been specifically assigned to the track, the default routing is shown.

Direct-to-Disk track names appear, but they can only be changed from the Track Display or the Audio Event Editor's Project Manager.

2. Click the output number (left or right) for a given Direct-to-Disk track (L1-L16).

The number lights.

3. Type the number of the desired Direct-to-Disk output.

4. Press Return.

The Direct-to-Disk track is assigned to the selected output. The left and right outputs always appear with same number. This assignment also appears on the Track Display and the Project Manager panel.

Any track previously assigned to the selected output now appears on the display with no output assigned to it.

The Multichannel Display

Instrument Name		Left	Right	Poly	MULTICHANNEL ROUTING DISPLAY			
KBD	RHODES	1	1	1				
1	ELECTRIC KIT	2	2	1	1.	Move cursor with arrow keys		
2	PHASED BASS	3	3	1	2.	Assign new track numbers		
3	Cuelist 1	*1*	*1*	1	and routings			
4	Cuelist 2	*2*	*2*	1	3.	Press space bar to		
5	Cuelist 3	*3*	*3*	1	increment values			
6	Cuelist 4	*4*	*4*	1	4.	M/C Outputs: 32 Poly Bins: 1		
7	Cuelist 5	*5*	*5*	1	DTD Outputs: 8			
8								
9					21			
10					22			
11					23			
12					24			
13					L1	Track 1	*1*	*1* 1
14					L2	Track 2	*2*	*2* 1
15					L3	Track 3	*3*	*3* 1
16					L4	Track 4	*4*	*4* 1
17					L5	Track 5	*5*	*5* 1
18					L6	Track 6	*6*	*6* 1
19					L7		*7*	*7* 1
20					L8		*8*	*8* 1

Current Catalog: W0:

Routing Direct-to-Disk tracks

The Track Display and The Project Manager panel have changed in several significant ways. The changes pertaining to routing are discussed in this section. Note that the location of some columns has changed. Other Track Display changes are discussed in the section "The Track Display." Other Project Manager changes are discussed in the section "The Project Manager panel."

The Track Display the Show Project mode of the Project Manager panel list the Direct-to-Disk tracks in your system. There are two sections: TRACKS and OUTPUTS. (These are labelled on the Track Display, but not on the Project Manager.) The new column labelled "Out" lists the Direct-to-Disk output through which each track is routed. The default routing is Track 1 to Output 1, Track 2 to Output 2, etc.

You can route a track to an output using the Out column.

1. Select the Track Display or the Audio Event Editor from the Main Menu.

The display appears on the screen.

2. If you selected the Audio Event Editor, display the Project Manager panel in the Show Project mode.
3. Click the output number (or space, if no number is shown) under the Out column for a given Direct-to-Disk track.

The number (or space) lights.

4. Type the number of the desired Direct-to-Disk output.
5. Press Return.

The track is assigned to the selected output. Any track previously assigned to the selected output now appears on the display with no output assigned to it.

The Track Display

RECORD	START	STOP	CONT	REW	FORWD	SMPTE	OFF	IN	OUT	BOUNCE				
TRACK DISPLAY						▼	01:23:13.11.25				Digital Transfer			
Project: Commercial Crossfade: 5 ms			Locked			Rate: 50.0 kHz	Start: 00	End: 12:00	Avail: 12:00	Used: 6:32				
TRACKS						OUTPUTS								
Butn	No.	Track Title	Status	Mode	Used	Input	dB	Out	No.	Vol	Pan	DDT		
(25)	1.	Vocals	Safe	Auto	3:32	STM 1A	0	1	1.	100.0	-50			
(26)	2.	Voiceover	Safe	CuePB	5:00	STM 1B	0	2	2.	100.0	-50			
(27)	3.	Music cues #1	Safe	CuePB	5:43	STM 1C	0	3	3.	100.0	-50	1		
(28)	4.	Music cues #2	Ready	Input	6:32	TRK 3	0	4	4.	100.0	-50	2		
(29)	5.	Effects	Safe	CuePB	1:13	STM	0	5	5.	100.0	-50			
(30)	6.		Safe	Auto	:00	STM	0	6	6.	100.0	-50			
(31)	7.		Safe	Auto	:00	STM	0	7	7.	100.0	-50			
(32)	8.		Safe	Auto	:00	STM	0	8	8.	100.0	-50			
	9.	Unavail												
	10.	Unavail												
	11.	Unavail												
	12.	Unavail												
	13.	Unavail												
	14.	Unavail												
	15.	Unavail												
	16.	Unavail												
^A Backup Track			^C Erase Track			^U Unlock			^W All Repro			^Y All Auto		
^B Load Track			^D Enter Fade			^V Lock			^X All Input			^Z All Safe		
Current Catalog W1: WORK														

The Project Manager panel

PROJECT MANAGER

Proj 1. Commercial 7/11/88			Start	0:00	End	5:23	Rate	50.0	Unlocked			M
No.	Track Title	Status	Mode	Used	Input	dB	Out	No.	Vol	Pan	DDT	
1.	Announcer 1	Safe	Auto	5:00	STM 1A	1.0	1	1	100.0	-50	2	
2.	Announcer 2	Safe	Auto	4:23	STM 1B	1.0	2	2	100.0	+50		
3.	Announcer 3	Safe	Auto	4:10	OUT	2	1.0	3	100.0	-50		
4.	Music Intro	Safe	Auto	1:23	TRK	3	1.0	4	100.0	+50		
5.	Music 1	Ready	Auto	1:23	DIG	1	1.0	5	100.0	-50		
6.	Music 2	Safe	Auto	0:45	STM	1.0	6	6	100.0	+50		
7.	Music Finale	Safe	Auto	1:54	STM	1.0	7	7	100.0	-50		
8.							8	8				
Show All			ALL:	Repro	Input	Auto	Cue PB	Safe	Lock	Unlock	Erase	Size: 8

Routing cuelists from the Audio Event Editor

You can route cuelists to Direct-to-Disk outputs from the Sequence Editor panel of the Audio Event Editor. In the default setting, each cue in a cuelist is routed through the output(s) of the Direct-to-Disk track(s) from which the cue originated. Asterisks (**) at the top of the column mean that the cuelist is set to the default routing.

A cuelist can be assigned a routing other than the default output.

1. Open the Audio Event Editor's Sequence Editor panel.

The panel appears on the screen. When ten or fewer columns are displayed, the column number appears. When six or fewer columns are displayed, the column title and routing appear.

2. Click the asterisks (**) at the top of the cuelist.

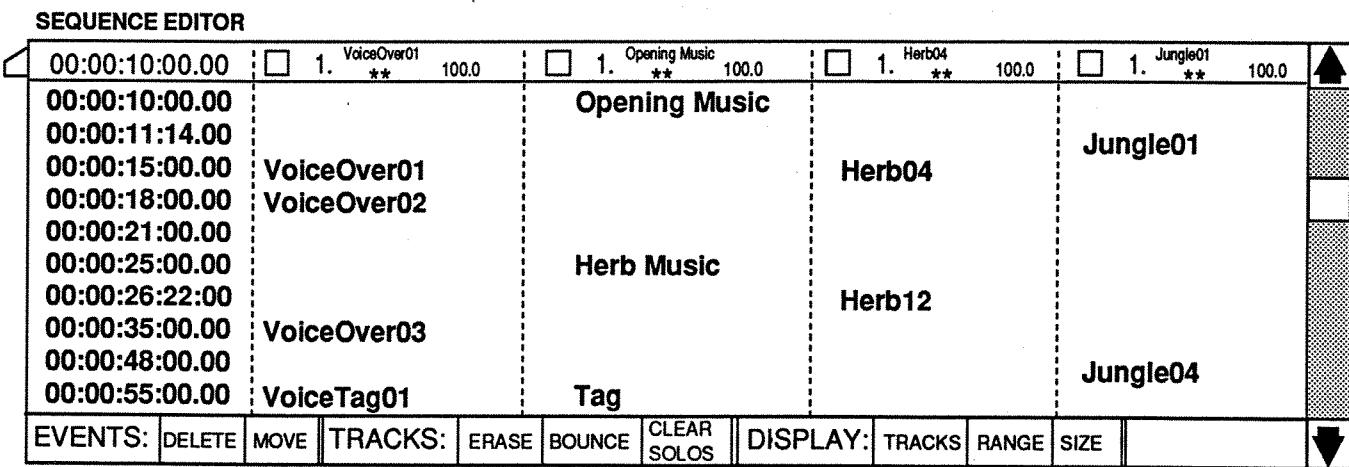
A box appears around the asterisks.

3. Type the appropriate output number.

4. Press Return.

The cuelist is routed to the selected output.

The Sequence Editor panel



Routing cuelists from the Multichannel Display

Cuelists appear in the Multichannel Display on the numbered sequence tracks (1-200) to which they were assigned in the Audio Event Editor's Sequence Editor. Their routing assignments appear with an asterisk (*) on either side of the output number. In the default setting, no routing assignment appears; each cue in the cuelist is routed through the output of the track(s) from which it originated.

You can assign a cuelist to a Direct-to-Disk output from the Multichannel Display.

1. Select the Multichannel Display from the Main Menu.

The display appears on the screen. Cuelists appear on the sequence tracks to which they were assigned from the Sequence Editor of the Audio Event Editor.

2. Click in the left or right column for a given cuelist.

The space lights.

3. Type in the number of the desired Direct-to-Disk output.

4. Press Return.

The cuelist is assigned to the selected output. The left and right columns always appear with same output number.

Track splitting

A Direct-to-Disk track can be blocked into cues and the track routed to more than one output, with no perceptible delay between cue triggers. A three-millisecond crossfade between outputs is performed immediately prior to the second cue trigger. During the crossfade, audio from the Direct-to-Disk track appears at both outputs.

More than one cuelist can be routed to one output. A 30-millisecond interval between cuelists allows for track switching. If the second cuelist overlaps the first cuelist, the first cuelist is cut off before the start of the second.

Multitrack cues

If a single cue placed in a cuelist contains audio from more than one Direct-to-Disk track, audio from the first track is routed through the chosen output, and audio from subsequent tracks is routed through the next consecutively numbered outputs. For example, if a cue using Direct-to-Disk tracks 1, 3 and 5 is routed to output 4, track 1 is routed to output 4, and tracks 3 and 5 are routed to outputs 5 and 6. If you run out of outputs, the tracks which have no outputs do not play.

Any cue played from the Cue Directory or Cue Editor is routed through the output of the Direct-to-Disk track(s) from which it originated. Any cue manually triggered from the Sequence Editor is either routed through the assigned cuelist output (with the above restrictions) or the default output.

Output volume control

There are two Direct-to-Disk volume settings: cuelist volume and output volume. The interaction of these settings can be manipulated to control the final mixed volume.

Controlling the final mixed volume

The volume setting in the Sequence Editor panel is used to control the individual cuelist volume. The volume setting in the Track Display or Project Manager panel is used to control the volume of each Direct-to-Disk output. When a cue is triggered through a particular output, the cuelist volume is multiplied by the output volume to get a final mixed volume.

$$\text{Mixed Volume} = \text{Cuelist Volume} \times \text{Output Volume}$$

For example, if the cuelist volume in the Sequence Editor is set to 50%, and the output volume in the Track Display or Project Manager panel is set to 50%, the final mixed volume is 25%.

$$\text{Mixed Volume} = 50\% \times 50\% = 25\%$$

Adjusting a cuelist volume

You can control the playback volume of each cuelist from the Sequence Editor panel of the Audio Event Editor. Any value from 0.0 to 100.0 percent can be entered at the top of each cuelist. The default setting is 100.0. All cues triggered in a particular cuelist play back at the specified volume.

1. Display the Sequence Editor panel.

The panel appears on the screen. When four or fewer tracks are displayed, the track volume appears to the right of the output number.

2. Click on the volume setting.

A box encloses the volume number.

3. Type the appropriate volume setting.

4. Press Return.

The volume for the cuelist is set.

Note: You cannot set the volume of an empty cuelist.

Adjusting output volume and pan

Each output in your system is listed in the OUTPUTS sections on the far right side of the Track Display and the Show Project mode of Project Manager panel. The first column labelled "No." lists each output in numerical order.

You can adjust the volume and pan settings for each individual output.

1. Select the Track Display or the Audio Event Editor from the Main Menu.

The display appears on the screen.

2. If you selected the Audio Event Editor, display the Project Manager panel in the Show Project mode.

3. Click the volume or pan column for the selected output.

The column lights.

4. Enter the volume or pan setting.

5. Press Return.

The volume or pan is set.

Direct-to-Disk inputs

You can select the source of input and the input channel from the Track Display or the Project Manager.

Setting the input source and channel

The Input column of the Track Display or the Show Project mode of the Project Manager has been expanded to two columns. The left column lists the input source, and the right column lists the input channel associated with the selected source. See the opposite page for a list of the possible input sources and their channels.

You can set the input source.

1. Click the left column under Input of the selected track.

The column lights.

2. Step through the selections.

The track is now set to receive input from the selected source.

You can set the input channel.

1. Click the right column under Input of the selected track.

The column lights.

2. Step through the selections until you reach the desired input channel.

The track is now set to receive input from the selected source and channel.

Input sources and their channels

Input

sources	channels	Use
STM	1A-4D	For live recording (using STM inputs)
TRK	1-16 tracks	To bounce tracks.
OUT	1-16 outputs	To bounce cue lists.
DIG	1 or 2	For digital transfer.

Setting the input gain

The input gain column header has been changed to dB. Any integer value between -3 and +28 can be entered. Regardless of whether you have an old or a new STM module installed in your system, all gain settings now appear in dB. A setting of zero is unity gain.

1. Click the dB column for the selected track.

The dB column lights.

2. Enter the appropriate input gain value. Negative gain settings provide attenuation. (If you have an old STM module, entering a negative value has the same effect as entering 0 dB.)
3. Press Return.

(For more information on input gain, see the sections "Sample-to-Memory module" and "Sound File Editor.")

The Track Display

RECORD		START	STOP	CONT	REW	FORWD	TRACK DISPLAY			SMPTE	OFF	IN	OUT	BOUNCE
										01:23:13.11:25	Digital Transfer			
Project: Commercial Crossfade: 5 ms							Locked	Rate: 50.0 kHz	Start: 00	End: 12:00	Avail: 12:00	Used: 6:32		
Butn No.	Track Title	Status	Mode	Used	Input	dB	Out	TRACKS						
(25)	1. Vocals	Safe	Auto	3:32	STM 1A	0	1	1.	100.0	50				
(26)	2. Voiceover	Safe	CuePB	5:00	STM 1B	0	2	2.	100.0	-50				
(27)	3. Music cues #1	Safe	CuePB	5:43	STM 1C	0	3	3.	100.0	50	1			
(28)	4. Music cues #2	Ready	Input	6:32	TRK 3	0	4	4.	100.0	-50	2			
(29)	5. Effects	Safe	CuePB	1:13	STM	0	5	5.	100.0	50				
(30)	6.	Safe	Auto	:00	STM	0	6	6.	100.0	-50				
(31)	7.	Safe	Auto	:00	STM	0	7	7.	100.0	50				
(32)	8.	Safe	Auto	:00	STM	0	8	8.	100.0	-50				
	9.	Unavail												
	10.	Unavail												
	11.	Unavail												
	12.	Unavail												
	13.	Unavail												
	14.	Unavail												
	15.	Unavail												
	16.	Unavail												
							OUTPUTS							
							No.	Vol	Pan	DDT				

Bounce

You can bounce Direct-to-Disk tracks and cues onto other tracks of the Direct-to-Disk using the Track Display or the Audio Event Editor. Before attempting to use the bounce feature, familiarize yourself with the concepts of Direct-to-Disk routing, setting track parameters and creating a cuelist. Information on these topics is available in this section and the manual *Audio Editing*.

Bouncing tracks and cues

You can bounce audio from one Direct-to-Disk track to another Direct-to-Disk track. Up to two tracks can be bounced at a time.

If you place cues into a cuelist and route them to an output, you can bounce the cuelist to a single Direct-to-Disk track. In this way you can save your best cues and then erase the other tracks to make room for more recording.

When bouncing tracks and cues, the bounced audio remains in the digital domain and retains its original recorded quality. There is no delay recording to the track when bouncing audio. (There will be an delay hearing the output if you record and bounce at the same time.)

The bounce mechanism can be turned off and on, the advantage being that you can set up your routing and then turn the bounce routings off and on, instead of having to enter new values.

You use the Input column of the Track Display or the Show Project mode of the Project Manager to set up for a track or a cuelist bounce.

Input source	Input channel	Use
TRK	1-16 tracks	Use when bouncing tracks.
OUT	1-16 outputs	Use when bouncing a cuelist to a track.

Note: A multitrack cue cannot be mixed down onto one track. For instance, a cue containing audio from two tracks must be bounced to two tracks.

You can bounce tracks and cuelists using either the Track Display or the Audio Event Editor. From either location the procedure follows similar steps. Each of the steps outlined below is described in more detail on the following pages.

Summary of track bounce

1. Turn on digital bounce.
2. Set the source and destination track parameters.
3. Start recording to start the bounce.
4. Stop recording to stop the bounce.
5. Turn off digital bounce.

Summary of cuelist bounce

1. Turn on digital bounce.
2. Route the cuelist to a Direct-to-Disk output.
3. Set the destination track parameters.
4. Start recording to start the bounce.
5. Stop recording to stop the bounce.
6. Turn off digital bounce.

Setting up to bounce a track from the Track Display

You can bounce tracks or cues using the Track Display. When bouncing from the Track Display the source of audio and the destination track always remain synchronized in a one-to-one relationship.

1. Select the Track Display from the Main Menu.

The display appears on the screen.

2. Click the Digital Transfer BOUNCE button in the upper right corner of the display to turn on bounce.

The BOUNCE button lights.

3. Set the following parameters for source and destination tracks.

			Input	
	Status	Mode	source	channel
Source track	Safe	Repro		
Destination track	Ready	Input	TRK	1-16

The Track Display

RECORD		START	STOP	CONT	REW	FORWD	SMPTE			OFF	IN	OUT	BOUNCE
							01:23:13:11.25			Digital Transfer			
Project: Commercial Crossfade: 5 ms Locked Rate: 50.0 kHz							Start: 00	End: 12:00	Avail: 12:00	Used: 6:32			
TRACKS							OUTPUTS						
Btn	No.	Track Title	Status	Mode	Used	Input	dB	Out	No.	Vol	Pan	DDT	
(25)	1.	Vocals	Safe	Auto	3:32	STM	1A	0	1	1.	100.0	-50	2
(26)	2.	Voiceover	Safe	Auto	5:00	STM	1B	0	2	2.	100.0	-50	
(27)	3.	Music cues #1	Safe	Auto	5:43	OUT	2	0	3	3.	100.0	50	
(28)	4.	Music cues #2	Ready	Auto	6:32	TRK	3	0	4	4.	100.0	-50	
(29)	5.	Effects	Safe	Auto	1:13	DIG	1	0	5	5.	100.0	50	
(30)	6.		Safe	Auto	:00	STM	0	0	6	6.	100.0	-50	
(31)	7.		Safe	Auto	:00	STM	0	0	7	7.	100.0	50	
(32)	8.		Safe	Auto	:00		0	0	8	8.	100.0	-50	
	9.		Unavail										
	10.		Unavail										
	11.		Unavail										
	12.		Unavail										
	13.		Unavail										
	14.		Unavail										
	15.		Unavail										
	16.		Unavail										
*A: Backup Track *C: Erase Track *U: Unlock *W: All Repro							*Y: All Auto *Z: All Safe						
*B: Load Track *D: Enter Fade *V: Lock *X: All Input							Current Catalog W1: WORK						

Setting up to bounce cues from the Track Display

You use the Track Display with the Multichannel Display when setting up to bounce a cuelist.

1. Click the Digital Transfer BOUNCE button in the upper right corner of the Track Display to turn on bounce.

The BOUNCE button lights.

2. Select the Multichannel Display from the Main Menu.

The display appears on the screen.

3. In the Left or Right column, type the output number next to the cuelist you want to bounce. (For more information on setting a cuelist output see the section "Direct-to-Disk outputs.")

This is the output through which all the cues in the cuelist will be played.

4. Press Return.

5. Press Enter.

The Main Menu appears on the screen.

6. Select the Track Display from the Main Menu.

The display appears on the screen.

7. Set the following parameters for the destination track.

	Status	Mode	source	Input channel
Destination track	Ready	Input	OUT	1-16

The Track Display

RECORD		START		STOP		CONT		REW		FORWD		TRACK DISPLAY			SMPTE		OFF IN OUT BOUNCE													
												01:23:13:11:25		Digital Transfer																
Project: Commercial						Start: 00 End: 12:00						Avail: 12:00 Used: 6:32																		
Crossfade: 5 ms						Locked Rate: 50.0 kHz																								
TRACKS																														
Butn	No.	Track Title	Status	Mode	Used	Input	dB	Out					No.	Vol	Pan	DDT														
(25)	1.	Vocals	Safe	Auto	3:32	STM	1A	0	1				1	100.0	50	2														
(26)	2.	Voiceover	Safe	Auto	5:00	STM	1B	0	2				2	100.0	-50															
(27)	3.	Music cues #1	Ready	Auto	5:43	OUT	2	0	3				3	100.0	50															
(28)	4.	Music cues #2	Safe	Auto	6:32	TRK	3	0	4				4	100.0	-50															
(29)	5.	Effects	Safe	Auto	1:13	DIG	1	0	5				5	100.0	50															
(30)	6.		Safe	Auto	:00	STM		0	6				6	100.0	-50															
(31)	7.		Safe	Auto	:00	STM		0	7				7	100.0	50															
(32)	8.		Safe	Auto	:00			0	8				8	100.0	-50															
	9.	Unavail																												
	10.	Unavail																												
	11.	Unavail																												
	12.	Unavail																												
	13.	Unavail																												
	14.	Unavail																												
	15.	Unavail																												
	16.	Unavail																												
^A Backup Track						^C Erase Track						^U Unlock																		
^B Load Track						^D Enter Fade						^V Lock																		
^W All Repro						^X All Input						^Y All Auto																		
^Z All Safe						Current Catalog						W1 WORK																		

The Multichannel Display

Bouncing tracks or cues from the Track Display

You are now ready to start the digital bounce.

1. Click RECORD on the motion controls in the upper left corner of the Track Display.

The RECORD and START buttons light and the track or cuelist plays.

When bouncing a track, the source track is recorded onto the destination track.

When bouncing a cuelist, the cuelist output is recorded onto the destination track.

2. Click STOP when you want to stop the bounce.
3. Click Digital Transfer OFF in the upper right corner of the display to turn off bounce.

The Track Display

RECORD		START	STOP	CONT	REW	FORWD	SMPTE			OFF	IN	OUT	BOUNCE																																																																																																																																																																																																															
							01:23:13.1125			Digital Transfer																																																																																																																																																																																																																		
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Setting up to bounce a track from the Audio Event Editor

When you bounce tracks or cues using the Audio Event Editor, you use the Project Manager, the Record Control, the Sequencer Motion Control and the Sequence Editor panels.

1. Select the Audio Event Editor from the Main Menu.

The Selection panel appears on the screen.

2. Click the Digital Transfer BOUNCE button in the Selection panel to turn on digital bounce.

The BOUNCE button lights.

3. Display the Project Manager, the Sequencer Motion Control and the Record Control panels.
4. Click the Show Proj button at the bottom left of the Project Manager if the panel is not in Show Project mode.
5. Set the following parameters for the source and destination tracks.

			Input	
	Status	Mode	source	channel
Source track	Safe	Repro		
Destination track	Ready	Input	TRK	1-16

6. Set the Record Control panel's Mode and Trigger switches for the type of recording you want to do. (For more information on setting these switches see the manual *Audio Editing*.)

The Project Manager panel

PROJECT MANAGER

Proj 1. Commercial 7/11/88			Start 0:00	End 5:23	Rate 50.0		Unlocked			M	
No.	Track Title	Status	Mode	Used	Input	dB	Out	No.	Vol	Pan	DDT
1.	Announcer 1	Safe	Auto	5:00	STM	1A	1.0	1	100.0	-50	2
2.	Announcer 2	Safe	Auto	4:23	STM	1B	1.0	2	100.0	+50	
3.	Announcer 3	Safe	Auto	4:10	STM		1.0	3	100.0	-50	
4.	Music Intro	Ready	Input	1:23	TRK	3	1.0	4	100.0	+50	
5.	Music 1	Safe	Auto	1:23	DIG	1	1.0	5	100.0	-50	
6.	Music 2	Safe	Auto	0:45	STM		1.0	6	100.0	+50	
7.	Music Finale	Safe	Auto	1:54	STM		1.0	7	100.0	-50	
8.								8	100.0	-50	
Show All		ALL:	Repro	Input	Auto	Cue PB	: Safe	Lock	Unlock	Erase	Size: 8

The Sequencer Motion Control panel

SEQUENCER MOTION CONTROL

START	STOP	CONT	REW	FORWD	MIDI RECRD	MIDI PUNCH	MIDI LOCATE	TRACK	DELETE	RENAME	STORE	RECALL	Name:	P
01 02 03 04 05 06 07 08 09 10	11 12 13 14 15 16 17 18 19 20	LOCATOR	STORE	ON/OFF	00:00:00:00.00									

The Record Control panel

RECORD CONTROL

READY	Mode	Allocate	Trk Start	00:00:00:00.00	<input checked="" type="checkbox"/> Trig Start	00:00:00:00.00
	Trig	Manual	Trk Stop	00:00:00:00.00		
STOP	Rec	Single	Tracks	01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16	<input checked="" type="checkbox"/> Trig Stop	00:00:00:00.00
Cue: Take 02			Retake			
			Cfade: 5			

Setting up to bounce cues from the Audio Event Editor

You bounce a cuelist by routing it to a Direct-to-Disk output that is the source of input for the destination track.

1. Select the Audio Event Editor from the Main Menu.

The Selection panel appears on the screen.

2. Click the Digital Transfer BOUNCE button in the Selection panel to turn on digital bounce.

The BOUNCE button lights.

3. Click the PROJECTS, RECORD, MOTION and SEQ EDIT boxes to open the Project Manager, the Record Control, Sequencer Motion Control and the Sequence Editor panels.
4. In the Sequence Editor, select the asterisk (*) at the top of the column and type the number of the cuelist output.
5. Press Return.
6. In the Project Manager, click the Show Proj button at the bottom left if the panel is not in the Show Project mode.
7. Set the following parameters for the destination track.

		Input		
	Status	Mode	source	channel
Destination track	Ready	Input	OUT	1-16

8. Set the Record Control panel's Mode and Trigger switches for the type of recording you want to do. (For more information on setting these switches see the *Audio Editing Manual*.)

The Project Manager panel

PROJECT MANAGER

Proj 1. Commercial 7/11/88			Start 0:00	End 5:23	Rate 50.0		Unlocked			M	
No.	Track Title	Status	Mode	Used	Input	dB	Out	No.	Vol	Pan	DDT
1.	Announcer 1	Safe	Auto	5:00	STM	1A	1.0	1	100.0	-50	2
2.	Announcer 2	Safe	Auto	4:23	STM	1B	1.0	2	100.0	+50	
3.	Announcer 3	Ready	Input	4:10	OUT	2	1.0	3	100.0	-50	
4.	Music Intro	Safe	Auto	1:23	TRK	3	1.0	4	100.0	+50	
5.	Music 1	Safe	Auto	1:23	DIG	1	1.0	5	100.0	-50	
6.	Music 2	Safe	Auto	0:45	STM		1.0	6	100.0	+50	
7.	Music Finale	Safe	Auto	1:54	STM		1.0	7	100.0	-50	
8.								8	8		
Show All		ALL:	Repro	Input	Auto	Cue PB	Safe	Lock	Unlock	Erase	Size: 8

The Sequencer Motion Control panel

SEQUENCER MOTION CONTROL

START	STOP	CONT	REW	FORWD	MIDI RECRD	MIDI PUNCH	MIDI LOCATE	TRACK	DELETE	RENAME	STORE	RECALL		Name:	P
01 02 03 04 05 06 07 08 09 10	LOCATOR	<input checked="" type="checkbox"/>	00:00:00:00.00	11 12 13 14 15 16 17 18 19 20	STORE	ON/OFF									

The Record Control panel

RECORD CONTROL

READY	Mode	Allocate	Trk Start	00:00:00:00.00	<input checked="" type="checkbox"/> Trig Start	00:00:00:00.00
REHEARSE	Trig	Manual	Trk Stop	00:00:00:00.00	<input checked="" type="checkbox"/> Trig Stop	00:00:00:00.00
STOP	Rec	Single	Tracks	01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16		
Cue: Take 02				Retake		Cfade: 5

The Sequence Editor panel

SEQUENCE EDITOR

00:00:10:00.00	<input type="checkbox"/> 1. VoiceOver01 ** 100.0	<input type="checkbox"/> 1. Opening Music ** 100.0	<input type="checkbox"/> 1. Herb04 ** 100.0	<input type="checkbox"/> 1. Jungle01 ** 100.0
00:00:10:00.00				
00:00:11:14.00				
00:00:15:00.00	VoiceOver01			
00:00:18:00.00	VoiceOver02			
00:00:21:00.00				
00:00:25:00.00				
00:00:26:22:00				
00:00:35:00.00	VoiceOver03			
00:00:48:00.00				
00:00:55:00.00	VoiceTag01	Tag		Jungle04
EVENTS:	DELETE	MOVE	TRACKS:	ERASE BOUNCE CLEAR SOLOS DISPLAY: TRACKS RANGE SIZE

Bouncing tracks or cues from the Audio Event Editor

You are now ready to start the digital bounce.

1. Click READY on the Record Control panel.

READY begins blinking.

2. Click RECORD on the Record Control panel.

Recording begins if you are set to Manual Mode in the Record Control panel. If you are set to Sequencer Mode, recording does not begin until the next step.

3. Click START on the Sequencer Motion Control panel.

When bouncing a track, the source track is recorded onto the destination track.

When bouncing a cuelist, the cuelist output is recorded onto the destination track.

4. Click STOP on the Record Control panel when you want to stop recording.
5. Click STOP on the Sequencer Motion Control panel when you want to stop the bounce.
6. Click Digital Transfer OFF in the Selection panel to turn off digital bounce.

The Sequencer Motion Control panel

SEQUENCER MOTION CONTROL

START	STOP	CONT	REW	FORWD	MIDI RECRD	MIDI PUNCH	MIDI LOCATE	TRACK	DELETE	RENAME	STORE	RECALL	Name:	P
01	02	03	04	05	06	07	08	09	10					
11	12	13	14	15	16	17	18	19	20	LOCATOR	<input checked="" type="checkbox"/>	00:00:00:00.00		
					STORE	ON/OFF								

The Record Control panel

RECORD CONTROL

READY	Mode	Allocate	Trk Start 00:00:00:00.00	<input checked="" type="checkbox"/> Trig Start 00:00:00:00.00
REHEARSE	Trig	Manual	Trk Stop 00:00:00:00.00	<input checked="" type="checkbox"/> Trig Stop 00:00:00:00.00
STOP	Rec	Single	Tracks 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16	
Cue: Take 02				Retake
				Cfade: 5

Digital transfer

You can transfer digital audio between a Mitsubishi digital tape recorder and the Direct-to-Disk, without leaving the digital domain and while retaining the original recorded quality. Before performing a digital transfer, you should be familiar with the concepts of Direct-to-Disk routing and setting track parameters. Information on these topics is available in this section and the manual *Audio Editing*.

Introduction

If you have purchased the digital transfer hardware, you can transfer up to two tracks of audio at a time between the Direct-to-Disk and the following five models of Mitsubishi tape recorder: X-80, X-86, X-400, X800 and X-850.

Digital transfer is useful for backing up Direct-to-Disk tracks to digital tape or for transferring audio from tape onto Direct-to-Disk tracks for editing. Your routings are saved even when you turn off digital transfer. When you are ready to use digital transfer again, all you have to do is turn it on and the parameters are set.

Before attempting to perform a digital transfer, your tape recorder should be properly connected for sending or receiving audio. The two available digital transfer channels DIG 1 and DIG 2 are Mitsubishi channels left and right, respectively. The digital transfer hardware supports the two channel standard. Volume and pan settings have no affect on the digital transfer.

Monitoring tracks

Although there is never a delay recording to the track, a delay can be heard in two instances when monitoring a digital transfer.

- Digital input is routed directly to a Direct-to-Disk output.
- A track receiving input from an STM module is simultaneously routed to a digital transfer output.

In these cases, there is a 75 msec delay in the output, which increases if you have a crossfade greater than 10 msec.

Setting the sampling rate

When transferring audio between a digital tape recorder and the Direct-to-Disk, the sampling rate of both systems should be set to 44.1, 48 or 96 kHz. In the Direct-to-Disk this is done by setting the sampling rate of the entire project to 44.1, 48 or 96 kHz from the Project Directory or the Audio Event Editor's Project Manager panel.

When SMPTE synchronization is being used, the Direct-to-Disk matches its digital sampling rate to the SMPTE signal. For example, if a sampling rate of 44.1 kHz is being used with Drop-frame SMPTE, the system creates exactly 44,100 samples for every 29.97 SMPTE frames. Many digital tape recorders set to phase lock to Drop-frame SMPTE in reality are acting as though they were locked to Non-drop (30 fps) SMPTE. The resulting sampling rate is actually less than 44.1 kHz.

If your machine operates in this way, a special sampling rate must be used when synchronizing digital transfer to Drop-frame SMPTE. The following project sampling rates can be used to translate to the correct sampling rate.

<u>Project sampling rate</u>	<u>Actual sampling rate</u>
44.0	44.0559 (for use with 44.1 kHz)
47.9	47.9520 (for use with 48.0 kHz)
95.9	95.9040 (for use with 96.0 kHz)

(For more information on setting the sampling rate, see the manual *Audio Editing for the Direct-to-Disk*.)

SMPTE synchronization

Certain precautions must be taken when synchronizing digital transfer with SMPTE.

- When you are striping SMPTE onto tape, the digital tape recorder must be phase locked to the house sync video signal.
- When one or more audio or video tape recorders is being used, the master SMPTE signal should be the SMPTE signal recorded on the digital tape recorder.

When using SMPTE to control digital transfer, the system waits for an incoming SMPTE signal before beginning the transfer.

(For information on using special sampling rates with Drop-frame SMPTE, see "Setting the sampling rate" above.)

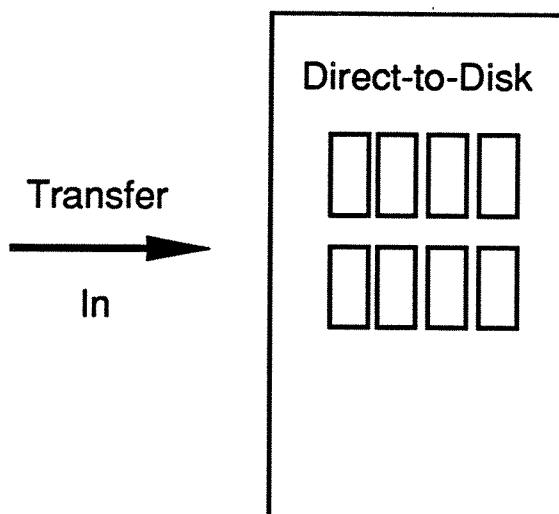
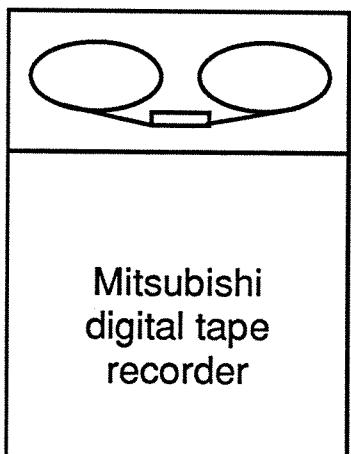
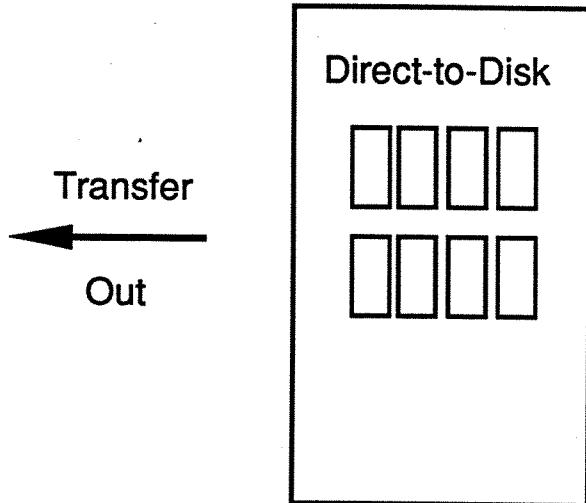
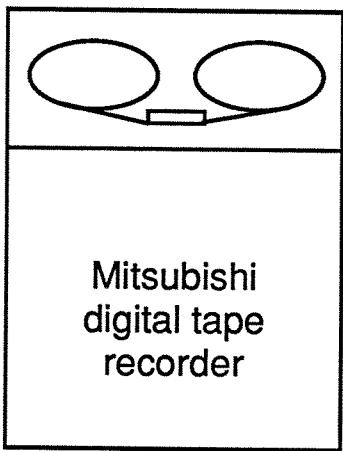
You can digitally transfer between the Direct-to-Disk and a Mitsubishi digital tape recorder using the Track Display or the Audio Event Editor. From either display, the procedure follows similar steps. Each of the steps outlined below is described in more detail on the following pages.

Summary of transferring out

1. Turn on digital transfer.
2. Set the source track parameters.
3. Set the Direct-to-Disk output.
4. Set the digital transfer (DDT) channel.
5. Set up the digital tape recorder.
6. Start recording on the digital tape recorder.
7. Start playback on the Direct-to-Disk to start the transfer.
8. Stop playback and recording to stop the transfer.
9. Turn off digital transfer.

Summary of transferring in

1. Turn on digital transfer.
2. Set the destination track parameters.
3. Set up the digital tape recorder.
4. Start recording on the Direct-to-Disk.
5. Start playback on the digital tape recorder to start the transfer.
6. Stop playback and recording to stop the transfer.
7. Turn off digital transfer.



Setting up to transfer a track out from the Track Display

You can transfer audio between a Mitsubishi digital tape recorder and the Direct-to-Disk using the Track Display. When transferring from the Track Display, the Direct-to-Disk track always remains synchronized to the tape recorder.

When you transfer out, Direct-to-Disk audio is sent to a digital tape recorder on two channels. You must set the parameters for each Direct-to-Disk source track before the transfer can take place.

1. Select the Track Display from the Main Menu.

The display appears on the screen.

2. Click the Digital Transfer OUT button in the upper right corner of the display to turn on digital transfer.

The OUT button lights.

3. Set the following parameters for each source track.

	Status	Mode	Output
Source track	Safe	Repro	1-16

4. In the Outputs section on the right side of the display, enter the digital transfer channel by typing 1 or 2 in the DDT column of the selected output.

Audio from the selected output is routed to the digital transfer channel.

5. Press Return.

You can also transfer cues triggered from the Cue Directory by routing the track that contains the cues to a particular output. This output is then routed to a digital channel, as above. When you trigger the cues from the Cue Directory, they are routed through the digital transfer channel to the tape recorder.

The Track Display

Setting up to transfer a cuelist out from the Track Display

You use the Track Display with the Multichannel Display when setting up to transfer a cuelist out.

1. Select the Multichannel Display from the Main Menu.

The display appears on the screen.

2. In the Left or Right column, type the output number next to the cuelist you want to transfer. (For more information on setting a cuelist output see the section "Direct-to-Disk outputs.")

This is the output through which all the cues in the cuelist will be played.

3. Press Enter.

The Main Menu appears on the screen.

4. Select the Track Display.

The Track Display appears on the screen.

5. Click the Digital Transfer OUT button in the upper right corner of the to turn on digital transfer.

The OUT button lights.

6. In the Outputs section on the right side of the display, enter the digital transfer channel by typing 1 or 2 in the DDT column of the cuelist output.

Audio from the selected output is routed to the digital transfer channel.

7. Press Return.

The Track Display

RECORD		START STOP		CONT REW FORWD		SMPTE		OFF IN OUT BOUNCE							
TRACK DISPLAY ▼								Digital Transfer							
Project: Commercial								Start: 00	End: 12:00						
Crossfade: 5 ms								Avail: 12:00	Used: 6:32						
TRACKS								OUTPUTS							
Butn	No.	Track Title	Status	Mode	Used	Input	dB Out	No.	Vol	Pan	DDT				
(25)	1.	Vocals	Safe	Auto	3:32	STM	1A 0	1	100.0	50	2				
(26)	2.	Voiceover	Safe	Auto	5:00	STM	1B 0	2	100.0	50					
(27)	3.	Music cues #1	Safe	Auto	5:43	OUT	2 0	3	100.0	50					
(28)	4.	Music cues #2	Safe	Auto	6:32	TRK	3 0	4	100.0	50					
(29)	5.	Effects	Ready	Input	1:13	DIG	1 0	5	100.0	50					
(30)	6.		Safe	Auto	:00	STM	0	6	100.0	50					
(31)	7.		Safe	Auto	:00	SIM	0	7	100.0	50					
(32)	8.		Safe	Auto	:00		0	8	100.0	50					
9.		Unavail.													
10.		Unavail.													
11.		Unavail.													
12.		Unavail.													
13.		Unavail.													
14.		Unavail.													
15.		Unavail.													
16.		Unavail.													
^A Backup Track		^C Erase Track		^U Unlock		^W All Repro		^Y All Auto							
^B Load Track		^D Enter Fade		^V Lock		^X All Input		^Z All Safe							
Current Catalog: W0: WORK															

The Multichannel Display

Instrument Name			Left	Right	Poly	MULTICHANNEL ROUTING DISPLAY			
KBD	RHODES		1	1	1	21			
1	ELECTRIC KIT		2	2	1	22			
2	PHASED BASS		3	3	1	23			
3	Cuelist 1	*1*	*1*			24			
4	Cuelist 2	*2*	*2*			L1	Track 1	*1*	*1*
5	Cuelist 3	*3*	*3*			L2	Track 2	*2*	*2*
6	Cuelist 4	*4*	*4*			L3	Track 3	*3*	*3*
7	Cuelist 5	*5*	*5*			L4	Track 4	*4*	*4*
8						L5	Track 5	*5*	*5*
9						L6	Track 6	*6*	*6*
10						L7		*7*	*7*
11						L8		*8*	*8*
12									
13									
14									
15									
16									
17									
18									
19									
20									
Current Catalog: W0:									

Transferring tracks and cues out from the Track Display

You are now ready to start the digital transfer.

1. Start recording on the digital tape recorder.
2. Click START on the Track Display.

The START button lights. The Direct-to-Disk track or cuelist routed to the digital transfer channel is recorded onto tape.

3. Click STOP on the Track Display when you want to stop playback.
4. Stop the tape recorder when you want to stop recording.
5. After completing all digital transfer tasks, click the Digital Transfer OFF button in the upper right corner of the display to turn off digital transfer.

Setting up to transfer in from the Track Display

When you transfer in, the Direct-to-Disk records audio sent by a digital tape recorder on two channels. You must set the parameters for each Direct-to-Disk destination track before the transfer can take place.

1. Select the Track Display from the Main Menu.

The display appears on the screen.

2. Click the Digital Transfer IN button in the upper right corner of the display to turn on digital transfer.

The IN button lights.

3. Set the following parameters for each destination track.

	Status	Mode	Input source	Input channel
Destination track	READY	Input	DIG	1 or 2

Transferring in from the Track Display

You are now ready to start the digital transfer.

1. Click RECORD on the Track Display.

The RECORD and START buttons light and recording begins on the track.

2. Start playing back the tape recorder.

Digital transfer begins. Audio is recorded onto the appropriate Direct-to-Disk track.

3. Stop the tape recorder when you want to stop playback.

4. Click STOP on the Track Display when you want to stop recording.

The RECORD and START buttons unlight.

5. After completing all digital transfer tasks, click Digital Transfer OFF in the upper right corner of the display to turn off digital transfer.

The Track Display

TRACK DISPLAY						SMPTE	OFF	IN	OUT	BOUNCE																																																																																																																																																																																																																													
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Setting up to transfer out a track using the Audio Event Editor

You can transfer audio between a Mitsubishi digital tape recorder and the Direct-to-Disk using the Audio Event Editor. When you transfer out, Direct-to-Disk audio is sent to a digital tape recorder on two channels. You must set the parameters for each Direct-to-Disk source track before the transfer.

1. Select the Audio Event Editor from the Main Menu.

The Selection panel appears on the screen.

2. Click the Digital Transfer OUT button in the Selection panel to turn on digital transfer.

The OUT button lights.

3. Display the Project Manager and the Sequencer Motion Control panels.
4. Click the Show Proj button at the bottom left of the Project Manager if the panel is not in Show Project mode.
5. In the Project Manager, set the following parameters for each source track.

	<u>Status</u>	<u>Mode</u>	<u>Output</u>
Source track	Safe	Repro	1-16

6. On the right side of the display, set the digital transfer channel by typing 1 or 2 in the DDT column of the selected output.

Audio from the selected output is routed to the digital transfer channel.

7. Press Return.

You can also transfer cues triggered from the Cue Directory by routing the track that contains the cues to a particular output. This output is then routed to a digital transfer channel, as above. When you trigger the cues from the Cue Directory, they are routed through the digital transfer channel to the tape recorder.

The Project Manager

PROJECT MANAGER

Proj 1. Commercial 7/11/88			Start 0:00	End 5:23	Rate 50.0		Unlocked			M	
No.	Track Title	Status	Mode	Used	Input	dB	Out	No.	Vol	Pan	DDT
1.	Announcer 1	Safe	Auto	5:00	STM 1A	1.0	1	1	100.0	-50	
2.	Announcer 2	Safe	Auto	4:23	STM 1B	1.0	2	2	100.0	+50	
3.	Announcer 3	Ready	Input	4:10	OUT	2 1.0	3	3	100.0	-50	
4.	Music Intro	Safe	Auto	1:23	TRK 3	1.0	4	4	100.0	+50	
5.	Music 1	Safe	Auto	1:23	DIG 1	1.0	5	5	100.0	-50	2
6.	Music 2	Safe	Auto	0:45	STM	1.0	6	6	100.0	+50	
7.	Music Finale	Safe	Auto	1:54	STM	1.0	7	7	100.0	-50	
8.							8	8			

Show All ALL: Repro : Input : Auto : Cue PB : Safe Lock Unlock Erase Size: 8

The Sequencer Motion Control panel

SEQUENCER MOTION CONTROL

START	STOP	CONT	REW	FORWD	MIDI RECRD	MIDI PUNCH	MIDI LOCATE	TRACK	DELETE	RENAME	STORE	RECALL	Name:	P
01 02 03 04 05 06 07 08 09 10	11 12 13 14 15 16 17 18 19 20	LOCATOR	<input checked="" type="checkbox"/>	00:00:00:00.00	STORE	ON/OFF								

Setting up to transfer out cues from the Audio Event Editor

You can transfer cues to a digital tape recorder by routing a cuelist to a Direct-to-Disk output and routing the output to a digital transfer channel.

1. Select the Audio Event Editor from the Main Menu.

The Selection panel appears on the screen.

2. Click the Digital Transfer OUT button in the Selection panel to turn on digital transfer.

The OUT button lights.

3. Display the Project Manager, the Sequencer Motion Control and the Sequence Editor panels.

4. In the Sequence Editor, type the output number at the top of the selected cuelist.

This is the output through which all of the cues in the cuelist are routed.

5. Click the Show Proj button at the bottom left of the Project Manager if the panel is not in Show Project mode.

6. On the right side of the panel, set the digital transfer channel by typing 1 or 2 in the DDT column of the selected cuelist output.

The cuelist is routed to the selected digital transfer channel.

7. Press Return.

The Project Manager

PROJECT MANAGER

Proj 1. Commercial 7/11/88			Start 0:00	End 5:23	Rate 50.0		Unlocked			M		
No.	Track Title	Status	Mode	Used	Input	dB	Out	No.	Vol	Pan	DDT	
1.	Announcer 1	Safe	Auto	5:00	STM	1A	1.0	1	100.0	-50	2	
2.	Announcer 2	Safe	Auto	4:23	STM	1B	1.0	2	100.0	+50		
3.	Announcer 3	Safe	Auto	4:10	OUT	2	1.0	3	100.0	-50		
4.	Music Intro	Safe	Auto	1:23	TRK	3	1.0	4	100.0	+50		
5.	Music 1	Ready	Input	1:23	DIG	1	1.0	5	100.0	-50		
6.	Music 2	Safe	Auto	0:45	STM		1.0	6	100.0	+50		
7.	Music Finale	Safe	Auto	1:54	STM		1.0	7	100.0	-50		
8.								8	100.0	-50		
Show All		ALL:	Repro	: Input	Auto	Cue PB	:	Safe	Lock	Unlock	Erase	Size: 8

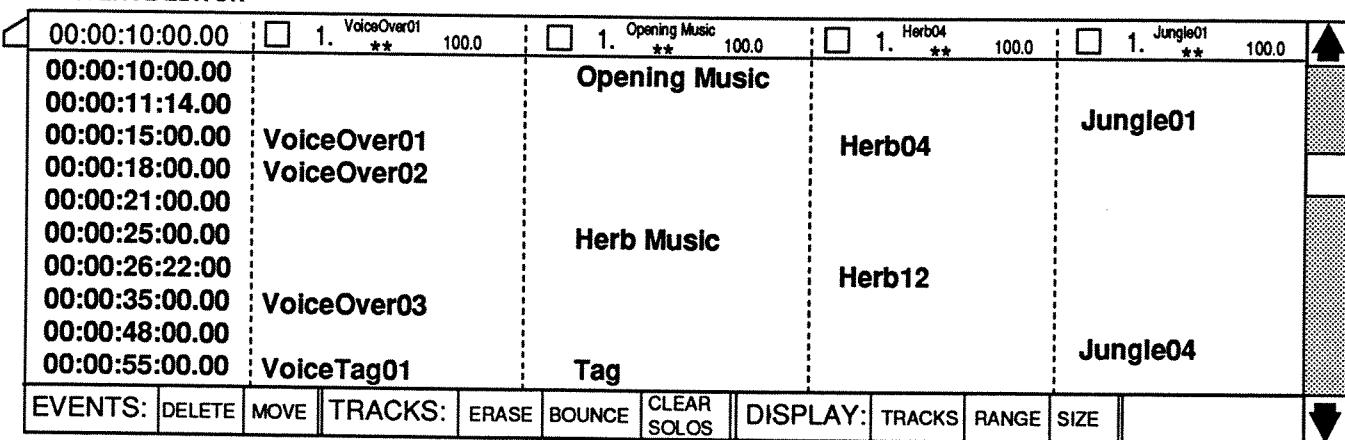
The Sequencer Motion Control panel

SEQUENCER MOTION CONTROL

START	STOP	CONT	REW	FORWD	MIDI RECRD	MIDI PUNCH	MIDI LOCATE	TRACK	DELETE	RENAME	STORE	RECALL	Name:	P
01 11	02 12	03 13	04 14	05 15	06 16	07 17	08 18	09 19	10 20	LOCATOR	STORE	ON/OFF	00:00:00:00:00	

The Sequence Editor panel

SEQUENCE EDITOR



Transferring out from the Audio Event Editor

You are now ready to start the digital transfer.

1. Start recording on the digital tape recorder.
2. Click START on the Sequencer Motion Control panel.

The START button lights. The Direct-to-Disk track or cuelist routed to the digital transfer channel is recorded onto tape.

3. Click STOP on the Sequencer Motion Control panel when you want to stop playback.
4. Stop the tape recorder when you want to stop recording.
5. After completing all digital transfer tasks, click Digital Transfer OFF in the Selection panel to turn off digital transfer.

Setting up to transfer in from the Audio Event Editor

When you transfer in, the Direct-to-Disk records audio sent by a digital tape recorder on two channels. You must set the parameters for each Direct-to-Disk destination track before the transfer can take place.

1. Select the Audio Event Editor from the Main Menu.

The Selection panel appears on the screen.

2. Click the Digital Transfer IN button in the Selection panel to turn on digital transfer.

The IN button lights.

3. Display the Project Manager, the Record Control and the Sequencer Motion Control panels.
4. Click the Show Proj button at the bottom left of the Project Manager if the panel is not in Show Project mode.
5. In the Project Manager, set the following parameters for each destination track.

	Status	Mode	Input source	Input channel
Destination track	READY	Input	DIG	1 or 2

6. Set the Record Control panel's Mode and Trigger switches for the type of recording you want to do. (For more information on setting these switches, see the manual *Audio Editing*.)

Transferring in from the Audio Event Editor

You are now ready to start the digital transfer.

1. Click READY on the Record Control panel.

READY begins blinking.

2. Click RECORD on the Record Control panel.

Recording begins if you are set to Manual Mode in the Record Control panel. (If you are set to Sequencer Mode, recording does not begin until you also click START on the Sequencer Motion Control panel.)

3. Start playing back the tape recorder.

Digital transfer begins. Audio is recorded onto the appropriate Direct-to-Disk track.

4. Stop the tape recorder when you want to stop playback.
5. Click STOP on the Record Control panel when you want to stop recording.
6. After completing all digital transfer tasks, click Digital Transfer OFF in the Selection panel to turn off digital transfer.

The Project Manager

PROJECT MANAGER

Proj 1. Commercial 7/11/88			Start 0:00	End 5:23	Rate 50.0		Unlocked			M	
No.	Track Title	Status	Mode	Used	Input	dB	Out	No.	Vol	Pan	DDT
1.	Announcer 1	Safe	Auto	5:00	STM	1A	1.0	1	100.0	-50	2
2.	Announcer 2	Safe	Auto	4:23	STM	1B	1.0	2	100.0	+50	
3.	Announcer 3	Safe	Auto	4:10	OUT	2	1.0	3	100.0	-50	
4.	Music Intro	Safe	Auto	1:23	TRK	3	1.0	4	100.0	+50	
5.	Music 1	Ready	Input	1:23	DIG	1	1.0	5	100.0	-50	
6.	Music 2	Safe	Auto	0:45	STM		1.0	6	100.0	+50	
7.	Music Finale	Safe	Auto	1:54	STM		1.0	7	100.0	-50	
8.								8	100.0	-50	
Show All		ALL:	Repro	:	Input	:	Auto	:	Cue PB	:	Safe
									Lock		Unlock
									Erase		Size: 8

The Record Control panel

RECORD CONTROL

READY	Mode	Allocate	Trk Start	00:00:00:00.00	<input checked="" type="checkbox"/> Trig Start 00:00:00:00.00
	Trig	Manual	Trk Stop	00:00:00:00.00	
	Rec	Single	Tracks	01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16	
Cue: Take 02				Retake	
			Cfade: 5		

The Sequencer Motion Control panel

SEQUENCER MOTION CONTROL

START	STOP	CONT	REW	FORWD	MIDI RECRD	MIDI PUNCH	MIDI LOCATE	TRACK	DELETE	RENAME	STORE	RECALL	Name:	P
01 11	02 12	03 13	04 14	05 15	06 16	07 17	08 18	09 19	10 20	LOCATOR STORE	<input checked="" type="checkbox"/>	00:00:00:00.00		
										ON/OFF				

The Track Display

Several new features have been added at the top of the Track Display: motion controls, a mark point, a time display and Digital Transfer buttons. (For information on routing from the Track Display, see the sections "Direct-to-Disk outputs" and "Direct-to-Disk inputs." For more information on Digital Transfer and bounce, see the sections "Bounce" and "Digital Transfer.")

The motion controls

At the top left side of the display are six motion control buttons.

START	Begins playback at the beginning of the sequence or at the mark point.
STOP	Click once to stop sequence playback and Direct-to-Disk recording. Click twice to go to the mark point, if set, or to the beginning of the sequence, if mark point is not set.
CONT	Continues sequence playback at the current location.
REW	Click once to rewind the sequence in twice normal speed; press twice for eight times normal speed; click three times for 32 times normal speed.*
FORWD	Click once to fast forward the sequence in twice normal speed; click twice for eight times normal speed; click three times for 32 times normal speed.*
RECORD	Starts recording at the current Direct-to-Disk track location if the sequencer is running. Otherwise, recording starts from the beginning of the track or the current mark point.

To activate a motion control button

- Click on the button.

The button lights and the function is activated.

* When moving forward or backward at speeds greater than twice normal speed, the movement can be slowed by pressing the opposite button. For example, clicking REWIND while moving forward at 32 times normal speed causes the forward movement to drop to 8 times normal speed.

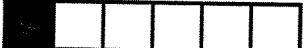
The Track Display

<input type="checkbox"/> RECORD	<input type="checkbox"/> START	<input type="checkbox"/> STOP	<input type="checkbox"/> CONT	<input type="checkbox"/> REW	<input type="checkbox"/> FORWD	<input type="checkbox"/>	SMPTE	OFF	IN	OUT	BOUNCE																																																																																																																																																																																													
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Choosing a time display

At the top middle of the Track Display is a time display which can show sequence time in six formats. You select these times using the horizontal row of boxes directly above the time display.

Each box selects a different time display.

<u>Box</u>	<u>Time Displayed</u>
	Seconds
	Beats
	Measures/Beats
	SMPTE
	Feet:Frames
	Minutes:Seconds

- Click one of the time display boxes.

The box lights. The time format and the display label change.

Activating the mark point

To the left of the time display at the top of the Track Display are two buttons. The triangular button on the left is a Take button. It takes the time in the time display and stores it as the mark point.

- Click the Take button.

The time displayed at the time of the click is stored as the mark point.

The button to the right of the Take button toggles the mark point off and on.

- Click on the box.

The mark point is turned off and on. If the box is lighted, the mark point is on. If the box is unlighted, the mark point is off.

When the mark point is turned on, the sequence plays from the mark point when you click START once or when you click STOP twice.

You cannot see your current mark point until you start the sequence and the mark point appears in the time display.

The Selection panel

The Selection panel now contains a set of Digital Transfer buttons similar to the Digital Transfer buttons in the Track Display.

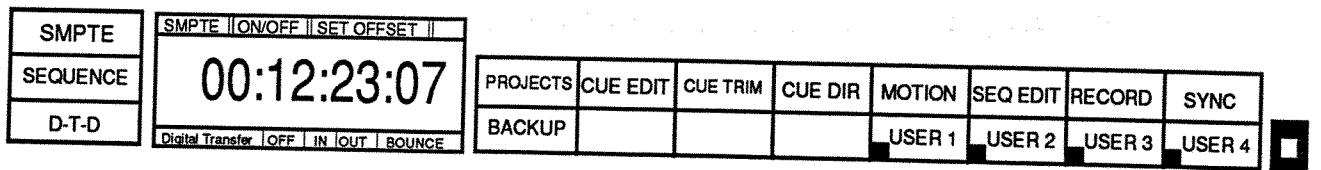
Digital Transfer buttons

There are four new buttons pertaining to digital transfer in the Selection panel.

Button	Use
OFF	Turn digital transfer off.
IN	Transfer digital audio from a Mitsubishi digital tape recorder onto the Direct-to-Disk
OUT	Transfer digital audio from the Direct-to-Disk to a Mitsubishi digital tape recorder.
BOUNCE	Bounce Direct-to-Disk tracks and cue lists to a Direct-to-Disk track.

(For more information, see the sections "Digital transfer" and "Bounce.")

The Selection panel



The Project Manager panel

Several new features have been added to the Project Manager in the Show Project and the Show All mode. In the Show Project mode, the Project Manager now resembles the Track Display, and in many cases duplicates the layout and functionality of that display.

General enhancements to the Show All mode

The Project Manager in the Show All mode displays all tracks and projects available to the system. Several enhancements have been made to the panel.

- The Mod button in the upper right corner of the display now appears as a single M.
- The command Erase Project at the bottom of the panel now appears as Erase. It erases the recorded material on all tracks of a selected project. It does not delete the project.
- The command Erase All at the bottom of the panel erases all recorded material on all projects. It does not delete the project the way the Erase All command on the Project Directory does.
- Scroll arrows for selecting and creating projects have been added at the top left of the panel. (See "Creating a new project.")

The Project Manager in Show All mode

PROJECT MANAGER									
Proj 1. Commercial 7/25/88		Start 0:00		End 5:23		Rate 50.0		Unlocked M	
Commercial 7/25/88		A&E 5/11/88		CBC					
1									
2									
3									
4									
5									
6									
7									
8									
Show Proj		Select Proj		Change Lock				Erase	
								Erase All	

The Project Manager in Show Project mode

PROJECT MANAGER											
Proj 1. Commercial 7/11/88		Start 0:00		End 5:23		Rate 50.0		Unlocked		M	
No.	Track Title	Status	Mode	Used	Input	dB	Out	No.	Vol	Pan	DDT
1.	Announcer 1	Safe	Auto	5:00	STM	1A	1.0	1	1	100.0	-50
2.	Announcer 2	Safe	Auto	4:23	STM	1B	1.0	2	2	100.0	+50
3.	Announcer 3	Safe	Auto	4:10	OUT	2	1.0	3	3	100.0	-50
4.	Music Intro	Safe	Auto	1:23	TRK	3	1.0	4	4	100.0	+50
5.	Music 1	Ready	Auto	1:23	DIG	1	1.0	5	5	100.0	-50
6.	Music 2	Safe	Auto	0:45	STM		1.0	6	6	100.0	+50
7.	Music Finale	Safe	Auto	1:54	STM		1.0	7	7	100.0	-50
8.								8	8		
Show All		ALL: Repro		Input		Auto		Cue PB		Safe	
		Lock		Unlock		Erase		Size: 8			

Creating a new project

The creation of a new project in the Audio Event Editor has been simplified. It can now be done entirely from the Project Manager panel.

1. Select the Audio Event Editor from the Main Menu.

The Selection panel appears on the screen.

2. Display the Project Manager panel.

3. Use the scroll arrows next to the Proj field to scroll to an empty project.

OR

Step the number in the Proj field to an empty project.

The project and track parameters for the new project can now be entered.

General enhancements to the Show Project mode

The Project Manager in the Show Project mode displays all track information for the selected project. The display has been redesigned for greater functionality and several new features have been added. Many of these features are explained in greater detail elsewhere in the documentation.

- The panel is divided into two functional areas. The left two-thirds of the panel relates to track parameters. The right third of the panel pertains to the Direct-to-Disk outputs and digital transfer. (See "Output routing" and the sections "Digital transfer" and "Digital bounce.")
- The Gain column has been changed to **dB**. (See the section "Sample-to-Memory module.")
- The **Input** column now displays the input source, on the left, and the input channel, on the right. (See "Input routing.")
- The new **No.** column lists the Direct-to-Disk outputs in numeric order. (See "Output routing.")
- The new **DDT** column is used for digital transfer between the Direct-to-Disk and a Mitsubishi digital tape recorder on two channels. (See the section "Digital transfer.")
- The command Erase Track has been shortened to **Erase**. Its functionality has not changed.
- Double-clicking the **All** command automatically changes all tracks to the selected track Mode.
- A **Size** command has been added. It changes the number of tracks displayed by the Project Manager. Stepping the numeric column next to the command resizes the entire display.

The Cue Editor panel

The Audio Event Editor's Cue Editor panel has two new features. The shuttle bar can display a waveform representing the current cue for easier editing. The new SLIDE command lets you drag an edit segment to a new location in the cue.

Using the signal display

The **scan bar** (previously called the coarse bar) and the **scrub bar** (previously called the fine bar) are located below the shuttle bar of the Cue Editor panel. These bars operate the same as in the previous release. In addition, each bar now can display an optional **signal display**. This waveform represents the sound you are editing on the shuttle bar. In this mode you can visually locate and play a particular area of audio.

The scan signal display (the top bar) displays a waveform representing the entire shuttle bar. When you recall a different cue, the waveform is redrawn.

The scrub signal display (the bottom bar) can display 0.5, 2.0 or 5.0 seconds of the shuttle bar, centered on the anchor box in the scan bar. Each time you move the anchor box in the scan bar, the scrub signal is redrawn. The number of seconds displayed is selected at the left of the scrub signal display.

- Click the scan bar SHOW WAVE button.

The button lights. The signal display for the entire shuttle bar is displayed. The following message appears.

Calculating wave . . .

- Click the scrub bar SHOW WAVE button.

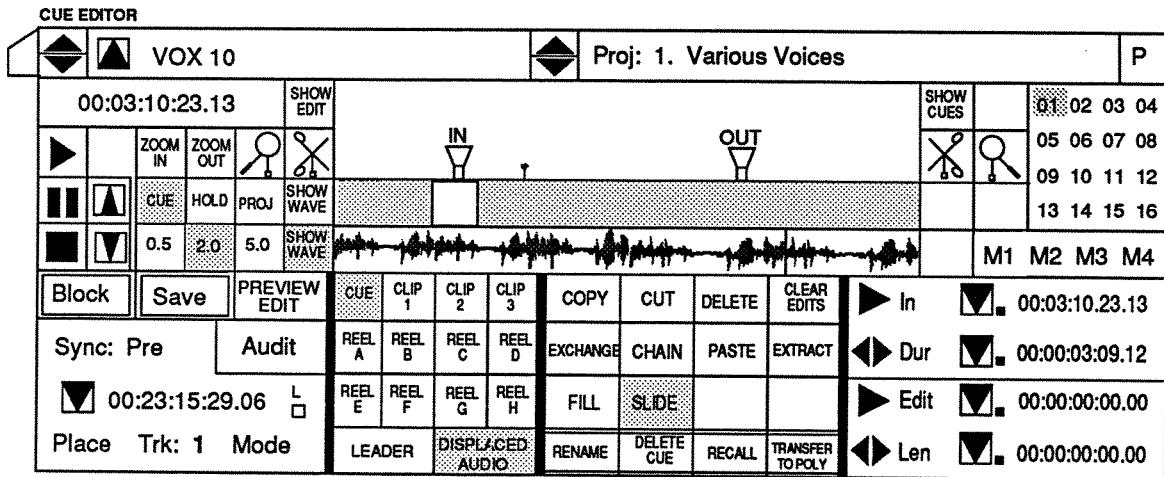
The button lights. The signal displayed represents an area of audio around the anchor box in the scan bar. The selected number of seconds displayed is centered on this anchor box. The following message appears.

Calculating wave . . .

- To turn off the signal display, click either lighted SHOW WAVE button.

The button unlights, and the cross-hatched bar returns with no signal display.

The Cue Editor panel



SLIDE—Dragging edit segments

You can drag an edit segment, the area between the edit points, to a different location in the cue. For example, two words can be nudged together in a dialog edit. The same two words could be slid to a different location in the cue and inserted, without erasing any audio.

Sliding is similar to cutting and pasting. The difference is that when you slide an edit segment, the duration of the cue and its synchronization remain unchanged.

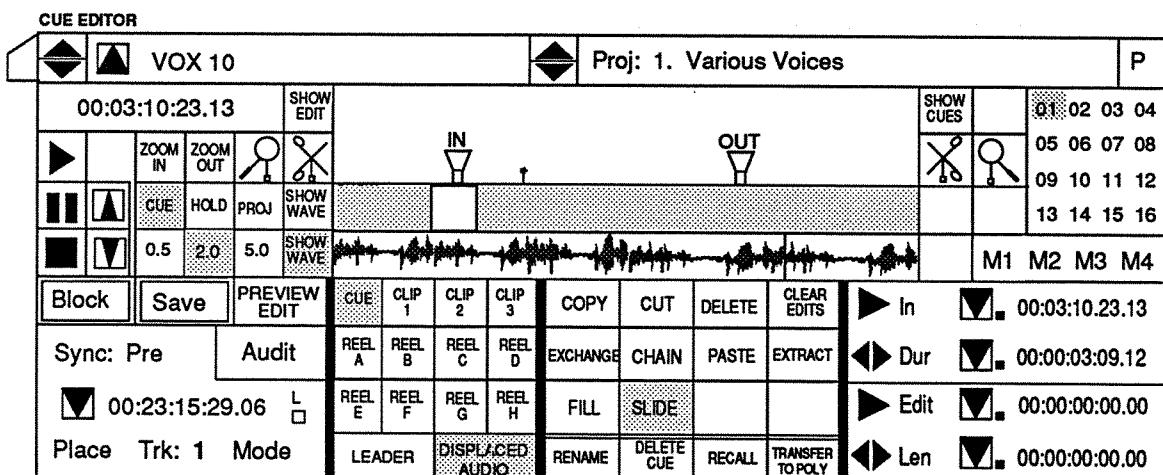
The SLIDE command, located below the signal display of the Cue Editor panel, is used to drag the edit segment.

There are two ways you can slide an edit segment.

Displace Cuts an edit segment from its present location and drags it to a new location where it is pasted in. No audio is erased or replaced.

Fill Drags an edit segment to a new location and replaces the gap left behind with LEADER or the contents of a CLIP or REEL button. The duration of the cue does not change. This is the default SLIDE mode.

The Cue Editor panel



SLIDE—Displacing an edit segment

When you choose to slide an edit segment using the displace mode, no audio is erased. It is only moved. This is similar to a cut and paste function.

1. Select an edit segment on the shuttle bar.
2. Click the SLIDE command.

When you select the SLIDE command, the duration of the cue is automatically frozen while you are sliding. The buttons DISPLACED AUDIO and PREVIEW SLIDE appear next to the LEADER button.

The following message appears.

Click again to SLIDE, and paste with CLIPBOARD 1. [CANCEL]

3. Click the DISPLACED AUDIO button.

The button lights. The following message appears.

Click again to SLIDE, and paste DISPLACED AUDIO. [CANCEL]

4. Drag the edit segment by one of its edit points or boxes to the desired location.

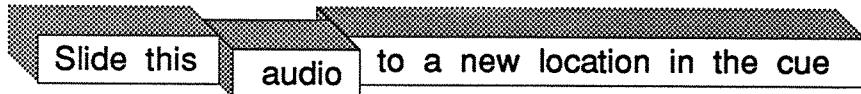
The cue plays in the scrub mode as you drag.

5. When you are satisfied with the edit, click the SLIDE command again.

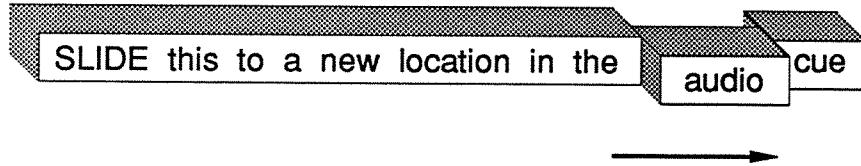
The edit segment is cut from its former location and pasted in at its new location. No audio is deleted. The duration of the cue does not change.

Displacing an edit segment

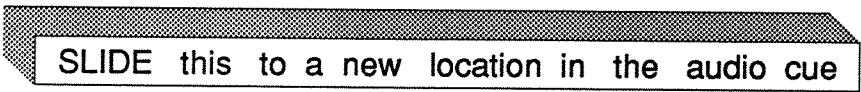
1. Designate an edit segment.



2. SLIDE the edit segment.



3. RESULT: Edited Cue. Cue duration remains unchanged.



SLIDE—Filling an edit

When you slide using the default SLIDE mode, you can fill the gap left behind, after moving the edit segment, with audio from a CLIP or REEL button. In this way, you can slide over words you want to delete, and then fill the gap left behind with room tone or other audio.

1. Select an edit segment on the shuttle bar.
2. Click the SLIDE command.

When you select the SLIDE command, the duration of the cue is automatically frozen while you are sliding.

The following message appears.

Click again to SLIDE, and fill gap with CLIPBOARD 1 [CANCEL]

3. Drag the edit segment by one of its edit points or boxes to the desired location.

The cue plays in the scrub mode as you drag.

4. If you want to fill the gap left behind with something other than the contents of CLIP 1, click on the desired CLIP or REEL button or the LEADER button.

A message appears confirming your selection.

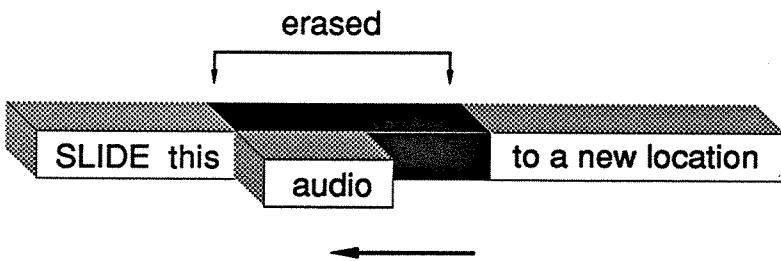
5. When you are satisfied with the edit, click the SLIDE command again.

The audio which the edit segment slid over is erased. The edit segment is placed at the new location and the gap left behind it is filled with the contents of the selected storage button.

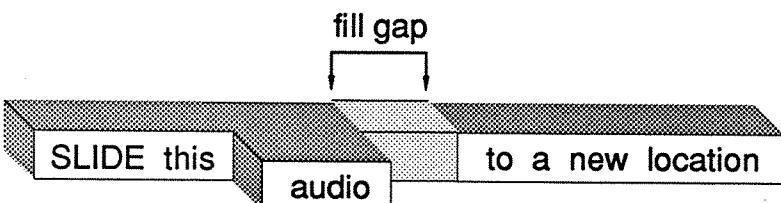
1. Designate an edit segment.



2. SLIDE edit.



3. Fill gap left behind with audio from CLIP 1 or other source.



4. RESULT: Edited cue. Cue duration remains unchanged.



Previewing an edit

You can preview a SLIDE edit before making the actual edit.

1. Select an edit segment on the shuttle bar.
2. Click the SLIDE command.

The PREVIEW SLIDE command appears to the left of the shuttle bar. The following dialog appears.

3. Drag the edit segment to the desired location.
4. Click the PREVIEW EDIT button to the left of the shuttle bar.

Edit flags appear at the potential edit points and the cue plays in its edited form. You cannot move the edit points. You can play the cue by clicking in the shuttle bar or by using the scrub and scan boxes below the shuttle bar.

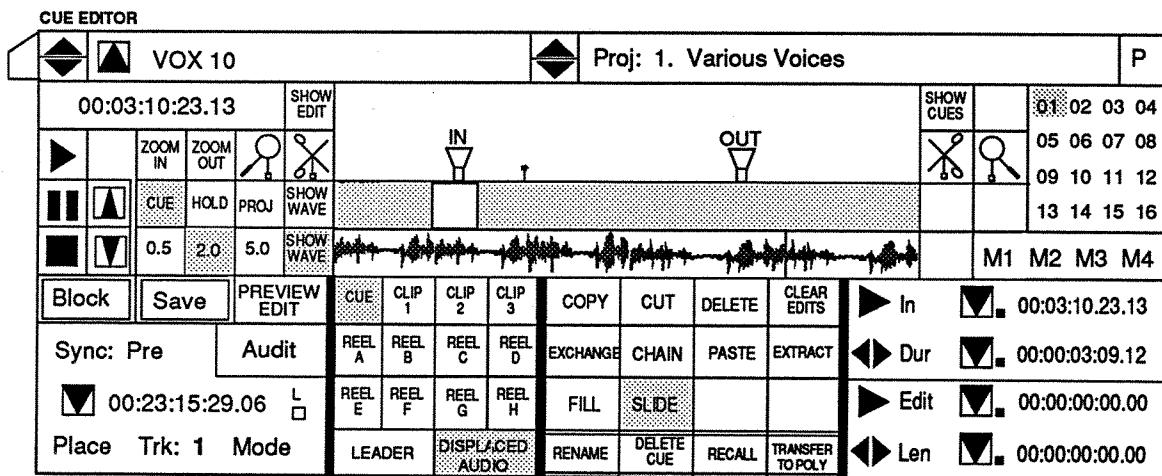
5. If you want to perform additional edits before completing the SLIDE, click the PREVIEW EDIT button again to turn off the preview function.

The edit flags disappear, and the cue can be further edited.

6. Repeat Steps 3–5 until you are satisfied with the edit.
7. Click the SLIDE command again.

The edit is performed.

The Cue Editor panel



Editing and playing cues from the terminal keyboard

Function keys on the terminal keyboard can now be used to automatically select cue and edit times, and to play any portion of a cue. All terminal keyboard commands are given in relation to the new terminal. Old terminal equivalents are given in parentheses.

Locking to a time

Depressing one of the function keys F5–F8 (PF20–PF23) on the terminal keyboard automatically selects, or locks, onto a cue or edit time. (See the table on the opposite page.) Thus, you do not need to click on the actual time or icon to select it.

- Press one of the F5–F8 (PF20–PF23) keys.

The associated time field in the lower right corner of the Cue Editor panel highlights. The shuttle bar lights, with the associated icon highlighted. A message at the bottom of the panel confirms your locked status. The cursor is temporarily disabled.

You can enter a new time, if desired, or press another F5–F8 (PF20–PF23) key to move to a different time field.

When locked to a cue or edit time, you temporarily do not have access to the other operations on the Cue Editor panel.

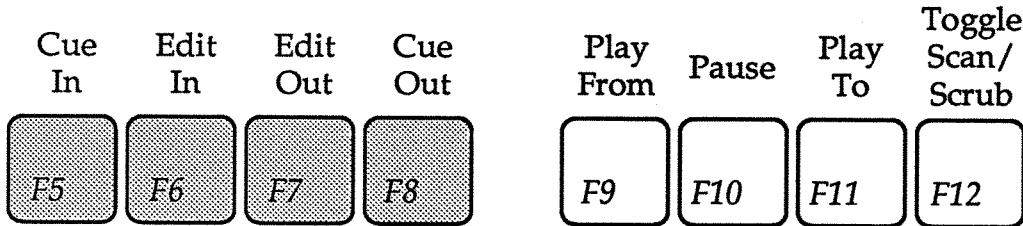
You can toggle the locked status off and on by pressing the currently selected key again.

- Press the currently selected function key again.

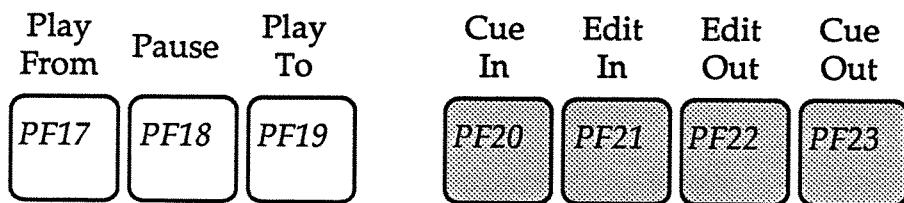
The shuttle bar unlights. The cursor returns to normal operation. You have access to all functions on the Cue Editor panel.

Locking to a time

NEW TERMINAL



OLD TERMINAL



Selecting a cue or edit icon

When locked to a cue or edit time, you can select the icon on the shuttle bar without having to click on the icon.

You use the large or small button on the trackball to automatically select the highlighted icon on the shuttle bar. (For more information on using the trackball buttons, see the sections "Starting the System" and "Using the trackball in the RTP system.")

If you are operating an old terminal, the middle mouse button can be used to select an icon on the shuttle bar.

1. Press one of the F5–F8 (PF20–PF23) keys to lock to a time.

The shuttle bar and cue or edit time field light. A message appears confirming your locked status.

2. Press the large or small trackball button (middle mouse button) to select the cue or edit icon.

The trackball (mouse) selects the highlighted shuttle icon, just as if you had clicked on it.

3. Drag the trackball (mouse).

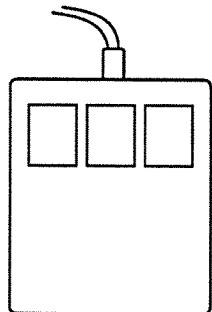
The icon moves with the trackball (mouse) and plays in either scrub or scan mode.

3. Release the trackball (mouse) button.

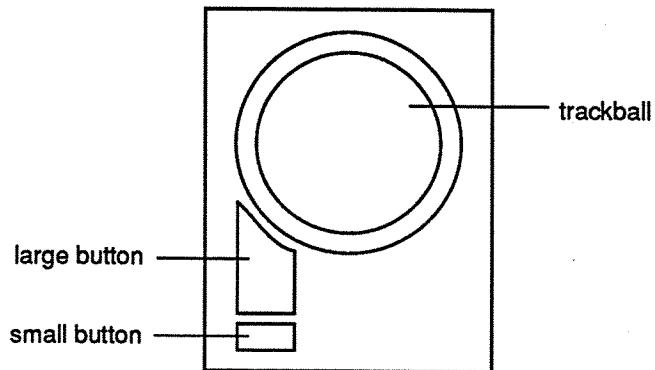
The time field is updated. The icon is released.

There is one exception to the above example. If you select an edit icon that is "parked," when you drag it onto the shuttle bar it first plays in scan mode. This enables you to quickly move the edit icon to the desired location.

Selecting a cue or edit icon



Mouse



Trackball

Keyboard Button Equivalents

New	Old	Time Field	Shuttle Bar Icon
F5	PF20	Cue In	
F6	PF21	Edit In	
F7	PF22	Edit Out	
F8	PF23	Cue Out	

Toggling between scan and scrub mode

You can toggle between the scan or scrub mode using the F12 key. (If you have an old terminal, you can toggle between scan and scrub using the left and right mouse buttons.)

1. Select a cue or edit icon with the trackball.
2. Press F12.

The play mode is toggled between scan and scrub each time you press F12.

You can toggle any of the cue or edit icons to play in scan or scrub mode using the trackball with the F12 key. The icon remains in that mode until you change it.

Toggling between scan and scrub

NEW TERMINAL

Cue In	Edit In	Edit Out	Cue Out	Play From	Pause	Play To	Toggle Scan/ Scrub
F5	F6	F7	F8	F9	F10	F11	F12

Playing the cue

You can use the function keys F9–F11 (PF17–PF19) to play the cue. (See the opposite page for keyboard equivalents.)

Any selected cue or edit time can be played using these function buttons.

Button	Function
Play From	Plays from the selected time.
Play To	Plays to the selected time, starting two seconds before.
Pause	Stops playback. Continues playback.

To play from a time

1. Select the time you want to play from.
2. Press the Play From key F9 (PF17).

The cue plays from the selected time.

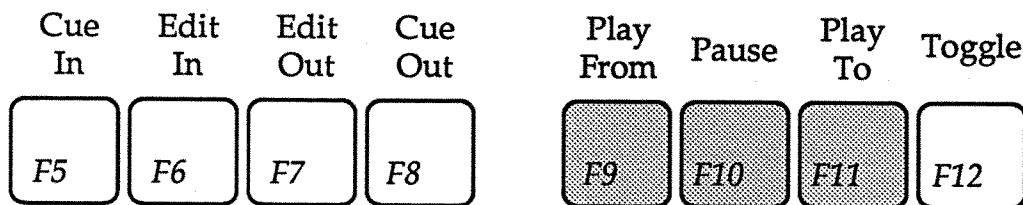
To play to a time

1. Select the time you want to play to.
2. Press the Play To key F11 (PF19).

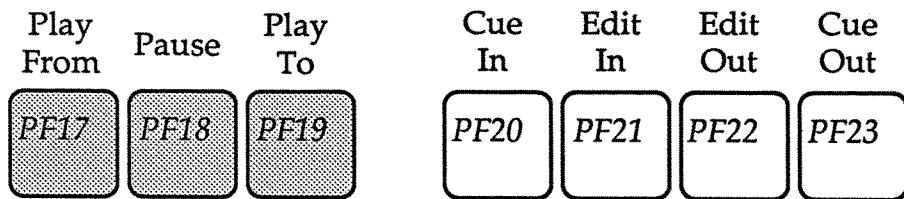
The cue plays to the selected time, starting two seconds before.

Playing a cue or edit

NEW TERMINAL



OLD TERMINAL



Using the Pause key

You can use the Pause key F10 (PF18) at any time to stop or continue cue playback while locked to a time.

1. Select a cue or edit time.
2. Press F9 or F11 (PF17 or PF19).

The cue plays.

2. Press F10 (PF18).
- The cue stops playing.
3. Press F10 (PF18) again.

The cue continues playing from the point at which it was stopped.

You can toggle the Pause key back and forth, stopping and continuing as the cue plays.

If you are dragging the icon when you press the Pause key, you can only stop playback; you cannot use the continue part of its function.

Listening to an edit

You can use the Play From and Play To keys while moving the icon. Thus, you can easily listen to your edits while you are making them.

1. Select a cue or edit icon.

2. Move the trackball (mouse).

The cue plays in your current playback mode as you move the trackball (mouse).

4. Press F9 (PF17).

The cue plays from the current icon position.

5. Press F11 (PF19).

The cue plays up to the icon position, starting a few seconds before.

In this way, you can listen to the edit as you move the icon, without having to release the trackball (mouse) button.

Using the arrow keys to nudge times

The arrow keys on your terminal keyboard can be used to nudge the cue and edit icons. You use the up and down arrow keys to nudge plus or minus ten pixels. You use the right and left arrow keys to nudge plus or minus one pixel.*

1. Select a cue or edit icon.
2. With the button down, or locked, press one of the arrow keys to nudge the icon.

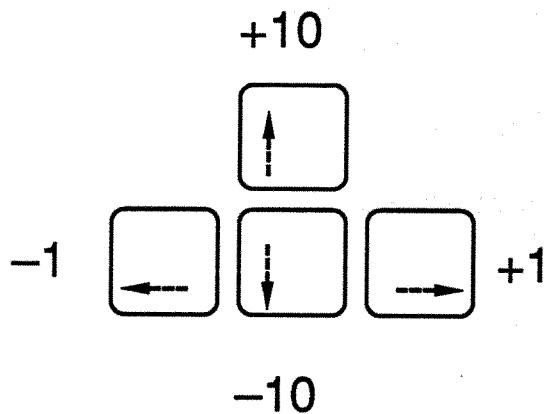
The icon moves the specified number of pixels. You can use any of the keys F9–F11 (PF17–19) to play the cue.

4. Release the icon.

The cue or edit time field is updated.

* The amount of time that a pixel equals varies with the shuttle bar resolution and cue length. A single pixel is approximately equal to less than a frame. Ten pixels are approximately equal to a frame. This feature is currently under development; the use of a pixel for measurement is temporary.

Using the arrow keys to nudge an icon



Remote control units

There are two new remote control units available for the Direct-to-Disk and Synclavier. The Portable Motion Control Unit is a five-button box with motion controls. The Custom Console Control includes hardware for connecting switch inputs to your console.

The Portable Motion Control Unit

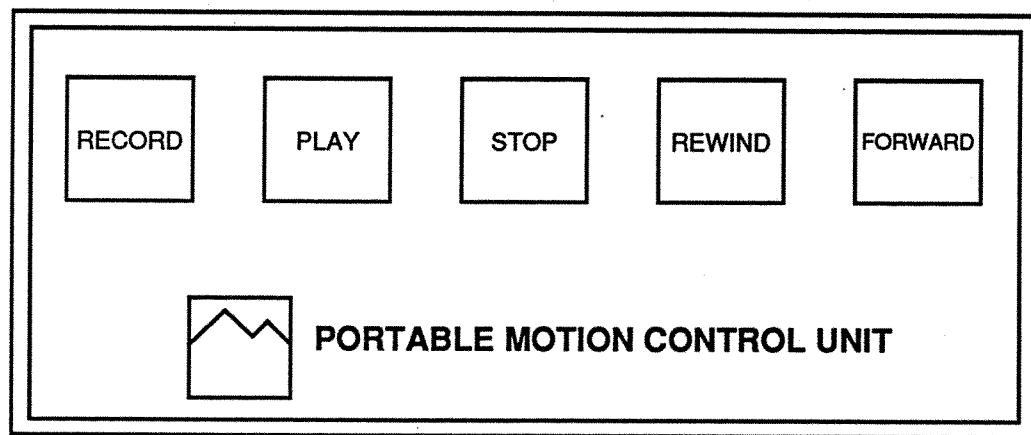
The Portable Motion Control Unit is a small box with five buttons—RECORD, PLAY, STOP, REWIND and FORWARD. You use these to remotely record on Direct-to-Disk tracks and to play back a sequence that contains cues, MIDI information or Synclavier timbres. Their functions are described in more detail below.

PLAY	Begins playback of the sequence at the current location. Acts as a continue button.
STOP	Stops sequence playback and Direct-to-Disk recording.
RECORD	Begins recording at the current Direct-to-Disk track location.
REWIND	Press once to rewind the sequence in twice normal speed; press twice for eight times normal speed; press three times for 32 times normal speed.*
FORWARD	Press once to fast forward the sequence in twice normal speed; press twice for eight times normal speed; press three times for 32 times normal speed.*

Refer to *The Portable Motion Control Unit Installation Manual* for separate installation instructions.

* When moving forward or backward at speeds greater than twice normal speed, the movement can be slowed by pressing the opposite button. For example, pressing REWIND while moving forward at 32 times normal speed causes the forward movement to drop to 8 times normal speed.

The Portable Motion Control Unit



Operating the Portable Motion Control Unit

The Portable Motion Control Unit works when the Track Display or the Audio Event Editor is active.

- Select the Track Display from the Main Menu.

The Track Display opens on the screen. All of the PMCU controls are active, except RECORD. The record function is only active when a sequence is activated.

- Select the Audio Event Editor from the Main Menu.

The Audio Event Editor's Selection panel opens on the screen. All of the PMCU controls are active, except for RECORD. The record function is only active when the Record Control panel is active and the READY button has been clicked.

The Custom Console Control

The Custom Console Control allows you input/output access to the Direct-to-Disk from a film-style recorder panel. The switch inputs are grouped as follows.

- 8 track INPUT/AUTO mode switches
- 8 track SAFE/READY status switches
- 8 RECORD IN switches
- 8 RECORD OUT (STOP) switches
- 8 motion control switches:
MASTER RECORD, MASTER RECORD OUT (MASTER STOP), MASTER INPUT,
MASTER AUTO, PLAY, STOP, REWIND and FAST FORWARD.

Refer to *The Custom Console Control Installation Manual* for separate installation instructions.

Operating the Custom Console Control

The Custom Console Control works when the Track Display or the Audio Event Editor is active.

- Select the Track Display from the Main Menu.

The Track Display opens on the screen. All motion controls are active, except for RECORD. The record function is only active when a sequence is activated.

- Select the Audio Event Editor from the Main Menu.

The Audio Event Editor's Selection panel opens on the screen. All functions are active, except for RECORD. The record function is only active when the Record Control panel is active and the READY button has been clicked.

The Custom Console Control operates the same regardless of whether you are using the Track Display or the Audio Event Editor, except for the exceptions explained above.

The INPUT switch toggles the track mode between INPUT and AUTO. The ARM switch toggles the track status between SAFE and READY. The screen display changes as you toggle between selections.

The basic motion control functions (MASTER INPUT, MASTER OUTPUT, PLAY, STOP, REWIND and FAST FORWARD) operate in a straightforward manner. The individual record buttons as well as the MASTER RECORD and MASTER RECORD OUT (MASTER STOP) buttons only function when a sequence is activated. The PLAY button functions as continue, causing the system to start playing forward from its current position.

A locate feature can be activated.

1. Press and hold the STOP button.
2. Press the PLAY button.

The system locates to either the start of the track or the currently selected mark start position.