Modifying sound files

SA-03-0988

Overview

A sound file can be modified in a variety of ways using commands from the Modify menu of the Sound File Editor.

Overview of Modify commands

All commands which modify a sound file are selected from the Modify menu.

Cutting and pasting commands include CUT, COPY, PASTE, FILL and CROSSFADE. You use them to piece sounds together in various ways and crossfade one segment gradually into the next.

You can create **subsets of sound files** using the EXTRACT and DELETE commands.

Looping commands, LOOP and REVERSE LOOP, make it possible to play a sound file as long as necessary regardless of its length.

Technical adjustments are made using the commands NORMALIZE, VOLUME, DC TRIM and INVERT. You use them to control the volume and phase of a sound file and clean up signal abnormalities.

Mono and stereo modification commands, COMBINE, EXCHANGE and EXT MONO, are used to create stereo from mono or mono from stereo.

Sound modifications commands, MIX and REVERSE, allow you to change the sound itself.

Note: When using a modify operation on a sound file section which includes play markers or other labels, the markers and labels are preserved after the operation has been performed.

A) Display	D) Reverse	H) Delete	L) Crossfade	P) Volume	T) Mix
B) Modify	E) Cut	I) Exchange	M) Copy	Q) Normalize	U) Undo
C) Store/Recall	F) Paste	J) Combine	N) Fill	R) Modulate	V) Invert
X) Modify II	G) Extract	K) Ext Mono	O) Loop	S) Rev Loop	W) DC Trim

Overview (con't)

Entering edit information from the terminal

When you select some commands, a message appears prompting you to enter more information. Some messages prompt you for time values. Some require words and others require numerical values. You can use the terminal to enter a valid response.

1. Type the appropriate response. If the message prompts you for more than one value or word, separate them by a comma.

   You may enter time values in seconds, existing labels or any combination of times and labels, as shown on the following page.

2. Press Return.

   The command is executed.

message	response
Enter begin, end, and crossfade times for loop=>	3.02,3.14,0.01
Enter begin, end, crossfade times or use the mouse to copy=>	#,$,0.02
Enter begin, end, crossfade times or use the mouse to copy=>	$,4.23,0.04
Enter name of file and number of copies to paste=>	testfile,3

Overview (con't)

Entering edit times with the trackball

When using the CUT, PASTE, EXTRACT, DELETE , COPY, FILL, LOOP and REVERSE LOOP commands, actual time values must be entered to select edit locations. You can use the trackball to enter these time values.

1. Drag the sound file cursor to the desired edit location.

   The sound file plays as you drag the cursor.

   The time corresponding to the sound file cursor location is entered as the edit time. Commands that require only one edit time are executed.

   If a second edit time is required, a vertical dotted line appears at the cursor location.

2. If the command requires a beginning and ending edit time, repeat step 1 to enter the second time.

You also can use the trackball to enter time values without listening to the sound file.

1. Roll the trackball until its cursor is on the desired edit location.

2. Click the large trackball button.

   The sound file cursor moves to the selected edit location, and the corresponding time is entered as the edit time.

The edit buffer

The edit buffer is a temporary area in poly memory into which a portion of a sound file is automatically placed when using either the CUT or COPY commands. The contents of the edit buffer can be inserted or placed in a sound file using the PASTE or FILL commands. The edit buffer is actually a sound file named **.editbuf** which you can recall to the Sound File Editor using the RECALL command. It cannot be edited unless it is renamed.

If there is no edit buffer file in memory when you use the CUT or COPY command, a new one is created. Each time you use the CUT or COPY command, the edit buffer is overwritten. Be sure to save its contents if needed.

Overview (con't)

CROSSFADE—*Setting the default crossfade time*

Some of the Modify commands cause parts of sound files to be spliced. A **crossfade** allows a smooth transition between the parts of the sound file that are spliced, making one portion fade into the other.

The current default crossfade time is displayed in the upper left corner of the Sound File Editor. You can change this default by using the CROSSFADE command. The minimum allowable crossfade time, 0 milliseconds, is a butt splice. The maximum crossfade time is 65,535 milliseconds (65.535 seconds). If one of the sound file sections being spliced is shorter than the set crossfade time, a shorter crossfade is created automatically.

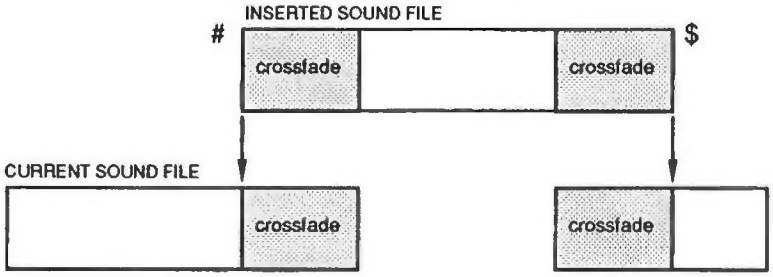
When using the CUT, COPY, EXTRACT, DELETE, LOOP or REVERSE LOOP command, a message prompts you to specify crossfade times. You can use the default crossfade time by following this instruction.

- Press Return instead of entering crossfade time values.

You can designate different crossfade times for the beginning and ending of a CUT, COPY or EXTRACT operation.

- Enter the two different crossfade times separated by a comma, as described in the section "Entering edit times from the terminal." If you enter only a beginning crossfade time, it will be used for both the beginning and ending crossfade time.

Inserting crossfades



Cutting and pasting

CUT—Cutting a portion of sound file to the edit buffer

You can remove a section of sound from the current file and place it in the edit buffer.

1. Determine the start and end points for the cut.

   The most accurate method is to set start and end points using the MARK START and MARK END commands selected from the Display menu. After labeling the start and end points, you may want to listen to the selected portion of the sound file before performing the cut.

2. Select the CUT command from the Modify menu.

   The menu is replaced by a prompt.

   ```
   Enter begin and end times or use the mouse to cut =>
   ```

3. Enter the start, end and crossfade times, as explained in the section "Overview." If no crossfade time is entered, the current crossfade setting is used.

   The marked portion is deleted from the current sound file and placed in the edit buffer. A new current file is created in which the remaining sections of the current sound file are spliced together. The original file remains intact in poly memory.

The edit buffer file can then be pasted into the current file or another file using the PASTE command, or can be recalled as the current file.

COPY—Copying a portion of a sound file into the edit buffer

You can copy a defined section of the current sound file and place it in the buffer file. The original file is left intact.

1. Determine the start and end points for the portion to be copied.

   The most accurate method is to set start and end points using the MARK START and MARK END commands selected from the Display menu. After labeling the start and end points, you may want to listen to the selected portion of the sound file before performing the copy.

2. Select the COPY command from the Modify menu.

   The menu is replaced by a prompt.

   ```
   Enter begin and end times or use the mouse to copy =>
   ```

3. Enter the start, end and crossfade times, as explained in the section "Overview." If no crossfade time is entered, the current crossfade setting is used.

   The marked portion is copied into the edit buffer. The original file remains intact.

The edit buffer file can then be pasted into the current file or another file using the PASTE command, or can be recalled as the current file.

Cutting and pasting (con't)

PASTE—Inserting a sound file into the current file

You can insert any sound file from disk or memory at the cursor position of the current sound file with a crossfade at either end of the insertion.

1. Move the cursor to the point at which you want to paste the file.

2. Select the PASTE command from the Modify menu.

   The menu is replaced by a prompt.

   ```
   Enter name of file and number of copies to paste =>
   ```

3. Press Return twice to insert the contents of the edit buffer, or enter the name of the sound file to be inserted and press Return, or enter the name of the sound file and a number between 2 and 999.

   For example, type **drum,3** to paste three copies of the sound file named drum, or type **drum** to paste only one copy.

   A new current sound file is created. Any number you typed determines how many times the pasted file is inserted. A crossfade is performed at each insertion point. The original sound file remains intact in poly memory.

Note: To paste more than one copy of the edit buffer, type **.editbuffer,** and the number of copies desired.

FILL—Replacing a portion of a sound file

You can replace a section of the current sound file with the contents of any file on disk or in poly memory.

1. Determine the start and end points for the fill.

   The most accurate method is to set start and end points using the MARK START and MARK END commands selected from the Display menu. After labeling the start and end points, you may want to listen to the selected portion of the sound file before performing the fill.

2. Select the FILL command from the Modify menu.

   The menu is replaced by a prompt.

   ```
   Enter begin and end times and name of sound file
   for fill =>
   ```

3. Enter the start, end and crossfade times, as explained in the section "Overview." If no crossfade time is entered, the current crossfade setting is used. Instead of typing the name of a file, you can press Return to use the current contents of the edit buffer.

   A new current file is created in which the portion of the sound file between the two edit points is replaced with the contents of the specified file. A crossfade is performed at each end of the overwrite. The original file remains intact.

Extracting and deleting

EXTRACT—Extracting a portion of a sound file

You can create a new sound file which contains only the samples between specified points of the current sound file.

1. Determine the start and end points for the extract.

   The most accurate method is to use the MARK START and MARK END commands selected from the Display menu. After labeling the start and end points, you may want to listen to the selected portion of the sound file before performing the extract.

2. Select the EXTRACT command from the Modify menu.

   The menu is replaced by a prompt.

   ```
   Enter begin, end, crossfade times or use the mouse to
   extract =>
   ```

3. Enter the start, end and crossfade times, as explained in the section "Overview." If no crossfade time is entered, the current crossfade setting is used.

   A new sound file containing only the extracted portion is created.

DELETE—Deleting a portion of a sound file

You can create a new sound file from which the samples between specified points of the current sound file have been removed.

1. Determine the start and end points for the delete.

   The most accurate method is to use the MARK START and MARK END commands selected from the Display menu. After labeling the start and end points, you may want to listen to the selected portion of the sound file before performing the delete.

2. Select the DELETE command from the Modify menu.

   The menu disappears and a prompt appears:

   ```
   Enter begin, end, crossfade times or use the mouse to
   delete =>
   ```

3. Enter the start, end and crossfade times, as explained in the section "Overview." If no crossfade time is entered, the current crossfade setting is used.

   A new sound file is created in which the marked portion is deleted from the current sound file and the remaining portions are spliced together.

LOOP—Crossfade looping

Normally, if you hold down a key for longer than the original length of a sound file, the sound stops. When you place a loop on a sound file, the looped section is repeated over and over, and the note is sustained for as long as the key is held.

A **crossfade loop** fades the end of one looped section into the beginning of the next, and reduces the likelihood of hearing the splice point.

Complex sounds, such as string sections or piano, are effectively looped using the crossfade loop. Keyboard looping is more effective for sounds with a fairly even harmonic structure. See the section "Keyboard looping" for details.

LOOP—Crossfade looping (con't)

Use the LOOP command, selected from the Modify menu, to create a new sound file which contains a crossfade loop.

1. Determine the start and end points for the loop.

   You may want to use the SEARCH command to find similar voltages for both ends of the loop.

2. Select the LOOP command from the Modify menu.

   The menu is replaced by a prompt.

   ```
   Enter begin, end, and crossfade times for loop =>
   ```

3. Enter the start, end and crossfade times, as explained in the section "Overview." If no crossfade time is entered, the current crossfade setting is used.

   A new file is created which contains a crossfade loop using the specified parameters. When a key is pressed, the sound file plays to the specified end point and loops to the specified begin point.

Reverse loop—*Creating a reverse loop*

A reverse loop which plays backward and forward between two selected points can sometimes eliminate the need for a long crossfade or for careful location of loop points. In some sound files, clicks caused by level changes, and "pings" caused by harmonic structure changes can be eliminated.

1. Select REV LOOP from the Modify menu.

   The menu disappears and a prompt appears:

   ```
   Enter begin, end and crossfade times for reverse loop=>
   ```

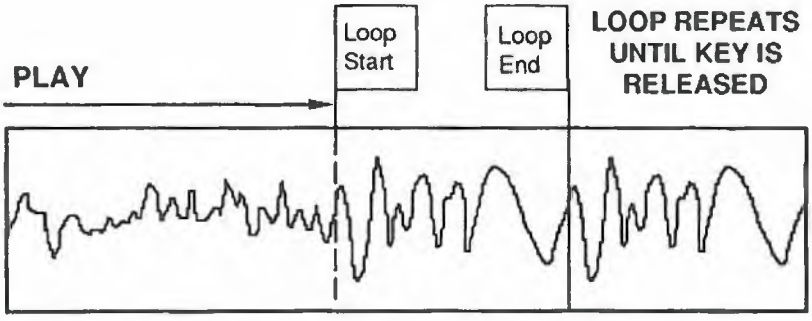
2. Enter the start, end and crossfade times, as explained in the section "Overview." If no crossfade time is entered, the current crossfade setting is used.

   A message appears at the bottom of the screen.

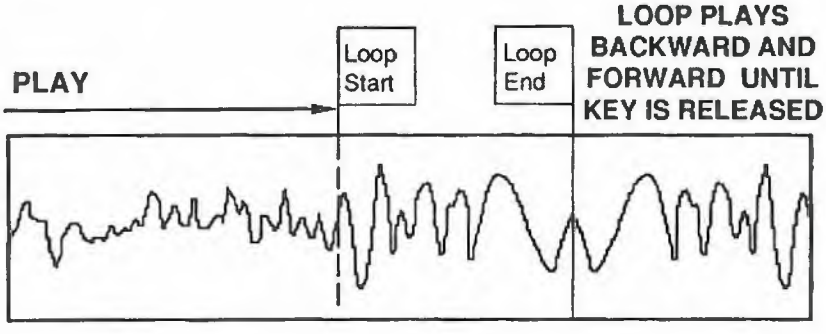
   ```
   Reverse Looping sound file...
   ```

   A new file is created beginning at the start of the current sound file and ending at the end loop point.

When you press a key, the sound file plays to the selected end time and then plays backward and forward between the selected start and end times.



A loop in a sound file



A reverse loop in a sound file

NORMALIZE—*Normalizing the level of a sound file*

You can scale the volume of the current sound file so that the highest signal level in the sound file is placed at full scale (5 volts).

- Select the NORMALIZE command from the Modify menu.

  A message appears at the bottom of the screen.

  Normalizing the volume...

  When the message disappears, the highest signal level in the current sound file is 5 volts.

VOLUME—Volume scaling

The VOLUME command, selected from the Modify menu, allows you to change the volume of a sound file. You increase the volume by entering a value between one and thirty. You decrease the volume by entering a number between zero and one.

The volume scaling factor is a direct multiplier, as shown in the table below.

factor	volume change	dB
0.5	one-half	-6
2	double	+6
3	triple	+10
10	ten times	+20

Follow these instructions to scale the volume of a sound file.

1. Select the VOLUME command from the Modify menu.

   The menu is replaced by a prompt.

   ```
   Enter a volume scale factor between 0.000 and
   30.000 =>
   ```

2. Enter the factor desired.

DC TRIM—Removing a DC component from a sound file

A DC offset is a displacement of the sound wave center above or below 0 volts, caused by a DC component added to the recorded signal.

You can remove a DC component from a sound file.

- Select the DC TRIM command from the Modify menu.

  A message appears at the bottom of the screen.

  Trimming DC from sound file...

  When the message disappears, any DC component in the current sound file has been removed.

INVERT—Inverting the phase of a sound file

You can invert the phase of the current sound file. Each positive voltage becomes negative, and each negative voltage becomes positive.

- Select the INVERT command from the Modify menu.

  A message appears at the bottom of the screen.

  Inverting sound file...

  When the message disappears, the phase of the sound file is inverted.

Mono and stereo modification

COMBINE—Combining sound files

You can create a stereo sound file from two mono sound files, provided that the mono sound files have identical sampling rates. One of the sound files must be the current sound file.

1. Recall one of the sound files you want to combine.

   It becomes the current sound file.

2. Select COMBINE from the Modify menu.

   The menu is replaced by a prompt.

   ```
   Enter name of sound file to combine with current file =>
   ```

3. Enter the name of the sound file to be combined with the current file.

   You can place the current sound file on both channels, or you can place the current sound file on one channel and another sound file on the other channel, as shown on the following page.

entry	result
, (comma)	places the current file on both channels.
,file004	places the current file on the left, file004 on the right.
file004,	places file004 on the left, the current file on the right.

Mono and stereo modification (con't)

EXCHANGE—Exchanging sound files

You can reverse the left and right channels of a stereo sound file.

- Select the EXCHANGE command from the Modify menu.

  The left and right channels of the sound file are reversed.

EXT MONO—Creating mono sound files from stereo sound files

You can create a mono sound file from either the right or left channel of a stereo sound file.

1. Select the EXTRACT MONO command from the Modify menu.

   The menu is replaced by a prompt.

   ```
   Extract left or right channel for mono sound file =>
   ```

2. Type the letter l to extract the left channel or the letter r to extract the right channel, and press Return.

   A new sound file is created containing the selected half of the original sound file.

MIX—Mixing sound files

You can mix sound files digitally provided they have the same sampling rate. When you mix two sound files, you specify the volume relationship (mix ratio) between the current file and the specified file. For example, if you enter a mix ratio of two, the volume of the specified file is twice the volume (6 dB higher) of the current file when they are mixed.

Follow these instructions to mix a sound file with the current sound file.

1. Recall one of the sound files you want to mix.

   It becomes the current sound file.

2. Select the MIX command from the Modify menu.

   The menu is replaced by a prompt.

   ```
   Enter sound file name and mix ratio between
   0.00 and 30.000=>
   ```

3. Enter the name of the sound file to be mixed with the current file, and the mix ratio.

   The specified sound file is mixed with the current sound file at the specified volume ratio.

REVERSE—Reversing a sound file

You can reverse a sound file so that it plays backward. That is, the series of samples which make up the sound file are played from the end rather than the beginning.

1. Select the REVERSE command.

   This message appears at the bottom of the screen while the sound file is being reversed and the screen is being redrawn.

   Reversing Sound File . . .

2. Press a key on the keyboard to hear the reversed sound file.

Summary

Modify commands

command	function
J) COMBINE	Creates a stereo sound file from two mono sound files.
M) COPY	Copies a specified portion of a sound file to a buffer file.
L) CROSSFADE	Specifies a default crossfade time to be used with all edit commands.
E) CUT	Cuts a defined portion of the sound file and places it in a buffer file.
W) DC TRIM	Removes DC voltage (offset) from a sound file.
H) DELETE	Deletes a specified portion of a sound file.
I) EXCHANGE	Exchanges the right and left channels of a stereo sound file.
K) EXT MONO	Creates a mono sound file from one channel of a stereo sound file.
G) EXTRACT	Creates a new sound file from a specified portion of the current sound file.

(con't next page)