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Basic Computer Operation

Introduction

This section covers the operation of all the standard features of the SSL Studio Computer. It assumes familiarity with the material discussed in Getting Started and also that you have already named and loaded a REEL from your formatted Data Cartridge or floppy Reel disc.

Using Timecode

The system has a range of sophisticated tape control facilities which can locate the tape accurately, control drop-ins, mark cues, etc. To operate with precision, timecode must be recorded onto a tape track. The system will work without a timecode track provided that a suitable tach output is connected from the tape deck. However it is recommended that timecode should always be used, to ensure maximum accuracy in tape control and storage of mix data.

If your tape requires striping, or if you are not familiar with timecode use, refer to Appendix II - Using Timecode.

As the tape is played for the first time, the computer detects the timecode signal and indicates the type of timecode by displaying EBU, SMPTE, DF TC (drop-frame), or FILM in the status box. The Setup Menu defines the type of timecode the system should expect and if incorrect, the status display first shows the type of code expected in flashing upper case letters and then what is being received in lower case. The system must then be set correctly in the Setup Menu, see Appendix I.

If the timecode type display is followed by a ? it indicates that the speed set on the LIST (Information) page is incorrect. An * indicates an absence of tach pulse. The timecode marker flickers when dropouts in the timecode track are encountered. Where a Synchroniser System is installed, ????? indicates that the synchroniser is not responding.
Once timecode has been read by the computer, the position of the tape is displayed in the Status box in hours:minutes:seconds.frames.

![Figure 1]

**Setting an Offset**

An offset can be defined so that the timecode stored on the REEL can appear to start from any convenient value. Timecode is read from the tape, the offset is subtracted and the result stored on the REEL.

The command line is:

```
OFF _ TIME EX  (the space after OFF is essential)
```

- e.g. `OFF _ 2:20:10 EX` (sets an offset of 2 hours, 20 minutes, 10 seconds)

- or `OFF HERE EX` 'zeros' the timecode at this point

- and `OFF TITLE EX` starts the TITLE at 00:00:00.00

To cancel the offset, type:

```
OFF _:  (the space after OFF is essential)
```
Titles

Having loaded a REEL, information relating to CUES, MIXES etc. are all stored under named TITLES.

Each TITLE is assigned a start and end time which relates to the associated tape position of a particular song or film scene etc. The end time need not be specified until the basic recording is complete and if a start time is not specified, the current tape position is assumed. To store a TITLE, the command line can be made up from:

```
NAME TITLE (Name) ((FROM TIME (TO TIME)) EX
```

If the TITLE name is not specified, it is automatically numbered (refer to the Cue Points section for an explanation of the auto-numbering system).

As each TITLE is named, it is entered into the TITLE List along with the current time and date. Having named a TITLE, or mentioned a TITLE name in a command line (apart from COPY commands), the system always assumes that you are working on that current TITLE. Hence, any information listed relates to the current TITLE only.

Naming a TITLE creates blank directory lists for CUES, TRACKS, MIXES, etc. so as entries are made in these lists, no more additional data storage space is used. However, each of these directories is a finite size and will be filled more quickly when many items with long names are stored. Should a specific directory be full, attempts at further entries will not succeed. NO ROOM IN DIRECTORY will be displayed and space must now be made available either by deleting items in the bulging directory or by creating an 'overflow' TITLE with its own directories.

Changing the Title Details

All the TITLE details can be altered, for example:

To alter the start time:

```
TITLE (Name) FROM 4:56 EX
```

```
TITLE FROM HERE EX
```
To alter the end time:

```
TITLE TO TIME EX  or  TITLE END 10063219 EX
```

TITLE END EX clears the title end time

Note: HERE defines the time as the current tape position when a command is entered with the EXECUTE key.

To alter the name of the TITLE, type:

```
TITLE Name NAME New Name EX
```

```
#
# List title
#
```

<table>
<thead>
<tr>
<th>client: AARDVARK ASSOCIATES</th>
<th>reel: SEAN.F</th>
</tr>
</thead>
<tbody>
<tr>
<td>title</td>
<td>from</td>
</tr>
<tr>
<td>GROOVE THAT DUDE</td>
<td>12:40:00.00</td>
</tr>
<tr>
<td>FAST MUZAK</td>
<td>12:48:00.00</td>
</tr>
</tbody>
</table>

```
12:42:28.22
```

Listing Titles

To list the TITLES, type: (LIST) TITLE EX

A list of titles will appear on the screen with their start and end times. To view the time/date information press the ↓ key, to return to the first page use the ↑ key.
Selecting A Title

To make a TITLE the current TITLE it has to be named in a command line e.g.

- TITLE SONG EX makes SONG the current TITLE
- GOTO TITLE 2 EX locates the tape at the start of TITLE 2 and makes it current

Using Autolocation Commands

Before the computer can assume control of the tape deck, the TAPE ENABLE function must be activated by pressing the TAPE ENABLE button located on the main keyboard panel. Whenever the tape machine is under computer control, the Status box will display the relevant type of control, LOCATING, CYCLING, RECORDING etc.

GOTO Commands

The GOTO command locates the tape to a specified point. The target timecode can be specified using a timecode value, or any stored item that has a timecode value such as a Title or Cue.

- GOTO TITLE EX locates the tape to the start of the TITLE plus preroll. (The Setup Menu, see Appendix I, allows you to define a preroll time so that the tape locates to a point before the target).

To locate to the end of the TITLE, type:

- GOTO END TITLE EX

The status box displays LOCATING while the tape is being spooled to the new position and the tape target time is indicated in the Command line box. For example: Going to 5:12:15

If the timecode value is not specified, as in GOTO EX, the system assumes you mean the last specified target point.
The HERE Key

The command line: HERE EX
marks a volatile timecode value without permanently storing it. This can be very useful, especially when mixing. To return to the mark, type:

GOTO EX or PLAY EX

The ? Key

The ? key can be used to capture a timecode value on the fly, e.g.

? HERE EX

The timecode value as the EXECUTE key is pressed, is displayed in the Command box. (The value is only displayed, not recorded).

It is also used to obtain full timecodes including the frame value for Titles and Mixes. (Frame values are not shown in their List pages).

? TITLE EX displays the Title start time

? END TITLE EX displays the Title end time

The ? key can also be used in timecode calculations:

? END TITLE - TITLE EX will display the length of the current title.

Entering Timecode Values

Timecode values can be entered in two basic formats.

Either hours : minutes : seconds . frames (with : and . where appropriate)

  e.g.  GOTO 00:04:34.00 EX

or without : and . as in

  GOTO 00043400 EX (all 8 digits must be entered in this case)
Timecode entries can be shortened by omitting leading and padding zeros:

.18  18 frames only  
34.  for 0 minutes 34 seconds 0 frames  
4:   for 4 minutes 0 seconds 0 frames  
4::  for 4 hours 0 minutes 0 seconds 0 frames

e.g.  GOTO 4:34 EX

PLAY Commands

The PLAY command locates the tape and the transport automatically goes into play as soon as the target is reached. PLAYING is displayed in the Status box.

PLAY EX  plays from the last specified target time

PLAY TITLE EX  plays from start of Title and stops at the end

PLAY (FROM) 4:34 EX  plays on forever from 4:34, until either manual control is resumed or another locate command is given

PLAY (FROM) TITLE TO 34: EX  plays from start of Title to 34 minutes

Having specified a target value with a locate command, the system will default to that target when an autolocate command is issued without a specified time.

As explained earlier, HERE EX can be entered as the tape is played to mark a temporary target.

CYCLE Commands

The CYCLE command locates the tape to the start time, plays to the end time and then locates the tape back to the start and repeats the cycle until another locate command is entered or the transport keys are operated. CYCLING is displayed in the Status box.
Start and end times are specified with the FROM and TO keys:

\[
\text{CYCLE (FROM ) TITLE TO 50. EX} \\
\text{CYCLE (FROM) 34. TO 3: EX}
\]

When a locate command has been issued with a start \textit{and} end target time, eg:

\[
\text{PLAY ( FROM ) CUE 1 TO END TITLE EX}
\]

These times are temporarily stored as with a cycle command such as:

\[
\text{CYCLE TITLE EX}
\]

The cycle may be initiated or continued at any time by typing:

\[
\text{PLAY CYCLE EX}
\]

If the current tape position is not within the stored times, this command will locate the tape and perform the cycle. Should the tape play be interrupted within the cycle times, the command will play the tape from its current position to the cycle end time and the cycle will be resumed.

To cycle between the last earlier specified target, and the current tape position, type:

\[
\text{CYCLE EX}
\]

\section*{Using the + And - Keys}

The + and - keys allow calculations to be carried out on timecode values and are also used to initiate instant tape locates:

\[
\text{GOTO HERE + 2: EX} \quad \text{rolls forward 2 minutes and parks} \\
\text{PLAY END TITLE - 3: EX} \quad \text{locates to 3 minutes before the end of the title and plays}
\]

When used on their own to perform an instant locate, the default + (spin forward) and - (rollback) times are as defined in the Setup Menu (see Appendix I):

\[
\text{+ EX} \quad \text{winds forwards by default time and plays} \\
\text{- EX} \quad \text{rolls back by default time and plays}
\]
- CYCLE EX rolls back by default time and cycles between there and tape position at the time of the command.

By specifying a new time, the + and - keys are effectively re-programmed independently with the new time:

+ 5. EX re-programs + time,
- 10. EX re-programs - time.

Re-programming the default times is also achieved in conjunction with a locate command:

+ 1: GOTO EX forwards by 1 minute. Resets the + value
then + GOTO EX forwards 1 minute again
- 20. CYCLE EX rolls back by 20 seconds and cycles between there and tape position at time of command. Resets the - value.

Once set in this manner the default times remain until reset. They will revert to the Setup Menu values when the program is reloaded.

CUE Points

So far, it has been explained how to store TITLES for reference and use them to find points on the tape. However, other reference points on the tape associated with the TITLE, called CUES, may be named and used in autolocation commands.

CUES can be created 'on the fly' or off-line by specifying a time using the AT key:

(NAME) CUE CHORUS EX creates a cue called CHORUS at the current tape position

(NAME) CUE VERSE AT TIME EX creates cue VERSE at the specified time
Note that NAME can be omitted when creating a Cue and that if the command line CUE EX is entered, the Cue is automatically stored as: 1*, 2*, 3* etc. with the timecode value at the instant EXECUTE is pressed. The number is incremented as each Cue is named.

It is not wise to enter names as a number with an asterisk from the keyboard, as these cannot be differentiated from automatically generated numbers.

A convenient way of generating numbered Cues is to play the tape and initially type:

CUE EX

Then press REPEAT as the tape arrives at each Cue point.

A list of automatically numbered Cues will be entered which may then be meaningfully renamed.

When naming or renaming Cues, carefully chosen names can save time later when referring to the Cues in locate commands.

With Cues named:

VERSE 1 the computer needs at least V_1, V_2 etc
VERSE 2 to differentiate between them
VERSE 3

but by using:

1 VERSE the computer requires an entry of only 1 or 2, etc to differentiate
2 VERSE
3 VERSE

Changing CUE Names and Times

Cues can be renamed using the following command line. (Please note the syntax)

CUE Name NAME New Name EX

All named items may be renamed in this manner.
Timecode values of Cues can be altered. The command:

\textbf{CUE VERSE TO 4.34 EX} \quad \text{shifts the Cue to the specified point}

The +/- keys can be used to trim the timecode value:

\textbf{CUE VERSE + (or - ) EX} \quad \text{nudges the Cue by 1 frame}

To empirically adjust a Cue frame by frame, use the \texttt{REPEAT} key after the above command. To trim the value by more than one frame, specify the time:

\textbf{CUE VERSE + 1. EX} \quad \text{nudges the Cue forward by 1 second}

Spot-on Cues are very useful when used in mixing and automated drop-ins. The standard runup (preroll) time is combined with autolocate commands using Cue points.

\begin{table}[h]
\begin{tabular}{|c|c|}
\hline
\textbf{at} & \textbf{cue} \\
\hline
12:43:33.21 & 19* \\
12:43:35.12 & 20* \\
12:43:38.24 & 21* \\
12:43:46.03 & 22* \\
12:43:52.17 & \texttt{CHORUS 2} \\
12:44:12.04 & 23* \\
\hline
\end{tabular}
\end{table}
CUE Lists

To list the Cues for the current TITLE, type:

LIST CUE EX lists the page of Cues which includes the current Cue

A finite number of Cues may be stored subject to the length of their names. If all the names are single numbers, there is room for about a hundred. If the names have an average of twelve letters, about fifty may be stored. The overall Cue list will be broken down into a number of pages, subject to the number of Cues.

The \( \leftarrow \rightarrow \) keys can be used to move from page to page of the Cue list. Two options on the List page of the Setup Menu (see Appendix I) affect the Cue list. Cursor Tracking enables a cursor display tracking the last Cue passed and the Reversed Cue Page option puts the timecode column on the left of the page, with the Cue names immediately to the right. Reversed Cue lists make it easier to read off the timecode associated with a given Cue.

Revising CUE Points

Blocks of Cues can be shifted in time and used in a new section of the recording. This feature is particularly useful when:

- The original timecode reference has been changed.
- Changing scenes in film production work.
- Recording another version of a track, but using the same Cues (see also COPY CUE TO TITLE).
- Revising Cues, generated using tach pulses alone, to new timecode

The command line to shift Cues is:

REVISE CUE FROM TIME 1 TO TIME 2 TO TIME 3 EX

The block of Cues is defined by the TIME 1 and TIME 2 timecode values, and the timecode values of the block are shifted such that TIME 1 becomes TIME 3. Having time-shifted the block, the complete list is resorted.

4-14
To shift all Cues, the command would be:

\texttt{REVISE CUE FROM CUE first TO CUE last TO TIME EX}

**Automated Drop-ins**

A single drop-in, consisting of a record-on and record-off time, can be set up either 'on the fly' or off-line. It can be rehearsed on monitor prior to actual recording.

To set up and rehearse the drop-in on the fly, first set the required audio group monitoring. Refer to the \textit{Console Operator's Guide} if you are unfamiliar with the console controls.

- Press the big red \texttt{RECORD} button on the required channel (s)
- check that the \texttt{RECORD ENABLE} key (next to \texttt{TAPE ENABLE}) is \textit{off}
- play the tape, type \texttt{DROP-IN} and press \texttt{EX} at the drop-in time
- press \texttt{EX} again at the drop-out time

To re-rehearse the drop-in again, check that the \texttt{RECORD ENABLE} button is off and type:

\texttt{PLAY DROP-IN EX}

The tape locates before the drop-in to a point determined by the run-up time set in the Setup Menu, plus standard preroll. The run-up can also be specified by including a start time, in which case the drop-in preroll is ignored, e.g.

\texttt{PLAY DROP-IN FROM 3:34 EX}

Now, to perform the drop-in:

- press the \texttt{RECORD ENABLE} button on.

  ensure that the \texttt{RECORD} button on the required channel(s) is selected.

The \texttt{PLAY DROP-IN} command can now be repeated by pressing the \texttt{REPEAT} key. Provided the machine local Record Safe is not set, the drop-in will be performed.
To display the drop-in time, type:

```
LIST DROP-IN EX
```

To define a drop-in off-line, the start and end times are specified using the AT, FROM, TO and END keys:

```
DROP-IN FROM CHORUS TO 6:23 EX  sets drop-in/out time
DROP-IN FROM TIME EX          defines the start, and
                                clears the drop-out time
                                for indefinite recording
DROP-IN TO TIME EX             defines drop-out time
DROP-IN END TIME EX            defines drop-out time
DROP-IN END EX                 clears drop-out time
DROP-IN + (or -) (time) EX     nudges drop-in time
DROP-IN END + (or -) (time) EX nudges drop-out time
DROP-IN AT TIME EX             resets drop-in time but
                                not drop-out time

AT DROP-IN EX                  as PLAY DROP-IN but
                                clears drop-out time

AT TIME DROP-IN EX             locates and drops in at
                                TIME for indefinite
                                recording

+ or - time DROP-IN EX         locates, plays and drops in
                                at time set by +/- keys

PLAY FROM DROP-IN EX           locates and plays without
                                drop-in preroll and does
                                not perform the drop-in
```

Drop-ins can be used as locate targets in PLAY FROM, CYCLE and GOTO commands, just as if they were Cues.
The tape can be cycled between the drop-in and out times, including the drop-in runup time, by using the command CYCLE DROP-IN EX. Alternatively, the REPEAT key can be used if another attempt at the drop-in is required.

Four options associated with the drop-in facility can be found in the Setup Menu (see Appendix I).

**Track Lists and Notes Pages**

Each TITLE has its own set of Track Lists (1-24, 25-48) and four Notes Pages. Track Lists can be used for multitrack assignments. However, where a multitrack is not in use, the Track Lists can come in very handy for noting other assignments, such as mic amp to mic line input or other cross patching on the console. The Notes Pages provide a convenient way of noting down additional session data such as the settings of outboard effects devices.

Track Lists and Notes Pages are solely for information and perform no control function.
The Track List is accessed for editing by typing:

```
NAME TRACK EX  which places the cursor at track 1
```

or

```
NAME TRACK n EX  which places the cursor on a specific track line
```

The list is displayed and the cursor can be moved using the ↑↓←→ keys. To enter new information, position the cursor and type the information followed by EX or the ↓↑←→ keys. Errors can be corrected by using RUB and DELETE, as with entering command lines.

Each page has 24 lines of up to 15 characters. Tracks 25-48 will be displayed once the cursor is moved beyond track 24. The number of pages is defined in the Setup Menu (see Appendix I).

As the tracks are edited, they are stored in memory but are not written to Data Cartridge or Reel disc. To save the Track List, press END whenever new information is entered.

The Track List can be viewed without editing, by typing:

```
LIST TRACK EX
```

If there is more than one page, use the ← and → keys to change pages.

Notes Pages

Four Notes Pages are available for each TITLE. To write on them type:

```
TITLE LIST EX
```

The screen will display the first page, with the cursor ready at the first line. The ↑↓ keys move the cursor between lines and the ← → keys move the cursor between pages. Information is entered on a line-by-line basis, EX terminates the line and moves the cursor down a line.

As with Track Lists, the Notes information is written to memory first.

To leave the Note Pages and store the information on Data Cartridge or Reel disc, press END.
When finished writing notes, Press END

<table>
<thead>
<tr>
<th>title</th>
<th>BEAT IT JOHNNY</th>
</tr>
</thead>
<tbody>
<tr>
<td>notes page</td>
<td>1</td>
</tr>
</tbody>
</table>

- REV 7 PRESET 23
- RMH - AMBIENCE
- CALL DENTIST

To view the Notes Pages at any time, type TITLE LIST EX

DELETE TITLE LIST EX deletes all Notes Pages in the Current Title

The Setup Menu provides an option to have an aesthetic box drawn around the Notes Page (see Appendix 1).

Item Management

Listing Information

The information lists held on the Data Cartridge or Reel disc can be accessed at almost any time.

The LIST command can be used to display all the available information pages as follows:

(LIST) REEL Reels on the current Data Cartridge

(LIST) REEL (A) or (B) EX Reels on the other Data Cartridge

LIST EX the LIST page (REEL session information)

(LIST) TITLE EX Titles
LIST CUE EX                      Cues
(LIST) TRACK EX                  Track Lists
TITLE LIST EX                    Notes
(LIST) MIX EX                    Mixes
LIST SETUP EX                    Total Recall Setups

Note: Optional use of the LIST key as shown above is not available when Mixing. In this case, the full command line must be entered.

Having displayed a page of information, scroll through additional pages with the ← → keys. With the exception of the MIX page, the ↑ and ↓ keys toggle the display between the timecode information and the time/date created page for REELS, TITLES and SETUPS. When displaying the MIX page, the ↓ key displays a Mix List in which more space has been made available for the Mix name by omitting the start and end times. The ↑ key selects the time/date Mix page.

The information lists within a TITLE are linked so that they can all be accessed using the ← → keys. Having obtained an information screen with a LIST command, the → key scrolls through all the information pages within the current title, in the following order: CUES - MIXES - SYNC PRESETS - TR SETUPS - TRACKS - NOTES.

The ← key scrolls through the pages in reverse order. In each case, where there is more than one page of item information, the page with the current item will be accessed first, followed by the following page(s) or preceding page(s) subject to the cursor key being used. Note that the list of TITLES is not included in the cycle and must be obtained with the (LIST) TITLE command.

Deleting Information

Items can be deleted using the DELETE key. For example to delete a Cue, type:

DELETE CUE Name EX
All information can be deleted in a similar way. The name and type of the item must be specified, but not necessarily in full provided it is not ambiguous. Note that if a TITLE is deleted, all Cues, Mixes etc. associated with that Title are removed. For this reason, the system checks that the Title is to be deleted by asking for confirmation. Press 'Y' to complete the deletion.

To delete all items in a list the command line would be, for example:

```
DELETE ALL CUE EX
```

Confirmation will again be requested for these commands.

To delete a number of items type:

```
DELETE CUE 1* CUE 2* CUE 3* etc EX
```

To delete all the data on a REEL, i.e. all TITLES type:

```
DELETE REEL Name EX
```

Confirmation will be requested, as this is obviously very dangerous if the wrong REEL identity is typed by mistake.

### Copying Information

The stored data on a REEL can be copied to another REEL either on the same Data Cartridge or to another. If you should run out of storage space on a REEL this is the only way of extending the project's data storage. Data from a REEL can also be copied from the Data Cartridge to an 8" floppy Reel disc (provided there is room), or vice versa.

A copy command line always starts with COPY. This can be followed by the specification of the source data, followed by TO and ending with a specification of the destination. Or, if the current REEL and TITLE are the destination for the data, the specification of the source data is followed by FROM, followed by the current location of the same data. Alternatively, to copy information to the current REEL or TITLE, type COPY followed by the source REEL name, TITLE name and information identity.
This type of command enables the following to be copied:

REELS
TITLES
CUE lists (complete)
TRACK lists (complete)
NOTES PAGES (complete)
MIXES
SETUPS (Total Recall)
SYNC PRESETS (complete - see Synchroniser Section)

For example, to copy REEL 1 from drive A to drive B and name it BACKUP 1, enter:

COPY REEL (A) 1 TO REEL (B) BACKUP 1 EX

The name of the source data REEL, TITLE, MIX may be omitted in command lines if it is listed as current.

REEL Capacity Check

Before copying any information it may be necessary to check either the total storage space available on a REEL (or floppy Reel disc) or the storage space remaining. The REEL must be current to allow this.

When the main LIST page of a REEL is displayed, the overall capacity of the reel is also displayed at the top right of the page.

To check how much space has been used in sectors and how much remains as a percentage, type:

DI EX

and the screen will display the required information. Just how you have managed to use all that space may be explained by reading pages 4-27 and 4-28.
Copying Floppy Discs

A general command exists for whenever it is necessary to copy from one floppy disc to another, including the Program disc:

COPY ALL EX

Follow the instructions on the screen, utilising the drive normally used for loading the Program disc.

To Copy all information from floppy Reel disc to a Data Cartridge REEL, type:

COPY FLOPPY TO REEL (A) or (B) Name EX

Copying REELS

To copy a REEL to another REEL on the same Data Cartridge, type:

COPY REEL (Name 1) TO REEL Name 2 EX

If REEL Name 2 already exists, confirmation to replace it will be requested.

To copy the current REEL from one drive to another, include the drive specification e.g.

COPY REEL TO REEL (A) or (B) Name EX

To copy a REEL to the floppy Reel disc, check there is room first, then type:

COPY REEL Name TO FLOPPY EX

Copying TITLES

TITLES are stored within REELS. However, the system will assume the current REEL if it is not given in the command line:

COPY TITLE TO REEL Name EX
copies current TITLE to another REEL.

COPY (REEL ((A) or (B)) Name) TITLE (Name) TO REEL ((A) or (B)) Name EX

copies the named TITLE from one REEL to another.

COPY TITLE ( FROM REEL ((A) or (B)) 1 EX

copies TITLE (SAY YOU WILL) DO IT from REEL 1 to current REEL.

Copying CUES

A complete list of CUES can be copied to another TITLE and will replace any CUES already stored in the destination TITLE. If the destination TITLE does not exist, the system will allow you to create it before copying the CUES, e.g.

COPY CUE TO (REEL ((A) or (B)) Name) TITLE 1 EX

copies the CUES from the current TITLE to TITLE 1.

The REVISE command is used to time-shift a list of Cues. (see Page 4-14)

Copying Track Lists and Notes Pages

Track Lists and Notes Pages are copied in the same way as Cue lists:

COPY TRACK TO REEL ((A) or (B) TITLE X EX

copies current Track List to REEL 1, TITLE X.

COPY LIST FROM TITLE 1 EX

copies TITLE 1's Notes Pages to the current TITLE.
Copying MIXES

Mixes are stored within a TITLE and hence the full specification of the Mix includes the name of the REEL and TITLE. However, the current Mix is assumed if no source name is given and if a Mix of the same name already exists in the destination TITLE, the option is given to replace it.

**COPY MIX TO TITLE 2 EX**

makes a copy of the current Mix in TITLE 2.

**COPY MIX TO REEL ((A) or (B)) DEMO TITLE 5 EX**

makes a copy of the current Mix to TITLE 5 within the REEL called DEMO.

**COPY MIX 1* FROM TITLE 2* EX**

copies MIX 1* to current TITLE.

Copying TR SETUPS

Setups are described in the Total Recall Section and are used to recall console settings by displaying a graphic representation of all the analogue controls and switches.

Setups are copied in the same way as Mixes except that the SETUP key is used in place of MIX:

**COPY REEL Name TITLE Name SETUP 3 EX**

copies SETUP 3 from another REEL to the current TITLE.
Data Cartridge Backup

As with any magnetic storage medium, it is advisable to regularly make a backup copy of any Data Cartridge that contains valuable information. Place the Master Data Cartridge in Drive A and a blank, but formatted (see Getting Started) Data Cartridge in Drive B. Type:

BACKUP EX

This process will take approximately 5 minutes.

Printing Information

Where a printer is installed, a facility entered from the Setup Menu (Appendix I) allows an immediate printout of the screen information display by pressing the PRINT key. The printer can be left to print out the page whilst normal operation of the computer will continue after the print information is quickly processed.

To print every list in the current Title, without this screendump facility enabled, type:

PRINT TITLE EX

To print individual lists from the current Title the commands are:

PRINT CUE EX (Cue Lists)
PRINT TRACK EX (Track Lists)
PRINT TITLE LIST EX (Notes Pages)
PRINT MIX EX (Mix Lists)
PRINT SETUP EX (Total Recall)
Data Storage Capacity

The following information is a guide to how much directory space will be used up by differing lengths of Title, Cue and Mix names etc.

Each directory is a fixed size of 992 bytes. There is also a fixed overhead for each entry in that directory. If you wish to find out how much room is left in any directory, perform the following mathematical trick using the figures given in the table below.

<table>
<thead>
<tr>
<th>Item</th>
<th>Overhead</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title</td>
<td>30</td>
</tr>
<tr>
<td>Mix</td>
<td>13</td>
</tr>
<tr>
<td>Cue</td>
<td>7</td>
</tr>
<tr>
<td>TR Setup</td>
<td>8</td>
</tr>
<tr>
<td>Sync Preset</td>
<td>20</td>
</tr>
<tr>
<td>Event</td>
<td>6</td>
</tr>
</tbody>
</table>

Add up the number of Item entries. Multiply that by the Overhead. Add this to the total number of characters used for your Item name (i.e. Name of Title, Mix, Cue etc.) then take all that away from 992 (the directory size). The result will be the space available for future Item name entries, allowing for the overhead of course.

In practical terms, with a minimum average of two characters per Item name, you can have the following maximum number of entries in each directory:

<table>
<thead>
<tr>
<th>Item</th>
<th>Maximum Number of Items in Directory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title</td>
<td>30</td>
</tr>
<tr>
<td>Mix</td>
<td>66</td>
</tr>
<tr>
<td>Cue</td>
<td>110</td>
</tr>
<tr>
<td>TR Setup</td>
<td>99</td>
</tr>
<tr>
<td>Sync Preset</td>
<td>45</td>
</tr>
<tr>
<td>Tracks</td>
<td>48</td>
</tr>
</tbody>
</table>

These are the maximum number of entries as limited by the size of the directory.

There is one Mix, Cue, Setup etc., directory for each and every Title directory. This would seem to imply that it is possible to have a maximum total of $31 \times 66 = 2046$ Mixes on one Reel. There is of course, however, a directory for the whole Reel which has a finite size in itself. This directory (the Reel Directory) can handle up to 218 files.
The limit is totally independent of the number of Titles or the length of Mix names etc., it is linked only to the overall file usage on the Reel. A Title with Notes Pages consumes two files. For each Mix, add one file and for each TR Setup, add two more files. Once the 218 files have been used up, the system will display a "Reel Directory Full" error message. If you are unwilling to delete any of your work at this point, it will be necessary to continue on another Reel.

Because of differing console sizes and varying Mix lengths, the actual data stored for each Mix and Setup (and hence the size of the Title) will vary in amount from studio to studio. This will obviously impose another limit on the maximum number of entries that can be stored on a Reel. With smaller sized Reels the space taken up by the data will probably be the limiting factor on the number of entries that can actually be stored on disk. With very large Reel sizes (8 or 16 Mb), the directory may well be filled up before the actual storage space.

Data Cartridge Sector Usage

The sector usage of file storage on the G Series cartridge is determined not only by the size of the file to be stored but also by the size of the Reel the information is being stored on. This is caused by the fixed length of the sector allocation table that is used with all Reel sizes.

As the size of the Reel increases, so each bit of the allocation table ceases to represent one sector and starts to represent a collection of sectors. This collection of sectors then becomes the minimum possible usable data block for any file storage.

The table below gives the relationship between Reel size and data block size. As an example, we also show the number of sectors needed on the storage medium for a typical mix of 22 sectors.

<table>
<thead>
<tr>
<th>Reel Size</th>
<th>Data Block Size</th>
<th>No of Sectors Used for 22 Sector Mix</th>
</tr>
</thead>
<tbody>
<tr>
<td>Floppy</td>
<td>1 sector</td>
<td>22 (22 blocks of 1)</td>
</tr>
<tr>
<td>.5 Mb</td>
<td>1 sector</td>
<td>22 (22 blocks of 1)</td>
</tr>
<tr>
<td>1 Mb</td>
<td>2 sectors</td>
<td>22 (11 blocks of 2)</td>
</tr>
<tr>
<td>2 Mb</td>
<td>4 sectors</td>
<td>24 (6 blocks of 4)</td>
</tr>
<tr>
<td>4 Mb</td>
<td>8 sectors</td>
<td>24 (3 blocks of 8)</td>
</tr>
<tr>
<td>8 Mb</td>
<td>16 sectors</td>
<td>32 (2 blocks of 16)</td>
</tr>
<tr>
<td>16 Mb</td>
<td>32 sectors</td>
<td>32 (1 block of 32)</td>
</tr>
</tbody>
</table>