PERKIN-ELMER

OS/32 FASTBACK

Reference Manual

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PREFACE

This manual describes the new OS/32 Fast Disk Backup and Restore Utility - OS/32 Fastback R00-01, Program Number 03-345. OS/32 Fastback R00-01 executes as a user task (u-task).

OS/32 Fastback contains very efficient disk-to-tape backup capability and is aimed at the operator who needs to take fast security backups of large amounts of data.

Users of Fastback should be familiar with OS/32, Perkin-Elmer's multitasking operating system for its 32-bit processors. An understanding of the multi-terminal monitor (MTM) is also desirable.

Chapter 1 of this manual gives a general overview of disc backup procedures and of Fastback in particular. Chapter 2 outlines how to load and start Fastback. Chapter 3 gives a detailed explanation of Fastback commands and their meanings. Chapter 4 describes the extended file selection masking available with Fastback. Chapter 5 explains the operation of Fastback and includes timing and tuning information. Chapter 6 discusses Fastback list output and error messages. Chapter 7 outlines Fastback internal failure codes and what to do if you encounter one of them. Finally, the Appendixes to the manual contain command summaries, end of task codes, linkage procedure, logical unit usage, and information regarding Fastback compatibility/comparisons with other products and Fastback tape formats, respectively.

NOTE

It is strongly recommended that users who wish to obtain the best possible performance from Fastback read Chapter 5 in order to understand how Fastback operates and the optimisations that may be effected to maximise its performance.

This manual is intended for use with the OS/32 R07.2 software release or higher. Revision F01 R00 of this manual includes updated text.

For information on the contents of all Perkin Elmer 32-bit manuals, see the 32-Bit Systems User Documentation Summary.

Functional Details:

In immediate mode all commands to Fastback must be passed via the START command. It is not possible to pass some commands to Fastback via the START command and the remainder from a command file. Thus for example, the following START command will be rejected:

    START ,BACKUP,DISC=DSC1:,COMMAND=SCRT:FASTBACK.CMD

Immediate mode is best used when the commands to Fastback can be passed via the START command. If the required commands cannot be passed via the START command, then batch mode must be used.

Whenever Fastback is started in immediate mode, any specified SELECT command referencing an "immediate" operand must contain only one select entry; i.e., multiple entry select immediate operands are not allowed. See Section 4.1.

After Fastback is started, this message is displayed:

    OS/32 FASTBACK Rnn-nn

where nn-nn gives the revision and update level of Fastback. The commands passed in the START command are then processed.

Examples:

    START ,BACKUP,DISC=DSC1:,TAPE=MAG1:,LIST=PR:

    ST ,RESTORE,TAP=MAG2:,DI=DSC2:,LIST PRIN:

    ST ,DISPLAY,TAPE MAG1:,LI=PR:,SEL=(-.-/194)

2.4 STOPPING FASTBACK

Once Fastback has processed all its initial commands, it commences operation. If the user desires to halt Fastback after it has begun execution, he may use the SEND command of OS/32 to issue a STOP command, which instructs Fastback to terminate in an orderly manner.

Format:

    SEND STOP

Functional Details:

This command, when received by Fastback, instructs the program to make an "orderly" shutdown. To effect its shutdown, Fastback will close any open logical units and delete any workfiles currently being used.

Regardless of the initial command mode (i.e., interactive, batch, or immediate), reception of the STOP command will cause Fastback to terminate.

This command is mainly intended for use when Fastback is performing a restore operation. Given that a restore is taking place, the use of this command is preferred to simply cancelling Fastback, because it allows the program to delete any intermediate files that may have been created on an output disc.

It is also possible to use SEND STOP to terminate Fastback if Fastback has paused for any reason during certain stages of a restore operation. Typically, SEND STOP will be used successfully if Fastback has paused for any reason:

- before it has started copying restore data (i.e., Fastback paused while still creating intermediate files and printing the names of files being restored), or

- after it has output its "FINISHED WITH MAGNETIC TAPE. TAPE MAY BE REMOVED" message.

After entering SEND STOP to a paused Fastback, continue Fastback. Fastback will then take a message trap, recognize the STOP command and begin to delete all outstanding intermediate files.

To maximize efficiency, it is recommended that the selected tape
drive buffer sizes should not exceed 12kb for NRZI drives
(800 BPI) and 24kb for phase-encoded drives (1600 BPI).

Examples:

```
BUFFERSIZE=16

BUFFER     = 12

BUFF 32

BU = 24
```

```
  ------------
|    DISC    |
  ------------
```

3.2.4 DISC

The DISC command specifies the disc pack which is to be backed
up, restored, verified, or displayed.

Format:

$$\underline{DISC}[=]\begin{Bmatrix} devn: \\ voln \end{Bmatrix}$$

Parameters:

devn: is the device name of the disc drive
                      containing the pack to be processed (i.e.,
                      backed up, restored, verified or displayed).

voln   is the volume (i.e., pack) name of the disc
                      pack to be processed.

Functional Details:

A disc device mnemonic (devn:) is distinguished from a volume
identifier (voln) by the presence of a colon.

The specified disc must be currently ready and marked on to the
system.   It must be marked on protected if a backup operation is
to be performed, unless the NOPROTECT command was specified.
Restore operations will execute faster if the target disc is
marked on unprotected with the CDIR option.

During a restore operation the specified disc, which is the
output disc, is also the default location for the building of
Fastback's various control tables. This may be avoided by the
use of the WORKSPACE command.

Examples:

DISC=DSC1:

DISC SYS

3.2.12 POSITIONING

The POSITIONING command is used to control the initial and final
positioning of the magnetic tape mounted on the specified TAPE
device.

Format:

$$\text{POSITIONING}\,[=]\,\left[\begin{Bmatrix} nn \\ \underline{\text{NO}}\text{REWIND} \\ \underline{\text{REWIND}} \end{Bmatrix}\right]$$

Parameters:

nn   specifies the number of filemarks which are to
                        be skipped before the operation commences.
                        Note that zero (0) is not acceptable – the
                        same thing can be achieved by NOREWIND.
                        Fastback will rewind the tape device and then
                        forward it over the given number of filemarks.
                        The tape will not be rewound again upon
                        completion of the requested operation.

NOREWIND   specifies that no rewinding of the tape device
                        is to be performed. Moreover, no   other
                        initial or final tape positioning is to be
                        performed by the program. That is, all tape
                        positioning is to be done by the user.

REWIND   specifies that the tape device is to be
                        rewound before the requested operation begins
                        and after the operation is complete. This is
                        the default option.

Functional Details:

The POSITIONING command may be used for any operation,   except
display operations which involve a disc device.

If this command is omitted, REWIND is the default option.

If REWIND is specified for a backup or restore operation with the verify option enabled, Fastback will rewind the tape before the operation commences, again before the verify pass commences, and finally when the whole process is complete.

If nn is specified for a backup or restore operation with the verify option enabled, then Fastback will rewind the tape device and forward it over nn filemarks both before the operation commences and again before the verify pass is performed. At the completion of the whole operation the tape will not be rewound.

Whenever possible, the tape should not be positioned too close to the end of a reel when beginning a backup operation. The reasons for this are outlined in the description of the BACKUP command.

NOTE

Multiple Fastback backups may be placed on a single tape. For example, backing up three discs to one tape, using the NOREWIND parameter to the POSITIONING command for each backup. Each disc backup contains six filemarks. If you later wish to restore/verifyonly/display the nth backup on a multibackup tape, use the POSITIONING command and specify (n-1)*6 filemarks to skip. Thus, in the above case of three backups on single tape, if you wish to restore the second backup on the tape, perform a Fastback operation with POSITIONING = 6 filemarks (i.e., (2-1)*6).

Examples:

POSITIONING=NOREWIND

POS = 3

P REWIND

PO 7

P=REW

3.2.13 RESTORE

The RESTORE command is used to select the restore function.

Format:

   RESTORE

Parameters:

   None

Functional Details:

This command informs Fastback that a restore operation is to take place. The operation will involve restoring a previously created Fastback tape to a disc pack.

The (input) tape device specified via the TAPE command must be currently on-line, positioned according to the user's requirements, and preferably write protected. Tape positioning may be specified through the use of the POSITIONING command.

The (output) disc pack specified by the DISC command must be currently ready, on-line, and marked on unprotected.

If a disc other than the output disc is specified to the WORKSPACE command, then that disc must also be ready, on-line, and marked on unprotected.

The speed of the restore operation will be increased if the pack is marked on with the CDIR option.

If the user believes that the output disc may fill up during a restore operation, then Fastback should be started with WORKSPACE=some-other-disc and ONERROR=SKIP. Such use of the WORKSPACE command helps ensure that Fastback's control table files will not run out of space, while use of ONERROR=SKIP will cause Fastback to continue to restore whatever files it can if the disc should fill up.

If the disc fills up and ONERROR=PAUSE (the default ONERROR action), then Fastback will pause. In this case, it is up to the user to create some free space on the disc - presumably by deleting some files - before continuing Fastback.

Note that in the extraordinary circumstance where Fastback's control table files occupy a significant amount of disc space and the disc fills up during a restore, you should be able to restore your files by doing several selective restores. Each selective restore will use less disc space for control tables than would a single large restore operation, hence more disc space will be available for the files being restored. Consequently, during selective restore with verify operations, Fastback does not verify any tape that does not contain data to be restored. For example, if all the data being restored is on the third tape of a multireel backup, Fastback will not verify the first and second tapes. Only the third tape will be verified.

WARNING

THE INTERMEDIATE FILES THAT FASTBACK CREATES DURING RESTORE OPERATIONS SHOULD NEVER BE DELETED WHILE THE RESTORE OPERATION IS STILL RUNNING.

This is because Fastback uses bare-disc writes to overwrite the prefilled dummy data in (indexed-type) intermediate files, with the "real" data being restored from tape. Hence, if an intermediate file is deleted and its disc space is claimed by another file that is being written while the Fastback restore is active, then the contents of those sectors may be overwritten by Fastback restoring data from tape. Thus, the file(s) which claimed the sector(s) formerly belonging to the intermediate file may have some of its/their contents destroyed.

If the file(s) that claimed the freed sectors happens to be one of Fastback's control files, then, if overwriting occurs, a Fastback internal failure may result.

For more information on Fastback intermediate files, please refer to Chapter 5 of this manual.

Examples:

    RESTORE

    RESTO

    RES

Intermediate files are allocated, by default, on the account under which Fastback is currently executing. Intermediate files are always allocated with protection keys of (hexadecimal) FBAC.

If, when Fastback attempts to allocate an intermediate file, it discovers that a file of the same name exists, the program will increment the count part of the name field by one and try again.

Examples:

TEMPLATE=RI.PAT/31

TEMPL =   BP.XXX   (defaults to private account)

TEMP IN./P   (blank extension)

TE=XX   (blank extension, private account)

TE NR/194   (blank extension)

```
--------------
|   VERIFY   |
--------------
```

3.2.18 VERIFY

The VERIFY command informs Fastback that once the desired backup
or restore operation is accomplished, a verify pass is to be
performed to check the data copied to the output medium.

Format:

   VERIFY

Parameters:

   None

Functional Details:

This command may be specified only if the selected operation is
either a backup or restore.   This command is rejected if any
other function is invoked.

By default, if this command is omitted, a verify pass will not be
performed.

Each reel of tape involved in a backup or restore operation is
verified before the next reel of tape is requested.

If, at the time of a backup or restore operation, the user is
aware that he wishes to verify the copied data, it is more
efficient to specify the VERIFY command for the selected
operation rather than running a later VERIFYONLY pass. This is
especially true for backup operations since a verify pass, like
the actual backup pass, can be done using physical record
processing techniques.   A VERIFYONLY pass, however, always
executes like a restore, with physical to logical record mapping
taking place, and thus takes somewhat longer to perform.

> During selective restore with verify operations, Fastback does not verify any tape that does not contain data to be restored. For example, if all the data being restored is on the third tape of a multireel backup, Fastback will not verify the first and second tapes. Only the third tape will be verified.

Examples:

VERIFY

VERI

VE

In order to ascertain what is to be done if duplicate filenames are encountered, Fastback then asks the question:

IF FILENAME CONFLICT, KEEP (#DISC, Tape or NEwer) FILE(S) ?

The default action is to retain the original disc file and skip the tape file. Alternatively, the Tape option would cause the original disc file to be deleted and replaced by the file coming from the input tape, whereas the NEwer option would only delete and replace the disc file if it was found to be older than the tape file.

The user may direct Fastback to build its required data structures on some disc other than the (default) output disc. This may be done by the response given to the following prompt:

USE WORKSPACE ON (#ovol, voln or devn:) ?

where ovol is the volume name of the output disc pack.

The default location for restore workspace is on the current (output) disc. However, by specifying another disc volume or drive, the user can move the work area on to another pack.

The program then gives the operator the option of specifying the names of the intermediate files that Fastback will create on the output disc. The prompt for this is:

INTERMEDIATE FILENAME TEMPLATE (#FB.INT/act or fn.ext/act) ? |

The user may either retain the default file descriptor or specify a "short" file descriptor. Account identifiers of P, G, and S are accepted. Given the answer to this question Fastback will generate intermediate filenames of the form discussed in Section 3.2.17.

The next prompt is:

NUMBER OF ENTRIES IN ERROR POOL (#64 or nn) ?

If a default is not used, a decimal number must be entered.

If the list device was not specified in the START command the following prompt is displayed:

LIST DEVICE (#PR:, @=idev:, or FD) ?

The default (null) response will select PR: as the list device. A response of @ will select the user's terminal as being the list device. Alternatively any required file or device can be selected by entering its file descriptor. Note that if a file is specified it must currently exist. The listing information will be appended to any existing data in the file.

At this point all required data has been entered and Fastback will commence the requested operation.

3.3.3 Dialogue for the Display Function

The first prompt is

FUNCTION (BAckup, REStore, DISPlay, VERIFYOnly or VO) ?

to which the response must be

DISPLAY

to select the display function.

If the display function is requested, the dialogue continues with the prompt

DEVICE (voln or devn:) ?

where voln is a valid volume name, or devn: is the name of a disc or tape drive. The user should respond with either of the allowed identifiers. For example:

SYS   (volume name)

DSC1:   (disc drive mnemonic)

MAG1:   (tape drive mnemonic)

The next prompt requests the mode in which the display is to be performed, and is as follows:

FILE SELECTION (#ALL, @=idev:, select-fd or (select-entry)) ?

If all files are not to be processed, then Fastback will obtain selection criteria from one of the sources identified by the user's response.

The use of the exclusion indicator is best explained as follows.
Each file on the input medium is tested against each successive
select entry in turn. If the file matches the selection criteria
(i.e., both the mask and any date/time limit), it is said to be
"included" unless the select entry contains the exclude
indicator, in which case, it is said to be "excluded". Thus, as
the file is checked against each successive select entry,
whenever matching occurs, the file may switch from "included" to
"excluded" or vice versa. The file will be processed if, after
it has been compared with the last select entry, it is still
"included".

It should be apparent from the above discussion that the ordering
of the select entries is significant if exclusion indicators are
being used. If a complex select list is being used, the user can
quickly check its suitability by using the DISPLAY function
before running the actual backup or restore operation.

4.2 SELECT ENTRY FORMAT

Each select entry has the following general format:

[!] mask [,date/time limit [,reprotect [,rename]]]

Where:

!   is the exclusion indicator. When this
                           character precedes a select mask, Fastback
                           does not process the files that match this
                           select entry.

The other parameters are discussed in the following sections.

Apart from the exclusion indicator and the mask, the parameters
are keyword parameters and may be specified in any order
following the mask.

4.2.1 Select Masks

The mask in the select entry has the same general format as a
standard file descriptor. That is, it has the following general
format:

    voln:filename.ext/act

ext   is the filename extension. This field may be
                       omitted from the select mask and, if so, the
                       extension field of the mask defaults, allowing
                       any three valid characters equivalent to a "-"
                       character in the extension field.

act   is the number of the account to which the file
                       belongs. Fastback will also accept account
                       specifiers of P, G and S. When running in the
                       MTM environment, these are understood to refer
                       to the current private, group, and system
                       accounts, respectively. Outside of the MTM
                       environment, Fastback will assume that these
                       account identifiers refer to account zero (the
                       system account). This field may be omitted
                       from the select mask, and, if so, the account
                       number defaults to the current private
                       account. The current private account is the
                       system account when Fastback is executing
                       outside of the MTM environment.

Both upper and lower case alphabetic characters may be used in
file descriptor masks.

Also, space characters are ignored whenever they are encountered
within the select mask. For example:

    FASTBACK.TSK/0 is equivalent to FAS T BACK . TSK /0

    FAST-.TSK/-   is equivalent to F A ST - .TSK/ -

Whilst the mask can consist simply of a standard file descriptor
(e.g., FASTBACK.TSK/0), it may also contain certain special
characters which are used to represent various ranges of
alphanumeric characters. By using these special characters, a
single mask can be used to obtain a positive match against a
number of filenames and thus select multiple files. These
special characters are discussed below.

Account numbers, when specified, may contain leading zeros and/or imbedded spaces. Account numbers may contain up to five significant digits.

Examples:

MASK	MATCHES
-.-/1**	any file on the input medium whose account is in the range 100 through 199 inclusive.
-.***/####7	any file on the input medium whose (5 digit) account number ends with a 7 (e.g., 007, 017,...,147,...,247, ...,1007,...,65527).
-/%	all files on the input device with a single digit account number (in the range 0 to 9 inclusive).
FASTBACK.TSK/2-	any file on the input medium with a name and extension of FASTBACK.TSK residing on any account from 20000 to 29999 inclusive.
XYZ.-/$	is invalid since the $ character cannot be used to imply P, G, or S in the account number field.
RKI-.FTN/7****	is invalid since the maximum allowed account number is 65535; a 5 digit account specifier beginning with a 7 cannot be used.
nerang.***/6554#	is invalid since the maximum allowed account number is 65535; a 5 digit account number specifier beginning with 6554 (or greater) cannot be used.

4.2.4 Complex Masks

The masking abilities outlined in the preceding sections may be combined to form very powerful file descriptor masks, as shown below. Caution should be exercised when constructing complex masks since the resulting matches may not be readily apparent. Hence it may be preferable to use a number of simple masks rather than a single complex one.

If the user is unsure of the effect that the desired select list will have, use the display function to check the results that will be obtained from the use of the given select list.

Examples:

```
J$M.$$$/#              DEK.%%%/%#4           F$S%B*C-.$$$/19-

!-.HLP/-               -:DISCVOLN.-/***      $#%-.$%#/1*4

!****:%%%%.-/##1       !$%%%:EXAMPLE/-       -/-

lower.cas/***          !-/***                -.-/P

!-/G                   -.***/s               -/**4
```

4.2.5 Date/Time Limit

The date/time limit parameter is used to specify a test on the
age of each file to further qualify the select mask. The age of
the file is determined by the date/time it was last updated, and
the time limit parameter may indicate those files last updated
either BEFORE or SINCE the given date and time.

Format:

$$\left\{ \begin{matrix} > \\ \underline{\text{SINCE}}\ [=] \\ \underline{\text{BEFORE}}\ [=] \\ < \end{matrix} \right\} \quad [\text{date}]\ [\text{,time}]$$

Parameters:

    date   is the date component of the time limit.

    time   is the time component of the time limit.

Functional Details:

A date/time limit contained within a select entry overrides any
active global time limit (as specified by a SINCE or BEFORE
command) for those files whose file descriptors match the mask in
the select entry.

The SINCE (or >) date/time parameter is used to indicate that
those files whose names conform to the given mask, and whose
date/time last written is equal to or more recent than the SINCE
date/time, are considered to match the select entry.

1. The backup operation involves a copy of physical data blocks from a disc to tape (i.e., the operating system's logical access paths are not used for the data copy). If Fastback should encounter a defective sector whilst attempting to read a data block from the disc, it will add the address of the faulting sector to its error pool. Further actions taken by the error pool handler are given in Section 5.3.

2. Because Fastback accesses file entries sequentially down the disc directory, marking the input disc on with the control directory (CDIR) option does not increase the speed of the backup operation.

3. The current revision of Fastback does not update the backup history records within the (optional) pack administration file (PACKINFO.DIR).

To reduce the possibility of errors in a data tranfer to magnetic tape, the recommended blocking factors are:

TAPE RECORDING DENSITY	BLOCKING FACTOR
800 BPI	12KB
1600 BPI	16KB
6250 BPI	32KB

Using larger blocking factors than those recommended gains little additional storage space and results in an insignificant reduction in processing time. However, it does increase the probability of data transfer errors resulting in verify errors.

5.2.2 The Restore Operation

When Fastback commences operation, it processes the commands passed to it by the user and sets up the required data structures and option information. If, at this time, the output disc is not marked on unprotected, then the program will display the message:

DISC devn: (VOLUME voln) NOT MARKED ON UNPROTECTED

It will then pause to allow the user to mark the disc on.

In accordance with the amount of memory available, the program allocates storage to its error pool, select list, I/O buffers, file association table (FAT), and link table (LT).

The FAT is built on disc and in memory, using an array paging method (APM). The LT is a table used to hold mapping information so that the data on the tape - in physical sector sequence - can be reconstructed into logical records and files on the output disc. The LT is built totally on disc scratch space. The disc space required by the FATs and LTs will be obtained on the output disc unless the user requests another disc to be used, via the WORKSPACE command.

Once the above steps have been done, the program will read the file containing the FAT entries and (compressed) index blocks from the tape. If Fastback cannot read this file, or if checksum errors are detected, the program will output an error message and then will terminate.

FAT entries are tested against any active select criteria to determine whether they represent files to be restored. Entries which meet the select criteria are copied into the (APM'ed) FAT. As each file's entry is placed in the FAT, the file's desired name is noted. The desired name is either the original name or that determined by an active RENAME command. If the selected KEEPFILES option was either DISC or NEWER, Fastback now checks for a file on the output disc whose name matches the desired name of the file being restored. If such a file exists (and in the case of the NEWER option, it is newer than the file being restored), then the following message is given:

        **** FILE fd ALREADY EXISTS
        CURRENT FILE ON DISC WILL BE RETAINED

The existing disc file is kept, and the tape file is not restored. If the KEEPFILES = TAPE option was specified (or if NEWER was specified and the tape file is newer than the duplicate disc file), Fastback will restore the tape file to disc as an intermediate file, then delete the file with the duplicate name (if any), and rename the intermediate file.

Having taken care of any duplicate files, an "intermediate" file of the appropriate type is allocated. The intermediate files are allocated under an encoded name and with protection keys of FBAC. This is done to help prevent unwarranted access to the files until they are fully restored. The encoded filenames will take the form of FBxxxxxx.INT/act (where xxxxxx represents sequential hexadecimal numbers starting from zero and act represents the current account number under which Fastback is running) unless an alternative format is specified via the TEMPLATE command.

Meaning:

During a backup, display, restore, or verifyonly operation,
a file (given by the original fd) has matched a select entry
which contains a rename mask. When the rename mask has been
applied to the original fd, the resultant file descriptor is
illegal. For further information, please refer to Chapter 4
of this manual.

Program Action:

If the operation is a restore, Fastback will continue but the
appropriate intermediate file will not be renamed to either
the original fd nor the resultant fd at the end of the
restore. The intermediate file will be left, but will be
identified to the user by a later message.

For backup operations, the original fd will be retained.

Finally, for verifyonly operations, the file will not be
verified (since Fastback cannot be sure of the name of the
file to be verified against on the output disc).

Required Operator Action:

None

WARNING: INSUFFICIENT DISC SPACE TO PRE-FILL INTERMEDIATE
        FILE int-fd
        CORRESPONDING FILE real-fd TRUNCATED TO nnnnnn RECORDS

Where:

int-fd   is the file descriptor of the intermediate
                  file which was being prefilled.

real-fd   is the file descriptor of the file which is
                  represented on the disc by the intermediate
                  file. That is, the name to which the
                  intermediate file will ultimately be renamed
                  (i.e., the target filename).

nnnnnn   is the number of logical records to which the
                  file (both intermediate and target) has been
                  truncated.

Meaning:

Fastback is running a restore operation and is prefilling an indexed intermediate file. While writing the dummy prefill records to the file, Fastback received an SVC1 end of medium (EOM) status in response to a record write. This means that there was insufficient contiguous disc space available for OS/32 to allocate another index or data block for the file. Hence, Fastback will leave the intermediate file containing only as many records as had already been written into it. For example, the file is truncated because not all required records could be written to it.

Program Action:

Fastback will continue the restore operation (it will continue to try to allocate and prefill any more needed intermediate files).

NOTE

Fastback does not give up the restore (i.e., the creation of intermediate files) because the prefill, which resulted in EOM status, may have been for a heavily blocked indexed file. Thus, there may still be sufficient contiguous disc space to restore other files.

Required Operator Action:

None

WARNING: INSUFFICIENT MEMORY FOR ll KB BUFFERS
         USING mm KB BUFFERS

Where:

ll   is the buffer size that the user had requested
                    Fastback to use (default is 16kb).

mm   is the buffer size which Fastback has chosen
                    to use because of memory size limitations.

APPENDIX B
END OF TASK CODES

The end of task codes used by Fastback are given below.

END OF TASK CODE	MEANING
0	Normal completion (requested operation accomplished without error)
1	Backup operation completed; verify not possible because input disc was not marked on protected, and Fastback had insufficient memory available to build a sector allocation map (SAM) with granularity 1
2	Error in start arguments or incompatible operating system revision level
3	Error in command read from batch command file
4	Inconsistency in specified commands
5	Insufficient memory or workspace
6	Checksum error encountered on tape
7	Error(s) detected in select list
8	Invalid volume descriptor (may occur for any operation involving a disc pack)
9	Nonverify during backup, restore, or verifyonly
10	Fatal I/O error
11	Workfile related error
12	Error on list device
13	Could not assign file in order to check if it exists
14	File to be restored/verifyonlyed is currently assigned for write

END OF TASK CODE	MEANING
15	I/O error (other than end of medium (EOM)) while prefilling an (indexed) intermediate file
16	Unable to assign an intermediate file prior to renaming
17	Unable to delete file with duplicate name
18	Unable to rename an intermediate file
19	Date/time fetched from OS/32 is earlier than date/time when PACKINFO.DIR was last updated
20	Fatal I/O error on command device/file
21	Fatal I/O error on select input device/file
22	Tape data format error; the format of the data on the tape is not what Fastback expected (for example, Fastback might have found an EOF1 (end of file) label not followed by a filemark, or a filemark not followed by either an EOF1 label or an EOV1 (end of volume) label, etc.)
23	No data was transferred through backup, restore or verifyonly operations and/or no files were displayed. For example, if a number of files were displayed, but they all contained no records, then this code would still be generated.
24	Recoverable error during operation (for example, during a restore operation Fastback might have found an unreadable tape data block which it then skipped and later reported all sectors/files whose data was not restored)
250	STOP message received or !STOP response to interactive command mode prompt
251	Internal failure
255	Cancelled by (console) operator

APPENDIX D
LOGICAL UNIT USAGE

The logical unit assignments used by Fastback are given in the following table.

LOGICAL UNIT	ACCESS PRIVILEGE	USAGE
0	*NONE*	Reserved (for journal output)
1	SRW	Used in restore and verifyonly operations to access the file association table (FAT)
2	SRW	Used in restore and verifyonly operations to access the link table (LT)
3	SWO	List device or file
4	SRO/ERW	Select list device or file (SRO); also used to assign files (ERW) for prefilling and renaming during restore operations.
5	SRW	Command device or file
6	SRW	DISC
7	ERW	TAPE
8	*NONE*	Reserved (for stack-journal output)

APPENDIX E
COMPATABILITY WITH OTHER PRODUCTS

E.1 16-BIT SYSTEMS

Fastback can be used to backup, restore, verifyonly, and display disc packs created and used under OS/16. However, any pack processed by Fastback must be marked on with the NEW option when returned to the OS/16 environment.

E.2 OS/32 BACKUP

Fastback is totally incompatible with OS/32 Backup. The two programs operate in dramatically different manners, and each program's tape format is completely incompatible with the other.

E.3 OS/32 COPY

Fastback is totally incompatible with OS/32 Copy. OS/32 Copy cannot be used to restore tapes created by Fastback.

E.4 NON-STANDARD DISC DEVICES

Fastback can be used to process discs supported by user-written or nonstandard drivers, provided that the drivers obey the following conventions:

● The device control block (DCB) is set up using the standard DCB macros.

● The device attributes and flags are the same as those used for standard disc devices.

- The device code used is either a standard OS/32 device code or is in the range 240 (X'F0') to 254 (X'FE'). The user should exercise caution when reusing standard device codes, since these imply certain sizes and properties on the involved disc(s). This particularly applies to virtual discs that use standard device codes.

- The driver supports the standard SVC 1 function codes in the same manner as the standard disc drivers.

- The driver uses the standard device independent status codes. Note also that a status of X'8283' returned for a write function is taken to indicate that drive is hardware write protected.

Thus the following START commands are equivalent:

```
BACKUP:      ST ,IN=MAG1:,OUT=DSC1:,LI=PR:
FASTBACK:    ST ,RESTORE,TAPE=MAG1:,DISC=DSC1:,LIST=PR:


BACKUP:      ST ,IN=MAG1:,OUT=DSC1:,LIST=PR:,VERIFY,
                  SELECT=SYS:ASDG.BKP/0
FASTBACK:    ST ,RESTORE,DISC=DSC1:,TAPE=MAG1:,LIST=PR:,
                  VERIFY,SELECT=SYS:ASDG.BKP/0


BACKUP:      ST ,IN=MAG1:,OUT=DSC1:,VERIFY,LIST=PR:,
                  SINCE=7/AUG/81,10:17:05,
                  DELETE/NODATECHECK
FASTBACK:    ST ,RESTORE,DISC=DSC1:,TAPE=MAG1:,VERIFY,
                  LIST=PR:,SINCE=7/AUG/81,10:17:05,
                  KEEPFILES=TAPE
```

F.4 VERIFYONLY FUNCTION

The following table gives the equivalent Fastback command for each of the Backup commands for performing a verifyonly operation.

Note that for verifyonly operations, Fastback will always treat the tape as the input device, although it does not specifically correspond to the Backup input device as is implied by the following table:

```
 ------------------------------------------------------------
| BACKUP  PARAMETER  |    FASTBACK  COMMAND              |
|====================|================================|
| IN = devn:         | TAPE [=] devn:                   |
|                    |                                  |
| OUT = devn:        | DISC [=] devn:                   |
|                    | DISC [=] voln                    |
|                    |                                  |
| LIST = fd          | LIST [=] fd                      |
|                    |                                  |
| COMMAND = fd       | COMMAND [=] fd                   |
|                    |                                  |
| END                | END                              |
|                    |                                  |
| VERIFYONLY         | VERIFYONLY                       |
|                    |                                  |
| ABORT              | ONERROR [=] ABORT                |
|                    |                                  |
| SKIP               | ONERROR [=] SKIP                 |
|                    |                                  |
| SINCE = date,time  | SINCE [=] [date][,time]          |
|                    |                                  |
| SELECT = fd        | SELECT [=] fd                    |
|                    | SELECT [=] @                     |
|                    | SELECT [=] (entry)               |
 ------------------------------------------------------------
```

Thus the following START commands are equivalent:

```
BACKUP:      ST ,VO,IN=MAG1:,OUT=DSC1:,LI=PR:
FASTBACK:    ST ,VERIFYONLY,TAPE=MAG1:,DISC=DSC1:,LIST=PR:

BACKUP:      ST ,IN=MAG1:,OUT=DSC1:,LIST=PR:,VO,
                       SELECT=SYS:ASDG.BKP/0
FASTBACK:    ST ,VO,DISC=DSC1:,TAPE=MAG1:,LIST=PR:,
                       SELECT=SYS:ASDG.BKP/0

BACKUP:      ST ,IN=DSC2:,OUT=MAG1:,VO,LIST=PR:,
                       SINCE=7/AUG/81,10:17:05,
FASTBACK:    ST ,VERIFYONLY,DISC=DSC2:,TAPE=MAG1:,
                       LIST=PR:,SINCE=7/AUG/81,10:17:05,
```

F.5 DISPLAY FUNCTION

OS/32 Backup does not have a function corresponding to Fastback's display function.

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PUBLICATION   OLD REVISION LEVEL: F00 R00
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                                     NEW REVISION LEVEL: F01 R00

This package of affected pages updates the current version of the subject manual. New features, as well as changes, deletions and additions to information in this manual are indicated by change bars in the page margins. Please discard the indicated old pages and replace them with the supplied new pages.

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