

BACKUP

BACKUP

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ABSTRACT

The BACKUP program is used to save disk files on magnetic tape and later to restore any or all of these files back to disk. This document describes the general capabilities of BACKUP. Version 1 of the software will be used by Digital Equipment Corporation to distribute all the software for the DECSYSTEM-10.

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1.0 INTRODUCTION

The BACKUP program is a system program that is used for the distribution of DECsystem-10 software.

BACKUP is more sophisticated than the previous system program for storage of disk files on magnetic tape. It allows for more selectivity when choosing the files to be removed from the disk. BACKUP is able to save files occupying multiple reels of tape.

Distribution tapes for the DECsystem-10 will be produced via BACKUP.

1.1 System Programmer Uses

Version 1 of BACKUP is intended to acquaint system programmers with BACKUP's command interface and tape format. It is for use with distribution tapes only. BACKUP can be used to transport files from one system to another, aiding in the distribution of newly developed files from one installation to another.

The distribution is implemented by the interchange mode switch. When running in interchange mode, BACKUP ignores installation dependent data and reads and writes only the information which is critical to the file itself. For more information on the interchange mode and BACKUP's tape format, refer to the Appendix.

1.2 Console User Uses

The console user can execute all of the BACKUP commands on his own disk area. He can save his disk area or any other files accessible to him on his own magnetic tape and later restore all his files or a subset of his files back to his area.

2.0 BACKUP COMMANDS

BACKUP commands are in the form of verbs. BACKUP prompts with a slash (/) and has three kinds of verbs:

1. Action,
2. Status setting, and
3. Tape positioning.

The action commands take as an argument a list of file specifications in a format similar to the monitor's COPY command. The file specifications can contain wild-cards (e.g., ? and *). For example to specify all files of the name COBOL and any extension, the file specification should be "COBOL.*". The entire DEC wild-carding scheme

works under BACKUP. Another example might be to specify all ".MAC" files whose first three letters are "FOR"; this would look like "FOR???.MAC."

For each entry in the list, the user can specify both input and output file specifications (output = input) or just the input specification. This allows the files to be renamed as they are saved or restored. If no output specification is given, then the specified files are transferred without being renamed. Entries in the list are separated by commas.

The action commands operate on the tape specified by the last TAPE verb. A tape must be specified before using any of the action commands, or an error will result. In the following lists of commands and switches

spec	is the standard file specification dev:filename.ext [directory]
date	is in the form dd-mmm-yy
time	is in the form hh:mm:ss

The action verbs are:

Command	Action
CHECK spec-list	Verify that the tape and disk agree
[N]PRINT spec	Print a directory of the entire tape on spec. N is an optional prefix meaning narrow.
SAVE spec-list	Save the disk onto tape
RESTORE spec-list	Restore from tape to disk

The status setting commands set a parameter which will affect future action commands. The negative form of certain commands is specified by an optional NO preceding the command. The status setting commands are:

Command	Action
ABEFORE date	Include only files accessed before the specified date
[NO]APPEND	Append to existing LOG file (default)
ASINCE date	Include only files accessed since the specified date
BEFORE date-time	Include only files created and last modified before the specified date-time
[NO]DATE75	Always accept files with possible DATE75 problems (default)

DENSITY (200, 556, 800, 1600)	(On input or output files) set tape density
DIRECTORIES	Type each user's directory while running (default)
[NO]ENCRYPT	Encrypt the magtape (asks for key later) (a key is similar to a password and it can consist of up to 6 alphabetic characters.)
FILES	Type each filename while running
INITIAL spec	Start processing at spec
[NO]INTERCHANGE	Run in interchange mode. (This is a default in version 1. A message is printed to this effect when BACKUP begins.)
LENGTH L:H	Include only files whose length is between Low and High
LIST spec	While running, make a log file on spec (default spec is LPT:BACKUP.LOG)
MBEFORE date-time	Include only files which have been last moved or modified before the specified time
MSINCE date-time	Include only files which have been moved or modified since the specified time
MESSAGE [NO]PREFIX	Suppress error message prefix
MESSAGE [NO]FIRST	Suppress first line of error message text
[NO]OPTION NAME	Use option BACKUP:name from SWITCH.INI
PARITY (EVEN,ODD)	Set tape parity.
SILENCE	Do not type filenames or directories while running
SINCE date-time	Include only files created or modified since the specified date-time
SORT DIRECTORIES X	Sort directories within each file structure in order X when saving. X=ALPHABETICAL, LOCATION, or NONE (by Master File Directory).
SORT FILES X	Sort files within each directory in order X when saving.

X = ALPHABETICAL, LOCATION, OR NONE (by directory)

SSNAME A	Save set name is A (up to 30 characters; ALL = all save sets on tape)
SUPERSEDE ALWAYS	Restore version from tape
SUPERSEDE NEVER	Restore from tape unless on disk
SUPERSEDE OLDER	Restore only the new versions from tape (default)
TAPE MTB0:	Use tape unit MTB0
[NO]USETI	Run in USETI mode (speeds up SAVES with /SINCE, etc.)
[NO]WRITE	Suppress disk writing during a RESTORE.

The tape positioning commands take immediate effect. They take, as an argument, a list of tapes. If no tape is specified for a given command, the last tape declared in a TAPE verb is positioned. The tape positioning commands are:

Command	Action
EOT tape list	Skip to the end-of-tape mark for each tape in the list
REWIND tape list	Rewind to the beginning of the tape for each tape in the list
SKIP n tape list	Skip n save sets forward for each tape in the list
SKIP 0 tape list	Backup to the start of the current save set for each tape in the list
SKIP -n tape list	Skip n save sets backward for each tape in the list
UNLOAD tape list	Unload each tape from its drive for each tape in the list.

Certain switches can be used for entries within the specification list supplied for an action verb. These switches should be preceded by a slash. They are as follows:

Switch	Action
ABEFORE date	(On input file) include only if accessed before date

ASINCE date	(On input file) include only if accessed since date
BEFORE date-time	(On input file) include only if created before date-time
ERNONE	(On input file) give error if no files match
ERPROTECTION	(On input file) give error if there is a protection failure
ESTIMATE n	(On output file) estimate output size
LENGTH L:H	(On input file) include only if the file length is between L:H
MBEFORE date-time	(On input file) include only if modified before date-time
MSINCE date-time	(On input file) include only if modified since date-time
OKNONE	(On input file) do not give an error if no files match
[NO]PHYSICAL	(Input or output) ignore logical names
PROTECTION nnn	(On output files) set the protection code
SINCE date-time	(On input file) include only if created since the specified date-time
VERSION v	(On output files) set output file version number
UPROTECTION nnn	Set the protection codes for the User File Directory

This group of commands can be given during the execution of the action verbs. The prompting character is an exclamation point (!). (EXIT, HELP, and RESET will also work with a slash (/) as a prompting character.):

Commands	Action
DIRECTORIES	Start typing every directory processed
EXIT	Exit from BACKUP when done
FILES	Start typing every file and directory processed
GO	Continue after a STOP

HELP	List these commands and explanations
KILL	Abort execution of the current action verb
PAUSE	Do not exit from BACKUP when done
RESET	Reset all status settings to their original defaults when done
SILENCE	Stop typing every directory or file
STOP	Stop temporarily; can be continued by GO.
WHAT	Display current filename and status

3.0 USAGE

Version 1 of BACKUP is a tool for interchanging files between installations and is executed in interchange mode only. If the user omits the interchange mode switch, he will receive a warning message to that effect. This mode allows the critical information in the files to be gleaned from the installation dependent data.

The following examples demonstrate the application of the BACKUP program.

3.1 The SAVE Command

The command

```
/SAVE spec-list
```

saves all the files on disk that match the input side of the entry in the specification list. BACKUP groups these files in a save set. (Each SAVE command creates one save set on tape.) The user can name the save set with the SSNAME status setting command.

The following sequence saves all LINK files on DSKN: 1,4 for interchange in a save set named LINK, on a tape mounted on drive MTA0.

```
.R BACKUP

/TAPE MTA0:
/INTERCHANGE
/SSNAME LINK
/SAVE DSKN:[1,4]LINK.*
! 1,4 DSKN
/
```

3.2 The RESTORE Command

The command

```
/RESTORE spec-list
```

restores files from tape to disk. If the user names a save set before issuing the RESTORE command, BACKUP will restore the files from the save set only. If the user resets the save set to ALL, BACKUP will search all the save sets on tape.

The following example restores all files in the save set named SCAN.

```
.R BACKUP
/TAPE MTA0:
/REWIND
/SSNAME SCAN
/RESTORE
/
```

To restore all HELP files in all save sets on tape, type

```
/REWIND
/SSNAME ALL
/RESTORE *.HLP
!
/
```

3.3 Obtaining Directories of BACKUP Tapes

The command

```
[N]PRINT spec
```

prints a directory of the entire tape. The optional prefix N indicates a narrow listing (72 columns). The default specification is LPT:BACKUP.LOG. If a line-printer is not available to the user's job, spooling is not in effect, and the default spec is used, an error will occur.

The following example produces a disk file directory listing named BACKUP.LOG.

```
.R BACKUP
/REWIND
/PRINT DSK:
!
/^C
```

This is an example of the output.

```
.TYPE BACKUP.LOG
START OF SAVE SET SCAN ON MTA0 BACKUP VERSION 1(41) FORMAT 1
SYSTEM      RX740B SYS #514/546 TOPS-10 MONITOR 0(60140) APR#514
800 BPI 9 TRACK
```

SCAN	REL	58	18-MAR-75	DSK:
SCAN	RNO	8	8-MAR-75	
SCAN	MAC	304	18-MAR-75	
SCN7A	DOC	99	19-MAR-75	
SCN7A	RND	95	19-MAR-75	

```
END OF SAVE SET SCAN ON MTA0 BACKUP VERSION 1(41) FORMAT 1
SYSTEM      RX740B SYS #514/546 TOPS-10 MONITOR 0(60140) APR#514
800 BPI 9 TRACK
```

```
START OF SAVE SET BACKUP ON MTA0 BACKUP VERSION 1(41) FORMAT 1
SYSTEM      RX740B SYS #514/546 TOPS-10 MONITOR 0(60140) APR#514
800 BPI 9 TRACK
```

BACKUP	HLP	11	18-MAR-75
BACKUP	MAC	94	13-MAR-75
BACKRS	MAC	174	13-MAR-75
BACKUP	SHR	39	18-MAR-75
BACKUP	LOW	26	18-MAR-75
BACKUP	RND	6	17-MAR-75
BACKUP	RNH	11	18-MAR-75

```
END OF SAVE SET BACKUP ON MTA0 BACKUP VERSION 1(41) FORMAT 1
SYSTEM      RX740B SYS #514/546 TOPS-10 MONITOR 0(60140) APR#514
800 BPI 9 TRACK
```

3.4 Comparing Tape and Disk Files

The command

```
CHECK spec-list
```

verifies that the tape and disk agree. BACKUP compares the tape files specified for input to the disk files specified for output, word for word.

The following example saves all the user's COBOL files on tape and then verifies that the saved tape files are identical to the disk files.

```
.R BACKUP

/TAPE MTA0:
/REWIND
/SAVE *.CBL
/REWIND
/CHECK
!
/
```

TO RESTORE ALL SHR and LOW files from a tape and then verify that the files were restored correctly type

```
/REWIND
/SSNAME ALL
/RESTORE *.SHR,*.LOW
!
/REWIND
/CHECK *.SHR,*.LOW
!
/
```

4.0 BACKUP MESSAGES

4.1 OPERATOR MESSAGES

\$BKPEOT EOT REACHED -- NEED NEW TAPE

The tape is full. The operator should mount a new one and type a carriage return to continue.

\$BKPMWL TAPE WRITE LOCKED -- NEED WRITE RING

The tape is write locked. The operator should insert a write ring and type a carriage return to continue.

4.2 ERROR MESSAGES

?BKPABC AMBIGUOUS COMMAND

The user has given a command abbreviation that is not unique.

?BKPCOL CAN'T OPEN LISTING DEVICE

The device specified for the LIST command cannot be selected for output.

?BKPCOM CAN'T OPEN MAGTAPE

The tape device specified cannot be selected for output.

?BKPCSA CAN'T SAVE WITH SAVE SET NAME "ALL"

"ALL" is reserved to mean all SAVE sets on tape; therefore, it cannot be used to name an individual SAVE set when saving.

?BKPDND DEVICE NOT A DISK

The input device specified for a SAVE or the output device specified for a RESTORE is not a disk.

?BKPDNM DEVICE NOT A MAGTAPE

The device specified for the TAPE command or a tape positioning command is not a magnetic tape drive.

?BKPFSL FILE SPECIFICATION DATA LOST

During the processing of a file specification list, a consistency check determined that data was lost. If this error occurs, please send an SPR.

?BKPHSG CANNOT GET HIGH SEGMENT BACK

BACKUP releases its high segment command scanner when performing I/O to eliminate most of the core while running. The attempt to restore the high segment after completing the I/O operation has failed.

?BKPIRC INVALID RUN TIME COMMAND -- TYPE KILL TO ABORT RUN FIRST

The user typed an illegal run time command. Type KILL to abort the run and return to verb command level. Type HELP to get a list of valid run time commands.

?BKPLFE LISTING FILE ENTER ERROR

After opening the listing I/O channel, no entry could be made for the listing file.

?BKPLSI LISTING SPECIFICATION INCORRECTLY FORMATTED

The user has used incorrect formatting or a "wild-card" in specifying the LIST file. No list specification is created.

?BKPNTS NO TAPE SPECIFIED

While searching for the last tape specification given, none could be found.

?BKPTMI INSUFFICIENT CORE FOR COMMAND

The routine for allocating space for file specifications could not expand core enough to store the specification.

?BKPTSI TAPE SPECIFICATION INCORRECTLY FORMATTED

The user has used incorrect formatting or a "wild-card" in specifying the tape device. This clears the tape specification.

4.3 WARNING MESSAGES

%BKPABT ABORT spec

The transfer of the specified file from tape to disk has been aborted.

%BKPBTL BLOCK TOO LARGE DURING SPEC (BLOCK = n)

The current record read from tape exceeds the buffer size.

%BKPCAB CHECK ABORTED

A CHECK was aborted by the KILL command.

%BKPCCM CANNOT COPY MFD FOR STRUCTURE

The program cannot get enough core to copy the Master File Directory for the indicated structure. Files for this structure will not be saved, and the program will skip to the next structure.

%BKPCCR CANNOT COPY UFD/SFD RIB FOR spec

The program cannot get enough core to copy the retrieval information block for the indicated directory. Files for this User File Directory/Sub-File Directory will not be saved, and the program will skip to the next UFD/SFD.

%BKPCCU COPY UFD/SFD FOR spec

The program cannot get enough core to copy the indicated User File Directory or Sub-File Directory. Files for this UFD or SFD will not be saved, and the program will attempt to continue by skipping to the next UFD/SFD.

%BKPCDS CHECK DISK FILE SHORTER spec

During a check operation, an end-of-file occurred for the indicated disk file, even though there is more file data on tape.

%BKPCFD CHECK FILES ARE DIFFERENT spec

The check operation determined that the disk and tape versions of the indicated file are different.

%BKPCHK CHECKSUM INCONSISTENCY DURING spec (BLOCK = n)

During a read, the computed checksum of the current tape record did not agree with the checksum stored when the record was written.

%BKPCNF CHECK FILE NOT ON DISK spec

The indicated file could not be found on disk during a check operation.

%BKPCOD CANNOT OPEN "file structure"

The file structure indicated cannot be selected for I/O. The transfer of files for this structure will be aborted.

%BKPCTS CHECK TAPE FILE SHORTER spec

During a check operation, an end-of-file occurred for the indicated tape file, even though there is more file data on disk.

%BKPDER DATA MISSED/ TAPE BAD/ TRANSPORT HUNG DURING spec (BLOCK = n)

One of the indicated conditions was detected by the hardware. The transferred file may contain unreliable data.

%BKPDIO DISK I/O ERROR error bits DURING spec

A disk I/O error occurred while attempting to read or write the specification. The error bits included are those returned by the monitor GETSTS call. The transfer will be aborted for this file.

%BKPFEE ENTER error-code spec

File enter error for the specification. The error bits included are those set by the monitor, and the error code abbreviation is listed in the DECsystem-10 Monitor Calls Manual.

%BKPFLE LOOKUP error-code spec

File lookup error for the specification. The error bits included are those set by the monitor, and the error code abbreviation is listed in the DECsystem-10 Monitor Calls Manual.

%BKPHRI HEADER RDW INCONSISTENCY

A consistency check has determined that the tape's file data records are not consecutive. This message is followed by "%BKPABT ABORT spec" message reporting that the file will not be transferred from tape to disk.

%BKPHSI HEADER FILE SPEC INCONSISTENCY

During a restore operation, a consistency check determined that the end-of-file record for the current file was missed, and the current record belongs to another file. This message is followed by "%BKPABT ABORT spec" indicating that the incomplete file will not be transferred from tape to disk.

%BKPIBL INCORRECT BLOCK LENGTH

During a RESTORE, the program encountered a tape record of the wrong size. The record will be skipped.

%BKPINT ONLY INTERCHANGE MODE SUPPORTED IN VERSION 1.

This message warns the user that he is running in interchange mode.

%BKPNBF NOT BACKUP FORMAT

The current tape record is not in BACKUP format, and the program will skip to the next tape record.

%BKPNEC NOT ENOUGH CORE

The program cannot get enough core. If this occurs during a RESTORE, the RESTORE will be aborted. During a SAVE, the program will skip to the next structure or User File Directory and attempt to continue.

%BKPNFF NO FILES FOUND TO MATCH spec

No files were found to match the given file specification.

%BKPPRE PARITY ERROR DURING spec (BLOCK = n)

The hardware detected a parity error. The transferred file may contain unreliable data.

%BKPRAB RESTORE ABORTED

A RESTORE was aborted by the KILL command.

%BKPSAB SAVE ABORTED

A SAVE was aborted by the KILL command.

%BKPSCE SIZE COPY ERROR spec

While transferring a file from tape to disk an error was encountered because the transferred file was not the same size as the tape file.

%BKPSLE SFD LEVEL EXCEEDED

While attempting to save nested Sub-File Directories the SFD level was exceeded.

%BKPSNF SAVE SET NOT FOUND name

This message may occur during a RESTORE or CHECK operation and indicates that the save set named with the last /SSNAME verb could not be found.

%BKPUIE UNIDENTIFIABLE INPUT ERROR

An error was encountered while trying to move data from tape to disk.

%BKPUOE UNIDENTIFIABLE OUTPUT ERROR

An error was encountered while trying to move data from disk to tape.

%BKPURT UNKNOWN RECORD TYPE

While reading the tape, BACKUP found that the type number of the current tape record is not within the defined range. The program will skip to the next tape record.

5.0 CAPACITIES OF DISK MEDIA VERSUS MAGNETIC TAPE

The following table illustrates the maximum capacity of various disk devices and the approximate number of 2400-foot magnetic tapes required to hold the same number of blocks. The calculations were made for 9-channel magnetic tapes at 800 bpi.

Disk Device	Capacity in Blocks	No. of magtapes Required for same capacity
RD10 (Disk)	4000	.139
RM10B (Drum)	2700	.094
RP02 (Disk Pack)	40000	1.39
RP03 (Disk Pack)	80000	2.78
RP04 (Disk Pack)	154280	5.37
RS04 (Disk)	2048	.071

APPENDIX
TAPE FORMAT

BACKUP tapes are made up of a series of tape blocks of various types. All blocks have a uniform length of 544 words. These 544 words are made up of a 32 word header and a 512 word data area. Even if the data area is not needed or is partially needed it is fully written. All undefined or unused words are written with zeroes and ignored on read. This maximizes the probability of reading old tapes.

The block types are:

BLOCK TYPE	SYMBOL	DEFINITION
BEGIN	T\$BEG	This is a mandatory block written at the beginning of the save set. It identifies the save set, the device, the system, and the date/time of writing.
END	T\$END	Same as T\$BEG except at the end of the save set.
DATA	T\$FIL	This is the actual data which has been saved. It is the only type of block which is encrypted. It is self identifying as to the position within the file, but only contains part of the full path name of the file.
UFD	T\$UFD	It contains all the information necessary to recreate the directory. (Not written in interchange mode.)
END OF VOLUME	T\$EOV	A trailer record written as the last record on tape.

There are several different types of records written. In all the headers, however, the first seven words are of common meaning to all record types.

They are:

WORD TYPE	SYMBOL	DEFINITION
RECORD TYPE	G\$TYPE	A number indicating the type of record. The following values have been assigned: Label record=1, Start of Save record=2, End of Save record=3, file record=4, UFD record=5, end of volume=6, comment=7
RECORD NUMBER	G\$SEQ	A sequence number unique to that record, for that tape. This number is incremented for each record written.
RELATIVE TAPE	G\$RTNM	A number indicating the relative number for this tape within a save set.
DEPENDENT BITS	G\$FLAG	Various bits dependent on the type of record involved. Currently, for all but data records this word is zero. For file data records, bit 0 is the software end-of-file (this indicates the last record for this file). Bit 1 indicates this record is a repeater of the previous record (done for error correction's sake). <ol style="list-style-type: none"> 1. GF\$EOF The flag set if this is the last tape block for this disk file. On short files, it can be set on the first block of the file. 2. GF\$RPT The flag set if this tape block is a repeat of the previous block. This is set whenever the block is rewritten because of a tape write error. 3. GF\$NCH The flag set if a checksum for the tape block has not been computed. Bit 2 indicates that the checksum has not been done.

4. GF\$SOF	The flag set if this is the first tape block for this file. Bit 3 indicates the first tape record.
G\$CHK	Contains a checksum of the tape record unless the GF\$NCH bit is set.
G\$SIZ	The number of words of file data in the record.
G\$LND	The number of words to skip before file data actually begins.

The next five words are reserved for future expansion. The remaining 20 words in the record header vary for each record.

The data portion of a tape record is primarily for storing file data, but may be used for saving some overhead information. Any non-data information written in the data area of a tape record is prefaced with a control word of the form:

LH = type, RH = length in words including this word.

More than one overhead region can appear. In this case, they follow each other with no intervening space. The currently defined types for overhead blocks are:

O\$NAME Gives the full path identification of the file without punctuation. The path components are treated as if the user gave a quoted representation in "DEC Integrated Command Language". This block consists of sub-blocks in the standard order: device, directories (top down), file name, extension, version, generation, sub-blocks corresponding to missing fields in the path specification are omitted. Each sub-block is in the format:

WORD0: LH = type, RH = length in words including this word.

The rest of the sub-block is the path field in ASCIIZ without leading or imbedded nulls, terminated by at least one null. Omitted fields will be defaulted. In interchange mode, only the name, extension and version are written. In interchange restore, only name, extension and version are used.

Sub-block type codes are:

1 = device
 2 = name
 3 = extension
 4 = version
 5 = generation
 40 = directory (lower directories are
 41, 42, ...)

O\$FILE A block containing file attributes. The first section of this block consists of a fixed length header containing single word attributes in fixed locations. All dates and times are in universal date/time format (i.e., LH = days since Nov. 17, 1858; RH = fraction of a day). In interchange mode only the critical attributes will be written, and the rest of this block will contain zeros; so the format will be:

1. A\$FHLN -- fixed header length in words.
2. A\$FLGS -- reserved for flags (0 in interchange mode)
3. A\$WRIT -- date/time of last write.
4. A\$ALLS -- allocated size in words.
5. A\$MODE -- mode of last write.
6. A\$LENG -- length in bytes (1B0 if $> 2^{35}-1$).
7. A\$BSIZ -- byte size (7 or 36).
8. A\$VERS -- version identification (.JBVER format).

The remainder of this block is reserved for future expansion.

O\$DIRT A block reserved for directory attributes (not written in interchange mode).

O\$SYSN A block containing the system header line in ASCIZ.

O\$SSNM A block containing the save set name in ASCIZ.

Now there will follow a description of each individual word for a given record type in the T\$LBL BLOCK.

WORD TYPE	SYMBOL	DEFINITION
REEL ID	L\$RLNM	A SIXBIT word defining the reel name
LABEL date/time	L\$DATE	The date/time of labelling in DEC-10 universal format (left half of the word is days since 17-NOV-1859 the right is fractions of a day)
DESTRUCT DATE	L\$DSTR	The date/time before which the tape can not be scratched. Before this time the only valid operation is to append.
DEVICE ID	L\$DEV	A SIXBIT word defining the physical name of the magnetic tape drive used to write the label
FORMAT	L\$FMT	A number indicating the BACKUP format
VERSION	L\$BVER	A number indicating the BACKUP version writing this record.

At the start of each save record the following words are found for T\$BEG and T\$END blocks:

SYSVER	S\$SVER	A number indicating the system version
FORMAT	S\$FMT	A number indicating the BACKUP format
VERSION	S\$BVER	A number indicating the BACKUP version writing the SAVE set
DATE/TIME	S\$DATE	A number indicating the date and time of writing in the universal date/time format.
DEVICE ID	S\$DEV	A sixbit word defining the physical name of the MTA drive used in writing the save set.
APR SERIAL	S\$APR	A number indicating the serial number of the processor which had directed the writing of this record

For each UFD record format (T\$UFD):

STR NAME	D\$STR	The UFD comes from the structure defined by this SIXBIT word.
LEVEL NAME	D\$LVL	A number indicating the nesting level for sub-file directories: 0=UFD 1-5=SFD level
CHECKSUM NAME	D\$PCHK	A checksum of the O\$NAME full path file name block.

File data record format:

F\$PCHK	Checksum of the full path file name block (O\$NAME). This is just a consistency check for consecutive records of the file.
---------	--

F\$RDW	Relative data word of file of first word on tape.
--------	---

F\$PTH	A twelve word block used to store information suitable for a restoration of the file. This area is big enough to hold the entire path to a TOPS-10 file in a UFD of up to five characters each in project and programmer numbers. The path information will be stored in the format:
--------	--

BYTE (7) data type, length in words, ASCII

where data types are:

001 = device
 002 = file name
 003 = extension
 040+n = nth directory entry