60463110

CONTROL DATA

NOS 2
Tape Management System (TMS)

User Reference Manual

CDC® Computer Systems:
CYBER 180
CYBER 170
CYBER 70
6000

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User Reference

This product is intended for use only as described in this document. Control Data cannot be responsible for the proper functioning of undescribed features and parameters.

Publication Number 60463110

Manual History

Revision	System Version	PSR Level	Date
A	2.4.1	630	December 1985
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Revision D of this manual, printed June 1992, reflects NOS 2.7.4 at PSR level 797. This revision incorporates changes reflecting the 5680-11 CTS (Cartridge Tape Subsystem) and the 5744 ACS (Automated Cartridge Subsystem). Technical changes are indicated by bars in the margins.

Revision letters I, O, Q, S, X, and Z are not used.

ALPHABETICAL LIST OF COMMANDS

PREFACE

This manual describes magnetic tape operations on a system using the NOS Tape Management System (TMS). TMS can operate on the following systems:

CONTROL DATA® CYBER 180 Computer Systems
    Models 810, 830, 835, 840, 845, 850, 855, 860, 870, 960, 970, 990, 994, and 995
CONTROL DATA CYBER 170 Computer Systems
    Models 171, 172, 173, 174, 175, 176, 720, 730, 740, 750, 760, 815, 825, 835, 845, 855, 865, and 875
CONTROL DATA CYBER 70 Computer Systems
    Models 71, 72, 73, and 74
CONTROL DATA 6000 Computer Systems

AUDIENCE

This manual is intended for users of magnetic tape files on a NOS system with TMS. It assumes that the reader is familiar with the material contained in the NOS Version 2 Reference Set.

ORGANIZATION

Information in this manual is divided into the following sections:

- Section 1 - Introduction: Provides general information about TMS
- Section 2 - Command Rules: Describes rules for using TMS commands
- Section 3 - Commands: Defines the TMS commands
- Appendix A - TMS Macros: Defines the TMS macros

CONVENTIONS

CONTROL STATEMENT

The manuals of many NOS products use the term control statement instead of the term command. This manual uses the term command exclusively. You can consider the two synonymous.

EXAMPLES

This manual uses commas to delimit command parameters and periods to terminate commands. For clarity, however, commands that appear in text use an opening parenthesis for the initial delimiter and a closing parenthesis for the terminator.

COMMAND FORMAT

Interpret uppercase characters within command formats literally. Lowercase characters are variables and are described immediately following the line that shows the command format.

SUBMITTING COMMENTS

There is a comment sheet at the back of this manual. You can use it to give us your opinion of the manual's usability, to suggest specific improvements, and to report errors. If the comment sheet has already been used, mail your comments to:

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4201 Lexington Avenue N.
St. Paul, MN 55126-6198

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Literature and Distribution Services ARHLDS
4201 Lexington Avenue N.
St. Paul, MN 55126-6198

You can call (612) 482-3800 or (612) 482-3801, or FAX your inquiry to (612) 482-3813. (If you are a Control Data employee, use the Controlnet number 235-3800, 235-3801, or 235-3813.)

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RELATED PUBLICATIONS

The following is a list of manuals that contain related information. You may also want to consult the NOS System Information manual. The NOS System Information Manual is an online manual that includes brief descriptions of all NOS operating system and NOS product set manuals. You can access this manual by logging into NOS and simply entering the command EXPLAIN.

Control Data Publication	Publication Number
NOS Version 2 Reference Set, Volume 1, Introduction to Interactive Usage	60459660
NOS Version 2 Reference Set, Volume 2, Guide to System Usage	60459670
NOS Version 2 Reference Set, Volume 3, System Commands	60459680
NOS Version 2 Reference Set, Volume 4, Program Interface	60459690
NOS 2 Tape Management System (TMS), Site Operations	60463350

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DISCLAIMER

This product is intended for use only as described in this document. Control Data cannot be responsible for the proper functioning of undescribed features or undefined parameters.

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INTRODUCTION 1

The NOS Tape Management System (TMS) is a software subsystem that allows a computer center and its users to efficiently manage magnetic tape usage. TMS commands permit tape owners to select security options and permit alternate user access of their tapes. TMS establishes a database of available tapes, tape owners, and alternate user access permission. The database keeps track of what users own specific tapes and enforces the security options that the tape owners select. TMS commands also simplify the user's tape-processing interface.

TMS consists of eight user commands. TMS provides six new commands and changes two NOS commands. Four NOS tape-handling commands are not needed with TMS. Table 1-1 lists TMS and NOS commands and their relationships. TMS maintains compatibility with the standard NOS commands by allowing non-TMS processing. The following paragraphs briefly describe the differences between non-TMS tape processing and TMS tape processing.

Table 1-1. TMS Commands Versus Standard NOS Tape Commands

TMS Commands	NOS Commands	Notes
ADMIT	---	Added by TMS
AMEND	---	Added by TMS
---	ASSIGN	Not used with TMS
AUDIT	---	Added by TMS
---	BLANK	Not used with TMS
LABEL	LABEL	Changed by TMS
RECLAIM	RECLAIM	Changed by TMS
RELEASE	---	Added by TMS
RESERVE	---	Added by TMS
---	REQUEST	Not used with TMS
TMSDEF	---	Added by TMS
---	VSN	Not used with TMS

Note: Other NOS commands that apply to magnetic tape operations, such as LISTLB, RESOURC, RETURN, TCOPY, and UNLOAD, are unchanged by TMS and are described in the NOS Version 2 Reference Set, Volume 3.

Volume 3 of the NOS Version 2 Reference Set contains the following additional information about tape files:

Subject	Location in NOS 2 Vol. 3
Introduction to NOS magnetic tape files	Section 2
Tape management	Section 12
Tape label formats	Appendix G
Definitions of terms	Glossary

NON-TMS TAPE PROCESSING

Non-TMS processing works essentially as described in the NOS Version 2 Reference Set, Volume 3. You may use standard NOS tape processing commands on a system with TMS if you force non-TMS processing.

You can force non-TMS processing in two ways. You can include the TO=F parameter in standard NOS commands such as LABEL or REQUEST. The TO=F parameter tells the system that you are operating outside of TMS. You can also issue the TMSDEF command prior to issuing a standard NOS tape-processing command. Refer to the TMSDEF command description later in this manual.

Whenever you force non-TMS processing on a system with TMS, a center operator must verify that you can use the requested tape, mount the tape on a drive, and assign the tape to your job.

NOTE

For information about tape file manipulation by VSN (tape operations for systems without TMS), consult your NOS 2 Reference Set.

TMS TAPE PROCESSING

TMS allows you to create and access tape files through symbolic access. Symbolic access means you create and access a tape file using its tape file name. If you initially specify symbolic access for a tape file using TMS, you also have the option of accessing the tape file by volume serial number (VSN). However, accessing tape files by their symbolic names simplifies tape processing.

When you create a tape file, you must decide how the file will be accessed. Once you select symbolic access or access by VSN, you cannot change the type of access without rewriting the file. If symbolic access (TO=S) is specified on the LABEL command, you have the choice of subsequently accessing the tape file either by tape file name or VSN on the ADMIT, AUDIT, and RELEASE commands.

In general, TMS saves tape file characteristics when a file is created and uses them when the tape file is requested again. This practice reduces the number of parameters required to access a file and relieves you of the responsibility for correctly redefining tape characteristics each time you access a file. You can verify characteristics of an existing file with the AUDIT command.

COMMAND RULES 2

This section provides rules for using Tape Management System commands. The standard rules for using NOS apply to TMS unless stated differently in this section.

GENERAL SYNTAX RULES

You can supply a LABEL command that exceeds one line under interactive job entry, batch job entry, or in a procedure file. If a LABEL command exceeds one line, you must omit a terminator from the end of the command's first line and begin the continued line by placing a blank in column 1. If NOS does not encounter a terminator, it assumes the next line is a continuation line.

NOTE

The system accepts continuation lines from an interactive terminal only if the lines appear within a procedure file.

You can supply a literal for certain parameters in the ADMIT, AMEND, AUDIT, LABEL, RELEASE, and RESERVE commands that contain alphanumeric characters. (Under NOS, the asterisk is considered an alphanumeric character. In addition, a literal is a character string that is delimited by dollar signs.) The system retains all blanks that appear within a literal. If you want the literal to contain a dollar sign, enter two consecutive dollar signs. For example, the literal:

```
$A B$$41$
```

is interpreted as:

```
A B$41
```

A single literal must be contained within one line of a command.

If you enter duplicate parameters that request different options, the system implements the last parameter it encounters in a left-to-right scan; however, two exceptions can occur. If you supply contradicting ring enforcement options (PO=R and PO=W), the system issues a dayfile message and terminates the job step. Similarly, if you supply more than one end-of-tape (EOT) option (PO=I, PO=P, PO=S), the system issues a dayfile message and terminates the job step.

ACCESSING TMS TAPE FILES

Under TMS, the LABEL command enables you to access tape files by tape file name (symbolic access) rather than by VSN. Although you can specify VSN with the other tape commands, accessing tape files by their symbolic names simplifies tape processing. Symbolic access is very similar to accessing permanent files because the storage medium (that is, the physical characteristics of the tape) need not concern you once you create the tape.

Each tape file may be from 1 to 60 reels long and must be identified with a tape file name that is 1 to 17 alphanumeric characters in length. In turn, each tape file name must be unique within your catalog. If you specify symbolic access (TO=S) and omit a tape file name (FI=fileid) on the LABEL command, the system uses the local file name (lfn) as the tape file name.

The volume serial number (VSN) is the external center-defined serial number assigned to each tape in the scratch pool. TMS uses only the first VSN of a multivolume set when accessing a tape file.

TMS TAPES

There are two kinds of TMS tapes; that is, center-owned and user-owned.

CENTER-OWNED TAPES

You can initially obtain a center-owned tape by requesting a scratch tape with the LABEL command. If you need to use the tape at a later date, you can reserve the tape with the RESERVE command. When you no longer need a center-owned tape, you can release the tape with the RELEASE command and it becomes available to other users as a scratch tape. If you reach the end-of-reel while using a center-owned tape, the system automatically assigns another center-owned tape.

USER-OWNED TAPES

When you submit your own tapes to the center, your tapes are handled the same as center-owned tapes except for the differences described below. When submitting a user-owned tape to the center, you must specify the following information:

Item	Description
Family name	Name of the NOS family that you want the tape placed under.
User name	Name identifying the tape owner. This user name must be validated for the specific NOS family being accessed.
Charge number	Number specifying the department/project account under which your tape will be stored.

The RELEASE command cannot be used to release a user-owned TMS tape. You must make appropriate arrangements with the operator to retrieve your tapes.

When data on a user-owned TMS tape extends beyond a volume, TMS does not provide a tape from the scratch pool, instead, the job step aborts, and you receive the following dayfile message, which notifies you that additional user-owned tape is required:

```
NO EXTEND ON USER OWNED FILE.
```

COMMANDS 3

The Tape Management System commands are listed as follows. This section explains these commands in detail.

Command	Description
ADMIT	Grants permission for alternate users to access and employ a private file.
AMEND	Permits you to change tape file characteristics in the TMS database.
AUDIT	Enables you to obtain information about files that reside in your tape file catalog.
LABEL	Assigns a magnetic tape to your job so that the job can manipulate the tape as a local file.
RECLAIM	Creates and manages tape backup copies of permanent files.
RELEASE	Immediately releases one or more specified tape volumes from your NOS family's tape library.
RESERVE	Reserves a center-owned scratch tape.
RESOURC	Prevents deadlocks with other jobs that require multiple tape drives.
TMSDEF	Defines default values for TMS parameters on the LABEL command.

ADMIT COMMAND

The ADMIT command grants permission for alternate users (users other than the file originator) to access and employ a private file. The ADMIT command can also indicate the file access mode in which each alternate user is allowed to employ the file. In other words, file originators can restrict alternate users to a specific mode using the ADMIT command.

File originators can also supply the ADMIT command to override the file access mode that was established when a semiprivate file was originally reserved.

Format:

ADMIT,tfn,$username_1$=md_1,$username_2$=md_2,...,$username_n$=md_n/S,NA.

NOTE

Parameters specified before the slash are order-dependent.

Parameter	Description
tfn	Tape file name of the file (1 to 17 alphanumeric characters) or first-volume VSN (6 characters). This must be the name of a private or semiprivate file; you cannot manipulate a public file with the ADMIT command.
username	User name of a specific alternate user whose access is being controlled. If you supply an invalid user name, no error results and the invalid entry is added to the permit list. You can enter a maximum of seven user names with a single ADMIT command.
md	File access mode under which the alternate user can manipulate the file. Valid entries are: md — Description R — Read W — Write N — Null (no access allowed) The default file access mode is READ. To revoke an alternate user's permission, enter an ADMIT command by associating the particular alternate user with null mode.
S	Symbolic tape access; mandatory entry when you refer to the file by its symbolic name (as opposed to its VSN).
NA	No-abort option. If you select the NA option and NOS encounters an error, the system completes as much of the ADMIT command as possible and processes the remaining commands in the job. If you omit the NA parameter, the system initiates error processing.

Example:

```
ADMIT,EXAMPL3,USER2=W,USER3=R,USER4=N/S.
```

This command grants USER2 and USER3 access to a private tape file whose symbolic name is EXAMPL3. USER2 is assigned WRITE mode while USER3 is given READ mode. In addition, the command denies USER4 access to the tape file.

AMEND COMMAND

The AMEND command permits the tape file originator to change the tape file characteristics that are in the TMS database; including its password, access category, access mode, availability of status information, clear error option, and specification of a change in the charge number/project number combination. Alternate users cannot employ this command since no one can change the parameters of a file which resides in another user's catalog. Issuing the AMEND command causes NOS to update the AUDIT information applicable to the file. (Refer to the description of the AUDIT command in this section.)

Format:

AMEND,nfn_1=ofn_1,nfn_2=ofn_2,...,nfn_n=ofn_n/PW=password,CT=ct,M=md,AC=ac,UC=uc,CE,AN,S,NA.

NOTE

Parameters specified after the slash are order-independent.

Parameter	Description
nfn	New tape file name that should be given to the file (1 to 17 alphanumeric characters or literals); mandatory entry. All tape file names must be unique within a single catalog. If you do not want to alter the file's name, you should supply only the file's current file name (ofn instead of the nfn=ofn entry).
ofn	File's current tape file name.
PW=password	New password that will apply to the file. A password can contain from 1 to 7 alphanumeric characters. To remove the file's password, enter the following option: PW=0
CT=ct	New file access category that will apply to the file. Valid entries are: ct — Description P or PR — Private S — Semiprivate PU — Public
M=md	New file access mode that will apply to the file. Valid entries are: md — Description R — Read W — Write N — Null (no access allowed)

Parameter	Description
AC=ac	Designation indicating whether the file originator allows alternate users to obtain status information (via the AUDIT command) about the tape file. Valid entries are: ac — Description Y — Yes N — No
UC=uc	1- to 10-character (alphanumeric) string that you want NOS to write in the user control word of the tape file catalog. To remove the file's control word, enter the following option: UC=0 If you omit UC=uc, NOS does not record any information in the user control word.
CE	Clear error option. Whenever NOS detects an error while manipulating a tape file, it sets an error bit for the file. If you try to access a tape file whose error bit is set, NOS initiates error processing and issues a diagnostic to your dayfile. In addition, the system designates each erroneous file within its AUDIT records by placing an asterisk in front of the file's name. Contact your system operator to determine the extent of damage on any erroneous file. If you still want to employ the damaged file, issue an AMEND command with the CE option so that NOS will clear the file's error bit.
AN	Specifies that you want to change the charge number/project number combination under which NOS retains your tape file. If you enter the AN option, NOS subsequently retains your tape file under the charge number/project number combination that is in effect when NOS processes your AMEND statement.
S	Symbolic tape access; mandatory entry when you refer to a tape file by its symbolic name.
NA	No-abort option. If NOS encounters an error while processing your AMEND command, it will complete as much as possible of your AMEND command and continue to process the remaining commands in your job. If you omit the NA parameter, NOS initiates error processing.

Example:

```
AMEND,EXAMPL1,/PW=PASSWRD,CT=P,S.
```

This command changes the password (PASSWRD) and file access category (P for private) on tape file EXAMPL1.

AUDIT COMMAND

The AUDIT command enables you to obtain information about files that reside in your tape file catalog and other files to which you have access permission. In response, NOS generates a report that describes files reserved under your user name within your NOS family. In addition, you can also request information about files in other user catalogs for which you have alternate user access.

The AUDIT report appears in a predetermined format, which is suitable for displaying on interactive terminals or batch line printers. Having a line width of 72 characters, this report is intended as listable output as opposed to machine-readable output.

A special option (SS=lfn$_2$) enables you to request a machine-readable file of status information. This file, which is intended for postprocessing, can be manipulated by your programs for such tasks as additional file editing, file sorting, automated file maintenance, and file merging (where several files of AUDIT output are merged). Each record in the machine-readable file describes one reserved magnetic tape volume. All records are Z-type records, whose fields contain alphanumeric or numeric display code. AUDIT stores alphanumeric values left justified and blank filled. It stores numerics right justified and zero filled. Control Data has adopted a standard format for these variable Z-type records that remains constant. If Control Data modifies the record format, it will do so only by adding fields to the end of the record. Table 3-1 presents the standard format that applies to each record in the machine-readable file.

Table 3-1. Audit Logical Record Format (Machine-Readable File)

Column	Description
01	Version; numeric
02- 08	Family name; alphanumeric
09- 15	User name; alphanumeric
16- 22	Charge number; alphanumeric
23- 42	Project number; alphanumeric
43- 59	Tape logical file name or VSN if nonsymbolic; alphanumeric
60- 66	File category; alphabetic (P,PR,PU,SP)
67- 72	Creation date (yymmdd); numeric
73- 78	Creation time (hhmmss); numeric
79- 84	Last access date (yymmdd); numeric
85- 90	Last access time (hhmmss); numeric
91- 96	Last modification date (yymmdd); numeric

Table 3-1. Audit Logical Record Format (Machine-Readable File) (Contd)

Column	Description
97-102	Last modification time (hhmmss); numeric
103-108	File permission mode; alphabetic (R, W, N)
109-118	Access count; numeric
119-120	File format; alphabetic (I, SI, F, S, SL, LI)
121-122	Conversion mode; alphabetic (AS, EB)
123-124	Physical tape type; alphabetic (NT, MT, CT, AT)
125-126	Tape density; alphabetic (HI, LO, HY, HD, PE, GE, CE, AE)
127-129	Not used (blanks)
130-139	User control word (UW)
140-143	Not used
144	Error indicator that specifies whether or not NOS detected an error in this file; alphabetic (S, C)
145	Blank
146-152	File password (blanks for alternate users); alphanumeric
153-155	Not used (blanks)
156-161	VSN (external); alphanumeric
162-167	PRN (internal); alphanumeric
168-173	First VSN; alphanumeric
174-179	Next VSN (blank if no next volume); alphanumeric
180-184	Maintenance flag; alphabetic HOLD if hold for maintenance AVAIL if available
185-187	Site status; alphabetic ON if on-site OFF if off-site
188-193	Ownership type; alphabetic CENTER if center-owned USER if user-owned

Table 3-1. Audit Logical Record Format (Machine-Readable File) (Contd)

Column	Description
194	Error indicator that specifies whether NOS detected an error on this VSN; alphabetic
195-196	Volume number; numeric
197-198	Label status; alphabetic (KL, KU, NS)
199-215	Physical file name; alphanumeric
216-217	Tape usage count; numeric
218-223	Not used (blanks)
224	Reserved flag; alphabetic R if reserved tape file N if tape file not yet reserved
225	Recovery flag; alphabetic S if recovered tape file N if not recovered tape file

Format:

```
AUDIT,tfn,LO=opt,UN=username,L=lfn,SS=lfn,S.
```

Parameter	Description
tfn	Tape file name (1 to 17 alphanumeric characters) or first-volume VSN (6 characters). You enter the tfn option to obtain information about one specific file. This parameter is required if you select the LO=FP or LO=P option. If you omit this parameter, the system lists information about all tape files in the catalog being interrogated.
LO=opt	Code indicating what kind of information should be generated. Valid entries are:

opt	Description
F	Generates pertinent information about each tape file in the catalog being interrogated. If you request information about an alternate-user catalog, the system supplies information about only those files that file originators specified as being listed via AC=ac on the LABEL command. Additionally, the system does not provide password information to an alternate user. You can only obtain passwords for files in your own catalogs. (If you are interrogating an alternate-user catalog, the system presents information only about the files you are allowed to access.)

Parameter	Description

opt	Description
FP	Generates information about alternate users who have accessed a specific semiprivate or private file. If the LO=FP option is selected, you must also supply a tfn entry. If you only want to know whether a particular alternate user has accessed a specified file, you can include a UN=username entry. In response to the LO=FP option, the system indicates how many times a specific alternate user has accessed the file and when the last access was performed. For private files, the LO=FP option generates information about the alternate users who are permitted to access the file (and the mode in which they can access the file) immediately after the file originator grants access permission. In other words, the LO=FP option produces information about alternate users of private files even though the alternate users may not have actually accessed the file.
M	Generates the same information as the LO=F option, with the addition of a third line of information for each tape file. The third line contains multifile tape information: sequence number, section number, and set identifier.
P	Lists only the user names of alternate users who have accessed a specified file. An asterisk after an alternate-user name means that the file originator explicitly granted the other user access to the file (via the ADMIT command). Essentially, the P option generates a short list of the lengthier information provided by the LO=FP option. If you select LO=P, you must also supply a tfn entry.
0 (zero)	Lists only the names of the files in the catalog being interrogated (no other information is listed). If you request file names in an alternate-user catalog, the system only displays the names of the files you are allowed to access.

If you omit the LO=opt parameter, the system lists all of your tape files.

Parameter	Description
UN=username	Specific user name. This parameter serves the following functions: • For the LO=F, LO=M, and LO=0 options, the username entry identifies the alternate-user catalog that you want to interrogate. In other words, you cannot interrogate someone else's catalog without knowing the user name that applies to it. The system presents information only on the files you are allowed to access. • For the LO=FP and LO=P options, the username entry identifies the specific alternate user whose access to a file is being monitored. If you omit the UN=username option, the system assumes you are inquiring about your own catalog.
L=lfn	Name of the local file into which AUDIT writes listable information. To inhibit the generation of status information, enter the following option: L=0 If you omit the L=lfn parameter, the system automatically generates status information into the OUTPUT file. If lfn is currently local to your workspace, the system writes the information into lfn at its current position.
SS=lfn	Name of the local file into which NOS generates machine-readable status information. This file is not rewound before or after processing. One record of status information is generated for each tape file in a volume if TO=S was specified when the files were created. If TO=S was omitted when the files were created, one record of status information is generated for each tape volume (regardless of the number of files in the volume). If you omit the SS=lfn parameter, the system does not produce a machine-readable file.
S	Symbolic tape access. This parameter is required if you request information about a tape file and use the file's symbolic name.

EXAMPLE 1

```
AUDIT,EXAMPL1,S,LO=F.
```

This command requests detailed information about one specific file (EXAMPL1) in your tape catalog.

EXAMPLE 2

```
AUDIT,EXAMPL1,S,LO=P.
```

This command requests the user names of alternate users who have access to EXAMPL1.

EXAMPLE 3

```
AUDIT,EXAMPL1,S,LO=FP.
```

This command requests information about alternate users who have accessed EXAMPL1. If a paticular user has not yet accessed the file, the system indicates when this user was initially granted permission to manipulate it.

LABEL COMMAND

The LABEL command under TMS differs from the standard NOS LABEL command. Use the format and parameters provided in this manual with the LABEL command under TMS. With non-TMS processing, the LABEL command works as described in the NOS Version 2 Reference Set Volume 3. You can force non-TMS processing if desired with the TMSDEF command. Refer to the TMSDEF command description.

The LABEL command assigns a magnetic tape to your job so that the job can manipulate the tape as a local file. The LABEL command applies to the following kinds of labeled and unlabeled tapes.

- Center-owned reserve tapes.
- Center-owned scratch tapes.
- User-owned tapes.

In addition, NOS can perform various tape operations with labeled tapes based on options selected in the LABEL command. The system can:

- Write ANSI labels onto the mounted tape when the LABEL command contains the W parameter and you supply other appropriate labeling options as LABEL command parameters.
- Verify the contents of the current tape label when you supply appropriate label verification parameters (unless the LABEL command contains the W or PO=W parameter).
- Position the tape to specific ANSI labels if the LABEL command contains the R parameter and you employ other appropriate positioning options (such as the SI, QN, and FI parameters.)

Format:

LABEL,lfn,VSN=0,p_1,p_2,...,p_n.

NOTE

All parameters except the lfn parameter are order-independent.

Parameter	Description
lfn	Local file name by which your job will manipulate the mounted tape. This parameter is required. If you create a new TMS-controlled tape and do not specify FI=fileid, lfn becomes the tape file name. If you access an existing TMS-controlled tape and do not specify FI=fileid but do specify S (for symbolic access), TMS assumes that lfn is the tape file name. TMS looks for the tape in your tape catalog.
VSN=0	Directs the system to mount a scratch tape. If a scratch tape is unavailable, the job is suspended until a tape is available. This parameter is required when you create a tape file via symbolic access. You can also supply this parameter in the following form: VSN=SCRATCH
p	One or more optional parameters that can appear in a LABEL command.

p	Description
AC=ac	Indicates whether the file originator allows alternate users to obtain status information (via the AUDIT command) about the tape file. Valid entries are:

ac	Description
Y	Yes
N	No

If you omit the AC=ac parameter, alternate users cannot obtain status information about the file.

Parameter	Description

p	Description
checkpt (CK or CB)	Specifies that the tape file referenced by the LABEL command's lfn parameter should be employed as a checkpoint file. Valid entries are:

checkpt	Description
CK	Asks the system to save all checkpoint dumps by appending each dump onto lfn at its end-of-information.
CB	Asks the system to save the most recent checkpoint dump by writing that dump onto lfn at its beginning-of-information.

You exercise this option in conjunction with the CKP and RESTART commands. You supply a LABEL command in the following form:

```
LABEL,lfn,CK,PO=W,NT.
      or
LABEL,lfn,CB,PO=W,NT.
```

If you omit both the CK and CB parameters, NOS assumes that the tape will not function as a checkpoint file.

CR=cdate — Specifies the tape's creation date. cdate is entered in the format:

yyddd

yy	Last two digits of the year in which the tape was created.
ddd	Day when the tape was created, expressed as a sequential number. This entry can have a minimum value of 1 (to represent January 1) and a maximum value of 366 (to represent December 31 in a leap year).

Select this option when you want the system to read an ANSI-labeled tape. This date is only meaningful for read operations. Write operations employ the current date. If you omit the CR=cdate parameter, the system supplies the current date.

You can request the same option by entering the following parameter:

C=cdate

Parameter	Description

p	Description

CT=ct Specifies the file access category. Valid entries are:

ct	Description
P or PR	Private
S or SP	Semiprivate
PU	Public

If you omit the CT parameter when the file is created, the file is categorized as P (private).

CV=cv Specifies the conversion mode that applies for 9-track tapes. Valid entries for the cv value are:

cv	Description
AS or US	ASCII/display code conversion
EB	EBCDIC/display code conversion

See appendix A in the NOS 2 Reference Set Volume 3 for these conversion tables. If you omit the CV=cv parameter, the system assumes that ASCII/display code conversion applies to 9-track tape.

D=den Tape density; must not conflict with the DT=dty specification. The default is installation-defined. The parameter is ignored for 9-track tapes not positioned at load point. Can be:

Seven-track (MT)		Nine-track (NT)	
den	Density	den	Density
LO	200 cpi	HD	800 cpi
HI	556 cpi	PE	1600 cpi
HY	800 cpi	GE	6250 cpi
200	200 cpi	800	800 cpi
556	556 cpi	1600	1600 cpi
800	800 cpi	6250	6250 cpi

Cartridge (AT)		Cartridge (CT)	
den	Density	den	Density
AE	38000 cpi	CE	38000 cpi
38000	38000 cpi	38000	38000 cpi

Parameter	Description
p	Description
DT=dty	Tape device type; must not conflict with the D=den specification. You can omit this parameter if the D=den parameter uniquely identifies the tape type (that is, for all D=den values except 800 cpi and 38000 cpi). The default is installation-defined.

dty	Meaning
MT	Seven-track tape.
NT	Nine-track tape.
AT	Cartridge tape for ACS.
CT	Cartridge tape for CTS.

E=gvn — Specifies a 1- to 2-digit generation version number. You can select this option when you want the system to read or write an ANSI-labeled tape. If you omit the E=gvn parameter, the system supplies a generation number of 00 for an ANSI-labeled tape.

F=format† — Specifies the data format in which the tape appears: Valid entries are:

format	Description
I	Internal
S	Stranger
L	Long Block Stranger
F	Foreign
LI	Long Block Internal

See the subsection on Tape Data Formats in section 2 of the NOS 2 Reference Set, Volume 3 for detailed information on these data formats. If you omit the F=format parameter, the system assumes the tape appears in I format.

† You must perform special procedures when employing tapes in X, B, E, or SI-coded format. Refer to the description of the TCOPY command in the NOS 2 Reference Set, Volume 3.

Parameter	Description

p	Description

FA=fa Specifies the accessibility restriction that governs the tape. You can select this option when you want the system to write on ANSI-labeled tape. In addition, if you create a file header label with FA equal to any alphanumeric character other than A, anyone who subsequently wants to access this tape must supply an FA=fa parameter with the correct fa value. Valid entries are:

fa	Description
A	Only the owner of a system-written tape can access the tape. Under NOS, the tape owner is identified on the tape's volume header label by a combination of a user name and family name. A system-written tape is an ANSI-labeled tape that is identified as a NOS-written tape in the HDR1, EOF1, and EOV1 labels.
non-A	Anyone who wants to access the tape in the future must supply the alphanumeric character specified by the fa value.

If you are writing a file header label and omit the FA=fa parameter, NOS does not impose any accessibility restrictions.

FC=fcount Specifies the maximum-sized block (in frames) that can be read from (or written to) the tape. This parameter only applies to tapes that appear in F format. If you omit the FC=fcount parameter, the system does not establish any size as a maximum.

FI=fileid Specifies a 1- to 17-character file identifer that can contain nonalphanumeric characters. You can select this option when you want the system to read or write an ANSI-labeled tape. You can obtain the same option by entering the following parameter:

```
L=fileid
```

If you are reading a multifile tape (see the SI=setid parameter), the FI=fileid parameter causes the system to position the tape at the HDR1 label whose sequence number matches your supplied fileid value. If you are writing onto a tape, the FI=fileid parameter instructs NOS to write your specified fileid onto the tape.

Parameter	Description

p	Description
	If you are reading a tape using symbolic access (TO=S parameter), the system assumes that the fileid is the TMS tape file name. If you omit FI=fileid when writing onto a tape, the system uses the local file name (lfn) as the TMS tape file name.
G=genno	Specifies a 1- to 4-digit generation number, which must be greater than zero. You can select this option when you want the system to read or write an ANSI-labeled tape. If you omit the G=genno parameter, the system supplies a generation number of 0001 for ANSI-labeled tapes.
LB=lb	Specifies whether the system should treat the tape as a labeled tape or an unlabeled tape. Valid entries are:

lb	Description
KU	Unlabeled tape. No label access restrictions can be enforced by the system.
KL	ANSI-labeled tape; NOS standard. NOS enforces volume and accessibility restrictions.
NS	Labeled tape that contains nonstandard labels (labels do not conform to ANSI standards). In this case, the system skips over labels based on tape marks and does not process those labels. You can select the LB=NS option when you want the system to process a non-NOS tape that contains a tape mark prior to its beginning-of-information (even though it is designated as an unlabeled tape).

If you omit the LB=lb parameter, the system assumes you are employing an ANSI-labeled tape (KL).

Parameter	Description

p	Description

MD=md

Specifies the file access mode permitted to other users if the tape file is public or semiprivate and if explicit access permission has not been granted to that user. Valid entries are:

md	Description
R	Read
W	Write

If you omit the MD=md parameter, the file access mode is R (read).

NS=ns

Specifies how the system should define noise on the tape; this parameter does not apply to tapes appearing in I, SI, or LI data format or for AT and CT tapes (see explanation below). The system considers a block of characters to be noise if that block is smaller than ns number of frames. The system automatically discards all characters that it considers to be noise.

ns is the number of frames that constitute the size of a legal block. You can specify a maximum of 31 (decimal). If you specify a 0, the system employs the default definition.

If you omit the NS=ns parameter (or supply an ns value of 0), the system automatically defines noise as any block smaller than 18 frames.

The I, SI, or LI tape formats and AT and CT tapes imply a definition of noise size that you cannot override. Do not specify an NS=ns parameter for these tapes.

PO=p_1, p_2,..., p_n

Specifies one of more special processing options that should be implemented when the system executes the LABEL command. You can combine two or more options; delimiters must be omitted from the combined string. Valid entries are:

P_i	Description
A	If the system encounters an irrecoverable read or write parity error, it automatically terminates your job. NOS implements the A option by default. You can override this default by selecting the N option as a PO parameter.

Parameter	Description
P	Description
P_i	Description
E	Error inhibit. If the system encounters read/write errors, it ignores these conditions and continues to process your job. The system does not attempt error recovery, issue error messages, or return error status if the E option is selected. When the PO=E option is in effect and reading is taking place, the system bypasses blocks that are smaller than the noise size. This option is not intended for the normal user; however, it can be employed to recover portions of a bad tape and to write on tape without skipping bad spots. In the latter case, you are responsible for verifying that the data was written correctly.
F	Instructs the system to unload the tape at job termination if the job has not already done so. RETURN and UNLOAD commands explicitly unload a tape. If your job does not contain a RETURN or UNLOAD command, the F option causes the system to unload the tape at job termination. NOS selects the F option by default. You can override this default by entering the U option.
G	Disable hardware corrections in GE write mode (density of 6250 cpi). If an on-the-fly error occurs while processing a GE tape and you select the PO=G option, the system performs standard error recovery and erases the defective portion of the tape. Unless you select the G option, NOS selects the H option by default.

Parameter

Description

p

Description

P_i

Description

H — Enable hardware corrections in GE write mode (density of 6250 cpi). If you select the PO=H option, the system allows certain single-track errors to be written and corrects these records when the tape is read (on-the-fly corrections).

I — Directs the system to ignore the block being read when the system encounters an end-of-tape indicator. This option does not apply to I, SI, or LI format tapes, nor to CT or AT tapes. If you do not select either the I or P option, NOS selects the S option by default.

L — Inhibits the system from issuing tape error-recovery messages to your dayfile. When PO=L appears, the system issues only the first and last recovery message. If you omit both the L and M options, the system performs the L option by default.

M — Allows the system to issue all tape error recovery messages to your dayfile. If you omit both the M and L options, the system performs the L option by default.

N — If the system encounters an irrecoverable read or write parity error, it does not terminate your job. If a read operation is being performed, the system passes the data to the program. If you do not select the N option, NOS selects the A option by default.

P — Directs the system to accept the block being read when the system encounters and end-of-tape indicator. This option does not apply to I, SI, or LI format tapes, nor to CT or AT tapes. If you do not select either the P or I option, NOS selects the S option by default.

Parameter	Description
p	Description
P_i	Description
R	Enforces a read-only protection. Any attempt to write on the tape is rejected. When you access a previously reserved tape, NOS selects the R option by default. When you create a tape with VSN=0, NOS selects the W option by default.
S	Specifies when the system should stop on an exit condition. Two alternatives can occur: • Unlabled tape - S option directs the system to stop at the first tape mark that appears after it senses an end-of-tape. • Labeled tapes - S option directs the system to stop at the first tape mark plus EOF1 or the tape mark plus EOV1 after NOS encounters an end-of-tape. NOS selects the S option by default. You can override the S option by selecting either the I or P options.
U	Instructs the system to inhibit unloading at job termination. If you omit the U option, the system automatically unloads the tape at job termination unless it has already done so in response to an explicit UNLOAD or RETURN command. In other words, if you omit the U option, NOS selects the F option by default.

Parameter	Description
P	Description
P_i	Description
W	Enforces a write-enable procedure. If the central site operator mounts the tape without a write ring (for an MT or NT tape) or with the write-enable thumbwheel in the the wrong position (for a CT tape), the system suspends your job until the operator corrects the situation. If an AT tape is mounted with the write-enable thumbwheel in the wrong position, the tape is unloaded and the job is aborted.

If you omit the PO parameter and a write operation is implied, the system performs the F, S, A, and L options (when a scratch tape is mounted or the W parameter is selected). If you omit the PO parameter and a write operation is not implied, NOS selects the F, S, A, L, and R options. In both instances, if you employ a 6250-cpi tape, NOS also performs the H option by default.

PW=password — Specifies the 1- to 7-character password that controls access to the mounted tape. You need to enter this password only if you are requesting an alternate tape (a tape reserved under someone else's user name) and if the tape originator assigned a password to the tape. If you omit the PW=password parameter while trying to request an alternate tape, and if this tape is reserved with a password in effect, NOS denies access and terminates your job.

For added security, you can enter the PW parameter, in the following form:

```
PW
```

In this case, NOS expects you to supply the 1- to 7-character password in the next record of the INPUT file that the system will read. This record must be a single line that contains the password beginning in column 1.

QN=seqno — Specifies a 1- to 4-digit file sequence number. You can select this option when you want the system to read or write an ANSI-labeled tape. You can obtain the same option by entering this parameter in the following form:

```
P=seqno
```

Parameter	Description

P	Description
	If you want to read a multifile tape (see the SI=setid parameter), the QN=seqno parameter causes the system to position the tape in front of the file whose sequence number is identical to the user-supplied seqno value. If you want to extend a multifile set beyond its current end-of-information, the seqno value must equal 9999 (QN=9999). If you omit the QN=seqno parameter, the system supplies a sequence number of 0001 for ANSI-labled tapes.
read/write (R or W)	Specifies whether the system should read or write ANSI labels on the requested tape. Valid entries are:

read/write	Description
R	System should read existing ANSI labels on the tape. The system compares the volume header label (VOL1) and/or a specific file header label (HDR1) that appears on the tape file against your supplied parameters in this LABEL command. This label verification can indicate whether the correct tape has been mounted or whether the person requesting the tape should be allowed to access the tape. If the comparison fails, the system terminates your job. If the R parameter appears in conjunction with certain other LABEL parameters (QN, SI, FI), NOS positions the tape to a particular label.

Parameter	Description
p	Description
read/write	Description
W	System should write standard ANSI labels onto the tape on the basis of parameters you supply within this LABEL command.† The W parameter does not require that you also supply a PO=W entry in the LABEL command. If the operator mounts the tape without a write ring, the system suspends your job until the operator remounts the tape with the write ring; however, if you specify a PO=R parameter, and the tape is mounted without a write ring, the system terminates your job.

If you omit both an R parameter and a W parameter when accessing a previously reserved tape, the system performs a read (R) procedure. When you create a scratch tape, the system forces a write (W) procedure.

retention (RT or T)	Specifies how long the system should prohibit users (including the tape owner) from writing information over the current information in the tape. This option applies only to ANSI-labeled tapes. When you write an ANSI label, you can exercise this option by supplying either a retention date or a retention cycle.

† When NOS writes a label onto a tape, it generates the label in accordance with user-specified parameters in the LABEL command, leaves 3 inches of blank tape, and then generates an end-of-information. If the tape already contains information, the system's label-writing conventions make the rest of the tape inaccessible to you by normal means.

Parameter	Description
p	Description

Supply a retention date in the following form:

RT=rdate

rdate — Date after which you can write information over the 'tape file's existing information. This date should be expressed in the following form:

yyddd

yy — Last two digits of the year when the tape retention should terminate.

ddd — Day when the tape retention should terminate, expressed as a sequential number. This entry can have a minimum value of 1 (to represent January 1) and a maximum value of 366 (to represent December 31 in a leap year).

Supply a retention cycle in the following form:

T=retcycle

retcycle — Number of days (from the current date) before you can write information over the tape's existing information.

You can supply either the RT=rdate parameter or the T=retcycle parameter in a LABEL command. On multifile tapes, only the first file's retention date or retention cycle is meaningful. If you omit both the RT=rdate and the T=retcycle parameter, the system allows you to write information over the tape's existing information immediately (it does not establish any retention date or retention cycle).

Parameter	Description
p	Description
SI=setid	Specifies a 1- to 6-character set identifier for a volume or volume set that contains more than one file. You can select this option when you want the system to read or write an ANSI-labeled tape. The SI=setid parameter must appear in the LABEL command if you want to position a multifile tape file to a specific file other than the first file on the volume. If you omit the SI parameter, the system does not supply a set identifier. It assumes the tape contains only one file.
SN=secno	Specifies a 1- to 4-digit file section number. You can select this option when you want the system to read or write an ANSI-labeled tape. You can obtain the same option by entering this parameter in the following form: V=secno If you omit the SN=secno parameter, the system supplies a file section number of 0001 for ANSI-labeled tapes.

Parameter	Description

p	Description

TO=to Specifies tape management options. You can specify one or more special processing options that should be implemented when the system executes the LABEL command. You can concatenate two or more options by omitting parameter separators/delimiters. Valid entries are:

to	Description
A	This option can be used in place of the QN=9999 option if you are going to append a file onto a multifile set.
C	Checks for catalog error. If you request a tape that TMS has identified as having a data error and you use this option, the LABEL command aborts with the ERROR IN FILE DATA message. You can use the E option if you want to ignore previous data errors.
D	User-supplied parameters. This option applies only if you want to change the physical parameters on an existing file in READ mode. In other words, it allows you to change the CV=cv, D=den, F=format, FI=fileid, and LB=lb parameters. If you omit the D option, the system uses the parameters specified when the file was created or last modified.
E	Ignores catalog error. If you request a tape that TMS has identified as having a data error and you use this option, the LABEL command does not abort with the ERROR IN FILE DATA message. You can use the C option if you want to check for previous data errors.

Parameter	Description
P	Description
to	Description
F	Non-TMS tape request. Requests a tape (foreign) that is not controlled by TMS. The operator must assign the file.
R	Reserves assigned scratch volumes. When you create a tape file, the system reserves all scratch tapes assigned to the file. If you are creating a new tape file and omit the R option, the system releases scratch volumes. If you are writing to an existing file, the system assumes R.
S	Symbolic tape access. This parameter is required when you manipulate a tape file by its symbolic name.

UN=username — Specifies the user name under which the mounted tape is reserved. If you omit the UN=username parameter, NOS assumes the mounted tape is reserved under your own user name. If the requested tape is not reserved under your own user name and you omit the UN parameter, NOS initiates error processing. Enter the UN=username parameter only to request a tape that is reserved under someone else's user name. Alternate users must have one of the following permissions in order to access a file.

- Explicit permission - The owner of the file grants access permission to you with the ADMIT command.
- Implicit permission - The file is semi-private or public and so can be accessed by users who know the file name, user name, and file password, and who have not been explicitly denied permission.

EXAMPLE 1

```
LABEL,ALPHA
```

This command assigns a previously reserved center-owned tape to your job. You instruct the operator to mount tape file ALPHA without inserting a write ring. ALPHA is a tape file previously placed in your catalog. By default, NOS positions the tape at its first file and assumes that this is an I format labeled tape and PO=R (read).

EXAMPLE 2

```
LABEL,BETA,D=PE,TO=S,VSN=0.
```

This command assigns a center-owned scratch tape to your job. You instruct the operator to mount a center-owned scratch tape with a write ring in place. The local file name for the tape is BETA which is also the tape file name since TO=S is specified. By default, NOS writes ANSI labels onto the tape. It generates default values into all fields of the file header label (HDR1) except the file identification field. On the basis of the PE parameter, the operator mounts a 9-track tape and NOS records information at 1600 cpi. By default, NOS writes data onto the tape in I format. In order to manipulate this tape, subsequent commands in the job refer to the tape by its tape file name (BETA).

EXAMPLE 3

```
LABEL,CHI,FI=Z119.
```

This command positions TMS multivolume tapes. You instruct the operator to mount tape file Z119 without inserting a write ring. Because the R parameter is operational by default, user-supplied parameters specify where NOS should position the tape before reading begins. NOS searches the tape for file header label (HDR1) with the file id of Z119 (FI=Z119) before reading begins. After NOS positions the tape, your job can manipulate the tape by referring to its local file name (CHI).

Under NOS, users who initially specify symbolic access for a tape have the option of also accessing the tape file by VSN. The following discussion shows the LABEL format for accessing a tape by VSN.

Format:

```
LABEL,lfn,VSN=vsn,p ,p ,...,p .
```

Parameter	Description
lfn	Local file name by which your job manipulates the mounted tape. This parameter is required.
vsn	A 6-character volume serial number that uniquely identifies a reel of tape. When you initially request a tape as a scratch tape, your dayfile lists the tape's VSN. You can also determine a tape's VSN with the AUDIT command. If the tape file has more than one volume, vsn must be the name of the first tape volume.
p	One or more optional parameters that can be in a LABEL command. Refer to the preceding description of the LABEL command for these parameters.

Example:

```
LABEL,EXAMPL3,W,UN=USER1,PW=PASSWRD,PO=W,VSN=KIB003.
```

By issuing this LABEL command, USER2 supplies a VSN (KIB003) to access a file (EXAMPL3) that resides on the specified tape volume. As an alternate user, USER2 must identify the username of the file originator (USER1) and an appropriate password (PASSWRD). The W option specifies that the system should rewrite ANSI labels on the requested tape, and the PO=W parameter enforces the write-enable procedure.

RECLAIM COMMAND

The RECLAIM command performs a number of functions related to the transfer of NOS files between your job and a dump file. The dump file can be a magnetic tape or a mass storage (disk) file. Using RECLAIM you can selectively dump local or permanent files, retrieve files from a dump file, and list information about files previously dumped to tape or mass storage.

RECLAIM provides you with an easy way of making backup copies of local files or of direct and indirect access permanent files. It also gives you greater control over the size of your permanent file disk space. You can enter RECLAIM from a batch or interactive job.

Dumped files can be reloaded as local or permanent files. Reloaded permanent files have the same permissions, modes, permit categories, and so forth that they had when dumped. File history information for reloaded files (file creation date, last date modified, last date accessed, etc.), however, is set to the date and time of loading. The file owner or an alternate user can reload files from tape.

Information about dumped files (such as, file name, dump date, tape VSN, and dump number), can be stored in a dump database. This database is maintained as a direct-access file in your permanent file catalog. RECLAIM automatically creates a dump database when you enter a DUMP directive unless you specify that you do not want a database for the dump (using the DB=0 parameter). If you do not specify a name for the database, RECLAIM uses the default name RECLDB. To get information on individual files in the database, enter a RECLAIM command with the LIST directive.

Multiple users can share a dump database; for example, alternate users can access a database in your catalog by entering a RECLAIM command specifying your database file name (on the DB parameter) and your user name (on the UN parameter). As with any other permanent file, alternate users must have WRITE permission to access and use your database file.

NOTE

RECLAIM directives that require tape mounts (COMPACT, DUMP, LOAD, and COPY) perform their own tape requests internally. When entering one of these directives interactively, you should be prepared to wait for the tape mount(s). Another alternative is to submit the RECLAIM command as a batch job.

Format:

RECLAIM,p_1,p_2,...,p_n./directive$_1$,op$_{11}$,op$_{12}$,...,op$_{1n}$/directive$_2$,

op$_{21}$,op$_{22}$,...,op$_{2n}$/.../directive$_{nn}$,op$_{n1}$,op$_{n2}$,...,op$_{nn}$.

Parameter	Description
DB=pfn	Specifies the name of the direct-access file that contains the RECLAIM database. The default file name for pfn is RECLDB. If a value of 0 is entered for pfn, no database is created or maintained.
I=input	Specifies the name of the local file containing the RECLAIM input directives to be processed. The default file name is INPUT.
L=output	Specifies the name of the local file to receive the output listing. The default file name is OUTPUT.
NH	Inhibits RECLAIM from printing a header on file lfn$_2$.
PW=password	Specifies the file password for the database file; applicable only if the database file resides in an alternate user catalog.
UN=username	Specifies the user name of the database file owner; applicable only if the database file resides in an alternate user catalog. You must have WRITE permission to access files under an alternate user name.
NA	No abort option; inhibits RECLAIM abort in case of a program error.
NV	Specifies that a dump is to be written at end-of-information (EOI), regardless of what precedes the EOI. If this parameter is omitted, RECLAIM will not write a dump beginning at EOI unless at least one valid RECLAIM dump precedes the EOI.
Z	Specifies that the RECLAIM command contains input directives following the terminator. If the Z parameter is specified, the I parameter is ignored. Use of the Z parameter eliminates the need for an input file when only a few directives are required.
directive$_i$	Specifies how RECLAIM is to manipulate files that meet the criteria set forth in the directive options. (The following paragraphs describe RECLAIM directives and options.)
option$_i$	Specifies a file characteristic or attribute RECLAIM is to use in selecting the file or files to be processed. (The following paragraphs describe RECLAIM directives and options.)

RECLAIM directives define the operation to be performed on a specified file or files. All directives except END can have one or more associated options. A comma is used as the separator between a directive and its associated options.

When you enter a RECLAIM command with the Z parameter, type in the directives following the command terminator. The first character following the terminator must be the separator character which is used to separate individual directives. The separator character can be any character that does not appear within the directives. (In this section, the / character is the separator in the examples.)

The following are descriptions of the RECLAIM directives:

Directive	Description
COMPACT	Rewrites a dump file using only the active files from the database. All files logically deleted (using the DELETE directive) from your database are physically deleted from the dump file and the database. Options that apply additional file selection criteria may also be specified. Files that do not meet these additional criteria are also physically deleted. The active files rewritten by the COMPACT directive are consolidated into a single dump before being rewritten; that is, the new dump file contains only one dump. The database is updated to remove all inactive entries and update the dumpfile number for the remaining entries. COMPACT cannot be used on dump files that have no database file. You must specify one of the following options to indicate where the dump file to be created by COMPACT is to be stored: CF=clfn CN=cpfn CT=vsn OV You must specify either or both of the CF=clfn and CN=cpfn options in conjunction with the DT=MS option if a new mass storage file is to receive the dump. You must specify the CT=vsn option if a new tape is to receive the dump. If you intend to enter a COMPACT directive specifying a new tape, you must issue a RESOURC command to allow RECLAIM to request the two tapes at once. You must specify the OV option if the dump is to be rewritten on the original tape or file. To rewrite a dump tape, the compacted dump is first written to a disk scratch file, then copied to the original file. If you know or expect that a dump will require multiple reels, you must enter a VSN command before entering RECLAIM. The VSN command should specify as many VSNs as necessary and should associate the VSNs with the local file name specified by the CF option. If no CF option is specified, the default local file name NTAPE is used.
COPY	Creates local file copies of all dumped files that meet the criteria specified by the COPY directive options. (The COPY directive is the same as the LOAD directive except that the LOAD directive creates permanent files from dumped files.) The copied files are created using their original permanent file names unless they are explicitly renamed. The COPY directive performs its own tape requests internally. If a copy is initiated for several files residing on a single tape, that tape is only requested once. If the copy specifies files on multiple tapes, multiple tape requests are initiated.

Directive	Description
	The latest (most recently dumped) version of each file is copied unless you specify other characteristics. The following are examples of a COPY directive: RECLAIM,Z./COPY,PF=ALPHA/COPY,PF=BETA/COPY,PF=SIGMA or RECLAIM,Z./COPY,PF=*/ALPHA,BETA,SIGMA Either of these commands copies the latest (most recently dumped) versions of files ALPHA, BETA, and SIGMA and makes them local files.
DELETE	Disables all files in your database that meet the criteria specified by the DELETE directive options. Deleted files are not physically deleted from the database and can be restored to active status using the RESET directive. Use the LIST directive with the DE option to list deleted files. You can use DELETE to temporarily disable selected files, thus, allowing you to load all files except those disabled. All files disabled by DELETE are physically removed from the dump file if a COMPACT directive is entered before the disabled files are reactivated (using RESET). The following is an example of a DELETE directive: RECLAIM,Z./DELETE,DD=851204 This example instructs RECLAIM to disable all files dumped on the date 12/4/85.
DUMP	Dumps to tape or mass storage all permanent files that meet the criteria specified by the DUMP directive options. Information that RECLAIM requires to perform future reloads from the dump file is stored in a database file within the specified user catalog. If the specified database file does not exist, RECLAIM creates it. You can inhibit the creation or use of a database file by specifying the DB=0 parameter. Files are dumped in the order they appear in your permanent file catalogue unless you specify the PF or FN option. Files are then dumped in the order they are listed for PF or FN. If a file is listed more than once for PF or FN, multiple copies are dumped in the specified order. Dumped files are written to the dump file at EOI unless EI=NO is specified. If RECLAIM determines that a dump file is empty or does not contain a RECLAIM dump, it sends the following message to the dayfile and the terminal: UNKNOWN DUMP FILE WILL BE REWRITTEN. If the DUMP directive was entered interactively, RECLAIM issues the following prompt: IS THIS OK (YES OR NO)?

Directive	Description

	If you enter YES, the dump proceeds normally. For a NO response, RECLAIM ignores the directive and prompts for the next one. In a noninteractive job, RECLAIM proceeds with the dump.
	
	The following is an example of a RECLAIM DUMP directive:
	
	`RECLAIM,Z./DUMP,TY=D,TN=001442`
	
	This example instructs RECLAIM to dump all direct-access permanent files in your catalog to a magnetic tape with the VSN of 001442. If a database named RECLDB does not currently exist, RECLAIM creates it.
	
	If you know or expect that a dump will require multiple reels, you must enter a VSN command before entering the RECLAIM command. The VSN command should specify as many VSNs as necessary and should associate the VSNs with the local file name specified by the DF option. The default name is TAPE, for example:
	
	`VSN,TAPE=001442/001501/001995.`
	`RECLAIM,Z./DUMP,TN=001442,TY=D`
	
	This example duplicates the previous example, but allows for a multiple-reel dump.

END	Ends the current RECLAIM session. At an interactive terminal, a blank line followed by a carriage return is equivalent to an END. In a directive file, an EOR has the same effect as an END directive.
LIST	Lists RECLAIM database information about all dumped files that meet the criteria specified by the accompanying directive options. Files are listed in alphabetical order except for dump files without a database. Dump files with no database are listed in sequential order.
LOAD	Loads into your permanent file catalog all of the files that meet the criteria specified by the LOAD directive options. (The LOAD directive is the same as the COPY directive except that the COPY directive creates only local files.) The latest (most recently dumped) version of each file is loaded unless you specify other characteristics. If a file name specified in a LOAD directive already exists in the catalog, the file will not be loaded unless the RP or RP=Y option is also specified. The LOAD directive performs its own tape requests internally. If a load is initiated for several files residing on a single tape, that tape is only requested once. If the load specifies files on multiple tapes, multiple tape requests are initiated. Examples of the LOAD directive follow: The following LOAD directive loads into your catalog the most recently dumped version of MYFILE: `RECLAIM,Z./LOAD,PF=MYFILE`

Directive	Description

	The following LOAD directive loads up to 595 files dumped on the date 1/12/84.
	
	`RECLAIM,Z./LOAD,DD=840112,NF=595`
	
	Either of the following LOAD directives loads the latest version of file ALPHA with modification date of 11/14/83:
	
	`RECLAIM,Z./LOAD,PF=ALPHA,NN=BETA,MD=831114`
	
	or
	
	`RECLAIM,Z./LOAD,PF=*,MD=831114/BETA=ALPHA`
	
	File ALPHA is loaded into your catalog as file BETA. If a permanent file called BETA already exists in your catalog, the file is not loaded. If a permanent file named ALPHA exists in the catalog, it does not affect and is not affected by this operation.

QUIT	Equivalent to END.
REMOVE	Permanently removes a tape volume serial number (VSN) from the database. This purges from the database all entries for the specified tape.
RESET	Reactivates all files previously disabled by the DELETE directive that meet the criteria specified by the RESET directive options.
SET	Redefines the RECLAIM defaults for any directive options. Typically, this directive is used during a long RECLAIM session to establish criteria for subsequent processing. If a SET directive is encountered without an accompanying option, it has no effect on current defaults.

The options that can be associated with RECLAIM directives are as follows:

Option	Description
CF=clfn	Specifies the name of the local file to receive the compacted dump. If clfn is omitted, the local file name is the name specified for the CN parameter. If the CN parameter is omitted, the default name NTAPE is used for clfn. This option is used with COMPACT.
CN=cpfn	Specifies the permanent file to receive the compacted dump if you choose not to overwrite the original dump file. (Use the OV option to overwrite the original dump file.) The CN option allows you to specify different names for the local and permanent file copies of the dump file. This option does not create, save, or replace the permanent file; these operations are the user's responsibility. This option is used with COMPACT.
CT=vsn	Specifies the VSN of the tape to which the compacted dump is to be written. The CT option is used with COMPACT.

Option	Description
D=den	Specifies tape density; valid entries for den are:

den	Description
HI	556 cpi; 7-track tape (MT)
HY	800 cpi; 7-track tape (MT)
HD	800 cpi; 9-track tape (NT)
PE	1600 cpi; 9-track tape (NT)
GE	6250 cpi; 9-track tape (NT)
CE	38000 cpi; cartridge tape for CTS (CT)
AE	38000 cpi; cartridge tape for ACS (AT)

The D option is used with COMPACT and DUMP.

DA=yymmdd — Instructs RECLAIM to process only those files dumped after a specified date. DA may be used in conjunction with DB to specify a date range. The DA option is used with COMPACT, COPY, DELETE, LIST, LOAD, and RESET.

DB=yymmdd — Instructs RECLAIM to process only those files dumped before a specified date. DB may be used in conjunction with DA to specify a date range. The DB option is used with COMPACT, COPY, DELETE, LIST, LOAD, and RESET.

DD=yymmdd — Instructs RECLAIM to process only those files dumped on a specified date. The DD option is used with COMPACT, COPY, DELETE, LIST, LOAD, and RESET.

DE — Instructs RECLAIM to process only those files that have been disabled by DELETE. If this options is omitted, only undeleted files are processed. The DE option is used with COMPACT, COPY, LIST, LOAD, and RESET.

DF=dlfn — Specifies the name of the local file copy of a dump file. The default name for dlfn is TAPE. The DF option is used with DUMP.

DN=dpfn — Specifies the permanent file to or from which files are to be processed. Only files on this dump file that meet other specified selection criteria are selected. The DN option is logically equivalent to and interchangeable with the TN option. The DN option is used with COMPACT, COPY, DELETE, DUMP, LIST, LOAD, and RESET.

DT=dtype — Specifies the type of dump file to be created. Possible values for dtype are:

dtype	Significance
MS	The dump is placed on a mass storage (disk) file.
MT	The dump is placed on 7-track magnetic tape.
NT	The dump is placed on 9-track magnetic tape.
AT	The dump is placed on a cartridge tape for ACS.
CT	The dump is placed on a cartridge tape for CTS.

The DT option is used with COMPACT and DUMP.

Option	Description
EI=NO	Instructs RECLAIM to write dumped files at the beginning of the dump file, thus destroying any existing information on the dump file. If this option is omitted, files to be dumped are written to the dump file at end-of-information. The EI option is used with DUMP.
EX=option	Specifies the use of exception processing for RECLAIM options. Values that can be specified for option are Y or N. Y indicates that exception processing will be used; that is, only files that fail one or more selection criteria are processed. N indicates that normal processing is used; that is, only files that meet all selection criteria are processed. The EX option is used with COMPACT, COPY, DELETE, DUMP, LIST, LOAD, and RESET.
F=format	Specifies any valid NOS tape format. The F option is used with COMPACT or DUMP.
FI=nn	Specifies the dump number (1 to 63) to which the dump file is to be positioned. A dump is the set of user files dumped to a file by a single DUMP or COMPACT directive. The FI option can be used in conjunction with the RC option to position the tape or file pointer to a particular file within a specified dump. (The FI value associated with a particular file is listed in the FI column of the RECLAIM output listing.) The FI option is used with COPY and LOAD.
FN=filename	Processes files in the same manner as the PF option with one exception: When used with a DUMP directive, it first checks to see if a named file exists as a local file. If so, the local file is dumped. The TY option can be used with FN to specify whether named local files are to be dumped as direct-access or indirect-access files. The default is direct access. The FN option is used with COMPACT, COPY, DELETE, DUMP, LIST, LOAD, and RESET. For all directives except DUMP, the FN and PF options are interchangeable.
FT	Specifies that the tape is foreign to TMS. This option is required when a non-TMS tape is requested.
GT=length	Instructs RECLAIM to process only those files that have a length in PRUs greater than the length specified. GT may be used in conjunction with LT to specify a size range. The GT option is used with COMPACT, COPY, DELETE, DUMP, LIST, LOAD, and RESET.
LT=length	Instructs RECLAIM to process only those files that have a length in PRUs less than the length specified. LT may be used in conjunction with GT to specify a size range. The LT option is used with COMPACT, COPY, DELETE, DUMP, LIST, LOAD, and RESET.
LV	Specifies that the most-current version of the specified file is to be processed. This is the default for the COPY and LOAD directives. The LV option is used with COMPACT, COPY, DELETE, LIST, LOAD, and RESET.

Option	Description
MA=yymmdd	Instructs RECLAIM to process only those files modified after a specified date. MA may be used in conjunction with MB to specify a date range. The MA option is used with COMPACT, COPY, DELETE, LIST, LOAD, and RESET.
MB=yymmdd	Instructs RECLAIM to process only those files modified before a specified date. MB may be used in conjunction with MA to specify a date range. The MB option is used with COMPACT, COPY, DELETE, LIST, LOAD, and RESET.
MD=yymmdd	Instructs RECLAIM to process only those files modified on a specified date. The MD option is used with COMPACT, COPY, DELETE, LIST, LOAD, and RESET.
NF=num	Specifies the maximum number of files to be processed. If the NF option is omitted, there is no limit on the number of files processed, except for the DUMP directive. The limit for DUMP is 4095 files. The NF option is used with COMPACT, COPY, DELETE, DUMP, LIST, LOAD, and RESET.
NN=pfn	Specifies a new file name for the file named by the PF option. The NN option is used with COPY, DUMP, and LOAD.
OV	Specifies that a compacted dump is to be written over the old dump tape. The OV option is used with COMPACT.
PF=pfn	Specifies the name of the permanent file or files to be processed by RECLAIM. If only one file is to be processed, pfn is any valid NOS file name. If multiple files are to be processed, specify an asterisk (*) for pfn. If PF=* is specified, you may specify a file name list containing up to 999 file names. A line of file names ending with a comma indicates that the file name list is continued on the next line. For interactive requests, RECLAIM prompts you to enter the file names with the following message: ENTER FILE NAMES. The file name list contains one entry for each file to be processed. Each entry consists simply of the name of the file to be processed unless the file is to be renamed. If the file is to be renamed, the entry is in the format, newname=oldname. Entries are separated by commas. An entry not followed by a separator indicates the end of the list. A comma at the end of the line indicates that another line follows.

Option	Description
	An example of a file name list is as follows: RECLAIM,Z./DUMP,TN=MYVSN,PF=*/ALPHA,GAMMA=BETA This command causes RECLAIM to dump files ALPHA and BETA. The files are identified in the dump and in the data base as ALPHA and GAMMA. The PF option is used with COMPACT, COPY, DELETE, DUMP, LIST, LOAD, and RESET.
PO=p1p2...pn	Specifies general tape processing options for a dump tape. Refer to Processing Options earlier in this section for a description of dump tape processing options. The PO option is used with COMPACT and DUMP.
PW=passwd	Specifies the password of the TMS tape owner; used only in conjunction with the TO option.
RC=nnnn	Specifies the dump record number (1 to 4095) within a dump that indicates where the dump file is to be positioned. The RC option is used in conjunction with the FI option to specify the location of a file within a dump. (The RC value associated with a particular file is listed in the REC column of the RECLAIM listable output.) The RC option is used with COPY and LOAD.
RP=option	Specifies that a file is to be loaded or copied from a dump file even if a local or permanent file by the same name already exists. Possible values for this option are Y or N. When used with the LOAD directive, specifying RP or RP=Y indicates that an existing permanent file will be replaced by a file loaded from a dump. Specifying RP=N or omitting the RP option indicates that a loaded file will not replace an existing permanent file. When used with the COPY directive, specifying RP or RP=Y indicates that a file copied from a dump will overwrite a local file. If RP=N is specified, or if the RP option is omitted, RECLAIM returns the existing local file before copying the file from DUMP. The RP option is used with COPY and LOAD.
TN=vsn	Specifies the VSN of the tape to or from which files are to be processed. Only files on this tape which also meet any other specified selection criteria are processed. This option is logically equivalent to and interchangeable with the DN option. The TN option is used with COMPACT, COPY, DELETE, DUMP, LIST, LOAD, and RESET.
TO=usernam	Specifies the owner of a TMS tape; used in conjunction with the PW option if the tape has a password.

Option	Description
TY=type	Specifies the permanent file type to be processed. Values that can be specified for the TY option are D (direct access) and I (indirect access). If this option is omitted, both file types are eligible for processing. The TY option is used with COMPACT, COPY, DELETE, LIST, LOAD, and RESET.
UN=username	Instructs RECLAIM to process files only for the specified user name when files are shared among multiple users. If this option is omitted, processing is performed only on the calling user's dumped files. The UN option is used with COMPACT, COPY, DELETE, LIST, LOAD, and RESET.

All RECLAIM directives except END, QUIT and SET generate output listings in the following format:

```
RECLAIM Vvvv    OP=ddddddd   UN=username yy/mm/dd. hh.mm.ss.  PAGE nn
PFN  TYPE LAST MOD   DUMP DATE  LENGTH USERNAME    TAPE   FI REC

pfname ty yy/mm/dd  yy/mm/dd      len   dmpuser   dumpid  fi  rc
pfname ty yy/mm/dd  yy/mm/dd      len   dmpuser   dumpid  fi  rc

    n FILES PROCESSED
```

where:

vvv	Current version of RECLAIM.
ddddddd	Name of the RECLAIM directive being processed.
username	User name of the calling user.
nn	Current page number (not displayed for interactive users).
pfname	Name of the permanent file being processed.
ty	File type (I for indirect access or D for direct access).
len	Length in PRUs of file pfname when dumped.
dmpuser	The user name under which file pfname was originally dumped.
dumpid	VSN of the tape or name of dump file containing file pfname.
fi	The dump number or dumpid containing file pfname.
rc	The record number on dump fi containing file pfname.

Entering a RECLAIM command with the NH parameter specified suppresses printing of the heading and the n FILES PROCESSED line. Only the file information is printed.

EXAMPLE 1

The following RECLAIM command lists a portion of dump file database MYDB and terminates the RECLAIM session:

```
/reclaim,db=mydb,z./list,tn=01/end
 RECLAIM V4.2    OP=LIST      UN=OMEN    83/12/14. 13.03.34.
 PFN  TYPE LAST MOD  DUMP DATE  LENGTH USERNAME    TAPE    FI REC

 DEMA    I 83/11/18  83/12/13     187   OMEN      01       1   2
 DEMB    I 83/11/18  83/12/13      27   OMEN      01       1   1

      2 FILES PROCESSED.

 RECLAIM COMPLETE.
/
```

EXAMPLE 2

The following example shows a RECLAIM session in which the system prompts for directives. This RECLAIM command dumps two files to tape and then lists the affected portion of MYDB.

```
/reclaim,db=mydb,nh
 ENTER DIRECTIVE.
? dump,tn=01,pf=*
 ENTER FILE NAMES.
? demc,demd=kdefs
 DEMD    I 83/10/06  83/12/14      92   OMEN      01       2   1
 DEMC    I 83/11/18  83/12/14     115   OMEN      01       2   2
 ENTER DIRECTIVE.
? list,tn=01
 DEMA    I 83/11/18  83/12/13     187   OMEN      01       1   2
 DEMB    I 83/11/18  83/12/13      27   OMEN      01       1   1
 DEMC    I 83/11/18  83/12/14     115   OMEN      01       2   2
 DEMD    I 83/10/06  83/12/14      92   OMEN      01       2   1
 ENTER DIRECTIVE.
?end
 RECLAIM COMPLETE.
/
```

RELEASE COMMAND

The RELEASE command enables you to release one or more specified tape volumes from your tape catalog. You can release only center-owned reserved tapes.

You can specify either the tape file name or VSN to release a tape volume. The system takes the same action in both cases. If the tape volume contains more than one file of user data, the system releases all the files on the volume. Likewise, all the volumes in a volume set (that contains a tape file) are released. If necessary, you can check an AUDIT listing to verify which volumes contain multifiles.

Since the RELEASE command cannot be continued, you must submit one or more additional RELEASE commands if you want to release more tapes than can be specified on one command.

RELEASE command format is as follows:

RELEASE,tfn_1,tfn_2,...,tfn_n/S,NA.

Parameter	Description
tfn	Tape file name (1 to 17 alphanumeric characters) or first-volume VSN (6 characters) that identifies the tape you want to release. This parameter is required. You can specify a maximum of seven tapes on each RELEASE command. Every file name or VSN specified must apply to tapes retained under the NOS family currently being accessed. In addition, all specified tape files must be retained under the same user name.
S	Symbolic tape access. This parameter is required when you are manipulating a tape by its symbolic name.
NA	No-abort option. If you select the NA option and NOS encounters an error, the system completes as much as possible of the RELEASE command and processes the remaining commands in your job. If you omit NA and NOS encounters an error while processing the RELEASE command, NOS initiates error processing.

EXAMPLE

An example is as follows:

```
RELEASE,TAPEFILENAME/S.
```

The RELEASE command removes TAPEFILENAME from your tape catalog.

RESERVE COMMAND

The RESERVE command enables you to reserve a center-owned scratch tape under TMS. As an option (SS=lfn_2), the RESERVE command lets you ask for a machine-readable file containing tape reservation information. As NOS creates this machine-readable file, it generates one record of status information for each tape volume that is reserved. All records are Z-type records, whose fields contain alphanumeric or numeric display code. Intended for post-processing, the machine-readable file can be manipulated by your own software. Control Data has adopted a standard format for the Z-type records in this file. If Control Data modifies this record format, it will do so only by adding fields to the end of the record. Table 3-2 presents the standard format that applies to every record in the machine-readable file.

Format:

RESERVE,lfn_1,lfn_2,...,lfn_n/SS=lfnx,PW=password,CT=ct,M=md,AC=ac,
UC=uc,NA.

NOTE

All parameters except lfn are optional and order independent.

Parameter	Description
lfn	Local file name(s) of the tape file(s) you want to reserve. This parameter is required.
lfnx	Name of the local file into which NOS generates machine-readable status information. One record of status information is generated for each tape file in a volume that you reserve.
PW=password	1- to 7-character (alphanumeric) file password. When initially reserving a tape, the tape originator specifies this parameter so that other users can access the file (if private or semiprivate). If a password is assigned to the file, other users must specify the password when accessing it.
CT=ct	File access category. Valid entries are: ct — Description P or PR — Private S or SP — Semiprivate PU — Public If you omit the CT parameter when the file is created, the file is categorized as P (private).

Table 3-2. Reserve Logical Record Format (Machine-Readable File)

Column	Description
01	Version; numeric
02- 08	Family name; alphanumeric
09- 15	User name; alphanumeric
16- 22	Charge number; alphanumeric
23- 42	Project number; alphanumeric
43- 59	Tape logical file name or VSN if nonsymbolic; alphanumeric
60- 66	File category; alphabetic (P,PR,PU,SP)
67- 72	Creation date (yymmdd); numeric
73- 78	Creation time (hhmmss); numeric
79- 84	Last access date (yymmdd); numeric
85- 90	Last access time (hhmmss); numeric
91- 96	Last modification date (yymmdd); numeric
97-102	Last modification time (hhmmss); numeric
103-108	File permission mode; alphabetic (R, W, N)
109-118	Access count; numeric
119-120	File format; alphabetic (I, SI, F, S, SL, LI)
121-122	Conversion mode; alphabetic (AS, EB)
123-124	Physical tape type; alphabetic (NT, MT, CT, AT)
125-126	Tape density; alphabetic (HI, LO, HY, HD, PE, GE, CE, AE)
127-129	Not used (blanks)
130-139	User control word (UW)
140-143	Not used
144	Error indicator that specifies whether or not NOS detected an error in this file; alphabetic (S, C)

Table 3-2. Reserve Logical Record Format (Machine-Readable File) (Contd)

Column	Description
145	Blank
146-152	File password (blanks for alternate users); alphanumeric
153-155	Not used (blanks)
156-161	VSN (external); alphanumeric
162-167	PRN (internal); alphanumeric
168-173	First VSN; alphanumeric
174-179	Next VSN (blank if no next reel); alphanumeric
180-184	Maintenance flag; alphabetic HOLD if hold for maintenance AVAIL if available
185-187	Site status; alphabetic ON if on-site OFF if off-site
188-193	Ownership type; alphabetic CENTER if center-owned USER if user-owned
194	Error indicator that specifies whether NOS detected an error on this VSN; alphabetic
195-196	Reel number; numeric
197-198	Label status; alphabetic (KL, KU, MS)
199-215	Physical file name; alphanumeric
216-217	Tape usage count; numeric
218-223	Not used (blanks)
224	Reserved flag; alphabetic R if reserved tape file N if tape file not yet reserved
225	Recovery flag; alphabetic S if recovered tape file N if not recovered tape file

Parameter	Description
M=md	File access mode permitted to other users if the tape file is public or semiprivate and if explicit access permission has not been granted to the user. Valid entries are:

md	Description
R	Read
W	Write
N	Null (no access allowed)

If you omit the M=md parameter, the file access mode is READ.

AC=ac — Designation indicating whether the file originator allows other users to obtain status information (via the AUDIT command) about the tape file. Valid entries are:

ac	Description
Y	Yes
N	No

If you omit the AC parameter, other users cannot obtain status information about the file.

UC=uc — 1- to 10-character (alphanumeric) string that you want NOS to write in the user control word of the tape file catalog. If you omit the UC parameter, NOS does not record any information in the user control word.

NA — No-abort option. If you select the NA option and NOS encounters an error, the system completes as much of the RESERVE command as possible and processes the remaining commands in the job. If you omit the NA parameter and NOS encounters an error while processing the RESERVE command, NOS initiates error processing.

Example:

```
RESERVE,EXAMPL2/M=W,PW=MASTER,CT=S.
```

This RESERVE command enables you to reserve a center-owned scratch tape. It specifies the file access mode (W for WRITE), password (MASTER), and file access category (SEMIPR).

RESOURC COMMAND

The RESOURC command must be supplied any time a job requires more than one magnetic tape drive concurrently. This command prevents deadlocks with other jobs that may require multiple tape drives. Deadlocks can occur if two (or more) jobs require multiple tape drives, but each job is able to obtain only a portion of its requirements. For example, assume that your NOS site maintains two 9-track tape drives and then receives job A and job B for processing. Each job needs both tape drives during a certain phase of its processing. Job A is assigned to drive 1. If job B already is assigned to drive 2, neither job A nor job B can be completed until the other job relinquishes its assigned drive. In other words, a deadlock occurs.

Format:

RESOURC,$rt_1=u_1$,$rt_2=u_2$,...,$rt_n=u_n$

Parameter	Description
rt_i	Kind of resource that you want to schedule. Valid entries are:

rt	Description
HI	7-track, 556-cpi magnetic tape unit.
HY	7-track, 800-cpi magnetic tape unit.
HD	9-track, 800-cpi magnetic tape unit.
PE	9-track, 1600-cpi magnetic tape unit.
GE	9-track, 6250-cpi magnetic tape unit.
MT	7-track magnetic tape unit. Alternate densities do not apply to 7-track magnetic tape units under NOS.
NT	9-track magnetic tape unit (800 cpi or 1600 cpi).
AT	38000-cpi cartridge tape unit for ACS.
CT	38000-cpi cartridge tape unit for CTS.

Parameter	Description
	Your rt parameters must be compatible within the same RESOURC command. The HI, HY, PE, and GE values are compatible (because they define the tape drive in terms of density). MT and NT are not compatible with HI, HY, HD, PE, or GE. In addition, the rt parameter in a RESOURC command must be compatible with the D=den parameter in a LABEL command. In this case, rt values of MT and NT are not compatible with D=HD, D=PE, and D=GE. Use of the MT and NT parameters is not recommended at sites that do not have both 800-cpi and 1600-cpi capabilities.
u_i	Maximum number of resource units of resource type rt that you want to schedule concurrently. To release all magnetic tape units of the type defined by the rt parameter, specify a value of zero (0).

Example:

```
RESOURC,PE=3
```

This command schedules three 9-track 1600-cpi magnetic tape units.

TMSDEF COMMAND

The TMSDEF command is used to define default values for TMS parameters on the LABEL command. If you do not use TMSDEF, installation-defined values are used.

Format:

```
TMSDEF,TO=topt
```

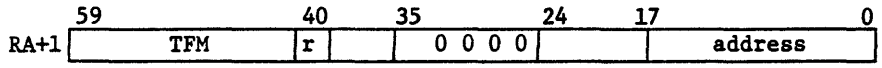
Parameter	Description
topt	The default value for the TO=to parameter on the LABEL command.

topt	Description
T	Set default to TO=T (TMS processing).
F	Set default to TO=F (non-TMS processing).
C	Set default to TO=C (check for catalog error).
E	Set default to TO=E (ignore catalog error).

TAPE MANAGEMENT SYSTEM MACROS A

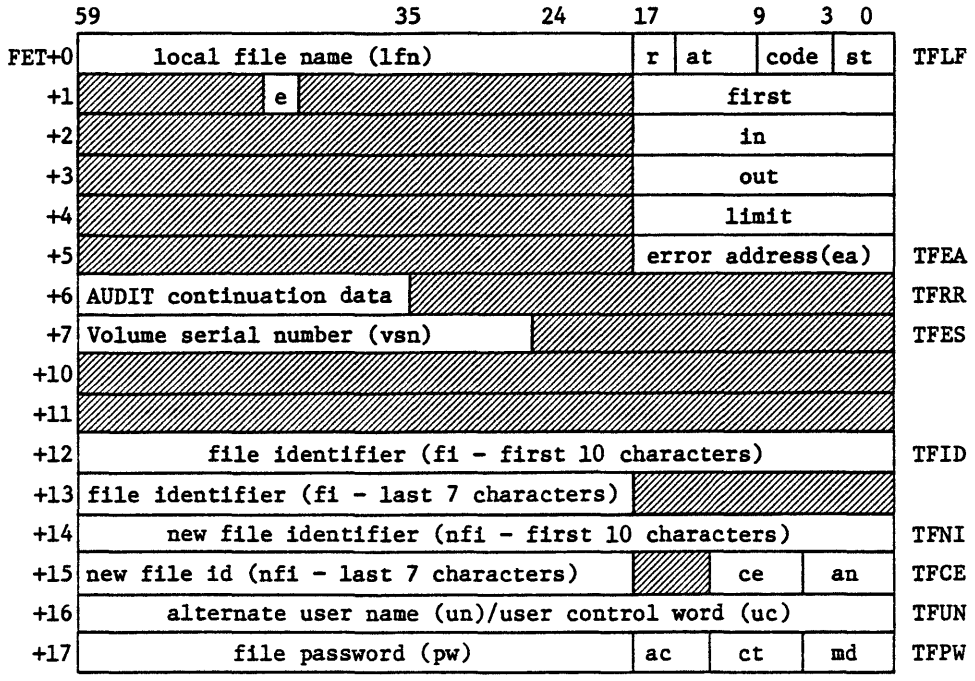
TMS includes a new internal macro, GETVSN, and six command macros: ADMIT, AMEND, AUDIT, LABEL, RELEASE, and RESERVE. These macros make TMS facilities available from within programs allowing you to create more complex and automatic application of TMS. This appendix contains a description of each macro.

TMS macros issue tape file requests through an RA+1 call to the tape file manager (TFM). The format of the RA+1 request is:



Parameter	Position	Description
r	40	Auto recall bit.
addr	17-0	Relative address of the FET.

The tape manager processes all requests using a FET. The tape manager FET takes the following general format. The mnemonics (TFLF, for example) are defined in common deck COMSTFM.



Parameter	Word	Position	Description
lfn	0	59-18	Local file name. One to seven display code characters, left justified and zero filled (RESERVE only).
r	0	17	Rollout on error.
at	0	16-9	Abnormal termination code.
code	0	8-3	Request code:

code	Description
RSVS	RESERVE tape file.
ADMS	ADMIT alternate users.
AUDS	AUDIT catalog entry.
AMDS	AMEND catalog entry.
RLSS	RELEASE tape file.
GVSS	GETVSN.

st	0	2-0	FET status code.

st	Description
1	Operation complete.
2	End of information.
4	Interlock operation (TFSP only).

e	1	44	Error processing bit. Set to indicate that the calling program processes any errors that occur.
first	1	17-0	First word address of input/output buffer.
in	2	17-0	The next location for writing data into buffer.
out	3	17-0	The next location for reading data from buffer.
limit	4	17-0	Last word address plus 1 of the buffer.
ea	5	17-0	Error address. If the error processing bit (e) is set and an error occurs, the system returns an error message beginning at this location. This message buffer must be a minimum of four words in length.
vsn	7	59-24	Volume serial number. Six display code characters that uniquely identify a reel of tape. This is the external tape identifier.

Parameter	Word	Position	Description
fi	12	59-0	Symbolic tape file name. This is the first 10 characters, left justified, and space filled.
fi	13	59-18	Symbolic tape file name. This is the last 7 characters, left justified and space filled.
pw	17	59-18	File password. The password is 1 to 7 characters, left justified and space filled.
ct	17	11-6	File category type. The COMSTFM mnemonic code is used to fill this field.

ct	Description
FCPR	Private
FCPU	Public
FCSP	Semiprivate

md	17	5-0	File mode. The COMSTFM mnemonic is used to fill this field.

md	Description
FMRE	Read
FMWR	Write
FMNA	Null

un	16	59-18	Alternate user name. This name is 1 to 7 characters, left justified, and space filled (see AUDIT and ADMIT).
uc	16	59-0	User control word. This is left justified and space filled.

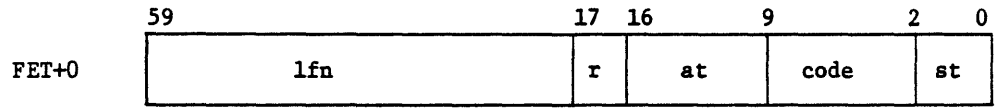
For the AMEND request, the following FET fields are defined:

Parameter	Word	Position	Description
nfi	14	59-0	New file identifier. This is the first 10 characters, left justified, and space filled.
nfi	15	59-18	New file identifier. This is the last 7 characters, left justified, and space filled.
ac	17	17-12	Alternate user auditability.

ac	Description
FAYS	Yes
FANO	No

ce	15	11-6	Clear error option.
an	15	5-0	Change to current charge and project numbers.

After a request to TFM is complete, the first word of the FET contains the following information:



Parameter	Description
lfn	Local file name, left justified, and zero filled (RESERVE only).
r	Rollout on error. If this is set, you can rollout, and upon return, reissue the TFM request.
at	Abnormal termination code. These error codes are defined in COMSTFM.
code	Unchanged.
st	Status code.

st	Description
1	Operation complete.
2	End of information.
4	Interlock operation (TFSP only).

When a TFM macro request is issued, the parameter values specified are placed in their corresponding fields in the FET.

All alphanumeric fields except lfn must be left justified and space filled. All numeric fields are right justified and zero filled.

When issuing an AUDIT or GETVSN macro, the buffer pointers in the lower 18 bits of words 1, 2, 3, and 4 of the FET must be set. The buffer must be at least 262D words in length.

When you do not use the AUDIT macro, but instead, set up your own FET parameter fields and issue the RA+1 TFM AUDIT request, you must set an AUDIT search type code in the TFPW word, bits 5-0. These AUDIT search type codes are defined in COMSTFM and described in the following paragraphs (see the AUDIT macro for a description of the possible buffer formats).

Audit Search Type	Description
FCST	Full catalog search type. This type is used when more than one tape catalog entry may be returned.
SCST	Selective catalog search type. This type is used when a specific tape file name (or first volume vsn) has been specified and only one tape catalog entry, with corresponding vsn entries, is desired.
FAST	Full admit search type. This type is used when more than one admit entry may be returned.
SAST	Selective admit search type. This type is used when a user name has been specified (word TFUN) in the FET and only the admit entry corresponding to that user name is desired.

ERROR PROCESSING

You can issue requests to TFM and have control returned if certain error conditions occur. To do this, you must specify the error processing bit (ep) in FET+1. The error codes are returned in the abnormal terminal (at) code field of FET+0 (Bits 17 through 10). If you specified erad in FET+5, the error message is returned at this address instead of being issued to your dayfile. A maximum of four central memory words are returned. System errors are issued to the system and error log dayfiles regardless of the erad specification. If bit 17 of the at field is set, you can request that the job is rolled out until a specified event takes place.

The error codes are returned in the abnormal termination code field. It is recommended that the error code mnemonics defined in common deck COMSTFM be used in testing these error conditions. The mnemonics are qualified by symbol EMSG. For example, to set the B7 register to the value of the FBS mnemonic, use the following instruction:

```
SB7 /EMSG/FBS
```

ADMIT (ADMS)

The ADMIT macro enables you to grant permission to a user to access and employ a specific tape file. When issuing the ADMIT macro, you can specify the address of a symbolic tape file name or the address of the first volume vsn. If both addresses are specified, the macro aborts.

The ADMIT macro has the following form:

LOCATION	OPERATION	VARIABLE SUBFIELDS
	ADMIT	addr,tfn,vsn,us,m

Subfield	Description
addr	Address of the FET.
tfn	Address of the two-word symbolic tape file name 1 to 17 characters, left justified, and space filled).
vsn	Address of the first volume serial number (6 alphanumeric characters, left justified).
us	Address containing the user name to which the permission is being granted (left justified and space filled).
m	File access mode the alternate user is to be granted:

m	Description
R	The alternate user can read the file.
W	The alternate can user read or write on the file.
N	The alternate user cannot access the file.

AMEND (AMDS)

The AMEND macro enables you to amend some of the parameters associated with a specific tape file. You can delete an existing password or user control word by setting these parameters to zero. When issuing the AMEND macro, you can specify the address of a symbolic tape file name or the address of the first volume vsn. If both addresses are specified, the macro aborts.

The AMEND macro format has the following form:

LOCATION	OPERATION	VARIABLE SUBFIELDS
	AMEND	addr,nfn,ofn,vsn,pw,ct,m,uc,ac,ce,an

Subfield	Description
addr	Address of the FET.
nfn	Address of the new two-word symbolic tape file name. This parameter is specified only if you wish to change the current symbolic tape file name (1 to 17 characters, left justified and space filled).
ofn	Address of the current two-word symbolic tape file name (1 to 17 characters, left justified and space filled).
vsn	Address of the first volume serial number (six alphanumeric characters, left justified).
pw	Address the new file password (1 to 7 alphanumeric characters). If the address given is zero, the current password is deleted and no password is associated with this file.
ct	New file category.

ct	Description
P or PR	Private
S	Semiprivate
PU	Public

Subfield	Description
m	New file access mode permitted to other users if the file is public or semiprivate and if explicit access permission has not been granted to that user.

m	Description
R	This file can be read.
W	This file can be read or written on.
N	No access is allowed.

uc	Address of the new 1- to 10-character, alphanumeric user control word (left justified, space filled). If the address specified is zero, the current user control word is deleted, and no user control word is associated with this file.
ac	New alternate user list attribute.

ac	Description
Y	Alternate users can obtain an AUDIT list of this file.
N	Alternate users cannot obtain an AUDIT list of this file.

ce	Clear error option. If an error was detected on this tape, the user can clear the error bit associated with the file by specifying CE on the macro call.
an	Changes the charge and project numbers associated with the tape file to the charge and project numbers the macro is running under.

AUDIT (AUDS)

The AUDIT macro enables you to:

- Determine the contents of the one or more of the entries in your tape catalog.
- Determine which tape files in a specified alternate catalog that you are allowed to access.
- Determine the alternate user information for a specified file that an alternate user can access or has accessed in the user's own catalog (admit data).

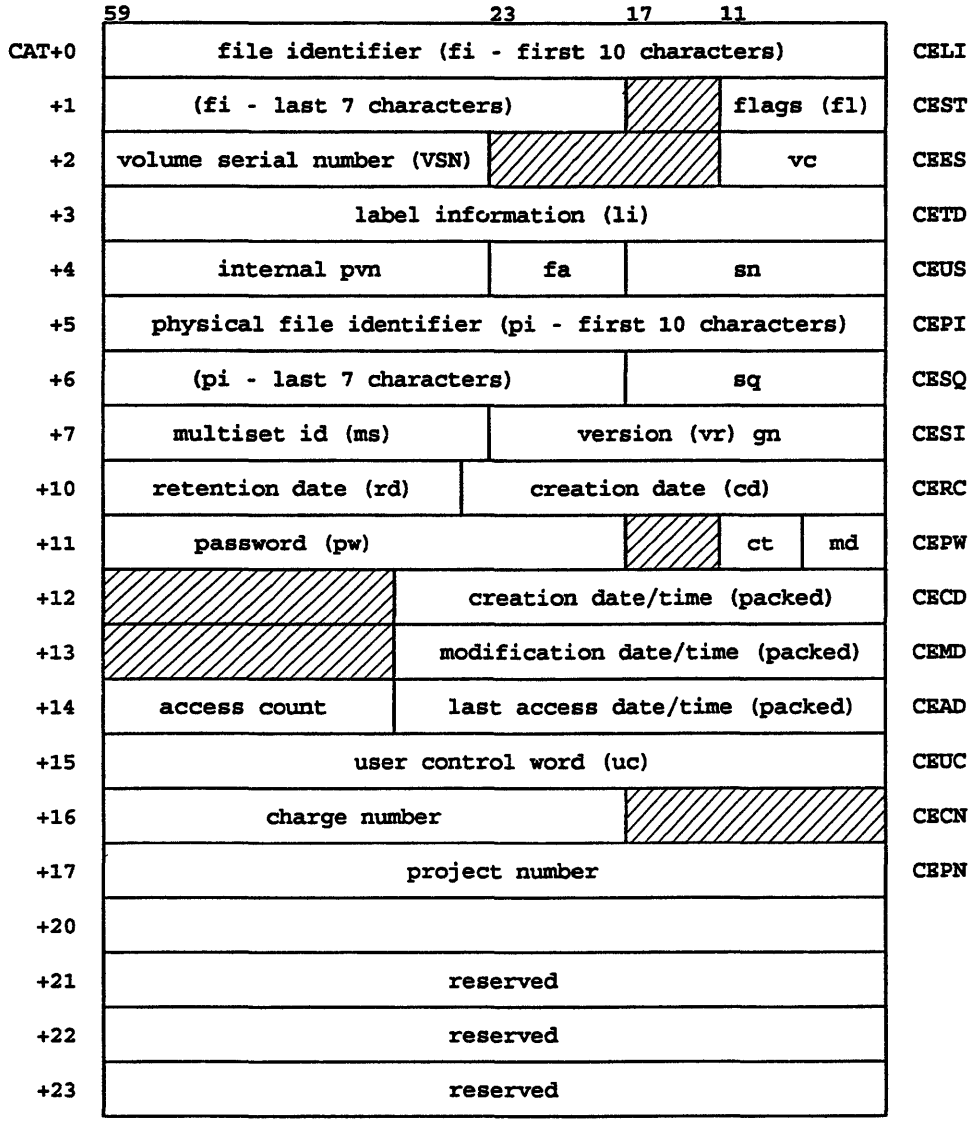
A buffer is required to pass information to the calling program. This buffer must be at least 262D words in length. The buffer length will have two different formats, depending on which LO or list option is specified. The buffer is filled using the circular buffer technique. The system fills the buffer until an end-of-information occurs or until there is not enough room left for a complete entry.

At this time, you must reissue the macro if more information is desired. Subsequent filling of the buffer begins at the IN pointer and wraps around to FIRST when LIMIT is reached (that is, circular buffer technique). The st flag in FET+0 indicates and end-of-information.

In the case of the 0 (zero) or F of the L option, the buffer is filled with a series of tape catalog entries with their corresponding 4-word vsn entries. In other words, there is a 24B-word tape catalog entry followed by up to 60 4-word vsn entries. A delimiter word is between the last vsn entry and the next tape catalog. The upper 36 bits of this word are set (that is, 36/-0, 24/0).

When OUT=IN of the FET and EOI bit (FET+0, bit one) is clear, there are still more tape catalog entries and another macro call that must be made. If you want only one tape catalog entry with associated vsn entries, you can specify which file through the tfn or vsn macro parameters.

The format of the tape file catalog entry is:



Description	Parameter	Word	Position
fi	0	59-0	Symbolic tape file name. This is the first 10 characters, left justified and space filled.
fi	1	59-18	Symbolic tape file name. This is the last 7 characters, left justified and space filled.
fl	1	11-0	Catalog status flags.

fl	Description
0001	Catalog busy.
0002	Error flag.
0004	Symbolic access.
2000	Recovered catalog.
4000	Alternate user listable.

vsn	2	59-24	Volume serial number. Six display-code characters that uniquely identify a volume of tape. This is the external tape identifier.
vc	2	11-0	Volume count. Number of volumes associated with this tape file.
li	3	59-0	Label information. This word is broken down as follows:

1/0,2/LB,2/TT,1/0,3/D,3/CV,12/0,6/F,6/NS,24/FC

LB	Label Type
0	Unlabeled.
2	Labeled.
3	Nonstandard labeled.

TT	Tape Type
0	Seven-track (MT).
1	Cartridge tape for CTS (CT).
2	Nine-track (NT).
3	Cartridge tape for ACS (AT).

D	Density
0	Installation default.
1	556 cpi - MT.
2	200 cpi - MT.
3	800 cpi - MT or NT.
4	1600 cpi - NT.
5	6250 cpi - NT.
6	38000 cpi - CT or AT.

CV	Conversion Mode
0	Installation default.
1	ASCII conversion.
2	EBCDIC conversion.

Parameter	Word	Position	Description
			F Format
			0 Internal (I).
			1 System internal (SI).
			2 Foreign (F).
			3 Stranger (S).
			4 Long block stranger (L).
			5 Long block internal (LI).
			NS Noise size.
			FC Frame count.
pvn	4	59-24	Physical volume number. One to 6 alphanumeric characters that uniquely identify a volume of tape. The pvn is written on the tape label and does not have to match the external vsn.
fa	4	23-18	One display code character indicating who may access the tape file.
sn	4	17-0	File section number. The file section number of the first header label of each file is 0001. This applies to the first or only file on a volume and to subsequent files on a multifile volume. This field is incremented by one for each subsequent volume of the file.
pi	5	59-0	Physical file identifier. This is the identifier that is physically on the tape label. The first 10 characters, left justified and space filled.
pi	6	59-18	Physical file identifier. This is the last 7 characters, left justified and space filled.
sq	6	17-0	Denotes the sequence (that is, 0001, 0002, etc.) of files within the volume or set of volumes. In all the labels for a given file, this field contains the same number.
ms	7	59-24	Multifile set identifier. This identifier must be the same for all files of a multifile set.
vr	7	23-12	Generation version number that distinguishes successive iterations of the same generation. The generation version number of the first attempt to produce a file is 00.
gn	7	11-0	Generation number. It denotes the current stage in the succession of one file generation by the next.

Parameter	Word	Position	Description
rd	10	59-30	Retention data (unpacked).
cd	10	29-0	Creation data of the label of the tape (unpacked).
pw	11	59-18	File password.
ct	11	11-6	File category type:

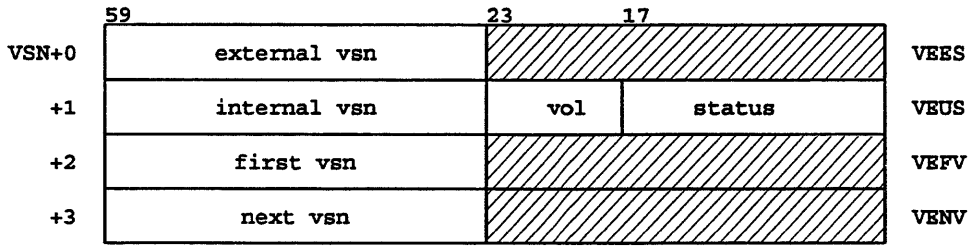
ct	Description
FCPU	Public
FCPR	Private
FCSP	Semiprivate

md	11	5-0	File permission mode:

ct	Description
FMRE	Read
FMWR	Write
FWNA	Null

uc	15	59-0	User control word. This is left-justified and space-filled.

The format of the vsn entry is:

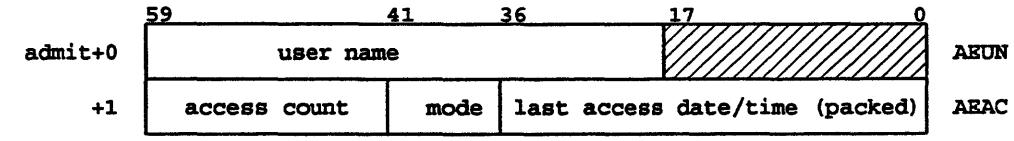


Parameter	Description
vol	Number of volumes in tape file.
status	vsn status:

status	Description
000001	vsn busy interlock.
000002	Read/write error detected.
000010	Transferred off site.
010000	User-owned tape.
100000	Available scratch tape.
200000	Hold for maintenance.
400000	Reserved tape file.

In the case of the P or FP of the LO option, the buffer contains a series of two-word alternate access admit entries.

The format of the admit entry is:



Parameter	Description
mode	Access permission. The user was given access explicitly through the use of ADMIT, or 000 if accessed implicitly.

The AUDIT macro has the following form:

LOCATION	OPERATION	VARIABLE SUBFIELDS
	AUDIT	addr,tfn,vsn,lo,un

Subfield	Description
addr	Address of the FET.
tfn	Address of the two-word symbolic tape file name (1 to 17 characters, left justified and space filled).
vsn	Address of the first volume serial number (6 alphanumeric characters, left justified).
lo	AUDIT list option:

lo	Description
0 or F	Buffer is filled with tape catalog entries and their corresponding vsn entries (default).
P or FP	Buffer is filled with a series of admit entries.

un	Address of a user name. If you want the catalog entries in another user's catalog that you have permission to access, you enter the user name of the file originator user name. When used with the P or FP list option, one admit entry corresponding to this user name is returned.

GETVSN (GVSS)

The GETVSN macro enables you to obtain a tape catalog image of the tape file associated with a local file name. The tape catalog image includes the 24B word tape catalog entry and up to 60 4-word vsn entries. The last vsn entry is followed by a delimiter word with the upper 36 bits set. A buffer is required to pass information to the calling program. This buffer must be at least 262D words in length. See the AUDIT macro documentation for a description of the tape catalog and vsn entries.

The GETVSN macro has the following format:

LOCATION	OPERATION	VARIABLE SUBFIELDS
	GETVSN	addr,lfn

Subfield	Description
addr	Address of the FET.
lfn	Address of the local file name used on the REQUEST or LABEL command.

LABEL

During non-TMS processing, the LABEL macro works as described in the NOS Version 2 Reference Set Volume 4. During TMS processing, the volume serial number field in FET+11 is the system defined VSN which might not be the same as the VSN written on the tape.

For TMS processing the FET may be expanded as follows:

	59	17	11	5
FET+16B	user name	tape options		
FET+17B	file password	ac	ct	md

Parameter	Word (FET+n)	Position	Description
user name	16B	59-18	Specifies the user name of the reserved tape file. A value of zeroes specifies your user name. This parameter must be nonzero if the tape file is reserved by another user.
tape options	16B	7	If set, checks for catalog error. If you request a tape that TMS has identified as having a data error and you use this option, your program aborts with the ERROR IN FILE DATA message. You can clear this bit and set bit 5 if you want to ignore previous data errors. This option is ignored for non-TMS processing.
		6	If set, you can directly access any reel of a multireel tape file. Normally, if you request the second (or third, and so on) VSN of a TMS tape file, the system assigns the first VSN of the tape file to your job. With this option you can initially assign any VSN of a tape file to your job. This option is ignored for symbolic access multifile tapes. This option is ignored for non-TMS processing.
		5	If set, ignores catalog error. If you request a tape that TMS has identified as having a data error and you use this option, your program does not abort with the ERROR IN FILE DATA message. You can clear this bit and set bit 7 if you want to check for previous data errors. This option is ignored for non-TMS processing.
		4	If set, forces TMS processing.
		3	If set, reserves a center-owned scratch tape. If you specify this option when requesting a scratch tape, the system reserves the tape under your user name. If you do not specify this option when requesting a scratch tape and you want to reserve the tape, you must issue a RESERVE command or macro before you return the tape. This option is ignored when requesting a reserved tape. This option is ignored for non-TMS processing.

Parameter	Word (FET+n)	Position	Description
		2	If set, defines symbolic access for the tape file. A symbolic access tape file can be requested by a user-defined 1- to 17-character tape file name instead of the site-defined vsn. Symbolic access is assumed if the vsn parameter is not included. If this option is not specified when a scratch tape is requested, symbolic access cannot be used for that tape file. This option is ignored for non-TMS processing.
		1	If set, forces non-TMS processing. If this option is specified, all other options are ignored.
		0	If set, overrides the TMS supplied defaults for the CR, CV, D, E, F, FA, FC, G, LB, and NS parameters for a reserved tape file. If you do not specify TO=D to request a reserved tape, the CR, CV, D, E, F, FA, FC, G, LB, and NS parameters are ignored. This option is ignored for non-TMS processing.
file password	17B	59-18	Specifies a 1- to 7-character password for the tape file. A value of zeroes specifies no password. If you specify this entry when requesting a scratch tape, the password is assigned to the tape file. If you specify this entry when requesting a tape reserved to another user, the password must match the password of the tape file.
ac	17B	17-12	Specifies whether the file originator allows alternate users to obtain information about the tape file using the AUDIT command or macro. Valid entries are: ac — Description 1 — Yes 2 — No This entry is ignored if requesting a reserved tape.

Parameter	Word (FET+n)	Position	Description
ct	17B	11-6	Specifies the file access category. Valid entries are: ct — Description 1 — Public 2 — Private 3 — Semiprivate This entry is ignored if requesting a reserved tape.
md	17B	5-0	Specifies the tape file access mode permitted to other users if the file is public or semiprivate and if explicit access permission has not been granted to the user. Valid entries are: md — Description 1 — Read 2 — Write This entry is ignored if requesting a reserved tape.

RELEASE (RLSS)

The RELEASE macro enables you to release a specified tape file. When issuing the RELEASE macro, you can specify the address of a symbolic tape file name or the address of the first volume vsn. If both addresses are specified, the macro aborts.

The RELEASE macro has the following format:

LOCATION	OPERATION	VARIABLE SUBFIELDS
	RELEASE	addr,tfn,vsn

Subfield	Description
addr	Address of the FET.
tfn	Address of the 2-word symbolic tape file name (1 to 17 characters, left justified and space filled).
vsn	Address of the first volume serial number (6 alphanumeric characters, left justified).

RESERVE (RSVS)

The RESERVE macro enables you to reserve a center-owned scratch tape under the NOS tape management system (TMS). The tape file is reserved under the user name of the user who makes the macro call. NOS automatically reserves every volume of a multivolume tape file.

The RESERVE macro has the following format:

LOCATION	OPERATION	VARIABLE SUBFIELDS
	RESERVE	addr,lfn,pw,ct,ac,m,uc

Subfield	Description
addr	Address of the FET. The local file name must be set in FET+0.
lfn	Address of the local file name. The name that was used to request the tape is left justified and zero filled.
pw	Address of the password (1 to 7 alphanumeric characters) to be associated with this tape file.
ct	File access category.

ct	Description
P or PR	Private
S	Semiprivate
PU	Public

Subfield	Description
ac	Alternate user auditability.

ac	Description
Y	Alternate users can obtain an AUDIT list of this file.
N	Alternate users cannot obtain an AUDIT list of this file (default).

Subfield	Description
m	File access mode permitted to other users if the file is public or semiprivate, and if explicit access permission has not been granted to that user.

m	Description
R	This file can be read (default).
W	This file can be read or written on.
N	No access is allowed.

Subfield	Description
uc	Address of the 1- to 10-character, alphanumeric user control word (left justified space filled).

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