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CA Product References

This document references the following CA products:

- CA 1® Tape Management (CA 1)
- CA ACF2™ for z/OS (CA ACF2)
- CA ASM2® Backup and Restore (CA ASM2)
- CA Disk® Backup and Restore (CA Disk)
- CA Earl™ (CA Earl)
- CA Roscoe® Interactive Environment (CA Roscoe IE)
- CA TLMS Tape Management (CA TLMS)
- CA Top Secret® Security for z/OS (CA Top Secret)
- CA Vantage™ Storage Resource Manager GMI (CA Vantage GMI)
- Unicenter® CA-JCLCheck™ Utility (Unicenter CA-JCLCheck)
- Unicenter® Service Desk (Unicenter Service Desk)

Contact Technical Support

For online technical assistance and a complete list of locations, primary service hours, and telephone numbers, contact Technical Support at http://ca.com/support.
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Chapter 1. Introduction

CA TLMS Copycat provides software to assist you with tape media-type conversions, media consolidation, media stacking/unstacking, and media replacement operations. CA TLMS Copycat also aids in disaster recovery by facilitating tape backup and electronic vaulting.

Caution

CA TLMS r5.5 is the minimal release that must be installed.
1.1 CA TLMS Copycat Features

CA TLMS Copycat is designed to copy data from tape-to-tape while retaining the information in the CA TLMS Volume Master File (VMF) regarding data set attributes and the creation information of the original data set.

1.1.1 Tape Conversions

CA TLMS Copycat enables you to convert from one tape medium or format to another. Automated data set copy methods expedite the conversion process and significantly reduce the resource requirements demanded by manual conversions using JCL.

1.1.2 Media Consolidation/Stacking

CA TLMS Copycat permits you to consolidate active data sets from multiple tape volumes onto fewer volumes, resulting in a larger scratch pool. By using CA Earl, the standard report writer, you can identify the control information that CA TLMS Copycat needs to effectively improve the utilization of the entire tape library.

1.1.3 Migration to Virtual Tape

CA TLMS Copycat facilitates the migration to virtual tape systems by copying physical media to virtual media. If you want the virtual tape system to handle the file stacking, you can unstack the previously stacked tapes into the virtual system. The virtual system would then assign a unique volume to each file copied.

1.1.4 Media Replacement

CA TLMS Copycat provides facilities to retrieve data from old or faulty media with the functionality to copy a tape volume, in its entirety, to a new replacement volume. Volume labels can be included in the copy function, if desired.

1.1.5 Volume/Data Set Backup

CA TLMS Copycat allows you to copy volumes or data sets onto other tapes without requiring the cataloging of the backup volume. The backup volume, as any other CA TLMS controlled volume, is recorded in the VMF for tracking and management purposes. If required, a new high-level data set name qualifier can be specified for all files on the backup volume.
1.1.6 **Electronic Vaulting**

CA TLMS Copycat reduces the overhead of vaulting tapes to off-site locations. By copying volumes or data sets to devices or tape volume pools at specific off-site locations, the data center minimizes the tasks of pulling the vaulting list, packaging the tapes and transporting them.

1.1.7 **Tape Analysis**

CA TLMS Copycat allows you to map a tape volume in order to verify its contents. Detailed information is provided for each file residing on the tape volume.
1.2 CA TLMS Copycat Functions

CA TLMS Copycat furnishes tape copy and file copy functions that are compatible with TLMS operations. Major functions allow you to:

- Copy an entire volume
- Copy selected data set(s)
- Copy all data sets on specified volume(s)
- Map an entire volume

CA TLMS Copycat is driven by control statements which you supply as SYSIN with the execution JCL. The functions provided with CA TLMS Copycat are initiated by the specification of a function code and one or more function control statements. The functions, described in the following chapters, are:

<table>
<thead>
<tr>
<th>Function Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FILECOPY</td>
<td>Copies one or more files from one tape volume set to a different tape volume set.</td>
</tr>
<tr>
<td>TAPECOPY</td>
<td>Copies an entire tape volume onto a different tape volume.</td>
</tr>
<tr>
<td>TAPEMAP</td>
<td>Maps an entire tape volume.</td>
</tr>
</tbody>
</table>
1.3 Documentation

CA TLMS Copycat provides extensive documentation. The following documents are included with the product:

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release Summary</td>
<td>This manual lists new features and changes to existing features that are included in the release.</td>
</tr>
<tr>
<td>Getting Started</td>
<td>This guide furnishes complete instructions for the installation of CA TLMS Copycat, using SMP/E. It also provides CA TLMS Copycat problem determination and troubleshooting procedures.</td>
</tr>
<tr>
<td>User Guide</td>
<td>This guide furnishes detailed instructions on coding the CA TLMS Copycat FILECOPY, TAPECOPY, and TAPEMAP control statements. These instructions include control statement formats, parameter definitions, rules and restrictions, and sample JCL and reports. It also furnishes detailed instructions on coding the CA TLMS Copycat CTCOPYUX user exit.</td>
</tr>
<tr>
<td>Messages Guide</td>
<td>This guide contains all messages generated by CA TLMS Copycat. The messages are listed in ascending order by message prefix. Each message is accompanied by a brief explanation and the appropriate response or recommended action for recovery.</td>
</tr>
</tbody>
</table>
1.4 Related Publications

The following product-specific publications relate to CA TLMS Copycat and are supplied by CA:

<table>
<thead>
<tr>
<th>Name</th>
<th>Minimum Version</th>
<th>Operating System</th>
</tr>
</thead>
<tbody>
<tr>
<td>CA TLMS Installation Guide</td>
<td>5.5</td>
<td>z/OS and OS/390</td>
</tr>
<tr>
<td>CA TLMS User Guide</td>
<td>5.5</td>
<td>z/OS and OS/390</td>
</tr>
<tr>
<td>CA TLMS Systems Programmer Guide</td>
<td>5.5</td>
<td>z/OS and OS/390</td>
</tr>
<tr>
<td>CA TLMS Message Guide</td>
<td>5.5</td>
<td>z/OS and OS/390</td>
</tr>
</tbody>
</table>

The following publications are not produced by CA, but are referenced in this guide or are recommended reading.

**IBM Publications**

- IBM MVS Catalog Administration Guide
- IBM SMP/E General Information Guide
- IBM SPL Application Development Guide
- MVS Tape Labels
1.5 Command Notation

This guide uses the following command notation.

Enter the following exactly as they appear in command descriptions:

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>UPPERCASE</td>
<td>Identifies commands, keywords and keyword values which must be coded exactly as shown.</td>
</tr>
<tr>
<td>MIXed cases</td>
<td>Identify command abbreviations. The uppercase letters are the minimum abbreviation and the lowercase letters are optional.</td>
</tr>
<tr>
<td>symbols</td>
<td>All symbols, such as commas, equal signs and slashes, must be coded exactly as shown.</td>
</tr>
</tbody>
</table>
1.6 Reading Syntax Diagrams

Syntax diagrams are used to illustrate the format of statements and some basic language elements. Read syntax diagrams from left to right and top to bottom.

The following terminology, symbols, and concepts are used in syntax diagrams:

- Keywords appear in uppercase letters, for example, COMMAND or PARM. These words must be entered exactly as shown.
- Variables appear in italicized lowercase letters, for example, variable.
- Required keywords and variables appear on a main line.
- Optional keywords and variables appear below a main line.
- Default keywords and variables appear above a main line.
- Double arrowheads pointing to the right indicate the beginning of a statement.
- Double arrowheads pointing to each other indicate the end of a statement.
- Single arrowheads pointing to the right indicate a portion of a statement, or that the statement continues in another diagram.
- Punctuation marks or arithmetic symbols that are shown with a keyword or variable must be entered as part of the statement or command.

Punctuation marks and arithmetic symbols can include the following:

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>,</td>
<td>comma</td>
</tr>
<tr>
<td>.</td>
<td>period</td>
</tr>
<tr>
<td>&gt;</td>
<td>greater than symbol</td>
</tr>
<tr>
<td>&lt;</td>
<td>less than symbol</td>
</tr>
<tr>
<td>(</td>
<td>open parenthesis</td>
</tr>
<tr>
<td>)</td>
<td>close parenthesis</td>
</tr>
<tr>
<td>=</td>
<td>equal sign</td>
</tr>
<tr>
<td>¬</td>
<td>not sign</td>
</tr>
<tr>
<td>+</td>
<td>addition</td>
</tr>
<tr>
<td>−</td>
<td>subtraction</td>
</tr>
<tr>
<td>*</td>
<td>multiplication</td>
</tr>
<tr>
<td>/</td>
<td>division</td>
</tr>
</tbody>
</table>

The following is a diagram of a statement without parameters:

```
Statement Without Parameters
```

For this statement, you must write the following:

```
COMMAND
```
Required parameters appear on the same horizontal line, the main path of the diagram, as the command or statement. The parameters must be separated by one or more blanks.

**Statement with Required Parameters**

```
COMMAND PARM1 PARM2
```

You must write the following:

```
COMMAND PARM1 PARM2
```

Delimiters, such as parentheses, around parameters or clauses must be included.

**Delimiters Around Parameters**

```
COMMAND (PARM1) PARM2='variable'
```

If the word `variable` is a valid entry, you must write the following:

```
COMMAND (PARM1) PARM2='variable'
```

When you see a vertical list of parameters as shown in the following example, you must choose one of the parameters. This indicates that one entry is required, and only one of the displayed parameters is allowed in the statement.

**Choice of Required Parameters**

```
COMMAND PARM1
```

You can choose one of the parameters from the vertical list, such as in the following examples:

```
COMMAND PARM1
COMMAND PARM2
COMMAND PARM3
```

When a required parameter in a syntax diagram has a default value, the default value appears above the main line, and it indicates the value for the parameter if the command is not specified. If you specify the command, you must code the parameter and specify one of the displayed values.

**Default Value for a Required Parameter**

```
COMMAND PARM1=YES PARM2=NO
```

If you specify the command, you must write one of the following:
1.6 Reading Syntax Diagrams

A single optional parameter appears below the horizontal line that marks the main path.

**Optional Parameter**

```plaintext
COMMAND PARM1=NO PARM2
COMMAND PARM1=YES PARM2
```

You can choose (or not) to use the optional parameter, as shown in the following examples:

- COMMAND
- COMMAND PARM1
- COMMAND PARM2

If you have a choice of more than one optional parameter, the parameters appear in a vertical list below the main path.

**Choice of Optional Parameters**

```plaintext
COMMAND
├─ PARM1
└─ PARM2
```

You can choose any of the parameters from the vertical list, or you can write the statement without an optional parameter, such as in the following examples:

- COMMAND
- COMMAND PARM1
- COMMAND PARM2

In some statements, you can specify a single parameter more than once. A repeat symbol indicates that you can specify multiple parameters.

**Repeatable Variable Parameter**

```plaintext
COMMAND variable
```

In the preceding diagram, the word `variable` is in lowercase italics, indicating that it is a value you supply, but it is also on the main path, which means that you are required to specify at least one entry. The repeat symbol indicates that you can specify a parameter more than once. Assume that you have three values named `VALUEX`, `VALUEY`, and `VALUEZ` for the variable. The following are some of the statements you might write:

- COMMAND `VALUEX`
- COMMAND `VALUEX VALUEY`
- COMMAND `VALUEX VALUEX VALUEZ`
If the repeat symbol contains punctuation such as a comma, you must separate multiple parameters with the punctuation. The following diagram includes the repeat symbol, a comma, and parentheses:

**Separator with Repeatable Variable and Delimiter**

In the preceding diagram, the word *variable* is in lowercase italics, indicating that it is a value you supply. It is also on the main path, which means that you must specify at least one entry. The repeat symbol indicates that you can specify more than one variable and that you must separate the entries with commas. The parentheses indicate that the group of entries must be enclosed within parentheses. Assume that you have three values named VALUEA, VALUEB, and VALUEC for the variable. The following are some of the statements you can write:

- COMMAND (VALUEC)
- COMMAND (VALUEB,VALUEC)
- COMMAND (VALUEB,VALUEA)
- COMMAND (VALUEA,VALUEB,VALUEC)

The following diagram shows a list of parameters with the repeat symbol:

**Optional Repeatable Parameters**

The following are some of the statements you can write:

- COMMAND PARM1
- COMMAND PARM1 PARM2 PARM3
- COMMAND PARM1 PARM1 PARM3

The placement of YES in the following diagram indicates that it is the default value for the parameter. If you do not include the parameter when you write the statement, the result is the same as if you had actually specified the parameter with the default value.

**Default Value for a Parameter**

For this command, COMMAND PARM2 is the equivalent of COMMAND PARM1=YES PARM2.
In some syntax diagrams, a set of several parameters is represented by a single reference.

Variables Representing Several Parameters

```
COMMAND ──┬ ┬───────── ────────────────────── ───────────────────────────
  ↓   └┴┘ ─PARM1───────────────
    └────┬ ┬────────────────── ─────────────────────────────────────────
        └─┤ ─PARM2─────────────
            └─┐ ─PARM3 ──┬ ┬───────
                └─┤ ─PARM4─
                    └┘ ─PARM5─
```

The *parameter-block* can be displayed in a separate syntax diagram.

Choices you can make from this syntax diagram therefore include, but are not limited to, the following:

- COMMAND PARM1
- COMMAND PARM3
- COMMAND PARM3 PARM4

**Note:** Before you can specify PARM4 or PARM5 in this command, you must specify PARM3.

A note in a syntax diagram is similar to a footnote except that the note appears at the bottom of the diagram box.

```
COMMAND ──┬ ┬───────── ────────────────────── ───────────────────────────
  ↓   └┴┘ ─PARM1───
      (1)

**Note:**

1 This is a note about the item.
Chapter 2. Copying Files

Use the FILECOPY function control statements to copy one or more files from one tape volume set to another. The following restrictions apply to the FILECOPY function:

- All files copied must be under the control of CA TLMS.
- The maximum number of files that can be copied per program execution is 65,535.

Caution

The FILECOPY function requires standard labeled (SL) tapes.
2.1 Coding FILECOPY Control Statements

When coding FILECOPY control statements, the first statement identifies the function as FILECOPY. It is followed by control statements, which allow you to indicate the position number in the input file where the data set name and volume serial number fields are located. Additionally, a file sequence number (binary or character) can be provided. Other optional control statements allow you to propagate creation information from the original data set to the copy, recatalog the data set to the new volume(s)/device type, and specify the retention of the output and input files. Comment statements may be included, and are identified as comments by coding an asterisk (*) in position 1.

CA TLMS Copycat control statements are constructed using keyword parameters. Statements may be coded as one keyword per statement, or as multiple keywords which are separated by a comma. Keywords specified in a multiple keyword statement are not positional, and continuation characters are not required.

**Note:** CA TLMS Copycat opens input and output files based on the following dispositions: DISP=(SHR,KEEP,KEEP) for input; DISP=(NEW,KEEP,KEEP) for output.
The formats for the FILECOPY control statements are:

### 2.1 Coding FILECOPY Control Statements

#### 2.1.1 Required Control Statement Definitions

- **FILECOPY** Identifies this as a file copy operation. This must be the first noncomment control statement, contain no other parameters, and must begin in position 1.

- **INPUT** *(Required)* Specified as one of the following:
2.1 Coding FILECOPY Control Statements

INPUT=ddname
Specifies the ddname of the input data set containing the data set or volume selection list.

INPUT=*  
Indicates that the data set or volume selection list immediately follows this INPUT control statement. If any other control statements are coded, they must be placed before the INPUT=* control statement.

VOL
Specifies the starting position within the input data set where the 6-character volume serial number is found. (See rules following the FILESEQD parameter definition.) The default is VOL=1.

INUNIT  
(Required.) Specifies the unit name for the input tape device. The JCL equivalent is UNIT= on the DD statement.

OUTUNIT  
(Required.) Specifies the unit name for the output tape device. The JCL equivalent is UNIT= on the DD statement.

2.1.2 Optional Control Statement Definitions

BUFFER
Specifies whether the channel programs should process single blocks multiple blocks of tape data in one I/O execution.

SINGLE
One data block is copied at a time from input to output tape. This is the default.

MULTIPLE
Multiple-block buffering will be used for all datasets with a block size up to 32760. The number of blocks being buffered depends on the block size and ranges between 1 and 2048. Specifying BUFFER=MULTIPLE can significantly reduce the EXCP count of FILECOPY jobs. The actual saving rate depends on data structure and DCB attributes. At least half of the number of tape EXCPs will be reduced according to the buffering factor.

BUFFER=MULTIPLE cannot be used for tapes created in proprietary format. All data sets must have standard labels with valid DCB information. In particular, the actual block length must not exceed the maximum block size documented in the tape label. Otherwise, data may be truncated when copied with BUFFER=MULTIPLE specified.

Note: The setting of the BUFFER option has an impact on the processing logic of duplex tapes. See option DUPLEX for further information.
COMP

When specified, indicates whether compaction is to be specifically turned on for the output tape device. The JCL equivalent is DCB=(TRTCH=COMP) on the DD statement. If COMP is not specified, the compaction is set to be the same as detected for the input tape.

YES Compaction is specifically turned on.

NO Compaction is specifically turned off. This is the default.

COMP2

When specified, indicates whether compaction is to be specifically turned on for the secondary output tape device. The JCL equivalent is DCB=(TRTCH=COMP) on the DD statement. COMP2 is only valid if DUPLEX=YES is also specified. If COMP2 is not specified, the compaction is set to be the same as detected for the input tape.

YES Compaction is specifically turned on.

NO Compaction is specifically turned off. This is the default.

CTLFILE

Specifies the 1- to 44-character data set name that identifies a dummy file that is created as the first file on the tape. This file is known as the control file. Files that match this data set name are not copied if ALL is specified by the FILES parameter.

If DUPLEX=YES is specified, the duplex copy will also have a control file with this same name, unless CTLFILE2 is specified.

Note: This data set name is not affected by PREFIX or PREFIX2.

CTLFILE2

Specifies the 1- to 44-character data set name that identifies a dummy file that is created as the first file on the duplex tape. This file is known as the duplex control file. Files that match this data set name are not copied if ALL is specified by the FILES parameter.

DUPLEX=YES and CTLFILE must also be specified.

Note: This data set name is not affected by PREFIX2.

DATACLAS

Specifies a 1- to 8-character name of a valid SMS Data Class to be used for the dynamic allocation of all primary output tape data sets.

DATACLAS2

Specifies a 1- to 8-character name of a valid SMS Data Class to be used for the dynamic allocation of all duplex output tape data sets. DATACLAS2 is only valid if DUPLEX=YES is also specified.

DSN

Specifies the starting position within the input data set where the 44-character data set name is found. (See rules following the FILESEQD parameter definition.)
2.1 Coding FILECOPY Control Statements

**DUPLEX** Specifies whether a secondary output tape is to be created.

**YES** Create a secondary output tape. Allows specification of optional parameters COMP2, CTLFILE2, OUTDISP2, OUTUNIT2, RECATLG2 and PREFIX2.

**Note:** The logic of multivolume output processing depends on the BUFFER option. With BUFFER=SINGLE, end-of-volume is always forced simultaneously on both output tapes. For each volume sequence, the data on the primary and the secondary volume is identical, even if the tapes are different length or on different device types. With BUFFER=MULTIPLE, end-of-volume is processed asynchronously on the output tapes, according to their capacity. While the entire output data sets are the same, single tapes of the output chains are the same, single tapes of the output chains are usually not identical and cannot be exchanged.

**NO** Do not create a secondary output tape. This is the default.

**ERASE** Specifies whether the remainder of the output tape(s) is to be erased after the copy has finished.

**YES** Erases any remaining data that may exist on an output tape upon completion of a copy operation.

**NO** No erase of remaining data is done. This is the default.

**FILES** Determines which files are copied.

**SPECIFIC** The data set name parameter (DSN) must be supplied. Only those data sets specified are copied.

**ALL** All data sets on the specified volume(s), and on any volumes chained to it, are copied. This is the default.

**FILESEQB** Specifies the starting position within the input data set where the two-byte binary file sequence number is found. FILESEQB, FILESEQC and FILESEQD are mutually exclusive. Supply one of them. (See rules following FILESEQD parameter definition.)

**FILESEQC** Specifies the starting position within the input data set where the four-character numeric file sequence number is found. Coding this keyword parameter requires that the DSN and VOL parameters also be supplied. FILESEQB, FILESEQC, and FILESEQD are mutually exclusive. Supply one of them. (See rules following FILESEQD parameter definition.)
FILESEQD  Specifies the starting position within the input data set where the
one to five character, delimited, numeric file sequence number is
found. Up to six positions are scanned. Leading blanks are
accepted. The last digit of the file sequence number must be
followed by a blank or a comma. FILESEQB, FILESEQC, and
FILESEQD are mutually exclusive. Supply one of them.

The following rules apply when using the DSN, VOL, FILESEQB,
FILESEQC, and FILESEQD parameters:

■ position is a numeric value. If INPUT=ddname is used, it is in
the range of 1-255. If INPUT=* is used, it is in the range of
1-80.

■ The position number specified is relative to 1 for example, if
the volume serial number starts in position 2, VOL=2 would
be specified.

■ If DSN is specified without the VOL parameter, all data sets
listed must be cataloged data sets.

■ Coding the FILESEQB, FILESEQC, or FILESEQD parameter
requires that the DSN and VOL parameters also be supplied.

■ If neither DSN, VOL, FILESEQB, FILESEQC, nor FILESEQD
is specified, VOL=1 is assumed.

INDISP  Determines the retention for the input file.

RETPD  Assign the retention specified.

Note: Any RETPD or EXPDT which makes the
input file expire on the current date is invalid and
is disallowed.

EXPDT  Assign the specified expiration date to the input
file. CA TLMS keyword expiration dates may be
used. For example, if permanent retention is
required, INDISP= EXPDT=PERM can be coded.
(See the CA TLMS User Guide for a list of valid
JCL expiration date keywords.) Specification of
non-keyword dates should be in the same format
as that specified in the DATEFMT parameter if it is
present in the JCL.

Note: Do not use the Julian numeric equivalents
for keyword dates here. For example, use the
keyword CATLG, not 99000 and not 1999/000.

SAME  The disposition on the input file is not modified
upon completion of the copy operation. This is the
default.

MAXFILES  Specifies the maximum number of files that can be processed
in a file set. This analysis is performed before any tapes are
mounted. The input volumes are analyzed and all secondary
files are taken into consideration. The default is 9999. Values from 1 to 65535 are accepted.

**MERGE**

When specified, this option indicates whether each input volume set is processed individually. "Set" refers to all volumes chained to the same first volume when applied to a multi-file, multivolume data set.

In the examples shown below, assume that volumes 123456 and 123555 are chained together with four files between them. Volumes 122323 and 112332 are chained together with a single large file.

**YES**

This option is used for combining (merging) all of the input files into a single set. This is the default.

For example, performing a FILECOPY on volumes 123456 and 122323 would result in all five files being merged together onto a single large multivolume set.

**NO**

Use of this option produces the same result as executing multiple CA TLMS Copycat jobs (with a single volume set processed in each job) as a single task. All files from each volume set are processed in the normal fashion. However, once EOF has been reached for the last file on the first volume set, a scratch request is issued to start a new output volume set for the next input volume set.

For example, performing a FILECOPY on volumes 123456 and 122323 would cause the four files starting on volume 123456 to be copied to one output volume set and the single large file starting on volume 122323 to be copied to a different output volume set. This produces a basic copy of volume sets, without the merging of files, in a single job.

**MOD**

Causes all input files to be merged into a single output set, like MERGE=YES. But instead of starting a new output chain on a scratch tape, Copycat will try to resume stacking on an existing output volume which was created in a previous execution. If no appropriate active volume is found, a scratch tape is requested. Option MODVOL can be used to specify an active output volume explicitly. Option MODHLQ can be used to maintain a catalog entry pointing to the last file created by a specific job. Any subsequent Filecopy job using the same jobname and the same MODHLQ specification will then automatically be directed to the output volume that was used last by the preceding job. If neither MODVOL nor MODHLQ is specified, MERGE=MOD operates exactly like MERGE=YES.
When MERGE=MOD is used to continue stacking on an existing CopyCat volume, the use of CTLFILE and OUTDISP must match the previous specification. If CTLFILE is used, the specified value must match the DSN of the first data set on the output volume set. If the default of OUTDISP=SAME is not used, the specified EXPDT or RETPD value must match the EXPDTs of the existing files on the volume set. The new date must be equal to or higher than all existing dates, and the date type must be the same. If the OUTDISP date is higher than the previous volume retention, the EXPDT of the first file is increased accordingly.

If MERGE=MOD is used with DUPLEX=YES, the primary and duplex output chains must be kept in sync. When active volumes are to be used for output, a pair of matching output volumes from a previous Filecopy execution must be selected.

**MGMTCLAS**
Specifies a 1- to 8-character name of a valid SMS ManagementClass to be used for the dynamic allocation of all primary output tape data sets.

**MGMTCLA2**
Specifies a 1- to 8-character name of a valid SMS ManagementClass to be used for the dynamic allocation of all duplex output tape data sets.

**MODHLQ**
Specifies a 1- to 24-character DSN high level qualifier, used to establish a dummy catalog entry for MERGE=MOD processing. MODHLQ is valid with MERGE=MOD only.

If MODHLQ is specified, CopyCat builds the following data set names:
- "modhlq.COPYCAT.jobname" for primary output
- "modhlq.COPYCAT2.jobname" for duplex output

Where "modhlq" is the specified option value, and "jobname" is the name of the executing CopyCat job.

If MODVOL is not specified (or if MODVOL2 is not specified for duplex processing), the above data set name is located in the system catalog. If an entry is found, the cataloged volser and file sequence are validated on the tape system. If the tape represents a valid CopyCat volume, it is used for output, and the Filecopy job starts stacking file behind the existing files on the tape.

CopyCat maintains the pointer to the last volume and the last file sequence of the output chain by deleting the catalog entry whenever a new output data set is opened and by recataloging it upon successful close. The catalog entry is always maintained.
when the MODHLQ option is specified, but any previously existing catalog entry matching high level qualifier and jobname is not necessarily used to determine the active output volume. Option MODVOL can be used to override the volser retrieved from the catalog entry.

**MODVOL**

Specifies the primary output volume to be used for MERGE=MOD processing. MODVOL is valid with MERGE=MOD only. MODVOL overrides any volser determined from a catalog entry via option MODHLQ.

**volser**

Specifies the volser of a Filecopy output volume created in a previous CopyCat execution. CopyCat will continue stacking files on this volume, behind the existing data sets.

**SCRTCH**

Indicates that a scratch tape should be requested for the primary Filecopy output, though MERGE=MOD was specified.

**MODVOL2**

Specifies the duplex output volume to be used for MERGE=MOD processing. MODVOL2 is valid only with MERGE=MOD and DUPLEX=YES. MODVOL2 overrides any duplex volser determined from a catalog entry via option MODHLQ.

**volser**

Specifies the volser of a Filecopy output volume created in a previous CopyCat execution. CopyCat will continue stacking files on this volume, behind the existing data sets.

**SCRTCH**

Indicates that a scratch tape should be requested for the duplex Filecopy output, though MERGE=MOD was specified.

**NOMERGE**

This option is identical to the MERGE=NO parameter, described above. It is provided for compatibility with release 1.0 of this product.

**OUTDISP**

Determines the retention for the output file.

**RETPD**

Assign the retention specified.

**EXPDT**

Assign the specified expiration date to the output file. CA TLMS keyword expiration dates may be used. For example, if permanent retention is required, OUTDISP=EXPDT=PERM can be coded. (See the CA TLMS User Guide for a list of valid JCL expiration date keywords.) Specification of non-keyword dates should be in the same format as that specified in the DATEFMT parameter if it is present in the JCL.
2.1 Coding FILECOPY Control Statements

Note: Do not use the Julian numeric equivalents for keyword dates here. For example, use CATLG not 99000.

SAME Assign the same retention on the output file that was on the input file. This is the default.

OUTDISP2 Determines the retention for the secondary output file. This parameter only applies if DUPLEX=YES is also specified.

RETPD Assign the retention specified.

EXPDT Assign the specified expiration date to the secondary output file. CA TLMS keyword expiration dates may be used. For example, if permanent retention is required, OUTDISP2= EXPDT=PERM can be coded. (See the CA TLMS User Guide for a list of valid JCL expiration date keywords.) Specification of non-keyword dates should be in the same format as that specified in the DATEFMT parameter if it is present in the JCL.

Note: Do not use the Julian numeric equivalents for keyword dates here. For example, use CATLG not 99000.

SAME Assign the same retention on the output file that was on the input file. This is the default.

OUTSER Specifies a 1-6 character volume serial number which will be supplied during allocation of the first file in each volume set as the primary, or only, output.

OUTSER2 Specifies a 1-6 character volume serial number which will be supplied during allocation of the first file in each volume set as the duplex output. This is valid only when DUPLEX=YES has also been specified.

OUTUNIT2 Specifies the unit name for the secondary output tape device. The JCL equivalent is UNIT= on the DD statement. OUTUNIT2 is only valid when DUPLEX=YES is also specified. Either OUTUNIT2 or STORCLA2 must be specified with DUPLEX=YES.

PREFIX Specifies 1-8 characters that are used as the new high-level qualifier for all files being copied. If the current data set name exceeds 35 characters, truncation may occur.

PREFIX2 The same as PREFIX except that it applies to the output volumes created on OUTUNIT2. If the current data set name exceeds 35 characters, truncation may occur. The default is the same as PREFIX.

RECATLG Determines the MVS catalog action to be performed. For the output volumes created on OUTUNIT.

Note: If DUPLEX=YES, the cataloging of the secondary output data set is controlled by RECATLG2.
2.1 Coding FILECOPY Control Statements

**ALL**  The newly created files are cataloged to the new output volume(s) all of the time.

**PREV**  The newly created files are cataloged to the new output volume(s) if the corresponding input files were cataloged to MVS. RECATLG=PREV is not allowed if PREFIX= is specified.

**NONE**  The newly created files are not cataloged to MVS. This is the default.

**RECATLG2**  Determines the MVS catalog action to be performed on the output volumes created on OUTUNIT2. If RECATLG is also being used, use the PREFIX2 to ensure unique names are created on the duplex tape.

- **ALL**  The newly created duplex files are cataloged to the new output volume(s) all of the time.
- **PREV**  The newly created duplex files are cataloged to the new duplex volume(s) if the corresponding input files were cataloged to MVS.
- **NONE**  The newly created duplex files are not cataloged to MVS. This is the default.

**SAVEINFO**  Specifies that CA TLMS creation data (date, time, job name, step name, DD name, program name, CPU, device (unit)) from the original file should be copied to the new VMF record for the file(s) created by this operation. More or less fields may be copied by using the CA TLMS Copycat user exit (see USEREXIT).

- **YES**  The VMF records for the newly created files will have CA TLMS Copycat creation data copied from the original files.
- **NO**  The VMF records for the new created files will not have CA TLMS Copycat creation data copied from the original files.

**SORT**  Determines the order of the input files to be copied.

- **YES**  The input files are sorted in the order of recording technique (TRTCH), density, first volume, file sequence number, and volume sequence number. This is the default.
- **NO**  The input files are processed in the same order as the control statements presented to INPUT=.

**STORCLAS**  Specifies a 1- to 8-character name of a valid SMS Storage Class to be used for the dynamic allocation of all primary output tape volumes. STORCLAS is mutually exclusive with OUTUNIT; one of the two parameters is required.
2.1 Coding FILECOPY Control Statements

**STORCLA2** Specifies a 1- to 8-character name of a valid SMS Storage Class to be used for the dynamic allocation of all duplex output tape volumes. STORCLA2 is only valid if DUPLEX=YES is also specified. STORCLA2 is mutually exclusive with OUTUNIT2; one of the two parameters is required with DUPLEX=YES.

**UNSTACK** A special control directive designed for use with virtual tape systems. The output files are each written to a separate volume. This allows the virtual system to physically stack the files within the virtual tape system while giving the external appearance of each file being on a separate volume. UNSTACK and MERGE processing of any kind are mutually exclusive.

**USEREXIT** Specifies whether the CTCOPYUX user exit is called before CA TLMS Copycat VMF updates are to be performed. See the CA TLMS Copycat User Exit Usage Guide section of this document for information on coding this exit.

- **YES** The user exit is called.
- **NO** The user exit is not called. This is the default.

**VOLCHAIN** Can be used to prevent creation of multivolume output chains on physical cartridges.

- **YES** Indicates that end of volume is processed normally. When the end of a tape is reached on output, the remainder of the current data set is written to a new scratch tape, which is chained to the previous tape as secondary volume. VOLCHAIN=YES is the default.
- **NO** Indicates that multivolume chaining is to be suppressed when possible. At EOV, if the current data set has not used more than half of the tape space, the partial files expired on the tape system and the entire input file is recopied from the beginning to a new scratch tape as file sequence 1. The volumes are not chained. VOLCHAIN=NO may be used with MERGE=YES, MERGE=NO and MERGE=MOD, but is not valid with UNSTACK.

  **Note:** VOLCHAIN=NO has no effect on reel tapes and on virtual tapes. VOLCHAIN=NO does not take effect when DUPLEX=YES and BUFFER=MULTIPLE are both specified.

**WAITTIME** Specifies the number of minutes to wait before retrying when a tape resource is not available. This value controls wait interval when you reply WAIT to the CTC7303R console message. Replying WAIT to the CTC7303R message puts the allocation logic in a loop of waiting and then retrying until either the allocation completes or you reply to the CTC7306R message which remains outstanding during the wait/retry cycle. Values from 1 to 10 are accepted. The default is WAITTIME=5.
2.1 Coding FILECOPY Control Statements

2.1.3 EXEC Parameters

The following parameters are used in the PARM= field for the EXEC JCL statement to specify an alternate date format, an alternate language, and to activate special testing features.

**DATEFMT**

Specifies the date format to be used when processing the INDISP or OUTDISP keyword. The date pattern is limited to ten bytes and must be enclosed in parentheses. This parameter is optional and, if omitted, the preferred date format is used. For detailed information on this parameter, see the CA-Dynam/TLMS System Programmer Guide.

**LANG**

Designates which language table should be used when generating error messages and report titling. The default is LANG=ENG. Valid values include ENG=English, FRN=French, GER=German, ITA=Italian, and SPN=Spanish. Support for other languages will be provided based on client demand.

**TEST**

Performs preliminary validation of all keyword parameters coded, and reports the options that are in effect, as well as tapes that will qualify for this copy operation. The actual copy operation is not executed when the TEST parameter is specified, and no VMF updates are made.
2.2 Sample Job Control Statements

Sample JCL and control statements for a FILECOPY operation are provided in CAI.SAMPJCL, member FILECOPY.

The following pages provide examples illustrating the JCL, control statements and optional parameters which can be utilized for a FILECOPY operation.

2.2.1 Example 1

This example shows the statements that would be necessary to copy all files from a set of three input tapes to two sets of tapes (output). This example does not appear in the CAI.SAMPJCL.

```plaintext
//FILECOPY JOB
//STEP1 EXEC PGM=COPYCAT,PARM='DATEFMT=(YYYY/MM/DD),LANG=FRN'
//STEPLIB DD DSN=CAI.CAILIB,DISP=SHR
//CAIVMF DD DSN=CAI.TLMS.VMF,DISP=SHR
//TLMSOPTS DD DSN=CAI.PPOPTION(TLMSIPO),DISP=SHR
//SYSPRINT DD SYSOUT=/c5197
//CCRPT DD SYSOUT=/c5197
//SYSUSNAP DD SYSOUT=/c5197
//SYSUDUMP DD SYSOUT=/c5197
//SYSIN DD /c5197
%

THE FOLLOWING STATEMENTS COPY ALL FILES ON TAPES 123457 AND 123456 ONTO TWO SETS OF TAPES. THE DATA SETS ARE RECATALOGED TO THE PRIMARY OUTPUT TAPE IF PREVIOUSLY CATALOGED, AND THE TLMS EXPIRATION DATE AND CREATION INFORMATION ARE PROPAGATED FROM THE ORIGINAL TAPES TO THE NEW TAPES. DATA SETS WILL BE COPIED BY TAPE VOLUME SETS IN THE ORDER SPECIFIED (SORT=NO).
%
FILECOPY
FILES=ALL,SAVEINFO=YES
RECATLG=PREV
INDISP=SAME
OUTDISP=SAME
DUPLEX=YES
INUNIT=TAPE
OUTUNIT=TAPE
OUTUNIT2=TAPE
COMP=YES
COMP2=YES
SORT=NO
INPUT=* 123457 123456
*/
```
2.2 Sample Job Control Statements

2.2.1 Parameter Definitions

A The DATEFMT parameter is requesting expiration dates to be reported in a different format. The LANG parameter is requesting all messages and reports be produced in French.

B CA TLMS Release 5.4 or higher options data set and member.

C All files are copied. The creation data is propagated.

D The new files are recataloged only if they were cataloged previously. Because RECATLG2 was not also specified, the new files written to the duplex volume are not cataloged.

E The original files keep the same expiration dates.

F A duplex copy of the output is created.

G COMP specifies that the output is compacted. NOCOMP specifies that the output is not compacted. This optional parameter applies to 3480x or 3490 units only.

H COMP2 specifies the compaction mode for the duplex output tape.

I The data sets are copied from tape volume sets in the same order as the volumes specified in control statements.

2.2.1.2 JCL Considerations

The DD statements below deserve special attention when included in the JCL for a FILECOPY operation:

CCRPT This produces a detailed report of all files copied.

TLMSOPTS This DD statement is required.
2.2.2 Example 2

The following is an example of the job and CA TLMS Copycat function control statements that would be necessary to copy all specified files onto a single tape (or set of tapes). For information on creating the selection list referenced by the DSNLIST DD statement used in Example 2, see Generating a Volume Selection List on page 36. This example does not appear in the CAI.SAMPJCL.

```
//jobname JOB
//STEP1 EXEC PGM=COPYCAT,PARM='LANG=GER'
//STEPLIB DD DSN=CAI.CAILIB,DISP=SHR
//CAIVMF DD DSN=CAI.TLMS.VMF,DISP=SHR
//SYSPRINT DD SYSOUT**
//CCRPT DD SYSOUT**
//SYSUSNAP DD SYSOUT**
//TLMSOPTS DD DSN=CAI.PPOPTION(TLMSIPO),DISP=SHR
//DSNLIST DD DSN=list.of.tape.data.sets.to.copy,DISP=OLD
//SYSIN DD *
FILECOPY
INPUT=DSNLIST,DSN=1,FILES=SPECIFIC
RECATLG=ALL,PREFIX=BACKUP
OUTDISP=RETPD=365/zerodot
INDISP=SAME
USEREXIT=YES
INUNIT=TAPE
OUTUNIT=TAPE
/*
```

2.2.2.1 Parameter Definitions

- **A** The LANG parameter is requesting all messages and reports be produced in German.
- **B** The new files are cataloged, and will have an additional prefix of BACKUP in the data set name.
- **C** The original files will not be expired.
- **D** The CTCOPYUX user exit is called during VMF updates.
2.3 Generating a Volume Selection List

CA Earl can be used to generate a volume selection list of the tapes to be copied.

2.3.1 Using CA Earl

Caution

CA Earl Release 6.1 is the minimum release required.

This example illustrates the sample JCL and control statements needed to create a list of volumes that meet the following criteria:

1. Expiration date is a non-keyword value, greater than 180 days in the future.
2. The last use date of the volume was more than 90 days previous.
3. The volume is not in an out-of-area location.
4. Positions 6 and 7 of the data set name are either 01 or 02.

```plaintext
// JOB
// EEARL EXEC PGM=EARL,REGION=1024K
// STEPLIB DD DSN=CAI.CAILIB,DISP=SHR
// EEARLLIB DD DSN=CAI.CAISRC,DISP=SHR
// TAPEDB DD DSN=CAI.TLMS.VMF,DISP=SHR
// SYSPRINT DD SYSOUT=/c5197
// EEARLOBJ DD UNIT=SYSDA,SPACE=(CYL,(1,1))
// SORTIN DD UNIT=SYSDA,SPACE=(CYL,(5,5))
// SORTOUT DD UNIT=SYSDA,SPACE=(CYL,(5,5))
// SYSSORT DD SYSOUT="
// OUTLIST DD DSN=&&TEMP,DISP=(,PASS),
//   SPACE=(TRK,(5,5)),UNIT=SYSDA
// SORTWK01 DD UNIT=SYSDA,SPACE=(CYL,(5,5))
// SORTWK02 DD UNIT=SYSDA,SPACE=(CYL,(5,5))
// SORTWK03 DD UNIT=SYSDA,SPACE=(CYL,(5,5))
// SYSUDUMP DD SYSOUT="
// SYSSIN DD *
!
! USE CA-EARL TO PRODUCE A LIST OF VOLUMES BASED ON
!
! EXPIRATION DATE
! LAST-USED DATE
! DATA SET NAME
! OUT-OF-AREA CODE
!
```
## 2.3 Generating a Volume Selection List

COPY EARLDEFS ! TLMS RELEASE 5.5 EARLDEFS

OUTLIST: FILE OUTPUT RECORD=80 ! DEFINE AN OUTPUT LIST
DEF OUT_REC 1-80 X ! THAT WILL BE USED AS
DEF OUT_VOLUME 1-6 X ! INPUT TO TLMS/COPYCAT

DEF P_LAST_DATE (P 7.0) = NONE ! MINIMUM LAST USED DATE
DEF P_SCRATCH_DATEL (P 7.0) = NONE ! LOW-VALUE EXPIRATION
DEF DSN1_2 = DSN 1-2 X ! PARTIAL DATASET NAME

SET TYPRUN = R_VOLUME ! ONLY LOOK AT VOLUME
SET FUNCTION = 'ADD_DAYS' ! ADD TO TODAY THIS
SET DAYS = 180 ! MANY DAYS
CALL CTSEDATE USING FUNCTION,RUNDATE,DAYS,P_SCRATCH_DATEL

SET FUNCTION = 'SUB_DAYS' ! SUBTRACT FROM TODAY
SET DAYS = 90 ! THIS MANY DAYS
CALL CTSEDATE USING FUNCTION,RUNDATE,DAYS,P_LAST_DATE

GET TAPEDB ! GET RECORDS
SET OUT_VOLUME = VOLSER ! FOR OUTLIST OUTPUT FILE

IF EXPDT >= P_SCRATCH_DATEL AND ! WHEN EXPDT >= CDATE+18/zerodot
    EXPDT_TYPE = T_JDATE AND ! AND EXPDT TYPE IS JULIAN
    LDATE <= P_LAST_DATE AND ! AND LDATE <= CDATE-9/zerodot
    OUTCODE = ' ', AND ! AND OUTCODE IS BLANKS
    DSN1_2 = 'AA','AB' ! AND POSITIONS 1 AND 2 OF THE
    ! DATASET NAME ARE EITHER AA OR AB
    THEN ! THEN
    PUT OUTLIST ! PUT THE RECORD TO OUTLIST
ENDIF

GOTO EOJ TAPEDB = 'E'
END

This example does not appear in CAI.SAMPJCL.
## 2.4 Sample FILECOPY Output Reports

### FILECOPY CA TLMS Copycat r11 SP2

**Monday, September 15, 2003, 19:34:30**

<table>
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<th>Duplex Data Set Name</th>
<th>File Seq#</th>
<th>Creation Date/Time</th>
<th>Expiration Date</th>
<th>1st Volume</th>
<th>Label Type</th>
<th>Ctlg Media</th>
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</tr>
<tr>
<td>ABCDE01.COPYCAT.LBI.FILE5</td>
<td></td>
<td></td>
<td>6</td>
<td>08/20/2003 17.17</td>
<td>10/09/2003</td>
<td>280821 SL</td>
<td>E COMP36TK</td>
<td></td>
<td></td>
<td>67</td>
</tr>
<tr>
<td>ABCDE01.COPYCAT.LBI.FILE6</td>
<td></td>
<td></td>
<td>6</td>
<td>08/20/2003 17.17</td>
<td>10/05/2003</td>
<td>285882 SL</td>
<td>COMP36TK</td>
<td></td>
<td></td>
<td>63</td>
</tr>
<tr>
<td>ABCDE01.COPYCAT.LBI.FILE6</td>
<td></td>
<td></td>
<td>7</td>
<td>08/20/2003 17.17</td>
<td>10/07/2003</td>
<td>280926 SL</td>
<td>R00 NCMP36TK</td>
<td></td>
<td>63</td>
<td></td>
</tr>
<tr>
<td>ABCDE01.COPYCAT.LBI.FILE6</td>
<td></td>
<td></td>
<td>7</td>
<td>08/20/2003 17.17</td>
<td>10/09/2003</td>
<td>280821 SL</td>
<td>E COMP36TK</td>
<td></td>
<td></td>
<td>63</td>
</tr>
</tbody>
</table>

**End of report FILECOPY Job=FILECOPY Step=$$$$$$@ Genlevel=0400WBO**

Figure 1. CA TLMS Copycat Filecopy Detail

### Field Description

- **Original Data Set Name**: Data set name for the corresponding tape file. ORIGINAL refers to the input data set (dynamically allocated as ddname C1nnnnnn).
- **Output Data Set Name**: TAPEOUT refers to the primary output data set (dynamically allocated as ddname CO1nnnnnn).
- **Duplex Data Set Name**: TAPEOUT2 refers to the duplex output data set (dynamically allocated as ddname CO2nnnnnn). The TAPEOUT2 line is only present if DUPLEX=YES is specified in the control statements.
- **File Seq#**: File sequence number.
- **Creation Date/Time**: Creation date and time for the data set.
- **Expiration Date**: Expiration date for the data set.
- **1st Volume**: First volume serial number of the volume set.
- **Label Type**: Data set label type.
### Field Description

**Ctlg RC**
Catalog return code, in the format *xnn*. This report field is only present if `RECATLG=PREV`, `RECATLG2=ALL`, or `RECATLG2=PREV` was in effect. The possible values for *xnn* are different for the input and the output files.

For *xnn* values listed for input files, the values of *x* can be:
- **Y** for Yes (the catalog points to this file).
- **N** for No (the catalog does not point to this file).

The *nn* is the LOCATE return code. A value of ‘00’ means a catalog entry exists under this name.

For *xnn* values listed for output files, the values of *x* can be:
- **C** for Cataloged (no catalog entry existed before, but the catalog now points to this file).
- **R** for Recataloged (the catalog previously pointed to another file, but it now points to the output file).
- **L** for Located (the catalog entry was found, but errors prevented cataloging or recataloging).
- **E** for Error (logic conditions resulting in message CTC4009W prevent catalog attempts).

The *nn* is the CATALOG or LOCATE return code.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
</table>
| **Ctlg RC**            | Catalog return code, in the format *xnn*. This report field is only present if `RECATLG=PREV`, `RECATLG2=ALL`, or `RECATLG2=PREV` was in effect. The possible values for *xnn* are different for the input and the output files. For *xnn* values listed for input files, the values of *x* can be:  
- **Y** for Yes (the catalog points to this file).  
- **N** for No (the catalog does not point to this file).  

The *nn* is the LOCATE return code. A value of ‘00’ means a catalog entry exists under this name.  

For *xnn* values listed for output files, the values of *x* can be:  
- **C** for Cataloged (no catalog entry existed before, but the catalog now points to this file).  
- **R** for Recataloged (the catalog previously pointed to another file, but it now points to the output file).  
- **L** for Located (the catalog entry was found, but errors prevented cataloging or recataloging).  
- **E** for Error (logic conditions resulting in message CTC4009W prevent catalog attempts).  

The *nn* is the CATALOG or LOCATE return code. |
| **Media Type**         | Type of media used for this data set. This field is a concatenation of recording technique and density, followed by ‘IDRC’ if the data set is compacted. |
| **Data Set Block Count** | Number of blocks in the data set. |
| **Err Ind**            | Error indicator. If this field contains an asterisk ‘*’, an error occurred with this data set. Look for messages CTC4004E, CTC4005E, CTC4006W, CTC4009W, CTC4010E, or CTC4011E. |
Figure 2. CA TLMS Copycat Copycat Messages
Figure 3. CA TLMS Messages (2 of 5)
The fields of the FILECOPY input entries list have the following meaning:

- **VOL=** is the volser
- **FVL=** is the First volume of the set
- **FS=** is the File sequence
- **RFS=** is the relative file sequence (the file sequence on this vol, as to the volume set)
- **VS=** is the Volume Sequence
- **F=** is a flag setting. It can have the following meanings:
  - **D** duplicate entry
  - **E** expired file
  - **F** more files follow on this volume
  - **L** this is the last volume of a multivolume file
  - **N** not selected due to CTLFILE DSN
  - **V** this file spans multiple volumes (flag is on for all volumes of the file)

In a multifile/multivolume aggregate, 'V' and 'L' are only set for multivolume files, and 'F' is only set for multifile volumes.
Figure 4. CA TLMS Copycat Messages (3 of 5)
2.4 Sample FILECOPY Output Reports

Figure 5. CA TLMS Copycat Messages (4 of 5)

Figure 6. CA TLMS Copycat Messages (5 of 5)
Chapter 3. Copying Tapes

The CA TLMS Copycat TAPECOPY function control statements are used to copy an entire tape volume to another volume. TAPECOPY is primarily intended to be used for media replacement. **CA TLMS MDS records are not created for secondary output data sets when copying volumes with more than one data set.** If MDS records are desired, use the FILECOPY function.

**Caution**

The TAPECOPY function requires standard labeled (SL) tapes. BLP processing is used.

Upon successful completion of the TAPECOPY operation, the following VMF data fields are copied from the input volume to the output volume for the first (or only) file on the tape: data set name, file count, volume sequence, volume count, base volume, expiration date, creation date, creation time, creation job, creation step, creation ddname, creation program, creation device, creation CPU, user accounting data, density, recording technique, label type, record format, record length, block size, block count, last used job name, last used date, last used unit, location code, location slot, date moved, uses since last clean, and actual data set name on tape.
3.1 Coding TAPECOPY Control Statements

When coding TAPECOPY control statements, the first statement identifies
the function as TAPECOPY. It is followed by control statements which allow
you to indicate the position number in the input file where the data set name
or volume serial number fields are located. Other optional statements allow
you to copy the volume serial number and list all headers of files being
copied. Comment statements may be included, and are identified as
comments by coding an asterisk (*) in position 1.

CA TLMS Copycat control statements are constructed using keyword
parameters. Statements may be coded as one keyword per statement, or
as multiple keywords which are separated by a comma. Keywords specified
in a multiple keyword statement are not positional, and continuation
characters are not required.

**Note:** CA TLMS Copycat opens input and output files based on the
following dispositions: DISP=(SHR,KEEP,KEEP) for input;
DISP=(NEW,KEEP,KEEP) for output.

The formats for the TAPECOPY control statements are:

![TAPECOPY Control Statement Diagram]
3.1 Coding TAPECOPY Control Statements

3.1.1 Control Statement Definitions

TAPECOPY Identifies this as a tape copy function. This must be the first noncomment control statement, contain no other parameters, and must begin in position 1. The input and output device types must be identical.

INPUT (Required.) Specified as one of the following:

INPUT=ddname Specifies the ddname of the input data set containing the volume selection list and, optionally, related data set names.

INPUT=* Indicates that the volume selection list immediately follows this INPUT control statement. If this form is used, the following rules apply:

- The optional parameters (OUTVOL and LIST) must be present before the INPUT control statement.
- Any DSN and VOL parameter associated with the INPUT control statement must be coded within one statement (separated by commas as shown above), rather than as a single control statement.

DSN Specifies the starting position within the input data set where the 44-character data set name is found. (See rules following VOL parameter definition.)

VOL Specifies the starting position within the input data set where the 6-character volume serial number is found.

The following rules apply when using the DSN and VOL parameters:

- position is a numeric value. If INPUT=ddname is used, it is in the range of 1-255. If INPUT=* is used, it is in the range of 1-80.
- The position number specified is relative to 1. For example, if the volume serial number starts in position 2, VOL=2 would be specified.
- If DSN is specified without the VOL parameter, the data sets listed must be cataloged to MVS.
- If neither DSN nor VOL is specified, VOL=1 is assumed.

INUNIT (Required.) Specifies the unit name for the input tape device. The JCL equivalent is UNIT= on the DD statement.
### 3.1 Coding TAPECOPY Control Statements

- **OUTUNIT**  
  Specifies the unit name for the output tape device. The JCL equivalent is `UNIT=` on the DD statement. As an alternative, the `STORCLAS` keyword may be specified. Either `OUTUNIT` or `STORCLAS` is required.

#### 3.1.2 Optional Control Statement Definitions

- **DATACLAS**  
  Specifies a 1- to 8-character name of a valid SMS Data Class to be used for the dynamic allocation of all output tape data sets.

- **ERASE**  
  Specifies whether the remainder of the output tape(s) is to be erased after the copy has finished.

  - **YES**  
    Erases any remaining data that may exist on an output tape upon completion of a copy operation.
  
  - **NO**  
    No erase of remaining data is done. This is the default.

- **LIST**  
  Specifies whether tape labels are to be reported.

  - **YES**  
    All detected VOL1, HDR1, HDR2, EOF1, EOF2, EOFV and tapemark indicators are listed on the report. The default is YES.
  
  - **NO**  
    No tape labels or tapemark indicators are reported.

- **MGMTCLAS**  
  Specifies a 1- to 8-character name of a valid SMS Management Class to be used for the dynamic allocation of all output tape data sets.

- **OUTSER** *(Required.)*  
  Specifies the volume serial number to be mounted for output.

  **Note:** Copycat dynamically allocates the output volume using `EXPDT=98000` for TAPECOPY processing. If the CA TLMS option `FORSPEC=YES` is active, the `OUTSER` parameter is required to satisfy CA TLMS mount processing even when `OUTVOL=SAME` is also being specified.

- **OUTVOL**  
  Specifies which volume serial number should be used for the output tape from a TAPECOPY operation.

  - **SAME**  
    The volume serial number of the output tape is the same as the input tape volume serial number.
  
  - **SCRATCH**  
    The volume serial number is left the same as the original output SCRATCH tape volume serial number. This is the default.

- **SORT**  
  Determines the order of the input fields to be copied.
3.1 Coding TAPECOPY Control Statements

**YES** The input files are sorted in the order of recording technique (TRTCH), density, first volume, file sequence number, and volume sequence number. This is the default.

**NO** The input files are processed in the same order as the control statements presented to INPUT=.

**STORCLAS** Specifies a 1- to 8-character name of a valid SMS Storage Class to be used for the dynamic allocation of all duplex output tape volumes.

**USEREXIT** Specifies whether the CTCOPYUX user exit is called before CA TLMS Copycat VMF updates are to be performed. See the CA TLMS Copycat User Exit Usage Guide section of this document for information on coding this exit.

**YES** The user exit is called.

**NO** The user exit is not called. This is the default.

**WAITTIME** Specifies the number of minutes to wait before retrying when a tape resource is not available. This value controls wait interval when you reply WAIT to the CTC7303R console message. Replying WAIT to the CTC7303R message puts the allocation logic in a loop of waiting and then retrying until either the allocation completes or you reply to the CTC7306R message which remains outstanding during the wait/retry cycle. Values from 1 to 10 are accepted. The default is WAITTIME=5.

### 3.1.3 Restrictions

1. The input and output device types must be identical.
2. No multi-data set chaining is maintained.
3. No multivolume chaining is maintained.
4. If OUTVOL=SCRATCH was specified, and the input tape has a retention period, the output tape will have the same retention period.
5. TAPECOPY uses BLP and EXPDT=98000 for both input and output tape volumes during processing.
3.1 Coding TAPECOPY Control Statements

3.1.4 EXEC Parameters

The following parameters are used in the PARM= field for the EXEC JCL statement to specify an alternate date format, an alternate language, and to activate special testing features.

**DATEFMT**

Specifies the date format to be used when processing the INDISP or OUTDISP keyword. The date pattern is limited to ten bytes and must be enclosed in parentheses. This parameter is optional and, if omitted, the preferred date format is used. For detailed information on this parameter, see the CA-Dynam/TLMS System Programmer Guide.

**LANG**

Designates which language table should be used when generating error messages and report titling. The default is LANG=ENG. Valid values include ENG=English, FRN=French, GER=German, ITA=Italian, and SPN=Spanish. Support for other languages will be provided based on client demand.

**TEST**

Performs preliminary validation of all keyword parameters coded, and reports the options that are in effect, as well as tapes that will qualify for this copy operation. The actual copy operation is not executed when the TEST parameter is specified, and no VMF updates are made.
3.2 Sample Job Control Statements

The following is an example of the job and CA TLMS Copycat function control statements that would be necessary to copy the contents of one tape to another.

3.2.1 Example 1

```plaintext
//TAPECOPY JOB
//STEP1 EXEC PGM=COPYCAT,PARM='DATEFMT=(YYYY/MM/DD),LANG=SPN'
//STEPLIB DD DSN=CAI.CAILIB,DISP=SHR
//CAIVMF DD DSN=CAI.TLMS.VMF,DISP=SHR
//TLMSOPTS DD DSN=CAI.PPOPTION(TLMSIPO),DISP=SHR
//SYSPRINT DD SYSOUT=*  
//CCRPT DD SYSOUT=*  
//SYSUSNAP DD SYSOUT=*  
//SYSUDUMP DD SYSOUT=*  
//SYSIN DD *  

+#++++++++++++++++++++++++++++++++++++++++++++++++++++++#
# THE FOLLOWING STATEMENTS COPY TAPE 123456 #
# NOTE: DEVICE TYPES FOR INPUT AND OUTPUT MUST BE THE SAME #
+#++++++++++++++++++++++++++++++++++++++++++++++++++++++#
TAPECOPY
INUNIT=TAPE
OUTUNIT=TAPE
OUTVOL=SCRATCH
OUTSER=76/zerodot189
INPUT=*  
760194
/*
```

3.2.1.1 JCL Considerations

The DD statement below deserves special attention when included in the JCL for a TAPECOPY operation:

**TLMSOPTS DD** Statement is required for use with CA TLMS Release 5.5 and above.

**Note:** Information regarding the use of CA Earl to produce a volume selection list is provided in Section 5.3.
### 3.3 Sample TAPECOPY Detail Report

#### Field Description

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>File Seq#</td>
<td>The file sequence number.</td>
</tr>
<tr>
<td>Data Set Name</td>
<td>The 17-character data set name found in the HDR1 tape label.</td>
</tr>
<tr>
<td>Pass Word</td>
<td>Indicates the level of pass word protection. It may indicate READ, WRITE or NONE.</td>
</tr>
<tr>
<td>Create Date</td>
<td>The date this file was originally written.</td>
</tr>
<tr>
<td>Expire Date</td>
<td>The expiration date of this file.</td>
</tr>
<tr>
<td>Recfm</td>
<td>The record format of the data set.</td>
</tr>
<tr>
<td>Lrecl</td>
<td>The logical record length of this file.</td>
</tr>
<tr>
<td>Block Size</td>
<td>The maximum physical block length recorded on tape for this file.</td>
</tr>
<tr>
<td>Blocks Copied</td>
<td>The number of data blocks copied in this file. Label blocks are not included in this count.</td>
</tr>
<tr>
<td>Media</td>
<td>The type of media being copied.</td>
</tr>
<tr>
<td>Den</td>
<td>The recording density used for the copy operation.</td>
</tr>
<tr>
<td>Block ID at EOF</td>
<td>The block ID read from the output device immediately following the data file's end-of-file marker. That is, the block ID of the EOF1 trailer label.</td>
</tr>
<tr>
<td>Bytes Copied</td>
<td>The number of data bytes copied in this file. The number of bytes copied of label blocks is not included in this count.</td>
</tr>
<tr>
<td>Creator Name/Stepname</td>
<td>The job name and the step name where this file was created.</td>
</tr>
</tbody>
</table>

---

**Figure 7. Tapecopy Detail**
3.4 Sample TAPECOPY Output Report with LIST=NO

COPYCAT  CA TLMS Copycat r11 SP2  Page=00001

Friday, November 14, 2003 3:38  COPYCAT MESSAGES  12:52:08

CTC6001I *** START TAPECOPY GENLEVEL=04040MMB0 ***
* THE FOLLOWING STATEMENTS COPY TAPE 760101 *
* NOTE: DEVICE TYPES FOR INPUT AND OUTPUT MUST BE THE SAME *
*=====================================================================

TAPECOPY
INUNIT=VTAPE
OUTUNIT=VTAPE
OUTSER=760189
LIST=NO
SORT=NO
INPUT=*

* OPTIONS IN EFFECT: *
* TAPECOPY *
* DSN= *
* ERASE=NO *
* INPUT= *
* INUNIT=VTAPE *
* LIST=NO *
* OUTSER=760189 *
* OUTUNIT=VTAPE *
* OUTVOL=SCRATCH *
* SORT=NO *
* USEREXIT=NO *
* VOL=001 *
* WAITTIME=5 *
*=====================================================================

CTC1017I INPUT STATEMENTS FOR TAPECOPY
760194
CTC1016I TOTAL INPUT STATEMENTS READ: 1
CTC1016I TAPECOPY ENTRIES: 1
VOL=760194 1STVOL=760194 DSN=JOHER1.COPYCAT.LBI.NEW.FILE1

-----------------------------------------------------------------------------------------------------------------------------

CTC5130I BLP PROCESSING MODE
CTC7004I DYNAMIC ALLOCATION START FOR C1100001 FS=0
CTC5132I ABOUT TO OPEN C1100001
CTC5110I C1100001 TAPE VOLSER = 760194, DEVICE TYPE = 3480
CTC5111I UNIT ADDRESS = Oeba FROM INPUT
CTC5108I INPUT DATA SET NAME = JOHER1.COPYCAT.LBI.NEW.FILE1
CTC7004I DYNAMIC ALLOCATION START FOR C0100001 FS=0
CTC5132I ABOUT TO OPEN C0100001
CTC5110I C0100001 TAPE VOLSER = 760189, DEVICE TYPE = 3480
CTC5111I UNIT ADDRESS = OEB9
CTC5100I OUTPUT DATA SET NAME = JOHER1.COPYCAT.LBI.NEW.FILE1
3.4 Sample TAPECOPY Output Report with LIST=NO

COPYCAT CA TLMS Copycat r11 SP2 Page=00002

Thursday, October 02, 2003 275 C O P Y C A T M E S S A G E S 18:02:30

-----------------------------------------------------------------------------------------------------------------------------
CTC5063I COPYING DSN=CAT.LBI.NEW.FILE1, FILESEQ=1
CTC5061I 10 BLOCKS CONTAINED IN DATA SET

-----------------------------------------------------------------------------------------------------------------------------
CTC5063I COPYING DSN=CAT.LBI.NEW.FILE2, FILESEQ=2
CTC5061I 9 BLOCKS CONTAINED IN DATA SET

-----------------------------------------------------------------------------------------------------------------------------
CTC5063I COPYING DSN=CAT.LBI.NEW.FILE3, FILESEQ=3
CTC5061I 8 BLOCKS CONTAINED IN DATA SET

-----------------------------------------------------------------------------------------------------------------------------
CTC5063I COPYING DSN=CAT.LBI.NEW.FILE4, FILESEQ=4
CTC5061I 8 BLOCKS CONTAINED IN DATA SET

-----------------------------------------------------------------------------------------------------------------------------
CTC5063I COPYING DSN=CAT.LBI.NEW.FILE5, FILESEQ=5
CTC5061I 7 BLOCKS CONTAINED IN DATA SET

-----------------------------------------------------------------------------------------------------------------------------
CTC5063I COPYING DSN=CAT.LBI.NEW.FILE6, FILESEQ=6
CTC5061I 7 BLOCKS CONTAINED IN DATA SET

-----------------------------------------------------------------------------------------------------------------------------
CTC5063I COPYING DSN=CAT.LBI.NEW.FILE7, FILESEQ=7
CTC5061I 2 BLOCKS CONTAINED IN DATA SET

CTC6025I TOTAL INPUT FILES----------7
CTC6026I TOTAL OUTPUT FILES---------7
CTC6027I TOTAL INPUT TAPES----------1
CTC6028I TOTAL OUTPUT TAPES---------1
CTC6002I *** END COPYCAT ***

End of report COPYCAT  Job=TAPECOP1  Step=TAPECOPY  Genlevel=0400MNB0
3.5 Sample TAPECOPY Output Report with LIST=YES

COPYCAT CA TLMS Copycat r11 SP2 Page=00001


CTC6001I *** START COPYCAT GENLEVEL=0404MB0 ***
* THE FOLLOWING STATEMENTS COPY TAPE 760194 *
* NOTE: DEVICE TYPES FOR INPUT AND OUTPUT MUST BE THE SAME *
**---------------------------------------------------------------**
TAPECOPY
INUNIT=VTAPE
OUTUNIT=VTAPE
OUTSER=760188
LIST=YES
SORT=NO
INPUT=

**---------------------------------------------------------------**
* OPTIONS IN EFFECT: *
* TAPECOPY *
* DSN= *
* ERASE=NO *
* INPUT= *
* INUNIT=VTAPE *
* LIST=YES *
* OUTSER=760188 *
* OUTUNIT=VTAPE *
* OUTVOL=SCRATCH *
* SORT=NO *
* USEREXIT=NO *
* VOL=001 *
* WAITTIME=5 *
**---------------------------------------------------------------**

CTC1017I INPUT STATEMENTS FOR TAPECOPY
760194
CTC1016I TOTAL INPUT STATEMENTS READ: 1
CTC1018I TAPECOPY ENTRIES: 1
VOL=760194 1STVOL=760194 DSN=JOHER1.COPYCAT.LBI.NEW.FILE1

**---------------------------------------------------------------**

CTC5130I BLP PROCESSING MODE
CTC70041 DYNAMIC ALLOCATION START FOR CI100001 FS=0
CTC51321 ABOUT TO OPEN CI100001
CTC51101 CI100001 TAPE VOLSER = 760194, DEVICE TYPE = 3480
CTC51111 UNIT ADDRESS = 0EBA FROM INPUT
CTC51010I INPUT DATA SET NAME = JOHER1.COPYCAT.LBI.NEW.FILE1
CTC70041 DYNAMIC ALLOCATION START FOR CI010001 FS=0
CTC51321 ABOUT TO OPEN CI010001
CTC51101 CI010001 TAPE VOLSER = 760188, DEVICE TYPE = 3480
CTC51111 UNIT ADDRESS = 0E88
CTC51001 OUTPUT DATA SET NAME = JOHER1.COPYCAT.LBI.NEW.FILE1

Chapter 3. Copying Tapes 55
3.5 Sample TAPECOPY Output Report with LIST=YES

COPYCAT
CA TLMS Copycat r11 SP2
Friday, October 03, 2003.276
COPYCAT MESSAGES 09:18:13
VOL1760188

-----------------------------------------------------------------------------------------------------------------------------
CTC5063I COPYING DSN=CAT.LBI.NEW.FILE1, FILESEQ=1
HDR1CAT.LBI.NEW.FILE1760188000000001IBM 05/VS 370 001
HDR2F0000000080000STCKLBIV/STEP1 B 47000 0000044000
** TAPEMARK **
** DATA **
** TAPEMARK **
CTC5061I 10 BLOCKS CONTAINED IN DATA SET
EOF1CAT.LBI.NEW.FILE176018800000001IBM 05/VS 370
EOF2F0000000080000STCKLBIV/STEP1 B 47000 0000044000
** TAPEMARK **
-----------------------------------------------------------------------------------------------------------------------------
CTC5063I COPYING DSN=CAT.LBI.NEW.FILE2, FILESEQ=2
HDR1CAT.LBI.NEW.FILE2760188000000002IBM 05/VS 370 002
HDR2F0000000080000STCKLBIV/STEP2 B 47000 0000044000
** TAPEMARK **
** DATA **
** TAPEMARK **
CTC5061I 9 BLOCKS CONTAINED IN DATA SET
EOF1CAT.LBI.NEW.FILE2760188000000002IBM 05/VS 370
EOF2F0000000080000STCKLBIV/STEP2 B 47000 0000044000
** TAPEMARK **
-----------------------------------------------------------------------------------------------------------------------------
CTC5063I COPYING DSN=CAT.LBI.NEW.FILE3, FILESEQ=3
HDR1CAT.LBI.NEW.FILE3760188000000003IBM 05/VS 370 003
HDR2F0000000080000STCKLBIV/STEP3 B 47000 0000052000
** TAPEMARK **
** DATA **
** TAPEMARK **
CTC5061I 8 BLOCKS CONTAINED IN DATA SET
EOF1CAT.LBI.NEW.FILE3760188000000003IBM 05/VS 370
EOF2F0000000080000STCKLBIV/STEP3 B 47000 0000052000
** TAPEMARK **
-----------------------------------------------------------------------------------------------------------------------------
CTC5063I COPYING DSN=CAT.LBI.NEW.FILE4, FILESEQ=4
HDR1CAT.LBI.NEW.FILE4760188000000004IBM 05/VS 370 004
HDR2F0000000080000STCKLBIV/STEP4 B 47000 0000056000
** TAPEMARK **
** DATA **
** TAPEMARK **
CTC5061I 8 BLOCKS CONTAINED IN DATA SET
EOF1CAT.LBI.NEW.FILE4760188000000004IBM 05/VS 370

3.5 Sample TAPECOPY Output Report with LIST=YES

End of report

COPYCAT Job=TAPECOP1 Step=TAPECOPY Genlevel=0404MNB0
Chapter 4. Mapping Tapes

Use the TAPEMAP function to produce reports by file name, attribute and length. Most of the information is obtained from the header and trailer labels.

**Caution**

The TAPEMAP function requires standard labeled (SL) tapes. BLP processing is used.

The volumes provided in SYSIN will have their header and trailer label listed, file sequence, and the approximate length in feet the data set occupies on the tape for 3420 devices. High block ID is listed for cartridge tapes. No files are copied during this operation.
4.1 Coding TAPEMAP Control Statements

CA TLMS Copycat control statements are constructed using keyword parameters. Statements may be coded as one per statement, or as multiple keywords which are separated by a comma. Keywords specified in a multiple statement are not positional, and continuation characters are not required.

**Note:** CA TLMS Copycat opens input tapes based on the disposition DISP=(SHR,KEEP,KEEP).

The formats for the TAPEMAP control statements are:

```
TAPEMAP ──┬ ┬ ┌┐─ NO ──┴ ┴ ──HEXMAP ──┴ ┴ ─ NO ──LIST ──┴ ┴ ──SORT ──┴ ┴ ──WAITTIME ──┴ ┴ ─ n ─/
├─INUNIT=unit ──┬ ┬ ┌┐─ NO ──┴ ┴ ──HEXMAP ──┴ ┴ ─ NO ──LIST ──┴ ┴ ──SORT ──┴ ┴ ──WAITTIME ──┴ ┴ ─ n ─/
││ ┌┐─ NO ──│ │ ┌┐─ YES ──│ │ ┌┐─ 5 ──│ │ ┌┐─ 5 ──│ │ ┌┐─ 5 ──/
└┘ ──VOL=position ──┴ ┴ ──YES ──┴ ┴ ──YES ──┴ ┴ ──YES ──┴ ┴ ──YES ──/
```

4.1.1 Control Statement Definitions

**TAPEMAP** Identifies this as a tape map function. This must be the first noncomment control statement, contain no other parameters, and must begin in position 1.

**INPUT** *(Required.)* Specified as one of the following:

- **INPUT=ddname** Specifies the ddname of the input data set containing the volume selection list and, optionally, related data set names.
- **INPUT=*** Indicates that the volume selection list immediately follows this INPUT control statement. If this form is used, all other parameters must be present before the INPUT control statement.

**VOL** Specifies the starting position within the input data set where the 6-character volume serial number is found.

The following rules apply when using the VOL parameter:

- **position** is a numeric value. If **INPUT=ddname** is used, it is in the range of 1-255. If **INPUT=*** is used, it is in the range of 1-80.
- The position number specified is relative to 1. For example, if the volume serial number starts in position 2, **VOL=2** would be specified.
4.1 Coding TAPEMAP Control Statements

- If VOL is not specified, VOL=1 is assumed.

**INUNIT** *(Required.)* Specifies the unit name for the input tape device. The JCL equivalent is UNIT= on the DD statement.

### 4.1.2 Optional Control Statement Definitions

<table>
<thead>
<tr>
<th>Statement</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>HEXMAP</strong></td>
<td>Determines the format of the output report to be produced.</td>
</tr>
<tr>
<td><strong>YES</strong></td>
<td>Specifies that the internal tape labels are to be reported on and shown in hexadecimal. All detected VOL1, HDR1, HDR2, EOF1, EOF2, EOV, and tapemark indicators are listed on the report. Refer to the IBM Tape Labels documentation for information on the fields contained within the tape labels.</td>
</tr>
<tr>
<td><strong>NO</strong></td>
<td>Specifies that the standard report listing information for each tape file is produced. This is the default.</td>
</tr>
<tr>
<td><strong>LIST</strong></td>
<td>Specifies whether tape labels are to be reported.</td>
</tr>
<tr>
<td><strong>YES</strong></td>
<td>All detected VOL1, HDR1, HDR2, EOF1, EOF2, EOV and tapemark indicators are listed on the report.</td>
</tr>
<tr>
<td><strong>NO</strong></td>
<td>No tape labels or tapemark indicators are reported on. This is the default.</td>
</tr>
<tr>
<td><strong>SORT</strong></td>
<td>The input files are sorted in the order of recording technique (TRTCH), density, first volume, file sequence number, and volume sequence number. This is the default.</td>
</tr>
<tr>
<td><strong>YES</strong></td>
<td>The input files are sorted in the order of recording technique (TRTCH), density, first volume, file sequence number, and volume sequence number. This is the default.</td>
</tr>
<tr>
<td><strong>NO</strong></td>
<td>The input files are processed in the same order as the control statements presented to INPUT=.</td>
</tr>
<tr>
<td><strong>WAITTIME</strong></td>
<td>Specifies the number of minutes to wait before retrying when a tape resource is not available. This value controls wait interval when you reply WAIT to the CTC7303R console message. Replying WAIT to the CTC7303R message puts the allocation logic in a loop of waiting and then retrying until either the allocation completes or you reply to the CTC7306R message which remains outstanding during the wait/retry cycle. Values from 1 to 10 are accepted. The default is WAITTIME=5.</td>
</tr>
</tbody>
</table>
4.1 Coding TAPEMAP Control Statements

4.1.3 EXEC Parameters

The following parameters are used in PARM= field of the JCL EXEC statement to specify the type of date format, language, and test type.

**DATEFMT**  
Specifies the date format to be used when processing the INDISP or OUTDISP keyword. The date pattern is limited to ten bytes and must be enclosed in parentheses. This parameter is optional and, if omitted, the CA-Dynam/TLMS preferred date format is used. For more information on this parameter, see the CA-Dynam/TLMS System Programmer Guide.

**LANG**  
Designates which language table should be used when generating error messages and report titling. The default is LANG=ENG. Valid values include ENG=English, FRN=French, GER=German, ITA=Italian, and SPN=Spanish. Support for other languages will be provided based on client demand.

**TEST**  
Performs preliminary validation of all keyword parameters coded, and reports the options that are in effect, as well as tapes that will qualify for this copy operation. The actual copy operation is not executed when the TEST parameter is specified, and no VMF updates are made.
4.2 Sample Job Control Statements

The following is an example of the control statements that would be necessary to map the contents of two volumes. This example does not appear in the CAI.SAMPJCL.

4.2.1 Example

```
//TAPEMAP JOB
//STEP1 EXEC PGM=COPYCAT,PARM='LANG=ITA'
//STEPLIB DD DSN=CAI.CAILIB,DISP=SHR
//CAIVMF DD DSN=CAI.TLMS.VMF,DISP=SHR
//TLMSOPTS DD DSN=CAI.PPOPTION(TLMSIPO),DISP=SHR
//SYSPRINT DD SYSOUT=* 
//CCRPT DD SYSOUT=* 
//SYSUSNAP DD SYSOUT=* 
//SYSUDUMP DD SYSOUT=* 
//SYSIN DD *

TAPEMAP
HEXMAP=NO
INUNIT=CART
LIST=NO
SORT=YES
INPUT=TAPELST
/*
//TAPELST DD *
76/0128
76/0130
/*
```

Note: Information regarding the use of CA Earl to produce a volume selection list is provided in Section 5.3.

4.2.1.1 JCL Considerations

The DD statements below deserve special attention when included in the JCL for a TAPEMAP operation:

TLMSOPTS DD Statement is required for use with CA TLMS Release 5.5 and above.
4.3 Sample TAPEMAP Reports

4.3.1 Sample TAPEMAP Detail with HEXMAP=NO

<table>
<thead>
<tr>
<th>File Seq#</th>
<th>Data Set Name</th>
<th>Pass Word</th>
<th>Create Date</th>
<th>Expire Date</th>
<th>Recfm</th>
<th>Lrecl</th>
<th>Block Size</th>
<th>Blocks Used</th>
<th>Length</th>
<th>Blk ID</th>
<th>Total Length</th>
<th>Creator</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>CAT.LBI.NEW.FILE1</td>
<td>NONE</td>
<td>11/14/2003</td>
<td>11/29/2003</td>
<td>FB</td>
<td>80</td>
<td>44000</td>
<td>10</td>
<td>3400</td>
<td>18TK</td>
<td></td>
<td>STCKLBIV/STEP1</td>
</tr>
<tr>
<td>2</td>
<td>CAT.LBI.NEW.FILE2</td>
<td>NONE</td>
<td>11/14/2003</td>
<td>11/28/2003</td>
<td>FB</td>
<td>80</td>
<td>48000</td>
<td>9</td>
<td>3400</td>
<td>18TK</td>
<td></td>
<td>STCKLBIV/STEP2</td>
</tr>
<tr>
<td>3</td>
<td>CAT.LBI.NEW.FILE3</td>
<td>NONE</td>
<td>11/14/2003</td>
<td>11/27/2003</td>
<td>FB</td>
<td>80</td>
<td>52000</td>
<td>8</td>
<td>3400</td>
<td>18TK</td>
<td></td>
<td>STCKLBIV/STEP3</td>
</tr>
<tr>
<td>4</td>
<td>CAT.LBI.NEW.FILE4</td>
<td>NONE</td>
<td>11/14/2003</td>
<td>11/26/2003</td>
<td>FB</td>
<td>80</td>
<td>56000</td>
<td>8</td>
<td>3400</td>
<td>18TK</td>
<td></td>
<td>STCKLBIV/STEP4</td>
</tr>
<tr>
<td>5</td>
<td>CAT.LBI.NEW.FILE5</td>
<td>NONE</td>
<td>11/14/2003</td>
<td>11/25/2003</td>
<td>FB</td>
<td>80</td>
<td>60000</td>
<td>7</td>
<td>3400</td>
<td>18TK</td>
<td></td>
<td>STCKLBIV/STEP5</td>
</tr>
<tr>
<td>6</td>
<td>CAT.LBI.NEW.FILE6</td>
<td>NONE</td>
<td>11/14/2003</td>
<td>11/24/2003</td>
<td>FB</td>
<td>80</td>
<td>64000</td>
<td>7</td>
<td>3400</td>
<td>18TK</td>
<td></td>
<td>STCKLBIV/STEP6</td>
</tr>
</tbody>
</table>

Total block count is 51

NOTE: Length(s) are in feet computed on block size, block count, and density for 3420 devices.
* High block IDs are listed for cartridge devices.

End of report TAPEMAP  Job=TAPEMAPT  Step=$$$$$$@  Genlevel=0404MM0
<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Den</td>
<td>Density as detected in the DCB.</td>
</tr>
<tr>
<td>Length</td>
<td>Length in feet computed on block size, block count, and density for 3420 devices. The asterisk '*' indicates high block ID for cartridge devices.</td>
</tr>
<tr>
<td>Blk ID</td>
<td></td>
</tr>
<tr>
<td>Total Length</td>
<td>The cumulative length of the tape that is shown for 3420 devices.</td>
</tr>
<tr>
<td>Creator</td>
<td>Creation jobname and stepname.</td>
</tr>
<tr>
<td>Job Name/Stepname</td>
<td></td>
</tr>
<tr>
<td>Total Block Count Is</td>
<td>Cumulative total of all the blocks used for the tape volume.</td>
</tr>
</tbody>
</table>
4.3 Sample TAPEMAP Reports

4.3.2 Sample TAPEMAP Report with HEXMAP=NO

COPYCAT CA TLMS Copycat r11 SP2 Page=00001


CTC6001I *** START COPYCAT GENLEVEL=0404MN80 ***
TAPEMAP
HEXMAP=NO
INUNIT=CART
SORT=NO
INPUT=* *

OPTIONS IN EFFECT: *
* TAPEMAP *
* HEXMAP=NO *
* INPUT=* *
* INUNIT=VTAPE *
* LIST=NO *
* SORT=NO *
* VOL=001 *
* WAITTIME=5 *

CTC1017I INPUT STATEMENTS FOR TAPEMAP
76012B
CTC1016I TOTAL INPUT STATEMENTS READ: 1
CTC1018I TAPEMAP ENTRIES: 1
VOL=76012B FVL=76012B FS=1 RFS=1 VS=1 F= DSN= TRTCH= DEN= 000000
CTC5130I BLP PROCESSING MODE

DYNAMIC ALLOCATION START FOR CI1/zerodot/zerodot/zerodot/zerodot1 VOL=76012B FS=1
CTC5132I ABOUT TO OPEN CI1/zerodot/zerodot/zerodot/zerodot1
CTC5111I UNIT ADDRESS = /zerodotE8A

DYNAMIC UNALLOCATION START FOR CI1/zerodot/zerodot/zerodot/zerodot1

TOTAL INPUT FILES----------7
TOTAL OUTPUT FILES---------
TOTAL INPUT TAPES----------1
TOTAL OUTPUT TAPES---------

CTC6002I *** END COPYCAT ***

**** MESSAGE SUMMARY ****

Error Level Messages (RC=8-16)
Msg ID Count On Page(s)
- None -

Warning Level Messages (RC=4)
Msg ID Count On Page(s)
- None -

*** End of Message Summary ****

End of report COPYCAT Job=TAPEMAPT Step=$$$$$$@ Genlevel=0404MN80
4.3.3 Sample TAPEMAP Detail with HEXMAP=YES

Figure 8. Header Listing (Hexadecimal Format) (1 of 4)
4.3 Sample TAPEMAP Reports

Figure 9. Header Listing (Hexadecimal Format) (2 of 4)
4.3 Sample TAPEMAP Reports

Figure 10. Header Listing (Hexadecimal Format) (3 of 4)

Figure 11. Header Listing (Hexadecimal Format) (4 of 4)
CA TLMS Copycat provides the CTCOPYUX user exit to tailor the supplied code to meet your data center requirements. The CTCOPYUX user exit is discussed in this chapter.

User exit activation is performed by including in the input control statement USEREXIT=YES. If the INPUT=* control statement is used, the USEREXIT=YES parameters must precede it.
5.1 Installing the User Exit

The CA TLMS Copycat user exit is supplied as a dummy source routine which is customized, assembled, and linked after the SMP/E installation is complete. To code your own exit, copy SMP/E USERMOD CMN1101 which resides in CAI.SAMPJCL to CAI.PPOPTION as member CMN1101, then modify it. The source code for the exit, which is modified by the USERMOD, resides in CAI.CAISRC as member CTCOPYUX.

5.1.1 Installation Using SMP/E

STEP 1  Customize and submit Sample JCL library member MN11XREC. This will perform an SMP/E RECEIVE of the USERMOD.

STEP 2  Customize and submit Sample JCL library member MN11XAPP. This will perform an SMP/E APPLY of the USERMOD. This causes assembly and linking of the user exit.

STEP 3  If corrections or modifications to the user exit are required, customize and submit Sample JCL library member MN11XRST. This will perform an SMP/E RESTORE of the USERMOD to remove the user exit. Make changes by manually editing CAI.PPOPTION member CMN1101. After changes are complete, go back to STEP 1, above.

The USERMOD should only be RECEIVED and APPLIED, never ACCEPTED.
5.2 CTCOPYUX - User Exit

The CTCOPYUX user exit is supplied as an interface to CA TLMS Copycat. In addition to housekeeping calls for initialization and termination, this exit receives control just prior to certain critical processing events. These events include the tape system update request for both input and output data sets and dynamic allocation requests for both input and output data sets.

CTCOPYUX provides the ability to view or update tape system fields through the common tape system records supplied at exit call time. Both original and modified tape system common records are supplied. These common records are mapped by macro CTMCDREC.

CTCOPYUX also provides the ability to view and change the dynamic allocation request. In particular, the file names may be modified for the output data sets. This area is mapped by macro CTMCDYNA.

Six separate calls are provided for the FILECOPY function and one for TAPECOPY. The user exit is not called for function TAPEMAP. FILECOPY calls CTCOPYUX just prior to input file allocation, output file allocation, and duplex output allocation, at the End-Of-File (EOF) on the primary output tape (ddname CO1nnnnnn), the duplex output tape (ddname CO2nnnnnn), and the input tape (ddname CI1nnnnnn). TAPECOPY calls CTCOPYUX only at End-Of-Tape (EOT) on the output tape.

The following CA TLMS Copycat macros generate mappings for program work areas are provided for exit reference during these function calls:

- **CTMCOPTS**
  Maps OPTDSECT, a program work area which contains input option switches. An example of this macro is shown in the DESCT Listings section, OPTDSECT DSECT, Using CTMCOPTS Macro on page 79.

- **CTMCDREC**
  Maps DBRECORD and DCRECORD, the common tape system format definition. This is the same as used by CA, Inc. for the CA Earl interface. An example of this macro is shown in the DESCT Listings section, DBRECORD Listing, Using CTMCDREC Macro on page 83.

- **CTMCDYNA**
  Maps ALOCAREA, the dynamic allocation work area. This area can be used to control input, output, and duplex output file allocations. An example of this macro is shown in the DESCT Listings section, ALOCAREA DSECT, Using CTMCDYNA Macro on page 87.
5.2 CTCOPYUX - User Exit

5.2.1 Register Usage

The registers on entry to CTCOPYUX are defined as follows. They may be redefined by the exit if desired.

R0  Work register.
R1  Input parameter list. Register points to a 5-word list.
UXANCHOR  Points to a full word value which is initially cleared before user exit initialization, but will maintain any value through the exit termination call.
UXPARM1  Pointer to function code. Reason for exit entry. See Function Codes, below.
UXPARM2  Pointer to CA TLMS Copycat Options area. Mapped by CTMCOPTS.
UXPARM3  Pointer to the dynamic allocation work area for allocation calls. Pointer to original common tape system record area for tape system update calls.
UXPARM4  Pointer to modified common tape system record area for tape system update calls.
R2 - R5  Not used.
R6  Pointer to the dynamic allocation work area for allocation calls. Pointer to original common tape system record area for tape system update calls.
R7  Pointer to modified common tape system record area for tape system update calls.
R8  Reserved.
R9  Pointer to passed parm list.
R10  Pointer to CA TLMS Copycat Options area. Mapped by CTMCOPTS.
R11  Not used.
R12  Default program base register.
R13  User exit save area or rent work area.
R14  Return address or work register.
R15  Return code or work register.
5.2.2 Function Codes

The CTCOPYUX call function codes are provided in the input parameter pointed to by UXPARM1. The function code values are as follows:

**CODE = 0**  
Exit initialization call. This provides the exit with a call to obtain any additional program work areas (GETMAIN) and open any user control or report files. DSECT mapping register 10 (CTMCOPTS) is the only valid work area during this call.

**CODE = 4**  
FILECOPY: Update output data set copy volume. This exit call occurs when a data set is closed for the output tape (ddname CO1nnnnn). DBRECORD is the original common tape system record area. It contains tape system catalog information as it currently exists for the input tape (ddname CI1nnnnn). DCRECORD is the modified common tape system record area. It contains tape system catalog information, with changes, for the output tape (ddname CO1nnnnn). It is this record (DCRECORD) that the user exit may change to reflect values to be supplied to the tape system for update processing. Information that is not normally transferred from the input (original) data set volume record to the output data set volume can be updated on this call. For example, the user data cell (also known as the job accounting data), field name DBUSRDTA, may be copied from the original to the modified area (DCUSRDTA).

**CODE = 8**  
FILECOPY: Update duplex data set copy volume. This exit call occurs when a data set is closed for the duplex output tape (ddname CO2nnnnn). DBRECORD is the original common tape system record area. It contains tape system catalog information as it currently exists for the input tape (ddname CI1nnnnn). DCRECORD is the modified common tape system record area. It contains tape system catalog information, with changes, for the duplex output tape (ddname CO2nnnnn). It is this record (DCRECORD) that the user exit may change to reflect values to be supplied to the tape system for update processing. Information that is not normally transferred from the input (original) data set volume record to the output data set volume can be updated on this call. For example, the user data cell, field name DBUSRDTA, may be copied from the original to the modified area (DCUSRDTA).

**CODE = 12**  
FILECOPY: Update input data set copy volume. This exit call occurs when the input data set is closed for ddname CI1nnnnn. DBRECORD is the original common tape system record area. It contains tape system catalog information as it currently exists for the input tape (ddname CO1nnnnn). DCRECORD is the modified common tape system record area. It contains tape system catalog information, with changes, for the input tape (ddname CO1nnnnn). It is this record (DCRECORD) that the
user exit may change to reflect values to be supplied to the tape system for update processing. Information that is not normally transferred from the original input data set volume record to the modified input data set volume can be updated on this call.

**Note:** This call is made only if the input control statement contains an input disposition change. (for example INDISP=, RETPD=, or EXPDT= was specified.)

**CODE = 16** TAPECOPY: Update output data set copy volume. This exit call occurs when the output volume (ddname CO1nnnnn) is closed. DBRECORD is the original common tape system record area. It contains tape system catalog information as it currently exists for the input tape (ddname CO1nnnnn). DCRECORD is the modified common tape system record area. It contains tape system catalog information, with changes, for the output tape (ddname CO1nnnnn). It is this record (DCRECORD) that the user exit may change to reflect values to be supplied to the tape system for update processing. Information that is not normally transferred from the input (original) data set volume record to the output data set volume can be updated on this call.

**CODE = 20** Exit termination call. This provides the exit with a call to free any additional program work areas (FREEMAIN) and/or close any user control or report files that were obtained at user exit initialization.

**CODE = 24** FILECOPY: Input allocation. This exit call occurs when the input data set is about to be allocated for ddname CO1nnnnn. ALOCAREA is the dynamic allocation work area. It contains allocation information as it currently exists for the input tape (ddname CO1nnnnn). It is this area (ALOCAREA) that the user exit may change to alter the allocation. The user may change the file name and volume serial number if desired.

**CODE = 28** FILECOPY: Primary output allocation. This exit call occurs when the output data set is about to be allocated for ddname CO1nnnnn. ALOCAREA is the dynamic allocation work area. It contains allocation information as it currently exists for the output tape (ddname CO1nnnnn). It is this area (ALOCAREA) that the user exit may change to alter the allocation. The user may change the file name and volume serial number if desired.

**CODE = 32** FILECOPY: Duplex output allocation. This exit call occurs when the output data set is about to be allocated for ddname CO2nnnnn. ALOCAREA is the dynamic allocation work area. It contains allocation information as it currently exists for the output tape (ddname CO2nnnnn). It is this area (ALOCAREA) that the user exit may change to alter the allocation. The user may change the file name and volume serial number if desired.
5.2.3 Program Work Areas

The CTCOPYUX user exit source example, supplied in the CAI.CAISRC data set, contains three program work area DSECTs. Other than selected fields of the modified common tape data area and the dynamic allocation work area, no other data fields should be altered. Any changes to these program work areas could cause a program failure and are therefore to be used as a data reference only.

OPTDSECT This is the CA TLMS Copycat options data area. Pointed to by register 10 for all calls. This work area is used by all CA TLMS Copycat programs. It contains all the program option switches set when the SYSIN control statements were processed and allows the user exit to see what CA TLMS Copycat options are in effect. It is for reference only, and must not be modified by the user exit.

DxRECORD This is the common tape data area. Pointed to by registers 6 and 7 for calls when the function code is 4, 8, 12, or 16. The DBRECORD (original) and DCRECORD (modified) areas are identical in format.

ALOCAREA This is the dynamic allocation work area. Pointed to by register 6 for calls when the function code is 24, 28, or 32.

5.2.4 User Exit Return Codes

The user exit cannot decide whether an update is to take place for a data set or volume record. This is done by CA TLMS Copycat based on the input control statements and the data set volumes copied. However a provision was made to allow the user exit to display (SNAP DUMP) the program work areas made available at exit call to assist in debugging.

To activate user exit work area display, supply the input control statement DEBUG=(UXA). All SNAP DUMPS are written to DD SYSUSNAP which must be provided in the JCL.

5.2.5 Specifications

NOT AUTHORIZED
EXECUTABLE
AMODE 31
RMODE ANY

This exit is activated by specifying YES for the USEREXIT parameter.
5.3 DSECT Listings

On the following pages are listings for:

- OPTDSECT, using the CTMCOPTS Macro
- DBRECORD, using the CTMCDREC Macro
- ALOCAREA, using the CTMCDYNA Macro
5.3.1 OPTDSECT Listing, Using CTMCOPTS Macro

Figure 12. OPTDSECT DSECT, Using CTMCOPTS Macro - Maps CA TLMS Copycat Options (1 of 4)
### DSECT Listings

**Figure 13. OPTDSECT DSECT, Using CTMCOPTS Macro - Maps CA TLMS Copycat Options (2 of 4)**

<table>
<thead>
<tr>
<th>D-Loc Object Code</th>
<th>Addr1</th>
<th>Addr2</th>
<th>Stmt</th>
<th>Source Statement</th>
<th>HLASM</th>
<th>04/01/16 16.25</th>
</tr>
</thead>
<tbody>
<tr>
<td>000020</td>
<td>5++</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>01-CTMCO</td>
</tr>
<tr>
<td>000037 404040404040404040404040404</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>58++</td>
<td>01-CTMCO</td>
</tr>
<tr>
<td>000037 00 000080 000040</td>
<td>61+COLIST DC XLI'00'</td>
<td>LIST=</td>
<td></td>
<td></td>
<td>60++</td>
<td>01-CTMCO</td>
</tr>
<tr>
<td>000040 00 000080 000040</td>
<td>62+COLYES EQU X'80'</td>
<td>YES</td>
<td></td>
<td></td>
<td>63++</td>
<td>01-CTMCO</td>
</tr>
<tr>
<td>000040 00 000080 000040</td>
<td>63+COLINO EQU X'40'</td>
<td>NO</td>
<td></td>
<td></td>
<td>64++</td>
<td>01-CTMCO</td>
</tr>
<tr>
<td>000040 00 000080 000040</td>
<td>65+CMAXERR DC XLI'00'</td>
<td>MAXERR= (RESERVED)</td>
<td></td>
<td></td>
<td>66++</td>
<td>01-CTMCO</td>
</tr>
<tr>
<td>000040 00 000080 000040</td>
<td>67+CMERGE DC XLI'00'</td>
<td>MERGE=</td>
<td></td>
<td></td>
<td>68++</td>
<td>01-CTMCO</td>
</tr>
<tr>
<td>000040 00 000080 000040</td>
<td>69+CMERGEOK EQU X'20'</td>
<td>- PROCESSED SET SUCCESSFULLY</td>
<td></td>
<td></td>
<td>70++</td>
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<td>71+CMERGEY EQU X'40'</td>
<td>- MERGE=YES OPTION SPECIFIED</td>
<td></td>
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<td>72++</td>
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<td>- PROCESSED SET SUCCESSFULLY</td>
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<td>- PROCESSED SET SUCCESSFULLY</td>
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<td>104+CMERGOK EQU X'20'</td>
<td>- PROCESSED SET SUCCESSFULLY</td>
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<td>105++</td>
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**Figure 13. OPTDSECT DSECT, Using CTMCOPTS Macro - Maps CA TLMS Copycat Options (2 of 4)**
Figure 14. OPTDSECT DSECT, Using CTMCOPTS Macro - Maps CA TLMS Copycat Options (3 of 4)
<table>
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<tr>
<th>D-Loc</th>
<th>Object Code</th>
<th>Addr1</th>
<th>Addr2</th>
<th>Stmt</th>
<th>Source Statement</th>
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<td>0000F1</td>
<td>404040</td>
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<td>HLASM R4.0 2004/01/16 16.25</td>
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<tr>
<td>167++</td>
<td></td>
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<td></td>
<td>168+CCLANG DC CL3' ' LANG=</td>
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<tr>
<td>169++</td>
<td></td>
<td>000F4</td>
<td></td>
<td></td>
<td>170+CCOPTEND EQU * END OF OPTIONS</td>
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<tr>
<td></td>
<td></td>
<td>000F4</td>
<td>171+CCOPTLEN EQU COPTEND-CCOPTST LENGTH OF OPTIONS</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>172</td>
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Figure 15. OPTDSECT DSECT, Using CTMCOPTS Macro - Maps CA TLMS Copycat Options (4 of 4)
5.3.2 DBRECORD Listing, Using CTMCDREC Macro

CTMCDREC DSECT - DBRECORD
Active Usings: None

Loc  Object Code  Addr1  Addr2  Stmt  Source Statement  HLASM R4.0  2004/01/16 16.25
000000  00000  00000  2  CTMCDREC CSECT ,
000000  00000  00000  3  *
000000  00000  00000  4  CTMCDREC PRESS=O8,DSECT=YES
000000  00000  00000  5++******************************************************************************
000000  00000  00000  6++ *
000000  00000  00000  7++ Filename : CTMCDREC *
000000  00000  00000  8++ *
000000  00000  00000  9++ *
000000  00000  00000  10++ Description: Macro/Header file to define the Common Tape *
000000  00000  00000  11++ data base record. *
000000  00000  00000  12++ *
000000  00000  00000  13++ Usage : Assembler - CTMCDREC ...
000000  00000  00000  14++ *
000000  00000  00000  15++******************************************************************************
000000  00000  00000  16++ *
000000  00000  00000  17++******************************************************************************
000000  00000  00000  18++ *
000000  00000  00000  19++ CA-1 / TLMS - DATA BASE RECORD DESCRIPTION *
000000  00000  00000  20++ *
000000  00000  00000  21++******************************************************************************
000000  00000  00000  22++ *
000000  00000  00200  23+DBRECORD DSECT 01-CTMCD
000000  00000  00000  24++ *
000000  00000  00000  25++ COMMON AREA
000000  00000  00000  26++ *
000000 FF  27+DBFORMAT DC XLL'FF' FORMAT INDICATOR 01-CTMCD
000010  09100  00000  28+DBRECTYPE DC CLI' ' RECORD TYPE 01-CTMCD
000020  04040  00000  29+DBPROD DC CL2' ' PRODUCT CODE TC29173 01-CTMCD
000030  04040  00000  30+DBREL DC CL2' ' PRODUCT RELEASE TC29173 01-CTMCD
000040  04040  00000  31+DBVOLSER DC CL6' ' VOLUME SERIAL NUMBER 01-CTMCD
000050  00000  00000  32+DBVOLSQ DC H'00' VOLUME SEQUENCE 01-CTMCD
000060  04040  00000  33+DBBASVOL DC CL6' ' FIRST VOLUME (BASE VOLUME) 01-CTMCD
000070  00000  00000  34+DBBASVOL DC H'00' FILE SEQUENCE NUMBER 01-CTMCD
000080  00000  00000  35+DBFILCNT DC H'00' FILE COUNT 01-CTMCD
000090  00000  00000  36+DBEXPDAT DC PL4'0' EXPIRATION DATE 01-CTMCD
000100  04040  00000  37+DBDSN DC CL4' ' DATA SET NAME 01-CTMCD
000110  04040  00000  38+DBRECFM DC CL4' ' RECORD FORMAT 01-CTMCD
000120  00000  00000  39+DBRECL DC F'0' LOGICAL RECORD LENGTH 01-CTMCD
000130  00000  00000  40+DBBLKSIZE DC F'0' BLOCK SIZE 01-CTMCD
000140  00000  00000  41+DBBLKCNT DC F'0' BLOCK COUNT 01-CTMCD
000150  00000  00000  42+DBDATE DC CL4'0' CREATION DATE 01-CTMCD
000160  00000  00000  43+DBTIME DC CL4'0' CREATION TIME 01-CTMCD
000170  00000  00000  44+DBJOBDC DC CB8' ' CREATION JOB 01-CTMCD
000180  00000  00000  45+DBGENDC DC CL8' ' CREATION DNAME 01-CTMCD
000190  00000  00000  46+DBUNIT DC CL4' ' UNIT ADDRESS 01-CTMCD
000200  00000  00000  47+DBUNITDC DC CL4'0' LAST USE UNIT ADDRESS 01-CTMCD
000210  00000  00000  48+DBUNITDC DC CL4'0' LAST USE DATE 01-CTMCD
000220  00000  00000  49+DBUNITDC DC CL4'0' LAST USE TIME 01-CTMCD
000230  00000  00000  50+DBUNITDC DC CL4'0' LAST USE JOINTERM 01-CTMCD
000240  00000  00000  51+DBUNITDC DC CL4'0' LAST USE JOINNAME 01-CTMCD
000250  00000  00000  52+DBUNITDC DC CL4'0' LAST USE JOINTIME 01-CTMCD
000260  00000  00000  53+DBUNITDC DC CL4'0' LAST USE JOINTIME 01-CTMCD
000270  00000  00000  54+DBUNITDC DC CB4 DENSITY 01-CTMCD
000280  00000  00000  55+DBUNITDC DC CL3' ' LABEL TYPE 01-CTMCD
000290  00000  00000  56+DBUNITDC DC CL3' ' SCRATCH INDICATOR 01-CTMCD

Figure 16. DBRECORD DSECT, Using CTMCDREC Macro- Common Tape Data Area (1 of 4)
### 5.3 DSECT Listings

<table>
<thead>
<tr>
<th>D-Loc</th>
<th>Object Code</th>
<th>Addr1</th>
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<th>Stmt</th>
<th>Source Statement</th>
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<td>57</td>
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<td>DC</td>
<td>CLA4 ' ' RECORDING TECHNIQUE</td>
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<td>0000AD</td>
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<td>58</td>
<td>OBUSCLN</td>
<td>DC</td>
<td>CLA5 ' ' USES CLEANED</td>
</tr>
<tr>
<td>000000</td>
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<td>59</td>
<td>OBTSCLN</td>
<td>DC</td>
<td>CLA6 ' ' TIMES CLEANED</td>
</tr>
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<td>000000</td>
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<td>60</td>
<td>OBDTCNL</td>
<td>DC</td>
<td>CLA7 ' ' DATE CLEANED</td>
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<tr>
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<td>00000000</td>
<td>61</td>
<td>OBITNTTE</td>
<td>DC</td>
<td>CLA8 ' ' INITIAL DATE</td>
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<tr>
<td>0000AA</td>
<td>00000000</td>
<td>62</td>
<td>OBUSERTOT</td>
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<td>CLA9 ' ' TOTAL USES</td>
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<td>0000AC</td>
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<td>63</td>
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<td>CLA10 ' ' DATE MOVED</td>
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<td>0000BD</td>
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<td>OBULOC</td>
<td>DC</td>
<td>CLA11 ' ' OUT-LOCATION CODE</td>
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<tr>
<td>00008D</td>
<td>00000000</td>
<td>65</td>
<td>OBNUSE</td>
<td>DC</td>
<td>CLA12 ' ' IS THE VOLUME IN-USE</td>
</tr>
<tr>
<td>00008D</td>
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<td>OBMOSTAK</td>
<td>DC</td>
<td>CLA13 ' ' IS THE VOLUME NOT STACKABLE</td>
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<td>CLA14 ' ' FILES DYNAMICALLY STACKED</td>
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<td>68</td>
<td>OBPXPERC</td>
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<td>CLA15 ' ' PERCENT OF VOLUME IN USE</td>
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<td>OBBVENDOR</td>
<td>DC</td>
<td>CLA26 ' ' VENDOR</td>
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<td>DC</td>
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<td>95</td>
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<td>CLA42 ' ' FILE IS ON OS CATALOG</td>
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<td>OBYVR</td>
<td>DC</td>
<td>CLA43 ' ' TAPE VAULTED DUE TO SPEC REQ</td>
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<td>0011AE</td>
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<td>97</td>
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<td>DC</td>
<td>CLA44 ' ' TAPE IS NON-RESIDENT</td>
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<td>OBOUSLST</td>
<td>DC</td>
<td>CLA45 ' ' OUT SLOT</td>
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<td>OBRSEV</td>
<td>DC</td>
<td>CLA46 ' ' RESERVED</td>
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**Figure 17. DBRECORD DSECT, Using CTMCDREC Macro - Common Tape Data Area (2 of 4)**

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<th>D-Loc</th>
<th>Object Code</th>
<th>Addr1</th>
<th>Addr2</th>
<th>Stmt</th>
<th>Source Statement</th>
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<td>0001C4 0000</td>
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<td>H'</td>
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<td>DBDATASC DC</td>
<td>PL4'</td>
<td>'</td>
<td>DATE SCRATCHED</td>
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<td>0001CA 40040400404040</td>
<td>114</td>
<td>DBRTMDAT DC</td>
<td>CL32'</td>
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<td>RETENTION DATA</td>
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<td>PL4'</td>
<td>'</td>
<td>DATA SET KEEP DATE</td>
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<td>CL8'</td>
<td>'</td>
<td>USER ID (TRANSACTIONS)</td>
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<td>DBUNUS1 EQU DBUSRID, L'DBUSRID</td>
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<td>0001FF 00000000</td>
<td>118</td>
<td>DBVFLAG1 DC</td>
<td>PL4'</td>
<td>'</td>
<td>VOLUME FLAG1</td>
</tr>
<tr>
<td>0001FA 00000000</td>
<td>119</td>
<td>DBKEVDTE DC</td>
<td>PL4'</td>
<td>'</td>
<td>VOLUME EXPIRATION DATE</td>
</tr>
<tr>
<td>0001FE 40</td>
<td>120</td>
<td>DBSCRSRDC DC</td>
<td>CL1'</td>
<td>'</td>
<td>SCRATCH SOURCE</td>
</tr>
<tr>
<td>0001FF 40</td>
<td>121</td>
<td>DBFLG006 DC</td>
<td>CL1'</td>
<td>'</td>
<td>SPARE TLMS FLAG</td>
</tr>
<tr>
<td>000200 00200 00164</td>
<td>125</td>
<td>DBRESVD2 DC</td>
<td>CL24'</td>
<td>'</td>
<td>RESERVED</td>
</tr>
<tr>
<td>00017C 40</td>
<td>127</td>
<td>DBSCRFIL DC</td>
<td>CL1'</td>
<td>'</td>
<td>SCRATCH FLAG</td>
</tr>
<tr>
<td>00017D 40</td>
<td>128</td>
<td>DBTMPMDN DC</td>
<td>CL1'</td>
<td>'</td>
<td>TEMPORARY DATA SET INDICATOR</td>
</tr>
<tr>
<td>00017E 400404004040</td>
<td>129</td>
<td>DPREVOL DC</td>
<td>CL6'</td>
<td>'</td>
<td>PREVIOUS VOLUME</td>
</tr>
<tr>
<td>000184 400404004040</td>
<td>130</td>
<td>DBNXVOL DC</td>
<td>CL6'</td>
<td>'</td>
<td>NEXT VOLUME</td>
</tr>
<tr>
<td>00018A 400404004040</td>
<td>131</td>
<td>DBSTVOL DC</td>
<td>CL6'</td>
<td>'</td>
<td>FIRST VOLUME</td>
</tr>
<tr>
<td>000190 00000000</td>
<td>132</td>
<td>DBSTDSN DC</td>
<td>F'0'</td>
<td>'</td>
<td>FIRST DSNB</td>
</tr>
<tr>
<td>000194 00000000</td>
<td>133</td>
<td>DBLSTDSN DC</td>
<td>F'0'</td>
<td>'</td>
<td>LAST DSNB</td>
</tr>
<tr>
<td>000198 00000000</td>
<td>134</td>
<td>DBCUSRDSN DC</td>
<td>F'0'</td>
<td>'</td>
<td>CURRENT DSNB</td>
</tr>
<tr>
<td>00019C 00000000</td>
<td>135</td>
<td>DBPUSRDSN DC</td>
<td>F'0'</td>
<td>'</td>
<td>PREVIOUS DSNB</td>
</tr>
<tr>
<td>0001A0 00000000</td>
<td>136</td>
<td>DBXVDSN DC</td>
<td>F'0'</td>
<td>'</td>
<td>NEAT DSNB</td>
</tr>
<tr>
<td>0001A4 40040400404040</td>
<td>137</td>
<td>DBHDSNDCS DC</td>
<td>CL17'</td>
<td>'</td>
<td>DSN17</td>
</tr>
<tr>
<td>0001B5 4040</td>
<td>138</td>
<td>DBUNUS2 DC</td>
<td>CL2'</td>
<td>'</td>
<td>-------- UNUSED</td>
</tr>
<tr>
<td>0001B7 00</td>
<td>139</td>
<td>DBCATCNT DC</td>
<td>XLL'00'</td>
<td>'</td>
<td>CATALOG COUNT</td>
</tr>
<tr>
<td>0001BB 40</td>
<td>140</td>
<td>DBRSOVRDC DC</td>
<td>CL1'</td>
<td>'</td>
<td>RDS OVERRIDE INDICATOR</td>
</tr>
<tr>
<td>0001B9 40</td>
<td>141</td>
<td>DBDELIND DC</td>
<td>CL1'</td>
<td>'</td>
<td>DELETE INDICATOR</td>
</tr>
<tr>
<td>0001B4 40</td>
<td>142</td>
<td>DBCNKLIND DC</td>
<td>CL1'</td>
<td>'</td>
<td>CLEAN INDICATOR</td>
</tr>
<tr>
<td>0001BB 40</td>
<td>143</td>
<td>DBUSRIND DC</td>
<td>CL1'</td>
<td>'</td>
<td>UPDATED USER INDICATOR</td>
</tr>
<tr>
<td>0001BC 40</td>
<td>144</td>
<td>DBINCLUD DC</td>
<td>CL1'</td>
<td>'</td>
<td>INTERNAL CHANGE INDICATOR</td>
</tr>
<tr>
<td>0001BB 40</td>
<td>145</td>
<td>DBXVOLDC DC</td>
<td>CL1'</td>
<td>'</td>
<td>EXPIRED BY JULIAN</td>
</tr>
<tr>
<td>0001BE 40</td>
<td>146</td>
<td>DBXVOLDC DC</td>
<td>CL1'</td>
<td>'</td>
<td>EXPIRED BY LAST DATE</td>
</tr>
<tr>
<td>0001BF 40</td>
<td>147</td>
<td>DBXVOLCC DC</td>
<td>CL1'</td>
<td>'</td>
<td>EXPIRED BY CYCLE</td>
</tr>
<tr>
<td>0001C0 40</td>
<td>148</td>
<td>DBXVOLCC DC</td>
<td>CL1'</td>
<td>'</td>
<td>EXPIRED BY CATALOG</td>
</tr>
<tr>
<td>0001C1 40</td>
<td>149</td>
<td>DBXVOLDS DC</td>
<td>CL1'</td>
<td>'</td>
<td>EXPIRED BY SMS</td>
</tr>
<tr>
<td>0001C2 40</td>
<td>150</td>
<td>DBXVOLDS DC</td>
<td>CL1'</td>
<td>'</td>
<td>EXPIRED BY SMS</td>
</tr>
<tr>
<td>0001C3 40</td>
<td>151</td>
<td>DBRECIND DC</td>
<td>CL1'</td>
<td>'</td>
<td>RECREATED INDICATOR</td>
</tr>
<tr>
<td>0001C4 40</td>
<td>152</td>
<td>DBOUTIN DC</td>
<td>CL1'</td>
<td>'</td>
<td>OPENED FOR OUTPUT INDICATOR</td>
</tr>
<tr>
<td>0001C5 40</td>
<td>153</td>
<td>DBRCAT DC</td>
<td>CL1'</td>
<td>'</td>
<td>READ VIA CATALOG INDICATOR</td>
</tr>
<tr>
<td>0001C6 40</td>
<td>154</td>
<td>DBDYNIND DC</td>
<td>CL1'</td>
<td>'</td>
<td>DYNAM/T CONTROLLED INDICATOR</td>
</tr>
<tr>
<td>0001C7 40</td>
<td>155</td>
<td>DBEDMIND DC</td>
<td>CL1'</td>
<td>'</td>
<td>EDML CONTROLLED INDICATOR</td>
</tr>
<tr>
<td>0001C8 40</td>
<td>156</td>
<td>DBADIND DC</td>
<td>CL1'</td>
<td>'</td>
<td>BAD TAPE INDICATOR</td>
</tr>
<tr>
<td>0001C9 40040400404040</td>
<td>157</td>
<td>DBLUPDST DC</td>
<td>CLB'</td>
<td>'</td>
<td>LAST UPDATE CAUSE</td>
</tr>
<tr>
<td>0001D1 00000000</td>
<td>159</td>
<td>DBAUDCOTE DC</td>
<td>PL4'</td>
<td>'</td>
<td>AUDIT DATE</td>
</tr>
<tr>
<td>0001D3 00000000</td>
<td>159</td>
<td>DBAUDCOT DC</td>
<td>PL4'</td>
<td>'</td>
<td>AUDIT TIME</td>
</tr>
<tr>
<td>0001D9 40040400404040</td>
<td>160</td>
<td>DBUSERID DC</td>
<td>CLB'</td>
<td>'</td>
<td>USER ID</td>
</tr>
<tr>
<td>0001E1 00</td>
<td>161</td>
<td>DBARCODE DC</td>
<td>X'00'</td>
<td>'</td>
<td>AUDIT CODE</td>
</tr>
<tr>
<td>0001E2 400404</td>
<td>162</td>
<td>DBRESVD2 DC</td>
<td>CL3'</td>
<td>'</td>
<td>RESERVED</td>
</tr>
<tr>
<td>0001E5 40</td>
<td>163</td>
<td>DBDSNACT DC</td>
<td>CL1'</td>
<td>'</td>
<td>ACTIVE DSNB INDICATOR</td>
</tr>
<tr>
<td>0001E6 400404</td>
<td>164</td>
<td>DBAUBLK DC</td>
<td>CL5'</td>
<td>'</td>
<td>EXCEPTION CODES</td>
</tr>
<tr>
<td>0001E9 80</td>
<td>165</td>
<td>DBVFLG0 DC</td>
<td>XLL'00'</td>
<td>'</td>
<td>VOLUME FLAG1</td>
</tr>
<tr>
<td>0001EA 80</td>
<td>166</td>
<td>DBVFLG0 DC</td>
<td>XLL'00'</td>
<td>'</td>
<td>VOLUME FLAG2</td>
</tr>
</tbody>
</table>

Figure 18. DBRECORD DSECT, Using CTMCDREC Macro- Common Tape Data Area (3 of 4)
Figure 19. DBRECORD DSECT, Using CTMCDREC Macro- Common Tape Data Area (4 of 4)
5.3.3 ALOCAREA Listing, Using CTMCDYNA Macro

```
ALOCAREA D S E C T - A L O C A R E A
Active Usings: None
Loc Object Code Addr1 Addr2 Stmt Source Statement HLASM R4.0 2004/01/16 16.25
000000 00000 0000 2 ALOCAREA CSECT ,
3 *
4 ALOCAREA CTMCDYNA DSECT=YES,PREFIX=DY

000000 0000000600 6+ALOCAREA DSECT
7+DYDDNM DC CLB' ' ddname 01-CTMCD
000008 4040404040404040 8+DYDDSN DC CL44' ' data set name 01-CTMCD
00000A 4040404040404040 9+DYDUUNIT DC CLB' ' unit name or address 01-CTMCD
00000C 00000000 10+DYDVOLL DC A(0) volser list ptr 01-CTMCD
00000D 00000000 11+DYDDTCH DC XL1'00' ' recfm= type 01-CTMCD

00000E 00000008 12+DYVSYS EQU X'08' - S (standard) 01-CTMCD
000010 00000008 13+DYVNS EQU X'10' - B (blocked) 01-CTMCD
000014 00000008 14+DYVRV EQU X'40' - V (variable) 01-CTMCD
000018 00000008 15+DYVRF EQU X'80' - F (fixed) 01-CTMCD

00001C 00000000 16+DYVNU EQU X'CD' - U (undefined) 01-CTMCD

00001D 00000000 17+DYVDISP DC XL1'00' ' disp= type 01-CTMCD

000020 00000000 18+DYDLSQ DC AL2(0) volume sequence 01-CTMCD
000022 00000000 19+DYDLSQ DC AL2(0) file sequence 01-CTMCD
000024 00000000 20+DYDLSQ DC AL2(0) record length 01-CTMCD

000028 00000000 21+DYDSHR EQU X'F' - shr 01-CTMCD
00002A 00000000 22+DYDSHR EQU X'8' - F (fixed) 01-CTMCD
00002C 00000000 23+DYDSHR EQU X'4' - V (variable) 01-CTMCD

00002E 00000000 24+DYDNR DC AL2(0) block size 01-CTMCD
24++ If zero, use xxxLBLKSZ 0LBI

000030 00000000 25+DYDLVLSQ DC AL2(0) volume count 01-CTMCD
000032 00000000 26+DYDLVLSQ DC AL2(0) file count 01-CTMCD
000034 00000000 27+DYDLVLSQ DC AL2(0) disp= type 01-CTMCD

000038 00000000 28+DYDLBLLT DC XL1'00' ' label type 01-CTMCD
00003C 00000000 29+DYDLN EQU X'01' - NL (no label) 01-CTMCD
00003E 00000000 30+DYDLN EQU X'02' - SL (standard label) 01-CTMCD
000040 00000000 31+DYDLN EQU X'04' - NSL (non-standard label) 01-CTMCD
000042 00000000 32+DYDLN EQU X'0A' - SUL (standard and user label) 01-CTMCD
000044 00000000 33+DYDLN EQU X'10' - BLP (bypass label processing) 01-CTMCD
000046 00000000 34+DYDLN EQU X'40' - AL (ANSI label) 01-CTMCD

000048 00000000 35+DYDTTRCH DC XL1'00' ' tape recording technique (trrch) type 01-CTMCD
00004C 00000000 36+DYDTTRCH DC XL1'00' ' tape recording technique (trrch) type 01-CTMCD
00004E 00000000 37+DYDTTRCH DC XL1'00' ' tape recording technique (trrch) type 01-CTMCD

```

Figure 20. ALOCAREA DSECT, Using CTMCDYNA Macro - Maps CA TLMS Copycat Allocation Area
5.3 DSECT Listings
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