PICK utilities guide

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PICK utilities guide

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FOREWORD

The PICK Utilities Guide contains documentation for all the PICK Utility verbs. These complete Utility verbs are also covered in the Utilities section of the PICK Quick Guide, but in many instances, in less detail. Some of them are also treated, where appropriate, in the PICK Reference Manuals and PICK Operator Guide. However, the most inclusive and most complete treatment of the Utility verbs is contained in this manual.

The PICK Utilities Guide documents the verbs in alphabetical order, and should be used as an index when trying to locate a particular verb. Note that the number or letter in parentheses following the general description of a verb indicates the minimum system privileges required for its use. Levels are 0, 1, 2, and S. The lowest is 0 and the highest, S; S indicates that the verb is only available from the SYSPROG account.

Although the PICK Utilities Guide is not a replacement for either the PICK Reference Manuals or the PICK Operator Guide, it does present a comprehensive picture of the basic PICK utilities for everyday PICK operation for both general programmers and system personnel. Other PICK features are covered in other documents.

Related ZEBRA/PICK documents that are available to the user:

Document No.	Title
88A00751A	Overview of the PICK Operating System
88A00757A	PICK Operator Guide
88A00758A	ACCU-PLOT Operator Guide
88A00759A	COMPU-SHEET Operator Guide
88A00760A	Quick Guide for the PICK Operating System
88A00776A	PICK ACCESS Reference Manual
88A00777A	PICK SPOOLER Reference Manual
88A00778A	PICK BASIC Reference Manual
88A00779A	PICK EDITOR Reference Manual
88A00780A	PICK PROC Reference Manual
88A00781A	PICK RUNOFF Reference Manual
88A00782A	Introduction to PICK TCL and FILE STRUCTURE
88A00783A	PICK JET Word Processor Guide

1 utilities description

In the following verb descriptions, the number or letter in parentheses following a utility indicates the minimum system privileges required for its use. Levels are 0, 1, 2, and S; the lowest level is 0 and the highest is S. S indicates that the utility may only be used at the SYSPROG level.

Note that some ZEBRA models use a cartridge disk rather than tape cartridge. All tape verbs and options may be used with the cartridge disk, except where noted.

:FILELOAD

Use when disks, communication lines, or LAN are added to system to enable access to entire system.(2)

* * * * *

:SHUTDOWN

Allows orderly shutdown of system. Use before system power off, ABS load, or when it is necessary to halt all system processes. Not valid on ZEBRA 750. May only be executed from port 0.(S)

Use of the :SHUTDOWN PROC will provide an orderly shutdown, thereby ensuring against possible loss of data, Group Format, and disk errors. It is recommended that this PROC be used whenever the system is to be powered off, before an ABS load is executed, or at any time when the system manager requires all system processes to stop.

The :SHUTDOWN PROC will LISTUSERS, send a message informing of the shutdown to all ports, prevent users from either logging on or off ports, create spooler hold files, delete printers, flush memory, and sequence down the disk.

Only SYSPROG can execute the :SHUTDOWN PROC and only from port 0. The PROC is not valid on ZEBRA 750.

:SHUTDOWN (Continued)

When the :SHUTDOWN is called, the following prompts will be received:

```
    THIS IS THE SHUTDOWN PROCEDURE TO FLUSH MEMORY AND SEQUENCE DOWN THE DISK

    DO YOU WISH TO CONTINUE (<Y>,N):

    WOULD YOU LIKE TO DISPLAY THE USERS CURRENTLY LOGGED ON (<Y>,N,X):
```

where:

```
    Y = LISTUSERS and continue
    N = Continue toward shutdown
    X = Exit to TCL
```

```
    DO YOU WISH FOR A SHUTDOWN MESSAGE TO BE SENT TO ALL TERMINALS (<Y>,N,X):
```

where:

```
    Y = Send message and continue
    N = Do not send message, but continue
    X = Exit to TCL
```

```
    DO YOU WISH TO LOG OFF ALL USERS (<Y>,N,X):
```

where:

```
    Y = Prevent ports from logging on and LOGOFF all ports that are still
        logged on
    N = Go to beginning of PROC
    X = Exit to TCL
```

(No port will be able to log on after a Y response is given.)

```
    ... NOW LOGGING OFF ALL PORTS ...

    DO YOU WISH ALL PRINT JOBS TO BECOME HOLD FILES (<Y>,N):

    ... NOW CREATING HOLD FILES FOR PRINT ENTRIES ...

    ... NOW DELETING PRINTERS ...

    SEQUENCE DOWN DISK (<Y>,N):
```

(In most cases, the Y response is necessary only when the system is to be powered off. Use the N response to ready the system for an ABS load.)

```
    ... NOW FLUSHING MEMORY AND SHUTTING DOWN SYSTEM ...
```

:SHUTDOWN (Continued)

```
    SYSTEM SHUTDOWN

    GA ZEBRA RESIDENT UTILITIES--
    DIALOGUE 80 TERMINAL OR EQUIVALENT (<Y>,N):
```

(Note that a Processor Exception message may appear instead of the GA ZEBRA RESIDENT UTILITIES prompt if the Executive Monitor is in an uncertain state. If this occurs, the system will still be shutdown correctly.)

* * * * *

:TASKINIT {workspaces}{,levels}{(U)}

Preallocates workspaces to be used for BASIC EXECUTE statements.(S)

workspaces: Number of EXECUTE workspaces to preallocate. If omitted, no workspaces will be added to or deleted from the Execute Work Table. If number is less than the current allocated workspace number, the extra workspaces will be returned to Available Space when :TASKINIT is executed.

levels: Maximum number of nested EXECUTEs in single-user process at one time. Range = 0 to 15. If 0, the EXECUTE statement is disallowed. If omitted, the previous :TASKINIT level is used, or if there was no previous :TASKINIT, the system default of 5 is used.

(U): Specifies unconditional reinitialization of the EXECUTE process. Only to be used when no EXECUTE process is running; when only the port running :TASKINIT is logged on; and when severe problems with the EXECUTE environment cannot be corrected without reinitialization.

* * * * *

ACCOUNT-RESTORE new-account-name

Restores a single account to an existing PICK system. System will prompt: ACCOUNT NAME ON TAPE? The name under which the save tape or cartridge disk saved the account should be entered, or a [CR] if account to be restored is the same as account name on tape.(2)

An 'ACCOUNT-RESTORE' can be performed from a file-save tape or cartridge disk of a whole system or from an 'ACCOUNT-SAVE' tape or cartridge disk. In either case, the account will be restored and a pointer to the account will be created in the System Dictionary. Account-restores may be started from any reel or cartridge of a multi- tape or cartridge disk file-save. To save time in searching for data, the STAT-FILE listing may be consulted to determine which reel or cartridge the account's data starts on, and that unit may be mounted. Account-restores are performed as follows:

1. Log on to SYSPROG.
2. Mount the tape or cartridge disk with the account on it.
3. Type: ACCOUNT-RESTORE new-account-name [CR]
   System responds: ACCOUNT NAME ON TAPE?
   Type: old-account-name or [CR]

The operator may respond with the name of the account under which the save tape or cartridge disk saved the account or may enter a [CR] only if this name is the same as the new-account-name. The media will be searched for the account, and the restore will proceed automatically.

A "Synonym' segment may be encountered with a base which has not been found on the tape or cartridge disk. This happens when a D-pointer on the saved account points to a file on another account, or if a 'D' segment on the tape or cartridge disk is unrecognizable because of a parity error. In this case, the message 'SYNONYM NOT FOUND' will appear. The synonym D-pointer will not be created and the restore will continue. An 'ACCOUNT-RESTORE' cannot be performed if the account being restored already exists on the system.

ACCOUNT-SAVE

Saves a single account on a save tape or cartridge disk.(2)

The 'ACCOUNT-SAVE' utility functions like the 'FILE-SAVE' utility. The files section contains no System Dictionary pointer or items, and only one account is saved. No synonym D or Q pointers will be saved. If STAT-FILE items are generated, they will pertain only to the save account. Account-saves are performed as follows:

1. Log on to SYSPROG.
2. Mount a tape or cartridge disk which is not write-protected.
3. Type: ACCOUNT-SAVE [CR]
   System responds: TAPE LABEL IF DESIRED
   Type: tape-or-cartridge-disk-label [CR] or [CR] (if no label is desired).
   System responds: ACCOUNT NAME?
   Type account-name [CR] (of account to be saved).

The account-name used must be in the System Dictionary.

NOTE

New cartridge disks must be formatted before using the first time.

* * * * *

ADD-ACCOUNTS

Automatically adds all new accounts on a FILE-SAVE tape or cartridge disk to the system.(S)

* * * * *

ADDD number1 number2

Adds two decimal numbers and displays result.(0)

ADD.UPDATE.MD

Compares Master Dictionary verbs against NEWAC verb with same name and changes Master Dictionary verbs to agree with NEWAC. Adds any additional NEWAC verbs to Master Dictionary. Does not make any deletions from Master Dictionary.(S)

ADDX number1 number2

Adds two hexadecimal numbers and displays result.(0)

* * * * *

BLOCK-PRINT character-string {(P)}

Produces a block-printed character or string of characters on the terminal or on the printer if (P) is specified.(0)

The BLOCK-PRINT command will print characters in block form on the line printer or the user's terminal. The option (P) will route the output to the line printer. Any ASCII characters may be printed. Any character-string containing single quotes (') must be enclosed in double quotes ("), and vice versa. The surrounding quotes will not be printed. A character-string not containing quotes as part of the string need not be surrounded by quotes. Character-strings to be blocked cannot have more than nine characters. The total number of characters must not exceed the current line length set by the most recent TERM command. If a BLOCK-PRINT command is illegally formed, any of the error messages 521 through 525 may be displayed. The BLOCK-PRINT command uses a file named BLOCK-CONVERT to create the blocked characters. A BLOCK-CONVERT file already exists which contains the conversion specifications for all printable ASCII characters (no lowercase alphas). With this file, characters will be printed as 9-by-12 to 9-by-20 blocks. If you wish to change the way any character is printed, it is necessary to change the corresponding item in the BLOCK-CONVERT file.

* * * * *

BREAK-KEY-ON {n}
BREAK-KEY-OFF {n}

Allows/disallows use of the BREAK key for port number n. If n is not specified, the port issuing the verb is used. Has no effect on logged-off or Spooler ports. Default is to allow BREAK key function (i.e., BREAK-KEY-ON). Note that BREAK-KEY-ON allows the debugger to function even if a BASIC statement has turned it off. SYS2 privileges are required for port n specification.(1)

CHARGE-TO project-name

Continues current user session, but accumulates charges from this point for whatever project-name is specified. This is terminated by logoff or another CHARGE-TO with a new or no project-name.(0)

The CHARGE-TO verb is used to keep track of computer usage for several projects associated with the same logon name. This verb performs the following:

1. Terminates the current charge session by updating the ACC file with the user's accumulated charge-units, line printer pages, and connect-time statistics.
2. Changes the logon name to the original name concatenated with an asterisk and then the name following "CHARGE-TO".

The project-name is any sequence of non-blank characters. If project-name is null in the CHARGE-TO statement, the user identification will revert to the logon account name alone.

The CHARGE-TO statement will also cause the following message to be displayed:

<<<CONNECT TIME = n MINS.; CPU = m UNITS; LPTR PAGES = x >>>

* * * * *

CHARGES

Displays current charge statistics for user.(0)

The CHARGES verb prints the current computer usage since logon as connect time in minutes and CPU usage in charge-units. This will display as:

<<<CONNECT TIME = n MINS.; CPU = m UNITS; LPTR PAGES = x >>>

* * * * *

CHECK-SUM {DICT}file-name{item-list}{attribute}{selection-criteria}(0)

Generates a checksum for file items, which lets you see if data in file has been changed.(0)

DICT:	dictionary portion of file is checked
file-name:	name of file being checked
item-list:	checks only those items specified
attribute:	checks only specified attribute
selection-criteria:	checks only those items which satisfy specified criteria

CHECK-SUM (Continued)

The CHECK-SUM command generates a checksum for file items, thus providing a means to determine if data in a file has been changed. A checksum is the arithmetic total, disregarding overflow, of all bytes in the selected items.

A checksum is generated for items in the specified file, or subset of items if the optional "item-list" and/or "selection-criteria" appear. Furthermore, the checksum may be calculated for one specified attribute. The dictionary portion is checksummed if {DICT} appears. If no attribute is specified, the first default attribute will be used. If there is no default attribute, or if the AMC is 9999, the entire item will be included. The checksum will include the binary value of each character times a positional value.

This yields a checksum which has a high probability of being unique for a given character string. A message is output giving checksum statistics in the following form:

```
BYTE STATISTICS FOR file-name (or attribute name):
TOTAL = t AVERAGE = a ITEMS = i CKSUM = c BITS = b
t     is the total number of bytes in the attribute (or item) included
a     is the average number of bytes
i     is the number of items
c     is the checksum
b     is the bit count
```

The attribute mark trailing the specified attribute (or item) will be included in the statistics. To use checksums, the user should issue CHECK-SUM commands for all files or portions of files to be verified and keep the output statistics. Subsequently, the CHECK-SUM commands can be reissued to verify that the checksum statistics have not changed. The checksum must be recalculated whenever the user updates the file.

* * * * *

CLEAR-FILE DATA file-name{,data-name}
or DICT file-name

Clears data from either the data section or the dictionary of the specified file-name as indicated. If data file is one of multiple files under same dictionary, then unique data-name must be specified to clear data section.(1)

The CLEAR-FILE processor clears the data from a file (i.e., it sets the file to the "empty" state by placing an attribute mark in the first data position of each group of the file). "Overflow" frames that may be linked to the primary file space will be released to the system's additional space pool. Either the data section or the dictionary (DICT) section of a file may be cleared using the CLEAR-FILE command. If the dictionary section is cleared and a corresponding data section exists (as implied by the presence of a file defining item in the dictionary), then it will be maintained in the dictionary.

CLEAR-FILE (Continued)

The BREAK key is inhibited during the DELETE process, but not during the CLEAR process. CLEAR-FILE examples:

* >CLEAR-FILE DATA INVENTORY [CR]

Clears the data section of the INVENTORY file.

* >CLEAR-FILE DICT TEST/FILE [CR]

Clears the dictionary of the TEST/FILE of all non-D-items; all D-items are maintained in the dictionary.

* * * * *

COLDSTART or **COLD-START**

Used automatically when system is IPLed. May be logged to for setting system time and date.(S)

* * * * *

COMPARE file-name item-name{...item-name}{(options)} [CR]
WITH: (file-name) item-name{...item-name}

Compares two items from the same or different files and lists them, indicating differences. Used on assembly listings.(2)

Options

A	Include entire lines
C	Begin page on each mismatched item
D	Suppress object code address line (when used with O option)
F	Begin page on each mismatched item
I	Suppress NOT-ON-FILE message
L	Generate saved list of mismatched items
N	Nopage on terminal
O	Compare object code only
P	List on printer
S	Suppress display of identical items
Z	Output error lines only

Status Indicators

D	Deleted
I	Inserted line

COPY {DICT} file-name item-list {(options)} [CR]

Copies items from a file to a terminal, to a printer, to the same file, or to another file (either in the same or a different user's account). If copy is to a file, system will prompt: TO:. Response is in form:

{(}{DICT} file-name {item-list}

where:

DICT and file-name are destination dictionary and file name. If these are different from original dictionary and file, they must be preceded by a left parenthesis. A copy to the same file or dictionary should not use the left parenthesis.

If item-ids of items being copied are being changed, the list of new item-ids must be included. If a [CR] is entered after the TO:, copy is to the terminal.(0)

Options

A	Assembly MLIST format used (for Assembler programs).
D	Deletes original after copy.
F	Form-feed. Copy each item on terminal or printer onto new page.
I	Item-ids suppressed in file copy.
M	Macro Assembly format used (for Assembler programs).
N	New items not copied to destination file unless items already exist there.
N	No page wait on copy to terminal.
n	Integer number indicates number of items to copy.
O	Overwrite. Copies items to destination file even if they already exist there. Note that you may not use the 'O' option to copy an item which has the same name as the destination file to that file if that file's dictionary contains a 'D' pointer.
P	Printer is copy destination.
S	Suppresses error messages on file copy indicating that items were not copied.
S	Suppresses line numbers on terminal or printer copy.
T	Terminal is copy destination.
X	Hexadecimal format used on terminal or printer copy.

The COPY processor allows the user to copy items from a file to the terminal, to the line-printer, to the same file, or to another file (either in his account or in some other user-account).

The first file-name parameter specifies the source file. The item-list consists of one or more item-ids separated by blanks, or an asterisk (*) specifying all items to be copied. The options parameter, if used, must be enclosed in parentheses.

Once a COPY command has been issued, the COPY processor will respond differently depending on whether the copy is to the terminal or line-printer, or to a file. This is specified by the presence of the "T" option (copy to terminal), or the "P" option (copy to line-printer). If neither of these options is specified, the copy is to a file.

COPY (Continued)

If the copy is a file-to-file copy, the processor will respond with:

```
TO:
```

The response to this request is shown in the general form on the preceding page.

FILE-TO-FILE COPY

It is frequently required to transfer data from one file to another or to different locations within the same file.

In using the COPY operation, multiple items may be specified as the source and as the destination. Multiple item-ids are separated by blanks, unless the item-id itself has embedded blanks, in which case the entire item-id may be enclosed in double-quotes (").

For example, the item-list may be:

```
1024-24 1024-25 "TEST ITEM" ABC
```

which specifies four item-ids, "1024-24", "1024-25", "TEST ITEM" and "ABC".

Item-ids may be repeated within the item list. There may be different numbers of items within the source and destination lists. If the source item-list is exhausted first, the COPY terminates. If the destination item-list is exhausted first, the remainder of the items are copied with no change in item-id.

If the items are to be copied without any change in the item-ids, the destination file item-list may be null. If it is desired to copy all existing items, an asterisk (*) may be used as the source file item-list.

If a preselected LIST of items is to be copied, the source item-list should be null. In this case, the COPY statement must have been preceded by a SELECT, SSELECT, QSELECT or GET-LIST statement. See the PICK Reference Manual for a discussion of these verbs.

When copying data to a file in another user's account, a Q-pointer to the other user's account must be set up in your Master Dictionary.

When copying from one dictionary to another, the COPY processor does not copy dictionary items which have a D/CODE of "D" (that is, the D-pointers). D-pointers must only be created by the CREATE-FILE processor. To recreate both the dictionary and the data sections of a file in a new file, a command sequence such as shown in the examples must be used.

COPY (Continued)

Examples of COPY under different conditions are listed below.

Copying items to the same file:

```
*   >COPY DICT SAMPLE COST  (I)  [CR]  <------ Single dictionary item
*   TO:  WORTH  [CR]                          copied.

    1 ITEMS COPIED

*   >COPY SAMPLE 1242-01  [CR]      <--------- Single data item copied.
*   TO:  1242-99  [CR]

         1 1242-01       <-------------------- Item-id is listed.
    1 ITEMS COPIED

*   >COPY FLAVORS RED WHITE BLUE  [CR]  <----- Multiple data items copied.
*   TO:  ALPHA BETA GAMMA  [CR]

         1 RED
         2 WHITE
         3 BLUE

    3 ITEMS COPIED
```

Copying items to a different file:

```
*   >COPY DICT SAMPLE * (I)  [CR]    <-------- All dictionary items copied.
*   TO:  (DICT FLAVORS)  [CR]
    [418] FILE DEFINITION ITEM 'SAMPLE' WAS NOT COPIED.

    2 ITEMS COPIED
```

Recreation of entire dictionary and data sections:

```
*   >CREATE-FILE (NEW-SAMPLE 1,1 3,1)  [CR]   <--- New file created.

    [417] FILE 'NEW-SAMPLE' CREATED; BASE = 15417, MODULO = 1, SEPAR = 1.
    [417] FILE 'NEW-SAMPLE' CREATED; BASE = 15418, MODULO = 3, SEPAR = 1.

*   >COPY DICT SAMPLE * (I)  [CR]   <------ All dictionary items (except
*   TO:  (DICT NEW-SAMPLE)  [CR]            D-pointer) copied.
    [418] FILE DEFINITION ITEM 'SAMPLE' WAS NOT COPIED

    3 ITEMS COPIED
*   >COPY SAMPLE * (I)  [CR]    <---------- All data items copied.
*   TO:  (NEW-SAMPLE)  [CR]

    22 ITEMS COPIED
```

CP file-name item-list {(options)}

Copies specified items to the printer. COPY verb options may be used.(0)

* * * * *

CREATE-ACCOUNT

Creates a new account according to specifications. Copies NEWAC file to new user's MD. Adds new name to SYSPROG's MD.(S)

The CREATE-ACCOUNT utility generates a new account by copying the contents of the NEWAC file (the prototype MD) to the new user MD. After typing in:

```
>CREATE-ACCOUNT  [CR]
```

The user is prompted for the required information as follows:

```
>CREATE-ACCOUNT           (PROC is typed at TCL)
ACCOUNT NAME:SHERRY       (MODULO,SEPARATION: 29,1) (default)
RETRIEVAL LOCKS:AAA]BBB   (Multi-valued retrieval code)
  UPDATE LOCKS:           ([CR] = no lock code)
PRIVILEGE LEVEL (0-2):2   (default = 0)
CONTROL CODE:L            (default = L)
  R--RESTART FLAG,  U--UPDATE FLAG,  L--DEFAULT
PASSWORD:R2D2             (User's LOGON password)
SYS0 VERBS ADDED TO THE ACCOUNT
SYS1 VERBS ADDED TO THE ACCOUNT
SYS2 VERBS ADDED TO THE ACCOUNT
[901] 'SHERRY' account created!
```

The CREATE-ACCOUNT utility should not be used to create a new synonym to an existing account; this should be done by using EDITOR to create the file synonym definition item (Q-item) in the SYSTEM dictionary.

* * * * *

CREATE-FILE file-name m1{,s1} m2{,s2}
or dict-name,data-name m1{,s1} m2{,s2}
or DICT file-name m1{,s1}

Creates a file for file-name specified and its associated dictionary. The modulo and separation values for the dictionary are given first (m1,s1) and the values for the file last (m2,s2). If s is not specified, s=1. The form dict-name,data-name must be used if file-name describes one of multiple files using same dictionary. A dictionary may be created without a data file by using the DICT form shown.(1)

CREATE-FILE (Continued)

The CREATE-FILE processor provides the capability for generating new files and dictionaries in the system. CREATE-FILE is used to create file dictionaries by reserving disk space and inserting a "D" entry in the user's Master Dictionary which points to the file-level dictionary, and to create data files by reserving disk space and placing a pointer to the space in the file level dictionary. CREATE-FILE will automatically locate and reserve a contiguous block of disk frames from the available space pool. The user need only specify values for the modulo and the separation of both the file dictionary and the data area. For a discussion of the values to use for modulo and separation, refer to the PICK Operator Guide, Sections 1.3 and 6.3.

There may not be a data file without a file-level dictionary pointing to it. Therefore, the file-level dictionary must be created prior to or concurrently with the data file. The latter is the preferred method for creating files and this form of the CREATE-FILE command is shown below. This enables the creation of both the dictionary and a data area with one command. The general form is:

```
CREATE-FILE  file-name m1{,s1} m2{,s2}
CREATE-FILE  dict-name,data-name m1{,s1} m2{,s2}
```

where "file-name" is the name of the file, m1 and s1 are the modulo and separation values of the dictionary (DICT) portion, and m2 and s2 are the modulo and separation of the data portion. If s1 and/or s2 are not given, then separation will be 1. Data-name is an optional data file name to be used if multiple data files will be pointed to by the file dictionary. In either case, a pointer to the data file is placed in the file-level dictionary. A file dictionary may be created without a data file by the command:

```
CREATE-FILE  DICT file-name m1{,s1}
```

The term 'DICT' specifies creation of the dictionary only with modulo m1 and separation s1, and a pointer to file-name is placed in the user's Master Dictionary. The user should note that a data area need not be reserved for a single-level file, in which case, the data is to be stored in the dictionary, as in the case of PROCS.

Once the DICT (Dictionary file) has been created, the primary file space for the data section of the file can be reserved. The general form of the command:

```
CREATE-FILE DATA dict-name{,data-name} m2{,s2}
```

where the term 'DATA' specifies creation of the data file data-name, if the data file is unique to the file-level dictionary, or creation of the data file data-name under dictionary dict-name, if the multiple data file option is desired. The data file has modulo m2 and separation s2, and the pointer to the reserved space is placed in the file-level dictionary. This form is also used to create new data files pointed to by a shared dictionary using the option {data-name}.

CREATE-FILE (Continued)

If you wish to create a pointer-file or a BASIC program file, use the CREATE-PFILE verb.

```
*   >CREATE-FILE INVENTORY  3,1 373  [CR]
```

Creates a new file called "INVENTORY", with a DICTIONARY section with modulo of 3 and separation of 1, and a DATA section with a modulo of 373 and a separation of 1. An item called "INVENTORY" will be placed in the Master Dictionary, and a D-item called "INVENTORY" will be placed in the INVENTORY dictionary.

```
*   >CREATE-FILE DICT TEST/FILE  7,1  [CR]
```

Creates a single-level file called "TEST/FILE"; a D-item "TEST/FILE" will be placed in the Master Dictionary, and a D-item "TEST/FILE" will also be placed in the dictionary created, pointing back to itself.

```
*   >CREATE-FILE DICT DEPT  3,1  [CR]
```

Creates a single-level dictionary called "DEPT".

```
*   >CREATE-FILE DATA DEPT,ACCOUNTING  73,1  [CR]
```

Creates a new DATA section called "ACCOUNTING" for the dictionary DEPT; a D-item called "ACCOUNTING" will be placed in the DEPT dictionary. The data file created will have to be referenced as "DEPT,ACCOUNTING" since it has the shared dictionary structure.

```
*   >CREATE-FILE DATA DEPT,MAINTENANCE  57,1  [CR]
```

Creates a new DATA section called "MAINTENANCE" for the dictionary DEPT. This data file will have to be referenced as "DEPT,MAINTENANCE".

* * * * *

CREATE-PFILE

Follows the same format and works the same as CREATE-FILE, except that it creates a DC pointer in the Master Dictionary.(1)

* * * * *

CROSS-INDEX file-name item-list

Produces a cross-reference of Assembly source code in specified file-name item-list and places it in a system file. (For PICK systems with Assemblers only.)(2)

CT file-name item-list {(options)}

Copies specified item(s) to the terminal. COPY verb options may be used.(0)

* * * * *

DATE {internal-date} {external-date}

Displays current date. If followed by internal date, will translate and display external date in dd/mmm/yyyy format. If followed by external date, will translate and display the internal date.

* * * * *

DATE-FLAG I or U

When I is specified, changes all date formats to International format (dd/mm/yy) for date conversion. When U is specified, changes all date formats to U.S. format (mm/dd/yy) for date conversion. U = default.(S)

* * * * *

DELETE file-name item-list {(I)}

Deletes specified item(s) from specified file. If (I) is specified, listing of item-ids is suppressed.(1)

* * * * *

DELETE-ACCOUNT

Deletes an account and all its files from the PICK system. Account name will be prompted for.(S)

DELETE-ACCOUNT runs the program DEL-ACC in SYSPROG-PL. The BASIC program removes the SYSTEM D-pointer for the account and puts it in SYSPROG's MD. Then it removes all D-pointers to data files from all the dictionaries on that account and places them in the account's MD. The program then calls on the DELETE-FILE verb which deletes the account's MD, plus all dictionary and data-level files for that account from SYSPROG's MD. Requirements to run DELETE-ACCOUNT:

1. You must be logged on to SYSPROG.
2. SYSPROG must have Q-pointers to the MD of the account and to SYSTEM.
3. D-items must exist in DICT SYSTEM for SYSPROG and the account name.
4. SYSPROG must have access to SYSTEM and all files on the account to be deleted.

All users should log off before running DEL-ACC because an item in the SYSTEM dictionary will be deleted. The DEL-ACC program produces a listing of all files being deleted.

DELETE-ACCOUNT (Continued)

An example of DELETE-ACCOUNT usage:

```
>DELETE-ACCOUNT                          PROC name is typed at TCL.
ACCOUNT NAME ?SHERRY
FILES TO BE DELETED IN ACCOUNT SHERRY     02 APR 82      PAGE 1

FILE              BASE     MODE    SEP

MD                34593    37      1
GEN/LED           85344    1       1
GEN/LED           49911    231     1
BP                44319    17      5

DO YOU STILL WANT TO DELETE THE ACCOUNT ?YES    Must start with 'Y'
```

* * * * *

DELETE-FILE file-name
or DICT file-name
or DATA file-name{,data-name}

Deletes specified file dictionary and all its associated data files. DICT form deletes a file dictionary that does not have an associated data file. DATA form will delete only the data file(s). If the file to be deleted is one of multiple data files using the same dictionary, the unique data-name must be specified.(1)

To delete a file-level dictionary and ALL its attached data file(s), use the command:

```
DELETE-FILE file-name.
```

To delete a file-level dictionary without an attached data file, use the command:

```
DELETE-FILE DICT file-name.
```

In both cases, the file-definition item (D-pointer) in the user's Master Dictionary is deleted, and the space owned by the deleted file is returned to the available space pool. Note that DICT cannot be deleted if it contains a 'D' pointer. The DATA file must be deleted first.

To delete the data file, the following command is used:

```
DELETE-FILE DATA file-name{,data-name}.
```

DELETE-FILE (Continued)

This will delete the pointer to the data file from the file-level dictionary and return the space owned by the data file to the available space pool. The parameter "data-name" is necessary to delete a file from a dictionary with multiple data files.

Files that are defined by file-synonym definitions (Q-pointers) in the user's MD cannot be specified in a DELETE-FILE command.

DELETE-FILE examples:

* >DELETE-FILE INVENTORY [CR]

Deletes the INVENTORY dictionary and all associated data files.

* >DELETE-FILE (DICT TEST/FILE) [CR]

Deletes the dictionary TEST/FILE. If there are any data sections associated with this dictionary (i.e., if there are any D-items in the dictionary), this command is not valid. (Use of parentheses is optional.)

* >DELETE-FILE DATA DEPT,ACCOUNTING [CR]

Deletes the DATA section ACCOUNTING from the shared dictionary structure whose shared dictionary name is DEPT.

DIVD number1 number2

Divides decimal number1 by decimal number2 and displays result.(0)

* * * * *

DIVX number1 number2

Divides hexadecimal number1 by hexadecimal number2 and displays result.(0)

* * * * *

DTR {base} number

Converts decimal number to specified base. Default base = 16.(0)

DTX {base} number

Converts decimal number to specified base. Default base = 16.(0)

* * * * *

DUMP n1{-n2}, {options}

Dumps data within a frame or from absolute core locations. Beginning and ending frame FIDs or core location numbers are specified in n1 and n2 parameters. Decimal or hexadecimal numbers may be used with hex numbers preceded by a period (.).(2)

Options

C	Core dump. A 512-block starting at n1 modulo 512 is dumped; n2 is ignored. Automatically sets X (hex) option.
G	Group. Dump starts at frame n1 and follows forward on backward link (depending on whether U option is set or not). Dump terminates when last frame in logical chain found.
L	Links. Dump confined to links of frames specified, no data displayed.
N	No page pause if dump to terminal.
P	Dump to printer.
U	Data or links traced logically upwards (backward links used to continue display).
X	Dump in hexadecimal and character format.

The DUMP verb may be used to display data in a frame or to display absolute core locations. The data display may be specified in either character or hexadecimal format. Options are specified like normal statement options, as single characters, optionally separated by commas. Example of the use of DUMP:

```
>DUMP 6950,L  [CR]
 FID:    6950 :    0    6967     0  0   (  1B26 :   0    1B37     0     0 )
+FID:    6967 :    0       0  6950  0   (  1B37 :   0       0  1B26     0 )
```

In the above example, the display indicates that 6950 is the FID whose links are being dumped; the "nncf"* field is 0; the "forward link" field is 6967; the "backward link" field is 0; the "npcf"** field is 0. Data in parentheses are the same numbers displayed in hexadecimal. The next line displays the link fields of FID 6967; the "+" indicates that this FID is logically "forward" of the preceding one.

*nncf = Number of next contiguous frames (count of frames that are linked forward of this frame, whose FIDs are sequential to this FID).
**npcf = Number of previous contiguous frames (count of frames that are linked backwards to this frame, whose FIDs are sequential to this FID).

ECHO

Suppresses printing on terminal. Use as on/off switch.(0)

The function of this verb is to toggle the switch in each user's PIB indicating whether or not characters typed in are to be echoed to the terminal. Thus, typing ECHO in normal mode will cause all further typing to be echo-suppressed. Similiarly, typing ECHO in suppressed mode will cause echoing to resume.

The user may also force a particular echo status. Typing ECHO (I) will force echo suppression, just as ECHO (L) will force echoing.

* * * * *

EXCHANGE file-name new-item-id old-item-id

Renames item-id.(0)

* * * * *

FILE-SAVE

Saves system on tape or cartridge disk. Will automatically execute SAVE verb with D,F,L,S,T options (see SAVE). Also performs a T-REW on 1/4" and 1/2" tape and cartridge disk.(S)

PICK can save the entire disk data base on tape or cartridge disk and restore the tape or cartridge disk copy, entirely or selectively, to disk. It is this procedure that provides backup in the event of a catastrophic failure or error.

The FILE-SAVE procedure creates an off-line copy of the data base on tape or cartridge disk. Either device is an inexpensive commodity when compared to the time and effort invested in your data base. It is vital that you protect that investment through adequate backup. As a minimum practice, you should have separate daily backup sets for one week's time and a monthly backup for each month in the year.

Some situations may also need a weekly backup cycle for the past month. That is, use a separate tape- or cartridge disk-set for each day of the week, one for each week of the month, and one for each month of the year. The longer cycle sets should be stored off premises to provide protection in the event of physical damage such as fire.

Note that the cartridge disk must be formatted before using the first time.

The FILE-SAVE procedure requires that you mount the media that is to save your data, and then LOGON to the SYSPROG account. The FILE-SAVE verb calls a PROC which sets up a sentence using the SAVE verb.

FILE-SAVE (Continued)

The general form of the SAVE verb is:

SAVE {(options)}

Options	Meaning
D	Data area is saved. This option must be present if any files are to be saved.
F	File names are printed. If (F) is not specified, just the SYSTEM file and account-names are listed.
I	Individual account saved. The prompt "ACCOUNT NAME:" is given.
L	Suppresses prompting for GFEs, logs them in GFE and STAT files.
N	No overflow space is required to run the SAVE. This makes it possible to perform a FILE-SAVE on a system that has no overflow space available. NOTE: If there are more than 1500 files on the system, one (1) frame of overflow space will be needed for every 125 files above 1500.
P	Output (list of file names) goes to the line printer. If (P) is not specified, all output goes to the user's terminal.
S	STAT-FILE items are stored, one for each file saved. Must be present if a STAT-FILE listing is made after the FILE-SAVE.
T	Output to tape or cartridge disk. If the (T) option is not specified, nothing will be written on tape or cartridge disk. However, the STAT-FILE will be generated if the (S) option is used.

Files whose file definition items have a "DX" in attribute 1 will not be saved. Thus, any data file, dictionary or even an entire account, may be prevented from taking up space on the FILE-SAVE media.

Files whose file definition items have a "DY" in attribute 1 will be saved, but none of the items in the file or sub-files will be saved. The data section of the STAT-FILE, for instance, has a "DY" code because the data is not valid after a file-restore and need not be saved.

FILE-SAVE (Continued)

To prevent erroneous Group Format Error (GFE) messages from occurring on other lines while the FILE-SAVE is running, the SAVE processor locks groups as it saves them. Up to four groups may be locked at one time by a file-save process. These groups would be the ones containing:

1. The SYSTEM dictionary pointer for the account being saved.

2. The file dictionary pointer for the dictionary of the file being saved. This would be a group in the account's MD.

3. The group in the data file of the ACC file.

4. A group in the dictionary of the ACC file.

If a user on another line tries to access data in a locked group, his terminal will hang until the file-save process finishes saving all the items in that group and unlocks it. If the (T) option is specified, the SAVE processor will prompt the user's terminal:

```
FILE-SAVE TAPE LABEL =
```

The response will be written on the tape or cartridge disk as part of the tape or cartridge disk label.

A program has been created to allow you to customize the FILE-SAVE proc for a more versatile system. To run the program, execute the following TCL command from SYSPROG:

```
>RUN SYSPROG-PL CREATE-FILE-SAVE
```

The following will be displayed:

```
                CUSTOMIZE FILE-SAVE PROC CREATOR
```

Enter Y or N to the following prompts if you want them in the FILE-SAVE proc:

```
DO YOU WANT A LISTING TO THE PRINTER (Y,N)?
Enter Y or N=[CR]:
```

Answer this the same way as for the previous prompts, and do the same for the following:

```
ENTER TIME TO START FILE-SAVE OR (RETURN) FOR IMMEDIATELY:
Enter Y or N=[CR]:
```

FILE-SAVE (Continued)

You will then be asked whether or not you would like to have a spooler assignment for any type output placed in the FILE-SAVE PROC.

Enter Spooler Assignment (i.e., SP-ASSIGN HS) or (RETURN):

This will give you the option of preassigning the spooler assignment, or if you enter (RETURN), of having no spooler assignment in the PROC and defaulting to what was previously set up. This option, however, requires you to type in the complete SP-ASSIGN verb, like in the preceding example. The next inquiry allows you to select whether or not you wish the FILE-SAVE to stop on a Group Format Error, or not to stop on any Group Format Errors, but to log them into the STAT-FILE and the GFE files. (It does this by adding the option "L" to the SAVE verb in the PROC.) Once all the questions have been answered, the program will move the previous FILE-SAVE proc to an item called OLD-FILE-SAVE in the SYSPROG-PL file, and create a new FILE-SAVE proc. Now, when the new FILE-SAVE proc is run, whatever new prompts have been added will be displayed.

A second, newer FILE-SAVE PROC called NEW-FILE-SAVE has also been created. It includes additional options which allow specification of FILE-SAVE media, time to start the FILE-SAVE, and a request for a File-Stat Report. These options will be prompted for by the PROC.

If you wish to use this new PROC in place of the old one, COPY NEW-FILE-SAVE to FILE-SAVE and include the overwrite option in your statement. If you wish to return to using the previous PROC, it can be obtained from SYSPROG-PL where it is named ORIG-FILE-SAVE.

* * * * *

GROUP file-name {(options)}

Displays base FID of each group of specified file, lists each item-id in group with hexadecimal character count of each item. At end, lists total number of item, bytes, and number of full frames divided by number of bytes in last frame of group.(0)

Options

I Suppresses output of null groups.

P List on printer.

S Suppresses item list.

INIT-CURSOR

Initializes the terminal characteristics for all terminal types as defined in the CURSOR file.(S)

* * * * *

ITEM file-name item-id {(options)}

Same as GROUP except displays statistics for group into which specified item-id hashes.(O)

This command displays the base FID of the group into which the specified item-id hashes. If the item is not already on file, the message "ITEM NOT FOUND" is displayed.

In addition, every item-id in that group is listed along with a character count of the item (in hex).

At the end of the list, the following message is displayed:

n ITEMS m BYTES p/q FRAMES

where:

n is the number of items in the group

m is the total number of bytes used in the group

p is the number of full frames in the group

q is the number of bytes used in the last frame of the group

Valid options for this command are as follows:

P Direct output to line printer.
S Suppress item list.

ITEM (Continued)

An example of the use of the ITEM command:

```
>ITEM MD A  [CR]

27121
0022 FILE-DOC
001C bd
0009 A
0011 T-ATT
000F DUMP
0018 B/ADD
000F DIVX
0014 EDIT-LIST
0028 V/CONV
0022 LISTU
0019 V/MIN
0018 ACCOUNT-RESTORE
001D D/CODE
0028 SL
0023 INST-INDEX
0047 SAL
0072 TB
000E SAVE
18 ITEMS 591 BYTES 1/91 FRAMES
```

* * * * *

LINK-WS {(n)} or {(n-m)}

Links work space for all lines not logged on. A line number or range of line numbers may be specified.(2)

* * * * *

LIST-FILE-STATS

Lists statistics from STAT-FILE for every account on the system. Gives base, modulo, separation, number of items, number of frames, average item, frame group and percentage of space utilized for each account. Printer copy and detail suppress may be specified through system prompts.(S)

LIST-ITEM file-name {item-list}{(options)}

Lists items from specified file-name on terminal (or printer if (P) option specified) in COPY verb format.(0)

Options

A	Assembly MLIST format used (for Assembler programs).
D	Deletes original after copy.
F	Form-feed. Copy each item on terminal or printer onto new page.
I	Item-ids suppressed in file copy.
M	Macro Assembly format used (for Assembler programs).
N	New items not copied to destination file unless items already exist there.
N	No page wait on terminal.
n	Integer number indicates number of items to copy.
O	Overwrite. Copies items to destination file even if they already exist there.
P	Printer is copy destination.
S	Suppresses error messages on file copy indicating that items were not copied.
S	Suppresses line numbers on terminal or printer copy.
T	Terminal is copy destination.
X	Hexadecimal format used on terminal or printer copy.

* * * * *

LIST-LOCKS

Lists locations of all locks currently set on PICK system including BASIC execution locks.(0)

* * * * *

LISTACC {account-name(s)}

Lists accounting data for account(s) specified. If no account-name(s) are specified, accounting data for all users will be listed.(0)

* * * * *

LISTACCT

Lists all accounts on system, giving account-name, code, base, modulo and separation for each account.(S)

LISTC file-name {selection-criteria}

Prints item-ids for file-name in four columns on the terminal.(0)

* * * * *

LISTCONN {(P)}

Sorts and lists all connectives in any dictionary on the terminal (or printer, if (P) is specified).(0)

* * * * *

LISTDICT {file-name}{(P)}

Sorts and lists dictionary attribute items on terminal (or printer if (P) is specified). If file-name not specified, Master Dictionary items are listed.(0)

* * * * *

LISTERRS

Lists system errors on terminal.(S)

* * * * *

LISTFILES {file-name}{(P)}

Lists files for file-name specified on terminal (or line printer if (P) is specified). If no file-name given, Master Dictionary files are listed.(0)

* * * * *

LISTPROCS {file-name}{(P)}

Lists all PROCs in user's Master Dictionary or in specified file on terminal (or printer if (P) is specified).(0)

* * * * *

LISTSYNS {(P)}

Lists all synonym definition items on terminal (or printer if (P) is specified).(0)

LISTU{SERS}

Lists current and recent users on the system and gives logon date, time and location.(0)

* * * * *

LISTVERBS {file-name}{(P)}

Lists all verbs in user's Master Dictionary or in specified file on terminal (or printer if (P) is specified). PROCs are not included.(0)

* * * * *

LOCK-FRAME frame-number

Locks a frame in memory and displays location at which frame is locked. Specify frame-number in decimal.(2)

The LOCK-FRAME verb responds with the absolute hexadecimal work address of the memory buffer in which the frame is core locked.

The frame remains core locked until it is released by the UNLOCK-FRAME verb (of the same general form) or by a RESET from the system front panel, which releases all memory frames locked by the LOCK-FRAME verb.

* * * * *

LOGOFF n{(U)}

Logs off account on port number n. For unconditional logoff, use (U) option.(2)

* * * * *

LOGON n,account-name

Logs on specified account-name to specified port number n.(2)

LOGTO account-name

Ends current logon session and logs on to new account-name specified. If the new account is password protected, the prompt "PASSWORD:" will be given, and a valid password must be supplied.(0)

If the account name is illegal, the message "USER ID?" will be printed and the user will be back at TCL. If the password is incorrect, the message "PASSWORD?" will be displayed and the user will be back to TCL.

If the account name and password are both correct, the current logon sessions will be terminated by updating the accounting file with the appropriate statistics and a new session started. The message:

<<<CONNECT TIME = n MINS.; CPU = m UNITS; LPTR PAGES = x >>>

will be displayed.

Note that it is possible to enter the form "account-name, password" on one line, but then the password will not be masked on entry.

Also, the tape or cartridge disk unit and line printer will be detached if the user had them attached to this line prior to the LOGTO.

* * * * *

LOOP-ON verb

Causes a TCL verb to repeat indefinitely.(0)

* * * * *

MESSAGE destination-account text
or !line-number text

Sends specified message text to specified account or line-number. An asterisk (*) in place of destination account or line number (i.e., !*) sends the message to all users who are logged on or to all terminals whether logged on or not.(2)

The message text is not edited in any way; there is no "options" parameter in the MESSAGE statement. The form MSG may be used instead of MESSAGE.

Note that ALL users who are logged on to the specified destination-account will receive the message.

MESSAGE (Continued)

Users can broadcast a message to all users by substituting an asterisk (*) for the "desination-account" in the MSG statement. This message will be received by the sending user's terminal also.

A user who was entering data when a message is received will lose up to 16 characters due to the interference of the message; he should use the Control-R to see exactly what data is left. Some examples:

```
>MSG MARY*A0001 WHAT'S THE STATUS OF THE INVENTORY REPORT??? [CR]

>MESSAGE JONES HELLO THERE!"%%%%'''% [CR]

USER NOT LOGGED ON                          (JONES is not logged on).
```

MESSAGE and MSG verbs may direct a message to a particular terminal by preceding the line number with an exclamation mark (!). This form of the verb sends messages to terminals whether logged on or not. The user may send a message to all terminals by using the form MSG!*. For example:

MESSAGE !12 HELLO	Sends the message 'HELLO' to the user on line 12.
MSG !* SIGN OFF NOW	Sends a message to all terminals connected to the computer.

* * * * *

MLIST file-name item-list {(options)}

Makes an Assembly source code listing of specified item-list.(2)

Options

E	Lists only error lines.
M	Lists Macro expansions.
n{-m}	Limits listing to beginning and ending line numbers specified.
P	Lists on printer.
S	Suppresses object code listing.
Z	Will not enter EDITOR if used with E option.

MLOAD file-name item-list {(options)}

Loads assembled object code into an address in memory defined in the routine.(2)

Options

N	Returns checksum data on item but does not load item.
V	Verifies mismatches and errors only.

* * * * *

MSG destination-account text
or
MSG !line-number text

Sends specified message text to specified account or line number. An asterisk (*) in place of destination account or line number (i.e., !*) sends the message to all users who are logged on or to all terminals whether logged on or not. See MESSAGE.(2)

* * * * *

MULD number1 number2

Multiplies two decimal numbers and displays result.(0)

* * * * *

MULX number1 number2

Multiplies two hexadecimal numbers and displays result.(0)

* * * * *

MVERIFY file-name item-list {(options)}

Verifies assembled object code in memory with corresponding item-list in specified file-name.(2)

Options

A	Lists all mismatches.
E	Lists errors only.

OFF

Logs off system.(0)

* * * * *

P

Suppresses printing of output on terminal. Use as on/off switch.(0)

* * * * *

PASSWORD {(I)}

Changes, enters, or deletes a password from an account. If (I) is specified, password will not be echoed on terminal when entered. System will prompt for account name and new password. To delete a password, enter a null entry to new password prompt. System will then prompt to confirm deletion. Only SYSPROG may add or delete a password. (S) A user may change his own password if it already exists in his account.(1)

* * * * *

POKE n,input-data

Allows you to input up to a line of data on a terminal connected to a port other than your own. You must specify a port number (n) which may not be your port.(1)

* * * * *

POVF {(P)}

Displays overflow space (available contiguous frames) on terminal (or printer if (P) is specified).(0)

The POVF verb displays the contents of the system overflow table. The P option forces all printed output to the line printer. The first line of output is the FID of the first frame in linked overflow, followed by the number of frames in the linked chain. The next lines (up to 16) describe blocks of contiguous overflow and have the following format:

m - n : p m - n : p m - n : p

where:

m	is the first frame of a contiguous block
n	is the last frame of the block
p	is the number of frames in the block

The total number of frames contained in all the contiguous overflow is then printed (using error message #293): TOTAL NUMBER OF CONTIGUOUS FRAMES:number.

PRIME

Tells you whether or not a number is prime. System will prompt for number. If not prime, it will also prompt for 'H' and 'L' and give you the next higher or lower prime number.(0)

* * * * *

PRINT-ERR file-name item-list

Displays specified error-message, when file-name is ERRMSG and item-list is error message number.(0)

The PRINT-ERR verb allows the user to invoke the error message processor from TCL. The error messages specified in the item-list will be processed with a parameter list of A,B,C,D... For example:

```
>PRINT-ERR ERRMSG 201  [CR]
[201] 'A' IS NOT A FILE NAME

>PRINT-ERR ERRMSG 289

             TERMINAL PRINTER
PAGE WIDTH:      A        B
PAGE DEPTH:      C        D
LINE SKIP:       E
LF DELAY:        F
FF DELAY:        G
BACKSPACE:       H
TERM TYPE:       I
```

* * * * *

PRINTRONIX {number of lines on page}

Sets number of lines per page on PRINTRONIX printer. (Lines per page = lines per inch x page length.) System will prompt if number not specified.(1)

PICK is provided with a BASIC program, PRINTRONIX, which can be used to set up the Electronic Vertical Feed Unit (EVFU) on a PRINTRONIX line printer. PRINTRONIX is included in R80 as part of the system software, and is a verb included in the master dictionary. It expects to be called with one numeric parameter which may be either included in parentheses or without parentheses. The numeric parameter is the specification of the number of lines per page which the printer will use as it counts the number of lines it has output so that, when it encounters a form-feed character, it will eject the correct number of lines. If there is no numeric parameter included with the verb, then the user will be prompted with the following message:

```
NUMBER OF LINES:
```

PRINTRONIX (Continued)

You should then enter the number of lines per page of paper, where the number of lines per page is the number of lines per inch set on the printer times the length of the paper in inches. For example:

PRINTRONIX 66	Sets the EVFU to 66 lines per page. This is suitable for 11 inch paper at 6 lines per inch.
PRINTRONIX (88)	Sets the EVFU to 88 lines per page, which is suitable for 8 lines per inch.
PRINTRONIX	will yield the prompt.
NUMBER OF LINES:	which is to be followed by the number of lines per page.

The verb generates a very short print file which is simply a control string known to the printer. In order to be effective, the print file must then be enqueued for output to the printer. When this print file is "printed", the EVFU will be set to the specified number of lines per page. Normally, this will be done when the paper is changed and the output queue specification for the printer is changed by use of the STARTPTR verb.

The PRINTRONIX verb does not handle the number of lines per inch because it is not completely controllable from software.

* * * * *

PVERIFY file-name item-id

Verifies BASIC object code.(0)

* * * * *

RESET-CURSOR

Cancels terminal characteristics set by INIT-CURSOR.(S)

* * * * *

RESET-PORT n

Cleans a "road blocked" condition caused by hardware or software on port number n.(S)

* * * * *

RESET-TERM

Resets terminal characteristics to those set by previous SET-TERM command.(0)

* * * * *

RTD {base} number

Converts a number from base specified to its decimal equivalent.
Default base = 16.(0)

S-DUMP {DICT}file-name{item-list}{selection-criteria}{HEADER"name"}
{sort-keys}{modifiers}{(options)}

Sorts and dumps (writes) a specified file onto magnetic tape or cartridge disk. If tape or cartridge disk is at the load point, writes a label before start of file. Writes an EOF mark on tape or cartridge disk after dump.(1)

DICT:	If used, dictionary section of file will be dumped; no file definition items will be dumped.
file-name:	Name of source file. Must be specified.
item-list:	Items to be dumped. Give individual item-ids in quotes. If not specified, all items dumped.
selection-criteria:	Selects only certain items to be dumped.
HEADER"name":	If used, the name of the specified file in the form "{DICT}file-name" will be added to the standard tape or cartridge disk label.
sort-keys:	ACCESS sort-keys may be used to specify order of the sort. If not specified, sort is in ascending order of item-ids.
modifiers:	HDR-SUPP - Suppresses writing of standard tape or cartridge disk label ID-SUPP - Suppresses listing of item-ids on terminal
options:	H - Suppresses writing of standard tape or cartridge disk label I - Suppresses listing of item-ids on terminal

The S-DUMP verb format is the same as T-DUMP except that it allows sort-keys as well. The form and operation of sort-keys, item-list, and selection-criteria are described in the PICK ACCESS Manual. The item-list and selection-criteria parameters select a subset of the items in the specified file which are to be written to tape or cartridge disk. The HEADER parameter is used to include the "name" in the label written at the start of the file. See the T-DUMP section, Generating Tape or Cartridge Disk Labels. The file-name may be preceded by the DICT modifier to dump dictionary data. File definition items (D-items) will not be dumped. An EOF mark is written to the tape or cartridge disk at the completion of S-DUMP. Like in other ACCESS statements, each item-id must be enclosed in double quotes. An example of S-DUMP:

```
S-DUMP FILES
```

This command will sort the file FILES into ascending sequence by item-ids, transfer the file to tape or cartridge disk, list the item-ids on the terminal, and write an EOF mark at end of file.

NOTE: A cartridge disk must be formatted before it is used for the first time.

SAVE (options)

Saves all files on system. Options may be specified in any order and separated by spaces or commas. See FILE-SAVE for a discussion of SAVE procedure.(2)

Options

D Saves data areas of all files on system. D must be specified to activate verb.

F Lists all file names. If omitted, only SYSTEM file and account names listed.

I Individual account saved. The prompt "ACCOUNT NAME:" is given.

L Suppresses prompting for GFEs. Logs them in GFE and STAT files.

N No overflow space is required to run the SAVE. This makes it possible to perform a FILE-SAVE on a system that has no overflow space available. NOTE: If there are more than 1500 files on the system, one (1) frame of overflow space will be needed for every 125 files above 1500.

P Outputs file-names on printer. Default: terminal.

S STAT-FILE items stored for each file saved. Use if STAT-FILE listing is made after SAVE.

T Outputs SAVE on tape or cartridge disk. Note that a cartridge disk must be formatted before it is used for the first time.

* * * * *

SEL-RESTORE file-name {item-list}{(options)}

Loads individual file or items from FILE-SAVE or ACCOUNT-SAVE media onto system. System will prompt for ACCOUNT-NAME ON TAPE and FILE NAME, and the account-name under which the file or items were saved on tape or cartridge disk and the name of the file on tape or cartridge disk should be entered.(1)

file-name: The name of the file in which the restored items will be placed. Must be defined on account doing the SEL-RESTORE.

item-list: Lists only those items which are to be restored. An asterisk (*) may be used to specify all items.

SEL-RESTORE (Continued)

options: A - Tape or cartridge disk is already positioned in desired account. (ACCOUNT NAME ON TAPE prompt will not appear.)

C - Restores every item on tape or cartridge disk until next EOF. Must be used with N option.

I - Suppresses printing of item-ids of restored items.

N - File on tape or cartridge disk will be identified by file number. Prompt will be: FILE#?. The number which is shown for the file on the STAT-FILE printout for the appropriate FILE-SAVE should be entered.

O - Overwrites duplicate items.

S - Skips label search on tape or cartridge disk.

The Selective-Restore capability allows individual files or items to be loaded onto a PICK system from a file-save tape or cartridge disk. This verb is used to restore items from either FILE-SAVE or ACCOUNT-SAVE media.

Selective restores are performed as follows:

1. Log on to the account with the file to be restored.

2. Mount the tape or cartridge disk.

   NOTE: Selective-restores may be started from any tape or cartridge disk of a multi- tape or cartridge disk file save. To save time in searching a tape or cartridge disk, the STAT-FILE listing may be consulted to determine which reel or cartridge the file's data starts on, and that reel or cartridge may be mounted. A SEL-RESTORE may be started at any place on any reel or cartridge of the file-save media. Any coldstart or ABS sections will be skipped automatically.

3. Attach the tape or cartridge disk unit (T-ATT).

4. To start the restore, enter:

   >SEL-RESTORE file-name {item-list} {(options)} [CR]

   where:

   file-name is the file in which items will be placed. This file must be defined on the account from which the restore is run. The optional item-list enumerates those items eligible for restore. A '*' symbol may be used as the item-list to indicate all items on the tape or cartridge disk.

SEL-RESTORE (Continued)

The options are:

A The tape or cartridge disk is already positioned in the desired account. In this case, the "ACCOUNT NAME ON TAPE" prompt will not appear.

C This option has effect when the 'N' option is used. It causes every item before the next end of file to be a candidate for restore. This ensures that data can be restored even if a D-pointer is damaged on the tape or cartridge disk.

I The item-ids of the restored items will not be printed.

N The file is to be identified on tape or cartridge disk by its file number, in which case the prompt will be FILE#?. The required file number is the one which accompanies the file on the statistics file printout for the appropriate file-save.

O Overwrites duplicate items.

S Skips label search of the tape or cartridge disk. This is used when beginning at the second or later reels or cartridges of a file-save.

If the N option is not used, the operator will be prompted:

```
ACCOUNT NAME ON TAPE?account-name

FILE NAME?file-name
```

where 'account-name' is the name of the account under which the file was saved on tape or cartridge disk, and 'file-name' is the name of the file as it appears on the tape or cartridge disk. Entering [CR] to 'FILE NAME?' causes the account Master Dictionary to be restored. The file-name may be of the form file-name, DICT file-name, or file-name,data-name.

If the N option is used, the prompt will be:

```
FILE #?
```

and the file-number must then be entered.

As the media is searched, the file-names on it are printed along with the file-numbers; names are indented one space for account-names, two spaces for dictionaries, and three spaces for data-file-names.

SEL-RESTORE (Continued)

If a STAT-FILE listing for the tape or cartridge disk is available, ensure that the account-name and file-name are on the media in the form you want. In the case of multiple D-pointers in the SYSTEM dictionary to an account, or multiple D-pointers in the MD to the file, the account-name or file-name on the tape or cartridge disk will be the first one the save processor encounters, and may be different from the one you commonly use. All other names will appear in the STAT-FILE listing with no data (null SIZE field), and cannot be specified in the SEL-RESTORE.

If in doubt about the contents of the tape or cartridge disk, the files can be listed by using a SEL-RESTORE of the form:

```
>SEL-RESTORE TEMP *

ACCOUNT-NAME ON TAPE?  XXXXX

FILE-NAME?  YYYYY
```

where XXXXX and YYYYY are fake names that will cause the SEL-RESTORE to search the media for non-existent data. Files will be printed out as encountered along with the file-numbers. Files with an (S) are synonyms and should be ignored.

In restoring both the dictionary and data section of a file, restore the dictionary first (DICT filename). Remember that the dictionary items follow the data items, so for large files, there may be a considerable pause after the time that the system has found the file (it stops the printout) and the actual restore of the items.

At any point, the tape or cartridge disk may be backed up (T-BCK (n)), or forward-spaced (T-FWD(n)) to position it, and a SEL-RESTORE with the A or N options may be started; this may be faster than restarting the tape or cartridge disk from the beginning when restoring both the dictionary and the data sections of a file, or when restoring multiple files.

Remember also that account dictionaries (MD items) follow all other files for the account on the tape or cartridge disk.

To restore the Q-pointers in the SYSTEM dictionary, use the N option with FILE# = 1. Remember that this will be the last file on the tape or cartridge disk. On a multi- reel or cartridge file-save, mount reel or cartridge #1 first, and start the SEL-RESTORE as usual; when the file-name "SYSTEM" has printed out, use the BREAK key to interrupt the restore, then mount the last reel or cartridge of the set and type "G[CR]" to continue the process. This saves searching the entire first and any intermediate tape reels, tape cartridges, or cartridge disks.

SET-1/2 {n}{U}

Tells system you are using 1/2" tape and attaches drive at block size 4000 unless otherwise specified by n (n must be $\leq$ 16384). Users with SYS2 privileges can use 'U' to unconditionally attach drive.(1)

* * * * *

SET-1/4 {n}{U}

Tells system you are using 1/4" tape and attaches drive at block size 4000 unless otherwise specified by n (n must be $\leq$ 8192). (A block size of more than 8000 bytes is not recommended.) Users with SYS2 privileges can use 'U' to unconditionally attach drive.(1)

* * * * *

SET-BAUD a,b,c,d

Changes baud rate of communication ports for terminals and printers. (Default baud rate: 9600.)(2)

- a: port or channel number to which the terminal or printer you wish to change is physically connected. If a is not specified, the baud rate of the line currently being used will be changed.
- b: new baud rate.
- c: parity (E = even, M = mark, 0 = odd).
- d: word size (must be > 0 and < 9).

Note that only the baud rate can be changed on ports 0 and 1.

* * * * *

SET-CD{U}

Tells system you are using cartridge disk and attaches drive at block size 1024. Users with SYS2 privileges can use 'U' to unconditionally attach drive.(1)

* * * * *

SET-CT {n}{U}

Tells system you are using 1/4" tape and attaches drive at block size 4000 unless otherwise specified by n. (A block size of more than 8000 bytes is not recommended.) Users with SYS2 privileges can use 'U' to unconditionally attach drive.(1)

SET-DATE date

Changes current system date to date specified.(2)

* * * * *

SET-FILE account-name file-name

Creates an entry in MD with Q-pointer to enable access to file in another user's account. If other user does not have security locks on this file, you may read and/or write on the file. However, it may not be deleted.(1)

account-name: name of account containing file.

file-name: name of file to access.

* * * * *

SET-LPTR

Lets you reset printer width and depth. System will prompt for width in number of columns and depth in number of lines per page. (This can also be reset by using SET-TERM and TERM commands.)(0)

* * * * *

SET-MT {n}{U}

Tells system you are using 1/2" tape and attaches drive at block size 4000 unless otherwise specified by n (n must be $\leq$ 16384). Users with SYS2 privileges can use 'U' to unconditionally attach drive.(1)

* * * * *

SET-SYM file-name {(T)}

Sets symbol file pointer for use by system debugger. (File-name usually PSYM.) Secondary file pointer may be set to TSYM file by specifying (T).(0)

SET-TERM term-width, term-depth, line-skip, lf-delay, ff-delay, backspace, printer-width, printer-depth, term-type

Displays and sets default terminal and printer characteristics for the entire system. Parameters are positional; use commas to indicate null values and previously defined values will default.(2)

term-width:	Number of character positions on terminal line.
term-depth:	Number of print lines on terminal page.
line-skip:	Number of blank lines on terminal page.
lf-delay:	Number of delay characters after line feed.
ff-delay:	Number of delay characters after top-of-form.
backspace:	Backspace character's ASCII number.
printer-width:	Number of character positions on printer page line.
printer-depth:	Number of print lines on printer page.
term-type:	Terminal type code for cursor functions:

L = LEAR-SIEGLER ADM-11, ADM-12
M = AMPEX, DIALOGUE 80
T = TELEVIDEO 925, 950
V = ADDS VIEWPOINT
X = No cursor addressing functions needed.

* * * * *

SET-TIME time

Sets your system time to time specified. Time should be entered in either "hh:mm:ss" or "hh:mm"format.(2)

* * * * *

SLEEP time

Puts terminal in a quiescent state for or until a specified time.(0)

time: a decimal number specifying the number of seconds to sleep; or the form "hh:mm:ss" or "hh:mm", which specifies the time until which to sleep in 24-hour format.

SLEEP is useful to cause a terminal to wait until some time to run a task (i.e., the FILE-SAVE may be run at 23:00 (11:00 PM) every night). For example:

```
>SLEEP 100  [CR]        (terminal will sleep for 100 seconds)
>SLEEP 23:00  [CR]      (terminal will wake up at 11:00 PM)
```

The form of SLEEP with a wake-up time is usable for a maximum of 24 hours.

SORTC file-name {selection-criteria}

Sorts and prints item-ids for file-name in four columns on terminal.(0)

* * * * *

STACK-OFF
STACK-ON

Forces TCL stacker to be always OFF or ON. May be used in a PROC.(0)

* * * * *

STAT-RPT

Prints out a detailed report from STAT-FILE for every account on the system. Otherwise, the same as LIST-FILE-STATS.(S)

* * * * *

SUBD number1 number2

Subtracts decimal number2 from decimal number1 and displays result.(0)

* * * * *

SUBX number1 number2

Subtracts hexadecimal number2 from hexadecimal number1 and displays result.(0)

* * * * *

T-ASSIGN {device-type}

To be used with conversion box to assign and specify the amount of data to be written to the 1/4" tape device. If device-type is not specified, the device-type that is currently assigned will be displayed on the terminal. Only has effect on cartridge tape. Not valid for ZEBRA 750.(2)

Device-type:

A = ARCHIVE cartridge tape assignment (approximately 45MB)

D = DEI cartridge tape assignment (approximately 20MB)

T-ATT{n}{U}

Attaches tape or cartridge disk drive to user's process and specifies tape block size n. Default tape block size = 4000 bytes. The cartridge disk block size is always 1024 bytes (i.e., n is ignored). SYS users can unconditionally attach drive with 'U' option. Use before:

- tape or cartridge disk control verbs
- SP-ASSIGN T
- SP-EDIT T
- BASIC tape or cartridge disk reads and writes
- REFORMAT that specifies TAPE.(1)

The T-ATT command assigns the tape or cartridge disk unit to the terminal issuing the command. Other users will then be locked out. If the unit is attached to another line, the following message is displayed on the terminal:

TAPE ATTACHED TO LINE n

If attachment is successful, the following message is displayed:

TAPE ATTACHED BLOCK SIZE: n

If tape or cartridge disk was already attached to the process, the following message will occur:

BLOCK SIZE: n.

All tape or cartridge disk manipulation processes on the system will check for attachment, attach the device if possible, generate the required message, and terminate if the device is not available. However, if 'U' has been specified, the device will be unconditionally attached. (Any other line currently attached to the drive will be detached.) The implied T-ATT will use the line's current tape block size specification. If there is no specification, the default will be 4000 bytes. Once the line's tape block size is initialized after LOGON, it will persist until LOGOFF unless changed by the use of T-ATT.

Both implicit and explicit T-ATTachments leave a residue in the PROC secondary input buffer: error message number 90 and the current block size specification, if attachment is successful, and error message number 95 and the line to which the tape or cartridge disk is attached, if attachment is unsuccessful.

The tape block size specification for a given line starts at zero at LOGON. Zero means that there is no tape block size. It may be initialized explicitly, by the use of the T-ATT with a numeric argument; implicitly by the use of the T-ATT without a numeric argument, by using any tape verb which checks for tape attachment, or by executing the T-RDLBL verb when a labeled tape is mounted, in which case the tape block size specified in the tape label will be transferred to the tape record specification for the line. If cartridge disk is used, the block size will always be 1024 bytes. The maximum block size for 1/2" tape is 16384, and for 1/4" tape is 8192.

T-ATT (Continued)

Examples of the T-ATT {(N)} verb:

T-ATT	Attaches the tape or cartridge disk to the user's line if possible. If tape, the default block size of 4000 bytes is taken.
T-ATT (80)	Attaches the tape to the user's line if possible. Tape block size is 80 bytes.
T-ATT 4000	Attaches the tape to the user's line if possible. Tape block size is 4000 bytes (recommended).

Note that the numeric option can be used either with or without a left parenthesis.

T-ATT messages and responses:

Message	Meaning and Response
BLOCK SIZE: n	The tape or cartridge disk continues to be attached to your line. Proceed.
TAPE ATTACHED BLOCK SIZE: n	The tape is attached to your line. Proceed.
TAPE ATTACHED TO LINE n	The tape or cartridge disk is attached to another line. Check with the user of that line. Detach if reasonable and possible, then re-enter the T-ATT.

T-ATT error message pattern:

Condition	PROC Buffer Contents
Successful	90N where N is the tape or cartridge disk block size.
Unsuccessful	95N where N is the line to which the tape or cartridge disk is attached.

Tape Block Size. The T-ATT verb attaches the tape or cartridge disk drive to a user's process and specifies the tape block size. It allows the user to specify the length of the block sent to the tape on each write, or retrieved from the tape on each read. The default value is 4000 bytes, which is the most efficient size to use for 1/4-inch tape. The exceptional default is 500 bytes for the T-DUMP verb for backward compatibility. The range of allowed values is arbitrary, but may be taken to be from 80 bytes to 8000 bytes for the following reasons. A size larger then 8000 bytes is not recommended.

T-ATT (Continued)

Tapes are written with a fixed physical gap between records (or 'blocks' as they are called on the PICK Operating System) known as the Inter-Record Gap (IRG), thereby placing an upper limit on the number of blocks on a tape of given length. The length of each tape block is a function of the number of bytes per block, however. Therefore, increasing the block length increases the storage capacity of the tape.

Furthermore, since the tape drive starts and stops for each block, increasing block size decreases the number of records containing a body of data, decreases wear and tear on the tape drive, decreases processing time, and increases system throughput.

Because data files, items, and their elements are of variable length, the length of tape records has no influence on the contents of blocks of data written to tape or read from tape and vice versa. Thus, the tape routines automatically handle multiple item records and spanned item records. This compact protocol is used by system tape processors file-save and restore, and T-LOAD and T-DUMP. The various logical records and their elements are delimited with the usual system delimiters.

The protocol for the BASIC READT and WRITET are different. BASIC handles the tape by writing one tape or cartridge disk record for each logical record. This is useful when conversing with a fixed-length-record machine, and when storing data on tape or cartridge disk which is to be returned through a BASIC program. When conversing with a fixed-length-record machine, it is useful to define the tape record size so that it matches the length of the data being sent to it, and it is efficient to block the data being sent. Blocking data normally means the process of placing a well-known number of logical records of fixed and equal length in a single physical block for the convenience of the physical device on which it is to be stored. Retrieval of the data then requires deblocking into individual logical records.

The PICK tape and cartridge disk processor will supply one tape or cartridge disk record for each record sent by a WRITET instruction. If the data record overflows the tape or cartridge disk record, it will be truncated on the right and an error message will be issued. If the data record block does not fill the tape or cartridge disk records, the remainder of the last tape or cartridge disk record will be padded with blanks.

The Spooler process does not handle tape or cartridge disk. It is, however, possible for the user to define the magnetic tape block size for print files.

Note that print files are a continuous string of data, with lines delimited by carriage return (X'0D') and line-feed (X'0A') characters. Pages are delimited by form-feed (X'0C') characters. A line of a print file is stored through the last non-blank character. There is no padding of blanks on the right. The end of a print file is padded with nulls (X'00').

T-ATT (Continued)

This suggests that communication of a print file to a foreign machine requires the acceptance by the foreign machine of the four characters noted above, and that it not require fixed-length records. If there is some problem with this set of protocols, then use of the SP-EDIT process to transfer the print file to a data file, followed by the use of a BASIC program is suggested.

An alternative is to print a meaningless character in the far-right column of each line. The .HILITE command in RUNOFF will handle text. ACCESS will require various strategies if headings, footings, and control breaks are required.

If the carriage-return, line-feed characters are usable, it then becomes possible to generate blocked, fixed-length data records using ACCESS, noting that if the page length parameter found in the TERM statement is zero, then ACCESS will not paginate; if two bytes are reserved for the CRLF, then there are sufficient resouces in the F-correlative structure to generate fixed-length data records.

Another strategy is to construct the meaningful part of the data record using a SELECT or SSELECT with an output attribute that generates a fixed-length data record using an F-correlative. The list is then saved, and then given to a BASIC program which uses the READNEXT command to obtain the fixed-length data records. It may then pad them out to a desired length, translate them to EBCDIC, and block them as desired. This approach appears to get the job done with less programming and less computer time.

The COPY-LIST verb is then available if a hard copy of the transmitted data is desired. T-READ is useful in order to obtain a sample of the tape for verification.

Note that the tape file will be padded on the end with X'FB' characters if it comes from a data transfer verb, that it will be padded on the end with X'00' characters if it comes from a print file generating process, and that it will be padded with blanks by BASIC.

A minimum block size of 80 bytes is recommended only for the generation of a tape of card images for transfer to a machine which needs such a tape.

For off-line storage of data to be used by PICK systems, a block size of 4000 bytes is recommended as the best compromise between tape storage efficiency and the tape record size upper-limit considerations, which are as follows.

The tape-handling routines allocate two buffers equal to the tape record length. These buffers are then corelocked, allowing one buffer to be filled by the output generating process while the other buffer is being written, in order to avoid conflicts with the virtual memory operating system's core allocation.

T-ATT (Continued)

This has the effect of decreasing the number of core buffers available to the memory manager, thereby increasing the rate at which frames must be moved into core for use by active processes.

The degree of system degradation due to large tape buffers is dependent on the activity of other users in the system. Although the system will continue to function with just a few 512-byte core buffers available to the memory manager, prudence dictates that tape buffers do not exceed half the core in the system.

Furthermore, the returns on increasing record size above 4000 bytes become negligible.

* * * * *

T-BCK{n}

Backspaces 1/2" tape or cartridge disk n records. If n not specified, backspaces to position preceding previous EOF mark or to load point. Backspaces 1/4" tape n records within the tape buffer only. This buffer is approximately 298,400 bytes. When beginning of buffer is reached, the message "BEGINNING OF BUFFER" is output. A T-FWD must then be issued if you wish to position the tape or cartridge disk after the EOF mark.

* * * * *

T-CHK{(A)}

Checks the file the tape or cartridge disk is currently positioned at for parity errors. If (A) specified, checks all files on tape or cartridge disk until a double EOF mark is reached.(1)

The processor will return to TCL with the message:

[91] END OF TAPE - n FILE(S)

where n is the number of files checked. It will be 1 if no option was used, or the number of files on the tape or cartridge disk if the A option was selected.

T-DET{U}

Detaches tape or cartridge disk from user's line. Optional (U) detaches device from any line except the Spooler. SYS2 privileges required for (U). Device will automatically be detached from user's line at user logoff.(1)

The T-DET verb releases the tape or cartridge disk unit attachment if the user's line is currently attached to the unit. Otherwise, the following message is displayed:

[1147] NOT ATTACHED!

Users with SYS2 privileges may use the unconditional form, T-DET U. This will detach the unit from any line except the Spooler, which detaches automatically at the end of each page. An attempt by a user without SYS2 privileges to use this form, or an attempt to detach the Spooler from the tape or cartridge disk unit will produce the following message:

[82] YOUR SYSTEM PRIVILEGE LEVEL IS NOT SUFFICIENT FOR THIS STATEMENT

The SP-ASSIGN T verb also affects tape or cartridge disk attachment or detachment. Successful execution of the SP-ASSIGN T requires that the unit be available, because it is attached at that time. It must then be detached at some later time by the user. (The tape or cartridge disk will be automatically detached from the user's line when the user logs off the system.)

* * * * *

T-DUMP {DICT}file-name{item-list}{selection-criteria}{HEADER"name"}
{modifiers}{(options)}

Dumps (writes) a specified file onto magnetic tape or cartridge disk. If tape or cartridge disk is at the load point, writes label before start of file. Writes an EOF mark on tape or cartridge disk after dump.(1)

DICT:	If used, dictionary section of file will be dumped and no file definition items will be dumped.
file-name:	Name of source file. Must be specified.
item-list:	List of items to be dumped may be specified by enclosing individual item-ids in ("). If not specified, all items are dumped.
selection-criteria:	May be used to select only certain items to be dumped.
HEADER"name":	If used, the name of the specified file in the form "{DICT}file-name" will be added to the standard tape or cartridge disk label.

T-DUMP (Continued)

modifiers:
- HDR-SUPP - Suppresses writing of standard tape or cartridge disk label
- ID-SUPP - Suppresses listing of item-ids on terminal

options:
- H - Suppresses writing of standard tape or cartridge disk label
- I - Suppresses listing item-ids on terminal
- P - Lists item-ids on printer

The T-DUMP verb copies the specified contents of the specified file from disk to tape or cartridge disk. The form and operations of the "item-list" and "selection-criteria" parameters are described in the PICK Reference Manual, Section 6, ACCESS. They select a subset of the items in the specified file which are to be written to tape or cartridge disk. Absence of both causes all items in the file to be written to the tape or cartridge disk. The HEADER parameter is used to include the "name" in the label written at the start of the file. See below, Generating Tape or Cartridge Disk Labels. The file-name may be preceded by the DICT modifier to dump dictionary data. File definition items (D-items) will not be dumped. An EOF mark is written to the tape or cartridge disk at the completion of T-DUMP. Like in other ACCESS statements, each item-id must be enclosed in double quotes.

Generating Tape or Cartridge Disk Labels. A label may be written at the beginning of each tape or cartridge disk. The system adds the time, date and the reel numbers. Labels are specified when invoking either the FILE-SAVE, S-DUMP, or T-DUMP processors. In the case of the FILE-SAVE, the label is written after the COLDSTART section of the tape or cartridge disk. S-DUMP and T-DUMP will cause the label to be written only if the tape or cartridge disk is at load point. It will otherwise be ignored.

Labeled tapes or cartridge disks are created via the S-DUMP and T-DUMP verb by using the HEADER option. For example:

```
T-DUMP ABC HEADER "ALPHA"
```

places the text "ALPHA" in the label. Note that the label text must be enclosed in double quotes.

T-DUMP (Continued)

The Form of Tape or Cartridge Disk Labels. A tape or cartridge disk label consists of eight elements as follows:

```
L 01F4   16:12:27    20 MAR 1982   FILENAME HEADERNAME ...  01
```

Element	Source and use
L	Label specifier
01F4	Block size (record length) in hexadecimal. Here, 500 bytes.
16:12:27	System time at tape or cartridge disk write.
20 MAR 1982	System date at tape or cartridge disk write.
FILENAME	Name of the source file; either filename, if T-DUMP was used, or SPOOLER if the spooler was used.
HEADERNAME	The "name" in the HEADER option of T-DUMP.
^01	The reel or cartridge number in bytes 79 and 80.

Labels are a uniform 80 bytes in length. The name section is 49 bytes long and is constructed by concatenating the source file name in the T-DUMP (or S-DUMP) verb and the "name" in the HEADER "name" option of the T-DUMP verb with an intervening space, and then truncating the right end of this string as necessary to insert it into the label block. If the spooler generates the tape or cartridge disk output, the file name is "SPOOLER".

The TAPE Modifier. You may read data from a T-DUMP by using the TAPE modifier in any LIST, LIST-LABEL, LIST-ITEM, SUM, STAT, ISTAT, HASH-TEST or COUNT statement, which will cause the data items to be retrieved from the tape or cartridge disk file. Note that a file-name must be specified as usual when using the TAPE modifier; the dictionary of this file is still used as the source for the dictionary definitions. Sample use of the TAPE modifier:

```
LIST TEST-FILE TAPE
```

This statement uses the dictionary of the TEST-FILE to generate the default output specifications. It then reads the T-DUMP tape or cartridge disk and formats the data items it finds there in the standard listing format.

```
LIST ACCOUNT WITH CURR-BALNC > "100.00" CURR-BALNC BILL-RATE TAPE
```

This selects data items from the T-DUMP tape or cartridge disk with CURR-BALNC greater than 100.00, and lists the CURR-BALNC and BILL-RATE fields. CURR-BALNC and BILL-RATE are attribute definition items in the ACCOUNT file dictionary.

T-DUMP (Continued)

Examples of T-DUMP:

```
T-DUMP ACCOUNT > "23060" WITH CURR-BALNC ID-SUPP

      31 ITEMS DUMPED
```

This example dumps to tape or cartridge disk all items in the ACCOUNT file which have items greater than 23060 as well as values for attribute CURR-BALNC.

```
T-DUMP TEST-FILE

      1  A-002
      2  A-088
      3  C-999
      4  A-560
      5  C-888

      5 ITEMS DUMPED
```

This statement dumps the entire TEST-FILE to tape or cartridge disk and then writes an EOF mark.

```
T-DUMP FILE3 "item7" "item11" "item17" HEADER "SMITH" (I)
```

Writes item7, item11, item17 in the file FILE3 to tape or cartridge disk after inserting the word "SMITH" in the tape or cartridge disk label, and writes an EOF at completion. The item-ids of the items are not listed on the terminal.

Note: A cartridge disk must be formatted before it is used for the first time.

* * * * *

T-EOD

Moves the tape or cartridge disk forward to end-of-file mark after last file on tape or cartridge disk.

T-EOF

Locates physical EOFs on a tape or cartridge disk. Used to search a tape or cartridge disk containing multiple tape or cartridge disk operations such as T-DUMPs and ACCOUNT-SAVEs for a particular operation.

* * * * *

T-EOFD

Locates the last physical EOF on a 1/4" tape. Use to correctly position a partically filled tape before performing another tape operation, such as T-DUMP or FILE-SAVE (Not valid for cartridge disk or 1/2" tape.)(1)

The T-EOF and T-EOFD verbs are used to locate EOFs so that a 1/4" tape may be fully utilized. Because a physical EOF is automatically generated when a T-REW command is issued immediately following a WRITE operation, the PICK operating system will treat one tape operation ending with a physical EOF as the actual end of the tape. (This is different from a software EOF where a T-FWD will advance the tape over the EOFs. The T-FWD command will not advance the tape past the first physical EOF.) To utilize a tape beyond the first physical EOF, the EOF and EOFD verbs should be used.

T-EOF will locate each physical EOF on a tape or perform a T-FWD on a cartridge disk. T-EOFD will locate the last physical EOF on a tape. When you wish to use a partially filled tape for another operation such as ACCOUNT-SAVE or T-DUMP, the T-EOFD verb should be used to position the tape correctly at the end of the last filled portion of tape. To search a tape which contains multiple tape operations for a particular section, the T-EOF verb should be used.

Use of the T-EOF and T-EOFD verbs will shorten the physical tape. Since the T-REW verb will reset the logical tape pointer to zero, it is possible to run over the logical tape EOT. Be sure to keep track of how much you put on a tape so this does not happen. Filling a tape in this fashion does not also allow you to use the multi-reel capability.

Note that T-EOFD does not apply to cartridge disk or 1/2" tape.

* * * * *

T-FWD{n}

Moves tape or cartridge disk forward n records. If n not specified, moves tape or cartridge disk forward to position immediately following next EOF mark. The maximum value for n is 32,767.(1)

T-LOAD {DICT}file-name{item-list}{selection-criteria}{modifiers}{(options)}

Loads (reads) a previously saved (by T-DUMP or S-DUMP) file onto the file specified by file-name. Positions the tape or cartridge disk at the EOF mark at the end of the load.(1)

DICT:	If used, will load the dictionary section of the destination file with the previously saved dictionary of the source file.
file-name:	Name of destination file. Must be specified.
item-list:	List of items to be loaded may be specified by enclosing item-ids in ("). If not specified, all items are dumped.
selection-criteria:	May be used to select only certain items to be loaded.
modifiers:	ID-SUPP - Suppresses listing of item-ids on terminal
options:	I - Suppresses listing of item-ids on terminal.
	O - Overwrites items in destination file with items in tape or cartridge disk file whenever a tape or cartridge disk item's item-id corresponds to a destination file item's item-id. If not specified, destination file's items are retained.
	P - Lists item-ids on printer.

The T-LOAD command allows the user to load dictionaries or data files saved by a T-DUMP operation. The data from the tape or cartridge disk is loaded to the file "file-name". The item-list and selection-criteria options allow the selection of a subset of the items in the file on tape or cartridge disk for inclusion in the destination file "file-name" on disk. The Dictionary used by the selection-criteria processing routines is that of the destination file. Items in the tape or cartridge disk file with item-ids identical to items in the destination file will overwrite only if the (O) option is specified. Item-ids will be listed at the terminal as they are loaded unless the (I) option is used, which suppresses (inhibits) the item-id listing. The tape or cartridge disk is positioned at the EOF mark at the conclusion of the operation.

T-LOAD (Continued)

The tape or cartridge disk unit must be attached by the user before the T-LOAD command is issued.

T-LOAD causes the label to be read from the tape or cartridge disk; this will also set up the tape block size from the label. If unlabeled tapes or other than the current PICK release tapes are used, the appropriate tape block size must be set up in the T-ATT statement.

The tape or cartridge disk must be positioned at the first record of the file. Otherwise, the read will probably commence with an initial spurious item, because the tape or cartridge disk records and items are not aligned. See the discussion of tape block size following T-ATT.

Examples of T-LOAD:

```
T-LOAD FILE2
```

Loads the contents of the tape or cartridge disk from the location of the tape or cartridge disk at initiation of the T-LOAD through EOF into FILE2. Items on the tape or cartridge disk with item-ids identical to those of items in the file are not written into the file.

```
T-LOAD FILE4 WITH VALUE = "37" (O)
```

Copies all items in the tape or cartridge disk file which have contents such that the attribute "VALUE" in the dictionary FILE4 evaluates to 37. Any items in FILE4 which have item-ids identical to the item-ids of selected items in the tape or cartridge disk file are overwritten.

```
T-LOAD TEST-F "100" AND < "400" (IO)

    17 ITEMS LOADED
```

This sentence loads only those items from the T-DUMP tape or cartridge disk that have item-ids in the range 100 through 400.

T-RDLBL

Attaches tape or cartridge disk to user's process if not attached and reads and displays label if positioned at a label. (For format of label, see T-DUMP.) Always displays last block size assigned.(1)

* * * * *

T-READ {(options)}

Dumps contents of tape or cartridge disk to terminal.(1)

Options

A	Dumps alphanumeric segment in character after conversion to ASCII.
n{-m}	Dumps n^{th} through m^{th} tape or cartridge disk record, starting at current position.
P	Dumps to printer.
X	Dumps in hexadecimal.

The T-READ dumps the content of the tape or cartridge disk to the terminal (or optionally to the line printer). The T-READ operation terminates when the specified number of items (records) have been dumped, or when an EOF mark is detected.

The T-READ operation must be preceded by tape or cartridge disk attachment to the user's line by the T-ATT verb.

T-READ is used to investigate the contents of a tape or cartridge disk. It may be used to find out either the contents of the tape or cartridge disk in general, or find the location of a specified file.

Note in the examples of the T-READ in the following paragraphs that the tape or cartridge disk label is displayed at the start of the output. This and the contents of the output generated by T-READ may be used to find the location of a desired file.

The structure of the label is discussed in the T-DUMP section. The label is in the upper left-hand corner of each form. Each record is preceded by a record counter. Note that the end of the last tape or cartridge disk record is filled with X'FB' ([) after the end of valid data.

Examples of the T-READ operation on a fragment of a BASIC program to display the format of the default character form and the optional hexadecimal form are shown on the following pages.

T-READ (Continued)

T-READ in character form:

```
    L 01F4 16:12:27  20 MAR 1978 BP

    RECORD = 1

       1 FORMATC*****************************************
      51 ************************THIS PROGRAM FORMATS A *
     101 ****BASIC PROGRAM TO[*  DISPLAY BLOCK STRUCTURIN
     151 G BY INDENTING LINES.*************************
     201 ************************************-----[ DEFIN
     251 ITIONS10    LOOP          SP = 6           ;* LEFT
     301  MARGIN COLUMN NUMBER          ID = 3           ;*
     351 NUMBER OF PAGES TO INDENT            FLF=0
     401     ;= FUNKY LINE FLAG*---- INITIALIZATION
     451    SPX = SP          LINE.NO = 0*--[-- INPUT FIL


    RECORD = 2

       1 E NAME AND  PROGRAM NAME           PRINT         P
      51 RINT          PRINT ´BASIC FILE NAME          - ´;
     101 INPUT FILE        UNTIL FILE=´´ DO          OPEN
         .
         .
         .
     401 [[[[[[[[[[[[[[[[[[[[[[[[[[[[[[[[[[[[[[[[[[[[[[[[
     451 [[[[[[[[[[[[[[[[[[[[[[[[[[[[[[[[[[[[[[[[[[[[[[[[

    [94]  END OF FILE
```

T-READ (Continued)

T-READ in hexadecimal form: L 01F4 16:12:27 20 MAR 1978 BP

```
    RECORD = 1

    0000  464F524D 415443FE 2A2A2A2A 2A2A2A2A      0 :FORMATC ********:
    0010  2A2A2A2A 2A2A2A2A 2A2A2A2A 2A2A2A2A     16 :****************:
    0020  2A2A2A2A 2A2A2A2A 2A2A2A2A 2A2A2A2A     32 :****************:
    0030  2A2A2A2A 2A2A2A2A 2A2A2A2A 2A2A2A2A     48 :****************:
    0040  2A2A2A2A 2A2A2A2A FE2A2020 54484953     64 :********^*  THIS:
    0050  2050524F 4752414D 20464F52 4D415453     80 : PROGRAM FORMATS:
    0060  2041202A 2A2A2A2A 42415349 43205052     96 : A *****BASIC PR:
    0070  4F475241 4D20544F FFFBFE2A 20204449    112 :OGRAM TO_[^*  DI:
    0080  53504C41 5920424C 4F434820 53545255    128 :SPLAY BLOCK STRU:
    0090  43545552 494E4720 42592049 4E44454E    144 :CTURING BY INDEN:
    00A0  54494E47 204C494E 45532EFE 2A2A2A2A    160 :TING LINES.^****:
    00B0  2A2A2A2A 2A2A2A2A 2A2A2A2A 2A2A2A2A    176 :****************:
    00C0  2A2A2A2A 2A2A2A2A 2A2A2A2A 2A2A2A2A    192 :****************:
    00D0  2A2A2A2A 2A2A2A2A 2A2A2A2A 2A2A2A2A    208 :****************:
    00E0  2A2A2A2A 2A2A2A2A 2A2A2A2A FE2A2D2D    224 :************^*--:
    00F0  2D2DFFFB 20444546 494E4954 494F4E53    240 :--_[ DEFINITIONS:
    0100  FE313020 2020204C 4F4F50FE 20202020    256 :^10    LOOP^    :
    0110  20202020 20535020 30203620 20202020    272 :     SP = 6     :
    0120  20202020 203B2A20 4C454654 204D4152    288 :     ;* LEFT MAR:
    0130  47494E20 434F4C55 4D4E204E 554D4245    304 :GIN COLUMN NUMBE:
    0140  52FE2020 20202020 20202049 44203020    320 :R^         ID = :
    0150  33202020 20202020 2020203B 2A204E55    336 :3          ;* NU:
    0160  4D424552 204F4620 53504143 FFFB4553    352 :MBER OF SPAC_[ES:
    0170  20544F20 494E4445 4E54FE20 20202020    368 : TO INDENT^     :
    0180  20202020 464C463D 30202020 20202020    384 :    FLF=0       :
    0190  20202020 3B2A2046 554E4B59 204C494E    400 :    ;* FUNKY LIN:
    01A0  4520464C 4147FE2A 2D2D2D2D 20494E49    416 :E FLAG^*---- INI:
    01B0  5449414C 495A4154 494F4EFE 20202020    432 :TIALIZATION^    :
    01C0  20202020 20535058 203D2053 50FE2020    448 :     SPX = SP^   :
    01D0  20202020 2020204C 494E452E 4E4F203D    464 :       LINE.NO =:
    01E0  2030FE2A 2D2DFFFB 2D2D2049 4E505554    480 : 0^*--_[-- INPUT:
    01F0  2046494C                               496 : FIL:

    RECORD = 2

    0000  45204E41 4D452041 4E442020 50524F47      0 :E NAME AND  PROG:
    0010  52414D20 4E414D45 FE202020 20202020     16 :RAM NAME^       :
          .
          .
          .
    01E0  FBFBFBFB FBFBFBFB FBFBFBFB FBFBFBFB    480 :[[[[[[[[[[[[[[[[:
    01F0  FBFBFBFB                               496 :[[[[:

    [94]  END OF FILE
```

T-RET

Retensions 1/4" tape. Not valid for cartridge disk.(1)

* * * * *

T-REW

Rewinds tape to load point. On the cartridge disk, this operation will cause the disk head to be positioned to the first available sector. On 1/4" tape, will cause last tape buffer to be written to tape before rewind.(1)

* * * * *

T-SPACE n

Moves tape or cartridge disk forward over specified number of files and positions tape or cartridge disk immediately after EOF of last file.(1)

* * * * *

T-STATUS

Displays tape and cartridge disk attachment status. Either tells which device is attached and specifies line number using the device, or reports that device is available.(1)

* * * * *

T-UNLOAD

Rewinds and unloads 1/2" tape from 1/2" tape drive. (After tape has been loaded and processed, use of this verb allows you to rewind and physically remove the tape without pressing the ON-LINE and UNLOAD buttons on the tape drive.)(1)

* * * * *

T-WEOF

Writes an end-of-file (EOF) mark on tape or cartridge disk.(1)

T-WTLBL

Writes a label on tape or cartridge disk. (For format of label, see T-DUMP.)(1)

* * * * *

TABS

Displays current tabs settings.(0)

Tab stops may be set with the TABS statement. The general form of the TABS command is as follows:

```
    TABS I or O  n1,n2,n3...
or
    TABS I or O {S}
```

where the tabs may be set for input or output depending on the parameter "I" or "O" following the TABS verb. n1, n2, n3, etc. are up to fifteen tab-stop positions; they must be in ascending numerical sequence.

Tabs set for input are then available at any time that the system requests input from the terminal. By entering a Control-I ([cI]), the system will space over to the next tab-stop position, if any. If there are no more tab-stop positions, the [cI] is ignored (Control-I is also generated by the TAB key on some terminals). The TAB stops set by the TABS I statement are identical to those set by the TB statement in the EDITOR.

Tabs set for output are useful only for those terminals that have a physical tabbing capability. Do not set output tabs for a CRT. If output tab stops are set, the system will replace blank sequences in any output generated by the system by an appropriate tab character ([cI]), thus reducing the data output. The user must also set up the physical tab stops on the terminal to correspond to those set in the TABS O statement. On many terminals, this entails positioning the carriage and entering a set-tabs sequence from the keyboard.

Input or output tab stops may be disabled by entering "TABS I" or "TABS O", respectively. Previously set tab stops may then be recalled by entering "TABS I S" or "TABS O S" for input and output tab stops, respectively. Currently set tab stops can be displayed by entering "TABS" alone.

TABS (Continued)

Examples of the use of TABS:

```
>TABS I  4,8,12,16,20,24,28  [CR]          (sets input tab stops)

>TABS O  10,20,30,40,50,60   [CR]          (sets output tab stops)

>TABS  [CR]                                (displays current tab stops)

         1         2         3         4         5         6         7
12345678901234567890123456789012345678901234567890123456789012345678901234567890
   I   I   I   I   I   I   I
         0         0         0         0         0         0

>TABS O  [CR]                              (turns off output tab stops)

>TABS  [CR]

         1         2         3         4         5         6         7
12345678901234567890123456789012345678901234567890123456789012345678901234567890
   I   I   I   I   I   I   I

>TABS I  5,15,20,40,50  [CR]

>TABS O S  [CR]                        (recalls previous output tabs stops)

>TABS  [CR]

         1         2         3         4         5         6         7
12345678901234567890123456789012345678901234567890123456789012345678901234567890
    I         I   I                   I         I
         0         0         0         0         0         0
```

* * * * *

TA-ON {n}
TA-OFF {n}

Turns type-ahead buffer either on (default) or off for port number n. Must have SYS2 privileges to use port number n. Default port is the one executing the verb. Once set, will stay ON or OFF until system RESET or another TA-verb is used.(0)

TERM term-width, term-depth, line-skip, lf-delay, ff-delay, backspace, printer-width, printer-depth, term-type

Displays and sets terminal and printer characteristics for individual user. Parameters are positional; use commas to indicate null values and previously defined values will default.(0)

term-width:	Number of character positions on terminal line.
term-depth:	Number of lines on terminal.
line-skip:	Number of blank lines on terminal page.
lf-delay:	Number of delay characters after line feed.
ff-delay:	Number of delay characters after top-of-form.
backspace:	Backspace character's ASCII number.
printer-width:	Number of character positions on printer page line.
printer-depth:	Number of print lines on printer page.
term-type:	Terminal type codes for cursor functions:

L = LEAR-SIEGLER ADM-11, ADM-12

M = AMPEX, DIALOGUE 80

T = TELEVIDEO 925, 950

V = ADDS VIEWPOINT

X = No cursor addressing functions needed.

Individual parameters may be null (i.e., as specified by two adjacent commas in the TERM command). If so, the previously defined parameter remains in force. A TERM command without a parameter list causes display of the current characteristics. To function properly, the term-type parameter must be the last element in any TERM string. It may be the only element if no other elements are to be changed. The other parameters are positional, however.

TERM (Continued)

A sample usage of TERM:

```
>TERM [CR]
            TERMINAL PRINTER
PAGE WIDTH:     79      132
PAGE DEPTH:     24       64
LINE SKIP :      0
LF DELAY  :      1
FF DELAY  :      2
BACKSPACE :      8
TERM TYPE :      M
```

Standard terminal characteristics set for the DIALOGUE 80 terminal.

```
>TERM ,,,,,,120,48 [CR]
```

Resets the line printer page size to 120x48.

```
>TERM [CR]

            TERMINAL PRINTER
PAGE WIDTH:     79      120
PAGE DEPTH:     24       48
LINE SKIP :      0
LF DELAY  :      1
FF DELAY  :      2
BACKSPACE :      8
TERM TYPE :      M
```

Note that an FF delay of 0 will cause the printer not to do a top-of-form and will not clear the screen on the terminal. An FF delay of 1 will not clear the screen on the terminal.

* * * * *

TIME

Displays current system time and date.(0)

* * * * *

UNLOCK-FRAME frame-number

Unlocks a locked frame in memory. Specify frame-number in decimal.(2)

UPDATE.MD

Compares Master Dictionary verbs against NEWAC verb with same name and changes Master Dictionary verbs to agree with NEWAC. Does not add any additional NEWAC verbs to Master Dictionary. Does not make any deletions from Master Dictionary.(S)

* * * * *

VERIFY-SYSTEM {n{-m}}

Verifies system by creating a checksum and comparing it with original checksum on file. A range of frames to verify may be specified {n{-m}}. If system does not verify, the frames that do not match are displayed and the total of mismatches given. If there are no mismatches, [341] ZEBRA PICK REV m.n SYSTEM VERIFIED is displayed.(O)

The VERIFY-SYSTEM verb checks the system software. The VERIFY-SYSTEM verb generates a checksum for every frame of software, from 1 to 399. These checksums are compared with those in the ERRMSG file, in an item named "CHECK-SUM". This item contains the correct checksum for all system software frames. Each line in the item contains a checksum for one frame of code, optionally followed by one or more hexadecimal limits. If the limits are present, the checksum is generated only for bytes within the limits.

If no limits are present, the checksum is generated for bytes 0-511. This is done because some frames contain tables which change from time to time, such as the system overflow table.

Note that only assembly code is checksummed, table entries are not. If all the program frames verify, message 341 is printed:

[341] ZEBRA PICK REV m.n SYSTEM VERIFIED

If a frame generates a checksum which does not match the checksum for that frame in the "CHECK-SUM" item, the FID of the frame, the generated checksum and the stored checksum from the item are printed, and message 342 is printed at the end of the check run:

[342] ZEBRA PICK REV m.n SYSTEM DOES NOT VERIFY
THERE ARE A FRAMES WITH MISMATCHES

where A is the number of programs whose checksums do not match.

The VERIFY-SYSTEM verb should be run whenever it is suspected that the system software is in error.

If a mismatch is found, the software can be restored by an IPL with the A option.

WHAT {options}

Displays system statistics.(2)

Options

L	Suppresses lock status display.
P	Statistics to printer.
S	Suppresses SP-STATUS statistics.
W	Suppresses current process information (see WHERE command).

The WHAT verb is used to display the system configuration, the current status of its locks and tables, and the location of the processes that are logged on.

The WHAT verb has several selectable parts. The system configuration is displayed in every case. The option 'L' will suppress the display of the locks; the option 'W' will suppress the display of the WHERE component; and the 'S' option will suppress the display of the SP-STATUS component. If a numeric or a numeric range is included, it will be applied to the WHERE component, as will an account name specification. WHAT examples:

WHAT L	will suppress the locks section of the WHAT verb.
WHAT W	will suppress the WHERE section of the WHAT verb.
WHAT S	will suppress the SP-STATUS section of the WHAT verb.
WHAT LWS	will yield only the system configuration section of the WHAT verb.

* * * * *

WHERE {options}

Displays information for all lines logged onto system.(2)

Options

"account-name"	Displays information only for lines logged to specified account.
n{-m}	Displays information for lines logged on in range specified.
Z	Displays information for all lines whether logged on or not.

The WHERE verb is a subset of the WHAT verb. WHERE may be used to display data for all channels that are logged on. If the optional "n" is used, only data for channel n is displayed. The WHERE verb also allows specification of a range of lines as well as the specification of an account name. The default form of the WHERE displays all lines which are logged on. Display of the status lines not logged on by the WHERE verb requires the use of the 'Z' option. WHERE examples:

WHERE 3-5	displays the return stack for users three through five.
WHERE 'DP'	displays the return stack for all lines logged onto DP.

WHERE (Continued)

The WHAT, WHERE Message

The WHAT verb displays the state of the system status as shown below. (Numbers in brackets identify NOTES listed below; they are not a part of display).

```
CORE   LINES  PCB0  WSSTART  WSSIZE  SYSBASE/MOD/SEP  MAXFID  AVAIL.  OVERFLOW
256K      11  1024     1376     127     5567  11   1   56423          49569
         [1]   [2]      [3]     [4]    ...[5].......    [6]            [7]

 ## ## ## ## ## ## ## ## ## ## ## ## ## ## ## ##
 ## ## ## ## ## ## ## ## ## ## ## ## ## ## ## ##    [8]
 ## ## ## ## ## ## ## ## ## ## ## ## ## ## ## ##

 ## ## ## ## ## ## ## ## ## ## ## ## ## ## ## ##    [9]
 ## ## ## ## ## ## ## ## ## ##

 00 0400 FD00      6.178   6.096 236.660
 02 0440 F30A      6.44A 233.578
 03 0460 FF00    478.31E 454.1C6 454.264 465.328
 04 0448 FF00    231.064
 05 04A0 EF00      6.44A 344.0D8 353.658 351.332
*06 04C0 FB00    121.000 121.114 166.626
 09 0520 BF00    170.060 170.0B4
 10 0540 BF00    170.060 170.14E
[10][11] [12][13]  [14]  [15] . . . . . . . . . .

 THE SPOOLER IS INACTIVE
 PRINTER # 0 IS SERIAL, INACTIVE, AND ON LINE.
 THE PRINTER IS RUNNING ON LINE 9.
 ASSIGNED OUTPUT QUEUES:  0
 THE NUMBER OF INTER-JOB PAGES TO EJECT IS 0.
```

NOTES for "WHAT":

[1] Number of communication lines (terminals) plus one (spooler) = number of processes on system.

[2] PCB-FID for channel zero; each following channels PCB-FID is displaced by 32 frames from PCB0.

[3] Extended workspace starting FID; WSSTART = PCB0 + 32*LINES (Including SPOOLER).

[4] Extended workspace size; number of frames per workspace is either 100 or 127 frames. There are three workspaces per line.

[5] System base-FID/modulo/separation; SYSBASE=WSSTART + WSSIZE*3*LINES.

[6] Maximum disk FID; (35MB - 56423).

[7] Available overflow space; linked frames + contiguous frames.

[8] BASIC locks (48); system reserved (15); spooler-linking-workspace (last bit). Bits start at 127.20.

WHERE (Continued)

NOTES for "WHAT" (Continued):

[9] System lock bytes; 00=available; else has channel number as above.

Lock #	Loc	Usage
0	127.0	Lock-table lock.
1	127.1	Overflow table lock.
2	127.2	Group-lock table lock.
3	127.3	MESSAGE processor lock.
4-26		Reserved.

NOTES for "WHERE":

The sequence of channels is in the current priority chain sequence, except for those channels that have a PIB-status of "7D" (waiting for terminal input), which are not in the chain and, therefore, appear in numerical sequence. If the "S" option is used in the WHAT verb, all channels are in numerical sequence.

[10] Channel number; preceded by a "*" if your channel.
[11] PCB-FID (hex) of channel.
[12] PIB-status of channel;
7F/FF = Active, or ready to go.
7B/FB = Terminal output.
7D = Terminal input.
5F = Waiting for disk.
3F = Release Quantum/Sleeping.
Typically, spooler is "BF".
[13] PIB-status-2; 00=Normal, 40=in DEBUGGER.
[14] "T" = Tape or cartridge disk attached; "P" = Printer attached.
[15] Location counter (1st address) and subroutine return = stack addresses.

Entry format = fff.lll where fff = decimal FID; lll = hex location.

Typical Locations:

6/9 = Terminal I/O	13-20 = EDITOR
225-248,275 = BASIC	53-64 = ACCESS Compiler
290-298 = RUNOFF	189-199 = BASIC Compiler
5 = TCL-I	161-183 = SPOOLER
89 = DEBUGGER	71-77 = LIST
	200-220 = SAVE-RESTORE

WHICH

Displays current PICK Operating System level.(0)

* * * * *

WHO {options}

Displays account logged on to line issuing command.(0)

Option

n{-m}	Displays accounts logged on and unused (UNKNOWN) lines for line numbers specified.
Z	Displays all accounts logged on and all unused (UNKNOWN) lines on system.

The WHO statement is used to display the account-name that a terminal is logged on to. If WHO is entered without the "n", the line-number (channel number) of the user's terminal is displayed, along with the account-name that he is logged on to. If the "n" is specified, the same data is displayed for line-number "n", where n ranges from 0 to the maximum number of lines on the current system. If the line is non-existent, or if no user is logged on to that line, the account-name is replaced with "UNKNOWN".

Lines which have the name UNKNOWN and which are actively processing suggest that something wrong is happening on the system, unless these lines are spoolers or you have an account on the system by the name of UNKNOWN.

You may specify a line or a range of lines. Any non-numeric character will cause WHO to display all lines and their logon name. For example:

```
>WHO  [CR]
07 SMITH                  (this is line-number 7, logged on to "SMITH")

>WHO 0  [CR]
00 SYSPROG                (line number 0 is logged on to SYSPROG)

>WHO 11  [CR]
11 UNKNOWN

>WHO *                    (displays accounts using all lines; lines which
                           are not logged on display UNKNOWN)

>WHO 1-3

01 JOHN
02 SYSPROG
03 UNKNOWN

>WHO 'SYSPROG'            (displays all lines logged onto the SYSPROG
                           account)
```

XOFF-DISABLE {n}
XOFF-ENABLE {n} {(C)}

XOFF-DISABLE causes XOFF (or ctrl S) to have no effect when sent to the computer from your own port or a specified port number n. XOFF-ENABLE causes an XOFF character that is sent to the computer from your own port or a specified port number n to stop that port's output on terminal or printer. If (C) is specified, when the input buffer is full, the XOFF character will be sent to the port instead of the bell code in order to allow computer-to-computer communication via that port. Use of (C) will disable the BREAK key until another XOFF-ENABLE without (C), a RESET-PORT, or system RESET. System RESET returns port to normal operation after data transmission and bell code halt. Must have SYS2 privileges to use n option.(1)

* * * * *

XTD {base} number

Converts a number from base specified to its decimal equivalent. Default base = 16.(0)

ASCII codes A

The ASCII codes used by the PICK System are:

DEC	Hex	Character	DEC	Hex	Character
0	0	NULL	36	24	$
1	1	SOH	37	25	%
2	2	STX	38	26	&
3	3	ETX	39	27	'
4	4	EOT	40	28	(
5	5	ENQ	41	29	)
6	6	ACK	42	2A	*
7	7	BEL	43	2B	+
8	8	BS[1]	44	2C	,
9	9	HT[1]	45	2D	-
10	A	LF[1]	46	2E	.
11	B	VT[1]	47	2F	/
12	C	FF[1]	48	30	0
13	D	CR[1]	49	31	1
14	E	SO	50	32	2
15	F	SI	51	33	3
16	10	DLE	52	34	4
17	11	DC1	53	35	5
18	12	DC2	54	36	6
19	13	DC3	55	37	7
20	14	DC4	56	38	8
21	15	NAK	57	39	9
22	16	SYN	58	3A	:
23	17	ETB	59	3B	;
24	18	CAN	60	3C	<
25	19	EM	61	3D	=
26	1A	SUB	62	3E	>
27	1B	ESC	63	3F	?
28	1C	FS	64	40	@
29	1D	GS	65	41	A
30	1E	RS[1]	66	42	B
31	1F	US[1]	67	43	C
32	20	SPACE	68	44	D
33	21	!	69	45	E
34	22	"	70	46	F
35	23	#	71	47	G

DEC	Hex	Character	DEC	Hex	Character
72	48	H	104	68	h
73	49	I	105	69	i
74	4A	J	106	6A	j
75	4B	K	107	6B	k
76	4C	L	108	6C	l
77	4D	M	109	6D	m
78	4E	N	110	6E	n
79	4F	O	111	6F	o
80	50	P	112	70	p
81	51	Q	113	71	q
82	52	R	114	72	r
83	53	S	115	73	s
84	54	T	116	74	t
85	55	U	117	75	u
86	56	V	118	76	v
87	57	W	119	77	w
88	58	X	120	78	x
89	59	Y	121	79	y
90	5A	Z	122	7A	z
91	5B	[	123	7B	{
92	5C	\	124	7C	:
93	5D	]	125	7D	}
94	5E	^	126	7E	~
95	5F	_	127	7F	DEL
96	60	`	.		
97	61	a	.		
98	62	b	.		
99	63	c	251	FB	SB[2]
100	64	d	252	FC	SVM[2]
101	65	e	253	FD	VM[2]
102	66	f	254	FE	AM[2]
103	67	g	255	FF	SM[2]

[1]For special use on LSI-11 and -12 terminals:

BS	Cursor Backspace	FF	Cursor Forward
HT	Cursor Tab	CR	Cursor Carriage Return
LF	Cursor Down	RS	Cursor Home
VT	Cursor UP	US	Cursor New Line

[2]For special use by PICK:

SB	Start buffer
SVM	Secondary value mark (displays \)
VM	Value mark (displays])
AM	Attribute mark (displays ^)
SM	Segment mark (displays _)