Information Management System (IMS) Terminal Users Guide

SPERRY UNIVAC

UP-9208

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This document contains the latest information available at the time of preparation. Therefore, it may contain descriptions of functions not implemented at manual distribution time. To ensure that you have the latest information regarding levels of implementation and functional availability, please consult the appropriate release documentation or contact your local Sperry Univac representative.

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PREFACE

This manual is one of a series designed to instruct and guide you in using the SPERRY UNIVAC Information Management System (IMS) for Operating System/3 (OS/3). It tells you how to enter and receive messages at IMS terminals and describes the IMS terminal commands and special-purpose transaction codes.

Part 1 is for terminal operators doing transaction processing and for programmers testing new or revised action programs. It covers dynamic terminal sign-on and sign-off, message processing, standard terminal commands, IMS transaction codes entered from standard terminals, and UNIQUE.

Part 2 is for the master terminal operator and the IMS administrator. It describes master terminal commands, IMS transaction codes entered from the master terminal, and message processing at the system console and master workstation.

Part 3 lists error messages related to terminal commands and IMS transaction codes.

The manual includes formats and brief descriptions of UNIQUE commands. For a complete description and examples of UNIQUE, see the information management system (IMS) data definition and UNIQUE user guide, UP-9209 (current version).

For the sake of brevity, we use the shortened forms of all terminal names throughout the manual:

- UNISCOPE 100 and UNISCOPE 200 Display Terminals (UNISCOPE)

- SPERRY UNIVAC UTS 10, UTS 20, UTS 40, and UTS 400 Universal Terminal System terminals (UTS 10, UTS 20, UTS 40, UTS 400)
- SPERRY UNIVAC DCT 1000 Data Communications Terminals (DCT 1000)
- IBM 3270 Terminal System terminals (IBM 3270)

For a complete list of terminals you can use with IMS, see the information management system (IMS) system support functions user guide, UP-8364 (current version).

In addition to UP-8364 and UP-9209, the other manuals in the IMS series are the current versions of:

- Information management system (IMS) concepts and facilities, UP-9205
- Information management system (IMS) action programming in RPG II user guide, UP-9206
- Information management system (IMS) action programming in COBOL and basic assembly language (BAL) user guide, UP-9207
- IMS/DMS interface user guide, UP-8748

HOW TO USE THIS MANUAL

To use this manual, first open it to just beyond the final page. You will find a folded vinyl easel there. Lay the book flat on your desk or table so that the long side of the book faces you. Unfold the easel so that it forms a triangle with the back cover of the book. Now raise the pages of the book against the easel. You can now flip down through the manual, guided by the tabs.

Text: UP-9208
Binder: UP-8573
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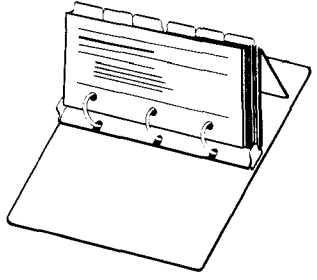
NOTE:

To receive both the binder and easel, you must indicate both UP numbers to your Sperry Univac representative.



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PART 1: STANDARD TERMINALS

STARTING AN IMS SESSION

After the IMS administrator starts up IMS, the message

```
IMS READY
```

appears on each terminal that is in a ready state (unless the administrator chose the IMSREADY=NO option at configuration). When IMS READY appears, begin entering messages. If your terminal comes online during an IMS session, you may not receive the IMS READY message.

Dynamic terminals – that is, terminals that are not dedicated to IMS – do not receive the IMS READY message. You must sign your terminal on to IMS before you can enter messages.

STARTING AND ENDING A DYNAMIC SESSION

IMS terminals are either static or dynamic. Static terminals are attached to IMS the entire time IMS is active; dynamic terminals are not. You can use a dynamic terminal for other programs when it is not attached to IMS.

After the IMS administrator starts up IMS, sign on the terminal to begin a dynamic session. To end the session, sign the terminal off.

To sign on your terminal, use this format for your keyin:

```
$$SON terminal-idprogram-name
```

terminal-id	4-character terminal name
program-name	4-character IMS program name

No space is permitted between terminal-id and program-name.

Example:

```
$$SON TRM1IMSA
```

If sign-on is accepted, you receive the message:

```
SESSION PATH OPEN
```

If you enter the $$SON command incorrectly or a terminal slot is not available, you receive the message:

```
SESSION PATH CLOSED
```

To end the dynamic session, key in:

```
$$SOFF
```

If your terminal is on a dial-up line, you can sign your terminal on to another program within 60 seconds without redialing. After 60 seconds, the communications line is disconnected.

INPUT AND OUTPUT MESSAGES

Messages entered at the terminal are input messages. Messages received at the terminal are output messages. Every time you enter a message, IMS returns at least one output message.

TYPES OF INPUT MESSAGES

There are two types of input messages – transaction messages and terminal commands.

Transaction messages are processed by IMS- or user-supplied action programs. A transaction includes a series of related input and output messages. Action programs process your requests to display information, update files, etc. You initiate a transaction by entering a transaction code, or, in some cases, a function key. Once you start a transaction, your terminal is in interactive mode. In this mode, you cannot initiate another transaction or issue certain terminal commands until the transaction is completed.

IMS supplies a number of action programs. UNIQUE (the *UN*iform *In*Quiry *U*pdate *E*lement) is a set of action programs that processes files by using a set of simple commands. The OPEN command is the transaction code that initiates UNIQUE processing.

Your supervisor will supply the transaction codes and message formats for user-written action programs.

Terminal commands are used for administrative and control functions. All terminal commands start with the letters ZZ.

IMS has two sets of terminal commands – standard and master. Standard terminal commands are entered from any IMS terminal. Master terminal commands are entered only from the master terminal or, in some cases, from the system console or master workstation.

ENTERING INPUT MESSAGES

Entering Messages from Display and Hard-Copy Terminals

When you enter a message from a display terminal or a DCT 1000 terminal, press the TRANSMIT (XMIT) key to send the message to IMS. For other hard-copy terminals, press the CTRL key and the letter C.

Deleting Incorrect Characters at a Hard-Copy Terminal

To cancel an incorrect character, press CTRL and the letter H. To delete multiple characters, press CTRL/H consecutively as many times as there are characters to be deleted. To delete an entire message, press CTRL and the letter X.

Entering Multiline Messages

For multiline messages, press the carriage return at the end of each line. Use the transmit or CTRL/C keys only after entering the entire message. When you get close to the end of a line, press the carriage return between words to avoid splitting a word on two lines. If you don't, IMS may replace the carriage return character with a blank character before sending the message to the action program. The word will contain a blank when it gets to the program and may cause an error.

Function Keys

Function keys on display terminals provide a fast, easy way to enter data. UNISCOPE display terminals have 4 function keys; UTS 10 terminals have 12 function keys; workstations and UTS 20, 40, and 400 terminals have 22 function keys; and IBM 3270 terminals have 33 function keys.

Some user-written transactions use function keys as transaction codes, and sometimes action programs require function keys in response to output messages.

Hard-copy terminals do not have function keys. To enter a function key from a hard-copy terminal, key in:

```
F#nn
```

where nn is the 2-digit number of the function key.

AUTOMATIC STATUS MESSAGES

When entering input messages in multithread IMS, sometimes there is a delay before the action program responds. When such a delay occurs, IMS sends one of three status messages. Additional status messages are sent periodically until the action program sends an output message or the transaction ends.

Automatic Status Message	Meaning
INPUT IN QUEUE	IMS received the input message but has not delivered it to the action program.
INPUT IN PROCESS	The action program received the input message and is processing it.
ROLLBACK IN PROCESS	The action program terminated abnormally, and data files are being restored to the last rollback point.

Any time after you receive the first status message, you can cancel the transaction by keying in the ZZCNC terminal command. Any other input entered before receiving an output message from the action program is ignored.

SOLICITED AND UNSOLICITED OUTPUT

The initial output received in response to an input message is called solicited output.

Unsolicited output is any output other than the initial response to a message from the same terminal. There are two types of unsolicited output:

1. Additional output to the terminal that sent the input message. When the volume of output is greater than the screen size of the terminal, it is transmitted in segments. The first segment is solicited output; additional segments are unsolicited output.

2. Output received at a terminal as a result of an input message from another terminal. This is called switched output.

IMS notifies you that unsolicited output is pending by displaying an unsolicited output indicator. The unsolicited output indicators for display and hard-copy terminals and the responses you enter to receive the output are:

Terminal Type	Unsolicited Output Indicator	Response
Display (except IBM 3270)	Message waiting light	Press message waiting key.

Hard-copy (except DCT 1000)	/CMW or other 4-character message*	Press CTRL/G, then press RETURN key.
IBM 3270	Message waiting light or /CMW*	Press PA1 key.
DCT 1000	Message waiting light	Press CTRL/G, then XMIT.

*This message is defined by the MSGWAIT operand of the TERM macro in the ICAM network definition. The default is /CMW.

When the pending output is segmented, the unsolicited output indicator is displayed for each segment. You must accept all segmented output before entering another transaction code or terminal command (except ZZCNC).

When a switched message is waiting, you can ignore the indicator and enter another input message or you can accept the message. If additional messages are waiting, the unsolicited output indicator is displayed again, and you can again ignore the signal or accept the message.

If the message waiting signal notifies you of switched output while you are working on a formatted screen, don't accept the switched output until you have transmitted the screen. Otherwise, you cancel the screen format and abort the transaction. You can retransmit the screen format by entering the ZZRSD terminal command, but you cannot enter input on the format.

STANDARD TERMINAL COMMANDS

Standard terminal commands help you control message transmittal and file updating from the terminal. You can enter standard terminal commands from any IMS terminal, including the master terminal. You can also enter the ZZCNC, ZZMCH, ZZNRM, and ZZTMD commands from the system console or master workstation (if console support is configured), but not the ZZHLD, ZZRDY, or ZZRSD commands.

ZZCNC CANCELING A TRANSACTION

The ZZCNC command cancels the transaction currently active. It does not cancel a terminal command. The format is:

```
ZZCNC
```

When ZZCNC is processed, you receive one or both of these messages:

- `ROLLBACK IN PROCESS`
- `TRANSACTION CANCELLED`

The most common use of this command is to break a deadlock condition under multithread IMS. You can cancel only the transaction at your terminal. Transactions at other terminals are not affected.

After you enter an input message, you must wait until you receive at least one output message before you enter the ZZCNC command. The output message can be either an automatic status message or a response from the action program.

ZZHLD HOLDING OUTPUT

The ZZHLD command suspends all output to your terminal until you enter a ZZRDY command. A typical situation for using the ZZHLD command is when the ribbon breaks or the paper jams on a hard-copy device. The format is:

```
ZZHLD
```

You cannot enter this command while output is being sent to the terminal. Enter ZZHLD after the complete message is received.

Do not enter the ZZHLD command from a local workstation because it locks the workstation.

ZZMCH CHANGING THE MASTER TERMINAL

If the master terminal becomes disabled, you can designate another terminal as the new master terminal by entering the ZZMCH command. The new master terminal can be your terminal, another IMS terminal, or the system console (if console support is configured). You can also enter the ZZMCH command from the master terminal when it is operable, to designate a new master terminal. The format is:

```
ZZMCH terminal-id
```

terminal-id	4-character new master terminal name

Response message:

```
NEW MASTER TERMINAL IS terminal-id
```

If the old master terminal becomes operable again during the IMS session, it functions as a standard terminal, not the master terminal. When IMS is started up again for its next session, the original master terminal is restored unless the PARAM RESTART option is used (multithread IMS only).

If the console is configured as the master terminal in single-thread IMS, you cannot use ZZMCH to designate a new master terminal.

ZZNRM RESTORING NORMAL MODE

The ZZNRM command restores your terminal to normal mode after it has operated in test mode. When your terminal is in normal mode, you can update files. The format is:

```
ZZNRM
```

Response message:

```
TERMINAL OUT OF TEST MODE
```

This command is accepted only when your terminal is in test mode and is not interactive.

ZZRDY

RELEASING HOLD STATE

The ZZRDY command releases the hold on output that you put into effect with the ZZHLD command. The format is:

```
ZZRDY
```

Response message:

```
TERMINAL READY
```

On a UNISCOPE 100 or 200 display terminal, you must press the WAIT switch before transmitting the ZZRDY command. On a UTS 400 terminal, press the KBOARD UNLOCK switch before transmitting the ZZRDY command.

ZZRSD RESENDING LAST OUTPUT MESSAGE

The ZZRSD command resends the last transaction-oriented output message displayed at your terminal. The format is:

```
ZZRSD
```

ZZRSD resends the output responses to the ZZCNC, ZZCLS, and ZZOPN terminal commands and to the ZZTST command in multithread IMS. It does not resend responses to other terminal commands.

Once you enter another input message, including other terminal commands, you can no longer receive the previous output message.

You can resend an output message only once with the ZZRSD command.

The ZZRSD command is not available if RESEND=NO is configured.

ZZTMD PLACING TERMINAL IN TEST MODE

The ZZTMD command places your terminal in test mode. When the terminal is in test mode, you can simulate file updating but data files are not physically altered. The format is:

```
ZZTMD
```

Response message:

```
TERMINAL IN TEST MODE
```

The ZZTMD command is useful in two situations:

1. Training new terminal operators
2. Testing and debugging new or revised action programs and data definitions

When the training or testing session is completed, issue the ZZNRM command to restore your terminal to normal mode.

This command is not accepted when your terminal is in interactive mode.

IMS TRANSACTION CODES ENTERED FROM STANDARD TERMINALS

IMS provides a number of action programs for special purposes. To activate these action programs, you key in IMS-supplied transaction codes. UNIQUE is an IMS-supplied set of action programs for file processing. We cover UNIQUE in a separate section.

You can enter the BRKPT, DITBL, DLMSG, JI, and SWTCH transaction codes at any IMS terminal. You can also enter the DLOAD transaction code at standard IMS terminals, but they must be UTS 40 or UTS 400 terminals. The CHTBL and ZSTAT transaction codes and a special form of the SWTCH and BRKPT transaction codes are available only to the master terminal operator. We cover the master terminal transaction codes in a separate section.

BRKPT

BREAKPOINTING USER-DEFINED PRINTER FILES/ RELEASING ANY ASSOCIATED ASSIGNMENT LOCKS

The BRKPT transaction code breakpoints user-defined printer files (any file where FILETYPE=PRNT) and unconditionally releases any associated assignment locks. All data in the following BRKPT formats must be separated by at least one space and cannot contain embedded blanks. No comments are permitted after the last entered character.

After a successful BRKPT request, the console operator is notified via the OS/3 system console. He now can print the accumulated spooled data of each printer file.

BRKPT Request to Designated Printer File

This format breakpoints the named printer file only if that file is assigned to the terminal requesting the breakpoint.

BRKPT filename

filename	Name of the printer file.

BRKPT (cont)

On successful completion of this request, you receive the message:

```
BRKPT COMPLETED
```

If your request is unsuccessful, you receive an error message listed in Part 3.

BRKPT Request to All User-Defined Printer Files Currently Assigned to a Terminal

This format breakpoints all printer files assigned to the terminal named. The format is:

```
BRKPT ALL terminal-id
```

terminal-id	This is a 4-character name; cannot represent a pseudo-terminal.

On successful completion of this request, you receive the message:

```
BRKPT COMPLETED
```

If this request is unsuccessful, you receive one of the error messages listed in Part 3.

DISPLAYING FIELDS IN INTERNAL TABLES

The DITBL transaction displays the contents of fields in the internal tables generated by the configurator from your specifications in the ACTION and PROGRAM sections.

Displaying a Field in the Action Control Table

To display a field in the action control table for an action, enter DITBL in the format:

```
DITBL ACT program-name field-name=
```

`program-name`	Program named in ACTION section
`field-name`	See following table for valid field names

Field Name	Meaning
CDAL	Continuity data area length
FILE	Files assigned to this action
IMAL	Input message area length
MXSZ	Maximum action program length
OMAL	Output message area length
SHSZ	Size of COBOL shared data area
WKAL	Work area length

Response message:

```
DISPLAY OF field-name OF ACT=contents
```

Example:

```
Entry:      DITBL ACT CREDIT FILE=
Response:   DISPLAY OF FILE OF ACT=CUSTFIL,INVFIL,ORDER
```

Displaying All Fields in the Action Control Table

You can display all fields in an action control table in hexadecimal format by entering DITBL in the format:

```
DITBL ACT program-name ALL
```

program-name	Program named in ACTION section

If all fields of the action control table do not fit on the screen, the display is truncated.

Displaying a Field in the Program Control Table

To display a field in a program control table, enter DITBL in the format:

```
DITBL PCT program-name field-name=
```

program-name	Program named in PROGRAM section
field-name	See following table for valid field names

Field Name	Meaning
RESP	Program residence (YES/NO)
SUBP	Subprogram (YES/NO)
TYPE	Reentrant (RE), serially reusable (SE), or sharable (SH)

Response message:

```
DISPLAY OF field-name OF PCT=contents
```

Example:

```
Entry:      DITBL PCT UPDATE RESP=
Response:   DISPLAY OF RESP OF PCT=NO
```

Displaying All Fields in the Program Control Table

You can display all fields in a program control table in hexadecimal format by entering DITBL in the format:

```
DITBL PCT program-name ALL
```

If all fields of the program control table do not fit on the screen, the display is truncated.

DLMSG

DISPLAYING THE LAST EFFECTIVE OUTPUT MESSAGE

The DLMSG transaction code displays the last effective output message sent to your terminal from an action program or UNIQUE. To use DLMSG, TOMFILE=YES must be configured. The format is:

```
DLMSG
```

When you cancel an updating transaction or the transaction abnormally terminates, IMS rolls back any updates you made since the last rollback point. Enter DLMSG to determine the point at which you should resume updating.

Retrieving Another Terminal's Last Output Message

You can also use DLMSG to retrieve the last effective output message sent to another terminal and display it at your terminal. To do this, enter:

```
DLMSG terminal-id
```

terminal-id — 4-character terminal name

Displaying Last Message after Cold or Warm Restart

Sometimes the IMS administrator starts up IMS with a *cold* or *warm* restart. He does this when the previous IMS session ended abnormally and some transactions were still in progress, or after he runs the offline recovery program to recover data files.

When IMS is started up with a cold or warm restart, the message

```
IMS READY DLMSG
```

appears on each terminal that is in a ready state. When this message appears, press the transmit key on a display terminal or enter DLMSG on a hard-copy terminal to activate the DLMSG transaction. DLMSG displays the last effective output message sent to your terminal during the previous session and helps you determine how far rollback of updates has gone. When the IMS administrator does a cold restart after offline recovery, you may have to repeat a number of updates.

DOWNLINE LOADING A UTS PROGRAM

When you are operating a UTS 40 or UTS 400 terminal and a user-written UTS program is available in the IMS load library, you can use the DLOAD transaction code to downline load that program to your terminal.

You can downline load the UTS program to your terminal's main storage for immediate use, or to a cassette or diskette attached to the terminal for later use. When you downline load directly to main storage, your terminal must be a primary station, not a slave station. The DLOAD transaction code is available only when DLLOAD=YES is configured.

Downline Loading to UTS 40/UTS 400 Main Storage

```
DLOAD program-name
```

program-name	8-character program name

The program is downline loaded in blocks. After the last block is transmitted, you receive the message:

```
SUCCESSFUL LOAD
```

If the downline load is unsuccessful, you receive one of the error messages listed in Part 3.

Downline Loading to Cassette/Diskette

```
DLOAD program-name,aux-device-no,program-id
```

program-name	8-character program name
aux-device-no	1-digit auxiliary device number
program-id	1- to 4-character alphanumeric name assigned to the program for storage on the cassette or diskette. No special characters are permitted.

When the downline load is complete, you receive the message:

```
CASSETTE/DISKETTE LOADED
```

If the downline load is unsuccessful, you receive one of the error messages listed in Part 3.

A successful downline load to a cassette or diskette does not guarantee a successful load to the UTS 40/UTS 400 main storage later. Problems such as inadequate main storage do not arise until you attempt to read the program from the auxiliary device.

JI INITIATING AN OS/3 JOB

The JI transaction code lets you run an OS/3 job from an IMS terminal. JI initiates a system command that reads a job control stream and schedules the job for execution. The format is:

```
JI command [parameters]
```

command	One of the following: RUN/RU/RV/SI/SC/OCL/OC/OV

For a description of the commands and their parameters, see the interactive services commands and facilities programmer reference, UP-8845 (current version).

The command and its parameters must not exceed 64 characters. No comments or extraneous characters are permitted. Enter at least one space between the JI transaction code and the command.

When the command is accepted, you receive the message:

```
JOB REQUEST NOW UNDER SYSTEM CONTROL
```

From this point, any messages relating to the job are sent to the operator console or workstation that started up IMS.

SWTCH SENDING A MESSAGE TO OTHER TERMINALS

The SWTCH transaction lets you send a message to another terminal or terminals, including the system console (if console support is configured). Avoid using the SWTCH transaction any more than necessary because it slows down IMS performance at all terminals. You can use SWTCH only when unsolicited output is configured.

Sending a Message to Specific Terminals

```
SWTCH terminal-id,...;△△message-text
```

This format sends the message to one or more terminals that you identify by their 4-character terminal names. The system console terminal-id is 1CNS. You must leave two spaces between the semicolon and the message.

Example:

```
SWTCH TRM2,TRM3,TRM4;  DON'T USE CREDIT TRANSACTION UNTIL FURTHER NOTICE.
```

Sending a Message to the Master Terminal

```
SWTCH MAST;△△message-text
```

Example:

```
SWTCH MAST;  DON'T USE CREDIT TRANSACTION UNTIL FURTHER NOTICE.
```

Output at Destination Terminals

Each valid destination terminal receives the message:

```
FROM source-terminal-id. message-text
```

In the examples, if your terminal name is TRM1, the output at TRM2, TRM3, TRM4, and the master terminal is:

```
FROM TRM1.  DON'T USE CREDIT TRANSACTION UNTIL FURTHER NOTICE.
```

Status Messages Received at Source Terminal

Your terminal receives one or more of these status messages:

- **MSG SENT**

  Message was delivered to all destination terminals. Terminal operators have not necessarily accepted the message, but it has been queued.

- **MSG NOT SENT INVALID DEST.terminal-id,...**

  Message was not delivered to one or more terminals because of invalid terminal names.

- **MSG QUEUED TERMINAL DOWN.terminal-id**

  One of the destination terminals cannot receive the message because it is down. However, the message is queued, and the destination terminal receives it when it becomes operable.

When a destination terminal is down and an alternate terminal is assigned, messages are automatically sent to the alternate terminal and you are not notified. If the alternate terminal is also down, the message is queued at the original destination terminal and you are notified that the destination terminal is down.

UNIQUE COMMANDS

UNIQUE is an inquiry/update language that displays and updates records in data files. The files accessed by UNIQUE are defined files. The data structure and allowable updating operations for each defined file are defined in an IMS data definition.

This section gives the format and a brief description of each UNIQUE command and is intended as a quick reference once you have learned the commands. For a complete description and examples, see the IMS data definition and UNIQUE user guide, UP-9209 (current version).

RULES FOR ENTERING UNIQUE COMMANDS

1. Clear the screen or press the start-of-entry key before entering any UNIQUE command. When using an IBM 3270 terminal, enter all commands from home position.

2. Enter commands in either uppercase or lowercase letters.

3. Enter at least one space between words except when other punctuation is required, such as a comma, semicolon, or equal sign.

4. When entering an identifier, value, or specification that contains blanks or special characters, enclose it in apostrophes. When a name contains an apostrophe, enter two apostrophes.

5. Include decimal points and commas in numeric values where required. Do not enclose numeric values in apostrophes.

6. When requesting a child record, enter both parent and child identifiers, separated by commas. For additional identifiers on the same command, you may substitute hyphens for parent identifiers and omit commas.

   Example:

   ```
   DISPLAY 'CENTURY HARDWARE',500850,01;--02;--03
   ```

ADDING A RECORD

The ADD command initiates a series of inputs and responses that result in adding a record to the file.

You can use the display format at any display terminal except an IBM 3270 display station. You can use the hard-copy format at any terminal.

Display Format

```
ADD identifier-1[;identifier-2]...
```

UNIQUE responds with an update format. Press the tab key to reach the start of each field, and fill in values for the items you want to add. Place the cursor between the characters < > to transmit the entire screen.

If there are no errors, UNIQUE adds the record to the file. If there are errors, UNIQUE returns an error format. Enter new values for the incorrect items and retransmit the screen.

When you enter more than one identifier on the ADD command, UNIQUE updates one record at a time. UNIQUE embeds a NEXT command in the screen display; press the transmit key to start the update sequence for the next record.

Hard-Copy Format

```
ADD identifier [item-name=]value[;[item-name=]value]...
```

Simplified hard-copy formats:

1. `ADD identifier item-name=value[;item-name=value]...`
2. `ADD identifier value[;value]...`

In format 1, enter items in any order. In format 2, enter items in the order they appear in the record; enter semicolons for omitted items.

UNIQUE responds with column headers, valid entries, and error formats for incorrect items. If there are no errors, enter the OK command to add the record to the file. If there are errors, enter new values (with or without item-names). UNIQUE repeats the output screen with the new values.

CANCELING AN UPDATE FUNCTION

The CANCEL command cancels the update function requested with the previous ADD, CHANGE, or DELETE command. The format is:

```
CANCEL
```

Before keying in CANCEL from a hard-copy terminal, press the carriage return key and the line feed key.

CHANGE CHANGING A RECORD

The CHANGE command initiates a series of inputs and responses that result in changing one or more items in a record.

You can use the display format at any display terminal except an IBM 3270 display station. You can use the hard-copy format at any terminal.

Display Format

```
CHANGE identifier-1[;identifier-2]...
```

UNIQUE responds with an update format. Press the tab key to reach the start of each field, and fill in values for the items you want to change. Place the cursor between the characters < > to transmit the entire screen.

If there are no errors, UNIQUE changes the record in the file. If there are errors, UNIQUE returns an error format. Enter new values for the incorrect items and retransmit the screen.

When you enter more than one identifier on the CHANGE command, UNIQUE updates one record at a time. UNIQUE embeds a NEXT command in the screen display; press the transmit key to start the update sequence for the next record.

Hard-Copy Format

```
CHANGE identifier [item-name=]value[;[item-name=]value]...
```

Simplified hard-copy formats:

1. `CHANGE identifier item-name=value[;item-name=value]...`
2. `CHANGE identifier value[;value]...`

In format 1, enter items in any order. In format 2, enter items in the order they appear in the record; enter semicolons for omitted items.

UNIQUE responds with column headers, valid entries, and error formats for incorrect items. If there are no errors, enter the OK command to change the record in the file. If there are errors, enter new values (with or without item-names). UNIQUE repeats the output screen with the new values.

CLOSE

ENDING THE UNIQUE TRANSACTION

The CLOSE command terminates the UNIQUE transaction. The format is:

```
CLOSE
```

You do not need a CLOSE command to end a dialog with one file before starting a dialog with another file. Enter the CLOSE command at the end of the UNIQUE session.

DELETE

DELETING A RECORD

The DELETE command lets you delete a record after viewing its contents. The format is:

```
DELETE identifier-1[;identifier-2]...
```

UNIQUE displays the record and then deletes it after you enter an OK command. Enter the CANCEL command if you decide not to delete the record.

When you enter more than one identifier on the DELETE command, UNIQUE displays one record at a time. UNIQUE embeds a NEXT command in the response to the OK or CANCEL command; press the transmit key to display the next record for deletion.

The DETAIL command interrupts the processing of a LIST command to obtain a secondary listing. The format is:

```
DETAIL [[display-content-specification]
       [IF conditional-expression];    ]...
       [FOR identifier-1]
       [{AFTER} identifier-2]
       [{FROM }              ]
       [statistical-function [item-name-1[,item-name-2]...]]...
```

The DETAIL command functions the same way as the LIST command, but you use it to obtain a different listing while retaining the text of the first listing. For a description of the format specifications, see the LIST command.

When the output listing takes up more than one screen, UNIQUE embeds a MORE command in the screen display; press the transmit key to display the next screenful. Use the MORE command to resume LIST processing after the DETAIL command.

DISPLAYING A RECORD

The DISPLAY command displays the contents of a record with column headings. The format is:

```
DISPLAY identifier-1[;identifier-2]...
```

When you enter more than one identifier, UNIQUE displays the records one at a time. UNIQUE embeds a NEXT command in the screen display; press the transmit key to display the next record.

LISTING THE RECORDS IN A FILE

The LIST command lists the contents of all or selected portions of a file and generates statistics about the file. The format is:

```
LIST [[display-content-specification]
     [IF conditional-expression];    ]...
     [FOR identifier-1]
     [{AFTER} identifier-2]
     [{FROM }              ]
     [statistical-function [item-name-1[,item-name-2]...]]
```

When the output listing takes up more than one screen, UNIQUE embeds a MORE command in the screen display; press the transmit key to display the next screenful.

Unqualified LIST Command

```
LIST
```

Lists complete contents of the file

Selecting Items or Records for Listing

```
display-content-specification
```

Types of display content specifications:

```
item-names
record-name
ALL
subrecord-name
```

Specifying a Condition

```
IF conditional-expression
```

Operators:

EQ or =	Equal to
NE	Not equal to
GT or >	Greater than
GE	Greater than or equal to
LT or <	Less than
LE	Less than or equal to
NOT, AND, OR	Negative and compound operators

Listing a Subset of a Hierarchical File

```
FOR identifier-1
```

Lists items or complete records related to a specific record in a hierarchical file, usually child records for a parent record.

Specifying a Starting Point for Listing Records

```
{AFTER}identifier-2
{FROM }
```

AFTER	Listing starts after record named by identifier-2
FROM	Listing starts with record named by identifier-2

Generating Statistics

```
statistical-function [item-name-1[,item-name-2]...]...
```

Statistical functions:

AVG item-name-1[,item-name-2]...
Displays average value for each item specified

COUNT
Displays number of records that meet selection criteria

MAX item-name-1[,item-name-2]...
Displays maximum value for each item specified and identifier of record containing the value

MIN item-name-1[,item-name-2]...
Displays minimum value for each item specified and identifier of record containing the value

TOTAL item-name-1[,item-name-2]...
Displays total value for each item specified

MORE — DISPLAYING NEXT DETAIL, LIST, OR SHOW SCREEN

The MORE command displays the next screenful of data from the previous DETAIL, LIST, or SHOW command. The format is:

```
MORE [{DETAIL}]
     [{LIST  }]
     [{SHOW  }]
```

DETAIL	Displays next DETAIL screen
LIST	Displays next LIST screen
SHOW	Displays next SHOW screen

UNIQUE embeds a MORE command in the screen display for DETAIL, LIST, and SHOW when the output listing takes up more than one screen; press the transmit key to display the next screenful.

Enter the MORE command to reinstate a DETAIL, LIST, or SHOW command after processing another command. The MORE command without the DETAIL, LIST, or SHOW option reinstates the most recent DETAIL, LIST, or SHOW command. Use the DETAIL, LIST, or SHOW option when more than one command is outstanding.

NEXT

SELECTING THE NEXT RECORD

The NEXT command selects the next identifier from the most recent ADD, CHANGE, DELETE, or DISPLAY command. The format is:

```
NEXT
```

UNIQUE embeds the NEXT command in the screen display when you enter more than one identifier; press the transmit key to display the next record.

Enter the NEXT command to display the next record after processing another command.

OK

AUTHORIZING AN UPDATE FUNCTION

The OK command completes the updating function requested with the previous command. It is always required with the DELETE command and with the hard-copy form of the ADD and CHANGE commands. It is occasionally used with the display form of the ADD and CHANGE commands. The format is:

```
OK
```

Before keying in OK from a hard-copy terminal, press the carriage return key and the line feed key.

OPEN — OPENING A UNIQUE DIALOG

The OPEN command initiates a UNIQUE transaction and opens a dialog with a file. You can issue another OPEN command at any time to access a different file. The format is:

```
OPEN password
```

password	Actual name of defined file or password assigned by the IMS administrator

The OPEN command may be entered separately or with another UNIQUE command.

SHOW

DISPLAYING RECORD FORMATS AND COMMAND STATUS

The SHOW command displays:

- the format of each record and subrecord in the file with update formats for record items;
- the most recent LIST and DISPLAY commands; and
- any ADD, CHANGE, DELETE, or DISPLAY command with unprocessed identifiers.

The format is:

```
SHOW
```

Symbols used in SHOW command display:

I	Identifier. Value required for ADD; change not permitted.
A	Value required for ADD; change not permitted.
D	Display only. Value not required for ADD; change not permitted.
!	Value required for ADD; change permitted.
*	Value not required for ADD; change permitted.

PART 2: MASTER TERMINAL

MASTER TERMINAL COMMANDS

Master terminal commands control and monitor the IMS system. You can enter these commands only from the master terminal, except for ZZHLT and ZZSHD, which can also be entered from the system console or master workstation when console support is configured. (A master workstation is a workstation from which the IMS job is entered or may be defined in the job control stream).

If the system console is configured as the master terminal, you can enter all master terminal commands from the system console or master workstation. The same is true if the master terminal is down and you use the ZZMCH command to designate the console as the new master terminal.

ZZALT ASSIGNING AN ALTERNATE TERMINAL

The ZZALT command assigns an alternate terminal for a designated terminal. Whenever the original terminal is physically or logically down, switched messages for that terminal are rerouted to the alternate terminal. Nonswitched messages are not affected. When the original terminal becomes operational again, rerouting is discontinued. You can issue the ZZALT command using the second format to cancel the alternate terminal assignment.

Assigning an Alternate Terminal

```
ZZALT terminal-id,alt-terminal-id
```

terminal-id	4-character name of original terminal
alt-terminal-id	4-character name of alternate terminal

Response message:

```
terminal-id IS ALTERNATED TO alt-terminal-id
```

Canceling the Alternate Terminal Assignment

```
ZZALT terminal-id
```

terminal-id	4-character name of original terminal

Response message:

```
terminal-id IS RESTORED
```

ZZALT Considerations

1. Only one level of alternation is performed. If the alternate terminal is also down, switched messages are not rerouted to a third terminal but are queued at the alternate terminal.

2. Test messages generated by the ZZTST command in single-thread IMS are not directed to the alternate terminal.

3. Unsolicited output must be configured.

CONTROLLING BATCH PROCESSING IN ONLINE MODE

The ZZBTH command initiates and controls batch transaction processing in online mode. To use ZZBTH, you must configure batch processing. The format is:

```
ZZBTH {module-name,filename}
      {*[,ALL]            }
      {CANCEL             }
      {PAUSE              }
      {RESUME             }
```

Processing Input Messages from a Source File

```
ZZBTH module-name,filename
```

module-name	1- to 8-character name of module containing input messages
filename	1- to 8-character source file name

When batch processing starts, you receive the message:

```
BATCH INITIATED
```

Processing Input from the Job Control Stream

ZZBTH *

Processes next PARAM IN statement or embedded data set.

ZZBTH *,ALL

Processes all PARAM IN statements and embedded data since the last ZZBTH * command or from the beginning of the job control stream.

When batch processing starts, you receive the message:

```
BATCH INITIATED
```

Canceling Batch Processing

```
ZZBTH CANCEL
```

Batch processing stops after the current output message is printed. The print file is closed. File modifications are not rolled back. The batch processor substitutes a ZZCNC terminal command for the next expected input message. The response to the ZZBTH CANCEL command is:

```
BATCH PROCESSING CANCELLED
```

You can issue another ZZBTH command to reinitiate batch processing:

1. ZZBTH * or ZZBTH *,ALL processes the next PARAM IN or data set in the job control stream.

2. ZZBTH module-name,filename processes the named module from the beginning, even if it is the same module being processed when you issued the ZZBTH CANCEL command.

Suspending Batch Processing

```
ZZBTH PAUSE
```

Batch processing stops after the current output message is printed, but the print file is not closed. You can resume processing from the point you stopped by entering a ZZBTH RESUME command. The response to the ZZBTH PAUSE command is:

```
BATCH PROCESSOR IN PAUSE STATE
```

Resuming Batch Processing

```
ZZBTH RESUME
```

Batch processing resumes from the point it was suspended by a ZZBTH PAUSE command. The response to the ZZBTH RESUME command is:

```
BATCH RESUMED
```

Concurrent Batch Processing in Multithread IMS

In a single-thread IMS system, you must wait until processing of one ZZBTH command is completed before entering another. In multithread IMS, you can enter as many ZZBTH commands as the number of batch terminals specified on the BATCH configurator parameter. You can use multiple ZZBTH commands only when processing source modules. You cannot enter another ZZBTH command during processing of an embedded data set.

Tracking Progress of Batch Processing

To determine whether processing of a ZZBTH command is complete, or to keep track of the processing of batch modules in a multithread IMS system, enter the ZZTCT master terminal command with BTH1, BTH2, BTH3, or BTH4 as the terminal-id. This gives you a report of the activity at the specified batch terminal.

CLOSING A FILE

The ZZCLS command closes a data file, allowing non-IMS users to access it. The file can be reopened with the ZZOPN command. The format is:

```
ZZCLS filename
    filename        File defined in configurator FILE section
```

No comments or special characters may follow filename.

Response message:

```
filename CLOSED
```

You cannot close a data file when another terminal is accessing it. IMS returns the message:

```
filename IN USE BY terminal-name
```

Reenter ZZCLS when the file is free.

ZZCLS Considerations

1. ZZCLS cannot close a defined file or a common storage area file.

2. For a sequential file, include the EXTEND keyword in the LFD job control statement at IMS start-up to access the next ascending record number after issuing ZZCLS and ZZOPN commands.

ZZDWN MARKING A TERMINAL DOWN

The ZZDWN command logically disables a terminal. It is generally used to mark down a terminal that is malfunctioning. This improves response time for active terminals. The format is:

```
ZZDWN terminal-id
```

terminal-id	4-character name of terminal to be marked down

Response message:

```
TERMINAL terminal-id DOWN
```

ZZDWN cannot be used to disable a batch terminal or the system console.

ZZHLT

HALTING THE IMS SESSION

The ZZHLT command terminates the IMS session immediately and is used only for emergencies. Terminal operators are not notified. The format is:

```
ZZHLT
```

When ZZHLT is entered, transactions in progress are aborted and are not rolled back. Files are closed, communications lines are deactivated, IMS terminates with a main storage dump, and the following message is displayed on the system console:

```
JOB jobname ABNORMALLY TERMINATED ERROR CODE ØØØ
```

File recovery is usually required, using either the offline recovery utility or a warm restart for the next IMS session.

ZZHLT can be entered from the system console or master workstation if console support is configured.

ZZOPN OPENING A FILE

The ZZOPN command reopens a data file that was closed with the ZZCLS command. The format is:

```
ZZOPN filename
```

filename	File defined in configurator FILE section.

No comments or special characters may follow filename.

The ZZPCH command tells IMS to load a new version of an action program added to the load library during the online session. The format is:

```
ZZPCH program-name
```

program-name	Name of updated action program

You can use ZZPCH for two purposes:

1. Debugging action programs. You can execute an action program online, recompile it, and then execute the new version.

2. Adding an action program to the load library that was missing at IMS start-up. The program must be identified in a PROGRAM section at configuration.

Do not issue the ZZPCH command for a resident subprogram.

Response message:

PROGRAM program-name **MARKED RELOADABLE VERSION** yymmdd hhmmss

program-name	Name of updated action program
yymmdd	Date of new action program version
hhmmss	Clock time of new action program version

The ZZSHD command shuts down the IMS session after all transactions in progress are completed or expiration of a shutdown time-out period, whichever comes first. The format is:

```
ZZSHD[nn]
```

nn	1- or 2-digit number of minutes until shutdown. The nn option is not supported from the system console unless the console is the master terminal.

The shutdown time-out period is different for single-thread and multithread IMS:

1. Single-thread IMS:
   - When you specify nn, shutdown time-out is the number of minutes you specify, but no less than 1 minute.
   - When you omit nn, shutdown time-out is 3 minutes.

2. Multithread IMS:

   - When you specify nn, shutdown time-out is the number of minutes you specify, but no less than the action time-out value specified in the configurator TIMEOUTS section.

   - When you omit nn, shutdown time-out is five times the configured action time-out value.

Terminal commands can be entered during the shutdown period, but new transactions are not accepted. The master terminal and any terminals attempting to enter new transactions receive the message:

```
SHUTDOWN IN PROCESS
```

Any transactions not completed by the end of the time-out period are rolled back.

ZZSHD can be entered from the system console or master workstation if console support is configured.

ZZTCT

OBTAINING TERMINAL STATUS

The ZZTCT command displays processing statistics for a specific terminal since the start of the IMS session.

The format is:

```
ZZTCT terminal-id
```

terminal-id	4-character terminal name

Response message:

```
STATUS OF terminal-id { UP  };nnnn MSG;nnnn TRAN;nnnn TRM CMD;ALT=name
                      { DWN }
                      { HLD }
                      { TMD }
```

Statistic	Meaning
UP/DWN/HLD/TMD	Current status of terminal – logically up, logically down, on hold, or in test mode
nnnn MSG	Number of input and output messages. Input messages counted are normal input, output-for-input queueing messages, and terminal commands. Output messages counted are normal output, multiple output, switched output, continuous output, and responses to terminal commands.
nnnn TRAN	Number of transactions
nnnn TRM CMD	Number of terminal commands
ALT=name	Name of alternate terminal if one is assigned

ZZTST TESTING A TERMINAL

The ZZTST command tests a terminal to determine whether it can receive output. To use ZZTST, you must configure unsolicited output. The format is:

```
ZZTST terminal-id
```

terminal-id	4-character name of terminal to be tested

When you enter the ZZTST command, IMS sends a message to the named terminal and then notifies you whether the message was received. The message sent to the terminal being tested is:

```
TEST REQUEST FROM MASTER TERM.
```

ZZTST cannot be used to send a test message to a batch terminal or the system console.

Response message:

```
TEST MESSAGE SENT TO TERMINAL
```

or

```
TEST TERMINAL IS DOWN
```

ZZUP MARKING A TERMINAL UP

The ZZUP command marks up a terminal that was previously marked down by the ZZDWN command and is now operative. The format is:

```
ZZUP terminal-id
```

terminal-id	4-character name of terminal to be marked up

Response message:

```
TERMINAL terminal-id UP
```

ZZUP cannot be used to mark up a batch terminal or the system console.

IMS TRANSACTION CODES ENTERED FROM THE MASTER TERMINAL

Four IMS transaction codes are restricted to the master terminal – BRKPT, CHTBL, ZSTAT, and one form of the SWTCH transaction.

You can enter these transactions from the system console or master workstation if the console is configured as the master terminal or designated as master terminal by a ZZMCH command. Because output to the console or master terminal is limited, the ZSTAT transaction is effective only when you direct output to a data file.

BRKPT

BREAKPOINTING USER-DEFINED PRINTER FILES/ RELEASING ANY ASSOCIATED ASSIGNMENT LOCKS

The BRKPT transaction code breakpoints user-defined printer files (any file where FILETYPE=PRNT) and unconditionally releases any associated assignment locks. All data in the following BRKPT formats must be separated by at least one space and cannot contain embedded blanks. No comments are permitted after the last entered character.

After a successful BRKPT request, the console operator is notified via the OS/3 system console. He now can print the accumulated spooled data of each printer file.

BRKPT Request to Designated Printer File

This format breakpoints the named printer file only if that file is assigned to the terminal requesting the breakpoint:

```
BRKPT filename
```

filename	Name of the printer file.

BRKPT (cont)

On successful completion of this request, you receive the message:

```
BRKPT COMPLETED
```

If your request is unsuccessful, you receive an error message listed in Part 3.

BRKPT Request to All User-Defined Printer Files Currently Assigned to a Terminal

This format breakpoints all printer files assigned to the terminal named. The format is:

```
BRKPT ALL terminal-id
```

terminal-id	This is a 4-character name; cannot represent a pseudo-terminal.

On successful completion of this request, you receive the message:

```
BRKPT COMPLETED
```

If this request is unsuccessful, you receive one of the error messages listed in Part 3.

Printer Files Currently Assigned to Specified Terminal

This format can be issued only from the master terminal to affect any terminal's files:

```
BRKPT ALL terminal-id
```

`terminal-id` This is a 4-character terminal name; cannot represent a pseudo-terminal.

On successful completion of this request, you receive the message:

```
BRKPT COMPLETED
```

If this request is unsuccessful, you receive one of the error messages listed in Part 3.

CHANGING CONFIGURATOR SPECIFICATIONS

The CHTBL transaction lets you make temporary changes to internal tables generated by the configurator from your specifications in the ACTION and PROGRAM sections. These changes are effective for the remainder of the IMS session. If you start up the next IMS session with the PARAM RESTART option, the changes remain in effect for the next session.

Do not make changes to a table being used by a current transaction; this causes unpredictable results.

Changing a Field in the Action Control Table

To change a specification in an ACTION section, enter CHTBL in the format:

```
CHTBL ACT program-name field-name=contents
```

program-name	Program named in ACTION section
field-name	See following table for valid field names

Field Name	Meaning	ACTION Section Parameter
CDAL	Continuity data area length	CDASIZE
FILE	Assigns a file to this action (File must be defined in a configurator FILE section.)	FILES
IMAL	Input message area length	INSIZE
MXSZ	Maximum action program length	MAXSIZE
OMAL	Output message area length	OUTSIZE
SHSZ	Size of COBOL shared data area	SHRDSIZE
WKAL	Work area length	WORKSIZE

For valid field contents, refer to the equivalent configurator parameters in the IMS system support functions user guide, UP-8364 (current version). CDAL, IMAL, and OMAL specifications may not exceed maximum sizes configured for the IMS system.

Example:

```
CHTBL ACT CREDIT MXSZ=4000
```

Response message:

```
CHTBL COMPLETED
```

Changing a Field in the Program Control Table

You can change only the TYPE specification in any PROGRAM section, to declare a program reentrant, serially reusable, or sharable. The format is:

```
CHTBL PCT program-name TYPE={RE}
                            {SE}
                            {SH}
```

Example:

```
CHTBL PCT UPDATE TYPE=SH
```

Response message:

```
CHTBL COMPLETED
```

NOTE:

You cannot change the TYPE specification for resident programs. It should only be displayed.

The SWTCH ALL form of the SWTCH transaction sends a message to all terminals including the system console, if configured. The format is:

```
SWTCH ALL;△△message-text
```

Leave two spaces between the semicolon and the message.

Each valid destination terminal receives the message in the format:

```
FROM source-terminal-id. message-text
```

Your terminal receives one or more of these status messages:

- `MSG SENT`
- `MSG NOT SENT INVALID DEST.terminal-id,...`
- `MSG QUEUED. TERMINAL DOWN.terminal-id`

The ZSTAT transaction generates statistics about files, programs, transactions, and terminals. You can direct this output to:

- the master terminal;
- the master terminal and an auxiliary device (terminal printer, cassette, or diskette); or
- a data file (STATFIL).

You can select continuous or noncontinuous output to the master terminal and auxiliary device. To use continuous output, you must specify CONTOUT=YES in the configurator OPTIONS section.

Normally, statistics are accumulated from the beginning of the IMS session. When you use PARAM RESTART at IMS start-up in a multithread system, statistics are accumulated over multiple sessions.

When executing ZC#ZSF (the offline routine that prints statistics created by ZSTAT), the error message DM44 PRNTR LINE TRUNCATED is output. Ignore this message.

ZSTAT has three formats. The first format displays a menu screen that lets you select the statistics you want, the second format displays or prints all statistics, and the third displays a *help* screen.

Format 1: Displaying a Menu Screen

Because the menu screen contains protected fields, you cannot enter format 1 from a hard-copy terminal or a display terminal that does not have the screen protection feature.

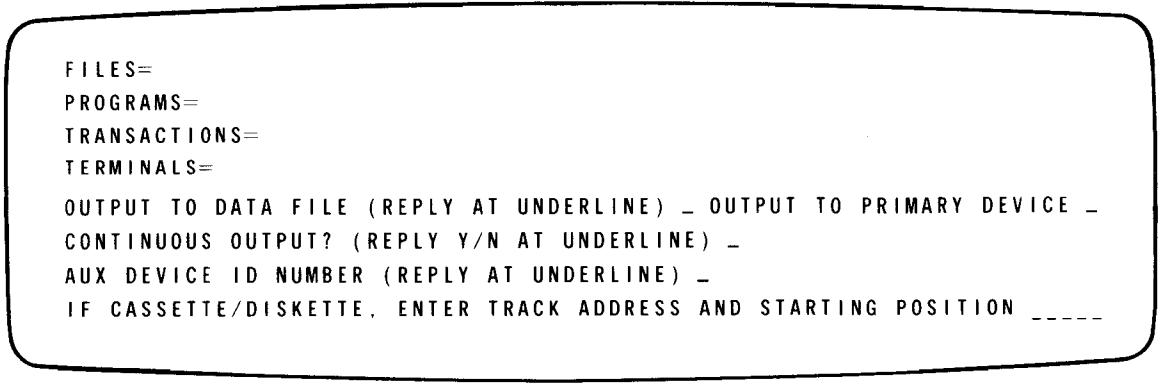
If the master terminal is a UTS 40 or a UTS 400, enter VAR on the control page transmit function (XMIT) and set the FCC/PROTECT switch to the FCC position.

To display a menu screen, enter ZSTAT with no parameters:

```
ZSTAT
```

ZSTAT (cont)

The menu screen looks like this:



To enter responses, press the tab key to reach each underline. Do not use the carriage return or space bar.

Valid Responses to Menu Screen

Menu Screen Entry	Valid Responses	Meaning
FILES=	ALL	Output data for all files
	CLOSED	Output data for closed files
	OPEN	Output data for open files
	name-list	Output data for named files
	NONE	No file data requested
PROGRAMS=	ALL	Output data for all programs
	name-list	Output data for named programs
	NONE	No program data requested
TRANSACTIONS=	ALL	Output data for all transactions
	name-list	Output data for named transactions
	NONE	No transaction data requested

ZSTAT (cont)

Menu Screen Entry	Valid Responses	Meaning
TERMINALS=	ALL	Output data for all terminals
	INT	Output data for interactive terminals
	name-list	Output data for named terminals
	NONE	No terminal data requested
OUTPUT TO DATA FILE	Y	Write data to STATFIL
	N	Output data to master terminal only
OUTPUT TO PRIMARY DEVICE	Y	Output data to master terminal in addition to STATFIL
	N	Output data to STATFIL only
CONTINUOUS OUTPUT?	Y	Output data in continuous mode
	N	Output data in noncontinuous mode
AUX DEVICE ID NUMBER	n	1-digit auxiliary device number. Omit when output to an auxiliary device is not desired

Menu Screen Entry	Valid Responses	Meaning
IF CASSETTE/DISKETTE, ENTER TRACK ADDRESS AND STARTING POSITION	nnnnn	1-digit track address followed by 4-digit starting position. Required if you have any other data on the cassette or diskette

NOTES:

1. The default value is always NONE or N. OUTPUT TO PRIMARY DEVICE is valid only with OUTPUT TO DATA FILE=Y.

2. You may enter a maximum of 13 file names, 13 program names, 18 transaction codes, and 22 terminal names.

3. When you don't enter a response to:

   - AUX DEVICE ID NUMBER; or
   - IF CASSETTE/DISKETTE, ENTER TRACK ADDRESS AND STARTING POSITION

   Do not transmit with the cursor beyond the response to the CONTINUOUS OUTPUT? entry. Otherwise, the system requires a response to the remaining entries.

Format 2: Displaying or Printing All Statistics

To generate statistics about all files, programs, transactions, and terminals in the IMS system, enter ZSTAT in the format:

```
ZSTAT ALL {[,CONT][,AUXn[,TCSasssss]][,FILE]}
          {[,FONLY]                          }
```

CONT	Display in continuous mode
AUXn	Output to auxiliary device in addition to master terminal. n is 1-digit auxiliary device number.
TCSasssss	Gives cassette/diskette track address and starting position. Required if you have any other data on cassette/diskette
FILE	Output to STATFIL in addition to master terminal
FONLY	Output to STATFIL but not to master terminal

Examples:

ZSTAT ALL

Displays statistics at master terminal in noncontinuous mode. When output requires more than one screen, MORE is embedded in the screen display; press the transmit key to display the next screenful.

ZSTAT ALL,FILE

Outputs statistics to both master terminal and STATFIL.

ZSTAT ALL,CONT,AUX2

Outputs statistics to master terminal and an auxiliary device in continuous mode. Auxiliary device may be a terminal printer, cassette, or diskette.

ZSTAT ALL,AUX3,TCS10000,FILE

Outputs statistics to master terminal, an auxiliary device, and STATFIL. The auxiliary device is a cassette or diskette with track address 1 and starting position 0000.

ZSTAT ALL,FONLY

Outputs statistics to STATFIL only.

Format 3: Displaying a Help Screen

To get a screen display describing the ZSTAT parameters and menu screen selections, enter:

```
ZSTAT HELP
```

There are two help screens. The first screen displays the ZSTAT parameters and their meanings. The second screen displays the menu screen selections and their meanings. You can respond YES or NO to CONTINUE PROCESSING ZSTAT on the second help screen. If you respond YES, the menu screen is displayed.

ZSTAT Output

ZSTAT output is the same whether you use the menu screen or ZSTAT ALL, except that only the data you request is displayed in response to the menu screen. In noncontinuous mode, each screen except the last contains MORE on the top line of the screen; press the transmit key to display the next screen.

When you request output to STATFIL only, you receive this message when processing is complete:

```
DATA WRITTEN TO STATFIL, ZSTAT TERMINATED
```

ZSTAT (cont)

Sample File Status Display Screen:

```
                                    [MORE]          81/08/28          17:05:32
FILE            STAT            TYPE          ACCESSES              UPDATES
FILE1           OPEN            MRAM                15                    3
FILE2           CLSD             SAM               936                  772
FILE3           OPEN             SAM               842                  624
FILE4   IS   INVALID
FILE5           CLSD            ISAM              2079                 1192
FILE6           CLSD            DAMR              1080                  293
TOTALS                                            4952                 2884
```

Column Header	Meaning
FILE	File name
STAT	File status - OPEN, CLSD, IS INVALID (invalid file name entered on menu screen)
TYPE	File type - MRAM, ISAM, DAMR, SAM, SAT, PRNT
ACCESSES	Number of file accesses
UPDATES	Number of file updates

ZSTAT (cont)

Sample Program Status Display Screen:

```
                                                [MORE]    81/08/28    17:06:15
PROGRAM        STAT      TYPE        RES        SUB       ACCESSES    LOADED
PROGRAM1       UP        SHARED      YES        YES         5100
PROGRAM2       DOWN      RE-ENT      YES         NO
PROGRAM3       UP        RE-ENT      YES         NO           351
PROGRAM4       UP        SERIAL       NO                      72         72
TOTALS                                                      5523       5172
```

Column Header	Meaning
PROGRAM	Program names
STAT	Program status - UP, DOWN, IS INVALID (invalid program name entered on menu screen)
TYPE	Program type - RE-ENT, SERIAL, SHARED (multithread only)
RES	Program residence - YES, NO
SUB	Subprogram - YES, NO
ACCESSES	Number of times program was accessed
LOADED	Number of times program was loaded

ZSTAT (cont)

Sample Transaction Status Display Screen:

```
                                                [MORE]      81/08/28   17:06:41
TRANSACT    ACCESSES     INPUT     OUTPUT      FILE-ACC    REM-ACC    LCAP
TRNSACT1           1         1          1             0          1    IMSB
TRNSACT2           3         3          3             0          1    IMSC
TRNSACT3           4         6          6            12          2
TOTALS             8        10         10            12          4
```

Column Header	Meaning
TRANSACT	Transaction code
ACCESSES	Number of times transaction was accessed
INPUT	Number of input messages processed by this transaction counting normal input, output-for-input queueing messages, delivery notice input messages, and function key input messages
OUTPUT	Number of output messages processed by this transaction counting normal output, switched messages, multiple output messages, and continuous output
FILE-ACC	Number of file accesses by this transaction
REM-ACC	In a distributed data processing (DDP) environment, number of remote accesses by this transaction; blank in a non-DDP environment
LCAP	Locap where transaction is currently being processed; blank in a non-DDP environment and when no remote transactions are in process

ZSTAT (cont)

Sample Terminal Status Display Screen:

```
                                    [END]          81/08/28     17:07:35
TERM    STAT   TRANSCODE   IN-MSG   OUT-MSG   TRANS    COMM   IN-CHAR    OUT-CHAR
TRM1      UP   ZSTAT           22        25       5       1      1250        1375
TRM2     HLD                   20        23       5       1      1000        1000
TRM3     TMD                  111       124       8       4       500         750
TRM4     DNL                    0         0       0       0         0           0
TRMB     DNP                   16        16      16       0       625         834
TRMC          $$SOFF           15        15       5       2       468         977
TOTALS        3 SLOTS         184       203      39       8                  4956
    MAX-IN=500(TRM1)    MAX-OUT=700(TRM1)                        3843
```

Column Header	Meaning
TERM	Terminal name
STAT	Terminal status – UP, DNL (logically down), DNP (physically down), HLD (on hold), TMD (test mode)
TRANSCODE	Current transaction code. Blank for terminals currently signed on but not in interactive mode; contains $$SOFF for terminals previously signed on but now signed off
IN-MSG	Number of input messages at this terminal counting normal input, output-for-input queueing messages, and terminal commands
OUT-MSG	Number of output messages at this terminal counting normal output, switched messages, multiple output messages, and responses to terminal commands
TRANS	Number of transactions at this terminal
COMM	Number of terminal commands at this terminal
IN-CHAR	Total number of input characters at this terminal
OUT-CHAR	Total number of output characters at this terminal

Summary Data	Meaning
SLOTS	In a global network, number of slots available for terminals to sign on
MAX-IN	Number of characters in largest input message and name of last terminal sending message
MAX-OUT	Number of characters in largest output message and name of last terminal receiving message

Controlling the Terminal during ZSTAT Output Processing

You can control ZSTAT output in either continuous or noncontinuous mode by entering function keys. You also enter these function keys to resume or end processing after certain types of error conditions.

Function Key*	Function Performed
1	Break processing. ZSTAT sends prompting message.
2	Resume processing. ZSTAT retransmits previous screen and starts where it left off.
3	End processing. ZSTAT terminates.
4	Resume processing at next function. ZSTAT terminates current function and starts at next function. In continuous output mode, use function key 1 to break processing before entering function key 4.

*At a hard-copy terminal, key in F#01, F#02, F#03, and F#04.

USING THE SYSTEM CONSOLE AND MASTER WORKSTATION

You can enter and receive messages at the system console and the master workstation (if there is one) when:

- you configure the console as the master terminal by not including MASTER=YES in any TERMINAL section; or
- you include OPCOM=YES in the configurator OPTIONS section.

A master workstation is a workstation from which the IMS job is entered or may be defined in the job control stream.

When you have a master workstation, you can enter messages from both the console and the workstation, but only one message from either source can be processed at a time. Switched messages always go to the master workstation.

The console or master workstation has the terminal-id 1CNS.

For the rest of this section, we will use the term *console* to refer to both the system console and master workstation.

MASTER AND STANDARD TERMINAL COMMANDS

The console functions as the master terminal when you omit MASTER=YES in the IMS configuration or when the master terminal is down and you use the ZZMCH command to designate the console as the new master terminal:

```
ZZMCH 1CNS
```

When the console is the master terminal, you can enter all master terminal commands. When the console is not the master terminal, you can enter the ZZSHD and ZZHLT master terminal commands to shut down the IMS session.

The nn option of the ZZSHD command is not supported from the console unless the console is the master terminal.

You can enter the standard terminal commands ZZCNC, ZZTMD, ZZMCH, and ZZNRM from the console, but not ZZHLD, ZZRDY, or ZZRSD.

If the console is configured as the master terminal in multithread IMS and becomes disabled, you can use the ZZMCH command from another terminal to designate a new master terminal. If the console is configured as the master terminal in single-thread IMS, you cannot use ZZMCH to designate a new master terminal.

TRANSACTION PROCESSING

You can enter transactions at the console with these restrictions:

1. Maximum input message length is 60 characters.
2. Maximum output message length is 120 characters (two lines of 60 characters); additional characters are truncated.
3. Output messages are not edited. DICE functions, FCCs, and other control sequences are treated as output text. Most control characters are nonprintable and appear as blanks, but some characters are printable and appear on the console.
4. Output to an auxiliary device at the console is not supported.
5. Automatic status messages are not sent to the console. You can key in ZZCNC after the status time-out interval.

You can also receive messages from other terminals through the SWTCH transaction and the SEND function. There is no message waiting signal; switched messages are sent out immediately.

Because IMS cannot process messages from the console and the master workstation concurrently, you cannot enter an input message at one while a transaction is in process at the other. You receive the message:

```
CONSOLE BUSY PROCESSING LAST transaction-id TRANSACTION
```

You also receive this message if you enter input before completing an action at your own terminal.

IMS TRANSACTIONS

You can enter the DLMSG and SWTCH transactions from the console. When the console is the master terminal, you can also enter ZSTAT, directing output to STATFIL only:

```
ZSTAT ALL, FONLY
```

UNIQUE is not effective at the console because of output limitations.

ENTERING INPUT FROM THE CONSOLE

To send a message, enter an unsolicited keyin to IMS in the format:

```
nØ message-text
```

n — Job slot number

Example:

```
2Ø ZZOPN CUSTFIL
```

RECEIVING OUTPUT AT THE CONSOLE

Output at the console is unformatted. DICE codes, FCCs, and control characters appear as spaces except for leading DICE codes, which are stripped from the beginning of the output message.

Because messages are sent out immediately to the console, you can receive a switched message or a message from another program while waiting for a response to an input message or between two lines of an output message. In the second example, a message from another program interrupts a two-line error message.

Example 1:

```
20 ZZTMD
42 PLEASE MOUNT TAPE S01984 -- NO RING     (R/C)
23 TERMINAL IN TEST MODE
```

Example 2:

```
20 DISP BR2NN
24 PROCESSING ERROR, STATUS CODE = 0001 DETAILED STATUS CODE=
55 JC06     USING DEV=402     VSN=D01951
26 0000           BR2NN
```

MARKING THE CONSOLE DOWN

When IMS cannot send output to the console because of a system error, IMS marks the console physically down (system error 47) or logically down (system error 48).

If physically down, the console is marked up again when an unsolicited keyin is received. If logically down, the console remains down for the rest of the IMS session. The console is marked up again at the start of the next IMS session, regardless of the type of start-up.

The following message is written to the job log:

```
CONSOLE MARKED DOWN - SYSTEM ERROR CODE {47}
                                        {48}
```

PART 3: ERROR MESSAGES

ALREADY READING BATCH CONTROL STREAM DATA SET - COMMAND IGNORED

Another ZZBTH command was entered during processing of an embedded data set.

Enter ZZTCT to determine when data set processing is complete, then retry.

BAD AUX NUMBER

Character other than number 1 through 9 entered for aux-device-no.

Reenter DLOAD with correct aux-device-id.

BATCH=NO SPECIFIED IN PARAM CARD - COMMAND IGNORED

BATCH parameter was omitted at IMS start-up, or PARAM BATCH=NO was specified.

Restart IMS with PARAM BATCH=ONLINE.

BATCH NOT CONFIGURED - COMMAND IGNORED

BATCH processing is not configured.

Reconfigure IMS with batch processing.

BATCH PROCESSOR NOT IN PAUSE - COMMAND IGNORED

ZZBTH RESUME was entered when batch processing was not suspended.

Enter ZZBTH RESUME only after receiving normal response to ZZBTH PAUSE.

BATCH PROCESSOR NOT RUNNING - COMMAND IGNORED

ZZBTH PAUSE or CANCEL was entered when batch processing is not in effect or is completed.

BIT CONFIGURATION IN TBL UNTRANSLATABLE

Field in action control or program control table cannot be displayed in character format.

CASSETTE/DISKETTE NOT RESPONDING. ZSTAT TERMINATED

Cassette/diskette device is not powered up and in ready state.

Check condition of device and retry ZSTAT.

CHTBL CAN ONLY BE ISSUED FROM MASTER TERMINAL

CHTBL was entered from a terminal other than the master terminal.

DATA ERROR ON TCS

Cassette/diskette error.

Retry ZSTAT. If failure persists, check condition of device.

DELIVERY NOTICE ERROR: nn

nn=11. Line is down or disconnected (message is displayed on master terminal).

Notify system operator.

nn=12. Terminal is marked down (message is displayed on master terminal).

Press the transmit key and retry. If terminal does not respond, notify system operator.

nn=40. Error occurred during output to auxiliary device.

Direct load to main storage or another auxiliary device.

nn=41. Cassette or diskette device is inoperative.

Direct load to main storage or another auxiliary device.

nn=42. Cassette or diskette is out of space.

Change cassette or diskette and retry.

nn=43. Cassette or diskette is write-protected or damaged.

Change cassette or diskette and retry.

nn=44. Cassette or diskette device is disconnected or not responding.

Direct load to main storage or another auxiliary device.

nn=84. Auxiliary device specification is invalid.

Make sure aux-device-no matches specification in ICAM network definition.

nn=85. No ICAM network buffer is available.

Reenter DLOAD. If problem persists, IMS administrator must allocate more ICAM buffers.

nn=86. Disk error occurred on ICAM file.

Reenter DLOAD. If problem persists, notify IMS administrator.

DEVICE NOT RESPONDING - MAY BE DISCONNECTED REPLY F2 OR F4 (RESUME) OR F3 (END)

IMS cannot output ZSTAT display because of device error.

Check condition of device and enter function key to retry or end processing.

DISK ERROR - REPLY F2 OR F4 (RESUME) OR F3 (END)

IMS cannot output ZSTAT display because of disk error.

Enter function key to retry or end processing.

DOWN-LINE LOAD ERROR BIT(S) n (&n)

n=1. Start address of block is not in available/assigned main storage.

Use the control page to assign more storage,* and reenter DLOAD. If insufficient main storage is available, the program must be recompiled.

n=2. Block overflow occurred in available/assigned main storage.

Same action as for bit 1.

n=4. DLOAD was entered from a slave station instead of a primary station.

Reenter DLOAD from a primary station.

n=5. Program cannot be loaded because previous program did not clear program-loaded flag (LOADFL)

Perform a power-on confidence test,* then reenter DLOAD.

* *Refer to the current version of the UTS 400 operator's guide, UP-8358, or UTS 40 operator's guide, UP-9142.*

FIELD CHOICE CAN ONLY BE DISPLAYED
Change was requested for a field that cannot be changed.

filename CANNOT OPEN WITH ACCESS SPECIFIED
Conflict of access rights with non-IMS program using file.

Wait until program completes execution, then reenter ZZOPN.

filename CLOSE ERROR DMnn
I/O error.

Refer to system messages programmer/operator reference, UP-8076 (current version) for DM error codes.

filename CLOSED
The specified file encountered is a printer file that is closed.

NOTE:

For multiple file operations, no message is issued for any closed files encountered.

filename IN USE BY terminal-name
Another terminal is accessing the file.

When transaction terminates, reenter ZZCLS.

FILENAME INVALID
The specified file is entered incorrectly or represents an IMS internal printer file.

filename INVALID FUNCTION FOR CSA FILE
ZZCLS command attempted to close common storage area file.

filename OPEN ERROR DMnn
I/O error.

Refer to system messages programmer/operator reference, UP-8076 (current version) for DM error codes.

INVALID ACTION PROGRAM NAME

Action program is not defined in a configurator ACTION or PROGRAM section.

INVALID CHARACTER IN OFFLINE LOAD PROGRAM NAME

Special character is used in name of program for storage on cassette or diskette.

Reenter DLOAD with corrected program-id.

INVALID COMMAND *** TEXT=command [parameters]**
Command was entered with JI transaction other than RUN, RU, RV, SI, SC, OCL, OC, or OV.

INVALID CONTENTS FOR field-name FIELD
Invalid specification was entered for the named field.

INVALID FIELD CHOICE FOR table-name
Invalid field name was entered for ACT or PCT.

INVALID FILE NAME
File is not defined in a configurator FILE section.

INVALID FILENAME: filename
File name was entered incorrectly or is not defined in configurator FILE section.

INVALID INPUT PARAMETER

One of the parameters was entered incorrectly on the ZSTAT ALL format.

INVALID MASTER TERMINAL COMMAND

1. Command not available because unsolicited output is not configured; or

2. ZZMCH was entered when master terminal not down.

INVALID NUMERIC FIELD

Numeric specification is invalid or exceeds the range limit of the field.

INVALID TBL NAME

Table name other than ACT or PCT was entered.

INVALID TERMINAL ID

Terminal name was entered incorrectly or is not defined in the network definition.

INVALID ZZBTH PARAMETERS - COMMAND IGNORED

Syntax error in ZZBTH command.

Check ZZBTH parameter formats and reenter.

******I/O ERROR ON TOMFILE******

******NO MESSAGE RETRIEVED******

Message cannot be retrieved because of a file error.

Check with the IMS administrator.

LOAD ERROR ENCOUNTERED FROM LOAD LIBRARY nn.

I/O error occurred while reading data from load library. Load error codes are listed in Appendix A of the system messages programmer/reference, UP-8076 (current version).

Make sure program name is correct. If it is, notify IMS administrator.

NO ICAM NETWORK BUFFERS AVAILABLE – REPLY F2 OR F4 (RESUME) OR F3 (END)

IMS cannot output ZSTAT display because of ICAM error.

Enter function key to retry or end processing.

NO STATISTICAL INFORMATION REQUESTED, ZSTAT TERMINATED

Menu screen was transmitted with no entries.

Reenter ZSTAT.

NO STATISTICAL INFORMATION REQUESTED, ZSTAT TERMINATED

Menu screen was transmitted with no entries.

Reenter ZSTAT.

NO VALID OUTPUT FOR THIS TERMINAL DUE TO - WARM RESTART

If the message retrieved is found to be invalid because of a previous warm restart or an aborted session on a dynamic terminal, this message is issued.

NOT MASTER TERMINAL
ZSTAT was entered from a terminal other than the master terminal.

program-name IS A SUBPROGRAM - CANNOT BE RELOADED
ZZPCH was issued for a resident subprogram.

PROGRAM NAME MISSING FOR ZZPCH COMMAND
ZZPCH was entered without program name.

Reenter command.

PROGRAM program-name IN USE
Another terminal is using action program.

Reenter ZZPCH when transaction terminates.

PROGRAM program-name LOAD ERROR

Action program was configured but is missing from the load file.

PROGRAM program-name NOT CONFIGURED

Action program is not defined in a configurator PROGRAM section.

READY GOOD STATUS BUT TERMINAL PRINTER WRITE FUNCTION INOPERATIVE REPLY F2 OR F4 (RESUME) OR F3 (END)

IMS cannot output ZSTAT display because of device error.

Check condition of terminal printer and enter function key to resume or end processing.

REQUESTED FUNCTION NOT SUPPORTED FOR THE CONSOLE

ZZHLD, ZZRDY, or ZZRSD was entered from the system console or master workstation, or the console terminal-id was specified on a ZZDWN, ZZTST, or ZZUP command.

SYNTAX ERROR, SYSTEM ERROR CODE=nnnn
COMMAND TEXT=command [parameters]

Syntax error on command entered with JI transaction. System error codes are listed in Appendix A of the system messages programmer/operator reference, UP-8076 (current version).

SUBFILE IS EMPTY

No output messages are in the TOMFILE.

Reenter transaction, if any. If message appears after a cold restart, repeat all transactions from previous session.

TERMINAL PRINTER OUT OF PAPER, INOPERATIVE, OR IN TEXT MODE REPLY F2 OR F4 (RESUME) OR F3 (END)

IMS cannot output ZSTAT display because of device error.

Correct problem and enter function key to resume or end processing.

TERMINAL terminal-id PHYSICALLY DOWN

Terminal cannot be marked up because it is not operative.

THIS BRKPT REQUEST CAN ONLY BE ISSUED FROM THE MASTER TERMINAL

The BRKPT request was issued from a nonmaster terminal, and either the designated printer is not currently assigned or the specified terminal is not the currently designated terminal.

TOO MANY ZZBTH COMMANDS ENTERED – COMMAND IGNORED

More than one ZZBTH command was entered in single-thread IMS or more than number configured in multithread.

Enter ZZTCT command to determine when processing is completed for each batch terminal.

UNALLOCATED OPTIONAL FILE, ZSTAT TERMINATED

Output to STATFIL was requested, but STATFIL was not assigned at IMS start-up.

VALUE EXCEEDS CONFIGURED ENVIRONMENT

Value entered for field contents is larger than maximum size configured.

ZZBTH PARAMETER PROCESSING ERROR

Input module cannot be found, or end of control stream input is encountered.

Check for correct parameter specifications and reenter.

Ø1 CONTINUOUS OUTPUT NOT CONFIGURED. DO YOU WISH TO CONTINUE USING NONCONTINUOUS OUTPUT (Y/N)? _

Continuous output mode was requested on ZSTAT transaction but is not configured.

Ø2 AN AUXILIARY DEVICE WAS REQUESTED AND NOT CONFIGURED. DO YOU WISH TO CONTINUE WITHOUT AN AUXILIARY DEVICE (Y/N)? _

Auxiliary device was requested on ZSTAT transaction, but continuous output is not configured.

03 AUX-DEVICE ID INVALID. PLEASE INPUT VALID ID _
Invalid auxiliary device number entered for ZSTAT.

04 INVALID TRACK ADDRESS. PLEASE INPUT VALID TRACK ADDRESS _
Invalid cassette/diskette track address entered for ZSTAT.

05 INVALID STARTING POSITION. PLEASE INPUT VALID STARTING POSITION _ _ _ _
Invalid cassette/diskette starting position entered for ZSTAT.