GƎ CONTROL DATA
CORPORATION

NOS VERSION 2
NETWORK TERMINAL
USER'S INSTANT

CDC® COMPUTER SYSTEMS:
CYBER 170
CYBER 70
MODELS 71, 72, 73, 74
6000

REVISION RECORD

Revision	Description
A (08-31-82)	Manual released. Reflects NOS 2.0 at PSR level 562.

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PREFACE

This manual describes the operation of a terminal
connected to the Network Operating System (NOS)
Version 2 via the Network Access Method (NAM). NOS
controls operation of CDC® CYBER 170 Computer
Systems; CDC CYBER 70 Computer Systems, Models 71,
72, 73, and 74; and CDC 6000 Computer Systems.

AUDIENCE

This manual is written for all NOS users who use NOS
via a network terminal.

ORGANIZATION

This manual provides information on entering and
leaving the system and communicating with the
network via an interactive terminal. The final
three sections contain formats and descriptions of
the commands that can be entered under the
Interactive Facility, Remote Batch Facility, Message
Control System, and Terminal Verification Facility
applications.

RELATED PUBLICATIONS

This manual is intended to serve as a quick
reference guide. Detailed information about the
features described in this manual is contained in
other Control Data publications.

The NOS Manual Abstracts is a pocket-sized manual
containing brief descriptions of the content of all
NOS and NOS product manuals. The abstracts can be
useful in determining which manuals are of greatest
interest to you.

Control Data also publishes a Software Release
History Report of all software manuals and revision
packets it has issued. This history lists the
revision level of a particular manual that
corresponds to each released level of software.

These manuals are available through Control Data
sales offices or Control Data Literature
Distribution Servies, 308 North Dale, St. Paul,
Minnesota 55103.

Control Data Publication	Publication Number
Message Control System Version 1 Reference Manual	60480300
Network Access Method Version 1 Reference Manual	60499500
Network Access Method Version 1 Terminal Interface Guide	60480600
NOS Version 2 Manual Abstracts	60485500
NOS Version 2 Reference Set, Volume 1, Introduction to Interactive Usage	60459660
NOS Version 2 Reference Set, Volume 3, System Commands	60459680
Remote Batch Facility Version 1 Reference Manual	60499600
Software Publications Release History	60481000
TAF Version 1 Reference Manual	60459500
XEDIT Version 3 Reference Manual	60455730

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APPENDIX

TABLES

LOGIN SEQUENCE

1. Complete dial-in procedure, if necessary, to connect the terminal to the network. Check to ensure that the terminal switches are set to the correct positions.

2. Once the connection is established, it may be necessary to identify the terminal to the network. This is required on autorecognition lines so that the network can determine the line speed and/or character code set of the terminal. Press the carriage return key on your terminal. This key may be labeled RETURN, CR, CARRIAGE RETURN, NEXT, SEND, NEW LINE, or ETX. The carriage return key will be represented in this manual by symbol ⓒⓇ.

   Entering a ⓒⓇ at terminals of classes 1 through 8 enables the system to determine the terminal's line speed. When the line speed is recognized, the system issues two line feeds. You then have 60 seconds to enter either of the following sequences for character code set recognition.

) ⓒⓇ   The system determines the character code set in use at the terminal.

   ⓒⓇ   The ASCII character code set is assumed.

   If you do not respond in 60 seconds, the system disconnects the terminal. If the system prints the message UNSUPPORTED CODE SET, the code set of your terminal is not supported at the site and you may have to restart the login sequence.

3. When communication with the network is
   established, the network initiates the login
   sequence by requesting that you enter a
   family name as follows:

       yy/mm/dd. hh.mm.ss.† termname ††

       CDC NETWORK OPERATING SYSTEM   NOS 2

       FAMILY:

   Enter your family name on the same line.

4. After your family name is accepted, the
   network requests that you enter your user
   name.

       USER NAME:

   Enter your user name on the same line.

5. The network then requests that you enter
   your password.

       PASSWORD
       ▮▮▮▮▮▮▮

   On terminals where overtyping is possible,
   the network blacks out the password entry
   area by overtyping a variety of characters.
   This is done to preserve password secrecy.

   Enter your password or, if no password is
   assigned, press ⒸⓇ only.

6. After the password is accepted, select an
   application as described under Application
   Selection.

Steps 3, 4, 5, and 6 can be done in a one-line entry
by responding to the FAMILY: prompt as follows:

FAMILY: familyname,username,password,application ⒸⓇ

Depending on how your site is configured, steps 3,
4, 5, and/or 6 may be done automatically by the
system.

---

† Date is given in year/month/day and time in a
  24-hour format (hours.minutes.seconds.).
†† termname is the network-supplied terminal name.

APPLICATION SELECTION

After the network has accepted your family name, user name, and password, it requests you to enter the name of the application to which you want to be connected.

    terminalname - APPLICATION:

Enter the application name on the same line.

You can be automatically logged into an application during the initial login sequence. If this is the case, the application selection message does not appear. If you have automatic application selection and make a mistake on the first login attempt, or if you enter a HELLO command, the subsequent login sequence will contain the application selection request. The following paragraphs describe selection of the Interactive Facility, the Remote Batch Facility, the Message Control System, the Terminal Verification Facility, and the Transaction Facility.

INTERACTIVE FACILITY SELECTION

To use the Interactive Facility (IAF), enter IAF following the application prompt.

IAF then displays the job sequence name (JSN) and terminal type (NAMIAF).

    JSN: nnnn,NAMIAF

If your site requires you to enter a charge number and project number during login, IAF issues the following prompt:

    CHARGE:

You can enter your charge number and project number in any of three ways.

1. Enter your charge number, a comma, and your project number.

2. Enter your charge number. IAF issues the following prompt:

        PROJECT:

    Enter your project number.

3. For secure entry, enter a carriage return. IAF
   issues the following prompt:

       ENTER CHARGE NUMBER
       ▇▇▇▇▇▇▇▇▇

   Enter your charge number. IAF issues the follow-
   ing prompt:

       ENTER PROJECT NUMBER:
       ▇▇▇▇▇▇▇▇▇▇▇▇▇▇▇▇▇▇

   Enter your project number.

If you have any recoverable jobs in the system, IAF
initiates the following dialogue:

       RECOVERABLE JOB(S)

       JSN   UNJ   STATUS   TIMEOUT

       xxxx   xxxx   xxxxxxxxx   xx MIN.

   ENTER   GO TO CONTINUE CURRENT JOB,
             RELIST   TO LIST RECOVERABLE JOBS,
             OR DESIRED JSN:

Entering a job sequence name allows you to continue
a job that you detached or that was accidentally
disconnected from your terminal.

When the login sequence is completed, IAF issues the
following message:

    READY.

REMOTE BATCH FACILITY SELECTION

To use the Remote Batch Facility (RBF), enter RBF
following the application prompt.

RBF responds with the date and time of the
connection as follows:

    RBF VER 1.3 - STARTED yy/mm/dd. hh.mm.ss. †
    READY.

Enter any valid RBF command.

---

† Date is given in year/month/day and time in 24-hour
  format (hours.minutes.seconds).

MESSAGE CONTROL SYSTEM SELECTION

To use the Message Control System (MCS), enter MCS
following the application prompt.

MCS responds with the following message.

    MCS1.0 yy/mm/dd. hh.mm.ss.

If the terminal is dedicated, MCS issues the
following message.

    DEDICATED TERMINAL
    APPLICATION=application
    SYMBOLIC NAME=name
    STATUS=status
    mode MODE
    ?

This message informs you of the application to which
the terminal is dedicated, the symbolic name of the
terminal, the terminal's status (ENABLED or
DISABLED), and the terminal's mode (DATA or COMMAND).

If the terminal is not dedicated or only dedicated
to the application or symbolic name, the system
makes the following requests.

1. The system requests entry of an MCS applica-
    tion. Enter the application following the
    application prompt.

        MCS APPLICATION?

    If the terminal is dedicated to a particular
    application, MCS does not issue the prompt.

2. After the system accepts the application, it
    requests the symbolic name of the terminal.

        SYMBOLIC NAME?

    Enter either one or two symbolic names. The
    symbolic name may be a source, destination,
    or interactive name. If the user enters two
    symbolic names, the first must be a source
    name, the second must be a destination name,
    and they must be separated by a space.

    If the terminal is named in an ALIAS clause
    in the application definition, the prompt is
    not issued.

3. The system then issues the operating mode of
    the terminal and a question mark. The mode
    is either DATA or COMMAND.

        mode MODE
        ?

You can change the operating mode. To
change from COMMAND mode to DATA mode, enter
DATA. To change from DATA mode to COMMAND
mode, enter the termination character.

Depending on the mode, enter message data or
an MCS command on the same line as the
question mark.

TERMINAL VERIFICATION FACILITY SELECTION

To use the Terminal Verification Facility (TVF),
enter TVF following the application prompt.

TVF responds with the following messages.

```
yy/mm/dd.          hh.mm.ss.
TVF
TERMINAL NAME=terminalname
TERMINAL CLASS=tc/MODEL model
LINE WIDTH=pw.
PAGE LENGTH=pl.
NAM VER 1x lev
..
```

Enter any valid TVF command.

TRANSACTION FACILITY SELECTION

To use the Transaction Facility (TAF), enter TAF
following the application prompt.

TAF responds with the following message.

```
READY.
```

Further input under TAF is task controlled. Refer
to the TAF Version 1 Reference Manual listed in the
preface.

APPLICATION SWITCHING

You can switch from one application to another as de-
scribed in the following paragraphs. All terminal
characteristics in effect under the previous applica-
tion remain in effect under the new application un-
less specifically altered by you or by the applica-
tion.

SWITCHING FROM IAF

To leave IAF control and access another application,
enter one of the following commands.

```
BYE, application
GOODBYE, application
HELLO, application
LOGIN, application
LOGOUT, application
```

A logout message is displayed and the terminal is
disconnected from IAF. If you are authorized to use
the specified application, the terminal is connected
to the application.

If you enter one of the preceding commands without
specifying an application (for example, BYE,), or
if the application entered is not available or not
allowed, a logout message is displayed, the terminal
is disconnected from IAF, and the next application
is requested.

```
terminalname - APPLICATION:
```

Enter the name of an application.

Entering one of the preceding commands with neither
a comma nor an application (for example, BYE) is
described under Logout Sequence later in this
section.

SWITCHING FROM RBF

To leave RBF control and access IAF, enter the
following command.

```
IAF
```

If you are authorized to use IAF, a logout message
is displayed, and the terminal is disconnected from
RBF and connected to IAF.

To leave RBF control and access an application other
than IAF, enter the following command.

```
END
```

A logout message is displayed, the terminal is
disconnected from RBF, and entry of the next
application is requested.

```
terminalname - APPLICATION:
```

Enter the name of an application.

SWITCHING FROM MCS

To leave MCS control and access another application,
enter one of the following commands.

BYE application	LOGIN application
END application	LOGOFF application
GOODBYE application	LOGON application
HELLO application	LOGOUT application

A logout message is displayed, and the terminal is
disconnected from MCS.

If you are authorized to use the specified
application, the terminal is connected to the
application.

If you enter one of the preceding commands without
specifying an application, a logout message is
displayed, the terminal is disconnected from MCS,
and the system requests the application desired.

    terminalname - APPLICATION:

Enter the name of an application.

LOGOUT SEQUENCE

To terminate the session, you enter certain commands
to disconnect the terminal from the current applica-
tion and, optionally, from the network. When leaving
the network, all terminal characteristics are reset.
When leaving the application but remaining connected
to the network, all terminal characteristics in ef-
fect under the previous application remain in effect
unless you or subsequent applications specifically
alter them. The descriptions of the logout proce-
dures follow.

IAF LOGOUT

To leave IAF and network control, enter one of the
following commands.

    BYE
    GOODBYE
    LOGOUT

A logout message is displayed, and the terminal is
disconnected from the network.

To leave IAF but remain connected to the network,
enter one of the following commands.

    HELLO
    LOGIN

A logout message is displayed, and the login
sequence is reinitiated.

RBF LOGOUT

To leave RBF and network control, enter one of the
following commands.

    LOGOFF
    LOGOUT

A logout message is displayed and the terminal is
disconnected from the network.

To leave RBF and reinitiate the login sequence,
enter one of the following commands.

    LOGIN
    LOGON

A logout message is displayed, and the login
sequence is reinitiated.

MCS LOGOUT

To leave MCS and network control, enter one of the
following commands.

    BYE
    GOODBYE
    LOGOFF
    LOGOUT

A logout message is displayed, and the terminal is
disconnected from the network.

To leave MCS but remain connected to the network,
enter one of the following commands.

    HELLO
    LOGIN
    LOGON

A logout message is displayed, and the login
sequence is reinitiated.

TVF LOGOUT

To leave TVF but remain connected to the network,
enter the following command.

    END

The network issues the message

    TVF CONNECT TIME   hh.mm.ss.

The terminal is then available for login to any
network application.

TAF LOGOUT

To leave TAF but remain connected to the network,
enter the following command.

    EX.LOGT

The message END OF TRANSACTION SESSION is displayed,
and the terminal is then available for login to any
network application.

NETWORK LOGOUT

To leave network control when the APPLICATION prompt
is issued, enter one of the following commands.

    BYE
    LOGOUT

To reinitiate the login sequence when the
APPLICATION prompt is issued, enter one of the
following commands.

    HELLO
    LOGIN

TERMINAL DEFINITION COMMANDS

The terminal class or terminal definition values can
be changed by entering terminal definition commands†
in the following format.

c   mnemonic=value ††

c	Terminal control character defined for the terminal in use (CT character in table 2-1).
mnemonic	Two-character mnemonic for terminal class or terminal definition parameter.
value	Value for terminal class or terminal definition parameter.

---

† IAF users also can enter the TRMDEF command (refer
to section 3).
†† Spaces are included for clarity. They should be
omitted when entering the command.

The terminal definition mnemonics have the following meanings and ranges of values.

Mnemonic	Meaning	Range
TC	Terminal class	1-17
CT	Control character	Any †
BS	Backspace character	Any †
CN	Cancel input line character	Any †
AL	Abort output line character	Any †
B1	Interruption character (user break 1)	Any †
B2	Termination character (user break 2)	Any †
CI	Carriage return idle count	0-99, CA
LI	Line feed idle count	0-99, CA
PW	Page width	0-255
PL	Page length	0-255
PG	Page wait	Y, N
PA	Parity	Z, O, E, N ††
SE	Special editing †††	Y, N
DL	Transparent text delimiter	X any C1-C4095 TO
IN	Input device	Refer to table 2-1
OP	Output device	Refer to table 2-1
EP	Echoplex mode	Y, N

---

† Any ASCII character except NUL, STX, EOT, LF, CR, DL, =, and space.
†† O (odd parity) is the only value allowed for terminal classes 10, 11, 12, 13, and 15.
††† Special editing is not supported at some sites.

Table 2-1. Default Terminal Definition Values (Sheet 1 of 4)

Mnemonic†	M33, M35 M37, M38	CDC 713-10	IBM 2741	M40	Hazeltine 2000	CDC 751-1	Tektronix 4000	HASP Protocol
TC	1	2	4	5	6	7	8	9
CT	ESC	ESC	%	ESC	ESC	ESC	ESC	%
BS	CTRL/H	←	BACKSPACE	No default	CTRL/H	←	CTRL/H	N/A
CN	CTRL/X	CTRL/X	ATTN (	CTRL/X	CTRL/X	CTRL/X	CTRL/X	(
AL	CTRL/X	CTRL/X	ATTN (	CTRL/X	CTRL/X	CTRL/X	CTRL/X	N/A
B1	CTRL/P	CTRL/P	ATTN :	CTRL/F	CTRL/P	CTRL/P	CTRL/P	:
B2	CTRL/T	CTRL/T	ATTN)	CTRL/T	CTRL/T	CTRL/T	CTRL/T	)
CI	2	0	CA	1	0	0	0	N/A
LI	1	0	1	3	3	0	0	N/A

† Refer to Terminal Definition Commands earlier in this section for mnemonic definitions.

Table 2-1. Default Terminal Definition Values (Sheet 2 of 4)

Mnemonic†	M33, M35 M37, M38	CDC 713-10	IBM 2741	M40	Hazeltine 2000	CDC 751-1	Tektronix 4000	HASP Protocol
PW	72	80	132	74	74	80	74	80
PL	0	0	0	0	0	0	0	0
PG	N	N	N	N	N	N	N	N/A
PA	E	E	0	E	E	E	E	N/A
SE	N	N	N	N	N	N	N	N/A
DL	X OD C2043	X OD C2043	X 6D	X OD C2043	X OD C2043	X OD C2043	X OD C2043	N/A
IN	KB (KB,PT, XK,XP,X)	KB (KB,PT, XK,XP,X)	KB (KB, XK,X)	KB (KB,PT, XK,XP,X)	KB (KB,PT, XK,XP,X)	KB (KB,PT, XK,XP,X)	KB (KB,PT, XK,XP,X)	KB
OP	PR (PR,PT)	DI (DI,PT)	PR (PR,PT)	DI (DI,PT)	DI (DI,PT)	DI (DI,PT)	DI (DI,PT)	DI
EP	N	N	N/A	N	N	N	N	N/A

† Refer to Terminal Definition Commands earlier in this section for mnemonic definitions.

Table 2-1. Default Terminal Definition Values (Sheet 3 of 4)

Mnemonic†	200 UT	CDC 714-30	CDC 711-10	CDC 714-10/20	CDC 731-12 CDC 732-12	CDC 734	IBM 2780	IBM 3780
TC	10	11	12	13	14	15	16	17
CT	%	%	%	%	%	%	%	%
BS	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CN	(	(	(	(	(	(	N/A	N/A
AL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B1	:	:	:	:	:	:	N/A	N/A
B2	)	)	)	)	)	)	N/A	N/A
CI	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
LI	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

†Refer to Terminal Definition Commands earlier in this section for mnemonic definitions.

Table 2-1. Default Terminal Definition Values (Sheet 4 of 4)

Mnemonic†	200 UT	CDC 714-30	CDC 711-10	CDC 714-10/20	CDC 731-12 CDC 732-12	CDC 734	IBM 2780	IBM 3780
PW	80	80	80	80	80	80	80	120
PL	13	16	16	16	13	13	0	0
PG	Y	Y	Y	Y	Y	Y	N/A	N/A
PA	0	0	0	0	0	0	N/A	N/A
SE	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
DL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
IN	KB	KB	KB (KB,XK,X)	KB (KB,XK,X)	KB	KB	N/A	N/A
DP	DI	DI	DI	DI	DI	DI	N/A	N/A
EP	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

†Refer to Terminal Definition Commands earlier in this section for mnemonic definitions.

LINE FEED AND TRANSMISSION KEYS

The following line feed and transmission functions
are performed using special keys on your terminal.

CARRIAGE RETURN

Terminates message, advances cursor or carriage to
beginning of next line, and transmits message. Also
transmits any other messages that are stored in the
terminal's buffer.

NEW LINE

Terminates message, advances cursor or carriage, and
stores message in terminal's buffer until carriage
return key is pressed. Many terminals do not have a
new line key, and on other terminals the new line
key does not perform the new line function. Refer
to specific terminal documentation for information
concerning operation of this key on your terminal.

LINE FEED

Terminates physical line of input and advances
cursor or carriage to beginning of next line.

Table 2-2 shows the keys used to perform the
carriage return, new line, and line feed functions
for each terminal class.

Table 2-2. Function Keys by Terminal Class

Terminal Class	Carriage Return	New Line	Line Feed
1	RETURN	N/A	LINE FEED
2	RETURN	N/A	↓
4	RETURN	N/A	ATTN
5	RETURN	N/A	NEW LINE
6	CR	N/A	LF
7	CARRIAGE RETURN †	N/A	LINE FEED
8	RETURN	N/A	LF
9	Varies ††	Varies	Varies
10	SEND	RETURN	N/A
11	SEND	RETURN	N/A
12	ETX	NEW LINE	N/A
13	ETX	NEW LINE	N/A
14	ETX	NEW LINE	N/A
15	SEND	NEW LINE	N/A
16	EOT	EM	N/A
17	EOT	EM	N/A

† For block mode, refer to terminal documentation
  for terminal key equivalences. Those keys
  listed are for character and line modes.
†† Terminals operating under HASP protocol use
   different keys for this purpose.

NETWORK COMMUNICATION COMMANDS

ABORT OUTPUT LINE SEQUENCE

When you enter the abort output line character as
the only character on a line, the system discards
the current output line. If you can interrupt
output at the terminal by pressing the BREAK key, †
output will continue, starting with the next line,
by entering the abort output line character (refer
to table 2-1 for abort line values).

CANCEL INPUT LINE SEQUENCE

You can enter the cancel input line character as the
last character before ⓒⓡ in order to delete the line
that was entered. This character (CN) is specified
in table 2-1. The network responds by printing
DEL on the next line and positioning the carriage
to the beginning of a new line.

CHARACTER CODE SET COMMAND

This command allows you to change the terminal's
character code set. (This command is used only on
terminal classes 1 through 8.) The command can be
entered any time after the terminal identification
part of login. The format is:

c   CD=A ††

    c   The terminal control character (CT)
              defined for the terminal in use (refer
              to table 2-1).

After entering the command, you select the character
code set by entering one of the following:

) ⓒⓡ   For recognition of the character code
             set in use.

    ⓒⓡ   For the ASCII character code set.

When the system recognizes the character code set,
it issues two line feeds to indicate that you can
continue. If the system prints the message
UNSUPPORTED CODE SET, your terminal's code set is
not supported at the site. A dial-up line is
disconnected, and a leased (hardwired) line waits
for you to reenter,) ⓒⓡ , or ⓒⓡ.

---

† The BREAK key is sometimes labeled INT, INTRPT, or
  ATTN.

†† Spaces are included for clarity. They should be
   omitted when entering the command.

INTERRUPTION SEQUENCE FOR IAF

To interrupt an executing program or the listing of
a file, enter the interruption character followed
by Ⓒ. This character (B1) can be found in table
2-1. To continue after an interruption, enter Ⓒ or
P Ⓒ. To terminate, enter the termination sequence.

MESSAGE COMMAND

This command enables you to send a message to the
local operator. The format is:

c   MS=message †

    control   Terminal control character (CT)
                  defined for the terminal in use
                  (refer to table 2-1).

    message   Message of no more than 76
                  characters (including spaces).

TERMINATION SEQUENCE FOR IAF

To terminate an executing program or a file listing,
enter the termination character followed by Ⓒ. This
character (B2) can be found in table 2-1.

TERMINATION SEQUENCE FOR RBF

To terminate refreshing the display, enter any RBF
command, the interruption character (B1), or the
termination character (B2), followed by Ⓒ. These
characters can be found in table 2-1. To start
display refreshing, enter the DISPLAY,type,RFR
command. If refreshing the display is not in
effect, the break character is ignored.

TERMINATION SEQUENCE FOR MCS

To switch a terminal from command mode to data mode,
enter the termination character (B1) followed by
a Ⓒ. To terminate output to the terminal, enter
the interruption character (B2) followed by a Ⓒ.
These characters can be found in table 2-1.

---

† Spaces are included for clarity. They should be
  omitted when entering the command.

SYSTEM COMMANDS

The following commands can only be entered from an
interactive terminal.

ACCESS	LIB
ALTER	LIST
ASCII	LOGIN
AUTO	LOGOUT
BASIC	MOVE
BATCH	NORMAL
BRIEF	NOSORT
BYE	NULL
CSET	READ
DELETE	RECOVER
DIAL	RUN
DUP	TEXT
EXECUTE	TIMEOUT
FORTRAN	TRMDEF
FTNTS	WHATJSN
GOODBYE	WRITE
HELLO	WRITEN
HELP	X

ACCESS.

Selects Access subsystem for validated users.

ALTER,l_1,l_2,...,l_n,/string$_1$/string$_2$/.

Changes character strings within specified lines
of primary file.

APPEND,pfn,lfn$_1$,lfn$_2$,...,lfn$_n$/PW=password,
UN=username,PN=packname,R=r,NA,WB.

Copies local files to end of indirect access
permanent file.

ASCII.

Changes terminal to ASCII mode.

```
ASSIGN,nn,lfn,VSN=vsn₁/vsn₂=...=vsnₙ₋₁/vsnₙ,

    ⎧ D=den ⎫   ⎧ FC=fcount ⎫          ⎧ MT ⎫
    ⎨       ⎬ , ⎨           ⎬ ,CV=cv, ⎨    ⎬ ,PO=p₁p₂...pₙ,
    ⎩ den  ⎭   ⎩ C=ccount  ⎭          ⎩ NT ⎭

                               ⎧ CB ⎫
    F=format,NS=ns,LB=lb,     ⎨    ⎬ .
                               ⎩ CK ⎭

    Assigns local file to device or device type nn.


ATTACH,lfn,=pfn₁,lfn₂=pfn₂,...,lfnₙ=pfnₙ/UN=username,
    PW=password,M=m,PN=packname,R=r,NA,RT,WB.

    Attaches direct access permanent files.


       ⎧ D=den ⎫   ⎧ MT ⎫
BLANK, ⎨       ⎬ , ⎨    ⎬ ,VSN=vsn,FA=fa,VA=va,OFA=ofa,
       ⎩ den  ⎭   ⎩ NT ⎭

    CV=cv,OWNER=username/familyname,LSL=lsl,U.

    Blank labels a magnetic tape.


AUTO,nnnnn,iiiii.

    Automatically generates five-digit line numbers.


BASIC,ccc.

    Selects BASIC subsystem.


BATCH,fl.

    Selects batch subsystem.


BKSP,lfn,n,m.

    Backspaces local file n logical records.


BRIEF.

    Suppresses some headers and prevents echoing of
    editing changes.


BYE,application.

    Ends IAF session.


CATALOG,lfn,N=n,L=fname,T,U,CS,D,R.

    Catalogs local file.
```

```
CATLIST,LO=p,FN=pfn,UN=username,PN=packname,R=r,
    L=lfn,NA,DN=dn.
```

   List information about your permanent files and
   other users' files that you can access.

```
CFO,jsn.data.
```

   Sends data to executing job.

```
CHANGE,nfn1=ofn1,nfn2,...,nfnn=ofnn/CT=ct,M=m,
    PW=password,PN=packname,R=r,SS=subsystem,NA,CE,
    PR=pr,BR=br,WB.
```

   Changes characteristics of your permanent files.

```
CHARGE,chargenumber,projectnumber.
```

   Specifies your charge and project numbers for
   validation.

```
CHARGE.
```

   Indicates that INPUT file contains
   chargenumber,projectnumber.

```
CKP,lfn1,lfn2,...,lfnn.
```

   Directs system to make checkpoint dump.

```
CLEAR.
```

   Releases all files currently assigned to your
   job, except those with no-auto-drop status.

```
CLEAR,*,lfn1,lfn2,...,lfnn.
```

   Releases all but specified list of files and
   files with no-auto-drop status currently
   assigned to your job.

```
COMMENT.comment    or
COMMENT,jsn.comment    or
*comment
```

   Enters comment in system dayfile and job dayfile

```
COMMON,lfn1,lfn2,...,lfnn.
```

   Accesses library type files.

```
CONVERT,P=lfn₁,N=lfn₂,RS=n₁,64,TS=t,R,RC=n₂,
     NM.
```

   Converts records from one character set to
   another.

```
COPY,I=lfn₁,O=lfn₂,V=x,M=c,TC=tc,N=copycnt,
     BS=bsize,CC=charcnt,EL=erlimit,
     PO=p₁p₂...pₙ,L=lfn₃.
```

   Copies lfn₁ to lfn₂.

```
COPYBF,lfn₁,lfn₂,n,c.
```

   Copies n files from lfn₁ in binary mode to
   lfn₂.

```
COPYBR,lfn₁,lfn₂,n,c.
```

   Copies n records from lfn₁ in binary mode to
   lfn₂.

```
COPYCF,lfn₁,lfn₂,n,fchar,lchar,na.
```

   Copies n files from lfn₁ in coded mode to
   lfn₂.

```
COPYCR,lfn₁,lfn₂,fchar,lchar,na.
```

   Copies n records from lfn₁ in coded mode to
   lfn₂.

```
COPYEI,lfn₁,lfn₂,x,c.
```

   Copies lfn₁ in binary mode to lfn₂ until EOI
   is reached.

```
COPYL,oldlfn,replfn,newlfn,last,flag.
```

   Copies oldlfn to newlfn, substituting records
   from replfn for matching records on oldlfn and
   using each record of replfn only once.

```
COPYLM,oldlfn,replfn,newlfn,last,flag.
```

   Copies oldlfn to newlfn, substituting records
   from replfn for matching records on oldlfn and
   using each record of replfn for every matching
   record on oldlfn.

COPYSBF,lfn$_1$,lfn$_2$,n,na.

    Copies n files from lfn$_1$ in coded mode to
    lfn$_2$, shifting each line image one character
    to right and adding leading space.

COPYX,lfn$_1$,lfn$_2$,x,b,c. or
COPYX,lfn$_1$,lfn$_2$,type/name,b,c.

    Copies logical records from lfn$_1$ to lfn$_2$.

CSET,c.

    Changes terminal´s character set.

DAYFILE,lfn,string,op,pd,pl,infile. or
DAYFILE,L=lfn,FR=string,OP=op,PD=pd,PL=pl,I=infile.

    Writes job dayfile.

DEFINE,lfn$_1$=pfn$_1$,lfn$_2$=pfn$_2$,...,lfn$_n$=pfn$_n$/PW=password,
    CT=ct,M=m,R=r,S=space,PN=packname,NA,PR=pr,
    BR=br,WB.

    Creates empty direct access permanent file.

DELETE,c$_1$,c$_2$,...,c$_n$,/string/.

    Deletes specified lines from primary file.

DIAL,jsn,msg.

    Sends one-line message to another terminal user
    (can only be used under the access subsystem).

DISPLAY,expression.

    Evaluates expression and sends results to job
    dayfile.

DMB,ordinal,xmemory.

    Generates binary dump of job´s exchange package,
    central memory, and extended memory.

DMD,fwa,lwa.

    Dumps central memory with display code
    equivalents.

DMDECS,fwa,lwa.

    Dumps extended memory with display code
    equivalents.

DMP,fwa,lwa.

    Dumps central memory.

DMPECS,fwa,lwa.

    Dumps extended memory.

DOCMENT,I=lfn_1,S=lfn_2,L=lfn_3,N=nn,T=type,C=cc,
    P=pp,NT,NR,TC.

    Extracts documentation from source code file.

DROP,JSN=jsn,DC=q,UJN=ujn.   or
DROP,jsn,q,ujn.

    Drops executing or queued job.

DUP,lines,number,increment.

    Duplicates and inserts lines in specified
    location in primary file.

ELSE,labelstring.

    Terminates skipping when used in conjunction
    with IFE, provided label strings match;
    initiates skipping if IFE has not done so.

ENDIF,labelstring.

    Terminates skipping when used in conjunction
    with IFE, ELSE, or SKIP command, provided label
    strings match; otherwise, it is ignored.

ENDW,labelstring.

    Terminates iterative processing of group of
    commands when used in conjunction with WHILE
    command, provided label strings match.

ENQUIRE,$p_1p_2\cdots p_n$.   or
ENQUIRE,OP=$p_1p_2\cdots p_n$,FN=lfn_1,O=lfn_2.

    Lists information about your job.

```
ENQUIRE,JSN=jsn,O=lfn.   or
ENQUIRE,UJN=ujn,O=lfn.
```

   Lists information about specified job.


```
ENTER./command_1/command_2/.../command_n.
```

   Enters series of commands on one line in batch
   subsystem.


```
EVICT,lfn_1,lfn_2,...,lfn_n.
```

   Releases file space for local files but for most
   files does not release assignment to job.


```
EXECUTE,ccc.
```

   Selects execute subsystem for use on previously
   compiled program.


```
EXIT.
```

   Indicates where in command record to resume
   command processing if error is encountered, or
   where to terminate normal command processing.


```
FCOPY,P=lfn_1,N=lfn_2,PC=cs,NC=cs,R.
```

   Converts file from one code format to another.


```
FORTRAN,ccc.
```

   Selects FORTRAN Version 5 subsystem.


```
FTNTS,ccc.
```

   Selects FORTRAN Extended Version 4 subsystem.


```
GET,lfn_1=pfn_1,lfn_2=pfn_2,...,lfn_n=pfn_n/UN=username,
    PW=password,PN=packname,R=r,NA,WB.
```

   Creates copy of indirect access permanent file
   for use as local file.


```
GO,jsn.
```

   Clears pause bit of executing job.

GOODBYE,application

    Same as BYE command.

GTR,lfn$_1$,lfn$_2$,d,NR,S,NA.directive$_1$,
    directive$_2$,...,directive$_n$.

    Copies record specified by selection directives
    from lfn$_1$ to lfn$_2$.

HELLO,application.

    Logs you out of IAF and switches you to another
    application or reinitiates login sequence.

HELP.

    Gives description of system commands.

HTIME.

    Issues dayfile message containing model 176
    accumulated clock cycle count for job.

IFE,expression,labelstring.

    Causes skipping of commands until ELSE or ENDIF
    command with matching label string is reached,
    provided expression is false.

ITEMIZE,lfn,L=listfln,BL,PW=n,PD,NR,N=n,E.

    Lists information about records on binary file.

KRONREF,P=lfn$_1$,L=lfn$_2$,S=lfn$_3$,G=lfn$_4$.

    Generates cross-reference listing of symbols
    used by decks on MODIFY OPL.

LABEL,lfn,VSN=vsn$_1$/vsn$_2$=...=VSN$_{n-1}$/vsn$_n$, $\left\{ \begin{array}{c} MT \\ NT \end{array} \right\}$,

    D=den,F=format,LB=lb, $\left\{ \begin{array}{c} FC=fcount \\ c=ccount \end{array} \right\}$,CV=cv,

    NS=ns,PO=p$_1$p$_2$...p$_n$, $\left\{ \begin{array}{c} CK \\ CB \end{array} \right\}$, $\left\{ \begin{array}{c} SI=setid \\ M=setid \end{array} \right\}$,

    $\left\{ \begin{array}{c} SN=secno \\ V=secno \end{array} \right\}$, $\left\{ \begin{array}{c} QN=seqno \\ P=seqno \end{array} \right\}$, $\left\{ \begin{array}{c} FI=fileid \\ L=fileid \end{array} \right\}$,FA=fa,

    G=genno,E=gvn, $\left\{ \begin{array}{c} CR=cdate \\ C=cdate \end{array} \right\}$, $\left\{ \begin{array}{c} RT=yyddd \\ T=ddd \end{array} \right\}$, $\left\{ \begin{array}{c} W \\ R \end{array} \right\}$.

    Assigns local file to tape unit and accesses new
    or existing tape.

LBC,addr.

> Reads one record from INPUT file and loads
> binary corrections into central memory.

LDI,lfn,id,op,dc,un,cm.   or
LDI,FN=fln,ID=id,OP=op,DC=dc,UN=un,FM=fm.

> Copies file of batch jobs on local file to mass
> storage and enters each job into system input
> queue.

LENGTH,lfn.

> Returns length and status of local file.

LIB,lfn=pfn,PW=password,PN=packname,R=r,NA,ND,WB.

> Creates copy of indirect access permanent file
> and makes it primary.

LIBGEN,F=lfn$_1$,P=lfn$_2$,N=name,NX=n.

> Generates user library file.

LIMITS,L=lfn.

> Lists validation information.

LIST,L=lfn.   or
LIST,c$_1$,c$_2$,...,c$_n$,/string/.

> Lists contents of local file or specified lines
> of primary file.

LISTLB,lfn, $\left\{ \begin{array}{l} SI=setid \\ M=setid \end{array} \right\}$, $\left\{ \begin{array}{l} QN=seqno \\ P=seqno \end{array} \right\}$,LO=ltype,L=out.

> Reads ANSI labels on local file and writes them
> to specified file.

LIST80,lfn$_1$,lfn$_2$,NR.

> Reads lfn$_1$ containing COMPASS assembly listing
> and writes it, compressed to 80 columns, to
> lfn$_2$.

LOC,fwa,lwa.

> Reads octal line images from INPUT file into
> central memory.

LOCK,lfn$_1$,lfn$_2$,...,lfn$_n$.

    Prevents writing on local file.

LOGIN,application.

    Same as HELLO command.

LOGOUT,application.

    Same as BYE command.

LO72,I=lfn$_1$,S=lfn$_2$,L=lfn$_3$,H=xxx,LP,NR,Nx=y,
    lx=y,Ox=y,IT.

    Reformats files to 72 columns.

MACHINE,EP=state.

    Enables or disables extended instruction stack
    purging on models 825, 835, and 855.

MFL,cmfl,emfl. or
MFL,CM=cmfl,EM=emfl.

    Sets maximum central memory and extended memory
    field length.

MODE,m.

    Sets CPU program exit mode.

MOVE,1...1,number,increment.

    Moves line of primary file.

NEW,lfn/ND.

    Creates new primary file.

NOEXIT.

    Suppresses transfer to command following next
    EXIT command if an error flag is encountered.

NORERUN.

    Clears rerun status of job.

NORMAL.

    Converts all lowercase input characters to
    uppercase, prints all headers and prompts.

NOSORT.

    Prevents automatic sorting of primary file.

NOTE,lfn,NR./line$_1$/line$_2$.../line$_n$

    Creates file containing specified lines of data.

NULL.

    Selects NULL subsystem.

OFFSW,jsn,switch$_1$,switch$_2$,...,switch$_n$.

    Clears sense switches for specified job (or, if
    jsn is not specified, the job from which the
    command is issued).

OLD,lfn=pfn/UN=username,PW=password,PN=packname,R=r,
    NA,ND,WB.

    Creates copy of indirect access permanent file
    and makes it primary file.

ONEXIT.

    Reverses effect of NOEXIT command.

ONSW,jsn,switch$_1$,switch$_2$,...,switch$_n$.

    Sets sense switches for specified job (or, if
    jsn is not specified, the job from which the
    command is issued).

OUT. or
OUT,*,lfn$_1$,lfn$_2$,...,lfn$_n$.

    Queues deferred files and OUTPUT, PUNCHB, PUNCH,
    and P8 files, if on mass storage.

PACK,lfn$_1$,lfn$_2$,x.

    Packs lfn$_1$ into one record on lfn$_2$.

PACKNAM,PN=packname,R=r.

    Directs subsequent permanent file requests to
    specified auxiliary device.

PASSWOR,oldpassword,newpassword.

    Changes your password.

PASSWOR.

    Indicates that file INPUT contains
    oldpassword,newpassword.

PAUSE,jsn.

    Sets pause bit for specified job.

PBC,fwa,lwa.

    Writes one record from central memory to PUNCHB
    file.

PERMIT,pfn,username$_1$=m$_1$,username$_2$=m$_2$,...,
    username$_n$=m$_n$/PN=packname,R=r,NA.

    Permits other users to access one of your
    permanent files.

PRIMARY,lfn.

    Returns current primary file and makes lfn
    primary file.

PROTECT,EC=state. or
PROTECT,state.

    Activates or deactivates extended memory
    preservation for your job between job steps.

PURGALL,CT=ct,AD=ad,MD=md,CD=cd,DN=dn,TY=ty,TM=tm,AF,
    PN=packname,R=r,NA,WB.

    Purges all of your permanent files that meet
    specified selection criteria.

PURGE,pfn$_1$,pfn$_2$,...,pfn$_n$/UN=username,
    PW=password,PN=packname,R=r,NA,WB.

    Removes permanent files from permanent file
    device.

```
QGET,JSN=jsn,DC=q,UJN=ujn,FN=lfn.   or
QGET,jsn,q,ujn,lfn.
```

Removes file from queue and makes it local.

```
RBR,filename,recordprefix.
```

Loads one binary record from specified file.

```
RECOVER.
```

Displays recoverable jobs at interactive
terminal.

```
RECOVER,JSN=jsn,OP=T.   or
RECOVER,jsn,T.
```

Recovers detached job or interrupted terminal
session.

```
READ,filename,n,z.
```

Inserts lines of specified file at specified
location in primary file.

$$\text{RENAME},nfn_1=ofn_1,nfn_2=ofn_2,\ldots,nfn_n=ofn_n.$$

Changes names of local files.

$$\text{REPLACE},lfn_1=pfn_1,lfn_2=pfn_2,\ldots,lfn_n=pfn_n/\text{UN=username}$$
$$\text{PW=password,PN=packname,R=r,NA,WB.}$$

Replaces indirect access permanent files with
copies of local files.

$$\text{REQUEST},lfn,\text{VSN}=vsn_1/vsn_2=\ldots vsn_{n-1}/vsn_n,$$
$$\left\{ \begin{matrix} \text{D=den} \\ \text{den} \end{matrix} \right\}, \left\{ \begin{matrix} \text{FC=fcount} \\ \text{C=ccount} \end{matrix} \right\}, \text{CV=cv}, \left\{ \begin{matrix} \text{MT} \\ \text{NT} \end{matrix} \right\}, \text{PO=p}_1\text{p}_2\ldots\text{p}_{n},$$
$$\text{F=format,NS=ns,LB=lb}, \left\{ \begin{matrix} \text{CK} \\ \text{CB} \end{matrix} \right\}. \text{comment}$$

Requests operator to assign device to local file.

```
RERUN.
```

Sets rerun status for job.

RESEQ,lfn,type,start,step.   or
RESEQ,start,step,type.

    Resequences source files that have leading
    sequence numbers or adds sequence numbers to
    unsequenced files. Second format is for
    interactive jobs only.

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

    Specifies maximum number of tape units and disk
    packs.

RESTART,lfn,nnnn,x.

    Restarts previously terminated job from
    specified checkpoint.

RETURN,$lfn_1,lfn_2,\ldots,lfn_n$.

    Releases file space and/or job attachment for
    specified local files.

RETURN,*,$lfn_1,lfn_2,\ldots,lfn_n$.

    Releases file space and/or job attachment for
    all files except those specified.

REWIND,$lfn_1,lfn_2,\ldots,lfn_n$.

    Rewinds specified local files and positions them
    to BOI.

REWIND,*,$lfn_1,lfn_2,\ldots,lfn_n$.

    Rewinds all local files, except those specified,
    and positions them to BOI.

RFL,CM=cm,EC=em.   or
RFL,cm,em.

    Sets initial running central memory and extended
    memory field length.

ROLLOUT,t.

    Rolls out your job and releases all memory
    assigned to job.

```
ROUTE,lfn,DC=dc,DEF,EC=ec,FC=fc,FID=fid,FM=fm,IC=ic,
    ID=id,PRI=pri,REP=rep,SC=sc,TID=tid,UJN=ujn,UN=un
```

Prepares local file for entry into queue and
optionally places file in queue.

```
RTIME.
```

Issues accumulated time in seconds since dead-
start to dayfile.

$$RUN,I=lfn_1, \left\{ \begin{array}{c} B \\ C \end{array} \right\} =lfn_2.$$

Compiles and initiates execution of local file.

```
RUN,T,q_1,q_2,...,q_n.
```

Initiates execution of object code FORTRAN
program in execute subsystem.

```
SAVE,lfn_1=pfn_1,lfn_2=pfn_2,...,lfn_n=pfn_n/PW=password,
    CT=ct,M=m,SS=subsystem,PN=packname,R=r,NA,
    BR=br,WB.
```

Retains copies of local files as indirect access
files.

```
SCOPY,lfn_1,lfn_2,n,fchar,lchar,NA,R,fcs,fline,lline,ns
```

Copies specified number of coded files from
lfn_1 to lfn_2, displaying EORs and EOFs.

```
SET,sym=exp.
```

Assigns value to flag or control register.

```
SETASL,s.
```

Specifies new account block SRU limit for job.

```
SETCORE,p.   or
SETCORE,-p.
```

Presets each word within job field length,
except first three words.

SETFS,lfn$_1$,lfn$_2$,...,lfn$_n$/FS=fs.

    Sets auto-drop or no-auto-drop status for
    specified local files.

SETFS,*,lfn$_1$,lfn$_2$,...,lfn$_n$/FS=fs.

    Sets auto-drop or no-auto-drop status for all
    local files except those specified.

SETJOB,UJN=ujn,DC=dc,OP=op.   or
SETJOB,ujn,dc,op.

    Changes current job's attributes.

SETTL,t.

    Specifies maximum time limit for subsequent job
    steps.

SKIP,labelstring.

    Causes unconditional skipping of following
    commands.

SKIPEI,lfn.

    Positions local file to EOI.

SKIPF,lfn,n,m.

    Skips files, in forward direction, from current
    position of local file.

SKIPFB,lfn,n,m.

    Skips files, in reverse direction, from current
    position of local file.

SKIPR,lfn,n,level,m.

    Skips records, in forward direction, from
    current position of local file.

SORT,lfn,NC=n.

    Sorts local file to lines, in numerical order,
    based on leading line numbers consisting of
    specified number of digits.

STIME.

    Issues current value of SRU accumulator to job's
    dayfile.

SUBMIT,lfn,q,NR.c

    Submits batch job on local file to input queue.

SUMMARY,OP=$p_1p_2 \cdots p_n$,FN=lfn$_1$,O=lfn$_2$. or
SUMMARY,$p_1p_2 \cdots p_n$.

    Lists information about your job.

SWITCH,jsn,$s_1,s_2,\ldots,s_n$.

    Sets sense switches for specified job (or, if
    jsn is not specified, for the job from which the
    command is issued).

TCOPY,I=lfn$_1$,O=lfn$_2$,F=format,TC=tc,N=copycnt,
    CC=charcnt,E=erlimit,P=p_1p_2,L=lfn$_3$.

    Copies tape to tape or mass storage file, or
    copies mass storage or tape file to tape.

TDUMP,I=fln$_1$,L=fln$_2$,O,A,R=rcount,F=fcount,
    N=lines,NR.

    Dumps local file in octal or alphanumeric format.

TEXT.

    Selects text mode; text mode is terminated by
    entering termination sequence or end-of-text
    (ETX) as only input on line.

TIMEOUT.

    Changes no-timeout status to normal timeout
    status.

TRMDEF,L=lfn,tc_1=v_1,tc_2=v_2,$\ldots$,tc_n=v_n.

    Changes characteristics of network terminal.
    Refer to section 1 for descriptions of
    parameters.

UNLOAD,lfn$_1$,lfn$_2$,...,lfn$_n$.

    Releases file space and/or job attachment for
    specified local files without decrementing
    resource demand count.

UNLOAD,*,lfn$_1$,lfn$_2$,...,lfn$_n$.

    Releases file space and/or job attachment for
    all local files, except those specified, without
    decrementing resource demand count.

UNLOCK,lfn$_1$,lfn$_2$,...,lfn$_n$.

    Reverses effect of LOCK command.

UPROC,FN=pfile.

    Specifies file containing procedure to be
    executed at start of each of your jobs.

USECPU,n.

    Specifies CPU to be used for processing.

USER,username,password,familyname.

    Identifies you as valid user and enables system
    to determine your resource limits.

VERIFY,lfn$_1$,lfn$_2$,p$_1$,p$_2$,...,p$_n$.

    Performs binary comparison of all data from
    current position of specified files.

VFYLIB,lfn$_1$,lfn$_2$,lfn$_3$,NR.

    Performs binary comparison of lfn$_1$ and lfn$_2$
    and lists replacements, deletions, and
    insertions on lfn$_3$.

VSN,lfn$_1$=vsn$_1$,lfn$_2$=vsn$_2$,...,lfn$_n$=vsn$_n$.

    Associates volume serial numbers with local
    files.

WBR,filename,recordlength.

    Writes binary record of specified length from
    central memory to current position of specified
    file.

WHATJSN,username.

    Determines job sequence name of specified
    terminal user (can only be used under the ACCESS
    subsystem).

WHILE,expression,labelstring.

    Delimits group of commands and causes them to be
    processed iteratively as long as specified
    expression is true (used with ENDW).

WRITE,filename,$c_1,c_2,\ldots,c_n$,/string/.

    Appends lines and line numbers of primary file
    to specified file.

WRITEF,lfn,x.

    Writes empty files on specified local file.

WRITEN,filename,$c_1c,c_2,\ldots,c_n$,/string/.

    Copies lines from primary file to specified
    file, removing line numbers.

WRITER,lfn,x.

    Writes empty records on specified local file.

X,command.

    Enables system to recognize batch command while
    you are not in batch subsystem.

XEDIT,lfn,$p_1,p_2,\ldots,p_n$.dcs

    Selects XEDIT utility. Refer to XEDIT Commands
    in this section.

XEDIT COMMANDS

Refer to System Commands earlier in this section for
information on how to call XEDIT.

XEDIT COMMAND WORDS

ADD   or   A

    Adds a specified string to the end of one or
    more existing file lines.

ADDLN   or   ALN

    Adds a line number to every line in the file
    that currently has none.

BOTTOM   or   B

    Moves file pointer to last line of the current
    record in the file.

BRIEF   or   BR

    Suppresses XEDIT verification mode or turns
    verification either on (BRIEF-) or off (BRIEF+).

CHANGE(S)   or   C(S)

    Replaces one or more occurrences of a particular
    string or strings of characters with another
    string.

COPY

    Copies one or more lines from the edit file to a
    specified file.

COPYD

    Same as COPY except that the copied lines are
    deleted from the edit file.

(CR)

    Allows you to enter input mode and insert an
    unspecified number of lines into the file
    immediately after the line designated by the
    current pointer position.

DBADL   or   DBL

    Deletes a specified number of bad lines (those
    not beginning with a line number) beginning at
    the current pointer position.

DEFTAB   or   DT

    Defines the tab character for subsequent use
    when entering editing data with the INSERT,
    INSERTB, or REPLACE commands, or with input mode.

DELETE   or   D

    Deletes one or more lines from a file starting
    at the current pointer position or deletes a
    particular number of lines on the basis of
    specified string criteria.

DELETELN   or   DLN

    Deletes all line numbers in the file.

DELIMIT   or   DEL

    Establishes a particular character as the
    delimiter. In subsequent lines the delimiter
    separates multiple commands and editing data.

DEOF   or   DF

    Deletes a specified number of EOF marks from the
    file.

DEOR   or   DR

    Deletes a specified number of EOR marks from the
    file.

DLBLANKS   or   DLB

    Deletes leading blanks from a specified number
    of lines in the file starting at the current
    pointer position. Blank lines are entirely
    deleted.

eEDIT

    Same as INPUT.

END   or   E

    Terminates XEDIT execution and allows you to
    save edited file.

EXPLAIN

    Gives you more detailed information about the
    XEDIT message that was most recently printed.

FBADL   or   FBL

    Searches for a specified number of bad lines
    (those not beginning with a line number).   In
    verification mode, the bad lines are printed.

FILE   or   F

    Saves the edited file according to parameters
    specified.

FINDLL   or   FLL

    Searches for long lines (those having more
    characters than the current RMARGIN setting).
    In verification mode, the long lines are printed.

HELP   or   H

    Requests information about a specific XEDIT
    command.

INPUT e   or   eEDIT

    Allows you to insert an unspecified number of
    lines into the file after the line designated by
    the current pointer position and to make quick
    changes to the last line entered by using the
    escape character e.   e may be any character
    except space or the command delimiter.   You
    leave input mode by entering eEDIT or a Ⓒ®.

INSERT   or   I

    Inserts a specified number of lines into the
    file immediately after the line designated by
    the current pointer position.

INSERTB   or   IB

    Inserts a specified number of lines into the
    file before the line designated by the current
    pointer position.

line number

    Performs a circular search for the line
    identified by the specified line number and sets
    the file pointer at that line.

LISTAB   or   LT

    Lists the current tab character and tab stop
    column positions.

LOCATE   or   L

    Locates a specified number of lines that contain
    a particular string or strings of characters,
    contain one string but not another, or do not
    contain a certain string. In verification mode,
    the lines are printed.

MODIFY   or   M

    Allows you to alter line contents on a
    character-by-character basis.

MODIFY directives:

The following directives can be entered under the
character or column to be modified. If no
modification directives are entered after the single
question mark, no changes are made to the line.

↑ string#		Inserts the alphanumeric string
	or	contained between the ↑ and # before
∧ string#		the character indicated by ↑.

↑	or ∧	Inserts a blank in front of indicated
		character when the directive is not
		followed by any other character.

\#   Deletes indicated character and closes
             up the space left by the deletion.

blank   No change to character above the blank
             space.

&   Replaces the character above & with a
             blank.

Any alpha-   Character in file line is changed to
numeric   character in directive.
character

NEXT   or   N

    Moves the file pointer from its current position
    forward or backward a specified number of lines.

NOBELLS   or   NB

    Turns off the bell on your terminal that rings
    when certain XEDIT messages are printed.

OCTCHANGE   or   OC

    Converts the octal display code of a specified
    character or string to another octal code
    character or string.

PRINT   or   P

    Lists a specified number of lines, starting at
    the current pointer position.

QMOD   or   QM

    Allows you to alter portions of your file lines
    on the basis of column numbers. XEDIT verifies
    the modification(s) by printing the affected
    line(s). QMOD uses MODIFY directives.

QUIT   or   Q

    Same as END command.

READ

    Merges one or more local files into the edited
    file after current pointer position.

READP

    Merges one or more permanent files into the
    edited file after current pointer position.

REPLACE   or   R

    Replaces a specified number of existing file
    lines (starting at the current pointer position)
    with the same number of substitute lines.

REPLACELN   or   RLN

    Replaces the existing set of line numbers in a
    file with a new set of line numbers.

RESTORE   or   REST

    Cancels any changes that have been made since
    the last time the pointer was positioned to the
    beginning of the file.

RMARGIN   or   RM

    Sets the column position of the right margin of
    a file.

STOP

    Terminates XEDIT execution without saving the
    modified edited file.

TABS   or   TAB

    Allows you to define up to eight tab stop column
    positions.

TEOF

    Toggles or turns either on (TEOF+) or off
    (TEOF-) the printing of --EOF-- messages.

TEOR

Toggles or turns either on (TEOR+) or off
(TEOR-) the printing of —EOR-- messages.

TOP   or   T

Moves the file pointer to the first line in your
file.

TOPNULL   or   TN

Inserts a blank line as the first line in a file
and sets the file pointer to that line.

TRIM

Toggles or turns either on (TRIM+) or off
(TRIM-) the trim mode. If trim mode is on,
XEDIT ignores trailing blanks on commands that
involve string searches.

TRUNCATE   or   TRUNC

Truncates a specified number of long lines to
RMARGIN length, starting at the current pointer
position.

VERIFY   or   V

Initiates XEDIT verification mode or turns it on
(VERIFY+) or off (VERIFY-).

WEOF   or   WF

Writes an EOF mark on the file in front of the
current pointer position.

WEOR   or   WR

Writes an EOR mark on the file in front of the
current pointer position.

WHERE   or   W

Prints the current line count (that is, the
number of file lines that appear from the
beginning of the file to the current pointer
position).

WMARGIN   or   WM

>   Sets the left and right window margin column
>   settings to define a window that restricts the
>   scope of string searches to the specified
>   columns.

Y

>   Allows you to enter several commands (separated
>   by delimiters) in one line of entry. XEDIT
>   executes the commands without listing them. The
>   Y command delimiter should be different than the
>   delimiter specified by the last DELIMIT command.

YQMOD   or   YQM

>   Same as QMOD except that the set of column
>   numbers is not printed.

Z

>   Same as Y command except that XEDIT prints each
>   component command as it is processed.

.n   or   -n

>   Advances the file pointer the specified number
>   of lines and reexecutes the last command (.n) or
>   the last Z or Y command (-n) that you entered.

XEDIT CONTROL CHARACTERS

prefix characters

>   Any number and combination of the following
>   characters that can precede any command.

/	Advances the file pointer ahead one line before processing the command.
X	Suppresses editor verification when verification mode is in effect. Verifies the results of the command when brief mode is in effect.
↑ or ∧	Moves file pointer to the top of the file before processing the command.
+	Indicates to XEDIT that editing data is on the same line as the command. + can be used with ADD, INSERT(B), MODIFY, QMOD, REPLACE, and YQMOD commands.

ln

Optional line number prefix that specifies the
line at which the specified command is to be
executed.

suffix character

One of the following characters, which can
follow any command that does a string search,
provided that a window has been defined via the
WMARGIN command.

A   Forces only the leftmost character of the
    first string to reside in the window. All
    other characters can reside outside the
    window; otherwise, the string is not found.

W   Forces all characters in the string to
    reside in the window; otherwise, the string
    is not found.

SUMMARY OF XEDIT COMMANDS AND FORMATS

ADD n

ADDLN(S) ln n

BOTTOM

BRIEF
BRIEF+
BRIEF-

CHANGE(S)/string1//n
CHANGE(S)/string1a...string1b//n
CHANGE(S)/string1/string2/n
CHANGE(S)/string1a...string1b/string2/n
CHANGE(S)//string2/n

COPY(D) fname n
COPY(D) fname/string/n
COPY(D) fname/string1...string2/n
COPY(D) fname/string1- - -string2/n
COPY(D) fname/- - -string2/n
(CR)

DBADL n

DEFTAB char

DELETE n
DELETE/string/n
DELETE/string1...string2/n
DELETE/string1- - -string2/n

DELETELN

DELIMIT char

DEOF m

DEOR m

DLBLANKS n

eEDIT

END,fname,mode

EXPLAIN

FBADL n

FILE,fname,mode

FINDLL n

HELP,cmd

INPUT e

INSERT(B) n

line number

LISTAB

LOCATE/string/n
LOCATE/string1...string2/n
LOCATE/string1- - -string2/n
LOCATE/- - -string2/n

MODIFY

NEXT n
NEXT -n

NOBELLS

OCTCHANGE oct1 oct2 n

PRINT n

QMOD n

QUIT,fname,mode

READ(P) $fname_1 \ldots fname_n$

REPLACE n

REPLACELN ln n

RESTORE

RMARGIN m

STOP

TAB(S)$t_1t_2...t_n$ $(n\leq 8)$

TEOF
TEOF+
TEOF-

TEOR
TEOR+
TEOR-

TOP

TOPNULL

TRIM
TRIM+
TRIM-

TRUNCATE n

VERIFY
VERIFY+
VERIFY-

WEOF

WEOR

WHERE

WMARGIN lm rm

YQMOD n

Y$\$cmd_1\$cmd_2\$...\$cmd_n$

Z$\$cmd_1\$cmd_2\$...\$cmd_n$

.n
-n

CONTROL BYTES

A control byte is a 12-bit quantity, right-justified in bit position 0, 12, 24, 36, or 48 of a CM word. Each control byte causes NOS to perform a particular operation when it is written to the terminal output file under IAF. The following control bytes are supported.

0000 (End-of-Line)

Generates carriage return and line feed, positioning terminal cursor or printing element at beginning of next line. Consists of from 12 to 66 contiguous zero bits, right-justified, in one or two CM words.

0001, 0002 (End-of-Block)

Prevents positioning of terminal cursor or printing element at beginning of next line. Can be used to allow you to enter input on same line as input request. Must be followed by end-of-line. If not followed immediately by a read request, output following this byte may be lost.

0003 (Auto Input)

Initiates auto mode input. Preceding characters in word in which this byte occurs are sent to terminal and are also retained as first characters of input line. Must be followed by end-of-line. If not followed immediately by a read request, output following this byte may be lost. Terminal prompt (question mark) is suppressed.

0004 (Log Off User)

Disconnects terminal from IAF and network. Must be first byte of a line and must be followed by end-of-line. Any output following this byte may be discarded.

0005 (Initiate ASCII Input)

Causes next line of input to be translated into 6/12-bit display code. Terminal prompt (question mark) is suppressed. Must be followed by end-of-line. Any output following this byte may be discarded. Subsequent end-of-line input (normally, carriage return) terminates ASCII input mode.

0006 (Initiate Transparent Input Mode)

Changes input mode from normal or ASCII to
transparent mode. Terminal prompt (question mark)
is suppressed. Must be first byte of a line and
word must be terminated by end-of-line. Bytes one
and two contain the following information:

Byte one   Maximum number (octal) of characters
                to be received before input is
                terminated. If byte one is zero,
                maximum is one character. If byte
                one is greater than 160_8, maximum
                is 160_8.

Byte two   Termination code. When display code
                of character received from terminal
                matches lower 7 bits of this byte,
                input operation is terminated. If
                bit 11 of this byte is set, no
                termination character is assumed.
                Bit 7 (parity bit) is not checked.

Transparent mode packs each 8 bits of data into
lower 8 bits of 12-bit byte and sets bit 11. A 0007
byte is forced as first byte of input so that data
is transmitted as transparent output if listed.

0007 (Initiate Transparent Output)

Initiates output of data formatted in transparent
mode. Must be first byte of a line. This mode
continues until end-of-line or nontransparent data
byte is detected (each transparent data byte
contains 1000_2 in bits 11 through 8 and a display
code value in bits 7 through 0). Termination by
end-of-line does not cause carriage return and line
feed; termination by detection of nontransparent
data returns terminal to original (normal or ASCII)
output mode. Once transparent output mode is
terminated, it remains cleared until resumed by
another 0007 control byte.

0010 (Reserved)

This byte should not be used.

0011 (Initiate ASCII Output)

Initiates ASCII 128-character set output (6/12-bit
display code). Must be first byte of a line, and
applies only to that line of output.

0012 (Reserved)

This byte should not be used.

0013 (End-of-String)

Terminates line of output data without repositioning
terminal carriage. Must be followed by end-of-line,
which is ignored; output continues with subsequent
data. Should not be used where end-of-line is
needed.

0014, 0015 (Reserved)

These bytes should not be used.

0016 (Terminal Redefinition)

Alters terminal characteristics. 0016 byte is
followed by a string of two-byte entries terminated
by an end-of-line. Each entry has the following
format:

40mn 4val

    mn   Octal number corresponding to the
            terminal characteristic mnemonic to be
            altered.

    val   Octal value for the parameter.

Refer to table 3-1 for a list of acceptable
mnemonics and corresponding values.

Table 3-1. Terminal Characteristics (Sheet 1 of 4)

Mnemonic	Number (Octal)	Values (Octal) by Terminal Type		
		Asynchronous	Mode 4	HASP
Terminal class (TC) ①	5	1-2, 4, 5-10	12-17	11
Page width (PW)	34	0-377	0-377	0-377
Page length (PL)	35	0-377	0-377	0-377
Cancel input line character (CN)	36	0-177 ②	0-177 ②	0-177 ②
Backspace character (BS)	37	0-177 ②	E	E

0-1   values: 0=no, 1=yes.
I   This parameter is ignored for this terminal class.
E   This parameter is invalid for this terminal class.
①   Terminal class changes are legal only within the same type.
②   Excluding 000 (NUL), 002 (STX), 004 (EOT), 012 (LF), 015 (CR), 040 (space), and 075 (=).

Table 3-1. Terminal Characteristics (Sheet 2 of 4)

Mnemonic	Number (Octal)	Values (Octal) by Terminal Type		
		Asynchronous	Mode 4	HASP
Control character (CT)	40	0-177 ①	0-177 ①	0-177 ①
Carriage return idle count (CI)	41	0-143	I	I
Line feed idle count (LI)	42	0-143	I	I
Carriage return idle default count (CI=CA)	43	0-1	I	I
Line feed idle default count (LI=CA)	44	0-1	I	I

0-1   values: 0=no, 1=yes.
I   This parameter is ignored for this terminal class.
①   Excluding 000 (NUL), 002 (STX), 004 (EOT), 012 (LF), 015 (CR), 040 (space), and 075 (=).

Table 3-1. Terminal Characteristics (Sheet 3 of 4)

Mnemonic	Number (Octal)	Values (Octal) by Terminal Type		
		Asynchronous	Mode 4	HASP
Special editing (SE)	45	0-1	I	I
Input device (IN)	53	0-1 ① ②	I	I
Output device (OP)	54	0-1 ② ③	I	I
Echoplex mode (EP)	55	0-1 ②	I	I
Page wait (PG)	56	0-1	0-1	0-1

0-1   values: 0=no, 1=yes.
I   This parameter is ignored for this terminal class.
①   0=KB, 1=PT.
②   Ignored for terminal class 4.
③   0=DI or PR, 1=PT.

Table 3-1. Terminal Characteristics (Sheet 4 of 4)

Mnemonic	Number (Octal)	Values (Octal) by Terminal Type		
		Asynchronous	Mode 4	HASP
Parity (PA)	57	0-3 ① ②	E	E
Abort output line character (AL)	60	0-177 ③	I	I
Interruption character (B1)	61	0-177 ③	0-177 ③	0-177 ③
Termination character (B2)	62	0-177 ③	0-177 ③	0-177 ③

0-1	values: 0=no, 1=yes.
E	This parameter is invalid for this terminal class.
I	This parameter is ignored for this terminal class.
①	Illegal for terminal class 4.
②	0=zero parity, 1=odd parity, 2=even parity, 3=no parity.
③	Excluding 000 (NUL), 002 (STX), 004 (EOT), 012 (LF), 015 (CR), 040 (space), and 075 (=).

RBF COMMANDS

ABORT,dev   or
ABT,dev

    Terminates a file being processed by input or
    output device and purges the file from the
    system.

    dev   Device type:

            CPn   Card punch.

            CRn   Card reader.

            LPn   Line printer.

            PLn   Plotter.

            ALL   All devices.

            omitted   Same as LP1.

            n is the device number assigned to the
            device. If n is omitted, n=1 is
            assumed. If n=A, all devices of that
            type are affected.

CANCEL,queue   or
CAN,queue

    Cancels extended effects on queue of previous
    DIVERT command with EXT parameter selected.

    queue   One of the following:

            PR   Print queue.

            PT   Plotter queue.

            PU   Punch queue.

            ALL   All queues.

            omitted   Same as ALL.

```
CHANGE,JOB=jsn,queue,PRI=pppp,REP=rpent    or
CHG,JOB=jsn,queue,PRI=pppp,REP=rpent
```

Changes priority and/or repeat count of an
output file while in output queue.

jsn   Four-character job sequence name
           identifying the output file; can be
           specified without JOB=.

queue   One of the following:

           PR   Print queue.

           PT   Plotter queue.

           PU   Punch queue.

           ALL   All queues.

           omitted   Same as PR.

pppp   A one- through four-character octal
           integer specifying the new priority.

rpent   A one- or two-digit integer from 0 to
           31 specifying the new repeat count.
           If omitted, rpent=1 is assumed. If
           REP=rpent is omitted, repeat count is
           not changed.

```
DISPLAY,type,RFR  or
DIS,type,RFR
```

Displays job, file, or device status information.

type   Status information for:

           PR   Print files.

           PT   Plot files.

           PU   Punch files.

           IN   Jobs in input queue.

           EX   Jobs in execution queue.

           DEV   Remote batch I/O devices
                       and extended DIVERT
                       commands.

           JOB=jsn   All system queues
              or   pertaining to the
           jsn   specified job or file.

           omitted   Same as DEV.

RFR   Optional parameter specifying that the display is to be refreshed and updated at regular intervals; not applicable when DEV is specified.

DIVERT,JOB=jsn,queue,FAM=famname,USR=username,EXT   or
DIV,JOB=jsn,queue,FAM=famname,USR=username,EXT   or
DIVERT,JOB=jsn,queue,HST,EXT   or
DIV,JOB=jsn,queue,HST,EXT

Transfers or reroutes your files and/or jobs to a different destination.

jsn   Four-character job sequence name of job or file to be diverted; can be specified without JOB=. If jsn is not specified, all files with same user name, family name, and family type combination as the terminal from which command is entered are diverted.

queue   One of the following:

PR	Print queue.
PT	Plotter queue.
PU	Punch queue.
IN	Input queue.
EX	Execution queue.
ALL	All queues except if HST or EXT is specified; then ALL indicates all output queues.
omitted	Same as ALL, if a jobname is specified. Same as output queues if HST or EXT is specified.

famname   One- through seven-character family name. If FAM=famname is not specified, the family name of the logged-in user is assumed.

username   One- through seven-character name identifying the terminal user to whom jobs and/or files are to be diverted.

EXT   Optional parameter specifying that the DIVERT command is extended to jobs and/or files not yet existing; cannot be used with JOB=, ALL, EXT, or IN.

HST   Parameter specifying that jobs and/or
               files are to be output on the host
               computer peripherals. If FAM=famname
               and USR=username are omitted, HST is
               assumed.

END

    Logs you out of RBF and allows selection of
    another application.

GO,dev   or
G,dev

    Enables data transmission to or from device that
    is stopped.

    dev   Device type:

              CPn   Card punch.

              CRn   Card reader.

              LPn   Line printer.

              PLn   Plotter.

              ALL   All devices.

              omitted   Same as LP1.

              n specifies the device number assigned
              to the device. If n is omitted, n=1
              is assumed. If n=A, all devices of
              that type are affected.

IAF

    Logs you out of RBF and connects the terminal to
    the Interactive Facility.

LOGIN

    Logs you out of RBF and reinitiates the login
    sequence.

LOGOFF

    Logs you out of RBF and disconnects the terminal.

LOGON

>   Logs you out of RBF and reinitiates the login
>   sequence. (Same as LOGIN command.)

LOGOUT

>   Logs you out of RBF and disconnects the
>   terminal. (Same as LOGOFF command.)

PURGE,JOB=jsn,queue or
PUR,JOB=jsn,queue

>   Drops an executing job or purges a file from the
>   system queues.

>   jsn   Four-character job sequence name of
>   the job to be dropped or the file to
>   be purged; can be specified without
>   JOB=. If JOB=jsn is omitted, queue
>   must be specified.

>   queue   One of the following:

>   PR   Print queue.

>   PT   Plotter queue.

>   PU   Punch queue.

>   IN   Input queue.

>   EX   Execution queue.

>   ALL   All queues. If jobname is
>   omitted, all jobs
>   belonging to the user that
>   reside in the queue
>   specified are purged.

>   omitted   Queue is ALL, and jobname
>   must be specified.

RESTORE,dev,opt or
RES,dev,opt

>   Restores acknowledging of input files, printing
>   of the banner, and/or printing under printer
>   format control, all of which were suppressed by
>   a previous SUPPRESS command.

>   dev   Device type:

>   CRn   Card reader.

LPn   Line printer.

n is the device ordinal assigned to
the specified device. Defaults depend
upon opt parameter.

opt   One or more of the following:

ACK   Displays acknowledgment
                 message (jsn) at the
                 terminal to indicate the
                 end of each input file
                 transmission. If dev is
                 not specified, CR1 is
                 assumed.

BAN   Restores banner page
                 printing at the beginning
                 of the next print file.
                 If dev is not specified,
                 LP1 is assumed.

FMT   Restores print format
                 control immediately. If
                 dev is not specified, then
                 LP1 is assumed.

omitted   Same as ACK, if CRn is
                 specified. Same as FMT,
                 if LPn is specified.

If no parameters are specified, RESTORE,LP1,FMT
is assumed.

RESUME or
R

Causes terminal to resume batch operations if a
batch I/O device can transfer data immediately.
RESUME or R has no effect on a device stopped
because of device failure or on status of STOP
or STOP/ABT, and is ignored if entered from a
HASP protocol terminal.

RETURN,device,PRI=pppp or
RET,device,PRI=pppp

Returns an output file active on a device to its
queue.

device   One of the following:

           CPn   Punch.

           LPn   Print.

PLn   Plotter.

ALL   All files.

omitted   Same as LP1.

n is the device number assigned to the
device. If n is omitted, n=1 is
assumed. If n=A, all devices of that
type are affected.

pppp   One- through four-digit octal integer
that specifies the new scheduler
priority. If pppp is omitted, the file
is returned to the lowest nonzero
priority allowed by the system.

REWIND,dev or
REW,dev

Rewinds a file currently at an output device.

dev   Device type:

CPn   Card punch.

LPn   Line printer.

PLn   Plotter.

ALL   All devices.

omitted   Same as LP1.

n is the device number assigned to the
device. n=A implies that files at all
devices of the specified type are to
be rewound.

SET,dev,REP=rpcnt,FMS=fmscode,WID=width,BLK=size

Sets the repeat count of a file at an output
device, changes the forms code of an output
device, and/or specifies the maximum number of
characters that can be printed on one line.

dev   Device type:

CPn   Card punch.

LPn   Line printer.

PLn   Plotter.

omitted   Same as LP1.

n is the device number assigned to the
device. If n is omitted, n=1 is
assumed. If n=A, all devices of that
type are affected.

rpcnt   One- or two-digit decimal integer from
0 through 31 that specifies the number
of additional file copies desired. If
rpcnt is omitted, REP=0 is assumed.
If REP=rpcnt is omitted, the repeat
count is not changed.

fmscode   Two alphanumeric character identifiers
used to change the forms code of the
output device. If fmscode is omitted,
existing forms code is removed
(default is blanks). If FMS=fmscode
is omitted, the forms code is not
changed.

width   Decimal value from 50 through 150 that
specifies the maximum number of
characters that can be printed on a
line. If width is omitted, the
printer width specified when printer
was initially connected to RBF is
assumed. If WID=width is omitted,
print width is not changed.

size   Block size specifies the maximum size
block that is sent to output device.
If size is omitted, default value of
200 decimal is used. Maximum size is
2043 decimal.

SKIP,dev,+val or
SKP,dev,+val

Repositions the file currently on an output
device.

dev   Device type:

CPn   Card punch.

LPn   Line printer.

PLn   Plotter.

omitted   Same as LP1.

n is the device number assigned to the
specified device. If n is omitted,
n=1 is assumed. If n=A, all devices
of that type are affected.

val   One of the following:

Any integer from 1 through 4095 that
specifies the number of file sectors
in multiples of eight to skip forward
(+) or backward (-). A value of 1
means 8 sectors are skipped, 2 means
16 sectors are skipped, and so on. If
+val is omitted, +1 is assumed.

DFL   Causes skipping to the
beginning of dayfile, if
one exists; applies only
to print files.

END   Repositions file to EOI.
Repeat counts are honored.

STOP,dev,END or
S,dev,END

Causes the file transmission to be suspended and
the specified device to be stopped.

dev   Device type:

CPn   Card punch.

CRn   Card reader.

LPn   Line reader.

PLn   Plotter.

ALL   All devices.

omitted   Same as LP1.

n is the device number assigned to the
device. If n is omitted, n=1 is
assumed. If n=A, all devices of that
type are affected.

END   Optional parameter specifying that
transmission is to be stopped when end
of current file is encountered;
selected by default for card readers.

```
SUPPRESS,dev,opt   or
SUP,dev,opt
```

Suppresses acknowledgment of input files,
printing of the banner, and/or format control.

dev   Device type:

           CRn   Card reader.

           LPn   Line printer.

           n is the device number assigned to the
           specified device. Defaults depend
           upon opt parameter.

opt   One or more of the following:

           ACK   Suppresses acknowledgment
                        message at the terminal to
                        indicate the end of each
                        input file transmission.
                        If dev is not specified,
                        CR1 is assumed.

           BAN   Suppresses banner page
                        printing at the beginning
                        of the next print file and
                        for subsequent files. If
                        dev is not specified, then
                        LP1 is assumed.

           FMT   Causes printing of current
                        file, except banner page,
                        to be single spaced.
                        Carriage control characters
                        are printed as leftmost
                        characters of each line.
                        If dev is not specified,
                        then LP1 is assumed.

           omitted   Same as ACK, if CRn is
                        specified. Same as FMT, if
                        LPn is specified.

If no parameters are specified, SUPPRESS,LP1,FMT
is assumed.

MCS COMMANDS

BYE application

> Logs you out of MCS and connects you to
> specified application. If BYE is specified
> without an application, the system disconnects
> you from MCS and network control.

DATA

> Switches terminal from command mode to data mode.

DISABLE

> Disables the terminal. Terminal cannot send
> and/or receive application messages but can
> perform all command mode activities.

DISPLAY name

> Displays information about the current status of
> input and output queues.

name	Description
ALL	Displays status of both input and output queues.
INPUT	Displays status of all input queues.
LAST	Displays serial number of last message received from the terminal.
OUTPUT	Displays status of all output queues
queue	Displays status of specified queue. Queue is the name of an output or input queue defined in the application definition.

ENABLE

> Reestablishes connection between MCS and the
> terminal. Terminal can send and receive
> application messages.

END application

> Logs you out of MCS and connects you to
> specified application. If END is specified
> without an application, the system reissues the
> request for entry of an application.

GOODBYE application

> Logs you out of MCS and connects you to
> specified application. If GOODBYE is specified
> without an application, the system disconnects
> the terminal from MCS and from the network.

HELLO application

> Logs you out of MCS and connects you to
> specified application. If HELLO is specified
> without an application, the system reissues the
> request for entry of an application.

LOGIN application

> Same as HELLO command.

LOGOFF application

> Same as GOODBYE command.

LOGON application

> Same as HELLO command.

LOGOUT application

> Same as GOODBYE command.

MESSAGE "string"

> Sends the message string to the applications
> operator. "string" is 80 characters or less.

TVF COMMANDS

END

    Terminates terminal's connection to TVF.

ENDL

    Terminates loopback test.

HELP

    Displays a list of all legal TVF commands.

TEST

    Displays a list of all available terminal
    verification tests.

1

    Initiates loopback test. TVF displays the
    message

        LOOPBACK TEST BEGINS

        ..

    TVF returns to the terminal each line of text
    entered until the ENDL command is entered.

2

    Initiates line test. TVF displays the message

        LINE TEST BEGINS

        ..

    TVF returns a string of characters identical to
    the next character entered from the terminal.
    The length of the string is the current page
    width value for the terminal.

3

Initiates screen test. TVF displays the message

SCREEN TEST BEGINS
..

If a character is entered from the terminal, TVF
clears the screen and displays one screen or
page of repetitions of the character. If a
carriage return is entered from the terminal,
TVF clears the screen and displays one screen or
page of repeated portions of the ASCII
96-character set.

APPENDIX A

CHARACTER SETS

Table A-1. Interactive Character Sets
(Sheet 1 of 4)

ASCII Graphic (64 Char)	ASCII Character (128 Char)	Display Code	6/12 Display Code	12-Bit ASCII Code
: colon†	: colon†	00†		
Display code 00 is undefined at sites using the 63-character set.				
A	A	01	01	0101
B	B	02	02	0102
C	C	03	03	0103
D	D	04	04	0104
E	E	05	05	0105
F	F	06	06	0106
G	G	07	07	0107
H	H	10	10	0110
I	I	11	11	0111
J	J	12	12	0112
K	K	13	13	0113
L	L	14	14	0114
M	M	15	15	0115
N	N	16	16	0116
O	O	17	17	0117
P	P	20	20	0120
Q	Q	21	21	0121
R	R	22	22	0122
S	S	23	23	0123
T	T	24	24	0124
U	U	25	25	0125
V	V	26	26	0126
W	W	27	27	0127
X	X	30	30	0130
Y	Y	31	31	0131
Z	Z	32	32	0132
0	0	33	33	0060
1	1	34	34	0061
2	2	35	35	0062
3	3	36	36	0063
4	4	37	37	0064
5	5	40	40	0065
6	6	41	41	0066
7	7	42	42	0067
8	8	43	43	0070
9	9	44	44	0071
+	+	45	45	0053
-	-	46	46	0055
*	*	47	47	0052

† This value applies to the 64-character set. The line below shows the value for the 63-character set. In ASCII mode for interactive jobs, a colon (:) is represented as a 7404₈ 6/12 display code.

Table A-1.   Interactive Character Sets
(Sheet 2 of 4)

ASCII Graphic (64 Char)	ASCII Character (128 Char)	Display Code	6/12 Display Code	12-Bit ASCII Code
/	/	50	50	0057
(	(	51	51	0050
)	)	52	52	0051
$	$	53	53	0044
=	=	54	54	0075
space	space	55	55	0040
, comma	, comma	56	56	0054
. period	. period	57	57	0056
# num. sign	# num. sign	60	60	0043
[l. bracket	[l. bracket	61	61	0133
] r. bracket	] r. bracket	62	62	0135
% †	% †	63 †	63 †	0045
: colon	: colon	63	63	0072
" quote	" quote	64	64	0042
_ underline	_ underline	65	65	0137
!	!	66	66	0041
& ampersand	& ampersand	67	67	0046
' apostrophe	' apostrophe	70	70	0047
?	?	71	71	0077
<	<	72	72	0074
>	>	73	73	0076
@		74		
\ rev. slant	\ rev. slant	75	75	0134
^ circumflex		76		
; semicolon	; semicolon	77	77	0073
	@		7401	0100
	^ circumflex		7402	0136
	: colon †		7404 †	0072
	%		7404	0045
	` grave accent		7407	0140
	a		7601	0141
	b		7602	0142
	c		7603	0143
	d		7604	0144
	e		7605	0145
	f		7606	0146
	g		7607	0147

†This value applies to the 64-character set. The
line below shows the value for the 63-character
set. In ASCII mode for interactive jobs, a colon
(:) is represented as a 7404₈ 6/12 display code.

ASCII Graphic (64 Char)	ASCII Character (128 Char)	Display Code	6/12 Display Code	12-Bit ASCII Code
	h		7610	0150
	i		7611	0151
	j		7612	0152
	k		7613	0153
	l		7614	0154
	m		7615	0155
	n		7616	0156
	o		7617	0157
	p		7620	0160
	q		7621	0161
	r		7622	0162
	s		7623	0163
	t		7624	0164
	u		7625	0165
	v		7626	0166
	w		7627	0167
	x		7630	0170
	y		7631	0171
	z		7632	0172
	{ left brace		7633	0173
	| vert. line		7634	0174
	} right brace		7635	0175
	~ tilde		7636	0176
	DEL		7637	0177
	NUL		7640	4000
	SOH		7641	0001
	STX		7642	0002
	ETX		7643	0003
	EOT		7644	0004
	ENQ		7645	0005
	ACK		7646	0006
	BEL		7647	0007
	BS		7650	0010
	HT		7651	0011
	LF		7652	0012
	VT		7653	0013
	FF		7654	0014
	CR		7655	0015
	SO		7656	0016
	SI		7657	0017

ASCII Graphic (64 Char)	ASCII Character (128 Char)	Display Code	6/12 Display Code	12-Bit ASCII Code
	DLE		7660	0020
	DC1		7661	0021
	DC2		7662	0022
	DC3		7663	0023
	DC4		7664	0024
	NAK		7665	0025
	SYN		7666	0026
	ETB		7667	0027
	CAN		7670	0030
	EM		7671	0031
	SUB		7672	0032
	ESC		7673	0033
	FS		7674	0034
	GS		7675	0035
	RS		7676	0036
	US †		7677	0037

† Reserved for network use.

Table A-2. Batch Character Sets (Sheet 1 of 6)

CDC Graphic (64 Char)	ASCII Graphic (64 Char)	ASCII Graphic (95 Char)	Display Code	6/12 Display Code	12-Bit ASCII Code	Punch Code	
						026	029
: colon †	: colon †		00 †			8-2	8-2
Display code 00 is undefined at sites using the 63-character set.							
A	A	A	01	01	0101	12-1	12-1
B	B	B	02	02	0102	12-2	12-2
C	C	C	03	03	0103	12-3	12-3
D	D	D	04	04	0104	12-4	12-4
E	E	E	05	05	0105	12-5	12-5
F	F	F	06	06	0106	12-6	12-6
G	G	G	07	07	0107	12-7	12-7
H	H	H	10	10	0110	12-8	12-8
I	I	I	11	11	0111	12-9	12-9
J	J	J	12	12	0112	11-1	11-1
K	K	K	13	13	0113	11-2	11-2
L	L	L	14	14	0114	11-3	11-3
M	M	M	15	15	0115	11-4	11-4
N	N	N	16	16	0116	11-5	11-5
O	O	O	17	17	0117	11-6	11-6

† This value applies only to the 64-character set. Display code 00 is undefined in the 63-character set.

Table A-2. Batch Character Sets (Sheet 2 of 6)

CDC Graphic (64 Char)	ASCII Graphic (64 Char)	ASCII Graphic (95 Char)	Display Code	6/12 Display Code	12-Bit ASCII Code	Punch Code	
						026	029
P	P	P	20	20	0120	11-7	11-7
Q	Q	Q	21	21	0121	11-8	11-8
R	R	R	22	22	0122	11-9	11-9
S	S	S	23	23	0123	0-2	0-2
T	T	T	24	24	0124	0-3	0-3
U	U	U	25	25	0125	0-4	0-4
V	V	V	26	26	0126	0-5	0-5
W	W	W	27	27	0127	0-6	0-6
X	X	X	30	30	0130	0-7	0-7
Y	Y	Y	31	31	0131	0-8	0-8
Z	Z	Z	32	32	0132	0-9	0-9
0	0	0	33	33	0060	0	0
1	1	1	34	34	0061	1	1
2	2	2	35	35	0062	2	2
3	3	3	36	36	0063	3	3
4	4	4	37	37	0064	4	4

Table A-2. Batch Character Sets (Sheet 3 of 6)

CDC Graphic (64 Char)	ASCII Graphic (64 Char)	ASCII Graphic (95 Char)	Display Code	6/12 Display Code	12-Bit ASCII Code	Punch Code	
						026	029
5	5	5	40	40	0065	5	5
6	6	6	41	41	0066	6	6
7	7	7	42	42	0067	7	7
8	8	8	43	43	0070	8	8
9	9	9	44	44	0071	9	9
+	+	+	45	45	0053	12	12-8-6
−	−	−	46	46	0055	11	11
*	*	*	47	47	0052	11-8-4	11-8-4
/	/	/	50	50	0057	0-1	0-1
(	(	(	51	51	0050	0-8-4	12-8-5
)	)	)	52	52	0051	12-8-4	11-8-5
$	$	$	53	53	0044	11-8-3	11-8-3
=	=	=	54	54	0075	8-3	8-6
space	space	space	55	55	0040	no punch	no punch
, comma	, comma	, comma	56	56	0054	0-8-3	0-8-3
. period	. period	. period	57	57	0056	12-8-3	12-8-3

Table A-2. Batch Character Sets (Sheet 4 of 6)

CDC Graphic (64 Char)	ASCII Graphic (64 Char)	ASCII Graphic (95 Char)	Display Code	6/12 Display Code	12-Bit ASCII Code	Punch Code	
						026	029
≡ equiv.	# num. sign	# num. sign	60	60	0043	0-8-6	8-3
[l. bracket	[l. bracket	[l. bracket	61	61	0133	8-7	12-8-2
] r. bracket	] r. bracket	] r. bracket	62	62	0135	0-8-2	11-8-2
% †	% †	% †	63 †	63 †	0045	8-6	0-8-4
: colon	: colon	: colon	63	63	0072	8-2	8-2
≠	" quote	" quote	64	64	0042	8-4	8-7
⌐	_ underline	_ underline	65	65	0137	0-8-5	0-8-5
∨	¦	¦	66	66	0041	11-0	12-8-7
∧	& ampersand	& ampersand	67	67	0046	0-8-7	12
↑	' apostrophe	' apostrophe	70	70	0047	11-8-5	8-5
↓	?	?	71	71	0077	11-8-6	0-8-7
<	<	<	72	72	0074	12-0	12-8-4
>	>	>	73	73	0076	11-8-7	0-8-6
≤	@		74			8-5	8-4
≥	\ rev. slant	\ rev. slant	75	75	0134	12-8-5	0-8-2
¬	^ circumflex		76			12-8-6	11-8-7
; semicolon	; semicolon	; semicolon	77	77	0073	12-8-7	11-8-6

†This value applies only to the 64-character set. The line below shows the value for the 63-character set.

Table A-2. Batch Character Sets (Sheet 5 of 6)

CDC Graphic (64 Char)	ASCII Graphic (64 Char)	ASCII Graphic (95 Char)	Display Code	6/12 Display Code	12-Bit ASCII Code	Punch Code 026	Punch Code 029
		@		7401	0100		
		^ circumflex		7402	0136		
		: colon †		7404	0072		
		%		7404	0045		
		` grave accent		7407	0140		
		a		7601	0141		
		b		7602	0142		
		c		7603	0143		
		d		7604	0144		
		e		7605	0145		
		f		7606	0146		
		g		7607	0147		
		h		7610	0150		
		i		7611	0151		
		j		7612	0152		
		k		7613	0153		

†This value applies only to the 64-character set. The line below shows the value for the 63-character set.

Table A-2. Batch Character Sets (Sheet 6 of 6)

CDC Graphic (64 Char)	ASCII Graphic (64 Char)	ASCII Graphic (95 Char)	Display Code	6/12 Display Code	12-Bit ASCII Code	Punch Code 026	029
		l		7614	0154		
		m		7615	0155		
		n		7616	0156		
		o		7617	0157		
		p		7620	0160		
		q		7621	0161		
		r		7622	0162		
		s		7623	0163		
		t		7624	0164		
		u		7625	0165		
		v		7626	0166		
		w		7627	0167		
		x		7630	0170		
		y		7631	0171		
		z		7632	0172		
		{ left brace		7633	0173		
		| vert. line		7634	0174		
		} right brace		7635	0175		
		~ tilde		7636	0176		

Table A-3. ASCII to 6/12 Display Code Conversion
(Sheet 1 of 3)

ASCII Character (128 Char)	12-Bit ASCII Code		6/12 Display Code
	Octal	Hex	
NUL	4000	00	7640
SOH	0001	01	7641
STX	0002	02	7642
ETX	0003	03	7643
EOT	0004	04	7644
ENQ	0005	05	7645
ACK	0006	06	7646
BEL	0007	07	7647
BS	0010	08	7650
HT	0011	09	7651
LF	0012	0A	7652
VT	0013	0B	7653
FF	0014	0C	7654
CR	0015	0D	7655
SO	0016	0E	7656
SI	0017	0F	7657
DLE	0020	10	7660
DC1	0021	11	7661
DC2	0022	12	7662
DC3	0023	13	7663
DC4	0024	14	7664
NAK	0025	15	7665
SYN	0026	16	7666
ETB	0027	17	7667
CAN	0030	18	7670
EM	0031	19	7671
SUB	0032	1A	7672
ESC	0033	1B	7673
FS	0034	1C	7674
GS	0035	1D	7675
RS	0036	1E	7676
US †	0037	1F	7677 †
space	0040	20	55
!	0041	21	66
" quote	0042	22	64
# number sign	0043	23	60
$	0044	24	53
% ††	0045	25	63 ††
%	0045	25	7404
& ampersand	0046	26	67
' apostrophe	0047	27	70

† The interpretation of this character or code
  may depend on its context.
†† Reserved for network use.

Table A-3. ASCII to 6/12 Display Code Conversion
(Sheet 2 of 3)

ASCII Character (128 Char)		12-Bit ASCII Code		6/12 Display Code
		Octal	Hex	
(		0050	28	51
)		0051	29	52
*		0052	2A	47
+		0053	2B	45
,	comma	0054	2C	56
-		0055	2D	46
.	period	0056	2E	57
/		0057	2F	50
0		0060	30	33
1		0061	31	34
2		0062	32	35
3		0063	33	36
4		0064	34	37
5		0065	35	40
6		0066	36	41
7		0067	37	42
8		0070	38	43
9		0071	39	44
:	colon†	0072	3A	7404†
:	colon	0072	3A	63
;	semicolon	0073	3B	77
<		0074	3C	72
=		0075	3D	54
>		0076	3E	73
?		0077	3F	71
@		0100	40	7401
A		0101	41	01
B		0102	42	02
C		0103	43	03
D		0104	44	04
E		0105	45	05
F		0106	46	06
G		0107	47	07
H		0110	48	10
I		0111	49	11
J		0112	4A	12
K		0113	4B	13
L		0114	4C	14
M		0115	4D	15
N		0116	4E	16
O		0117	4F	17

† Reserved for network use.

ASCII Character (128 Char)		12-Bit ASCII Code		6/12 Display Code
		Octal	Hex	
P		0120	50	20
Q		0121	51	21
R		0122	52	22
S		0123	53	23
T		0124	54	24
U		0125	55	25
V		0126	56	26
W		0127	57	27
X		0130	58	30
Y		0131	59	31
Z		0132	5A	32
[	left bracket	0133	5B	61
\	reverse slant	0134	5C	75
]	right bracket	0135	5D	62
^	circumflex	0136	5E	7402
_	underline	0137	5F	65
`	grave accent	0140	60	7407
a		0141	61	7601
b		0142	62	7602
c		0143	63	7603
d		0144	64	7604
e		0145	65	7605
f		0146	66	7606
g		0147	67	7607
h		0150	68	7610
i		0151	69	7611
j		0152	6A	7612
k		0153	6B	7613
l		0154	6C	7614
m		0155	6D	7615
n		0156	6E	7616
o		0157	6F	7617
p		0160	70	7620
q		0161	71	7621
r		0162	72	7622
s		0163	73	7623
t		0164	74	7624
u		0165	75	7625
v		0166	76	7626
w		0167	77	7627
x		0170	78	7630
y		0171	79	7631
z		0172	7A	7632
{	left brace	0173	7B	7633
		vertical line	0174	7C	7634
}	right brace	0175	7D	7635
~	tilde	0176	7E	7636
DEL		0177	7F	7637

CONTROL DATA CORPORATION