

CONTROL DATA®

6000 SERIES TIME-SHARING

KRONOS

TIME-SHARING

USER'S REFERENCE MANUAL

CONTROL DATA
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PREFACE

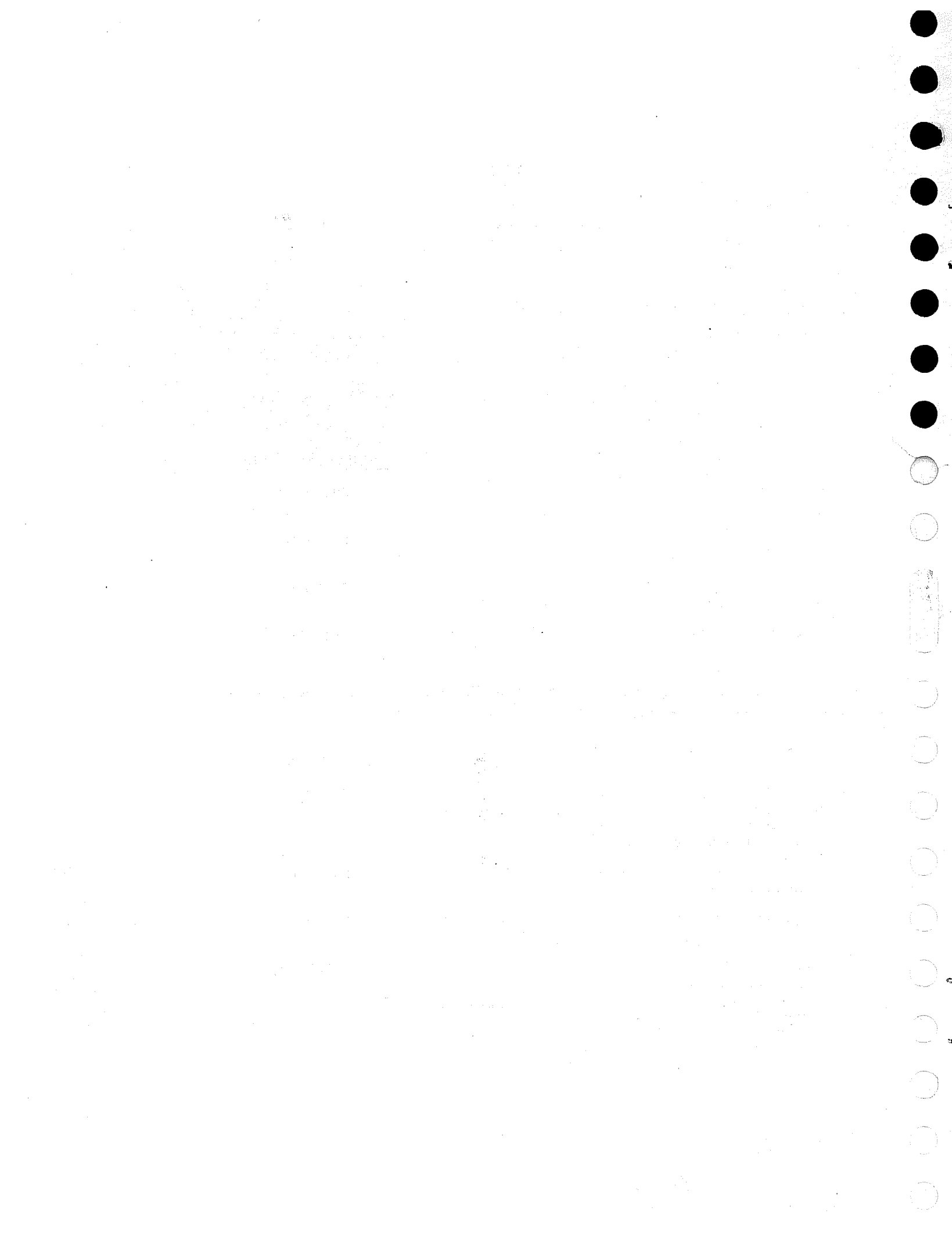
This manual describes communication between a terminal user and the KRONOS Time-Sharing System. It contains an explanation of the subsystems available to the terminal user, and the procedures which allow him to fully utilize the capabilities of these subsystems. However, this manual does not contain programming information for these subsystems.

The following manuals contain additional information of interest to the remote time-sharing user:

<u>Title</u>	<u>Publication Number</u>
Time-Sharing FORTRAN Reference Manual	59150900
FORTRAN Translator (FTNTRAN) Reference Manual	59151000
BASIC Reference Manual	59150800
Text Editor (EDIT) Reference Manual	59150700

In addition, the following manuals describe the KRONOS Time-Sharing System which was developed by the Business and Industrial Systems Division of Control Data Corporation.

<u>Title</u>	<u>Publication Number</u>
KRONOS Batch User's Reference Manual	59150600
KRONOS Operating Guide	59151600
MODIFY File Editing System Reference Manual	59151100
EXPORT/IMPORT Reference Manual	59150500
ALGOL Reference Manual	59151200
KRONOS Terminal User's Instant Manual	59152000



INTRODUCTION

1

The KRONOS Time-Sharing System allows the terminal user to create, manipulate, execute, and save files consisting of programs and data. To execute a program from a terminal, the user must:

- Identify himself to the computer and specify the subsystem to be used.

The available subsystems are:

BASIC	Allows the user to solve mathematical and engineering problems.
FORTRAN	Allows the user to solve mathematical and engineering problems.
EDIT	Allows the user to edit files.
EXEC	Allows the user to run a previously compiled program.

- Enter the commands necessary to process his job.
- Log off when job processing is completed.

Section 2 of this manual contains a sample program run. Section 3 provides an expanded description of time-sharing job processing. Section 4 lists and describes the control and job processing commands. Section 5 describes permanent file structure and the permanent file commands. Section 6 describes the program editing facilities available to the user. The special privilege commands are described in Section 7.



For the user who is unfamiliar with time-sharing, this section describes the steps for the successful operation of the KRONOS system by means of a simple example in the BASIC language.

1. Dial the central site. If the procedure is unfamiliar, consult Appendix B. Dial-in is complete when the system prints:

```
mm/dd/yy. hh.mm.ss.
CDC TIME SHARING SYSTEM
USER NUMBER:
      mm/dd/yy      month, day, year
      hh.mm.ss.    hour, minute, second
```

2. Submit your user number on the same line:

```
ABCDEFGG (CR) †
```

The system responds:

```
PASSWORD
■■■■■■■■■■
```

3. Enter your password in the blacked-out area:

```
TUVWXYZ (CR)
```

The system prints:

```
SYSTEM:
```

4. On the same line, enter the subsystem to be used:

```
BASIC (CR)
```

The system responds:

```
OLD, NEW, OR LIB FILE:
```

† Throughout this manual the convention (CR) (Carriage Return) is used to denote the RETURN key on the keyboard.

5. Submit the appropriate file status on the same line:

NEW

The system requests:

FILE NAME:

6. Enter the file name on the same line:

PRIME (CR)

The system responds:

READY.

To this point, the output has the following form:

```
mm/dd/yy. hh.mm.ss
CDC TIME SHARING SYSTEM
USER NUMBER: ABCDEFG
PASSWORD
TUVWXYZ█ →
SYSTEM: BASIC
OLD, NEW, OR LIB FILE: NEW
FILE NAME: PRIME
READY.
```

The password cannot be seen and is shown in this manner solely for purposes of illustration.

7. Now we are ready to enter the BASIC program. In this case, we enter the program PRIME which prints the prime numbers. The program is entered as follows:

```
10 PRINT "THIS IS A LISTING OF ALL PRIME NUMBERS" (CR)
11 PRINT (CR)
20 PRINT "WHICH PRIME THE PRIME NUMBER" (CR)
30 LET N=0 (CR)
40 LET V=0 (CR)
50 LET V=V+1 (CR)
60 LET Y=INT (V/2+.5) (CR)
70 FOR X=2 TO Y (CR)
80 LET Z=V/X (CR)
90 LET W=INT (Z) (CR)
100 IF Z=W THEN 50 (CR)
110 NEXT X (CR)
120 LET N=N+1 (CR)
140 PRINT "      ";N,"      ";V (CR)
160 GO TO 50 (CR)
170 END (CR)
```

8. The program is now ready to be executed. Type:

RUN (CR)

The system returns the following output:

mm/dd/yy. hh.mm.ss.

PROGRAM PRIME

THIS IS A LISTING OF ALL PRIME NUMBERS

WHICH PRIME THE PRIME NUMBER

1	1
2	2
3	3
4	5
5	7
6	11
7	13
8	17
9	19

9. This program continues to print prime numbers until terminated by depressing either the S-key or break-key.

The system responds:

RUN TERMINATED.

10. To log off the system, type:

BYE (CR)

This command logs off the user and outputs the following data:

ABCDEFGH LOG OFF. hh.mm.ss

ABCDEFGH CPU s.sss SEC.

s.sss Central processor seconds used



This section explains the basic steps in processing a time-sharing job.

- Terminal log-in
- Subsystem selection
- Program entry and execution
- Terminal log-off

To use the system from a terminal, the user must:

1. Connect to the central site using one of the procedures described in Appendix B.

When the connection is completed, the computer types:

```
mm/dd/yy.  hh.mm.ss.  
CDC TIME SHARING SYSTEM
```

and requests:

```
USER NUMBER:
```

2. Submit the user number on the same line:

```
xxxxxxx (CR)
```

The user number consists of seven alphanumeric characters.

The system then requests:

```
PASSWORD  
■■■■■■■■■■
```

3. Enter the password:

```
zzzzzzz (CR)
```

The password must consist of seven alphanumeric characters. To provide a greater measure of security, type the password in the area the system has blacked out.

If no password is needed, type:

```
(CR)
```

If the user number and password are not acceptable, the system types:

```
ILLEGAL LOG IN, TRY AGAIN  
USER NUMBER:
```

If the user number and password are acceptable, the system responds:

SYSTEM:

4. Enter the desired subsystem:

BASIC	(CR)	to use the BASIC language
EDIC	(CR)	to do text editing
EXEC	(CR)	to execute a compiled program
FORTRAN	(CR)	to use the Time-Sharing FORTRAN language

To BASIC or FORTRAN, the system responds:

OLD, NEW, OR LIB FILE:

To EXEC, the system responds:

OLD OR LIB FILE:

to EDIT, the system responds:

OLD OR NEW FILE:

5. In answer to the response, submit the appropriate status:

OLD	(CR)	for a file that was previously submitted
NEW	(CR)	for a new file
LIB	(CR)	for a file from the system library

The system responds:

FILE NAME:

6. Submit the file name:

nnnnnnn (CR)

The file name consists of up to seven alphanumeric characters.

If an OLD or LIB file is specified but does not exist, the system responds:

FILE NOT FOUND.

If the file name submitted contains illegal characters, the system responds:

FILE NAME ERROR.

If no errors are detected, the system responds:

READY.

The following example illustrates a sample log-in:

11/02/69.11.00.00
CDC TIME SHARING SYSTEM
USER NUMBER: ABCDEFG
PASSWORD
TUVWXYZ
SYSTEM: BASIC
OLD, NEW, OR LIB FILE: OLD
FILE NAME: GEORGE
READY.

→ The password cannot be seen and is shown in this way solely for purposes of illustration.

7. Enter the new FORTRAN or BASIC program (if either of these subsystems is specified in Step 4). Type each line in the proper format. Each line must begin with a 1-5 digit line number and end with (CR).

At this time the user can enter any of the other commands described in Sections 4 and 5. These commands include:

- file action commands
- terminal control commands
- permanent file commands

8. When all necessary file retrieval and file creation activity is completed for a program run or an edit operation, type:

RUN (CR)

This command causes the FORTRAN or BASIC program to be run. This includes an old or library file being run under the EXEC subsystem. If the EDIT subsystem is requested, the RUN command causes the response:

BEGIN TEXT EDITING

The output of a BASIC or FORTRAN program is in the form:

mm/dd/yy. hh.mm.ss.
PROGRAM nnnnnnn

•
•

(data requested or generated by the program –
error messages if program errors occurred)

•
•

RUN COMPLETE.

If the user wishes merely to generate object code which can be saved and used at a later time, he enters the command:

RUN, C = nnnnnnn (CR)
or
RUN, COMPILE = nnnnnnn (CR)

where nnnnnnn is the name of the file the object code is generated on.

LOG-OFF PROCEDURE

When the user completes job processing, he logs off the system using the following procedure. Type:

BYE (CR)
or
GOODBYE (CR)

This command logs off the user, purges all local files, and outputs the following information:

```
xxxxxxx LOG OFF.      hh.mm.ss  
xxxxxxx CPU          s.sss SEC.  
  
xxxxxxx      user number  
s.sss        number of seconds of central processor time used
```

ALTERNATE LOG-OFF/LOG-IN

When the terminal is connected, the user may wish to allow another person to use the terminal. An alternate Step 1 is provided for this purpose. The user types:

HELLO (CR)

This command logs off the present user and reinitializes the log-in sequence. The system requests:

USER NUMBER:

The new user then proceeds with Step 2.

SAMPLE TIME-SHARING RUN

The following pages contain an example of a terminal run. The commands used are described more fully in Section 4. The examples are shown here mainly to give the user an idea of the range of commands available.

LIST

10/23/69. 10.25.47.
PROGRAM SECTEST

The LIST command is entered to obtain a listing of the file – in this case SECTEST.

10 PROGRAM SECTEST (TAPE2, OUTPUT)
20 DIMENSION K(4)
30 30 FORMAT (4(I5, 1X))
40 READ (2, 30) (K(I), I=1, 4)
50 PRINT 30, (K(I), I=1, 4)
60 END

SECTEST is a brief FORTRAN program which reads a secondary file and prints four numbers from the file.

RUN COMPLETE.

This system response occurs after each execution of a LIST or RUN command.

GET, TAPE2=DATA
READY.

Before running SECTEST, the user must obtain the secondary file DATA from permanent file storage.

RUN

The RUN command causes program SECTEST to be executed.

10/23/69. 10.26.29.
PROGRAM SECTEST

The system supplies a program header for each program.

19690 25761 48304 27538
END.

The program output is printed as specified in FORMAT line 30.

RUN COMPLETE.

RUN, C=SECB

The RUN, C command causes the program to be compiled as SECB.

10/23/69. 10.27.06
PROGRAM SECTEST

RUN COMPLETE.

SAVE, SECB
READY.

The SAVE command is used to retain the object code for a later execution

EXEC
READY.

The user specifies the EXEC subsystem to execute the previously compiled program.

OLD
FILE NAME: SECB
READY.

The user supplies the OLD command and the file name SECB to the system.

GET, TAPE2=DATA
READY.

The secondary file DATA is retrieved from permanent file storage.

RUN

The program SECB is executed (under the EXEC subsystem).

10/23/69. 10.28.10.
PROGRAM SECB

19690 25761 48304 27538
END.

The output is the same as when run under the FORTRAN subsystem.

RUN COMPLETE.

PERMIT, ABCDEFG, SECB, E
READY.

The user grants permission to execute file SECB to user ABCDEFG.

PERMIT, ABCDEFG, SECB, N
READY.

This command removes the permission granted in the previous command.

STATUS
TTY 12
SYSTEM - EXECUTE
FILE NAME: SECB
STATUS - IDLE

This command is used to obtain the status of the terminal at which the user is running.

CATLIST
FILE NAME
LEE
TEST
COMP
EEE
DATA
SECTEST
INMPLS
TOMPLS
TOKC
TOMPLS1
MODS
SECB
END-OF-CATALOG

The CATLIST command is entered to obtain a listing of the files available under the current user's user number.

RUN COMPLETE.

OLD
FILE NAME: EEE
READY.

The user specifies another file.

LIS

10/23/69. 10.30.07.
PROGRAM EEE

The user requests a listing of EEE, using only the first three characters in the LIST command.

00100 REM PROGRAM EEE (OUTPUT)
00110 X=0
00120 FOR Y=1 TO 5
00130 Z=X+Y
150 NEXT Y
160 PRINT Y
00180 END

RUN COMPLETE.

LENGTH, EEE
1920 CHARACTERS.

The user requests the length of file EEE.

PURGE
READY.

The user removes EEE from permanent file storage.

CATLIST, F
FILE NAME

LENGTH
CHARACTERS

CREATION
DATE

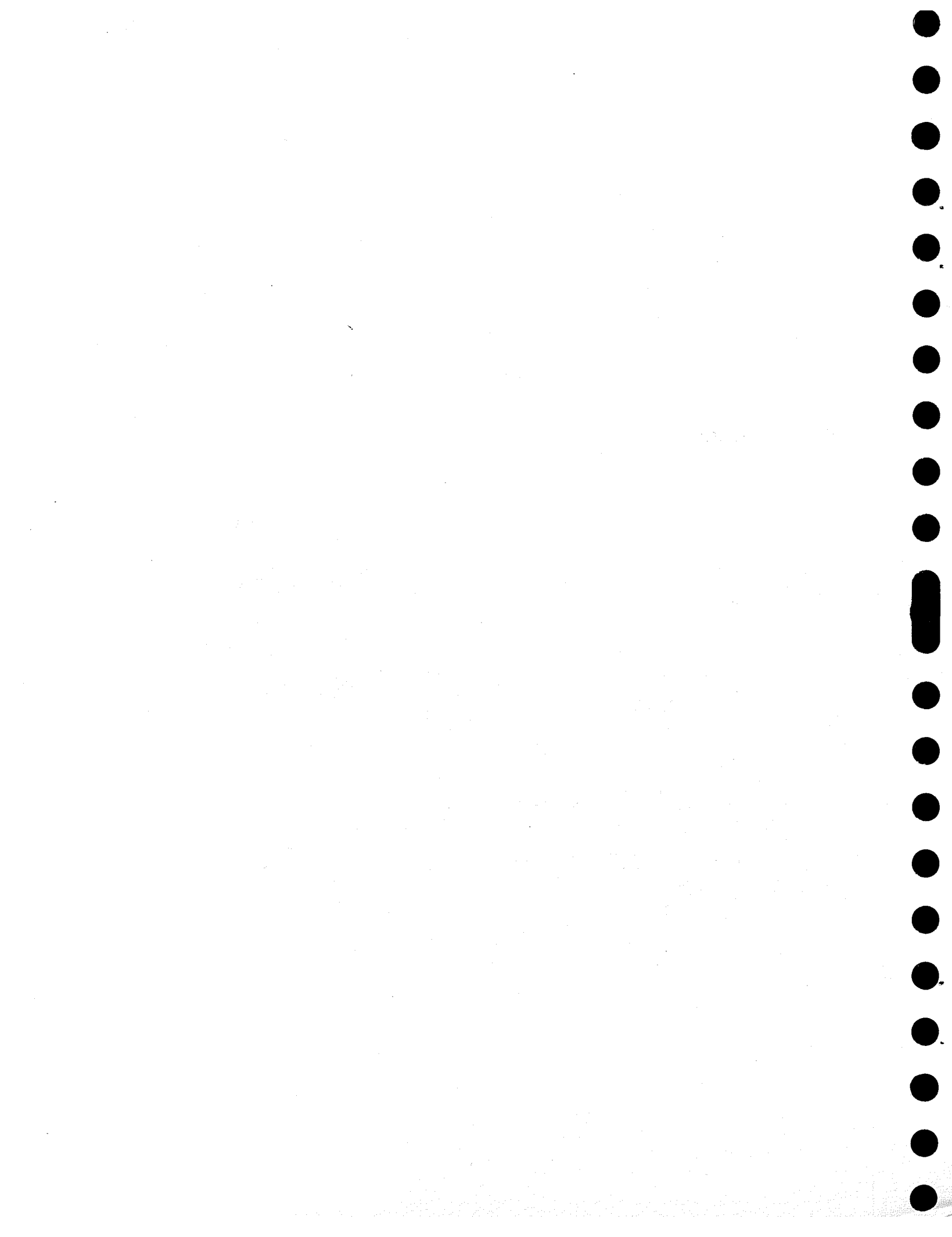
LAST ACCESS
DATE

LEE	1920	08/15/69.	08/15/69.
TEST	1920	09/25/69.	09/25/69.
COMP	36480	09/25/69.	09/25/69.
DATA	1920	10/23/69.	10/23/69.
SECTEST	1920	10/23/69.	10/23/69.
INMPLS	4480	10/07/69.	10/22/69.
TOMPLS	11520	10/22/69.	10/22/69.
TOKC	8320	10/22/69.	10/22/69.
TOMPLS1	21120	10/22/69.	10/22/69.
MODS	28800	10/22/69.	10/23/69.
SECB	41600	10/23/69.	10/23/69.

END-OF-CATALOG

RUN COMPLETE.

The user obtains an updated listing of the files available using the CATLIST command. The F parameter is used to obtain additional information on each file.



After a user has logged in, he can enter any of the system commands. This section describes the terminal control and job commands.

COMMAND PROCESSING

The commands are entered from the terminal in a specified format. The system processes each command by checking from three to seven characters. The user must submit a minimum of three characters, but need not enter the entire command. For example, the user could specify the FORTRAN subsystem by entering any of the following commands:

FOR (CR)
FORT (CR)
FORTR (CR)
FORTRA (CR)
FORTRAN (CR)

However, if a user enters one of several commands that are similar in the first three or more characters, the system responds:

COMMAND NOT UNIQUE.

The user must submit a sufficient number of characters to make the command unique.

A user may enter a command and then wish to delete it. This is done in one of two ways:

- By pressing the ESC (escape) key
- By pressing both the CTRL (control) and X keys

TERMINAL CONTROL COMMANDS

The terminal control commands allow the user to vary the source and format of information given to and received from the system. These commands, which may be given at any time after the user has logged in, are described below:

ASCII (CR)

This command specifies that all subsequent characters be read as belonging to the full ASCII set and thus converted.

AUTO, nn, ii (CR)

After each carriage return, KRONOS automatically generates line numbers beginning with nn with an increment value of ii. If the parameters are omitted, the system assumes the values of nn=100 and ii=10. The user can override this mode by backspacing or by deleting the line and entering a command.

NORMAL (CR)

KRONOS initially assumes this command has been entered. This command clears the TAPE mode, the PARITY mode, the ASCII mode, the special privilege ACCESS mode (see Section 7), and/or the MONITOR mode (see Section 7) selections that previously have been made.

PARITY (CR)

This command specifies that all subsequent output to the terminal be transmitted with odd parity.

TAPE (CR)

This command permits subsequent information to be read from the paper tape reader.

TIME-SHARING JOB COMMANDS

Five basic types of job commands are available to the terminal user:

- log-in
- subsystem selection and control
- job execution
- file manipulation
- log-off

These commands are:

BASIC (CR)

This command is used to specify the BASIC subsystem. If no primary file is currently specified, the system responds:

OLD, NEW, OR LIB FILE:

The user must then specify which one of the three file types he wishes to use.

BYE (CR)

This command logs off the user, purges all files, issues accounting information, and disconnects the terminal.

The system replies:

```
xxxxxxx LOG OFF.  hh.mm.ss  
xxxxxxx CPU      s.sss SEC.
```

```
xxxxxxx      user number  
s.sss        central processor time used
```

CLEAR (CR)

Purges all current files but retains the current primary file name. The system replies:

READY.

DROP, lfn (CR)

Purges the primary or secondary file lfn.

After the file is dropped, the system replies:

READY.

If the file cannot be found, the system responds:

FILE NOT FOUND.

EDIT (CR)

This command is used to specify the EDIT subsystem. If no primary file is currently specified, the system responds:

OLD OR NEW FILE:

The user must then specify whether he wishes to edit an old or new file.

EXEC (CR)

This command is used to specify the EXEC subsystem. If no primary file is currently specified, the system responds:

OLD OR LIB FILE:

The user must then specify whether he intends to execute an old or a library file.

FORTRAN (CR)

This command is used to specify the FORTRAN subsystem. If no primary file is currently specified, the system responds:

OLD, NEW, OR LIB FILE:

The user must then specify which one of the three file types he wishes to use.

GOODBYE (CR)

Same as the command BYE.

HELLO (CR)

This command logs off the current user, as in the BYE command, and reinitializes the log-in sequence. The system replies:

USER NUMBER:

The user enters his user number and continues with the log-in procedure.

LENGTH, lfn (CR)

Calculates the length of the primary or secondary file lfn in terms of 640 character blocks (all rounding is up to the next multiple of 640 characters). The system replies:

xxxxxxx CHARACTERS.

LIBRARY (CR)

Allows the user to obtain a file from the system library. The system replies:

FILE NAME:

The user must then submit the name of a file which is present in the system library.

When the file is found, the system replies:

READY.

LIB, lfn (CR)

This is an optional form of the above command which allows the file name to be specified.

LIST, N, xxxxx, F=lfn (CR)

Prints the program at the terminal.

N (when present) means that no header line is desired (used for punching paper tape).

xxxxxx Line where listing is to begin (optional).

F=lfn (when present) means list file lfn. File lfn is not sorted.

The system replies:

mm/dd/yy. hh.mm.ss

PROGRAM nnnnnnn

•
•

(program lines)

•
•

RUN COMPLETE.

LNH, xxxxx, F=lfm (CR)

An optional form of the LIST, N command specified above.
Lists the file without a header.

MEMORY, nnn (CR)

Allows the user to specify the octal field length nnn for the job. If nnn is omitted, the system assumes nnn = 100. The system replies:

READY.

NEW (CR)

Purges all current files and allows the user to specify a new file name. The system replies:

FILE NAME:

The user enters a valid file name. When the system accepts the file name, it responds:

READY.

NEW, lfn (CR)

This is an optional form of the above command which allows the user to specify the file name.

NODROP (CR)

This command allows a user to retain all secondary files from a previous run when changing primary files. It must be entered immediately after a NEW, OLD, or LIB command is completed. The system replies:

READY.

NOSORT (CR)

Allows a user to prevent a file from being sorted on a LIST, REPLACE, RUN, or SAVE command. This command must follow all correction lines to be effective.

The system replies:

READY.

OLD (CR)

Purges all current files and allows the user to access a file that previously was saved in the permanent file system. The system replies:

FILE NAME:

The user must supply:

pfn, xxxxxxxx (CR)

pfn permanent file name
xxxxxxx (optional) user number of another user whose files this user can access. The system allows a user to access the files of another user if he has at least an E permission level (see the description of the PERMIT command in Section 5).

OLD, pfn, xxxxxxxx (CR)

This is an optional form of the above command which allows the user to specify the file name.

PASSWORD (CR)

This command allows a user to change his password and provides a greater measure of security for his files. The system requests:

OLD PASSWORD:

■■■■■■■■■■

The user supplies the old password. The system replies:

NEW PASSWORD:

■■■■■■■■■■

The user then supplies the new password and the system replies:

PASSWORD CHANGED.

If the old password submitted is illegal, the system replies:

ILLEGAL OLD PASSWORD.

RENAME (CR)

Changes the current file name. The system replies:

FILE NAME:

The user enters any unused file name. After the name has been accepted, the system replies:

READY.

If the user has retrieved a secondary file by that name since the last RUN, the system responds:

DUPLICATE FILE NAME.

RENAME, lfn (CR)

This is an optional form of the above command which allows the user to specify the file name.

RUN (CR)

Compiles and initiates execution, initiates execution of the user program, or begins text editing. The system replies:

mm/dd/yy. hh.mm.ss
PROGRAM nnnnnnn
•
•
(data or error messages)
•
•
RUN COMPLETE.

or

BEGIN TEXT EDITING.
•
•
commands/data/error messages
•
•
RUN COMPLETE.

RNH (CR)

This optional command allows the user to run the job without a header being printed.

RUN, C=nnnnnn (CR)
or

RUN, COMPILE=nnnnnn (CR)

These commands allow a user to compile object code for a file to be saved in the permanent file system. This file can later be executed under the EXEC subsystem. The system replies:

mm/dd/yy. hh.mm.ss
PROGRAM nnnnnnn
•
•
(diagnostic messages, if any)
•
RUN COMPLETE.

S (break key)

The user presses this key to terminate a job that is currently being output. The system responds:

RUN TERMINATED.

SORT (CR)

Allows the user to force sorting of the primary file. The system replies:

READY.

STATUS (CR)

Requests the current job status. A sample system reply could be:

```
TTY      6  
SYSTEM - BASIC  
FILE NAME: DDD  
STATUS - IDLE
```

STOP (CR)

Stops any run in progress. The system replies:

```
RUN TERMINATED.
```

SYSTEM (CR)

Requests a new system name. The system replies:

```
SYSTEM:
```

The user can enter any command. Generally, the name of one of the four subsystems is entered.

TIME, nnnnn (CR)

Allows the user to specify a time limit – nnnnn octal seconds – for the next operation requiring the central processor. If nnnnn is omitted, the system assumes nnnnn = 100₈ seconds. The minimum time that can be entered is 10₈ seconds.

KRONOS terminal users work with two types of files: primary and secondary. A primary file is specified for a system in response to the question FILE NAME; and can be listed, executed, etc. All other scratch files are secondary files. A user may use more than one secondary file, but can only work with one primary file at a time.

The user catalog contains information on all saved files, a list of the users who have been granted access to each file, and the access level granted to each permitted user.

FILE PERMISSIONS

A user becomes the creating user of a file when he saves a file. The SAVE command stores the file and causes an entry to be made in the user's catalog. The catalog entry contains the creation date, length, and the date last accessed.

The granting of explicit permission to another user causes an entry to be made in the creating user's catalog. This entry contains the permission level and the user number of the permitted user. If a user attempts to access a file to which no access has been granted (through the use of the OLD or GET command), the system responds:

PERMISSION NOT GRANTED. - if he enters an optional user number and the file is not found.

FILE NOT FOUND. - if he does not enter an optional user number and the file is not found.

A user may also be granted implicit permission to access the files of another user. The KRONOS service center personnel establish this permission by assigning a hierarchy of user numbers. This hierarchy defines a user/subuser relationship.

When a user wishes to access files to which he has implicit permission, his user number must satisfy a user/subuser relationship. His user number must match the user number of the subuser in all n positions.

The system does not compare user numbers in those positions where the user's (not sub-user's) user number contains asterisks. (When one position of a user number contains an asterisk, all subsequent positions of the user number will also contain asterisks.)

PERMANENT FILE COMMANDS

PERMIT COMMAND

The PERMIT command is used to grant file access permission. The general form of the command is:

PERMIT, xxxxxxx, pfn, p (CR)

- xxxxxxx The user number of the user to be granted access permission.
- pfn The name of the file on which permission is to be granted.
- p Permission to be granted. The possible permission levels are:
- A - append only
 - E - execute only
 - N - none - removes previously granted permission
 - R - read and/or execute
 - W - write, read, and/or execute

CATLIST COMMAND

The CATLIST command allows the user to obtain information about files stored in the permanent file system. The general form of the command is:

CATLIST, param (CR)

If param is not specified, the names of the files created by the user are listed. If param = F, the name, length, creation date, and the date last accessed of all files created by the user are listed at the terminal. If param is a user number, the system lists the files of that user providing the person requesting the listing has implicit or explicit permission.

PERMANENT FILE PROCESSING COMMANDS

The permanent file processing commands are:

APPEND, lfn=pfn, xxxxxxx (CR)

Allows the user to append the contents of file lfn to file pfn.

GET, lfn=pfn, xxxxxxx (CR)

Allows a user to retrieve a primary or secondary file from a permanent file storage device.

PURGE, pfn, xxxxxxx (CR)

Allows a user to drop a file from the permanent file system.

REPLACE, lfn=pfm, xxxxxxxx (CR)

Allows a user to substitute a new file for a file currently stored in the permanent file system.

SAVE, lfn=pfm (CR)

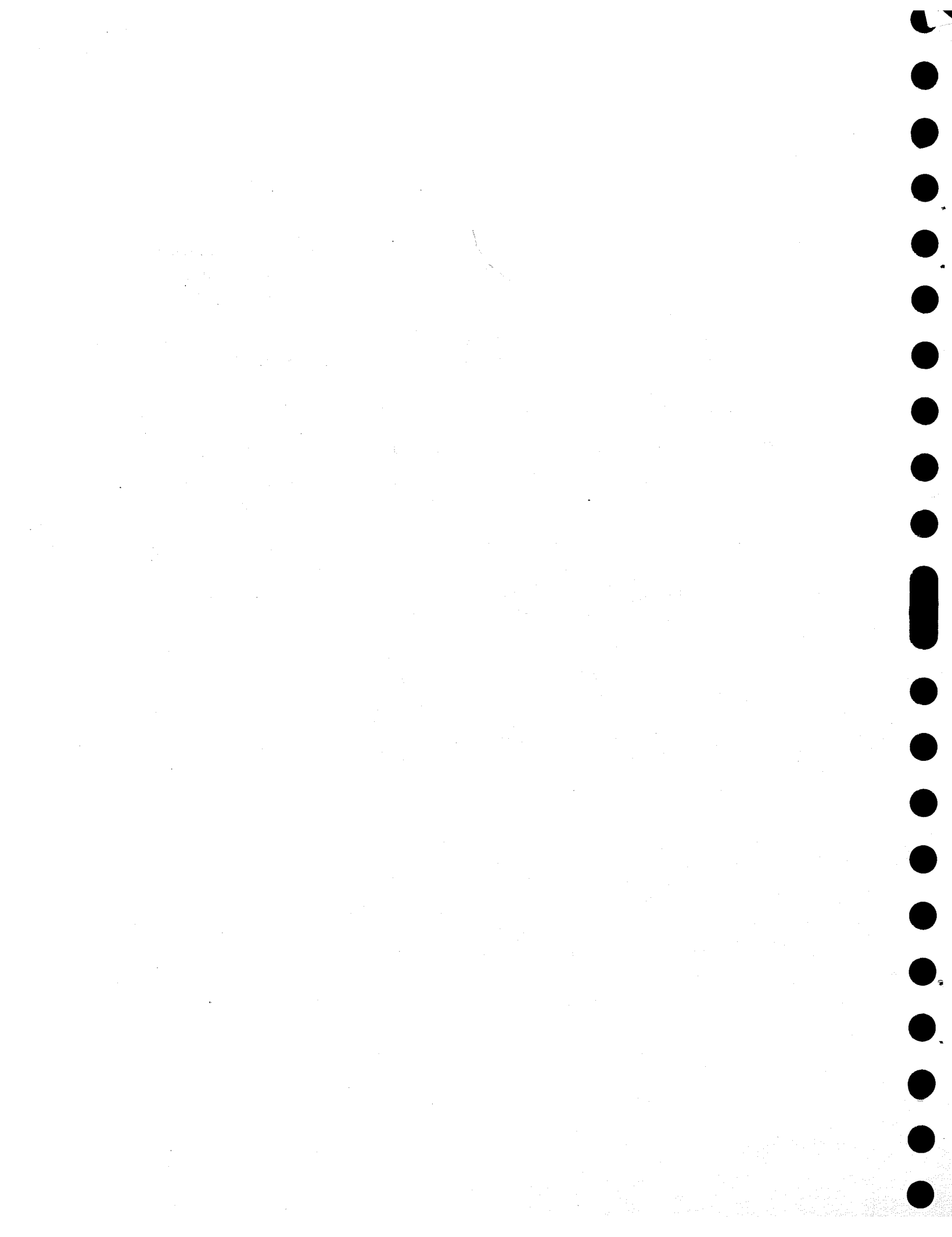
Allows a user to retain a file in the permanent file system. It does not allow a user to replace a file in the permanent file system.

UNSAVE, pfm, xxxxxxxx (CR)

Allows a user to drop a file from the permanent file system (same as PURGE).

The parameters used in these commands are defined as follows:

- lfn local file name. This is the name given to the file when it is in use.
- pfm permanent file name. This is the name under which the file is stored in the permanent file system. (If omitted, pfm equals lfn.)
- xxxxxxx the user number of another user (optional). This parameter is given when a user wishes to operate on the permanent files of a subuser (i.e. on a file on which he has implicit permission) or on a file to which he has been granted explicit permission.



PROGRAM EDITING

6

The EDIT subsystem (described in the Text Editor (EDIT) Reference Manual) provides general file editing capabilities to the user. In addition, to allow ease of editing when working with source programs, the user can perform program editing while using any other subsystem. This simplified editing capability allows him to:

- insert statements into a program
- delete statements from a program
- correct statements in a program

The following example illustrates this program editing capability. The user types:

```
10 LET A=B (CR)
20 LET C=D (CR)
25 LET Z=A+B (CR)
30 LET E=F (CR)
40 LET G=I (CR)
```

If the user wishes to insert an instruction between the statements numbered 10 and 20, he types:

```
15 LET X=Y (CR)
```

If he wishes to delete statement 25 from his program, he types:

```
25 (CR)
```

Finally, to correct statement 40, he types:

```
40 GO TO 10 (CR)
```

When the file is listed, it has the following form:

```
10 LET A=B
15 LET X=Y
20 LET C=D
30 LET E=F
40 GO TO 10
```

RESEQUENCING LINE NUMBERS

It is often convenient to resequence the line numbers of a primary file. This is done by the use of the command:

RESEQ, nn, ii (CR)

- nn the new line number of the first statement;
 if omitted, the system assumes nn=100

- ii the increment to be added to nn; if omitted,
 the system assumes ii=10

SPECIAL PRIVILEGE COMMANDS

7

The special privilege commands enable the KRONOS service center personnel to validate and communicate with users. Each user is grouped with others who may be monitored together. This group of users is specified by the first three characters of the user number. The service center personnel can establish a user hierarchy among the users. This hierarchy creates a series of implicit file access permissions. The final four characters of the user number denote the specific user.

The special privilege commands are:

ACCESS (CR)

Enables the user to identify himself as a special privilege user.

The system replies:

PASSWORD

■■■■■■■■■■

The user enters the access password. If the password is valid, the system responds:

READY.

If the password is illegal, the terminal is disconnected.

ANSADD, nnnnnnn,
aaa (CR)

This command allows the user to add an answerback code to the validation entry for subuser nnnnnnn. The answerback code contains ten characters. It can be null or contain blanks.

When the code has been added to the validation file, the system responds:

ADDED.

If user nnnnnnn does not exist, the system responds:

USER NOT CREATED.

ANSDEL, nnnnnnn,
aaa (CR)

This command allows the user to delete an answerback code from the validation entry for subuser nnnnnnn. The answerback code contains ten characters. It can be null or contain blanks.

When the code has been deleted from the validation file, the system responds:

DELETED.

If user mnnnnnn does not exist, the system responds:

USER NOT CREATED.

CREATE, xxxxxxx,
aaa, pswd (CR)

Allows the service vendor to validate a new user. The parameters are:

xxxxxxx	user number of the subuser being created. It consists of seven alphanumeric characters. The first three characters must be the same as the first three characters of the creating user's user number. However, asterisks in any of the first three positions create an automatic match for any characters in the same positions.
aaa	Ten-character answerback code. This code is used with the user number and password to validate the user at log-in. If omitted, the answerback is not checked when the created user logs in.
pswd	User's seven-character alphanumeric file security password; if omitted, the password is not checked at log-in.

The possible system responses to this command are:

USER VALIDATED.	- when the new user has been created.
USER ALREADY CREATED.	- when the user number submitted previously has been created.

DIAL, nnn, sss (CR)

Sends a one-line message to the terminal specified by the multiplexer port number nnn. The maximum length of the message sss is one line, including the command. The user can dial those terminals with user numbers that match his in the first three positions.

The possible system responses to this command are:

READY. -- when the message has been sent.

ILLEGAL USER ACCESS. -- the user attempted to dial a terminal to which he does not have access.

TTY NOT ACTIVE. -- the desired terminal is inactive.

MESSAGE TOO LONG. -- the message is longer than one line.

MONITOR, nnn (CR)

To connect the calling terminal with the terminal specified by the multiplexer port number nnn. The input and output from terminal nnn is output at the calling terminal. The user can monitor those terminals with user numbers that match his in the first three positions.

Possible system replies are:

TTY NOT ACTIVE. -- the terminal being requested is inactive.

TERMINAL BEING MONITORED. -- the terminal is already being monitored.

ILLEGAL USER ACCESS. -- the requested terminal cannot be monitored by the user.

UNCREATE, xxxxxxxx,
aaa (CR)

To invalidate a currently valid user.

xxxxxxx The user number of the user being invalidated. (The first three characters of xxxxxxxx must match the first three characters of the user number of the person submitting the command.)

aaa Ten-character answerback code. Spaces are suppressed in answerback input.

Possible system responses include:

USER INVALIDATED. -- the command has been processed.

USER NOT CREATED. -- the specified user was not found.

USER, xxxxxxxx (CR)

Allows a user to determine to what multiplexer port(s) user xxxxxxxx is currently connected. The user number submitted must match the user number of the user submitting the command in the first three characters.



KRONOS TERMINAL ERROR MESSAGES

A

<u>Message</u>	<u>Description</u>
COMMAND NOT UNIQUE.	The user supplied the first characters that are not unique to one command.
DUPLICATE FILE NAME.	The permanent file requested has already been retrieved.
EXECUTE ONLY FILE.	The user has only an E permission level on the file.
FILE NOT FOUND.	The specified file does not exist.
FL TOO LARGE.	The field length – needed by the program as calculated by the system or as specified in a MEMORY command – is greater than the system allows.
ILLEGAL OLD PASSWORD.	The old password submitted after a PASSWORD command does not exist or cannot be accessed by that user.
ILLEGAL PARAMETER.	The parameter specified is outside the allowable limits.
NO DATA IN FILE.	The file specified is empty.
NO SYSTEM DEFINED.	The user attempted to RUN a program without specifying the system to be used.
PERMISSION NOT GRANTED.	The user does not have write or append permission on the specified file.
TOO MANY FILES.	The maximum number of permanent files has already been retrieved.
TOO MANY PARAMETERS.	The user submitted more parameters than the command requires.



TELETYPEWRITER DIAL-IN PROCEDURES

B

This appendix gives a brief explanation of how to connect the most common teletypewriter (TTY) models to KRONOS.

CONNECTING TTY MODELS 33/35

If the teletypewriter is hard-wired to the system, i.e., the telephone line is connected directly to the TTY, the following procedure is used:

- Turn on the TTY by setting the rotary power switch in the LINE position or by depressing the ORIG button (on those models having such a feature).
- Dial the correct connect code. The system returns a header, and TTY processing can begin.

If the teletypewriter is connected to the system by an acoustic coupler, the following procedure is used:

- Turn on the TTY as described above.
- Turn on the acoustic coupler.
- Dial the correct phone number.
- When the connection has been made, i.e., a constant high-pitched sound is heard, place the receiver in the acoustic coupler. The system returns a header, and TTY processing can begin.

CONNECTING TTY MODEL 37

To connect the Model 37 to KRONOS, use the following procedure:

- Turn on the TTY by pressing the DATA button.
- Follow the procedure described for Models 33/35 depending on whether the TTY is hard-wired to the system or connected to the system by an acoustic coupler.



PAPER TAPE FORMATS

C

Paper tape can be used to enter programs, commands, and data into the system from a remote terminal. The three paper tape modes (program, command, and data) can be used together on a single paper tape. This allows the entire terminal operation, after log-in, to be run on paper tape. Each paper tape mode has a distinct format associated with it which must be followed to ensure proper operation. Each tape begins and ends with at least an inch of rubout characters.

LOADING PAPER TAPE

If tape is placed into the reader before the TAPE command is entered from the keyboard, the user must place the Reader Mode switch in the READY position. If the tape is loaded after the tape command has been entered, he must start the tape reader. (Refer to the instruction manual for a description of the loading of paper tape into the reader.)

TAPE FORMATS

- | | | |
|--------------|---|---|
| Program Mode | — | The user must end each program line punched on paper tape by pressing the following sequence of keys:
RETURN, LINE FEED, RUBOUT |
| Command Mode | — | The user must end each command punched on paper tape by pressing the following sequence of keys:
RETURN, LINE FEED, X-OFF, RUBOUT |
| Data Mode | — | The user must end each line of data punched on paper tape by pressing the following sequence of keys:
RETURN, X-OFF, RUBOUT, LINE FEED |



COMMAND INDEX

D

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