Burroughs Corporation

COMPUTER SYSTEMS GROUP
SANTA BARBARA PLANT

B1800/B1700 SUPERVISORY MESSAGE CONTROL SYSTEM

PRODUCT SPECIFICATION

REV LTR	REVISION ISSUE DATE	APPROVED BY	REVISIONS
A	9/13/77		Original Issue - MARK Level 7.0

PRODUCT SPECIFICATION

REV LTR	REVISION ISSUE DATE	APPROVED BY	REVISIONS
A	7/8/76		ORIGINAL ISSUE
B	5/6/77		Changed "log-in" to "log-on" throughout. Page 1-1 INTRODUCTION: Added reference to remote file "CANDEQUEUE". RELATED DOCUMENTATION: Expanded to include CANDE/ANALYZER, HOST/RJE, and SYSTEM/MAKEUSER. 2-6 SYNTACTIC VARIABLES: Added notation to indicate text string maximum in Text Field section. Added "For exceptions..." to Semantics of Sequence Range. 3-2 OPERATING PROCEDURES: Updated message display information in section (d). 3-4 SPECIAL CONTROL CHARACTERS: Data Identification section updated. 3-6 FILES: Reference to HOST/RJE product specification added to Filename section. 3-8 SEQUENCE NUMBERS: Added subheading and paragraph to describe Sequence Number Zero. 4-1 thru 4-3 Added sections entitled: USERCODES AND SECURITY, STRUCTURE OF THE USERCODE FILE, SYSTEM/MAKEUSER EXECUTION, CANDE EXECUTION, and DISK PACK DEFAULTS. 4-6 WORKFILE: Description of SAVE added to section. 4-6 thru 4-11 Added sections entitled: RECORD MODIFICATION, LINE DELETION, FILE POSITIONING, DISPLAYS AND ERRORS, CRT-TYPE DEVICES, and SCROLLING. 4-10 RECOVERY section expanded and updated. 5-1 Page references deleted from COMMANDS table. 5-6 CLEAR QUEUE command added. DS command moved to Page 5-9

REV LTR	REVISION ISSUE DATE	APPROVED BY	REVISIONS
		con't	5-8 EDIT command deleted. 5-13 Added BLOCKING to FILES section. 5-14 thru 5-16 FIND: Explanation of column range added; Text option description added. 5-20 GET: Added description of NOCHECK and CHECK options and updated Syntax. 5-23 thru 5-24 INSERT: Expanded description of sequence number range. 5-25 Option " ;PAGED " deleted. 5-28 MARGIN/@: Semantics section updated. 5-34 thru 5-36 PAGE syntax and explanation updated in major revision of this command. 5-38 RECOVER: Added description and example of the PURGE option, and updated the Syntax. 5-47 SAVE: Added "specifying *" notation to Semantics section. 5-49 thru 5-50 SEQ: Added NEXT and END to Syntax. Added paragraph to explain the display of existing records. 5-53 SPATCH command description expanded. 5-56 thru 5-57 TERMINAL: Expanded to include CONTINOUS and WAIT. 5-57 "Default page sizes" added; PAGE LENGTH, CONTINOUS, and WAIT sections added. 5-60 thru 5-61 WHAT: Added SOURCE FILE SIZE, TANK & WORKFILE SIZE, SOURCE PACK ID and PATCH ID to Semantics and Examples.

PRODUCT SPECIFICATION

REV LTR	REVISION ISSUE DATE	APPROVED BY	REVISIONS
		con't	5-63 WRITE command added and ZIP command deleted. 6-1 thru 6-2 EXECUTION OF CANDE section updated and expanded. 6-3 Operators message to CANDE updated and EXAMPLE: added. 6-4 thru 6-6 Heading OPERATOR COMMANDS added and all information in this section updated. 6-7 SCROLLING: Deleted " or ?-s " from description. 6-8 thru 6-9 TERMINAL SECTION list deleted; "Sequence Number Zero" subheading and instruction deleted; paragraph on "output message control" expanded; REQUEST table updated; NDL/LIBRARY list of requests and controls (2-10-76) deleted. 6-9 thru 6-10 TERMINATION OF CANDE deleted and CANDE/ANALYZER section added. 7-1 thru 7-2 NETWORK CONTROLLER: Compilation section expanded and updated; "D1" changed to "FST1"; file "F" concatenated notation added. Paragraph explaining reconnection expanded in Operation Section. 7-3 MAX BUFFERS and MAX MESSAGES increased in NIF declaration; BUFFERSIZE increased in TERMINAL SECTION. 7-5 TERMINAL TCS added to TERMINAL SECTION. 7-5 thru 7-7 Updated sections entitled: STATION SECTION, LINE SECTION, and FILE SECTION. 7-9 Updated "Terminal Options" section; added (ESC), (CAN), and (SI) control coded; TERMINALTYPE information deleted.

TABLE OF CONTENTS

BURROUGHS CORPORATION
COMPUTER SYSTEMS GROUP
SANTA BARBARA PLANT

COMPANY CONFIDENTIAL
B1800/B1700 SMCS
P. S. 2219 0482 (A)

TABLE OF CONTENTS

INTRODUCTION

The B1800/1700 CANDE program provides generalized file preparation and updating capabilities in an interactive, terminal oriented environment. The B1800/1700 CANDE system has been designed and implemented to conform in its functional behavior to the existing B6700 CANDE system.

The B1800/1700 CANDE program runs in conjunction with the B1800/1700 NDL system. The NDL generated network controller performs all the data communication related functions, while CANDE performs file updating and text editing functions. CANDE can support a maximum of sixteen concurrent users. The number of stations defined in the network controller may be any number limited only by NDL constraints. CANDE's remote file ("CANDEQUEUE") is opened by default with "number of stations" ('NST')=50 but this value may be modified or file-equated in the usual manner.

A basic usercode-password type of security is available with the system. The user logs-on with a usercode and password and may access any files that are associated with his usercode. A recovery system is also provided.

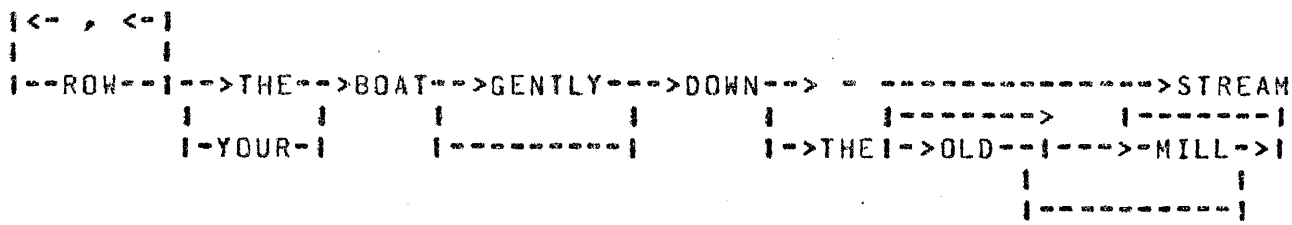
RELATED DOCUMENTATION

NUMBER	TITLE
P.S. 2212 5223	Network Definition Language
P.S. 2212 5215	NDL/LIBRARY
P.S. 2212 5412	Data Comm Audit
P.S. 2219 0185	CANDE/ANALYZER
P.S. 2219 0136	HOST/RJE
P.S. 2219 0102	SYSTEM/MAKEUSER
1073715	B1800/1700 NDL Reference Manual

SYNTAX SPECIFICATIONS

SYNTAX DIAGRAMS

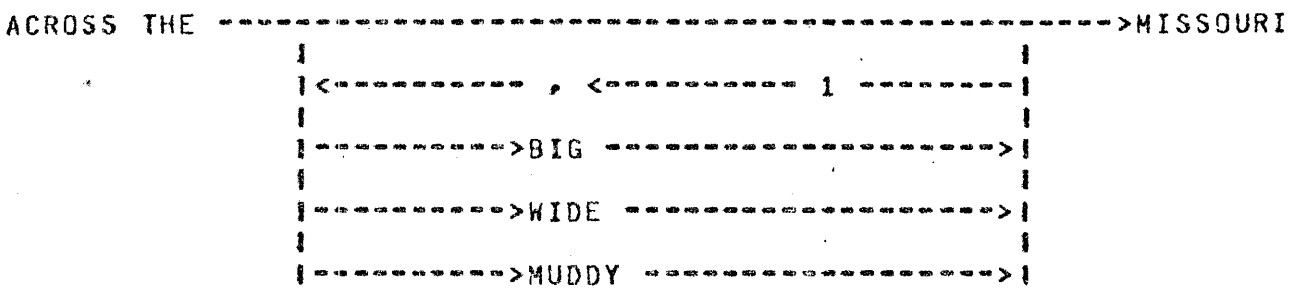
The principle means of displaying CANDE command syntax is the syntax diagram. This method has been chosen because it affords a very concise and lucid exposition of syntax involving defaults, alternatives, and iterations; it is rigorous without being cumbersome. There are few formal rules to remember: The basic rule is that any path traced along the forward directions of the arrows will produce a syntactically valid command. The following examples illustrate the technique:



Valid productions of this diagram are:

ROW THE BOAT DOWN-STREAM
ROW, ROW, ROW, YOUR BOAT GENTLY DOWN THE STREAM
ROW, ROW, ROW, ROW THE BOAT GENTLY DOWN THE OLD STREAM
ROW YOUR BOAT DOWN THE MILL STREAM
ROW THE BOAT DOWN THE OLD MILL STREAM

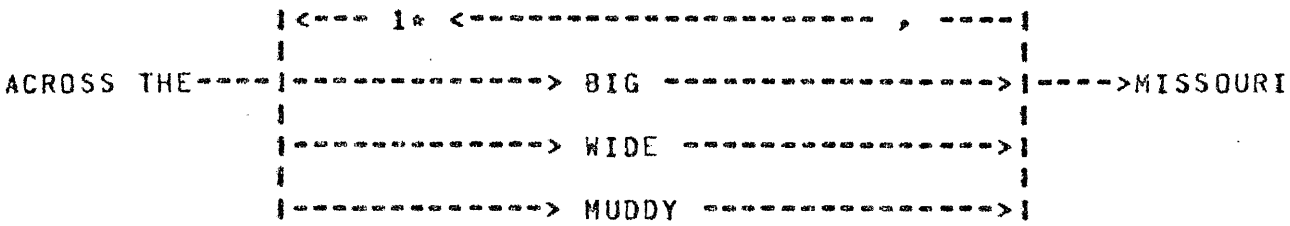
The following convention is used to control the number of iterations:



The "bridge" over the "1" can be crossed only one time, so a maximum of one comma may appear. Valid productions are:

ACROSS THE MISSOURI
ACROSS THE WIDE MISSOURI
ACROSS THE BIG, MUDDY MISSOURI
ACROSS THE MUDDY, WIDE MISSOURI
ACROSS THE BIG, BIG MISSOURI

An "*" associated with the number under the bridge indicates that the path must be crossed at least one time. If the previous example is changed to the following:



Then proper syntax is obtained by crossing the bridge exactly one time. Valid productions are:

ACROSS THE BIG, WIDE MISSOURI

SYNTAX CONVENTIONS

CANDE commands are constructed of letters, digits, special characters, and blanks. Letters and digits are alphanumeric characters; all other non-blanks are delimiters. Alphanumeric characters may be separated into such items as integers, keywords and identifiers. All integers, keywords and identifiers must be entered in upper case characters.

Keywords

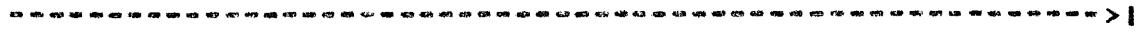
Upper-case letters in syntax diagrams indicates keywords which appear literally in the command. In many cases it is permissible to abbreviate the keyword by its initial or first few letters. In the syntax presentation, underscores mark the letters which must appear, the rest are optional.

Blanks

Blanks in CANDE commands serve to separate syntactic items and may appear freely except within certain text fields, where they become significant characters. Blanks are optional on either side of a delimiter. Whenever one alphanumeric item (keyword, identifier, integer, etc.) follows another with no separating delimiter, they must be separated by at least one blank.

End of statement

End of statement is indicated by the following notation:



SYNTACTIC VARIABLES

Lower-case letters, words, and phrases in the syntax diagrams are syntactic variables, which represent information to be supplied by the user. A particular variable may represent a single character, a simple construct such as an integer or text string, or a relatively complicated construct. Most variables are defined where used. Several variables and types of variables which are frequently encountered are defined here.

Identifier

An identifier is a string of characters used to represent some entity, such as a file, or a usercode. Identifiers in CANDE may vary in length from one to nine characters, and are composed of characters and digits only, with the first character being a non-integer.

Integer

An integer is specified by a string of digits which represent the decimal value of the integer. Syntactic variables of this type occur frequently in CANDE. Some common examples are <s> (sequence number), <col> (column number), and <base> and <inc> (sequence base and increment).

Delimiters

The delimiters may be any non-alphanumeric character except one that occurs in the field being delimited or one that might have special meaning in the context of its appearance, these instances are detailed with each use of <delim>. (NOTE: "." (PERIOD) is not considered a delimiter).

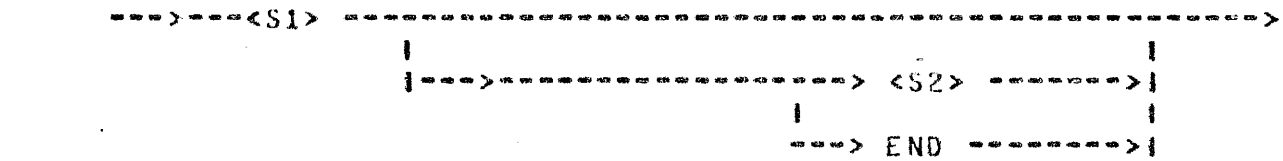
Text Fields

A text field, denoted by <text> or <newtext>, is a sequence of characters to be sought or placed in a file. In most text fields, all characters are significant and any character may appear except a specific delimiter. A maximum of 30 characters may be referenced in a text string.

Sequence Range

A <sequence range> specifies an inclusive range of sequence numbers which define a line or lines to be included (or excluded) in a particular operation.

Syntax:



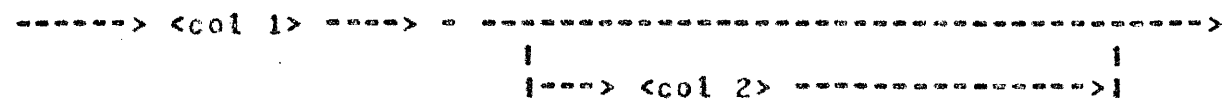
Semantics:

The integers <S1> and <S2> represent sequence numbers. If both <S1> and <S2> appear, the sequence range includes both those values and all values between; <S2> must exceed <S1>. If <S1> appears alone, it usually defines a range comprising that single number. For exceptions see the individual command description. The keyword "END", in place of <S2> represents the largest sequence number in the file.

Column Range

A column range specifies an inclusive range of columns, defining a portion of a line.

Syntax:



Semantics:

The integers <col 1> and <col 2> represent positions on a line. If both appear, <col 2> must exceed <col 1>, and they define the group of columns including both and all between. If <col 1> appears alone, it defines a range comprising that single column.

Logical Station Number

The logical station number <lsn> is an unique integer reference assigned by the DATACOMM system to each station in the DATACOMM network. This value is normally used when CANDE commands pertain to stations.

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OPERATING PROCEDURES

Before a user can make use of the system capabilities, he must first present to the system his usercode and password. If the user is using a hardcopy device such as a teletype, the password may be typed into an area that the teletype has blacked out. For screen devices, a similar degree of password security may be obtained by turning down the screen brightness before entering the password.

CANDE checks the user's identification against the system's file of authorized users. If the usercode/password entered is not correct, the user is informed and asked to re-enter the information. If the usercode/password is correct, CANDE responds with an appropriate message and considers the station to be a valid user. The user cannot use the system until a successful log-on has occurred.

Log-On

The user may log-on to the system in any one of three ways. He may simply enter his usercode and password and thus get logged-on. He may enter HELLO <usercode><password> and be logged-on or he may enter HELLO and the system will lead the user through the log-on sequence.

The log-on sequence consists of the following steps:

a. The system sends the following:

ENTER USERCODE PLEASE.

The user should respond by entering his usercode, either by itself or followed by a blank and his password.

b. If the user enters a usercode but not password, the system then responds with:

ENTER PASSWORD PLEASE.

For hardcopy terminal devices, the system then blocks out ten characters on the text line into which the user should enter his password.

c. If the system recognizes the usercode and password, it proceeds to Step d. If it does not recognize the usercode and password it displays:

SECURITY ERROR, ENTER USERCODE PLEASE.

and the log-on procedure begins again.

d. On successful log-ons the system displays to the user the following:

```
B1800/B1700 CANDE MARK <RELEASE> VERSION
<PATCH LEVEL> (<COMPILE DATE & TIME>)
USER <usercode> LOGGED-ON AT <time><date>
YOU ARE AT STATION <LSN> (<TERMINAL TYPE>)
```

e. If the user's previous session had been aborted due to system failure or line disconnects, CANDE informs the user about his recovery file by displaying the following message:

"RECOVERY DATA <workfile name> <date>"

Where:

<workfile name> is the name of the recovered file.

<date> is the date of the CANDE session recovered.

Recovery of the indicated workfile is achieved by responding with the RECOVER command.

ENTERING DATA

Data and commands are entered in the form of messages from the keyboard of the terminal.

SPECIAL CONTROL CHARACTERS

The following special characters are supported by CANDE:

FOR	USE
end-of-message (ETX)	control-C or carriage return
backspace	left-arrow
line delete	rubout or control-E

Data Identification

If a message begins with N decimal digits, where N = sequence field length of the workfile, it is assumed to be a data record and is added to the workfile; otherwise it is treated as a command.

CANDE Commands

The commands used to create and save files, to enter data and to perform editing functions are 36700 CANDE compatible commands. These inputs are processed in serial order, and are queued if they cannot be immediately executed.

Control Commands

Control commands are a separate class of input messages preceded by the control command character (?). These commands provide capability of controlling and interrogating the user's operating environment as explained in a later chapter. Note that these commands are processed immediately and are not queued behind other commands from the terminal.

RESPONSES

CANDE will respond to every command input by the user. All commands will receive appropriate textual output as a response except for single-line entries, which will receive only a "#" as acknowledgement.

FILES

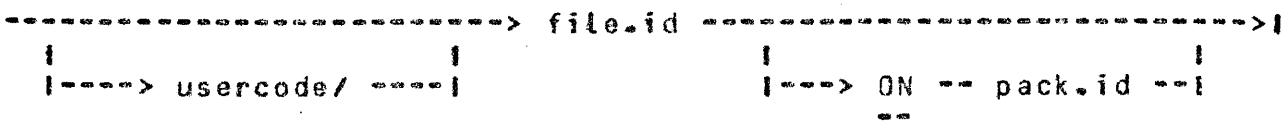
A file is a collection of records of information. It is the primary means by which the user establishes continuity between one CANDE session and the next or between CANDE and other programs.

Filename

A filename is used to identify a file in the B1800/1700 system. When a file is created through CANDE the user supplies the file.id, an alphanumeric identifier of nine characters or less with the first character being non-numeric, and CANDE adds the usercode to form the complete filename; i.e., <usercode>/file.id>.

The user may access any file under his usercode by simply specifying the <file.id> of the file. The user may access files belonging to another user, in a read only mode. To do this, the user must specify the <usercode>/<file.id> of the file being requested. Also, users may access files on user packs or user cartridges by specifying ON <pack-id> after the <file.id> or <usercode>/<file.id>. For releases of VI.1 CANDE, and higher, the user should refer to the HOST/RJE product specification regarding greater detail in file naming with usercodes.

Syntax:



A user backup file is named <usercode>/#number> by default. This file may be accessed by LIST, WRITE, REMOVE, FILE commands. Eg: LIST # 5 will cause listing at the terminal of the user's backup file named <usercode>/#5. This form of the LIST command can only be interrupted via the ?BRK command.

Type

Possible types which may be specified for a workfile are:

BASIC	DATA	MIL	RPG	SEQ
COBOL	FORTRAN	NDL	SDL	UPL

The BASIC, COBOL, FORTRAN, MIL, NDL, SDL, and UPL types denote files for the respective compilers. A type SEQ is an arbitrary data file with sequence numbers. A type DATA file is a file without sequence numbers.

SEQUENCE NUMBERS

Files which are edited by CANDE must contain sequence numbers. A sequence number is defined as a positive integer containing a maximum of eight digits which must appear in the input data record. The length of the sequence number must be equal to or less than the sequence field width of that file. A sequence number is used to identify the line for editing and to specify the position of the line in the file. Even if the lines are input out of order, CANDE will arrange the lines in ascending order. Except for BASIC files, the sequence numbers are not considered to be a part of the data in the file. In BASIC the sequence numbers are also statement numbers and may be used in statements such as GO TO. COBOL files are limited to six digits and are found in the first six columns, BASIC files are five digits and are located in the first five columns.

RPG is also five digits; they are located in the first five columns, the rest (except type DATA-see DATA files) are eight digits and are found in columns seventy-three through eighty. If the user is in doubt, he should perform RESEQ command immediately after the GET to insure that the file is properly sequenced. Unsequenced files may be sequenced by CANDE.

Sequence Number Zero

In both auto sequence and single-line entry mode, a sequence number zero is accepted, and will be the first record of that file.

ERROR MESSAGES

Error messages output by CANDE will be one or two lines in length and will be self-explanatory. Unrecognized CANDE commands are noted as "NO SUCH VERB" errors.

DATA FILES

Files of type DATA are assumed to be eighty characters in length, with no sequence field. In order to edit files of type DATA, a RESEQ command should be performed immediately after loading the file. RESEQ will create "pseudo sequence numbers" in columns eighty-three through ninety of the file. The file may then be edited in a normal fashion. The SAVE command will remove the "pseudo sequence numbers", restoring the file to its original unsequenced state.

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CANDE MECHANISMS

USERCODES AND SECURITY

If executed under a privileged usercode-password, CANDE uses the file security mechanisms implemented by the MCP. As a result, users must be aware of the following items:

a. Usercodes are bracketed by parentheses, and in CANDE's case are limited to seven characters in length. Log-on is accomplished by entering usercode without parentheses.

b. Usercodes and passwords may have a pack associated with them. If a pack has been defined, CANDE treats the pack as the default pack for files. Consequently, all files will be read or written from this pack. The default may be overridden by specifying a pack with the "ON" attribute in CANDE.

c. All files saved through CANDE are saved as private or public files according to the user's default protection specified in the system usercode file. Private files can be accessed only by a program running under the same usercode the file was saved with, or by running with a privileged usercode password. To make a file public one must transmit the following message: ?MH <file-id> PTN PUBLIC.

d. CANDE has a two-way communication with the MCP. Messages are zipped to the MCP and responses come back to CANDE and are then routed to the requesting user.

EXAMPLE: ?WY - gives status of only that user's job(s).
?TD - gives time and date.
?MX - gives mix for only that user's job(s).
?RE (UC)/<filename> - removes the file only if the usercodes match, i.e., the signed-on owner is removing one of his/her own files.
?MO - modifies only files belonging to that owner.

e. CANDE lists, on the terminal, printer backup files which have been created by jobs executed through CANDE. Backup files are locked in the disk directory with a name of the form (usercode)/#<number>. The command LIST #<number> brings the backup file to the screen for review. If CANDE is not executed under a usercode then RJE FILE NAMING, FILE SECURITY, and MCP communication are not provided. This means that backup files will not be created automatically nor will they be named as above.

STRUCTURE OF THE USERCODE FILE

The 6.1 and later releases of the MCP support a file security mechanism for disk files. This means that disk files created by running under a usercode have security restrictions enforced on them. These valid usercodes and passwords are maintained in the (SYSTEM)/USERCODE file created by SYSTEM/MAKEUSER. For a more complete discussion of the usercode file and the SYSTEM/MAKEUSER program, see product specification 2219 0102, SYSTEM/MAKEUSER.

SYSTEM/MAKEUSER is a normal-state utility program used to create, access, or modify (SYSTEM)/USERCODE, the system usercode file of allowable usercode and password combinations. The information for each usercode is described below. The fields are termed "usercode password entry attributes" and are used to control the jobs and files of users.

Field		Description	Sample Input
Usercode	-	7 characters	US=<7 characters>
Password	-	10 characters	PW=<10 characters>
Pack.id	-	10 characters	PACK=<10 characters>
Charge number	-	24 bits	CHG=<6 digits>
User priority	-	4 bits	PRI=<2 digits>
Protection	-	2 bits	PUBLIC
Privileged bit	-	1 bit	*PRIV

In the preceding table, all descriptions indicate a maximum length for the input. *PRIV will set the privilege bit in the "on" position.

Each card should contain one unique usercode-password pair, a pack.id (blank defaults to system disk), a charge number, a priority number, and a privilege status indication. The card is in free format, with blanks delimiting each item. The maximum number of usercode-password combinations is 1024. A blank pack.id is denoted by PACK = "".

SYSTEM/MAKEUSER EXECUTION

To create the system usercode file a card deck in the following form must be presented to the system:

```
? EX SYSTEM/MAKEUSER;
? DATA SYSTEM/USER.CODES
  <usercode entries as defined above>
? END;
```

The file will be automatically created, listed, and placed in the appropriate name table slot. For more information see P.S. 2219 0102.

CANDE EXECUTION

To bring up the CANDE system, the user should select from the usercode-password file a public privileged usercode and password that do not have a default pack associated with them. This will enable CANDE's recovery, tank, and workfile to be placed on system disk for easier maintenance. To execute CANDE, the user must enter:

US <priv>/<user> EX CANDE

Executing CANDE will tell the MCP to execute the system handler. In VI.1, a network controller can be placed in the system name table and whenever the first request for remote file open comes up, the handler is executed. The network controller is placed in the name table by CM C <network controller name>. To request CANDE to zip execute a network controller of the name CANDE/HANDLER, CANDE must be executed with program switch zero set to one (SW0=1), as in the following example.

US <priv>/<user> EX CANDE SW0=1

If the controller was executed by the MCP from the 'C' slot in the name table, and the last remote file close has been processed, the MCP will queue a 'QC' for the network controller after 3 times through 'N.SECOND' (about 1 minute with a mix of 1) with no intervening remote file opens occurring. If the controller was locked (executed with 'PT' or 'PROTECTED' or modified thus or <MIX>LP was entered) the 'QC' queued by the MCP will be performed. Any attempt to QC or DS from the SPO while the handler is 'locked' will be denied.

NOTE: CANDE may be executed without a usercode/password. If this is done CANDE will not provide file security and MCP communication.

DISK PACK DEFAULTS

Since the MCP will force files to a default pack associated with the usercode-password, syntax has been implemented to access files on system disk if a pack was specified in the usercode-password table. The following table applies to all commands allowing filenames, except for SAVE.

ENTER	PACK.ID	FAMILY.ID	FILE.ID
A	DEF.PACK	(UC)	A
A/B		A	B
A/B ON C	C	A	B
(UC)/A	DEF.PACK	(UC)	A
(UC)/A ON C	C	(UC)	A
*(UC)/A		(UC)	A
*A		A	

No file identifier [including * and ()] may exceed 10 characters, e.g., *(ABCDEFG) and ABCDEFGHIJ. However, *(ABCDEFGH), for example, is invalid.

An asterisk entered preceding a filename denotes that the file is on system disk, and CANDE looks for a literal name following the asterisk. To access another user's file, that file must be changed from private to public by the owner or be accessed by a privileged usercode. When saving a file, it cannot be saved under someone else's usercode. Thus, the command SAVE AS *(UC)/A is illegal; SAVE AS *A will save the file as (UC)/A on system disk. A command such as SAVE AS A will put the file on disk as <DEF.PACK>/(UC)/A.

WORKFILE

CANDE can be directed to read any file which the user may access, however, changes may be made only to the one file which is called the "workfile". The user gets a new workfile by doing a MAKE, or he may recall an existing workfile by doing a GET. Additions and corrections may be performed on the workfile by single-line entries or by using the editing commands.

A CANDE workfile consists of two parts. The "tank" (which is invisible to the user) is where additions and edited lines are placed until an update takes place. The "tank" contains a maximum of 32 entries and if an explicit update has not been issued by the time the tank is full, an automatic update is done, and the contents of the tank are merged with the workfile. An update incorporates all additions and corrections of the workfile creating a new copy of the workfile and an empty tank. An update does not make the user's workfile a permanent file on disk. A SAVE is required to make the workfile a permanent file and to discard the original file. A SAVE creates a new file on disk with an empty tank and workfile.

The second part of a user's "workfile" consists of N + 1 blocks within CANDE's master workfile (named "CANDE/WORK.FILE".) N is the number of contiguous blocks (each 64 records long) needed to contain all currently changed records including deletes. Note: CANDE never writes to a user's original source file. The file is only changed at SAVE time.

RECORD MODIFICATION

If a file is present (a GET, MAKE, or RECOVER has been processed), the user is assumed to be in a state of editing the file. Any input consisting only of records having valid sequence numbers with no sequence errors will be treated as records to be entered into the file. After the input is processed, a NEXT will be performed automatically, meaning that the next page will be displayed, beginning with the record that follows the last one

input.

PAGE, LIST (except from an external file), BACK, SAME, NEXT, -, and + explicitly request a page to be displayed. For CRT devices, records may then be edited and the page (or partial page) transmitted back. For non-CRT devices, the records must be retyped.

For recovery purposes, CANDE will not clear the screen at log-on time. The user may recover his file and transmit to the system any records left on the screen at failure time.

The 1920-byte buffer used by the PAGE system has been moved from dynamic memory (if present) to static memory in CANDE's base-limit. It is used to "rollin" a user's last output in order to compare the current input against it. Comparison will allow the system to determine if a record has changed so that it will only add to the tank those records which have changed. This is necessary to prevent writing unnecessary records to a file when the user initiates a SAVE: PATCH. It will also make input processing more efficient.

Comparison occurs record-by-record only when the sequence numbers are the same. If a sequence number is encountered in the input which does not exist in the last output copy, then comparison will cease and the record will be added. Processing will continue in this fashion until either the sequence number of an input record is greater than or equal to that of the last output record at which comparison ceases or all input records have been processed. This prevents the occurrence of unnecessary error reports or "advisories". Also, synchronization of record comparison will not be lost and no unchanged records will be added to the tank. If the page of input returned to CANDE is missing any records initially displayed (user has performed a line delete locally) the missing records are not automatically deleted from the workfile.

LINE DELETION

Single lines may be deleted through use of the void command. V must be the first character of the line and the line must contain a valid sequence number. Any number of blanks, or none at all, may separate the command and the sequence number.

A delete record will be queued for later processing and input processing will continue. If the sequence number is in error, the record will be treated as a sequence error (See GENERAL CONSIDERATIONS).

Note: This form of deletion may be time consuming as each deletion request will cause an UPDATE. No optimization of successive, contiguous Vs (Voids) is attempted.

FILE POSITIONING

CANDE allows the user to move backward and forward throughout the file, once PAGE or LIST is invoked. PAGE or LIST in any form cause the file "position" pointers (for BACK, SAME, NEXT, - or +) to be realigned to the requested position. For CRT devices, after displaying a page, NEXT will be written at the home position leaving the cursor immediately after it. Thus, transmission without moving the cursor will effect NEXT automatically. Any other string transmitted in the first line is treated as a command input. If transmission includes more than the first line, then it is assumed to be input records. The first line will be ignored and the input will be processed.

File positioning is controlled through the following commands:

BACK <n> : Display current -<n>th page.

SAME : Display current page again.

NEXT <n> : Display current +<n>th page.

- <n> : Display page at current - <n>th record.

+ <n> : Display page at current + <n>th record.

Note: A missing <n> implies <n> equals one.

After GET or MAKE or RECOVER, these commands (BACK, SAME, NEXT, -, and +) will be operative.

Plus or minus <n> (+<n>, -<n>) shift exactly <n> records in the direction requested. BACK <n> and NEXT<n> shift approximately <n> pages in the direction requested. In this way, BACK and NEXT may be used to position the file approximately to the desired area quickly without reading through each record on the way from the current position to the requested one. Once in the approximate area, the user may adjust the position accurately by using +<n> and -<n>. The range of records shifted is 1 <= r <= 131071 where r=n for plus and minus and r=n*current pagesize for BACK and NEXT.

To effect "approximate" shifting, a factor indicating an estimate of the increment between successive sequence numbers is computed at GET time or upon entry of SEQ or RESEQ command and dynamically adjusted for local variation during accumulation of records for a display. The initial computation of the factor at GET time will be more accurate if :NOCHECK is not specified. A moving average is computed during sequence checking on the file. If :NOCHECK is specified, the factor is computed by dividing the difference between the source ending sequence number and the source beginning sequence number by the file size. At SEQ or RESEQ time, the INC (default or specified) is used unless a sequence range is specified indicating local activity. If so, the factor is not modified.

RECOVERY

Recovery of a user's workfile occurs when CANDE is executed after an abnormal termination or when the user's terminal incurs retry consecutive timeouts. The recovery procedure involves creation of the recovery file and communication of this fact to the user when the user logs-on. The recovery file is named <usercode>/RECOVERY<AB>. <AB> us a unique 2-character sequence computed as follows:

A = <usercode index/36>th character of ATOM (see below)
B = <usercode index mod 36>th character of ATOM

ATOM = ABCDEFGHIJKLMNOPQRSTUVWYZ0123456789
Character 'A' is the 0th character of ATOM;
Character '9' is the 35th character of ATOM;

This scheme produces a unique recovery file for each usercode/password pair. To avoid loss of the file upon recovery, users should not intentionally create files named in this manner.

After log-on each user that was on the system when it aborted has the option of recovering his workfile. The user enters RECOVER if he wishes to get his previous workfile. If the user does not wish to recover, he merely starts another session. When a system goes down, it is possible to lose up to four records in the user's tank file.

DISPLAYS AND ERRORS

TERMINAL PAGE will correctly set page size as requested. See the TERMINAL command section for default page sizes depending on terminal type.

All displays to a device having a page size greater than one will begin on the second line of the screen and end with the column

indicator on the last line.

Any line whose first token is a valid CANDE command will be taken as a new command and executed after the records to that point have been processed. (See LINE DELETION on page 4-7 for exceptions.)

All numerics in sequence fields indicate to CANDE that after input is processed, the next page should be displayed.

Sequence errors are defined as: a) numeric but out of sequence or b) beginning with a non-numeric which is 1) not a valid CANDE verb and 2) not V (See LINE DELETION). The action taken is to leave the screen alone and notify the user on the top line of the screen.

Inserts are defined as: numbers in sequence but not put on the screen by CANDE. The action taken is to add the record(s) to the tank and to discontinue comparison against the copy until the next copy sequence number is encountered.

For devices whose page size equals one, the following operating characteristics are valid:

- Break key (teletype only) will clear the output queue and terminate.
- SEQ, when it displays an existing record, will CR, (CR=Carriage Return), LF, and re-type the sequence number, leaving the carriage immediately after the number to allow the line to be changed and re-entered. If only an ETX or CR is returned, the record will not be changed and the command will continue. If it was not an existing record (only a new sequence number) then returning only an ETX or CR will terminate the command.
- PAGE will treat displays as noted above in SEQ.
- LIST will not be paged but will be continual.
- BACK, SAME, NEXT, - , and + will be operative.
- V will not be operative.

CRT-TYPE DEVICES

Pages output to a CRT-type device will be preceded by *HOME AND CLEAR* and will have CR appended after the rightmost non-blank character in each line in order to decrease transmission time since the remaining blanks will be deleted. If the line is blank, it will consist of CR only.(CR = carriage return.) Single line output to a TD820/830 series device will have LC appended to it in order to clear the remainder of the line. (LC=clear to end of line.)

SCROLLING

The NDL library requests CANDEPOLTD, CANDEFSLTD and CANDESELTD contain a scrolling capability available to users running under CANDE and those running an application program under CANDE. Scrolling is disabled by default. Enter "?+" to enable scrolling and "?-" to disable scrolling.

All output except full page output produced by LIST, PAGE, SEQ is written a single line at a time at the bottom of the screen after shifting the screen up one line (the top line is deleted). Any input except paged input is scrolled to the bottom of the screen.

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COMMANDS

In the table below, CANDE commands are grouped by function:

Control Commands:

- BREAK
- DS
- SS
- WHERE

Editing Commands:

- DELETE
- FIX
- INSERT
- MERGE/RMERGE
- MOVE
- PAGE
- RESEQ
- SINGLE-LINE ENTRY

Editing Mode Commands:

- MARGIN/Q
- SEQ

Environment Commands:

- BYE
- DCSTATUS
- FILES
- HELLO
- PASSWORD
- TEACH
- TERMINAL

Input-Output Commands:

- LIST
- WRITE

Program Execution:

- COMPILE
- EXECUTE/RUN

Search Commands:

- FIND
- REPLACE

Workfile Commands:

- GET
- MAKE
- RECOVER
- REMOVE
- SAVE
- SPATCH
- TITLE
- UPDATE
- WHAT

BREAK

The BREAK command terminates the current output to the terminal.

Syntax:

```
?BRK----------------------------------------------------->|
----                          <break key>
```

Semantics:

All output queued for the terminal is "flushed" when the BREAK command is processed.

BYE

The BYE command terminates the user's current session.

Syntax:

Semantics:

A CANDE session is terminated by the BYE command; switched lines may be disconnected. If the workfile has not been saved or removed, the user is notified of this condition. The workfile may then be removed or saved, and the BYE command re-entered.

Example:

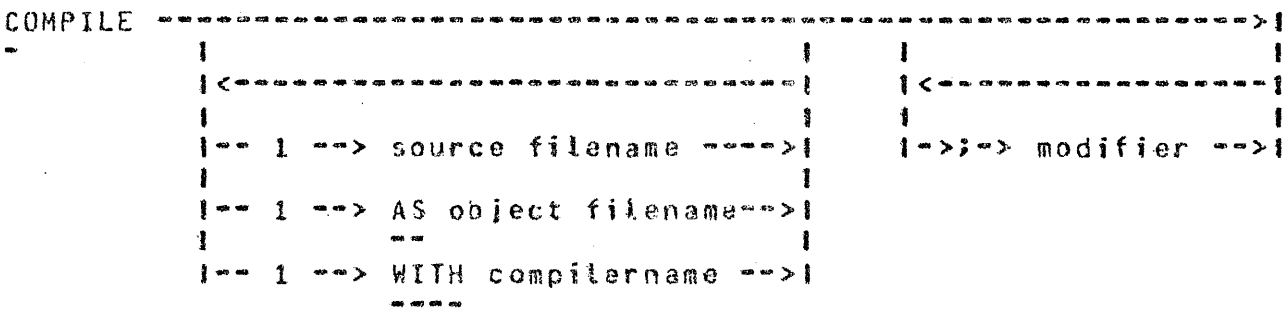
```
BYE

USER <USERCODE> LOGGED-OFF AT <TIME & DATE> (TIME = <HH:MM:SS:T>)
```

Note: Time given is CANDE processor time. (See Appendix)

COMPILE

The COMPILE command invokes the standard system compilers or any non-standard version. Options provide the ability to use an existing file or workfile, to specify the object filename, to specify the compiler name, and to specify the label equation and other control statements for both the compile and resultant object program.

Syntax:



Semantics:

If <source filename> is not specified, then the workfile will be used as the source file. If the object filename is not provided, then the source filename will be used. In either case, an "O" will be attached to the end of the file.id to flag the file as an object file.

A compiler must be specified if the source filename given is not the current workfile. Also, a compiler should be given if the user's workfile is of a type DATA or SEQ. If no compiler is given, the UPL compiler will be the default.

Example:

```
C
-
```

Compile the workfile using the default compiler type and associate the object file with the workfile.

```
COMPILE A/B AS D WITH SDL
```

Compile the source file A/B as object file <usercode>/D with the SDL compiler.

CLEAR QUEUE

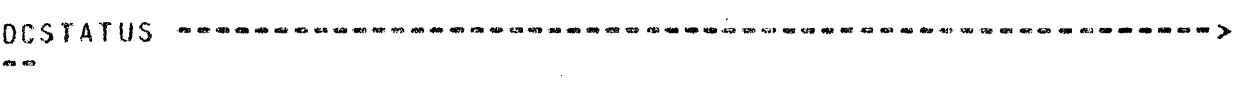
```
?CQ---------------------------------------------->! ---
```

Causes all pending output to a terminal to be cleared to a maximum of 'MAX MESSAGES' as defined in the network controller declaration section.

DCSTATUS

The DCSTATUS command provides general information regarding the status of the user's station.

Syntax:



Semantics:

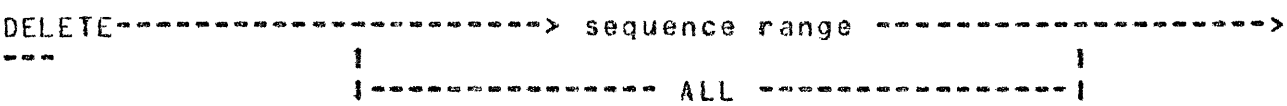
DCSTATUS will return to the user a run down of the user's station. The following is returned to the user:

1. LSN
2. NAME
3. TERMINAL TYPE
4. BUFFER SIZE
5. MAX RETRY
6. INPUT PRIORITY
7. OUTPUT PRIORITY
8. MESSAGE COUNT

DELETE

The DELETE command discards records from the workfile.

Syntax:



Semantics:

Those lines specified in the sequence range list are deleted from the workfile. If "ALL" is specified, the entire contents of the workfile is deleted, but the name and other attributes are preserved.

Examples:

DEL ALL

Delete the entire contents of the workfile.

DELETE 100-500

Delete lines 100 through 500 from the workfile.

DEL 200-END

Delete lines 200 through the end of the workfile.

DS

The DS command DSes (discontinues) the current running user's remote program that was executed from CANDE.

The DS capability implemented applies only to jobs which have successfully performed a remote file OPEN. (See pg 7-1). CANDE obtains the mix number of the user program and the job may be DSed by entering "?DS" from the terminal. Refer to the ?<MCP CONTROL STRING> command for DS'ing jobs which have not opened a remote file.

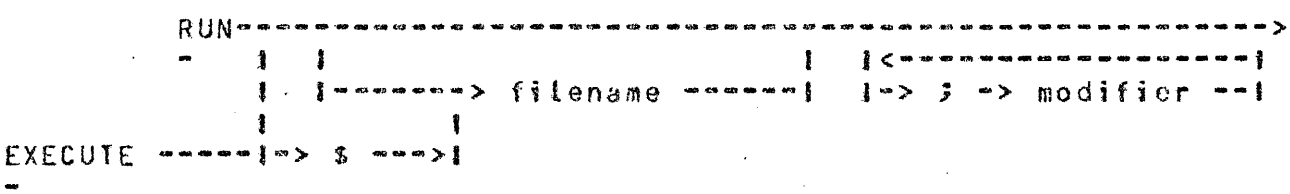
Syntax:

```
?DS---------------------------------------------------------->
```

EXECUTE/RUN

The EXECUTE and RUN commands cause execution of an object program; the RUN command will provide for compilation of the source file prior to execution if the object file is not available.

Syntax:



Semantics:

The workfile is assumed if no filename is provided. A "$" is specified only with EXECUTE, and refers to an object file not created by CANDE.

A <filename> in EXECUTE may refer to any file to which the user is permitted access, but a <filename> in RUN must refer only to the user's current workfile.

Modifier specifications may be provided.

Examples:

EX

Execute the object program associated with the workfile.

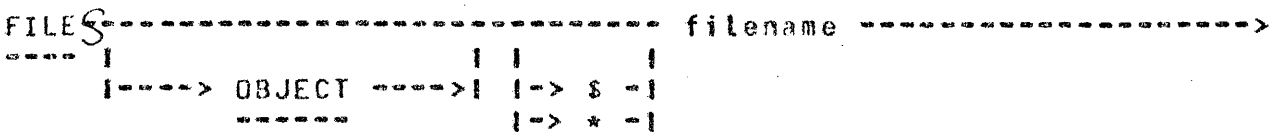
RUN ; FI LINE = REMOTE;

Execute or compile-and-go on the workfile name and label equate the output to the user's remote terminal.

FILES

The FILES command provides a method for determining if a file is on disk.

Syntax:



Semantics:

The FILES command will search disk for the specified filename and report whether or not the file is on disk. If the file is present, that fact is reported along with some general information about the file. The OBJECT parameter allows the user to search for object files created through the CANDE COMPILE or RUN commands. (i.e., the file.id of the specified filename is changed to <file.id> CAT "O"). System object files or object files not created through CANDE may be found by using the normal filename syntax and omitting the OBJECT parameter. The "$" allows for inquiries on files not created by CANDE. The "*" indicates that the file is to be searched for on system disk.

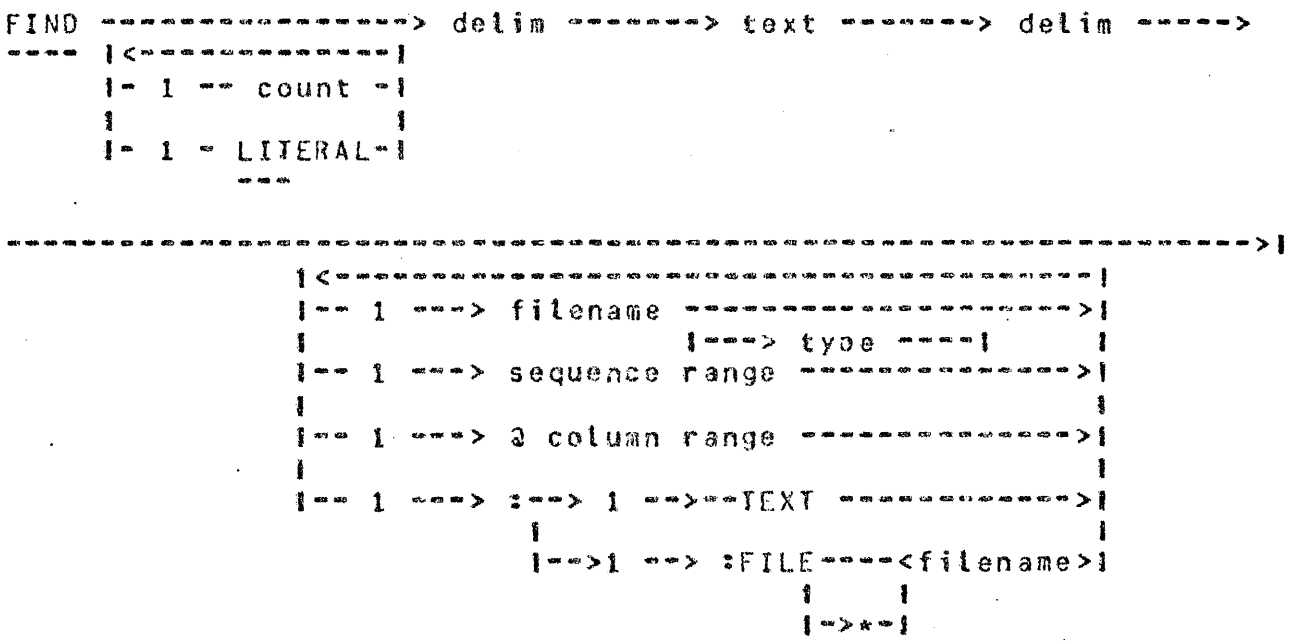
The following is returned to the users terminal when the specified file is found on disk:

```
FILE       <filename> PRESENT
USERS    = <integer>                                    (0-n)
TYPE     = <file.type>                                  (CODE, DATA,....etc.)
SIZE     = <integer>                                    (EOF pointer of file)
BLOCKING (RSZ/RB/BA/NA) = <integer>/ <integer>/ <integer>/ <integer>
                                                        (RECORD SIZE (bytes)/
                                                        RECORDS PER BLOCK/
                                                        BLOCKS PER AREA/
                                                        NUMBER OF AREAS)
CREATED : <date>                                        (month/day/year)
ACCESSED: <date>                                        (month/day/year)
```

FIND

The FIND command searches a file for appearances of specific text. Output indicating the result of the search may be directed to the terminal. The output of a FIND is prompt driven, that is, the command will fill a screen to its page size and then the user must transmit a character to get the next page of output. A "?BRK" will break the output as soon as possible.

Syntax:



Semantics:

Only one target may be sought with a FIND. The delimiters

surrounding the target may be any delimiter. The text may contain any characters except the delimiter. The text field may not be empty. The text field is treated as a token string unless LITERAL is specified.

The search is successful whenever the string of characters in the text field is found in a line of the file.

If the integer <count> appears, the search for the associated text will be terminated after it has been found in the specified number of times in the file.

If a <filename> is not specified the workfile is searched by default. Specification of <filename> causes searching of the specified file, which may be any file the user is allowed to read. A <type> may be specified to give the location of sequence numbers in relationship to the text. If no <type> is specified and the user does not have a workfile, a type of SEQ is assumed. Otherwise the file type will default to that of the workfile. If a sequence range is specified only records falling within that range are searched. A column range, if provided, indicates that only a specified part of each record is to be examined. Note that a column range cannot fall within sequence-number range, e.g. cols 73-80 for SDL files.

b:TEXT

The option :TEXT, if specified, will output the entire line containing the string to the user's terminal, otherwise only the sequence numbers of those records containing the string are output. The option :FILE <filename> will direct output from the FIND to a disk file labeled <usercode>/<filename>. The user may not specify a usercode with this option, his own usercode is used as the multi-file- name. If the option FILE * <filename> is used, the file is forced to the system disk and not allowed to go to the default pack associated with the usercode (refer to VI.I security implementation for CANDE). The defaults for sequence range and column range are the entire file and the entire record respectively.

Examples:

FIND / FILEID / 100-900

Search the workfile for the occurence of " FILEID " within the 100 through 900 and output any lines found with the text to the terminal.

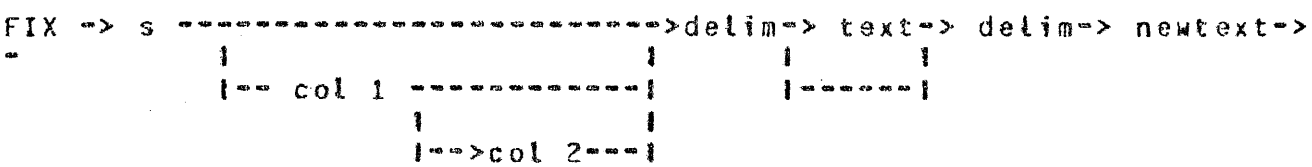
FIND 10 / STUFF /

Find the first ten occurences of "STUFF" within the workfile and output the sequence number of the records containing the string to the terminal.

FIX

The FIX command alters the contents of a line in the workfile, by inserting new text or replacing part of the line. The alteration may be controlled by specifying target text, column numbers, or a combination.

Syntax:



Semantics:

The integer <s> is the sequence number of the line to be modified. If there is no such line in the file, the command is disregarded.

The semantics vary for several forms of this command, depending upon the presence of column numbers and text:

1. TEXT, NO COLUMNS:

The specified line is scanned from left to right for a literal appearance of the character string specified as text. When located, the target <text> is replaced by the character string specified as <newtext>. If the target is not found, the FIX is disregarded. Only one replacement is made on the line.

2. TEXT, ONE COLUMN:

The specified line is scanned as in 1., beginning at col 1.

3. TEXT, TWO COLUMNS:

The specified line is scanned as in 1., within the range col 1 through col 2.

4. NO TEXT, NO COLUMNS:

The newtext is inserted at the beginning of the line.

5. NO TEXT, ONE COLUMN:

The newtext is inserted at the beginning of col 1.

6. NO TEXT, TWO COLUMNS:

The characters in columns "col 1" through "col 2" are replaced by the newtext.

The <delim> which brackets the target text may be any special character. The text may contain any characters except the delimiter. All characters, including blanks, are significant in the text; the text field is empty only if the two delimiters are in adjacent columns. The newtext field begins after the second delimiter and runs to the end of the record. Blanks are significant; newtext is empty if the end of the record immediately follows the second delimiter.

If the size of <newtext> is greater than the size of the string being replaced then the data in the record to the right of the string being replaced is shifted right to make room for <newtext>. This may cause overflow. If the size of <newtext> is less than the string being replaced then the data to the right if the string is shifted left.

There is considerable function overlap between the FIX and REPLACE commands. FIX is specialized for single replacements on single lines and has a very concise syntax. REPLACE is more general, with file-searching and output capability; its various options require a more elaborate syntax.

If a column number outside the text field is specified, or if col 1 exceeds col 2, the FIX command is rejected.

Examples:

```
FIX  398 1-39 /AB/ABB
```

Locate the target text "AB" within columns 1 through 39 of line 398, and replace it with the newtext "ABB".

```
FIX  500 /END;/END ELSE
```

For line 500, locate the text "END"; and replace it with "END ELSE".

```
FIX  10 40 //% ADJUST LINKAGE
```

Insert newtext, % ADJUST LINKAGE, beginning in column 40 of line 10.

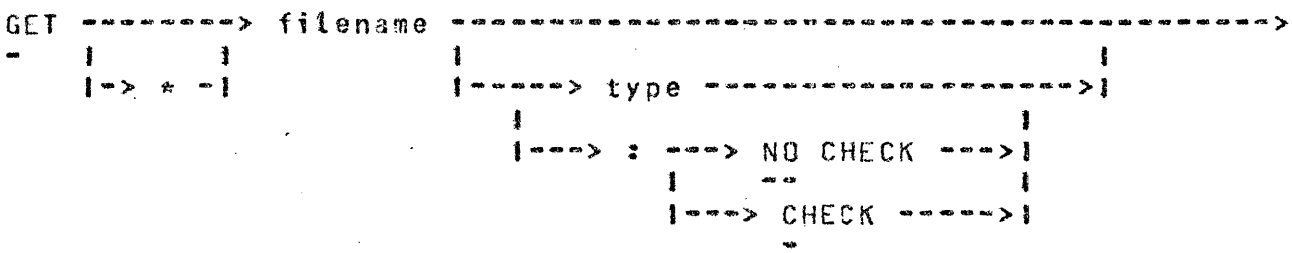
```
FIX  2 1-5 //   <end of statement>
```

Delete the first five columns of line 2, shifting the image to the left.

GET

The GET command recalls an existing file as the workfile. If the unSAVEd workfile already exists, the GET command is in error.

Syntax:



Semantics:

The <filename> may specify any file to which the user has access. The <usercode>/<file.id> option gives the user the ability to get a file that someone else created. The GET gives the user a copy of the file so that he will not alter the original file. The <type> specifies the file type of the file being loaded and will dictate where the sequence numbers are placed in relationship to the text. If <type> is omitted then the file is loaded as a SEQ file. If the file is one that was created by CANDE, the file will be properly sequenced, but if the file was not created by CANDE, the user is responsible for sequence errors. If "*" is specified, only the literal name after the "*" is looked for (refer to VI.1 security implementation for CANDE).

The options NOCHECK and CHECK provide for performing sequence field checking during the get. NOCHECK is the default. (This ~~option~~ is provided in keeping with previous releases where NOCHECK is the only option.) CHECK will perform sequence checking on the file. Sequence checking may be terminated early by entering ?BRK (See the BREAK command). The file will be marked as loaded with no errors. Any errors beyond the BREAK will be detected if read.

If a user loads source files to system disk, and those files have only a single file-name, that user may now edit those files using CANDE. The user enters at his terminal GET *<MULTI-FILE-ID><FILE-TYPE> and CANDE will load the file for editing. When the file saved, it will be saved under that user's usercode as <USERCODE>/<NAME HE DID THE GET ON>.

Examples:

GET AFILE

Get an existing file named AFILE as the workfile. The type will be SEQ.

GET AFILE FORTRAN

Get an existing file named AFILE as the workfile. The type is FORTRAN.

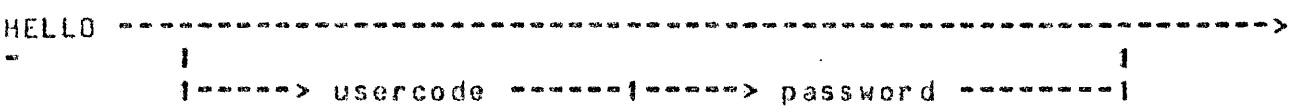
GET HIS/NEW UPL

Get a copy of a file named NEW that belongs to usercode HIS and load it as a UPL file.

HELLO

The HELLO command initiates a new user session without explicitly terminating the current session.

Syntax:



Semantics:

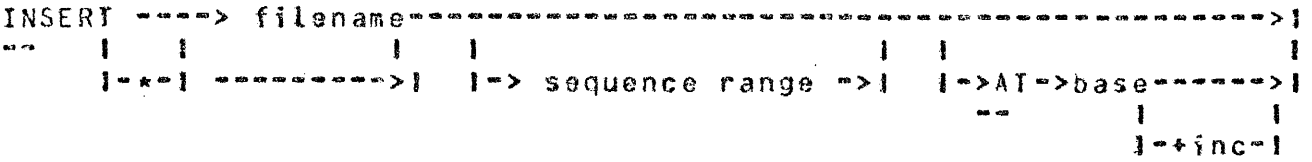
The current user's session is terminated by implicitly performing the BYE command and then invoking the normal log-on process to initiate the new user's session. As with the BYE command, this command is in error if the current user's workfile has not been saved or removed. If the station is not currently logged-on, then only the normal log-on procedure is invoked.

Usercode and password may be included to complete the log-on procedure or this information will be requested in the normal log-on manner.

INSERT

The INSERT command copies records from the workfile, or from a file on disk, and places the copies into the workfile with new sequence numbers.

Syntax:



Semantics:

INSERT copies records from any data file to which the user has access or from the workfile by default, and enters them in the workfile as a contiguous block. The entire file will be copied if a <filename> is specified and the sequence range list is omitted.

New sequence numbers are determined by assigning an initial value to the first line and incrementing that value for each succeeding line. An integer <base> specifies the initial value. The increment <inc> for successive sequence numbers in the block may be specified as an explicit integer. If none appears, the default value of 100 is used.

The range of new sequence numbers may not overlap any lines already in the file, nor may the numbers exceed the largest sequence number which may be expressed in the sequence number field. If the format *<filename> or *(usercode)/file-id is used, CANDE will look

only on system disk for the file.

Examples:

INSERT AT 3000+100

Insert the entire workfile into the workfile starting at 3000, in increments of 100.

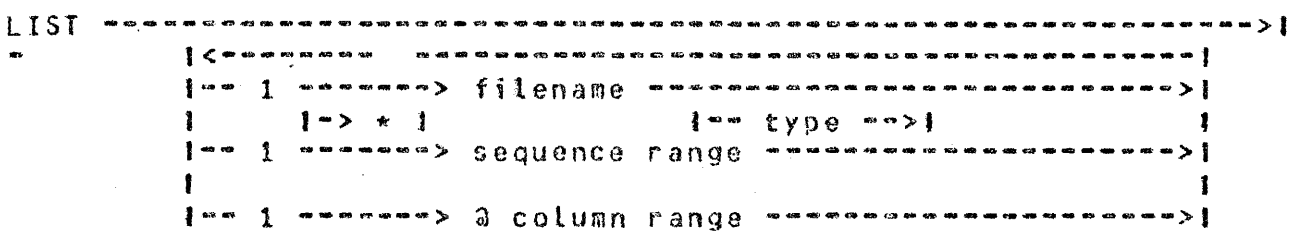
INSERT AFILE 100-600 AT 4000

Insert the lines 100 through 600 from file AFILE into the workfile, starting at 4000 and incrementing using the default of 100.

LIST

The LIST command displays the contents of the workfile or some other file to the user at his terminal. Options are available for selecting specific lines and columns.

Syntax:



Semantics:

The contents of the workfile are listed by default. If a <filename> is specified and if the user has access privileges, the file is listed. If "*" precedes the filename, the default pack-id, specified in the system usercode file for this user, is not applied. A <type> may be specified, so that sequence numbers can be located in relationship to the text. If no <type> is given and the user does not have a workfile, a type SEQ is assumed. Otherwise the file type given is that of the workfile.

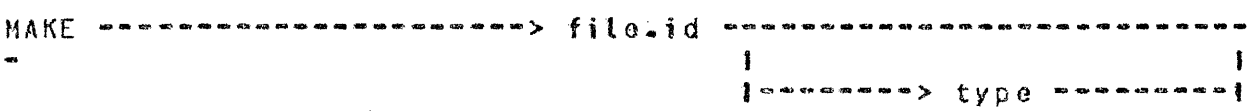
A sequence range and a column range may be specified; otherwise, the whole file and the entire line are listed. Specification of a single sequence number will display that sequenced record only, rather than a page beginning with that record. (see "PAGE")

Lines output to a terminal have the sequence number on the left end of the record.

MAKE

The MAKE command creates a new workfile. If an unSAVEd workfile already exists, the MAKE command is in error.

Syntax:



Semantics:

The <file.id> must define a new file within the user's library; it becomes the name associated with the workfile. A type SEQ file is assumed by default. The <usercode>/<file.id> option may not be used with the MAKE command.

Examples:

MAKE AFILE

Make a new workfile with the name AFILE and a default type SEQ.

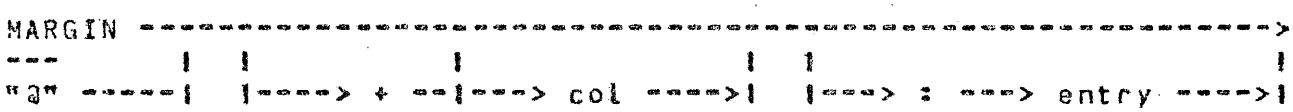
M AFILE U

Make a new workfile with the name AFILE and a type of UPL.

MARGIN/@

The MARGIN command controls the entry of text at the left margin of a line by inserting a specified number of blanks in front of the data being entered. A margin specification may be in absolute column numbers or relative to the previous margin; it may be effective for all subsequent lines entered at the terminal, or for a single line. The "@" form must be used in automatic sequence mode.

Syntax:



Semantics:

If an unsigned integer <col> appears, the margin is set to that column, relative to column one at the beginning of the line. The value of <col> must fall within the text field of the line, (e.g., should not exceed 72 for UPL files).

If a signed integer <col> appears, the margin is moved left (-) or right (+) by the number of columns specified; the resulting value must fall within the text field of the line.

MARGIN with no other parameters will now be responded to with CURRENT MARGIN=<integer>.

If the colon and <entry> are not entered, the new margin specification applies to all subsequent entries from the terminal, until a new margin specification is entered or a GET, MAKE is performed. If a colon appears, the new margin specification applies only to the single-line entry which follows.

In automatic sequence mode, the "@" must be entered as the first character (after the system-supplied sequence number). If the colon and <entry> are not entered, the margin specification for subsequent entries is changed, and the sequence number is repeated for the next line. If a colon appears, the subsequent single-line entry is made at the sequence number provided; the user enters only the text, as in any other entry in automatic sequence mode. Line overflow may occur as a result of indentation. The user is notified at his terminal, and the resulting line is truncated.

Examples:

MAR 20: 4700 A:=B;

Enter a line with A:=B beginning at column 20 with sequence number 4700.

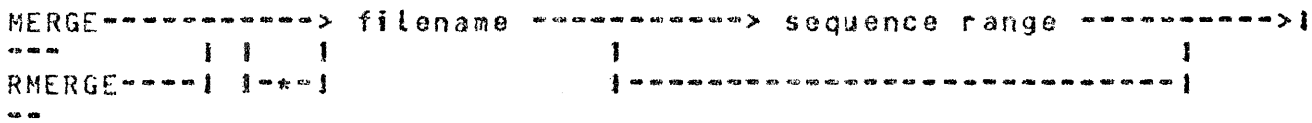
MARGIN+5

Change the indentation position to the current starting position plus 5 columns and retain this indentation for all following input.

MERGE/RMERGE

The MERGE and RMERGE commands cause a specified file, or portions thereof, to be merged with the workfile, with the result becoming the new workfile. The two commands differ in precedence considerations when a record in the merge file has the same sequence number as a record in the workfile: MERGE keeps the workfile record and discards the other; RMERGE does the reverse.

Syntax:



Semantics:

The <filename> specifies any data file the user is allowed to read and "*" indicates to look only on system disk. If a sequence range appears, only the selected records are merged and the rest of the file is ignored. The sequence numbers of records in the merge file remain unchanged as they enter the workfile.

Examples:

MERGE SYMBOL

Merge the workfile with the complete file SYMBOL, keeping the workfile copy of records with identical (i.e. duplicate) sequence numbers.

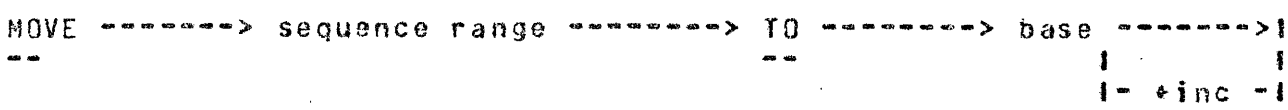
RM PATCHES 400-END

Merge the lines 400 to the end of file PATCHES with the workfile, discarding the workfile copy of duplicate sequence numbers.

MOVE

The MOVE command moves lines from one point to another within the workfile, and changes their sequence numbers.

Syntax:



Semantics:

The lines in the sequence range are deleted after being entered in the workfile as a continuous block.

New sequence numbers are determined by assigning an initial value <base> to the first line and incrementing that value for each succeeding line.

The increment <inc> for successive sequence numbers in the block may be specified as an explicit integer. If none appears, a default value of 100 is used.

The range of new sequence numbers may not overlap any lines already in the file, nor may the number exceed the largest sequence number which may be expressed in the sequence number field. The destination may not overlap any existing records in the workfile.

. Examples:

MOVE 100-600 to 900+5

Remove lines numbered 100 through 600 and reinsert them at 900, 905, 910 ...

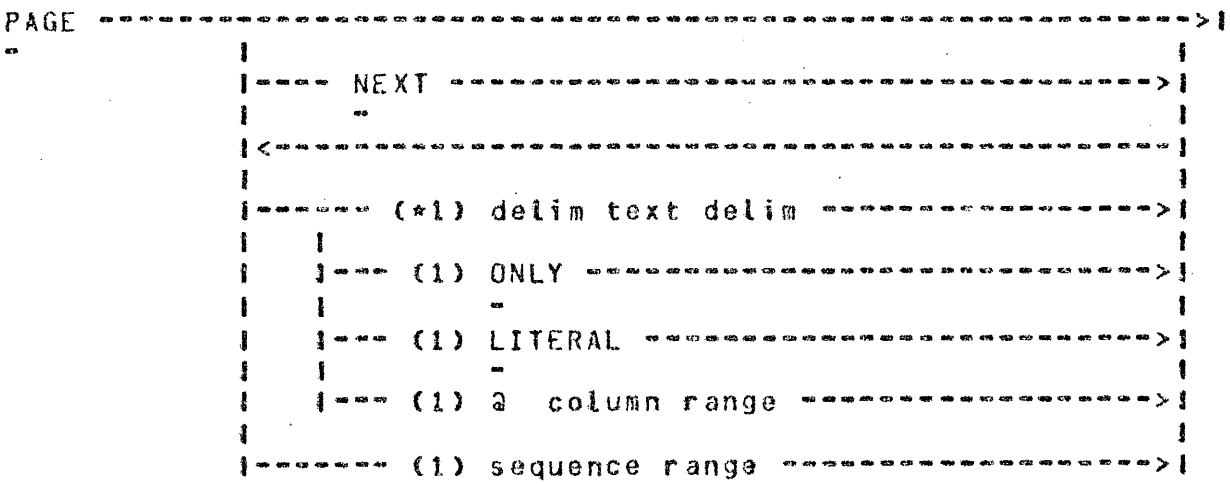
MOVE 1000 to 6000.

Remove line 1000 and insert it at 6000.

PAGE

The PAGE command displays full screens of information at the terminal for editing, and accepts full screens of input from the terminal. Operations will continue until the command parameters have been satisfied or the user enters any command on the top line of the terminal.

Syntax:



delim text delim:	scan each record within the sequence range for the delimited text. Display page starting with record in which text is found.
sequence range:	begin at S1, terminate after S2. S1 alone implies S2 = END. Default = BOF-EOF.
ONLY :	display only records with target text.
LITERAL :	as in REPLACE, FIND.
@ :	as in REPLACE, FIND.
NEXT :	resume action requested by previous PAGE command.
Example :	Assume page size = 2 and file contains:

```
100  abcdef
200  ghijkk
300  lmnopq
400  rstuvw
500  xyzabcd
600  efghijkk
700  lmnopq
```

Command	Response
PAGE ONLY /KK/ LITERAL	Display 200, 600, terminate.
PAGE 100	Display record 100, terminate.

Note: For CRT devices, NEXT is written at the home position as in FILE POSITIONING (See page 3-7). For text searching, NEXT means begin searching with the next record after the first displayed (if ONLY is not specified) or last displayed (if ONLY is specified).

Note: The meaning of a single sequence number in a sequence range specification is now different for LIST than it is for PAGE.

LIST <seql> will display the single record at sequence number <seql>.
PAGE <seql> will display a page of records the first of which is the record at sequence number <seql>.

PASSWORD

The PASSWORD command allows the user to change his password.

Syntax:

PASSWORD--> current password --> new password --> new password-->|

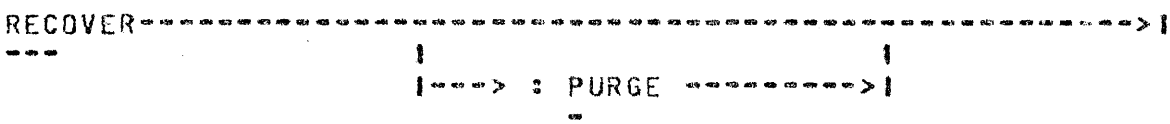
Semantics:

To change passwords, a user must enter his current password, the new password, and for verification purposes, repeat the new password.

RECOVER

The RECOVER command recalls a recovery file as the workfile. After an abnormal termination of CANDE, those users that were logged-on the system will have the option of recovering the workfile on at that time.

Syntax:



Semantics:

By entering RECOVER after logging-on, the user can recover his workfile.

Example:

```
REC
```

Recover my previous workfile.

The PURGE option allows the user to remove a recovery file which he does not need to recover.

Example:

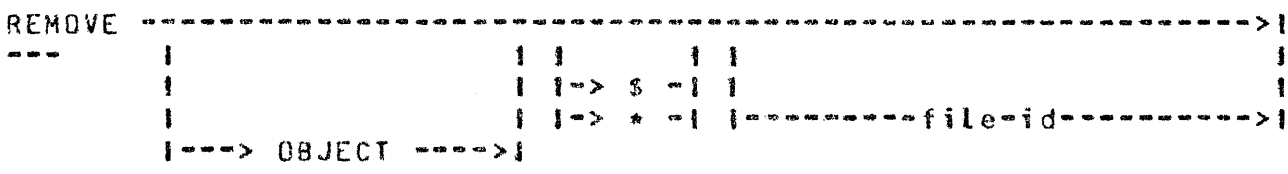
```
RECOVER   :P
```

Remove the user's recovery file without recovering.

REMOVE

The REMOVE command may be used to remove the workfile or any file with the user's usercode.

Syntax:



Semantics:

The semantics vary with the form of the command.

1. REMOVE

The workfile is removed. No further editing can be performed until a GET or MAKE is performed.

2. REMOVE <file.id>

The user's source file <usercode>/<file.id> is removed.

3. REMOVE OBJECT

The user's object file <usercode>/<workfile name> CAT "O" is removed.

4. REMOVE OBJECT <file.id>

The user's object file <usercode>/<file.id> CAT "O" is removed.

5. REMOVE OBJECT $ <file.id>

The user's object file <usercode>/<file.id> is removed.

Examples:

REM

Remove the workfile.

REMOVE AFILE ON <pack.id>

Removes <usercode>/AFILE from pack <pack.id>.

REMOVE OBJECT AFILE

Removes <usercode>/AFILEO if the file is of type "CODE".

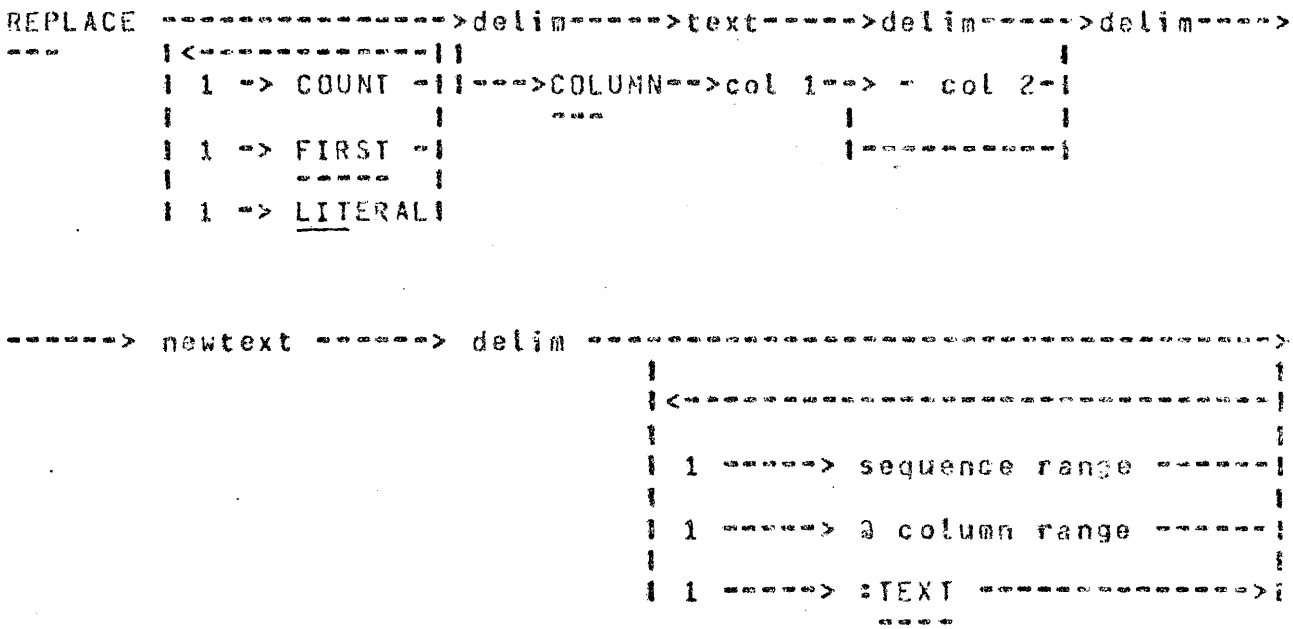
REMOVE OBJECT $AFILE

Removes <usercode>/AFILE if the file is of type "CODE".

REPLACE

The REPLACE command scans line-by-line through the workfile or selected portions, replacing certain target text with new text. REPLACE is also a prompt driven command, output comes to the terminal after transmission of any character from the home position. A "?BRK" will break the output as soon as possible.

Syntax:



Semantics:

Only one replacement may be specified in each REPLACE; the replacement is defined by a target and a substitution. The target specification may contain a text field or column numbers; the substitution specification always contains a newtext field, which can be blanks. The <text> and <newtext> fields are bracketed by delimiters. The <text> or <newtext> may contain any characters except the delimiter.

TARGET SPECIFICATIONS:

The form <COLUMN col 1> causes the <newtext> to be inserted at the column specified. The form <COLUMN col 1 - col 2> means that the characters in columns col 1 through col 2 are to be replaced by <newtext>. If <text> must be present, and it specifies a target to be sought.

For purposes of the search, all strings are considered to be token strings. Each line of the file is considered as an arbitrary string of tokens, excluding blanks. The search is successful whenever the string of characters in the text field is found in a line of the file. Literal strings must be searched for in LITERAL mode.

If the keyword FIRST appears, only the first appearance of the text on any line is sought and replaced. If an integer <count> appears, the replacement will be terminated after the program has replaced <text> with <newtext> the specified <count> of times.

The replacement may be restricted to a sequence range of the file or to a column range of the record. The defaults are the entire record length and the entire file.

If the option <:TEXT> is specified, the entire record is output to the user's terminal. If <:TEXT> is not specified, only the sequence numbers of records affected by REPLACE are output to the terminal.

SUBSTITUTION SPECIFICATIONS:

Whenever a target is found, the <newtext> (which may be blanks) is substituted. Adjustment for different length <text> and <newtext> is made by shifting the right-hand end of the line (or column range) to the left or right, deleting or adding terminal blanks. A line overflow error is detected whenever the adjustment would shift non-blank characters off the end of the line (or column range).

Examples:

REP / AB / / ABB /

Search the entire workfile for the string "AB" and replace it with "ABB".

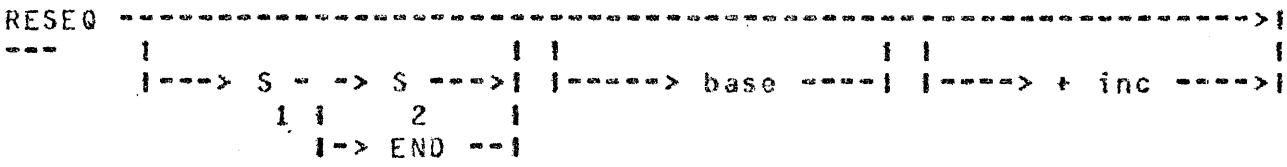
REPLACE COL 1-5 / / 130-180

Replace the contents of columns 1 through 5 in lines 130 through 180 with empty newtext.

RESEQ

The RESEQ command assigns new sequence numbers to lines in the workfile, without changing the order in which the lines appear.

Syntax:



Semantics:

An initial value is assigned as the sequence number of the first line to be re-numbered; the value is incremented for each subsequent line.

If a range of sequence numbers is provided, only the specified part of the workfile is re-numbered; by default, the entire workfile is re-numbered.

An initial value must be specified as the integer <base>. The increment <inc> for successive new sequence numbers may be specified; if none appears, the default value of 100 is assumed.

RESEQ will not change the appearing order of the lines. S1 must be less than or equal to <base> and the <base> plus the number of lines times the <inc> must not exceed S2 + <inc>.

Examples:

RESEQ 200

The entire workfile is re-numbered starting with the initial value of 200 and proceeding in increments of 100.

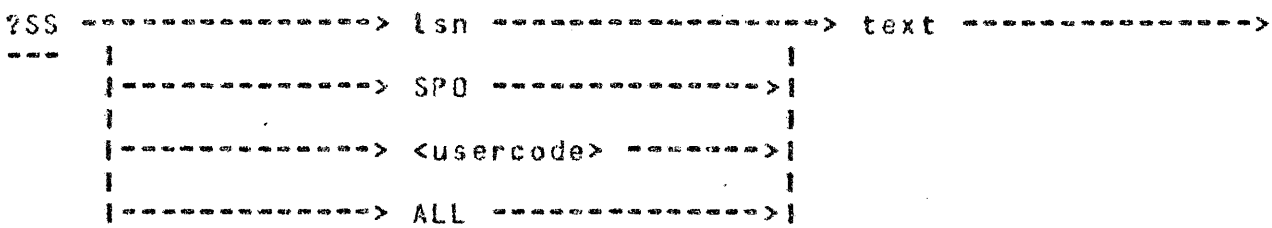
RESEQ 100-700 100+10

Reseq lines 100 through 700 starting at 100 and incrementing by 10.

SS

The SS command provides the ability to send a message to another station or to the system SPO.

Syntax:



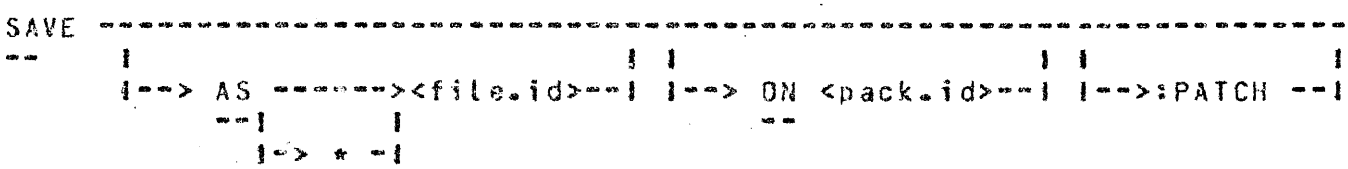
Semantics:

The receiving station may be referenced by <lsn> or by the <usercode> of a user if he is logged-on the system. The <text> may consist of any character string up to the maximum line size of the sending or receiving terminal.

SAVE

The SAVE command causes the current workfile to be saved.

Syntax:



Semantics:

If no <file.id> is specified, the workfile is SAVEd under its workfile name. The workfile may be SAVEd under a different name by using the "AS <file.id>" option. Specifying "*" will override the default pack and save the file on the system disk.

The :PATCH option allows the user to create a "patch" file consisting of only of those recors from a source file, which were changed during an editing session. Deleted records are saved in a patch file as "$VOID" records.

Example:

SAVE

The workfile is saved.

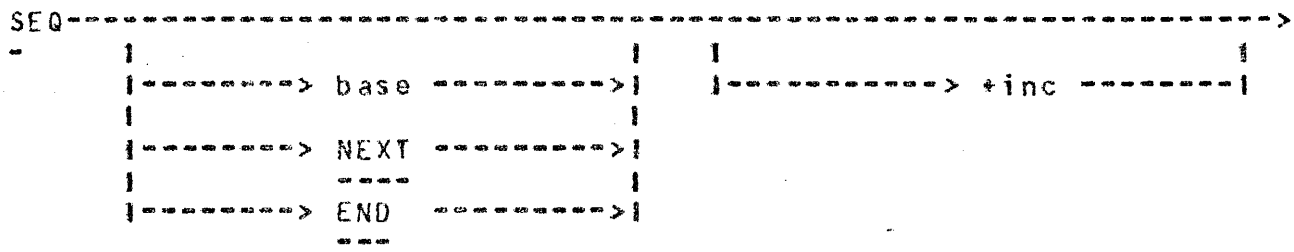
SAVE AS AFILE

The workfile is saved under the name AFILE.

SEQ

The SEQ command invokes automatic sequence mode, causing the system to provide the sequence number for each new line. With the exception of @(MARGIN), and ? (control character), no commands are recognized in automatic sequence mode.

Syntax:



NEXT : begin sequence numbers with last output + INC from previous SEQ.

END : begin sequence numbers with last record sequence.

Semantics:

An initial value is assigned as the sequence number of the next line to be entered; the value is incremented for each subsequent line. Initial values are specified by an integer <base> and <inc> or by defaulting to values 100 for the <base> and 100 for the <inc>. If NEXT is specified, the sequence numbering begins where the last sequence number, for that user, was terminated.

Sequence mode is terminated by entering end-of-text immediately following the sequence number or by transmitting back only the sequence number back. CANDE then displays a message at the terminal that the automatic sequence mode is terminated.

SEQ will display existing records in sequence with the new sequence numbers that have been created. Display will begin with the last record from previous input if pagesize is greater than one. BACK, SAME, NEXT, -, and + will terminate the SEQ mode and display the requested page. For CRT devices, the cursor is placed immediately after the sequence number of the first record. Returning only the first sequence number will terminate the command. Blank records will be added to the tank. MARGIN will not be applied.

Example:

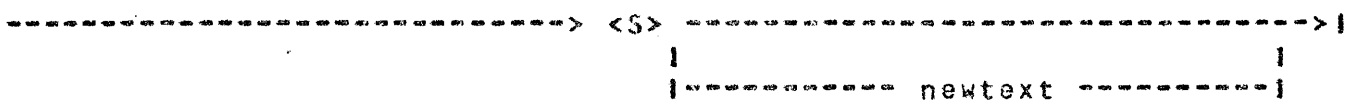
```
S  10+10
```

Enter automatic sequence mode using an initial and increment value of 10.

SINGLE-LINE ENTRY

Any line beginning with a digit of size = sequence field length, for current file type, is a "command" to enter a new line of text at the sequence number specified, or to replace or delete the line already at the sequence number.

Syntax:



Semantics:

The line consists of an integer sequence number, <S>, followed immediately by an optional newtext field supplying the contents of the new line. The sequence number begins in the first column of the input line, and runs until a non-digit character is encountered, or until the maximum number of digits for a sequence number have been entered; newtext field begins in the column immediately following. If there is already a line of text at the specified sequence number, that line is replaced by the newtext or blanks.

Examples:

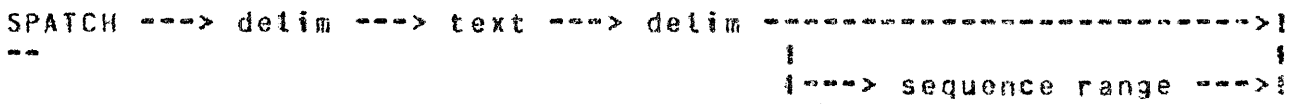
```
100 THIS IS A NEW LINE

215 AND SO IS THIS

300
```

(the above entry causes record 300 to be blanked out but not deleted)

SPATCH

The SPATCH command allows the user to insert up to ten characters of patch identification information into columns 81-90 of the workfile records for all file types except "DATA". The command remains in effect until the user signs off from the current session.

Syntax:



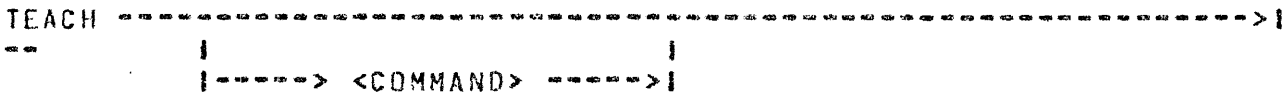
Semantics:

A delimited text string of up to 10 characters is required with the SPATCH command, and the sequence range is optional. If the sequence range is omitted, then the delimited string is saved as a permanent patch.id string and is applied to future entries to the workfile. If the sequence range is included, then the patch.id string is treated as temporary and is immediately inserted into the workfile records specified by the sequence range. This latter form of the SPATCH command does not change any previous permanent setting of the patch.id.

TEACH

The TEACH command provides the user with the capability of requesting an explanation of CANDE commands.

Syntax:



Semantics:

Entering TEACH without any specific command mentioned, will cause the system to return a complete list of valid CANDE commands and their valid abbreviations in form:

<abbreviation> (<remaining letters>)

e.g.: UPDATE will appear as: UP(DATE)

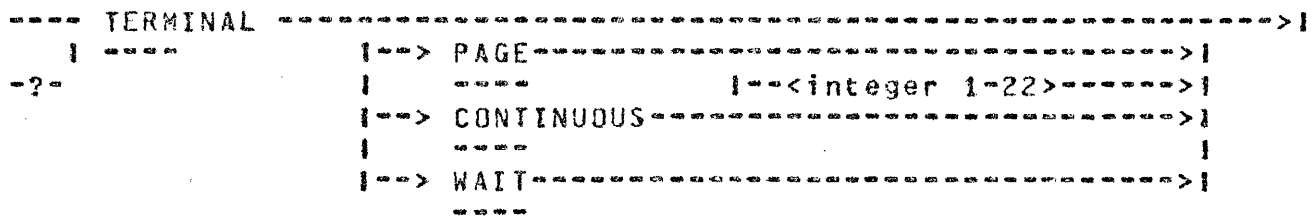
Entering TEACH <command> will cause the system to return three or more lines of text and will give a full description of the semantics and syntax of the requested command. e.g.: TEACH UPDATE

```
COMMAND:    UPDATE

SEMANTICS:  CAUSES IMMEDIATE UPDATE ON THE WORKFILE

SYNTAX:     UPDATE  ----------------------------------------->!
            --
```

TERMINAL

The TERMINAL command will allow the user to specify or query the number of lines per page or per screen for his terminal, or to modify the output mode of the terminal.

Syntax:



Semantics:

PAGE specifies the number of lines per page or per screen, as the integer page-length.

Default page sizes are:

Device	Terminal Type	Page Size
B9350 Teletype	0	1
TC Series	21, 23, 24, 25, 26, 27	1
TD700	32	2
TD730	33	2
TD801	41	10
TD802	42	22
TD821	43	10
TD822	44	22
TD831	45	10
TD832	46	22

Note: Default page sizes are also maximum possible values.

If no parameters are specified then current page size and current output mode are displayed.

If PAGE LENGTH is not specified then the current value of page size is displayed.

CONTINUOUS will cause the terminal to be left in 'RECEIVE' unconditionally after each output if scroll is enabled.

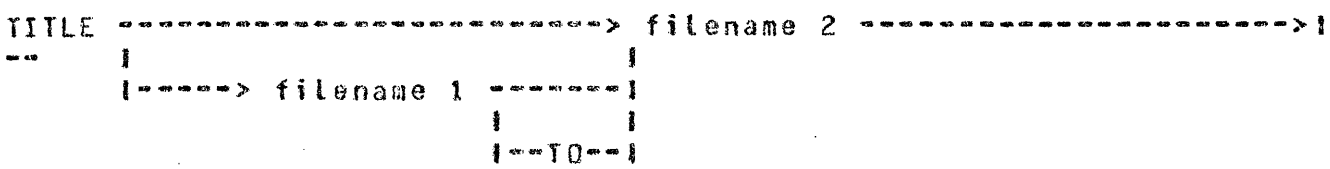
WAIT is the default output mode and will cause the terminal to go to local after most outputs.

Note:
- TD730 is treated as a TD700
- TD830 series are treated as TD820's except for fastselect and stop highlight character
- TD830 series running two-wire direct connect should have the system adapter strapped for 15ms write-delay.

TITLE

The TITLE command changes the name of the workfile or a file on disk.

Syntax:



Semantics:

If <filename> is not specified, the name of the workfile is changed for any subsequent SAVE command.

The name of the file <filename 1> is changed to <filename 2>, which must be a new file name within the user's library.

Example:

```
TI ZAP
```

Change the name of the workfile to ZAP.

```
TITLE A TO B
```

Change the file named A to B.

UPDATE

The UPDATE command forces immediate update action in the workfile. It is not necessary that the user explicitly invoke this command; it is invoked automatically whenever the tank file in filled.

Syntax:

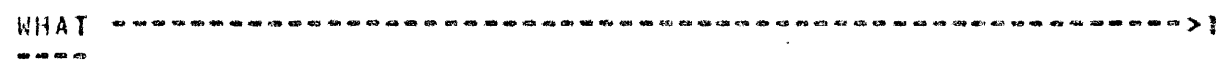
Semantics:

UPDATE forces all the changes/additions in the tank to be incorporated with the workfile. If the tank is empty, the UPDATE has no effect.

WHAT

The WHAT command indicates the state of the workfile.

Syntax:



Semantics:

The amount of information provided varies depending on the current state of the workfile; as much information as is available is indicated. Output may include:

a. TITLE
b. TYPE
c. MARGIN setting
d. SAVEd or unSAVEd status
e. BEGIN SEQ NO: of file
f. ENDING SEQ NO: of file
g. SOURCE FILE SIZE: <N>
h. TANK & WORKFILE SIZE (including deletes): <N>
i. TIME = CANDE processor time
j. SOURCE PACK ID
k. PATCH ID

Example:

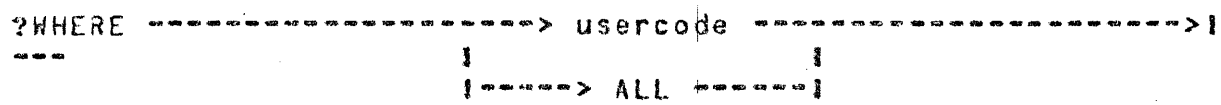
WHAT

```
TITLE:                  <filename>
TYPE:                   <file type>
MARGIN SET AT           <integer>
WORKFILE IS SAVED/UNSAVED
BEGIN SEQ NO:           <integer>
ENDING SEQ NO:          <integer>
SOURCE FILE SIZE: <integer>
TANK & WORKFILE SIZE: <integer>
       (including deletes)
TIME = <HH:MM:SS.T>
SOURCE PACK ID = <PID>
PATCH ID = <character string>
```

WHERE

The WHERE command provides the <lsn> of a user.

Syntax:



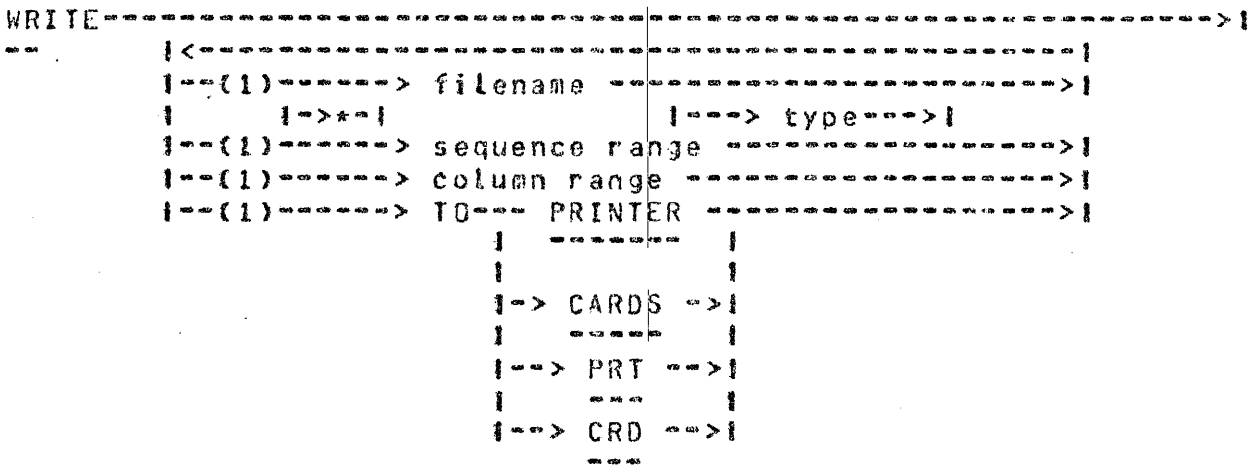
Semantics:

If the specified usercode is currently logged-on then his <lsn> is provided; otherwise the user is so notified. The ALL option gives th <lsn> of all users currently logged-on to CANDE.

WRITE

The WRITE command prints to the printer or punches to the card punch the contents of the workfile or some other file. Options are available for selecting specific lines or columns.

Syntax:



Semantics:

By default, the contents of the workfile are printed. If a <filename> is specified, and the user has access privileges, or if the file is public, it is used. A sequence range and a column range may be specified; otherwise, the whole file and the entire line are printed or punched. The terminal shows the user sees how many records were printed or punched.

This command should be used in conjunction with the autoprint routine in the MCP. If the autoprint option is set, WRITE generates a backup file that will be printed or punched when the autoprint routine gets to the backup file.

Examples:

WRITE	Writes to the line printer all records in the user's current workfile.
WRITE A TO CARDS	Writes to the card punch all records in <DEF.PACK>/(UC)/A.
WRITE 100-1000 TO PRINTER	Writes to line printer records 100 through 1000 inclusive.
WRITE *(UC)/A	Writes to the line printer all records in file (UC)/A.

Note: The autobackup printing facility cannot be utilized by CANDE if CANDE is not excuted under a usercode.

?<MCP control string>

A question mark in column one, line one of input followed by any string whose first token is not a valid CANDE control command will be sent to the MCP. If CANDE is running under a privileged usercode/password, the MCP response will return to the terminal of the initiating user.

OPERATOR INSTRUCTIONS

This section is intended to provide the host system operator for CANDE with facts to help execute and maintain the CANDE system.

Those topics discussed will be the execution of CANDE, the use of the network controller, and options available to the operator for the maintenance of the CANDE system.

The operator should have available for his use copies of :

Burroughs B1700 Message Control System Information Manual
Burroughs B1700 Network Definition Language Information Manual
Burroughs B1700 Software Operational Guide
Burroughs B1700 CANDE Information Manual

EXECUTION OF CANDE

To use the CANDE system, the operator executes CANDE. CANDE will in turn execute the network controller if possible (see below). Both CANDE and the network controller should execute at a higher priority than other programs in the mix to insure adequate response times to the user.

Upon execution CANDE will determine if recovery is appropriate, and if so will build individual user recovery files for the previous CANDE session. CANDE will then condition its working files for the new session.

Finally, CANDE will execute the network controller if the following conditions are true:

> The network controller must be present, a valid code file, not currently executing, and named "CANDE/HANDLER" either on system disk or on the same user disk from which CANDE was executed.
>
> Program SWitch 0, in CANDE, must be set, i.e., greater than zero.

If the network controller cannot be found or was not executed due to any reason other than SW 0 equal to zero, the operator will be notified via the SPO. Any desired network controller can then be executed. Note that by setting CANDE's program SWitch 0 to zero, a file named "CANDE/HANDLER" can reside on disk and CANDE will not attempt to ZIP-execute it.

Note: If a handler exists in the name table and CANDE ZIP-execute's a handler a DS situation could occur because of more than one handler being executed. (see pg. 4-3)

FILENAMES

Files created or loaded by CANDE appear to the user to have but one filename up to nine characters in length. To the CANDE program though, the files are named by the convention of usercode/filename. By doing this a certain amount of file security is provided in the system, and the hazard of two users creating files of the same name is eliminated. A user may have read-only access to another user's files if he is certain the user's

usercode and his own are both privileged.

If a user wishes to GET, MERGE, RMERGE, FIND, LIST or INSERT from another user's file he must specify the usercode/filename section of the multi-file-id in the command syntax.

SPO Options

CANDE allows communication between terminals themselves and between terminals and the system SPO (or vice versa). Messages coming from the terminal will appear as:

USER = <lsn>:<textual message>

The operator can talk to the terminal by entering:

<CANDE mix-index> AX <usercode> <message>
or
<lsn of destination terminal> <message>

EXAMPLE:

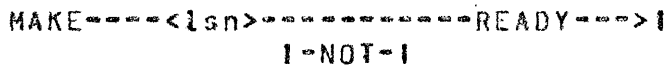
1AX JOHN WHAT FILE ARE YOU USING?

OPERATOR COMMANDS

The system operator has certain commands that can be directed to CANDE. These commands are "WHO", "STOP", "ALL" and "MAKE". The "WHO" command will print a list of usercodes and associated logical station numbers that are currently logged-on the system. The command "STOP" will bring CANDE to a logical conclusion. This command will only be executed if there are no users logged-on the system. The "ALL" command allows the operator to broadcast a message to all terminals. The command "MAKE" is provided to allow the operator to make a station "READY" or "NOT READY".

MAKE

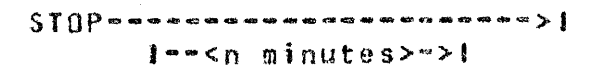
Syntax:



The "ready" flag in the network controller's table for the specified lsn will be changed as requested.

STOP

Syntax:



Semantics:

<CANDE'S mix> AX STOP <n>

The STOP command, for automatic shutdown, provides for controlled shutdown of the CANDE system within <n> minutes, with <n> being optional, and a default of 2). When entered at the SPO, the command causes the following:

If no users are logged-on, CANDE goes to EOJ.

Each logged-on user is sent the following message:

CANDE WILL STOP IN <n> MINUTES. PLEASE SAVE OR
REMOVE ANY ACTIVE FILE AND LOG-OFF.

At the same time each logged-on lsn is reported at the SPO (as before). After all logged-on lsns are reported the following message is displayed at the SPO:

CANDE WILL ADVISE AUTOMATICALLY AT <hh:mm:ss.t>
IF USERS ARE STILL ACTIVE>

From this point on, only the following commands are allowed:

Control commands ("?")

RECOVER	UPDATE	BYE
REMOVE	WHAT	DCSTATUS
SAVE	RESEQ	FILES
TEACH		

One more page of input records will be processed so that a page in the process of being edited when the STOP occurs will not be lost.

Note that no further 'single-line' input is allowed, except when that line comes from a device with a pagesize of 1, in which case it is treated as 'one more page of input records' as above.

All other commands will receive the following response:

CANDE TERMINATION IN PROCESS. PLEASE SAVE OR
REMOVE ANY ACTIVE FILE AND LOG-OFF.

If <n> minutes elapse and there are still users logged-on, the following message is displayed at the SPO:

SHUT DOWN TIME HAS ELAPSED WITH USERS STILL ACTIVE.
OPERATOR ACTION REQUIRED.

None of the above conditions change except that CANDE will not advise the operator again.

The automatic shutdown function is intended for the system operator's convenience, not a user inconvenience. To that end, CANDE will never shut itself down while users are active. It is the responsibility of the user, however, to log-off when no activity is anticipated for a while.

CANDE/HANDLER

BASIC

The interactive BASIC implemented for B1700 CANDE is like that on the B6700 CANDE. The user creates his file, then enters COMPILE, RUN, or EXECUTE, and CANDE handles all file equations for the task. To make use of interactive BASIC, a naming convention must be followed in the NDL handler that is generated, the filename for the station must be "F" CAT <station name> and this name must not exceed four characters on COMPILEs, RUNs, and EXECUTEs of BASIC files.

SCROLLING

TD820/830 series devices are capable of scrolling. Scrolling is enabled by entering a "?+S" and disabled by "?-S". In SCROLL mode, all entries are made on the top line, but the entries are rolled to the bottom of the screen and the responses come back from the bottom up. "?+S" entered on devices that do not scroll will generate the response "NOT A SCROLLING DEVICE". To correctly determine the type of terminal, users must observe the following conventions when compiling a network controller to run with CANDE:

TERMINAL SECTION

See the TERMINAL command (page 5-56) for valid terminaltypes.

Also implemented in CANDE"s request-and-control section is an output message control procedure which prevents output messages destined for a station that is in local, or otherwise unable to accept the message, from being retried indefinitely. After two tries, the output message is suspended until any one of the following occurs:

1. 30 seconds elapse with no transmissions from the station.

   Action: Message is tried again as above.

2. User transmits something other than "?".

   Action: Suspended output message(s) retried also: input is sent to CANDE.

3. User transmits "?".

   Action: Suspended output retried and "?" not sent to CANDE.

4. User transmits "?CQ".

   Action: Flushes queued output to a depth of 'MAX MESSAGES' as defined in the compiled handler. Default if not explicitly set is 20.

This procedure prevents denied output messages from taking over the processor. The network controller executed with CANDE should be compiled using "NDL/LIBRARY" requests and controls selected from the following:

REQUESTS	CONTROLS	TERMINAL TYPE
CANDEPOLTD CANDESELTD CANDEFSLTD	CANDETDCTL	TD SERIES, TC SERIES
CANDEIOTTY	CONVERCTL	TELETYPE

These requests include a number of functions specifically tailored to the output produced by CANDE in order to provide a more readable output at the terminal and to ensure recovery under terminal failure situations. See Appendix A (Section 7) for further information.

Other requests may be used with CANDE, however, results may be undesirable.

CANDE/ANALYZER

CANDE/ANALYZER is a companion program to B1700 CANDE and is intended primarily to aid in debugging CANDE. In an interactive real-time program such as CANDE, bugs can exist which become evident only upon entering some unusual sequence of commands or which involve a particular interaction between two or more users. When such bugs occur, it is typically difficult or impossible for users to know precisely what they did that caused the CANDE failure. CANDE/ANALYZER should help resolve this problem.

At BOJ, CANDE creates a trace file called CANDE/AUDIT and writes information about each USER/CANDE transaction into that file. CANDE/AUDIT is laid out to minimize the time required to create the trace and is not easily read by the user. CANDE/ANALYZER then assumes the burden of reading the audit file and of breaking it down into a format easily read by the user.

CANDE/ANALYZER is released with its program switches set to produce the most useful output for debugging purposes. This setting is: Sw=@00000210100. It may be modified to any other value.

For more information about CANDE/ANALYZER, see P.S. 2219 0185, CANDE/ANALYZER.

APPENDIX A

NETWORK CONTROLLER

Compilation

Following is a source listing of a typical handler to be used with CANDE.

File configuration allows user programs to open remote files to their own terminal without affecting operation at other terminals.

For example, user "A" at LSN-1 (station name = "ST1", available in file named "FST1" may execute a program which opens a remote file named "FST1". The program will then automatically be attached to the terminal from which the user executed the job through CANDE. Note that the BASIC system requires that a file which it is to open be named "F" concatenated with the station name (in this case "ST1" and that the total number of characters involved in forming this file name be no greater than four.

Application programs executed via CANDE need not ensure that the remote file name that is opened exists in the handler. The OPEN will be passed to the spawning job (CANDE in this case) if a file name match cannot be made. CANDE will approve the OPEN as long as all stations (except that from which the execution originated) are not logged-on to CANDE at the time of the OPEN.

Operation

The requests specified in Section "CANDE/HANDLER" initially determine if the stations opened are on-line and responding. Those that are not will be automatically deleted from the poll list for 8 minutes to be re-tried on an 8-minute cycle. Switched lines will remain in a "waiting for ring" state. If leased or direct terminal is in use with CANDE and experiences failure, such as many consecutive timeouts, loss of data-set-ready, or loss of carrier, the terminal is then deleted from the poll list.

If a switched terminal is disconnected or the line is disconnected in any way, then the network controller will reinitiate a "wait for ring" state on the line and CANDE will recover all appropriate data and will leave the station "ready" for the next dial-in.

Reconnecting a direct or leased terminal will not automatically cause the network controller to recognize and service it. The operator must enter a MAKE command at the SPO in order to make it ready immediately. If he does not make it ready, it will be re-tried after a maximum of eight minutes.

Re-dialing from a switched station will cause immediate service when connected.

After failure has occurred and the user has successfully re-connected, he must log-on again. At that time he will be advised of any recovery data he may have.

```
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
%%                                                                           %%
%%                          DECLARATION SECTION                              %%
%%                                                                           %%
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
%
%
DECLARATION:
             NIF="CANDE"/"NIF".%
             MAX BUFFERS = 5.%
             MAX MESSAGES = 255.%
%
%
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
%%                                                                           %%
%%                         REQUESTS & CONTROLS                               %%
%%                                                                           %%
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
 $LIBRARY CANDEPOLTD %
 $LIBRARY CANDEFSLTD %
 $LIBRARY CANDEIOTTY %
 $LIBRARY CANDETDCTL %
 $LIBRARY CONVERCTL %


%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
%%                                                                           %%
%%                         NETWORK CONFIGURATION                             %%
%%                                                                           %%
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
%%                                                                           %%
%%                         TERMINAL SECTION                                  %%
%%                                                                           %%
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
TERMINAL DEFAULT TDFLT:
        REQUEST       =  CANDEPOLTD:RECEIVE, %
                         CANDEFSLTD:TRANSMIT, %
        TRANSMISSION  =    0.
        ADDRESS       =    2.
        TYPE          =  44.% TD822
        BUFFERSIZE    =  2250.%
%
```

```
TERMINAL TD822:%
         DEFAULT        =  TDFLT.
TERMINAL TTY:
         REQUEST        =  CANDEIOTTY:RECEIVE, %
                           CANDEIOTTY:TRANSMIT, %
         TRANSMISSION   =    0.
         ADDRESS        =    0.
         TYPE           =    0.% TELETYPE
         BUFFERSIZE     =   150.%
TERMINAL TCS:
         DEFAULT        =   TDFLT
         TYPE           =    25.% (TC3500 SERIES)
         BUFFERSIZE     =   225.%
```

```
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
%%                                                                          %%
%%                           STATION SECTION                                %%
%%                                                                          %%
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
STATION DEFAULT TD8DF: %
        FREQUENCY      =  2, 24.
        MYUSE          =  INPUT, OUTPUT.
        TERMINAL       =  TD822. %
        RETRY          =  4.%
STATION DEFAULT TTYDF: %
        FREQUENCY      =  2, 24.%
        MYUSE          =  INPUT,OUTPUT.%
        TERMINAL       =  TTY.%
        RETRY          =  4.%
%
STATION ST1: %
        DEFAULT        =  TD8DF. %
        ADDRESS        =  "D1".
STATION ST2: %
        DEFAULT        =  TD8DF. %
        ADDRESS        =  "D2".
STATION ST3: %
        DEFAULT        =  TD8DF. %
        ADDRESS        =  "D3".
STATION ST4:%
        DEFAULT        =  TD8DF.%
        ADDRESS        =  "D4".%
STATION ST5:%
        DEFAULT        =  TD8DF.%
        ADDRESS        =  "R3".%
STATION ST6:%
        DEFAULT        =  TD8DF.%
        ADDRESS        =  "R4".%
STATION ST7:%
        DEFAULT        =  TD8DF.%
        ADDRESS        =   "R5".%
STATION ST8:%
        DEFAULT        =  TTYDF.%
        ADDRESS        =  "00".%
STATION ST9:%
        DEFAULT        =  TD8DF.%
        TERMINAL       =  TCS.%
        ADDRESS        =  "1A"
```

```
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
%%                                                                    %%
%%                          LINE SECTION                              %%
%%                                                                    %%
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
LINE      DEFAULT LINEDFLT:
          CONTROL        =  AUTOPOLCTL.%
%
LINE      DIRECT01:
          DEFAULT        =  LINEDFLT.
          AUTOPOLL       =  35.% 5 PER STATION
          ADDRESS        =  1:0:6.%
          STATION        =  ST1,ST2,ST3,ST4,ST5,ST6,ST7. %
LINE SYNC01:%
          DEFAULT        =  LINEDFLT.%
          AUTOPOLL       =  5.% 5 PER STATION
          ADDRESS        =  1:0:2:.%
          STATION        =  ST11.%
LINE TTY01:%
          DEFAULT        =  LINEDFLT.%
          CONTROL        =  CONVERCTL.%
          ADDRESS        =  1:0:9.%
          STATION        =  ST8.%
```

```
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
%%                                                                    %%
%%                          FILE SECTION                              %%
%%                                                                    %%
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
FILE CANDEQUEUE: %
        FAMILY          =  ST1,ST2,ST3,ST4,ST5,ST6,ST7,ST8,ST9. %
FILE FST1: %
        FAMILY          =  ST1.%
FILE FST2: %
        FAMILY          =  ST2.%
FILE FST3: %
        FAMILY          =  ST3.%
FILE FST4: %
        FAMILY          =  ST4.%
FILE FST5: %
        FAMILY          =  ST5. %
FILE FST6: %
        FAMILY          =  ST6. %
FILE FST7:%
        FAMILY          =  ST7. %
FILE FST8: %
        FAMILY          =  ST8.%
FILE FST9: %
        FAMILY          =  ST9.%
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
FINI.
```

Terminal Options

Terminals other than those specified in the CANDE/HANDLER section, if connected to the CANDE system may not operate correctly with the specified requests, although any Burroughs' qualified terminal for the B1700 can be connected to the CANDE system via a user coded request which could include the special features built into the released CANDE requests.

CANDE makes use of certain control codes to effect a more readable output. Terminals should be so optioned when setup:

@0D@ (CR),	@25@ (LF),	@0C@ (DC4),
@3C@ (HOME ONLY),	@11@ (DC1),	@13@ (DC3)
@27@ (ESC),	@18@ (CAN),	@0F@ (SI), (TD820 Series)
		OR
		@1E@ (SI), (TD830 Series)

CANDE

CANDE Processor Time

A value called "TIME" appears on the screen whenever WHAT, BYE, or HELLO is transmitted. This value is the amount of time the user spent being serviced by the CANDE system. This time will be less than the difference of log-on and log-off times except after recovery when the previous session's time is taken as a starting time.

The time value is not strictly hardware "CPU" time. It includes IO time, both datacomm and any disk accessing. Included also are such system overhead costs as overlay, service requests, rollin/rollout of the user, and others.

It is not intended to be used directly for billing, but it is an indication of the amount of time the CANDE system spent in servicing the user.

ALPHABETIC INDEX