mei 1979

ASPECTEN van INFORMATIEVERWERKING

22

A short introduction to the computerperipherals of

the ICW and how to use them with the CYBER computer

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A S P E C T E N   V A N   I N F O R M A T I E V E R W E R K I N G

Deel	Titel	Auteur	Nota	Datum
1	Computerverwerking van lange reeksen getallen	J.B.H.M.van Gils	935	nov. 1976
2	Optimaliseren van parameters: Het gereedmaken van een functie voor toepassing in NLV	Ph.Th. Stol	943	febr. 1977
3	Registratieverwerking voor automatische pF-bepalingen	J.B.H.M.van Gils	949	febr. 1977
4	Het systematisch bepalen van de afgeleiden van een functie ten behoeve van hun programmering	Ph.Th. Stol	948	febr. 1977
5	Mogelijkheden en beperkingen bij het verzinnen van namen bij informatieverwerking	Ph.Th. Stol	1037	febr. 1978
6	Over het samenstellen van een computerprogramma voor het optimaliseren van parameters	Ph.Th. Stol	951	apr. 1977
7	De onbekend-kode in een datafile	mevr.G.van den Berg-Buitenhuis	989	juli 1977
8	Enkele methoden voor het op eenvoudige en overzichtelijke wijze systematisch aanpassen respectievelijk veranderen van functies en parameterwaarden in computerprogramma's	Ph.Th. Stol	984	aug. 1977
9	Copiëren van file naar file	mevr.G.van den Berg-Buitenhuis	1019	dec. 1977
10	Een korte toelichting op de mogelijkheden van gebruik van de nieuw te installeren terminal	Ph.Th. Stol	1023	dec. 1977
11	Een systematische samenvatting van SUEDI, de routine voor het bijwerken van files	Ph.Th. Stol	1026	dec. 1977

Deel	Titel	Auteur	Nota	Datum
12	Handleiding tot het gebruik in LOCAL-mode van de ICW Teleprint -terminal	J.R. Maassen Ph.Th. Stol	1044	mrt. 1978
13	Handleiding tot het gebruik in ON-LINE mode van de ICW Teleprint-terminal	J.R. Maassen Ph.Th. Stol	1051	apr. 1978
14	Praktijkvoorbeelden van het gebruik van de ICW Teleprint-terminal	J.R. Maassen Ph.Th. Stol	1052	mei 1978
15	Het gebruik van mag- neetbanden door mid- del van de terminal	Ph.Th. Stol	1054	apr. 1978
16	Het beheren van een niet te groot bestand met behulp van de terminal en floppy disks	Ph.Th. Stol	1060	mei 1978
17	Het programmapakket SPSS	J.R. Maassen	1069	aug. 1978
18	BATCH-verwerking door middel van de terminal	J.R. Maassen Ph.Th. Stol	1070	okt. 1978
19	Fortran	Ph.Th. Stol	1113	apr. 1979
20	Toepassingen van het programmapakket GENSTAT	W.van Doorne		1979
21	Over het bijwerken en tot executie brengen van een hoofdprogramma met bijbehorende sub- programma's	Ph.Th. Stol	1117	
22	A short introduction to the computerperi- pherals of the ICW and how to use them with the CYBER computer	J.G. Wesseling	1124	mei 1979

De nota's handelende over Aspecten van Informatieverwerking bevatten inlichtingen over de ontwikkeling van de informatieverwerking binnen het Instituut. Naast meer concluderende en toelichtende beschouwingen zal aandacht worden besteed aan het gebruik van programma's en pro- grammapakketten en zullen zakelijke inlichtingen over praktijkerva- ring met en toepassing van de informatieverwerking worden gegeven

C O N T E N T S

I. INTRODUCTION

This paper has been written to give a short overview of the computerperipherals and possibilities at the ICW to the new user of them. It describes some of the uses of the peripherals when working local (not connected to a computer) in Chapter 2. The third chapter gives information on connecting the peripherals to the CYBER computer of IWIS-TNO in The Hague, including the most frequently used commands. To change programs or datafiles the CYBER has an editor called SUEDI. This editor is discussed in Chapter 4. The last chapter describes the use of an interactive program for the handling of magnetic tapes called MUFI.

The paper is not a complete users manual. It just describes in some points the most common uses of peripherals and computer. The best and only way to learn the described and not-described commands and methods is by experiments on the equipment itself.

II. THE COMPUTERPERIPHERALS AT THE ICW

1. The equipment consists of the following parts:
   a. Teletype videoterminal, cursor control, 72 lines of memory.
   b. Printer.
   c. Manually operated floppy-disk drive.
   d. Modem (300 baud) for use with a CYBER or DEC computer
   e. Modem (1200 baud),experimental stage, only for use with PDP-11
      of the Landinrichtingsdienst in Utrecht.

2. The powerswitches on the equipment:
   a. Terminal   : under the display, left side.
   b. Printer   : on the front, red button with ON/OFF on it.
   c. Floppy drive   : on the back.
   d. Modem (300 baud): on the back.
   e. Modem (1200 baud): this modem will be left out of this manual
                         because its use is at present in the exper-
                         imental stage.

3. All equipment(except of course the modem) may be switched for 2
   speeds: 300 baud (for sending data and commands to a computer),
   and 1200 bauds (for local work). The switches are located:
   a. Terminal   : under the display, above the keyboard, on the
                    right side.
   b. Printer   : on the left side of the back
   c. Floppy drive: on the front, button with HIGH on it.

4. When working with a computer, the button LINE on the floppy must
   be pushed. On the terminal then the button S/R (SEND/RECEIVE)must
   be pushed. When one of the control-buttons of the terminal has
   been pushed, the lamp in it will light up.

5. In the next lines the most important buttons on the equipment
   will be discussed. This will be done for each peripheral. In some
   later points the simultaneous use of the peripherals connected
   with each other will be discussed.

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6. The terminal

LOCAL: when switching on the terminal, the LOCAL lamp will light. This means the terminal is in the local-mode. Everything typed in or done under this mode will be shown on the screeen, but not be sent outside the terminal. For example, now we can type in a program, data or commands, and send them to the computer or one of the other perpherals later. Most of the editing buttons on the terminal only work in LOCAL-mode, for example the cursor control, scroll up and down, and the HOME and CLEAR button.

NOTE : The CLEAR button only clears the screen from the position of the cursor until the end of memory (line 72).

A set of buttons very easy to use is the series on the right side of the keyboard. The ones with line INSERT, LINE DELETE, CHARACTER INSERT and CHARACTER DELETE.

Examples:

If there is a text on the screen, where it is necessary to insert another line, just put the cursor on the line where the new line has to be inserted, press NEW LINE, and you see every line starting from the position of the cursor move down one place. Warning: if memory is completely filled, the LINE INSERT does not work. Then it is necessary to remove some lines first either by the LINE DELETE or the CLEAR button.

The LINE DELETE button operates in the same way: put the cursor on the line you want to delete, press the button, and the line is deleted. Warning: the LINE DELETE makes all the lines after the cursor move one line up. But if the text continues after line 72, then only the lines until line 72 move up. So it is possible you get a gap between the lines.

The CHARACTER INSERT works as follows: put the cursor on the place you want to insert a character. Then press CHARACTER INSERT, and you see the part of the line to the right of the cursor move a position to the right. This only works until the line is completely filled. The same thing can be done with CHARACTER DELETE.

Place the cursor on the character you want to be deleted, press
CHARACTER DELETE, and the character is deleted, while the rest of
the line to the right of the cursor moved one position to the left.
Another feature that works only in LOCAL is the TAB SET and TAB
CLEAR. To set some tab stops, first press HOME, because both TAB
SET and TAB CLEAR only work from the line the cursor is in until
the end of memory. Position the cursor on the place you need a
tab and press TAB SET. The screen will show a column of dots on
the place the tab stop is placed. When the stops have been set,
the cursor can be moved to the next tab stop by CURSOR TAB.

Depending on the mode you are working in there are two ways to
terminate a line on the terminal:
a. When the S/R lamp is on, terminate with the RETURN button. On
   the screen a ≡ is placed and the cursor moves to the beginning
   of the next line.
b. When the LOCAL lamp is on, it must be done with NEW LINE.
   A ≡ is placed here also. The RETURN shows in LOCAL only a ⪦
   and does not move the cursor to the next line.

The screen can show 24 lines. The terminal can contain 72 lines
in memory. This memory is divided in three pages of 24 lines each.
The top of a page is shown by dots before column 1. The top of
the first page is indicated by one ".", the top of the second
page by two vertically arranged dots ":", and the top of the third
page by 3 dots ":". When pressing "SEGMENT ADVANCE" the complete
(next) page is shown on the screen.

The buttons grouped on the most left side of the keyboard are for
cursor control and need no further explanation. Just like the
other buttons that operate in LOCAL, the cursor-control buttons
repeat when they are held down stronger than normal.

When the REC button is pressed, the terminal can receive signals
from outside, When S/R is pressed, the terminal can receive and
send signals.
It is possible to send over a number of lines from the terminal

to the computer or one of the other peripherals: place the cursor on the beginning of the data you want to be sent, press SEND. The terminal now sends data or commands away. It stops only for three reasons:

a. You press the LOCAL button.

b. The cursor is at the end of line 72.

c. Cursor meets an E_x(CONTROL/C (=EOT = End of Text))on the screen. This is the best way to work:

Locate the cursor at the end of the information you want to be sent away. Place an E_x in this place. Go back to the begin of information and press SEND.

When sending has ended, the terminal returns to the LOCAL mode.

Warning: The terminal has no RUBOUT-key. When using the CYBER the function of this key is taken over by the ←(left cursor control). When using the DEC the ^V can be used.

The PRINT ON LINE key is used to switch the lineprinter on.

7. The floppy-disc drive

The floppy drive is a manually operated one. This means you have to select the track you want to write on or read from yourself. There are 32 tracks, numbered 0 to 31. The selection can be made with the big knob in the middle of the front.

To insert a disc, just push down the small plateau just above the track selector. Then the floppy container will open. Slide the floppy in and close the container. The floppy is ready to work with now.

On the left side of the front panel there is the function--switch. When one wants to write on the floppy, place it in the WRITE-position, when it is necessary to read from the floppy, it must be in de READ position. The RESET position is not allowing to do anything with the floppy.

The three buttons on the right side of the front panel have the floowing meaning:

a. HD : Half duplex (when pressed) or full duplex (when not pressed). This button may stay in the not-pressed position

when using the equipment.

b. LINE: When this button is pressed, the installation is connected with the modem. When the button is not pressed, the equipment can be used as an independent system in completely LOCAL mode.

c. HIGH: The HIGH button should be pressed when working at 1200 baud, it should not be pressed when working at 300 baud.

Note 1. There is always a 'scratch'-floppy available for use. The programs or data put on it may be erased by somebody else. This floppy is meant only for temporarily use during work on the terminal. This disc is marked by a large red cross on the cover.

Note 2. When using your own floppy, it is very easy to use one track, preferably no. 0 as a register for the contents of the other tracks. When adding, changing or deleting the contents of a track, it can be changed in the register easily by just putting the contents of the track on the screen, change it in the LOCAL mode and send the changed register back to the track.

Note 3. If a program or datafile is too large for one track, the floppy automatically switches to the next track. When reading it back again without selecting the original track manually, the floppy automatically reads this last track.

Note 4. When writing accidentally on a track that may not be deleted, before pressing the start/stop button again, switch the function selector to RESET. Then the old track is still there and the new information is not written on floppy.

To read from floppy : a. switch the track you want to read
b. set the receiving machine to receive
c. press START/STOP on the floppy drive
d. floppy will send information to the

receiving equipments. This can be seen
on the red LED on the floppy. When the
floppy is sending or receiving, the
yellow lamp will light up

e. when the floppy is ready, the yellow
light will go out

To send to the floppy:
a. switch the track you want to write on
b. put the function switch to WRITE
c. push START/STOP (yellow light will light
up)
d. send data (red LED will go on and off)
e. when all data are sent over to the flop-
py, press START/STOP again. After some
moments the yellow ligt will be off
f. put function selector to RESET

8. The lineprinter

The printer can give hard copy of anything that is sent to
the terminal from the computer, but may also be used to print the
contents of a floppy or the screen. The use is very simple thanks
to the few buttons on the front panel:

HDW   : this light will burn when there is something wrong with
the printer hardware.

ON/OFF: power switch. Red light will be on when power is switched
on.

SELECT: when this button is pressed the yellow light will be on
and the printer is ready to receive signals from the com-
puter or one of the other peripherals.
When the button is not pressed, and you want to move the
paper up manually, press the SELECT again, the light will
go out, and you'll hear a signal for some seconds. Then
you can press the yellow button on top of the front panel
to have the paper moved:
press it on the side LINE FEED: paper moves up one line
press it on the side FORM FEED: paper moves up to the top
of the next page.

PAPER : this lamp will burn just before the printer runs out of
        paper.

    The printer is connected to the system by pressing the PRINT
ON LINE button on the terminal.

Example: To send a program from the floppy to the printer. First
        make sure all units are at the same baud-rate. Select the
        track to be printed. Put the function selector on the
        floppy to READ. Set the terminal to SEND/RECEIVE. Press
        PRINT ON LINE on the terminal after you made sure the
        SELECT-lamp on the printer is on. Then press START/STOP
        on the floppy-drive. Now the contents of the track will
        appear on the screen and on the printer. Now it is possi-
        ble to switch the terminal to LOCAL. Then the printer
        will go on but now you can prepare a new text on the
        terminal at the same time. Do not start sending it until
        the other units are ready with their job!

Note: the moving of the paper as described under SELECT can also
      be done from the terminal. Put it to S/R, push PRINT ON
      LINE. Line feed now can be accomplished by just pushing the
      RETURN-button. Form feed is done by typing ^L (CONTROL/L).
      Warning: when you are connected to the CYBER, after ^L type
               a RUBOUT, because CYBER does not know ^L.

9. The modem

    The modem used with the equipment when working with the CYBER
(TNO, Den Haag) or the DEC (Agricultural University, Wageningen)
is a 300 baud modem, which can be used in full-duplex and in half-
-duplex mode.
    After switching it on, make sure the DATA-button is depressed.
The LOCAL COPY button may be pushed in or out, depending on the
computer you are working with:
CYBER: LOCAL COPY must be pressed (half duplex)
DEC : LOCAL COPY must be out (full duplex)

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10. To send a file from terminal or floppy to the CYBER

      In the next lines (CR) means: press the RETURN-button.
Assuming you logged in, the way to copy a file from the ICW peripherals is as follows:

a. Prepare the peripheral you want it to be sent from (see item 5 or 6).

b. Type the next command to the CYBER:

      COPYBF,ICW,FILENAM (CR)

    where FILENAM is the name of the local file the information has to be stored, and (CR) means press the RETURN button.

c. Start the sending unit.

d. After sending over information, it is necessary to check whether the last line was an %EOF - command. If so, the CYBER will return with COMMAND-. If there was no %EOF, just type %EOF(CR) in the mode S/R on the terminal. Then CYBER will return with COMMAND- and the information is in the CYBER.

11. To receive data from the CYBER on one of the peripherals

a. Type COPYSBF,FILENAM,ICW (without a (CR)).

b. Switch on the receiving unit if it is not the terminal, and prepare it for receiving data.

c. Press (CR), after checking all units are at 300 baud.

d. When all data are sent, close the file on the floppy, if that is where data was sent to by pressing the START/STOP button. If it was not the floppy, you can just give the next command.

III. CONNECTING THE EQUIPMENT TO THE CYBER COMPUTER

1. Witch on the terminal, floppy, modem and printer.
2. Check whether all switches are in position '300.
3. Press S/R on terminal
4. RETURN
5. CYBER answers: DATE .....
                  TIME .....
                  PLEASE LOGIN

   Type   : LOGIN,ICW,WAG
   Answer   : ACCOUNT NR.=

6. Type   : 43,xxxxxxxx,yy
   Where   : 43= institute number

                   xxxxxxxx = accountnumber

                   yy=checkdigits

7. CYBER answers: logged in at ....
                  COMMAND-

   The CYBER always gives 'COMMAND-" to show he is ready to receive
   the next command.

8. CYBER considers the terminal as a local file, so the best thing to
   do is to give a command in the beginning:
         CONNECT,ICW

   CYBER now considers the terminal as a local file called ICW.

9. There are two kinds of files on CYBER: local files and permanent
   files.

   After LOGOUT the local files will disappear. If you want to save
   a local file you must make it permanent. All operations must be
   made with LOCAL files.

   Example: you want to make the local file ME permanent with name
            YOU:
            CATALOG,ME,YOU,ID=...,RP=999

   In the example ... stands for your identification (initials).
   The last (RP=999) may be omitted. If omitted, the permanent
   file will be saved for 10 days after last attach, with RP=999
   this is infinite.

   To use a permanent file as a local file:

```
ATTACH,ME,YOU,ID=...(,CY=...)
```

The file YOU will then be copied and placed in memory as local
file ME.

To remove a local file: RETURN,ME

To remove a permanent file: PURGE,ME,YOU,ID=...,CY=..

or, if ME is already attached to YOU: PURGE,ME, ID=...

It is possible to use the same name for a permanent file more
than once. The CYBER then increases the cycle-number with one.
When attaching the file again, you must give the cycle-number also.
The same when purging a file. When CY=... is omitted, CYBER assumes
the highest number was meant.

10. Copying one file to another can be done in the following way:

```
COPYBF,A,B     (copy binary file A to binary file B        )
COPYBR,A,B     (copy binary record A to binary record B    )
COPYSBF,A,B    (copy shifted binary file A to binary file B)
```

In most cases COPYBF can be used. But when copying a file to the
terminal it is necessary to use COPYSBF, because terminal and
lineprinter consider the first character of each line as a car-
riage-control character. So if you use COPYBF, and a statement
number is in the first column, the terminal uses this number as
a carriage-control character which gets lost.

Example: to print the file ME on the terminal:

```
REWIND,ME
COPYSBF,ME,ICW
```

11. To translate a FORTRAN program, the command FTN is used.

```
FTN,I=ME,B=ME,L=O (CR)
```

where: The filename following I(=INPUT) is the file to be trans-
lated, in this case ME. If omitted, the CYBER assumes a
filename INPUT. The filename following B(BINARY FILE NAME)
is the name of the translated file. If omitted, CYBER names
it LGO (LOAD and GO) L=O means no listing of the program
and a reference map of used variables and labelnumbers is
required. If you want a listing and reference map,omit
L=O. If you want a listing of the program text without a
map add R=O.

Examples:

```
FTN                 (filename=INPUT, binary file=LGO)
FTN,I=ME            (filemane=ME   , binary file=LGO)
FTN,I=ME,B=BME      (filename=ME   , binary file=BME)
FTN,B=BME           (filename=INPUT, binary file=BME)
```

12. To run the translated program, just type the name of the binary
    file, followed by RETURN. Examples:

    ```
    BME (CR)
    LGO (CR)
    ```

13. To show which local files are on your area, just type FILES (CR).

14. To show which permanent files you have, the following command
    must be typed

    AUDIT,LF=ICW,ID=...(,AI=P)

    LF = ICW means the result must be sent to local file ICW (terminal)
            (if omitted, result is going to OUTPUT)

    ID=... means all programs and files with ID=...

    AI=P is optional. If used, you get a partial version of AUDIT.

15. When returning (=disposing) an OUTPUT-file, CYBER places it in a
    remote output-queue under the name BIBIIBI. Before logging out,
    remove these files by typing

    EVICT,BIBIIBI

16. Logout is done by typing the command

    LOGOUT

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IV. HOW TO USE SUEDI

SUEDI stands for Single User Editor and is the editing-program on the CYBER. To enter SUEDI just type the word SUEDI and the filename of the local file you want SUEDI to be stored, this means you can use more SUEDI-files at a time, for instance when there are a main program, a subprogram and some data:

SUEDI, A   for the main program MAIN (it will be explained later

                                           how to enter the program

                                           in the editor)

SUEDI,B   for the subprogram

SUEDI,C   for the datafile

The regulations for these names (A,B, and C in the example) are the same as for the local files: 1 to 7 alphanumeric characters, of which the first one must be a letter.

After typing SUEDI (return) the program comes back with two points (..), which mean you can now give SUEDI-commands.

Most of the commands may be abbreviated. The abbreviation is under-lined in the following list, Parameters between () are optional.

1. Add(,r(,dr))(,OVERWRITE)

   r   : linenumber of first line to be added (default-value:

              LAST+10)

   dr   : linenumber increment(default:10)

   OVERWRITE: existing lines are overwritten or bypassed

   Example: Suppose the following text-file exists:

         10=THIS IS AN EXERCISE

         20=IN SUEDI

  ..A,15,1

  ENTER LINES

  TO SHOW

  THE COMMANDS THAT

  CAN BE USED

  =   (termination of input)

Now the file hase become:

    10=THIS IS AN EXERCISE

    15=TO SHOW

    16=THE COMMANDS THAT

    17=CAN BE USED

    20=IN SUEDI

2. BYE

With the command BYE,SUEDI is left and the CYBER is back in monitor mode. The edit-file remains in SUEDI.

Example: ..B

          COMMAND-

3. CREATE(,r(,dr))

    r : linenumber of first line (default: 10)

    dr: linenumber increment (default: 10)

It is possible there already is an edit-file in SUEDI, then the computer types the message:

    WARNING, EDIT FILE NOT SAVED

There are two possibilities to proceed:

    SAVE (save the edit-file, see the SAVE-command)

    CREATE(repeat, edit-file is lost)

Example:

    ..C,5,5

    WARNING,EDIT FILE EXISTS

    ..C,5,5

    ENTER LINES

    THIS IS AN EXERCISE

    IN SUEDI

    =

    ..

4. DELETE a(,VETO)(,b)

a =	ALL	delete the entire edit-file
	r1,LAST	delete all lines from line r1
	r1,r2	delete line r1 to r2(incl.r2)
	r1	delete line r1
	LAST	delete last line

b = /t/(,UNIT)(,k1(,k2))

t=text	search this text
UNIT	recognize text t as a unit (between spaces, parentheses, etc.)
k1	start looking for the text from column k1 (default: 1)
k2	look for the complete text until column k2 (default: k2 defined by linewidth)
k1,k1	check only column k1.

When including a parameter VETO, before deleting the line SUEDI
types it out on the terminal, waiting at the end of the line for
the decision to delete or not delete. There may be several ans-
wers to VETO:

CONTINUE	Deletion OK and all the following also
YES	Deletion OK, keep searching
ACCEPT	Deletion OK, stop
NO	Do not delete this line, keep searching
STOP	Do not delete this line and stop searching.

Example: Suppose the following text is in the edit-file:

        10=THIS IS AN EXERCISE

        20=TO SHOW

        30=THE COMMANDS THAT

        40=CAN BE USED

        50=IN SUEDI

    Now give the following command:

        ..D,20,50,V,/T/,1,10

    (delete with veto all the lines between 20 and 50 (20 and

    50 included) that have a T in column 1 to 10)

    SUEDI answers:

20=TO SHOWN

        30=THE COMMANDS THATY

        1 DELETION

        ..

   In this example only line 30 has been deleted.

5. EDIT,lfn(,SEQUENCE)

        With this command it is possible to insert a local file in
        the edit file. If the local file does not have linenumbers,
        giving the SEQUENCE parameter in the EDIT-command, causes
        the editor to create linenumbers, starting with 10 and in-
        creasing 10.

        There are several warnings possible:
             WARNING, EDIT FILE NOT SAVED
                This may occur when you already had another file in
                SUEDI, and did not save it.
                There are two possible answers:
                     SAVE, see there, old file will be saved,
                     EDIT,...,repeat command, old editfile is lost.
             SEQUENCE ERROR
                No SEQUENCE command and the linenumbers of the local
                file are not increasing.
             LINES GT nnn CHARS, TYPE YES TO IGNORE
                In the edit-file there is a record with length greater
                than the defined linelength. Continue with
                YES   Editing continues, lines up to nnn (depending
                      on FORMAT) characters are placed in the edit-
                      -file, excess characters are deleted.
                NO   EMPTY FILE is returned if it is the first line
                      that is already too long. Otherwise only the
                      lines before the first line that is too long
                      are placed into the edit file.
             EMPTY FILE
                No information in local file.
             The editing goes on until SUEDI finds and *EOI in the
             file (End of Information).

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Example: suppose the local file LOCFIL must be edited:

    COMMAND-SUEDI

    ..E,LOCFIL,S

      WARNING, EDIT FILE NOT SAVED

    ..E,LOCFIL,S

      LINES GT 72 CHARACTERS, TYPE YES TO IGNOREY

      34 LINES IN EDIT FILE

    ..

6. The END-mark

It is possible to insert one of the following END-marks the end of
the edit-file by typing:

*EOR

*EOR,n   (n between 0 and 17 (octal))

*EOF

Default at the end of the edit-file is *EOI.

7. FORMAT,a

It is possible to define another format in which your program lay-
out has to be. All these formats have their own tab-symbol, their
own tab-columns and their own line length.

Possibilities are:

a=	line length	tab symbol	tab columns
ALGOL	140	$	7,10,13,16,19
SIMULA	72	$	7,10,13,16,19
PASCAL	72	$	7,10,13,16,19
BASIC	72	;	
COBOL	72	;	8,12,16,20,24
COMPASS	72	;	11,18,36
FORTRAN	72	;	7
OUTPUT	137		
CN=nnn	(max n=140)		

It is also possible to create your own lay-out:

    a = /tabchar/(,k_1,.....k_n)   n must be less than or equal
                                  to 6.

    tabchar should be only one character.

To check what FORMAT SUEDI is using at the moment, type

FORMAT,SHOW

Examples: F,F   (default)

F,O

F,C=20

F,/:/,10,50,60

F,S

When you left SUEDI after editing a file with a format other than F,F (default), and you enter SUEDI, for example to change something you forgot, you get the following message:

COMMAND-SUEDI

EDIT-FILE EXISTS

(NO DEFAULT FORMAT)

..

8. INIT

This command clears the edit-file without checking if the file has been saved. The format remains unchanged. It works faster than DELETE,ALL.

9. INSERT,lfn(,(r(,dr))(,NOCHECK)

The INSERT-command makes it possible to insert a local file in an edit-file that exists already.

lfn   = name of local file that must be copied in edit-file

r   = linenumber of line that has to be added first
         (default: LAST + 10)

dr   = increment of linenumbers that have to be inserted

NOCHECK = SUEDI starts inserting without checking if it is
          possible to insert all lines. It stops when all
          lines are inserted or an existing line would be
          overwritten or bypassed.

The following error-messages can occur:

LINES DON'T FIT, n LINES IN FILE

There are n lines in the file. Without the NOCHECK-
parameter SUEDI finds there is no room for these

lines in the edit-file. There does not take place any
inserting.

LINES DON'T FIT

With the NOCHECK parameter insertion starts immediate-
ly. No lines will be overwritten or bypassed, so only
the 'fitting' lines will be inserted.

Examples: I,LOC   (file LOC will be placed behind the edit-
file)

I,LOC,11,1   (file LOC is placed in the edit-file start-
ing at line 11, increasing lines with 1,
first SUEDI will check if it is possible
to insert all lines)

I,LOC,13,3,N (file LOC is placed in the edit-file as
far as possible, starting with line 13,
without checking before inserting)

10. LIST,a,(,SUP)(,/t/(,UNIT)(,(k1(,k2)))

The list command causes SUEDI to print some line on the
terminal, depending on the parameters.

a =	ALL	List the complete edit-file
	r1,L	List all the lines from r1 to the end
	r1,r2	List all lines between r1 and r2 (incl. r1 and r2)
	L	List last line
	blank	List line where pointer is

SUP	Suppress linenumbers
t=text	List only the lines in which this text occurs
UNIT	Consider the text as a unit
K1	Search text t starting from column k1 (default: 1)
K2	Search complete text until column k2 (default: end of line, depending on FORMAT)
k1,k1	Search only in column k1

Examples: Suppose we have the file described on page 14 again in
SUEDI, but with linenumbers 10, 20, ..., 50. Then the
following commands can be given:

..L,10

 10=THIS IS AN EXERCISE

..L,10,30

 10=THIS IS AN EXERCISE

 20=TO SHOW

 30=THE COMMANDS THAT

..L,10,20,S,/IS/,U,10,20

..L,A,/AN/

 10=THIS IS AN EXERCISE

 30=THE COMMANDS THAT

 40=CAN BE USED

..L,A,/AN/,U

 10=THIS IS AN EXERCISE

..

11. Abortions

When the user wants to stop a command before it is finished, he
can use %A. But be careful: when the computer is working on a
command that changes the edit-file, the whole file is lost. If
the computer is working on a command that does not change the
edit-file, the edit-file remains available.

Examples:

 Commands changing the edit-file (DELETE,INSERT,etc.):

  ..D,300,1000

  %A

  CANT ABORT THIS COMMAND

  USER ABORT

  COMMAND-

So now SUEDI is aborted completely. Call SUEDI to find
out whether the edit-file is lost and how far the com-
mand has been executed.

Commands not changing the edit-file (LIST,SAVE,etc.):

  ..L,200,50000

  %A

COMMAND ABORTED

.:

        Edit file is not lost, user stays in SUEDI.

To suppress output there is a better command: %S.

Example:

                ..L,A
                  10=....
                        :
                        :
                        :
                        :
                        %S

        .:

12. Adding a line
    It is possible to add one or more lines in an edit file.
    This can be done by just typing the linenumber and the line, fol-
    lowed by a return. Suedi does not come back with .., so you just
    can continue until you have inserted all new lines. When typing
    a linenumber that is already existing, the old line disappears
    and is replaced by the new line.

    Example: Again refer to the file on page SUEDI.3. Supposed we are
            in SUEDI. The next commands then can be given.
                ..40=ARE POSSIBLE
                L,40
                  40=ARE POSSIBLE
                ..35=MOST OF THE TIME
                L,30,40
                30=THE COMMANDS THAT
                35=MOST OF THE TIME
                40=ARE POSSIBLE
                .:

On the ICW terminal this can also be done by typing the line-
numbers and lines you want to change or insert under LOCAL, and
send them to the computer by means of the SEND button.

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Another way to change text is the following:

    /t1/=/t2/,a,(,V)(,U),(k1,(k2))

For the meaning of the parameters see under LIST. The V parameter
has been described under DELETE.

This command replaces text t1 by text t2, where the line- and
columnnumbers can be specified. When using the VETO command,
SUEDI always prints the changed line on the terminal, waiting for
your answer telling it to change or not to change.

WARNING: when a text that has to be replaced occurs two times or
         more in a line, SUEDI replaces them all.

Examples: Again suppose the file on page 14 is in the edit file.

                  ../AN/=/THE/,A,V

                  10=THIS IS THE EXERCISEY

                  30=THE COMMTHEDS THATN

                  40=CTHE BE USED IN SUEDIN

                  1 CHANGES

              ..

          This could easier be done with the U-parameter.
          Imagine the file has not been changed yet.

                  ../AN/=/THE/,A,U,V

                  10=THIS IS THE EXERCISEY

                  1 CHANGES

              ..

13. SAVE,lfn(,NOSEQ)(,OVERWRITE)(,a),b)(,c)
    The SAVE command copies the edit-file or parts of it to a local
    file lfn. This is necessary because when the program or text of
    data have to be processed, it must be a local file. The SAVE-
    -command includes a REQUEST-command (see monitor-commands), so
    the local file can be made permanent.
    The parameters in the SAVE-command are:
       lfn = local file name
    NOSEQ = Nosequence, the local file will be without linenumbers.
    OVERWRITE - an existing local file may be overwritten.

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a = linenumbers, see under LIST. When omitted the whole edit-file
is saved.

b = action with local file after saving:

RW/EOR	rewind, save, write EOR
RW/EOF	rewind, save, write EOF, rewind
NRW/EOR	no rewind, save, write EOR
NRW/EOF	no rewind, save, write EOF, rewind
option not used	RW/EOF (default

c = /t/(,UNIT)(,k1(,k2))

For an explanation of these parameters see the LIST-command.
This part of the SAVE-command makes it possible to save only
those line in which a certain text occurs.

After saving a file, SUEDI prints how much lines it has saved.

Examples:

S, LOC, N	save all lines in a lfn LOC
S,LOC,O	save all lines in a lfn LOC, with linenumbers, if necessary overwrite an existing local file
S,LOC,N,O,10,100,/ME/,10,20	save all lines between 10 and 100 which have the string ME in columns 10 to 20. Local file LOC has no line-numbers, and an existing local file LOC may be overwritten

14. RESEQ(,r(,dr))

This command can be used to resequence the lines. It is often
used after inserting some lines. It may also be used before
using the INSERT command. When the INSERT command has to insert
a local file with 15 lines, it is impossible with linenumbers
with dr = 10. This may be done in the following way:

..R,20,20

..I,LOC,23,1

..R

After these commands the 15 lines are inserted, the linenumber
sequence is back to r=10, dr=10, because this is the default
value of the R command.
The values of r and dr are free to choose, as long as the number
of the last line is smaller than 9999999. The maximum amount of
lines SUEDI can hold is 122880.

Examples of the R-command:

> R,1,1
> R,1,99
> R,234,543
> R

V. TAPE HANDLING WITH THE MUFI PROGRAM

1. MUFI stands for Multi-File handling. It is a program to help the
   user of the CYBER in manipulating magnetic tapes. As we will see
   later, we can create a file MUFIVSNSPOOL, which then controls the
   job for us. The only thing we have to do is tell MUFI what should
   be done with the tape(s), like read, create a new tape, or modify
   the tape.

2. MUFI uses at least two tapes when modifying. It then reads one
   tape, places the contents of it on permanent file, adds the new
   programs or data, and puts the permanent file on the other tape.
   When reading or creating a tape, MUFI only uses the tape it last
   wrote on (reading) on the first tape you selected.

3. MUFI can write data or programs from permanent file to tape or
   from tape to permanent file.
   Unless a multi-read option is used when a permanent file has been
   cataloged, MUFI can not place a permanent file on tape when there
   is a local file attached to it. MUFI waits until the local file
   is returned.

4. MUFI is a batch-job. All commands must be terminated by a dot
   (it takes the place of a CR (Carriage Return)).

5. In the following explanation the abbrevation used mean:
   (CR) carriage return
   ^   control (example: ^C means CONTROL/C (gives an E_X on the
         screen))
   lfn   local file name, 1-7 characters, alphanumeric,beginning with
         a letter
   pfn   permanent file name, 1-40 characters, beginning alphanumeric,
   mfn   nulti file name (name on tape), 1-10 characters, all charac-
         ters allowed except . and , .
   id   identification, 1-9 character, alphanumeric (it is usual to
         use the identification abbrevation of your name)
   pw   password, 1-9 characters, alphanumeric, beginning alphanume-
         ric
   VSN   Visual Serial Number (tape number)

6. As mentioned in point 1 MUFI needs a file called MUFIVSNSPOOL containing the owner of the tape, a password, and the VSN numbers of the tapes.

   This file can be made by just typing MUFIVSN (CR).

   The CYBER then starts asking some questions in dutch. These questions are typed on the left side of the page. The englisch translation is typed on the right side of the page. All answers to these questions must be terminated by (CR)

   TIK VSN-NR IN (OF -END-) ....   TYPE VSN-NR (OR -END-) ....

   When typing a number, followed by CR for ...., MUFI comes back with the same question. When all VSN numbers are typed in, the user must type END. Then MUFI asks which tape should be handled first:

   KAN ER VOORAAN IN DE SERIE   CAN I START WRITING ON THE FIRST
   BEGONNEN WORDEN MET SCHRIJVEN?   TAPE IN THE ROW? TYPE JA(=YES)
   TIK JA OF NEE IN ...   OR NEE(=NO)...

   When typing NEE, CYBER asks:
   MET WELK VSN-NR DAN WEL? ...   WHAT VSN-NR DO I START WITH? ...

   When you typed JA, the next question is:
   TIK DE OWNER IN VAN DE PERM.   TYPE THE OWNER OF THE PERM. FILE
   FILE WAAROP DE VSN INFORMATIE   IN WHICH THE VSN INFORMATION
   BEWAARD MOET WORDEN   MUST BE STORED
   OWNER= ...   OWNER= ...

   To make sure not everybody can use your tape, you must give a password:

   TIK HET PASSWORD IN VOOR DEZE   TYPE THE PASSWORD FOR THIS PERM.
   PERM.FILE   FILE
   PASSWORD= ...   PASSWORD= ...

   The CYBER now finishes with:
   CT ID= id   PFN = MUFIVSNSPOOL
   CT CY=001   00000064 WORDS.
   COMMAND-

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The ... after the questions above give the place the answer has to be typed.

Once a MUFIVSNSPOOL is created, it can be used for the tapes automatically whenever needed.

Example: Suppose the tapes 1234 and 4321 have to be taken in use, with owner Hydrology and password JAN:

<u>COMMAND-MUFIVSN</u>

<u>TIK VSN-NR IN (OF -END-)</u> 1234

<u>TIK VSN-NR IN (OF -END-)</u> 4321

<u>TIK VSN-NR IN (OF -END-)</u> END

<u>KAN ER VOORAAN IN DE SERIE BEGONNEN WORDEN MET SCHIJVEN?</u>

JA

<u>TIK DE OWNER IN VAN DE PERM. FILE WAAROP DE VSN INFORMA-</u>

<u>TIE BEWAARD MOET WORDEN</u>

<u>OWNER = HYDROLOGY</u>

<u>TIK HET PASSWORD IN VOOR DEZE PERM. FILE</u>

<u>PASSWORD = JAN</u>

<u>CT ID = HYDROLOGY PFN=MUFIVSNSPOOL</u>

<u>CT CY=001   00000064 WORDS.</u>

<u>COMMAND-</u>

7. The MUFI-commands are in alfabetical order:
   a. /ADD,mfn,pfn,ID=id.

   This instruction places the permanent file with name pfn on tape under the name mfn. After this instruction there may follow some lines of comment, program description, etc. These lines must be in the columns 2 to 80. Column 1 may not be used.

   Example: /ADD,DEMO,DEMONSTRATION,ID=WES.
            THIS FILE IS USED TO DEMONSTRATE THE USE OF MUFI.

   The comment-lines are finished by the next command or ZEOF.

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b. /REPL,mfn,pfn,ID=id.

(comment)

The file called mfn is replaced by the permanent file pfn. If no comment is given, the old comment remains.

c. /CREPL,mfn.

(comment)

Replaces the comment belonging to file mfn to the comment followed by the instruction.

d. /SEL,mfn,pfn,ID=id.

The file called mfn is read and placed in permanent file pfn. The necessary or wished catalog-data must be given in the /SEL command.

e. /CSEL,mfn,pfn,ID=id.

The comments of the file mfn on tape must be placed in permanent file pfn.

f. /DEL,mfn.

The file mfn is removed from tape. The comments, belonging to file mfn are removed also.

g. /NOLIST.

Instruction to prevent that the whole list of programs on the tape is made again. Is advisable when only using a/SEL or /CSEL command. When giving a lot of /ADD commands it is better to let MUFI make a new list of the programs.

8. When using MUFI it is necessary to make a local file 1fn containing all the commands. There are many ways to prepare such a local file, but most of the time the commands will be given from the terminal. An example will be given when using the terminal.

```
Example: COPYBF,ICW,TAPE
         /ADD,DATA1,DATAFORFLUX,ID=WES.
          DATA TO BE USED WITH PROGRAM STREAM.
         /REPL,STREAM,MODSTREAM,ID=WES.
          MODIFIED PROGRAM STRAM
         /CREPL,DELTA.
          PROGRAM TO COMPUTE TIMDIFFERENCES.
         %EOF
         E_X (=^C)
```

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Put the terminal in LOCAL mode and type the just created commands.
Return the cursor back to the first command and press SEND. The
MUFI-commands are now placed in a local file TAPE.

9. To start MUFI, just type MUFI,lfn(CR)

Example: MUFI,TAPE

After typing this command, CYBER returns with
TYPE FUNCTION
1=SELECT,2=CREATE,3=MODIFY
FUNCTION= ...

These numbers mean:

1=SELECT only an input-tape is necessary. It is only reading
          from tape. Uses only 1 tape.

2=CREATE only an output-tape is necessary. NOTE: when you
          want to add something to the tape on which are al-
          ready some files, and you use 2, all other files on
          the tape are lost.
          CREATE uses only one tape.

3=MODIFY means you want to change or add something. Uses 2
          tapes as described in 2.

After typing the function and (CR), MUFI asks:
JOBNAME:(5 CHARS)= .....

The first two characters of the job made from the terminal must
be BI, identificating the ICW. The next three are free to choose,
but most of the time they will be your initials to show you made
the job. CYBER then generates two more characters behind it.

Example: BIWES3J.

Next thing MUFI asks is the accountnumber:
ACCOUNTNR= xx,yyyyyyyy,zz
IS THERE A VSN-NR FILE?
TYPE YES OR NO ...

Generally the answer to this question will be YES. When typing NO, MUFI asks for the number of the input-tape and the number of the output-tape. When typing YES, he knows these numbers from the file MUFIVSNSPOOL, but asks what file he has to take:

> WHO OWNS THIS FILE?
> OWNER= ...
> PASSWORD= ...
> JOB BI...   IN INPUT QUEUE.
> COMMAND-

Example:

> COMMAND- MUFI,TAPE
> TYPE FUNCTION
> 1=SELECT,2=CREATE.3=MODIFY
> FUNCTION= 3
> ACCOUNTNR= 43, yyyyyyyy,zz
> JOBNAME:(5 CHARS)= BIWES
> IS THERE A VSN-NR FILE?
> TYPE YES OR NO YES
> WHO OWNS THIS FILE?
> OWNER= HYDROLOGY
> PASSWORD= JAN
> JOB BIWES IN INPUT QUEUE
> COMMAND-

10. After returning in monitor mode (COMMAND-) you can give some other commands, or just logout.

It is also possible to follow the job:

type Q I

> then you get a list of jobnames on your screen which are in the input queue. When your job is not there any more, it goes to the executing queue.

type Q E

> to get a listing of the executing queue.

> There may be one of the following remarks in the queue behind your jobname. In chronological order:

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EXECUTING	job has been started
WAITING FOR DEVICE	job waits until the operator hangs your tape in the unit
EXECUTING	input tape is being read. Permanent files are attached.
WAITING FOR DEVICE	job is waiting until the operator hangs the output tape in the unit
EXECUTING	tape is being written on. VSN-NR file is modified

When the remark W-PFILE is after the jobname, this means the job cannot attach a file, because it is already attached. Then return the local file that is attached to this permanent file simply by an INTERCOM-command (RETURN,lfn).

After it has been executed, the job transfers from the executing queue to the remote output queue. This can be seen by typing Q O, or more simple, just FILES.

11. When the job is in the output queue it can be made local by typing

> BATCH,BI.....,LOCAL(CR)

Example:

> BATCH,BIWES3J,LOCAL(CR)

Now the results may be printed or just checked with SUEDI.

12. The file made local in point 11 consists of four parts:
    a. Heading: MUFI - OVERZICHT VSN ....
       (MUFI- OVERVIEW VSN ....)
       where .... stands for the most update tapenumber.
    b. List of programs and descriptions on tape (omitted when /NOLIST. has been added).
    c. List of tapenumbers in use (most of the time 2). Also gives the number of the last updated tape.
    d. Dayfile. File where all actions of MUFI are recorded.