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EUROPEAN ATOMIC ENERGY COMMUNITY - EURATOM

**A CONTRIBUTION TO THE PROGRAMMING OF THE
CALCOMP DIGITAL INCREMENTAL PLOTTER
FOR OFF-LINE OPERATION**

by

H. SCHMID

1967



**Joint Nuclear Research Center
Geel Establishment - Belgium**

Central Bureau for Nuclear Measurements - CBNM

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European Atomic Energy Community - EURATOM
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Brussels, October 1967 - 86 Pages - 15 Figures - FB 125

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Ispra) and which prepares magnetic tapes for the Calcomp magnetic tape unit 570.

2. An IBM 1401 program in SPS which translates magnetic tape plotter data from CETIS code into original Calcomp code.
3. A set of plotter subroutines for the IBM 1401 computer in SPS. An example for the application of the IBM 1401 plotter subroutines is given.

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SUMMARY

The following computer programs for the off-line use of a Calcomp digital incremental plotter are described :

1. An IBM 7090 subroutine PLOT in FAP which is compatible with the plotter subroutine package of P. Moinil and J. Pire of CETIS (Euratom Ispra) and which prepares magnetic tapes for the Calcomp magnetic tape unit 570.
2. An IBM 1401 program in SPS which translates magnetic tape plotter data from CETIS code into original Calcomp code.
3. A set of plotter subroutines for the IBM 1401 computer in SPS. An example for the application of the IBM 1401 plotter subroutines is given.

KEYWORDS

PROGRAMMING
C-CODES
DIGITAL SYSTEMS
F-CODES

COMPUTERS
IBM 7090
IBM 1401
MAGNETIC TAPES

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A Contribution to the Programming of the
Calcomp Digital Incremental Plotter for Off-Line Operation⁽⁺⁾

1. Introduction

This report describes some IBM 7090 and IBM 1401 computer programs which have been prepared for the off-line use of a Calcomp digital incremental plotter at the Euratom Central Bureau for Nuclear Measurements (CBNM).

Euratom is operating a computer centre (CETIS) at Ispra in Italy to which the CBNM at Geel in Belgium is linked via a tele-processing system based on a leased telephone line and magnetic tape transmission terminals. Both CETIS and the CBNM are using a Calcomp plotter, model 506, which produces X-Y plots of digital data recorded on magnetic tape.

Whereas at CETIS the plotter is connected to an IBM 1401 computer, which reads the plotter data from magnetic tape written by an IBM 7090 computer, the CBNM plotter is operated by the Calcomp magnetic tape unit 570 for 7-track tapes. The tapes for this unit are prepared by the IBM 1401 computer of the CBNM or by the IBM 7090 computer of CETIS. The plotter tapes written at CETIS can be duplicated by the tele-processing system to be read at the CBNM.

For the preparation of plotter tapes to be used by the CBNM plotter the following computer programs have been written:

a) An IBM 7090 subroutine PLOT in FAP.

This subroutine PLOT replaces that one of the plotter subroutine package of CETIS written by P.Moinil and J.Pire⁽¹⁾. These plotter subroutines form a completely revised and extended version of the subroutine package supplied by Calcomp. The CETIS routines are more flexible and practicable for the programmer than those of Calcomp, and the tape plotter data are reduced to one third as compared to those written by the routines from Calcomp. However, the magnetic tape in CETIS code can no more be read by the Calcomp magnetic tape unit 570. Therefore a new subroutine PLOT has been written which is compatible with all CETIS plotter routines, and which writes tapes compatible with the Calcomp magnetic tape unit 570.

⁽⁺⁾Manuscript received on August 29, 1967.

- b) An IBM 1401 program in SPS for translating magnetic tape plotter data in CETIS code into the original tape code of Calcomp.

This program is used on the IBM 1401 computer of the CBNM for the translation of magnetic tape plotter data received from CETIS by tele-processing. The transmission of tape data in CETIS code takes only one third of the time necessary for tape data in Calcomp code.

- c) IBM 1401 subroutines named PLOT, SYMBOL and IAXIS in SPS.

These subroutines can be used for all linear scale plots for which the IBM 1401 computer is able to perform the necessary calculations. The plotter tapes prepared are compatible with the Calcomp magnetic tape unit 570.

2. Magnetic Tape Codes of Calcomp Plotter Data

The Calcomp digital incremental plotter is constructed to carry out 10 different pen motions: pen-up, pen-down and steps in 8 basic directions as shown in Fig. 1.

The X-axis deflection is produced by rotary motions of the drum and Y-axis deflection by lateral movements of the pen carriage. The step size is depending on the Calcomp model.

<u>Calcomp Model</u>	<u>Step Size</u>
506	0.01 cm
560, 563, 565	0.01 inch
564, 566	0.005 inch

The programs of this report refer to model 506. However, they can be easily modified to be used for model 564 or 566. For models 560, 563 and 565 only the specification "centimetre" has to be changed into "inch" in the following program descriptions.

2.1. Original Calcomp code (2)

If the plotter is operated by a magnetic tape unit 570 the following code is used: Plotter data records are separated by block address records, which serve for identification. Only three tracks of the 7-track Calcomp tape are read by the tape unit 570.

2.1.1. Block address records (Fig.4) begin with ten 4's, seven 3's and one 1 (= 18 synchronisation characters). The next 6 characters determine the block address in the following code:

C	B	A	8	4	2	1	A bit in A is 800	in G is 20
		1	A	B			B is 400	H is 10
		1	C	D	6 char.		C is 200	I is 8
		1	E	F	block		D is 100	J is 4
		1	G	H	address		E is 80	K is 2
		1	I	J			F is 40,	L is 1.
		1	K	L				

The 6 block address characters are followed by the 18 synchronisation characters in reverse order. For the purpose of synchronisation the block address data has to be separated from the plotter data by about 2 inch of tape. This can be done by inserting a dummy record or by elongating the block address record by about sixty 4's.

2.1.2. The plotter data records begin with the same 18 synchronisation characters as the block address records except that the last must be a 2 (Fig. 5).

The plotter data are recorded in groups of 3 characters. The first character in a group determines the X-motion, the second the Y-motion, and the third the pen-up or pen-down movement as shown in the following table:

	1st character	2nd character	3rd character
7	+ X	+ Y	pen-down
5	- X	- Y	pen-up
6	no-action	no-action	no-action

Fig. 2 demonstrates the 10 possible triplets for the 10 pen motions. Since the pen-up or pen-down motion takes more time than the horizontal pen-motions, about 70 no-action characters (6's) have to be inserted after each pen-up or pen-down triplet. Each record should be terminated by 4634.

2.2. CETIS code

In the subroutines of CETIS each of the 10 plotter steps is determined by a 6-bit tape character as shown in Fig. 3. In this figure each character is interpreted as two octal digits. The record length used at CETIS is 255 words (+ 1 computer identification word).

3. Subroutine PLOT for the IBM 7090 Computer

The subroutine PLOT has the same function as the subroutine EUPLT of CETIS ⁽¹⁾ except that the magnetic tape is written in original Calcomp code. For this purpose EUPLT and the PLOT subroutine from Calcomp have been amalgamated. The flow diagram is shown in Fig. 6.1. and 6.2. Subroutine PLOT is written in FAP.

3.1. Subroutine PLOT

<u>Entry points for PLOT:</u>	PLOT
	PLTIR
	FINIM
	FINTRA
	PTC

<u>Subroutines called by PLOT:</u>	(WER)
	BEGIN
	DUMP
	MSG

(WER) and DUMP are subroutines of the Fortran library.

<u>Number of core locations used:</u>	581 (1105 octal)
---------------------------------------	------------------

3.1.1. PLOT

<u>Calling sequence:</u> FORTRAN	CALL PLOT (X,Y,I)
FAP	TSX \$PLOT,4
	PZE X
	PZE Y
	PZE I

Description: PLOT causes the pen to be moved from its present position on the chart to the point with the coordinates X and Y (floating point variables in cm). This motion is carried out with pen-down if I=2, and pen-up if I=3.

For all other values of I the pen is not changed by PLOT. The coordinates of the pen position on the chart at the first call for PLOT are considered as (0.,0.).

When one of the entries PLOT, PLTIR or FINIM is called the first time, the subroutine calls BEGIN which reads the first block address from input tape 5 in the format (I5). At this point and after each execution of FINIM the subroutine decodes the block address and writes a block address record on magnetic tape. The block address counter is increased by 1. Logical tape 16 (B-8) is assigned as Calcomp tape.

3.1.2. PLTIR

<u>Calling sequence:</u> FORTRAN	CALL PLTIR (X,Y,I)
FAP	TSX \$PLTIR,4
	PZE X
	PZE Y
	PZE I

Description: PLTIR has the same function as PLOT except that a dashed line is drawn (dash length = 0.3 cm). This motion is carried out starting with pen-down if I=2, and pen-up if I=3. For I≠2 and ≠3 the subroutine decides if the line begins with pen-up or pen-down, which may be important for strongly curved lines.

3.1.3. FINIM

<u>Calling sequence:</u> FORTRAN	CALL FINIM (X,Y)
FAP	TSX \$FINIM,4
	PZE X
	PZE Y

Description: In pen-up position the pen is moved to point (X,Y), which is after the execution of FINIM regarded as a new origin. All plotter data in the memory buffer are written on tape and an indicator is set which causes

3.2. Subroutine BEGIN

Entry point for BEGIN: BEGIN

Subroutines called by BEGIN: (TSH)
(RTN)

(TSH) and (RTN) are subroutines of the Fortran library.

Number of core locations used: 31 (37 octal)

Calling sequence: FAP TSX \$BEGIN,4
PZE N

Description: This subroutine is called by PLOT and reads the first block address from input tape 5 in format (I5).

3.3. Subroutine MSG

Entry point for MSG: MSG

Subroutines called by MSG: (SPH)
(FIL)

(SPH) and (FIL) are subroutines of the Fortran library.

Number of core locations used: 46 (56 octal)

Calling sequence: FAP TSX \$MSG,4

Description: If the end of reel marker of the Calcomp tape is reached, subroutine PLOT writes the block address 999 on tape and closes the file. Then PLOT calls MSG, which prints an operator message for changing tape B-8 on the on-line printer. The new tape will start with block address 999.

Note:

The tape record length is 255 words. However, this can easily be changed by substituting in card PLOT3130 the number 251 (= buffer length - 4) by a new value.

The maximum coordinate which can be used in PLOT, PLTIR and FINIM is 327.67 cm ($= 2^{15} - 1$ steps).

There are no tape marks on the tape written in this way. If they are necessary they can be inserted by the normal Fortran statement. The Calcomp magnetic tape unit 570 is not affected by any other records than those of the plotted data.

4. An IBM 1401 Program for Magnetic Tape Plotter Data Translation

4.1. Description

The program performs the tape translation from CETIS code into the code for the Calcomp magnetic tape unit 570 and indicates the end of files of the input tape and the block addresses on the list printer. The record length on the output tape is 3022 characters. The program is written in SPS. The flow diagram is shown in Fig. 7.

The number of core locations used is 5937, including a buffer of 3023 characters.

4.2. Machine Configuration

1. 8K memory (The program can be easily adapted to a 4K machine; if the buffer is reduced to about 1000 memory locations).
2. Indexing feature.
3. Store address register feature.
4. High-low-equal compare feature.
5. Column binary feature.
6. 2 magnetic tape units.

4.3. Tapes

2 = Input (CETIS tape)

3 = Output (Calcomp tape for magnetic tape unit 570).

4.4. Switches

I/O check stop	=	ON
Tape select switch	=	N
Mode switch	=	RUN.

4.5. Halts (Address in B-register)

0112 Permanent redundancy in reading tape 2. Start = try again.
0223 Permanent redundancy in writing tape 3. Start = try again.
0888 End of reel tape 3. Assign new tape for this unit. Start.
0999 End of file on input tape. Start = continuation with
the following file.

5. Plotter Subroutines for the IBM 1401 Computer

The subroutines PLOT, SYMBOL and IAXIS have been written in SPS for the IBM 1401 computer. The tapes prepared are compatible with the Calcomp magnetic tape unit 570. Whilst the IBM 7090 plotter subroutines use all coordinates as floating point variables in cm, the IBM 1401 subroutines require coordinates given in multiples of plotter steps (field length of 5 positions). Therefore the maximum coordinate to be designed is 999.99 cm.

5.1. Machine Configuration

1. 4K or 8K machine (depending on the buffer length and on whether PLOT, PLOT and SYMBOL or PLOT, SYMBOL and IAXIS are used).
2. Indexing feature.
3. Store address register feature.
4. High-low-equal compare feature.
5. 1 magnetic tape unit.

5.2. Subroutine PLOT

Entry point for PLOT: PLOT

Subroutine called by PLOT: .RWS.

.RWS. is a standard read-write-subroutine for the IBM 1401 (3).

<u>Number of core locations used:</u>	PLOT	945
	.RWS.	281
	Buffer	2006

Tapes used: 3 = Calcomp tape

<u>Calling sequence:</u>	MCW...	X
	MCW...	Y
	MCW...	IC
	B PLOT	

The points (...) symbolize the values to be brought into the argument fields.

Meaning of the arguments:

X and Y (each 5 characters) are the values of the coordinates in multiples of plotter steps.

IC (1 character) is an indicator for the pen movement.

Description: The execution of PLOT causes the pen to be moved from its present position on the chart to the point with the coordinates (X,Y). This motion is carried out with pen-down if IC=2, and pen-up if IC=3. For all other values of IC the pen is not changed by PLOT.

For the first call of PLOT the coordinates of the pen position are considered as (0.,0) and block address 1 is written on tape. In subsequent calls of PLOT a block address is only written on tape, if the indicator BI has a zone bit. The plotter data for each design should be terminated by a block address to make sure that all plotter data have been written on tape.

In the fields PENX and PENY (each 5 positions) the coordinates of the present pen position can be found. By setting PENX and PENY to zero a new origin is defined at the present position of the pen.

The block address BN (3 characters) is equal to 1 for the first call of PLOT and is increased by 1 each time a block address has been written on tape.

The execution time of PLOT can be decreased by increasing the buffer length. This buffer length can be changed by modifying the buffer area (cards 31150 to 32150) and the branch instructions in cards 26010, 26050 and 26150.

The flow diagram is shown in Fig. 8.1. and 8.2.

Note: The fields X,Y and IC are not changed by PLOT. This may be used in some cases to reduce the calling sequence.

Halts: (Address in B-register)

0888 End of reel unit 3. Assign new tape for this unit.
Start.

If the end of reel marker is sensed, subroutine PLOT writes the block address 999 on tape and closes the file. The new tape starts with block address 999.

5.3. Subroutine SYMBOL

<u>Entry point for SYMBOL:</u>	SYMBOL
<u>Subroutine called by SYMBOL:</u>	PLOT
<u>Number of core locations used:</u>	1586
<u>Calling sequence:</u>	MCW... XSYM
	MCW... YSYM
	MCW... FACT
	MCW... STHETA
	MCW... NSYM
	MCW... BCD +..
	B SYMBOL

Meaning of the arguments:

XSYM and YSYM (5 characters) are the values of the lower, left-hand coordinates of the first character measured in multiples of plotter steps except for the centered cross for which XSYM and YSYM are the coordinates of the centre.

FACT (5 characters) determines the size of the symbol in the following way:

Height of the symbol = $7 \times \text{FACT}$ (for centered cross
= $4 \times \text{FACT}$)

Width of the symbol = $4 \times \text{FACT}$

Distance between two symbols = $2 \times \text{FACT}$

STHETA (1 character) = 0 for writing symbols in pos.X-direction
 = 1 for writing symbols in pos.Y-direction.

NSYM (2 characters) is the number of symbols to be designed in one call for SYMBOL (≤ 32).

BCD is the left-hand address minus 1 of a field of 32 positions. The characters to be designed have to be left-hand adjusted within this field. The string of maximal 32 characters can be designed by one branch to SYMBOL. BCD+1 has a word mark.

Description: Subroutine SYMBOL designs the NSYM characters in location BCD+1 to BCD+NSYM with the height of $7 \times$ FACT. The following characters are available:

A to Z, 0 to 9 and + - * () § , . = ,
 punched in IBM 1401 card code.

The centered symbol + is punched 4-8.

The flow diagram of SYMBOL is shown in Fig. 9.

Note: XSYM and YSYM are changed in this way that they always contain the coordinates of the character being designed. NSYM is decremented by 1 each time a character is completed. FACT, STHETA and BCD are not affected by the execution of SYMBOL. However, SYMBOL calls PLOT and the values of X, Y and IC are changed by SYMBOL. (For a 4K machine the MA operation in card 12050 has to be changed to A).

5.4. Subroutine IAXIS

<u>Entry point for IAXIS:</u>	IAXIS
<u>Subroutines called by IAXIS:</u>	PLOT SYMBOL
<u>Number of core locations used:</u>	715

<u>Calling sequence:</u>	MCW...	XAXIS
	MCW...	YAXIS
	MCW...	LAXIS
	MCW...	ATHETA
	MCW...	NAXIS
	MCW...	BCD1 +..
	MCW...	AMIN
	MCW...	DA
	MCW...	DL
	B	IAXIS

Meaning of the arguments:

IAXIS and YAXIS (5 characters) are the coordinates of the start of the axis.

LAXIS (5 characters) is the length of the axis in multiples of plotter steps.

ATHETA (1 character):

Numerical part of ATHETA = 0 for horizontal AXIS
= 1 for vertical AXIS.

If ATHETA has no zone bits the scales, tic marks, and label will be drawn on the right-hand side of the axis.

If ATHETA has a 11-zone bit, the scales, tic marks, and label will be drawn on the left-hand side of the axis.

NAXIS (2 characters) gives the number of symbols for the label of the axis ($\neq 32$).

BCD1 is the left-hand address minus 1 of a field of 32 positions. The characters in BCD1+1 to BCD1+NSYM determine the label of the axis. The tic marks, the scale numbers, and the label are all drawn on the same side of the axis.

AMIN (5 characters) is the functional value to be assigned to the origin.

DA (5 characters) is the scale increment.

DL (5 characters) is the distance from one tic mark to the following in multiples of plotter steps.

Description: Subroutine IAXIS designs a linear scale in horizontal or vertical direction. The height of the scale numbers is 0.35 cm and that of the label 0.42 cm. Because the scale is graduated by integer numbers (sign + 5 digits) one has in general to put a scale factor in the label, e.g.

ENERGY MEV (X 10 ~~XX~~ 2).

The flow diagram of IAXIS is shown in Fig. 10.

Note: AMIN and ATHETA are modified by the execution of IAXIS, all other parameters are not changed.

6. An IBM 1401 Plotter Program Example

6.1. Description

The program prepares a magnetic tape for plotting multi-channel analyser data. The channel numbers are plotted on the X-axis, the counts per channel on the Y-axis. The plot can be a histogram or a curve in which the points (counts per channel) are connected by straight lines.

The analyser data are recorded on magnetic tape in blocks of 256 channels each of 6 digits^{*}. Each block is headed by an identification word of 6 characters. The first two characters of the identification word define the block number. The last 4 characters define the identification number of the spectrum. The spectrum must consist of complete blocks of 256 channels.

The flow diagram is shown in Fig. 11.

6.2. Machine Configuration

1. 8K machine.
2. Indexing feature.
3. Store address register feature.
4. High-low-equal compare feature.
5. 2 magnetic tape units.
6. Sense switches feature.

6.3. Tapes

- 3 = Output (Calcomp tape)
 2 = Input (Analyser data).

6.4. Switches

I/O check stop	= ON
Tape select switch	= N
Mode switch	= RUN
A (last card)	= ON.

^{*} (The left-most digit is always zero).

- B ON No list of input data is printed.
 OFF List of input data is printed.
- E ON Y-axis is larger than 35 cm.
 OFF Y-axis is smaller than 35 cm.
- F ON The spectrum will be plotted in histograms.
 OFF The spectrum will be a curve in which the points are connected by straight lines.
- G ON The scales of the axis are suppressed.
 OFF Scaled axis are designed.

6.5. Halts (Address in B-register)

- 0112 Permanent redundancy in reading tape 2. Start = try again.
- 0223 Permanent redundancy in writing tape 3. Start = try again.
- 0333 Spectrum cannot be found on input tape. Verify control card. Start = begin again.
- 0444 Change tape unit 2. See message printer. Start.
- 0888 End of reel unit 3. Assign new tape for this unit. Start.
- 0999 End of job. Start = new job.

6.6. Control Cards (One for each plot)

- Col. 4-6 Tape number (Col. 6 \neq blank).
- Col. 10-13 ID-number of spectrum to be plotted.
- Col. 15-16 First block to be plotted.
- Col. 17-18 Last block to be plotted.
- Col. 20-22 Scale factor X (= number of channels/cm), must be 100 or a divisor of 100.
- Col. 24-27 Scale factor Y (= number of counts/cm).
- Col. 31-35 Maximum count to be designed. All counts greater than this maximum count will be cut off at this value.
- Col. 40-72 Remarks, will be headed on the output listing.

Note: If there is more than one plot to be designed the control cards for all plots can be put together into the card reader.

6.7. Memory locations used: 7887

6.8. The execution time for a plot of 80 cm length and 35 cm height takes about 10 minutes for IBM 729 IV tape units. Two examples are shown in Fig. 12 and 13.

Acknowledgements

The interest and stimulating support of Dr. H.Horstmann and the cooperation of Dr. J.Pire in solving some programming problems for the IBM 7090 are gratefully acknowledged. The author thanks Mr. P.Moinil for his IBM 1401 read-write-subroutine and for transforming the IBM 7090 subroutine PLOT from FAP to IBM 7090-MAP.

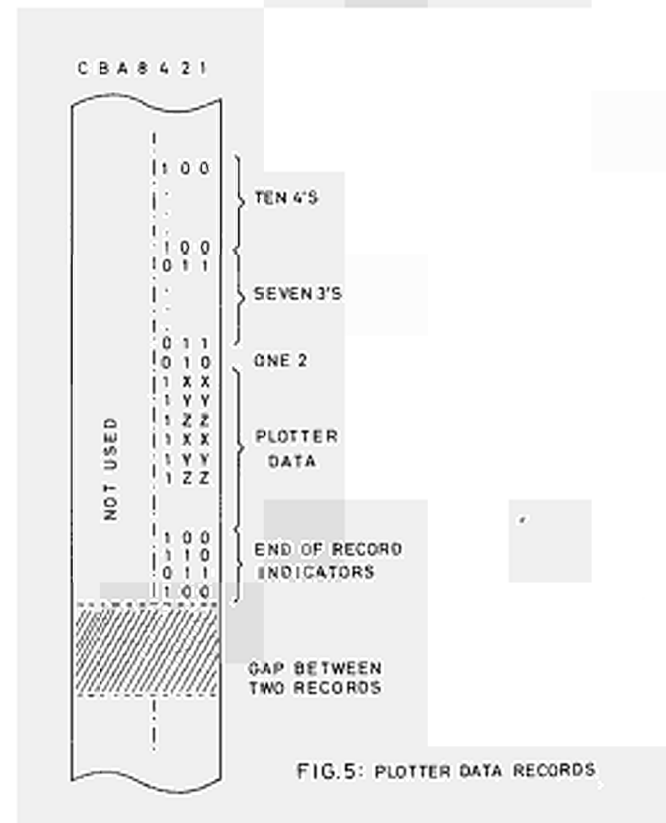
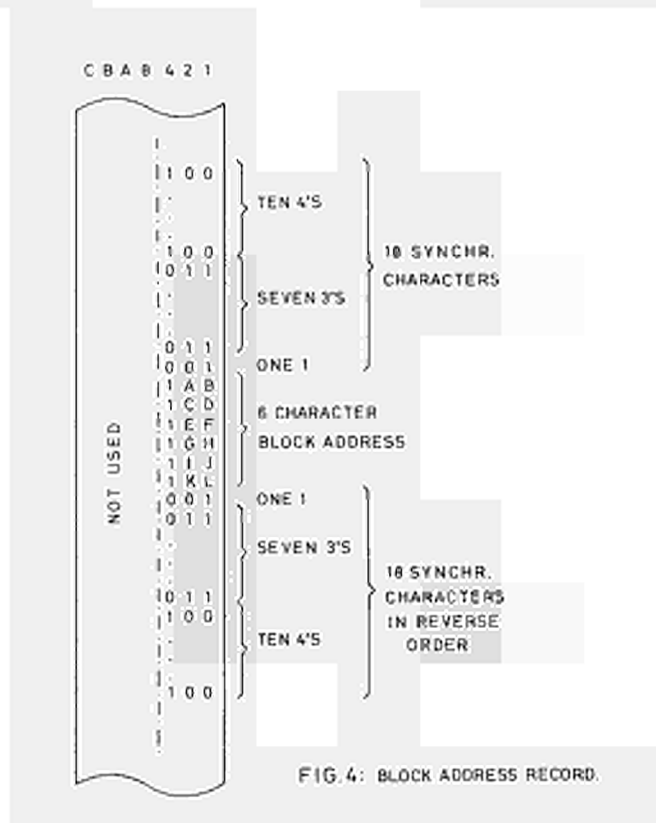
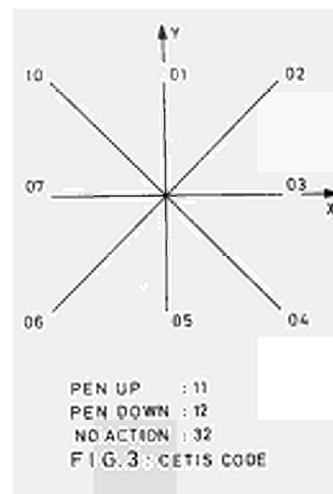
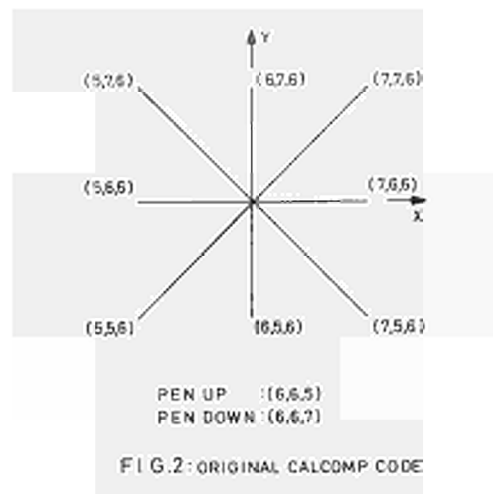
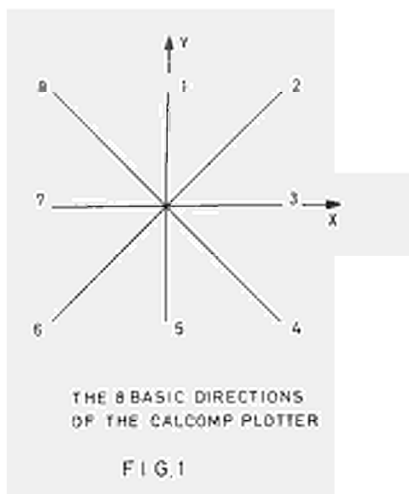
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- 2) Nederlandse Computer Maatschappij, Reference Manuel SCOOP Programming System for Digital Incremental Plotters (1963).
- 3) P. Moinil, Read-write-subroutine for IBM 1401, Euratom Ispra, private communication.

8. Figures and Flow Diagrams

Figure captions

- Fig. 1: The 8 basic directions of the Calcomp digital incremental plotter.
- Fig. 2: Original Calcomp code of the 10 different pen motions: pen-up, pen-down and the 8 basic directions.
- Fig. 3: CETIS code of the 10 different pen motions: pen-up, pen-down and the 8 basic directions.
- Fig. 4: Block address record in original Calcomp format.
- Fig. 5: Plotter data record in original Calcomp format.
- Fig. 6.1. and 6.2.: Flow diagram of the IBM 7090 subroutine PLOT.
- Fig. 7: Flow diagram of IBM 1401 program for magnetic tape plotter data translation.
- Fig. 8.1. and 8.2.: Flow diagram of IBM 1401 subroutine PLOT.
- Fig. 9: Flow diagram of IBM 1401 subroutine SYMBOL.
- Fig. 10: Flow diagram of IBM 1401 subroutine IAXIS.
- Fig. 11: Flow diagram of an IBM 1401 plotter program example.
- Fig. 12: Plot of analyser data in histograms.
- Fig. 13: Plot of analyser data as a curve in which the points are connected by straight lines.



SUBROUTINE PLOT for IBM 7090

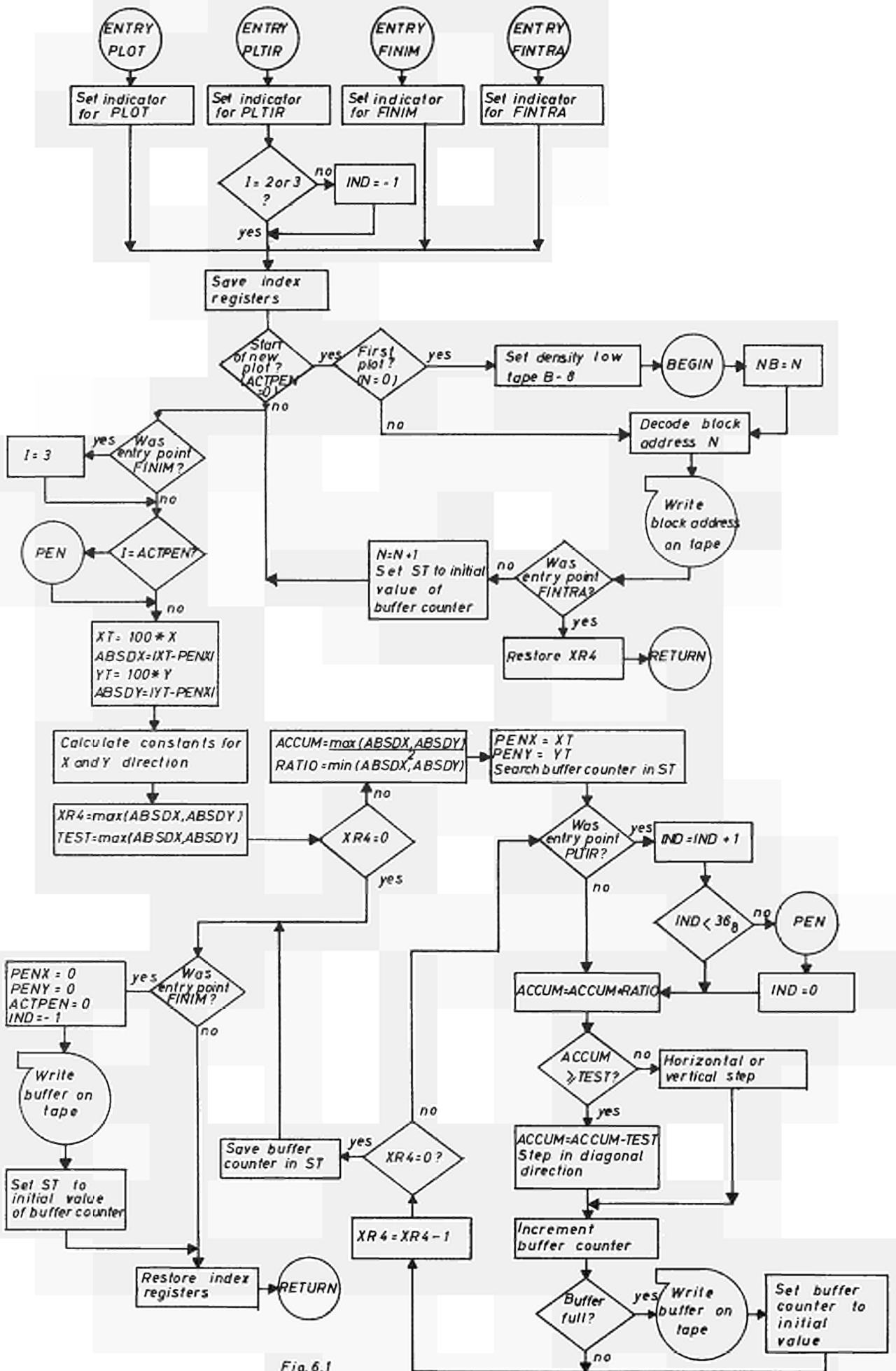


Fig. 6.1

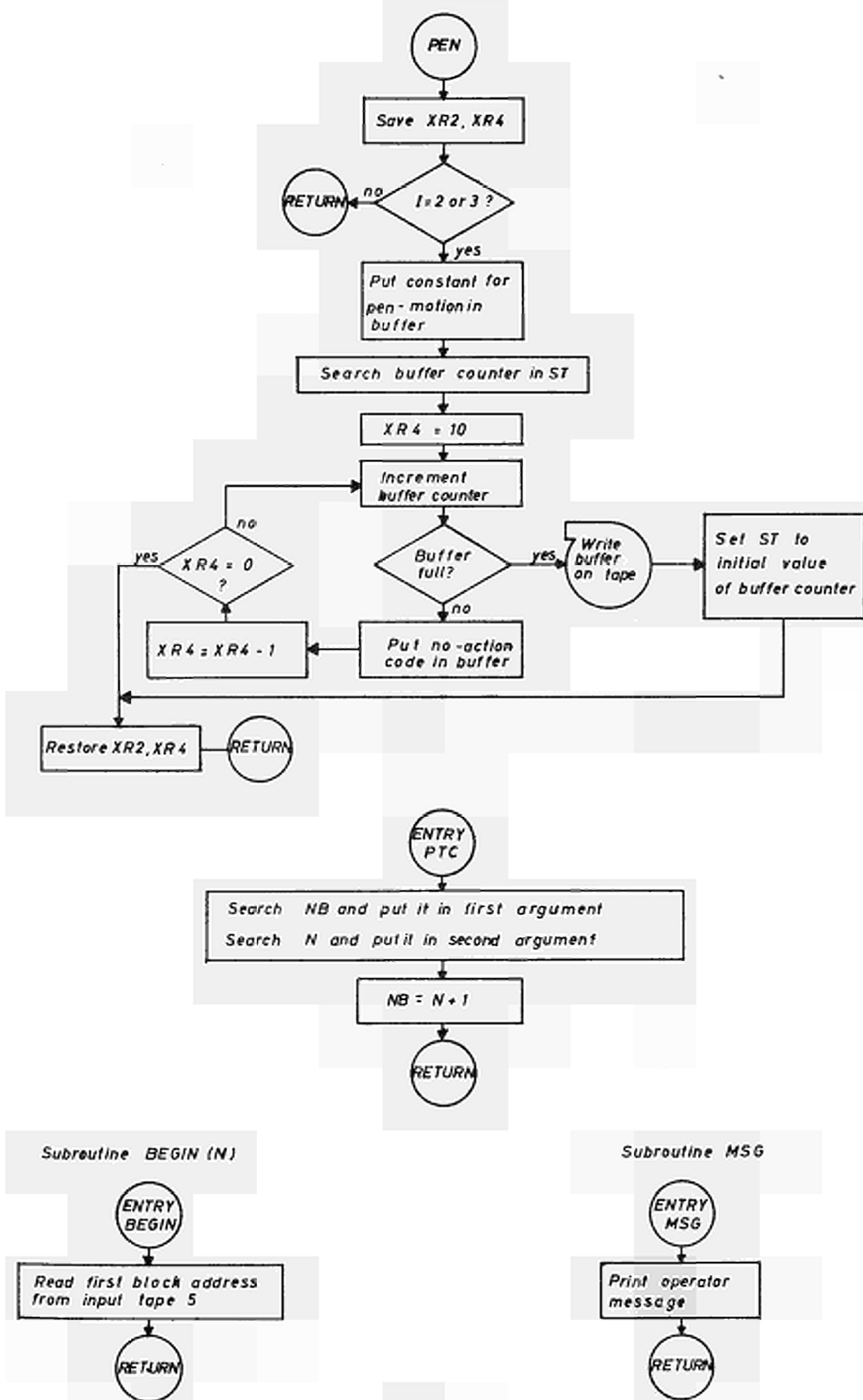
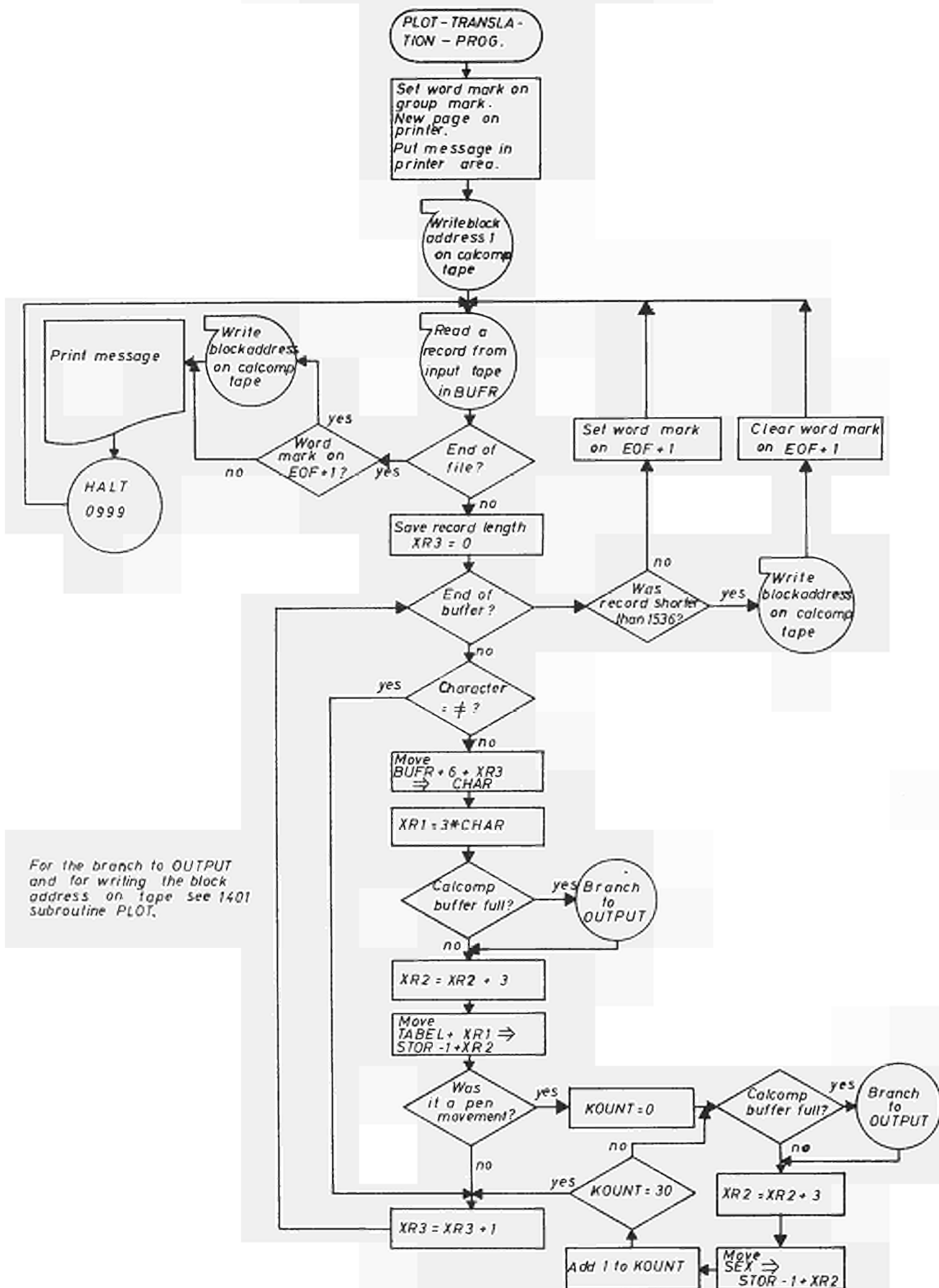


Fig 6.2

1401-PLOT-TRANSLATION PROGRAM



SUBROUTINE PLOT for IBM 1401

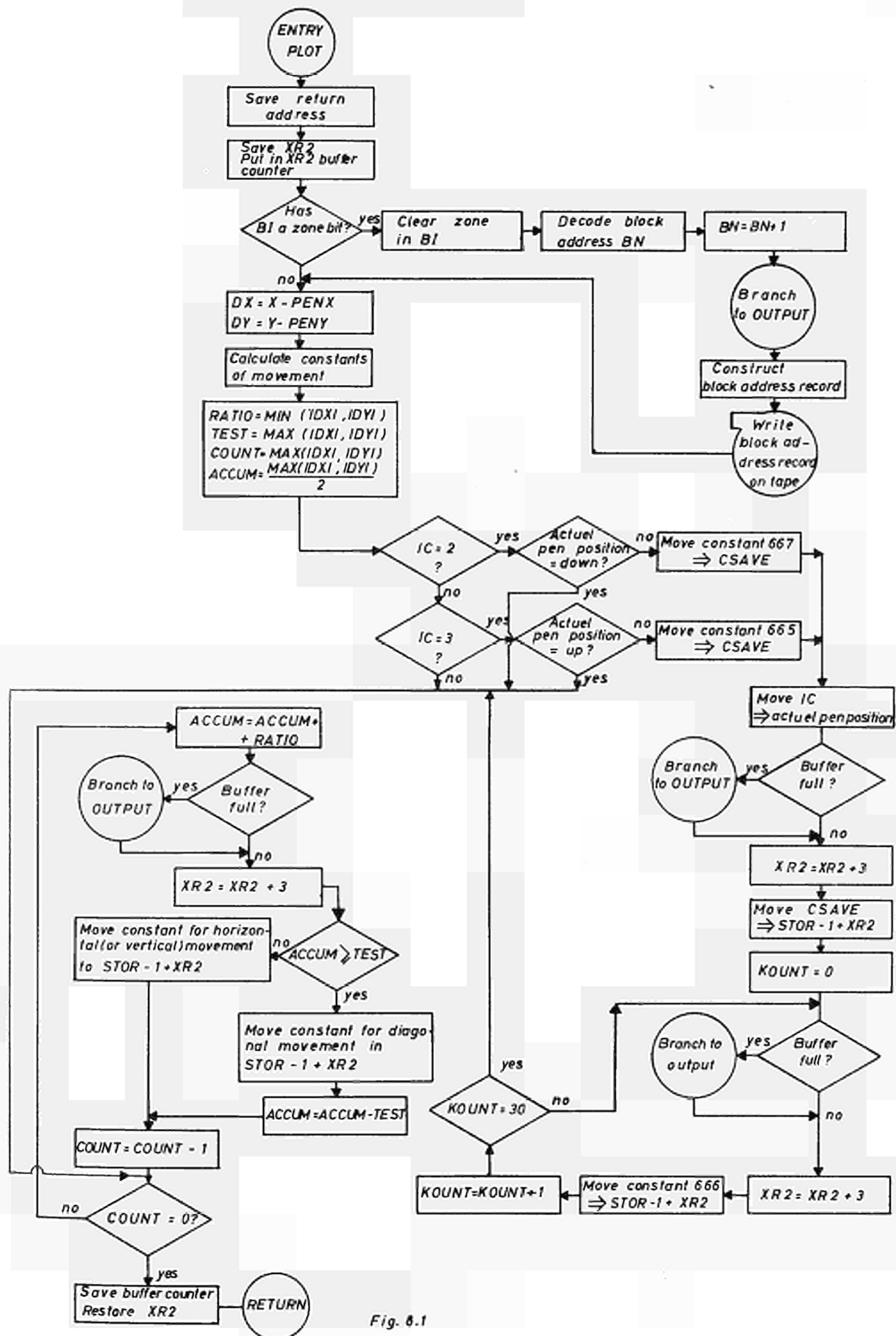
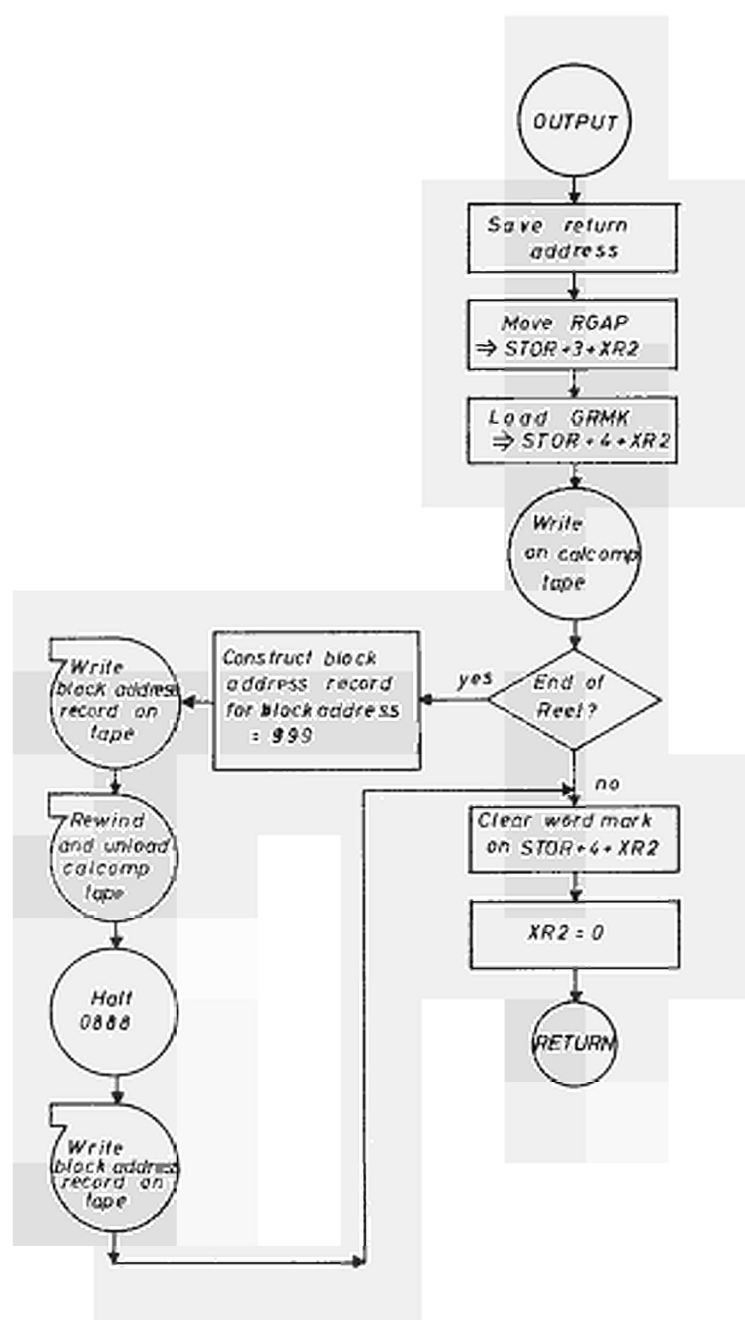


Fig. 8.1



SUBROUTINE SYMBOL for IBM 1401

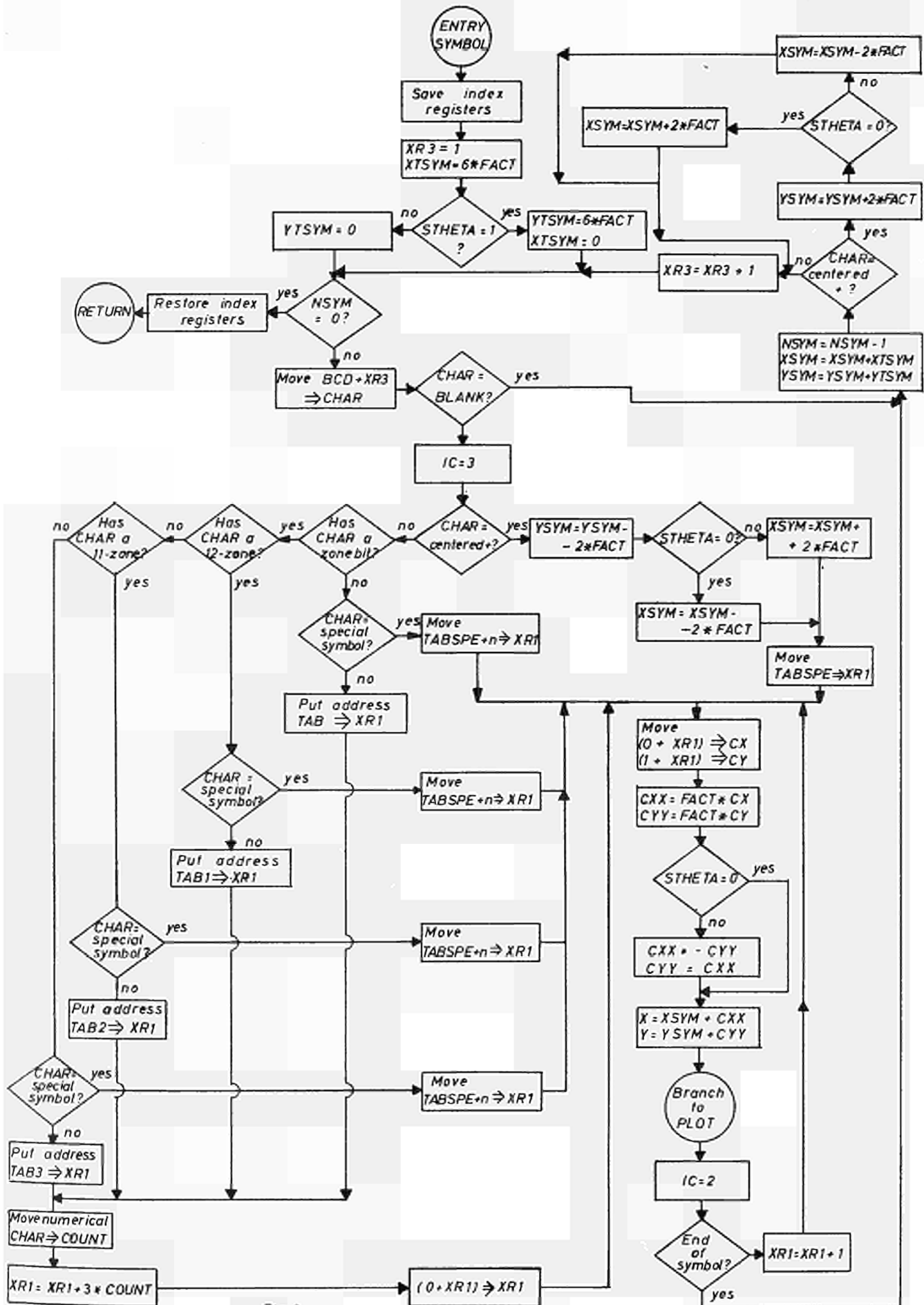


Fig. 9

SUBROUTINE IAXIS FOR IBM 1401

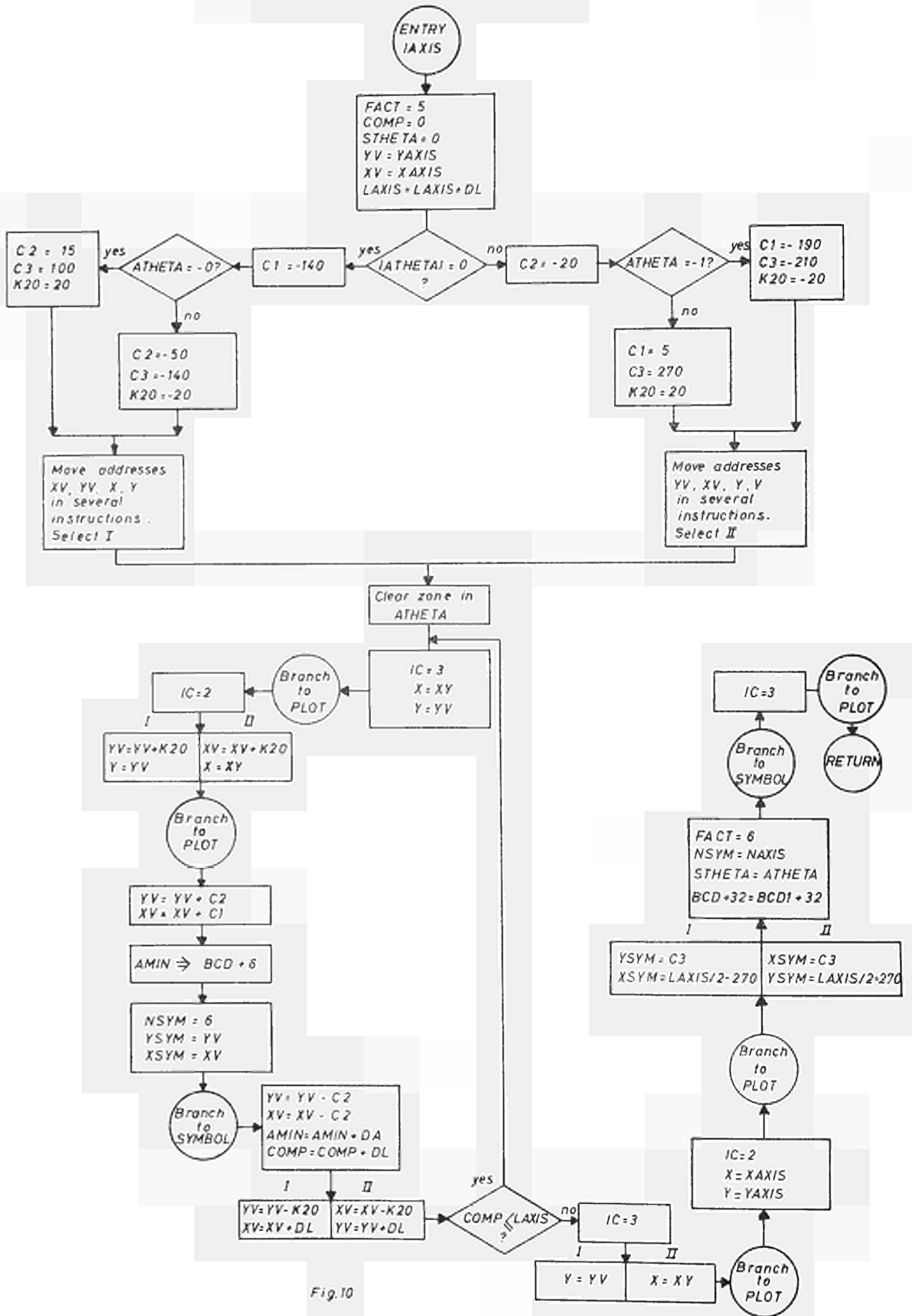


Fig.10

PLOTTING OF ANALYSER DATA

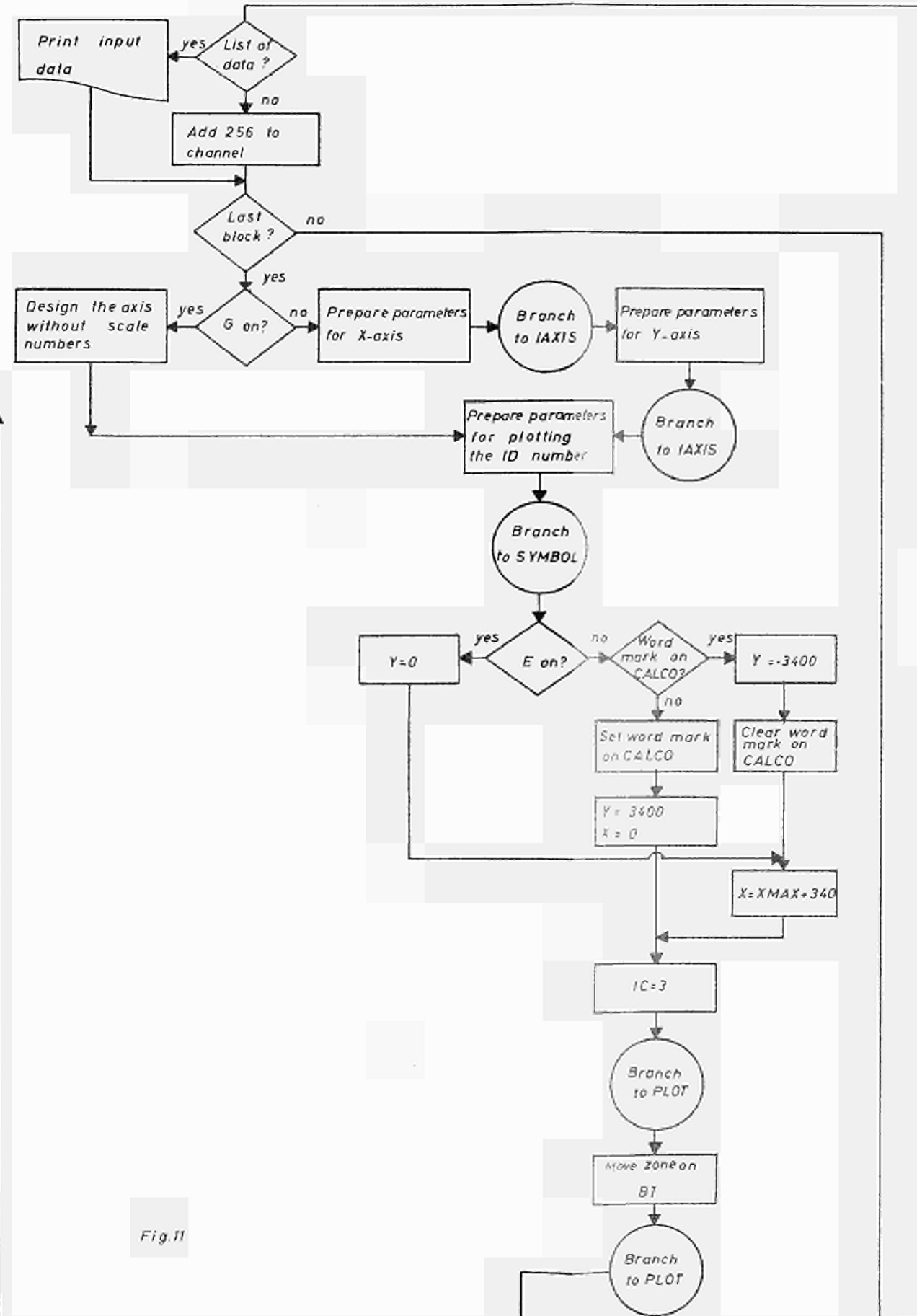
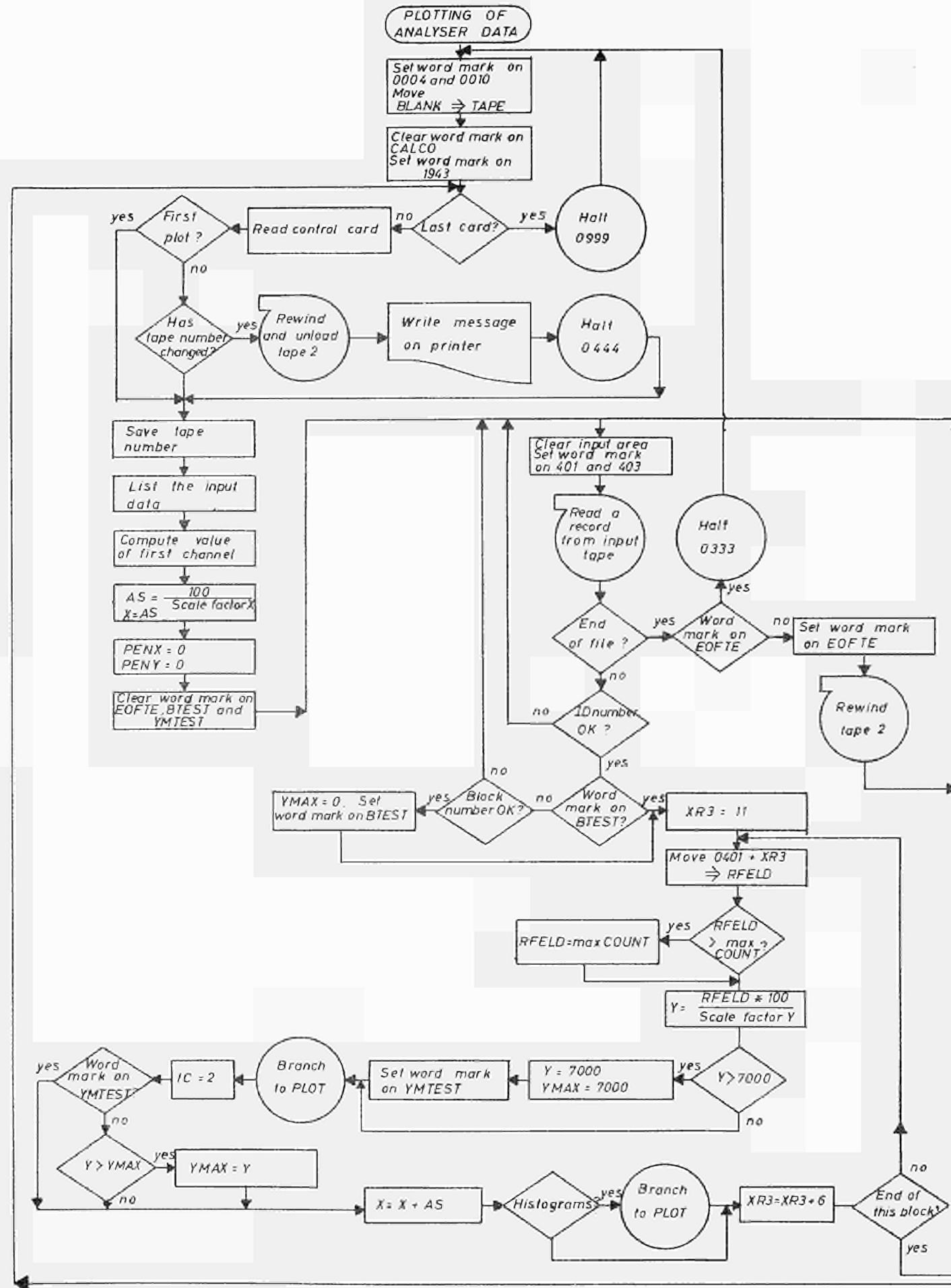


Fig.11

ID. NUMBER 4022

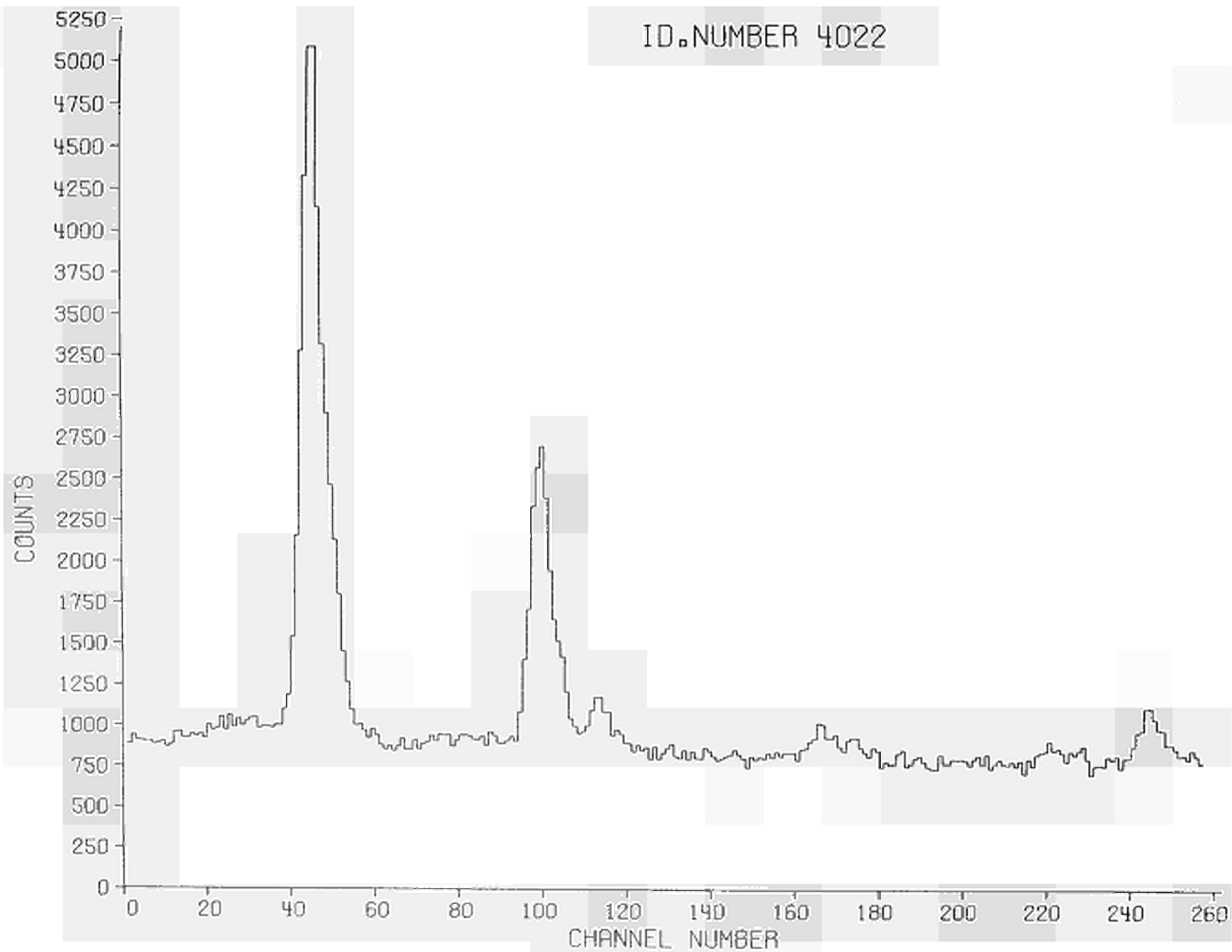
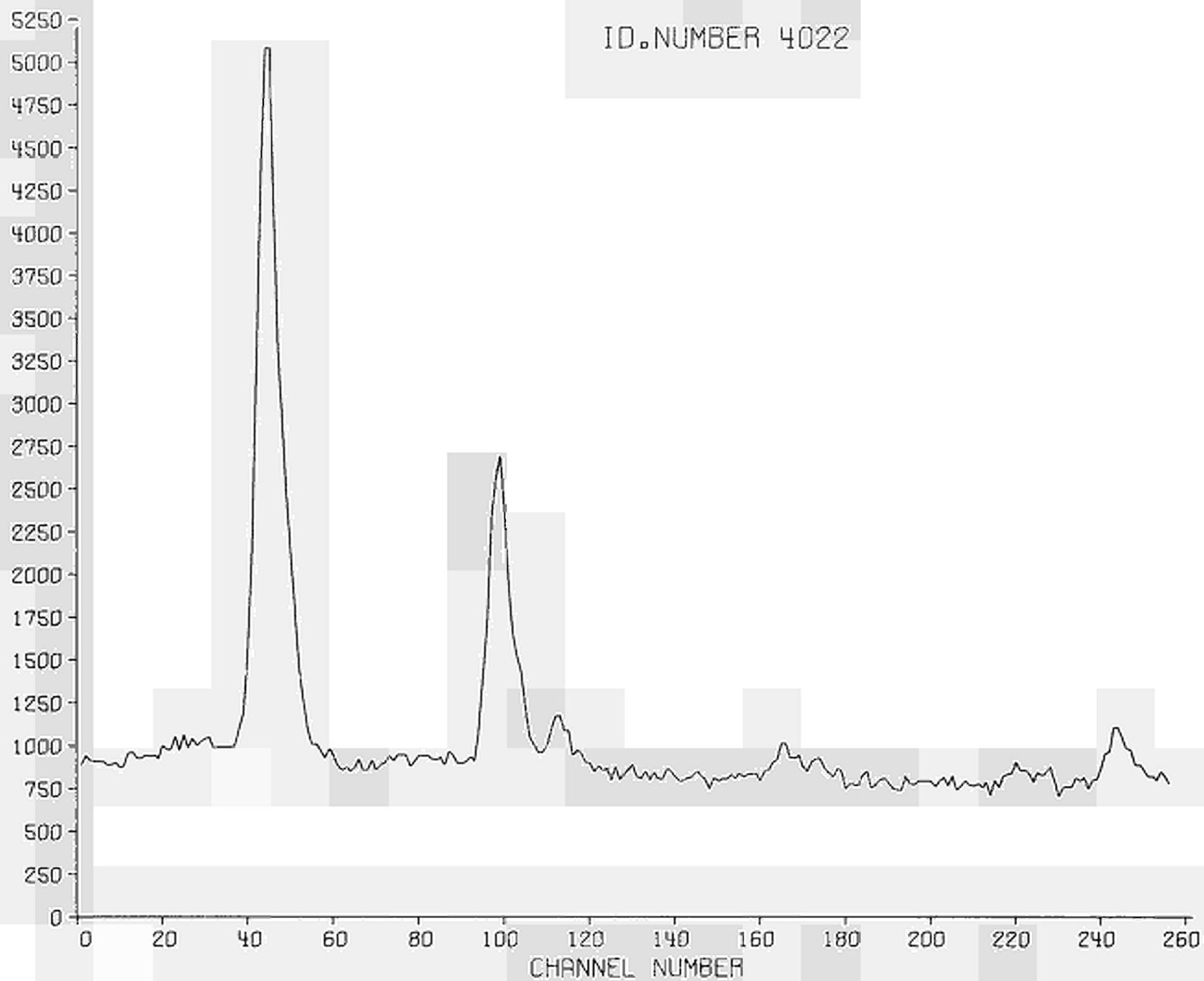


FIG. 12

ID. NUMBER 4022

COUNTS



9. Program Listings

Subroutines PLOT, BEGIN, MSG for the IBM 7090 computer

Magnetic tape plotter data translation program for the IBM
1401 computer (TRAN)

Plotter subroutines for the IBM 1401 computer (PLOT)

A 1401 program for plotting multi-channel analyser
data (ANAL)

```

*****
* CALLING SEQUENCE
*
* 1. FORTRAN = CALL PLOT(X,Y,I)
*              CALL PLTIR(X,Y,I)
*              CALL FINIM(X,Y)
*              CALL FINTRA
*              CALL PTC(NB,NE)
*
* 2. FAP      = TSX FPLOT,4          TSX FPLTIR,4
*              PZE X                PZE X
*              PZE Y                PZE Y
*              PZE I                PZE I
*
*              TSX FFINIM,4         TSX FFINTRA,4
*              PZE X
*              PZE Y
*
*              TSX FPTC,4
*              PZE NB
*              PZE NE
*
* X AND Y ARE COORDINATES OF NEW POINT
* I IS INDICATOR FOR PEN MOVEMENT (3 = PEN UP, 2 = PEN DOWN,
* OTHER VALUES NO MOVEMENT )
* NB IS FIRST BLOCKADDRESS
* NE IS LAST BLOCKADDRESS
*****
*
* EURATOM GEEL
*
PLOT0050
PLOT0060
PLOT0070
PLOT0080
PLOT0090
PLOT0100
PLOT0110
PLOT0120
PLOT0130
PLOT0140
PLOT0150
PLOT0160
PLOT0170
PLOT0180
PLOT0190
PLOT0200
PLOT0210
PLOT0220
PLOT0230
PLOT0240
PLOT0250
PLOT0260
PLOT0270
PLOT0280
PLOT0290
PLOT0300
PLOT0310
PLOT0320
PLOT0330
PLOT0340
PLOT0350
PLOT0360
PLOT0370
PLOT0380

```

```

BINARY CARD NO. PLCTC000
00004
00030
00014
00027
00025

```

```

ENTRY PTC
ENTRY PLOT
ENTRY PLTIR
ENTRY FINIM
ENTRY FINTRA

```

```

PLOT0400
PLOT0410
PLOT0420
PLOT0430
PLOT0440
PLOT0450

```

TRANSFER VECTOR

```

BINARY CARD NO. PLCTC001
C0000 746625513460
C0001 222527314560
C0002 246444476060
C0003 446227606060

```

```

(WER)
BEGIN
DUMP
MSG

```

```

C0004 0500 00 0 00422
C0005 0601 60 4 00001
C0006 0500 00 0 00421
C0007 0767 00 0 00022

```

```

PTC  CLA NB
      STO* 1,4
      CLA N
      ALS 18

```

```

PLOT0460
PLOT0470
PLOT0480
PLOT0490

```

00010	0601	60	4	00002		STO* 2,4	PLOT0500
00011	0400	00	0	00406		ADD UNED	PLOT0510
00012	0601	00	0	00422		STO NB	PLOT0520
00013	0020	00	4	00003		TRA 3,4	PLOT0530
00014	-0625	00	0	00357	PLTIR	STL PLTIND	PLOT0540
00015	0634	00	1	00312		SXA X1,1	PLOT0550
00016	0500	60	4	00003		CLA* 3,4	PLOT0560
00017	-0734	00	1	00000		PDX 0,1	PLOT0570
00020	-3 00001	1	00031			TXL PLOT+1,1,1	PLOT0580
00021	3 00003	1	00031			TXH PLOT+1,1,3	PLOT0590
00022	0502	00	0	00403		CLS ONE	PLOT0600
00023	0601	00	0	00417		STO IND	PLOT0610

BINARY CARD NO.				PLCT0002			
00024	0020	00	0	00031		TRA PLOT+1	PLOT0620
00025	-0625	00	0	00356	FINTRA	STL FTRIND	PLOT0630
00026	0020	00	0	00030		TRA *+2	PLOT0640
00027	-0625	00	0	00355	FINIM	STL FININD	PLOT0650
00030	0634	00	1	00312	PLOT	SXA X1,1	PLOT0660
00031	0634	00	2	00311		SXA X2,2	PLOT0670
00032	0634	00	4	00072		SXA X4,4	PLOT0680
00033	0500	00	0	00373		CLA ACTPEN	PLOT0690
00034	-0100	00	0	00104		TNZ TOTO	PLOT0700
00035	0520	00	0	00421		ZET N	PLOT0710
00036	0020	00	0	00047		TRA LXC	PLOT0720
00037	0074	00	4	00000		TSX F(WER),4	PLOT0730
00040	0776	00	0	02210		SDLB 8	PLOT0740
00041	0074	00	4	00001		TSX FBEGIN,4	PLOT0750
00042	0 00000	0	0	00421		PZE N	PLOT0760
00043	0500	00	0	00421		CLA N	PLOT0770
00044	0601	00	0	00422		STO NB	PLOT0780
00045	0771	00	0	00022		ARS 18	PLOT0790
00046	0601	00	0	00421		STO N	PLOT0800
00047	0774	00	4	00044	LXC	AXT 36,4	PLOT0810

BINARY CARD NO.				PLCT0003			
00050	0500	00	0	00361		CLA START	PLOT0820
00051	0601	00	0	00364		STO ABSDX	PLOT0830
00052	0560	00	0	00421		LDQ N	PLOT0840
00053	-0754	00	0	00007	CLM	PXD 7,0	PLOT0850
00054	0221	00	0	00404		DVP TEN	PLOT0860
00055	-0600	00	0	00372		STQ ABSDY	PLOT0870
00056	0765	00	0	00002	TWO	LRS 2	PLOT0880
00057	0767	00	0	00004		ALS 4	PLOT0890
00060	0763	00	4	00046		LLS 38,4	PLOT0900
00061	-0602	00	0	00364		ORS ABSDX	PLOT0910
00062	0560	00	0	00372		LDQ ABSDY	PLOT0920
00063	2 00014	4	00053			TIX CLM,4,12	PLOT0930
00064	0074	00	4	01022		TSX TRW,4	PLOT0940
00065	0 00053	0	00361			PZE START,0,CLM	PLOT0950
00066	0074	00	4	01022		TSX TRW,4	PLOT0960
00067	0 00056	0	00361			PZE START,0,TWO	PLOT0970
00070	-0520	00	0	00356		NZT FTRIND	PLOT0980
00071	0020	00	0	00074		TRA WEITER	PLOT0990
00072	0774	00	4	00000	X4	AXT **,4	PLOT1000

41

C0073	0020	00	4	00001		TRA 1,4		PLCT1010
BINARY CARD NO. PLCTC004								
C0074	0774	00	1	77775	WEITER	AXT -3,1		PLOT1020
C0075	-0634	00	1	00165		SXD ST,1		PLOT1030
C0076	0774	00	2	00001		AXT 1,2		PLOT1040
C0077	-0634	00	2	00236		SXD FF,2		PLCT1050
C0100	0500	00	0	00421		CLA N		PLCT1060
C0101	0400	00	0	00403		ADD ONE		PLOT1070
C0102	0601	00	0	00421		STO N		PLOT1080
C0103	0534	00	4	00072		LXA X4,4		PLOT1090
C0104	0500	60	4	00003	TGTG	CLA* 3,4		PLOT1100
C0105	0520	00	0	00355		ZET FININD		PLOT1110
C0106	0500	00	0	00405		CLA TROISO		PLOT1120
C0107	-0734	00	1	00377	BFLENG	PDX BFLENT+4,1		PLCT1130
C0110	0340	00	0	00373		CAS ACTPEN		PLCT1140
C0111	0020	00	0	00113		TRA **2		PLCT1150
C0112	0020	00	0	00114		TRA **2		PLOT1160
C0113	0074	00	2	00320		TSX PEN,2		PLCT1170
C0114	0560	60	4	00001	X	LDQ* 1,4		PLOT1180
C0115	0260	00	0	00376		FMP F100		PLCT1190
C0116	0601	00	0	00401		STQ XPLTC		PLOT1200
C0117	0760	00	0	00003		SSP		PLOT1210
BINARY CARD NO. PLCTC005								
C0120	0300	00	0	00407		FAD P005		PLOT1220
C0121	0771	00	0	00001		ARS 1		PLOT1230
C0122	-0320	00	0	00410		ANA MASK		PLOT1240
C0123	0560	00	0	00401		LDQ XPLTC		PLOT1250
C0124	0763	00	0	00000		LLS 0		PLCT1260
C0125	0601	00	0	00411		STO XT		PLOT1270
C0126	0402	00	0	00374		SUB PENX		PLOT1280
C0127	0560	00	0	00377		LDQ XCON		PLOT1290
C0130	0765	00	0	00000		LRS 0		PLOT1300
C0131	-0600	00	0	00401		STQ XPLTC		PLCT1310
C0132	0602	00	0	00364		SLW ABSDX		PLOT1320
C0133	0560	60	4	00002	Y	LDQ* 2,4		PLOT1330
C0134	0260	00	0	00376		FMP F100		PLOT1340
C0135	0601	00	0	00402		STO YPLTC		PLOT1350
C0136	0760	00	0	00003		SSP		PLOT1360
C0137	0300	00	0	00407		FAD P005		PLCT1370
C0140	0771	00	0	00001		ARS 1		PLOT1380
C0141	-0320	00	0	00410		ANA MASK		PLOT1390
C0142	0560	00	0	00402		LDQ YPLTC		PLOT1400
C0143	0763	00	0	00000		LLS 0		PLOT1410
BINARY CARD NO. PLCTC006								
C0144	0601	00	0	00412		STO YT		PLOT1420
C0145	0402	00	0	00375		SUB PENY		PLOT1430
C0146	0560	00	0	00400		LDQ YCON		PLOT1440
C0147	0765	00	0	00000		LRS 0		PLOT1450
C0150	-0600	00	0	00402		STQ YPLTC		PLOT1460
C0151	0760	00	0	00003		SSP		PLOT1470
C0152	0601	00	0	00372		STO ABSDY		PLOT1480
C0153	0402	00	0	00364		SUB ABSDX		PLOT1490

PLOT

7C9C SUBROUTINES FOR CALCOMP 506/570.
SUBROUTINES PLOT/PLTIR/FINIM/FINTRA/PTC.

9/05/66

PAGE 4

CO154	-0120	00	0	00166	TMI	XBASIC		PLOT1500
CO155	0500	00	0	00401	CLA	XPLTC	YBASIC	PLOT1510
CO156	0560	00	0	00402	LDQ	YPLTC		PLOT1520
CO157	0601	00	0	00402	STQ	YPLTC		PLOT1530
CO160	-0600	00	0	00401	STQ	XPLTC		PLOT1540
CO161	0500	00	0	00372	CLA	ABSDY		PLOT1550
CO162	0734	00	4	00000	PAX	0,4	K	PLOT1560
CO163	0601	00	0	00413	STQ	TEST		PLOT1570
CO164	0560	00	0	00364	LDQ	ABSDX		PLOT1580
CO165	1 0000	00	0	00172	TXI	REENT,0,**	ST	PLOT1590
CO166	0500	00	0	00364	CLA	ABSDX	XBASIC	PLOT1600
CO167	0734	00	4	00000	PAX	0,4		PLOT1610

BINARY CARD NO. PLCTC007								
CO170	0601	00	0	00413	STQ	TEST		PLOT1620
CO171	0560	00	0	00372	LDQ	ABSDY		PLOT1630
CO172	0771	00	0	00001	ARS	1	REENT	PLOT1640
CO173	-3 0000	00	4	00261	TXL	EDP,4,0		PLOT1650
CO174	-0600	00	0	00414	STQ	RATIO		PLOT1660
CO175	0601	00	0	00415	STQ	ACCUM		PLOT1670
CO176	0500	00	0	00411	CLA	XI		PLOT1680
CO177	0601	00	0	00374	STQ	PENX		PLOT1690
CO200	0500	00	0	00412	CLA	YI		PLOT1700
CO201	0601	00	0	00375	STQ	PENY		PLOT1710
CO202	-0534	00	2	00236	LXD	FF,2		PLOT1720
CO203	-0534	00	1	00165	LXD	ST,1		PLOT1730
CO204	-0520	00	0	00357	NZT	PLTIND	BACK	PLOT1740
CO205	0020	00	0	00226	TRA	NORM		PLOT1750
CO206	0500	00	0	00417	CLA	IND		PLOT1760
CO207	0400	00	0	00403	ADD	ONE		PLOT1770
CO210	0601	00	0	00417	STQ	IND		PLOT1780
CO211	0402	00	0	00420	SUB	TIR		PLOT1790
CO212	-0120	00	0	00226	TMI	NORM		PLOT1800
CO213	0500	00	0	00405	CLA	TROISD		PLOT1810

BINARY CARD NO. PLCTC008								
CO214	0340	00	0	00373	CAS	ACTPEN		PLOT1820
CO215	0020	00	0	00217	TRA	**2		PLOT1830
CO216	0500	00	0	00416	CLA	DEUXD		PLOT1840
CO217	-0634	00	1	00165	SXD	ST,1		PLOT1850
CO220	-0634	00	2	00236	SXD	FF,2		PLOT1860
CO221	-0734	00	1	00000	PDX	C,1		PLOT1870
CO222	0074	00	2	00320	TSX	PEN,2		PLOT1880
CO223	-0534	00	2	00236	LXD	FF,2		PLOT1890
CO224	-0534	00	1	00165	LXD	ST,1		PLOT1900
CO225	0600	00	0	00417	STZ	IND		PLOT1910
CO226	0500	00	0	00414	CLA	RATIO	NCRM	PLOT1920
CO227	0400	00	0	00415	ADD	ACCUM		PLOT1930
CO230	0601	00	0	00415	STQ	ACCUM		PLOT1940
CO231	0402	00	0	00413	SUB	TEST		PLOT1950
CO232	-0120	00	0	00237	TMI	SKIP		PLOT1960
CO233	0601	00	0	00415	STQ	ACCUM		PLOT1970
CO234	0500	00	0	00360	CLA	CCN		PLOT1980
CO235	0400	00	0	00402	ADD	YPLTC		PLOT1990
CO236	1 0000	00	1	00240	TXI	SKIP+1,0,1	FF	PLOT2000

Address	Code	Op	Op2	Op3	Op4	Label	Op	Op2	Op3	Op4	Plot
00237	0500	00	0	00360		SKIP	CLA	CON			PLOT2010
BINARY CARD NO. PLCT0009											
00240	0400	00	0	00401			ADD	XPLTC			PLOT2020
00241	-3	00000	2	00244			TXL	FLIP,2,0			PLOT2030
00242	0601	00	1	00423			STO	BUFFER,1			PLOT2040
00243	1	77777	2	00256			TXI	OR,2,-1			PLOT2050
00244	0771	00	0	00022		FLIP	ARS	18			PLOT2060
00245	0621	00	1	00423			STA	BUFFER,1			PLOT2070
00246	1	77777	1	00247			TXI	*+1,1,-1			PLOT2080
00247	3	77402	1	00255		LIMIT	TXH	UP,1,-BFLCNT-3			PLOT2090
00250	0634	00	4	00253			SXA	SAVE4,4			PLOT2100
00251	0074	00	4	01022			TSX	TRW,4			PLOT2110
00252	0	00107	0	00423			PZE	BUFFER,0,BFLENG			PLOT2120
00253	0774	00	4	00000		SAVE4	AXT	** ,4			PLOT2130
00254	0774	00	1	77775			AXT	-3,1			PLOT2140
00255	0774	00	2	00001		UP	AXT	1,2			PLOT2150
00256	2	00001	4	00204		OR	TXI	BACK,4,1			PLOT2160
00257	-0634	00	1	00165			SXD	ST,1			PLOT2170
00260	-0634	00	2	00236			SXD	FF,2			PLOT2180
00261	-0520	00	0	00355		ECP	NZT	FININD			PLOT2190
00262	0020	00	0	00310			TRA	OVER			PLOT2200
00263	0600	00	0	00374			STZ	PENX			PLOT2210
BINARY CARD NO. PLCT0010											
00264	0600	00	0	00375			STZ	PENY			PLOT2220
00265	0600	00	0	00373			STZ	ACTPEN			PLOT2230
00266	0502	00	0	00403			CLS	ONE			PLOT2240
00267	0601	00	0	00417			STO	IND			PLOT2250
00270	-0534	00	2	00236			LXD	FF,2			PLOT2260
00271	-0534	00	1	00165			LXD	ST,1			PLOT2270
00272	0500	00	0	01021			CLA	END			PLOT2280
00273	3	00000	2	00276			TXH	*+3,2,0			PLOT2290
00274	1	77777	1	00275			TXI	*+1,1,-1			PLOT2300
00275	1	00001	2	00276		ONED	TXI	*+1,2,1			PLOT2310
00276	0601	00	1	00423			STO	BUFFER,1			PLOT2320
00277	-0634	00	2	00236			SXD	FF,2			PLOT2330
00300	1	77776	1	00301			TXI	*+1,1,-2			PLOT2340
00301	0754	00	1	00000			PXA	0,1			PLOT2350
00302	0760	00	0	00006			COM				PLOT2360
00303	0621	00	0	00162			STA	K			PLOT2370
00304	0774	00	1	77775			AXT	-3,1			PLOT2380
00305	-0634	00	1	00165			SXD	ST,1			PLOT2390
00306	0074	00	4	01022			TSX	TRW,4			PLOT2400
00307	0	00162	0	00423			PZE	BUFFER,0,K			PLOT2410
BINARY CARD NO. PLCT0011											
00310	0534	00	4	00072		OVER	LXA	X4,4			PLOT2420
00311	0774	00	2	00000		X2	AXT	** ,2			PLOT2430
00312	0774	00	1	00000		X1	AXT	** ,1			PLOT2440
00313	0600	00	0	00357			STZ	PLTIND			PLOT2450
00314	-0520	00	0	00355			NZT	FININD			PLOT2460
00315	0020	00	4	00004			TRA	4,4			PLOT2470
00316	0600	00	0	00355			STZ	FININD			PLOT2480
00317	0020	00	4	00003			TRA	3,4			PLOT2490

C0320	-3	00001	1	00354	PEN	TXL	TRA,1,1		PLOT2500
C0321	3	00003	1	00354		TXH	TRA,1,3		PLOT2510
C0322	0634	00	4	00353		SXA	PEN4,4		PLOT2520
C0323	0634	00	2	00352		SXA	PEN2,2		PLOT2530
C0324	0774	00	4	00012		AXT	10,4		PLOT2540
C0325	0601	00	0	00373		STO	ACTPEN		PLOT2550
C0326	0500	00	1	00373		CLA	PENCOM+3,1		PLOT2560
C0327	-0534	00	1	00165		LXD	ST,1		PLOT2570
C0330	-0534	00	2	00236		LXD	FF,2		PLOT2580
C0331	-3	00000	2	00342		TXL	FL,2,0		PLGT2590
C0332	0602	00	1	00423		SLW	BUFFER,1		PLOT2600
C0333	0500	00	0	00360	LF	CLA	CON		PLOT2610

BINARY CARD NO. PLCTC012									
C0334	1	77777	1	00335	TXI	TXI	*+1,1,-1		PLOT2620
C0335	3	77402	1	00346	PENB	TXH	STO,1,-BFLENT-3		PLOT2630
C0336	0074	00	4	01022		TSX	TRW,4		PLOT2640
C0337	0	00107	0	00423		PZE	BUFFER,0,BFLENG		PLOT2650
C0340	0774	00	1	77775		AXT	-3,1		PLOT2660
C0341	0020	00	0	00351		TRA	PEN2-1		PLOT2670
C0342	0621	00	1	00423	FL	STA	BUFFER,1		PLOT2680
C0343	0500	00	0	00275		CLA	ONED		PLOT2690
C0344	0622	00	0	00236		STD	FF		PLOT2700
C0345	0020	00	0	00333		TRA	LF		PLOT2710
C0346	-2	00001	4	00351	STO	TNX	*+3,4,1		PLOT2720
C0347	0602	00	1	00423		SLW	BUFFER,1		PLOT2730
C0350	0620	00	0	00334		TRA	TXI		PLOT2740
C0351	-0634	00	1	00165		SXD	ST,1		PLOT2750
C0352	0774	00	2	00000	PEN2	AXT	**,2		PLOT2760
C0353	0774	00	4	00000	PEN4	AXT	**,4		PLOT2770
C0354	0020	00	2	00001	TRA	TRA	1,2		PLOT2780
C0355	0	00000	0	00000	FININD	PZE	0		PLOT2790
C0356	0	00000	0	00000	FTRIND	PZE	0		PLOT2800
C0357	0	00000	0	00000	PLTINC	PZE	0		PLOT2810

BINARY CARD NO. PLCTC013									
C0360	060606060606				CON	BCD	1666666		PLOT2820
C0361	040404040404				START	BCD	344444444443333331		PLOT2830
C0362	040404040303								
C0363	030303030301								
C0364	0	00000	0	00000	ABSDX	PZE	0		PLOT2840
C0365	010303030303					BCD	313333333444444444		PLOT2850
C0366	030304040404								
C0367	040404040404								
C0370	060605060605				PENCUM	BCD	1665665		PLOT2860
C0371	060607060607					BCD	1667667		PLOT2870
C0372	0	00000	0	00000	ABSDY	PZE	0		PLOT2880
C0373	0	00000	0	00000	ACTPEN	PZE	0		PLOT2890
C0374	0	00000	0	00000	PENX	PZE	0		PLOT2900
C0375	0	00000	0	00000	PENY	PZE	0		PLOT2910
C0376	+207620000000				F100	DEC	100.		PLOT2920
C0377	010000000000				XCON	BCD	1100000		PLOT2930
C0400	000100000000				YCON	BCD	1010000		PLOT2940
C0401	0	00000	0	00000	XPLTC	PZE	0		PLOT2950
C0402	0	00000	0	00000	YPLTC	PZE	0		PLOT2960

C0403	0 00000.0 0C0G1	ONE	PZE 1		PLOT2970
BINARY CARD NC. PLCTC014					
C0404	0 00000 0 00012	TEN	PZE 10		PLOT2980
C0405	0 00003 0 00C00	TROISD	PZE 0,0,3		PLOT2990
C0406	0 C0001 0 00000	UNED	PZE 0,0,1		PLOT3000
C0407	+232400000001	P005	OCT 232400CC0C01		PLOT3010
C0410	0 00000 0 77777	MASK	PZE -1,0,0		PLOT3020
C0411	0 C0000 0 00000	XT	PZE 0		PLOT3030
C0412	0 00000 0 00C00	YT	PZE 0		PLOT3040
C0413	0 00000 0 00C00	TEST	PZE 0		PLOT3050
C0414	0 00C00 0 00C00	RATIO	PZE 0		PLOT3060
C0415	0 00C00 0 00000	ACCUM	PZE 0		PLOT3070
C0416	0 00002 0 00C00	DEUXD	PZE 0,0,2		PLOT3080
C0417	-0 00000 0 0C001	IND	MZE 1,0		PLOT3090
C0420	0 00000 0 00036	TIR	PZE 30		PLOT3100
C0421	0 00000 0 00000	N	PZE **		PLOT3110
C0422	0 CC000 0 00C00	NB	PZE **		PLOT3120
	00373	BFLENT	EQU 251		PLOT3130
C0423	040404040404	BUFFER	BCD 3444444444433333332		PLOT3140
C0424	040404040303				
C0425	030303030302				
C0426		BSS	BFLENT		PLOT3150
BINARY CARD NC. PLCTC015					
01021	04060304CC00	END	BCD 1463400		PLOT3160
01022	0634 00 1 01046	TRW	SXA TRW1,1		PLOT3170
01023	0634 00 4 01047		SXA TRW4,4		PLOT3180
01024	0C74 00 4 0C000		TSX F(WER),4		PLOT3190
01025	0534 00 4 01047		LXA TRW4,4		PLOT3200
01026	-0500 00 4 000C1		CAL 1,4		PLOT3210
01027	0621 00 0 01075		STA IO		PLOT3220
01030	0771 00 0 00022		ARS 18		PLOT3230
01031	0621 00 0 01032		STA LXA		PLOT3240
01032	0534 00 1 00C00	LXA	LXA **,1		PLOT3250
01033	-0634 00 1 01075		SXD IO,1		PLOT3260
01034	0766 00 0 02230	WRS	WTBB 8		PLOT3270
01035	-0540 00 0 01075		RCHB IO		PLOT3280
01036	0500 00 0 01035		CLA *-1		PLOT3290
01037	0621 00 0 01073		STA TRY		PLOT3300
01040	0061 00 0 01040	SPIN	TCOB *		PLOT3310
01041	-0760 00 0 02000		ETTB		PLOT3320
01042	C020 00 0 01051		TRA ENDT		PLOT3330
01043	0760 00 0 0C0C5		IOT		PLOT3340
01044	0074 00 4 0C002		TSX FDUMP,4		PLOT3350
BINARY CARD NC. PLCTC016					
01045	-0C22 00 0 01C70	TRCB	BSR		PLOT3360
01046	0774 00 1 00C00	TRW1	AXT **,1		PLOT3370
01047	0774 00 4 00C00	TRW4	AXT **,4		PLOT3380
01050	0020 00 4 000C2		TRA 2,4		PLOT3390
01051	0766 00 0 02230	ENDT	WTBB 8		PLOT3400
01052	-0540 00 0 01076		RCHB BLOCK		PLOT3410
01053	+0772000C2230		OCT 0772000C2230		PLOT3420
01054	0C74 00 4 0C003		TSX FMSG,4		PLOT3430

PLCT

7C90 SUBROUTINES FOR CALCOMP 50c/570.
SUBROUTINES PLOT/PLTIR/FINIM/FINTRA/PTC.

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C1055	CC00	00	0	01056	HTR	**1		PLOT3440
C1056	0772	00	0	02210	REWB	8		PLOT3450
C1057	0774	00	4	00005	AXT	5,4		PLOT3460
C1060	0766	00	0	02230	WTBB	8		PLOT3470
C1061	2	00001	4	01060	TIX	*-1,4,1		PLOT3480
C1062	0776	00	0	02210	SULB	8		PLOT3490
C1063	0766	0C	0	02230	WTBB	8		PLOT3500
C1064	-0540	0C	0	C1076	RCHB	BLOCK		PLOT3510
C1065	0500	00	0	01064	CLA	*-1		PLOT3520
C1066	0621	00	0	01073	STA	TRY		PLOT3530
C1067	CC20	00	0	01040	TRA	SPIN		PLOT3540
C1070	+07640000	02230			BSR	OCT	07640C002230	PLOT3550

BINARY CARD NO. PLCTC017

C1071	+07660000	02230			OCT	07660C002230		PLOT3560
C1072	+07660000	02230			OCT	07660C002230		PLOT3570
C1073	-0540	00	0	01075	TRY	RCHB	IO	PLOT3580
C1074	C020	00	0	01040		TRA	SPIN	PLOT3590
C1075	0	00000	0	00000	IO	PZE	**0,**	PLOT3600
C1076	0	00007	0	01077	BLOCK	PZE	BLOCK+1,0,7	PLOT3610
C1077	04040404	0404			BCD	74444444444433333331656565133333334444444444		PLOT3620
C1100	04040404	0303						
C1101	03030303	0301						
C1102	06050605	0605						
C1103	01030303	0303						
C1104	03030404	0404						
C1105	04040404	0404						

END

PLOT3630

47

```
SUBROUTINE BEGIN(N)
SUBROUTINE BEGIN(N)
READ INPUT TAPE 5,20,N
20 FORMAT (2X,I3)
RETURN
END(1,1,0,0,0,0,1,1,0,0,0,0,0,0,0)
```

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```
BGIN0030
BGIN0040
BGIN0050
BGIN0060
```

SUBROUTINE MSG

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PAGE 1

SUBROUTINE MSG

```
PRINT 2
2 FORMAT (52F REMOVE TAPE ON B-8 AND MOUNT NLW TAPE. PRESS START )
PRINT 3
3 FORMAT (47F RETURN ALL REELS WRITTEN ON B-8 TO PROGRAMMER. )
RETURN
ENC(1,1,C,C,0,0,1,1,0,0,0,0,0,0,0)
```

MSG00030
MSG00040
MSG00050
MSG00060
MSG00070
MSG00080

CLEAR STORAGE 1 ,C08015,022029,033001L0671351001/099H104C104135B101/1,001/001199199
 CLEAR STORAGE 2 ,105109,116121,122126,133C01B1C1
 BCOTSTRAP CARD ,008015,022029,056063/056029 ,0240671056

TRAN		PAGE 1									
PG	LIN	CT	LABEL	CP	A OPERAND	B OPERAND	D	LOC	INSTRUCTION	INST. DECD.	COMMENTS
1	010			CTL	441						
1	020				*****						
1	030				*						
1	040				* PLCT-TRANSLATION PROGRAM						
1	050				*						
1	060				*****						
1	070				EURATOM GEEL *						
1	080	3		DCW	0089			0089			
1	090	3		DCW	0094			0094			
1	100	3		DCW	0099			0099			
1	110		BUFR	DS	0334			C334			
1	120			CRG	1900						
1	130	1	GRMK	CC	*			1900			
1	140	4	START	SW	GRMK			1901			
1	150	2		CC				1905	F 1	01900	
1	160	7		MCW	MSG	0257	1	1907	M 017 257	M 02617 00257	1
1	170	4		B	BLOCKA			1914	B J57	B 02157	
1	180	4	A0	B	.RWS.			1918	B W4/	B 05641	
1	190	8		MU	(B2	BUFR	R	1922	M (B2 334 R	M (B2 00334 R	
1	200	4		B	EOF			1930	B J17	B 02117	
2	010	7		MCW	.LGTH.	LGTH		1934	M Z2/ N70	M 05921 02570	
2	020	7		SBR	0099	0000		1941	H 099 C00	H 00099 00000	
2	030	8	A1	B	A6	BUFR + 6 3		1948	B -85 3D0	B 02085 00340/3	
2	040	8		B	A5	BUFR + 6 3	+	1956	B -74 3D0 +	B 02074 00340/3 +	
2	050	7		MCW	BUFR + 6 3	CHAR		1964	M 3D0 N67	M 00340/3 02567	
2	060	7		ZA	CHAR	0089		1971	+ N67 089	+ 02567 00089	
2	070	4		A	0089			1978	A 089	A 00089	
2	080	7		A	CHAR			1982	A N67 089	A 02567 00089	
2	090	7		MZ	A	0089		1989	Y N10 089	Y 02510 00089	
2	100	8		BWZ	OUTPUT	0092		1996	V L04 092 B	V 02304 00092 B	
2	110	7		SBR	0094	0003	2	2004	H 094 0-3	H 00094 00003/2	
2	120	7		MCW	TABEL	1		2011	M MX9 CL5	M 02479/1 02635/2	
2	130	8		B	A5	STOR - 1 2	6	2018	B -74 0L5 6	B 02074 02635/2 6	
2	140	7		MCW	K00	KOUNT		2026	M N63 N61	M 02563 02561	
2	150	8	A3	BWZ	CUTPUT	0092		2033	V L04 092 B	V 02304 00092 B	
2	160	7		SBR	0094	0003	2	2041	H 094 0-3	H 00094 00003/2	
2	170	7		MCW	SEX	STOR - 1 2		2048	M N09 0L5	M 02509 02635/2	
2	180	7		A	ONE	KOUNT		2055	A M76 N61	A 02476 02561	
2	190	8		B	A5	KOUNT - 1	3	2062	B -74 N60 3	B 02074 02560 3	
2	200	4		B	A3			2070	B -33	B 02033	
3	010	7	A5	SBR	0099	0001	3	2074	H 099 0+1	H 00099 00001/3	
3	020	4		B	A1			2081	B Z48	B 01948	
3	030	7	A6	C	LGTH	A1871		2085	C N70 N66	C 02570 02566	
3	040	5		B	A7			2092	B J09 S	B 02109 S	
3	050	4		B	BLOCKA			2097	B J57	B 02157	
3	060	4		MCW	ECF + 1			2101	J J18	J 02118	
3	070	4		B	A0			2105	B Z18	B 01918	
3	080	4	A7	SW	ECF + 1			2109	J J18	J 02118	
3	090	4		B	A0			2113	B Z18	B 01918	
3	100	1	ECF	NCP				2117	N	N	
3	110	4		B	BLOCKA			2118	B J57	B 02157	

PG	LIN	CT	LABEL	CP	A OPERAND	B OPERAND	D	LOC	INSTRUCTION	INST. DECD.	COMMENTS
3	120	7		MCW	BN	BLOCK		2122	M N56 N59	M 02556 02559	
3	130	7		S	CNE	BLOCK		2129	S M76 N59	S 02476 02559	
3	140	7		MCS	BLOCK	0261		2136	Z N59 261	Z 02559 00261	
3	150	2		CC			J	2143	F J	F 2	J
3	160	1		W				2145	Z	Z	
3	170	7		H	* + 1	0999		2146	. J53 999	. 02153 00999	
3	180	4		B	A0			2153	B Z18	B 01918	
3	190										
3	200										
4	010										
4	020	4	BLOCKA	SBR	BLOCX+ 3			2157	H L03	H 02303	
4	030	4		B	OUTPUT			2161	B L04	B 02304	
4	040	7		MN	BN	0094		2165	D N56 094	D 02556 00094	
4	050	7		MN	A	2		2172	D NJ0 N34	D 02510/2 02534	
4	060	7		MN	B	2	- 1	2179	D NK0 N35	D 02520/2 02535	
4	070	7		MN	BN	- 1	0094	2186	D N55 094	D 02555 00094	
4	080	7		MN	A	2	- 3	2193	D NJ0 N32	D 02510/2 02532	
4	090	7		MN	B	2	- 2	2200	D NK0 N33	D 02520/2 02533	
4	100	7		MN	BN	- 2	0094	2207	D N54 094	D 02554 00094	
4	110	7		MN	A	2	- 5	2214	D NJ0 N30	D 02510/2 02530	
4	120	7		MN	B	2	- 4	2221	D NK0 N31	D 02520/2 02531	
4	130	7		A	ONE			2228	A M76 N56	A 02476 02556	
4	140	7		MN	ONE			2235	D M76 035	D 02476 02635	
4	150	7		SBR	0094			2242	H 094 014	H 00094 00014	
4	160	7		MCW	BLKADR		- 1 2	2249	M N43 0L5	M 02543 02635/2	
4	170	7	BLOCK1	A	CNE		- 1	2256	A M76 093	A 02476 00093	
4	180	7		MCW	SYNCR + 9		- 1 2	2263	M 027 0L5	M 02627 02635/2	
4	190	8		B	BLOCK2		- 1	2270	B K82 093 5	B 02282 00093 5	
4	200	4		B	BLOCK1			2278	B K56	B 02256	
5	010	4	BLOCK2	B	CUTPUT			2282	B L04	B 02304	
5	020	7		MN	BLOCK2		- 1	2286	D K82 035	D 02282 02635	
5	030	7		SBR	0094			2293	H 094 000	H 00094 00000	
5	040	4	BLOCX	B	0000			2300	B 000	B 00000	
5	050										
5	060										
5	070										
5	080	4	OUTPUT	SBR	RTN + 3			2304	H L52	H 02352	
5	090	7		MCW	RGAP		STOR + 3 2	2308	M N47 0L9	M 02547 02639/2	
5	100	7		LCA	GRMK		STOR + 4 2	2315	L Z00 0M0	L 01900 02640/2	
5	110	4		?	.RWS.			2322	B W4/	B 05641	
5	120	8		MU	(U3		SYNCR	2326	M (U3 018 W	M (U3 02618 W	
5	130	4		B	ENREEL			2334	B L53	B 02353	
5	140	4	RTN1	CW	STOR + 4 2			2338	) 0M0	) 02640/2	
5	150	7		SBR	0094		0000	2342	H 094 000	H 00094 00000	
5	160	4	RTN	B	0000			2349	B 000	B 00000	
5	170	7	ENREEL	MCW	K9999		AB	2353	M N53 N35	M 02553 02535	
5	180	7		SBR	0094		0014	2360	H 094 014	H 00094 00014	
5	190	7		MCW	BLKADR		- 1 2	2367	M N43 0L5	M 02543 02635/2	
5	200	7		MN	CNE		- 1	2374	D M76 035	D 02476 02635	
6	010	7	MCRE44	A	CNE		0093	2381	A M76 093	A 02476 00093	
6	020	7		MCW	SYNCR + 9		- 1 2	2388	M 027 0L5	M 02627 02635/2	
6	030	8		B	EXITC			2395	B M07 093 5	B 02407 00093 5	
6	040	4		B	MCRE44			2403	B L81	B 02381	
6	050	7	EXITC	MCW	RGAP		STOR + 3 2	2407	M N47 0L9	M 02547 02639/2	
6	060	7		LCA	GRMK		STOR + 4 2	2414	L Z00 0M0	L 01900 02640/2	
6	070	4		B	.RWS.			2421	B W4/	B 05641	

SI

TRAN	PG	LIN	CT	LABEL	GP	A OPERAND	B OPERAND	D	LOC	INSTRUCTION	INST. DECD.	COMMENTS
	6	08G	8		MU	(U3	SYNCR	W	2425	M (U3 018 W	M (U3 02618	W
	6	09C	4		NCP	0000			2433	N 000	N 00000	
	6	10G	5		CC	(U3		U	2437	U (U3 U	(U3	U
	6	11C	7		H	* + 1	0888		2442	. M49 888	. 02449 00888	
	6	12C	4		B	.RWS.			2449	B W4/	B 05641	
	6	13C	8		NCP	(U3	SYNCR	W	2453	M (U3 018 W	M (U3 02618	W
	6	14G	4		NCP	0000			2461	N 000	N 00000	
	6	15C	7		MN	* + 1	STOR - 1		2465	D M72 035	D 02472 02635	
	6	16G	4		B	RTN1			2472	B L38	B 02338	
	6	17C										
	6	18C										
	6	19C										
	6	20C	1	ONE	DCW	* 1			2476			
	7	01G	3	TABEL	DCW	* 667			2479			
	7	02G	3		DCW	* 676			2482			
	7	03G	3		DCW	* 776			2485			
	7	04G	3		DCW	* 766			2488			
	7	05G	3		DCW	* 756			2491			
	7	06G	3		DCW	* 656			2494			
	7	07G	3		DCW	* 556			2497			
	7	08G	3		DCW	* 566			2500			
	7	09C	3		DCW	* 576			2503			
	7	10G	3		DCW	* 665			2506			
	7	11G	3	SEX	DCW	* 666			2509			
	7	12G	1	A	DCW	* 4			2510			
	7	13G	9		DC	* 444555566			2519			
	7	14G	1	B	DCW	* 4			252C			
	7	15C	9		DC	* 567456745			2529			
	7	16G	6	AB	DCW	* *			2535			
	7	17G	8	BLKADR	DC	* 13333333			2543			
	7	18G	4	RGAP	DCW	* 4634			2547			
	7	19C	6	K9999	DCW	* 656565			2553			
	7	20G	3	BN	DCW	* 001			2556			
	8	01G	3	BLCK	DCW	* *			2559			
	8	02G	2	KCUNT	DCW	* *			2561			
	8	03G	2	KCO	DCW	* 00			2563			
	8	04G	3	A1871	DSSA	* * 1871	1871	Y71	2566			
	8	05G	1	CHAR	DCW	* *			2567			
	8	06G	3	LGTH	DCW	* *			257C			
	8	07G	32		DCW	* *			2602			
	8	08C	15	MSG	DC	* END OF FILE ON INPUT TAPE. LAST BLOCK ADDRESS =			2617			
	8	09C										
	8	10C										
	8	11C										
	8	12C	1	SYNCR	DCW	* 4			2618			
	8	13C	17		DC	* 44444444433333332			2635			
	8	14G	1	STCR	DCW	* *			2636			
	8	15C	99		DSS	* *			2735			
	8	16G	99		DSS	* *			2834			
	8	17G	99		DSS	* *			2933			
	8	18G	99		DSS	* *			3032			
	8	19G	99		DSS	* *			3131			
	8	20C	99		DSS	* *			3230			
	9	01G	99		DSS	* *			3329			
	9	02G	99		DSS	* *			3428			
	9	03G	99		DSS	* *			3527			

PG	LN	CT	LABEL	CP	A OPERAND	B OPERAND	D	LOC	INSTRUCTION	INST. DECD.	COMMENTS
9	040	99		DS	*			3626			
9	050	99		DS	*			3725			
9	060	99		DS	*			3824			
9	070	99		DS	*			3923			
9	080	99		DS	*			4022			
9	090	99		DS	*			4121			
9	100	99		DS	*			4220			
9	110	99		DS	*			4319			
9	120	99		DS	*			4418			
9	130	99		DS	*			4517			
9	140	99		DS	*			4616			
9	150	99		DS	*			4715			
9	160	99		DS	*			4814			
9	170	99		DS	*			4913			
9	180	99		DS	*			5012			
9	190	99		DS	*			5111			
9	200	99		DS	*			5210			
10	010	99		DS	*			5309			
10	020	99		DS	*			5408			
10	030	99		DS	*			5507			
10	040	99		DS	*			5606			
10	050	34		DS	*			5640			
10	060			*							
10	070			*							
10	080			*							
10	090			*							
10	100			*							
10	110			*							
10	120	4	.RWS.	SER	+129			5641	H X6Z	H 05769	RELOC. SYMBOL.
10	130	7		MCW	0099	+155		5645	M 099 X9V	M 00099	SAVE RETURN.
10	140	7		MCW	+129	0099		5652	M X6Z 099	M 05769	SAVE XR3.
10	150	7		LCA	0007	+ 56	3	5659	L 0+7 W9W	L 00007/3	MOVE INSTRUCT.
10	160	7		MCW	.	+274		5666	M W4W Z1U	M 05646	RED. COUNT = 0.
10	170	4		B	.	+ 49		5673	B W8Z	B 05689	
10	180	7		MN	.	+ 52	*	5677	D W9S W8X	D 05692	
10	190	5		CU	(UO			5684	U (UO E	U (UO	E ERASE TAPE.
10	200	8		NCP	0000		0000	5689	N 000 C00 0	N 00000	0 READ-WRITE TAPE.
11	010	4		SBR	.LGTH.			5697	H Z2/	H 05921	STORE REC. LGTH.
11	020	5		B	.	+255		5701	B Y9V K	B 05895	K EOF-EOR TEST.
11	030	8		B	.	+130		5706	B X7+ W9W W	B 05770	W WRITE OP. TEST.
11	040	7		MCW	.	+ 55	0099	5714	M W9V 099	M 05695	00099 COMPUTE ADDRESS
11	050	7		MCW	.	+276		5721	M Z1W Z1Y	M 05916	05918 TO TEST IF
11	060	7		SBR	0099		0001	5728	H 099 0+1	H 00099	00001/3 NOISE RECORD.
11	070	7		C	0099	.LGTH.	3	5735	C 099 Z2/	C 00099	05921
11	080	5		B	.	+ 12		5742	B W5S S	B 05652	S NOISE. YES.
11	090	7		A	.	- 6	.	5747	A X4X Z1Y	A 05747	05918
11	100	5		B	.	+123		5754	B X6T Z	B 05763	Z
11	110	4		BB	.	+ 88		5759	B X2Y	B 05728	
11	120	7		SBR	0099		0000	5763	H 099 C00	H 00099	00000 RESTORE RETURN.
11	130	5		B	.	+160		5770	B Y0+ L	B 05800	L ERROR TAPE TEST.
11	140	7		SBR	0099		0004	5775	H 099 0+4	H 00099	00004/3 NORMAL RETURN.
11	150	7		SBR	.	+159	0008	5782	H X9Z 0+8	H 05799	00008/3 EOF-EOR RETURN.
11	160	7		SBR	0099		0000	5789	H 099 C00	H 00099	00000 RESTORE XR3.
11	170	4		B	0000			5796	B 000	B 00000	***** EXIT *****
11	180	7		MN	+ 52	*	+ 4	5800	D W9S Y1+	D 05692	05810
11	190	5		CU	(UO			5807	U (UO B	U (UO	B BACK SPACE.

READ-WRITE SUBROUTINE.

TRAN

PG	LIN	CT	LABEL	CP	A OPERAND	B OPERAND	D	LOC	INSTRUCTION	INST. DECD.	COMMENTS
11	200	7		A	* - 6	. +274		5812	A Y1S Z1U	A 05812 05914	TEST IF PERM.
12	01C	5		B	. +196		Z	5819	B Y3W Z	B 05836	REDUND.(10).
12	02C	8		B	. + 37	. + 56	W	5824	B W7X W9W W	B 05677 05696	NO.
12	03C	4		B	. + 49			5832	B W8Z	B 05689	
12	04C	7		SBR	0099	0000		5836	H 099 000	H 00099 00000	YES.
12	05C	8		B	. +222	. + 56	W	5843	B Y6S W9W W	B 05862 05696	
12	06C	7		SBR	. +242	0110	3	5851	H Y8S 1A0	H 05882 00110/3	READ.
12	07C	4		B	. +229			5858	B Y6Z	B 05869	
12	08C	7		SBR	. +242	0220	3	5862	H Y8S 2B0	H 05882 00220/3	WRITE.
12	09C	7		MA	. + 52	* + 7		5869	D W9S Y8S	D 05692 05882	
12	10C	7		H	* + 1	0000		5876	. Y8T 000	. 05883 00000	-STOP-
12	11C	8		B	* - 14	Q098		5883	B Y7W 098 2	B 05876 00098 2	EOF-EOR.
12	12C	4		B	. + 12			5891	B W5S	B 05652	PERM. REDUND.
12	13C	8		B	. +142	0008	3	5895	B X8S 0+8 B	B 05782 00008/3 B	TEST IF USER
12	14C	7		SBR	0099	0220		5903	H 099 220	H 00099 00220	RETURN.
12	15C	4		B	. +203			5910	B Y4T	B 05843	
12	16C			*							
12	17C	1		DCW	*			5914			REDUND. COUNT.
12	18C	2		DCW	* 87			5916			CONSTANT -13.
12	19C	2		DCW	*			5918			NOISE COUNT.
12	20C	3	.LGTH.	DCW	*			5921			RECORD LENGTH.
13	01C			*							
13	02C	3		DCW	0099			0099			XR3.
13	03C			*							
13	04C			END	START				/ Z01 080		

244 CARDS.

CLEAR STORAGE 1
 CLEAR STORAGE 2
 BCOTSTRAP CARD

,0C8015,022029,033001L0671351001/099H104C104135B101/1,001/001199199
 ,105109,116121,122126,133001B101
 ,008015,022029,056063/056029

,0240671056

PLCT

PAGE 1

PG	LIN	CT	LABEL	CP	A OPERAND	B OPERAND	D	LOC	INSTRUCTION	INST. DECD.	COMMENTS
1	010			CTL	441						
1	020				*****						
1	030				* SUBROUTINE IAXIS						
1	040				* -----						
1	050				* ARGUMENTS						
1	060				* XAXIS,YAXIS	COORDINATES FOR THE START OF THE					
1	070				* (5 POS.)	AXIS					
1	080				* LAXIS	LENGTH OF AXIS					
1	090				* (5 POS.)						
1	100				* ATHETA	=0 AXIS HORIZONTAL					
1	110				* (1 POS.)	=1 AXIS VERTICAL					
1	120				*	WITHOUT ZONE LABELS RIGHT HAND					
1	130				*	SIDE OF THE AXIS					
1	140				*	WITH 11-ZONE LABELS LEFT HAND					
1	150				*	SIDE OF THE AXIS					
1	160				* BCD1	LABEL OF THE AXIS					
1	170				* (32 POS.)						
1	180				* NAXIS	NUMBER OF CHAR. IN BCD1					
1	190				* (2 POS.)						
1	200				* AMIN	FUNCTIONAL VALUE TO BE ASSIGNED					
2	010				* (5 POS.)	TO THE ORIGIN					
2	020				* CA (5 POS.)	SCALE INCREMENT					
2	030				* DL (5 POS.)	LENGTH IN PLOTTER STEPS FROM					
2	040				*	ONE TIC MARK TO THE FOLLOWING					
2	050				*						
2	060				*****						
2	070	4	IAXIS	SBR	IAXEX + 3			0333	H 921	H 00921	
2	080	7		ZA	K5	FACT		0337	+ 922 N49	+ 00922	02549
2	090	7		MCW	ZERO + 5	COMP		0344	M E53 978	M 03553	00978
2	100	7		MCW	KM050 - 2	STHETA		0351	M 950 N60	M 00950	02560
2	110	7		MCW	YAXIS	YV		0358	M 932 #32	M 00932	01032
2	120	1		MCW				0365	M	M	
2	130	8		B	AX02	ATHETA	0	0366	B 517 987 0	B 00517	00987
2	140	8		B	AX02	ATHETA	-	0374	B 517 987 -	B 00517	00987
2	150	7		MCW	KM020	C2		0382	M 955 940	M 00955	00940
2	160	8		B	AX00	ATHETA	J	0389	B 422 987 J	B 00422	00987
2	170	7		ZA	K5	C1		0397	+ 922 937	+ 00922	00937
2	180	7		MCW	K270	C3		0404	M 964 943	M 00964	00943
2	190	7		MZ	K1	K20		0411	Y 032 934	Y 02632	00934
2	200	4		B	AX01			0418	B 443	B 00443	
3	010	7	AX00	MCW	KM190	C1		0422	M 946 937	M 00946	00937
3	020	7		MCW	KM210	C3		0429	M 973 943	M 00973	00943
3	030	7		MZ	KM210	K20		0436	Y 973 934	Y 00973	00934
3	040	7	AX01	SBR	AX08 + 6	XV		0443	H 681 #27	H 00681	01027
3	050	7		SBR	AX08 + 10	XV		0450	H 685 #27	H 00685	01027
3	060	7		SBR	AX08 + 13	X		0457	H 688 D99	H 00688	03499
3	070	7		SBR	AX11 + 6	XV		0464	H 762 #27	H 00762	01027
3	080	7		SBR	AX12 + 6	YV		0471	H 769 #32	H 00769	01032
3	090	7		SBR	AX13 + 3	XV		0478	H 797 #27	H 00797	01027
3	100	7		SBR	AX13 + 6	X		0485	H 800 D,9	H 00800	03499
3	110	7		SBR	AX15 + 6	Y		0492	H 852 E04	H 00852	03504

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PLCT

PAGE 2

PG	LIN	CT	LABEL	CP	A OPERAND	B OPERAND	D	LOC	INSTRUCTION	INST. DECD.	COMMENTS
3	12C	7		SBR	AX15 + 13	Y		0499	H 859 E04	H 00859 03504	
3	130	7		SBR	AX16 + 6	X		0506	H 866 D99	H 00866 03499	
3	140	4		B	AX07			0513	B 642	B 00642	
3	150	7	AX02	MCW	KM140	C1		0517	M 949 937	M 00949 00937	
3	160	8		B	AX03	ATHETA		0524	B 554 987 -	B 00554 00987	
3	170	7		MCW	KM140	C3		0532	M 949 943	M 00949 00943	
3	180	4		MCW	KM050			0539	M 952	M 00952	
3	190	7		MZ	KM050	K20		0543	Y 952 934	Y 00952 00934	
3	200	4		B	AX04			0550	B 572	B 00572	
4	01C	7	AX03	MCW	K100	C3		0554	M 961 943	M 00961 00943	
4	02C	4		MCW	K015			0561	M 958	M 00958	
4	030	7		MZ	K1	K20		0565	Y 032 934	Y 02632 00934	
4	04C	7	AX04	SBR	AX08 + 6	YV		0572	H 681 #32	H 00681 01032	
4	05C	7		SBR	AX08 + 10	YV		0579	H 685 #32	H 00685 01032	
4	06C	7		SBR	AX08 + 13	Y		0586	H 688 E04	H 00688 03504	
4	07C	7		SBR	AX11 + 6	YV		0593	H 762 #32	H 00762 01032	
4	08C	7		SBR	AX12 + 6	XV		0600	H 769 #27	H 00769 01027	
4	09C	7		SBR	AX13 + 3	YV		0607	H 797 #32	H 00797 01032	
4	10C	7		SBR	AX13 + 6	Y		0614	H 800 E04	H 00800 03504	
4	110	7		SBR	AX15 + 6	X		0621	H 852 D99	H 00852 03499	
4	12C	7		SBR	AX15 + 13	X		0628	H 859 D99	H 00859 03499	
4	130	7		SBR	AX16 + 6	Y		0635	H 866 E04	H 00866 03504	
4	14C	7	AX07	MZ	K1	ATHETA		0642	Y 032 987	Y 02632 00987	
4	15C	7		MCW	K3	IC		0649	M N61 E05	M 02561 03505	
4	16C	7		MCW	YV	Y		0656	M #32 E04	M 01032 03504	
4	17C	1		MCW				0663	M	M	
4	18C	4		B	PLOT			0664	B 034	B 02634	
4	19C	7		MCW	K2	IC		0668	M N44 E05	M 02544 03505	
4	20C	7	AX08	A	K20	YV		0675	A 934 #32	A 00934 01032	
5	01C	7		MCW	YV	Y		0682	M #32 E04	M 01032 03504	
5	02C	4		B	PLOT			0689	B 034	B 02634	
5	03C	7		A	C2	YV		0693	A 940 #32	A 00940 01032	
5	04C	1		A				0700	A	A	
5	05C	7		LCA	MASK	BCD + 6		0701	L 970 005	L 00970 02605	
5	06C	7		MCE	AMIN	BCD + 6		0708	E #37 005	E 01037 02605	
5	070	7		MCW	K06	NSYM		0715	M 981 L03	M 00981 02303	
5	08C	7		MCW	YV	YSYM		0722	M #32 N77	M 01032 02577	
5	09C	1		MCW				0729	M	M	
5	10C	4		B	SYMBCL			0730	B #48	B 01048	
5	11C	7		S	C2	YV		0734	S 940 #32	S 00940 01032	
5	120	1		S				0741	S	S	
5	13C	7		A	CA	AMIN		0742	A #42 #37	A 01042 01037	
5	14C	7		A	DL	COMP		0749	A #47 978	A 01047 00978	
5	150	7	AX11	S	K20	YV		0756	S 934 #32	S 00934 01032	
5	160	7	AX12	A	DL	XV		0763	A #47 #27	A 01047 01027	
5	17C	7		C	CCMP	LAXIS		0770	C 978 986	C 00978 00986	
5	18C	5		B	AX07			0777	B 642 S	B 00642	
5	19C	5		B	AX07			0782	B 642 U	B 00642	
5	200	7		MCW	K3	IC		0787	M N61 E05	M 02561 03505	
6	01C	7	AX13	MCW	YV	Y		0794	M #32 E04	M 01032 03504	
6	02C	4		B	PLCT			0801	B 034	B 02634	
6	03C	7		MCW	YAXIS	Y		0805	M 932 E04	M 00932 03504	
6	04C	1		MCW				0812	M	M	
6	05C	7		MCW	K2	IC		0813	M N44 E05	M 02544 03505	
6	06C	4		B	PLCT			0820	B 034	B 02634	
6	07C	7		ZA	LAXIS	COMP + 1		0824	+ 986 979	+ 00986 00979	

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PG	LIN	CT	LABEL	CP	A OPERAND	B OPERAND	D	LOC	INSTRUCTION	INST. DECD.	COMMENTS
6	08C	4		A	CCMP + 1			0831	A 979	A 00979	
6	09C	4		A	CCMP + 1			0835	A 979	A 00979	
6	10C	7		A	LAXIS	COMP + 1		0839	A 986 979	A 00986	00979
6	11C	7	AX15	A	CCMP	X		0846	A 978 D99	A 00978	03499
6	12C	7		S	K270	X		0853	S 964 D99	S 00964	03499
6	13C	7	AX16	A	C3	Y		0860	A 943 E04	A 00943	03504
6	14C	7		MCW	Y	YSYM		0867	M E04 N77	M 03504	02577
6	15C	1		MCW				0874	M	M	
6	16C	7		MCW	BCC1 + 32	BCD + 32		0875	M #20 C31	M 01020	02631
6	17C	7		MCW	ATHETA	STHETA		0882	M 987 N60	M 00987	02560
6	18C	7		MCW	NAXIS	NSYM		0889	M #22 L03	M 01022	02303
6	19C	7		ZA	K06	FACT		0896	+ 981 N49	+ 00981	02549
6	20C	4		B	SYMBCL			0903	B #48	B 01048	
7	01C	7		MCW	K3	IC		0907	M N61 E05	M 02561	03505
7	02C	4		B	PLCT			0914	B 034	B 02634	
7	03C	4	IAXEX	B	CCCC			0918	B 000	B 00000	
7	04C				*						
7	05C				* CCNSTANTS						
7	06C				*						
7	07C	1	K5	DCW	*	5		0922			
7	08C	5	XAXIS	DCW	*			0927			
7	09C	5	YAXIS	DCW	*			0932			
7	10C	2	K2C	DCW	*	20		0934			
7	11C	3	C1	DCW	*			0937			
7	12C	3	C2	DCW	*			0940			
7	13C	3	C3	DCW	*			0943			
7	14C	3	K#190	DCW	*	19-		0946			
7	15C	3	K#140	DCW	*	14-		0949			
7	16C	3	K#050	DCW	*	05-		0952			
7	17C	3	K#020	DCW	*	02-		0955			
7	18C	3	K015	DCW	*	015		0958			
7	19C	3	K100	DCW	*	100		0961			
7	20C	3	K270	DCW	*	270		0964			
8	01C	6	MASK	DCW	*	- 0		0970			
8	02C	3	K#210	DCW	*	21-		0973			
8	03C	5	CCMP	DCW	*			0978			
8	04C	1		DC	*			0979			
8	05C	2	KC6	DCW	*	06		0981			
8	06C	5	LAXIS	DCW	*			0986			
8	07C	1	ATHETA	DCW	*			0987			
8	08C	1	BCC1	DCW	*			0988			
8	09C	32		DCW	*			1020			
8	10C	2	NAXIS	DCW	*			1022			
8	11C	5	XV	DCW	*			1027			
8	12C	5	YV	DCW	*			1032			
8	13C	5	AMIN	DCW	*			1037			
8	14C	5	DA	DCW	*			1042			
8	15C	5	DL	DCW	*			1047			
8	16C				*						
8	17C				*						
8	18C				*						
8	19C				*						
8	20C				*						
9	01C				*						
9	02C				*						
9	03C				*						

					* SUBROUTINE SYMBOL *						
					* ----- *						
					* ARGUMENTS *						
					* XSYM,YSYM LOWER,LEFT-HANDE CORNER *						
					* (5 POS.) COORDINATES OF FIRST SYMBOL *						
					* IN PLOTTER STEPS *						

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PG	LIN	CT	LABEL	CP	A OPERAND	B OPERAND	D	LOC	INSTRUCTION	INST. DECC.	COMMENTS
9	040				* FACT	FACT * 7 = HEIGHT (EXC.CENTERED +)*					
9	050				* (5 PCS.)	FACT * 4 = WIDTH					
9	060				*	FACT * 2 = DISTANCE BETWEEN					
9	070				*	TWO CHARACTERS					
9	080				* THETA	=0 IF WRITING HORIZONTAL					
9	090				* (1 PCS.)	=1 IF WRITING VERTICAL					
9	100				* BCDSYM	GIVES THE ADDR. OF THE LEFT HAND					
9	110				* (32 POS.)	POSITION OF THE CHARACTER STRING TO					
9	120				*	BE PLOTTED.					
9	130				* NSYM	NUMBER OF SYMBOLS TO BE PLOTTED					
9	140				* (2 POS.)	MAX.32 SYMBOLS					
9	150				*						
9	160				*						
9	170				*						
9	180				*						
9	190	4	SYMBCL	SER	SYMBEX+ 3			1048	H /57	H 01157	
9	200	7		MCW	0099	SAVES3		1052	M 099 N67	M 00099 02567	SAVE XR3AND XR1.
10	010	7		MCW	0089	SAVES1		1059	M 089 N64	M 00089 02564	
10	020	7		SER	0099	CO01		1066	H 099 001	H 00099 00001	XR3=1
10	030	7		MCW	FACT	XTSYM		1073	M N49 N54	M 02549 02554	
10	040	4		A	XTSYM			1080	A N54	A 02554	
10	050	4		A	FACT	XTSYM		1084	A N49 N54	A 02549 02554	
10	060	4		A	XTSYM			1091	A N54	A 02554	XTSYM=6*FACT
10	070	8		B	SYM000	THETA	1	1095	B /14 N60 1	B 01114 02560	1
10	080	7		MCW	ZERC + 5	YTSYM		1103	M E53 N59	M 03553 02559	YTSYM=0
10	090	4		B	SYM003			1110	B /28	B 01128	
10	100	7	SYM000	MCW	XTSYM	YTSYM		1114	M N54 N59	M 02554 02559	
10	110	7		MCW	ZERC + 5	XTSYM		1121	M E53 N54	M 03553 02554	
10	120	7	SYM003	C	NSYM	ZERO + 2		1128	C L03 E50	C 02303 03550	
10	130	5		B	SYM004			1135	B /58 /	B 01158	/
10	140	7		MCW	SAVES3	0099		1140	M N67 099	M 02567 00099	RESTORE INDEX
10	150	7		MCW	SAVES1	0089		1147	M N64 089	M 02564 00089	REGISTERS.
10	160	4	SYMBEX	B	0000			1154	B 000	B 00000	RETURN
10	170	7	SYM004	MCW	BCD	CHARAC	3	1158	M N19 C33	M 02599/3 02633	CHARAC=BCD+XR3
10	180	8		B	SYM100	CHARAC		1165	B V30 C33	B 01530 02633	
10	190	7		MCW	K3	IC		1173	M N61 E05	M 02561 03505	
10	200	8		B	SYM101	CHARAC		1180	B W29 C33	B 01629 02633	CENTERED PLUS
11	010	8		BWZ	SYM020	CHARAC		1188	V S39 C33	V 01239 02633	2 NO ZONE
11	020	8		BWZ	SYM030	CHARAC		1196	V S58 C33	V 01258 02633	B 12-ZONE
11	030	8		BWZ	SYM040	CHARAC		1204	V S93 C33	V 01293 02633	K 11-ZONE
11	040	8		B	SYM102	CHARAC		1212	B W94 C33	B 01694 02633	ZERO-ZONE
11	050	8		B	SYM103	CHARAC		1220	B X05 C33	B 01705 02633	
11	060	7		SER	0089	TAB3		1228	H 089 Z06	H 00089 01906	
11	070	4		B	SYM060			1235	B T24	B 01324	
11	080	8	SYM020	B	SYM104	CHARAC		1239	B X16 C33	B 01716 02633	=
11	090	7		SER	0089	TAB		1247	H 089 Y25	H 00089 01825	
11	100	4		B	SYM060			1254	B T24	B 01324	
11	110	8	SYM030	B	SYM105	CHARAC		1258	B X27 C33	B 01727 02633	+
11	120	8		B	SYM106	CHARAC		1266	B X38 C33	B 01738 02633	
11	130	8		B	SYM107	CHARAC		1274	B X49 C33	B 01749 02633)
11	140	7		SER	0089	TAB1		1282	H 089 Y52	H 00089 01852	
11	150	4		B	SYM060			1289	B T24	B 01324	
11	160	8	SYM040	B	SYM108	CHARAC		1293	B X60 C33	B 01760 02633	F
11	170	8		B	SYM109	CHARAC		1301	B X71 C33	B 01771 02633	-
11	180	8		B	SYM110	CHARAC		1309	B X82 C33	B 01782 02633	*
11	190	7		SER	0089	TAB2		1317	H 089 Y79	H 00089 01879	

PG	LIN	CT	LABEL	CP	A OPERAND	B OPERAND	D	LOC	INSTRUCTION	INST. DECD.	COMMENTS
11	200	7	SYMC60	MA	CHARAC	COUNTS		1324	D 033 N78	D 02633 02578	
12	010	7		ZA	CCOUNTS	COUNT3		1331	+ N78 N81	+ 02578 02581	
12	020	4		A	CCOUNT3			1338	A N81	A 02581	
12	030	7		A	CCOUNTS	COUNT3		1342	A N78 N81	A 02578 02581	SEARCH ADDRESS
12	040	7		NZ	K3	COUNT3		1349	Y N61 N81	Y 02561 02581	OF COORDINATES
12	050	7		MA	CCOUNT3	0089		1356	= N81 089	= 02581 00089	IN LABEL.
12	060	7		MCW	0000	0089		1363	M 0+0 089	M 00000/1 00089	
12	070	7	SYM080	MCW	0001	CY		1370	M 0+1 N83	M 00001/1 02583	SEARCH COORDIN.
12	080	4		MCW	0000			1377	M 0+0	M 00000/1	OF THE CHARACTER
12	090	7		MCW	ZERO +	CYY		1381	M E53 N93	M 03553 02593	IN LABEL.
12	100	4		MCW	ZERO +			1388	M E53	M 03553	
12	110	8	SYM085	B	SYM090	CX	0	1392	B U25 N82 0	B 01425 02582	0 CXX=CX*FACT
12	120	7		A	FACT	CXX		1400	A N49 N88	A 02549 02588	
12	130	7		S	K1	CX		1407	S 032 N82	S 02632 02582	
12	140	7		NZ	K1	CX		1414	Y 032 N82	Y 02632 02582	
12	150	4		B	SYM085			1421	B T92	B 01392	
12	160	8	SYM090	B	SYM095	CY	0	1425	B U58 N83 0	B 01458 02583	0 CYY=CY*FACT
12	170	7		A	FACT	CYY		1433	A N49 N93	A 02549 02593	
12	180	7		S	K1	CY		1440	S 032 N83	S 02632 02583	
12	190	7		NZ	K1	CY		1447	Y 032 N83	Y 02632 02583	
12	200	4		B	SYM090			1454	B U25	B 01425	
13	010	8	SYM095	B	SYM096	STHETA	0	1458	B U84 N60 0	B 01484 02560	0 CHANGE CXX AND
13	020	7		MCW	CYY	CXY		1466	M N93 N98	M 02593 02598	CY FOR STHETA=1
13	030	4		MCW	CXX			1473	M N88	M 02588	
13	040	7		ZS	CXY	CXX		1477	- N98 N88	- 02598 02588	
13	050	7	SYM096	MCW	YSYM	Y		1484	M N77 E04	M 02577 03504	
13	060	1		MCW				1491	M	M	
13	070	7		A	CYY	Y		1492	A N93 E04	A 02593 03504	
13	080	1		A				1499	A	A	
13	090	4		B	PLOT			1500	B 034	B 02634	BRANCH TO PLOT.
13	100	7		MCW	K2	IC		1504	M N44 E05	M 02544 03505	
13	110	8		BWZ	SYM100	0002	1	1511	V V30 0+2 1	V 01530 00002/1 1	1 CHARACTER
13	120	7		SBR	0089	0002	1	1519	H 089 0+2	H 00089 00002/1	COMPLETED.
13	130	4		B	SYM080			1526	B T70	B 01370	
13	140	7	SYM100	A	YTSYM	YSYM		1530	A N59 N77	A 02559 02577	YSYM=Y+YTSYM
13	150	1		A				1537	A	A	XSYM=X+XTSYM
13	160	7		S	K1	NSYM		1538	S 032 L03	S 02632 02303	NSYM=NSYM-1
13	170	7		NZ	K1	NSYM		1545	Y 032 L03	Y 02632 02303	
13	180	8		B	SYM130	CHARAC		1552	B V71 033	B 01571 02633	
13	190	7	SYM150	SBR	OC99	OC01	3	1560	H 099 0+1	H 00099 00001/3	
13	200	4		B	SYM003			1567	B /28	B 01128	
14	010	7	SYM130	A	FACT	YSYM		1571	A N49 N77	A 02549 02577	
14	020	7		A	FACT	YSYM		1578	A N49 N77	A 02549 02577	
14	030	8		B	SYM140	STHETA	0	1585	B W11 N60 0	B 01611 02560	0
14	040	7		S	FACT	XSYM		1593	S N49 N72	S 02549 02572	
14	050	7		S	FACT	XSYM		1600	S N49 N72	S 02549 02572	
14	060	4		B	SYM150			1607	B V60	B 01560	
14	070	7	SYM140	A	FACT	XSYM		1611	A N49 N72	A 02549 02572	
14	080	7		A	FACT	XSYM		1618	A N49 N72	A 02549 02572	
14	090	4		B	SYM150			1625	B V60	B 01560	
14	100	7	SYM101	S	FACT	YSYM		1629	S N49 N77	S 02549 02577	
14	110	7		S	FACT	YSYM		1636	S N49 N77	S 02549 02577	
14	120	8		B	SYM111	STHETA	0	1643	B W69 N60 0	B 01669 02560	0
14	130	7		A	FACT	XSYM		1651	A N49 N72	A 02549 02572	
14	140	7		A	FACT	XSYM		1658	A N49 N72	A 02549 02572	
14	150	4		B	SYM121			1665	B W83	B 01683	

PLCT

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PG	LIN	CT	LABEL	CP	A OPERAND	B OPERAND	D	LOC	INSTRUCTION	INST. DECD.	COMMENTS
14	160	7	SYM111	S	FACT	XSYM		1669	S N49 N72	S 02549 02572	
14	170	7		S	FACT	XSYM		1676	S N49 N72	S 02549 02572	
14	180	7	SYM121	MCW	TABSPE	0089		1683	M X95 089	M 01795 00089	-
14	190	4		B	SYM080			1690	B T70	B 01370	
14	200	7	SYM102	MCW	TABSPE+ 3	0089		1694	M X98 089	M 01798 00089	,
15	010	4		B	SYM080			1701	B T70	B 01370	
15	020	7	SYM103	MCW	TABSPE+ 6	0089		1705	M Y01 089	M 01801 00089	(
15	030	4		B	SYM080			1712	B T70	B 01370	
15	040	7	SYM104	MCW	TABSPE+ 9	0089		1716	M Y04 089	M 01804 00089	=
15	050	4		B	SYM080			1723	B T70	B 01370	
15	060	7	SYM105	MCW	TABSPE+ 12	0089		1727	M Y07 089	M 01807 00089	+
15	070	4		B	SYM080			1734	B T70	B 01370	
15	080	7	SYM106	MCW	TABSPE+ 15	0089		1738	M Y10 089	M 01810 00089	.
15	090	4		B	SYM080			1745	B T70	B 01370	
15	100	7	SYM107	MCW	TABSPE+ 18	0089		1749	M Y13 089	M 01813 00089)
15	110	4		B	SYM080			1756	B T70	B 01370	
15	120	7	SYM108	MCW	TABSPE+ 21	0089		1760	M Y16 089	M 01816 00089	F
15	130	4		B	SYM080			1767	B T70	B 01370	
15	140	7	SYM109	MCW	TABSPE+ 24	0089		1771	M Y19 089	M 01819 00089	-
15	150	4		B	SYM080			1778	B T70	B 01370	
15	160	7	SYM110	MCW	TABSPE+ 27	0089		1782	M Y22 089	M 01822 00089	*
15	170	4		B	SYM080			1789	B T70	B 01370	
15	180										
15	190										
15	200										
16	010	3	TABSPE	CSA	*	TABEL +600	N34	1795			.
16	020	3		DSA	*	TABEL +588	N22	1798			,
16	030	3		CSA	*	TABEL +572	N06	1801			(
16	040	3		CSA	*	TABEL +580	N14	1804			=
16	050	3		DSA	*	TABEL +498	M32	1807			+
16	060	3		DSA	*	TABEL +508	M42	1810			.
16	070	3		CSA	*	TABEL +518	M52	1813)
16	080	3		DSA	*	TABEL +526	M60	1816			F
16	090	3		DSA	*	TABEL +584	N18	1819			-
16	100	3		CSA	*	TABEL +548	M82	1822			*
16	110	3	TAB	CSA	*	TABEL +350	K84	1825			0
16	120	3		CSA	*	TABEL	Z34	1828			1
16	130	3		DSA	*	TABEL + 10	Z44	1831			2
16	140	3		CSA	*	TABEL +232	J66	1834			3
16	150	3		CSA	*	TABEL + 28	Z62	1837			4
16	160	3		DSA	*	TABEL + 44	Z78	1840			5
16	170	3		DSA	*	TABEL + 64	Z98	1843			6
16	180	3		CSA	*	TABEL + 88	-22	1846			7
16	190	3		CSA	*	TABEL +224	J58	1849			8
16	200	3	TAB1	CSA	*	TABEL + 98	-32	1852			9
17	010	3		DSA	*	TABEL +142	-76	1855			A
17	020	3		CSA	*	TABEL +162	-96	1858			B
17	030	3		CSA	*	TABEL + 72	-06	1861			C
17	040	3		DSA	*	TABEL +128	-62	1864			D
17	050	3		CSA	*	TABEL +188	J22	1867			E
17	060	3		CSA	*	TABEL +190	J24	1870			F
17	070	3		CSA	*	TABEL +202	J36	1873			G
17	080	3		CSA	*	TABEL +260	J94	1876			H
17	090	3	TAB2	CSA	*	TABEL +272	K06	1879			I
17	100	3		CSA	*	TABEL +284	K18	1882			J
17	110	3		CSA	*	TABEL +296	K30	1885			K

* ADDRESS LABEL FOR LETTERS AND SPECIAL SYMBOLS

PLCT

PG	LIN	CT	LABEL	CP	A OPERAND	B OPERAND	D	LOC	INSTRUCTION	INST. DECD.	COMMENTS	
17	120	3		DSA	*	TABEL +122	-56	1888			L M N O P Q R S T U V W X Y Z	
17	130	3		DSA	*	TABEL +308	K42	1891				
17	140	3		DSA	*	TABEL +318	K52	1894				
17	150	3		DSA	*	TABEL +326	K60	1897				
17	160	3		DSA	*	TABEL +174	J08	1900				
17	170	3		DSA	*	TABEL +346	K80	1903				
17	180	3	TAB3	DSA	*	TABEL +370	L04	1906				
17	190	3		DSA	*	TABEL +494	M28	1909				
17	200	3		DSA	*	TABEL +390	L24	1912				
18	010	3		DSA	*	TABEL +418	L52	1915				
18	020	3		DSA	*	TABEL +426	L60	1918				
18	030	3		DSA	*	TABEL +438	L72	1921				
18	040	3		DSA	*	TABEL +444	L78	1924				
18	050	3		DSA	*	TABEL +454	L88	1927				
18	060	3		DSA	*	TABEL +468	M02	1930				
18	070	3		DSA	*	TABEL +478	M12	1933				
18	080			*								
18	090			*	* TABEL OF THE COORDINATES FOR ALL CHARACTERS							
18	100			*								
18	110	1	TABEL	DCW	*	1		1934				1
18	120	9		DC	*	627201030		1943				
18	130	18		DCW	*	050617374645010040		1961				
18	140	16		CCW	*	0703433337304020		1977				4
18	150	20		CCW	*	02011030414334040747		1997				
18	160	24		CCW	*	031434434130100106173746		2021				
18	170	10		CCW	*	0607472120		2031				7
18	180	24		CCW	*	011030414637170604133344		2055				
18	190	6		CCW	*	400007		2061				L
18	200	14		CCW	*	00073746413000		2075				D
19	010	20		DCW	*	00034346371706034340		2095				
19	020	26		DCW	*	04344341301000073746453404		2121				
19	030	14		DCW	*	40000434040747		2135				FE
19	040	22		DCW	*	3343413010010506173746		2157				
19	050	32		DCW	*	01031405061737464534143443413010		2189				
19	060	4		DC	*	0102		2193				
19	070	12		DCW	*	000704444740		2205			3,8	
19	080	12		DCW	*	173727203010		2217			I	
19	090	12		DCW	*	020110304147		2229			J	
19	100	12		DCW	*	000704470440		2241			K	
19	110	10		DCW	*	0007234740		2251			M	
19	120	8		DCW	*	00074047		2259			N	
19	130	20		DCW	*	25471706011030414637		2279				
19	140	22		DCW	*	2240100106173746413010		2301				
19	150	2	NSYM	DCW	*			2303				
19	160	20		DCW	*	00073746453404344340		2323				
19	170	28		DCW	*	0201103041433414050617374645		2351				
19	180	8		DCW	*	07472720		2359				
19	190	12		DCW	*	070110304147		2371			T	
19	200	6		DCW	*	072047		2377			U	
20	010	10		DCW	*	0700234047		2387			V	
20	020	14		CCW	*	00240724472440		2401			W	
20	030	10		DCW	*	2024072447		2411			X	
20	040	16		DCW	*	0747241434240040		2427			Y	
20	050	4		DCW	*	0047		2431			Z	
20	060	10		DCW	*	2125230343		2441			/	
20	070	10		DCW	*	1030321210		2451			+	

PG	LIN	CT	LABEL	CP	A OPERAND	B OPERAND	D	LOC	INSTRUCTION	INST. DECD.	COMMENTS
20	080	8		DCW	*	C0111607		2459)
20	090	22		DCW	*	023243341405164626272C		2481			
20	100	24		DCW	*	221102201101211112101100		2505			
20	110	8		DCW	*	10010617		2513			(
20	120	8		DCW	*	14341333		2521			=,-
20	130	12		DCW	*	001112020111		2533			:
20	140	10		DCW	*	2024220242		2543			
20	150			*							
20	160			*	CCONSTANTS AND WORKAREAS						
20	170			*							
20	180	1	K2	DCW	*	2		2544			
20	190	5	FACT	DCW	*			2549			
20	200	5	XTSYM	DCW	*			2554			
21	010	5	YTSYM	DCW	*			2559			
21	020	1	STHETA	DCW	*			2560			
21	030	1	K3	DCW	*	3		2561			
21	040	3	SAVES1	DCW	*			2564			
21	050	3	SAVES3	DCW	*			2567			
21	060	5	XSYM	DCW	*			2572			
21	070	5	YSYM	DCW	*			2577			
21	080	1	CCUNTS	DCW	*			2578			
21	090	3	CCUNT3	DCW	*			2581			
21	100	1	CX	DCW	*			2582			
21	110	1	CY	DCW	*			2583			
21	120	5	CXX	DCW	*			2588			
21	130	5	CYY	DCW	*			2593			
21	140	5	CXY	DCW	*			2598			
21	150	1	BCC	DCW	*			2599			
21	160	32		DCW	*			2631			
21	170	1	K1	DCW	*	1		2632			
21	180	1	CHARAC	DCW	*			2633			
21	190	3		DCW	*	0089		0089			
21	200			*							
21	210			*							
22	010			*							
22	020			*							
22	030			*							
22	040			*							
22	050			*							
22	060			*							
22	070			*							
22	080			*							
22	090			*							
22	100			*							
22	110			*							
22	120			*							
22	130			*							
22	140			*							
22	150	4	PLCT	SBR	PLCTEX+	3		2634	H B20	H 03220	
22	160	7		MCW	0C94		SAVE2	2638	M 094 E08	M 00094	C3508
22	170	7		MCW	IX2		0C94	2645	M E11 094	M 03511	0C094
22	180	8		BWZ	PLCT03		BI	2652	V 017 005 2	M 02817	03405
22	190	7		SBR	0C94		CCCC	2660	H 094 000	H 0C094	0C0C0
22	200	7		MZ	GNE		BI	2667	Y E12 D05	Y 03512	03405
23	010	4		SW	MARK			2674	, E47	, 03547	
23	020	7		MN	BN		0C94	2678	D 020 094	D 03420	0C094

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XR2=0
CLEAR ZONE BI.
SET WM ON GRMK.
WRITE A BLOCK

PG	LIN	CT	LABEL	CP	A CPERANC	B OPERAND	D	LOC	INSTRUCTION	INST. DECD.	COMMENTS
23	030	7		MN	A	2		2685	D EJ3 E37	D 03513/2 03537	ADDRESS IF BI
23	040	7		MN	B	2		2692	D EK3 E38	D 03523/2 03538	HAS A ZONE BIT.
23	050	7		MN	BN - 1	1		2699	D D19 094	D 03419 0C094	
23	060	7		MN	A	2		2706	D EJ3 E35	D 03513/2 03535	
23	070	7		MN	B	2		2713	D EK3 E36	D 03523/2 03536	
23	080	7		MN	BN - 2	2		2720	D D18 094	D 03418 0C094	
23	090	7		MN	A	2		2727	D EJ3 E33	D 03513/2 03533	
23	100	7		MN	B	2		2734	D EK3 E34	D 03523/2 03534	
23	110	7		A	CNE			2741	A E12 D20	A 03512 03420	BN=BN+1
23	120	7		MCW	IX2			2748	M E11 C94	M 03511 0C094	XR2=BUF. COUNT.
23	130	4		B	CUTPUT			2755	B B46	B 03246	
23	140	7		MN	CNE			2759	D E12 E78	D 03512 03578	CONSTRUCT BLOCK
23	150	7		SBR	0094			2766	H 094 G14	H 00094 0C014	ADDRESS RECORD.
23	160	7		MCW	BLKACR			2773	M E46 EP8	M 03546 03578/2	
23	170	7	PLCT01	A	CNE			2780	A E12 093	A 03512 0C093	
23	180	7		MCW	SYNCR + 9	9		2787	M E70 EP8	M 03570 03578/2	
23	190	8		B	PLOT02		5	2794	B 006 093 5	B 02806 00093	5
23	200	4		B	PLOT01			2802	B P80	B 02780	
24	010	4	PLCT02	B	CUTPUT			2806	B B46	B 03246	WRITE BLOCK ADDR
24	020	7		MN	PLOT02			2810	D 006 E78	D 02806 03578	ON CALCOMP TAPE.
24	030	7	PLCT03	MCW	Y			2817	M E04 D40	M 03504 03440	
24	040	1		MCW				2824	M	M	
24	050	7		S	PENY			2825	S D30 D40	S 03430 03440	DY=Y-PENY
24	060	1		S				2832	S	S	CX=X-PENX
24	070	7		MCW	Y			2833	M E04 D30	M 03504 03430	PENY=Y
24	080	1		MCW				2840	M	M	PENX=X
24	090	7		MCW	MXC			2841	M D46 D67	M 03446 03467	
24	100	8		B&Z	PLOT04		K	2848	V Q63 D35 K	V 02863 03435	K DETERMINE CONST.
24	110	7		MCW	PXC			2856	M D43 D67	M 03443 03467	OF MOTIONS.
24	120	7	PLCT04	MCW	MYC			2863	M D52 D70	M 03452 03470	
24	130	8		B&Z	PLOT05		K	2870	V Q85 D40 K	V 02885 03440	K
24	140	7		MCW	PYC			2878	M D49 D70	M 03449 03470	
24	150	7	PLCT05	MCW	XPLTC			2885	M D67 D73	M 03467 03473	SET UP DIAGONAL
24	160	7		MN	YPLTC - 1	1		2892	D D69 D72	D 03469 03472	COMMAND.
24	170	7		MZ	CNE			2899	Y E12 D35	Y 03512 03435	DX=/DX/
24	180	7		MZ	CNE			2906	Y E12 D40	Y 03512 03440	DY=/DY/
24	190	7		C	DX			2913	C D35 D40	C 03435 03440	
24	200	5		B	PLCT06		T	2920	B R53 T	B 02953	T
25	010	7		MCW	DX			2925	M D35 D78	M 03435 03478	INTERCHANGE
25	020	7		MCW	DY			2932	M D40 D35	M 03440 03435	THE ROLES OF
25	030	7		MCW	RATIO			2939	M D78 D40	M 03478 03440	/DX/ AND /DY/
25	040	7		MCW	YPLTC			2946	M D70 D67	M 03470 03467	FOR /DX/ LARGER.
25	050	7	PLCT06	MCW	DY			2953	M D40 D78	M 03440 03478	
25	060	7		MCW	DX			2960	M D35 C88	M 03435 03488	BEGIN ALGORITHM
25	070	4		MCW	DX			2967	M D35	M 03435	FOR A STRAIGHT
25	080	7		MCW	ZERC + 5	5		2971	M E53 D93	M 03553 03493	LINE.
25	090	7		MCW	DX			2978	M D35 D94	M 03435 03494	
25	100	4		A	ACCUM + 1	1		2985	A D94	A 03494	
25	110	4		A	ACCUM + 1	1		2989	A D94	A 03494	ACCUM=MAX(/DX/,
25	120	7		A	DX			2993	A D35 D94	A 03435 03494	(DY/) / 2
25	130			*							
25	140			*							
25	150	8		B	PLCT07		2	3000	B +20 E05 2	B 03020 03505	2 IC=2 FOR PEN-UP.
25	160	8		B	PLOT10		3	3008	B A12 E05 3	B 03112 03505	3 IC=3 FOR PEN-DN.
25	170	4		B	PLOT15			3016	B A91	B 03191	
25	180	8	PLCT07	B	PLCT15		2	3020	B A91 D06 2	B 03191 03406	2 NO PEN-MOTION.

PG	LIN	CT	LABEL	CP	A OPERAND	B OPERAND	D	LOC	INSTRUCTION	INST. DECD.	COMMENTS
25	190	7		MCW	C667	CSAVE		3028	M D58 D64	M 03458	03464
25	200	7	PLCT08	MCW	IC	PPI		3035	M E05 D06	M 03505	03406
26	010	8		BWZ	CUTPUT	0092		3042	V B46 092 K	V 03246	0C092 K
26	020	7		SHR	0094	0C03		3050	H 094 0-3	H 00094	0C003/2 K
26	030	7		MCW	CSAVE	STOR - 1 2		3057	M D64 EP8	M 03464	03578/2
26	040	7		MCW	ZERU + 2	KOUNT		3064	M E50 D04	M 03550	03404
26	050	8	PLCT09	BWZ	CUTPUT	0092		3071	V B46 092 K	V 03246	00092 K
26	060	7		SHR	0094	0003		3079	H 094 0-3	H 00094	0C003/2 K
26	070	7		MCW	SEX	STCR - 1 2		3086	M D55 EP8	M 03455	03578/2
26	080	7		A	CNE	KCUNT		3093	A E12 D04	A 03512	03404
26	090	8		B	PLCT15	KOUNT - 1	3	3100	B A91 D03 3	B 03191	03403 3
26	100	4		B	PLCT09			3108	B +71	B 03071	
26	110	8	PLCT10	B	PLCT15	PPI	3	3112	B A91 D06 3	B 03191	03406 3
26	120	7		MCW	C665	CSAVE		3120	M D61 D64	M 03461	03464
26	130	4		B	PLCT08			3127	B +35	B 03035	
26	140	7	PLCT11	A	RATIO	ACCUM		3131	A D78 D93	A 03478	03493
26	150	8		BWZ	CUTPUT	0092		3138	V B46 092 K	V 03246	0C092 K
26	160	7		SHR	0094	0003	2	3146	H 094 0-3	H 00094	00003/2 K
26	170	7		C	ACCUM	TEST		3153	C D93 D88	C 03493	03488
26	180	5		B	PLCT14			3160	B B21 T	B 03221	
26	190	5		B	PLCT14			3165	B B21 S	B 03221	
26	200	7		MCW	XPLTC	STOR - 1 2		3170	M D67 EP8	M 03467	03578/2
27	010	7	PLCT12	S	CNE	COUNT		3177	S E12 D83	S 03512	03483
27	020	7		MZ	CNE	COUNT		3184	Y E12 D83	Y 03512	03483
27	030	7	PLCT15	C	COUNT	ZERU + 5		3191	C D83 E53	C 03483	03553
27	040	5		B	PLCT11			3198	B A31 /	B 03131	/
27	050	7		MCW	0094	IX2		3203	M 094 E11	M 00094	03511
27	060	7		MCW	SAVE2	0094		3210	M E08 094	M 03508	00094
27	070	4	PLCTEX	B	0C00			3217	B 000	B 00000	
27	080	7	PLCT14	MCW	XYPLTC	STOR - 1 2		3221	M D73 EP8	M 03473	03578/2
27	090	7		S	TEST	ACCUM		3228	S D88 D93	S 03488	03493
27	100	7		MZ	CNE	ACCUM		3235	Y E12 D93	Y 03512	03493
27	110	4		B	PLCT12			3242	B A77	B 03177	
27	120				* SUBROUTINE OUTPUT						
27	130				* * * * *						
27	140				* * * * *						
27	150	4	CUTPUT	SHR	CUTEX + 3			3246	H B94	H 03294	
27	160	7		MCW	RGAP	STOR + 3 2		3250	M C78 EQ2	M 03378	03582/2
27	170	7		LCA	MARK	STOR + 4 2		3257	L E47 EQ3	L 03547	03583/2
27	180	4		B	.RWS.			3264	B V8V	B 05585	
27	190	8		MU	CALCCM	SYNCR	W	3268	M U3 E61 W	M U3	03561 W
27	200	4		B	ENREEL			3276	B B95	B 03295	
28	010	4	CUT1	CW	STCR + 4 2			3280	J EQ3	J 03583/2	
28	020	7		SHR	0094	0000		3284	H 094 C00	H 00094	00000
28	030	4	CUTEX	B	0000			3291	B 000	B 00000	
28	040	7	ENREEL	MCW	K9999	AB		3295	M E60 E38	M 03560	03538
28	050	7		SHR	0C94	0014		3302	H 094 014	H 00094	0C014
28	060	7		MCW	BLKADR	STOR - 1 2		3309	M E46 EP8	M 03546	03578/2
28	070	7		MN	CNE	STOR - 1		3316	D E12 E78	D 03512	03578
28	080	7	CUT2	A	CNE	C093		3323	A E12 093	A 03512	00093
28	090	7		MCW	SYNCR + 9	STOR - 1 2		3330	M E70 EP8	M 03570	03578/2
28	100	8		B	CUT3	C093	5	3337	B C49 093 5	B 03349	00093 5
28	110	4		B	CUT2			3345	B C23	B 03323	
28	120	7	CUT3	MCW	RGAP	STOR + 3 2		3349	M C78 EQ2	M 03378	03582/2
28	130	7		LCA	MARK	STOR + 4 2		3356	L E47 EQ3	L 03547	03583/2
28	140	4		B	.RWS.			3363	B V8V	B 05585	

PG	LIN	CT	LABEL	CP	A OPERAND	B OPERAND	D	LOC	INSTRUCTION	INST. DECD.	COMMENTS
28	150	8		MU	CALCOM	SYNCR	W	3367	M (U3 E61 W	M (U3 03561	W
28	160	4	RGAP	DCW	* 4634			3378			
28	170	5		CU	CALCOM		U	3379	U (U3 U	U (U3	U
28	180	7		H	* + 1	0888		3384	. C91 888	. 03391 00888	
28	190	4		B	.RWS.			3391	B V8V	B 05585	
28	200	8		MU	CALCOM	SYNCR	W	3395	M (U3 E61 W	M (U3 03561	W
29	010	2	KCUNT	DCW	*			3404			
29	020	1	BI	DCW	* -			3405			
29	030	1	PPI	DCW	*			3406			
29	040	7		MA	* + 1	STOR - 1		3407	D D14 E78	D 03414 03578	
29	050	4		B	OUT1			3414	B B80	B 03280	
29	060				*						
29	070				* CONSTANTS AND WORK AREAS						
29	080				*						
29	090	3		DCW	0094			0094			
29	100	3	BN	DCW	*	001		3420			
29	110	5	PENX	DCW	*			3425			
29	120	5	PENY	DCW	*			3430			
29	130	5	DX	DCW	*			3435			
29	140	5	DY	DCW	*			3440			
29	150	3	PXC	DCW	*	766		3443			
29	160	3	MXC	DCW	*	566		3446			
29	170	3	PYC	DCW	*	676		3449			
29	180	3	MYC	DCW	*	656		3452			
29	190	3	SEX	DCW	*	666		3455			
29	200	3	C667	DCW	*	667		3458			
30	010	3	C665	DCW	*	665		3461			
30	020	3	CSAVE	DCW	*			3464			
30	030	3	XPLTC	DCW	*			3467			
30	040	3	YPLTC	DCW	*			3470			
30	050	3	XYPLTC	DCW	*			3473			
30	060	5	RATIC	DCW	*			3478			
30	070	5	CCUNT	DCW	*			3483			
30	080	5	TEST	DCW	*			3488			
30	090	5	ACCLM	DCW	*			3493			
30	100	1		DC	*			3494			
30	110	5	X	DCW	*			3499			
30	120	5	Y	DCW	*			3504			
30	130	1	IC	DCW	*			3505			
30	140				*						
30	150	3	SAVE2	DCW	*			3508			
30	160	3	IX2	DCW	*			3511			
30	170	1	CNE	DCW	*	1		3512			
30	180	1	A	DCW	*	4		3513			
30	190	9		DC	*	444555566		3522			
30	200	1	B	DCW	*	4		3523			
31	010	9		DC	*	567456745		3532			
31	020	6	AB	DCW	*			3538			
31	030	8	BLKADR	DC	*	13333333		3546			
31	040	1	MARK	DC	*			3547			
31	050	1	ZERC	DC	*			3548			
31	060	6		DCW	*	C00C00		3554			
31	070	6	K9999	DCW	*	656565		3560			
31	080		CALCOM	DS	(U3						
31	090				*						
31	100				* CALCCMP DATA BUFFER						

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PG	LIN	CT	LABEL	CP	A CPFRAND	B OPERAND	D	LOC	INSTRUCTION	INST. DECD.	COMMENTS
31	110				*						
31	120	1	SYNCR	ECW	*	4		3561			
31	130	17		EC	*	444444444433333332		3578			
31	140	1	STCK	ECW	*			3579			
31	150	99		CS	*			3678			
31	160	99		CS	*			3777			
31	170	99		CS	*			3876			
31	180	99		CS	*			3975			
31	190	99		CS	*			4074			
31	200	99		CS	*			4173			
32	010	99		CS	*			4272			
32	020	99		CS	*			4371			
32	030	99		CS	*			4470			
32	040	99		CS	*			4569			
32	050	99		CS	*			4668			
32	060	99		CS	*			4767			
32	070	99		CS	*			4866			
32	080	99		CS	*			4965			
32	090	99		CS	*			5064			
32	100	99		CS	*			5163			
32	110	99		CS	*			5262			
32	120	99		CS	*			5361			
32	130	99		CS	*			5460			
32	140	99		CS	*			5559			
32	150	27		CS	*			5584			
32	160				*						
32	170				*	READ-WRITE SUBROUTINE.					
32	180				*						
32	190				*						
32	200				*						
33	010			DS	*			5584			RELOC. SYMBOL.
33	020	4	.RWS.	SBR	.	+129		5585	H X1T	H 05713	SAVE RETURN.
33	030	7		MCW	0099			5589	M 099 X3Z	M 00099 05739	SAVE XR3.
33	040	7		MCW	.	+129	0099 +155	5596	M X1T 099	M 05713 00099	MOVE INSTRUCT.
33	050	7		LCA	C007		3 . + 56	5603	L 0+7 W4#	L 00007/3 05640	
33	060	7		MCW	.	+ 6	. +274	5610	M V9# Y5Y	M 05590 05858	REC. COUNT = 0.
33	070	4		B	.	+ 49		5617	B W3T	B 05633	
33	080	7		MA	.	+ 52	* + 4	5621	D W3W W3/	C 05636 05631	
33	090	5		CU	(UO			5628	U (UO E	U (UO	E ERASE TAPE.
33	100	8		NCP	0C00		C000	5633	N 000 C00 0	N 00000 0C000	O READ-WRITE TAPE.
33	110	4		SFR	.LGTH.			5641	H Y6V	H 05865	STCRE REC. LGTH.
33	120	5		B	.	+255		5645	B Y3Z K	B 05839	K EOF-EOR TEST.
33	130	8		BB	.	+130	. + 56	5650	B X1U W4# W	B 05714 05640	W WRITE CP. TEST.
33	140	7		MCW	.	+ 55	0099	5658	M W3Z 099	M 05639 0C099	COMPUTE ADDRESS
33	150	7		MCW	.	+276	. +278	5665	M Y6# Y6S	M 05860 05862	TO TEST IF
33	160	7		SBR	0099		0C01 3	5672	H 099 0+1	H 00099 0C001/3	NOISE RECORD.
33	170	7		CC	0099		.LGTH.	5679	C 099 Y6V	C 00099 05865	
33	180	5		B	.	+ 12		5686	B V9W S	B 05596	S NOISE. YES.
33	190	7		A	*	- 6	. +278	5691	A W9/ Y6S	A 05691 05862	
33	200	5		B	.	+123		5698	B X0X Z	B 05707	Z
34	010	4		BB	.	+ 88		5703	B W7S	B 05672	
34	020	7		SBR	0C99		C0C0	5707	H 099 C00	H 00099 0C000	L RESTORE RETURN.
34	030	5		B	.	+160		5714	B X4U L	B 05744	L ERROR TAPE TEST.
34	040	7		SBR	0099		0C04 3	5719	H 099 0+4	H 00099 00004/3	NORMAL RETURN.
34	050	7		SBR	.	+159	C008 3	5726	H X4T 0+8	H 05743 0C008/3	EOF-EOR RETURN.
34	060	7		SBR	0099		C0C0	5733	H 099 C00	H 00099 0C000	RESTORE XR3.

PLCT

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PG	LIN	CT	LABEL	CP	A OPERAND	B OPERAND	D	LOC	INSTRUCTION	INST. DECD.	COMMENTS
34	07C	4		B	0000			5740	B 000	B 00000	***** EXIT *****
34	080	7		MN	+ 52	* + 4		5744	D W3W X5U	D 05636 05754	
34	09C	5		CU	{U0		B	5751	U {U0 B	U {U0	B BACK SPACE.
34	100	7		A	* - 6	. +274		5756	A X5W Y5Y	A 05756 05858	TEST IF PERM.
34	110	5		B	. +196		Z	5763	B X8# Z	B 05780	Z REDUND.(10).
34	12C	8		B	. + 37	. + 56	W	5768	B W2/ W4# W	B 05621 05640	W NO.
34	130	4		B	. + 49			5776	B W3T	B 05633	
34	140	7		SBR	0099	0000		5780	H 099 000	H 00099 00000	YES.
34	150	8		B	. +222	. + 56	W	5787	B Y0W W4# W	B 05806 05640	W
34	160	7		SBR	. +242	0110	3	5795	H Y2W 1A0	H 05826 00110/3	READ.
34	17C	4		B	. +229			5802	B Y1T	B 05813	
34	180	7		SBR	. +242	0220	3	5806	H Y2W 2B0	H 05826 00220/3	WRITE.
34	190	7		MN	. + 52	* + 7		5813	D W3W Y2W	D 05636 05826	
34	20C	7		H	* + 1	0000		5820	. Y2X 000	. 05827 00000	-STOP-
35	01C	8		B	* - 14	0098	2	5827	B Y2# 098 2	B 05820 00098	2 EOF-EOR.
35	02C	4		B	. + 12			5835	B V9W	B 05596	PERM. REDUND.
35	030	8		B	. +142	0008	3	5839	B X2W 0+8 B	B 05726 00008/3	B TEST IF USER
35	040	7		SBR	0099	0220		5847	H 099 220	H 00099 00220	RETURN.
35	050	4		B	. +203			5854	B X8X	B 05787	
35	060			*							
35	07C	1		DCW	*			5858			RECUND. COUNT.
35	080	2		DCW	* 87			5860			CONSTANT -13.
35	09C	2		DCW	*			5862			NOISE COUNT.
35	10C	3	.LGTH.	DCW	*			5865			RECORD LENGTH.
35	110			*							
35	120	3		DCW	* 0099			0099			XR3.
35	130			*							
35	14C			END	* IAXIS						

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/ 333 080

695 CARDS.

CLEAR STORAGE 1 ,008015,022029,033001L06713510C1/099H104C1C4135B101/1,001/001199199
 CLEAR STORAGE 2 ,105109,116121,122126,133001B101
 BCGTSTRAP CARC ,008015,022029,056063/056029 ,0240671056

PG	LIN	CT	LABEL	OP	A OPERAND	B OPERAND	D	LOC	INSTRUCTION	INST. DECD.	COMMENTS	
				ANAL								
1	010			CTL	441							
1	020				*****							
1	030				* PLOTTING OF ANALYSER DATA							
1	040				* -----							
1	050				* B ON NO LIST							
1	060				* OFF LIST OF DATA							
1	070				* E ON Y-AXIS GREATER OR EQUAL THAN 35 CM							
1	080				* OFF Y-AXIS SMALLER THAN 35 CM							
1	090				* F ON HISTOGRAMS							
1	100				* OFF NO HISTOGRAMS							
1	110				* G ON NO SCALED AXIS ARE DESIGNED							
1	120				* OFF SCALED AXIS ARE DESIGNED							
1	130				* INPUT CARDS							
1	140				* COL 4-6 TAPE NUMBER							
1	150				* COL 10-13 ID-NUMBER							
1	160				* COL 15-16 FIRST BLOCK							
1	170				* COL 17-18 LAST BLOCK							
1	180				* COL 20-22 SCALE FACTOR X (NO.OF CHAN./CM)							
1	190				* COL 24-27 SCALE FACTOR Y (NO.OF COUNTS/CM)							
1	200				* CCL 31-35 MAX COUNT							
2	010				* COL 40-72 REMARKS							
2	020				* -----							
2	030				*****							
2	040			GRG	0100							
2	050	1	KM1	DCW	*	J				0100		
2	060	3	A1547	DSA	*		1547	V47		0103		
2	070	1	KCPLUS	DCW	*	+				0104		
2	080	1	K8	DCW	*	8				0105		
2	090	2	K14	DCW	*	14				0107		
2	100	3	BLANK	DCW	*					0110		
2	110	3	K069	DCW	*	069				0113		
2	120	3	KP100	DCW	*	10+				0116		
2	130	3	K200	DCW	*	200				0119		
2	140	3	K256	DCW	*	256				0122		
2	150	5	KC3400	DCW	*	03400				0127		
2	160	5	K07000	DCW	*	0700+				0132		
2	170	2	BC	DCW	*					0134		
2	180	2	BE	DCW	*					0136		
2	190	3	TAPE	DCW	*					0139		
2	200	3	SFX	DCW	*					0142		
3	010	4	SFY	DCW	*					0146		
3	020	5	CHANC	DCW	*					0151		
3	030	5	RFELD	DCW	*					0156		
3	040	5	XMAX	DCW	*					0161		
3	050	5	YMAX	DCW	*					0166		
3	060	5	AS	DCW	*					0171		
3	070	5	CCOUNTM	DCW	*					0176		
3	080	7	DIVENC	DCW	*					0183		
3	090	13	RDIV	DCW	*					0196		
3	100			ORG	0333							
3	110	30	MSGBLD	DCW	*	BLOCK XX UNTIL XX ARE PLOTTED.				0362		

ANAL

PAGE 2

PG	LIN	CT	LABEL	OP	A OPERAND	B OPERAND	D	LOC	INSTRUCTION	INST. DECD.	COMMENTS
3	120	28	MSGSCX	DCW	* SCALE FACTOR X-AXIS = XXXXX			0390			
3	130	8		DC	* CHAN./CM			0398			
3	140	1		DC	1943			1943			GROUP MARK
3	150			ORG	1956						
3	160	7	START	SW	0004	CO10		1956	, 004 010	, 00004 00010	
3	170	7		MCW	BLANK	TAPE		1963	M 110 139	M 00110 00139	
3	180	4		CSW	CALCO			1970	) R48	) 02948	
3	190	4		SW	1943			1974	, Z43	, 01943	
3	200	5	START1	B	FIN		A	1978	B +37 A	B 03037	A
4	010	1		R				1983	1	1	
4	020	2		SS				1984	K 1	K	1
4	030	8		B	A01	TAPE		1986	B -40 139	B 02040 00139	
4	040	7		C	0006	TAPE		1994	C 006 139	C 00006 00139	
4	050	5		B	A01		S	2001	B -40 S	B 02040	S
4	060	5		CU	(U2		U	2006	U (U2 U	U (U2	U
4	070	7		MCW	0006	MSGTAP- 17		2011	M 006 A71	M 00006 03171	
4	080	4		CS	0330			2018	/ 330	/ 00330	
4	090	1		CS				2022	/	/	
4	100	7		MCW	MSGTAP	0250		2023	M A88 250	M 03188 00250	
4	110	1		W				2030	2	2	
4	120	2		CC				2031	F 1	F	1
4	130	7		H	* + 1	0444		2033	. -40 444	. 02040 00444	
4	140	7	A01	MCW	0006	TAPE		2040	M 006 139	M 00006 00139	
4	150	7		A	ZERO + 1	0035		2047	A M7# 035	A 06470 00035	
4	160	4		SW	0040			2054	, 040	, 00040	
4	170	4		CS	0332			2058	/ 332	/ 00332	
4	180	1		CS				2062	/	/	
4	190	2		CC				2063	F 1	F	1
4	200	7		MCW	0072	0250		2065	M 072 250	M 00072 00250	1
5	010	1		W				2072	2	2	
5	020	2		CC				2073	F L	F	L
5	030	7		MCW	0013	IDNUMB		2075	M 013 616	M 00013 03216	L
5	040	4		CS	0250			2082	/ 250	/ 00250	
5	050	7		MCW	IDNUMB	0217		2086	M B16 217	M 03216 00217	
5	060	1		W				2093	2	2	
5	070	2		CC				2094	F J	F	J
5	080	7		MCW	0016	BO		2096	M 016 134	M 00016 00134	J
5	090	7		MCW	0018	BE		2103	M 018 136	M 00018 00136	
5	100	7		MCW	0022	SFX		2110	M 022 142	M 00022 00142	
5	110	7		MCW	0027	SFY		2117	M 027 146	M 00027 00146	
5	120	7		MCW	0035	COUNTM		2124	M 035 176	M 00035 00176	
5	130	7		MCW	BC	MSGBLO- 22		2131	M 134 340	M 00134 00340	
5	140	7		MCW	BE	MSGBLO- 13		2138	M 136 349	M 00136 00349	
5	150	7		MCW	MSGBLO	0233		2145	M 362 233	M 00362 00233	
5	160	1		W				2152	2	2	
5	170	2		CC				2153	F J	F	J
5	180	4		CS	0233			2155	/ 233	/ 00233	
5	190	7		LCA	MASK	MSGSCX- 1		2159	L H91 389	L 03891 00389	
5	200	7		MCE	SFX	MSGSCX- 1		2166	E 142 389	E 00142 00389	
6	010	7		MCW	MSGSCX+ 8	0239		2173	M 398 239	M 00398 00239	
6	020	1		W				2180	2	2	
6	030	2		CC				2181	F J	F	J
6	040	7		LCA	MASK	MSGSCY- 1		2183	L H91 B43	L 03891 03243	
6	050	7		MCE	SFY	MSGSCY- 1		2190	E 146 B43	E 00146 03243	
6	060	7		MCW	MSGSCY+ 9	0240		2197	M B53 240	M 03253 00240	
6	070	1		W				2204	2	2	

ANAL	PG	LIN	CT	LABEL	CP	A OPERAND	B OPERAND	D	LOC	INSTRUCTION	INST. DECD.	COMMENTS
	6	08C	2		CC			J	2205	F J	F	J
	6	09C	4		CS	0242			2207	/ 242	M 00242	
	6	100	7		MCW	ZERO + 5	CHANC		2211	M M7U 151	M 06474 00151	
	6	110	7		LCA	ZERO + 2	0029		2218	L M7/ 029	L 06471 00029	
	6	12C	7	A02	A	K1	0029		2225	A V5T 029	A 05553 00029	
	6	130	7		C	0029	BU		2232	C 029 134	C 00029 00134	
	6	140	5		B	A03		S	2239	B K55 S	B 02255	S
	6	15C	7		A	K256	CHANC		2244	A 122 151	A 00122 00151	
	6	16C	4		B	A02			2251	B K25	B 02225	
	6	17C	7	A03	MCW	CHANC	AMIN		2255	M 151 I58	M 00151 03958	
	6	18C	7		MCW	K3	IC		2262	M U8S M2W	M 05482 06426	
	6	19C	7		ZA	KP100	DIVEND		2269	+ 116 183	+ 00116 00183	
	6	20C	7		D	SFX	DIVEND-	2	2276	(142 181	(00142 00181	
	7	010	7		ZA	DIVEND-	AS		2283	+ 179 171	+ 00179 00171	
	7	02C	7		MCW	AS	X		2290	M 171 M2+	M 00171 06420	
	7	030	7		MCW	ZERO + 5	PENY		2297	M M7U L5/	M 06474 06351	
	7	04C	7		MCW	ZERO + 5	PENX		2304	M M7U L4W	M 06474 06346	
	7	050	4		CW	ECFTE			2311	) +49	) 03049	
	7	060	7		CW	BTEST	YMTEST		2315	) L77 N14	) 02377 02514	
	7	07C	4	READ	CS	1942			2322	/ Z42	/ 01942	
	7	080	1		CS				2326	/	/	
	7	090	1		CS				2327	/	/	
	7	100	1		CS				2328	/	/	
	7	110	1		CS				2329	/	/	
	7	120	1		CS				2330	/	/	
	7	130	1		CS				2331	/	/	
	7	140	1		CS				2332	/	/	
	7	150	1		CS				2333	/	/	
	7	160	1		CS				2334	/	/	
	7	170	1		CS				2335	/	/	
	7	180	1		CS				2336	/	/	
	7	190	1		CS				2337	/	/	
	7	200	1		CS				2338	/	/	
	8	01C	1		CS				2339	/	/	
	8	020	1		CS				2340	/	/	
	8	030	7		SW	0401	0403		2341	, 401 403	, 00401 00403	
	8	040	4		B	.RWS.			2348	B FOX	B 07607	
	8	050	8		MU	(U2	0401	R	2352	M (U2 401 R	M (U2 00401 R	
	8	06C	4		B	EOF			236C	B +48	B 03048	
	8	070	7		C	0406	0013		2364	C 406 013	C 00406 00013	
	8	08C	5		B	READ		/	2371	B L22 /	B 02322	/
	8	090	1		NOP				2376	N	N	
	8	100	4	BTEST	B	A04			2377	B M04	B 02404	
	8	11C	7		C	0402	BO		2381	C 402 134	C 00402 00134	
	8	120	5		B	READ		/	2388	B L22 /	B 02322	/
	8	130	7		MCW	ZERO + 5	YMAX		2393	M M7U 166	M 06474 00166	
	8	14C	4		SW	BTEST			2400	, L77	, 02377	
	8	150	7	A04	SBR	0099	0011		2404	H 099 011	H 00099 00011	
	8	160	7	A05	MCW	0401	RFELD		2411	M 4+1 156	M 00401/3 00156	
	8	170	7		C	RFELD	COUNTM		2418	C 156 176	C 00156 00176	
	8	18C	5		B	A06		U	2425	B M37 U	B 02437	U
	8	190	7		MCW	COUNTM	RFELD		2430	M 176 156	M 00176 00156	
	8	200	7	A06	ZA	KOPLUS	RDIV		2437	+ 104 196	+ 00104 00196	
	9	010	7		MCW	RFELD	RDIV - 3		2444	M 156 193	M 00156 00193	
	9	020	7		D	SFY	RDIV - 7		2451	(146 189	(00146 00189	
	9	030	7		A	K1	RDIV - 5		2458	A V5T 191	A 05553 00191	

ANAL

PG	LIN	CT	LABEL	OP	A OPERAND	B OPERAND	D	LOC	INSTRUCTION	INST. DECD.	COMMENTS
9	040	7		ZA	RDIV - 6	Y		2465	+ 190 M2V	+ 00190 06425	
9	050	7		C	K07000	Y		2472	C 132 M2V	C 00132 06425	
9	060	5		B	A07		T	2479	B N02 T	B 02502	T
9	070	7		MCW	K07000	Y		2484	M 132 M2V	M 00132 06425	
9	080	7		MCW	K07000	YMAX		2491	M 132 166	M 00132 00166	
9	090	4		SW	YMTEST			2498	, N14	, 02514	
9	100	4	A07	B	PLOT			2502	B V5V	B 05555	
9	110	7		MCW	K2	IC		2506	M U6V M2W	M 05465 06426	
9	120	1		NCP				2513	N	N	
9	130	4	YMTEST	B	A08			2514	B N37	B 02537	
9	140	7		C	Y	YMAX		2518	C M2V 166	C 06425 00166	
9	150	5		B	A08		U	2525	B N37 U	B 02537	U
9	160	7		MCW	Y	YMAX		2530	M M2V 166	M 06425 00166	
9	170	7	A08	A	AS	X		2537	A 171 M2+	A 00171 06420	
9	180	5		B	PLOT		F	2544	B V5V F	B 05555	F
9	190	7		SBR	0099	0006	3	2549	H 099 0+6	H 00099 00006/3	
9	200	7		C	0099	A1547		2556	C 099 103	C 00099 00103	
10	010	5		B	A05		/	2563	B M11 /	B 02411	/
10	020	5		B	A11		B	2568	B P23 B	B 02723	B
10	030	4		CS	0332			2573	/ 332	/ 00332	
10	040	1		CS				2577	/	/	
10	050	2		CC			L	2578	F L	F	L
10	060	7		MCW	IDNUMB	0225		2580	M B16 225	M 03216 00225	
10	070	7		MCW	0402	MSGBLO- 22		2587	M 402 340	M 00402 00340	
10	080	7		MCW	MSGBLO- 22	0260		2594	M 340 260	M 00340 00260	
10	090	1		W				2601	Z	Z	
10	100	2		CC			L	2602	F L	F	L
10	110	4		CS	0299			2604	/ 299	/ 00299	
10	120	7		MCW	0402	0212		2608	M 402 212	M 00402 00212	
10	130	7		MCW	0406	0216		2615	M 406 216	M 00406 00216	
10	140	7		SBR	0099	0011		2622	H 099 011	H 00099 00011	
10	150	7	A085	SBR	0094	0013		2629	H 094 013	H 00094 00013	
10	160	7		A	K8	CHANC		2636	A 105 151	A 00105 00151	
10	170	7	A09	MCW	0401	RFELD	3	2643	M 4+1 156	M 00401/3 00156	
10	180	7		LCA	MASK	0210	2	2650	L H91 2J0	L 03891 00210/2	
10	190	7		MCE	RFELD	0210	2	2657	E 156 2J0	E 00156 00210/2	
10	200	7		SBR	0099	0006	3	2664	H 099 0+6	H 00099 00006/3	
11	010	7		SBR	0094	0007	2	2671	H 094 0-7	H 00094 00007/2	
11	020	7		C	0094	K069		2678	C 094 113	C 00094 00113	
11	030	5		B	A09		/	2685	B 043 /	B 02643	/
11	040	7		LCA	MASK	0290		2690	L H91 290	L 03891 00290	
11	050	7		MCE	CHANC	0290		2697	E 151 290	E 00151 00290	
11	060	1		W				2704	Z	Z	
11	070	7		C	0099	A1547		2705	C 099 103	C 00099 00103	
11	080	5		B	A085		/	2712	B 029 /	B 02629	/
11	090	2		CC			1	2717	F 1	F	1
11	100	4		B	A111			2719	B P30	B 02730	
11	110	7	A11	A	K256	CHANC		2723	A 122 151	A 00122 00151	
11	120	7	A111	C	0402	BE		2730	C 402 136	C 00402 00136	
11	130	5		B	READ		/	2737	B L22 /	B 02322	/
11	140	5		B	CGURT		G	2742	B +77 G	B 03077	G
11	150	7		MCW	X	LAXIS		2747	M M2+ 107	M 06420 03907	
11	160	7		MCW	X	XMAX		2754	M M2+ 161	M 06420 00161	
11	170	7		MCW	ZERO + 5	YAXIS		2761	M M7U H53	M 06474 03853	
11	180	4		MCW	ZERO + 5			2768	M M7U	M 06474	
11	190	7		MCW	ZERO + 5	ATHETA		2772	M M7U 108	M 06474 03908	

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PG	LIN	CT	LABEL	CP	A OPERAND	B OPERAND	D	LOC	INSTRUCTION	INST. DECC.	COMMENTS
11	200	7		MCW	TIT1	BCD1 + 14		2779	M B02 I23	M 03202 03923	
12	01C	7		MCW	K14	NAXIS		2786	M 107 I43	M 00107 03943	
12	02C	7		A	K100	LAXIS		2793	A H82 I07	A 03882 03907	
12	03C	7		ZA	K200	DL		2800	+ 119 I68	+ 00119 03968	
12	04C	4		A	SFX			2807	A 142	A 00142	
12	05C	7		ZA	SFX	DA		2811	+ 142 I63	+ 00142 03963	
12	06C	4		B	IAXIS			2818	B B54	B 03254	
12	07C	7		MCW	XSYM	AS		2822	M U9T 171	M 05493 00171	
12	08C	7		MCW	ZERO + 5	AMIN		2829	M M7U I58	M 06474 03958	
12	09C	7		ZA	K100	DL		2836	+ H82 I68	+ 03882 03968	
12	10C	7		MCW	YMAX	LAXIS		2843	M 166 I07	M 00166 03907	
12	11C	7		A	K100	LAXIS		2850	A H82 I07	A 03882 03907	
12	12C	7		ZA	SFY	DA		2857	+ 146 I63	+ 00146 03963	
12	13C	7		MCW	KM1	ATHETA		2864	M 100 I08	M 00100 03908	
12	14C	7		MCW	MSGSCY+ 6	BCD1 + 6		2871	M B50 I15	M 03250 03915	
12	15C	7		MCW	K06	NAXIS		2878	M I02 I43	M 03902 03943	
12	16C	4		B	IAXIS			2885	B B54	B 03254	
12	17C	7	A115	MCW	AS	XSYM		2889	M 171 U9T	M 00171 05493	
12	18C	7		S	K03400- 1	XSYM		2896	S 126 U9T	S 00126 05493	
12	19C	7		MCW	YMAX	YSYM		2903	M 166 U9Y	M 00166 05498	
12	20C	7		MCW	ZERO + 1	STHETA		2910	M M7# U8/	M 06470 05481	
13	01C	7		MCW	IDNUMB	BCD + 14		2917	M B16 V3U	M 03216 05534	
13	02C	7		MCW	K14	NSYM		2924	M 107 S2U	M 00107 05224	
13	03C	7		ZA	K070C0- 3	FACT		2931	+ 129 U7#	+ 00129 05470	
13	04C	4		B	SYMBCL			2938	B I69	B 03969	
13	05C	5		B	A13		E	2942	B +00 E	B 03000	E
13	06C	1		NCP				2947	N	N	
13	07C	4	CALCC	B	A12			2948	B R71	B 02971	
13	08C	4		SW	CALCC			2952	, R48	, 02948	
13	09C	7		MCW	K034C0	Y		2956	M 127 M2V	M 00127 06425	
13	10C	4		MCW	ZERO + 5			2963	M M7U	M 06474	
13	11C	4		B	A14			2967	B +11	B 03011	
13	12C	7	A12	ZS	K03400	Y		2971	- 127 M2V	- 00127 06425	
13	13C	4		CH	CALCC			2978	) R48	) 02948	
13	14C	7	A125	MCW	XMAX	X		2982	M 161 M2#	M 00161 06420	
13	15C	7		A	K03400- 1	X		2989	A 126 M2#	A 00126 06420	
13	16C	4		B	A14			2996	B +11	B 03011	
13	17C	7	A13	MCW	ZERO + 5	Y		3000	M M7U M2V	M 06474 06425	
13	18C	4		B	A125			3007	B R82	B 02982	
13	19C	7	A14	MCW	K3	IC		3011	M U8S M2w	M 05482 06426	
13	20C	4		B	PLOT			3018	B V5V	B 05555	
14	01C	7		MZ	* - 10	BI		3022	Y +18 L2W	Y 03018 06326	
14	02C	4		B	PLOT			3029	B V5V	B 05555	
14	03C	4		B	START1			3033	B Z78	B 01978	
14	04C	7	FIN	H	* + 1	0999		3037	. +44 999	. 03044 00999	
14	05C	4		B	START			3044	B Z56	B 01956	
14	06C	1	ECF	NCP				3048	N	N	
14	07C	4	ECFTE	B	A20			3049	B +66	B 03066	
14	08C	4		SW	EOFTE			3053	, +49	, 03049	
14	09C	5		CU	IU2		R	3057	U IU2 R	U IU2 R	R
14	10C	4		B	READ			3062	B L22	B 02322	
14	11C	7	A20	H	* + 1	0333		3066	. +73 333	. 03073 00333	
14	12C	4		B	START			3073	B Z56	B 01956	
14	13C	7	CCURT	MCW	ZERO + 5	Y		3077	M M7U M2V	M 06474 06425	
14	14C	7		MCW	X	AS		3084	M M2# 171	M 06420 00171	
14	15C	7		MCW	K3	IC		3091	M U8S M2W	M 05482 06426	

PG	LIN	CT	LABEL	CP	A OPERAND	B OPERAND	D	LOC	INSTRUCTION	INST. DECD.	COMMENTS
14	16C	4		B	PLOT			3098	B V5V	B 05555	
14	17C	7		MCW	ZERO + 5	X		3102	M M7U M2#	M 06474 06420	
14	18C	7		MCW	K2	IC		3109	M U6V M2W	M 05465 06426	
14	19C	4		B	PLOT			3116	B V5V	B 05555	
14	20C	7		MCW	YMAX	Y		3120	M 166 M2V	M 00166 06425	
15	01C	4		B	PLOT			3127	B V5V	B 05555	
15	02C	7		ZA	AS	DIVEND- 1		3131	+ 171 182	+ 00171 00182	
15	03C	4		A	DIVEND- 1			3138	A 182	A 00182	
15	04C	7		A	AS	DIVEND- 1		3142	A 171 182	A 00171 00182	
15	05C	7		MCW	DIVEND- 2	AS		3149	M 181 171	M 00181 00171	
15	06C	4		B	All5			3156	B Q89	B 02889	
15	07C	29	MSGTAP	DCW	* PUT TAPE XXX ON UNIT 2. START			3188			
15	08C	14	TIT1	DCW	* CHANNEL NUMBER			3202			
15	09C	14	IDNUMB	DCW	* ID.NUMBER XXXX			3216			
15	10C	28	MSGSCY	DCW	* SCALE FACTOR Y-AXIS = XXXXX			3244			
15	11C	9		DC	* COUNTS/CM			3253			
15	12C				*****						
15	13C				* SUBROUTINE IAXIS						
15	14C				* -----						
15	15C				* ARGUMENTS						
15	16C				* XAXIS,YAXIS COORDINATES FOR THE START OF THE						
15	17C				* (5 POS.) AXIS						
15	18C				* LAXIS LENGTH OF AXIS						
15	19C				* (5 POS.)						
15	20C				* ATHETA =0 AXIS HORIZONTAL						
16	01C				* =1 AXIS VERTICAL						
16	02C				* (1 POS.) WITHOUT ZONE LABELS RIGHT HAND						
16	03C				* SIDE OF THE AXIS						
16	04C				* WITH 11-ZONE LABELS LEFT HAND						
16	05C				* SIDE OF THE AXIS						
16	06C				* BCD1 LABEL OF THE AXIS						
16	07C				* (32 POS.)						
16	08C				* NAXIS NUMBER OF CHAR. IN BCD1						
16	09C				* (2 POS.)						
16	10C				* AMIN FUNCTIONAL VALUE TO BE ASSIGNED						
16	11C				* (5 POS.) TO THE ORIGIN						
16	12C				* CA (5 POS.) SCALE INCREMENT						
16	13C				* DL (5 POS.) LENGTH IN PLOTTER STEPS FROM						
16	14C				* ONE TIC MARK TO THE FOLLOWING						
16	15C				*****						
16	16C										
16	17C	4	IAXIS	SBR	IAXEX + 3	FACT		3254	H H42	H 03842	
16	18C	7		ZA	K5	COMP		3258	+ H43 U7#	+ 03843 05470	
16	19C	7		MCW	ZERO + 5	STHETA		3265	M M7U H99	M 06474 03899	
16	20C	7		MCW	KM050 - 2	YV		3272	M H71 U8/	M 03871 05481	
17	01C	7		MCW	YAXIS			3279	M H53 I53	M 03853 03953	
17	02C	1		MCW				3286	M	M	
17	03C	8		B	AX02	ATHETA	0	3287	B D38 I08 0	B 03438 03908	0
17	04C	8		B	AX02	ATHETA	-	3295	B D38 I08 -	B 03438 03908	-
17	05C	7		MCW	KM020	C2		3303	M H76 H61	M 03876 03861	
17	06C	8		B	AX00	ATHETA	J	3310	B C43 I08 J	B 03343 03908	J
17	07C	7		ZA	K5	C1		3318	+ H43 H58	+ 03843 03858	
17	08C	7		MCW	K270	C3		3325	M H85 H64	M 03885 03864	
17	09C	7		MZ	K1	K20		3332	Y V5T H55	Y 05553 03855	
17	10C	4		B	AX01			3339	B C64	B 03364	
17	11C	7	AX00	MCW	KM190	C1		3343	M H67 H58	M 03867 03858	

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PG	LIN	CT	LABEL	CP	A OPERAND	B OPERAND	D	LOC	INSTRUCTION	INST. DECC.	COMMENTS
17	120	7		MCW	KM210	C3		3350	M H94 H64	M 03894	03864
17	130	7		MZ	KM210	K20		3357	Y H94 H55	Y 03894	03855
17	140	7	AX01	SBR	AX08 + 6	XV		3364	H F02 I48	H 03602	03948
17	150	7		SBR	AX08 + 10	XV		3371	H F06 I48	H 03606	03948
17	160	7		SBR	AX08 + 13	X		3378	H F09 M2#	H 03609	06420
17	170	7		SBR	AX11 + 6	XV		3385	H F83 I48	H 03683	03948
17	180	7		SHR	AX12 + 6	YV		3392	H F90 I53	H 03690	03953
17	190	7		SBR	AX13 + 3	XV		3399	H G18 I48	H 03718	03948
17	200	7		SBR	AX13 + 6	X		3406	H G21 M2#	H 03721	06420
18	010	7		SBR	AX15 + 6	Y		3413	H G73 M2V	H 03773	06425
18	020	7		SBR	AX15 + 13	Y		3420	H G80 M2V	H 03780	06425
18	030	7		SBR	AX16 + 6	X		3427	H G87 M2#	H 03787	06420
18	040	4		B	AX07			3434	B E63	B 03563	
18	050	7	AX02	MCW	KM140	C1		3438	M H70 H58	M 03870	03858
18	060	8		B	AX03	ATHETA	-	3445	B D75 I08 -	B 03475	03908 -
18	070	7		MCW	KM140	C3		3453	M H70 H64	M 03870	03864
18	080	4		MCW	KM050			3460	M H73	M 03873	
18	090	7		MZ	KM050	K20		3464	Y H73 H55	Y 03873	03855
18	100	4		B	AX04			3471	B D93	B 03493	
18	110	7	AX03	MCW	K100	C3		3475	M H82 H64	M 03882	03864
18	120	4		MCW	K015			3482	M H79	M 03879	
18	130	7		MZ	K1	K20		3486	Y V5T H55	Y 05553	03855
18	140	7	AX04	SBR	AX08 + 6	YV		3493	H F02 I53	H 03602	03953
18	150	7		SBR	AX08 + 10	YV		3500	H F06 I53	H 03606	03953
18	160	7		SBR	AX08 + 13	Y		3507	H F09 M2V	H 03609	06425
18	170	7		SBR	AX11 + 6	YV		3514	H F83 I53	H 03683	03953
18	180	7		SBR	AX12 + 6	XV		3521	H F90 I48	H 03690	03948
18	190	7		SBR	AX13 + 3	YV		3528	H G18 I53	H 03718	03953
18	200	7		SBR	AX13 + 6	Y		3535	H G21 M2V	H 03721	06425
19	010	7		SBR	AX15 + 6	X		3542	H G73 M2#	H 03773	06420
19	020	7		SBR	AX15 + 13	X		3549	H G80 M2#	H 03780	06420
19	030	7		SBR	AX16 + 6	Y		3556	H G87 M2V	H 03787	06425
19	040	7	AX07	MZ	K1	ATHETA		3563	Y V5T I08	Y 05553	03908
19	050	7		MCW	K3	IC		3570	M U8S M2W	M 05482	06426
19	060	7		MCW	YV	Y		3577	M I53 M2V	M 03953	06425
19	070	1		MCW				3584	M	M	
19	080	4		B	PLOT			3585	B V5V	B 05555	
19	090	7		MCW	K2	IC		3589	M U6V M2W	M 05465	06426
19	100	7	AX08	A	K20	YV		3596	A H55 I53	A 03855	03953
19	110	7		MCW	YV	Y		3603	M I53 M2V	M 03953	06425
19	120	4		B	PLOT			3610	B V5V	B 05555	
19	130	7		A	C2	YV		3614	A H61 I53	A 03861	03953
19	140	1		A				3621	A	A	
19	150	7		LCA	MASK	BCD + 6		3622	L H91 V2W	L 03891	05526
19	160	7		MCE	AMIN	BCD + 6		3629	E I58 V2W	E 03958	05526
19	170	7		MCW	K06	NSYM		3636	M I02 S2U	M 03902	05224
19	180	7		MCW	YV	YSYM		3643	M I53 U9Y	M 03953	05498
19	190	1		MCW				3650	M	M	
19	200	4		B	SYMBOL			3651	B I69	B 03969	
20	010	7		S	C2	YV		3655	S H61 I53	S 03861	03953
20	020	1		S				3662	S	S	
20	030	7		A	DA	AMIN		3663	A I63 I58	A 03963	03958
20	040	7		A	DL	COMP		3670	A I68 H99	A 03968	03899
20	050	7	AX11	S	K20	YV		3677	S H55 I53	S 03855	03953
20	060	7	AX12	A	DL	XV		3684	A I68 I48	A 03968	03948
20	070	7		C	COMP	LAXIS		3691	C H99 I07	C 03899	03907

PG	LIN	CT	LABEL	OP	A OPERAND	B OPERAND	D	LOC	INSTRUCTION	INST. DECD.	COMMENTS
20	080	5		B	AX07		S	3698	B E63 S	B 03563	
20	090	5		B	AX07		U	3703	B E63 U	B 03563	S
20	100	7		MCW	K3	IC		3708	M U8S M2W	M 05482	06426
20	110	7	AX13	MCW	YV	Y		3715	M I53 M2V	M 03953	06425
20	120	4		B	PLOT			3722	B V5V	B 05555	
20	130	7		MCW	YAXIS	Y		3726	M H53 M2V	M 03853	06425
20	140	1		MCW				3733	M	M	
20	150	7		MCW	K2	IC		3734	M U6V M2W	M 05465	06426
20	160	4		B	PLOT			3741	B V5V	B 05555	
20	170	7		ZA	LAXIS	COMP + 1		3745	+ I07 I00	+ 03907	03900
20	180	4		A	COMP + 1			3752	A I00	A 03900	
20	190	4		A	CCMP + 1			3756	A I00	A 03900	
20	200	7		A	LAXIS	COMP + 1		3760	A I07 I00	A 03907	03900
21	010	7	AX15	A	COMP	X		3767	A H99 M2#	A 03899	06420
21	020	7		S	K270	X		3774	S H85 M2#	S 03885	06420
21	030	7	AX16	A	C3	Y		3781	A H64 M2V	A 03864	06425
21	040	7		MCW	Y	YSYM		3788	M M2V U9Y	M 06425	05498
21	050	1		MCW				3795	M	M	
21	060	7		MCW	BCD1 + 32	BCD + 32		3796	M I41 V5S	M 03941	05552
21	070	7		MCW	ATHETA	STHETA		3803	M I08 U87	M 03908	05481
21	080	7		MCW	NAXIS	NSYM		3810	M I43 S2U	M 03943	05224
21	090	7		ZA	K06	FACT		3817	+ I02 U7#	+ 03902	05470
21	100	4		B	SYMBCL			3824	B I69	B 03969	
21	110	7		MCW	K3	IC		3828	M U8S M2W	M 05482	06426
21	120	4		B	PLOT			3835	B V5V	B 05555	
21	130	4	IAXEX	B	0000			3839	B 000	B 00000	
21	140				* CONSTANTS						
21	150				*						
21	160				*						
21	170	1	K5	DCW	5			3843			
21	180	5	XAXIS	DCW				3848			
21	190	5	YAXIS	DCW				3853			
21	200	2	K20	DCW	20			3855			
22	010	3	C1	DCW				3858			
22	020	3	C2	DCW				3861			
22	030	3	C3	DCW				3864			
22	040	3	KM190	DCW	19-			3867			
22	050	3	KM140	DCW	14-			3870			
22	060	3	KM050	DCW	05-			3873			
22	070	3	KM020	DCW	02-			3876			
22	080	3	KC15	DCW	015			3879			
22	090	3	K100	DCW	100			3882			
22	100	3	K270	DCW	270			3885			
22	110	6	MASK	DCW	- 0			3891			
22	120	3	KM210	DCW	21-			3894			
22	130	5	CCMP	DCW				3899			
22	140	1		DC				3900			
22	150	2	KC6	DCW	06			3902			
22	160	5	LAXIS	DCW				3907			
22	170	1	ATHETA	DCW				3908			
22	180	1	BCD1	DCW				3909			
22	190	32		DCW				3941			
22	200	2	NAXIS	DCW				3943			
23	010	5	XV	DCW				3948			
23	020	5	YV	DCW				3953			
23	030	5	AMIN	DCW				3958			

PG	LIN	CT	LABEL	CP	A OPERAND	B OPERAND	D	LOC	INSTRUCTION	INST. DECD.	COMMENTS
23	040	5	DA	DCW	*			3963			
23	050	5	DL	DCW	*			3968			
23	060				*						
23	070				*****						
23	080				* SUBROUTINE SYMBOL						
23	090				* -----						
23	100				* ARGUMENTS						
23	110				* XSYM,YSYM LOWER,LEFT-HANDE CORNER						
23	120				* (5 POS.) COORDINATES OF FIRST SYMBOL						
23	130				* IN PLOTTER STEPS						
23	140				* FACT FACT * 7 = HEIGHT (EXC.CENTERED +)						
23	150				* (5 POS.) FACT * 4 = WIDTH						
23	160				* FACT * 2 = DISTANCE BETWEEN						
23	170				* TWO CHARACTERS						
23	180				* STHETA =0 IF WRITING HORIZONTAL						
23	190				* (1 POS.) =1 IF WRITING VERTICAL						
23	200				* BCDSYM GIVES THE ADDR. OF THE LEFT HAND						
24	010				* (32 POS.) POSITION OF THE CHARACTER STRING TO						
24	020				* BE PLOTTED.						
24	030				* NSYM NUMBER OF SYMBOLS TO BE PLOTTED						
24	040				* (2 POS.) MAX.32 SYMBOLS						
24	050				*						
24	060				*****						
24	070				*						
24	080				*						
24	090	4	SYMBCL	SBR	SYMBEX+ 3			3969	H 07Y	H 04078	
24	100	7		MCW	0099	SAVES3		3973	M 099 U8Y	M 00099 05488	SAVE XR3AND XR1.
24	110	7		MCW	0089	SAVES1		3980	M 089 U8V	M 00089 05485	
24	120	7		SBR	0099	0001		3987	H 099 001	H 00099 00001	XR3=1
24	130	7		MCW	FACT	XTSYM		3994	M U7# U7V	M 05470 05475	
24	140	4		A	XTSYM			4001	A U7V	A 05475	
24	150	7		A	FACT	XTSYM		4005	A U7# U7V	A 05470 05475	
24	160	4		A	XTSYM			4012	A U7V	A 05475	XTSYM=6*FACT
24	170	8		B	SYM000	STHETA	1	4016	B 03V U8/ 1	B 04035 05481	1
24	180	7		MCW	ZERO + 5	YTSYM		4024	M M7U U8#	M 06474 05480	YTSYM=0
24	190	4		B	SYM003			4031	B 04Z	B 04049	
24	200	7	SYM000	MCW	XTSYM	YTSYM		4035	M U7V U8#	M 05475 05480	
25	010	7		MCW	ZERO + 5	XTSYM		4042	M M7U U7V	M 06474 05475	
25	020	7	SYM003	C	NSYM	ZERO + 2		4049	C S2U M7/	C 05224 06471	
25	030	5		B	SYM004		/	4056	B 07Z /	B 04079 /	/
25	040	7		MCW	SAVES3	0099		4061	M U8Y 099	M 05488 00099	RESTORE INDEX
25	050	7		MCW	SAVES1	0089		4068	M U8V 089	M 05485 00089	REGISTERS.
25	060	4	SYMBEX	B	0000			4075	B 000	B 00000	RETURN
25	070	7	SYM004	MCW	BCD	CHARAC	3	4079	M VB# V5U	M 05520/3 05554	CHARAC=BCD+XR3
25	080	8		B	SYM100	CHARAC		4086	B 45/ V5U	B 04451 05554	
25	090	7		MCW	K3	IC		4094	M U8S M2W	M 05482 06426	
25	100	8		B	SYM101	CHARAC	.	4101	B 55# V5U	B 04550 05554	. CENTERED PLUS
25	110	8		BWZ	SYM020	CHARAC	2	4109	V 16# V5U	V 04160 05554	2 NO ZONE
25	120	8		BWZ	SYM030	CHARAC	B	4117	V 17Z V5U	V 04179 05554	B 12-ZONE
25	130	8		BWZ	SYM040	CHARAC	K	4125	V 21U V5U	V 04214 05554	K 11-ZONE
25	140	8		B	SYM102	CHARAC	,	4133	B 61V V5U	B 04615 05554	, ZERO-ZONE
25	150	8		B	SYM103	CHARAC	(	4141	B 62W V5U	B 04626 05554	(
25	160	7		SHR	0089	TAB3		4149	H 089 82X	H 00089 04827	
25	170	4		B	SYM060			4156	B 24V	B 04245	
25	180	8	SYM020	B	SYM104	CHARAC	=	4160	B 63X V5U	B 04637 05554	=
25	190	7		SBR	0089	TAB		4168	H 089 74W	H 00089 04746	

PG	LIN	CT	LABEL	OP	A OPERAND	B OPERAND	D	LOC	INSTRUCTION	INST. DECD.	COMMENTS
25	200	4		B	SYM060			4175	B 24V	B 04245	
26	01C	8	SYM030	B	SYM105	CHARAC	+	4179	B 64Y V5U +	B 04648 05554	+
26	02C	8		B	SYM106	CHARAC	.	4187	B 65Z V5U .	B 04659 05554	.
26	030	8		B	SYM107	CHARAC	)	4195	B 67# V5U)	B 04670 05554)
26	040	7		SBR	0089	TAB1		4203	H 089 77T	H 00089 04773	
26	050	4		B	SYM060			4210	B 24V	B 04245	
26	06C	8	SYM040	B	SYM108	CHARAC	F	4214	B 68/ V5U F	B 04681 05554	F
26	07C	8		B	SYM109	CHARAC	-	4222	B 69S V5U -	B 04692 05554	-
26	080	8		B	SYM110	CHARAC	*	4230	B 70T V5U *	B 04703 05554	*
26	09C	7		SBR	0089	TAB2		4238	H 089 80#	H 00089 04800	
26	10C	7	SYM060	MN	CHARAC	COUNTS		4245	D V5U U9Z	D 05554 05499	
26	11C	7		ZA	CGUNTS	COUNT3		4252	+ U9Z V0S	+ 05499 05502	
26	120	4		A	CGUNTS			4259	A V0S	A 05502	
26	130	7		A	CGUNTS	COUNT3		4263	A U9Z V0S	A 05499 05502	SEARCH ADDRESS
26	14C	7		MZ	K3	COUNT3		4270	Y U8S V0S	Y 05482 05502	OF COORDINATES
26	15C	7		MA	CGUNTS	0089		4277	= V0S 089	= 05502 00089	IN LABEL.
26	16C	7		MCW	0000	0089		4284	M 0#0 089	M 00000/1 00089	
26	170	7	SYM080	MCW	0001	CY		4291	M 0#1 V0U	M 00001/1 05504	SEARCH COORDIN.
26	180	4		MCW	0000			4298	M 0#0	M 00000/1	OF THE CHARACTER
26	190	7		MCW	ZERO +	CYY		4302	M M7U V1U	M 06474 05514	IN LABEL.
26	200	4		MCW	ZERO +			4309	M M7U	M 06474	
27	010	8	SYM085	B	SYM090	CX	0	4313	B 34W V0T 0	B 04346 05503	0 CXX=CX*FACT
27	020	7		A	FACT	CXX		4321	A U7# V0Z	A 05470 05509	
27	030	7		S	K1	CX		4328	S V5T V0T	S 05553 05503	
27	040	7		MZ	K1	CX		4335	Y V5T V0T	Y 05553 05503	
27	050	4		B	SYM085			4342	B 31T	B 04313	
27	060	8	SYM090	B	SYM095	CY	0	4346	B 37Z V0U 0	B 04379 05504	0 CYY=CX*FACT
27	070	7		A	FACT	CYY		4354	A U7# V1U	A 05470 05514	
27	080	7		S	K1	CY		4361	S V5T V0U	S 05553 05504	
27	090	7		MZ	K1	CY		4368	Y V5T V0U	Y 05553 05504	
27	100	4		B	SYM090			4375	B 34W	B 04346	
27	110	8	SYM095	B	SYM096	STHETA	0	4379	B 40V U8/ 0	B 04405 05481	0 CHANGE CXX AND
27	120	7		MCW	CYY	CXY		4387	M V1U V1Z	M 05514 05519	CYY FOR STHETA=1
27	130	4		MCW	CXX			4394	M V0Z	M 05509	
27	14C	7		ZS	CXY	CXX		4398	- V1Z V0Z	- 05519 05509	
27	150	7	SYM096	MCW	YSYM	Y		4405	M U9Y M2V	M 05498 06425	
27	160	1		MCW				4412	M	M	
27	170	7		A	CYY	Y		4413	A V1U M2V	A 05514 06425	
27	180	1		A				4420	A	A	
27	190	4		B	PLOT			4421	B V5V	B 05555	BRANCH TO PLOT.
27	200	7		MCW	K2	IC		4425	M U6V M2W	M 05465 06426	
28	01C	8		BWZ	SYM100	0002	1	4432	V 45/ 0#2 1	V 04451 00002/1 1	CHARACTER
28	02C	7		SBR	0089	0002	1	4440	H 089 0#2	H 00089 00002/1	COMPLETED.
28	030	4		B	SYM080			4447	B 29/	B 04291	
28	040	7	SYM100	A	YTSYM	YSYM		4451	A U8# U9Y	A 05480 05498	YSYM=Y+YTSYM
28	050	1		A				4458	A	A	XSYM=X+XTSYM
28	060	7		S	K1	NSYM		4459	S V5T S2U	S 05553 05224	NSYM=NSYM-1
28	07C	7		MZ	K1	NSYM		4466	Y V5T S2U	Y 05553 05224	
28	080	8		B	SYM130	CHARAC	'	4473	B 49S V5U '	B 04492 05554	'
28	090	7	SYM150	SBR	0099	0001	3	4481	H 099 0+1	H 00099 00001/3	
28	100	4		B	SYM003			4488	B 04Z	B 04049	
28	110	7	SYM130	A	FACT	YSYM		4492	A U7# U9Y	A 05470 05498	
28	120	7		A	FACT	YSYM		4499	A U7# U9Y	A 05470 05498	
28	130	8		B	SYM140	STHETA	0	4506	B 53S U8/ 0	B 04532 05481	0
28	140	7		S	FACT	XSYM		4514	S U7# U9T	S 05470 05493	
28	150	7		S	FACT	XSYM		4521	S U7# U9T	S 05470 05493	

PG	LIN	CT	LABEL	CP	A OPERAND	B OPERAND	D	LOC	INSTRUCTION	INST. DECD.	COMMENTS
28	160	4		B	SYM150			4528	B 48/	B 04481	
28	17C	7	SYM140	A	FACT	XSYM		4532	A U7# U9T	A 05470 05493	
28	18C	7		A	FACT	XSYM		4539	A U7# U9T	A 05470 05493	
28	19C	4		B	SYM150			4546	B 48/	B 04481	
28	20C	7	SYM101	S	FACT	YSYM		4550	S U7# U9Y	S 05470 05498	
29	01C	7		S	FACT	YSYM		4557	S U7# U9Y	S 05470 05498	
29	02C	8		B	SYM111	STHETA	0	4564	B 59# U8/	B 04590 05481	0
29	03C	7		A	FACT	XSYM		4572	A U7# U9T	A 05470 05493	
29	04C	7		A	FACT	XSYM		4579	A U7# U9T	A 05470 05493	
29	05C	4		B	SYM121			4586	B 60U	B 04604	
29	06C	7	SYM111	S	FACT	XSYM		4590	S U7# U9T	S 05470 05493	
29	07C	7		S	FACT	XSYM		4597	S U7# U9T	S 05470 05493	
29	08C	7	SYM121	MCW	TABSPE	0089		4604	M 71W 089	M 04716 00089	-
29	09C	4		B	SYM080			4611	B 29/	B 04291	
29	10C	7	SYM102	MCW	TABSPE+ 3	0089		4615	M 71Z 089	M 04719 00089	,
29	11C	4		B	SYM080			4622	B 29/	B 04291	
29	12C	7	SYM103	MCW	TABSPE+ 6	0089		4626	M 72S 089	M 04722 00089	(
29	13C	4		B	SYM080			4633	B 29/	B 04291	
29	14C	7	SYM104	MCW	TABSPE+ 9	0089		4637	M 72V 089	M 04725 00089	=
29	15C	4		B	SYM080			4644	B 29/	B 04291	
29	16C	7	SYM105	MCW	TABSPE+ 12	0089		4648	M 72Y 089	M 04728 00089	+
29	17C	4		B	SYM080			4655	B 29/	B 04291	
29	18C	7	SYM106	MCW	TABSPE+ 15	0089		4659	M 73/ 089	M 04731 00089	.
29	19C	4		B	SYM080			4666	B 29/	B 04291	
29	20C	7	SYM107	MCW	TABSPE+ 18	0089		4670	M 73U 089	M 04734 00089)
30	01C	4		B	SYM080			4677	B 29/	B 04291	
30	02C	7	SYM108	MCW	TABSPE+ 21	0089		4681	M 73X 089	M 04737 00089	F
30	03C	4		B	SYM080			4688	B 29/	B 04291	
30	04C	7	SYM109	MCW	TABSPE+ 24	0089		4692	M 74# 089	M 04740 00089	-
30	05C	4		B	SYM080			4699	B 29/	B 04291	
30	06C	7	SYM110	MCW	TABSPE+ 27	0089		4703	M 74T 089	M 04743 00089	*
30	07C	4		B	SYM080			4710	B 29/	B 04291	
30	08C										
30	09C										
30	10C										
30	11C	3	TABSPE	DSA	*	TABEL +600		U5V	4716		.
30	12C	3		DSA	*	TABEL +588		U4T	4719		,
30	13C	3		DSA	*	TABEL +572		U2X	4722		(
30	14C	3		DSA	*	TABEL +580		U3V	4725		=
30	15C	3		DSA	*	TABEL +498		T5T	4728		+
30	16C	3		DSA	*	TABEL +508		T6T	4731		,
30	17C	3		DSA	*	TABEL +518		T7T	4734)
30	18C	3		DSA	*	TABEL +526		T8/	4737		F
30	19C	3		DSA	*	TABEL +584		U3Z	4740		-
30	20C	3		DSA	*	TABEL +548		U0T	4743		*
31	01C	3	TAB	DSA	*	TABEL +350		SOV	4746		0
31	02C	3		DSA	*	TABEL		85V	4749		1
31	03C	3		DSA	*	TABEL + 10		86V	4752		2
31	04C	3		DSA	*	TABEL +232		+8X	4755		3
31	05C	3		DSA	*	TABEL + 28		88T	4758		4
31	06C	3		DSA	*	TABEL + 44		89Z	4761		5
31	07C	3		DSA	*	TABEL + 64		91Z	4764		6
31	08C	3		DSA	*	TABEL + 88		94T	4767		7
31	09C	3		DSA	*	TABEL +224		+7Z	4770		8
31	10C	3	TAB1	DSA	*	TABEL + 98		95T	4773		9
31	11C	3		DSA	*	TABEL +142		99X	4776		A

PG	LIN	CT	LABEL	CP	A OPERAND	B OPERAND	D	LOC	INSTRUCTION	INST. DECD.	COMMENTS		
31	120	3		CSA	*	TABEL +162		#1X 4779			B		
31	130	3		DSA	*	TABEL + 72		92X 4782			C		
31	140	3		CSA	*	TABEL +128		98T 4785			D		
31	150	3		DSA	*	TABEL +188		#4T 4788			E		
31	160	3		CSA	*	TABEL +190		#4V 4791			F		
31	170	3		DSA	*	TABEL +202		#5X 4794			G		
31	180	3		CSA	*	TABEL +260		/1V 4797			H		
31	190	3	TAB2	CSA	*	TABEL +272		/2X 4800			I		
31	200	3		DSA	*	TABEL +284		/3Z 4803			J		
32	010	3		CSA	*	TABEL +296		/5/ 4806			K		
32	020	3		CSA	*	TABEL +122		97X 4809			L		
32	030	3		CSA	*	TABEL +308		/6T 4812			M		
32	040	3		DSA	*	TABEL +318		/7T 4815			N		
32	050	3		CSA	*	TABEL +326		/8/ 4818			O		
32	060	3		CSA	*	TABEL +174		#2Z 4821			P		
32	070	3		DSA	*	TABEL +346		S0/ 4824			Q		
32	080	3	TAB3	DSA	*	TABEL +370		S2V 4827			R		
32	090	3		CSA	*	TABEL +494		T4Z 4830			/		
32	100	3		DSA	*	TABEL +390		S4V 4833			S		
32	110	3		CSA	*	TABEL +418		S7T 4836			T		
32	120	3		DSA	*	TABEL +426		S8/ 4839			U		
32	130	3		CSA	*	TABEL +438		S9T 4842			V		
32	140	3		CSA	*	TABEL +444		S9Z 4845			W		
32	150	3		DSA	*	TABEL +454		T0Z 4848			X		
32	160	3		CSA	*	TABEL +468		T2T 4851			Y		
32	170	3		CSA	*	TABEL +478		T3T 4854			Z		
32	180			*									
32	190			*	* TABEL OF THE COORDINATES FOR ALL CHARACTERS								
32	200			*									
33	010	1	TABEL	DCW	*	1		4855			1		
33	020	9		DC	*	627201030		4864					
33	030	18		DCW	*	050617374645010040		4882					
33	040	16		DCW	*	0703433337304020		4898			4		
33	050	20		DCW	*	02011030414334040747		4918					
33	060	24		DCW	*	031434434130100106173746		4942					
33	070	10		DCW	*	0607472120		4952			7		
33	080	24		DCW	*	011030414637170604133344		4976					
33	090	6		DCW	*	400007		4982					
33	100	14		DCW	*	00073746413000		4996			L		
33	110	20		DCW	*	00034346371706034340		5016			D		
33	120	26		DCW	*	04344341301000073746453404		5042					
33	130	14		DCW	*	40000434040747		5056			FE		
33	140	22		DCW	*	3343413010010506173746		5078					
33	150	32		DCW	*	01031405061737464534143443413010		5110					
33	160	4		DC	*	0102		5114			3,8		
33	170	12		DCW	*	000704444740		5126			H		
33	180	12		DCW	*	173727203010		5138			I		
33	190	12		DCW	*	020110304147		5150			J		
33	200	12		DCW	*	000704470440		5162			K		
34	010	10		DCW	*	000723474C		5172			M		
34	020	8		DCW	*	00074047		5180			N		
34	030	20		DCW	*	25471706011030414637		5200					
34	040	22		DCW	*	2240100106173746413010		5222					
34	050	2	NSYM	CCW	*			5224					
34	060	20		CCW	*	00073746453404344340		5244					
34	070	28		CCW	*	0201103041433414050617374645		5272					

PG	LIN	CT	LABEL	CP	A OPERAND	B OPERAND	D	LOC	INSTRUCTION	INST. DECD.	COMMENTS
34	080	8		DCW	*	07472720		5280			
34	090	12		DCW	*	070110304147		5292			
34	100	6		DCW	*	072047		5298			
34	110	10		DCW	*	0700234047		5308			
34	120	14		DCW	*	00240724472440		5322			
34	130	10		DCW	*	2024072447		5332			
34	140	16		DCW	*	0747241434240040		5348			
34	150	4		DCW	*	0047		5352			
34	160	10		DCW	*	2125230343		5362			
34	170	10		DCW	*	1030321210		5372			
34	180	8		DCW	*	00111607		5380			
34	190	22		DCW	*	0232433414051646262720		5402			
34	200	24		DCW	*	221102201101211112101100		5426			
35	010	8		DCW	*	10010617		5434			
35	020	8		DCW	*	14341333		5442			
35	030	12		DCW	*	001112020111		5454			
35	040	10		DCW	*	2024220242		5464			
35	050				*						
35	060				*	CONSTANTS AND WORKAREAS					
35	070				*						
35	080	1	K2	DCW	*	2		5465			
35	090	5	FACT	DCW	*			5470			
35	100	5	XTSYM	DCW	*			5475			
35	110	5	YISYM	DCW	*			5480			
35	120	1	STHETA	DCW	*			5481			
35	130	1	K3	DCW	*	3		5482			
35	140	3	SAVES1	DCW	*			5485			
35	150	3	SAVES3	DCW	*			5488			
35	160	5	XSYM	DCW	*			5493			
35	170	5	YSYM	DCW	*			5498			
35	180	1	CCUNTS	DCW	*			5499			
35	190	3	CCUNT3	DCW	*			5502			
35	200	1	CX	DCW	*			5503			
36	010	1	CY	DCW	*			5504			
36	020	5	CXX	DCW	*			5509			
36	030	5	CYY	DCW	*			5514			
36	040	5	CXY	DCW	*			5519			
36	050	1	BCC	DCW	*			5520			
36	060	32		DCW	*			5552			
36	070	1	K1	DCW	*	1		5553			
36	080	1	CHARAC	DCW	*			5554			
36	090	3		DCW	*	0089		0089			
36	100				*						
36	110				*						
36	120				*						
36	130				*	SUBROUTINE PLOT					
36	140				*						
36	150				*	ARGUMENTS					
36	160				*	X,Y(5PGS.) COORDINATES OF THE POINT					
36	170				*	IN PLOTTER STEPS					
36	180				*	IC (1POS.) =3 PEN UP					
36	190				*	IC =2 PEN DOWN					
36	200				*	OTHER VALUES NO MOVEMENT					
37	010				*	BI IF BI HAS A ZONE BIT A NEW BLOCK					
37	020				*	ADDRESS IS WRITTEN					
37	030				*						

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PG	LIN	CT	LABEL	CP	A OPERAND	B OPERAND	D	LOC	INSTRUCTION	INST. DECD.	COMMENTS
37	040				*****						
37	050	4	PLGT	SBR	PLOTX+ 3			5555	H J4/	H 06141	
37	060	7		MCW	0094	SAVE2		5559	M 094 M2Z	M 00094 06429	
37	070	7		MCW	IX2	0094		5566	M M3S 094	M 06432 00094	
37	080	8		BWZ	PLOT03	BI	2	5573	V X3Y L2W 2	V 05738 06326 2	
37	090	7		SBR	0094	0000		5581	H 094 000	H 00094 00000	XR2=0
37	100	7		MZ	GNE	BI		5588	Y M3T L2W	Y 06433 06326	CLEAR ZONE BI.
37	110	4		SW	MARK			5595	, M6Y	, 06468	SET WM ON GRMK.
37	120	7		MN	BN	0094		5599	D L4/ 094	D 06341 00094	WRITE A BLOCK
37	130	7		MN	A	AB - 1		5606	D MLU M5Y	D 06434/2 06458	ADDRESS IF BI
37	140	7		MN	B	AB 2		5613	D MMU M5Z	D 06444/2 06459	HAS A ZONE BIT.
37	150	7		MN	BN - 1	0094		5620	D L4+ 094	D 06340 00094	
37	160	7		MN	A	AB - 3		5627	D MLU M5W	D 06434/2 06456	
37	170	7		MN	B	AB - 2		5634	D MMU M5X	D 06444/2 06457	
37	180	7		MN	BN - 2	0094		5641	D L3Z 094	D 06339 00094	
37	190	7		MN	A	AB - 5		5648	D MLU M5U	D 06434/2 06454	
37	200	7		MN	B	AB - 4		5655	D MMU M5V	D 06444/2 06455	
38	010	7		A	GNE	BN		5662	A M3T L4/	A 06433 06341	BN=BN+1
38	020	7		MCW	IX2	0094		5669	M M3S 094	M 06432 00094	XR2=BUF. COUNT.
38	030	4		B	OUTPUT			5676	B J6X	B 06167	
38	040	7		MN	GNE	STOR - 1		5680	D M3T M9Z	D 06433 06499	CONSTRUCT BLOCK
38	050	7		SBR	0094	0014		5687	H 094 C14	H 00094 00014	ADDRESS RECORD.
38	060	7		MCW	BLKADR	STOR - 1 2		5694	M M6X MRZ	M 06467 06499/2	
38	070	7	PLCT01	A	GNE	0093		5701	A M3T 093	A 06433 00093	
38	080	7		MCW	SYNCR + 9	STOR - 1 2		5708	M M9/ MRZ	M 06491 06499/2	
38	090	8		B	PLOT02	0093	5	5715	B X2X 093 5	B 05727 00093 5	
38	100	4		B	PLOT01			5723	B X0/	B 05701	WRITE BLOCK ADDR
38	110	4	PLCT02	B	OUTPUT			5727	B J6X	B 06167	ON CALCOMP TAPE.
38	120	7		MN	PLOT02	STOR - 1		5731	D X2X M9Z	D 05727 06499	
38	130	7	PLCT03	MCW	Y	DY		5738	M M2V L6/	M 06425 06361	
38	140	1		MCW				5745	M M	M	
38	150	7		S	PENY	DY		5746	S L5/ L6/	S 06351 06361	DY=Y-PENY
38	160	1		S				5753	S	S	DX=X-PENX
38	170	7		MCW	Y	PENY		5754	M M2V L5/	M 06425 06351	PENY=Y
38	180	1		MCW				5761	M M	M	PENX=X
38	190	7		MCW	MXC	XPLTC		5762	M L6X L8Y	M 06367 06388	
38	200	8		BWZ	PLOT04	DX	K	5769	V X8U L5W K	V 05784 06356 K	DETERMINE CONST.
39	010	7		MCW	PXC	XPLTC		5777	M L6U L8Y	M 06364 06388	OF MOTIONS.
39	020	7	PLCT04	MCW	MYC	YPLTC		5784	M L7T L9/	M 06373 06391	
39	030	8		BWZ	PLOT05	DY	K	5791	V Y0W L6/ K	V 05806 06361 K	
39	040	7		MCW	PYC	YPLTC		5799	M L7+ L9/	M 06370 06391	
39	050	7	PLCT05	MCW	XPLTC	XYPLTC		5806	M L8Y L9U	M 06388 06394	SET UP DIAGONAL
39	060	7		MN	YPLTC - 1	XYPLTC- 1		5813	D L9+ L9T	D 06390 06393	COMMAND.
39	070	7		MZ	GNE	DX		5820	Y M3T L5W	Y 06433 06356	DX=/DX/
39	080	7		MZ	GNE	DY		5827	Y M3T L6/	Y 06433 06361	DY=/DY/
39	090	7		C	DX	DY		5834	C L5W L6/	C 06356 06361	
39	100	5		B	PLOT06		T	5841	B Y7U T	B 05874 T	
39	110	7		MCW	DX	RATIO		5846	M L5W L9Z	M 06356 06399	INTERCHANGE
39	120	7		MCW	DY	DX		5853	M L6/ L5W	M 06361 06356	THE ROLES OF
39	130	7		MCW	RATIO	DY		5860	M L9Z L6/	M 06399 06361	/DX/ AND /DY/
39	140	7		MCW	YPLTC	XPLTC		5867	M L9/ L8Y	M 06391 06388	FOR /DX/ LARGER.
39	150	7	PLCT06	MCW	DY	RATIO		5874	M L6/ L9Z	M 06361 06399	
39	160	7		MCW	DX	TEST		5881	M L5W MOZ	M 06356 06409	BEGIN ALGORITHM
39	170	4		MCW	DX			5888	M L5W	M 06356	FOR A STRAIGHT
39	180	7		MCW	ZERC + 5	ACCUM		5892	M M7U M1U	M 06474 06414	LINE.
39	190	7		MCW	DX	ACCUM + 1		5899	M L5W M1V	M 06356 06415	

PG	LIN	CT	LABEL	CP	A OPERAND	B OPERAND	D	LOC	INSTRUCTION	INST. DECD.	COMMENTS
39	200	4		A	ACCUM + 1			5906	A MIV	A 06415	
40	010	4		A	ACCUM + 1			5910	A MIV	A 06415	
40	020	7		A	DX	ACCUM + 1		5914	A L5W MIV	A 06356 06415	ACCUM=MAX(/DX/, (DY/) / 2
40	030			*							
40	040			*							
40	050	8		B	PLOT07	IC	2	5921	B Z4/ M2W 2	B 05941 06426	2 IC=2 FOR PEN-UP.
40	060	8		B	PLOT10	IC	3	5929	B -3T M2W 3	B 06033 06426	3 IC=3 FOR PEN-DN.
40	070	4		B	PLCT15			5937	B J1S	B 06112	
40	080	8	PLCT07	B	PLCT15	PPI	2	5941	B J1S L2X 2	B 06112 06327	2 NO PEN-MOTION.
40	090	7		MCW	C667	CSAVE		5949	M L7Z L8V	M 06379 06385	
40	100	7	PLCT08	MCW	IC	PPI		5956	M M2W L2X	M 06426 06327	PPI=IC
40	110	8		B	OUTPUT	CC092	/	5963	B J6X 092 /	B 06167 06092	/ BUFFER FULL
40	120	7		SBR	0094	CC03	2	5971	H 094 0-3	H 00094 00003/2	XR2=XR2+3
40	130	7		MCW	CSAVE	STOR - 1 2		5978	M L8V MRZ	M 06385 06499/2	
40	140	7		MCW	ZERC + 2	KUUNT		5985	M M7/ L2V	M 06471 06325	
40	150	8	PLCT09	B	OUTPUT	CC092	/	5992	B J6X 092 /	B 06167 06092	/ BUFFER FULL
40	160	7		SBR	0094	CC03	2	6000	H 094 0-3	H 00094 00003/2	XR2=XR2+3
40	170	7		MCW	SEX	STOR - 1 2		6007	M L7W MRZ	M 06376 06499/2	
40	180	7		A	ONE	KUUNT		6014	A M3T L2V	A 06433 06325	
40	190	8		B	PLOT15	KUUNT - 1	3	6021	B J1S L2U 3	B 06112 06324	3
40	200	4		B	PLOT09			6029	B Z9S	B 05992	
41	010	8	PLCT10	B	PLOT15	PPI	3	6033	B J1S L2X 3	B 06112 06327	3 PEN OK AS IS
41	020	7		MCW	C665	CSAVE		6041	M L8S L8V	M 06382 06385	
41	030	4		B	PLOT08			6048	B Z5W	B 05956	
41	040	7	PLCT11	A	RATIC	ACCUM		6052	A L9Z M1U	A 06399 06414	ACCUM=ACC.+RATIO
41	050	8		B	OUTPUT	CC092	/	6059	B J6X 092 /	B 06167 00092	/ BUFFER FULL
41	060	7		SBR	0094	0003 2		6067	H 094 0-3	H 00094 00003/2	
41	070	7		C	ACCUM	TEST		6074	C M1U M0Z	C 06414 06409	
41	080	5		B	PLOT14		T	6081	B J4S T	B 06142	T
41	090	5		B	PLOT14		S	6086	B J4S S	B 06142	S
41	100	7		MCW	XPLTC	STOR - 1 2		6091	M L8Y MRZ	M 06388 06499/2	HORIZONTAL OR
41	110	7	PLCT12	S	ONE	COUNT		6098	S M3T M0U	S 06433 06404	VERTICAL DIRECT.
41	120	7		MZ	ONE	COUNT		6105	Y M3T M0U	Y 06433 06404	
41	130	7	PLCT15	C	CCUNT	ZERO + 5		6112	C M0U M7U	C 06404 06474	
41	140	5		B	PLCT11		/	6119	B -5S /	B 06052	/
41	150	7		MCW	0094	IX2		6124	M 094 M3S	M 00094 06432	SAVE BUFF.COUNT.
41	160	7		MCW	SAVE2	0094		6131	M M2Z 094	M 06429 00094	RESTORE XR2
41	170	4	PLCTEX	B	0000			6138	B 000	B 00000	RETURN
41	180	7	PLCT14	MCW	XYPLTC	STOR - 1 2		6142	M L9U MRZ	M 06394 06499/2	DIAGONAL MOVE.
41	190	7		S	TEST	ACCUM		6149	S M0Z M1U	S 06409 06414	
41	200	7		MZ	ONE	ACCUM		6156	Y M3T M1U	Y 06433 06414	
42	010	4		B	PLOT12			6163	B -9Y	B 06098	
42	020			*							
42	030			*							
42	040			*							
42	050	4	OUTPUT	SBR	OUTEX + 3			6167	H K1V	H 06215	
42	060	7		MCW	RGAP	STOR + 3 2		6171	M K9Z N-T	M 06299 06503/2	
42	070	7		LCA	MARK	STOR + 4 2		6178	L M6Y N-U	L 06468 06504/2	
42	080	4		B	.RWS.			6185	B FOX	B 07607	
42	090	8		MU	CALCOM	SYNCR	W	6189	M (U3 M8S W	M (U3 06482	W
42	100	4		B	ENREEL			6197	B K1W	B 06216	
42	110	4	OUT1	CH	STOR + 4 2			6201	) N-U	) 06504/2	
42	120	7		SBR	0094	0000		6205	H 094 000	H 00094 00000	
42	130	4	OUTEX	B	0000			6212	B 000	B 00000	
42	140	7	ENREEL	MCW	K9999	AB		6216	M M8/ M5Z	M 06481 06459	
42	150	7		SBR	0094	0014		6223	H 094 014	H 00094 00014	

PG	LIN	CT	LABEL	CP	A OPERAND	B OPERAND	D	LOC	INSTRUCTION	INST. DECD.	COMMENTS
42	160	7		MCW	BLKADR	STOR - 1 2		6230	M M6X MRZ	M 06467	06499/2
42	170	7		MCW	ONE	STOR - 1		6237	D M3T M9Z	D 06433	06499
42	180	7	OUT2	A	ONE	0093		6244	A M3T 093	A 06433	00093
42	190	7		MCW	SYNCR + 9	STOR - 1 2		6251	M M9/ MRZ	M 06491	06499/2
42	200	8		B	OUT3	0093	5	6258	B K7# 093 5	B 06270	00093 5
43	010	4		B	GUT2			6266	B K4U	B 06244	
43	020	7	OUT3	MCW	RGAP	STOR + 3 2		6270	M K9Z N-T	M 06299	06503/2
43	030	7		LCA	MARK	STOR + 4 2		6277	L M6Y N-U	L 06468	06504/2
43	040	4		B	.RWS.			6284	B FOX	B 07607	
43	050	8		MU	CALCOM	SYNCR	W	6288	M (U3 M8S W	M (U3	06482 W
43	060	4	RGAP	DCW	* 4634			6299			
43	070	5		CU	CALCOM		U	6300	U (U3 U	U (U3	U
43	080	7		H	* + 1	0888		6305	. LIS 888	. 06312	00888
43	090	4		B	.RWS.			6312	B FOX	B 07607	
43	100	8		MU	CALCOM	SYNCR	W	6316	M (U3 M8S W	M (U3	06482 W
43	110	2	KCUNT	DCW	*			6325			
43	120	1	BI	DCW	*	-		6326			
43	130	1	PPI	DCW	*			6327			
43	140	7		MCW	* + 1	STOR - 1		6328	D L3V M9Z	D 06335	06499
43	150	4		B	OUT1			6335	B K0/	B 06201	
43	160				* * * * *						
43	170				* * * * *						
43	180				* * * * *						
43	190	3		DCW	0094			0094			
43	200	3	BN	DCW	* 001			6341			
44	010	5	PENX	DCW	*			6346			
44	020	5	PENY	DCW	*			6351			
44	030	5	DX	DCW	*			6356			
44	040	5	DY	DCW	*			6361			
44	050	3	PXC	DCW	* 766			6364			
44	060	3	MXC	DCW	* 566			6367			
44	070	3	PYC	DCW	* 676			6370			
44	080	3	MYC	DCW	* 656			6373			
44	090	3	SEX	DCW	* 666			6376			
44	100	3	C667	DCW	* 667			6379			
44	110	3	C665	DCW	* 665			6382			
44	120	3	CSAVE	DCW	*			6385			
44	130	3	XPLTC	DCW	*			6388			
44	140	3	YPLTC	DCW	*			6391			
44	150	3	XYPLTC	DCW	*			6394			
44	160	5	RATIO	DCW	*			6399			
44	170	5	CCUNT	DCW	*			6404			
44	180	5	TEST	DCW	*			6409			
44	190	5	ACCUM	DCW	*			6414			
44	200	1		DC	*			6415			
45	010	5	X	DCW	*			6420			
45	020	5	Y	DCW	*			6425			
45	030	1	IC	DCW	*			6426			
45	040				* * * * *						
45	050	3	SAVE2	DCW	*			6429			
45	060	3	IX2	DCW	*			6432			
45	070	1	ONE	DCW	*	1		6433			
45	080	1	A	DCW	*	4		6434			
45	090	9		DC	*	444555566		6443			
45	100	1	B	DCW	*	4		6444			
45	110	9		DC	*	567456745		6453			

ANAL

PG	LIN	CT	LABEL	CP	A OPERAND	B OPERAND	D	LOC	INSTRUCTION	INST. DECD.	COMMENTS
45	120	6	AB	DCW	*			6459			
45	130	8	BLKADR	DC	*	13333333		6467			
45	140	1	MARK	DC	*			6468			
45	150	1	ZERC	DC	*			6469			
45	160	6		DCW	*	000000		6475			
45	170	6	K9999	DCW	*	656565		6481			
45	180		CALCGM	DS	(U3						
45	190			*							
45	200			*	CALCOMP DATA BUFFER						
46	010			*							
46	020	1	SYNCR	DCW	*	4		6482			
46	030	17		DC	*	444444444433333332		6499			
46	040	1	STCR	DCW	*			6500			
46	050	99		DS	*			6599			
46	060	99		DS	*			6698			
46	070	99		DS	*			6797			
46	080	99		DS	*			6896			
46	090	99		DS	*			6995			
46	100	99		DS	*			7094			
46	110	99		DS	*			7193			
46	120	99		DS	*			7292			
46	130	99		DS	*			7391			
46	140	99		DS	*			7490			
46	150	99		DS	*			7589			
46	160	17		DS	*			7606			
46	170			*							
46	180			*	READ-WRITE SUBROUTINE.						
46	190			*	-----						
46	200			*							
47	010			DS	*			7606			RELOC. SYMBOL.
47	020			*							
47	030	4	.RWS.	SBR	.0099	+129		7607	H G3V	H 07735	SAVE RETURN.
47	040	7		MCW	.0099	+155		7611	M 099 G6/	M 00099 07761	SAVE XR3.
47	050	7		MCW	.0099	+129		7618	M G3V 099	M 07735 00099	MOVE INSTRUCT.
47	060	7		LCA	0007	3		7625	L 0+7 F6S	L 00007/3 07662	
47	070	7		MCW	.	+ 6		7632	M F1S H8#	M 07612 07880	RED. COUNT = 0.
47	080	4		B	.	+ 49		7639	B F5V	B 07655	
47	090	7		MN	.	+ 52	*	7643	D F5Y F5T	D 07658 07653	
47	100	5		CU	(U0			7650	U (U0 E	U (U0	E ERASE TAPE.
47	110	8		NOP	0000			7655	N 000 C00 0	N 00000 00000	O READ-WRITE TAPE.
47	120	4		SBR	.LGTH.			7663	H H8X	H 07887	O STORE REC. LGTH.
47	130	5		B	.	+255		7667	B H6/ K	B 07861	K EOF-EOR TEST.
47	140	8		B	.	+130		7672	B G3W F6S W	B 07736 07662	W WRITE OP. TEST.
47	150	7		MCW	.	+ 55	.0099	7680	M F6/ 099	M 07661 00099	COMPUTE ADDRESS
47	160	7		MCW	.	+276		7687	M H8S H8U	M 07882 07884	TO TEST IF
47	170	7		SBR	0099	0001	3	7694	H 099 0+1	H 00099 00001/3	NOISE RECORD.
47	180	7		C	0099	.LGTH.		7701	C 099 H8X	C 00099 07887	
47	190	5		B	.	+ 12		7708	B F1Y S	B 07618	S NOISE. YES.
47	200	7		A	*	- 6	.	7713	A G1T H8U	A 07713 07884	
48	010	5		B	.	+123		7720	B G2Z Z	B 07729	Z
48	020	4		B	.	+ 88		7725	B F9U	B 07694	
48	030	7		SBR	.0099		C000	7729	H 099 C00	H 00099 00000	L RESTORE RETURN.
48	040	5		B	.	+160		7736	B G6W L	B 07766	L ERROR TAPE TEST.
48	050	7		SBR	.0099		0004	7741	H 099 0+4	H 00099 00004/3	NORMAL RETURN.
48	060	7		SBR	.0099	+159		7748	H G6V 0+8	H 07765 00008/3	EOF-EOR RETURN.
48	070	7		SBR	.0099		0000	7755	H 099 000	H 00099 00000	RESTORE XR3.

ANAL

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PG	LIN	CT	LABEL	OP	A OPERAND	B OPERAND	D	LOC	INSTRUCTION	INST. DECD.	COMMENTS
48	080	4		B	0000			7762	B 000	B 00000	***** EXIT *****
48	090	7		MN	+ 52	* + 4		7766	D F5Y G7W	D 07658 07776	
48	100	5		CU	(UO		B	7773	U (UO B	U (UO	B BACK SPACE.
48	110	7		A	* - 6	. +274		7778	A G7Y H8+	A 07778 07880	TEST IF PERM.
48	120	5		B	. +196		Z	7785	B H0S Z	B 07802	REDUND.(10).
48	130	8		B	. + 37	. + 56	W	7790	B F4T F6S W	B 07643 07662	NO.
48	140	4		B	. + 49			7798	B F5V	B 07655	
48	150	7		SBR	0099	0000		7802	H 099 000	H 00099 00000	YES.
48	160	8		B	. +222	. + 56	W	7809	B H2Y F6S W	B 07828 07662	W
48	170	7		SBR	. +242	0110	3	7817	H H4Y 1A0	H 07848 00110/3	READ.
48	180	4		B	. +229			7824	B H3V	B 07835	
48	190	7		SBR	. +242	0220	3	7828	H H4Y 2B0	H 07848 00220/3	WRITE.
48	200	7		MN	* + 52	* + 7		7835	D F5Y H4Y	D 07658 07848	
49	010	7		H	* + 1	0000		7842	. H4Z 000	. 07849 00000	-STOP-
49	020	8		B	* - 14	0098	2	7849	B H4S 098 2	B 07842 00098 2	EOF-EOR.
49	030	4		B	. + 12			7857	B F1Y	B 07618	PERM. REDUND.
49	040	8		B	. +142	C008	3	7861	B G4Y 0+8 B	B 07748	TEST IF USER
49	050	7		SBR	0099	0220	B	7869	H 099 220	H 00099 00220	RETURN.
49	060	4		B	. +203			7876	B H0Z	B 07809	
49	070			*							
49	080	1		DCW	* 87			7880			REDUND. COUNT.
49	090	2		DCW	* 87			7882			CONSTANT -13.
49	100	2		DCW	* 87			7884			NOISE COUNT.
49	110	3	.LGTH.	DCW	* 87			7887			RECORD LENGTH.
49	120			*							
49	130	3		DCW	* 0099			0099			XR3.
49	140			*							
49	150			END	START						

975 CARDS.

/ Z56 080

85



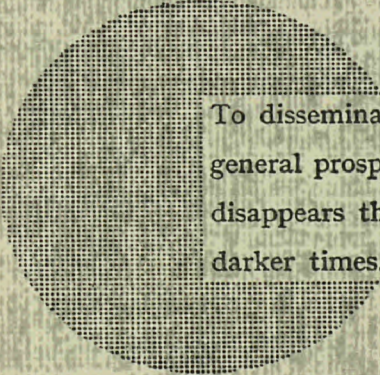
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Alfred Nobel

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