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J. D. Drinan
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MASSACHUSETTS INSTITUTE OF TECHNOLOGY
LINCOLN LABORATORY

HAYSTACK POINTING SYSTEM: PRINTER PACKAGE

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Editors

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ABSTRACT

The Printer Package is a set of general-purpose routines for: converting internally-stored numbers either in floating point, fixed point, integer, or octal form or alphanumeric strings to an output form suitable for printing; controlling format; and printing the output form. A user program by means of simple calling sequences can print virtually any information it has in a suitable form. The Printer Package and the user program are compiled together.

Accepted for the Air Force
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PREFACE

This document was written by C. W. Adams Associates, 575 Technology Square, Cambridge, Massachusetts, under subcontract to Group 62 of Lincoln Laboratory, as part of a programming effort on the Haystack Pointing System.

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I. INTRODUCTION

The Printer Package (PPKG) is a set of general-purpose routines for 1) converting internally-stored numbers or alphanumeric strings to output form suitable for printing, 2) controlling the format, and 3) performing the actual printing. Many of the routines resemble functions available in SOS OUTRAN but are oriented, of course, to the requirements of the Univac 490 and its on-line high-speed printer.

Available in the package are routines to convert to output form the following types of information: decimal integers, octal numbers, fixed-point numbers, floating-point numbers, and Fieldata strings. Also available are routines to blank out areas of the print line, to set the column counter to a desired column, to increment the column counter by any number, to establish the top and bottom margins of a printed page, to define a user-prepared print area and, most important, to print the line after skipping a number of lines or ejecting to the top of the next page.

Each routine has an entry point labeled with its own name and assumes a particular calling sequence to provide it with the information it needs from the user. No storage areas are used outside of the Printer Package for communication between routines or between the user and the package. All routines save and restore all registers.

Printing is performed on a double-buffer interrupt system to minimize time wasted in waiting for completion of the actual print operation. The routines prepare an unpacked (one character per word) array corresponding to a print line; then, just prior to printing, this is compressed to a packed buffer as the printer expects it.

II. Program Specifications

General Programming Scheme

The PPKG routines are designed with the general philosophy of treating a single unit record at a time, where the unit record in this case consists of a printed line. There are two stages which the programmer must specify for the production of every unit output record.

1) Internal Processing Stage

The internal binary information to be represented by the external printed line is processed, piece by piece, to form a continuous string of characters, one per computer word, occupying a 128 word buffer within PPKG. "Processed" here means either converted to octal, decimal, fixed-point or floating-point Fieldata form or else, simply moved without conversion if already in Fieldata form.

2) Write-out Stage

The information in the internal unpacked buffer is packed into one of the two print buffers and sent out in buffered mode to the line printer.

Calling Sequence Conventions

All routines within the package are called by the RJP instruction followed by one or more words of parameter information, followed by an error return and, finally, the normal return. For the routines which convert internal binary quantities to one of the various output forms (integer, octal, fixed point, floating point) the first parameter word contains an address, and an index register designator. The actual quantity to be converted is taken from the given address plus the contents of the indicated index register when the conversion routine is called. The lower half of the second parameter word contains the column number in which the first character of the converted output is to appear. Other portions of the parameter words give the number of characters, separated into integer and fractional portions where appropriate, to be printed.

Each subroutine description should be consulted for the specific calling sequence for that routine.

Page Formatting

Margins at the top and bottom of the page are established or

changed by the PFORM subroutine. Page ejection or line spacing is controlled by the PSCRIB routine which also prints the accumulated line.

Formatting within an individual line is controlled by the conversion routines' parameter words designating the starting column and the number of characters to be printed. The routine PCOLR may also be used to set the column counter to any desired position and the routine PCOLIN may be used to increment the column counter by a given amount.

The storage register PCOLUMN contains the current value of the column counter which may be a number from 1 to 128. This register is maintained by all routines that store characters into the print line buffer and is cleared by the routine that prints the line.

User-prepared Line Image

If the user has prepared a line image which he wishes to print as is or which he wishes to overlay with other data, he may use the routine PIMAGE to transfer his image area to the buffer area supplied by PPKG. His image area must contain unpacked Fielddata characters, right-justified, and should consist of 128 words. It should be noted that the user's image area is never modified by PPKG, as is the case with OUTRAN. All PPKG routines which place characters in the unpacked print buffer deal only with the buffer internal to PPKG. The user may obtain information about the internal buffers through use of the external communication registers described below.

External Communication

Within PPKG, two registers contain information that may be of value to the user program concerning the location of the current print line data. UNPACKBUFF has in its lower half the address of the unpacked information; PACKBUFF has in its lower half the address of the currently available buffer (that is, the buffer into which the unpacked information will be packed) and in its upper half the address of the packed buffer currently being printed. Each of the buffers indicated is preceded by a single free word which may be used at the discretion of the user. A possible use of this free word is for a carriage control character used on a tape prepared for off-line printing on the 1401.

Other registers which may be of value to the user are:

PCOLUMN - the current value of the column counter
LINCNT - the current line number being printed

Initialization

The PFORM routine, which establishes the top and bottom margins of the page, must be entered before the PSCRIB routine which prints the accumulated line. While not necessary if the package is loaded and executed directly from assembly, this is recommended as a safer practice. It insures that LINCNT, the line counter, will be set to TOPLINE, the first line of printing on the page; that PCOLUMN will be set to column 1; and that STATUS, the register set by the external interrupt routine, will be initialized so that PSCRIB may immediately print its first line. If PFORM is not performed initially, the top margin will have six blank lines and the bottom margin five blank lines. The page is assumed to be 66 lines long.

Routine Names

The routines available to the user are identified below and described in detail in Section III:

<u>Name</u>	<u>Function</u>
PINT	Converts internal quantity to decimal integer format
POCT	Converts internal quantity to octal format
PFIX	Converts internal quantity to fixed-point format
PFLOAT	Converts internal quantity to floating-point format
PFD	Moves Fieldata character string to print line buffer
PBLANK	Moves blanks to print line buffer
PCOLR	Resets column counter to given value
PCOLIN	Increments column counter by given amount
PIMAGE	Moves user-generated print image to internal PPKG buffer
PFORM	Establishes top and bottom margins of page
PSCRIB	Prints line after spacing or ejecting

Routines used strictly internally in the Printer Package are identified below and further described in Section III:

<u>Name</u>	<u>Function</u>
PSCRINT	External interrupt routine
PENTRY	Interprets calling sequence and resets column counter
PLAYUP	Unpacks and counts non-zero characters
PFRACSTOR	Stores fraction in print line buffer
PSAVE	Saves all registers
PRESTORE	Restores all registers
PERRORR	Prints an error message
BINDECINT	Converts binary to decimal integer Fieldata code
BINOCTFLD	Converts binary to octal Fieldata code
BINDECFRA	Converts binary to decimal fraction Fieldata code
SUPZRO	Suppresses leading zeros
COFRND	Rounds off a number to BETA decimal places
COFFIX	Converts binary to fixed-point Fieldata code
COTFLT	Converts two-word floating-point to exponential output form

III. SUBROUTINE DESCRIPTIONS

PINT

Function

To convert the internal binary value indicated by the calling sequence to a decimal integer and store it in the proper column positions of a high-speed printer buffer.

Calling Sequence

RJP PINT
U-TAG INDEX, ADDRESS
U-TAG NUMCHAR, COLUMN
Error return
Normal return

Input

The value given in ADDRESS + (INDEX).

Output

NUMCHAR + 1 output characters starting in PBUF + COLUMN.

Subroutines Used

PENTRY, BINDECINT, SUPZRO, PLAYUP, PBLANK, PRESTORE, PERRORR.

Storage Areas Read

PCOLUMN, CHARNO, SIGN, LAYUPSTOR.

Storage Areas Written

IOINTEGER, SIGN, LAYUPSTOR (by subroutines), INTEGER, PBUF, PCOLUMN.

Method

The PENTRY routine interprets the calling sequence and sets the column counter to the desired column. The value given is then converted to output form, zero suppressed and unpacked into a one-character-per-word array. The appropriate number of blanks is determined by NUMCHAR minus the number of significant digits minus one for the sign position, and that number of blanks is stored in the buffer. Then the sign (minus or blank) is stored, followed by the integer itself.

Error Conditions

Type 1 - the maximum number of characters in the buffer is exceeded.

Type 2 - the number of significant digits to be printed exceeds NUMCHAR.

POCT

Function

To convert the internal binary value indicated by the calling sequence to an octal number and store it in the proper column positions of a high-speed printer buffer.

Calling Sequence

RJP POCT
U-TAG INDEX, ADDRESS
U-TAG NUMCHAR, COLUMN
Error return
Normal return

Input

The value given in ADDRESS + (INDEX).

Output

NUMCHAR + 1 output characters starting in PBUF + COLUMN.

Subroutines Used

PENTRY, BINOCFLD, PLAYUP, PRESTORE, PERRORR.

Storage Areas Read

PCOLUMN, LAYUPSTOR.

Storage Areas Written

IOINTEGER, LAYUPSTORE (by subroutines), PCOLUMN, PBUF.

Method

The PENTRY routine interprets the calling sequence and sets the column counter to the desired column. The value given is then converted to output form and unpacked into a one-digit-per word array. The lower NUMCHAR digits are then stored in the output buffer (if NUMCHAR = 0, it is taken as 10).

Error Conditions

Type 1 - The maximum number of characters in the buffer is exceeded.

PFIX

Function

To convert the internal binary value indicated by the calling sequence to a fixed-point number and store it in the proper column positions of a high-speed printer buffer.

Calling Sequence

RJP PFIX
U-TAG INDEX, ADDRESS
U-TAG BINARY-PT, COLUMN
U-TAG NUMCHARINT, NUMCHARFRAC
Error return
Normal return

Input

The value given in ADDRESS + (INDEX).

Output

NUMCHARINT + 1, decimal pt., NUMCHARFRAC output characters starting in PBUF + COLUMN.

Subroutines Used

PENTRY, COFFIX, PLAYUP, PBLANK, PFRACSTOR, PRESTORE, PERRORR.

Storage Areas Read

SIGN, LAYUPSTOR, PCOLUMN, CHARNO.

Storage Areas Written

IOINTEGER, LAYUPSTOR (by subroutines), PBUF, PCOLUMN.

Method

The PENTRY routine interprets the calling sequence and sets the column counter to the desired column. The value is converted from a fixed-point number with the indicated binary point and unpacked into a one-digit-per-word array. The appropriate number of blanks is determined by NUMCHARINT minus the number of significant digits in the integer portion of the number, and that number of blanks is stored in the buffer. The sign (minus or blank) is then stored, followed by the integer portion, then a decimal point, and finally the fractional portion.

Error Conditions

Type 1 - the maximum number of characters in the buffer is exceeded.

Type 2 - the number of significant integer digits exceeds NUMCHARINT.

PFLOAT

Function

To convert the internal floating-point number indicated by the calling sequence to an exponential output form and store it in the proper column positions of a high-speed printer.

Calling Sequence

RJP PFLOAT
U-TAG INDEX, ADDRESS
U-TAG NUMCHARFRAC, COLUMN
Error return
Normal return

Input

The value given in ADDRESS + (INDEX).

Output

A string of output characters consisting of a sign, an integer, a decimal point, NUMCHARFRAC decimal digits, a sign for the exponent, and two digits for the exponent beginning at PBUF + COLUMN.

Subroutines Used

PENTRY, COTFLT, PFRACSTOR, PRESTORE, PERRORR.

Storage Areas Read

SIGN, IOEXPONENT.

Storage Areas Written

SIGN, EXPSIGN, IOINTEGER, IOFRACTION, IOEXPONENT (by subroutines), BETA, PBUF, PCOLUMN.

Method

The PENTRY routine interprets the calling sequence and sets the column counter to the desired column. The value is converted from floating-point form to output form and stored one character at a time into the buffer. If the exponent is zero, blanks are stored in place of the sign and two exponent digits.

Error Conditions

Type 1 - the maximum number of characters in the buffer is exceeded.

Type 4 - the floating-point number has an erroneous format.

PFD

Function

To store internal Fieldata code into the proper column positions of a high-speed printer buffer.

Calling Sequence

```
RJP      PFD
U-TAG    INDEX,ADDRESS
U-TAG    NUMCHAR,COLUMN
Error return
Normal return
```

Input

The packed string of characters starting at ADDRESS + (INDEX).

Output

An unpacked string of output characters starting in PBUF + COLUMN.

Subroutines Used

PENTRY, PRESTORE.

Storage Areas Read

None.

Storage Areas Written

PBUF, PCOLUMN.

Method

The PENTRY routine interprets the calling sequence and sets the column counter to the desired column. Then the Fielddata words are unpacked into one character per word and stored in the buffer until NUMCHAR of them have been stored.

Error Conditions

Type 1 - the maximum number of characters in the buffer is exceeded.

PBLANK

Function

To store blanks in the proper column positions of the high-speed printer buffer.

Calling Sequence

RJP PBLANK
U-TAG COLUMN, NUMCOLS
Error return
Normal return

Input

The desired starting column and number of columns to be blanked given in the calling sequence.

Output

Blanks stored in PBUF + COLUMN through PBUF + COLUMN + NUMCOLS.

Subroutines Used

PCOLR, PERRORR.

Storage Areas Read

PCOLUMN.

Storage Areas Written

PCOLUMN, PBUF.

Method

If NUMCOLS = 0, 128-PCOLUMN is substituted so that the rest of the line is blanked out. If COLUMN = 0, the current column counter is used as the desired starting column. If COLUMN $\neq$ 0, the PCOLR subroutine is used to reset the column counter to that value.

Error Conditions

Type 1 - the maximum number of column positions in the buffer is exceeded.

PCOLR

Function

To reset the column counter to a given value.

Calling Sequence

RJP PCOLR
U-TAG INDEX,COLUMN
Error return
Normal return

Input

The value given in COLUMN + (INDEX).

Output

PCOLUMN.

Subroutines Used

PERRORR.

Storage Areas Read

None.

Storage Areas Written

PCOLUMN.

Method

The value `COLUMN + (INDEX)` is tested for not exceeding 128 and, if not, stored in `PCOLUMN`.

Error Conditions

Type 1 - the maximum number of columns has been exceeded. `PCOLUMN` is set to 0.

PCOLIN

Function

To increment the column counter and test for exceeding the maximum number of positions.

Calling Sequence

RJP PCOLIN
U-TAG INDEX, NUMCOLS
Error return
Normal return

Input

The value given in NUMCOLS + (INDEX).

Output

PCOLUMN.

Subroutines Used

PERRORR.

Storage Areas Read

None.

Storage Areas Written

PCOLUMN.

Method

Add NUMCOLS + (INDEX) to PCOLUMN and test for not exceeding 128.

Error Conditions

Type 1 - the maximum number of columns has been exceeded.

PIMAGE

Function

To move the contents of an output buffer area containing unpacked Fieldata characters to PBUF, the buffer area supplied by PPKG.

Calling Sequence

RJP PIMAGE
U-TAG INDEX, ADDRESS
Error return
Normal return

Input

The 128-word area beginning at ADDRESS + (INDEX).

Output

The 128-word area beginning at PBUF + 1.

Subroutines Used

None.

Storage Areas Read

None.

Storage Areas Written

PBUF.

Method

The entire 128-word array is transferred from the users area to PBUF.

Error Conditions

None.

PFORM

Function

To establish the top and bottom margin areas of the printer page and advance the paper to the top of the next page. Also serves to initialize printer functions, interrupt routines, etc.

Calling Sequence

```
RJP      PFORM
U-TAG    LINES TOP,LINES BOTTOM
Error return
Normal return
```

Input

Margin information in the calling sequence, i.e., number of blank lines desired at top and bottom of page.

Output

```
TOPLINE, BOTLINE, LINCNT, BOTMARG.
```

Subroutines Used

None.

Storage Areas Read

STATUS.

Storage Areas Written

```
TOPLINE, BOTLINE, LINCNT, BOTMARG, STATUS.
```

Method

```
TOPLINE = LINESTOP + 1
BOTMARG = LINESBOTTOM
BOTLINE = PAGESIZE (66) - BOTMARG
LINCNT (after advancing to top of next page) = TOPLINE
PAGESIZE is an assembly parameter which is set to 6610
for normal printer paper.
```

Error Conditions

If STATUS > 1, a printer error is indicated and the computer is stopped. Pushing the HI-SPEED button on the console will cause the routine to reissue the offending print instruction. This will continue until the printer error condition is remedied, at which time the print instruction will be properly executed and the routine will return via the normal exit.

PSCRIB

Function

To print one line from the buffer after spacing or advancing to the top of the next page.

Calling Sequence

RJP PSCRIB
U-TAG PAGETOP, LINESKIP
Error return
Normal return

Input

PBUF, the information in the calling sequence.

Output

The printed line on the proper line number.

Subroutines Used

PSAVE, PSCRIBSS (internal to PSCRIB), PRESTORE, PSCRINT
(external interrupt routine)

Storage Areas Read

BOTLINE, LINCNT, BOTMARG, TOPLINE, PBUF, STATUS, PSCRIBD.

Storage Areas Written

LINCNT, PSCRIBD, PREGION, PCOLUMN

Method

If $PAGETOP \neq 0$, an ejection to the top of the next page before printing is indicated. The value of $BOTLINE - LINECNT - BOTMARG + TOPLINE$ is computed and tested to see if it exceeds 63_{10} , the maximum number of lines the printer is able to skip.

If so, the command to skip 63 lines without printing is given, after which 63 is subtracted from the previously computed value placed in the lines-to-skip portion of the print command word. The value of $TOPLINE$ is stored in $LINCNT$ since, after advancing and printing, the paper will be at the top line of printing on the next page.

If page topping is not desired, the value of $BOTLINE - LINCNT$ is tested against the number of lines desired to skip given in the calling sequence. If the number of lines exceeds this value, page topping is automatically indicated and $BOTMARG + TOPLINE$ must be added to must be added to space the paper past the inter-page margins. Otherwise the number of lines to skip is inserted directly into the print command word and $LINCNT$ incremented by this amount.

The actual printing process is a double-buffered operation. The available packed buffer area which will begin at either $PREGION$ or $PREGION + 27_{10}$ is determined by looking in the buffer control word $PSCRIBD$. The information from $PBUF$ is packed five characters to a word and stored in the available buffer. Before the print command is issued, the register $STATUS$ is tested to see if the external interrupt routine $PSCRINT$ has been entered, signifying that the previous print command was completed. If $STATUS = 1$, the previous print command was successfully completed, so the new print command and buffer initiation is issued for the information just packed into the available buffer. Now the buffers are switched, $STATUS$ is cleared and registers are restored before exit.

Error Conditions

If $STATUS > 1$, a printer error is indicated and the computer is stopped. Pushing the $HI-SPEED$ button on the console will cause the routine to reissue the offending print instruction. This will continue until the printer error condition is remedied, at which time the print instruction will be properly executed and the routine will return via the normal exit.

PENTRY

Function

To interpret the calling sequence to the routine which called PENTRY, save all registers and set the column counter to the desired column.

Calling Sequence

PANYTHING ENTRY
RJP PENTRY
Error return
Normal return

Input

Calling sequence to calling routine.

Output

PCOLUMN, desired ADDRESS + (INDEX) in B6.

Subroutines Used

PSAVE, PCOLR.

Storage Areas Read

None.

Storage Areas Written

PCOLUMN.

Method

The A, Q, and B1 through B7 registers are saved by PSAVE for later restoration by PRESTORE. The entry point of PENTRY is used to determine the entry point of the calling routine, which in turn is used to obtain the desired address of the value to be converted for output. The lower half of the word following that is used to reset the column counter by use of PCOLR if it is not equal to zero. Just before the routine returns to the normal exit, B6 is loaded with the desired address.

Error Conditions

The error return from PCOLR causes an exit to the error return.

PLAYUP

Function

To unpack and store the Fieldata characters in the words indicated by the calling sequence in the area LAYUPSTOR.

Calling Sequence

RJP PLAYUP
U-TAG PACKEDAREA, NUMWORDS
Normal return

Input

The characters in PACKEDAREA through PACKEDAREA + NUMWORDS-1.

Output

LAYUPSTOR, CHARNO.

Subroutines Used

None.

Storage Areas Read

None.

Storage Areas Written

LAYUPSTOR, CHARNO.

Method

Up to 130 characters may be unpacked from the area designated and stored one character per word in LAYUPSTOR, with the final number of characters stored in CHARNO. Any whole words or individual characters which are blank (zero) will not be stored.

Error Conditions

None.

PFRACSTOR

Function

To store the fractional portion of a number in the high-speed printer buffer.

Calling Sequence

RJP PFRACSTOR
Error return
Normal return

Input

BETA, IOFRACTION.

Output

PBUF.

Subroutines Used

PERRORR.

Storage Areas Read

BETA, IOFRACTION.

Storage Areas Written

PBUF, BETA.

Method

If $BETA = 0$, the routine exits immediately. Otherwise a decimal point is stored in PBUF followed by BETA digits starting from the high-order digits of IOFRACTION.

Error Conditions

Type 1 - The maximum number of characters in the buffer has been exceeded.

PERRORR

Function

To print and type the error type and the location of the error.

Calling Sequence

```
ENT A  W(ERRORWD)
RJP    PERROR
Normal return
```

where ERRORWD has the format: U-TAG ERRORTYPE, LOCATION

Input

Information in calling sequence.

Output

The message "ERROR TYPE n AT LOCATION mmmmm" on both the console printer and the high-speed printer.

Subroutines Used

PIMAGE, PSCRIB, PLAYUP.

Storage Areas Read

None.

Storage Areas Written

LAYUPSTOR.

Method

The error type is converted to a two-digit Fielddata code and stored in the proper place in the error message. The location is likewise converted to output format and stored in the message. Through the use of PIMAGE, this message is put in the high-speed printer buffer and printed by PSCRIB, after which it is unpacked by PLAYUP and printed on the console printer.

Error Conditions

None.

COTFLT

Function

To convert the value indicated by the calling sequence from internal floating-point form to output exponential form.

Calling Sequence

RJP COTFLT
U-TAG ADDRESS,0
Error return
Normal return

Input

Floating-point value in ADDRESS (2).

Output

IOINTEGER + 1, IOFRACTION(2), IOEXPONENT, EXPSIGN, SIGN.

Subroutines Used

FLTPT, BINDECINT, BINDECFA, COFRND, SUPZRO.

Storage Areas Read

EXPONENT, FPFRACTION.

Storage Areas Written

INTEGER, FRACTION, EXPONENT, FPFRACTION, IOINTEGER(2),
IOFRACTION(2), IOEXPONENT, EXPSIGN, SIGN, SINTEMP.

Method

The value indicated by the calling sequence is stored as a positive quantity in the common area EXPONENT and FPFRACTION along with temporary storage of the true sign. Separate paths are entered depending on the sign of the exponent, but as the functions are similar only the positive exponent path will be described.

The number is tested against the floating-point representation of 10^{10} and repeatedly divided by it with corresponding adjustment of IOEXPONENT until it is less. Then it is tested against a table of floating-point representations of powers of ten and divided by the highest one which is less than it, thus making the number in terms of units only. Now the value can be shifted an amount equal to the exponent minus the base (40000) to separate the integer and fractional portions which are each converted separately to output format. The resultant I/O values are rounded to BETA decimal places and zero suppressed. The IOEXPONENT is then converted to decimal for output.

Error Conditions

If the resultant value of IOEXPONENT is greater than 40, the routine exits to the error return.

COFFIX

Function

To convert the fixed-point value indicated by the calling sequence to output fixed point format with BETA decimal places printing.

Calling Sequence

RJP COFFIX
U-TAG ADDRESS, GAMMA
Normal return

Input

Value in address given in calling sequence.

Output

IOINTEGER(2), IOFRACTION(2), SIGN.

Subroutines Used

BINDECINT, BINDECFA, COFRND, SUPZRO.

Storage Areas Read

Address given in calling sequence.

Storage Areas Written

SIGN, INTEGER, FRACTION, IOINTEGER(2), IOFRACTION(2)
(by subroutines).

Method

The value is made positive and its true sign temporarily stored. It is then separated into its integer and fractional portions by the binary point (GAMMA) given in the calling sequence. Each is separately converted to output form and the entire value rounded to BETA decimal places with leading zeros suppressed.

Error Conditions

None.

COFRND

Function

To round off the value in IOINTEGER and IOFRACTION to BETA decimal places.

Calling Sequence

RJP COFRND
Normal return

Input

IOINTEGER(2), IOFRACTION(2), BETA.

Output

IOINTEGER(2), IOFRACTION(2).

Subroutines Used

None.

Storage Areas Read

IOINTEGER(2), IOFRACTION(2), BETA.

Storage Areas Written

IOINTEGER(2), IOFRACTION(2).

Method

The BETA + 1st digit is tested for 5 or greater. If not it is cleared and the fraction replaced as is; if so, the next higher order digits are tested for 9's to see if the carry will propagate upwards. This process continues from IOFRACTION through to IOINTEGER until a digit less than 9 is found at which point 1 is added to it and the value cleared up and prepared for output with BETA digits, zero or greater in IOFRACTION.

Error Conditions

None .

SUPZRO

Function

To suppress leading zeros in the area defined by the calling sequence, converting them to blanks but leaving one zero if the entire value is zero.

Calling Sequence

RJP SUPZRO
U-TAG AREA, No. of words
Normal return

Input

Area given by calling sequence.

Output

Same area.

Subroutines Used

None.

Storage Areas Read

Area given by calling sequence.

Storage Areas Written

Same area.

Method

Test leading digits for zero, clearing each until a non-zero digit is found or the area is exhausted. If the latter condition holds, force in a single zero in the least significant digit position of the area.

Error Conditions

None.

BINDECFA

Function

To convert a value in FRACTION from internal binary form to fractional decimal form suitable for output.

Calling Sequence

RJP BINDECFA
Normal return

Input

FRACTION.

Output

IOFRACTION(2), SIGN.

Subroutines Used

None.

Storage Areas Read

FRACTION.

Storage Areas Written

IOFRACTION (2), SIGN.

Method

Multiply the fraction by 2^4_8 , each time converting the high order 4 bits to output form and accumulating them in IOFRACTION.

Error Conditions

None.

BINDECINT

Function

To convert the value in INTEGER from binary to decimal in Fieldata output form.

Calling Sequence

RJP BINDECINT
Normal return

Input

INTEGER.

Output

IOINTEGER(2), SIGN.

Subroutines Used

None.

Storage Areas Read

INTEGER.

Storage Areas Written

IOINTEGER(2), SIGN.

Method

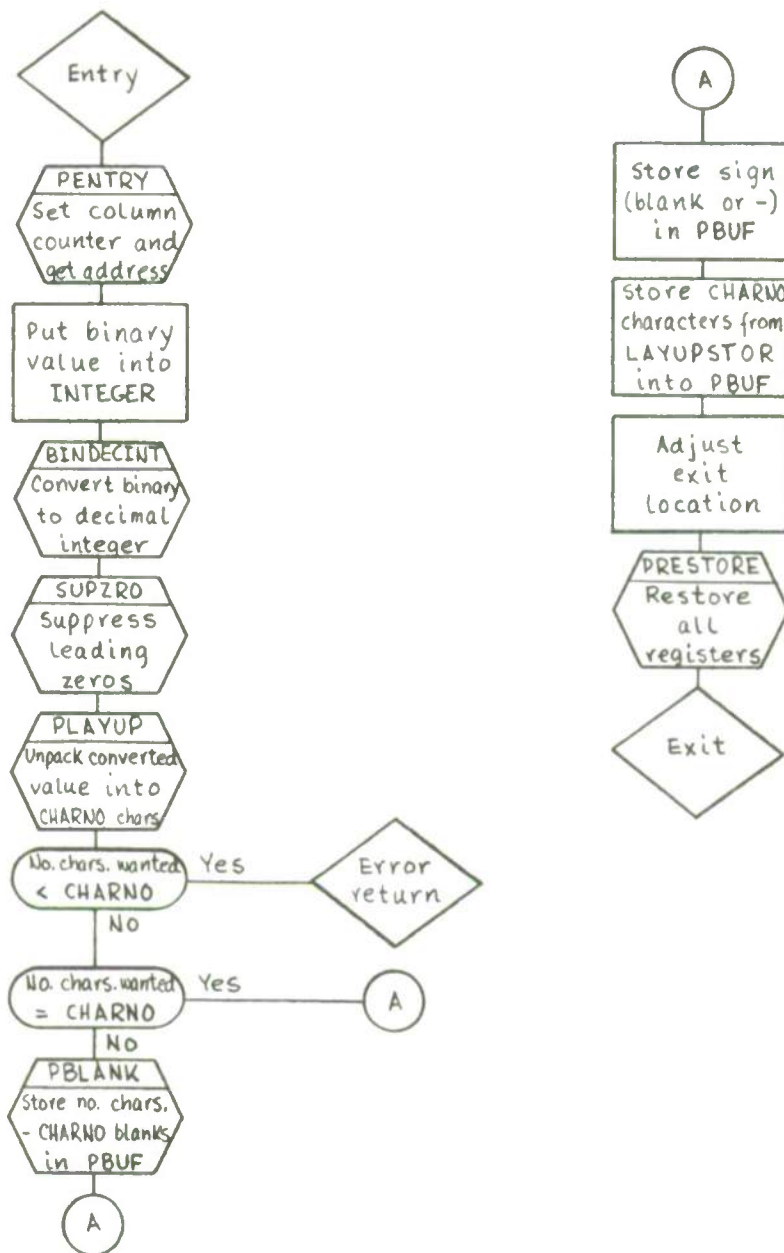
Repeatedly divide the quantity in INTEGER, having been forced positive, by 12_8 and store the remainder in the appropriate digit position of IOINTEGER or IOINTEGER + 1.

Error Conditions

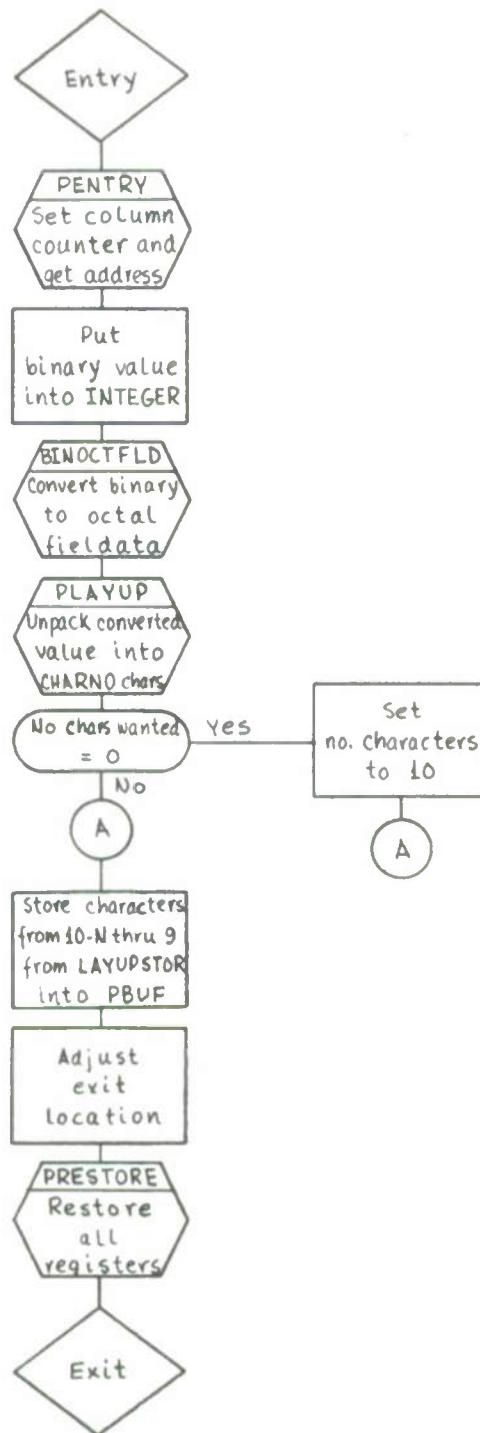
None.

IV. FLOW CHARTS

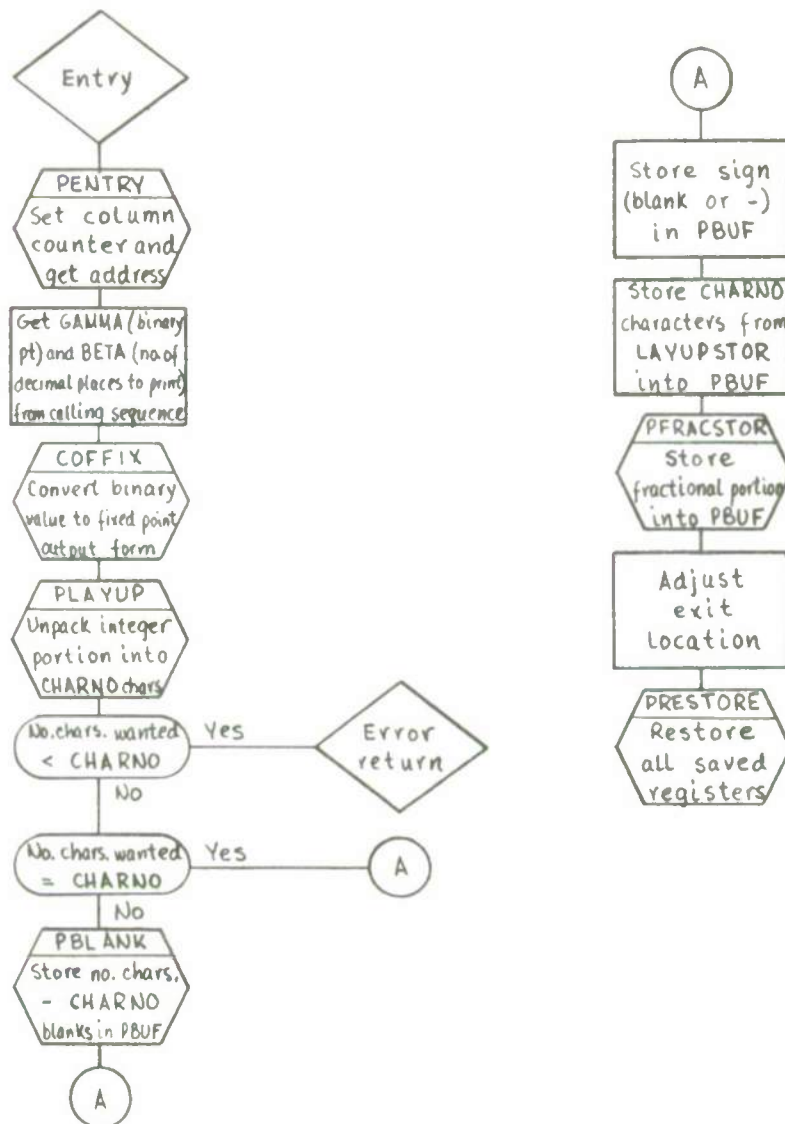
Flow charts for the subroutines described in the preceding section appear on the following pages.



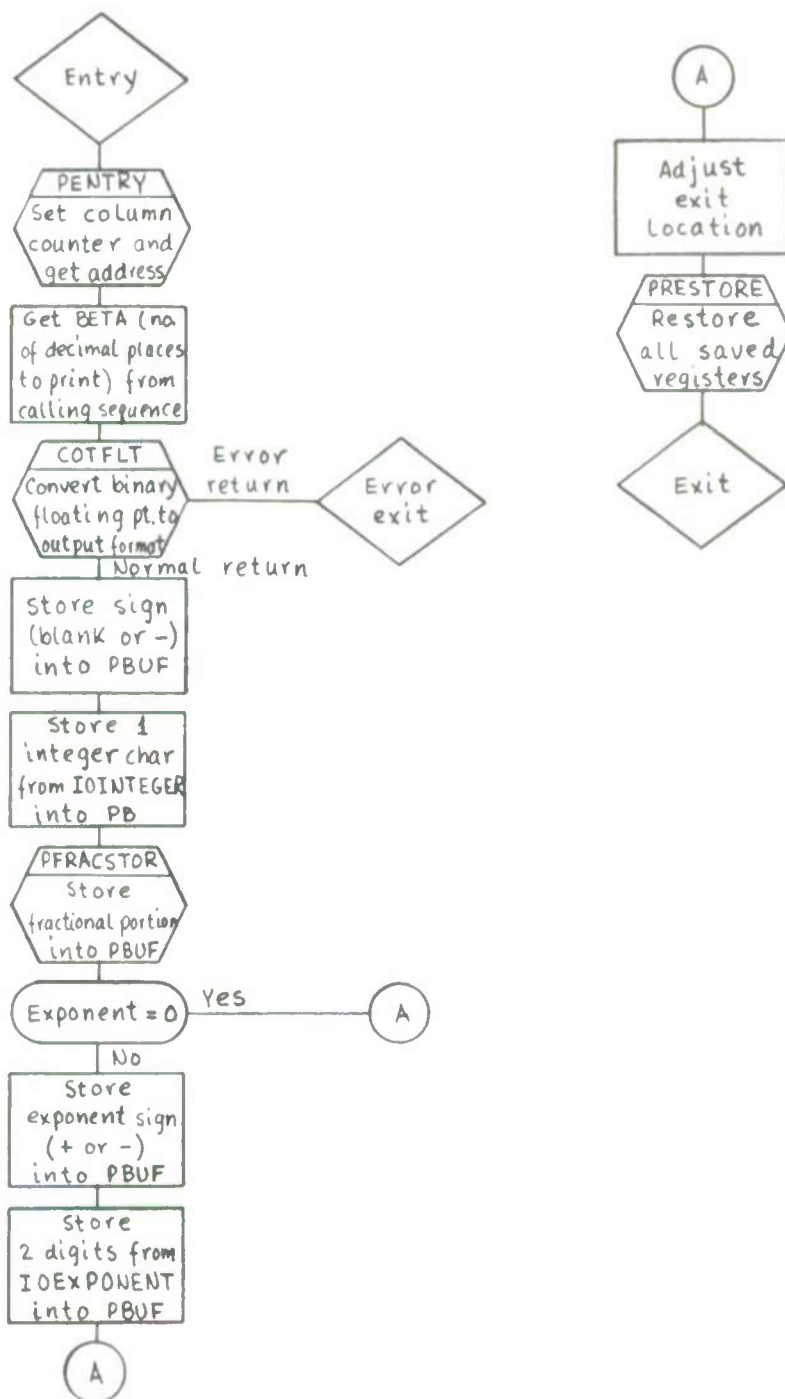
PINT



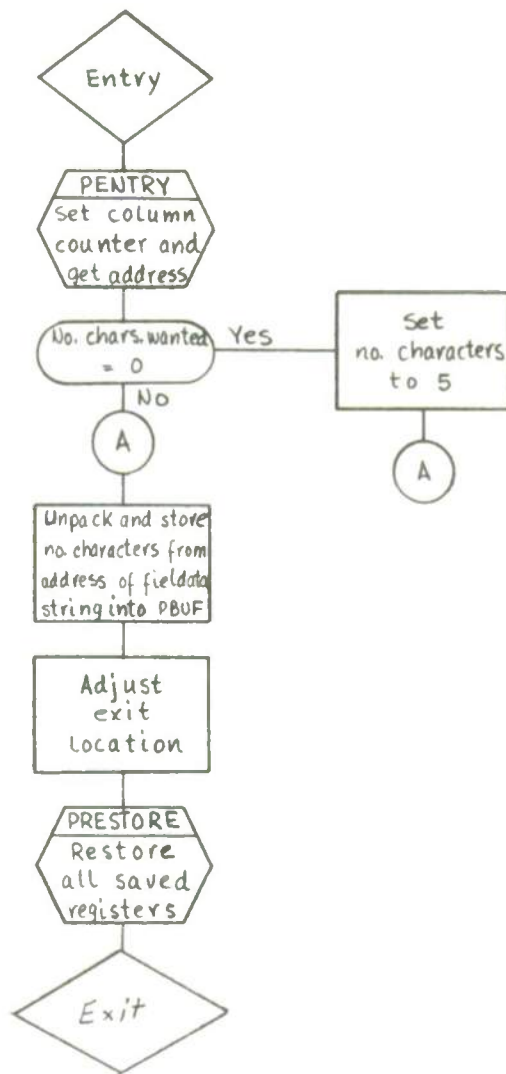
POCT



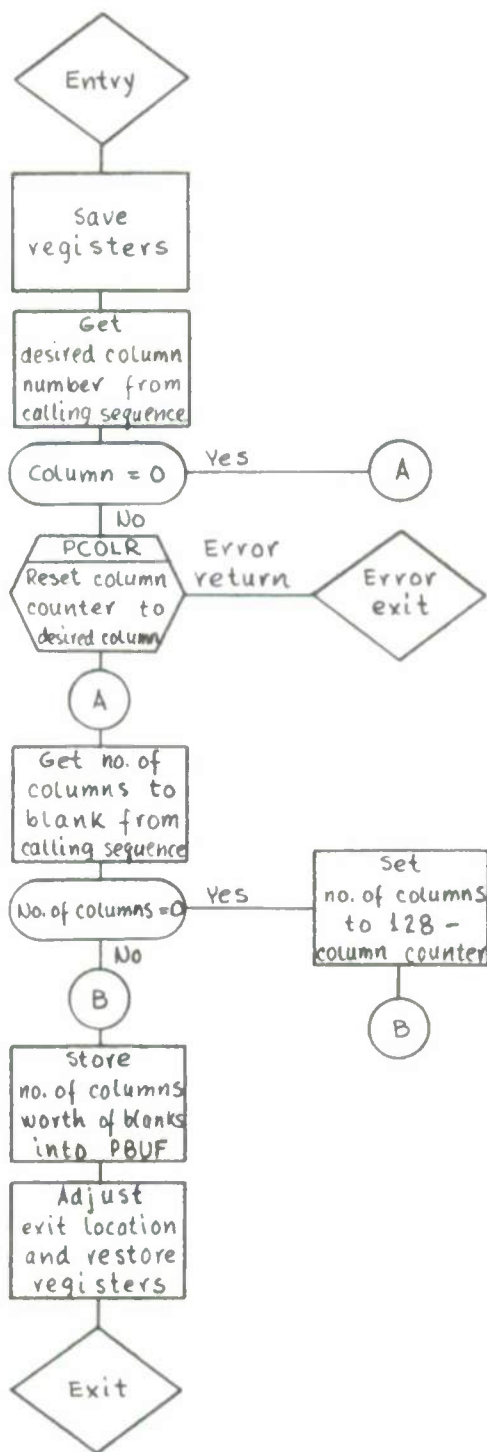
PFIX



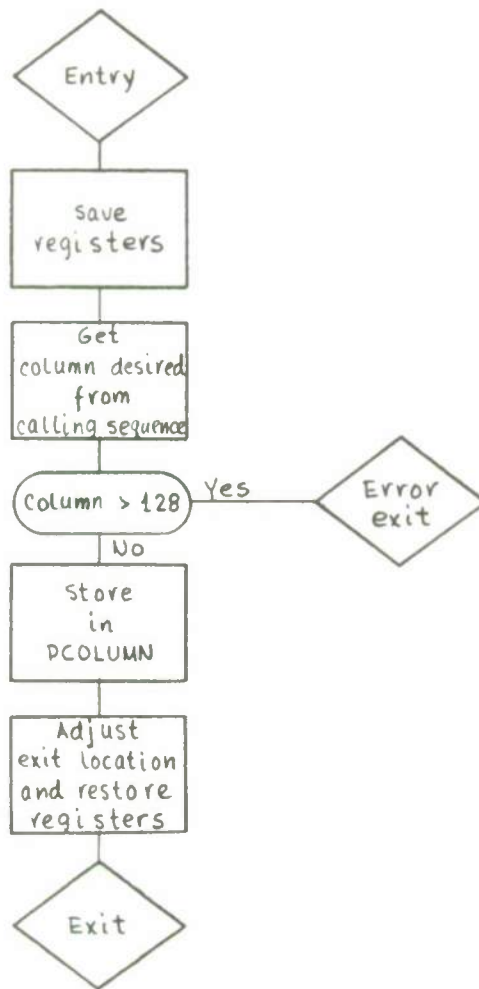
PFL0AT



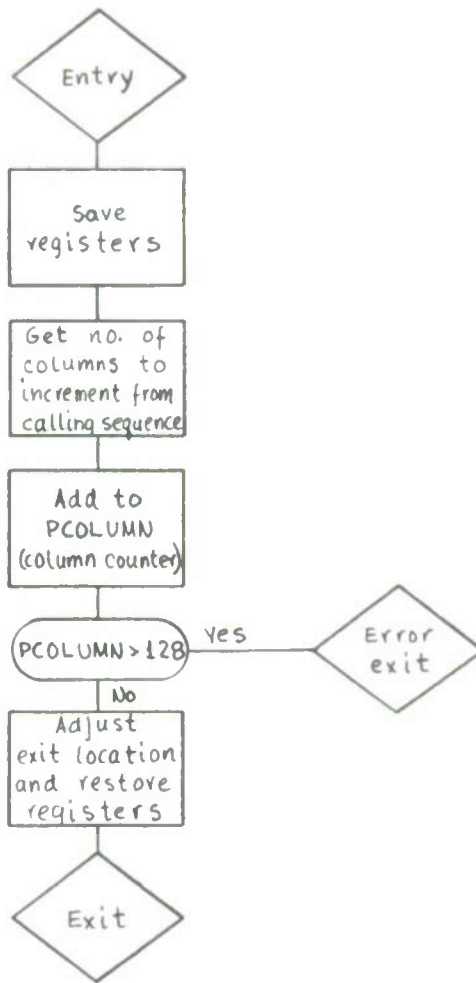
PFD



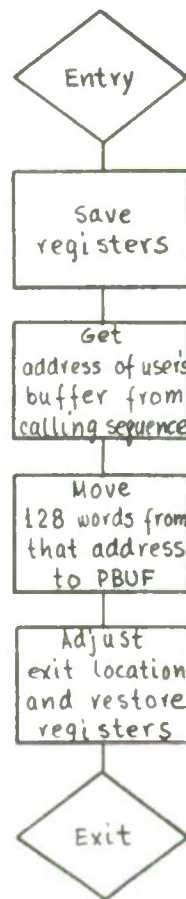
PBLANK



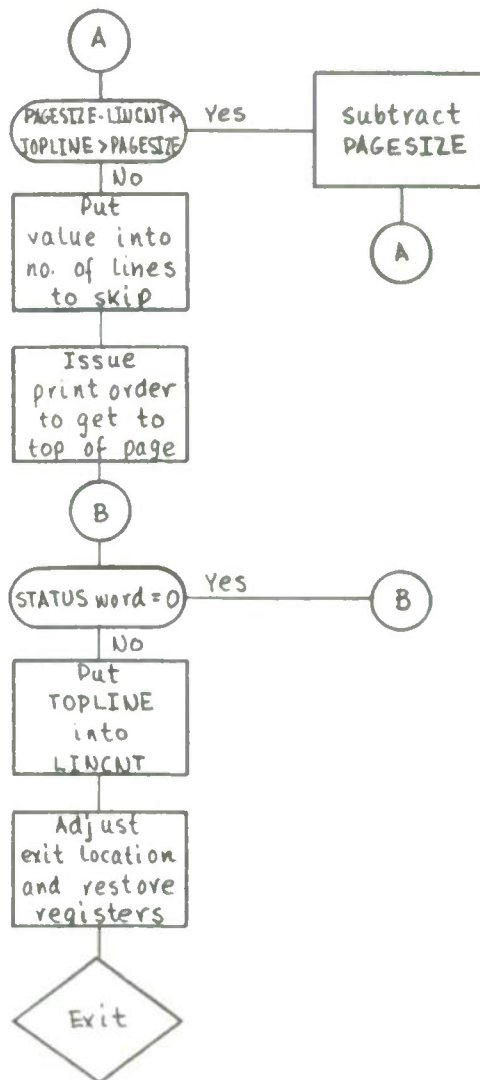
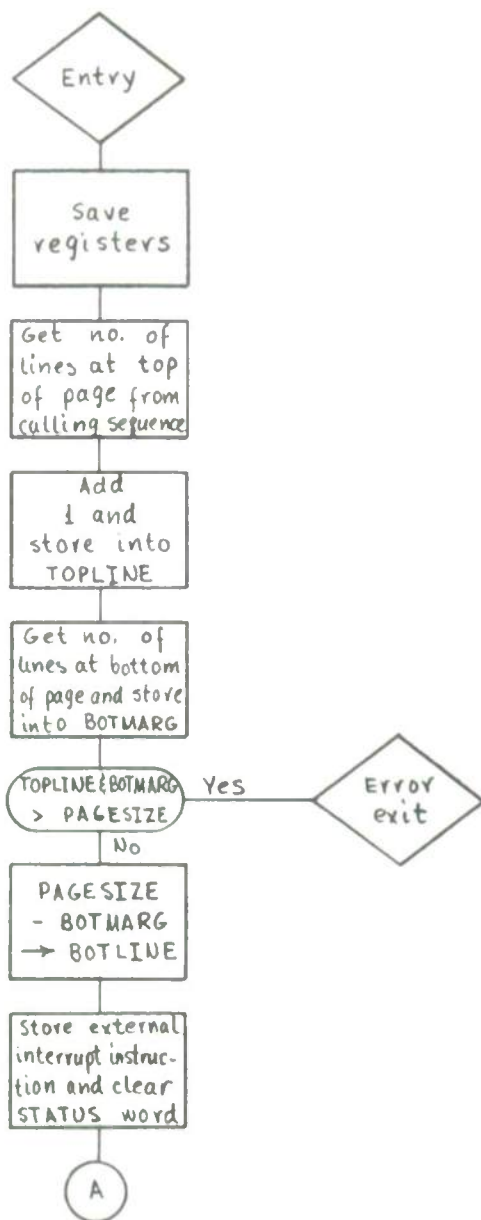
PCOLR



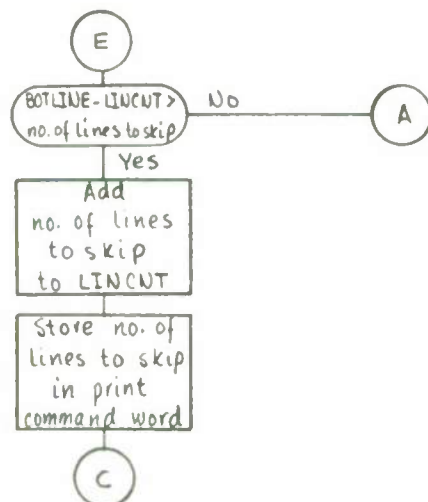
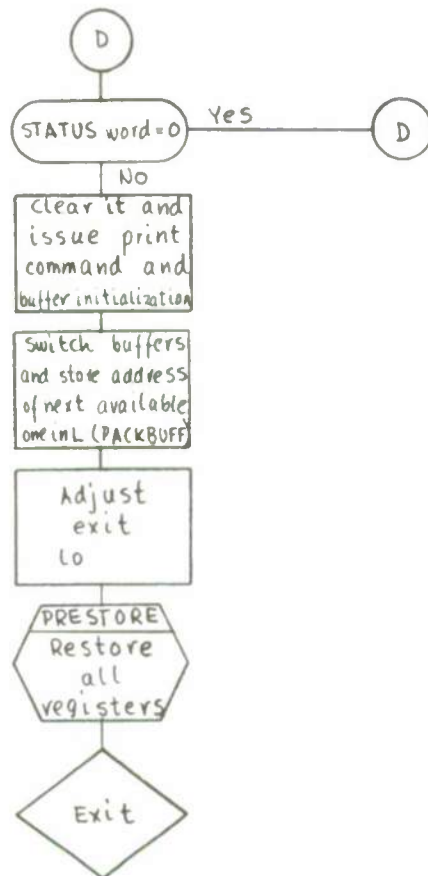
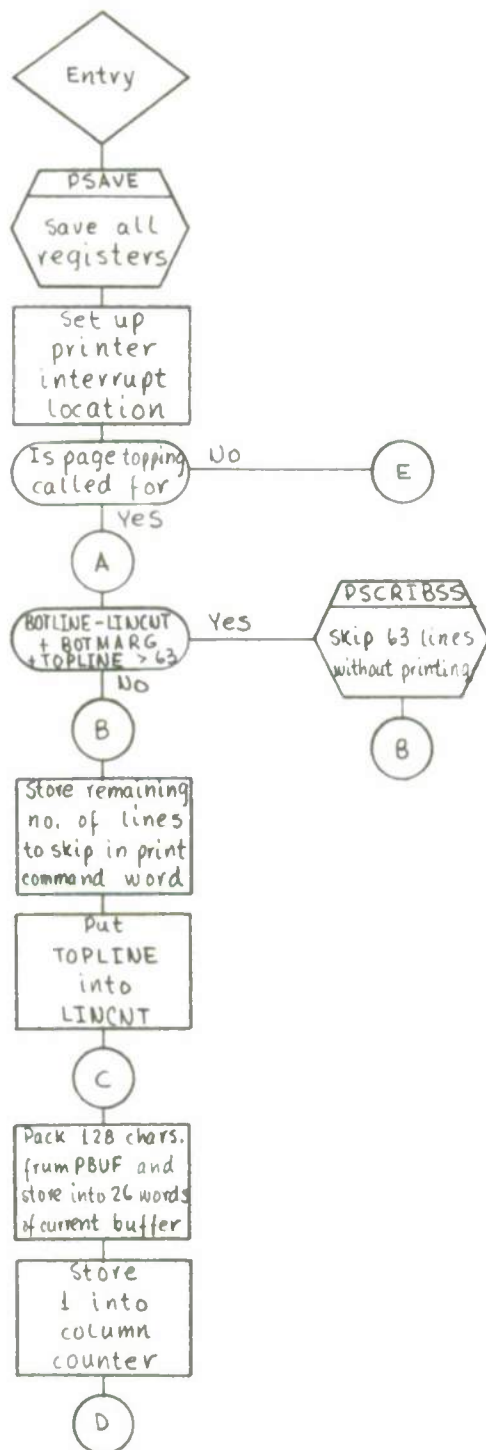
PCOLIN



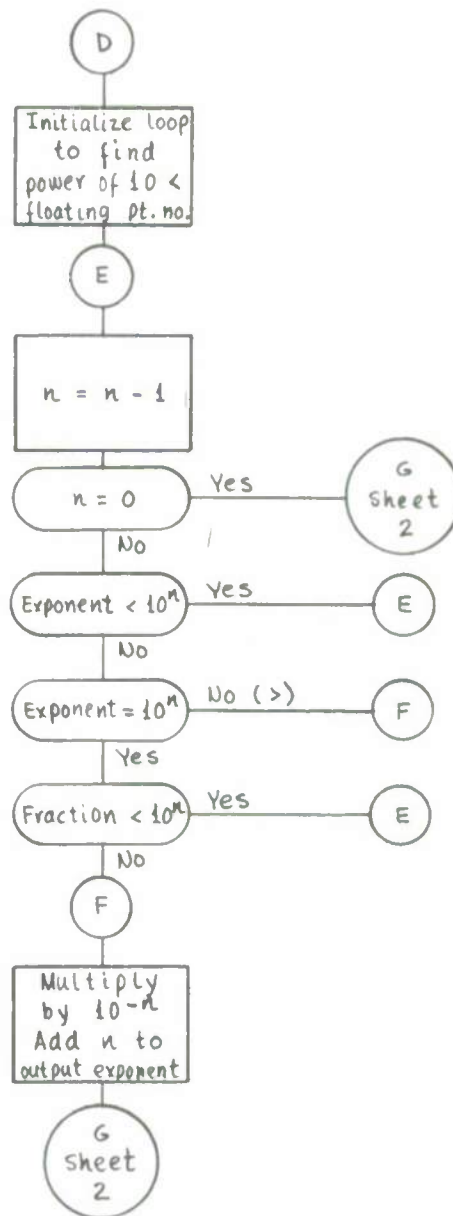
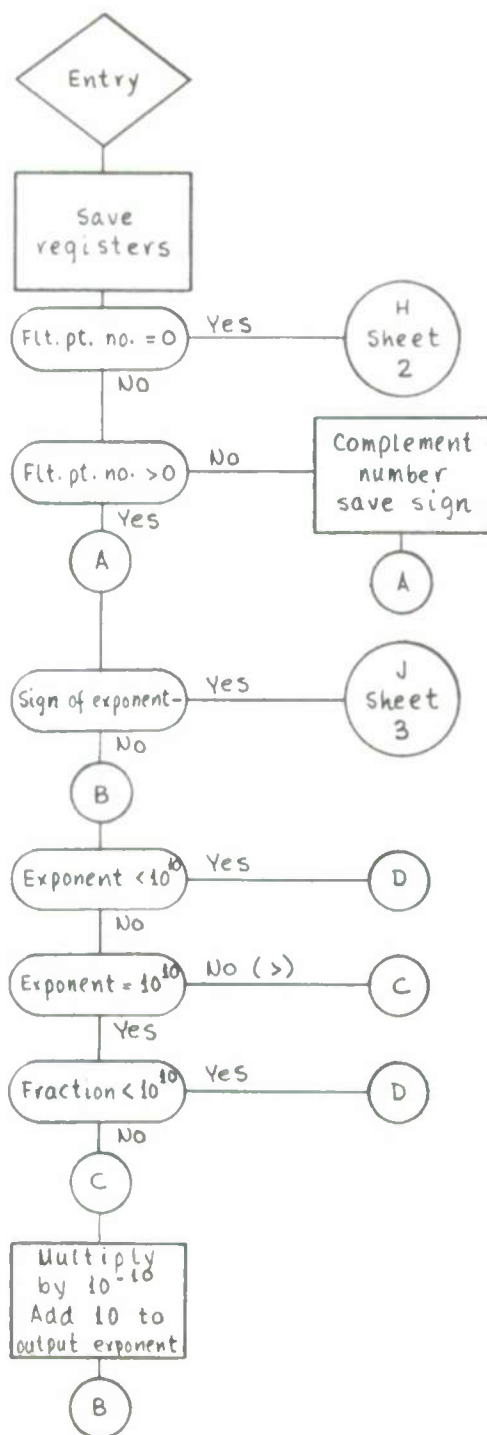
PIMAGE



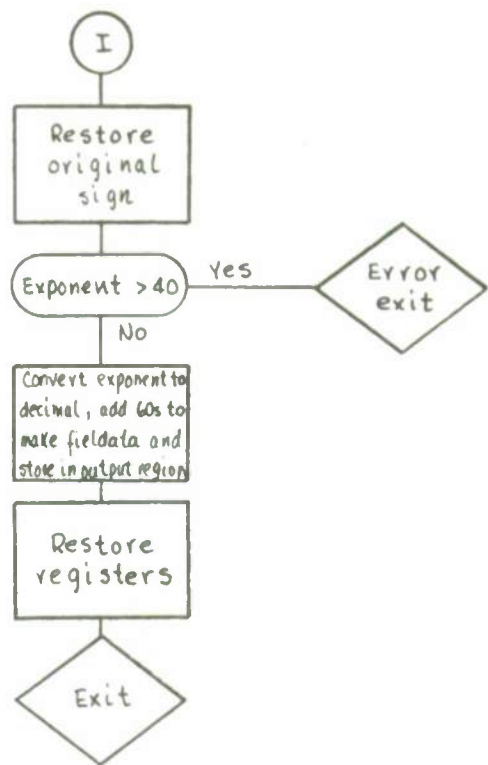
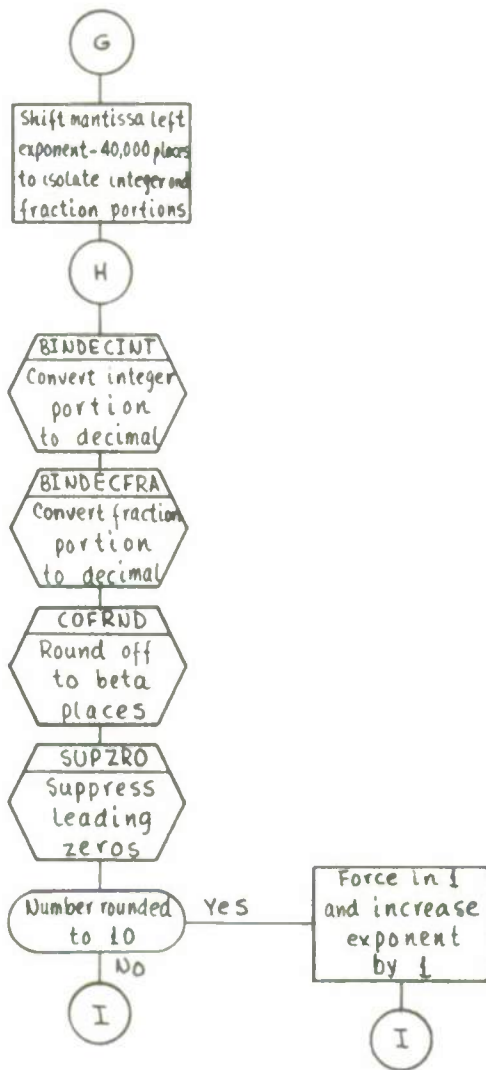
PFORM



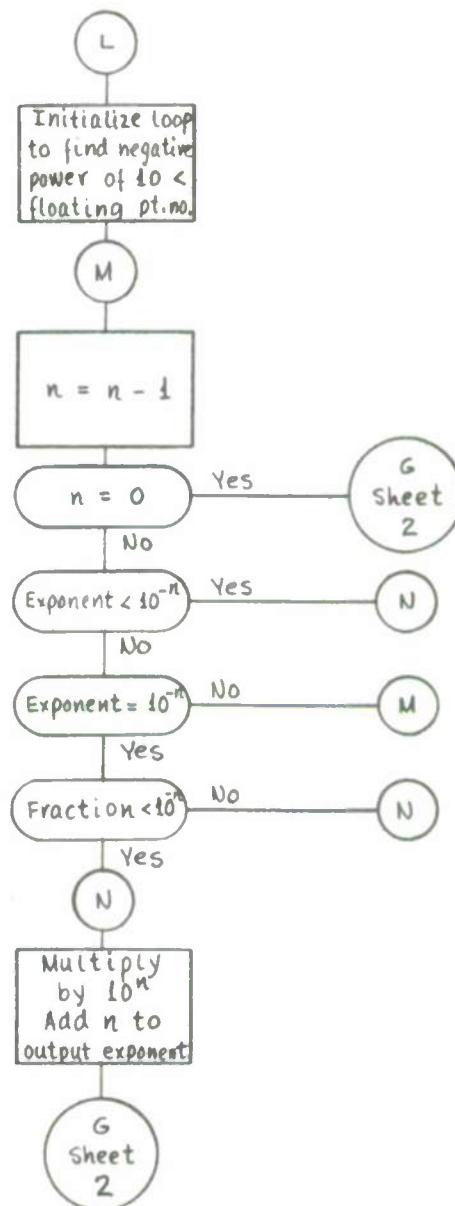
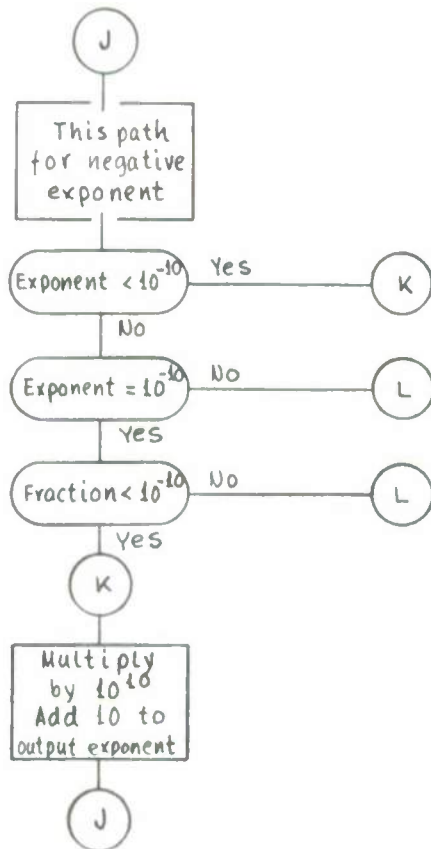
PSCRIB



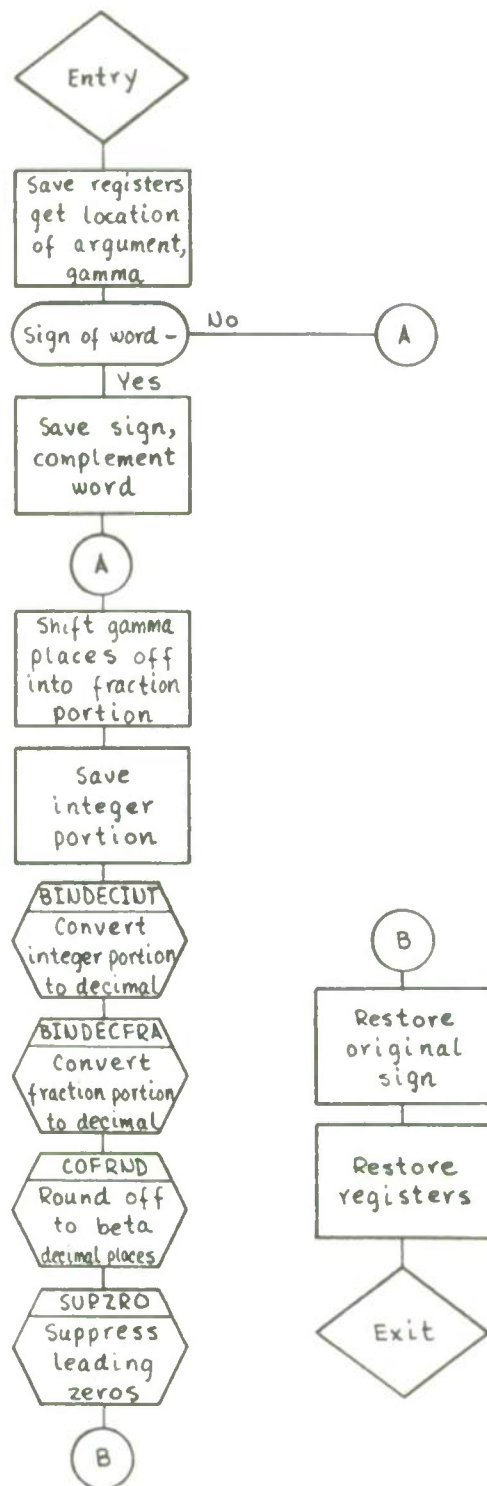
COTFLT
Sheet 1 of 3



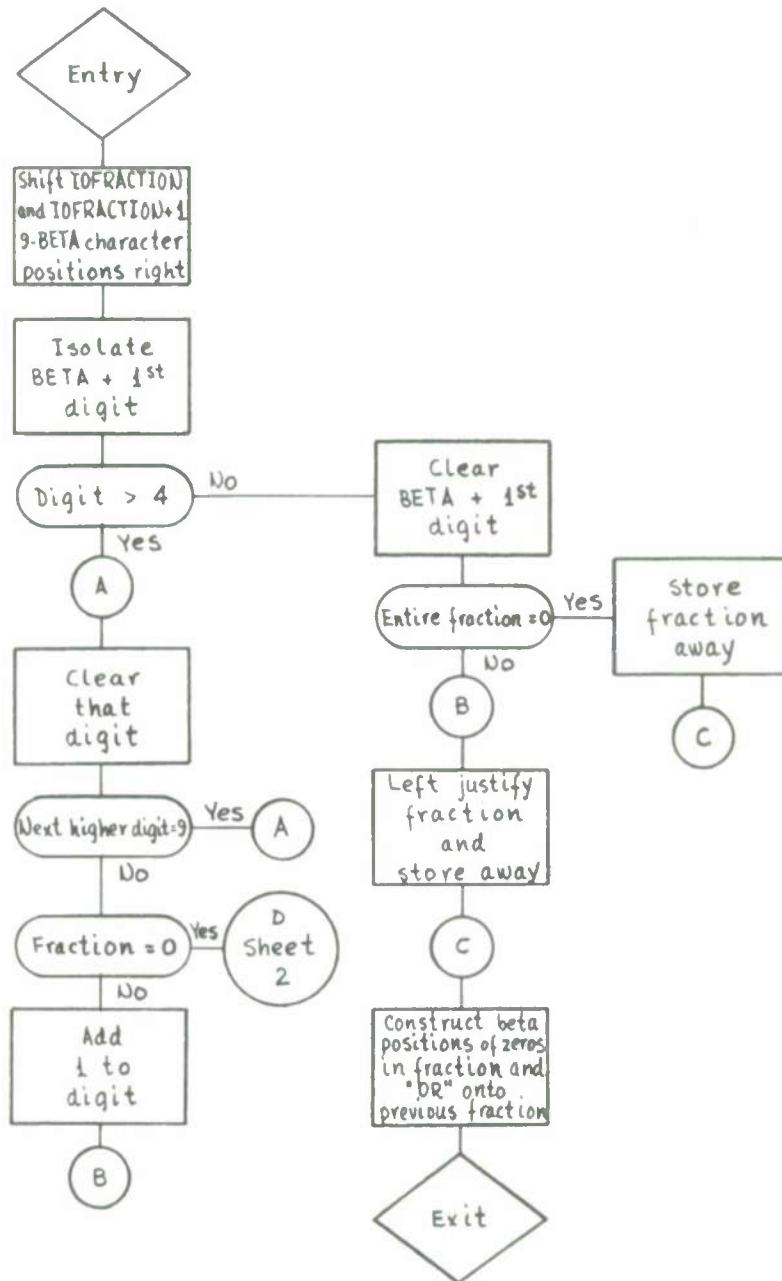
COTFLT
Sheet 2 of 3



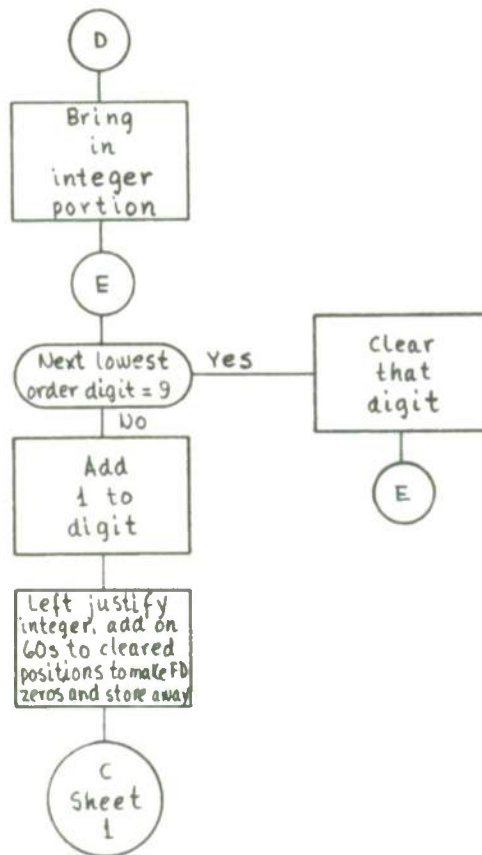
COTFLT
Sheet 3 of 3



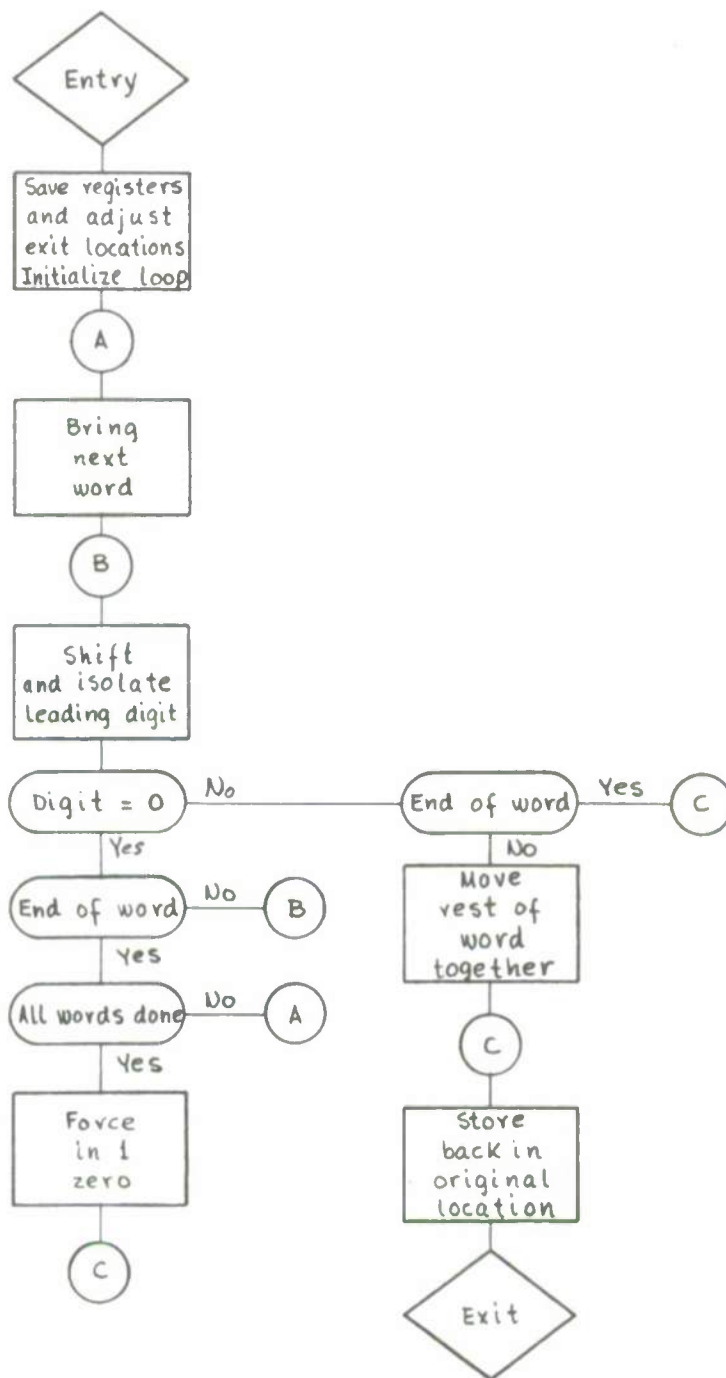
COFFIX



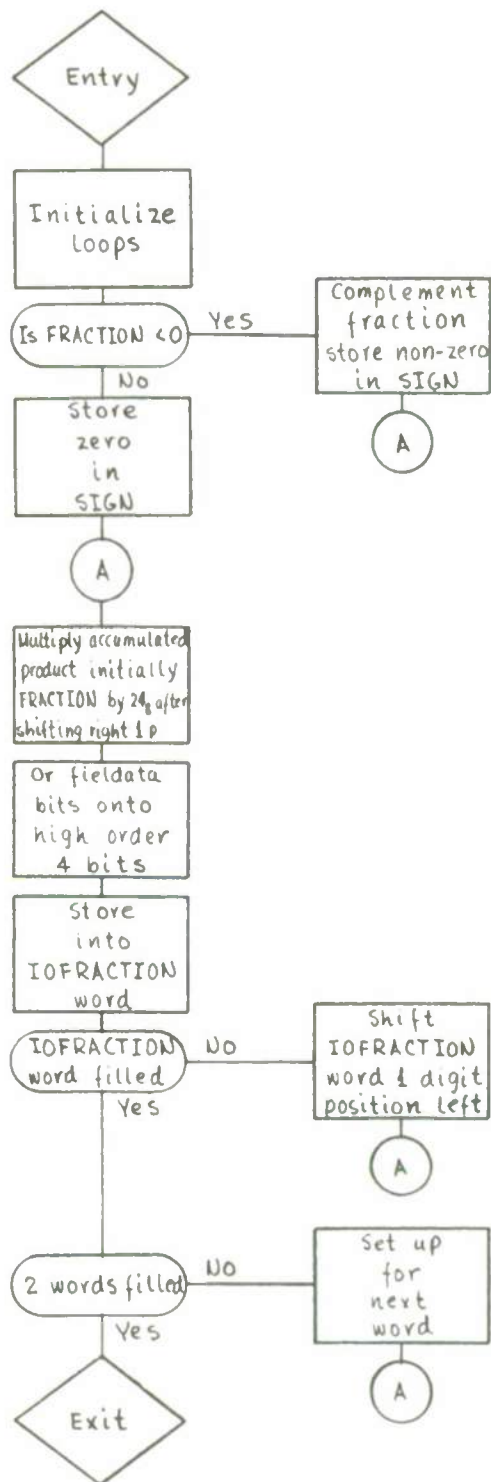
COFRND
Sheet 1 of 2



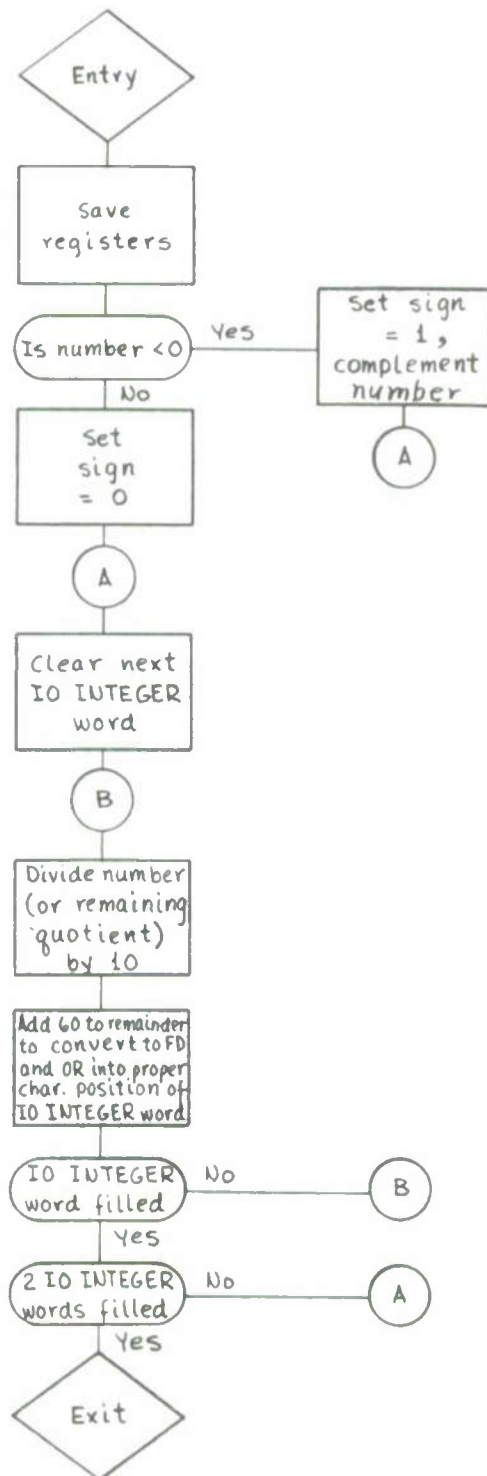
COFRND
Sheet 2 of 2



SUPZRO



BINDEC FRA



BINDECINT

CARDS	LI	ID	LABEL	TA	STATEMENT	PPKG	LOC	F	JKB	Y	NOTES
.	00000		PPKG	PROGRAM	AOAMS-ASSOC*1JULY65						
.	00001		KEYIN	MEANS	C2		00000	61000	00000		
.	00002		KEYOUT	MEANS	C2		00001	65000	00706		
.	00003		NIL	EQUALS	O		00002	61000	00050		
.	00004			COMMENT	ROUTINE		00003	11035	00000		TO PRINT AN INTEGER
.	00005			COMMENT	CALLING		00004	15030	02234		SEQUENCE
.	00006			COMMENT	RJP		00005	65000	01327		PINT
.	00007			COMMENT	INDEX*Y		00006	65000	01457		
.	00010			COMMENT	NUMCHAR*COL		00007	02241	00002		\$
.	00011			COMMENT	ERROR		00010	65000	00730		CONVERT TO DECIMAL
.	00012			COMMENT	NORMAL		00011	02241	00002		SUPPRESS LEADING ZEROS
.	00013		PINT	ENTRY			00012	11527	00001		COUNT AND STORE SIGNIFICANT
.	00014			RJP	PENTRY		00013	61000	00024		OIGITS
.	00015			JP	PINTERR		00014	21630	01170		EXAMINE NUMBER OF PLACES (N)
.	00016			ENT	A*W(1861						IF O SKIP BUMPING CTR
.	00017			STR	A*W(INTEGER1						N-CHARNO=NO. OF PRINTABLE OIGI
.	00018			RJP	BINDECINT						TS
.	00020			RJP	SUPZRO						IF CHARNO GRTR N, ERROR
.	00021			RJP	U-TAG	IOINTEGER*2					INSERT N-CHARNO-1 BLANKS
.	00022			RJP	PLAYUP						
.	00023			RJP	U-TAG	IOINTEGER*2					
.	00024			ENT	A*U(1+87)*ANOT						
.	00025			JP	PINTR						
.	00026			JP	PINTR						
.	00027			SUR	A*W(CHARNO1*APDS						
.	00030			JP	PINTERRA		00015	61000	00051		
.	00031			JP	PINTB*AZERO		00016	60400	00024		
.	00032			STR	A*W1\$+21		00017	15030	00021		
.	00033			RJP	PBLANK		00020	65000	00237		
.	00034			O	O		00021	00000	00000		
.	00035			JP	PINTERR		00022	61000	00050		
.	00036			ENT	B1*LI PCOLUMN1		00023	12110	00666		
.	00037		PINTB	ENT	A*W(SIGN1*AZERO		00024	11430	02236		
.	00040			ENT	A*41		00025	11000	00041		
.	00041			STR	A*LI(PBUF+B11		00026	15011	02337		
.	00042			BSK	B1*1290		00027	71100	00201		
.	00043			JP	\$+2		00030	61000	00032		
.	00044			JP	PINTERR		00031	61000	00050		
.	00045			ENT	R6*1		00032	12600	00001		
.	00046		PINTC	ENT	A*W(LAYUPSTOR*B6-11		00033	11036	00764		
.	00047			STR	A*LI(PBUF+B11		00034	15011	02337		
.	00050			BSK	B1*1290		00035	71100	00201		
.	00051			JP	\$+2		00036	61000	00040		
.	00052			JP	PINTERR		00037	61000	00050		
.	00053			BSK	B6*W(CHARNO1		00040	71630	01170		
.	00054			JP	PINTC		00041	61000	00033		ADJUST EXIT LOCATION
.	00055		PINTEXIT	RPL	Y+1*LI PINT1		00042	36010	00000		
.	00056			RPL	Y+1*LI(PINT1		00043	36010	00000		
.	00057			RPL	Y+1*LI(PINT1		00044	36010	00000		
.	00060			STR	B1*W(PCOLUMN1		00045	16130	00666		
.	00061			RJP	PRESTORE		00046	65000	01241		ADJUST EXIT LOCATION
.	00062			EXIT			00047	61010	00000		NORMAL EXIT
.	00063		PINTERR	ENT	A*W(PINTERR1)*SKIP		00050	11130	00054		

CARD	LOC	LOC	F	J	K	B	Y	NOTES
00064	PINTERRA	ENT A*(PINTERR2)	00051	11030	00055			
00065	RJP	PERRORR	00052	65000	01256			
00066	PINTERR1	JP PINTERR1+1	00053	61000	00043			ERROR EXIT
00067	PINTERR2	00001 PINT	00054	00001	00000			
00070	PINTERR2	00002 PINT	00055	00002	00000			
00071		COMMENT						\$
00072		COMMENT ROUTINE						TO CONVERT AND STORE THE OCTAL
00073		COMMENT OF						DIGITS
00074		COMMENT CALLING						A WORD IN THE PRINT BUFFER.
00075		COMMENT RJP						SEQUENCE
00076		COMMENT INOE*Y						POCT
00077		COMMENT NUMCHAR*COL						
00100		COMMENT ERROR						
00101		COMMENT NORMAL						
00102	POCT	ENTRY	00056	61000	00000			\$
00103		RJP PENTRY	00057	65000	00706			
00104		JP POCTERR	00060	61000	00107			
00105		ENT A*(B6)	00061	11036	00000			PLACE ARG IN INTEGER
00106		STR A*(INTEGER1)	00062	15030	02234			
00107		RJP BINOCFLD	00063	65000	01360			CONVERT TO FIELOATA
00110		RJP PLAYUP	00064	65000	00730			
00111		U-TAG IOINTEGER*2	00065	02241	00002			
00112		ENT A*(1+B7)*ANOT	00066	11527	00001			GET N
00113		FNT A*100	00067	11000	00012			IF 0 IMPLIES 10
00114		SUB A*100	00070	21000	00012			TAKE 10-N
00115		CP A*	00071	15040	00000			
00116		ENT B7*A	00072	12770	00000			GET LOWER N DIGITS
00117	POCTA	ENT A*(LAYUPSTOR+B7)	00073	11037	00765			
00120		STR A*(PRUF+B11)	00074	15011	02337			
00121		BSK R1*1290	00075	71100	00201			
00122		JP \$+2	00076	61000	00100			
00123		JP POCTERR	00077	61000	00107			
00124		BSK R7*90	00100	71700	00011			
00125		JP POCTA	00101	61000	00073			
00126		FNT A*3	00102	11000	00003			
00127	POCTB	RPL A*Y*(POCT1)	00103	24010	00056			
00130		STR B1*(PCOLUMN1)	00104	16130	00666			
00131		RJP PRESTORE	00105	65000	01241			
00132		EXIT	00106	61010	00056			
00133	POCTERR	ENT A*(POCTERR11)	00107	11030	00113			
00134		RJP PERRORR	00110	65000	01256			
00135		ENT A*2	00111	11000	00002			
00136		JP POCTB	00112	61000	00103			
00137	POCTERR1	00001 POCT	00113	00001	00056			\$
00140		COMMENT						TO CONVERT A FIXED POINT NUMBE
00141		COMMENT ROUTINE						R AND
00142		COMMENT PLACE						IT IN THE PRINT BUFFER.
00143		COMMENT CALLING						SEQUENCE
00144		COMMENT RJP						PFIX
00145		COMMENT INOE*Y						
00146		COMMENT BINPT*COL						

CAROS	LI	ID	LABEL	TA	STATEMENT	LOC	F	JKB	Y	NOTES
	C0147				COMMENT NUMCHARINT•					NUMCHARFRAC
	C0150				COMMENT ERROR					\$
	C0151				COMMENT NORMAL					
	C0152		PFI		ENTRY	00114	61000	00000		
	C0153				RJP PENTRY	00115	65000	00706		
	C0154				JP PFIERR	00116	61000	00166		
	C0155				STR B6•UI(PFI1X8)	00117	16620	00125		STORE ARGUMENT ADDRESS
	C0156				ENT A•UI(1+871)	00120	11027	00001		GET GAMMA
	C0157				STR A•L(PFI1XR1)	00121	15010	00125		GET BETA
	C0160				ENT A•L(2+87)	00122	11017	00002		
	C0161				STR A•WIBETAI	00123	15030	02233		CONVERT NUMBER AND ZERO SUPP
	C0162				RJP COFFIX	00124	65000	01421		SS
	C0163		PFI1B		O	00125	00000	00000		
	C0164				RJP PLAYUP	00126	65000	00730		SPREAD OUT SUPPRESSED INTEGER
	C0165				U-TAG IOINTEGER•2	00127	02241	00002		
	C0166				ENT A•UI(2+87)	00130	11027	00002		GET NO OF INTEGERS TO PRINT
	C0167				SUB A•W(CHARNO)•APJS	00131	21630	01170		SUBTRACT NO OF SIGNIFICANT
	C0170				JP PFI1ERRA	00132	61000	00167		DIGITS, IF GRTR, ERROR
	C0171				JP PFI1XC•AZERO	00133	60400	00140		
	C0172				STR A•L(1+21)	00134	15010	00136		INSERT N-CHARNO-1 BLANKS
	C0173				RJP PBLANK	00135	65000	00237		
	C0174				O	00136	00000	00000		
	C0175				JP PFI1ERR	00137	61000	00166		
	C0176		PFI1C		ENT A•W(1GN)•AZERO	00140	11430	02236		
	C0177				ENT B1•L(PCOLUMN)	00141	12110	00666		
	C0200				ENT A•41	00142	11000	00041		
	C0201				STR A•L(PBUF+R11)	00143	15011	02337		
	C0202				BSK B1•1290	00144	71100	00201		
	C0203				JP \$+2	00145	61000	00147		
	C0204				JP PFI1ERR	00146	61000	00166		
	C0205				ENT B6•1	00147	12500	00001		
	C0206		PFI1D		ENT A•W(LAYUPSTOR+86-1)	00150	11036	00764		
	C0207				STR A•L(PBUF+81)	00151	15011	02337		
	C0210				BSK B1•1290	00152	71100	00201		
	C0211				JP \$+2	00153	61000	00155		
	C0212				JP PFI1ERR	00154	61000	00166		
	C0213				BSK B6•W(CHARNO)	00155	71630	01170		
	C0214				JP PFI1X0	00156	61000	00150		
	C0215				RJP PFRACSTOR	00157	65000	01171		
	C0216				JP PFI1ERR	00160	61000	00166		
	C0217		PFI1F		ENT A•4	00161	11000	00004		NORMAL EXIT
	C022C				RPL A•Y•L(PFI1X)	00162	24010	00114		COMMON EXIT PATH
	C0221				STR B1•W(PCOLUMN)	00163	16130	00666		
	C0222				RJP PRESTORE	00164	65000	01241		
	C0223				EXIT	00165	61010	00114		
	C0224		PFI1ERR		ENT A•W(PFI1ERR1)•SK1P	00166	11130	00173		
	C0225		PFI1ERRA		ENT A•W(PFI1ERR2)	00167	11030	00174		
	C0226				RJP PFRORR	00170	65000	01256		
	C0227				ENT A•3	00171	11000	00003		
	C0230				JP PFI1XF+1	00172	61000	00162		ERROR EXIT
	C0231		PFI1ERR1		00031 PFI1X	00173	00001	00114		
	C0232		PFI1ERR2		00032 PFI1X	00174	00002	00114		

CAROS	LI	IO	LABEL	TA	STATEMENT	LOC	F	J	K	B	Y	NOTES
.	00320			STR	B7*L(PBLANK2+1)	00242	16710	00273				
.	00321			STR	B1*L(PBLANK2+21)	00243	16110	00274				PARAMETER LOCATION
.	00322			ENT	B7*L(PBLANK1)	00244	12710	00237				
.	00323			ENT	A*U(B71*ANOT	00245	11527	00000				
.	00324			JP	PBLANK05	00246	61000	00253				COL 15 ZERO
.	00325			STR	A*L(\$+21	00247	15010	00251				BUILD PCOLR CALLING SEQUENCE
.	00326			RJP	PCOLR	00250	65000	00306				
.	00327			OO	OO	00251	00000	00000				
.	00330			JP	PBLANK3	00252	61000	00300				
.	00331	PBLANK05		ENT	A*L(B71*AZERO	00253	11417	00000				
.	00332			JP	\$+3	00254	61000	00257				
.	00333			ENT	A*1280	00255	11000	00200				
.	00334			SUB	A*W(PCOLUMN1	00256	21030	00666				
.	00335			ENT	B7*A	00257	12770	00000				NUMBER OF COLUMNS TO BLANK
.	00336			RJP	B7*\$+1	00260	72700	00261				
.	00337			ENT	B1*L(PCOLUMN1	00261	12110	00666				
.	00340	PBLANK1		CL	A*	00262	11000	00000				
.	00341			STR	A*L(PBUF+81)	00263	15011	02337				
.	00342			BSK	B1*1290	00264	71100	00201				
.	00343			JP	\$+2	00265	61000	00267				
.	00344			JP	PBLANK3	00266	61000	00300				
.	00345			RJP	B7*PBLANK1	00267	72700	00262				
.	00346			STR	B1*W(PCOLUMN1	00270	16130	00666				
.	00347			RPL	Y+1*L(PBLANK1	00271	36010	00237				PREPARE EXIT
.	00350	PBLANK2		RPL	Y+1*L(PBLANK1	00272	36010	00237				
.	00351			ENT	B7*OO	00273	12700	00000				
.	00352			ENT	B1*OO	00274	12100	00000				
.	00353			ENT	A*W(PBLANK51	00275	11030	00304				
.	00354			ENT	Q*W(PBLANK61	00276	10030	00305				
.	00355			EXIT		00277	61010	00237				
.	00356	PBLANK3		ENT	A*W(PBLANK41	00300	11030	00303				ERROR ROUTINE PARAMETER
.	00357			RJP	PERRORR	00301	65000	01256				
.	00360			JP	PBLANK2	00302	61000	00272				
.	00361	PBLANK4		00001	PBLANK	00303	00001	00237				
.	00362	PBLANK5		0	0	00304	00000	00000				
.	00363	PBLANK6		0	0	00305	00000	00000				
.	00364			COMMENT								\$
.	00365			COMMENT	ROUTINE							TO RESET THE COLUMN COUNTER
.	00366			COMMENT	CALLING							SEQUENCE
.	00367			COMMENT	RJP							PCOLR
.	00370			COMMENT	INDEX*COL							
.	00371			COMMENT	ERROR							
.	00372			COMMENT	NORMAL							
.	00373	PCOLR		ENTRY		00306	61000	00000				\$
.	00374			STR	A*W(PCOLRG1	00307	15030	00334				
.	00375			STR	B7*L(PCOLR11	00310	16710	00315				
.	00376			ENT	B7*L(PCOLR1	00311	12710	00306				LOC OF PARAMETERS
.	00377			ENT	A*W(B71	00312	11037	00000				T,Y TO A
.	00400			SEL	SET*W(PCOLR41	00313	50030	00332				OF IN AN ENT A INST
.	00401			STR	A*W(\$+21	00314	15030	00316				
.	00402	PCOLR1		ENT	B7*O	00315	12700	00000				
.	00403			0	0	00316	00000	00000				ENT A WITH COUNTER VALUE
.	00404			COM	A*1290*YMORE	00317	00700	00201				TEST FOR LINE OVERFLOW

CARD	11	10	LABEL	TA	STATEMENT	LOC	F	J	K	B	Y	NOTES
00405	.			JP	PCOLR3	00320	61000	00326				TOO BIG, ERROR
00406	.			STR	A*W(PCOLR3)	00321	15030	00666				SET COUNTER
00407	.			RPL	Y+1*PCOLR1	00322	36010	00306				
00410	.		PCOLR2	RPL	Y+1*PCOLR1	00323	36010	00306				
00411	.			ENT	A*W(PCOLR3)	00324	11030	00334				
00412	.			EXIT		00325	61010	00306				
00413	.		PCOLR3	ENT	A*W(PCOLR5)	00326	11030	00333				PARAMETER WORD FOR ERROR ROUTINE
00414	.			RJP	PERRORR	00327	65000	01256				
00415	.			CL	W(PCOLR3)	00330	16030	00666				
00416	.			JP	PCOLR2	00331	61000	00323				
00417	.		PCOLR4	ENT	A*O	00332	11000	00000				
00420	.		PCOLR5	00031	PCOLR	00333	00001	00306				
00421	.		PCOLRG	0	O	00334	00000	00000				
00422	.			COMMENT								\$
00423	.			COMMENT	ROUTINE							TO INCREMENT AND TEST
00424	.			COMMENT	THE							COLUMN COUNTER
00425	.			COMMENT	CALLING							SEQUENCE
00426	.			COMMENT	RJP							PCOLIN
00427	.			COMMENT	INDEX*NUMCOLS							
00430	.			COMMENT	ERROR							
00431	.			COMMENT	NORMAL							
00432	.		PCOLIN	ENTRY		00335	61000	00000				\$
00433	.			STR	A*W(PCOLIN5)	00336	15030	00364				
00434	.			STR	B7*PCOLIN1	00337	16710	00344				
00435	.			ENT	B7*PCOLIN1	00340	12710	00335				LOC OF PARAMETERS
00436	.			ENT	A*W(B7)	00341	11037	00000				T,Y
00437	.			SEL	SET*W(PCOLIN3)	00342	50030	00362				OR IN AN ENT A INST
00440	.			STR	A*W(S+2)	00343	15030	00345				
00441	.		PCOLIN1	ENT	B7*O	00344	12700	00000				
00442	.			0	O	00345	00000	00000				VALUE OF INCREMENT TO A
00443	.			AOO	A*W(PCOLR3)	00346	20030	00666				
00444	.			COM	A*1290*YMORE	00347	04700	00201				TEST FOR LINE OVERFLOW
00445	.			JP	PCOLIN2	00350	61000	00356				TOO MANY CHARACTERS, ERROR
00446	.			STR	A*W(PCOLR3)	00351	15030	00666				OK, STORE NEW COLUMN NUMBER
00447	.			RPL	Y+1*PCOLIN1	00352	36010	00335				PREPARE EXIT
00450	.		PCOLIN1A	RPL	Y+1*PCOLIN1	00353	36010	00335				
00451	.			ENT	A*W(PCOLIN5)	00354	11030	00364				
00452	.			EXIT		00355	61010	00335				
00453	.		PCOLIN2	ENT	A*W(PCOLIN4)	00356	11030	00363				PARAMETER WORD FOR ERROR ROUTINE
00454	.			RJP	PERRORR	00357	65000	01256				
00455	.			CL	W(PCOLR3)	00360	16030	00666				
00456	.			JP	PCOLIN1A	00361	61000	00353				ERROR EXIT
00457	.		PCOLIN3	ENT	A*O	00362	11000	00000				
00460	.		PCOLIN4	00031	PCOLIN	00363	00001	00335				
00461	.		PCOLIN5	0	O	00364	00000	00000				
00462	.			COMMENT								\$
00463	.			COMMENT	ROUTINE							TO DEFINE THE OUTPUT
00464	.			COMMENT	BUFFER							ORIGIN
00465	.			COMMENT	CALLING							SEQUENCE
00466	.			COMMENT	RJP							PIMAGE
00467	.			COMMENT	INDEX*Y							

CARD	LI	ID	LABEL	TA	STATEMENT	LOC	F	JKB	Y	NOTES
	C047C			COMMENT	ERROR					\$
	C0471			COMMENT	NORMAL					
	C0472		PIMAGE	ENTRY		00366	61000	00000		
	C0473			STR	A*(PIMAGE31	00366	15030	00410		
	C0474			STR	B*(LIPIMAGE11	00367	16710	00404		
	C0475			ENT	B*(LIPIMAGE)	00370	12710	00365		
	C0476			ENT	A*(1871	00371	11037	00000		
	C0477			SEL	SET*(PIMAGE21	00372	50030	00407		
	C0500			STR	A*(1+11	00378	15030	00374		ENT A WITH ADDRESS OF BUFFER
	C0501			00	00	00374	00000	00000		
	C0502			STR	A*(11+21	00376	15010	00377		
	C0503			ENT	B*(1270	00376	12700	00177		
	C0504			ENT	A*(00+871	00377	11037	00000		
	C0505			STR	A*(WIPBUF+1+87)	00400	15037	02340		
	C0506			BJP	B*(1+2	00401	72700	00377		
	C0507			RPL	Y*(1+LIPIMAGE1	00402	36010	00365		
	C051C			RPL	Y*(1+LIPIMAGE1	00403	36010	00365		
	C0511		PIMAGE1	ENT	B*(00	00404	12700	00000		
	C0512			ENT	A*(WIPIMAGE3)	00405	11030	00410		
	C0513			EXIT		00406	61010	00365		
	C0514		PIMAGE2	ENT	A*(80	00407	11000	00000		
	C0515		PIMAGE3	0	0	00410	00000	00000		\$
	C0516			COMMENT	ROUTINE					TO SET TOP AND BOTTOM MARGINS
	C0517			COMMENT						OP
	C0520			COMMENT	PRINTED					PAGE-
	C0521			COMMENT	CALLING					SEQUENCE
	C0522			COMMENT	RJP					PRORM
	C0523			COMMENT	LINESTOP*LINE80T					
	C0524			COMMENT	ERROR					\$
	C0525			COMMENT	NORMAL					
	C0526		PFORM	ENTRY		00411	61000	00000		
	C0527			STR	A*(PFORASTOR)	00412	15030	00500		
	C0530			STR	B*(LIPFORBSTR1	00413	16710	00476		GET PARAMETER WO ADDRESS
	C0531			ENT	B*(LIPFORM1	00414	12710	00411		GET NO OF BLANK LINES AT TOP
	C0532			ENT	A*(1871	00415	11027	00000		
	C0533			ADD	A*(1	00416	20000	00001		
	C0534			STR	A*(WITOPLINE1	00417	15030	00671		FORM TOP LINE NO.
	C0535			ENT	A*(1871	00420	11017	00000		GET NO OF BLANKS AT BOTTOM
	C0536			STR	A*(WITOTMARG)	00421	15030	00670		SAVE
	C0537			ADD	A*(WITOPLINE1	00422	20030	00671		
	C0540			COM	A*(PAGESIZE+1+YMORE	00423	04700	00103		CHECK FOR MARGINS EXCEEDING
	C0541			JP	PFORMERR	00424	61000	00474		PAGE SIZE -ERROR
	C0542			ENT	A*(PAGESIZE	00425	11000	00102		
	C0543			SUB	A*(WITOTMARG1	00426	21030	00670		FORM BOTTOM LINE NO.
	C0544			STR	A*(WITOTLINE1	00427	15030	00672		SET UP PRINT INTERRUPT
	C0545			ENT	A*(WITEXTINT1	00430	11030	00665		
	C0546			STR	A*(WIT231	00431	15030	00023		
	C0547			ENT	A*(1	00432	11000	00001		INITIALIZE STATUS
	C0550			STR	A*(WITATUS1	00433	15030	00702		
	C0551			ENT	A*(WITINCNT1	00434	11030	00673		
	C0552			SUB	A*(WITOPLINE1+AVOT	00435	21530	00671		TEST FOR PAGE TOPPEO
	C0553			JP	PFORMERR-1	00436	61000	00473		

CARDS	L1 IO LABEL	TA STATEMENT	LOC	F JK0 Y	NOTES
•	00554	ENT A=PAGESIZE	00437	11000 00102	COMPUTE PAGESIZE-LINCNT
•	00555	SUB A=ILINCVT1	00440	21030 00673	PLUS TOPLINE=NO OF LINES
•	00556	ADD A=ITOPLINE1	00441	20030 00671	MODULO PAGESIZE
•	00557	COM A=PAGESIZE-YLESS	00442	00400 00102	
•	00560	JP \$+3	00443	51000 00445	
•	00561	SUB A=PAGESIZE	00444	21000 00102	
•	00562	JP \$-3	00445	61000 00442	
•	00563	COM A=77*YMORE	00446	00700 00077	
•	00564	RJP PScriBS	00447	65000 00620	
•	00565	LSH A=180	00450	06000 00022	
•	00566	SEL 6E+H(PRINTW3)	00451	50030 00674	CONSTRUCT PRINT ORDER
•	00567	STR A=IPSCRIBCI	00452	15030 00675	
•	00570	ENT A=ITOPLINE1	00453	11030 00671	RESET LINCNT TO TOP OF PAGE
•	00571	STR A=ILINCVT1	00454	15030 00673	
•	00572	ENT A=1	00455	11000 00001	RESET PCOLUMN
•	00573	STR A=H(PCOLUMN1	00456	15030 00656	
•	00574	NO-JP	00457	12000 00000	
•	00575	ENT A=H(STATUS1)ANOT	00460	11530 00702	WAIT FOR COMPLETION
•	00576	JP \$-2	00461	61000 00457	
•	00577	SUB A=1-AZERO	00462	21000 00001	CHECK OK STATUS
•	00600	RJP PScriBS*STCP	00468	65000 00610	
•	00601	CL W(STATUS1	00464	16030 00702	CLEAR STATUS WORD
•	00602	EX-FCT PRINTC=HIPSCRIBCI	00465	13170 00675	ISSUE WITH NO BUFFER
•	00603	OUT PRINTC=HIPSCRIBSBI	00466	74170 00704	
•	00604	ENT A=H(PCSCRIBCI	00467	11030 00675	
•	00605	STR A=HIPSCSAVE1	00470	15030 00651	
•	00606	ENT A=H(PCSCRIBSBI	00471	11030 00704	
•	00607	STR A=H(PCSDSAVE1	00472	15030 00652	
•	00610	RPL Y+1=L(PFORM1	00473	36010 00411	
•	00611	RPL Y+1=L(PFORM1	00474	36010 00411	
•	00612	ENT A=H(PFORASTOR1	00475	11030 00500	
•	00613	ENT B7=0	00476	12700 00000	
•	00614	EXIT	00477	61010 00411	
•	00615	O 0	00500	00000 00000	
•	00616	COMMENT			\$ TO PRINT ONE LINE AFTER SPACIN
•	00617	COMMENT ROUTINE			G OR GOING
•	00620	COMMENT TO			TOP OF NEXT PAGE. IMAGE ADDRESS
•	00621	COMMENT CALLING			\$ IN PREVIOUS
•	00622	COMMENT RJP			PSCRIB
•	00623	COMMENT EJECT-SPACING			\$
•	00624	COMMENT ERROR			
•	00625	COMMENT NORMAL			
•	00626	MEANS C3			
•	00627	ENTRY			
•	00630	RJP PSAVE	00501	61000 00000	
•	00631	ENT A=H(PEXTINT1	00502	65000 01226	SET UP PRINT INTERRUPT
•	00632	STR A=H(231	00503	11030 00665	
•	00633	ENT B7=L(PSCRIB1	00504	15030 00023	GET PARAMETER WD ADDRESS
•	00634	ENT A=H(87)ANOT	00505	12710 00501	TEST FOR PAGE TOPPING
•	00635	JP PRSCRIB	00506	11527 00000	NO
•			00507	61000 00575	

CARDS	L1	ID	LABEL	TA	STATEMENT	LDC	F	JKB	Y	NOTES
	D0636			ENT	A*(BOTLINE)	00510	11030	00672		YES- COMPJTE LINES TO SKIP
	D0637		PSCRIBA	SUB	A*(LINCNT)	00511	21030	00673		FDR TDP OF NEXT PAGE
	D0640			ADD	A*(BOTMARG)	00512	20030	00670		
	D0641			ADD	A*(TDLINEL)	00513	20030	00671		
	D0642			CDM	A*77*YMDRE	00514	04700	00077		
	D0643			RJP	PSCRIBSS	00515	65000	00620		
	D0644		PSCRIBB	LSH	A*1BD	00516	06000	00022		
	D0645			SEL	SET*WIPRINTWD)	00517	50030	00674		INSERT IN PRINT FUNCTION WD
	D0646			STR	A*WIPSCRIBCI	00520	15030	00675		
	D0647			ENT	A*(TOPLINEL)	00521	11030	00671		RESET LINE COUNT TO TDLINEL
	D0650			STR	A*(LINCNT)	00522	15030	00673		
	D0651		PSCRIBF	ENT	B*0D	00523	12700	00000		CREATE PACKEO PRINT BUFFER
	D0652			ENT	B5*L(PSCRIBD)	00524	12510	00676		
	D0653		PSCRIBH	ENT	B6*4	00525	12600	00004		
	D0654			ENT	A*0	00526	11000	00000		
	D0655			BSK	B7*129D	00527	71700	00201		
	D0656			ENT	Q*(PBUF+B71*SKIP	00530	10137	02337		PACK CHARS FROM PBUF
	D0657			JP	PSCRIBJ	00531	61000	00540		
	D0660			LSH	Q*24D	00532	05000	00030		
	D0661			LSH	AQ*6	00533	07000	00006		
	D0662			BJP	B6*PSCRIBH+2	00534	72600	00527		
	D0663			STR	A*(B5)	00535	15035	00000		STORE INTO PACKEO BUFFER
	D0664			BSK	B5*-1	00536	71500	77776		
	D0665			JP	PSCRIBH	00537	61000	00525		
	D0666		PSCRIBJ	LSH	A*6	00540	06000	00006		LEFT JUSTIFY A REG
	D0667			RJP	B6*8-1	00541	72600	00540		
	D0670			STR	A*(B5)	00542	15035	00000		
	D0671		PSCRIBI	ENT	A*1	00543	11000	00001		
	D0672			STR	A*WIPCDLUMNI	00544	15030	00666		RESET COLUMN COUNTER TO 1
	D0673		PSCRIBSW	ENT	B0*PSCRBUF	00545	12000	00562		SWITCH TO SKIP PRINTING
	D0674			NO-DP		00546	12000	00000		
	D0675			ENT	A*WISTATUS)*ANOT	00547	11530	00702		LODP TILL PRINT COMPLETE
	D0676			JP	\$-2	00550	61000	00546		
	D0677			SUB	A*1*AZERO	00551	21400	00001		TEST FOR NDRMAL COMPLETION
	D0700			RJP	PSCRIBERR*STDP	00552	65400	00610		
	D0701			CL	WISTATUS	00553	16030	00702		
	D0702			EX-FC	PRINTC*WIPSCRIBCI	00554	13170	00675		
	D0703			OUT	PRINTC*WIPSCRIBO)	00555	74170	00676		
	D0704			ENT	Q*(PSCRIBCI	00556	10030	00675		
	D0705			STR	Q*(PSCSAVE)	00557	14030	00661		
	D0706			ENT	Q*(PSCRIBO)	00560	10030	00676		
	D0707			STR	Q*(PSCSAVE)	00561	14030	00662		
	D0710		PSCRIBUF	ENT	Q*WITWENTYSIXSI	00562	10030	00667		EXAMINE LAST BUFFER
	D0711			ENT	A*LIPSCRIBO)	00563	11010	00676		
	D0712			STR	A*(PACKBUFF)	00564	15020	02250		
	D0713			COM	A*PREGION+2*YMORE	00565	04700	02253		
	D0714			RPL	Y-Q*WIPSCRIBD)*SKIP	00566	35130	00676		
	D0715			RPL	Y+Q*WIPSCRIBD)	00567	34030	00676		
	D0716			STR	A*(PACKBUFF)	00570	15010	02250		
	D0717			RPL	Y+L*LIPSCRIBI	00571	36010	00501		YES- ADJUST EXIT LINE
	D0720		PSCRIBG	RPL	Y+L*LIPSCRIBI	00572	36010	00501		
	D0721			RJP	PRESTORE	00573	65000	01241		
	D0722			EXIT		00574	61010	00501		

CARDS	L)	IC	LABEL	TA	STATEMENT	PPKG	LOC	F	J	K	B	Y	NOTES
.	C0723		FRSCR(BC	ENT	A*(BOTLINE1		00575	11030	00672				IF BOTLINE-LINCNT GREATER
.	C0724			SUB	A*(LINCNT)		00576	21030	00673				THAN NO OF LINES TO SHIP, FINE
.	C0725			COM	A*(B7)*YLESS		00577	04617	00000				
.	C0726			JP	PSCRIBA+1		00600	61000	00512				ELSE GO TO TOP PAGE
.	C0727			ENT	A*(L07)		00601	11017	00000				BUMP LINE COUNTER
.	C0730			RPL	A+Y*(LINCNT1		00602	24030	00673				
.	C0731			ENT	A*(L071		00603	11017	00000				GET NO OF SPACES
.	C0732			LSH	A*180		00604	06000	00022				
.	C0733			SEL	SET*(PRINTWO)		00605	50030	00674				INSERT IN PRINT FUNCTION WO
.	C0734			STR	A*(PSCRIBC)		00606	16030	00675				
.	C0735			JP	PSCRIBF		00607	61000	00523				GO TO PRINT OUT
.	C0736		FSCR(BERR	ENTRY			00610	61000	00000				
.	C0737			ENT	A*(LIPSCRIBERR)		00611	11010	00610				
.	C0740			SUB	A*5		00612	21000	00005				
.	C0741			STR	A*(LIPSCRIBERR)		00613	15010	00610				
.	C0742			CL	W(SKATUS1		00614	16030	00702				
.	C0743			EX-FCI	PRINTC*(PSCSAVE)		00615	13170	00661				
.	C0744			OUT	PRINTC*(PSOSAVE1		00616	74170	00662				
.	C0745			EXIT			00617	61010	00610				
.	C0746		FSCR(BSS	ENTRY			00620	61000	00000				
.	C0747			SUB	A*77		00621	21000	00077				
.	C0750			COM	A*77*YMORE		00622	04700	00077				
.	C0751			JP	\$-2		00623	61000	00621				
.	C0752			ENT	B7*A		00624	12770	00000				
.	C0753			NO-OP			00625	12000	00000				
.	C0754			ENT	A*(STATUS)*ANOT		00626	11530	00702				
.	C0755			JP	\$-2		00627	61000	00625				
.	C0756			SUB	A*1-AZERO		00630	21400	00001				
.	C0757			RJP	PSCRIBERR*STOP		00631	65400	00610				
.	C0760			CL	W(STATUS)		00632	16030	00702				
.	C0761			EX-FCI	PRINTC*(PSCRIBSSA1		00633	13170	00703				
.	C0762			OUT	PRINTC*(PSCRIBSSB1		00634	74170	00704				
.	C0763			ENT	A*(PSCRIBSSA)		00635	11030	00703				
.	C0764			STR	A*(PSCSAVE)		00636	15030	00661				
.	C0765			ENT	A*(PSCRIBSSB)		00637	11030	00704				
.	C0766			STR	A*(PSCSAVE)		00640	15030	00662				
.	C0767			ENT	A*87		00641	11007	00000				
.	C0770			EXIT			00642	61010	00620				PRINT INTERRUPT ROUTINE
.	C0771		FSCRINT	ENTRY			00643	61000	00000				
.	C0772			STR	A*(PSCRASTOR1		00644	15030	00663				
.	C0773			STR	Q*(PSCRQSTOR)		00645	14030	00664				
.	C0774			STR	PRINTC*(STATSTOR)		00646	17170	00701				SAVE STATUS WORO
.	C0775			ENT	Q*(STATSTOR1		00647	10030	00701				
.	C0776			CL	A*		00650	11000	00000				
.	C0777			LSH	AQ*4		00651	07000	00004				TEST BOTTOM 4 BITS
.	C1000			SUB	A*10*ANOT		00652	21500	00010				
.	C1001			ENT	A*1*SKIP		00653	11100	00001				OTHERWISE ENTER ERROR CODE
.	C1002			ENT	A*2		00654	11000	00002				INTO STATUS WORO
.	C1003			STR	A*(STATUST1		00655	15030	00702				
.	C1004			ENT	A*(PSCRASTOR1		00656	11030	00663				
.	C1005			ENT	Q*(PSCRQSTOR1		00657	10030	00664				
.	C1006			RILJP	L(PSCRINT1		00660	60110	00643				EXIT

CARCS	L1 IC LABEL	TA STATEMENT	LOC	F JKB Y	NOTES
.	C1C7 PSCSAVE	0 0	00661	00000 00000	
.	C1C10 PSCSAVE	0 0	00662	00000 00000	
.	C1C11 PSCRASTOR	0 0	00663	00000 00000	
.	C1C12 PSCRASTOR	0 0	00664	00000 00000	
.	C1C13 PEXTINT	RJP PSCPRINT	00665	00000 00000	INSTR. FOR PRINT INTERRUPT
.	C1C14 PCOLUMN	0 1	00666	00000 00001	
.	C1C15 TWENTYSIXS	00033 00033	00667	00033 00033	
.	C1C16 RCTMARG	0 4	00670	00000 00004	
.	C1C17 TOTLINE	0 7	00671	00000 00007	
.	C1C20 BOTLINE	0 62D	00672	00000 00074	
.	C1C21 LINCNT	0 1	00673	00000 00001	
.	C1C22 PRINTWC	12000 00001	00674	12000 00001	
.	C1C23 PSCRIBC	0 0	00675	00000 00000	
.	C1C24 PSCRIBC	U-TAG	00676	00303 02252	
.	C1C25 PSCASTOR	0 0	00677	00000 00000	
.	C1C26 PSCASTOR	0 0	00701	00000 00000	
.	C1C27 STATSTOR	0 0	00702	00000 00001	
.	C1C30 STATUS	0 1	00703	00000 00001	
.	C1C31 PSCRIBSSA	12770 00001	00704	12770 00001	
.	C1C32 PSCRIBSSB	U-TAG	00705	00705 00705	
.	C1C33 PSCRIBSSC	77777	00706	77777 77777	
.	C1C34 PAGESIZE	EQUALS 660			
.	C1C35	COMMENT			
.	C1C36	COMMENT SUBROUTINE			
.	C1C37	COMMENT ENTRY			
.	C1C40	COMMENT OF			
.	C1C41	ENTRY	00706	01000 00000	
.	C1C42	RJP PSAVE	00707	00000 01226	
.	C1C43	ENT 87*(PENTRY)	00710	12710 00706	
.	C1C44	ENT 87*(87-2)	00711	12717 77775	
.	C1C45	ENT A*(87)	00712	11037 00000	
.	C1C46	SEL SET*(GETAOD)	00713	50030 00727	
.	C1C47	STR A*(PENTA+1)	00714	15830 00724	
.	C1C50	ENT A*(1+87)*ANOT	00715	11517 00001	
.	C1C51	JP PENTA	00716	01000 00723	
.	C1C52	STR A*(1+2)	00717	15030 00721	
.	C1C53	RJP PCOLR	00720	00000 00306	
.	C1C54	0 0	00721	00000 00000	
.	C1C55	JP 3+2	00722	01000 00724	
.	C1C56	RPL Y+1*(PENTRY)	00723	36010 00706	
.	C1C57	0 0	00724	00000 00000	
.	C1C60	ENT 81*(PCOLUMN)	00725	12110 00666	
.	C1C61	EXIT	00726	01010 00706	
.	C1C62	ENT 86*0	00727	12400 00000	
.	C1C63	ENTRY	00730	01000 00000	
.	C1C64	STR 87*(PLAY8STOR)	00731	16710 00760	
.	C1C65	STR 86*(PLAY8STOR+1)	00732	16810 00761	
.	C1C66	STR 85*(PLAY8STOR+2)	00733	16510 00762	
.	C1C67	CLEAR 1300*LAYUPSTOR	00734	70100 00202	
.	C1C70	ENT 87*(PLAYUP)	00735	16030 00765	
.	C1C71	ENT 87*(PLAYUP)	00736	12710 00730	

FOR CONVERSION ROUTINES TO PER
FORM
PROCEDURES, SET COLUMN CTR AND
GET ADDRESS
ARGUMENT

GET ADDRESS OF MAIN CALLER

SAVE B-REGS

CARCS	LI	IC	LABEL	TA STATEMENT	LOC	F	JKB	Y	NOTES
-	C1C71			ENT B6*U(B71	00737	12627	00000		GET ADDRESS OF 1ST WORD
-	C1C72			ENT B7*L(R7)	00740	12717	00000		
-	C1C73			STR B6*L(PLAYUPA1	00741	16610	00744		
-	C1C74			ENT B6*O	00742	12600	00000		
-	C1C75			ENT B5*O	00743	12500	00000		
-	C1C76		PLAYUPA	ENT Q*W(O*B61	00744	10036	00000		BRING 1ST WORD
-	C1C77			ADC Q*O*QNOT	00746	26500	00000		TEST FOR 0
-	C11C0			JP PLAYUPB	00746	61000	00755		
-	C11C1			CL A*	00747	11000	00000		
-	C11C2			LSH AQ*6*ANOT	00750	07500	00006		IF NOT GET NEXT MSO
-	C11C3			JP PLAYUPA+1	00751	61000	00745		
-	C11C4			STR A*W(LAYUPSTOR+BS)	00752	15035	00765		STORE IN NEXT SLOT
-	C11C5			B9K B5*LAYUPLMT	00758	71500	00202		
-	C11C6			JP PLAYUPA+1	00754	61000	00745		
-	C11C7		PLAYUPB	B9K B6*B7-1	00756	71607	77776		TILL ALL WORDS DONE
-	C11C8			JP PLAYUPA	00756	61000	00744		SAVE NUMBER OF CHARACTERS
-	C11C9			STR B5*W(CHARNO1	00757	16530	01170		RESTORE B-REGS
-	C1110			ENT B7*O	00760	12700	00000		
-	C1111		PLAYB9STOR	ENT B6*O	00761	12600	00000		
-	C1112			ENT B5*O	00762	12500	00000		
-	C1113			RPL Y+1*L(PLAYUP1	00768	36010	00730		NORMAL EXIT
-	C1114			EXIT	00764	61010	00730		
-	C1115			EQUALS 1300	00765	00000	00000		
-	C1116		LAYUPLMT	RESERVE 1310	01170	00000	00000		
-	C1117		LAYUPSTOR	RESERVE 1	01171	61000	00000		
-	C1118		CHARNO	ENTRY	01172	11530	02233		IF BETA GRTR 0,
-	C1119		PFRACSTOR	ENT A*W(BETA1*ANOT	01173	61000	01223		
-	C1120			JP PFRACB	01174	11000	00075		
-	C1121			ENT A*75	01175	16011	02337		
-	C1122			STR A*L(PBUF+811	01176	71100	00201		
-	C1123			B9K B1*1290	01177	61000	01201		
-	C1124			JP 8+2	01200	61000	01220		
-	C1125			JP PFRACERR	01201	12400	00000		
-	C1126			ENT B4*O	01202	12500	00000		
-	C1127			ENT B5*O	01203	10035	02243		UNPACK FRACTION
-	C1128		PFRACA	ENT Q*W(10FRACTION+BS)	01204	11000	00000		
-	C1129			CL A*	01205	07000	00006		
-	C1130			LSH AQ*6	01206	16011	02337		
-	C1131			STR A*L(PBUF+811	01207	71100	00201		
-	C1132			B9K B1*1290	01210	61000	01212		
-	C1133			JP 8+2	01211	61000	01220		
-	C1134			JP PFRACERR	01212	37530	02233		STORE BETA DIGITS (K1
-	C1135			RPL Y-1*W(BETA1*ANOT	01213	61000	01228		WHEN DONE, EXIT
-	C1136			JP PFRACB	01214	71400	00004		
-	C1137			B9K B4*4	01215	61000	01204		
-	C1138			JP PFRACA+1	01216	71500	00001		
-	C1139			B9K B5*1	01217	61000	01203		
-	C1140			JP PFRACA	01220	11030	01225		
-	C1141			ENT A*W(PFRACERR11	01221	65000	01256		
-	C1142		PFRACERR	RJP PERRORR	01222	61010	01171		
-	C1143			EXIT	01223	36010	01171		
-	C1144			RPL Y+1*L(PFRACSTOR1	01224	61010	01171		
-	C1145		PFRACB	EXIT					
-	C1146								
-	C1147								
-	C1148								
-	C1149								
-	C1150								
-	C1151		PFRACERR						
-	C1152								
-	C1153								
-	C1154		PFRACB						
-	C1155								

SPURT OUTPUT NO. 210 AOAMS-ASSOC JULY 65										
CARDS	LI	IC	LABEL	TA	STATEMENT	LOC	F	JKB	Y	NOTES
.	C1156		PERACERR1		00001 PFRACSTOR	01225	00001	01171		TO SAVE AND RESTORE ALL REGISTERS
.	C1157				COMMENT ROUTINES					
.	C1160		PSAVE		ENTRY	01226	61000	00000		
.	C1161				STR A*W(PASTOR1	01227	15030	01254		
.	C1162				STR O*W(POSTOR1	01230	14030	01255		
.	C1163				STR B1*L(PRESTORE+11	01231	16110	01242		
.	C1164				STR B2*L1(PRESTORE+21	01232	16210	01243		
.	C1165				STR B3*L(PRESTORE+31	01233	16310	01244		
.	C1166				STR B4*L(PRESTORE+41	01234	16410	01245		
.	C1167				STR B5*L(PRESTORE+51	01235	16510	01246		
.	C1170				STR B6*L1(PRESTORE+61	01236	16610	01247		
.	C1171				STR B7*L(PRESTORE+71	01237	16710	01250		
.	C1172				EXIT	01240	61010	01226		
.	C1173		PRESTORE		ENTRY	01241	61000	00000		
.	C1174				ENT B1*0	01242	12100	00000		
.	C1175				ENT B2*0	01243	12200	00000		
.	C1176				ENT B3*0	01244	12300	00000		
.	C1177				ENT B4*0	01245	12400	00000		
.	C1200				ENT B5*0	01246	12500	00000		
.	C1201				ENT B6*0	01247	12600	00000		
.	C1202				ENT B7*0	01250	12700	00000		
.	C1203				ENT A*W(PASTOR1	01251	11030	01254		
.	C1204				ENT O*W(POSTOR1	01252	10030	01255		
.	C1205				EXIT	01253	61010	01241		
.	C1206		PASTOR		0 0	01254	00000	00000		
.	C1207		POSTOR		0 0	01256	00000	00000		TO PRINT AND TYPE ERROR AND LOCATION
.	C1210				COMMENT ROUTINE					
.	C1211				COMMENT CODE					
.	C1212				COMMENT					
.	C1213		PERRORR		ENTRY	01256	61000	00000		
.	C1214				STR A*L1(PERRORR21	01257	15010	01266		LOC
.	C1215				RSH A*150	01260	02000	00017		
.	C1216				SEL SET*6060	01261	50000	06060		
.	C1217				STR A*W1(PERRORR11	01262	15030	01317		
.	C1220				RJP P1MAGE	01263	65000	00365		DEFINE NEW BUFFER
.	C1221				0 PERRORR4	01264	00000	01314		
.	C1222				NO-OP	01265	12000	00000		
.	C1223		PERRORR2		ENT Q*L1001	01266	10010	00000		GET LOC OF CALLER
.	C1224				CL A*	01267	11000	00000		
.	C1225				LSH Q*150	01270	05000	00017		
.	C1226				LSH A*3	01271	06000	00003		
.	C1227				LSH AQ*3	01272	07000	00003		
.	C1230				A00 0*0*0ZERO	01273	26400	00000		
.	C1231				JP 8-3	01274	61000	01271		
.	C1232				SEL SET*W(SIXTIES1	01275	50030	02231		
.	C1233				STR A*W(PERRORR15)	01276	15030	01323		
.	C1234				RJP PSCR18	01277	65000	00501		PRINT
.	C1235				1 0	01300	00001	00000		
.	C1236				NO-OP	01301	12000	00000		
.	C1237				RJP PLAYUP	01302	65000	00730		SPREAD OUT MESSAGE
.	C1240				U-TAG PERRORR4*80	01303	01314	00010		
.	C1241				ENT A*0403	01304	11000	00403		A00 CRANO LF

CAROS	L1 10 LABEL	TA STATEMENT	LOC	F JKB Y	NOTES
•	C1242	STR A*W(LAYUPSTOR+400)	01306	15030 01035	
•	C1243	NO-OP	01306	12000 00000	
•	C1244	JP \$-1*KEYOUT*ACTIVEOUT	01307	63100 01306	
•	C1245	OUT KEYOUT*W(PERROR9)	01310	74130 01326	
•	C1246	NO-OP	01311	12000 00000	
•	C1247	JP \$-1*KEYOUT*ACTIVEOUT	01312	63100 01311	
•	C1250	EXIT	01313	61010 01256	
•	C1251	FO 3*ERROR TYPE	01314	12272 72427	
			01316	05313 62512	
			01316	05050 50505	
•	C1252	0 0	01317	00000 00000	
•	C1253	FO 3* AT LOCATION	01320	05050 53105	
			01321	21241 00631	
			01322	16242 30505	
•	C1254	PERROR15	01328	00000 00000	
•	C1255	77777 0 00000	01324	77777 00000	
•	C1256	U-TAG PERROR4*260*PERROR4	01326	01346 01314	
•	C1257	U-TAG LAYUPSTOR+360*LAYUPSTOR	01326	01031 00765	
•	C1260	JP 0	01327	61000 00000	
•	C1261	STR 81*U(BINOECINT31)	01330	16120 01357	
•	C1262	STR 82*L(BINOECINT31)	01331	16210 01357	
•	C1263	STR 87*L(BINOECINT41)	01332	16710 01355	
•	C1264	CL B2	01333	12200 00000	
					EXIT ENTRY SAVE B REGISTERS
					INITIALIZE B REGS FOR COUNT
•	C1265	ENT B1*1	01334	12100 00001	
•	C1266	STR B1*W(SIGN1)	01335	16130 02236	
					STORE 1 (B1) IN SIGN AS NEG SI
•	C1267	ENT Q*W(INTEGER1*QNEG	01336	10330 02234	
					TEST IF NUMBER TO BE CONV) IS
•	C1270	RPL Y-1*W(SIGN1*SKIP	01337	37130 02236	
					NEG
•	C1271	CP Q	01340	14000 00000	
					POS RESET SIGN TO ZERO-GO TO M
					AIN
					NEG LEAVE SIGN-COMPLEMENT NUMB
•	C1272	CL W(101 INTEGER+B11	01341	16031 02241	
					ER
					MAIN LOOP-INITIALLY CLEAR OUTP
•	C1273	BINOECINT2			UT
•	C1274	CL A	01342	11000 00080	
•	C1275	OIV 12	01343	23000 00012	
•	C1276	A00 A*60	01344	20000 00060	
		RPT B2	01346	70002 00000	
					CLEAR A FOR DIVIDE
					NEG DEC DIGIT REMAINS IN A
					INCORPORATE FLDATA BITS
					VARIABLE SHIFT TO INCORP FLDAY
•	C1277	LSH A*6	01346	06000 00006	
•	C1300	RSE SET*W(101 INTEGER+B11	01347	54031 02241	
•	C1301	B9K B2*4	01350	71200 00004	
					DIGIT IN RT. JUSTIFIED OUTPUT
					A00 IN NEW 6-BIT CODE
					OUTPUT WORD FILLED YET (5 CODE
•	C1302	JP BINOECINT2	01351	61000 01342	
•	C1303	BJP B1*81 NOECINT1	01352	72100 01341	
					SI
					NO-GET ANOTHER CODE
					YES-OUTPUT COMPLETED-IF NO 00
					NEXT
					YES-RESTORE B REGS
•	C1304	ENT B1*U(BINOECINT31	01353	12120 01357	
•	C1305	ENT B2*L(BINOECINT31	01354	12210 01357	
•	C1306	ENT B7*0	01356	12700 00000	
•	C1307	JP BINOECINT	01356	61000 01327	
•	C1310	BINOECINT3	01357	00000 00000	
•	C1311	JP 0	01360	61000 00000	
					AND EXIT
					SAVE B REGISTERS HERE
					ENTRY EXIT

CARDS	LI	ID	LABEL	TA	STATEMENT	LOC	F	YKB	Y	NOTES
•	01312			STR	B7•L(B1NOCTFLD3)	01361	16710	01374		
•	01313			CL	B7	01362	12700	00000		CLEAR B7 FOR COUNT
•	01314			ENT	Q•W11INTEGER1	01363	10030	02234		ENTER INPUT WORD
•	01315		B1NOCTFLO1	CL	A	01364	11000	00000		MAIN LOOP SET WORD INITIALLY T
•	01316		B1NOCTFLO2	LSH	A•3	01365	06000	00003		O ZERO
•	01317			LSH	AQ•3	01366	07000	00003		ALLOW ROOM FOR FLOATA BITS
•	01320			AD0	A•60•ANEG	01367	20700	00060		INSERT 3BINARY BITS11OCTAL OIG
•	01321			JP	B1NOCTFLD2	01370	61000	01365		IT1
•	01322			STR	A•W101INTEGER3•871	01371	15037	02241		INSERT FLOATA CODE TEST IF WOR
•	01323			BSK	B7•1	01372	71700	00001		O FIL
•	01324			JP	B1NOCTFLD1	01373	61000	01364		NOT FILLED INSERT NEXT OIGIT
•	01325		B1NOCTFLO3	ENT	B7•0	01374	12700	00000		FILLEO-STORE OUTPUT
•	01326			JP	B1NOCTFLO	01375	61000	01360		ALL OUTPUT COMPLETE
•	01327		B1NOECFRA	ENTRY		01376	61000	00000		NO- MAKE 2ND WORD
•	01330			CL	B7	01377	12700	00000		AND EXIT
•	01331			ENT	Q•1	01400	10000	00001		SET BREG
•	01332			ENT	A•W1FRACTION1•APOS	01401	11530	02235		FIND IF NO IS + OR -
•	01333			STR	A•A•ANOT	01402	15540	00000		SET SIGN APPROPRIATELY
•	01334			ENT	Q•0	01403	10000	00000		AND SET NUMBER POSITIVE
•	01335			STR	Q•W1SIGN1	01404	14030	02236		INITIALIZE
•	01336			RSH	AQ•290	01405	03000	00035		SET OUTPUT WORD TO ZERO
•	01337		B1NOECFRA1	ENT	A•0	01406	11000	00000		RESET OUTPUT WORD FOR NEXT COD
•	01340		B1NOECFRA2	LSH	A•6	01407	06000	00006		E
•	01341			STR	A•W110FRACTION•87)	01410	15037	02243		AND STORE
•	01342			RSH	AQ•1	01411	03000	00001		SET Q FOR MUL OPERATION
•	01343			MUL	24	01412	22000	00024		PRODUCT AT B29
•	01344			SEL	SET•60	01413	50000	00060		INSERT FIELOATA BITS
•	01345			RSE	SET•W(10FRACTION•87)•ANEG	01414	54737	02243		INSERT NEW CODE,WORD FILLED
•	01346			JP	B1NOECFRA2	01415	61000	01407		NO-KEEP FILLING SAME WORD
•	01347			BSK	B7•1	01416	71700	00001		YES-ARE BOTH WORDS FILLED
•	01350			JP	B1NOECFRA1	01417	61000	01406		NO-00 SECOND WORD
•	01351			EXIT		01420	61010	01376		
•	01352		COFFIX	ENTRY		01421	61000	00000		
•	01353			STR	B7•L1COFXSTOR1	01422	16710	01455		
•	01354			STR	B2•L(COFFTEM1)	01423	16210	01463		
•	01355			STR	B3•L1COFFTEM2	01424	16310	01454		
•	01356			CL	W1FXCODE1	01425	16030	02230		INITIALIZATION
•	01357			CL	W1SIGN1	01426	16030	02236		
•	01360			ENT	B2•L1COFFIX1	01427	12210	01421		B2 CONTAINS LOC OF ARG + GAMMA
•	01361			ENT	B3•W(1B2)	01430	12322	00000		
•	01362			ENT	A•W(1B31•ANEG	01431	11733	00000		ARGUMENT UNTO A TEST + OR -
•	01363			JP	COFF1	01432	61000	01435		+ CONTINUE
•	01364			STR	A•W1FXCODE1	01433	15030	02230		
•	01365			CP	A•	01434	15040	00000		
•	01366		COFF1	CL	Q•	01435	10000	00000		
•	01367			ENT	B2•L1B21	01436	12212	00000		
•	01370			RSH	AQ•82	01437	03002	00000		
•	01371			STR	A•W(1INTEGER1	01440	15030	02234		

CARDS	LI	IO	LABEL	TA	STATEMENT	LOC	F	JKB	Y	NOTES
.	C1372			LSH	Q*290	01441	05000	00035		
.	C1373			STR	Q*WIFRACTION1	01442	14030	02235		
.	C1374			RJP	BINDECINT	01443	65000	01327		CONVERT BIN INT TO FLOTA
.	C1375			RJP	BINOECFRA	01444	65000	01376		CONVERT BIN FRAC TO FLOTA
.	C1376			RJP	COFRNO	01445	65000	01516		
.	C1377			RJP	SUPZRO	01446	65000	01457		
.	C1400			U-TAG	IOINTEGER*2	01447	02241	00002		
.	C1401			ENT	A*WIFXCODE1*AZERO	01450	11430	02230		
.	C1402			STR	A*WISIGN1	01451	15030	02236		
.	C1403			RPL	Y*1*L(COFFIX1)	01452	36010	01421		
.	C1404		COFFTEM1	ENT	B2*0	01453	12200	00000		
.	C1405		COFFTEM2	ENT	B3*0	01454	12300	00000		
.	C1406		COFXSTOR	ENT	B7*0	01455	12700	00000		
.	C1407			EXIT		01456	61010	01421		
.	C1410		SUPZRO	ENTRY		01457	61000	00000		
.	C1411			STR	B6*L(SUPB8TOR1	01460	16610	01513		
.	C1412			STR	B7*L1SUPB8TOR+11	01461	16710	01514		
.	C1413			ENT	B7*L(SUPZRO1	01462	12710	01457		
.	C1414			RPL	Y*1*L(SUPZRO1	01463	36010	01457		
.	C1415			ENT	B6*L1R71	01464	12617	00000		NO OF WROS
.	C1416			STR	B6*L(SUPZRO31	01465	16610	01501		
.	C1417			ENT	B6*1	01466	12600	00001		
.	C1420			ENT	B7*U1R71	01467	12727	00000		ADDRESS
.	C1421		SUPZRO1	ENT	Q*W1R71	01470	10037	00000		BRING NEXT (1ST) WORO
.	C1422		SUPZRO2	CC	A.	01471	11000	00000		
.	C1423			LSH	AQ*6	01472	07000	00006		MOVE 1 OIGIT INTO A
.	C1424			COM	A*61*YMORE	01473	04700	00061		TEST FOR EQUAL TO 60
.	C1425			JP	SUPZRO4	01474	61000	01506		IF NOT, JUMP TO CLEAN-UP
.	C1426			A00	Q*0*QZERO	01475	26000	00000		IF 50, TEST FOR WORO EXHAUSTED
.	C1427			JP	SUPZRO2	01476	61000	01471		IF MORE OIGITS, RETURN TO TEST
.	C1430			CL	W1R71	01477	16037	00000		
.	C1431			ENT	B7*1+87	01500	12707	00001		IF NOT, BUMP ADDRESS OF WORO
.	C1432		SUPZRO3	BSK	B6*NIL	01501	71600	00000		TEST FOR ALL WROS OONE
.	C1433			JP	SUPZRO1	01502	61000	01470		RETURN FOR NEXT WORO
.	C1434			ENT	A*60	01508	11000	00060		IF WROS ALL ZERO, PRINT 1
.	C1435			ENT	B7*87-1	01504	12707	77776		
.	C1436			JP	SUPZRO5	01506	61000	01512		WHEN FINO NON-ZERO
.	C1437		SUPZRO4	A00	Q*0*QNOT	01506	26500	00000		
.	C1440			JP	SUPZRO5	01507	61000	01512		MOVE REST OF WORO TO A
.	C1441			LSH	AQ*6	01510	07000	00006		STORE BACK IN PROPER SLOT
.	C1442			JP	SUPZRO4	01511	61000	01506		
.	C1443		SUPZRO5	STR	A*W1R71	01512	15037	00000		
.	C1444		SUPB8TOR	ENT	B6*NIL	01513	12600	00000		
.	C1445			ENT	B7*0	01514	12700	00000		
.	C1446			EXIT		01516	61010	01457		
.	C1447		COFRNO	ENTRY		01516	61000	00000		
.	C1450			ENT	A*90	01517	11000	00011		
.	C1451			SUB	A*W1BETA1	01520	21030	02233		PUT 9-BETA IN B7
.	C1452			ENT	B7*0	01521	12770	00000		BRING FLOATA FRACTION TO AQ
.	C1453			ENT	Q*W1IOFRACTION+11	01522	10030	02244		
.	C1454			ENT	A*W1IOFRACTION1	01523	11030	02243		
.	C1455			CL	W1IOFRACTION1	01524	16030	02243		
.	C1456			CL	W1IOFRACTION+11	01525	16030	02244		

CAROS	L I (C LABEL	TA STATEMENT	LOC	F JKB Y	NOTES
.	01457	SEL CL*W(HIBIT)	01526	52030 02222	
.	01460	BJP B7*COFRN02	01527	72700 01531	SUBTRACT 1 FROM B7
.	01461	JP COFRN03	01530	61000 01533	WHEN B7 IS 0, STOP SHIFTING
.	01462	RSH AQ*6	01531	03000 00006	SHIFT OFF 1 OIGIT
.	01463	JP COFRN01	01532	61000 01527	RETURN TO TEST B7
.	01464	COFRN03	01538	07000 00066	PUT BETA+1TH OIGIT IN A1-6
.	01465	LSH AQ*540	01534	04730 02224	
.	01466	COM A*W(SIXTYFIVEI*YMORE	01536	61000 01545	IF MORE THAN 4, GO TO A00 I
.	01467	JP COFRN05	01536	52030 02225	IF LESS THAN 5, CLEAR IT
.	01470	SEL CL*W(M6L1)	01537	07700 00001	LEFT JUSTIFY FRACTION
.	01471	LSH AQ*1*ANEG	01540	61000 01537	
.	01472	JP COFRN04	01541	03000 00001	PUT HIGH ORDER BIT BACK ON
.	01473	RSH AQ*1	01542	15030 02243	STORE AWAY
.	01474	STR Q*W(10FRACTIONI)	01543	14030 02244	
.	01475	JP COFRN081	01544	61000 01604	
.	01476	SEL CL*W(M6L1	01545	52030 02225	IF MUST A00 I, CLEAR EXTRA OIG
.	01477	LSH AQ*540	01546	07000 00066	IT
.	01500	COM A*W(SEVENTYONEI*YMORE	01547	04730 02226	SHIFT LOW-ORDER OIGIT TO TOP 0
.	01501	JP COFRN05I*ANOT	01550	60500 01555	F A
.	01502	JP COFRN06*AZERO	01551	60400 01565	TEST EQUAL TO 71
.	01503	ADO A*W(BIT51	01552	20030 02227	IF 50, RETURN TO TEST NEXT OIG
.	01504	LSH AQ*6	01558	07000 00006	IT
.	01505	JP COFRN04	01554	61000 01537	IF NOT, TEST FOR FRACTION ALL
.	01506	JP COFRN05*ANEG	01556	60700 01545	0
.	01507	SEL SET*W(HIBIT)	01556	50030 02222	IF NOT, A00 I TO OIGIT
.	01510	COM A*W(SEVENTYONEI*YMORE	01567	04730 02226	RIGHT JUSTIFY FRACTION
.	01511	JP COFRN05	01560	61000 01545	OIGIT MAY HAVE HAD HIBIT
.	01512	A00 A*W(BIT51	01561	20030 02227	CLEARED, SO RESTORE AND
.	01513	LSH AQ*6*ANEG	01562	07700 00006	
.	01514	JP COFRN052	01568	61000 01562	
.	01515	JP COFRN041	01564	61000 01542	
.	01516	ENT Q*W(10INTEGER+1)	01566	10030 02242	
.	01517	ENT A*W(10INTEGER1	01566	11030 02241	
.	01520	JP COFRN07+1	01567	61000 01571	
.	01521	SEL CL*W(M6L1	01570	52030 02225	
.	01522	LSH AQ*540	01571	07000 00066	
.	01523	COM A*W(SEVENTYONEI*YMORE	01572	04730 02226	
.	01524	JP COFRN07	01578	61000 01570	
.	01525	ADO A*W(BIT51	01574	20030 02227	
.	01526	LSH AQ*6*ANEG	01575	07700 00006	
.	01527	JP COFRN08	01576	61000 01575	
.	01530	SEL SET*W(SIXTIES1	01577	50030 02231	
.	01531	STR A*W(10INTEGER1	01600	15030 02241	
.	01532	STR Q*6	01601	14040 00000	
.	01533	SEL SET*W(SIXTIES1	01602	50030 02231	
.	01534	STR A*W(10INTEGER+1)	01608	15030 02242	
.	01535	ENT B7*W(BETA1	01604	12730 02233	
.	01536	BJP B7*COFRN09	01605	72700 01607	
.	01537	JP COFRN011	01606	61000 01616	

CARDS	L1 ID	LABEL	TA STATEMENT	LOC	F	JKB	Y	NOTES
.	0154C	COFRND9	ENT A*(SIXTY)	01607	11030	02223		
.	01541		CL Q*	01610	10000	00000		
.	01542		BJP 87*COFRND10	01611	72700	01613		
.	01543		JP COFRND11	01612	61000	01616		
.	01544	COFRND10	LSH AQ*540	01613	07000	00066		
.	01545		SEL SET*WLSIXTY)	01614	50030	02223		
.	01546		BJP 87*COFRND10	01615	72700	01613		
.	01547	COFRND11	RSE SET*W(I OF FRACTION)	01616	54030	02243		
.	01550		STR Q*A	01617	14040	00000		
.	01551		RSE SET*W(I OF FRACTION+1)	01620	54030	02244		
.	01552		EXIT	01621	61010	01516		\$
.	01553		COMMENT					TO CONVERT A FLOATING PT NUMBE
.	01554		CALL FLTPT					R AND
.	01555		COMMENT ROUTINE					IT IN THE PRINT BUFFER.
.	01556		COMMENT PLACE					SEQUENCE
.	01557		COMMENT CALLING					PFLOAT
.	01560		COMMENT RJP					
.	01561		COMMENT INDEX*Y					
.	01562		COMMENT NUMCHARFRAC*COL					
.	01563		COMMENT ERROR					
.	01564		COMMENT NORMAL					
.	01565	PFLOAT	ENTRY	01622	61000	00000		\$
.	01566		RJP PENTRY	01623	65000	00706		
.	01567		JP PFLTERR	01624	61000	01704		GET ADDRESS OF T,Y
.	01570		STR 86*U(PFLTA)	01625	16420	01631		GET BETA (K)
.	01571		ENT A*U(1+87)	01626	11027	00001		CONVERT,SUPPRESS AND ROUND
.	01572		STR A*(BETA)	01627	15030	02233		
.	01573		RJP COTFLT	01630	65000	01713		
.	01574	PFLTA	O	01631	00000	00000		
.	01575		JP PFLTERRA	01632	61000	01705		
.	01576		ENT B1*(PCOLUMN)	01633	12110	00666		
.	01577		ENT A*(SIGN)*AZERO	01634	11430	02236		
.	01600		ENT A*41	01635	11000	00041		
.	01601		STR A*(PBUFF+B11	01636	15011	02337		
.	01602		BSK B1*1290	01637	71100	00201		
.	01603		JP \$+2	01640	61000	01642		STORE 1 INTEGER OIGIT
.	01604		JP PFLTERR	01641	61000	01704		
.	01605		ENT A*(TOINTEGER+1)	01642	11030	02242		
.	01606		STR A*(PBUFF+B11	01643	15011	02337		
.	01607		BSK B1*1290	01644	71100	00201		
.	01610		JP \$+2	01645	61000	01647		
.	01611		JP PFLTERR	01646	61000	01704		
.	01612		RJP PFRACSTOR	01647	65000	01171		STORE FRACTION
.	01613		JP PFLTERR	01650	61000	01704		
.	01614		ENT A*(TOEXPONENT)*ANOT	01651	11530	02245		
.	01615		JP PFLT8-1	01652	61000	01677		
.	01616		ENT A*(EXPSIGN)*AZERO	01653	11430	02246		
.	01617		ENT A*41*SKIP	01654	11100	00041		
.	01620		ENT A*42	01655	11000	00042		
.	01621		STR A*(PBUFF+B11	01656	15011	02337		
.	01622		BSK B1*1290	01657	71100	00201		
.	01623		JP \$+2	01660	61000	01662		

CAROS	LI	IO	LABEL	TA	STATEMENT	LOC	F	JKB	Y	NOTES
.	01624			JP	PFLTRR	01661	61000	01704		
.	01625			ENT	Q*W(10EXPONENT)	01662	10030	02245		
.	01626			CC	A*	01663	11000	00000		
.	01627			L3H	AQ*240	01664	07000	00030		
.	01630			STR	A*L(P8UF+81)	01665	15011	02337		
.	01631			BSK	B1*1290	01666	71100	00201		
.	01632			JP	\$+2	01667	61000	01671		
.	01633			JP	PFLTRR	01670	61000	01704		
.	01634			CL	A*	01671	11000	00000		
.	01635			LSH	AQ*6	01672	07000	00006		
.	01636			STR	A*L(P8UF+81)	01673	15011	02337		
.	01637			BSK	B1*1290	01674	71100	00201		
.	01640			JP	\$+2	01675	61000	01677		
.	01641			JP	PFLTRR	01676	61000	01704		
.	01642			ENT	A*3	01677	11000	00003		
.	01643		PFLTB	RPL	A*Y*L(PFLOAT)	01700	24010	01622		
.	01644			STR	B1*W(PCOLUMN)	01701	16130	00666		
.	01645			RJP	PRESTORE	01702	65000	01241		
.	01646			EXIT		01703	61010	01622		
.	01647			ENT	A*PFLTRR1*SKIP	01704	11100	01711		
.	01650		PFLTRR	ENT	A*PFLTRR4	01705	11000	01712		
.	01651			RJP	PERRRR	01706	65000	01256		
.	01652			ENT	A*2	01707	11000	00002		
.	01653			JP	PFLTB	01710	61000	01700		
.	01654		PFLTRR1	00001	PFLOAT	01711	00001	01622		
.	01655		PFLTRR4	00004	PLOAT	01712	00004	01622		
.	01656			COMMENT	SUBROUTINE					
.	01657			COMMENT	NUMBER					
.	01660		COTFLT	ENTRY		01713	61000	00000		
.	01661			STR	B4*L(COTXT)	01714	16410	02052		
.	01662			STR	B5*L(COTXT+1)	01715	16510	02053		
.	01663			STR	B6*L(COTXT+2)	01716	16610	02054		
.	01664			STR	B1*L(COTXT+3)	01717	16110	02055		
.	01665			STR	B7*L(COTXT+4)	01720	16710	02056		
.	01666			ENT	B1*1	01721	12100	00001		
.	01667			ENT	B7*L(COTFLT)	01722	12710	01713		
.	01670			ENT	B7*U(B7)	01728	12727	00000		
.	01671			RPL	Y+1*L(COTFLT)	01724	36010	01713		
.	01672			CL	W(10EXPONENT)	01726	16030	02245		
.	01673			CL	W(SINTEMP)	01726	16030	02133		
.	01674			CL	Q*	01727	10000	00000		
.	01675			ENT	A*W(B7+1)*ANOT	01730	11537	00001		
.	01676			JP	COT7	01731	61000	02021		
.	01677			ENT	A*W(B7+1)*APDS	01732	11637	00001		
.	01700			STR	A*CPW(FPFRACTION)*SKIP	01733	15170	02240		
.	01701			STR	A*W(FPFRACTION)*SKIP	01734	15130	02240		
.	01702			STR	A*W(SINTEMP)	01736	15030	02133		
.	01703			ENT	A*LX(B7)	01736	11057	00000		
.	01704			STR	A*L(EXPONENT)*ANEG	01737	15710	02237		
.	01705			JP	COTNEG1	01740	61000	02060		
.	01706			CL	W(EXPSIGN)	01741	16030	02246		
.	01707		COT1	ENT	A*L(EXPONENT)	01742	11010	02237		

TO CONVERT INTERNAL FLOATING P
 T
 TO OUTPUT EXPONENTIAL FORM

GET ADDRESS OF FLT PT NO.
 ADJUST EXIT OT ERROR RETURN

IF NUMBER 0, EXIT

TEST SIGN OF FRACTION
 MAKE FRACTION LOOK POS

STORE MINUS INOICATION

TEST SIGN OF EXP
 + IMPLIES NEG EXPONENT
 STORE + SIGN OF EXP

CARDS	LI	IC	LABEL	TA	STATEMENT	PPKG	LOC	F	JKB	Y	NOTES
.	01710			COM	A=L(TEN121+YLESS		01748	04610	02160		
.	01711			JP	COT2		01749	61000	01763		NO. IS LESS THAN 10 TO 10TH
.	01712			ENT	Q=X77777		01745	10040	77777		
.	01713			COM	MASK=L(TEN121+AZERO		01746	43410	02160		NO. IS MORE THAN 10 TO 10TH
.	01714			JP	COT11		01747	61000	01753		IF EXP =, TEST FRACTIONS
.	01715			ENT	A=W(FPFRAC10N1		01750	11030	02240		
.	01716			COM	A=W(TEN12+11+YLESS		01751	04630	02161		NO. IS LESS 10 TO 10TH
.	01717			JP	COT2		01752	61000	01763		
.	01720		COT11	ENT	B4=EXPONENT		01758	12400	02237		
.	01721			ENT	B5=MTEN12		01754	12500	02212		
.	01722			ENT	B6=EXPONENT		01765	12600	02237		
.	01723			ENT	B7=02		01756	12700	00002		
.	01724			RJP	FLTPT		01767	65000	02541		MULTIPLY BY 10 TO -10TH
.	01725			ENT	A=10D		01760	11000	00012		
.	01726			RPL	A=Y+W(10EXPONENT)		01761	24030	02245		ADD 10 TO OUTPUT EXP
.	01727			JP	COT1		01762	61000	01742		RETURN TO TEST NEW NO.
.	01730		COT2	ENT	B7=90		01768	12700	00011		
.	01731			ENT	B6=180		01764	12600	00022		
.	01732			ENT	Q=X77777		01765	10040	77777		
.	01733		COT3	ENT	A=L(EXPONENT1		01766	11010	02237		
.	01734			COM	A=L(TEN1+B61+YLESS		01767	04616	02136		NO. LESS THAN THAT PWR OF 10
.	01735			JP	COT4		01770	61000	01776		
.	01736			COM	MASK=L(TEN1+B61+AZERO		01771	43416	02136		
.	01737			JP	COT5		01772	61000	02001		IF GRTR, GO TO MULTIPLY
.	01740			ENT	A=W(FPFRAC10N1		01778	11030	02240		IF EXP =, TEST FRACTIONS
.	01741			COM	A=W(TEN1+B6+11+YMORE		01774	04736	02137		
.	01742			JP	COT5		01776	61000	02001		IF NO.= OR LESS, LOOK AT
.	01743		COT4	ENT	B6=B6-2		01776	12606	77775		NEXT LOWER PWR OF 10
.	01744			RJP	B7=COT3		01777	72700	01766		NO. NEED NOT BE REDUCEO
.	01745			JP	COT6		02000	61000	02010		
.	01746		COT5	ENT	A=1+B7		02001	11007	00001		
.	01747			RPL	A=Y+W(10EXPONENT)		02002	24030	02245		
.	01750			ENT	B4=EXPONENT		02003	12400	02237		
.	01751			ENT	B5=MTEN1+B6		02004	12506	02170		
.	01752			ENT	B6=EXPONENT		02005	12600	02237		
.	01753			ENT	B7=02		02006	12700	00002		
.	01754			RJP	FLTPT		02007	65000	02541		DIVIOE BY SM PWR OF 10
.	01755		COT6	ENT	Q=W(FPFRAC10N1		02010	10030	02240		COMMON PATH AFTER MULTIPLYING
.	01756			LSH	Q=2		02011	05000	00002		
.	01757			ENT	A=L(EXPONENT1		02012	11010	02237		
.	01760			SUB	A=40000+ANOT		02013	21500	40000		
.	01761			JP	COT7-1		02014	61000	02020		
.	01762			CL	A=		02015	11000	00000		
.	01763			ENT	B7=L(EXPONENT1		02016	12710	02237		SHIFT INTEGER PORTION TO A
.	01764			LSH	AQ=87-40000		02017	07007	37777		
.	01765			LSH	Q=290		02020	05000	00035		
.	01766		COT7	STR	A=W(INTEGER1		02021	15030	02234		
.	01767			STR	Q=W(FRAC10N1		02022	14030	02235		
.	01770			RJP	B1NOECINT		02023	65000	01327		
.	01771			RJP	B1NOECFRA		02024	65000	01376		TRUNCATE BETA+1 AND ROUND
.	01772			RJP	COFRNO		02025	65000	01516		SUPPRESS LEADING ZEROS
.	01773			RJP	SUPZRO		02026	65000	01457		

CAROS	LI	ID	LABEL	TA	STATEMENT	LOC	F	JKB	Y	NOTES
.	C1774			U-TAG	10INTEGER*2	02027	02241	00002		
.	C1775			ENT	A*W110INTEGER+11	02030	11030	02242		TEST FOR NUMBER ROUNDED TO 10
.	C1776			SEL	CP*06160*AZERO	02031	51000	06160		
.	C1777			JP	3+4	02032	61000	02036		LF 50 JAM IN A 1
.	C2000			PUT	61*W(10INTEGER+11)	02038	10000	00061		
						02034	14030	02242		
.	C2001			RPL	Y+1*W110EXPONENT1	02035	36030	02245		AND BUMP EXPONENT BY 1
.	C2002			PUT	W15TEMP)*W1SIGN)	02036	10030	02133		
						02037	14030	02236		
.	C2003			ENT	Q*W110EXPONENT)	02040	10030	02245		
.	C2004			CL	A*	02041	11000	00000		
.	C2005			COM	Q*51*YMORE	02042	04300	00051		TEST FOR EXP GRTR THAN 40
.	C2006			JP	COTXT	02043	61000	02052		IF 50+ ERROR
.	C2007			DIV	12	02044	23000	00012		CONVERT TO DECIMAL
.	C201C			LSH	A*240	02045	04000	00030		
.	C2011			LSH	AQ*360*AZERO	02046	07400	00044		
.	C2012			SEL	SET*W151XITIES)	02047	50030	02231		CONVERT TO FLOATA
.	C2013			STR	A*W110EXPONENT)	02050	15030	02245		STORE IN OUTPUT
.	C2014			RPL	Y+1*LCOTFLT1)	02051	36010	01713		ADJUST EXIT TO NORMAL RETURN
.	C2015		COTXT	ENT	B4*W11	02052	12000	00000		EXIT
.	C2016			ENT	B5*W11	02053	12500	00000		
.	C2017			ENT	B6*W11	02054	12600	00000		
.	C2020			ENT	B1*W11	02055	12100	00000		
.	C2021			ENT	B7*0	02056	12700	00000		
.	C2022			EXIT		02057	61010	01713		BRANCH FOR NEGATIVE EXPONENTS
.	C2023			COMMENT	THIS					
.	C2024		COTNEG1	STR	A*W1EXP5IGN)	02060	15030	02246		
.	C2025			ENT	A*LC(EXPONENT)	02061	11010	02237		
.	C2026			COM	A*LC(MTEN12)*YLESS	02062	04010	02212		
.	C2027			JP	COTNEG11	02063	61000	02072		NO LESS THAN 10 TO -10TH
.	C2030			ENT	Q*W77777	02064	10040	77777		
.	C2031			COM	MASK*LC(MTEN12)*AZERO	02065	43010	02212		NO GRTR THAN 10 TO -10TH
.	C2032			JP	COTNEG2	02066	61000	02102		
.	C2033			ENT	A*W1FFRACTION)	02067	11030	02240		
.	C2034			COM	A*W1MTEN12+1)*YMORE	02070	04730	02213		NO GRTR THAN 10 TO -10TH
.	C2035			JP	COTNEG2	02071	61000	02102		
.	C2036		COTNEG11	ENT	B4*EXPONENT	02072	12000	02237		
.	C2037			ENT	B5*TEN12	02073	12500	02160		
.	C2040			ENT	B6*EXPONENT	02074	12600	02237		
.	C2041			ENT	B7*02	02075	12700	00002		
.	C2042			RJP	FLPT	02076	65000	02541		MULTIPLY BY 10 TO 10TH
.	C2043			ENT	A*100	02077	11000	00012		ADD 10 TO OUTPUT EXPONENT
.	C2044			RPL	A*Y*W110EXPONENT)	02100	24030	02245		
.	C2045			JP	COTNEG1+1	02101	61000	02061		RETURN TO RETEST NO.
.	C2046		COTNEG2	ENT	B7*90	02102	12700	00011		WHEN NO = OR GRTR THAN
.	C2047			ENT	B6*180	02103	12500	00022		10 TO -10TH, LOOK FOR UNITS
.	C205C			ENT	Q*W77777	02104	10040	77777		PWR OF 10 TO MULTIPLY BY
.	C2051		COTNEG3	ENT	A*LC(EXPONENT)	02105	11010	02237		
.	C2052			COM	A*LC(MTEN1+861)*YLESS	02106	04016	02170		
.	C2053			JP	COTNEG5	02107	61000	02123		
.	C2054			COM	MASK*LC(MTEN1+861)*AZERO	02110	43016	02170		

CARDS	LI	IC	LABEL	TA	STATEMENT	LOC	F	JK8	Y	NOTES
	C2055			JP	COTNEG4	02111	61000	02115		
	C2056			ENT	A*WIFPFRAC10N1	02112	11030	02240		
	C2057			COM	A*MTENT1+86+11*YLESS	02113	04636	02171		
	C206C			JP	COTNEG5	02114	61000	02123		
	C2061	COTNEG4		ENT	B6*86-2	02115	12406	77775		
	C2062			BJP	B7*COTNEG3	02116	72700	02105		
	C2063			ENT	B4*EXPONENT	02117	12400	02237		
	C2064			ENT	B5*TEN1	02120	12500	02136		
	C2065			RPL	Y+1*W(10EXPONENT)	02121	36030	02245		
	C2066			JP	COTNEG5+4	02122	61000	02127		
	C2067	COTNEG5		ENT	A*87+2	02128	11007	00002		
	C207C			RPL	A*Y+W(10EXPONENT)	02124	24030	02245		
	C2071			ENT	B4*EXPONENT	02125	12400	02237		
	C2072			ENT	B5*TEN1+86+2	02126	12506	02140		
	C2073			ENT	B6*EXPONENT	02127	12400	02237		
	C2074			ENT	B7*02	02130	12700	00002		
	C2075			RJP	FLIPT	02131	65000	02541		
	C2076			JP	COT6	02132	61000	02010		
	C2077	SINTEMP		0	0	02133	00000	00000		
	C210C	TEN		0	37775	02134	00000	37775		
	C2101			14631	46315	02135	14631	46315		
	C2102	TEN1		0	40004	02136	00000	40004		
	C2103			12000	0	02137	12000	00000		
	C2104	TEN2		0	40007	02140	00000	40007		
	C2105			14400	0	02141	14400	00000		
	C2106	TEN3		0	40012	02142	00000	40012		
	C2107			17500	0	02143	17500	00000		
	C211C	TEN4		0	40016	02144	00000	40016		
	C2111			11610	0	02145	11610	00000		
	C2112	TEN5		0	40021	02146	00000	40021		
	C2113			14152	0	02147	14152	00000		
	C2114	TEN6		0	40024	02150	00000	40024		
	C2115			17204	40000	02151	17204	40000		
	C2116	TEN7		0	40030	02152	00000	40030		
	C2117			11422	64000	02153	11422	64000		
	C2120	TEN10		0	40033	02154	00000	40033		
	C2121			13727	41000	02155	13727	41000		
	C2122	TEN11		0	40036	02156	00000	40036		
	C2123			16715	31200	02157	16715	31200		
	C2124	TEN12		0	40042	02160	00000	40042		
	C2125			11240	27620	02161	11240	27620		
	C2126	TEN24		0	40103	02162	00000	40103		
	C2127			12657	07274	02168	12657	07274		
	C213C	TEN36		0	40144	02164	00000	40144		
	C2131			14476	26234	02165	14476	26234		
	C2132	TEN50		0	40205	02166	00000	40205		
	C2133			16543	12370	02167	16543	12370		
	C2134	MTEN1		0	37775	02170	00000	37775		
	C2135			14631	46315	02171	14631	46315		
	C2136	MTEN2		0	37772	02172	00000	37772		
	C2137			12172	70244	02173	12172	70244		
	C2140	MTEN3		0	37767	02174	00000	37767		
	C2141			10142	23351	02175	10142	23351		

MULTIPLY BY LARGER PWR OF 10

PPKG

CAROS	LI	IC	LABEL	TA	STATEMENT	LOC	F	JKB	Y	NOTES
.	02142		MTEN4	0	37763	02176	00000	37763		
.	02143		MTEN5	15066	70565	02177	15066	70565		
.	02144		MTEN5	0	37760	02200	00000	37760		
.	02145		MTEN6	12370	55304	02201	12370	55304		
.	02146		MTEN6	0	37755	02202	00000	37755		
.	02147		MTEN7	10306	75720	02203	10306	75720		
.	02150		MTEN7	0	37751	02204	00000	37751		
.	02151		MTEN10	15327	74515	02205	15327	74515		
.	02152		MTEN10	0	37746	02206	00000	37746		
.	02153		MTEN11	12571	43561	02207	12571	43561		
.	02154		MTEN11	0	37743	02210	00000	37743		
.	02155		MTEN12	10456	02764	02211	10456	02764		
.	02156		MTEN12	0	37737	02212	00000	37737		
.	02157		MTEN24	15574	67755	02213	15574	67755		
.	02160		MTEN24	0	37676	02214	00000	37676		
.	02161		MTEN36	13634	50206	02215	13634	50206		
.	02162		MTEN36	0	37635	02216	00000	37635		
.	02163		MTEN50	12110	22777	02217	12110	22777		
.	02164		MTEN50	0	37574	02220	00000	37574		
.	02165		H1BIT	10554	11423	02221	10554	11423		
.	02166		SIXTY	40000	0	02222	40000	00000		
.	02167		SIXTY	60000	0	02223	60000	00000		
.	02170		SIXTYFIVE	65000	0	02224	65000	00000		
.	02171		M6L	77000	0	02225	77000	00000		
.	02172		SEVENTYONE	71000	0	02226	71000	00000		
.	02173		81T5	01000	0	02227	01000	00000		
.	02174		FXC00E	0	0	02230	00000	00000		
.	02175		SIXTIES	60606	06060	02231	60606	06060		
.	02176		GAMMA	RESERVE	1	02232	00000	00000		
.	02177		BETA	RESERVE	1	02233	00000	00000		
.	02200		INTEGER	RESERVE	1	02234	00000	00000		
.	02201		FRACTION	0	0	02235	00000	00000		
.	02202		SIGN	RESERVE	1	02236	00000	00000		
.	02203		EXPONENT	RESERVE	1	02237	00000	00000		
.	02204		FPFRACTION	RESERVE	1	02240	00000	00000		
.	02205		101INTEGER	RESERVE	2	02241	00000	00000		
.	02206		10FRACTION	RESERVE	2	02243	00000	00000		
.	02207		10EXPONENT	RESERVE	1	02245	00000	00000		
.	02210		EXPSIGN	RESERVE	1	02246	00000	00000		
.	02211		UNPACKBUFF	0	PBUF+1	02247	00000	02340		
.	02212		PACKBUFF	U-TAG	PREGION+1*PREGION+270	02250	02252	02304		
.	02213		PREGION	00	00	02251	00000	00000		
.	02214			RESERVE	260	02252	00000	00000		
.	02215			00	00	02304	00000	00000		
.	02216			RESERVE	260	02306	00000	00000		
.	02217		PBUF	RESERVE	1290	02337	00000	00000		
.	02220			NO-OP		02540	12000	00000		DUMMY
.	02221		FLTPT	PROGRAM	CORR8*16MAR64					
.	02222			IGNORE	FLTPT					
.	02223		PTR	MEANS	C4					
.	02224		POUT	MEANS	C4					
.	02225		FLTPT	ENTRY						
.	02226			STR	B1*L(FP1)					
						02541	61000	00000		
						02542	16110	02550		

CARDS	LI	ID	LABEL	TA	STATEMENT	PPKG	LOC	F	JKB	Y	NOTES
•	02227			STR	B4*L(FP4)		02543	16410	02551		
•	02230			STR	B5*L(FP5)		02544	16510	02552		
•	02231			STR	B6*L(FP6)		02545	16610	02553		
•	02232			STR	B7*L(FP7)		02546	16710	02554		
•	02233			RJP	L(EFP+87)		02547	66017	02654		
•	02234	FP1		ENT	B1*0		02550	12100	00000		
•	02235	FP4		ENT	B4*0		02551	12400	00000		
•	02236	FP5		ENT	B5*0		02552	12500	00000		
•	02237	FP6		ENT	B6*0		02553	12600	00000		
•	02240	FP7		ENT	B7*0		02554	12700	00000		
•	02241			EXIT			02555	61010	02641		
•	02242	EFP		0	ADD		02556	00000	02600		ADDITION
•	02243			0	SUB		02557	00000	02637		SUBTRACTION
•	02244			0	MPL		02560	00000	02647		MULTIPLICATION
•	02245			0	OIV		02561	00000	02661		OLIVISION
•	02246			0	STARTREAD		02562	00000	03441		DATA INPUT
•	02247			0	PUNCH		02563	00000	03004		PUNCH OUTPUT
•	02250			0	TYPE		02564	00000	03002		TYPE OUTPUT
•	02251			0	SET		02565	00000	02745		SET OUTPUT LENGTH
•	02252			0	FXTDFL		02566	00000	02747		FIX TO FLOAT
•	02253			0	FLTOFX		02567	00000	02757		FLOAT TO FIX
•	02254			0	SQR		02570	00000	03030		SQUARE ROOT
•	02255			0	SIN		02571	00000	04054		SINE OF ARGUMENT
•	02256			0	COS		02572	00000	04163		COS OF ARGUMENT
•	02257			0	ATAN		02573	00000	03122		ARCTANGENT OF ARGUMENT
•	02260			0	EXP		02574	00000	03202		EXPONENTIAL OF ARGUMENT
•	02261			0	ASIN		02575	00000	03444		
•	02262			0	ACOS		02576	00000	03650		
•	02263			0	LOGE		02577	00000	03673		
•	02264	ADD		ENTRY			02600	61000	00000		
•	02265			ENT	A*L(B4)		02601	11014	00000		
•	02266			SWB	A*L(B5)+ANEG		02602	21715	00000		C1 MINUS C2
•	02267			JP	POS		02603	61000	02616		
•	02270			ENT	Q*L(B5)		02604	10015	00000		C2 IS THE
•	02271			STR	Q*W(B6)		02605	14036	00000		RESULTANT CHARACTERISTIC
•	02272			SEL	CP-X77777		02606	51040	77777		C2 MINUS C1
•	02273			COM	A-35*YLESS		02607	04600	00035		C2-C1 GREATER THAN 28
•	02274			STR	A*L(SFT1)+SKIP		02610	15110	02627		NO
•	02275			JP	NTR1		02611	61000	02634		YES
•	02276			ENT	A*W1+851		02612	11035	00001		
•	02277			STR	A*WMS1		02613	15030	03006		STORE LARGER MANTISSA
•	02300			ENT	A*W1+841		02614	11034	00001		
•	02301			JP	SFT		02615	61000	02626		
•	02302	POS		ENT	Q*L(B4)		02616	10014	00000		C1 IS THE RESULTANT
•	02303			STR	Q*W(B6)		02617	14036	00000		CHARACTERISTIC
•	02304			COM	A-35*YLESS		02620	04600	00035		C1-C2 GREATER THAN 28
•	02305			STR	A*L(SFT1)+SKIP		02621	15110	02627		NO
•	02306			JP	NTR		02622	61000	02633		YES
•	02307			ENT	A*W1+841		02623	11034	00001		
•	02310			STR	A*WMS1		02624	15030	03006		STORE LARGER MANTISSA
•	02311			ENT	A*W1+851		02625	11035	00001		
•	02312	SFT		ENT	Q*0		02626	10000	00000		
•	02313	SFT1		RSH	AQ*0		02627	03000	00000		SET RADIX POINTS

CARDS	LI	IC	LABEL	TA	STATEMENT	LOC	F	JKB	Y	NOTES
•	C2314			ADD	A*(WS)	02630	20030	03006		ADD LARGER MANTISSA
•	C2315			RJP	SCL	02631	65000	02701		TO SCALE
•	C2316			EXIT		02632	61010	02600		
•	C2317	PTR		ENT	A*(1+B4)*SKIP	02633	11134	00001		M1 RESULTANT MANTISSA
•	C2320	PTR1		ENT	A*(1+B5)	02634	11035	00001		M2 RESULTANT MANTISSA
•	C2321			STR	A*(1+B6)	02635	15036	00001		STORE RESULTANT
•	C2322			EXIT		02636	61010	02600		
•	C2323	SUR		ENTRY		02637	61000	00000		
•	C2324			ENT	A*(B5)	02640	11015	00000		
•	C2325			STR	A*(WS2)	02641	15010	03010		C2
•	C2326			ENT	A*(1+B51)	02642	11035	00001		
•	C2327			STR	A*CPW(WS3)	02643	15070	03011		COMPLEMENT M2
•	C2330			ENT	B5*WS2	02644	12500	03010		SET B5
•	C2331			RJP	ADD	02645	65000	02600		JUMP TO ADD ROUTINE
•	C2332			EXIT		02646	61010	02637		
•	C2333	PPL		ENTRY		02647	61000	00000		
•	C2334			ENT	A*(B41)	02650	11014	00000		
•	C2335			ADD	A*(B5)	02651	20015	00000		C1 + C2
•	C2336			SUR	A*40000	02652	21000	40000		RESULTANT C
•	C2337			STR	A*(B6)	02653	15036	00000		
•	C2340			ENT	Q*(1+B4)	02654	10034	00001		
•	C2341			MUL	M(1+B5)	02655	22035	00001		(M1)(M21
•	C2342			LSH	AQ*2	02656	07000	00002		SHIFT FOR SCALE
•	C2343			RJP	SCL	02657	65000	02701		TO SCALE
•	C2344			EXIT		02660	61010	02647		
•	C2345	CIV		ENTRY		02661	61000	00000		
•	C2346			ENT	A*(1+B5)*AZERO	02662	11435	00001		
•	C2347			ENT	A*(B4)*SKIP	02663	11114	00000		
•	C2350			JP	ERR	02664	61000	03330		ZERO DIVISOR
•	C2351			SUR	A*(B5)	02665	21015	00000		C1-C2
•	C2352			ADD	A*40000	02666	20000	40000		RESULTANT C
•	C2353			STR	A*(B61)	02667	15016	00000		
•	C2354			ENT	Q*0	02670	10000	00000		
•	C2355			ENT	A*(1+B41)	02671	11034	00001		M1
•	C2356			RSR	AQ*2	02672	03000	00002		PREPARE FOR DIVISION
•	C2357			DIV	M(1+B5)	02673	23035	00001		M1 DIVIDED BY M2
•	C2360			STR	Q*A*APUS	02674	14640	00000		QUOTIENT TO A. IS IT POS
•	C2361			ENT	Q*X-0*SKIP	02675	10140	77777		NO SET NEG
•	C2362			CL	Q	02676	10000	00000		YES 30 SET TO PLUS ZERO
•	C2363			RJP	SCL	02677	65000	02701		TO SCALE
•	C2364			EXIT		02700	61010	02661		
•	C2365	SCL		ENTRY		02701	61000	00000		
•	C2366			JP	NEG*ANEG	02702	60700	02714		
•	C2367			RPT	36	02703	70000	00036		RESULT ZERO
•	C2370			LSH	AQ*1*ANEG	02704	07700	00001		
•	C2371			JP	ZERO	02706	61000	02736		
•	C2372			SEL	CL*1	02707	52000	00001		
•	C2373			ADD	A*2*APUS	02707	20600	00002		
•	C2374			JP	AQR	02710	61900	02723		ADD 1 TO C
•	C2375			RPL	Y+1*(B6)	02711	36036	00000		40000 00000 TO A
•	C2376			ENT	A*(SCL2)	02712	11030	02742		
•	C2377			JP	AQR	02713	61000	02723		
•	C2400	NEG		RPT	36	02714	70000	00036		

CARDS	L1 10 LABEL	TA STATEMENT	LOC	F JXB Y	NOTES
.	C2401	LSH AQ*1*AP05	02715	02600 00001	
.	C2402	JP ZERO	02716	61000 02736	RESULT ZERO
.	C2403	SUB A*2*ANEG	02717	21700 00002	
.	C2404	JP AOR	02720	61000 02723	NO CHANGE
.	C2405	RPL Y+1*W(B61)	02721	36036 00000	
.	C2406	ENT A*W(SCL2+11)	02722	11030 02743	37777 77777 TO A
.	C2407	RSH AQ*2	02723	03000 00002	SET RAOIX PT
.	C2410	SEL CP*W(SCL2+2)	02724	51030 02744	SET FIRST TWO BITS 0
.	C2411	STR A*W(1+86)	02725	16036 00001	RESULTANT MANTISSA
.	C2412	STR 87*Q	02726	16700 00000	SHIFTS
.	C2413	ADD Q*W(B61)	02727	26036 00000	CR + SHIFTS
.	C2414	SUB Q*3*QNEG	02730	27700 00034	CR + SHIFTS -28, SKIP 1F Q NEG
.	C2415	STR Q*W(B61)*SKIP	02731	14136 00000	STORE RESULTANT CHARACTERISTIC
.	C2416	JP ZERO	02732	61000 02736	RESULT ZERO
.	C2417	SUB Q*77777*QPOS	02733	27600 77777	
.	C2420	EXIT	02734	61010 02701	
.	C2421	JP ERR	02736	61000 03330	OVERFLOW
.	C2422	STR 80*W(B61)	02736	16036 00000	
.	C2423	STR 80*W(1+86)	02737	16036 00001	RESULT IS ZERO
.	C2424	ENT A*0	02740	11000 00000	
.	C2425	EXIT	02741	61010 02701	
.	C2426	40000 00000	02742	40000 00000	
.	C2427	37777 77777	02743	37777 77777	
.	C2430	60000 00000	02744	60000 00000	
.	C2431	ENTRY	02745	61000 00000	
.	C2432	EXIT	02746	61010 02745	
.	C2433	ENTRY	02747	61000 00000	
.	C2434	ENT Q*X(B4)	02750	10044 00000	SCALING POINT TO Q
.	C2435	ENT Y-Q*40034	02751	31000 40034	40034-S
.	C2436	STR A*W(B61)	02752	15036 00000	CHARACTERISTIC
.	C2437	ENT Q*0	02753	10000 00000	
.	C2440	ENT A*W(B5)	02754	11035 00000	FIX NO
.	C2441	RJP SCL	02755	65000 02701	SCALE
.	C2442	EXIT	02756	61010 02747	
.	C2443	ENTRY	02757	61000 00000	
.	C2444	ENT Q*X(B4)	02760	10044 00000	SCALING PT WITH SIGN
.	C2445	ADC Q*LI(B5)	02761	26015 00000	CHARACTERISTIC
.	C2446	SUB Q*40000	02762	27000 40000	
.	C2447	ENT Y-Q*3*AP05	02763	31600 00034	
.	C2450	JP FLTOFX2	02764	61000 02774	TO NEG BRANCH
.	C2451	STR A*LI(FLTOFX1)	02765	15010 02771	SETUP SHIFT
.	C2452	SUB A*36*ANEG	02766	21700 00036	TEST FOR S GREATER THAN 29
.	C2453	ENT A*0*SKIP	02767	11100 00000	CLEAR SHIFT GREATER THAN 30
.	C2454	ENT A*W(1+85)	02770	11035 00001	MANTISSA
.	C2455	RSH A*0	02771	02000 00000	SHIFT
.	C2456	STR A*W(B61)	02772	15036 00000	RESULTS
.	C2457	EXIT	02773	61010 02757	
.	C2460	COM A*X77776*VLESS	02774	04640 77776	
.	C2461	JP ERR12	02775	61000 03350	LEFT SHIFT GREATER THAN 1
.	C2462	ENT A*W(1+85)	02776	11035 00001	MANTISSA
.	C2463	LSH A*1	02777	06000 00001	SHIFT

CARDS	LI	IC	LABEL	TA	STATEMENT	LOC	F	JKB	Y	NOTES
.	C2464			STR	A*(B6)	03000	15036	00000		RESULT
.	C2465			EXIT		03001	61010	02757		
.	C2466	TYPE		ENTRY		03002	61000	00000		
.	C2467			EXIT		03003	61010	03002		
.	C2470	PUNCH		ENTRY		03004	61000	00000		
.	C2471			EXIT		03006	61010	03004		
.	C2472	WS		0	0	03006	00000	00000		
.	C2473	WS1		0	0	03007	00000	00000		
.	C2474	WS2		0	0	03010	00000	00000		
.	C2475	WS3		0	0	03011	00000	00000		
.	C2476	WS4		0	0	03012	00000	00000		
.	C2477	WS5		0	0	03013	00000	00000		
.	C2500	WS6		0	0	03014	00000	00000		
.	C2501	WS7		0	0	03015	00000	00000		
.	C2502	WS10		0	0	03016	00000	00000		
.	C2503	WS11		0	0	03017	00000	00000		
.	C2504	WS12		0	0	03020	00000	00000		
.	C2505	WS13		0	0	03021	00000	00000		
.	C2506	WS14		0	0	03022	00000	00000		
.	C2507	WS15		0	0	03023	00000	00000		
.	C2510	WS16		0	0	03024	00000	00000		
.	C2511	RZERO		STR	B0*(B6)	03026	16036	00000		
.	C2512			STR	B0*(B6+1)	03026	16036	00001		
.	C2513			JP	FP4	03027	61000	02551		
.	C2514	SQR		ENTRY		03030	61000	00000		
.	C2515			ENT	A*(1+B4)*APCS	03031	11434	00001		IS MANTISSA POSITIVE
.	C2516			JP	ERR13	03032	61000	03352		NO ERROR EXIT
.	C2517			ENT	Q*(SQR11+ANOT	03033	10530	03101		MASK FOR 2 EXP(-21, 2 EXP(-31
.	C2520			STR	A*(1B6)*SKIP	03034	15116	00000		RESULT CHARACTERISTIC ZERO
.	C2521			STR	LP*A*SKIP	03035	47140	00000		EXTRACT RANGE FACTOR, SCALED 2
.	C2522			STR	A*(1+B6)*SKIP	03036	15136	00001		5
.	C2523			RSH	A*250*SKIP	03037	02100	00031		RESULT MANTISSA ZERO
.	C2524			EXIT		03040	61010	03030		RANGE FACTOR SCALED 0
.	C2525			ENT	B5*A	03041	12570	00000		LOAD 65 WITH FACTOR
.	C2526			ENT	Q*(1+B4)	03042	10034	00001		M SCALED 28
.	C2527			MUL	N(SQR2+B5)	03043	22035	03106		TIMES K SCALED 2
.	C2530			RSH	AQ*2	03044	03000	00002		M11 SCALED 28
.	C2531			STR	Q*(WWS)	03045	14030	03006		SAVE M11
.	C2532			RSH	Q*3	03046	01000	00003		TIMES 1/8
.	C2533			ADD	Q*(SQR1+1)	03047	26030	03102		MINUS B
.	C2534			MUL	W(WWS)	03050	22030	03006		
.	C2535			RSH	AQ*290	03051	03000	00035		SCALED 27
.	C2536			ADD	Q*(SQR1+2)	03052	26030	03103		MINUS C
.	C2537			STR	Q*(WWS+1)	03053	14030	03007		SAVE -A SCALED 27
.	C2540			CL	Q	03054	10000	00000		SET UP
.	C2541			ENT	A*(WWS)	03055	11030	03006		M11
.	C2542			RSH	AQ*4	03056	03000	00004		SCALED 54
.	C2543			OIV	W(WWS+1)	03057	23030	03007		M(11/4-A) SCALED 27
.	C2544			ADD	Q*(WWS+1)	03060	26030	03007		MINUS A
.	C2545			STR	Q*(WWS)	03061	14030	03006		SAVE -2(SQRT M(11
.	C2546			ENT	A*(1B4)	03062	11014	00000		CHARACTERISTIC

CAROS	L1 ID LABEL	TA STATEMENT	LOC	F JKB Y	NOTES
•	02547	ADD A*WISQR1+31	03063	20030 03104	PLUS BIAS
•	02550	LSH A*290	03064	06000 00035	HALVEO
•	02551	STR A*LI(B61)*ANEG	03065	15716 00000	TO RESULT CHECK EVEN/000
•	02552	MUL W(SQR3+85)*SKIP	03066	22135 03112	EVEN CHAR CORRECTION SCALED 29
•	02553	MUL W(SQR4+85)	03067	22035 03116	ODO CMAR
•	02554	RSH AQ*280	03070	03000 00034	N SCALED 28
•	02555	COM Q*WISQR1+4)*YLESS	03071	04230 03105	LS N NORMALIZEO
•	02556	JP SQR1	03072	61000 03077	YES
•	02557	ENT A*LI(B61)	03073	11016 00000	A00 1
•	02560	ADD A*1	03074	20000 00001	TO
•	02561	STR A*LI(B61)	03075	15016 00000	CHARL
•	02562	RSH Q*1	03076	01000 00001	NORMALIZE
•	02563	STR Q*W1+861	03077	14036 00001	STORE RESULT
•	02564	EXIT	03100	61010 03030	
•	02565	0600000000	03101	08000 00000	MASK
•	02566	6376776144	03102	63767 76144	-B SCALED 28
•	02567	7500402153	03103	75004 02153	-C SCALED 27
•	02570	0000040000	03104	00000 40000	BLAS
•	02571	2800000000	03105	20000 00000	1.0 SCALED 28
•	02572	0000000007	03106	00000 00007	K(31 FOR BITS 00
•	02573	0000000006	03107	00000 00006	K(21 01
•	02574	0000000005	03110	00000 00005	K(11 10
•	02575	0000000004	03111	00000 00004	K(0 11
•	02576	6371733412	03112	63717 33412	7 EXP(-1/2)+2*10 EXP(-91 SCALE
•	02577	6273720435	03113	62737 20435	D 29
•	02600	6154066433	03114	61540 66433	6 EXP(-1/2)
•	02601	5777777776	03115	57777 77776	5 EXP(-1/2)
•	02602	5671230431	03116	56712 30431	4 EXP(-1/2)
•	02603	5541454270	03117	55414 54270	(2/7) EXP(1/2)
•	02604	5360566233	03120	53605 66233	(1/3) EXP(1/2)
•	02605	5127660627	03121	51276 60627	(2/5) EXP(1/2)
•	02606	ENTRY	03122	61000 00000	(1/2) EXP(1/2)
•	02607	ENT Q*LI(B41	03128	10014 00000	C
•	02610	COM Q*40001*YMORE	03124	04300 40001	LESS THAN 40001
•	02611	JP ERR16	03126	61000 03356	NO-ARGUMENT TOO LARGE
•	02612	COM Q*37745*YLESS	03126	04200 37745	
•	02613	JP RZERO	03127	61000 03025	
•	02614	ATAN1	03130	11800 40000	
•	02615	ENT A*40000	03131	33030 03013	TO A SET UP SHIFT
•	02616	STR A-Q*W(W51	03132	10034 00001	MANTISSA
•	02617	ENT Q*W1+841	03133	01070 00000	CONVERT TO FIXED POINT
•	02620	RSH Q*4	03134	14030 03013	M
•	02621	STR Q*W(W51	03135	22030 03013	M2
•	02622	MUL W(W51	03136	03000 00033	M2
•	02623	RSH AQ*33	03137	14030 03014	M2
•	02624	STR Q*W(W561	03140	12500 00000	
•	02625	ENT B*0	03141	10030 03174	HASTINGS CONSTANT
•	02626	ENT Q*W(ATAN51	03142	22030 03014	TO Q
•	02627	MUL W(W561	03143	03000 00035	
•	02630	RSH AQ*35	03144	26035 03175	
•	02631	ADD Q*W(ATAN5+85+11	03146	71500 08004	
•	02632	BSK B5*4	03146	61000 03142	
•	02633	JP ATAN2			

PPKG

CARDS	LI	ID	LABEL	TA	STATEMENT	LOC	F	JKB	Y	NOTES
•	02633				MUL W(WSS)	03147	22030	03013		H
•	02634				RSH AQ*34	03150	03000	00034		
•	02635				JP ATAN3•QNEG	03151	03000	03163		POS RESULT
•	02636				RPT 36	03152	70000	00036		
•	02637				LSH Q*1•QNEG	03153	05300	00001		
•	02640				JP RZERO	03154	61000	03025		
•	02641				ENT A*37743+87	03155	11007	37743		OF RESULT
•	02642				STR A•W(B6)	03156	15036	00000		CLEAR
•	02643				ENT A•O	03157	11000	00000		
•	02644				LSH AQ*34	03160	07000	00034		
•	02645				STR A•W(1+86)	03161	15036	00001		MANTISSA OF RESULT
•	02646				EXIT	03162	61010	03122		NEG RESULT
•	02647		ATAN3		RPT 36	03163	70000	00036		
•	02650				LSH Q*1•QPOS	03164	05200	00001		
•	02651				JP RZERO	03165	61000	03025		
•	02652				ENT A*37743+87	03166	11007	37743		OF RESULT
•	02653				STR A•W(B6)	03167	15036	00000		NEG SIGN
•	02654				ENT A•3	03170	11000	00003		
•	02655				LSH AQ*34	03171	07000	00034		
•	02656				STR A•W(1+86)	03172	15036	00001		MANTISSA FOR RESULT
•	02657				EXIT	03173	61010	03122		
•	02660		ATAN3		77477 75334	03174	77477	75334		K 11
•	02661				01536 53004	03175	01536	53004		K9
•	02662				74214 27222	03176	74214	27222		K7
•	02663				06143 01016	03177	06143	01016		K5
•	02664				65266 23005	03200	65266	23005		K3
•	02665				37777 50120	03201	37777	50120		K1
•	02666		EXP		ENTRY	03202	61000	00000		
•	02667				ENT Q•W(1+84)•QPOS	03203	10234	00001		MANTISSA
•	02670				JP EXP2	03204	61000	03217		
•	02671				ENT A•L(B4)	03205	11014	00000		CHARACTERISTIC
•	02672				COM A•40034•YMORE	03206	04700	40034		C LESS THAN 40034
•	02673				JP ERR17	03207	61000	03363		MO-OVERFLOW
•	02674				COM A*37744•YMORE	03210	04700	37744		C LESS THAN 37744
•	02675				JP EXP4	03211	61000	03224		NO
•	02676		EXP1		ENT A•40001	03212	11000	40001		
•	02677				STR A•W(B6)	03213	15036	00000		RESULT IS
•	02700				ENT A•W(EXP10)	03214	11030	03261		ONE
•	02701				STR A•W(1+86)	03215	15036	00001		
•	02702				EXIT	03216	61010	03202		
•	02703		EXP2		ENT A•L(B4)	03217	11014	00000		
•	02704				COM A•40034•YMORE	03220	04700	40034		
•	02705				JP RZERO	03221	61000	03025		C LESS THAN 37744
•	02706		EXP3		COM A*37744•YLESS	03222	04600	37744		YES
•	02707				JP EXP1	03223	61000	03212		LOGE1/LN10
•	02710		EXP4		MUL W(EXP10+1)	03224	22030	03262		
•	02711				STR A•W(WS12)	03225	15030	03020		
•	02712				ENT A•40032	03226	11000	40032		CHARACTERISTIC
•	02713				SUB A•W(B4)	03227	21034	00000		SET UP SHIFT
•	02714				STR A•W(WS13)	03230	15030	03021		
•	02715				ENT A•W(WS12)	03231	11030	03020		CONVERT TO FIXED POINT
•	02716				RSH AQ•W(WS13)•APOS	03232	03630	03021		NEG NUMBER
•	02717				JP EXP7	03233	61000	03256		

CARD	IC	LABEL	TA STATEMENT	LOC	F	JKB	Y	NOTES
C2720			A00 A*40001	03234	2000	40001		
C2721			STR A*W(B61	03235	15036	00000		
C2722		EXP5	ENT A*0	03236	11000	00000		
C2723			RSH A*0.1	03237	03000	00001		
C2724			MUL W(EXP10+21	03240	22030	03263		
C2725			RSH A*0.35	03241	03000	00035		
C2726			STR Q*W(WS141	03242	14030	03022		
C2727			ENT B*0	03243	12500	00000		CLEAR
C2730			FNT Q*W(EXP10+31	03244	10030	03264		K6
C2731		EXP6	MUL W(WS141	03245	22030	03022		K6X
C2732			RSH A*0.34	03246	03000	00034		
C2733			A00 Q*W(EXP10+B5+41	03247	26035	03265		
C2734			BSK B*0.5	03250	71500	00005		
C2735			JP EXP6	03251	61000	03245		
C2736			ENT A*0	03252	11000	00000		
C2737			LSH A*0.35	03253	07000	00035		RESULT
C2740			STR A*W(1+B61	03254	15036	00001		
C2741			EXIT	03255	61010	03202		
C2742		EXP7	A00 A*40000	03256	20000	40000		
C2743			STR A*W(B61	03257	15036	00000		
C2744			JP EXP5	03260	61000	03236		
C2745		EXP10	10000 0	03261	10000	00000		MANTISSA OF 1
C2746			27052 43542	03262	27052	43542		LOGE1/LN10
C2747			11504 04651	03263	11504	04651		PROGRAM CONSTANT
C2750			00056 24630	03264	00056	24630		K
C2751			00155 74340	03265	00155	74340		K5
C2752			01152 16565	03266	01152	16565		K4
C2753			04035 41132	03267	04035	41132		K3
C2754			12466 00553	03270	12466	00553		K2
C2755			22327 26210	03271	22327	26210		K1
C2756			20000 0	03272	20000	00000		FIXED POINT 1
C2757		AFRR1	STR A*W(AERR2+21	03273	15010	03315		
C2760			CONSOLE HOLO	03274	64120	00142		
C2761			TYPE T \$CR\$LF\$LF\$FP ERROR\$CR\$A0DR\$S03276	03275	03000	00000		
			P\$SP\$	03276	61000	03303		
				03277	04030	31325		
				03300	05122	72724		
				03301	27040	51111		
				03302	27050	50000		
				03303	64120	00142		
				03304	00000	00022		
				03305	00000	03277		
				03306	10010	02541		
				03307	27000	00001		
				03310	64110	00141		
				03311	00000	00000		
				03312	77050	50505		
				03313	64120	00142		
				03314	00000	00012		
				03315	00000	03313		
				03316	12410	02551		
				03317	12510	02552		
C2762			ENT Q*L(FLTPT1					
C2763			SUR Q*1					
C2764			TYPEC Q*SP\$*SP\$*SP\$*SP\$					
C2765		AERR2	TYPE 10D*AERR2					
C2766			ENT B4*L(FP41					
C2767			ENT B5*L(FP51					

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CARDS	LI	IC	LABEL	TA STATEMENT	LOC	F	JKB	Y	NOTES
	C277C			ENT B6*L(FP6)	03320	12610	02553		
	C2771			ENT B7*L(FP7)	03321	12710	02554		
	C2772			CL A	03322	10000	00000		
	C2773			CL Q	03323	10000	00000		
	C2774			CONSOLE RELEASE	03324	64120	00142		
					03325	04000	00000		
	C2775		FPSTOP	REX STOPRUN	03326	64120	00142		
					03327	05000	00000		
	C2776		ERR	ENT B7*L(FP7)	03330	12710	02554		
	02777			ENT A*L(AERR+B7)	03331	11017	03333		
	C3000			JP AERR1	03332	61000	03273		
	C3001		AERR	O AOFFL	03333	00000	03337		
	C3002			O SBOFL	03334	00000	03341		
	C3003			O MLOFL	03335	00000	03343		
	C3004			O OVOFL	03336	00000	03345		
	C3005		AOFFL	0611110524	03337	06111	10524		
	C3006			1321050505	03340	13210	50505		
	C3007		SBOFL	3032070524	03341	30320	70524		
	C301C			1321050505	03342	13210	50505		
	C3011		MLOFL	2232210524	03343	22322	10524		
	C3012			1321050505	03344	13210	50505		
	C3013		DVOFL	1116330524	03345	11163	30524		
	C3014			1321050505	03346	13210	50505		
	C3015		EKR11	ENT A*ERR20*SKIP	03347	11100	03365		
	C3016		ERR12	ENT A*ERR21	03350	11000	03367		
	C3017			JP AERR1	03351	61000	03273		
	C3020		ERR13	ENT A*ERR22*SKIP	03352	11100	03371		
	C3021		ERR14	ENT A*ERR23	03353	11000	03373		
	C3022			JP AERR1	03354	61000	03273		
	C3023		ERR15	ENT A*ERR24*SKIP	03355	11100	03375		
	C3024		ERR16	ENT A*ERR25	03356	11000	03377		
	C3025			JP AERR1	03357	61000	03273		
	C3026		ERR16A	ENT A*ERR40	03360	11000	03405		
	C3027			JP AERR1	03361	61000	03273		
	C3030		ERR10	ENT A*ERR27*SKIP	03362	11100	03403		
	C3031		ERR17	ENT A*ERR26	03363	11000	03401		
	C3032			JP AERR1	03364	61000	03273		
	C3033		ERR20	1621210530	03365	16212	10530		
	C3034			1231052324	03366	12310	52324		
	C3035		ERR21	3010062112	03367	30100	62112		
	C3036			0524132105	03370	05241	32105		
	C3037		ERR22	3026270523	03371	30262	70523		
	C3040			1214052324	03372	12140	52324		
	C3041		ERR23	3016230524	03373	30162	30524		
	C3042			1321050505	03374	13210	50505		
	C3043		ERR24	10243 00524	03375	10243	00524		
	C3044			1321050505	03376	13210	50505		
	C3045		ERR25	0631062305	03377	06310	62305		
	C3046			2413210505	03400	24132	10505		
	C3047		ERR26	1235250524	03401	12352	50524		
	C3050			1321050505	03402	13210	50505		
	C3051		ERR27	2432312532	03403	24323	12532		
	C3052			3105241321	03404	31052	41321		

LOG ERROR

ILL SET NO

SCALE OFL

CARDS	LI	IC	LABEL	TA	STATEMENT	LOC	F	JKB	Y	NOTES
•	C3053	ERR40		2124141205		03405	21241	41205		
•	C3054			127272427		03406	12272	72427		
•	C3055	LERR		STR A•L(LERR+3)		03407	15010	03412		
•	C3056			RPL Y+1•L(POW14)		03410	36010	03443		
•	C3057			STR A•L(FLTP1)		03411	15010	02541		
•	C3060			ENT A•0		03412	11000	00000		
•	C3061			JP AERR1		03413	11000	03273		
•	C3062	ERR2		ENT A•ERR30•SKIP		03414	11100	03425		
•	C3063	ERR3		ENT A•ERR31		03415	11000	03427		
•	C3064			JP LERR		03416	11000	03407		
•	C3065	ERR4		ENT A•ERR32•SKIP		03417	11100	03431		
•	C3066	ERR5		ENT A•ERR33		03420	11000	03433		
•	C3067			JP LERR		03421	11000	03407		
•	C3070	ERR6		ENT A•ERR34•SKIP		03422	11100	03435		
•	C3071	ERR7		ENT A•ERR35		03423	11000	03437		
•	C3072			JP LERR		03424	11000	03407		
•	C3073	ERR30		2324310524		03426	23243	10524		NO TAB
•	C3074			1031050505		03426	10310	50505		
•	C3075	ERR31		2324053106		03427	23240	53106		
•	C3076			0705050505		03430	07050	50505		NOT DEC
•	C3077	ERR32		2324310511		03431	23243	10511		
•	C3100			1210050505		03432	12100	50505		NO DEC PT
•	C3101	ERR33		2324051112		03433	23240	51112		
•	C3102			1005253105		03434	10052	53105		RANGE ERR
•	C3103	ERR34		2706231412		03435	27062	31412		
•	C3104			0512272705		03436	06122	72705		END CODE
•	C3105	ERR35		1223110510		03437	12231	10510		
•	C3106			2411120505		03440	24111	20505		
•	C3107	STARTREAD		ENTRY		03441	11000	00000		BIASED CHAR EQUALS 1
•	C3110			EXIT		03442	11010	03441		1-C, TEST C GREATER THAN 1
•	C3111	POW14		NO-OP		03443	12000	00000		YES ERROR
•	C3112	ASTN		ENTRY		03443	12000	00000		85 EQUALS 1-C TEST C EQUALS 1
•	C3113			ENT A•400001		03444	11000	40001		
•	C3114			SUB A•L(1841•APOS		03446	21614	00000		-C TEST C EQUALS 0
•	C3115			JP ERR16		03447	11000	03356		YES TO TEST ABS(41) EQUALS 1/2
•	C3116			ENT B5•A		03450	12570	00000		
•	C3117			JP ASIN4•AZERO		03451	60400	03613		
•	C3120			SUB A•1•ANOT		03452	21500	00001		
•	C3121			JP ASIN3		03456	61000	03534		
•	C3122			COM A•140•YMORE		03454	04700	00016		
•	C3123			ENT A•0•SKIP		03465	11100	00000		
•	C3124	HERE		ENT A•W(1+841•SKIP		03456	11134	00001		
•	C3125			JP ASIN2		03457	61000	03530		SCALED 29
•	C3126			LSH A•1		03460	06000	00001		SAVED
•	C3127			STR A•W(WS1		03461	15030	03006		M=2•C EQUALS Y SCALED 29 EQUA
•	C3130			RSH AQ•290+B5		03462	03005	00035		LS X
•	C3131			STR Q•W(WS+11		03463	14030	03007		
•	C3132			MUL W(WS+11		03464	22030	03007		
•	C3133			RSH AQ•290		03465	03000	00035		SCALED 29 0 IN A
•	C3134	ASIN1		STR A•W(WS+11		03466	15030	03007		STORE P

PPKG

CARDS	L1	IC	LABEL	TA	STATEMENT	LOC	F	JKB	Y	NOTES
-	C3135			MUL	W(ASINK)	03467	22030	03632		K*X**2
-	C3136			RSH	AQ*290	03470	03000	00035		SCALE0 29 EQUALS Z
-	C3137			ENT	Y+Q*W(ASINK+3)	03471	30030	03635		Z+C
-	C3140			STR	A*W(WS+2)	03472	15030	03010		SAVED
-	C3141			ENT	A*W(ASINK+1)	03473	11030	03633		A
-	C3142			STR	A+Q*Q	03474	32000	00000		+Z
-	C3143			MUL	A	03475	22070	00000		(A+Z)**2
-	C3144			RSH	AQ*290	03476	03000	00035		SCALE0 29
-	C3145			AQO	Q*W(ASINK+2)	03477	26030	03634		+B EQUALS U
-	C3146			STR	Q*W(WS+3)	03500	14030	03011		SAVE U
-	C3147			MUL	W(WS+2)	03501	22030	03010		U*(Z+C)
-	C3150			RSH	AQ*290	03502	03000	00035		SCALE0 29 EQUALS V
-	C3151			FNT	Y+Q*W(ASINK+4)	03503	30030	03636		V+0
-	C3152			SUB	Q*W(WS+3)	03504	27030	03011		V-0
-	C3153			AQO	Q*W(ASINK+5)	03505	26030	03637		+E
-	C3154			STR	A*W(WS+3)	03506	15030	03011		
-	C3155			MUL	W(WS+3)	03507	22030	03011		
-	C3156			RSH	AQ*290	03510	03000	00035		SCALE0 29
-	C3157			AQO	Q*W(ASINK+61	03511	26030	03640		+F EQUALS ARCSIN X/2X
-	C3160			MUL	W(WS)	03512	22030	03006		*M EQUALS (1/2)ARCSIN X SCALE0 2B+C
-	C3161			RSH	AQ*270+85	03513	03005	00033		*((4*2**C) EQUALS 2ARCSIN X SC 2B
-	C3162			ENT	A*W(WS+1)*AZERO	03514	11430	03007		P SCALE0 2B SKIP IF P EQUALS 0
-	C3163			STR	A+Q*Q*SKIP	03515	32100	00000		P-2*ARCSIN X EQUALS ARCSIN Y
-	C3164			RSH	Q*1	03516	01000	00001		ARCSIN Y SCALE0 2B
-	C3165			STR	Q*A*QP0S	03517	14240	00000		TEST M LESS THAN 0
-	C3166			STR	A*A	03520	15040	00000		YES FORM ABS(M)
-	C3167			RPT	290	03521	70000	00035		NORMALIZE
-	C317C			L9H	A*1*ANEG	03522	06700	00001		SCALE0 30
-	C3171			JP	ASIN2+2	03523	61000	03532		M EQUALS 0
-	C3172			LSH	A*290	03524	06000	00035		PRESERVE SIGN
-	C3173			RSH	A*1*QP0S	03526	08200	00001		M SCALE0 2B TEST M LESS THAN 0
-	C3174			STR	A*A	03526	15040	00000		YES -ABS(M)
-	C3175			ENT	Q*3774.5+87*SKIP	03527	10107	37745		C EQUALS (27-SF)-27*BIAS
-	C3176	ASIN2		FNT	Q*A	03530	10070	00000		C EQUALS 0
-	C3177			STR	Q*L(86)	03531	14016	00000		STORE ARCSIN Y
-	C3200			STR	A*W(1+B6)	03532	15036	00001		AS C,M
-	C3201			EXIT		03533	61010	03444		
-	C3202	ASIN3		ENT	Q*W(1+B4)	03534	10034	00001		M EQUALS Y SCALE0 2B
-	C3203			STR	Q*A*QNEG	03536	14340	00000		FORM
-	C3204			STR	A*A	03536	15040	00000		-ABS(Y)
-	C3205			ADO	A*W(ASINP+2)*ANOT	03537	20530	03643		1/2-ABS(Y) TEST ZERO
-	C3206			JP	ASIN5	03540	61000	03622		YES USE (PI)/6
-	C3207			AQO	A*W(ASINP+2)*QP0S	03541	20230	03643		(1-ABS(Y))/2 SCALE0 29
-	C3210			STR	A*CPW(WS+1)*SKIP	03542	15170	03007		STORE X**2 AND
-	C3211			STR	A*W(WS+1)	03543	15030	03007		SAVE SIGN OF Y
-	C3212			RPT	290*	03544	70000	00035		NORMALIZE
-	C3213			LSH	A*1*ANEG	03546	06700	00001		SCALE0 30
-	C3214			JP	ASIN5-1	03546	61000	03621		ABS(X)1 LESS THAN 2**13 USE (P 11/2
-	C3215			ENT	Q*A	03547	10070	00000		SAVE X**2

CARDS	LI	IC	LABEL	TA	STATEMENT	PPKG	LOC	F	JKB	Y	NOTES
.	C3216			STR	B7-A		03550	16740	00000		26-SF
.	C3217			SUB	A-30D		03551	21000	00036		-(2-SF) EQUALS -(2-2C)
.	C3220			LSH	A-29D-ANEQ		03552	06700	00035		-(1-C) TEST SF EVEN
.	C3221			LSH	Q-27D-SKIP		03553	05100	00033		N0 (1/4)*X**2 SCALED 29 EQUALS T/2
.	C3222			LSH	Q-28D		03554	05000	00034		YES (1/2)*X**2 SCALED 29 EQUALS T/2
.	C3223			STR	A-A		03555	15040	00000		1-C
.	C3224			ENT	B5-A		03556	12570	00000		TO B5
.	C3225			STR	Q-W(WS+2)		03557	14030	03010		SAVE T/2
.	C3226			MUL	W(AS(INQ))		03560	22030	03645		A(T/2)
.	C3227			RSH	AQ-29D		03561	03000	00035		SCALED 29
.	C3230			ADD	Q-W(AS(INQ)*1)		03562	26030	03646		+(B/2)
.	C3231			MUL	W(WS+2)		03563	22030	03010		*T/2
.	C3232			RSH	AQ-29D		03564	03000	00035		SCALED 29 0 IN A-REG
.	C3233			ADD	Q-W(AS(INQ)*2)		03565	26030	03647		*(C/4)
.	C3234			STR	Q-W(WS)		03566	14030	03006		EQUALS (T**1/2)/4 APPROX EQUALS T/2
.	C3235			ENT	Q-W(WS+2)		03567	10030	03010		LS R1
.	C3236			LSH	AQ-26D		03570	07000	00032		T/2
.	C3237			DIV	W(WS)		03571	23030	03006		*(1/8) EQUALS T/16 SCALED 58
.	C3240			ADD	Q-W(WS)		03572	26030	03006		+(R1)
.	C3241			RSH	Q-1		03573	01000	00001		*(1/2) EQUALS R2
.	C3242			STR	Q-W(WS)		03574	14030	03006		SAVE R2
.	C3243			ENT	A-W(WS+2)		03575	11030	03010		ONE MORE
.	C3244			CL	Q		03576	10000	00000		ITERATION
.	C3245			RSH	AQ-4		03577	03000	00004		YIELDS
.	C3246			DIV	W(WS)		03600	23030	03006		(T**1/2)/2
.	C3247			ADD	Q-W(WS)		03601	26030	03006		*2
.	C3250			LSH	AQ-31D		03602	07000	00037		EQUALS T**1/2 SCALED 29 EQUALS T/2
.	C3251			ENT	Q-W(WS+1)*QNEG		03603	10330	03007		S ABS(M)
.	C3252			STR	A-CPW(WS)*SK(P		03604	15170	03006		X**2 TEST SIGN
.	C3253			STR	A-W(WS)		03606	15030	03006		STORE -M
.	C3254			ENT	A-W(AS(INP)*1)*QPD5		03606	11230	03642		STORE -M
.	C3255			STR	Q-Q*SKIP		03607	14100	00000		(P11/2) SCALED 28
.	C3256			JP	ASIN		03610	61000	03466		CHANGE SIGN
.	C3257			STR	A-A		03611	15040	00000		TO CALC FOR Y GREATER .5
.	C3260			JP	ASIN		03612	61000	03466		-(P11/2)
.	C3261		AS(IN4	ENT	Q-W(1+B4)		03613	10034	00001		TO CALC FOR Y LESS THAN -.5
.	C3262			STR	Q-A-QNEG		03614	14240	00000		M
.	C3263			STR	A-A		03615	15040	00000		FORM
.	C3264			ADD	A-W(AS(INP)*2)*AZERO		03616	20830	03643		-ABS(M)
.	C3265			JP	ERR16		03617	61000	03356		+(1/2) TEST AZERO
.	C3266			ENT	B5-40001		03620	12500	40001		NO ERROR
.	C3267			JP	AS(IN5+1		03621	61000	03623		C FOR (P11/2)
.	C3270		AS(IN5	ENT	B5-40000		03622	12500	40000		C FOR (P11/2)
.	C3271			ENT	A-W(AS(INP-40000+B5)*QPOS		03623	11235	43640		C FOR (P11/2)
.	C3272			STR	A-A		03624	15040	00000		(P11/2) TEST M LESS
.	C3273			RSH	A-1		03625	02000	00001		YES -(P11/2) OR -(P11/2)
.	C3274			STR	B5-Q		03626	16500	00000		M SCALED 28
.	C3275			STR	Q-L1B61		03627	14016	00000		C
.											STORE ARCSIN Y

PKG

CAROS	L	IC	LABEL	TA STATEMENT	LOC	F	JKB	Y	NTES
	03276			STR A*(1+B6)	03630	15036	00001		AS C,M
	03277			EXIT	03631	61010	03444		
	03300	ASINK		2041015167	03632	20410	15167		K
	03301			1070502075	03633	10705	02075		A
	03302			1507662270	03634	15076	62270		B
	03303			0125170245	03635	01251	70245		C
	03304			0151206634	03636	01512	06634		D
	03305			3121124150	03637	31211	24150		E
	03306			1720500666	03640	17205	00666		F
	03307	ASINP		2060251072	03641	20602	51072		(P1)/6 SCALED 29
	03310			3110375526	03642	31103	75526		(P1)/2 SCALED 28
	03311			1000000000	03643	10000	00000		/2 SCALED 28
	03312			1444176653	03644	14441	76653		(P1)/2 SCALED 27
	03313	ASINO		6570132340	03645	65701	32340		-A SCALED 29
	03314			2065211354	03646	20652	11354		B/2 SCALED 29
	03315			0204600545	03647	02046	00545		C/4 SCALED 29
	03316	ACOS		ENTRY	03650	61000	00000		GET ARCSIN Y
	03317			RJP ASIN	03651	65000	03444		BIASED CHARACTERISTIC
	03320			ENT A*40001	03652	11000	40001		-C
	03321			SUR A*(1+B6)	03653	21016	00000		M SCALED 28
	03322			ENT Q*(1+B6)	03654	10036	00001		ARCSIN Y SCALED 27
	03323			RSH Q*A	03655	01070	00000		-(P1)/2 SCALED 27
	03324			SUR Q*(ASINP+3)*QNEG	03656	27730	03644		ARCSIN Y EQUALS 0
	03325			JP ACOS1	03657	61000	03667		NORMALIZE (-ARCSIN Y)
	03326			RPT 290	03660	70800	00035		WITH 26+C IN B7
	03327			LSH Q*1*QPOS	03661	05200	00001		(ARCSIN Y EQUALS D)
	03330			JP ACOS1	03662	61000	03667		SAVE SIGN DF -M
	03331			LSH Q*290	03663	05000	00035		AND SCALE 28
	03332			RSH Q*1	03664	01000	00001		26+C
	03333			STR B7*A	03665	16740	00000		+BIAS-26 EQUALS C
	03334			ADD A*37746*SKIP	03666	20100	37746		SET FOR C EQUALS D
	03335	ACOS1		STR Q*Q	03667	14000	00000		STORE ARCSIN Y
	03336			STR A*(1+B6)	03670	15016	00000		AS C,M
	03337			STR Q*CPW(1+B6)	03671	14076	00001		LN(Y) IN FLDATING PT
	03340			EXIT	03672	61010	03650		MANTISSAEQ
	03341	LOGE		ENTRY	03673	61000	00000		TEST M LESS
	03342			ENT Q*(1+B4)	03674	10034	00001		TEST M GREATER 1/2
	03343			COM Q*(LOGER)*YMORE	03675	04330	04004		NO, TRY M EQ 1/2
	03344			JP ERR16A	03676	61000	03360		GET L
	03345			ENT Y-Q*(LOGER+1)*ANEG	03677	31730	04005		FOR K(1)
	03346			JP LOGE1	03700	61000	03727		IN TABLE
	03347			ENT LP*(LOGER+2)	03701	40030	04006		K(1)*Q
	03350			RSH A*240	03702	02000	00080		SCALED 27
	03351			ENT B5*A	03703	12570	00000		-) EQ X
	03352			MUL W*(LOGER+B5)	03704	22035	04026		X+C
	03353			RSH AQ*290	03705	03000	00035		SAVED
	03354			SUR Q*(LOGER+1)	03706	27030	04005		X+A
	03355			ENT Y+Q*(LOGEA+2)	03707	30030	04012		
	03356			STR A*(WS)	03710	15030	03006		
	03357			ENT Y+Q*(LOGEA)	03711	30030	04010		
	03360			STR A*(WS+1)	03712	15030	03007		
	03361			MUL W*(WS+1)	03713	22030	03007		
	03362			RSH AQ*270	03714	03000	00033		SCALED 27

CARD	LI	IO	LABEL	TA	STATEMENT	LOC	F	JK	Y	NOTES
•	C3363			STR	Q*W(WS+11	03715	14030	03007		SAVE
•	C3364			A00	Q*W(LOGEA+11	03716	26030	04011		Z+B
•	C3365			MUL	W(WS1	03717	22030	03006		*(X+C1
•	C3366			RSH	AQ*270	03720	03000	00033		SCALED 27 EQ W
•	C3367			ENT	Y+Q*W(LOGEA+41	03721	30030	04014		W+E
•	C3370			A00	Q*W(LOGER+31	03722	26030	04007		W-3
•	C3371			A00	Q*W(LOGEA+31	03723	26030	04013		+(0+3)
•	C3372			A00	Q*W(WS+11	03724	26030	03007		+Z
•	C3373			STR	A*W(WS+11	03725	15030	03007		
•	C3374			MUL	W(WS+11)*SKIP	03726	22130	03007		
•	C3375		LOGE1	ENT	Q*W(LOGEA+51)*SKIP	03727	10130	04015		LN(21
•	C3376			OIV	W(LOGER+31)*SKIP	03730	21330	04007		(-1/6) EQLN(X)-F*(-1/6)
•	C3377			STR	Q*Q*SKIP	03731	14100	00000		-LN(2)
•	C3400			A00	Q*W(LOGER+85)*SKIP	03732	26130	04016		+F*(-1/L)-LN(K(1))
•	C3401			JP	ERR16A*ANOT	03733	60500	03360		
•	C3402			STR	Q*W(WS)	03734	14030	03006		EQ LN(Q) SCALED 28
•	C3403			ENT	A*LI(1841	03735	11014	00000		CHAR EQ P+2*014
•	C3404			SUB	A*40000*ANOT	03736	21500	40000		-BIASEQ, TEST P EQ
•	C3405			JP	LOGE2	03737	61000	03764		YES SKIP CALC
•	C3406			ENT	Q*Q*Q*P05	03740	10270	00000		TEST PLESSO
•	C3407			STR	Q*Q	03741	14000	00000		USE ABS(P)
•	C3410			RPT	4*AOV	03742	70100	09004		RANGE OR P
•	C3411			COM	Q*LI(LOGES)*YMORE	03743	04310	04036		TO OSTR MIN SHIFTS
•	C3412			JP	LOGE1	03744	61000	04042		
•	C3413			ENT	B5*W(LOGES+87)	03745	12527	04036		FOR SCALING
•	C3414		LOGE1A	MUL	W(LOGEA+51	03746	22030	04015		
•	C3415			LSH	AQ*85	03747	07005	00000		SCALED 45 47 50 53 56
•	C3416			JP	LOGE+2	03750	61000	04044		NORMALIZE
•	C3417			RPT	LI(COUNT1	03751	70010	04053		PRODUCT
•	C3420			LSH	AQ*1*ANEG	03752	07700	00001		
•	C3421			JP	ERR16A	03758	61000	03360		RETURN SIGN SCALED 28
•	C3422			LSH	AQ*580	03754	07800	00072		P
•	C3423			ENT	Q*LI(184)	03755	10014	00000		TEST P LESS 0
•	C3424			COM	Q*40000*YLESS	03756	04200	40000		YES -ABS(P)*LN(2)
•	C3425			STR	A*Q	03757	15040	00000		LN(Q)
•	C3426			ENT	Q*W(WS)	03760	10030	03006		
•	C3427			ENT	B5*87-260	03761	12507	77745		SET FOR NO SHIFTS(P EQ 0)
•	C3430			BJP	B5*LOGE2-1	03762	72500	03763		LN(Y)
•	C3431			RSH	Q*85*SKIP	03763	01105	00000		ABS(LN(Y1)
•	C3432		LOGE2	ENT	87*270	03764	12700	00033		SKIP IF Y EQ 1
•	C3433			STR	A*Q*Q*Q*P05	03765	32800	00000		SAVE FACTOR
•	C3434			STR	Q*Q	03766	14000	00000		NORMALIZE
•	C3435			JP	LOGE3*AZERO	03767	60400	04000		ABS(LN(Y1)
•	C3436			STR	B7*W(WS)	03770	16730	03006		RETURN SIGN SCALED 28
•	C3437			RPT	290	03771	70000	00035		AS MANTISSA
•	C3440			LSH	Q*1*QNEG	03772	05300	00001		FORM
•	C3441			JP	ERR16A	03773	61000	03360		CHARACTERISTIC
•	C3442			LSH	Q*280*AP05	03774	05600	00034		STORE
•	C3443			STR	Q*Q	03775	14000	00000		
•	C3444			ENT	A*W(WS1	03776	11030	03006		
•	C3445			A00	A*37712+87*SKIP	03777	20107	37712		
•	C3446		LOGE3	CL	Q	04000	10000	00000		
•	C3447			STR	A*LI(186)	04001	15016	00000		

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CARDS	L1 ID LABEL	TA STATEMENT	LOC	F JKB Y	NOTES
.	03450	STR Q*W(1+B61	04002	14036 00001	RESULT
.	03451	EXIT	04003	61010 03673	1 SCALED 28
.	03452	LOGER	04004	20000 00000	1/2 SCALED 28
.	03453	1000000000	04005	10000 00000	MASK FOR 1
.	03454	0700000000	04006	07000 00000	-3 SCALED 27 -6 SCALED 26
.	03455	4777777777	04007	47777 77777	A SCALED 27
.	03456	5770232732	04010	57702 32732	B
.	03457	3427564132	04011	34275 64132	C
.	03460	0724376530	04012	07243 76530	D+3
.	03461	4341324241	04013	43413 24241	E
.	03462	5712656427	04014	57126 56427	LN(2) SCALED 28
.	03463	1305620600	04015	13056 20600	1
.	03464	5366557053	04016	53665 57053	2
.	03465	5557247242	04017	55572 47242	3
.	03466	5733156444	04020	57331 56444	4
.	03467	6074650576	04021	60746 50576	5
.	03470	6225723447	04022	62257 23447	6
.	03471	6347732466	04023	63477 32466	7
.	03472	6463606732	04024	64636 06732	ED 28
.	03473	6572323037	04025	65723 23037	1 EQ 0 IN K(1) EQ15/(8+1) SCAL
.	03474	3600000000	04026	36000 00000	1
.	03475	3252525253	04027	32525 25253	2
.	03476	3000000000	04030	30000 00000	3
.	03477	2564272135	04031	25642 72135	4
.	03500	2400000000	04032	24000 00000	5
.	03501	2235423542	04033	22354 23542	6
.	03502	2111111111	04034	21111 11111	7
.	03503	2000000000	04035	20000 00000	UPPER HALF
.	03504	0002300014	04036	00023 00014	SHIFT CONSTANTS
.	03505	0002600135	04037	00026 00135	LOWER HALF
.	03506	0003101343	04040	00031 01343	CHAR RANGE
.	03507	0003413426	04041	00034 13426	
.	03510	ENT B5+170	04042	12500 00021	
.	03511	JP LOGE1A	04048	61000 03746	
.	03512	STR A*W(SAVE1	04044	15030 04052	
.	03513	ENT A+590	04045	11000 00073	
.	03514	SUB A+85	04046	21005 00000	
.	03515	STR A*W(COUNT1	04047	15030 04053	
.	03516	ENT A*W(SAVE)	04050	11030 04052	
.	03517	JP LOGE1A+3	04051	61000 03751	
.	03520	RESERVE 1	04052	00000 00000	
.	03521	RESERVE 1	04053	00000 00000	
.	03522	ENTRY	04054	00000 00000	
.	03523	ENT A*L(B41	04055	11014 00000	
.	03524	COM A+37767+YMORE	04056	04700 37767	TEST EXPONENT LES 2EXP-10
.	03525	JP \$+5	04057	61000 04064	NO
.	03526	STR A*L(B61	04060	15016 00000	SET SIN(X) EQ X
.	03527	ENT A*W(B4+11	04061	11034 00001	
.	03530	STR A*W(B6+11	04062	15036 00001	
.	03531	EXIT	04068	61010 04054	
.	03532	COM A+40034+YMORE	04064	04700 40034	EXPONENT GEQ 2EXP27
.	03533	JP \$+STOP	04065	61400 04065	

CARDS	LI	ID	LABEL	TA	STATEMENT	LOC	F	JKB	Y	NOTES
.	C3534			CL	L(SINCOS2+1)	04066	16010	04101		
.	C3535			ENT	A*W(1+84)	04067	11034	00001		
.	C3536	SINCOS1		STR	A*W(SINCOS201+APDS	04070	15430	04161		ARG IN SINCOS20
.	C3537			CP	A*ANDT	04071	15440	00000		
.	C3540			JP	SINCOS7+1+AZERO	04072	60400	04147		
.	C3541			ENT	Q*40033	04073	10000	40033		
.	C3542			SUB	Q*L(B4)	04074	27014	00000		\$ARG\$ TO Q
.	C3543			STR	Q*L(SINCOS2)	04075	14010	04100		\$ARG\$ TIMES 2/P1 IN AQ
.	C3544			ENT	Q*A	04076	10070	00000		QTRV IN AQ AT B30
.	C3545			MUL	W(SINCOS101	04077	22030	04152		A00 1 IF COSINE
.	C3546	SINCOS2		RSH	AQ*0	04100	03000	00000		QUADRANT TO B7
.	C3547			A00	A*0	04101	20000	00000		FRAC IN Q AT B29
.	C3550			SEL	CL*X77774	04102	52040	77774		
.	C3551			ENT	B7*A	04104	03000	00001		QUADRANT 1
.	C3552			RSH	AQ*1	04105	61007	04106		QUADRANT 11
.	C3553			JP	\$+1+B7	04106	61000	04111		QUADRANT 111
.	C3554			JP	\$+3	04107	14100	00000		QUADRANT 1V, ARG TO A
.	C3555			CP	Q*SKIP	04110	14000	00000		-FRAC IF ARG NEGATIVE
.	C3556			CP	Q	04111	11530	04161		STORE X EQ + OR - FRAC AT B29
.	C3557			ENT	A*W(SINCOS201+APDS	04112	14000	00000		
.	C3560			CP	Q	04113	14030	04161		
.	C3561			STR	Q*W(SINCOS20)					
.	C3562			MUL	W(SINCOS20)	04114	22030	04161		Y EQ X*2 IN AQ AT B58
.	C3563			RSH	AQ*290	04115	03000	00035		Y IN Q AT B29
.	C3564			STR	Q*W(SINCOS20+1)	04116	14030	04162		
.	C3565			ENT	B7*3	04117	12700	00003		KSUB9 IN Q AT B32
.	C3566			ENT	Q*W(SINCOS11+41	04120	10030	04160		Y TIMES POLY
.	C3567			MUL	W(SINCOS20+1)	04121	22030	04162		TO Q
.	C3570			ENT	Q*A	04122	10070	00000		POLY EQ POLY+XSUB1
.	C3571			A00	Q*W(SINCOS11+B7)	04123	26037	04154		X*POLY IN AQ AT B57
.	C3572			BJP	B7*-3	04124	72700	04121		
.	C3573			MUL	W(SINCOS20)	04125	22030	04161		
.	C3574			JP	SINCOS6*ANEG	04126	60700	04134		
.	C3575			CL	L(SINCOS6+6)	04127	16010	04142		
.	C3576			RPT	320	04130	70000	00040		
.	C3577			LSH	AQ*1*ANEG	04131	07700	00001		
.	C3600			JP	SINCOS7	04132	61000	04146		SIN(X) EQ 0
.	C3601			JP	\$+5	04133	61000	04140		
.	C3602			CL	CPL(\$+6)	04134	16050	04142		
.	C3603	SINCOS6		RPT	320	04135	70000	00040		
.	C3604			LSH	AQ*1*APDS	04136	07600	00001		SIN(X) EQ 0
.	C3605			JP	SINCOS7	04137	61000	04146		
.	C3606			ENT	Q*37743+B7	04140	10007	37743		
.	C3607			STR	Q*W(B6)	04141	14036	00000		PUT PROPER SIGN IN Q
.	C3610			ENT	Q*0	04142	10000	00000		SIN(X) IN A
.	C3611			LSH	AQ*580	04148	17000	00072		
.	C3612			STR	A*W1+B61	04144	15036	00001		
.	C3613			EXIT		04145	61010	04054		SIN(X) EQ 0
.	C3614	SINCOS7		CL	A	04146	11000	00000		
.	C3615			CL	W(B61	04147	16036	00000		
.	C3616			CL	W1+B61	04150	16036	00001		
.	C3617			EXIT		04151	61010	04054		

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CARDS	LI	IC	LABEL	TA STATEMENT	LOC	F	JKB	Y	NOTES
•	C3620		SINCOS10	2427630155	04152	24276	30155		2/P1 AT B29
•	C3621			1000000000	04153	10000	00000		1.0 AT B27
•	C3622		SINCOS11	3110375522	04154	31103	75522		K1 AT B28
•	C3623			5325041750	04155	53250	41750		K3 AT B29
•	C3624			0506321276	04156	05063	21276		K5 AT B30
•	C3625			7731554634	04157	77315	54634		K7 AT B31
•	C3626			0002366574	04160	00023	66574		K9 AT B32
•	C3627		SINCOS20	0	04161	00000	00000		X HERE AT B29
•	C3630			0	04162	00000	00000		Y EQ X*2 AT B29
•	C3631		COS	ENTRY	04163	61000	00000		
•	C3632			ENT Q•L(COS)	04164	10010	04163		
•	C3633			STR O•L(SIN)	04166	14010	04054		SET EXIT ADDRESS
•	C3634			ENT A•L(B4)	04166	11014	00000		
•	C3635			COM A•37764•YLESS	04167	04500	37764		TEST EXPONENT GTR 2EXP-13
•	C3636			JP SINCOS8	04170	61000	04202		MO, SET COS(X) EQ 1.0
•	C3637			COM A•40034•YMORE	04171	04700	40034		TEST EXPONENT TOO LARGE
•	C3640			JP \$•STOP	04172	61400	04172		YES
•	C3641			ENT A•1	04173	11000	00001		
•	C3642			STR A•L(SINCOS2+1)	04174	15010	04101		
•	C3643			ENT A•W(1+B4)•APOS	04175	11834	00001		
•	C3644			CP A•AZERO	04176	15440	00000		\$ARG\$ IN A
•	C3645			JP SINCOS1•ANOT	04177	60500	04070		
•	C3646			ENT Q•A	04200	10070	00000		
•	C3647			JP SINCOS1	04201	61000	04070		
•	C3650		SINCOS8	ENT A•40001	04202	11000	40001		COS(X) EQ 1.0
•	C3651			STR A•W(B6)	04203	15036	00000		
•	C3652			ENT A•W(SINCOS10+1)	04204	11030	04153		
•	C3653			STR A•W(B6+1)	04205	15036	00001		
•	C3654			EXIT	04206	61010	04163		

END OF LISTING

ADAMS-ASSOC-JULY65

PPKG

LABEL	LOC	LABEL	LOC	LABEL	LOC
A\$S\$S\$1111	03303	A\$S\$S\$1112	03277	ADOS	03650
ACOS1	03667	ACQAZIM	63071	ADCELEV	03075
ACQU1	63427	ACTUALTIME	63142	ADDFL	03337
ADO	02600	ADSCN	63416	ABRR	03333
AERR1	03273	AERR2	03313	AESCN	63417
ALNGOFFSET	63517	AQR	02723	ARCOFAZIM	63524
ARCOFUEC	63526	ARCOFELEV	63522	ARCOFRA	63530
ASIN	03444	ASIN1	03466	ASIN2	03530
ASIN3	03534	ASIN4	03618	ASIN5	03622
ASINK	03632	ASINP	03641	ASINQ	03645
ASTRODEC	63106	ASTORA	63105	ATAN	03122
ATAN1	03130	ATAN2	03142	ATAN3	03163
ATAN5	03174	AUPEQUAT	63341	AZELOTIME	63532
AZELBXSCAN	63500	AZIM	63058	AZIMOFFSET	63512
AZIMOUT	64000	AZIMOVER	63325	AZIMADD	63442
AZIMIN	75000	AZMTHSCAN	63501	BODYSIZE	63462
BOTLINE	00672	BOTMARG	00670	BETA	02233
BINOCFLD	01360	BINOCFLD1	01364	BINOCFLD2	01365
BINOCFLD3	01374	BINDECFA	01376	BINDECFA1	01406
BINDECFA2	01407	BINDECINT	01327	BINDECINT1	01341
BINDECINT2	01342	BINDECINT3	01357	BINDECINT4	01355
BITS	02227	BLASTOFF	63146	COCON	63414
COFF1	01435	COFF1X	01421	COFFTEM1	01453
COFFTEM2	01454	COFRND	01516	COFRND1	01527
COFRND10	01613	COFRND11	01616	COFRND2	01531
COFRND3	01533	COFRND4	01537	COFRND41	01542
COFRND5	01545	COFRND51	01556	COFRND52	01562
COFRND6	01565	COFRND7	01570	COFRND8	01575
COFRND81	01604	COFRND9	01607	COFXSTOR	01455
CONVERTIME	63135	CORCT	63420	COS	04163
COSORIENT	63065	COSAZEL	63070	COT1	01742
COT11	01753	COT2	01768	COT3	01766
COT4	01776	COT5	02001	COT6	02010
COT7	02021	COTFLT	01718	COTNEG1	02060
COTNEG11	02072	COTNEG2	02102	COTNEG3	02105
COTNEG4	02115	COTNEG5	02128	COTXT	02052
COUNT	04053	CAZIM	63060	CELBODY	63113
CELCOMPGM	63424	CELEV	63061	CELTIME	63133
CHARNO	01170	CHCOR	63422	CHPAR	63431
GRANGE	63057	CRSROFFSET	63516	DOPPOBT	66000
DOPPAD	63444	DATANALYZE	63425	DAY	63150
DEC	63003	DECOFFSET	63515	DECOOT	63010
DECLINSCAN	63505	DELTATEE	6316	DIV	02661
OSECONDS	63141	DUMSECTTG	63154	DVOFL	03345
DYDMP	63421	EFP	02566	ELEV	63054
ELEVOFFSET	63513	ELEVOUT	65000	ELEVADD	63443
ELEVIN	76000	ELVTNSCAN	63502	EQUATOR	63323
ERR	03330	ERR10	03362	ERR11	03347
ERR12	03350	ERR13	03352	ERR14	03353
ERR15	03355	ERR16	03356	ERR16A	03360
ERR17	03363	ERR2	03414	ERR20	03365

LABEL	LOC	LABEL	LOC	LABEL	LOC
ERR21	03367	ERR22	03371	ERR23	03373
ERR24	03375	ERR25	03377	ERR26	03401
ERR27	03403	ERR3	03415	ERR30	03425
ERR31	03427	ERR32	03431	ERR33	03433
ERR34	03435	ERR35	03437	ERR4	03417
ERR40	03405	ERR5	03420	ERR6	03422
ERR7	03423	ESTSHIFTED		EXP	03202
EXPONENT	02237	EXPI	63143	EXP10	03261
EXP2	03217	EXP3	03222	EXP4	03224
EXP5	03236	EXP6	03246	EXP7	03256
EXPNAME	63350	EXP8	03246	FIRSTELEV	63104
FIRSTTHRU	63153	EXP9	03246	FLATTELEV	63104
FLTOFX1	02771	FLATTENING	63337	FLTOFX	02755
FLTOFX2	02771	FLTOFX2	02774	FLTPFT	02541
FPI	02550	FLOFX2	02774	FPS	02552
FP6	02553	FP4	02551	FRACTION	02240
FPSTOP	03326	FP7	02554	FRAMESIZE	63101
FREQUENCY	63317	FRACTON	02235	FRAMESTRT	02747
GAMMA	02232	FXCODE	02230	FXTOFL	63321
GETADD	00727	GEOCENLAT	63322	GMTDELTA	63144
HOLDNDHOLD	63511	GEOCENLON	63145	GMTSHIFTED	63151
HEIGHT	63326	GMTMINUTE	63137	HOURREG	02222
IDEXPONENT	02245	HERE	03456	HIBIT	02241
ID1ORADIO	66777	I0FRACTION	02243	I0INTEGER	67777
ID1SRADIO	70775	ID11RADIO	02243	ID12RADIO	71776
ID16RADIO	71777	ID14RADIO	70776	ID15RADIO	72777
ID19RADIO	73776	ID17RADIO	72776	ID18RADIO	63410
IDRADCOR	63050	ID18RADIO	63000	ID19RADIO	63410
IDISYSENT	77576	ID19RADIO	63440	ID1SYSPAR	63310
IDTIME	63130	ID1SYSNAM	77576	ID1SYSPAR	63310
ID22RADIO	74777	ID20RADIO	73777	ID21RADIO	74776
ID25RADIO	76775	ID23RADIO	75776	ID24RADIO	75777
ID2ENTPNT	63411	ID26RADIO	76776	ID25RADIO	66301
ID2RECD	63211	ID26RADIO	76776	ID26RADIO	63441
ID2SYSPAR	63311	ID2ADRCOR	63051	ID27RADIO	77677
ID4RADIO	63777	ID2SYSTEM	77577	ID28RADIO	63776
ID7RADIO	65776	ID2TIME	63131	ID29RADIO	64776
INAZIMADD	63446	ID5RADIO	64776	ID30RADIO	66776
INTER	63413	ID8RADIO	65777	ID31RADIO	66776
INTERDOPP	74000	INELEVADD	63447	ID32RADIO	66776
INTERFERENCE	76777	INTERAZIM	72000	ID33RADIO	66776
LOGE	03673	INTERLEVE	73000	ID34RADIO	66776
LOGE2	03764	KMPERNM	63342	ID35RADIO	66776
LOGEF	04016	LOGE1	03727	ID36RADIO	66776
LOGER	04004	LOGE3	04000	ID37RADIO	66776
LAYUPI MT	00202	LOGE4	04000	ID38RADIO	66776
LINCNT	00673	LOGK	04026	ID39RADIO	66776
MAINSWITCH	63334	LOGS	04036	ID40RADIO	66776
MILLSINADD	63451	LAYOUTSTR	00766	ID41RADIO	66776
MPL	02647	LSPERAU	63336	ID42RADIO	66776
MTEIN10	02206	MCPFILLER	71000	ID43RADIO	66776
MTEIN2	02172	MNREG	63152	ID44RADIO	66776
		MSREQ	63332	ID45RADIO	66776
		MTEIN1	02210	ID46RADIO	66776
		MTEIN2	02210	ID47RADIO	66776
		MTEIN3	02214	ID48RADIO	66776
				ID49RADIO	66776
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				ID98RADIO	66776
				ID99RADIO	66776
				ID100RADIO	66776

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PPKG

LABEL	LOC	LABEL	LOC	LABEL	LOC
MTEN36	02216	MTEN4	02176	MTEN5	02200
MTEN50	02220	MTEN6	02202	MTEN7	02204
MTR	02633	MTR1	02634	NEG	02714
NIL	00000	NMPERAU	63340	POCT	00056
POCTA	00073	POCTB	00103	POCTERR	00107
POCTERR1	00113	POLE	63324	POS	02616
POM14	03443	PACK8UFF	02250	PAGESIZE	00102
PASTOR	01254	PBLANK	00237	PBLANK05	00253
PBLANK1	00262	PBLANK2	00272	PBLANK05	00300
PBLANK4	00303	PBLANK5	00304	PBLANK6	00305
PBUF	02337	PCOLIN	00335	PCOLINI	00344
PCOLIN1A	00353	PCOLIN2	00356	PCOLIN3	00362
PCOLIN4	00363	PCOLIN5	00364	PCOLR	00306
PCOLR1	00315	PCOLR2	00328	PCOLR3	00326
PCOLR4	00332	PCOLR5	00338	PCOLRG	00334
PCOLUMN	00666	PENTA	00723	PENTRY	00706
PERIODAZIM	63523	PERIODDEC	63525	PERIODELEV	63521
PERIODRA	63527	PERR01	01317	PERR015	01323
PERR04	01314	PERR08	01325	PERR09	01326
PERR0R	01256	PERR0R2	01266	PEXTINT	00665
PFORASTOR	00500	PFORBSTR	00476	PEFORM	00411
PFORMERR	00474	PFD	00175	PEDA	00207
PFOB	00216	PFOC	00225	PFERR	00232
PFERR1	00236	PPIX	00114	PPIX8	00125
PPIX	00140	PPIXO	00150	PPIXERR	00166
PPIXERR1	00173	PPIXERR2	00174	PPIXERRA	00167
PPIXF	00161	PFOAT	01622	PFLTA	01631
PFLB	01700	PFLERR	01704	PFLERR1	01711
PFLERR4	01712	PFLTERRA	01705	PFRACA	01203
PFRACR	01223	PFRACERR	01220	PFRACERR1	01225
PFRACSTOR	01171	PIMASE	00365	PIMAGE1	00404
PIMAGE2	00407	PIMAGE3	00410	PINT	00000
PINTB	00024	PINTC	00033	PINTERR	00050
PINTERR1	00054	PINTERR2	00055	PINTERRA	00051
PINTEXT	00042	PLOTP	63436	PLANP	63434
PLAYB8TOR	00760	PLAYUP	00730	PLAYUPA	00744
PLAYUPR	00755	PQSTOR	01255	PREGION	02251
PRESTORE	01241	PREVIOUS1M	63461	PRINTWD	00674
PRLOG	63423	PRSCRIB	00576	PSAVE	01226
PSCASTOR	00677	PSCQSTOR	00700	PSCRASTOR	00663
PSCRBUF	00562	PSCRIB	00501	PSCRIBA	00511
PSCRIBB	00516	PSCRIB	00675	PSCRIBD	00676
PSCRIBERR	00610	PSCRIBF	00528	PSCRIBG	00572
PSCRIBH	00525	PSCRIBI	00548	PSCRIBJ	00540
PSCRIBSS	00620	PSCRIBSSA	00703	PSCRIBSSB	00704
PSCRIBSSC	00705	PSCRIBSSW	00545	PSCRIBSSJ	00540
PSCRQSTOR	00664	PSCSAVE	00661	PSCRINT	00643
PUNCH	03004	ROTATEA8X	63507	PSDSAVE	00662
ROTATER08X	63510	RA	63002	ROTATERADN	63506
RADOT	63007	RADARMODE	63312	RAOFFSET	63514
RADECOTIME	63531	RAOIDE	63541	RADCBXSCAN	63503
				RADIOMETER	63102

SPURT OUTPUT NO. 211

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PPKG

LABEL	LOC	LABEL	LOC	LABEL	LOC
RADTORA	63540	RADTUS	63006	RADIUSDOT	63011
RANGE	63052	RANGEOUT	70777	RANGEADD	63445
RANGEDOT	63062	RASCTNSCAN	63504	RDTR	63430
ROXXX	63433	RECOROSIZE	63112	RECAZIM	67000
RECELEV	70000	RECFILE	63212	RECD	63415
RECROSWTCH	63155	RELEASESW	63156	RZERO	03025
SAVE	04052	SAZIM	63055	SBOFL	03341
SELETIME	63134	SCL	02701	SCL1	02741
SCL2	02742	SOEC	63006	SECONDS	63140
SELEV	63056	SET	02745	SEVENTYONE	02226
SFT	02626	SFT1	02627	SIDERTIME	63012
SIGN	02236	SIN	04054	SINORIENT	63064
SINAZEL	63066	SINCOS1	04070	SINORIENT	63064
SINCOS11	04154	SINCOS2	04100	SINCOS10	04152
SINCOS6	04134	SINCOS7	04146	SINCOS20	04161
SINTEMP	02133	SIXTIES	02231	SINCOS8	04202
SIXTYFIVE	02224	SKIP	63331	SIXTY	02223
SQR1	03101	SQR2	03106	SQR	03030
SQR4	03116	SQR3	03112	SQR3	03112
SRADTIME	63136	SORT1	03077	SRA	63004
STATUS	00702	STARTREAO	03441	STATSTOR	00701
SUPZRU	01457	SUB	02637	SUPBSTOR	01513
SUPZRO3	01501	SUPZRO1	01470	SUPZRO2	01471
SYNCTIMING	63542	SUPZROW	01506	SUPZRO5	01512
SYSCOMREG3	63454	SYSCOMREG1	63452	SYSCOMREG2	63453
SYSCOMREG6	63457	SYSCOMREG4	63456	SYSCOMREG5	63456
SYSTAT1	63313	SYSENTRIES	77600	SYSNAMES	77700
TOPLINE	00671	SYSTAT2	63314	SYSTATD	63315
TEN10	02154	TEN	02134	TEN1	02136
TEN2	02140	TEN11	02156	TEN2	02160
TEN36	02164	TEN24	02162	TEN3	02142
TEN50	02166	TEN4	02144	TEN5	02146
TIMECORR	63107	TEN6	02150	TEN7	02152
TIMEOHOLO	63520	TIMEOOE	63108	TIMEP	63435
TTYSTATUS	63111	TRUERANGE	63063	TRUETIME	63132
TYPE	03002	TWOSECOOP	63017	TWENTYSIXS	00667
VIZOEC1	63014	UNPACKBUFF	02247	VELOFLIGHT	63335
VIZRA2	63015	VIZOEC2	63016	VIZRA1	63013
WFFREQ	63333	WFORO	63432	WFADD	63450
WS10	03016	WS	03006	WS1	03007
WS13	03021	WS11	03017	WS12	03020
WS16	03024	WS14	03022	WS15	03023
WS4	03012	WS2	03010	WS3	03011
WS7	03015	WS5	03013	WS6	03014
ZERO	02736	YEARMONTH	63147	YRTRAN	63327
		ZRTRAN	68330		

END OF LISTING

ADAMS-ASSOC*1 JULY65

LABEL	LOC	LABEL	LOC	LABEL	LOC
PINT	00000	NIL	00000	PINTB	00024
PINTC	00033	PINTEXT	00042	PINTERR	00050
PINTERR	00051	PINTERR1	00054	PINTERR2	00055
POCT	00056	POCTA	00078	PAGESIZE	00102
POCTR	00103	POCTERR	00107	POCTERR1	00113
PPIX	00114	PPIXB	00126	PPIXC	00140
PPIXD	00150	PPIXF	00161	PPIXERR	00166
PPIXERRA	00167	PPIXERR1	00178	PPIXERR2	00174
PFD	00175	LAYUPLMT	00202	PFOA	00207
PFOB	00216	PFOC	00226	PFDERR	00232
PFDERR1	00236	PBLANK	00237	PBLANK05	00253
PBLANK1	00262	PBLANK2	00272	PBLANK3	00300
PBLANK4	00303	PBLANK5	00304	PBLANK6	00305
PCOLR	00306	PCOLR1	00316	PCOLR2	00323
PCOLR3	00326	PCOLR4	00332	PCOLR5	00333
PCOLRG	00334	PCOLIN	00336	PCOLIN1	00344
PCOLIN1A	00353	PCOLIN2	00356	PCOLIN3	00362
PCOLIN4	00363	PCOLIN5	00364	PIMAGE	00365
PIMAGE1	00404	PIMAGE2	00407	PIMAGE3	00410
PFORM	00411	PFORMERR	00474	PFORBSTR	00476
PFORASTOR	00500	PSCRIB	00501	PSCRIBA	00511
PSCRIBB	00516	PSCRIBF	00528	PSCRIBH	00525
PSCRIBJ	00540	PSCRIBI	00543	PSCRIBSW	00545
PSCRIBUF	00562	PSCRIBG	00572	PSCRIBC	00575
PSCRIBERR	00610	PSCRIBSS	00620	PSCRINT	00643
PSCSAVE	00661	PSCSAVE	00662	PSCRASTOR	00663
PSCRQSTOR	00664	PEXTINT	00665	PCOLUMN	00666
TWENTYSIXS	00667	BOTMARG	00670	TOPLINE	00671
BOTLINE	00672	LINCNT	00678	PRINTWD	00674
PSCRIRC	00675	PSCRIBO	00676	PSCASTOR	00677
PSQSTOR	00700	STATSTOR	00701	STATUS	00702
PSCRIBSSA	00703	PSCRIBSSB	00704	PSCRIBSSC	00705
PENTRY	00706	PENTA	00723	GETADD	00727
PLAYUP	00730	PLAYUPA	00744	PLAYUPB	00755
PLAYBSTOR	00760	LAYUPSTOR	00765	CHARNG	01170
PFRACSTOR	01171	PERACA	01203	PERACERR	01220
PFRACB	01223	PRACERR1	01226	PSAVE	01226
PRESTORE	01241	PASTOR	01254	POSTOR	01255
PERRORR	01256	PERRORR2	01266	PERRORR4	01314
PERROR1	01317	PERROR15	01328	PERRORB	01325
PERROR9	01326	BINDECINT1	01327	BINDECINT1	01341
BINDECINT2	01342	BINDECINT4	01356	BINDECINT3	01357
BINOCTFLO	01360	BINOCTFLO1	01364	BINOCTFLO2	01365
BINOCTFLO3	01374	BINOECFRA	01376	BINOCTFLO3	01406
BINDECFA2	01407	COFFIX	01421	COFFI	01435
COFFTEM1	01453	COFFTEM2	01454	COFFXSTOR	01455
SUPZRO	01457	SUPZRO1	01470	SUPZRO2	01471
SUPZRO3	01501	SUPZRO4	01506	SUPZRO5	01512
SUPBSTOR	01513	COFRND	01516	COFRNO1	01527
COFRND2	01531	COFRND3	01533	COFRNO4	01537
COFRND4	01542	COFRND5	01545	COFRNO5	01555

SPURT OUTPUT NO. 212

PPKG			AOAMS-ASSOC*1 JULY65		
LABEL	LOC		LABEL	LOC	
COFRND52	01562		COFRND6	01566	COFRND7
COFRND8	01575		COFRND81	01604	COFRND9
COFRND10	01613		COFRND11	01616	PFL0AT
PFLTA	01631		PFLTB	01700	PFLTERR
PFLTERRA	01705		PFLTERR1	01711	PFLTERR4
COTFLT	01713		COT1	01742	COT11
COT2	01763		COT3	01766	COT4
COT5	02001		COT6	02010	COT7
COTXT	02052		COTNEG1	02060	COTNEG11
COTNEG2	02102		COTNEG3	02105	COTNEG4
COTNEG5	02123		S1NTEMP	02138	TEN
TEN1	02136		TEN2	02140	TEN3
TEN4	02144		TEN5	02146	TEN6
TEN7	02152		TEN10	02154	TEN11
TEN12	02160		TEN24	02162	TEN36
TEN50	02166		MTEN1	02170	MTEN2
MTEN3	02174		MTEN4	02176	MTEN5
MTEN6	02202		MTEN7	02204	MTEN10
MTEN11	02210		MTEN12	02212	MTEN24
MTEN36	02216		MTEN50	02220	M181T
SIXTY	02223		SIXTYFIVE	02224	M6L
SEVENTYONE	02226		B1T5	02227	FXCOOE
SIXTIES	02231		GAMMA	02232	BETA
INTEGER	02234		FRACTION	02235	SIGN
EXPONENT	02237		FPFRACTION	02240	IOINTEGER
IOFRACTION	02243		IOEXPONENT	02245	EXPSIGN
UNPACKBUFF	02247		PACKBUFF	02250	PREGION
PRUF	02237		FLTPT	02541	FP1
FP4	02551		FP5	02552	FP6
FP7	02554		EF	02556	A00
POS	02616		SFT	02626	SFT1
MTR	02633		MTR1	02634	SUB
MPL	02647		DIV	02661	SCL
NEG	02714		AOR	02723	ZERO
SCL1	02741		SCL2	02742	SET
FXTOFL	02747		FLTOFX	02757	FLTOFX1
FLTOFX2	02774		TYPE	03002	PUNCH
WS	03006		WS1	03007	WS2
WS3	03011		WS4	03012	WS5
WS6	03014		WS7	03015	WS10
WS11	03017		WS12	03020	WS13
WS14	03022		WS15	03023	WS16
RZERO	03025		SOR	03030	SORT1
SQR1	03101		SOR2	03106	SQR3
SQR4	03116		ATAN	03122	ATAN1
ATAN2	03142		ATAN3	03163	ATAN5
EXP	03202		EXP1	03212	EXP2
EXP3	03222		EXP4	03224	EXP5
EXP6	03245		EXP7	03256	EXP10
AERR1	03273		A\$\$\$1112	03277	A\$\$\$1111
AERR2	03313		FPSTOP	03326	ERR
					03330

.....			SPURT DUTPUT NO. 212					
PPKG			ADAMS-ASSOC*1 JULY65					
LABEL	LOC	LABEL	LOC	LABEL	LOC	LABEL	LOC	LABEL
AERR	03333	ADOFI	03337	SBOFL	03341			
MLOFL	03343	DVOFL	03345	ERR11	03347			
ERR12	03350	ERR13	03352	ERR14	03353			
ERR15	03355	ERR16	03356	ERR16A	03360			
ERR10	03362	ERR17	03363	ERR20	03365			
ERR21	03367	ERR22	03371	ERR23	03373			
ERR24	03375	ERR25	03377	ERR26	03401			
ERR27	03403	ERR40	03405	LERR	03407			
ERR2	03414	ERR3	03415	ERR4	03417			
ERR5	03420	ERR6	03422	ERR7	03423			
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PPKG

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ELEVOUT	65000	ID7RAOIO	65776	IO8RADIO	65777
OOPPOUT	66000	IO9RAOIO	66776	IOIORADIO	66777
RECELEV	70000	ID11RAOIO	67776	ID12RADIO	67777
RANGEOUT	70777	ID13RAOIO	70776	ID14RADIO	70776
IO16RADIO	71777	MCPFILLER	71000	IO15RADIO	71776
IO18RADIO	72777	INTERAZIM	72000	ID17RADIO	72776
ID20RAOIO	73777	INTERELEV	73000	ID19RADIO	73776
ID22RAOIO	74777	INTERDOPP	74000	ID21RADIO	74776
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ID2SYSNAM	77677	SYSENTRIES	77600	IO1SYSNAM	77676
		SYSNAMES	77700		

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The Printer Package is a set of general-purpose routines for: converting internally-stored numbers either in floating point, fixed point, integer, or octal form or alphanumeric strings to an output form suitable for printing; controlling format; and printing the output form. A user program by means of simple calling sequences can print virtually any information it has in a suitable form. The Printer Package and the user program are compiled together.		
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