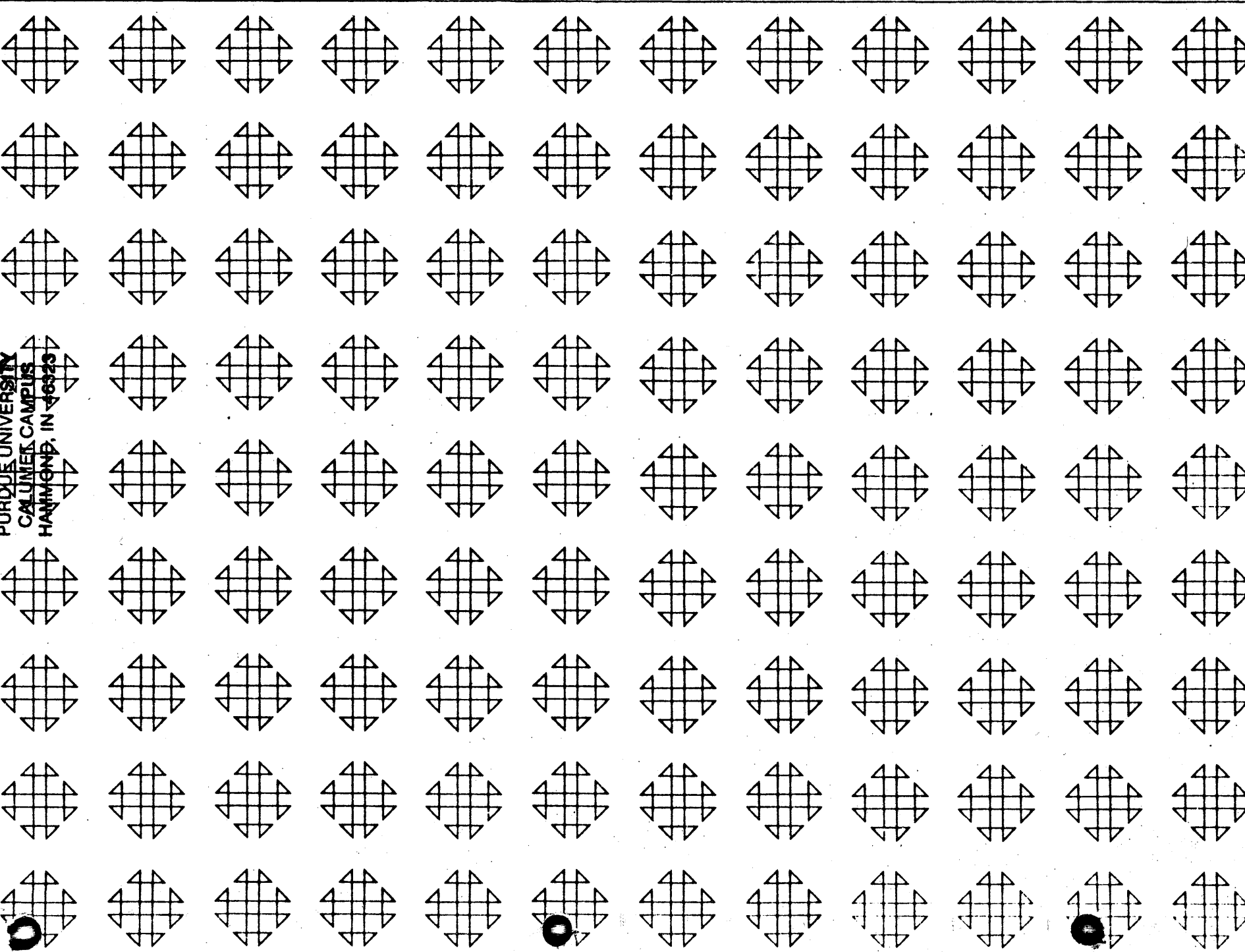


COMPUTER  
TECHNOLOGY

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1620  
2.0.059

Correction  
July 20, 1967

Attached are corrected pages 2 and 169 for the subject program. These pages have been prepared to allow you to replace these sheets in your writeup affected by this correction.

Replacement of the program card decks have also been made.

COMMON USERS GROUP PROGRAM REVIEW AND EVALUATION  
(fill out in typewriter, ink or pencil)

Program No. \_\_\_\_\_

Date \_\_\_\_\_

Program Name: \_\_\_\_\_

1. Does the abstract adequately describe what the program is and what it does? Yes \_\_\_ No \_\_\_  
Comment \_\_\_\_\_
2. Does the program do what the abstract says? Yes \_\_\_ No \_\_\_  
Comment \_\_\_\_\_
3. Is the description clear, understandable, and adequate? Yes \_\_\_ No \_\_\_  
Comment \_\_\_\_\_
4. Are the Operating Instructions understandable and in sufficient detail? Yes \_\_\_ No \_\_\_  
Comment \_\_\_\_\_  
Are the Sense Switch options adequately described (if applicable)? Yes \_\_\_ No \_\_\_  
Are the mnemonic labels identified or sufficiently understandable? Yes \_\_\_ No \_\_\_  
Comment \_\_\_\_\_
5. Does the source program compile satisfactorily (if applicable)? Yes \_\_\_ No \_\_\_  
Comment \_\_\_\_\_
6. Does the object program run satisfactorily? Yes \_\_\_ No \_\_\_  
Comment \_\_\_\_\_
7. Number of test cases run \_\_\_\_\_. Are any restrictions as to data, size, range, etc. covered adequately in description? Yes \_\_\_ No \_\_\_  
Comment \_\_\_\_\_
8. Does the Program meet the minimal standards of COMMON? Yes \_\_\_ No \_\_\_  
Comment \_\_\_\_\_
9. Were all necessary parts of the program received? Yes \_\_\_ No \_\_\_  
Comment \_\_\_\_\_
10. Please list on the back any suggestions to improve the usefulness of the program. These will be passed onto the author for his consideration.

Please return to:

IBM Corporation  
Program Information Department  
40 Saw Mill River Road  
Hawthorne, New York 10532  
Attn: PREP FORM COORDINATOR

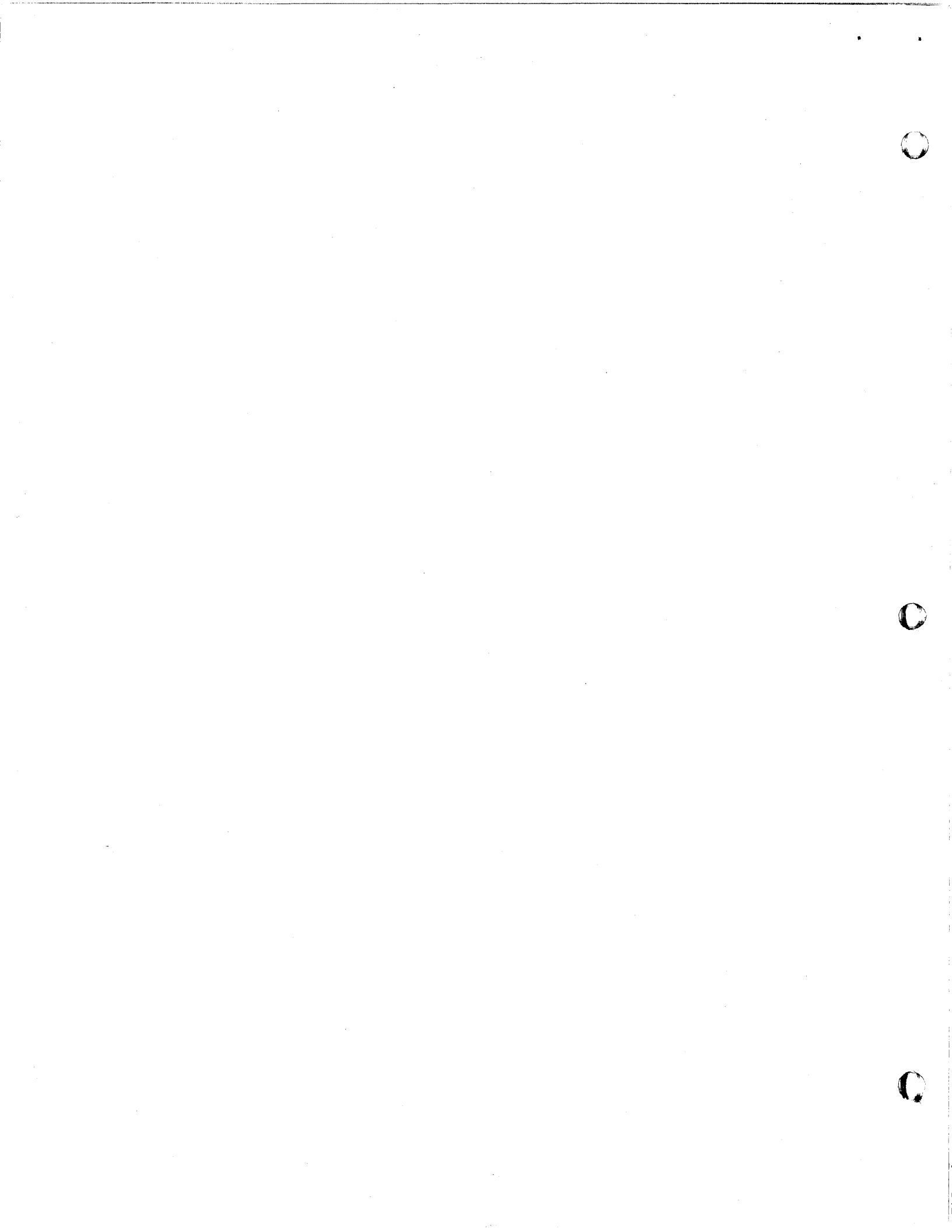
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Company \_\_\_\_\_  
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Users Group Code \_\_\_\_\_

THIS REVIEW FORM IS PART OF THE COMMON ORGANIZATION'S PROGRAM REVIEW AND EVALUATION PROCEDURE. NONMEMBERS ARE CORDIALLY INVITED TO PARTICIPATE IN THIS EVALUATION.

2/2/67

11





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PROGRAM ABSTRACT

1. TITLE (If subroutine, state in Title): C4D (An Operating System for PDQ Fortran)  
Subject Classification: 2.0 Operating System
2. Author; Organisation: Grant, Lilly, McAteer - J & L Steel Corporation,  
Maskiell, Powell - Pennsylvania Transformer Division.  
Date: 1 - 20 - 67 Users Group Membership Code: 3081
3. Direct Inquiries to Name: Frank H. Maskiell, Pennsylvania Transformer Division,  
Box 330, Canonsburg, Pa. Phone: 412-745-9100 (205)
4. Description/Purpose: (5. Method; 6. Restriction/Range; When Applicable);  
C4D is a PDQ Fortran operating system providing batch processing, a mixed group of Fortran compilation and execution runs. It permits storage of programs and data on one or more 1311 disk drives. Segmentation of programs is possible. The system contains very comprehensive error checking. The operating system resides on the disk and occupies less than 5% of a single disk. A 1443 Printer may be used for output if available but is not required for the use of the system.
7. Specifications (Check or fill in appropriate spaces):
- a. Storage used by program: The system occupies the last 5 cylinders of the disk.
- b. Equipment required by program: Object Fortran programs commence at 07650.  
Card System X ; Magnetic Tape System \_\_\_\_\_ ; No. of Tapes \_\_\_\_\_ ;  
Paper Tape System \_\_\_\_\_ ; Disk File System X ; No. of Packs 1 ;  
TNS, TNF, MF X ; Auto divide X ; Indirect addressing X ; Floating point hardware \_\_\_\_\_ ;  
Other (specify) System will adjust for any memory size. Additional disk drives may be used if available.  
Can program be used on lesser Machine? NO . Specify which requirements can be easily removed \_\_\_\_\_
- c. Programming type (Check appropriate spaces):  
Fortran without Format \_\_\_\_\_ ; Fortran with Format \_\_\_\_\_ ;  
Fortran II \_\_\_\_\_ ; Mainline, Complete \_\_\_\_\_ ; Subroutine or function subprogram(S or F) \_\_\_\_\_ ;  
Is the program a library (ie, SPS) function to the Fortran system checked? \_\_\_\_\_ ;  
SPS \_\_\_\_\_ ; SPS - 1620/1710 \_\_\_\_\_ ;  
Mainline, Complete \_\_\_\_\_ ; Macro \_\_\_\_\_ ; Subroutine \_\_\_\_\_ ;  
Other programming language: \_\_\_\_\_ ; Give details \_\_\_\_\_
- d. Language used in the writeup: The entire system has been written in AFIT SPS 1.1.023
8. Additional Remarks: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

C4D

An Operating System Built Around PDQ

by

Jean Grant,<sup>1</sup> Gordon Lilly,<sup>2</sup> Frank Maskiell,<sup>3</sup>  
Mary Lynn McAteer,<sup>4</sup> Lawrence Powell<sup>5</sup>

ABSTRACT

C4D is a PDQ operating system for the IBM 1620. It provides for batch processing a mixed group of compilation and execution runs. It permits storage of program and data on one or more 1311 disk drives. Segmentation of programs is possible under C4D. The system contains very comprehensive error checking.

ACKNOWLEDGMENTS

The authors gratefully acknowledge the contributions of many friends and colleagues:

John Burgeson of IBM whose FORTRAN II DIAGNOSTICIAN provided the original basis for the C4D diagnostic routine; James Taylor for a faster routine for the compiler symbol table scan; Dick Pratt for his preliminary version of DATA SPS which was used exclusively in assembling the system; Manfred Fliess and Joseph Smith for contributions to the sample procedures; John Holmes, Stewart Lee and James Field, and Donald Jardine for their suggestions built into the original PDQ; Jack O'Keefe for the REREAD feature; Jim Deck, Jack Imbertson, and Bob Humbrecht for testing the early version of the system and suggesting improvements.

1. Junior Research Mathematician, Jones & Laughlin Steel Corporation
2. Research Supervisor, Jones & Laughlin Steel Corporation
3. Computer Supervisor, Pennsylvania Transformer Division of the McGraw Edison Company
4. Research Physicist, Jones & Laughlin Steel Corporation
5. Scientific Programmer, Pennsylvania Transformer Division of the McGraw Edison Company.

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DECK LABELS

DECK 1      SYSTEM DECK      CARDS NUMBERED IN COLUMNS 1-5

IDENTIFIER - CARD CONTENTS

1ST 3 CARDS - (NOT SEQUENTIALLY NUMBERED)

(A) TURN OFF INDEX REGISTERS

(B) TURN ON INDIRECT ADDRESSING

(D) READ NEXT CARD

00000-..... - LOADS LOADER INITIALIZATION

00001-00026 - LOADER INITIALIZATION

00997-..... - CAUSES BRANCH INTO LOADER INITIALIZATION

00998-..... - C4D COLD START CARD

00999-..... - LOADS EXECUTIVE TO CORE

01001-01155 - EXECUTIVE ROUTINE

01999-..... - CAUSES BRANCH TO EXECUTIVE INITIALIZATION,  
CONTAINS EXEC MINUS DISK TABLE DISK CONTROL FIELD

02001-02109 - CLASS-A SUBROUTINES

02999-..... - CAUSES BRANCH TO CLASS A INITIALIZATION,  
CONTAINS CLASS A SUBS DISK CONTROL FIELD

03001-03064 - SCAN ROUTINE

03999-..... - CAUSES BRANCH TO SCAN INITIALIZATION,  
CONTAINS SCAN DISK CONTROL FIELD

04001-04244 - DIAGNOSTICIAN I

04999-..... - CONTAINS DIAG. I DISK CONTROL FIELD

05001-05029 - DIAGNOSTICIAN II

05999-..... - CONTAINS DIAG. II DISK CONTROL FIELD

06001-06096 - LABEL INDEX ROUTINE

06999-..... - CONTAINS LABEL INDEX DISK CONTROL FIELD

07001-07251 - COMPILER I

07999-..... - CAUSES BRANCH TO COMPILE I INITIALIZATION,  
CONTAINS COMPILE I DISK CONTROL FIELD

08001-08029 - COMPILER II

08999-..... - CONTAINS COMPILE II DISK CONTROL FIELD

09001-09019 - ERROR SUBROUTINES

09997-09998 - CAUSES BRANCH INTO ERR SUBS INITIALIZATION,  
CONTAINS ERR SUBS DISK CONTROL FIELD

09999-..... - SERVES TO COLD START AFTER SYSTEM LOAD

\*DATE SYSTEM LOAD CARD

\*DISK CARD

\*SRS 16 CARD AND RELOCATABLE SUBROUTINE DECK

DECK 2      TEST DECK

## THE C4D OPERATING SYSTEM

### Introduction

C4D is an operating system built around an extended version of PDQ FORTRAN. It is written for the IBM 1620 with a 1311 disk file, indirect addressing, and the special instructions TNS, TNF, and MF. C4D will also utilize a second disk drive and the 1443 printer if these are available. It is self-adapting for any core size.

C4D consists of the following programs:

1. The statement scan routine
2. The diagnostic routine
3. The compiler routine
4. The class A subroutines
5. The relocatable subroutines
6. The label index routine
7. The executive routine.

The statement scan routine reads each source program statement, removes the blanks, determines the type of statement, and stores this information on the disk for later use by the diagnostic and compiler routines. After it has read the entire source program, it calls the diagnostic routine from the disk.

The diagnostic routine is a modified version of the 40K FORTRAN II Diagnostician. The modifications accommodate the differences in language between FORTRAN II and PDQ FORTRAN, permit the use of the 40K Diagnostician on a 20K machine, and incorporate the Diagnostician as a routine within C4D. If the diagnostic routine finds errors, it punches or prints error messages, lists the entire source program on the 1443 if available, and calls the executive routine from disk. If no errors are found in the program, the diagnostic routine calls the compiler.

The compiler routine is a modified version of the original C<sub>2</sub> processor for PDQ. Error messages have been eliminated as these are now handled by the diagnostician. ACCEPT and IF (SENSE SWITCH) statements have been eliminated as they have no place in an operating system designed for open shop programming and closed shop operation. DATA statements now permit initial values of variables to be defined at compile time. Iteration within input/output statements is now permissible. The ability to segment programs has been added to avoid core size limitation on program length. More symbols are permitted since the compiler routine occupies less core storage. The length of integer variables is now ten digits. This allows integer arithmetic in the comparison of alphanumeric fields. Finally, no object decks are produced, since C4D object programs are stored temporarily or permanently on the disk.

-2-

The class A subroutines are little changed from their PDQ ancestors. They now detect undefined symbols at run time and, in this event, provide a symbol table dump before they return control to the executive routine. The relocatable subroutines have real or integer values according to their initial letters. The LOG subroutine is now called ALOG since it is a real function. Eight new subroutines have been added to the original set of PDQ relocatables. They include a disk data routine, a link routine which calls another program from disk without destroying the contents of the COMMON area, and a random integer generator.

The label indexer provides an index of all statement, procedure, and segment labels and of all variable names. The index gives the source card number where the label or name is defined and the source card numbers where they are referenced. If the source cards are not numbered, the scan routine supplies sequential numbers.

The executive routine determines the nature of each job from a control card. It then loads the appropriate system routine or object program from disk. It acts as librarian for users programs on disk, it loads and relocates the relocatable subroutines, and it prints headings and dates for each job. Finally, it permits automatic exit from the system by loading another program not handled under the system.

Speed comparisons with other systems will be possible only after extended experience with C4D and will vary for different jobs and for different machine configurations. Unlike the IBM MONITOR system, C4D has no provision for assembly language programs and does not permit separate compilation of subprograms with local variable names, statement labels, and parameter lists. These limitations, however, must be balanced by important advantages for the installation which runs mainly FORTRAN programs. The system uses only 5% of the disk and the rest of the disk may be divided into program storage and working data storage to suit the needs of each particular installation. The comprehensive diagnostics at compile and run time are invaluable in debugging. Other advantages of C4D are the efficient use of core and the high speed of disk operations for program segmentation and data storage.

Documentation consists of the Users Manual and the Systems Manual. The Users Manual defines C4D as a programming language for users who have a basic knowledge of FORTRAN. It also includes operating instructions and a description of control cards and error messages. The Systems Manual is written for systems programmers who wish to correct or extend C4D or who are just curious about the construction of the system.

USERS MANUAL FOR C4D

Specifications of the C4D Language

Variables

Variable names may contain up to five alphameric characters and must start with a letter. Variables may be either integer-valued or real-valued.

1. Integer variables are ten decimal digits. Any variable whose name starts with the letters I,J,K,L,M, or N is an integer.

Integer addition, subtraction, and multiplication are performed modulo 10,000,000,000. This means that only the ten right-most digits are retained out of a possible twenty digit product. No error message is printed if an overflow occurs. The quotient of an integer division is converted to an integer by truncation.

Examples:  $(500,000 * 25,000) \text{ Mod } 10^{10} = 12,500,000,000 \text{ Mod } 10^{10}$   
 $= 2,500,000,000$   
 $5/2 \text{ Truncated} = 2.5 \text{ Truncated}$   
 $= 2$

2. Real variables have names with initial letters other than I,J,K,L,M,N. They are stored in the 1620 in excess-50 floating point form, that is with a two digit exponent and an eight digit fraction as follows:

$\bar{e}e\text{fffffff}$  represents  $0.\text{fffffff} * 10^{(ee-50)}$

Examples:  $\bar{5}131415927$  represents  $0.31415927 \times 10^1$  or pi

$\bar{4}910000000$  represents  $0.1 \times 10^{-1} = 0.01$

Zero is a special case and is stored as  $\bar{0}000000000$ . Thus a real variable V may have the following values:

$0.1 \times 10^{-49} \leq |V| \leq 0.99999999 \times 10^{49}$  or  $V = 0$

Arrays

Vectors and matrices may be stored, and their elements are addressed by means of integer subscripts.

Examples: X(I), Y(I,J), NAME(M), P(2)

A limited amount of arithmetic is permitted within the subscript parentheses. X(I-3) and Y(I+1, J+2) are permissible but X(2+I), X(2\*I), X(I+J), X(2\*I-3) are not.

The subscripts may have only strictly-positive values. X(0), Y(-3) will refer to some other variable or some element of another array. The array is stored in core by columns, with the first element in the highest numbered core location. A matrix B(I,J) with two row and two columns might therefore appear in core as follows:

<u>Core Location</u>	<u>Element</u>
18999	B(1,1)
18989	B(2,1)
18979	B(1,2)
18969	B(2,2)

Subroutines

Certain commonly used functions are available as subroutines. Other subroutines may be added to the system as described in Appendix 2. These subroutines are loaded relocatably into core only if they are called for by the program to be executed. Real functions have real arguments and integer subroutines have integer arguments. Functions are identified as real or integer by the initial letter of the subroutine name in the same way as variables.

The following table of the subroutines which are supplied with C4D includes their range and associated error messages. The subroutines may be addressed with or without a final F e.g. SIN(x) or SIN F(x).

- SIN/COS - evaluates sin(x) or cosine(x) when x is expressed in radians and  $X < 10^7$   
Error Message - TRIG if  $(x) \geq 10^7$   
Length - 718 digits
- EXP - evaluates  $e^X$   
Error Message - OFLO if  $e^X \geq 10^{50}$   
Length - 536 digits
- ALOG - evaluates  $\log_e(x)$  where  $x > 0$   
Error Message - OFLO if  $x = 0$ , ERLN if  $x < 0$   
Length - 582 digits

- 4. SQRT - evaluates  $\sqrt{x}$  when  $x \geq 0$   
Error Message - NSQR if  $x < 0$   
Length - 366 digits
- 5. ABS - evaluates  $|x|$   
Length - 38 digits
- 6. NABS - evaluates  $|n|$   
Length - 38 digits
- 7. ATAN - evaluates  $\arctan(x)$ . Result is in the range  $-\pi/2$  to  $\pi/2$   
Length - 846 digits
- 8. DRH - drops decimal digits of a real variable  
Length - 128 digits
- 9. NPR - generates equiprobable pseudo-random integers in the range 00000 to 99999. Different starting points in the sequence can be defined by different odd integer arguments. After the first execution of NPR the argument is ignored.  
Length - 208 digits
- 10. MOVE - MOVE(-1) reads a group of records from disk  
MOVE(0) seeks a group of records on disk  
MOVE(1) writes a group of records on disk

Further details are given under the heading Disk Storage of Data.

Error Messages - DISK indicates computer malfunction  
- TASK indicates programming error  
Length - 994 digits

- 11. MOD-MOD(N/M) evaluates  $N \text{ Mod } M$  i.e.  $(N-(N/M)*M)$   
Note: MOD in fact ignores the argument and picks up the remainder from the last executed division. Since this remainder is only erased by another divide, a multiply, a fix to float operation, or the use of a doubly subscripted variable, it is possible to use a dummy argument under certain circumstances.

Example:  $NLB = NOZ/16$   
 $NOZ = MOD(NOZ/16)$

can be replaced by the following more efficient statements:

$NLB = NOZ/16$   
 $NOZ = MOD(1)$

However, this trick would lead to error in the following case:

$NLB(I,4) = NOZ/16$   
 $NOZ = MOD(NOZ/16)$

Length - 14 digits

- 12. SAVE(C) - permits temporary storage of the contents of the input/output area. SAVE is used in conjunction with the REREAD statement.

SAVE(-1.) saves the contents of the I/O area  
SAVE(+1.) restores the contents of the I/O area

Error Message - SAVE if SAVE(+1.) is executed before SAVE (-1.)  
Length - 296 digits

- 13. LINK(N) - permits a program to call another program on the disk without zeroing the symbol table. The program so called is not protected against the use of undefined variables. The COMMON statement may be used to ensure that both programs refer to the same variable in the same location.

The argument N is the numeric representation of the name of the program called. N can be readily defined by the DATA statement.

Example:  $M = LINK(N)$

:  
:  
:  
DATA, N/5HPLOT1/  
END

will call the program PLOT1  
Length - 80 digits

- 14. NFIL(N) - converts an integer in the range  $0 \leq N \leq 99999$  into its alphanumeric form. Leading zeroes are converted to 00 and not 70. Example:  $K = NFIL(987)$  will set K equal to 0000797877

The major application of NFIL is to permit output of the value zero as a blank.  
Error Message - NFIL indicates out-of-range variable  
Length - 222 digits

- 15. NUPL(N) allows for additional printer carriage control by altering the class A subroutines as specified by the subroutine argument, N.

NUPL(1) suppresses skipping at the end of a page  
 NUPL(-1) restores skipping at the end of a page  
 NUPL(10) suppresses spacing when printing  
 NUPL(-10) restores spacing when printing

Error Message - NUPL if N = 0  
 Length - 170 digits

Storage of Subroutines

At run time, these routines are stored between the object program and the symbol table only if called for in the program. In this connection, the programmer should know how the \*\* operation is executed at run time:

T \* \* P (i.e. T to the power P) is interpreted as

EXP (P \* ALOG(T))

Therefore, if T is negative, an error message will result. This is reasonable because P can be fractional and FORTRAN does not handle complex numbers. If the programmer knows that P is an integer, he should define it as an integer, e.g. NP. T \* \* NP uses successive multiplication rather than the logarithmic procedure. If P is a small constant integer, e.g. 2, the programmer can save computer time and storage by writing T \* T.

Statement Card Format

Strict FORTRAN rules apply to statement card format.

1. A comment card must have a C in column 1.
2. The statement label, if any, must be right justified in columns 2 through 5 and be a positive integer in the range 1 through 9999. It may not contain leading zeroes and must be distinct from any other statement, procedure, or segment label.
3. Column 6 must contain a non-zero digit on any continuation card. Note, however, that continuation cards are only permissible in FORMAT and I/O statements. Furthermore, the card preceding a continuation card must end with a comma.
4. The statement text may only occupy columns 7 through 72. Record marks may not appear in the statement.
5. The cards may be numbered in columns 77-80. This number will appear in the 1443 listing of the source statements at compile time. If the first card of the source deck is not numbered, then a sequence number will be supplied for the 1443 listing.

Permissible Statements

A. Arithmetic Statements:

A = B op C etc.

Note: There is one known error in C4D inherited from FORTRAN (with FORMAT).

The statements

A = -B \* \* C or A = -B \* \* I

will compile as if they were

A = (-B) \* \* C or A = (-B) \* \* I

B. Control Statements:

1. GO TO n
2. GO TO (n<sub>1</sub>, n<sub>2</sub>, ..., n<sub>m</sub>), i
3. IF (a) n<sub>1</sub>, n<sub>2</sub>, n<sub>3</sub>,
4. DO n i = m<sub>1</sub>, m<sub>2</sub> or DO n i = m<sub>1</sub>, m<sub>2</sub>, m<sub>3</sub>
5. CONTINUE
6. PAUSE
7. STOP n
8. END
9. BEGIN TRACE F15.d or BEGIN TRACE E15.d
10. END TRACE

C. Input/Output Statements:

1. READ n, list
2. REREAD n, list
3. PUNCH n, list
4. PRINT n, list



- 5. TYPE n, list
- 6. CONTROL n

D. Declarative Statements:

- 1. COMMON
- 2. DIMENSION
- 3. FORMAT
- 4. DATA, name/value/name/value ... name/value/
- 5. SEGMENT n<sub>1</sub>, n<sub>2</sub>, n<sub>3</sub> ..., n<sub>k</sub>

E. Segment Statements:

- 1. BEGIN SEGMENT n
- 2. END SEGMENT n
- 3. CALL SEGMENT n

F. Procedure Statements:

- 1. BEGIN PROCEDURE n
- 2. RETURN n
- 3. END PROCEDURE n
- 4. EXECUTE PROCEDURE n

Differences from FORTRAN (with FORMAT)

IF(a) n<sub>1</sub>, n<sub>2</sub>, n<sub>3</sub>

Statement labels following the arithmetic expression in an IF statement may be replaced by C under the following conditions:

- 1. The statement referenced immediately follows the IF statement.
- 2. The statement is not referenced anywhere else in the program.

Example: IF(I) 1,2,1  
1 X(I) = I

can be written as follows

IF(I) C,2,C  
X(I) = I

By reducing the number of labeled statements this feature of C4D reduces the storage requirements of the symbol table.

PAUSE

With sense switch 3 on, PAUSE halts the computer. Execution of the program continues when START is pressed. With sense switch 3 off, PAUSE calls the executive without halting the computer. PAUSE should be used only following a TYPE statement which instructs the operator on machine set up.

STOP n

Prints STOP n and calls the executive routine which proceeds with the job specified by the next control card that it finds in the card read hopper.

END

Calls the executive.

TRACE

The results of arithmetic statements may be traced without the generation of any additional instructions. Replacement type statements, that is: A = B; C = D(K); I = J; will not be traced since no arithmetic operation is required. If the replacement statement includes a subscripted variable on each side of the equality, the statement may be traced. This option is under the control of the operator (sense switch 4 for trace) and causes the output of traced statements to be punched four per card in I15 or E15.8 format, followed by the first four digits of the address of the variables traced. The trace is printed on the 1443 if available. An E or F type format may be specified instead of the more general E15.8 in the BEGIN TRACE statement. The field width specified must be 15 columns e.g.

BEGIN TRACE F15.5  
BEGIN TRACE E15.6

BEGIN TRACE will turn on the trace feature during compilation. Each arithmetic statement thereafter will be compiled to include tracing. Tracing will be terminated when an END TRACE card is encountered. Succeeding statements will not be traced until another BEGIN TRACE is read.

INPUT/OUTPUT LISTS

If the length of an input/output statement requires more characters than are available before column 73, the list may be continued on the next card. Terminate the partial list preceding a continuation with a comma. The next card must have a digit punched in column 6 followed by the continuation of the list.

Single indexing is permitted within a list but not multiple indexing.

Examples: READ 1, (A(I), I=1,7), (B(J),J=1,7) is permitted

READ 1, ((A(I,J),I=1,2), J=1,3) is not permitted

READ

All 80 columns of each data card may be read.

REREAD

The programmer will first call for a normal read operation, specifying a format which will define the identifying data in the card. After programming the necessary logical operations on the identifying data, he will call for a reread operation, specifying the desired format for the particular card.

Example: READ 1,J  
GO TO (17, 18, 19), J  
17 REREAD 2, D, E, F  
GO TO nnn  
18 REREAD 3, A, B, C  
GO TO nnn  
19 REREAD 4, X, Y, Z

FORMAT 1 defines the field for the control digit J. If J is 1, control transfers to statement 17 and the card contents are reread in FORMAT 2, etc.

Note that any input/output statement interposed between the READ statement and its corresponding REREAD statement destroys the contents of the I/O area. The SAVE subroutine was written to overcome this difficulty.

Example: 1 READ 100, I  
TEMP = SAVE(-1.)  
PRINT 101, L,M  
TEMP = SAVE(+1.)  
2 REREAD 102, J,K

Statement 2 stores in J and K the contents of the card read by statement 1. Without the use of SAVE it would have picked up the information stored in the I/O area by the PRINT statement.

PUNCH

All 80 columns may be used for card output.

PRINT

Up to 80 columns may be printed in each line on the typewriter following a carriage return. With a 1443 up to 144 characters may be printed on the 1443 printer. However, in most installations the 1443 printer will permit only 120 characters per line.

TYPE

Up to 80 columns are printed on the typewriter with carriage return.

CONTROL n

This statement controls the typewriter carriage in C4D.

- n = 101 spaces typewriter
- n = 102 returns typewriter carriage
- n = 108 tabulates

CONTROL can also be used for control of the 1443 printer if available.

- n = 951 spaces one line before printing
- n = 952 spaces two lines before printing
- n = 953 spaces three lines before printing
- n = 962 spaces one line after printing
- n = 963 spaces two lines after printing
- n = 971 skips to new page before printing

For a Mod II 1620 two other control options are available

- n = 103 backspaces the typewriter
- n = 104 gives a line index, that is advances the carriage one line without carriage return.

COMMON

The COMMON statement is followed by a list of variables whose object-time addresses will begin in the first symbol location

after the function symbols. COMMON is used in conjunction with multiple argument subroutines, particularly with regard to the use of the disk for data storage under MOVE. COMMON is also used to ensure that each of several programs which are run in sequence with the LINK subroutine, uses the same core locations for the same variables.

Array variables which are listed in a COMMON statement will have the necessary space reserved and must not be listed again in a DIMENSION statement. CAUTION: The COMMON statement(s) must be the first compiled statement(s) in the program. That is, COMMON statements may be preceded only by COMMENT cards.

Example: COMMON A,B,C,D(2,4),E

FORMAT

Should a desired set of specifications require more characters than are available on the format card, the specifications may be continued on the next card beginning in column 7. A non-zero digit must be punched in column 6. A single format specification may not be split between cards. Any format card to be followed by a continuation card should terminate with a comma in anticipation of another format specification. The duplication of the format statement number on continuation cards in columns 2 through 5 is optional.

Permissible format specifications include I type (Iw), F type (Fw.d), E type (Ew.d), A type (Aw), X type (wX), and H type (wH). All numerical field specifications and the A specification may have fields repeated by preceding the specification by the number of required repetitions such as (3F10.2), which is the equivalent of (F10.2,F10.2,F10.2). Multiple format groups, such as (3(3F5.2,I3), 2(3I4,5X)), are also permissible. Field and group multipliers must be less than or equal to 99.

I Type: The I specification defines a field of w characters from which, or into which, integer data will be transferred. The data must be in integer form with a maximum of 10 digits; however, the field width, w, is not so limited. On input, leading or trailing blanks are interpreted as zeros. On output, the sign of the variable will precede the digits so that a minimum field width of 11 is required to ensure complete output of an integer. Should the field width be less than one plus the number of digits to be output, the width of the field will be automatically increased to accommodate the output. This will thereby alter the columns for subsequent data in that output statement.

F Type: The F specification defines a field of w characters from which, or into which, real data will be transferred. If a decimal point is not included in input data, the last d characters of the field will be recognized as decimal digits. On output, if the numerical value of the variable requires a field width greater than w to permit all non-decimal digits to be output, the specification will be automatically changed to an E type specification so that the output data will be complete.

Example: +1728. is the output under the specification (F6.0) of a variable. Had the specification been (F5.0), the output would have been +.17280000E+04

Variables in E type notation may be input under the F type specification.

E Type: The E specification permits the input or output of a real variable in the exponential form; that is, +.XXXE+XX. E Type input data must be right justified within the field. On output, 6 characters of the field are required for the sign, the decimal point, and the exponential notation. Variables in F type notation may be input under the E type specification.

A Type: The A type specification permits the input or output of up to five alphanumeric characters. The alphanumeric characters are converted to their two digit forms and stored in the symbol table as a 10 digit integer or real variable. The integer form permits arithmetic operations on alphanumeric data. The width of the A field must not exceed 5. The number of alphanumeric characters output will be determined by this field width designation.

X TYPE (Blank Field Specification): Blank characters may be provided in an output record by means of specification wX where w is the width of the field to contain blanks. When the X specification is used with an input record, w characters are ignored.

H Type: The specification wH permits the w alphanumeric characters immediately following H in the specification to be input or output. CAUTION: The characters of an H specification may not be split on two cards. Should more characters than are available on a given format card be required in an H specification, the H specification on the first card must include the count of characters on the first card only, the first card must terminate with a comma, and a new H specification must be stated on the format continuation card for the remaining desired characters. The H type format may be used for programs to reproduce card input or to list the contents of an input deck.

DATA

Variables may be given initial values at run time by the DATA statement(s) rather than by arithmetic statements. The DATA statement saves core storage by eliminating both instructions and constants. It also permits definition of alphameric constants

Example: DATA, A/1.0/I/2/K/3HABC/X(10)/-3.1416/

This statement is equivalent to the following four statements, if and only if they are only used for initializing, i.e. are only executed once at the beginning of the program.

A = 1.0  
I = 2  
K = 4142430000  
X(10) = -3.1416

The DATA statement(s) must immediately precede the END statement.

Segmentation

To run a long program in a computer of small memory the programmer may break up his program into segments. C4D permits these segments to be brought into the core memory from disk storage one at a time as needed during program execution. In a segmented source program there is an initial unsegmented portion of the program. This unsegmented portion may include COMMON, DIMENSION and FORMAT statements. It must include at least one CALL SEGMENT statement and must end with one or more SEGMENT declaration statements. The segments of the program follow immediately after the SEGMENT declaration.

SEGMENT n<sub>1</sub>, n<sub>2</sub>, n<sub>3</sub>, ..., n<sub>k</sub> The n<sub>i</sub> are the integer labels for the segments included in the program. These labels must be distinct from all statement labels and procedure labels. Execution of SEGMENT is not meaningful and will be identical to execution of END.

BEGIN SEGMENT n and END SEGMENT n These statements are used to enclose the segment with the label n. CALL SEGMENT n may appear in the part of the program prior to SEGMENT or within any of the segments other than segment n. At run time the statement CALL SEGMENT n transfers the segment n from the disk to the core and branches to the first statement in segment n. If multiple entry points within a segment are desired, an index should be defined prior to the CALL SEGMENT statement and this index used in a computed GO TO statement which appears as the first statement in the segment. Exit from the segment may be by a GO TO statement or an IF statement which transfers control to the initial part of the program before the SEGMENT statement. Alternatively, exit may be achieved by calling another segment. The END SEGMENT is not to be used as an exit. Execution of END SEGMENT is identical to execution of END.

10

Procedures

A procedure is defined as a group of C4D statements which are to be executed as a unit more than once in a larger program. Such a group of statements is enclosed by the statements BEGIN PROCEDURE n and END PROCEDURE n where n is the procedure label. This label must not appear anywhere in the program as a statement label; it may not be used in more than one procedure, nor may it be used as a segment label.

The procedure n may be executed at any time by the statement EXECUTE PROCEDURE n which transfers control to the statement immediately following the BEGIN PROCEDURE n statement and obeys the statements of procedure n until either of the two following situations is encountered.

- (a) the END PROCEDURE n statement is executed, which transfers control to the statement immediately following the EXECUTE PROCEDURE n statement which initiated entry into the procedure.
- (b) a RETURN n statement is executed. This returns control to the statement immediately following the EXECUTE PROCEDURE n statement which initiated entry to the procedure. A RETURN statement is valid only within the procedure from which it returns control.

A procedure may include EXECUTE PROCEDURE statements referring to other procedures but may not include BEGIN PROCEDURE, RETURN, or END PROCEDURE statements referring to other procedures or EXECUTE PROCEDURE referring to the procedure within which it is placed.

Appendix 1 gives examples of procedures that may be of general utility. Note that the use of large procedure labels and statement labels in the examples reduces the likelihood of duplicating the statement labels of the main program.

Data Storage on the Disk

The subroutine MOVE is written to enable bulk storage of data during the execution of a program or a group of consecutive programs. It is a multiple argument subroutine with four arguments stored in the COMMON area. The use of MOVE is subject to the following restrictions.

- 1. Data may be read from or written on the disk as a group of records, where a record is a positive multiple of ten words up to 2000 words maximum. The group may consist of one record or a number of records, the total number of words within the group not exceeding 2000.

2. The first statement of the program must be a COMMON statement which names in the following order:
  - a. number of words per record (must be a multiple of 10) - INTEGER VARIABLE
  - b. maximum number of records - INTEGER VARIABLE
  - c. number of the first record to be written or read - INTEGER VARIABLE
  - d. number of the last record to be written or read - INTEGER VARIABLE
  - e. buffer area (core storage area for data involved in the transfer) - INTEGER or REAL VARIABLE named array, or combination of both. e.g. COMMON NWR, MNR, NFR, NLR, BUF(80) or COMMON NWR, MNR, NFR, NLR, A,I,J,B,C,D(4),K  
In the second example A,I,J,B,C,D(4),K constitute the buffer area. Values for items (a) through (d) must be specified in the program before the subroutine is entered.  
In C4D, variables dimensioned in a COMMON statement must not appear in a DIMENSION statement also.

3. The MOVE routine is called through an arithmetic statement, e.g. N=MOVE(I), where I may be given the values +1, 0, -1

I = +1 causes a core-to-disk transfer or write.

I = 0 causes the disk read/write arm to be positioned over the correct cylinder.

I = -1 causes a disk-to-core transfer or read.

e.g. COMMON NWORD, MAXNR, NLST, NLAST, BUFFA(200)

```

MAXNR = 2000
NWORD = 20
...
...
NLST = 1997
NLAST = 2000
K = MOVE (-1)
...

```

These statements will transfer the four two-sector records 1997, 1998, 1999, 2000 from the disk into BUFFA(1) through BUFFA(80). K is a dummy variable and is set to zero.

4.  $0 < \text{first record number} \leq \text{last record number} \leq \text{maximum number of records}$ .
5. Each transfer of data (and therefore the size of the buffer area) is limited to 2000 words.
6. The space limitation on the disk must not be exceeded.

Error Messages: The error message TASK indicates that one of the above limitations has been violated or that the wrong disk pack is mounted on the 1311. The error message DISK indicates a computer malfunction during a MOVE attempt. After the error message is printed the executive is called from the disk.

Output: All the output from MOVE is in the buffer area defined by COMMON. The statement K = MOVE(I) sets K to zero.

Disk Storage Map: Data is stored on the disk at sectors 60000 through 59999 + (maximum number of records) · (number of words per record)/10. The first record is stored in the highest numbered sector. In the above example the first record is stored in sectors 63998 and 63999. Note that if the system had been loaded to store program starting below 64000, the statements in the example would result in a TASK error because rule 6 would have been violated.

Control Cards

The format for control cards is as follows:

Column 1	*
Columns 2-5	Four characters, left justified, specifying the control function required by the executive.
Column 6	Blank
Columns 7-11	Up to five characters, left justified, specifying the name of the program for CODE, HOLD, RUN, or CUT. The number of subroutines in two left justified digits for SRS.
Column 12	Blank

Columns 13-80          Comments, for example, project number, programmer's name, etc. followed by a record mark.

The system permits the use of the following control cards:

- \*CODE - causes the subsequent C4D source program to be checked for errors and compiled if no errors are found. The source program is normally followed immediately by either \*RUN or \*HOLD.
- \*HOLD - assigns permanent disk storage to the specified program if it has just been compiled. Also causes the index routine to provide an index.
- \*RUN - causes execution of the specified object program. \*RUN is usually followed by data cards.
- \*CUT - deletes the specified object program from disk storage.
- \*DISK - provides a listing on the typewriter or on the printer. The listing contains
  1. the number of programs currently assigned permanent disk storage
  2. the number of the next available sector for program storage
  3. the names of all the programs currently on disk
- \*DATE - stores the contents of Columns 7-80 of the \*DATE card to be stored. This area is intended for a date, shift, AM, PM, or other message. The message is then printed or punched after the control card message for each subsequent job.
- \*SRS - causes loading of the relocatable subroutine set (see Appendix 2)
- \*OUT - reads the next card (which should be the first card of a card program) and branches to 00000.

We will now study the output of a program called ERROR that was written to illustrate the use of program output in debugging.

```

@CODE FRROR
DECEMBER 16, 1965 AM
07500 READ3,I,X,Y
07560 GOTO(1,2),I
07648 1 CALLSEGMENT10
07660 2 CALLSEGMENT20
07672 3 FORMAT(15,2F10.5)
07704 SEGMENT10,20
        BEGINSEGMENT10
07718 11 X=SQRT(X)
07742 ENDSEGMENT10
        BEGINSEGMENT20
07718 21 X=SQRT(Y)
07742 ENDSEGMENT20
        END

39959 COS          39989 COSF          39979 SIN          39969 SINF
39959 EXP          39949 EXPF          39939 ALOG          39929 ALOGF
39919 SQRT         39909 SQRTF         39899 ABS           39889 ABSF
39879 NABS         39869 NABSF         39859 ATAN          39849 ATANF
39839 DRH         39829 DRHF          39819 NPR           39809 NPRF
39799 MOVE        39789 MOVEF         39779 MOD           39769 MODF
39759 SAVE        39749 SAVEF         39739 LINK          39729 LINKF
39719 NFIL        39709 NFILF         39699 FM 0003       39689 I
39679 X           39669 Y             39659 SN 0001       39649 SN 0002
39629 SG 0010     39609 SG 0020       39599 SN 0011       39589 000
39579 SN 0021

@RUN ERROR
DECEMBER 16, 1965 AM
SEGMENT SYMTAB ADDR 3960 NSQR,NEXT INSTR- ← 07730
39930 M1535647-#M5675746-#M5675700-#02495546-#02495500-#M3566246-#M3566200-#
39860 N5414262-#N5414262-#M1426246-#M1426200-#M11000000-M9-7770-#M1535647-#
39780 N4566545-#N5575946-#N5575900-#M4594846-#M4594800-#M1634155-#M1634155-#
39720 N3495552-#N3495552-#02418545-#02418545-#N4564446-#N4564400-#N4566545-#
39650 M907648000N11000000-00000000-00000000-7678000N5464953-#N5464953-#
39580 -000000-#M907718000-0005000-7718000-0004000-7718000M90766000
39510 -0000000-#-0000000-#-0000000-#-0000000-#-0000000-#-000000-#-000000R99M907718000
    
```

The output consists of the following items:

1. A referenced source statement listing
2. A referenced symbol table
3. An error message indicating an attempt to take the square root of a negative number
4. A symbol table dump

In addition, the operator has recorded the address 07730 from the IR<sub>2</sub> register. This address contains the next instruction in the users program that would have been executed following the error.

Check Stops

The referenced source statements show that both statement 11 and statement 21 have been translated into instructions which include the instruction at 7730. Furthermore, both these statements involve the square root routine. Isolation of the offending statement is accomplished in this way. The error message draws attention to a symbol table address of 3960. This is the first four digits of the symbol table address 39609. The referenced source statement listing shows that this address corresponds to segment 20. Since statement 21 is in segment 20, it is the offending statement. Also, we notice that the argument of the square root in statement 21 is Y. The symbol table shows that Y is stored at 39669 (actually 39660 through 39669). The symbol table dump shows that this storage area contains N11000000-. The N represents a flagged 5 and the - a flagged zero. The flag at the leftmost digit of this field is normal but the flag at the rightmost digit indicates that Y is negative. In fact, 5110000000 represents  $-0.1 \times 10^1$  or  $-1.0$ . The same number in locations 39900 through 39909 is the actual argument conveyed to the subroutine. The number 4907770 immediately following is an instruction to branch to location 07770 where the square root subroutine has been stored for this program. Note also that fields in the symbol table dump that end in a record mark have not been given a numerical value. That is, if they are variables, they were still undefined when the error was detected.

Alphabetic characters in dumped output may be interpreted as follows:

J	I
K	2
L	3
M	4
N	5
O	6
P	7
Q	8
R	9
-	0

There are certain programming errors which are not detected by C4D and which cause the computer to stop functioning with a CHECK STOP light on. The error responsible is probably one of the following:

1. An array element computed when the subscript is out of the dimensioned range.
2. The subscript of an array element is undefined.
3. A GO TO or IF statement in one segment references a statement in another segment, or an EXECUTE PROCEDURE references a procedure in another segment.
4. Branch to a FORMAT statement.
5. An integer variable is raised to a power by the use of the \*\*operator. This operator may only be used to raise a real variable to a power.
6. An error in the argument of a subroutine.

To help debugging after a check stop the operator should recover the contents of IR<sub>2</sub> if possible and then manually branch to 06576. This will provide a symbol table dump as if an undefined variable had been detected.

7. An invalid transfer of data from disk to core. Nearly all transfers from disk to core are verified and, if incorrect will be automatically corrected by the system when the PARITY and I/O switches are set to program. In a few cases, a CHECK STOP will result from an invalid disk to core transfer. Should the RD CHK light be ON on the occurrence of a CHECK STOP, RESET, RELEASE, and START will permit the continuing of the program.

OPERATING INSTRUCTIONS FOR C4D

Loading the System onto Disk

1. Number the C4D disk pack(s) 60000 through 79999.
2. Place system deck in read hopper.
3. Set PARITY and I/O switches to STOP, DISK, and ARITHMETIC switches to PROGRAM. \*\*
4. Press RESET and LOAD keys.
5. You will be requested to enter the following information through the typewriter:
  - a. The disk drive numbers for the system drive and the data drive. For a single drive system, enter the same number twice.
  - b. A digit specifying that this is an initial or subsequent load. CAUTION -- an initial load erases the table that indexes the user's programs which are stored on the disk file.
  - c. The starting sector number for disk program storage.\*
6. The loader punches out a C4D COLD START card.
7. When all cards have been read, the system is loaded and ready to accept jobs headed by control cards.

\* 64000 might be a reasonable starting sector number. This would allow for a maximum of 2000 source cards per program and a maximum of 40000 stored variables when using the MOVE subroutine. Such designation would allocate 15125 sectors for permanent program storage. For compilation of larger programs or for more disk data storage area, the starting sector number must be increased by two per source card or by one per ten additional variables to be stored. The sectors allocated for permanent program storage will be correspondingly reduced. This is only requested upon initial load of a single drive system.

\*\* PARITY and I/O switches may be set to PROGRAM for the automatic correction of any transfer between disk and core which initially proves to be invalid.

Cold Start

The executive may be called from the disk at any time by the following procedure:

1. Place C4D COLD START CARD in read hopper
2. Press RESET & LOAD

The same effect may be achieved as follows:

1. Press RESET & INSERT
2. Enter by typewriter the following

3400044007013200000000036000440070249129820n7980012900100R-S

where n is the system disk drive code (0,1,3,5,7)

Switch Settings

SS1 ON halts the computer after the header card is punched for each new job. This permits removal of the cards punched during the previous job. Alternatively a different colored card placed behind the cards in the 1622 punched card stacker at halt time can be used to separate output decks at some subsequent time.

SS2 should be ON for the use of the 1443 printer. If the 1443 printer fails, SS2 OFF will enable C4D to operate while the 1443 is repaired. For an installation without a 1443, SS2 should always be OFF.

SS3 should be left ON when the operator is in the computer room. It should be left OFF when the 1620 is running unattended. SS3 ON causes a halt after an error message at run time. This permits recovery of the address in IR2 to direct the programmer's attention to the FORTRAN statement being executed. START then causes a symbol table dump on cards or printer. After this dump, the executive is automatically called. SS3 ON also causes halt after a PAUSE statement. START then allows the program execution to continue. SS3 OFF inhibits the halts and the symbol table dump and causes the executive to be called immediately following a run-time error or a PAUSE statement.

SS4 ON causes tracing to be executed on cards or printer depending on the setting of SS2. SS4 OFF inhibits the trace.



APPENDIX I

```

C BEGIN PROCEDURE 5000
C   USES JORDAN TECHNIQUE WITH MAXIMUM PIVOTAL ELEMENTS TO SOLVE
C   -NSO- EQUATIONS WITH AUGMENTED COEFFICIENT MATRIX -CSO-
C   IF THE EQUATIONS HAVE NO UNIQUE SOLUTION THE ERROR MESSAGE
C   SOLVE IS PRINTED AND -NOSOL- IS SET TO ZERO OTHERWISE
C   -NOSOL- IS ONE AND THE SOLUTION VECTOR IS STORED IN THE
C   FIRST COLUMN OF -CSO- MAIN PROGRAM MUST DIMENSION
C   CSO(NSO,NSO+1) AND NAME(NSO)
C
C   NSOP = NSO + 1
C   NOSOL = 1
C   DO 5001 JSO = 1,NSO
5001 NAME(JSO) = 0
C   DO 5015 KSO = 1,NSO
C   CMAX = 0.
C   DO 5004 JSO = 1,NSO
C   IF(NAME(JSO))5004, C,5004
C   TSO = CSO(KSO,JSO)
C   IF(ABSF(TSO)-ABSF(CMAX))5004,5004,C
C   CMAX = TSO
C   JMAX = JSO
5004 CONTINUE
C   IF(CMAX)5007, C,5007
C   NOSOL = 0
C   PRINT 5006
C   RETURN 5000
5006 FORMAT(5HSOLVE)
5007 NAME(JMAX) = KSO
C   DO 5010 JSO = 1,NSOP
C   IF(JSO-NSOP) C,5009, C
C   IF(NAME(JSO))5010,5009,5010
5009 CSO(KSO,JSO) = CSO(KSO,JSO)/CMAX
5010 CONTINUE
C   DO 5015 ISO = 1,NSO
C   IF(ISO-KSO) C,5015,C
C   TSO = CSO(ISO,JMAX)
C   IF(TSO) C,5015,C
C   DO 5015 JSO = 1,NSOP
C   IF(JSO-NSOP) C,5014,C
C   IF(NAME(JSO))5015,5014,5015
5014 CSO(ISO,JSO) = CSO(ISO,JSO)-TSO*CSO(KSO,JSO)
5015 CONTINUE
C   DO 5016 KSO = 1,NSO
C   LSO = NAME(KSO)
5016 CSO(KSO,1)=CSO(LSO,NSOP)
C   END PROCEDURE 5000

```

```

C BEGIN PROCEDURE 5100
C   INVERTS MATRIX -YINV- OF ORDER -NNV- IF -YINV- IS SINGULAR THE
C   ERROR MESSAGE INVERT IS PRINTED AND THE VARIABLE -NOSOL- IS
C   SET TO ZERO OTHERWISE -NOSOL- IS SET TO ONE AND THE INVERSE
C   IS STORED IN -YINV- MAIN PROGRAM MUST DIMENSION CNV(NNV)
C   YINV(NNV,NNV) AND NAME(NNV)
C
C   NOSOL=1
C   DO 5101 INV=1,NNV
5101 NAME(INV)="NV
C   DO 5113 JNV=1,NNV
C   CMAX=0.
C   JNV=INV
C   DO 5103 KNV=INV,NNV
C   IF (ABSF(CMAX)-ABSF(YINV(INV,KNV))) C,5103,5103
C   JNV=KNV
C   CMAX=YINV(INV,KNV)
5103 CONTINUE
C   IF (CMAX) 5106, C,5106
C   PRINT 5105
C   NOSOL=0
C   RETURN 5100
5105 FORMAT (6HINVERT)
5106 IF (INV-JNV) C,5109,C
C   KNV=NAME(INV)
C   NAME(INV)=NAME(JNV)
C   NAME(JNV)=KNV
C   DO 5108 LNV=1,NNV
C   TNV=YINV(LNV,INV)
C   YNV(LNV,INV)=YNV(LNV,JNV)
5108 YNV(LNV,JNV)=TNV
5109 YNV(INV,INV)=1.
C   DO 5110 JNV=1,NNV
5110 YNV(INV,JNV)=YNV(INV,JNV)/CMAX
C   DO 5113 JNV=1,NNV
C   IF (INV-JNV) C,5113,C
C   TNV=YNV(JNV,INV)
C   YNV(JNV,INV)=0.
C   DO 5112 KNV=1,NNV
5112 YNV(JNV,KNV)=YNV(JNV,KNV)-TNV*YNV(INV,KNV)
5113 CONTINUE
C   DO 5119 MNV=1,NNV
C   IF (NAME(MNV)-MNV) C,5119,C
5114 DO 5115 JNV=1,NNV
5115 CNV(JNV)=YNV(MNV,JNV)
C   JJNV=MNV+1
C   DO 5116 JNV=JJNV,NNV
C   IF (NAME(JNV)-MNV) 5116,5117,5116
5116 CONTINUE
5117 NAME(JNV)=NAME(MNV)
C   DO 5118 KNV=1,NNV
C   YNV(MNV,KNV)=YNV(JNV,KNV)
5118 YNV(JNV,KNV)=CNV(KNV)
5119 NAME(MNV)=MNV
C   END PROCEDURE 5100

```

```

C BEGIN PROCEDURE 5200
C MULTIPLIES MATRIX -BMULT- BY MATRIX -CMULT- AND STORES PRODUCT
C IN -AMULT-. SIZE OF BMULT IS -MMULT-* -KMULT- AND SIZE OF
C CMULT IS -KMULT-* -NMULT-. MAIN PROGRAM MUST DEFINE VALUES
C OF -MMULT-, -KMULT-, -NMULT-, AND DIMENSION -AMULT-,
C -BMULT-, -CMULT-
DO5202 IMULT=1,MMULT
DO5202 JMULT=1,NMULT
SMULT=0.
DO5201 MULT=1,KMULT
5201 SMULT=SMULT+BMULT(IMULT,MULT)*CMULT(MULT,JMULT)
5202 AMULT(IMULT,JMULT)=SMULT
END PROCEDURE 5200

C BEGIN PROCEDURE 6000
C GENERATES A STANDARD NORMAL DEVIATE -SND-
SUSND=0
DO 6001 J=1,12
SNDX=NPRF(IBEG)
6001 SUSND=SUSND+SNDX
SND = 0.00001*SUSND - 5.99994
END PROCEDURE 6000

C BEGIN PROCEDURE 6100
C GENERATES A VALUE -NERL- FROM AN ERLANG DISTRIBUTION
C OF ORDER -KERL- AND MEAN VALUE -TBAR-
XKERL=KERL
PROD =1.
DO 6101 JERL=1,KERL.
XR=NPR(NRI)
XR = 0.00001*(XR+0.5)
6101 PROD=PROD*XR
NERL= -(TBAR/XKERL)*ALOG(PROD)
END PROCEDURE 6100

C BEGIN PROCEDURE 6200
C CONVERTS A TIME IN SECONDS -NSEC- TO DAYS,HOURS, AND MINUTES
NDAY = NSEC/86400
NHR = MOD(1)/3600
NMIN = MOD(1)/60
IF(MOD(1)-30)6201,6201,C
NMIN = NMIN+1
6201 CONTINUE
END PROCEDURE 6200

```

APPENDIX 2

Adding New Subroutines to C4D

Up to 37 subroutines may be included in C4D if they are short enough to fit in 150 disk sectors (average length less than 406 digits). No individual subroutine may be longer than 4998 digits. Additional subroutines may be added to the system if certain rules are followed. CAUTION: Do not remove subroutines after the initial load as this will alter the transfer points for all subsequent subroutines. The rules for adding a new subroutine are as follows:

1. Define the origin of the subroutine at 5000.
2. All instructions, except for the last instruction, must occupy a full twelve digits, i.e. DORG \*-n, B7, BB2 instructions are not permitted before the last instruction. Symbol and constant definition must follow the instructions to ensure that instructions start in 5000, 5012, 5024, etc. The spare digits in branch, clear flag and similar instructions are, of course, available for data storage.
3. Flag the first or second operation code digits corresponding to those P or Q addresses which must be modified by the relocater.
4. Do not use the halt instruction. Upon error detection the subroutine should transmit the address of the leftmost digit of its error message to ERMA and branch to ERR. These addresses are in the Class A subroutines which will print the error message, dump the symbol table, and call the executive.
5. Only define group marks within a subroutine as the last digit.
6. The field address of the argument may be found by subtracting 20 from the field address of the argument of the last subroutine already in the system. The system, as provided, has the following subroutines:

Name	Address of Argument
COS	19989
SIN	19969
EXP	19949
ALOG	19929
SQRT	19909
ABS	19889
NABS	19869
ATAN	19849
DRH	19829
NPR	19809
MOVE	19789

<u>Name</u>	<u>Address of Argument</u>
MOD	19769
SAVE	19749
LINK	19729
NFIL	19709
NUPL	19689

These addresses are adjusted at load time for core size greater than 20K.

7. Test the subroutine argument for a record mark in the rightmost digit. If there is a record mark, the argument is undefined. A branch to UDV in the Class A subroutines will provide the error message.

8. The output value of the function should be stored as a ten digit integer or as a real value in excess-fifty floating point form in the floating point accumulator. This occupies core positions 00051 through 00060.

9. Use Data SPS, AFIT SPS, SPS III, or 1620/1710 SPS to assemble into a condensed object deck. Discard the first two and the last seven cards of this deck.

10. Add a header card with the following format:

Column 1	\$
Columns 2-5	The name of the subroutine, left justified. The initial letter determines a real or integer value for the function and its argument. The name must be from two to four digits in length and must not end in F.
Column 6	Blank
Columns 7-10	The total number of digits in the instructions
Columns 11-14	The total number of digits for instructions and data. If this is an odd number add one to make it even.
Columns 15-18	The number of cards in the subroutine object deck excluding header and trailer cards.
Columns 19-22	The number of cards in the object deck excluding header but including trailer cards.

11. Add a trailer card that contains, in successive five digit fields, the unrelocated addresses of any digit that must be modified for core size. Follow the last of these fields with a record mark. Use additional trailer cards if more than 14 such modifications are needed.

12. A subroutine may have two entry points (e.g. sine-cosine). Refer to section on "Subroutines With Two Entry Points"

13. Add the new subroutine to the back of the subroutine deck. Do not disturb the order of the previous subroutines.

14. Place the control card \*SRSnn as a header card for the new subroutine deck (discard the old \*SRS card). The value of nn is the number of subroutines in the new deck.

15. Load the deck under the control of the executive. Error messages that may occur at subroutine load time (\*SRS) are as follows:

- (a) WRONG ENTRY - second entry point of subroutine with two entry points specified to be outside the range of subroutine.
- (b) 1ST SUB WRONG - first subroutine \$ card contains blanks or zeroes in columns 11-14.
- (c) TOO MANY SUBS - SRSnn has nn greater than 40.
- (d) SUB TOO BIG - number in columns 11-14 of \$ card greater than 4998.
- (e) SUB CYLINDER EXCEEDED - total length of all subroutines exceeds 15,000 digits.
- (f) SUB ODD LENGTH - number in columns 11-14 of \$ card is not an even number.
- (g) HDWR ERR EXEC - hardware error encountered with core-disk transfer while loading subroutines.
- (h) \$ CARD NOT IN PLACE - nn of SRSnn card or columns 15-18 or 19-22 of a \$ card incorrectly specified.
- (i) SUB NAME ERR - less than two-digit subroutine name.

A check stop will result if the number of subroutine cards specified on the \$ card is incorrect.

Subroutines With Two Entry Points

Two functions with different names can be generated by a subroutine with two entry points. The first function results from entering the subroutine at 05000. Assemble the subroutine deck under the name of the first function and follow this deck with a dummy \$ card containing the name of the other function. Columns 7-10 of this \$ card contain the address of the abnormal entry relative to 5000. Columns 11-14 must be blank or zero signifying a special type of subroutine. No cards need follow the dummy card.

Example: COS has entry at 05000, SIN has entry at 05036 and the joint subroutine generating these functions is set up as follows:

```
$ COS 0644071800140015
  14 object program cards
  1 trailer card
$ SIN 0036
```

TABLE I

C4D ERROR MESSAGES AT CODE TIME

- ERR 01 OPEN SEGMENT OR PROCEDURE
- ERR 02 CONTINUATION ERROR OR PREVIOUS STATEMENT ENDS IN A COMMA
- ERR 03 DUPLICATE STATEMENT, SEGMENT OR PROCEDURE LABEL
- ERR 04 SEGMENT NOT DECLARED OR NOT CALLED
- ERR 05 PARENTHESIS ERROR
- ERR 06 GO TO WRITTEN INCORRECTLY
- ERR 07 IMPROPERLY NESTED DO LOOPS
- ERR 08 DO LOOP ENDS WITH A TRANSFER STATEMENT
- ERR 09 END OF A DO LOOP IS A PREVIOUS STATEMENT LABEL
- ERR 10 INVALID DO STATEMENT
- ERR 11 ERROR IN A NUMERIC CONSTANT
- ERR 12 ERROR IN A VARIABLE NAME
- ERR 13 SUBSCRIPTING ERROR
- ERR 14 NON-NUMERIC SUBSCRIPT OR MORE THAN 2 SUBSCRIPTS  
IN A DIMENSION OR COMMON
- ERR 15 ERROR IN SEGMENT OR PROCEDURE LABEL
- ERR 16 TRANSFER STATEMENT TRANSFERS TO ITSELF
- ERR 17 INVALID STATEMENT LABEL
- ERR 18 MODIFICATION OF A DO INDEX OR PARAMETER WITHIN A DO LOOP
- ERR 19 FORMAT OF TRACE, IF SPECIFIED, NOT E OR F.
- ERR 20 STATEMENT IS UNRECOGNIZABLE
- ERR 21 I/O LIST MISSING OR INCORRECTLY WRITTEN
- ERR 22 COMMON STATEMENT(S) NOT FIRST STATEMENT(S) IN PROGRAM
- ERR 23 INVALID FORMAT STATEMENT LABEL IN AN I/O STATEMENT
- ERR 24 NON-NUMERIC SUBSCRIPT IN A DATA STATEMENT
- ERR 25 LABELED STATEMENT FOLLOWS END SEGMENT STATEMENT
- ERR 26 COMMA MISSING IN AN I/O STATEMENT
- ERR 27 SUBSCRIPTED VARIABLE NOT DIMENSIONED
- ERR 28 INDEXING ERROR IN I/O STATEMENT, OR IMPLIED DO WITHIN MORE THAN  
ONE LEVEL OF PARENTHESIS
- ERR 29 INVALID FORMAT STATEMENT
- ERR 30 INCORRECTLY WRITTEN ARITHMETIC STATEMENT
- ERR 31 DIMENSIONED VARIABLE NOT SUBSCRIPTED
- ERR 32 SYMBOL TABLE EXCEEDED OR MORE THAN 15 NESTED DO LOOPS
- ERR 33 MIXED MODE EXPRESSION
- ERR 34 HOLLERITH FIELD IN A DATA STATEMENT MORE THAN 5 CHARACTERS
- ERR 35 ERROR IN DATA STATEMENT OR DATA STATEMENT(S) NOT PLACED  
IMMEDIATELY BEFORE END STATEMENT
- ERR 36 ERROR IN STATEMENT LABEL(S) IN AN IF STATEMENT OR  
INVALID EXPRESSION WITHIN THE PARENTHESIS
- ERR 37 INVALID DIMENSION OR COMMON STATEMENT
- ERR 38 VARIABLE APPEARS MORE THAN ONCE IN COMMON AND/OR DIMENSION STATEMENT
- ERR 39 UNLABELED STATEMENT FOLLOWING A TRANSFER STATEMENT
- ERR 40 SUBROUTINE NAME USED AS A VARIABLE NAME
- ERR 41 FORMAT MULTIPLIER GREATER THAN 99

TABLE II

SYSTEM MESSAGES AT RUN TIME

STOP NNNN -- EXECUTION OF STOP NNNN  
 END -- EXECUTION OF END, END SEGMENT, OR SEGMENT

SEGMENT SYMTAB ADDR AAAA UNDV -- UNDEFINED VARIABLE  
 SEGMENT SYMTAB ADDR AAAA OFLO -- RESULT OF ARITHMETIC OPERATION GREATER IN  
 MAGNITUDE THAN 10 TO THE POWER +50  
 THIS INCLUDES TAKING THE LOGARITHM OF ZERO  
 ALSO RESULTS FROM ATTEMPT TO FIX A NUMBER  
 GREATER THAN 99999999.0 IN MAGNITUDE

SEGMENT SYMTAB ADDR AAAA UFLO -- RESULT OF ARITHMETIC OPERATION LESS IN  
 MAGNITUDE THAN 10 TO THE POWER -50

SEGMENT SYMTAB ADDR AAAA ERI0 -- INPUT DATA ERROR  
 SEGMENT SYMTAB ADDR AAAA IXER -- INDEX OUT OF RANGE IN COMPUTED GO TO  
 SEGMENT SYMTAB ADDR AAAA TRIG -- ARGUMENT OF SIN OR COS IS 1000000 OR GREATER  
 SEGMENT SYMTAB ADDR AAAA NSQR -- NEGATIVE ARGUMENT FOR SQRT SUBROUTINE  
 SEGMENT SYMTAB ADDR AAAA ERLN -- NEGATIVE ARGUMENT FOR ALOG SUBROUTINE  
 SEGMENT SYMTAB ADDR AAAA TASK -- VIOLATION OF RESTRICTIONS ON USE OF MOVE  
 SEGMENT SYMTAB ADDR AAAA DISK -- 1311 HARDWARE MALFUNCTION IN MOVE SUBROUTINE  
 SEGMENT SYMTAB ADDR AAAA SAVE -- ATTEMPT TO RECOVER DATA BEFORE ANY HAS  
 BEEN SAVED

SEGMENT SYMTAB ADDR AAAA NFIL -- ARGUMENT FOR NFIL IS OUT OF RANGE

NOTE -- AAAA REFERS TO FIRST FOUR DIGITS OF THE SYMBOL TABLE ADDRESS

TABLE III

MISCELLANEOUS SYSTEM MESSAGES

EXECUTIVE ROUTINE MESSAGES

HDWR ERR EXEC -- EXECUTIVE ROUTINE READ INCORRECTLY FROM DISK FILE  
 OR INFORMATION WRITTEN INCORRECTLY ON THE FILE  
 BY THE EXECUTIVE (THIS IS A COMPUTER MALFUNCTION)

INVALID \* CARD -- SELF EXPLANATORY  
 PRGAM WAS ON FILE -- TRYING TO CODE OR HOLD PROGRAMS WITH THE SAME NAME  
 PROGRAM NOT ON FILE -- TRYING TO RUN OR CUT A NON-EXISTENT PROGRAM  
 DISK TABLE FULL -- NO ROOM TO INDEX ANY NEW PROGRAMS  
 OVERLAP -- NOT ENOUGH CORE FOR PROGRAM, SYMBOL TABLE,  
 AND SUBROUTINES

RELOAD C4D-  
 INITIAL LOAD-- DISK TABLE DESTROYED BY 1311 DISK MALFUNCTION

CUT HDWR ERROR-  
 PROGRAMS ON FILE  
 FOLLOW -- ONLY PART OF DISK TABLE DESTROYED

RENUMBER SYSTEM  
 DRIVE -- DISK SECTOR ADDRESS NOT FOUND IN NINE SEKS

STATEMENT SCAN ROUTINE MESSAGES

HDWR ERR SCAN -- SCAN ROUTINE READ INCORRECTLY FROM THE DISK FILE  
 OR INFORMATION WRITTEN INCORRECTLY ON THE FILE  
 BY THE SCAN ROUTINE-THIS IS A COMPUTER MALFUNCTION

NO END CARD -- SELF EXPLANATORY

DIAGNOSTIC ROUTINE MESSAGES

HDWR ERR DIAG -- DIAGNOSTICS READ INCORRECTLY FROM THE DISK FILE  
 (THIS IS A COMPUTER MALFUNCTION)

UNDEF LABLS -- FOLLOWED BY LIST OF STATEMENT, SEGMENT, AND  
 PROCEDURE LABELS REFERENCED BUT NOT DEFINED IN  
 THE USERS PROGRAM

UNDEF SMBS -- FOLLOWED BY LIST OF VARIABLES REFERENCED IN THE  
 USERS PROGRAM BUT NEVER GIVEN A NUMERICAL VALUE

COMPILER ROUTINE MESSAGES

HDWR ERR COMP -- COMPILER READ INCORRECTLY FROM THE DISK FILE  
 OR INFORMATION WRITTEN INCORRECTLY ON THE FILE  
 BY THE COMPILER (THIS IS A COMPUTER MALFUNCTION)

SYMTAB FULL -- PROGRAM IN ITS PRESENT FORM TOO LARGE FOR COMPUTER  
 OVERLAP -- PROGRAM IN ITS PRESENT FORM TOO LARGE FOR COMPUTER  
 FORMAT TOO LONG -- SELF EXPLANATORY  
 NO ROOM ON FILE -- SELF EXPLANATORY

TABLE III (CONTINUED)

MISCELLANEOUS SYSTEM MESSAGES

LABEL INDEX ROUTINE MESSAGES

HDWR ERR LAB INDX -- LABEL INDEXER READ INCORRECTLY FROM THE DISK FILE  
 (THIS IS A COMPUTER MALFUNCTION)

NO INDEX-\*HOLD SHOULD FOLLOW \*CODE -- HOLD CARD DID NOT IMMEDIATELY FOLLOW SOURCE PROGRAM

SUBJECT INDEX

ARRAYS.....	4	STATEMENTS.....	8
CHECK STOPS.....	22	ARITHMETIC.....	8
COLD START.....	24	BEGIN PROCEDURE .....	16
CONTROL CARDS.....	19	BEGIN SEGMENT.....	16
*CODE.....	19	BEGIN TRACE.....	10
*CUT.....	19	CALL SEGMENT.....	15
*DATE.....	19	COMMON.....	12,13
*DISK.....	19	CONTROL.....	12
*HOLD.....	19	DATA.....	15
*OUT.....	19	END PROCEDURE.....	16
*RUN.....	19	END SEGMENT.....	15
*SRS.....	19	END TRACE.....	10
DATA STORAGE ON DISK...16		END.....	10
DEBUGGING UNDER C4D...20		EXECUTE PROCEDURE...16	
ERROR MESSAGES.....32-34		FORMAT.....	13-14
AT CODE TIME.....32		IF.....	9
AT RUN TIME.....33		PAUSE.....	10
MISCELLANEOUS.....34,35		PRINT.....	12
EXPONENTIATION(**).....8		PUNCH.....	12
FLOATING POINT		READ.....	11
ARITHMETIC.....3		REREAD.....	11
FORMAT.....	13-14	RETURN.....	16
A TYPE.....	14	SEGMENT.....	15
E TYPE.....	14	STOP.....	10
F TYPE.....	14	TYPE.....	11
H TYPE.....	14	SUBROUTINES.....	4,28-31
I TYPE.....	13	ABS.....	5
X TYPE.....	14	ALOG.....	4
INPUT/OUTPUT LISTS.....11		ATAN.....	5
INTEGER ARITHMETIC.....3		COS.....	4
INTEGERS.....3		DRH.....	5
LABELS.....7		EXP.....	4
LOADING C4D.....23		LINK.....	6
MATRICES.....4		MOD.....	5
OPERATING		MOVE.....	5,16-18
INSTRUCTIONS...23,24		NABS.....	5
PROCEDURES.....16		NFIL.....	6
ERLANG SAMPLING.....27		NPR.....	5
LINEAR EQUATIONS.....25		SAVE.....	6
MATRIX INVERSION.....26		SIN.....	4
MATRIX MULTIPLY.....27		SQRT.....	4
NORMAL DEVIATES.....27		SWITCH SETTINGS.....24	
TIME CONVERSION.....27		SYMBOL TABLE DUMP.....20	
REAL VARIABLES.....3		TRACE MODE.....10	
SEGMENTATION.....14		VARIABLES.....3	
STATEMENT CARD FORMAT...7		VECTORS.....4	

## C 4 D S Y S T E M M A N U A L

## INTRODUCTION

C4D CONTAINS NO RESIDENT EXECUTIVE. EACH SYSTEM ROUTINE CALLS INTO CORE THE NEXT APPROPRIATE ROUTINE TO ACCOMPLISH THE GIVEN JOB. SINCE CERTAIN INFORMATION MUST BE TRANSMITTED FROM ONE ROUTINE TO ANOTHER, CERTAIN CORE LOCATIONS ARE SET ASIDE FOR THIS PURPOSE. AT COMPILE TIME, INFORMATION IS ALSO STORED IN THE WORKING STORAGE AREA ON DISK.

## SYSTEM INFORMATION STORED IN CORE

THE MEMORY SIZE (1,3,5), SYSTEM DRIVE CODE (0,1,3,5,7) AND DATA DRIVE CODE (0,1,3,5,7) ARE DETERMINED BY THE LOADER INITIALIZATION AND STORED IN CORE LOCATIONS 400,401,402 RESPECTIVELY WITH FLAGS. FOR A SINGLE DRIVE SYSTEM THE TWO DRIVE CODES ARE THE SAME. CORE LOCATION 403 CONTAINS A GROUP MARK. THESE PARAMETERS REMAIN IN 400-403 AND ARE USED FOR INITIALIZATION BY ALL OTHER ROUTINES.

THE VARIABLE -NEXT- IS IN CORE POSITIONS 566-570 DURING ALL PHASES OF THE \*CODE PROCESS. -NEXT- DEFINES THE NEXT AVAILABLE SECTOR FOR USER PROGRAM STORAGE. IT IS UPDATED BY THE EXECUTIVE ROUTINE DURING \*HOLD AND \*CUT AND IS SUBSEQUENTLY USED BY THE COMPILER.

PARTS OF THE SYSTEM THAT RECEIVE INPUT FROM THE CARD READER SHARE A COMMON INPUT AREA AT LOCATIONS 404-563. IF A CONTROL CARD (\* IF COLUMN 1) IS READ BY A ROUTINE OTHER THAN THE EXECUTIVE, THE EXECUTIVE IS CALLED LEAVING THE INPUT AREA INTACT, AND THE CARD IS PROCESSED.

PERMANENTLY ASSIGNED AREAS IN CORE, THEN, ARE AS FOLLOWS

00100 - 00299	ADD TABLES
00300 - 00399	MULTIPLICATION TABLES
00400	MEMORY SIZE DIGIT
00401	SYSTEM DRIVE CODE
00402	DATA DRIVE CODE
00403	GROUP MARK
00404 - 00563	CARD INPUT AREA
00566 - 00570	-NEXT- -- NEXT AVAILABLE SECTOR FOR USER PROGRAM STORAGE.

## SYSTEM INFORMATION STORED ON DISK

THREE ROUTINES IN C4D - DIAGNOSTICIAN, LABEL INDEX, AND COMPILER - PROCESS SOURCE STATEMENTS. IN ORDER THAT THE CARDS NEED ONLY BE READ ONCE, A STATEMENT SCAN ROUTINE HAS BEEN ADDED. THE SCAN READS SOURCE CARDS,

COMPRESSES BLANKS, SETS UP BRANCH ADDRESSES FOR THE DIAGNOSTICIAN AND COMPILER, AND STORES THIS INFORMATION, TWO SECTORS PER CARD, IN THE WORKING STORAGE AREA ON DISK (SEE ALLOCATION OF DISK STORAGE). WHEN THIS INFORMATION IS LATER BROUGHT INTO THE INPUT AREA IT APPEARS AS FOLLOWS

00404 - 00547	SOURCE STATEMENT
00548 - 00552	ADDRESS OF LAST NON-BLANK CHARACTER IN THE SOURCE STATEMENT
00549	CONTAINS A FLAG IF THIS STATEMENT ENDS IN A COMMA
00561	CONTAINS A FLAG IF SCAN FOUND A PARENTHESIS ERROR
00553 - 00557	BRANCH ADDRESS FOR DIAGNOSTICIAN
00558 - 00562	BRANCH ADDRESS FOR COMPILER
00563	CONTAINS A FLAGGED DIGIT IF THIS STATEMENT HAS A LABEL
00573 - 00576	CARD NUMBER

THE DISK TABLE (SECTORS 79804-79843) IS USED AND UPDATED BY BOTH THE COMPILER AND EXECUTIVE ROUTINES. (SEE EXECUTIVE ROUTINE).

A TABLE OF SUBROUTINE NAMES CURRENTLY IN THE SYSTEM IS STORED ON SECTORS 79852-79856. THE FIRST TWO DIGITS OF THIS TABLE IS THE NUMBER OF SUBROUTINES. THE TABLE IS UPDATED BY THE EXECUTIVE WHEN AN \*SRS CARD IS ENCOUNTERED, AND IS SUBSEQUENTLY USED BY THE DIAGNOSTICIAN AND COMPILER.

#### READ-BACK CHECK

THE READ-BACK CHECK IS USED AT ALL POSSIBLE TIMES AFTER A TRANSFER TO OR FROM THE DISK. IT CANNOT BE USED WHEN FETCHING THE UNSEGMENTED PORTION OF A PROGRAM OR WHEN FETCHING RELOCATABLE SUBROUTINES SINCE THESE ARE READ WITH THE WRONG LENGTH RECORD CHECK WHICH USES THE SAME INDICATOR AS THE READ-BACK CHECK. A HARDWARE ERROR RESULTS IN THE MESSAGE -PDWR ERR RRRR- WHERE RRRR INDICATES THE ROUTINE IN WHICH THE ERROR OCCURRED.

WHENEVER FEASIBLE, THE AREA 00000-00057 IS USED TO READ FROM THE DISK. THIS IS DONE WITH SEEK, SET FLAG, READ AND BRANCH INSTRUCTIONS. THE DISK CONTROL FIELD IS IN LOCATION 44. THE BRANCH ADDRESS REFERS TO THE READ-BACK CHECK IN THE ROUTINE BROUGHT IN. FOR DEBUGGING THE SYSTEM IT IS OFTEN HELPFUL TO DUMP LOCATION 44 TO DETERMINE WHICH ROUTINE WAS IN CORE WHEN THE ERROR OCCURRED. FOR EXAMPLE, WHEN FETCHING THE EXECUTIVE, CORE POSITIONS 00000-00057 MIGHT READ AS FOLLOWS,

3400044007013200000000003600044007024912982017980012900100



## SENSE SWITCHES

SWITCH	ON	OFF	ROUTINES EFFECTED
1	HALTS COMPUTER AFTER HEADER CARD IS PUNCHED	NO HALT	EXECUTIVE
2	OUTPUT ON 1443 PRINTER	OUTPUT ON CARDS AND TYPEWRITER	ALL ROUTINES
3	HALTS COMPUTER AT RUN TIME AFTER A PAUSE STATEMENT OR AN ERROR	NO HALT	OBJECT PROGRAM AT RUN TIME
4	TRACE GENERATED	NO TRACE	OBJECT PROGRAM AT RUN TIME

## ALLOCATION OF DISK STORAGE FOR A SINGLE DRIVE SYSTEM

THE C40 DISK PACK SECTOR NUMBERS RUN FROM 60000 THROUGH 75999,  
DIVIDED INTO THE THREE AREAS LISTED BELOW--

1. DATA AND WORKING STORAGE AREA
2. USERS PROGRAM AREA
3. SYSTEM ROUTINES

SYSTEM ROUTINES ALWAYS OCCUPY CYLINDERS 96 THROUGH 99 AND PART OF  
CYLINDER 95. THE ALLOCATION OF THE REMAINING 95+ CYLINDERS IS DETERMINED  
FOR EACH INSTALLATION AT SYSTEM LOAD TIME. NOTE THAT THE STATEMENT SCAN  
ROUTINE STORES SOURCE PROGRAM STATEMENTS IN THE WORKING STORAGE AREA FOR  
RECOVERY BY THE DIAGNOSTIC, COMPILER AND LABEL INDEX ROUTINES. EACH SOURCE  
CARD REQUIRES TWO SECTORS OF STORAGE. SINCE 100 SOURCE CARDS REQUIRE ONE  
CYLINDER OF DISK STORAGE, WE SUGGEST A MINIMUM OF 20 CYLINDERS FOR WORKING  
STORAGE. DATA STORAGE DEPENDS ON THE APPLICATION EXPECTED AT THE  
INSTALLATION. IF, FOR EXAMPLE, YOU DECIDE TO USE FORTY CYLINDERS FOR DATA  
YOUR DISK WILL BE PARTITIONED AS FOLLOWS--

CYLINDERS 00 - 39	DATA AND WORKING STORAGE
CYLINDERS 40 - 95+	PROGRAM STORAGE
CYLINDER 95	FORTRAN LABEL INDEXER
CYLINDER 96	DIAGNOSTIC ROUTINE
CYLINDER 97	COMPILER ROUTINE
CYLINDER 98	SCAN ROUTINE AND RELOCATABLE SUBROUTINES
CYLINDER 99	EXECUTIVE ROUTINE AND CLASS A SUBROUTINES

THE ALLOCATION OF DISK STORAGE CANNOT BE CHANGED AFTER THE INITIAL LOAD EXCEPT BY ANOTHER INITIAL LOAD AND RECOMPILATION OF ALL PROGRAMS PREVIOUSLY HELD ON THE DISK.

#### ALLOCATION OF DISK STORAGE FOR A TWO DRIVE SYSTEM

THE SYSTEM AUTOMATICALLY ALLOCATES ONE COMPLETE DRIVE TO DATA AND WORKING STORAGE AND THE OTHER TO PROGRAMS AND SYSTEMS ROUTINES. BOTH DISKS MUST BE NUMBERED 60000 THROUGH 79999. THE SYSTEM ROUTINES OCCUPY THE SAME CYLINDERS ON THE SYSTEM DISK PACK AS IN A SINGLE DRIVE SYSTEM.

#### SYSTEMS WITH THREE OR FOUR DRIVES

SUPPOSE YOU HAVE FOUR DRIVES AND YOU HAVE RESERVED DRIVE 1 FOR SYSTEM AND DRIVE 3 FOR DATA. NOW YOU WISH TO USE 5 AND 7 FOR DATA ALSO. WITHIN YOUR PROGRAM YOU MAY USE THE FOLLOWING STATEMENT, N= NODDF(5), WHICH WILL CAUSE DRIVE 5 TO BE TREATED BY THE MOVE ROUTINE AS THE DATA DRIVE. N= NODD(1) WILL CAUSE AN ERROR MESSAGE AND YOUR JOB WILL BE ABORTED. THIS IS TO PROTECT THE PROGRAMS AND SYSTEM ON DRIVE 1.

THE NODD SUBROUTINE IS SHOWN BELOW.

```

30210*  NODD
30230  DORG5000
30240  BNR NODD,KTAB,0,      IS ARGUMENT UNDEFINED
30250  B  UDV,,,           YES
30260NODD TD NODD-1,401,0,   401 IS NUMBER OF SYSTEM DRIVE
30270  MF NODD-2,NODD-1,01,  MAKE A FIELD OUT OF SYSTEM DRIVE NUMBER
30290  C  KTAB,NODD-1,1,    ARE YOU TRYING TO CLOBBER PROGRAMS
30300  BE NODDA,,0 ,       NO
30310  TD 402,KTAB,,       402 IS NUMBER OF DATA DRIVE
30315  SF 402

```

```

30320      BB
30330NODDA TFM ERMA,NODDM-1,1, YOU ARE DEFINING THE SYSTEMS DISK FOR DATA
30340      B7 ERR
30350NODDM DAC 5,NODD',NODDA-9
30400NFTAB DS ,19709
30360KTAB DS ,NFTAB-20
30370ERR DS ,06356
30380ERMA DS ,03301
30390UDV DS ,06344
30410      DEND

```

## DATA STORAGE BY THE MOVE SUBROUTINE

ASSUME THAT 40 CYLINDERS HAVE BEEN ALLOCATED FOR DATA. NOW CONSIDER A PROGRAM USING MOVE WHICH HAS SPECIFIED HUNDRED-WORD RECORDS AND A MAXIMUM NUMBER OF RECORDS EQUAL TO 800. IF THE PROGRAM STORES ALL THE RECORDS THAT IT SPECIFIED, IT WOULD EXACTLY FILL THE DATA STORAGE AREA. THE FIRST RECORD WOULD OCCUPY SECTORS 67990 THROUGH 67999 AND THE LAST RECORD WOULD OCCUPY SECTORS 60000 THROUGH 60009. SUPPOSE, INSTEAD, THAT THE PROGRAM ONLY STORES TEN RECORDS BUT STILL SPECIFIES 800. THEN THE FIRST RECORD WILL BE STORED IN 67999 THROUGH 67990 AS BEFORE BUT THE LAST (TENTH) RECORD IS IN 67909 THROUGH 67900. THESE RECORDS WILL NOW BE RELATIVELY SAFE SINCE THEY CAN ONLY BE ERASED BY A PROGRAM THAT STORES DATA ON ALL FORTY CYLINDERS. WHERE AN INSTALLATION HAS ONLY ONE OR TWO PROGRAMMERS IT WOULD THEREFORE BE POSSIBLE TO MAINTAIN PERMANENT DATA STORAGE ON DISK BY MEANS OF A DISK MEMORY MAP AND A DISCREET USE OF THE MOVE SUBROUTINE. FOR AN OPEN SHOP INSTALLATION USED BY MANY PROGRAMMERS THIS TYPE OF PERMANENT STORAGE ON DISK IS NOT PRACTICAL. THE BEST SOLUTION FOR AN OPEN SHOP IS TO ACQUIRE ADDITIONAL DISK PACKS FOR SPECIAL JOBS WHICH REQUIRE EITHER PERMANENT DATA STORAGE OR MORE DATA STORAGE THAN IS ALLOCATED ON THE MAIN C4D SYSTEM PACK.

## CORE STORAGE AT EXECUTION TIME

```

00000 - 00399      LOAD AREA AND ARITHMETIC TABLES
00400 - 07649      CLASS A SUBROUTINES
07650 - SSSSS      UNSEGMENTED PORTION OF PROGRAM
SSSSS+2 - RRRRR    THE LAST SEGMENT WHICH HAS BEEN CALLED
                   INTO CORE. THE LONGEST OF THE PROGRAM
                   SEGMENTS DETERMINES RRRRR.
RRRRR+1 - UP       THE RELUCATABLE SUBROUTINES CALLED BY
                   THE PROGRAM
TTTTT - N9999      THE SYMBOL TABLE

```

## SYSTEM DECK AND LOADER INITIALIZATION

ALL ROUTINES OF C4D ARE COMPRESSED INTO A SPECIAL FORMAT THAT DIFFERS FROM THE OUTPUT OF ANY PRESENTLY AVAILABLE SPS ASSEMBLER. THIS FORMAT IS AS FOLLOWS--

COLUMNS 1-5 SEQUENCE NO. OF THE CARD  
 6-10 CORE LOCATION THAT THE INFORMATION IN COLUMN 11  
 WILL BE READ INTO (DIGIT IN COLUMN 6 IS FLAGGED)  
 11-80 PROGRAM INFORMATION

IF A RECORD MARK APPEARS ON A CARD, ALL PROGRAM INFORMATION TO THE RIGHT OF IT MUST APPEAR ON THE FOLLOWING CARD AND THE ADDRESS IN COLUMNS 6-10 ADJUSTED ACCORDINGLY.

THE FIRST THREE CARDS OF THE SYSTEM DECK TURN OFF INDEX REGISTERS, TURN ON INDIRECT ADDRESSING AND ZERO CORE. THE FOURTH CARD LOADS THE LOADER INITIALIZATION USING CORE POSITION 09900-09979 AS AN INPUT AREA. THE FIRST CARD FOLLOWING THE LOADER INITIALIZATION DECK CAUSES A BRANCH TO THE FIRST INSTRUCTION OF THE INITIALIZATION.

THE INITIALIZATION DOES THE FOLLOWING--

1. DETERMINES CORE SIZE
2. CHECKS FOR INDIRECT ADDRESSING
3. REQUESTS VIA THE TYPEWRITER THE SYSTEM DRIVE NUMBER, DATA DRIVE NUMBER, AND A NUMBER INDICATING EITHER AN INITIAL OR SUBSEQUENT LOAD
4. READS AND PUNCHES A C4D COLD START CARD
5. STORES ADD AND MULTIPLY TABLES AND SYSTEM DIGITS ON DISK (SECTORS 79800-79803)
6. READS A LOAD CARD WHICH SUBSEQUENTLY LOADS THE EXECUTIVE INTO CORE.

THE EXECUTIVE ROUTINE THEN REQUESTS THAT THE PROGRAM STORAGE BEGINNING SECTOR ADDRESS BE ENTERED ON THE TYPEWRITER IF THIS IS AN INITIAL LOAD ON A SINGLE DRIVE SYSTEM (ON A MULTIPLE DRIVE SYSTEM IT IS AUTOMATICALLY SET TO 60000). THIS ADDRESS IS STORED IN CORE AT 00181-00185 TO BE LATER RETRIEVED AND LOADED ONTO DISK AS PART OF THE CLASS A SUBROUTINES. THE EXECUTIVE IS THEN INITIALIZED AND LOADED ONTO DISK (THE DISK TABLE IS ALSO LOADED IF THIS IS AN INITIAL LOAD).

THE PORTION OF THE EXECUTIVE LOCATED IN CORE POSITIONS 18000-18223 SERVES TO LOAD THE ENTIRE REST OF THE SYSTEM AND CHECK FOR HARDWARE ERRORS DURING LOADING.

## EXECUTIVE ROUTINE

THE EXECUTIVE ROUTINE IDENTIFIES THE TYPE OF JOB SPECIFIED BY A CONTROL CARD. IT THEN PERFORMS THE FOLLOWING TASKS AS REQUIRED--

1. UPDATES TABLES,
2. LOADS CORE WITH PROGRAMS AND DATA,
3. RELOCATES RELOCATABLE SUBROUTINES,
4. COMPRESSES THE DISK TABLE AND PROGRAM STORAGE AREA FOLLOWING A PROGRAM DELETION,
5. PRINTS OR PUNCHES APPROPRIATE MESSAGES.

## DISK TABLE

THE EXECUTIVE CONTAINS THE DISK TABLE WHICH IS A CATALOG OF THE PROGRAMS STORED ON THE DISK FILE. EACH PROGRAM REFERENCE IS A TWENTY DIGIT RECORD CONSISTING OF THREE FIELDS. A FIVE DIGIT FIELD CONTAINS THE BEGINNING SECTOR NUMBER OF THE PROGRAM. THE NEXT THREE DIGIT FIELD CONTAINS THE NUMBER OF SECTORS FOR SYMBOL TABLE STORAGE. THE LAST TWELVE DIGITS CONTAIN THE FIVE ALPHAMERIC CHARACTER PROGRAM NAME AND AN ALPHAMERIC RECORD MARK (O#). FOR THE BENEFIT OF THE EXECUTIVE ROUTINE AND THE COMPILER THESE RECORDS ARE PRECEDED BY TWENTY DIGITS CONTAINING INFORMATION ON THE NEXT AVAILABLE SECTOR NUMBER (NEXT AND NRP2LO), THE NUMBER OF USERS PROGRAMS PERMANENTLY HELD (MAX), AND THE DISK TABLE CORE LOCATION FOR THE MAX+1 PROGRAM NAME (PP1NLU). THE DISK TABLE IS STORED IN CORE WITH THE EXECUTIVE IN LOCATION 00566 THROUGH 04499. THE SIZE OF THE TABLE ALLOWS PERMANENT STORAGE OF 195 PROGRAMS. AN ATTEMPT TO CODE A 196TH ENTRY RESULTS IN THE ERROR MESSAGE -DISK TABLE FULL-. CKDT IS THE ROUTINE WITHIN THE EXECUTIVE THAT SCANS THE DISK TABLE FOR A SPECIFIC ENTRY. BASE, AS FOUND BY THE CKDT ROUTINE, CONTAINS THE ADDRESS WITHIN THE DISK TABLE OF THE STARTING SECTOR NUMBER OF THE PROGRAM DESIRED. WHENEVER THE DISK TABLE IS ALTERED, IT IS RERECORDED ON THE DISK.

WHENEVER A CORE TO DISK OR DISK TO CORE TRANSFER IS ATTEMPTED, A MAXIMUM OF NINE SEEKS ARE EXECUTED TO FIND THE SECTOR ADDRESS. IF AFTER SEEKING NINE TIMES THE WRONG ADDRESS INDICATOR IS ON, THE MESSAGE-RENUMBER SYSTEM DRIVE- IS OUTPUT. IT IS SUGGESTED THAT THE POSITION OF THE SEEK MECHANISM BE CHECKED BEFORE RENUMBERING THE PACK.

## CONTROL CARDS

THE EXECUTIVE RESPONDS TO CONTROL CARDS AS FOLLOWS--

## \* DATE

THE CONTENTS OF COLUMNS 7-80 ARE STORED IN THE DAYID AREA IN CORE AND ON DISK FOR SUBSEQUENT OUTPUT WITH EACH JOB.

## \* SRS NNN

THE EXECUTIVE RELOCATES ALL SUBROUTINES RELATIVE TO ZERO, ENTERS THE NUMBER OF SUBS -NNN- AND EACH SUBROUTINE NAME IN THE SUB NAME TABLE (SUBNMS), ENTERS FOR EACH SUBROUTINE THE NUMBER OF SUBROUTINE INSTRUCTION DIGITS, SUBROUTINE INSTRUCTION PLUS DATA DIGITS, AND THE SIZE OF THE SUBROUTINE IN SECTORS INTO THE SUBROUTINE TABLE (SUBTAB). AFTER RELOCATING A SUBROUTINE AND MAKING THE APPROPRIATE TABLE ENTRIES, THE SUBROUTINE IS STORED ON DISK. AFTER ALL SUBS HAVE BEEN PROCESSED, THE TABLES ARE STORED ON THE DISK.

## \* DISK

THE EXECUTIVE OUTPUTS THE NUMBER EQUAL TO MAX, THE NUMBER EQUAL TO NEXT, AND THE NAMES OF ALL PROGRAMS PERMANENTLY STORED ON DISK.

## \* CODE NAME

THE EXECUTIVE CHECKS THAT THE PROGRAM -NAME- IS NOT ALREADY ON FILE, ENTERS THE NAME OF THE PROGRAM AS THE MAX + 1 ENTRY IN THE DISK TABLE, AND FLAGS N(MAX+2) ON THE RIGHT TO INDICATE THAT COMPILATION HAS NOT YET TAKEN PLACE. THE SCAN ROUTINE IS THEN FETCHED TO CORE AND CONTROL IS TRANSFERRED TO SCAN.

IF THE PROGRAM IS ON FILE, THE MESSAGE -NAME WAS ON FILE- IS OUTPUT.

## \* HOLD NAME

THE EXECUTIVE CHECKS THAT NAME WAS THE LAST PROGRAM COMPILED AND UPDATES THE DISK TABLE BY INCREMENTING MAX BY ONE AND NEXT BY THE SIZE OF THE PROGRAM. ALSO, MPINLO (MAX PLUS ONE NAME LOCATION) AND MP2LO (NAME-MAX PLUS TWO-LOCATION) ARE INCREMENTED BY TWENTY. NAME(MAX+1) IS ZEROED OUT AND N(MAX+2) IS FLAGGED ON ITS RIGHTMOST DIGIT. THE FORTRAN LABEL INDEXER IS THEN FETCHED TO CORE AND CONTROL IS TRANSFERRED TO THE INDEXER.

IF THE PROGRAM WAS NOT THE LAST COMPILED, A CHECK IS MADE TO SEE IF THE PROGRAM IS ALREADY ON FILE. IF IT IS, THE MESSAGE -NAME WAS ON FILE- IS OUTPUT. OTHERWISE THE MESSAGE -NAME NOT ON FILE- IS OUTPUT.

## \* RUN NAME

THE EXECUTIVE CHECKS THAT NAME HAS BEEN SUCCESSFULLY COMPILED AND EXISTS ON DISK AND THEN FETCHES THE UNSEGMENTED PORTION OF THE PROGRAM INTO CORE LOCATION 7550. THE FIRST ONE HUNDRED DIGITS OF THE UNSEGMENTED PORTION CONTAIN THE FOLLOWING INFORMATION--

1. THE SECTOR ADDRESS OF THE SYMBOL TABLE CONSTANTS ON DISK RELATIVE TO BASE, THE SECTOR ADDRESS OF THE BEGINNING OF THE PROGRAM. (SYMSEC)
2. THE STARTING CORE ADDRESS FOR THE RELOCATABLE SUBROUTINES (RELBEG)
3. THE LOW CORE ADDRESS OF THE SYMBOL TABLE (STBEG)
4. THE HIGH CORE ADDRESS OF THE COMMON AREA (FCTEND)

5. THE LAST (LOW CORE) ADDRESS OF VARIABLES IN COMMON (ENDCOM)
6. DESIGNATION OF WHICH RELOCATABLE SUBROUTINES ARE CALLED BY THE PROGRAM (ISUSED THROUGH ISUSED-72)

(THIS INFORMATION WAS SUPPLIED BY THE COMPILER AT COMPILE TIME).

THE SYMBOL TABLE AREA IS FILLED WITH 0# AT THE RIGHT OF EACH SYMBOL TABLE SLOT, AND DISK SECTORS CONTAINING SYMBOL TABLE ENTRIES (SIX PER SECTOR) ARE READ ONE AT A TIME AND THE CONTENTS OF EACH STORED IN THE CORE SYMBOL TABLE AREA. THE RELOCATABLE SUBROUTINES THAT ARE REFERENCED ARE FETCHED ONE AT A TIME, ENTRY POINTS ARE RECORDED IN THE SYMBOL TABLE, AND EACH IS PROPERLY RELOCATED. THE FIRST FIVE SECTORS OF THE CLASS A SUBROUTINES ARE BROUGHT INTO CORE AND STBEG AND FCTEND (3 AND 4 ABOVE) ARE STORED WITHIN THESE FIVE HUNDRED DIGITS AT PRBS AND COMBEG RESPECTIVELY. THE REMAINDER OF THE CLASS A SUBROUTINES ARE CALLED TO CORE AND CONTROL IS TRANSFERRED TO THE PROGRAM NAME.

\*CUT NAME (WHERE NAME IS ENTRY K)

THE EXECUTIVE CHECKS THAT THE PROGRAM EXISTS ON FILE AND FOLLOWS ONE OF TWO PATHS ACCORDING TO WHETHER NAME WAS OR WAS NOT THE LAST PROGRAM PERMANENTLY STORED. IN EITHER CASE, MPINLO AND MNP2LO ARE BOTH DECREMENTED BY TWENTY AND MAX IS DECREMENTED BY ONE. THE NONEXISTENCE OF NAME ON FILE RESULTS IN THE MESSAGE -NAME NOT ON FILE-.

IF NAME WAS THE LAST PERMANENTLY RECORDED PROGRAM, NEXT IS DECREMENTED BY THE SIZE OF THE PROGRAM BEING DELETED, THE NAME OF THE PROGRAM IS ZEROED OUT, AND N(MAX+2) IS FLAGGED ON THE RIGHTMOST DIGIT. THE ALTERED DISK TABLE IS RECORDED ON DISK.

IF NAME WAS NOT THE LAST PERMANENTLY RECORDED PROGRAM, THE FOLLOWING OCCURS. NEXT IS SET EQUAL TO BASE + THE NUMBER OF STORED PROGRAM SECTORS FOLLOWING PROGRAM K. THE DISK PROGRAM STORAGE AREA IS COMPRESSED BY READING THOSE PROGRAMS FOLLOWING NAME FROM THE DISK INTO A CORE BUFFER AREA (BUFFEG) AND THEN REPLACING THE PROGRAMS ONTO THE DISK STARTING IN THE AREA WHERE NAME EXISTED. AFTER THIS PROCESS IS COMPLETE, THE DISK TABLE IS UPDATED BY SUBTRACTING THE SIZE OF NAME FROM N(K+1), MOVING ENTRY K+1 BACK ONE TO THE POSITION FORMERLY CONTAINING THE K ENTRY AND EXECUTING THIS SUBTRACTION AND SHIFT FOR THE REMAINING ENTRIES K+2 THROUGH MAX+1. FINALLY NAME(MAX+1) IS ZEROED OUT AND N(MAX+2) IS FLAGGED ON ITS RIGHTMOST DIGIT, THE ALTERED DISK TABLE IS RECORDED ON DISK, AND THE EXECUTIVE IS RECALLED IN ITS ENTIRETY TO CORE WHEREIN IT LOOKS FOR A NEW \* CONTROL CARD.

A-HDWR ERR EXEC-MESSAGE DURING \*CUT JOB INDICATES THAT A DISK CHECK HAS OCCURRED TWICE WHEN ATTEMPTING TO RECORD THE UPDATED DISK TABLE. IF A HARDWARE ERROR (INCORRECT DISK-CORE READ/WRITE OR MISSING SECTOR ADDRESS) OCCURS DURING THE COMPRESSING OF THE PROGRAM STORAGE AREA THE NAMES OF PROGRAMS K THROUGH MAX+1 ARE ZEROED IN THE DISK TABLE. MAX IS SET EQUAL TO K-1, NEXT IS SET EQUAL TO N(K), AND THE NEW N(MAX+2) IS FLAGGED ON ITS RIGHTMOST DIGIT. THE EXECUTIVE LESS THE DISK TABLE IS FETCHED TO CORE, THE NEW DISK TABLE IS RECORDED, THE MESSAGE -CUT HDWR ERR- PROGRAMS

ON FILE FOLLOW- IS OUTPUT, AND THE NAMES OF THE PROGRAMS REMAINING ARE OUTPUT. IF A HARDWARE ERROR OCCURS DURING THIS ATTEMPT TO SAVE PROGRAMS NUMBERED ONE THROUGH K-1 (E.G. WHEN RECORDING NEW DISK TABLE), THE MESSAGE -RELOAD C4D, INITIAL LOAD- IS OUTPUT, AND THE MACHINE HALTS WITH A CHECK STOP.

#### EXECUTIVE CALLED BY LINK SUBROUTINE

WHEN THE EXECUTIVE IS CALLED BY THE LINK SUBROUTINE, THE PROGRAM TO BE RUN IS TREATED AS EXPLAINED UNDER \*RUN NAME WITH ONE EXCEPTION -THE COMMON AREA OF THE SYMBOL TABLE IS NOT INITIALIZED WITH RECORD MARKS BEFORE INSERTING THE DEFINED SYMBOLS OF THE PROGRAM IN THEIR PROPER CORE LOCATIONS.

#### C4D SCAN

SCAN WAS ADDED TO THE C4D SYSTEM TO SAVE TIME. SINCE THE COMPILER AND DIAGNOSTICIAN BOTH NEED SIMILAR INFORMATION ABOUT THE SOURCE STATEMENTS, SCAN ASSEMBLES THIS INFORMATION AND STORES IT ON DISK. IT DOES THE FOLLOWING--

1. READS SOURCE CARDS
2. COMPRESSES BLANKS (EXCEPT IN FORMAT STATEMENTS)
3. DOES SOME MINOR ERROR CHECKING (E.G. UNBALANCED PARENTHESIS)
4. DETERMINES THE STATEMENT TYPE
5. SEQUENTIALLY NUMBERS EACH CARD IMAGE ON THE RIGHT IF THE FIRST CARD IS NOT NUMBERED IN COLUMNS 77-80.
6. SETS UP BRANCH ADDRESSES FOR THE DIAGNOSTICIAN AND COMPILER
7. STORES THIS INFORMATION ALONG WITH THE SOURCE STATEMENT IN THE WORKING STORAGE AREA ON DISK
8. CHECKS FOR AN END CARD. IF NONE IS FOUND THE MESSAGE -NO END CARD- IS PRINTED AND THE EXECUTIVE IS CALLED.



## C4D DIAGNOSTICIAN

THE DIAGNOSTIC ROUTINE CONSISTS OF 2 PARTS, THE FIRST OF WHICH CONTAINS CHECKING ROUTINES FOR EVERY ALLOWABLE TYPE OF STATEMENT EXCEPT DATA AND END. WHENEVER EITHER A DATA OR END STATEMENT IS ENCOUNTERED THE SECOND PART IS CALLED SO THAT IT OVERLAYS ONLY THE ARITHMETIC STATEMENT CHECKING ROUTINE. ALL THE SUBROUTINES, SUCH AS THE LABEL PROCESSOR, NEEDED BY PART TWO ARE LEFT IN FROM PART ONE. AFTER THE END STATEMENT IS FOUND, THE TABLES OF UNDEFINED LABELS, UNDEFINED VARIABLES, AND OPEN DO LOOPS, IF ANY, ARE OUTPUT. THE COMPILER IS THEN CALLED AND EITHER COMPILES THE PROGRAM IF NO ERRORS HAVE BEEN FOUND OR MERELY LISTS IT IF IT CONTAINS ERRORS.

## ERRORS

WHEN AN ERROR IS ENCOUNTERED, THE CONTENTS OF THE INPUT AREA ARE SHIFTED TO THE RIGHT, ERRXX (WHERE XX IS THE ERROR NO.) IS INSERTED ON THE LEFT AND THE AREA IS PRINTED OR PUNCHED DEPENDING ON THE SETTING OF SENSE SWITCH 2. THE CONTENTS ARE THEN SHIFTED BACK TO THE ORIGINAL POSITION AND A FLAG IS SET TO INDICATE THAT THE PROGRAM CONTAINS ERRORS.

WHENEVER POSSIBLE, ERROR CHECKING CONTINUES ON A PARTICULAR STATEMENT AFTER AN ERROR IS FOUND. SOMETIMES, HOWEVER, THE ERROR IS SUCH THAT IT WOULD MAKE FURTHER CHECKING OF THE STATEMENT IMPOSSIBLE (E.G. A MISPLACED CONTINUATION CARD OR AN UNRECOGNIZABLE STATEMENT). THIS OFTEN RESULTS IN FURTHER ERRORS--SUCH AS, AN UNDEFINED LABEL WHICH WAS ACTUALLY DEFINED IN THE STATEMENT IN ERROR. THE PROGRAMMER WILL FIND THAT CORRECTION OF THE FIRST ERROR WILL CORRECT THE OTHERS THAT IT CAUSED.

## SENSE SWITCHES

THE ONLY SENSE SWITCH APPLICABLE TO THE DIAGNOSTIC ROUTINE IS SWITCH 2. THIS SWITCH IS TESTED AS SOON AS THE DIAGNOSTICIAN IS BROUGHT INTO CORE AND OUTPUT STATEMENTS ARE INITIALIZED ACCORDING TO THE SETTING. HENCE, THE RESETTING OF SWITCH 2 ONCE THE DIAGNOSTICIAN IS ALREADY IN CORE WILL NOT CHANGE THE OUTPUT DEVICE.

## SYMBOL TABLES

THERE ARE FIVE TABLES IN THE DIAGNOSTICIAN--

TBLF - HOLDS UP TO 37 SUBROUTINE NAMES  
 TBLB - HOLDS UP TO 15 OPEN DO LABELS  
 TBLD - HOLDS UP TO 60 OPEN DO INDEXES  
 TBLA - HOLDS VARIABLE NAMES  
 TBLA1 - HOLDS STATEMENT, SEGMENT AND PROCEDURE LABELS.

EACH OF THE TABLES HOLDS 10 DIGIT FIELDS. TBLF, TBLB, AND TBLD ARE OF FIXED LENGTH. TBLA AND TBLA1 ARE OF VARIABLE LENGTH DEPENDING BOTH ON CORE SIZE AND THE SIZE OF EACH OTHER. TBLA BEGINS AT THE END OF TBLD WHEREAS TBLA1 BEGINS AT HIGH NUMBERED CORE AND WORKS ITS WAY DOWN UNTIL IT ENCOUNTERS TBLA. A RECORD MARK INDICATES THE END OF EACH TABLE. ALL 10 DIGIT ENTRIES ARE FLAGGED ON THE LEFT.

## TBLF

ENTRIES ARE MADE INTO THIS TABLE DIRECTLY FROM THE DISK. SUBROUTINE NAMES ARE BROUGHT IN AS PART OF THE INITIALIZATION. THIS TABLE IS USED ONLY FOR COMPARISON AND ONCE THE NAMES ARE BROUGHT IN, NO DELETIONS OR ADDITIONS ARE MADE. ALL VARIABLE NAMES ARE COMPARED AGAINST THIS TABLE AND AN EQUAL COMPARE RESULTS IN ERROR 40 (SUBROUTINE NAME USED AS A VARIABLE NAME). CONTENTS OF TBLF ARE NEVER OUTPUT.

## TBLB

ENTRIES ARE MADE TO THIS TABLE WHEN A DO STATEMENT IS ENCOUNTERED. THE LABEL IS HELD HERE UNTIL THE STATEMENT WITH THAT LABEL IS READ. EACH TIME A LABELED STATEMENT IS READ, THE LABEL IS COMPARED AGAINST THIS TABLE TO SEE IF IT CLOSSES A DO LOOP. IF SO, THE LABEL IS REMOVED FROM THE TABLE. IF ANY ENTRIES REMAIN AT THE END OF THE PROGRAM, THE CONTENTS OF THIS TABLE ARE PRINTED AS OPEN DOS.

## TBLD

ENTRIES ARE ALSO MADE TO THIS TABLE WHENEVER A DO STATEMENT IS ENCOUNTERED AND DELETED WHEN THE DO LOOP IS CLOSED. ENTRIES ARE COMPARED AGAINST THE INDEX OF A NEW DO LOOP OR AN IMPLIED DO AS IN A READ STATEMENT (READ1,(A(I), I=1,10). IF THE INDEX BEING COMPARED IS ALREADY IN THE TABLE, IT RESULTS IN ERROR 18. THE CONTENTS OF THIS TABLE ARE NEVER OUTPUT.

## TBLA

VARIABLE NAMES ARE ENTERED INTO THIS TABLE AS THEY ARE ENCOUNTERED. IF PUT IN BY A DIMENSION STATEMENT, A FLAG OVER THE NINTH POSITION INDICATES THAT IT HAS BEEN DIMENSIONED. (FOR EXAMPLE, DIMENSION A(20)

GOES IN AS M1000000-0). IF ENTERED BY AN INPUT STATEMENT, OR FROM THE LEFT-HAND SIDE OF AN ARITHMETIC STATEMENT, IT IS PUT IN AS DEFINED, THAT IS, WITH ONLY A FLAG AT THE LEFTMOST DIGIT (B=2. GOES IN AS M200000000). IF IT IS A VARIABLE THAT IS REFERRED TO BUT NOT YET DEFINED IT IS PUT IN WITH A FLAG ALSO OVER THE RIGHTMOST DIGIT (T=CA GOES IN AS M34100000-). WHEN THIS VARIABLE IS DEFINED LATER IN THE PROGRAM, THE FLAG IS REMOVED. IF AT THE END OF THE PROGRAM ANY ENTRIES REMAIN WITH A FLAG OVER THE RIGHTMOST DIGIT, THESE ENTRIES ARE OUTPUT AS UNDEFINED SYMBOLS. SUBSCRIPTED VARIABLES ARE CHECKED AS TO WHETHER THEY HAVE BEEN DIMENSIONED, BUT NOT AS TO WHETHER THEY HAVE BEEN DEFINED.

## TBLA1

LABELS ARE ENTERED INTO THIS TABLE AS THEY ARE ENCOUNTERED. IF IT IS A STATEMENT, SEGMENT OR PROCEDURE LABEL IT IS MERELY PUT IN WITH A FLAG ON THE LEFTMOST DIGIT. IF REFERRED TO, BUT NOT YET DEFINED, A FLAG WILL ALSO APPEAR ON THE RIGHTMOST DIGIT. WHEN THIS LABEL IS DEFINED, THE FLAG IS REMOVED. IF AT THE END OF THE PROGRAM, ANY LABELS REMAIN WITH A FLAG ON THE RIGHTMOST DIGIT, THEY ARE OUTPUT AS UNDEFINED LABELS.

## SUBROUTINES

THE DIAGNOSTICIAN CONTAINS A NUMBER OF SUBROUTINES WHICH REPORT BACK TO THE MAINLINE PROGRAM BY MEANS OF VARIOUS SWITCHES--

IUPROC THE INPUT/OUTPUT PROCESSOR WHICH HANDLES READ, REREAD, PUNCH, TYPE AND PRINT STATEMENTS. CHECKS FOR A FORMAT NUMBER AND I/O LIST.

LBPROC PROCESSES LABELS AND ASSEMBLES THE CHARACTERS IN A PLACE CALLED - LABEL - FOR SUBSEQUENT COMPARISONS AGAINST ENTRIES IN THE SYMBOL TABLES.

TLU TABLE LOOK-UP ROUTINE WHICH HANDLES ALL ENTRIES AND DELETIONS TO THE SYMBOL TABLES (EXCEPT TRLF WHERE ENTRIES ARE MADE FROM THE DISK AS PART OF THE INITIALIZATION).

STMMU CHECKS STATEMENT LABELS. A DIGIT IN LOCATION 563 (PUT THERE BY SCAN) CAUSES A BRANCH TO THIS ROUTINE.

## INTERNAL SWITCHES

SWITCH	FLAG ON THIS SWITCH INDICATES--
1	PREVIOUS STATEMENT ENDED WITH A COMMA, SO EXPECT A CONTINUATION CARD (BRANCH INTO CHECKING ROUTINE WILL BE DIFFERENT FROM REGULAR ENTRY).
2	CONTINUATION CARD IS BEING PROCESSED
12	THIS STATEMENT ENDS A DO LOOP
13	-SYMBOL TABLE EXCEEDED- MESSAGE HAS BEEN PRINTED. DO NOT PRINT IT AGAIN.
20	LBPROC FOUND A NUMERIC LABEL
21	LBPROC FOUND A FIXED POINT LABEL
22	LBPROC FOUND A DECIMAL POINT
23	LBPROC FOUND AN E
24	LBPROC FOUND A SUBSCRIPTED VARIABLE
27	NUMERIC SUBSCRIPT FOUND
28	FINISHED PROCESSING SUBSCRIPT
29	SPECIAL CHARACTER FOUND IN SUBSCRIPT
30	TLU SHOULD PUT LABEL IN TABLE
31	TLU SHOULD REMOVE LABEL FROM TABLE
32	TLU SHOULD PUT UNDEFINED FLAG (RIGHT-MOST POSITION) ON LABEL
35	TLU DID NOT FIND THIS LABEL IN TABLE
36	THIS LABEL IS UNDEFINED IN THE TABLE (FLAG IS ON RIGHT-MOST DIGIT)
37	TLU SHOULD PUT DIMENSION FLAG (NINTH POSITION) ON LABEL.
38	LABEL FOUND IN TABLE HAS DIMENSION FLAG
46	TLU REMOVED THIS LABEL FROM THE TABLE
47	LBPROC SHOULD NOT SAVE CHARACTERS FOUND BECAUSE THIS IS A NUMERIC CONSTANT AND WILL NOT BE STORED.
48	LBPROC FOUND A SUBROUTINE NAME
49	DO STATEMENT IS BEING PROCESSED
52	EXPECT A FORMAT NUMBER
54	OUTPUT STATEMENT IS BEING PROCESSED
61	ARITHMETIC DEFINITION FOUND
63	FIXED MODE
64	EXPONENTIAL EXPRESSION
65	PREVIOUS EXPRESSION FIXED
70	COMPUTED GO TO STATEMENT
71	DIMENSION STATEMENT
73	COMMON OR DIMENSION STATEMENT
99	LBPROC FOUND EITHER A SUBSCRIPTED VARIABLE OR A SUBROUTINE
200	NUMBER FOUND BEFORE A FORMAT SPECIFICATION
201	OPEN PARENTHESIS IN A FORMAT STATEMENT
500	ONLY COMMON STATEMENTS PROCESSED SO FAR

501 THIS IS A COMMON STATEMENT, SO DO NOT CLEAR SWITCH 500  
SWTR A TRANSFER STATEMENT HAS JUST BEEN PROCESSED.  
SWTRE UNLABELED STATEMENT FOUND AFTER A TRANSFER STATEMENT  
A1 TLU SHOULD USE ITS ROUTINE FOR TBLA1 (SINCE THIS TABLE GOES  
ESSENTIALLY BACKWARDS, THE METHOD FOR SEARCH, ADDITION AND  
DELETION IS SLIGHTLY ALTERED)  
SEGFLG AN END SEGMENT STATEMENT HAS BEEN FOUND  
FLAG AT LEAST ONE ERROR HAS BEEN FOUND IN THE SOURCE PROGRAM.  
SWC PREVIOUS IF STATEMENT USED THE -C- FEATURE SO THIS STATEMENT  
NEED NOT BE NUMBERED

ROUTINE	INPUT		OUTPUT		INTERFACES <sup>(1)</sup>	
	INFORMATION	DEVICE	INFORMATION	DEVICE	CALLED BY	CALLS
EXECUTIVE	CONTROL CARDS	CARD READER	CONTROL CARDS	CD PUNCH, PRINTER <sup>(2,3)</sup>	COLD START AND	SCAN
	RELOCATABLE SUBROUTINES	CARD READER	ERROR MESSAGES	PRINTER <sup>(2,3)</sup>		ALL SYSTEM ROUTINES
	REL. SUBROUTINE NAMES	DISK	UPDATED DISK TABLE	DISK <sup>(2,3)</sup>	OBJECT PROGRAM	
	REL. SUBROUTINE TABLE	DISK	#PROGRAMS & PROGRAM NAMES	PRINTER <sup>(2,3)</sup>	SUBROUTINES	
		REL. SUBROUTINES	DISK			
			REL. SUB. NAMES	DISK		
			REL. SUB. TABLE	DISK		
SCAN	SOURCE STATEMENTS	CARD READER	COMPRESSED SOURCE STMTS.	DISK WORKING STORAGE	EXECUTIVE	DIAGNOSTICIAN I
			ERROR MESSAGES	PRINTER <sup>(2)</sup>		EXECUTIVE IF NO "END" CARD
DIAGNOSTICIAN I	SOURCE STMTS.	DISK	FORTRAN ERRORS	PRINTER <sup>(3)</sup>	SCAN	DIAGNOSTICIAN II
	REL. SUB. NAMES	DISK				
DIAGNOSTICIAN II	SOURCE STMTS.	DISK	FORTRAN ERRORS	PRINTER <sup>(3)</sup>	DIAGNOSTICIAN I	COMPILER I
COMPILER I	SOURCE STMTS.	DISK	SOURCE STMTS. (IF ERRORS)	PRINTER-SS2 ON NO LISTING-SS2 OFF	DIAGNOSTICIAN II	COMPILER II
	REL. SUB. NAMES	DISK	COMPILED STMTS.	PRINTER <sup>(3)</sup>		EXECUTIVE-IF ERRORS
	REL. SUB. TABLE	DISK	OBJECT PROGRAM	DISK		
			ERROR MESSAGES	PRINTER <sup>(3)</sup>		
COMPILER II	SOURCE STATEMENTS	DISK	SYMBOL TABLE	DISK, PRINTER <sup>(3)</sup>	COMPILER I	EXECUTIVE
			UPDATED DISK TABLE	DISK		
LABEL INDEXER	SOURCE STMTS.	DISK	INDEX OF LABELS	PRINTER <sup>(3)</sup>	EXECUTIVE	EXECUTIVE

- (1) If a hardware error occurs in any routine or if a control card is read by a routine other than the Executive, the Executive is called.
- (2) Output is on the printer if sense switch 2 is on.  
If sense switch 2 is off, output is on the typewriter.
- (3) If sense switch 2 is off, output is on cards.

CAD DISK ADDRESSES & INTERFACE LABELS

CONTAINED IN WITHIN REFERENCE TO	EXEC	ASUBS	SCAN	DIAG I	DIAG II	LABEL INDEX	COMPI	COMPI II	ERR SUBS
EXECUTIVE 79800/79828	EXZMDF FETEX FETEX2	ABNDGF DCFEF TIGER	DCFEF EXENAB	DCENEC	DCXEC	DOFS	DCFEF	DCFEF	TIGER
DISK TABLE 79804/79843	DTDCF								
STATEMENT SCAN 79600/79643	PREDCF								
DIAGNOSTICS I 79200/79266			DCF06						
DIAGNOSTICS II 79380/79399				DCPTR					
COMPILER I 79490/79556					DCCOMP				
COMPILER II 79561/79570							EDCF		
CLASS A SUBS 79929/79997	ASBDF ASBDF								
ERROR SUBS 79591/79599									DCFER
RELOCATABLE SUBROUTINES 79150/79199	SUBDCF								
REL. SUBR. NAMES 79592/79596	NANDCF								
REL. SUBR. TABLE 79644/79649	S8TBDC								
SOURCE STATEMENTS 60000/60000-1									
OBJECT PROGRAM ? / 79124	RUNI								DCFSG
LABEL INDEX 79125/79199	LABINX								

00040	B2	00100			
00050	B3	00070	00080	00090	
00640	CALCD	00420	00430	00440	
00360	CONTN	00280			
00560	DATDRV	00170			
00690	DRIVE	00400	00410	00430	
00530	DRIVE1	00140	00150	00210	00360
00540	DRIVE2	00190	00200	00220	00360
00680	DTD				
00630	DTDCF1	00230	00240	00260	00270
	GRPMK	00030			
00670	LDERR	00330			
00320	LDHER	00290	00350		
00470	NOIA	00100	00520		
00620	NOINA	00500			
00580	NOINAD	00480			
00400	QNEDRV	00380			
00450	RDLA				
00570	REC	00050			
00090	SET400	00060			
00510	STRDRS	00530	00540		
00550	SYSDRV	00120			
00700	TABLES	00020			
00260	WRTAB	00310			

LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS AND REMARKS
				00000	*	C4D LOADER	
10000				00010		DORG	10000
10000	31	00100	11142	00020		TR	100, TABLES
				00000	*	C4D LOADER	INITIALIZATION
				00030		TD	403, GRPMK
10012	25	00403	11443	00040	B2	TDM	0,0,, DETERMINE CORE SIZE
10024	15	00000	00000	00050	B3	TR	19999, REC-1,2
10036	31	+9999	10724	00060		BD	SET400,0
10048	43	10080	00000	00070		AM	B3+3,20,10
10060	11	10039	00020	00080		B7	B3
10072	49	10036		00090	SET400	TD	400, B3+2
10080	25	00400	10038	00100		BNR	NOIA, B2+6, 11, DETERMINE INDIRECT ADDRESSING
10092	45	10524	10030	00110		RCTY	
10104	34	00000	00102	00120		WATY	SYSDRV
10116	39	10593	00100	00130		RCTY	
10128	34	00000	00102	00140		RNTY	DRIVE1,,, READ SYSTEM DRIVE FROM TYPEWRITER
10140	36	10578	00100	00150		SF	DRIVE1
10152	32	10578	00000	00160		RCTY	
10164	34	00000	00102	00170		WATY	DATDRV
10176	39	10661	00100	00180		RCTY	
10188	34	00000	00102	00190		RNTY	DRIVE2,,, READ DATA DRIVE FROM TYPEWRITER
10200	36	10583	00100	00200		SF	DRIVE2
10212	32	10583	00000	00210		TD	401, DRIVE1
10224	25	00401	10578	00220		TD	402, DRIVE2
10236	25	00402	10583	00230		TD	DTDCF1, 401
10248	25	10922	00401	00240		K	DTDCF1, 00701
10260	34	10922	00701	00250		SF	0
10272	32	00000	00000	00260	WRTAB	WN	DTDCF1, 00702
10284	38	10922	00702	00270		RN	DTDCF1, 703
10296	36	10922	00703	00280		BN1	CONTN, 01900
10308	47	10396	01900	00290		BNF	LDHER, 0
10320	44	10352	00000	00300		CF	0
10332	33	00000	00000	00310		B7	WRTAB
10344	49	10284		00320	LDHER	RCTY	
10352	34	00000	00102	00330		WATY	LDERR
10364	39	11109	00100	00340		H	
10376	48	00000	00000	00350		B7	LDHER
10388	49	10352		00360	CONTN	C	DRIVE1, DRIVE2
10396	24	10578	10583	00370		TD	182, 0,, 0 IN 182 IF SINGLE DRIVE
10408	15	00182	00000	00380		BE	ONEDRV
10420	46	10444	01200	00390		TDM	182, 1,, 1 IN 182 IF TWO DRIVES
10432	15	00182	00001	00400	ONEDRV	TDM	DRIVE-1, 5, 11
10444	15	11140	00005	00410		TD	DRIVE, 401
10456	25	11141	00401	00420		RACD	CALCD
10468	37	10937	00500	00430		TF	CALCD+98, DRIVE
10480	26	11035	11141	00440		WACD	CALCD+10,,, C4D COLD START
10492	39	10947	00400	00450	RDL	RNCD	183
10504	36	00183	00500	00460		B7	188
10516	49	00188		00470	NOIA	RCTY	
10524	34	00000	00102	00480		WATY	NOINAD
10536	39	10727	00100	00490		RCTY	
10548	34	00000	00102	00500		WATY	NOINA
10560	39	10879	00100	00510	STRDRS	H	,, 27
10572	48	00000	00000	00520		B7	NOIA
10584	49	10524		00530	DRIVE1	DS	1, STRDRS+6
10588		00001		00540	DRIVE2	DS	1, STRDRS+11
10593		00034	X2	00550	SYSDRV	DAC	34, ENTER ONE DIGIT SYSTEM DISK DRIVE'
10661		00032	X2	00560	DATDRV	DAC	32, ENTER ONE DIGIT DATA DISK DRIVE'
10725		00002		00570	REC	DC	2, '
10727		00017	X2	00580	NOINAD	DAC	17, YOU WILL NEED TO ,
10761		00020	X2	00590		DAC	20, ACQUIRE THE INDIRECT
10801		00020	X2	00600		DAC	20, ADDRESSING FEATURE ,
10841		00019	X2	00610		DAC	19, BEFORE YOU CAN USE'
10879		00022	X2	00620	NOINA	DAC	22, THIS OPERATING SYSTEM'
10922		00014		00630	DTDCF1	DSC	14, 07980000400100
10937		00080	X2	00640	CALCD	DAS	80
11097		00005	X2	00650		DAC	5, ,
11106		00001		00660		DC	1, '
11109		00012	X2	00670	LDERR	DAC	12, LD HDWR ERR'
11133		00004	X2	00680	DTD	DAC	4, DISK
11141		00002		00690	DRIVE	DS	2
11142		00050		00700	TABLES	DSC	50, 00000000000010203040002040608000306090210040802161
11192		00050		00710		DSC	50, 00500151020060218142007041128200806142230090817263
11242		00050		00720		DSC	50, 000000000005060708090012141618151811242720242822363
11292		00050		00730		DSC	50, 52035304540363248445532494653604846546275445362718
11342		00050		00740		DSC	50, 0123456789123456789-23456789-J3456789-JK456789-JKL
11392		00050		00750		DSC	50, 56789-JKLM6789-JKLMN789-JKLMNO89-JKLMNOP9-JKLMNPO
11442		00001		00760		DSC	1, '
11443		00001		00770	GRPMK	DGM	
10000				00780		DEND	10000



03150	AA	03080																		
05730	ACTHLD	04530																		
02660	ADDRS																			
02670	ADDRS1	03420																		
02370	ADD2	02430	02550																	
07830	ADTAB	07650																		
07840	ADTAB2	07850																		
01740	AFTST	01720																		
03210	ALSTEN	03220																		
03970	ARG	03890																		
00700	ASBCON	02630																		
00510	ASBDCF	02570																		
03190	BA	03140																		
02130	BAS	02140																		
00220	BASE	01170	01180	01210	01250	01440	01500	03090	03100	03110	03340	03360	03440	03460	03570	04140				
		04230	04290	04300	04310															
03230	BB2	03030	03160	03200																
04610	BEG	01150	04580	04640	05040	05210	05380	05720	06070	06110	06320	06440	06650	06730	06750	06990				
04560	BEGIN	00840	03380	07510	07920															
00390	B000	00560	02930	04965																
01890	BP2ST	01760	01850	02280	02490	02530														
00280	BRPT	01810	01820	01890	01930	02520	02530	02540												
00270	BRPT8	00280																		
00330	BRST	03640																		
00910	BSTBG	02620																		
04480	BUFBEG	03590	08410																	
01480	BUFFER	01470	01560	01600	01600	01610	01610													
00370	CA	03590																		
05810	CALLIX	05780																		
07770	CCERR	05200																		
07950	CDBUF	00560	00590	00600	00620	02930	02950	02960												
04680	CFLGS	04690	04700	04710																
03050	CHECK	03180																		
06870	CHEKCD	06840																		
08150	CHKUPR	08110																		
02990	CKDT	01070	03150	03190	04500	05120	05390													
06300	CKSB	06140																		
06330	CKSB1	06300																		
06340	CKSB2	07130																		
01540	CKSTRD	01520																		
04170	CKWA	04120																		
03420	CLZGP1	03330																		
05340	CNTCD	06760	06800	06820	06860	06870														
03060	CNTR	03040	03050	03150	03190	03690	05640	05650	05670											
00920	COMBEG	02610																		
00750	COMPL	04970																		
06900	CONTH	06850																		
07230	CUUNT	07200	07340	07360																
07870	CTHER	04000																		
03600	CTLOP	04270																		
03280	CUT	05130																		
05100	CUTCK	05080																		
03680	CUTER	00680	02670	03440	03730															
03870	CUTER1	03840																		
03900	CUTER2	03880																		
03950	CUTER3	03910																		
04020	CUTER4	03960																		
04920	CXSS1	04900																		
02710	CYLOFL	01330																		
04780	C4DP	04750																		
05370	DATDAT	05300																		
07800	DATDCF	05270	05280	05290	08440															
05220	DATE	04940																		
05230	DATE1	05240																		
05250	DATE2	05260																		
05280	DATOD	05360																		
07790	DAY	04930																		
00230	DAYID	04950	05220	05230	05370															
00250	DAYRM	01410	04720	07520	07550															
05330	DCTNC	05340	05350																	
03930	DELET	05100																		
05580	DISK	05150																		
05640	DISK2	04040																		
07720	DOLCD	06430																		
03540	DRAS	03550																		
00340	DRIVE	03480	08460																	
05140	DSKCK	05110																		
00190	DSTAB	00200	00210	00220																
03240	DTDCF	03400	04280	04410	05510	08450														
00470	DTERR	01120	01130	01140	05410															
07780	DTFUL	05030																		
00180	DTNH1	05680	05710																	
03790	DTZEG	03710																		
01390	DUBFIN	01340	01350	01430	08430															
01410	DUBST	01380	01390	01420																
02800	DUMHY	02730	02780	02790	02810	02830														
00550	DUMY	01820	01830	01840	02250															
00990	ENDCOM	01340																		
07850	ENDTAB	08290																		
07740	EXCCYL	06310																		
04800	EXECU	05070																		







LOCTN	DP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS	AND	REMARKS
				00000	* C4D EXECUTIVE				
00000		00000		00010	PARCK	DS	,0		
00025		00001		00020	ZLDROW	DS	1,25		
00037		00001		00030	ZLDGRD	DS	1,37		
00042		00005		00040	ZLDBR	DS	5,42		
00044		00001		00050	ZLDDC	DS	1,44		
00049		00005		00060	ZLDSA	DS	5,49		
00052		00003		00070	ZLDSC	DS	3,52		
00057		00005		00080	ZLDCA	DS	5,57		
00404				00090		DORG	404		
00405		00080	X2	00100	INPUT	DAS	80		
00565		00001	X2	00110		DAC	1,		
00425		00010		00120	NAME	DS	10,INPUT+20		
00570		00005		00130	NEXT	DS	5,570		
00574		00003		00140	MAX	DS	3,574		
00580		00005		00150	MP1NLO	DC	5,00603,00580		
00585		00005		00160	NMP2LO	DC	5,00610,00585		
00590		00001		00170	NSUB1	DS	1,MAX+16		
00595		00001		00180	DTNM1	DS	1,595		
04499		03934		00190	DSTAB	DS	3934		
04491		00001		00200	GRPMK	DGM	DSTAB-8		
04493		00001		00210	MORMOV	DS	1,DSTAB-6		
04499		00005		00220	BASE	DS	5,DSTAB		
04501		00050	X2	00230	DAYID	DAC	50,		
04601		00025	X2	00240		DAC	25,		
04651		00001	X2	00250	DAYRM	DAC	1,		
04656		00005	05348	00260		DSA	RUNO		
04664		00008		00270	BRPT8	DC	8,4900000'		
04663		00001		00280	BRPT	DS	1,BRPT8-1		
04667		00008	X2	00290	OVLAP	DAC	8,OVERLAP'		
04719		00038		00300	LDCRD	DC	38,34000440070132000000000038000440070249		
04682		00001		00310	LDCD	DS	1,LDCRD-37		
04707		00001		00320	ROW	DS	1,LDCD+25		
04720		00005		00330	BRST	USS	5,LDCD+38		
04726		00006		00340	DRIVE	DC	6,0,LDCD+44		
04731		00005		00350	SA	DC	5,0,LDCD+49		
04734		00003		00360	SC	DC	3,0,LDCD+52		
04739		00005		00370	CA	DC	5,0,LDCD+57		
04740		00001		00380		DC	1,'LDCD+58		
04721		00004	X2	00390	B000	DAC	4,		
04729		00044	X2	00395		DAC	44,		
04816		00013		00400		DSC	13,0,		
04831		00001	X2	00410	0000	DAC	1,		
04841		00010		00420		DC	10,0,		
04863		00022		00430		DC	22,0,		
04879		00016		00440		DC	16,000000000000'0000		
04880		00001		00450	NH2ZER	DC	1,0,		
04883		00015	X2	00460	HERR	DAC	15,HDWR ERR EXEC'		
04913		00009	X2	00470	UTERR	DAS	9		
04931		00009	X2	00480		DAC	9, ON FILE'		
04953		00006		00490	HAS	DC	6,664162		
04964		00011		00500	NAHDCF	DC	11,58200513996		
04975		00011		00510	ASBDCF	DC	11,92900500550		
04976		00014		00520	SUBDCF	DSC	14,07965000015000		
04990		00014		00530	SBTDC	DSC	14,07964400614400		
05016		00013		00540	EX2DCF	DC	13,7980012900100		
05021		00005		00550	DUMY	DS	5		
05022	31	13008	04722	00560	PRINT	TR	CDBUF+7,B000+1		
05024		00000		00570	FLAG	DS	,PRINT+2		
05034	12	05021	00001	00580		SM	PRINT-1,1,7		
05046	31	13000	05024	00590		TR	CDBUF-1,PRINT-1,11		
05054	39	13001	00400	00600	WACD	CDBUF			
05070	34	00000	00102	00610		RCTY			
05082	39	13001	00100	00620	WATY	CDBUF			
05094	42			00630		BB2	,,0		
05096	36	00044	00703	00640	ROWCK	RM	ZLDDC,703,10		
05108	47	05113	01942	00650		BNI	**+10,1942		
05120	43	05224	00070	00660		BD	ROWCK1,70,11		
05132	44	05156	05024	00670		BNF	HDWRE,FLAG		
05144	49	08208	00000	00680		B	CUTER		
05156	34	00000	00102	00690	HDWRE	RCTY			
05166		00008		00700	ASBCON	DC	8,34066010,*-1		
05168	47	05192	00200	00710		BNC2	TYHDW		
05180	17	05022	04883	00720		BTM	PRINT,HERK		
05192	39	04883	00100	00730	TYHDW	WATY	HERR		
05204	48	00000	00000	00740	HALT	H	,,,		HALT AFTER DISK HARDWARE CHECK
05207		00004	X2	00750	COMPL	DAC	4,CODE,*-8		
05216	49	05304		00760		B7	FETEX2		
05224	25	00069	00070	00770	ROWCK1	TD	69,70,11		
05236	46	05248	00600	00780		BI	**+12,600		
05248	46	05260	00700	00790		BI	**+12,700		
05260	46	05272	01600	00800		BI	**+12,1600		
05272	46	05284	01700	00810		BI	**+12,1700		
05284	49	00000		00820		B7			
05292	27	05096	05095	00830	FETEX	BT	ROWCK,ROWCK-1		
05304	16	00042	09162	00840	FETEX2	TFM	ZLDBR,BEGIN,7,		REFETCH EXEC. FROM DISK
05316	26	00057	05016	00850		TF	ZLDCA,EX2DCF		
05328	15	00025	00006	00860		TDM	ZLDROW,6		

LOCTN	OP	P/L	Q	PG/LN	LABEL	MEM	OPERANDS	REMARKS
05340	49	00000		00870		B7	0	
				00880	*			
				00890	*			R U N
				00900	*			
00855		00001		00910	BSTBG	DS	1,855	
00879		00001		00920	COMBEG	DS	1,879	
07650		00001		00930	UNSEG	DS	1,7650	
07550		00100		00940	SECIUS	DSS	100,UNSEG-100,,	SINGLE SECTOR PRECEDING UNSEG
07554		00001		00950	SYMSEC	DS	1,SECIUS+4	
07559		00001		00960	RELBEG	DS	1,SECIUS+9	
07564		00001		00970	STBEG	DS	1,SECIUS+14	
07569		00001		00980	FCTEND	DS	1,SECIUS+19	
07574		00000		00990	ENDCOM	DS	,SECIUS+24	
07577		00001		01000	LASTSB	DS	1,SECIUS+27	
07649		00001		01010	ISUSED	DS	1,SECIUS+99	
05348	16	05682	05732	01020	RUNO	TFM	RUN2+6	,RUNLK
05360	16	00070	00299	01025		TFM	70	,299
05372	47	05396	00200	01030	RUN	BNI	**24,00200,,	FOR ENTRY VIA LINK ROUTINE
05384	31	05022	07392	01040		TR	PRINT,PRNTR	
05396	26	07499	00574	01050		TF	MAXLOC,MAX	
05408	11	07499	00801	01060		AM	MAXLOC,1,9	
05420	27	07500	07499	01070		BT	CKOT,MAXLOC	
05432	71	04719	00036	01080		MF	LDCRD,36	
05444	44	05480	00099	01090		BNF	NNOD,99	
05456	44	05536	07755	01100		BNF	RUN1,LSTENT	
05468	44	05536	00585	01110		BNF	RUN1,NMP2LO,11	
05480	26	04929	07435	01120	NNOD	TF	DTERR+16,NOT,,	PROGRAM TO BE CUT OR RUN NOT ON DISK
05492	26	04921	00425	01130	MISSER	TF	DTERR+8,NAME	
05504	17	05022	04913	01140		BTM	PRINT,DTERR,7	
05516	44	09210	04719	01150		BNF	BEG,LDCRD	
05528	49	05304		01160		B7	FETEX2,,,	LINK-RUN
05536	25	04494	00401	01170	RUN1	TD	BASE-5,401	
05548	34	04494	00701	01180		K	BASE-5,00701	
05560	26	00037	04719	01190		TF	ZLDCRD,LDCRD	
05572	15	00035	00000	01200		TDM	35,0	
05584	26	00023	04499	01210		TF	23,BASE,11,	STORE REG SECTOR NO AS BASE FOR SEGMENT
05596	16	00042	05676	01220		TFM	ZLDBR,RUN2,7	
05608	15	00025	00006	01230		TDM	ZLDROP,6,,	
05620	16	00057	07550	01240		TFM	ZLDCA,SECIUS,7	
05632	26	00049	04499	01250		TF	ZLDSA,BASE,11	
05644	25	00044	00401	01260		TD	ZLDDC,401	
05656	16	00052	00201	01270		TFM	ZLDDC,201,9	
05668	49	00012		01280		B7	12	
05676	46	05756	03700	01290	RUN2	BI	RUN3,3700,,	BI RUNLK,03700 IF LINK PROG
05688	46	05700	03800	01300		BI	**12,3800	
05700	27	05108	05107	01310		BT	ROWCK+12,ROWCK+11	
05712	33	05024	00000	01320		CF	FLAG	
05724	49	07240		01330		B7	CYLOFL	
05732	26	05803	07574	01340	RUNLK	TF	DUBFIN+11,ENDCOM	
05744	12	05803	00010	01350		SM	DUBFIN+11,10	
05756	27	05108	05107	01360	RUN3	BT	ROWCK+12,ROWCK+11	
05768	15	00035	00002	01370		TDM	35,2	
05780	21	05822	07564	01380		A	DUBST+6,STBEG,,	FILL SYM TAB AREA WITH FLAGGED ZERO-REG
05792	14	05822	09999	01390	DUBFIN	CM	DUBST+6,9999	
05804	46	05848	01100	01400		BH	FETST	
05816	26	00010	04651	01410	DUBST	TF	10,DAYRM,2	
05828	11	05822	00010	01420		AM	DUBST+6,10,7	
05840	49	05792		01430		B7	DUBFIN	
05848	21	05866	04499	01440	FETST	A	FETST1+6,BASE	
05860	14	00003	00000	01450	FETST1	CM	3,0,29, P ADDR IS THAT OF BU.=BO. STORED SECTORS OF SYM. TAB	
05872	46	06064	01200	01460		BE	FETREL	
05884	16	00057	05372	01470		TFM	ZLDCA,BUFFER,7,	FETCH SECTOR OF SYMBOL TABLE
05872		00000		01480	BUFFER	DS	,RUN	
05896	25	00069	00009	01485		TD	69	,9
05908	16	00052	00801	01490		TFM	ZLDDC,1,9	
05920	26	00049	04499	01500		TF	ZLDSA,BASE,11	
05932	21	00049	07554	01510		A	ZLDSA,SYMSEC	
05944	16	00042	05964	01520		TFM	ZLDBR,CKSTRD	
05956	49	00012		01530		B7	12	
05964	27	05096	05095	01540	CKSTRD	BT	ROWCK,ROWCK-1	
05976	11	00049	00001	01550		AM	ZLDSA,1,7	
05988	45	06032	05372	01560	TESTRM	BNR	TF,BUFFER	
06000	24	00049	06599	01570		C	ZLDSA,NXM20,11	
06012	46	06064	01300	01580		BNL	FETREL	
06024	49	00012		01590		B7	12	
06032	26	05376	05386	01600	TF	TF	BUFFER+4,BUFFER+14,6	
06044	31	05372	05387	01610		TR	BUFFER,BUFFER+15	
06056	49	05988		01620		B7	TESTRM	
				01630	*			
				01640	*			LOAD RELOCATABLE SUBROUTINES
				01650	*			
00569		00001		01660	SBINDG	DS	1,00569	
00573		00001		01670	SUBDIG	DS	1,00573	
00578		00001		01680	SUBSEC	DS	1,00578	
06064	34	04990	00701	01690	FETREL	K	SBTBDC,00701,,	FETCH SUBROUTINE TABLE OVER DISK TABLE
06076	25	00069	00009	01695		TD	69	,9
06088	26	00052	04998	01700		TF	ZLDDC,SBTBDC+8	
06100	16	00057	00566	01710		TFM	ZLDCA,566,7	

LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS AND REMARKS
06112	16	00042	06132	01720		TFM	ZLDBR,AFTST,7
06124	49	00012		01730		B7	12
06132	27	05096	05095	01740	AFTST	BT	ROWCK,ROWCK-1
06144	15	00035	00000	01750		TDM	35,0
06156	25	06306	00400	01760		TD	BP2ST+2,400
06168	43	06200	07649	01770	RELCK	BD	SYTBB,ISUSED,7
06180	15	06787	00000	01780		TDM	LDDIG,0
06192	49	06728		01790		B7	REL6
06200	15	06787	00001	01800	SYTBB	TDM	LDDIG,1
06212	26	04663	07559	01810		TF	BRPT,RELBEG
06224	26	05021	04663	01820		TF	DUMY,BRPT
06236	21	05021	00573	01830	REL1	A	DUMY,SUBDIG,7
06248	24	05021	07564	01840		C	DUMY,STBEG
06260	47	06304	01300	01850		BL	BP2ST
06272	17	05022	04667	01860		BTM	PRINT,OVLAP,7
06284	15	00035	00002	01870		TDM	35,2
06296	49	05304		01880		B7	FETEX2
06304	31	09990	04657	01890	BP2ST	TR	9990,BRPT-6
06316	26	00049	00578	01900	REL7	TF	ZLDSA,SUBSEC,7
06328	16	00054	00099	01910		TFM	ZLDSC+2,99,7
06340	21	00054	00573	01920	REL2	A	ZLDSC+2,SUBDIG,7
06352	26	00057	04663	01930		TF	ZLDCA,BRPT
06364	16	00042	06384	01940		TFM	ZLDBR,REL2,7
06376	49	00012		01950		B7	12
06384	46	06396	03700	01958	REL2	BI	*+12,3700
06396	27	05108	05107	01960		BT	ROWCK+12,ROWCK+11
06408	26	06515	07559	01970		TF	RELOP+11,RELBEG,,
06420	16	06575	00001	01980		TFM	RELOQ+11,00001,7
06432	21	06575	06515	01990		A	RELOQ+11,RELOP+11
06444	16	06546	00006	02000		TFM	PPBEG+6,00006,7
06456	21	06546	06515	02010		A	PPBEG+6,RELOP+11
06468	16	06606	00011	02020		TFM	QPPEG+6,00011,7
06480	21	06606	06515	02030		A	QPPEG+6,RELOP+11
06492	16	06539	00000	02040		TFM	KOUNT,0,7
06504	44	06564	00000	02050	RELOP	BNF	RELOQ
06516	44	06540	06546	02060		BNF	*+24,PPBEG+6,11
06528	32	06551	00000	02070		SF	PPBEG+11,,6
06539		00005		02080	KOUNT	DS	5,*
06540	21	00000	07559	02090	PPBEG	A	,RELBEG
06552	33	06551	00000	02100		CF	PPBEG+11,,6
06564	44	06624	00000	02110	RELOQ	BNF	INCRL
06576	44	06600	06606	02120		BNF	*+24,QPPEG+6,11
06588	32	06611	00000	02130	BAS	SF	QPPEG+11,,6
06599		00005		02140	NXM20	DS	5,BAS+11
06600	21	00000	07559	02150	PPBEG	A	,RELBEG
06612	33	06611	00000	02160		CF	QPPEG+11,,6
06624	11	06539	00012	02170	INCRL	AM	KOUNT,12,7
06636	24	06539	00569	02180	REL3	C	KOUNT,SBINDG,7
06648	46	06716	01300	02190		BNL	REL5
06660	11	06515	00012	02200		AM	RELOP+11,12,7
06672	11	06546	00012	02210		AM	PPBEG+6,12,7
06684	11	06575	00012	02220		AM	RELOQ+11,12,7
06696	11	06606	00012	02230		AM	QPPEG+6,12,7
06708	49	06506		02240		B7	RELOP
06716	26	07559	05021	02250	REL5	TF	RELBEG,DUMY,,
06728	14	06179	07577	02260	REL6	CM	RELCK+11,LASTSB,7
06740	46	07040	01200	02270		BE	FETASB
06752	12	06310	00020	02280		SM	BP2ST+6,20,7
06764	12	06179	00002	02290		SM	RELCK+11,2,7
06776	33	06786	00000	02300	FLADG	CF	USEFLG
06786		00000		02310	USEFLG	DS	,FLADG+10
06787		00000		02320	LDDIG	DS	,FLADG+11
06788	11	06247	00013	02330		AM	REL1+11,13,7
06800	43	06892	06179	02340		BD	V,RELCK+11,11
06812	15	06787	00000	02350		TDM	LDDIG,0
06824	32	06786	00000	02360		SF	USEFLG
06836	11	06647	00013	02370	ADD2	AM	REL3+11,13,7
06848	11	06351	00013	02380		AM	REL2+11,13,7
06860	11	06327	00013	02390		AM	REL7+11,13,7
06872	44	06200	06786	02400		BNF	SYTBB,USEFLG
06884	49	06728		02410		B7	REL6
06892	14	06247	00000	02420	V	CM	REL1+11,0,68
06904	47	06836	01200	02430		BNE	ADD2
06916	32	06786	00000	02440		SF	USEFLG
06927		00005		02450	TIGER	DC	5,00550 ,*
06928	43	06984	06787	02460		BD	Z,LDDIG
06940	12	06247	00013	02470		SM	REL1+11,13,7
06952	11	06179	00002	02480		AM	RELCK+11,2,7
06964	11	06310	00020	02490		AM	BP2ST+6,20,7
06976	49	06200		02500		B7	SYTBB
06984	11	06647	00013	02510	Z	AM	REL3+11,13,7
06996	21	04663	06647	02520		A	BRPT,REL3+11,11
07008	31	06310	04657	02530		TR	BP2ST+6,BRPT-6,6
07020	22	04663	06647	02540		S	BRPT,REL3+11,11
07032	49	06848		02550		B7	ADD2+12
07040	15	00035	00002	02560	FETASB	TDM	35,2
07052	25	00069	00009	02565		TD	69 ,9
07064	26	00057	04975	02570		TF	ZLDCA,ASBDCF

ADJUST P AND Q RELOCATABLE ADDRESSES

REPLACE RELBEG WITH RELBEG + SUB LENGTH

LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS AND REMARKS
07076	16	00042	07096	02580		TFM	ZLDBR,FTASB2
07088	49	00000		02590		B7	0
07096	27	05096	05095	02600	FTASB2	BT	ROWCK,ROWCK-1
07108	26	00879	07569	02610		TF	COMBEG,FCSTEND
07120	26	00855	07564	02620		TF	BSTBG,STBEG
07132	26	00055	05166	02630		TF	ZLDCA-2,ASBICON
07144	26	00042	06927	02640		TF	ZLDBR,TIGER
07156	49	00012		02650		B7	12
07164	39	07185	00100	02660	ADDRS	WATY	SYSPRB
07176	48	08208	00000	02670	ADDRS1	H	CUTER
07184				02680		DORG	*-3
07185		00022	X2	02690	SYSPRB	DAC	22,RENUMBER SYSTEM DRIVE'
07228	27	05108	05107	02700	TYPECK	BT	ROWCK+12,ROWCK+11
07240	13	00049	00050	02710	CYLOFL	MM	49,50,10
07252	11	00095	00001	02720		AM	95,1,9
07264	26	07347	00049	02730		TF	DUMMY,ZLDSA
07276	16	00049	00000	02740		TFM	ZLDSA,0,7
07288	21	00047	00095	02750		A	ZLDSA-2,95
07300	21	00047	00095	02760		A	ZLDSA-2,95
07312	34	00044	00701	02770		K	ZLDDC,00701,,
07324	22	07347	00049	02780		S	DUMMY, ZLDSA
07336	32	07345	00000	02790	YMMUD	SF	DUMMY-2
07347		00005		02800	DUMMY	DS	5,YMMUD+11
07348	22	00055	07347	02810		S	ZLDCA-2,DUMMY
07360	44	00000	05024	02820		BNF	0,FLAG,,
07372	21	00052	07347	02830		A	ZLDCS,DUMMY,,
07384	49	00000		02840		B7	0
07392	47	05046	03400	02850	PRNTR	BNI	PRINT+24,03400,,
07404	34	00000	00971	02860		SKIP	,1
07407		00003	X2	02870	EXIT	DAC	3,OUT,*-8
07416	39	05024	00900	02880		PRA	PRINT-1,,6
07428	34	00000	00951	02890		SPI	M,1
07435		00006		02900	NOT	DC	6,555663,*-4
07440	42			02910		BB2	
07442		00001		02920		DC	1,'
07444	31	13008	04722	02930	TYPWR	TR	CDBUF+7,B000+1
07456	12	05021	00001	02940		SM	PRINT-1,1,7
07468	31	13000	05024	02950		TR	CDBUF-1,PRINT-1,11
07480	39	13001	00400	02960		WACD	CDBUF
07494		00003		02970		DC	3,34'
07499		00005		02980	MAXLOC	DC	5,0
07500	16	07590	00603	02990	CKDT	TFM	ZA+6,603,,
07512	33	00099	00000	03000		CF	99
07524	33	07755	00000	03010		CF	LSTENT
07536	14	07499	00000	03020		CM	MAXLOC,0,9
07548	46	07756	01200	03030		BE	BB2
07560	16	07581	00000	03040		TFM	CNTR,000,9
07572	11	07581	00001	03050	CHECK	AM	CNTR,001,10
07581		00003		03060	CNTR	DS	3,*-2
07584	24	00000	00425	03070	ZA	C	,NAME
07596	47	07676	01200	03080		BNE	AA
07608	26	04499	07590	03090		TF	BASE,ZA+6
07620	12	04499	00013	03100		SM	BASE,13,7
07632	26	06599	04499	03110		TF	NXM20,BASE
07644	11	06599	00020	03120		AM	NXM20,20,7
07656	32	00099	00000	03130		SF	99,,,
07668	49	07720		03140		B7	BA
07676	24	07581	07499	03150	AA	C	CNTR,CKDT-1
07688	46	07756	01300	03160		BNL	BB2
07700	11	07590	00020	03170		AM	ZA+6,20,7
07712	49	07572		03180		B7	CHECK
07720	24	07581	07499	03190	BA	C	CNTR,CKDT-1
07732	47	07756	01200	03200		BNE	BB2
07744	32	07755	00000	03210	ALSTEN	SF	LSTENT
07755		00001		03220	LSTENT	DS	1,ALSTEN+11
07756	42			03230		BB2	
07758		00014		03240	DTDCF	DSC	14,07980404000500
				03250		*	
				03260		*	
				03270		*	
07772	44	05480	00099	03280	CUT	BNF	NNOD,99,,
07784	12	00574	00001	03290		SM	MAX,01,10
07796	26	00585	04880	03300		TF	NMP2LO,NMZZER,6
07808	12	00585	00020	03310		SM	NMP2LO,20,9
07820	12	00580	00020	03320		SM	MP1NLO,20,9
07832	44	07924	07755	03330		BNF	CLZGPI,LSTENT
07844	26	00570	04499	03340	SZVOID	TF	NEXT,BASE,11,,
07855		00005		03350	VOIDSZ	DS	5,SZVOID+11
07856	11	04499	00004	03360		AM	BASE,4,7
07868	26	00585	04880	03370		TF	NMP2LO,NMZZER,6
07880	16	00042	09162	03380	RECOT1	TFM	ZLDBR,BEGIN,7
07892	26	00037	04719	03390		TF	ZLDCRD,LDCRD,,
07904	26	00057	07771	03400		TF	ZLDCA,DTDCF+13
07916	49	00000		03410		B7	0
07924	15	07177	00009	03420	CLZGPI	TFM	ADDRS1+1,9,,
07936	26	00037	04719	03430		TF	ZLDCRD,LDCRD
07948	26	08219	04499	03440		TF	CUTER+11,BASE
07960	26	07855	06599	03450		TF	VOIDSZ,NXM20,11

SEEK NEXT CYLINDER AFTER OFLO

\*RUN CYLINDER OVERFLOW  
\*CUT CYLINDER OVERFLOW

\*\*\* INSTR MUST BEGIN BETWEEN 404-7400

CHECK FOR NAME IN DISK TABLE

FLAG SET AT 99 IF ENTRY FOUND

C U T

CUT ENTRY K

MAX ENTRY TO BE CUT

RECORD ADJUSTED DISK TABLE

ENTRY TO BE CUT NOT LAST ENTRY



LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS AND REMARKS
07972	22	07855	04499	03460		S	VOIDS2,BASE,11
07984	26	04731	06599	03470		TF	SA,NXM20,11,
07996	34	04726	00701	03480		K	DRIVE,00701,,
08008	26	08043	00570	03490		TF	SCONT,NEXT
08020	22	08043	06599	03500		S	SCONT,NXM20,11
08032	32	08041	00000	03510	TNOCS	SF	SCONT-2
08043		00005		03520	SCONT	DS	5,TNOCS+11
08044	26	04734	08043	03530		TF	SC,SCONT,,
08056	33	08041	00000	03540	DRAS	CF	SCONT-2
08067		00005		03550	SARD	DS	5,DRAS+11
08068	26	08067	06599	03560		TF	SARD,NXM20,11,
08080	26	00570	04499	03570		TF	NEXT,BASE,11
08092	21	00570	08043	03580		A	NEXT,SCONT,,
08104	16	04739	09074	03590		TFM	CA,BUFBCG
08116	24	08043	08789	03600	CTLOP	C	SCONT,TFSK+9,,
08128	47	08164	01100	03610		BNH	SMLMOV
08140	26	04734	08789	03620		TF	SC,TFSK+9
08152	32	04493	00000	03630		SF	MORMOV
08164	16	04724	08616	03640	SMLMOV	TFM	BRST+4,RETCT,7
08176	31	00026	04708	03650		TR	ZLDROW+1,ROW+1
08188	16	00025	00036	03660		TFM	ZLDROW,36,10
08200	49	00012		03670		B7	12,,,
08208	26	00570	00000	03680	CUTER	TF	NEXT,
08220	26	00574	07581	03690		TF	MAX,CNTR,,
08232	12	00574	00801	03700		SM	MAX,1,9
08244	16	08346	00580	03710		TFM	DTZEO+6,MP1NLO
08256	16	00585	00020	03720		TFM	NMP2LO,20
08268	21	00585	08219	03730		A	NMP2LO,CUTER+11
08280	26	00580	00585	03740		TF	MP1NLO,NMP2LO
08292	12	00580	00007	03750		SM	MP1NLO,7
08304	21	08322	00580	03760		A	ZEODT+6,MP1NLO
08316	26	00020	04841	03770	ZEODT	TF	20,0000+10,2
08328	11	08322	00020	03780		AM	ZEODT+6,20
08340	24	00000	08322	03790	DTZEO	C	,ZEODT+6
08352	46	08316	01300	03800		BNL	ZEODT
08364	26	00585	04880	03810		TF	NMP2LO,NM2ZER,6
08376	15	00025	00006	03820		TDM	ZLDROW,6
08388	26	00057	08431	03830		TF	ZLDCA,SPECDC
08400	16	00042	08432	03840		TFM	ZLDBR,CUTER1
08412	49	00000		03850		B7	0,,,
08431		00013		03860	SPECDC	DC	13,7984408504500
08432	36	00044	00703	03870	CUTER1	RN	ZLDDC,703
08444	47	08464	03900	03880		BNI	CUTER2,03900
08456	49	08532		03890		B7	ARG
08464	15	00025	00008	03900	CUTER2	TDM	ZLDROW,8
08476	16	00042	08508	03910		TFM	ZLDBR,CUTER3
08488	34	00000	00102	03920		RCTY	
08491		00003	X2	03930	DELET	DAC	3,CUT,*-8
08500	49	09052		03940		B7	RECDT
08508	36	00044	00703	03950	CUTER3	RN	ZLDDC,703
08520	47	08584	03900	03960		BNI	CUTER4,03900
08532	44	08564	00000	03970	ARG	BNF	MACH,PARCK
08544	33	00000	00000	03980		CF	PARCK
08556	49	00024		03990		B7	24
08564	39	12903	00100	04000	MACH	WATY	CTHER
08576	49	77777		04010		B7	77777
08584	39	12829	00100	04020	CUTER4	WATY	FIXCUT
08596	31	05022	07444	04030		TR	PRINT,TYPWR
08608	49	10314		04040		B7	DISK2
08616	46	08628	03800	04050	RETCT	BI	*+12,3800,8
08628	32	05024	00000	04060		SF	FLAG
08640	27	05108	05107	04070		BT	ROWCK+12,ROWCK+11
08652	36	00044	00703	04080		RN	ZLDDC,00703
08664	46	07228	03800	04090		BI	TYPECK,03800
08676	27	05096	05095	04100		BT	ROWCK;ROWCK-1
08688	25	00069	00009	04105		TD	69,9
08700	24	08625	00025	04110		C	RETCT+9,ZLDROW
08712	46	08768	01200	04120		BE	CKWA,,
08724	31	00050	04732	04130		TR	ZLDSC-2,SC-2,,
08736	26	00049	04499	04140		TF	ZLDSA,BASE,11
08748	15	00025	00008	04150		TDM	ZLDROW,8
08760	49	00012		04160		B7	12,,,
08768	44	08896	04493	04170	CKWA	BNF	FIXDT,MORMOV,,
08780	33	04493	00000	04180	TFSK	CF	MORMOV,,
08792	22	08043	04734	04190		S	SCONT,SC
08804	26	04731	08067	04200		TF	SA,SARD
08816	21	08067	04734	04210		A	SARD,SC
08828	21	04731	04734	04220		A	SA,SC
08840	21	04499	04734	04230		A	BASE,SC,6
08852	32	08041	00000	04240		SF	SCONT-2
08864	26	04734	08043	04250		TF	SG,SCONT
08876	33	08041	00000	04260		CF	SCONT-2
08888	49	08116		04270		B7	CTLOP,,,
08896	34	07758	00701	04280	FIXDT	K	DTDCF,00701,,
08908	26	08962	04499	04290		TF	UPDATE+6,BASE
08920	21	08974	04499	04300		A	MOVE+6,BASE
08932	21	08979	04499	04310		A	MOVE+11,BASE
08944	11	08962	00020	04320	LOOP	AM	UPDATE+6,20,7

SECTOR ADDRESS N(K+1)  
SEEK CYLINDER CONTAINING K+1 ENTRY

TOTAL NO. SECTORS TO BE MOVED UP

SAVE N(K+1) AT SARD

NEW NEXT AFTER PROGRAM DELETION

TFSK+5 THRU 9 CONTAINS CORE BUF AREA SI

READ K+1 ENTRY PLUS ALL ON CYL TO CORE

BLANK OUT DSK TAB FROM CUT ENTRY ON

FETCH EXEC MINUS DISK TABLE

AFTER WRITE TO LOWER DISK  
AFTER READ PROGS FROM UPPER DISK

WRITE K+1 ENTRY PLUS ON LOWER DISK  
FLAG INDICATES MORE OF PROGRAM TO BE CUT  
CUT BUFFER SIZE IN Q ADDRESS

READ PROGS FROM NEXT CYL TO CORE  
SQUISH DISK TABLE

LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS AND REMARKS
08956	22	00000	07855	04330	UPDATE	S	,VOIDSZ
08968	31	00004	00016	04340	MOVE	TR	4,16,267
08980	11	08974	00020	04350	AM	MOVE+6,20,7	
08992	11	08979	00020	04360	AM	MOVE+11,20,7	
09004	24	08962	00570	04370	C	UPDATE+6,NEXT,6	
09016	47	08944	01300	04380	BL	LOOP	
09028	26	00585	04880	04390	TF	NMP2LO,NM2ZER,6	
09040	16	00042	05292	04400	TFM	ZLDBR,FETEX	
09052	26	00057	07771	04410	RECDT	TF	ZLDCA,DTDCF+13
09064	49	00012	00000	04420	B	12,,,	RECORD SQUISHED DISK TABLE
09073				04430	DORG	*-2	
				04440	*		
				04450	*		
				04460	*		H O L D
09074	24	00580	00425	04470	HOLD	C	MPINLO,NAME,6
09074		00001		04480	BUFBEQ	DS	1,HOLD
09086	46	09130	01200	04490	BE	HOLD2	
09098	27	07500	07499	04500	BT	CKDT,MAXLOC	
09110	44	05480	00099	04510	BNF	NNOD,99	
09122	49	10062		04520	B7	NIDT2	
09130	44	10414	00585	04530	HOLD2	BNF	ACTHLD,NMP2LO,11
09142	49	05480		04540	B7	NNOD	
09150	16	12291	00040	04550	RESBEG	TFM	IXOFF+25,40,10
09162	16	00070	00299	04560	BEGIN	TFM	70,299,,
09174	27	05096	05095	04570	BT	ROWCK,ROWCK-1	NORMAL ENTRY POINT TO EXEC
09186	47	09210	00200	04580	BNC2	BEG	
09198	34	00000	00971	04590	SKIP	,1	
09201		00003	X2	04600	SUBAD	DAC	3,SRS,*-8
09210	31	00404	04830	04610	BEG	TR	INPUT-1,0000-1
09222	37	00405	00500	04620	RACD	INPUT	
09234	14	00405	00014	04630	CM	INPUT,14,10	
09246	47	09210	01200	04640	BNE	BEG	
09258	49	09362		04650	B7	FRMERR	
09266	16	00070	00299	04660	FROMER	TFM	70,299,,
09278	27	05096	05095	04670	BT	ROWCK,ROWCK-1	EXTERNAL EXEC ENTRY PT AFTER *CARD
09290	33	00564	00000	04680	CFLGS	CF	INPUT+159,,4
09302	12	09296	00002	04690	SM	CFLGS+6,2,10	
09314	14	09296	00406	04700	CM	CFLGS+6,INPUT+1,9	
09326	47	09290	01200	04710	BNE	CFLGS	
09338	31	00564	04650	04720	TR	INPUT+159,DAYRM-1	
09350	32	00416	00000	04730	SF	INPUT+11	
09362	16	00405	00034	04740	ERMERR	TFM	INPUT,34,10
09374	46	09406	00200	04750	BI	C4DP,00200	
09386	31	05022	07444	04760	TR	PRINT,TYPWR	
09398	49	09442		04770	B7	FRME	
09406	31	05022	07392	04780	C4DP	TR	PRINT,PRNTR
09418	34	00000	00971	04790	SKIP	,1	
09421		00003	X2	04800	EXECU	DAC	3,RUN,*-8
09430	39	00405	00400	04810	WACD	INPUT	
09442	17	05022	00405	04820	FRME	BTM	PRINT,INPUT,7
09454	47	09478	00100	04830	BNC1	RECNAM	
09466	48	00000	00000	04840	H	,,,	HALT FOR NEW JOB - SENSE SWITCH 1
09469		00004	X2	04850	STORE	DAC	4,HOLD,*-8
09478	45	09502	00421	04860	RECNAM	BNR	INPPL,INPUT+16,7
09490	15	09489	00000	04870	TDH	RECNAM+11,0,6	
09502	11	09489	00002	04880	INPPL	AM	RECNAM+11,2,7
09514	14	09489	00425	04890	CH	RECNAM+11,INPUT+20,7	
09526	46	09546	01100	04900	BH	CXSS1	
09538	49	09478		04910	B7	RECNAM	
09546	16	09489	00421	04920	CXSS1	TFM	RECNAM+11,INPUT+16,7
09558	24	00413	12701	04930	C	INPUT+8,DAY+6,,	DATE * CARD CHECK
09570	46	09902	01200	04940	BE	DATE	
09582	17	05022	04501	04950	BTM	PRINT,DAYID,7	
09594	26	07499	00574	04960	TF	MAXLOC,MAX	
09606	26	00563	04791	04965	TF	INPUT+158 ,B000+70	
09618	24	00413	05213	04970	C	INPUT+8,COMPL+6,,	CODE * CARD CHECK
09630	47	09710	01200	04980	BNE	HLDC	
09642	14	00574	00800	04990	CM	MAX,0,9	
09654	46	10082	01200	05000	BE	FCHPC	
09666	24	00574	09937	05010	C	MAX,LIMIT	
09678	47	10038	01300	05020	BL	NIDT	
09690	17	05022	±2663	05030	BTM	PRINT,DTFUL	
09702	49	09210		05040	B7	BEG	
09710	24	00413	09475	05050	HLDC	C	INPUT+8,STORE+6,,
09722	46	09074	01200	05060	BE	HOLD	HOLD * CARD CHECK
09734	24	00411	09425	05070	C	INPUT+6,EXECU+4,,	RUN * CARD CHECK
09746	47	09766	01200	05080	BNE	CUTCK	
09758	49	05372		05090	B7	RUN	
09766	24	00411	08495	05100	CUTCK	C	INPUT+6,DELET+4,,
09778	47	09810	01200	05110	BNE	DSKCK	CUT * CARD CHECK
09790	27	07500	07499	05120	BT	CKDT,MAXLOC	
09802	49	07772		05130	B7	CUT	
09810	24	00413	12631	05140	DSKCK	C	INPUT+8,TABOUT+6,,
09822	46	10242	01200	05150	BE	DISK	DISK * CARD CHECK
09834	24	00411	09205	05160	C	INPUT+6,SUBAD+4,,	SRS * CARD CHECK
09846	46	10558	01200	05170	BE	SRS	
09858	24	00411	07411	05180	C	INPUT+6,EXIT+4,,	OUT * CARD CHECK
09870	46	10538	01200	05190	BE	OUT	

LOC TN	OP	P/L	Q	PG/EN	LABEL	MNEM	OPERANDS AND REMARKS
09882	17	05022	±2633	05200		BTM	PRINT,CCERR,7, INVALID * CARD
09894	49	09210		05210		B7	BEG
09902	31	04502	00416	05220	DATE	TR	DAYID+1,INPUT+11
09914	33	04534	00000	05230	DATE1	CF	DAYID+33,, Q ADDRESS = PREBEG
09925		00005		05240	PREBEG	DC	5,00592,DATE1+11
09926	32	00099	00000	05250	DATE2	SF	99,, Q ADDRESS = LIMIT
09937		00003		05260	LIMIT	DC	3,199,DATE2+11
09938	34	12702	00701	05270		K	DATDCF,00701
09950	38	12702	00702	05280	DATOD	WN	DATDCF,00702,, STORE DATE INFO
09962	36	12702	00703	05290		RN	DATDCF,00703
09974	47	10018	03900	05300	MILBUS	BNI	DATDAT,03900
09985		00002		05310	SUBLIM	DC	2,37,MILBUS+11
09986	44	05156	00099	05320		BNF	HDWRE,99
09998	33	00099	00000	05330	DCTNC	CF	99,,7
10007		00003		05340	CNTCD	DS	3,DCTNC+9
10009		00002		05350	SUBCT	DS	2,DCTNC+11
10010	49	09950		05360		B7	DATOD
10018	17	05022	04501	05370	DATDAT	BTM	PRINT,DAYID,7
10030	49	09210		05380		B7	BEG
10038	27	07500	07499	05390	NIDT	BT	CKDT,MAXLOC
10050	44	10082	00099	05400		BNF	FCHPC,99
10062	26	04929	04953	05410	NIDT2	TF	DTERR+16,WAS,, PROGRAM TO BE CODED ALREADY ON DISK
10074	49	05492		05420		B7	MISSER
				05422	*		
				05424	*		
				05426	*		C O D E
10082	26	00580	00425	05430	FCHPC	TF	MP1NLO,NAME,6
10094	26	00099	00580	05440		TF	99,MP1NLO
10106	11	00099	00001	05450		AM	99,1,7
10118	31	00099	00564	05460		TR	99,INPUT+159,6
10130	32	00585	00000	05470		SF	NMP2LO,,6
10141		00004		05480	SUBAR	DC	4,5000,*
10142	26	00037	04719	05490		TF	ZLDCRD,LDCRD
10154	16	00042	±0186	05500	TFM	ZLDBR,RETCOD,7	
10166	26	00057	07771	05510		TF	ZLDCA,DTDCF+13,, RECORD MAX+1 DISK TAB ENTRY ON DISK
10178	49	00000		05520		B7	0
10186	27	05096	05095	05530	RETCOD	BT	ROWCK,ROWCK-1
10198	15	00025	00006	05540		TDM	ZLDROW,6,, FETCH SCAN ROUTINE
10210	26	00042	09925	05550		TF	ZLDBR,PREBEG
10222	26	00057	12728	05560		TF	ZLDCA,PREDCF
10234	49	00000		05570		B7	0
10242	16	05059	00041	05580	DISK	TFM	PRINT+37,41,10
10254	31	00448	04874	05590		TR	INPUT+43,NM2ZER-6
10266	73	00447	00574	05600		TNF	INPUT+42,MAX
10278	17	05022	00443	05610		BTM	PRINT,INPUT+38
10290	73	00447	00570	05620		TNF	INPUT+42,NEXT
10302	17	05022	00439	05630		BTM	PRINT,INPUT+34
10314	16	07581	00000	05640	DISK2	TFM	CNTR,000,9
10326	24	07581	00574	05650	LSTRE	C	CNTR,MAX
10338	46	10394	01200	05660		BE	RESTR
10350	11	07581	00001	05670		AM	CNTR,001,9
10362	17	05022	00595	05680	NMENT	BTM	PRINT,DTNM1,7
10374	11	10373	00020	05690		AM	NMENT+11,20,7, PRINT NAME(I) FOR ALL I
10386	49	10326		05700		B7	LSTRE
10394	16	10373	00595	05710	RESTR	TFM	NMENT+11,DTNM1,7
10406	49	09210		05720		B7	BEG
10414	26	00570	00585	05730	ACTHLD	TF	NEXT,NMP2LO,11
10426	11	00574	00001	05740		AM	MAX,1,9
10438	11	00585	00020	05750		AM	NMP2LO,20,9
10450	11	00580	00020	05760		AM	MP1NLO,20,9
10462	26	00580	04841	05770		TF	MP1NLO,0000+10,6
10474	16	00042	±0494	05780		TFM	ZLDBR,CALLIX
10486	49	07892		05790		B7	RECDT1+12,, RECORD UPDATED DISK TABLE
10494	27	05096	05095	05810	CALLIX	BT	ROWCK,ROWCK-1
10506	31	00038	12950	05820		TR	38,LABINX
10518	15	00025	00006	05830		TDM	25,6
10530	49	00000		05840		B7	0
10538	36	00000	00500	05850	OUT	RNCD	0
10550	49	00000		05860		B7	0
				05870	*		
				05880	*		S T O R E R E L S U B S
				05890	*		
00415		00008		05900	SUBNAM	DS	8,INPUT+10
00419		00004		05910	NSR	DS	4,INPUT+14
00423		00008		05920	NIDFIL	DS	8,INPUT+18
00431		00008		05930	LENFIL	DS	8,INPUT+26
00439		00008		05940	TNSC	DS	8,INPUT+34
00447		00008		05950	TNC	DS	8,INPUT+42
13996		00404		05960	SUBNMS	DSS	404,13996
14007		00001		05970	SUBNM1	DS	1,SUBNMS+11
14400		00520		05980	SUBTAB	DSS	520,SUBNMS+404
14403		00001		05990	LNMDAT	DS	1,SUBTAB+3
14407		00001		06000	TOTLEN	DS	1,SUBTAB+7
14412		00001		06010	STSCNO	DS	1,SUBTAB+12
14920		00080		06020	SUBBUF	DSS	80,14920
14988		00005		06030	FIRST	DS	5,SUBBUF+68
10558	72	00419	10709	06040	SRS	TNS	NSR,NSRSTR
10570	16	10745	00000	06050		TFM	TND,0,8

LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS AND REMARKS
10582	14	10709	00080	06060		CM	NSRSTR,0,10
10594	46	09210	01200	06070		BE	BEG
10606	24	10709	09985	06080		C	NSRSTR,SUBLIM,, CHECK NO. SUBS EXCEED LIMIT
10618	47	10650	01100	06090		BNH	SUB1
10630	17	05022	±2469	06100		BTM	PRINT,TMAYSB,7
10642	49	09210		06110		B7	BEG
10650	34	04976	00701	06120	SUB1	K	SUBDCF,00701,, SEEK CYL AND SET UP LD AREA FOR SUB STOI
10662	26	00037	04719	06130		TF	ZLDCRD,LDCRD
10674	16	00042	±0826	06140		TFM	ZLDBR,CKSB,7
10686	26	00057	04989	06150		TF	ZLDCA,SUBDCF+13
10698	32	00045	00080	06160		SF	ZLDSA-4,,10
10709		00002		06170	NSRSTR	DS	2,*
10710	16	11612	±4412	06180		TFM	TOTAB+6,STSCNO,7, INIT OF STMENTS FOR SUB TAB. AND NAME EFF
10722	16	11624	±4403	06190		TFM	TOTAB1+6,LNMDAT,7
10734	33	11620	00000	06200		CF	TOTAB1+2,,8
10745		00004		06210	TND	DS	4,*
10746	16	11636	±4407	06220		TFM	TOTAB2+6,TOTLEN,7
10758	33	11632	00000	06230		CF	TOTAB2+2
10770	16	11648	±4007	06240		TFM	TOTAB3+6,SUBNM1,7
10782	33	11644	00000	06250		CF	TOTAB3+2,,8
10793		00004		06260	NCDS	DS	4,*
10794	31	00404	04830	06270		TR	INPUT-1,0000-1
10806	16	10009	00080	06280		TFM	SUBCT,0,10
10818	49	10950		06290		B7	RDCD1
10826	47	10858	03800	06300	CKSB	BNI	CKSB1,03800,, RETURN PT AFTER SUB TO DISK
10838	17	05022	±2561	06310		BTM	PRINT,EXCCYL,7
10850	49	09210		06320		B7	BEG
10858	27	05096	05095	06330	CKSB1	BT	ROWCK,ROWCK-1
10870	25	00069	00009	06335		TD	69,9
10882	24	10709	10009	06340	CKSB2	C	NSRSTR,SUBCT,, CHECK FOR ALL SUBS READ IN
10894	47	10926	01200	06350		BNE	RDCD2
10906	34	04990	00701	06360		K	SBTBC,00701,, SEEK SUB TABLE CYLINDER
10918	49	12118		06370		B7	TB2DSK
10926	21	00049	10743	06380	RDCD2	A	ZLDSA,TND-2
10938	16	11268	±1538	06390		TFM	SUBWNG+6,TOTAB0
10950	37	00405	00500	06400	RDCD1	RACD	INPUT,, READ SUB S CARD
10962	14	00405	000±3	06410		CM	INPUT,13,10
10974	46	11006	01200	06420		BE	SUBSZ
10986	17	05022	±2497	06430		BTM	PRINT,DOLCD,7
10998	49	09210		06440		B7	BEG
11006	11	10009	00001	06450	SUBSZ	AM	SUBCT,1,10
11018	26	11161	10745	06460		TF	SAVE,TND
11030	72	00431	10745	06470		TNS	LENFIL,TND
11042	13	10745	00005	06480		NH	TND,5,10
11054	43	11206	00099	06490		BD	FINTNS,99
11066	72	00447	10793	06500		TNS	TNC,NCDS
11078	72	00439	11372	06510		TNS	TNSC,NSCDS
11090	72	00423	11137	06520		TNS	NIDFIL,NID
11102	15	11112	00000	06530	LFTJS	TDM	LFTJS+10,0
11114	16	00415	00080	06540		TFM	INPUT+10,0,10
11126	33	00414	00000	06550		CF	INPUT+9,,8
11137		00004		06560	NID	DS	4,*
11138	43	11250	00406	06570	LFTJUS	BD	SBCON1,INPUT+1
11150	32	00408	00000	06580		SF	INPUT+3
11161		00004		06590	SAVE	DS	4,*
11162	26	00413	00415	06600		TF	INPUT+8,INPUT+10
11174	43	11226	11112	06610		BD	SBCON,LFTJS+10
11186	15	11112	00001	06620		TDM	LFTJS+10,1
11198	49	11138		06630		B7	LFTJUS
11206	17	05022	±2595	06640	FINTNS	BTM	PRINT,SBODLN
11218	49	09210		06650		B7	BEG
11226	43	11250	00406	06660	SBCON	BD	SBCON1,INPUT+1
11238	17	05022	±2731	06670		BTM	PRINT,SBNMER
11250	14	10745	00000	06680	SBCON1	CM	TND,0,8
11262	46	11318	01200	06690	SUBWNG	BE	SBIWR
11274	24	10141	10745	06700		C	SUBAR,TND
11286	46	11338	01300	06710		BNL	RDSBN
11298	17	05022	±2537	06720		BTM	PRINT,STOBIG
11310	49	09210		06730		B7	BEG
11318	17	05022	±2441	06740	SBIWR	BTM	PRINT,FSBHR
11330	49	09210		06750		B7	BEG
11338	16	10007	00000	06760	RDSBN	TFM	CNTCD,0,9
11350	36	14920	00500	06770	RDSUB	RNCD	SUBBUF,, READ CARDS OF SUB H
11362	15	14984	0000±	06780		TDM	FIRST-4,1,711
11372		00004		06790	NSCDS	DS	4,*-1
11374	11	10007	00001	06800		AM	CNTCD,1,9
11386	31	14988	14920	06810		TR	FIRST,SUBBUF,6, STORE SUB INSTRS IN BUFFER AREA
11398	24	11372	10007	06820		C	NSCDS,CNTCD
11410	46	11350	01100	06830		BH	RDSUB
11422	46	11458	01200	06840		BE	CHEKCD
11434	45	11494	14920	06850	TRAIL	BNR	GOINTN,SUBBUF
11446	11	10007	00001	06860		AM	CNTCD,1,9
11458	24	10793	10007	06870	CHEKCD	C	NCDS,CNTCD
11470	47	11606	01100	06880		BNH	TOTAB
11482	36	14920	00500	06890		RNCD	SUBBUF,, READ TRAILER CARDS AND ADJUST FOR CURE
11494	15	14920	0000±	06900	CONTN	TDM	SUBBUF,1,11
11506	25	14924	00400	06910		TD	SUBBUF+4,400,6
11518	31	14920	14925	06920		TR	SUBBUF,SUBBUF+5

LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS AND REMARKS
11530	49	11434		06930	B7	TRAIL	
11538	14	11137	00000	06940	TOTABO	CM	NID,0,8
11550	46	11606	01200	06950	BE	TOTAB	
11562	24	11161	11137	06960	C	SAVE,NID	
11574	46	11606	01100	06970	BH	TOTAB	
11586	17	05022	+2379	06980	BTM	PRINT,MULENT,7	
11598	49	09210		06990	B7	BEG	
11606	26	00000	00049	07000	TOTAB	TF	,ZLDSA,, MAKE ENTRIES TO SUB TABLE
11618	26	00000	11137	07010	TOTAB1	TF	,NID
11630	26	00000	10745	07020	TOTAB2	TF	,TND
11642	26	00000	00415	07030	TOTAB3	TF	,SUBNAM,, SUB NAME TO SUB NAME TABLE
11654	16	11684	+5001	07040	TFM	SETGM+6,15001	
11666	21	11684	10745	07050	A	SETGM+6,TND	
11678	25	15001	04491	07060	SETGM	TD	15001,GRPMK
11690	21	11648	12439	07070	A	TOTAB3+6,INCREM	
11702	11	10745	00099	07080	AM	TND,99,8	
11714	26	00052	10743	07090	TF	ZLDSC,TND-2	
11726	33	00051	00000	07100	CF	ZLDSC-1	
11738	15	00050	00000	07110	TDM	ZLDSC-2,0,11	
11750	14	00052	00000	07120	CM	ZLDSC,0,9	
11762	46	10882	01200	07130	BE	CKSB2	
11774	16	11869	+5000	07140	TFM	RELOCP+11,15000,7	
11786	16	11941	+5001	07150	TFM	RELOCP+11,15001,7	
11798	16	11876	+5002	07160	TFM	FLAGP+6,15002,7	
11810	16	11948	+5007	07170	TFM	FLAGP+6,15007,7	
11822	16	11912	+5006	07180	TFM	PM5000+6,15006,7	
11834	16	11984	+5011	07190	TFM	QM5000+6,15011,7	
11846	16	11881	00012	07200	TFM	COUNT,12,7	
11858	44	11930	00000	07210	RELOCP	BNF	RELOCP,,, RELOCATE RELATIVE TO ZERO
11870	32	00000	00000	07220	FLAGP	SF	
11881		00005		07230	COUNT	DS	5,FLAGP+11
11882	44	11906	11912	07240	BNF	**+24,PM5000+6,11	
11894	32	11917	00000	07250	SF	PM5000+11	
11906	12	00000	05000	07260	PM5000	SM	,5000,7
11918	33	11917	00000	07270	CF	PM5000+11	
11930	44	12002	00000	07280	RELOCP	BNF	INCREL
11942	32	00000	00000	07290	FLAGP	SF	
11954	44	11978	11984	07300	BNF	**+24,QM5000+6,11	
11966	32	11989	00000	07310	SF	QM5000+11	
11978	12	00000	05000	07320	QM5000	SM	,5000,7
11990	33	11989	00000	07330	CF	QM5000+11	
12002	24	11881	11137	07340	INCREL	C	COUNT,NID
12014	46	00012	01300	07350	BNL	12	
12026	11	11881	00012	07360	AM	COUNT,12,7	
12038	11	11869	00012	07370	AM	RELOCP+11,12,7	
12050	11	11941	00012	07380	AM	RELOCP+11,12,7	
12062	11	11876	00012	07390	AM	FLAGP+6,12,7	
12074	11	11948	00012	07400	AM	FLAGP+6,12,7	
12086	11	11912	00012	07410	AM	PM5000+6,12,7	
12098	11	11984	00012	07420	AM	QM5000+6,12,7	
12110	49	11858		07430	B7	RELOCP	
12118	26	00057	05003	07440	T82DSK	TF	ZLCA,S8TBDC+13,, SET UP FOR RECORD SUB TABLE ON DISK
12130	26	13997	10709	07450	TF	SUBNMS+1,NSRSTR	
12142	16	00042	+2174	07460	TFM	ZLDBR,SBS2CH,7	
12154	25	14920	00403	07470	TD	SUBTAB+520,403	
12166	49	00012		07480	B7	12	
12174	27	05096	05095	07490	SBS2CH	BT	ROWCK,ROWCK-1
12186	26	00057	04964	07500	TF	ZLCA,NAMDCF,, SET UP FOR RECORD SUB NAMES ON DISK	
12196	16	00042	09162	07510	TFM	ZLDBR,BEGIN	
12210	25	14398	04651	07520	TD	SUBNMS+402,DAYRM	
12222	25	14399	00403	07530	TD	SUBNMS+403,403	
12234	12	11648	00009	07540	SM	TOTAB3+6,9,7	
12246	25	11648	04651	07550	TD	TOTAB3+6,DAYRM,6	
12258	49	00000		07560	B7	0	
12266	31	00300	12284	07570	IXOFF	TR	300,IXOFF+18
12278	11	12291	00020	07580	AM	IXOFF+25,20,10	
12301		00012		07590	DC	12,400031800009	
12302	16	00369	00008	07600	TFM	00369,8,2	
12314	49	00342	00000	07610	B	342,,35	
12326	49	12346		07620	B7	RESTAD	
12334	60	12346	00000	07630	BSNX	RESTAD	
12345		00001		07640	DC	1,,*	
12346	31	00300	12756	07650	RESTAD	TR	300,ADTAB
12358	15	00370	00007	07660	TDM	370,7	
12370	49	09150		07670	B7	RESBEG	
12379		00012	X2	07680	MULENT	DAC	12,WRONG ENTRY'
12439		00038		07690	INCREM	DC	38,130000000000013000000000013000000000010
12441		00014	X2	07700	FSBWR	DAC	14,1ST SUB WRONG'
12469		00014	X2	07710	TMAYSB	DAC	14,TOD MANY SUBS'
12497		00020	X2	07720	DOLCD	DAC	20,\$ CARD NOT IN PLACE'
12537		00012	X2	07730	STOBIG	DAC	12,SUB TOO BIG'
12561		00017	X2	07740	EXCCYL	DAC	17,SUB CYL EXCEEDED'
12595		00015	X2	07750	SBODLN	DAC	15,SUB ODD LENGTH'
12625		00004	X2	07760	TABOUT	DAC	4,DISK
12633		00015	X2	07770	CCERR	DAC	15,INVALID * CARD'
12663		00016	X2	07780	DTFUL	DAC	16,DISK TABLE FULL'
12695		00004	X2	07790	DAY	DAC	4,DATE
12702		00014		07800	DATDCF	DSC	14,07984400204500

LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS AND REMARKS
12728		00013		07810	PREDCF	DC	13,7960004400592
12731		00013 X2		07820	SBNMER	DAC	13,SUB NAME ERR'
12756		00050		07830	ADTAB	DSC	50,0123456789123456789-23456789-J3456789-JK456789-JKL
12806		00021		07840	ADTAB2	DSC	21,56789-JKLM6789-JKLMN'
12826		00000		07850	ENDTAB	DS	,ADTAB2+20
12829		00037 X2		07860	FIXCUT	DAC	37,CUT HDWR ERR-PROGRAMS ON FILE FOLLOW'
12903		00024 X2		07870	CTHER	DAC	24,RELOAD C4D-INITIAL LOAD'
12950		00021		07880	LABINX	DSC	21,00424007912507500424'
12982				07890		DORG	12982
12982	49	12266	00000	07900		B	IXOFF
12990				07910		DORG	12990
12994		00005	09162	07920		DSA	BEGIN,FRMER
12999		00005	09266				
13000				07930		DORG	13000
00185		00005		07940	UB	DS	5,185
13001		00001 X2		07950	CDBUF	DAS	1,13001
				07960	*		
				07970	*		
				07980	*		
				07990	INITL	RCTY	
13000	34	00000	00102	08000		WATY	ORORLT
13012	36	13769	00100	08010		RNTY	INRIL+2
13024	39	13002	00100	08020		BD	LATLD,INITL+2
13036	43	13388	13002	08030		BD	TWODRS,182
13048	43	13284	00182	08040	TRIAGN	RCTY	
13060	34	00000	00102	08050		WATY	INNEX
13072	39	13597	00100	08060		RCTY	
13084	34	00000	00102	08070		RNTY	NEX-4
13096	36	00566	00100	08080	PRG	SF	NEX-4
13108	32	00566	00000	08090	PRGAR	DS	5,PRG+11
13119		00005		08100		CM	NEX,61000,7
13120	14	00570	61000	08110		BNL	CHKUPR
13132	46	13180	01300	08120		RCTY	
13144	34	00000	00102	08130		WATY	TOLO
13156	39	13667	00100	08140		B	TRIAGN
13168	49	13060	00000	08150	CHKUPR	CM	NEX,79000,7
13180	14	00570	79000	08160		BNH	FIXUB
13192	47	13240	01100	08170		RCTY	
13204	34	00000	00102	08180		WATY	TOHI
13216	39	13705	00100	08190		B	TRIAGN
13228	49	13060	00000	08200	FIXUB	SF	PRGAR,NEX
13240	26	13119	00570	08210		TF	PRGAR,60000,7
13252	12	13119	60000	08220		TF	UB,PRGAR
13264	26	00185	13119	08230		B7	ONE
13276	49	13308		08240	TWODRS	BFM	NEX,60000,7
13284	16	00570	60000	08250		TFM	UB,20000,7
13296	16	00185	20000	08260	ONE	TD	NEX+1,GRPHK
13308	25	00571	04491	08270		TF	NSUB1,NEX
13320	26	00590	00570	08280		TFM	MAX,0,9
13332	16	00574	00000	08290		TD	MAX+1,ENDTAB
13344	25	00575	12826	08300		TF	603,0000+10
13356	26	00603	04841	08310		TF	223,LDONE
13368	26	00223	13767	08320		B7	LATLD1
13380	49	13468		08330	LATLD	TD	GETUB,401
13388	25	13744	00401	08340		RN	GETUB,702
13400	36	13744	00702	08350		SH	18790,60000
13412	12	18790	60000	08360		BZ	LATLD2
13424	46	13456	01200	08370		TF	185,18790
13436	26	00185	18790	08380		B7	LATLD1
13448	49	13468		08390	LATLD2	TFM	185,20000
13456	16	00185	20000	08400	LATLD1	TD	TFSK+7,400
13468	25	08787	00400	08410		SH	TFSK+11,BUFBE
13480	12	08791	09074	08420		AM	TFSK+8,10,10
13492	11	08788	00040	08430		TD	DUBFIN+7,400
13504	25	05799	00400	08440		TD	DATDCF,401
13516	25	12702	00401	08450		TD	DTDCF,401
13528	25	07758	00401	08460		TD	DRIVE,401
13540	25	04726	00401	08470		TD	SURDCF,401
13552	25	04976	00401	08480		TD	SBTBDC,401
13564	25	04990	00401	08490		TD	LABINX+6,401
13576	25	12956	00401	08500		B7	18000
13588	49	18000		08510	INNEX	DAC	35,ENTER PROGRAM STORAGE START SECTO'
13597		00035 X2		08520	TOLO	DAC	19,TOO LOW, TRY AGAIN'
13667		00019 X2		08530	TOHI	DAC	20,TOO HIGH, TRY AGAIN'
13705		00020 X2		08540	GETUB	DSC	14,07980400118700
13744		00014		08550	LDONE	DC	10,0412500500
13767		00010		08560	ORORLT	DAC	47,ENTER DIGIT 0 IF INITIAL LOAD, 1 IF LATER LOAD'
13769		00047 X2		08570		DORG	18000
18000				08580		DS	210,401
18012	25	00210	00401	08590		SF	0
18024	38	00210	00702	08600	LDSYS	WN	210,702
18036	36	00210	00703	08610		RN	210,703
18048	47	18136	03900	08620		BNI	NXTLD,03900
18060	44	18092	00000	08630		BNF	LDERR,0
18072	33	00000	00000	08640		CF	0
18084	49	18024		08650		B7	LDSYS
18092	34	00000	00102	08660	LDERR	RCTY	
18104	39	18169	00100	08670		WATY	LDERMS

SYSTEM LOAD

LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS AND REMARKS
18116	48	00000	00000	08680	STOP	H	
18128	49	18116		08690		B7	STOP
18136	31	00200	18192	08700	NXTLD	TR	200,LOADR
18148	25	00080	00231	08710		TD	80,231
18160	49	00200		08720		B7	200
18169		00012	X2	08730	LDERMS	DAC	12,LD HDWR ERR'
18192		00032		08740	LOADR	DSC	32,360000000500310000R000104900200'
13000				08750		DEND	INITL





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04060 DCFEX 00130 00420 03880
04150 DIAGA 00690 00730 00740 00770 00880 00930 01250 01370 01630 01710 02070 02130 02230 02270 02310
02400 02480 02520 02560 02640 02720 02760 02820 02860 02950 02990 03050 03110 03210 03250
03290 03390 03430 03470
04510 ECNST 00930
03750 ENDSW 02660
04500 ERCDN 00690
00930 ERCST 03340
00420 EXENAB
04080 FORMT 01240
01950 HCT 01930 01940 01970 01980 02000
03810 HDWRE 00440 03650
04100 HERR 03800
04130 INC 01110 01160 01460 02010
00840 INIT 00810 00820 00830 00950 01340 02050 02110 02170 02190 02200 02350 02370 02380 02440 02450
02600 02620 02630 02690 02800 02900 02920 02930 03030 03090 03150 03170 03180 03330 03350
03360
02170 ISB 02120
02350 ISC 01600 02180
03090 ISD 03040
02600 ISE 02360
02110 ISG 02060
02050 ISITI 01310
03150 ISP 03100
03330 ISR 03160
02900 ISS 02610
03030 IST 02910
04140 LAD 00640 00670 03580 03590 03610
01460 LPC 00790 01010 01130 01180 01320 01350 01550 01670 01740 01800 01890 01920 01960 01990 02040
00820 LP1 00640 00850
04110 NENM 00430
03520 PAR 00390 01520 01790 03490
03780 ROCK 00230 03700 03730 03950
03910 ROCK1 03790
01660 SA3 01530 01610 01750
01370 SDAT 01290
01400 SD1 00800
00340 SETSQ 00300 00340
01630 SIO 01590
00190 SQN 03620
01330 SSWD 01420
00260 START 00320 00340 00590 03750
03580 STCM 00900 00940 03560
04120 STER 03830
04170 STNSW 00380 00970
03490 STST 00700 00760 01270 01400 01650 01730 02090 02150 02250 02290 02330 02420 02500 02540 02580
02670 02740 02780 02840 02880 02970 03010 03070 03130 03230 03270 03310 03410 03450
01510 SWA 01300 01410 01540 01660 01740
01480 SWB 01000 01310 01400 01530 01590 01600 01650 01730
01830 SWC 00790 00980 01040 01080 01170 01320 01390
00370 SWCS 00320 00330 00360
01470 SWD 00990 01330
00530 TEST 00480 00500 00510 00560
00490 TL 00470 00520 00580 00600 00610 00910 01870 01880 03530 03570 03580 03600
03640 TMXDK 00150
01850 TR 01010 01060 01090 01110 01140 01160 01350 01460 01470 01500 01570 01690 01770 01820 01840
01860 01910 01930 02010
03660 WDK 03700
03830 WEM 00430 03800 03850 03860
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LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS	AND	REMARKS
				00000	**	FORTRAN STATEMENT SCAN			12/6/66
				00010	*	CARD INPUT			
				00020	*	* CONTROL CARD CALLS EXECUTIVE			
				00030	*	LAD -- ZONE ADDR OF BLANK AFTER STATEMENT			
				00040	*	DIAGA -- ENTRY FOR DIAGNOSTICIAN			
				00050	*	COMPA -- ENTRY FOR COMPILER			
				00060	*	STNSW -- SET J FOR NUMBERED STATEMENT			
				00070	*	LAD-3 -- FLAGGED IF CONTINUATION REQD			
				00080	*	COMPA-1 FLAGGED IF PAR UNBALANCE			
				00090	*	(NOT ON FORMATS)			
				00100	*				
00404				00110		DORG	404		
00404	25	04454	00402	00120		TD	DCF	,402	
00416	25	04475	00401	00130		TD	DCFEX+2	,401	
00428	25	04438	00401	00140		TD	DCFDG-14	,401	
00440	21	04021	00185	00150		A	TMXDK+11	,185	
00452	49	18012		00160		B7	18012		
00405		00000		00170	CHI	DS	,405		
00573				00180		DORG	CHI+168		
00580		00008		00190	SQN	DC	8,0		
00592				00200		DORG	592		
00592	16	00023	00299	00205		TFM	23	,299	
00604	36	00044	00703	00220		RN	44	,703	
00616	17	04174	00024	00230		BTM	ROCK	,24	
00628	16	00405	00000	00230		TFM	CHI	,	,210
00640	11	00634	00002	00240		AM	*-6	,2	,10
00652	44	00628	00002	00250		BNF	*-24	,CHI+157	
00664	26	00563	04289	00260	START	TF	CHI+158,CAL-13		
00676	37	00405	00500	00270		RACD	CHI		
00688	49	00700	00000	00280		B	**12		
00700	14	00563	00000	00290		CM	CHI+158	,	,10
00712	47	00756	01200	00300		BNE	SETSQ		
00724	16	04009	00001	00310		TFM	COUNT,1,8		
00736	16	00694	00788	00320		TFM	START+30,SWCS		
00748	49	00800		00330		B7	SWCS+12		
00756	16	00694	00768	00340	SETSQ	TFM	START+30,SETSQ+12		
00768	72	00563	04009	00350		TNS	CHI+158	,COUNT	
00780	49	00800		00360		B7	SWCS+12		
00788	11	04009	00001	00370	SWCS	AM	COUNT,1,10		
00800	15	04633	00000	00380		TDM	STNSW		
00812	16	03889	00000	00390		TFM	PAR+1	,	,811
00824	14	00405	00034	00400		CM	CHI	,14	,10
00836	47	00880	01200	00410		BNE	CKL		
00848	16	04473	12999	00420	EXENAB	TFM	DCFEX	,-12999	
00860	16	04240	04539	00430		TFM	WEM+6	,NENM	
00872	49	04210	00000	00440		B	HDWRE		
				00450		DORG	*-3		
				00460	*	CHECK LAST			
00880	16	00903	00547	00470	CKL	TFM	TL	,CHI+142	
00892	26	00937	00000	00480		TF	TEST		
00903		00000		00490	TL	DS	,	*	
00904	43	00948	00937	00500		BD	CKRM	,TEST	
00916	43	00968	00936	00510		BD	CKCON	,TEST-1	
00928	12	00903	00002	00520		SM	TL	,2	,10
00937		00000		00530	TEST	DS	,	**2	
00940	49	00892	00000	00540		B	CKL+12		
00948				00550		DORG	*-3		
00948	45	00968	00937	00560	CKRM	BNR	CKCON	,TEST	
00960	49	00928		00570		B7	CKL+48		
00968	14	00903	00405	00580	CKCON	CM	TL	,CHI	
00980	47	00664	01300	00590		BL	START		
00992	11	00903	00002	00600		AM	TL	,2	,10
01004	26	00903	00403	00610		TF	TL	,403	,6
01016	45	01036	00407	00620		BNR	**20	,CHI+2	
01028	49	01268		00630		B7	CMNT		
01036	44	01196	04619	00640		BNF	LP1-12	,LAD-3	
				00650	*	CONTINUE REQUIRED			
01048	14	00415	00069	00660		CM	CHI+10	,69	,10
01060	33	04619	00000	00670		CF	LAD-3		
01072	46	01104	01100	00680		BH	**32		
01084	16	04627	00758	00690		TFM	DIAGA	,ERCON	
01096	49	03854	00000	00700		B	STST		
01104				00710		DORG	*-3		
				00720	*	CONTINUE FOUND			
01104	14	04627	00618	00730		CM	DIAGA	,ACFMT	
01116	16	04627	00618	00740		TFM	DIAGA	,ACFMT	
01128	16	04632	00586	00750		TFM	COMPA	,CCFMT	
01140	47	03854	01100	00760		BNH	STST		
01152	16	04627	00623	00770		TFM	DIAGA	,ACIO	
01164	16	04632	00591	00780		TFM	COMPA	,CCIO	
01176	16	02256	01902	00790		TFM	SWC+6	,LPC	
01188	49	01860		00800		B7	SD1		
01196	16	01226	00403	00810		TFM	INIT	,CHI-2	
01208	11	01226	00002	00820	LP1	AM	INIT	,2	,10
01220	14	01226	00000	00830		CM	INIT	,	,10
01226		00000		00840	INIT	DS	,	**5	
01232	46	01208	01200	00850		BE	LP1		
01244	14	00405	00043	00860	CKCM	CM	CHI,43,10		

LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS	AND	REMARKS
01256	47	01300	01200	00870		BNE	CSTN		
01268	16	04627	00608	00880	CMNT	TFM	DIAGA	,ACMT	
01280	16	04632	00576	00890		TFM	COMPA	,CCMT	
01292	49	03950		00900		B7	STCM		
01300	14	00903	00419	00910	CSTN	CM	TL	,CHI+14	
01312	46	01344	01100	00920		BH	**32		
01324	16	04627	00763	00930	ERCST	TFM	DIAGA	,ECNST	
01336	49	03950		00940		B7	STCM		
01344	14	01226	00069	00950		CM	INIT	,69	,610
01356	47	01448	01100	00960		BNH	CKD		
01368	15	04633	00001	00970		TDM	STNSW	,1	,11
01380	16	02256	01560	00980		TFM	SWC+6	,CFRT	
01392	16	01920	02238	00990	C1	TFM	SWD+6	,CKBL	
01404	16	01932	01744	01000		TFM	SWB+6	,CMPRS	
01416	26	02285	01901	01010		TF	TR+11	,LPC-1	
01428	16	01510	00091	01020		TFM	CMP+6	,91	,9
01440	49	02238		01030		B7	CKBL		
01448	16	02256	01468	01040	CKD	TFM	SWC+6	,CKDT	
01460	49	01392		01050		B7	C1		
01468	14	02285	00044	01060	CKDT	CM	TR+11	,44	,610
01480	47	01744	01200	01070		BNE	CMPRS		
01492	16	02256	01504	01080		TFM	SWC+6	,CMP	
01504	26	00091	02285	01090	CMP	TF	91	,TR+11	,11
01516	11	01510	00002	01100		AM	CMP+6	,2	,10
01528	21	02285	04617	01110		A	TR+11	,INC	
01540	43	01616	01508	01120		BD	CFL-12	,CMP+4	
01552	49	01914		01130		B7	LPC+12		
01560	14	02285	00046	01140	CFRT	CM	TR+11	,46	,610
01572	47	01744	01200	01150		BNE	CMPRS		
01584	21	02285	04617	01160		A	TR+11	,INC	
01596	16	02256	01504	01170		TFM	SWC+6	,CMP	
01608	49	01914		01180		B7	LPC+12		
01616	16	01634	00092	01190		TFM	CFL+6	,92	
01628	33	00000	00000	01200	CFL	CF			
01640	11	01634	00002	01210		AM	*-6	,2	,10
01652	43	01672	01632	01220		BD	**20	,*-20	
01664	49	01628		01230		B7	CFL		
01672	24	04499	00099	01240		C	FORMT+8	,99	
01684	16	04627	00613	01250		TFM	DIAGA	,AFMT	
01696	16	04632	00581	01260		TFM	COMPA	,CFMT	
01708	46	03854	01200	01270		BE	STST		
01720	24	04509	00099	01280		C	DATA+8	,99	
01732	46	01824	01200	01290		BE	SDAT		
01744	16	01952	02002	01300	CMPRS	TFM	SWA+6	,A1	
01756	16	01932	02494	01310		TFM	SWB+6	,ISITI	,8
01768	16	02256	01902	01320		TFM	SWC+6	,LPC	
01780	16	01920	01934	01330	SSWD	TFM	SWD+6	,CKLP	
01792	16	01226	00417	01340		TFM	INIT	,CHI+12	
01804	26	02285	01901	01350		TF	TR+11	,LPC-1	
01816	49	01934		01360		B7	CKLP		
01824	16	04627	00683	01370	SDAT	TFM	DIAGA	,AEND	
01836	16	04632	00726	01380		TFM	COMPA	,CDATA	
01848	16	02256	02330	01390		TFM	SWC+6	,CKH	
01860	16	01932	03854	01400	SD1	TFM	SWB+6	,STST	
01872	16	01952	02194	01410		TFM	SWA+6	,A3	
01884	49	01780	00000	01420		B	SSWD		
01892				01430		DORG	*-3		
01896		00005	00416	01440		DSA	CHI+11		
01897		00005	00417	01450		DSSA	CHI+12		
01902	21	02285	04617	01460	LPC	A	TR+11	,INC	
01914	45	01934	02285	01470	SWD	BNR	CKLP	,TR+11	,11
01926	49	00000	00000	01480	SWB	B			
01934				01490		DORG	*-3		
01934	14	02285	00024	01500	CKLP	CM	TR+11	,24	,610
01946	47	02002	01200	01510	SWA	BNE	A1		
01958	11	03888	00001	01520		AM	PAR	,1	,710
01970	44	02094	01929	01530		BNF	SA3	,SWB+3	
01982	16	01952	02114	01540		TFM	SWA+6	,A2	,8
01994	49	01902	00000	01550		B	LPC		
02002				01560		DORG	*-3		
02002	14	02285	00023	01570	A1	CM	TR+11	,23	,610
02014	47	02114	01200	01580		BNE	A2		
02026	44	02058	01929	01590		BNF	SIO	,SWB+3	
02038	16	01932	02774	01600		TFM	SWB+6	,ISC	
02050	49	02094	00000	01610		B	SA3		
02058				01620		DORG	*-3		
02058	16	04627	00678	01630	SIO	TFM	DIAGA	,ADD	
02070	16	04632	00646	01640		TFM	COMPA	,CDO	
02082	16	01932	03854	01650		TFM	SWB+6	,STST	
02094	16	01952	02194	01660	SA3	TFM	SWA+6	,A3	
02106	49	01902	00000	01670		B	LPC		
02114				01680		DORG	*-3		
02114	14	02285	00033	01690	A2	CM	TR+11	,33	,610
02126	47	02194	01200	01700		BNE	A3		
02138	16	04627	00628	01710		TFM	DIAGA	,AASCN	
02150	16	04632	00596	01720		TFM	COMPA	,CASCN	
02162	16	01932	03854	01730		TFM	SWB+6	,STST	
02174	44	01902	01949	01740		BNF	LPC	,SWA+3	

LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS	AND	REMARKS
02186	49	02094	00000	01750		B	SA3		
02194				01760		DORG	*-3		
02194	14	02285	00004	01770	A3	CM	TR+11	,4	,610
02206	47	02238	01200	01780		BNE	CKBL		
02218	12	03888	00001	01790		SM	PAR	,1	,10
02230	49	01902	00000	01800		B	LPC		
02238				01810		DORG	*-3		
02238	14	02285	00000	01820	CKBL	CM	TR+11	,	,610
02250	47	02330	01200	01830	SWC	BNE	CKH		
02262	11	02285	00001	01840		AM	TR+11	,1	,10
02274	31	00000	00000	01850	TR	TR			
02286	12	02285	00001	01860		SM	TR+11	,1	,10
02298	16	00903	00000	01870		TFM	TL	,	,610
02310	12	00903	00002	01880		SM	TL	,2	,10
02322	49	01914	00000	01890		B	LPC+12		
02330				01900		DORG	*-3		
02330	14	02285	00048	01910	CKH	CM	TR+11	,48	,6810
02342	47	01902	01200	01920		BNE	LPC		
02354	26	02384	02280	01930		TF	HCT+6	,TR+6	
02366	12	02384	00003	01940		SM	HCT+6	,3	,10
02378	14	00000	00021	01950	HCT	CM		,21	,10
02390	47	01902	01200	01960		BNE	LPC		
02402	11	02384	00002	01970		AM	HCT+6	,2	,10
02414	14	02384	00070	01980		CM	HCT+6	,70	,610
02426	47	01902	01100	01990		BNH	LPC		
02438	25	02339	02384	02000		TD	CKH+9	,HCT+6	,11
02450	21	02285	04617	02010		A	TR+11	,INC	
02462	12	02339	00001	02020		SM	CKH+9	,1	,10
02474	43	02450	02339	02030		BD	*-24	,CKH+9	
02486	49	01902		02040		B7	LPC		
02494	14	01226	00049	02050	ISITI	CM	INIT	,49	,610
02506	47	02550	01200	02060		BNE	ISG		
02518	16	04627	00633	02070		TFM	DIAGA	,AIF	
02530	16	04632	00601	02080		TFM	COMPA	,CIF	
02542	49	03854	00000	02090		B	STST		
02550				02100		DORG	*-3		
02550	14	01226	00047	02110	ISG	CM	INIT	,47	,610
02562	47	02606	01200	02120		BNE	ISB		
02574	16	04627	00708	02130		TFM	DIAGA	,AGO	
02586	16	04632	00676	02140		TFM	COMPA	,CGO	
02598	49	03854	00000	02150		B	STST		
02606				02160		DORG	*-3		
02606	14	01226	00042	02170	ISB	CM	INIT	,42	,610
02618	47	02774	01200	02180		BNE	ISC		
02630	11	01226	00040	02190		AM	INIT	,10	,10
02642	14	01226	00062	02200		CM	INIT	,62	,610
02654	46	02742	01100	02210		BH	*+88		
02666	46	02710	01200	02220		BE	*+44		
02678	16	04627	00648	02230		TFM	DIAGA	,ABGPR	
02690	16	04632	00616	02240		TFM	COMPA	,CBGPR	
02702	49	03854	00000	02250		B	STST		
02710				02260		DORG	*-3		
02710	16	04627	00643	02270		TFM	DIAGA	,ABGSG	
02722	16	04632	00611	02280		TFM	COMPA	,CBGSG	
02734	49	03854	00000	02290		B	STST		
02742				02300		DORG	*-3		
02742	16	04627	00638	02310		TFM	DIAGA	,ABGTR	
02754	16	04632	00606	02320		TFM	COMPA	,CBGTR	
02766	49	03854	00000	02330		B	STST		
02774				02340		DORG	*-3		
02774	14	01226	00043	02350	ISC	CM	INIT	,43	,610
02786	47	03010	01200	02360		BNE	ISE		
02798	11	01226	00002	02370		AM	INIT	,2	,10
02810	14	01226	00041	02380		CM	INIT	,41	,610
02822	47	02866	01200	02390		BNE	*+44		
02834	16	04627	00658	02400		TFM	DIAGA	,ACLSG	
02846	16	04632	00626	02410		TFM	COMPA	,CCLSG	
02858	49	03854	00000	02420		B	STST		
02866				02430		DORG	*-3		
02866	11	01226	00006	02440		AM	INIT	,6	,10
02878	14	01226	00056	02450		CM	INIT	,56	,610
02890	46	02978	01100	02460		BH	*+88		
02902	46	02946	01200	02470		BE	*+44		
02914	16	04627	00663	02480		TFM	DIAGA	,ACNTU	
02926	16	04632	00631	02490		TFM	COMPA	,CCNTU	
02938	49	03854	00000	02500		B	STST		
02946				02510		DORG	*-3		
02946	16	04627	00653	02520		TFM	DIAGA	,ACOMN	
02958	16	04632	00621	02530		TFM	COMPA	,CCOMN	
02970	49	03854	00000	02540		B	STST		
02978				02550		DORG	*-3		
02978	16	04627	00668	02560		TFM	DIAGA	,ACNTL	
02990	16	04632	00636	02570		TFM	COMPA	,CCNTL	
03002	49	03854	00000	02580		B	STST		
03010				02590		DORG	*-3		
03010	14	01226	00045	02600	ISE	CM	INIT	,45	,610
03022	47	03290	01200	02610		BNE	ISS		
03034	11	01226	00006	02620		AM	INIT	,6	,10

LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS	AND	REMARKS
03046	45	03102	01226	02630		BNR	**56		,INIT
03058	16	04627	00683	02640		TFM	DIAGA		,AEND
03070	16	04632	00651	02650		TFM	COMPA		,CEND
03082	15	04151	00001	02660		TDM	ENDSW+1		,1
03094	49	03854	00000	02670		B	STST		
03102				02680		DORG	*-3		
03102	14	01226	00062	02690		CM	INIT		,62
03114	47	03202	01300	02700		BL	**88		,610
03126	46	03170	01200	02710		BE	**44		
03138	16	04627	00688	02720		TFM	DIAGA		,AEDTR
03150	16	04632	00656	02730		TFM	COMPA		,CEDTR
03162	49	03854	00000	02740		B	STST		
03170				02750		DORG	*-3		
03170	16	04627	00693	02760		TFM	DIAGA		,AEDSG
03182	16	04632	00661	02770		TFM	COMPA		,CEDSG
03194	49	03854	00000	02780		B	STST		
03202				02790		DORG	*-3		
03202	14	01226	00057	02800		CM	INIT		,57
03214	46	03258	01200	02810		BE	**44		,610
03226	16	04627	00703	02820		TFM	DIAGA		,AEXPR
03238	16	04632	00671	02830		TFM	COMPA		,CEXP
03250	49	03854	00000	02840		B	STST		
03258				02850		DORG	*-3		
03258	16	04627	00698	02860		TFM	DIAGA		,AEDPR
03270	16	04632	00666	02870		TFM	COMPA		,CEDPR
03282	49	03854	00000	02880		B	STST		
03290				02890		DORG	*-3		
03290	14	01226	00062	02900	ISS	CM	INIT		,62
03302	47	03414	01200	02910		BNE	IST		,610
03314	11	01226	00002	02920		AM	INIT		,2
03326	14	01226	00045	02930		CM	INIT		,45
03338	46	03382	01200	02940		BE	**44		,610
03350	16	04627	00748	02950		TFM	DIAGA		,ASTOP
03362	16	04632	00716	02960		TFM	COMPA		,CSTOP
03374	49	03854	00000	02970		B	STST		
03382				02980		DORG	*-3		
03382	16	04627	00743	02990		TFM	DIAGA		,ASEG
03394	16	04632	00711	03000		TFM	COMPA		,CSEG
03406	49	03854	00000	03010		B	STST		
03414				03020		DORG	*-3		
03414	14	01226	00063	03030	IST	CM	INIT		,63
03426	47	03470	01200	03040		BNE	ISD		,610
03438	16	04627	00753	03050		TFM	DIAGA		,ATYP
03450	16	04632	00721	03060		TFM	COMPA		,CTYP
03462	49	03854	00000	03070		B	STST		
03470				03080		DORG	*-3		
03470	14	01226	00044	03090	ISD	CM	INIT		,44
03482	47	03526	01200	03100		BNE	ISP		,610
03494	16	04627	00673	03110		TFM	DIAGA		,ADIM
03506	16	04632	00641	03120		TFM	COMPA		,CDIM
03518	49	03854	00000	03130		B	STST		
03526				03140		DORG	*-3		
03526	14	01226	00057	03150	ISP	CM	INIT		,57
03538	47	03694	01200	03160		BNE	ISR		,610
03550	11	01226	00002	03170		AM	INIT		,2
03562	14	01226	00059	03180		CM	INIT		,59
03574	46	03662	01100	03190		BH	**88		,610
03586	46	03630	01200	03200		BE	**44		
03598	16	04627	00713	03210		TFM	DIAGA		,APAUS
03610	16	04632	00681	03220		TFM	COMPA		,CPAUS
03622	49	03854	00000	03226	*				INITIALIZE CHI
03622				03230		B	STST		
03630				03240		DORG	*-3		
03630	16	04627	00718	03250		TFM	DIAGA		,APRNT
03642	16	04632	00686	03260		TFM	COMPA		,CPRNT
03654	49	03854	00000	03270		B	STST		
03662				03280		DORG	*-3		
03662	16	04627	00723	03290		TFM	DIAGA		,APCH
03674	16	04632	00691	03300		TFM	COMPA		,CPCH
03686	49	03854	00000	03310		B	STST		
03694				03320		DORG	*-3		
03694	14	01226	00059	03330	ISR	CM	INIT		,59
03706	47	01324	01200	03340		BNE	ERCST		,610
03718	11	01226	00004	03350		AM	INIT		,4
03730	14	01226	00059	03360		CM	INIT		,59
03742	46	03830	01100	03370		BH	**88		,610
03754	47	03798	01300	03380		BL	**44		
03766	16	04627	00733	03390		TFM	DIAGA		,ARERD
03778	16	04632	00701	03400		TFM	COMPA		,CRERD
03790	49	03854	00000	03410		B	STST		
03798				03420		DORG	*-3		
03798	16	04627	00728	03430		TFM	DIAGA		,ARD
03810	16	04632	00696	03440		TFM	COMPA		,CRD
03822	49	03854	00000	03450		B	STST		
03830				03460		DORG	*-3		
03830	16	04627	00738	03470		TFM	DIAGA		,ARETN
03842	16	04632	00706	03480		TFM	COMPA		,CRETN
03854	14	03888	00000	03490	STST	CM	PAR		,10

LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS	AND REMARKS
03866	46	03890	01200	03500		BE	**24	
03878	32	04631	00000	03510		SF	COMPA-1	
03888		00000		03520	PAR	DS		,*-1
03890	26	03920	00903	03530		TF	**30	,TL
03902	12	03920	00002	03540		SM	**18	,2
03914	14	00000	00023	03550		CM		,23
03926	47	03950	01200	03560		BNE	STCM	
03938	32	00900	00000	03570		SF	TL-3	
03950	26	04622	00903	03580	STCM	TF	LAD	,TL
03962	12	04622	00001	03590		SM	LAD	,1
03974	16	00903	00000	03600		TFM	TL	,10
03986	31	00548	04618	03610		TR	CHI+143	,LAD-4
03998	16	00576	00000	03620		TFM	SQN-4,,8	
04009		00000		03630	COUNT	DS	,*	
04010	14	04459	59998	03640	TMXDK	CM	DCF+5	,59998
04022	46	04198	01100	03650		BH	HDWRE-12	
04034	15	00022	00009	03655		TDM	22	,9
04046	38	04454	00702	03660	WDK	WN	DCF	,702
04058	47	04090	03600	03670		BNI	**32	,3600
04070	34	04454	00701	03680		K	DCF	,701
04082	49	04046		03690		B7	**36	
04090	17	04174	04046	03700		BTM	ROCK	,WDK
04102	15	00022	00009	03710		TDM	22	,9
04114	36	04454	00703	03720		RN	DCF	,703
04126	17	04174	04114	03730		BTM	ROCK	,*-12
04138	11	04459	00002	03740		AM	DCF+5	,2
04150	49	00664	00000	03750	ENDSW	B	START	,10
04162	49	04302	00000	03770		B	CAL	
04174	47	04184	01942	03780	ROCK	BNI	**10	,1942
04186	43	04322	00023	03790		BD	ROCK1	,23
04198	16	04240	04511	03800		TFM	WEM+6	,HERR
04210	46	04254	00200	03810	HDWRE	BC2	**44	
04222	34	00000	00102	03820		RCTY		
04234	39	04563	00100	03830	WEM	WATY	STER	
04246	49	04266		03840		B7	**20	
04254	39	04240	00900	03850		WA	WEM+6	,900
04266	44	04290	04237	03860		BNF	**24	,WEM+3
04278	48	00000	00000	03870		H	,4	
04290	31	04432	04469	03880		TR	CALL+38	,DCFEX-4
04302	31	00000	04394	03890	CAL	TR		,CALL
04314	49	00000		03900		B7		
04322	25	00022	00023	03910	ROCK1	TD	22	,23
04334	46	04346	00600	03920		BI	**12	,600
04346	46	04358	00700	03925		BI	**12	,700
04358	46	04370	01600	03930		BI	**12	,1600
04370	46	04382	01700	03940		BI	**12	,1700
04382	49	04173	00000	03950		B	ROCK-1	,6
				03960	*			RETURN TO EXECUTIVE ROUTINE
04394	34	00044	00701	03970	CALL	K	44	,701
04406	32	00000	00000	03980		SF		
04418	36	00044	00702	03990		RN	44	,702
04430	49	00764		04000		B7	764	
04452		00016		04010	DCFDC	DC	16	,7920016700604'
04454		00002		04020	DCF	DC	2	,0
04468		00014		04030		DC	14	,6000000200404'
04473		00005		04060	DCFEX	DC	5	,-12994
04489		00016		04070		DC	16	,7980412500500'
04491		00005 X2		04080	FORMT	DAC	5	,ORMAT
04501		00005 X2		04090	DATA	DAC	5	,DATA,
04511		00014 X2		04100	HERR	DAC	14	,HDWR, ERR SCAN'
04539		00012 X2		04110	NENM	DAC	12	,NO END CARD'
04563		00025 X2		04120	STER	DAC	25	,WORKING STORAGE OVERFLOW'
04617		00006		04130	INC	DC	6	,200002
04622		00005		04140	LAD	DS	5	
04627		00005		04150	DIAGA	DS	5	
04632		00005		04160	COMPA	DS	5	
04633		00001		04170	STNSW	DS	1	
04634		00001		04180		DGM		
00604				04190		DORG	604	
00608		00005		04200	ACMT	DS	5	
00613		00005		04210	AFMT	DS	5	
00618		00005		04220	ACFMT	DS	5	
00623		00005		04230	ACIO	DS	5	
00628		00005		04240	AASCN	DS	5	
00633		00005		04250	AIF	DS	5	
00638		00005		04260	ABGTR	DS	5	
00643		00005		04270	ABGSG	DS	5	
00648		00005		04280	ABGPR	DS	5	
00653		00005		04290	ACOMN	DS	5	
00658		00005		04300	ACLSG	DS	5	
00663		00005		04310	ACNTU	DS	5	
00668		00005		04320	ACNTL	DS	5	
00673		00005		04330	ADIM	DS	5	
00678		00005		04340	ADD	DS	5	
00683		00005		04350	AEND	DS	5	
00688		00005		04360	AEDTR	DS	5	
00693		00005		04370	AEDSG	DS	5	
00698		00005		04380	AEDPR	DS	5	

LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS	AND REMARKS
00703		00005		04390	AEXPR	DS	5	
00708		00005		04400	AGD	DS	5	
00713		00005		04410	AP AUS	DS	5	
00718		00005		04420	APRNT	DS	5	
00723		00005		04430	APCH	DS	5	
00728		00005		04440	ARD	DS	5	
00733		00005		04450	ARERD	DS	5	
00738		00005		04460	ARETN	DS	5	
00743		00005		04470	ASEG	DS	5	
00748		00005		04480	ASTOP	DS	5	
00753		00005		04490	ATYP	DS	5	
00758		00005		04500	ERCON	DS	5	
00763		00005		04510	ECNST	DS	5	
00572				04520		DORG	572	
00576		00005		04530	CCMT	DS	5	
00581		00005		04540	CFMT	DS	5	
00586		00005		04550	CCFMT	DS	5	
00591		00005		04560	CCID	DS	5	
00596		00005		04570	CASCN	DS	5	
00601		00005		04580	CIF	DS	5	
00606		00005		04590	CBGTR	DS	5	
00611		00005		04600	CBGSG	DS	5	
00616		00005		04610	CBGPR	DS	5	
00621		00005		04620	CCOMN	DS	5	
00626		00005		04630	CCLSG	DS	5	
00631		00005		04640	CCNTU	DS	5	
00636		00005		04650	CCNTL	DS	5	
00641		00005		04660	CDIM	DS	5	
00646		00005		04670	CDD	DS	5	
00651		00005		04680	CEND	DS	5	
00656		00005		04690	CEDTR	DS	5	
00661		00005		04700	CEDSG	DS	5	
00666		00005		04710	CEDPR	DS	5	
00671		00005		04720	CEXP	DS	5	
00676		00005		04730	CGD	DS	5	
00681		00005		04740	CP AUS	DS	5	
00686		00005		04750	CPRNT	DS	5	
00691		00005		04760	CPCH	DS	5	
00696		00005		04770	CRD	DS	5	
00701		00005		04780	CRERD	DS	5	
00706		00005		04790	CRETN	DS	5	
00711		00005		04800	CSEG	DS	5	
00716		00005		04810	CSTOP	DS	5	
00721		00005		04820	CTYP	DS	5	
00726		00005		04830	CDATA	DS	5	
00000				04850		DEND		





14730	CZ8	15010																	
16130	C4D1	16110																	
16230	DATA	15870	15874	15876															
16150	DCCOMP	15820	16070																
00470	DCEXEC	00040	00520																
00790	DCF	00770	07500	07524	14920														
07460	DCPT2	07504	14950																
15110	DCSUBS	14940	15080																
11000	DC1	12540	12630	13050															
13050	DECCNT	12820																	
14020	DIMENS	00220																	
10850	DIMFLG	08890	10850	14300															
02150	DO	00230																	
02220	DOCNT	02150	02670	02810	02820														
02890	DOEND																		
02930	DOEND1	02070	02900																
09140	DONE	09610	09630	09930															
16170	DOXXX	15330																	
16240	DTFLG	16240	16270	16300	16400	16670													
03610	EDIT	03450	03610	03640	03660	03670	03680	04260											
03640	EDIT1	03630	03700	03710	03720														
03730	EDIT2	03440	03460	03470	03620	03630	03650	03660	03690	03710	03730	03740	04270	04280					
02050	END	00200	00210	04360	04510	04690	04800	04920	04960	04980	07630	07650	07670	07690	07890	07900			
		07930	08050	08090	08210	08290	08430	08610	08640	12120	13580	13600							
16280	ENDATA	16340	16830	16850	16870	16900													
08300	ENDPR	00270																	
08320	ENDPRP	08310																	
08220	ENDSG	00260																	
08250	ENDSGP	08240																	
08280	ENDTR	00250	08350																
14440	END1	14160	14520	14600	14670														
13570	END2	00370	08190	13430	13650														
07300	EQUAL	07170																	
00480	ERR	01910																	
01710	ERRDR	01640	01710	01720	02040	02310	02960	03410	03760	04900	05840	07680	07720	08930	08940	09360			
		09370	09500	09510	10010	10020	10610	10620	11040	11260	11310	13120	13560	13590	13630	14430			
01750	ERROR1	01660																	
01640	ERROR9	01140	01240	01440	01610	01650	01650	01710	01920	01930	02480	02540	02910	02940	03000	03006			
		03270	04080	04990	05150	05420	05620	05820	06120	07400	07430	07880	07920	08690	10870	10900			
		11100	11380	11940	12090	12520	12722	13030	14150	14240	14260	14660	14760	15890	16330	16820			
		16840	16860	16890	16910														
08690	ERR3	08080	08670																
05420	ER31	05470																	
08360	EXCPR	00280	08190	08200	08370														
07920	E1	07800	07960	08260	08330	08420													
02310	E10	02270	02430	02510	02600	02640	02680	02780	02800	02830	02860	14030							
09500	E11	09390	09480	09700	09720														
08930	E12	09040	09170	09530	09620	10950													
10010	E13	10080	10200	10230	10330	10360	10390	10470	10490										
07720	E15	07740	07760	07770	08490	08530	08540												
10610	E16	10430																	
02540	E18	02460																	
13120	E20	00400	04790	13180															
14260	E22	14110																	
16910	E24	16380																	
10870	E27	09890	10840																
06120	E28	06090																	
03410	E29	03520	03570	03840	03940	04230	04400	04420	04450	04730	04740	04770							
01440	E3	01420																	
11040	E30	11060	11470	11480	11620	11720	12290	12320	12360	12380	12420	12490	12600	12780	12840	12860			
		12910																	
11110	E31	11180	11200	11220	12000	12760													
16840	E31D	16490																	
07440	E32B	07420																	
12520	E33	11820																	
16890	E33D	16800																	
12722	E33T	12692																	
16860	E34	16610																	
13560	E36	13350	13360	13380	13420	13500	13520												
14150	E37	14190	14500	14550	14620														
14660	E38	14320																	
07880	E4	07910	08470																
16820	E40D	16370																	
16330	E41	16270	16430	16570	16710	16730	16780												
14430	E42	14380	14390																
03760	E43	04250	04310	04540	04570	04630													
10650	FFNC	09330																	
10690	FF1	10670	10710	10740	10760														
10680	FF2	10660	10720	10730															
10740	FF3	10700																	
15960	FIB	15910																	
06780	FIN	06680																	
16030	FINA	15970																	
02190	FIND	02160	02230	02240	02280	02390	02400	02500	02520										
15820	FINISH	07530																	
15860	FINSI	16220	16280																
14510	FINUP	14420																	
07330	FIX	07310																	
07360	FIXR	07330																	
00730	FLAG	01980	15340	15430	16110														
04520	FMATA	04210																	





09560	PMTEST	09450							
13550	PNUM	13200							
13280	PNUMT	13550							
13330	PNUM2	13290							
01970	PRA1	15170							
02660	PRM2	02750							
02620	PRM3	02850							
16770	PROCL	16750							
08060	PROCL	08040							
15980	PTBLA	15960							
04850	PUNCH	00310	00320	03240	04820	04840			
06520	PUT	06400							
06550	PUTR	06520							
10150	PUT1	09970	10070	10110	10160				
02130	P1	02110							
01910	P2	01890							
02080	P3	02040	07410	07420	07440	10880	10890	10910	
02370	Q1	02350							
00494	RBCHK	00412	00412	00615	00615	00810	00810	07520	07520 14900 14900
00560	RBCHK1	00498							
04830	READ	00330							
06370	REC	03080	03160	07110	07220	07270			
06220	RECM	00890	01960	02000	15300				
16470	REGLAB	16360							
04810	RERREAD	00340							
07180	RESET	03080	07290						
07210	RESETR	07180							
07080	RESETU	07010							
07230	RESET1	06950							
07260	RES1R	07230							
11590	RET	11680	11700	11730	11760	12390	12440	12500	
09930	RETURN	09870	10570						
08390	RETURN	00350							
08410	RETURNP	08400							
06250	RM	00700	00710	00720	00730	00740	00750	01150	03050 06850 09820
02550	SAFE	02470							
09100	SCAN	09000	09050	09070					
01140	SEGFLG	01110	01130	08220	08460				
08440	SEGMT	00360							
08500	SEG1	08480							
08510	SEG2	08630							
08650	SEG3	08590							
08600	SEG4	08680	08700						
02870	SETM3	02690							
12400	SETUP	12340							
09090	SET20	08960							
09080	SET22	08980							
10930	SET48	10830							
07710	SGPRSB	07780	07820	07980	08130	08240	08310	08400	
16420	SLSH1	16700							
16180	SMBLS	16000							
10260	SPEC	10060							
05560	SS1	06050							
15790	STADD	15600	15610	15620	15690	15720			
14910	START	00414	16930						
01595	STBRAD	00870	02010						
00810	STCOM	00785							
16670	STDT	16810	16880						
07380	STE	06570							
01130	STMNO	01040							
00420	STNO	00930	01220	01340	03250	14740			
00440	STNOM	01160	01180	01200	01200	01210	01270	01290	
00910	STNXT	00780	16100						
09110	STDR	09100	09780	09790					
00782	STORE	00090	02980	03060	03170	13130	16290		
09750	STOR1	09540	09680						
01740	STRMAD	00860	01750	01760	01810	02000			
02030	STRNO	00880	01950						
03004	STTST	02990							
01040	STTST1	00990							
09230	ST21	09210							
09520	ST22	09490							
09730	ST23	09710							
10130	ST27	10100							
10400	ST28	10290							
10580	ST29	10380							
11840	ST62	11790							
11880	ST66	11800							
09340	SUBFIN	10820							
09320	SUBN	09300	09320	09340	10820				
09890	SUBSCR	10640	10920						
12940	SUBTT	12922							
01070	SWC	01060	01070	13230	13300				
15780	SWPF	15400	15550	15700	15780	15930	15980		
15770	SWPF1	15710							
13580	SWTR	01050	02050	02890	13570				
01100	SWTRE	01060	01080	01100	02930	07610	07940	08280	08440
15570	SWUDT	15410	15500	15570	15580	15920	15990		
03580	SW1	00980	02970	03008	03580	04910	05560	07560	07580
01480	SW12	01020	01500	01530	02900	03020	13580	15880	
02180	SW13	07380	07390	15070					



11330	T12	11230					
10340	T29	10310					
06410	T38	06740					
15450	UNDB1	15460	15470	15480	15490	15760	15770
16160	UNDEF	15420	16000	16010			
01080	UTF	01050	01530	01550	01620		
05510	VDEF	05480					
05480	VDEF35	05460					
02230	WHERE	02180	02250	02260	02290		
09240	WIPE	09200	09220				
05610	Y1	05250					
05270	Y2	05610					
05300	Y3	05280					
05320	Y4	05300					
05680	Y5	05640					
05830	Y6	05780					
05860	Y7	05830					
05930	Y8	05910					
02380	ZAP1	02360	02490				
03271	Z1	03260	07600				
03535	Z2	03400					
03540	Z21	03536					
03970	Z3	04030					
04320	Z4	04300					
05010	Z5	04890					

LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS AND REMARKS
				00000	*	C4D	DIAGNOSTICIAN
00404				00010		DORG	404
00405		00080	X2	00020	INPUT	DAS	80 ,,,AREA WHERE STATEMENTS ARE READ INTO
00584				00030		DORG	584
00584	25	00826	00401	00040		TD	DCEXEC-14 ,401
00596	49	18012		00050		B7	18012
00604				00060		DORG	604
				00070	*	THESE	DSA INSTRUCTIONS DEFINE BRANCH ADDRESSES FOR EACH
				00080	*	TYPE	SOURCE STATEMENT
00608		00005	01234	00090		DSA	STORE
00613		00005	03836	00100		DSA	FRMT
00618		00005	08710	00110		DSA	CFRMT
00623		00005	08666	00120		DSA	CIO
00628		00005	±2394	00130		DSA	ARITH
00633		00005	±4850	00140		DSA	IF
00638		00005	08742	00150		DSA	BGTR
00643		00005	08926	00160		DSA	BGSF
00648		00005	09082	00170		DSA	BGPR
00653		00005	±5926	00180		DSA	COMMON
00658		00005	09264	00190		DSA	CLSG
00663		00005	02534	00200		DSA	END
00668		00005	02534	00210		DSA	END
00673		00005	±5858	00220		DSA	DIMENS
00678		00005	02616	00230		DSA	DO
00683		00005	08590	00240		DSA	CLPT2
00688		00005	09452	00250		DSA	ENDTR
00693		00005	09380	00260		DSA	ENDSG
00698		00005	09472	00270		DSA	ENDPR
00703		00005	09540	00280		DSA	EXCPR
00708		00005	±5410	00290		DSA	GOTO
00713		00005	05694	00300		DSA	PAUSE
00718		00005	05754	00310		DSA	PUNCH
00723		00005	05754	00320		DSA	PUNCH
00728		00005	05734	00330		DSA	READ
00733		00005	05714	00340		DSA	REREAD
00738		00005	09572	00350		DSA	RETURN
00743		00005	09628	00360		DSA	SEGMT
00748		00005	±5366	00370		DSA	END2
00753		00005	03816	00380		DSA	TYPEXX
00758		00005	03572	00390		DSA	CONTER
00763		00005	±4886	00400		DSA	E20
00764	16	00023	00299	00410		TFM	23 ,299
00776	27	00882	00881	00412		BT	RBCHK ,RBCHK-1
00788	49	16688		00414		B7	START
00797		00005	X2	00420	STNO	DAS	5
00807		00001	X2	00430		DAC	1, '
00809		00005	X2	00440	STNDM	DAS	5
00819		00001	X2	00450		DAC	1, '
00824		00005		00466		DC	5 , -12994
00840		00016		00470	DCEXEC	DC	16 ,7980312600400'
00841		00010		00480	ERR	DSC	10,455959000'
00853		00014	X2	00490	HERR	DAC	14,HDWR ERR DIAG'
00881		00002		00492		DC	2,0
00882	36	00044	00703	00494	RBCHK	RN	44 ,703 ,10
00894	47	00904	01942	00496	BNI	**10	,1942
00906	43	00962	00023	00498	BD	RBCHK1	,23 ,11
00918	17	02578	00853	00500	HWERR	BTM	TYPE,HERR ,,,HARDWARE ERROR. CALL EXECUTIVE
00930	39	00853	00100	00510		WATY	HERR
00942	31	00038	00820	00520		TR	38 ,DCEXEC-20
00954	49	00000		00550		B7	0
00962	25	00022	00023	00560	RBCHK1	TD	22 ,23 ,11
00974	46	00986	00600	00570		BI	**12 ,600
00986	46	00998	01600	00580		BI	**12 ,1600
00998	46	01010	01700	00600		BI	**12 ,1700
01010	49	00000		00610		B7	
01018	27	00882	00881	00615		BT	RBCHK ,RBCHK-1
01030	15	±7065	00000	00620	CSYMT9	TDM	TBLB+9,0,2 ,,,CLEAR SYMBOL TABLE AREA
01042	11	01036	00010	00630		AM	CSYMT9+6,10
01054	14	01036	±9995	00640	CZ1	CM	CSYMT9+6,TBLA1+9
01066	47	01030	01200	00650		BNE	CSYMT9
01078	15	±7836	00000	00660	CSYMT1	TDM	TBLA+10,0,2
01090	11	01084	00010	00670		AM	CSYMT1+6,10
01102	14	01084	±9996	00680	CZ2	CM	CSYMT1+6,TBLA1+10
01114	47	01078	01200	00690		BNE	CSYMT1
01126	25	17826	07246	00700		TD	TBLA,RM ,,,INITIALIZE TABLES
01138	25	17056	07246	00710		TD	TBLB,RM
01150	25	±9995	07246	00720	CZ3	TD	TBLA1+9,RM
01162	25	17216	07246	00730	FLAG	TD	TBLD,RM
01174	25	17215	07246	00740	SW49	TD	TBLD-1,RM
01186	25	17825	07246	00750	SW500	TD	TBLA-1,RM
01198	16	01496	00000	00760		TFM	NESM,0,10
01210	31	00038	01253	00770		TR	38 ,DCF-6
01222	26	01381	00570	00780		TF	STNXT,570
01234	15	00022	00009	00782	STORE	TDM	22 ,9
01246	49	00024	01274	00785		B	24 ,STCOM
01259		00002		00790	DCF	DC	2,0
01273		00014		00795		DC	14,6000000200404'
01274	27	00894	00893	00810	STCOM	BT	RBCHK+12 ,RBCHK+11

LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS AND REMARKS
01286	71	01874	00549	00830	NSEEK	MF	S3,549
01298	71	01286	00561	00840		MF	NSEEK,561
01310	32	00548	00000	00850		SF	548
01322	26	02189	00552	00860		TF	STRMAD,552
01334	26	02101	00557	00870		TF	STBRAD,557
01346	26	02521	00576	00880		TF	STRNO,576
01358	31	00552	00733	00890		TR	552,RECM-1,6
01370	32	00557	00000	00900		SF	557
01381		00005		00910	STNXT	DC	5,0,*
01382	11	00049	00002	00920		AM	49 ,2 ,10
01394	26	00805	07256	00930		TF	STNO+8,CLEAR
01406	14	00405	00043	00940		CM	INPUT,43,10
01418	46	00557	01200	00950		BE	557,,6
01430	14	00405	00000	00960		CM	INPUT,0,10
01442	47	01726	01200	00970		BNE	NO3C
01454	44	01474	04372	00980		BNF	SW9,SW1
01466	49	01498		00990		B7	STTST1
01474	43	03572	00414	01000	SW9	BD	CONTER,INPUT+9
01486	33	01966	00000	01020		CF	SW12
01496		00002		01030	NESM	DC	2,0,*-1
01498	43	01598	00563	01040	STTST1	BD	STMNO,563
01510	44	01546	15378	01050		BNF	UTF,SWTR
01522	44	01566	01534	01060		BNF	SWTRE,SWC
01534	33	01534	00000	01070	SWC	CF	SWC
01546	33	01566	00000	01080	UTF	CF	SWTRE
01558	49	01578		01090		B7	BRANCH
01566	32	01566	00000	01100	SWTRE	SF	SWTRE
01578	33	01610	00000	01110	BRANCH	CF	SEGFLG
01590	49	00557		01120		B7	557,,6
01598	44	01622	01610	01130	STMNO	BNF	TD,SEGFLG
01610	17	02132	00025	01140	SEGFLG	BTM	ERROR9,25,10
01622	25	00415	07246	01150	TD	TD	415,RM
01634	31	00808	00404	01160		TR	STNOM-1,INPUT-1
01646	15	00415	00000	01170		TDM	415,0
01658	14	00809	00000	01180	NO3A	CM	STNOM,,10
01670	47	01746	01200	01190		BNE	NO3B
01682	31	00808	00810	01200	CZERO	TR	STNOM-1,STNOM+1
01694	45	01658	00809	01210		BNR	NO3A,STNOM
01706	26	00805	07256	01220	CLSNO	TF	STNO+ 8,CLEAR
01718	49	02022		01230		B7	C
01726	17	02132	00047	01240	NO3C	BTM	ERROR9,17,10
01738	49	01706		01260		B7	CLSNO
01746	14	00809	00070	01270	NO3B	CM	STNOM,70,10
01758	46	01682	01200	01280		BE	CZERO
01770	17	09936	00809	01290		BTM	LBPROC,STNOM
01782	44	01726	09960	01310		BNF	NO3C,SW20
01794	44	01726	09972	01320		BNF	NO3C,SW21
01806	26	07244	09926	01330		TF	ARG,LABEL-2
01818	26	00805	09926	01340		TF	STNO+ 8,LABEL-2
01830	32	07602	00000	01350		SF	SW30
01842	17	07262	39995	01370	CZ4	BTM	TLU1,TBLA1+9
01854	44	01874	07346	01380		BNF	S3 ,SW35
01866	49	01930		01390		B7	NO3E
01874	11	07285	00010	01400	S3	AM	TLU-1,10
01886	33	07285	00000	01410		CF	TLU-1,,6
01898	44	01918	07358	01420		BNF	E3 ,SW36
01910	49	01930		01430		B7	NO3E
01918	17	02132	00003	01440	E3	BTM	ERROR9,3,10
01930	32	01942	00000	01450	NO3E	SF	SW80
01942	32	07498	00000	01460	SW80	SF	SW31
01954	17	07286	17056	01470		BTM	TLU,TBLB
01966	44	01986	07346	01480	SW12	BNF	S1 ,SW35
01978	49	02022		01490		B7	C
01986	32	01966	00000	01500	S1	SF	SW12
01998	12	01496	00001	01510		SM	NESM,1,10
02010	44	02054	07370	01520		BNF	S2 ,SW46
02022	44	01546	01966	01530	C	BNF	UTF,SW12
02034	44	02110	01942	01540		BNF	NO3F,SW80
02046	49	01546		01550		B7	UTF
02054	12	07285	00001	01560	S2	SM	TLU-1,1
02066	24	07244	07285	01570		C	ARG,TLU-1,11
02078	46	01942	01200	01580		BE	SW80
02090	33	01942	00000	01590		CF	SW80
02101		00000		01600	STBRAD	DS	,*
02102	49	01942		01650		B7	SW80
02110	17	02132	00007	01610	NO3F	BTM	ERROR9,7,10
02122	49	01546		01620		B7	UTF
02130		00002		01630		DS	2
02132	33	02166	00000	01640	ERROR9	CF	ERROR
02144	26	02143	02131	01650		CF	ERROR+11,ERROR9-1
02156	49	02190		01660		B7	ERROR1
02164		00002		01670		DS	2
02166	26	02143	02165	01710	ERROR	TF	ERROR+11,ERROR-1
02178	32	02166	00000	01720		SF	ERROR
02185				01730	DORG		*-4
02189		00005		01740	STRMAD	DC	5,0
02190	11	02189	00001	01750	ERROR1	AM	STRMAD,1
02202	26	02220	02189	01760		TF	CRM10+6,STRMAD



LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS AND REMARKS
02214	15	00000	00000	01770	CRM10	TDM	,0
02226	12	02220	00002	01780		SM	CRM10+6,2
02238	45	02258	02220	01790		BNR	CRMI,CRM10+6,11
02250	49	02214		01800		B7	CRM10
02258	12	02189	00001	01810	CRMI	SM	STRMAD,1
02270	16	02300	00563	01820		TFM	CLFGI+6,INPUT+158
02282	16	02305	00547	01830		TFM	CLFGI+11,INPUT+142
02294	26	00563	00547	01840	CLFGI	TF	INPUT+158,INPUT+142,27,,,SHIFT STATEMENT FOR PRINT OUT
02306	12	02300	00002	01850		SM	CLFGI+6,2
02318	12	02305	00002	01860		SM	CLFGI+11,2
02330	14	02305	00403	01870		CM	CLFGI+11,INPUT-2
02342	47	02294	01200	01880		BNE	CLFGI
02354	47	02378	03400	01890	CRD1	BNI	P2 ,03400
02366	34	00000	00971	01900		SKIP	,1
02378	31	00404	00841	01910	P2	TR	INPUT-1,ERR
02390	33	02143	00000	01920		CF	ERROR9+11
02402	73	00415	02143	01930		TNF	INPUT+10,ERROR9+11
02414	16	00419	00034	01940		TFM	INPUT+14,34,8
02426	73	00571	02521	01950		TNF	571,STRND
02438	31	00572	07233	01960		TR	572,RECM-1
02450	39	00405	00900	01970	PRA1	PRA	INPUT
02462	32	01162	00000	01980		SF	FLAG
02474	31	00404	00420	01990		TR	INPUT-1,INPUT+15
02486	31	02189	07233	02000		TR	STRMAD,RECM-1,6
02498	26	00557	02101	02010		TF	557,STBRAD
02510	32	00557	00000	02020		SF	557
02521		00005		02030	STRND	DC	5,0,*
02522	44	02566	02166	02040		BNF	P3, ERROR
02534	33	15378	00000	02050	END	CF	SWTR
02546	33	08678	00000	02060		CF	SW2
02558	49	03468		02070		B7	DOEND1
02566	42	00000	00000	02080	P3	BB	
02573				02090		DORG	*-4
02577		00005		02100		DS	5
02578	47	02602	03400	02110	TYPE	BNI	P1 ,03400
02590	34	00000	00971	02120		SKIP	,1
02602	39	02577	00900	02130	P1	PRA	TYPE-1,,6
02614	42			02140		BB2	
02616	16	02687	00001	02150	DO	TFM	DOCNT,1,10
02628	16	02670	00421	02160		TFM	FIND+6,INPUT+16
02640	26	09928	07256	02170		TF	LABEL,CLEAR
02652	16	02694	09920	02180	SW13	TFM	WHERE+6,LABEL-8
02664	14	00000	00070	02190	FIND	CM	,70,10
02676	47	02756	01300	02200		BL	FST
02686				02210		DORG	*-1
02687		00002		02220	DOCNT	DC	,0
02688	26	00000	02670	02230	WHERE	TF	,FIND+6,11
02700	11	02670	00002	02240		AM	FIND+6,2
02712	11	02694	00002	02250		AM	WHERE+6,2
02724	14	02694	09930	02260		CM	WHERE+6,LABEL+2
02736	46	02780	01200	02270		BE	E10
02748	49	02664		02280		B7	FIND
02756	14	02694	09920	02290	FST	CM	WHERE+6,LABEL-8
02768	47	02792	01200	02300		BNE	ISNU
02780	17	02166	00010	02310	E10	BTM	ERROR,10,10
02792	31	07235	09919	02320	ISNU	TR	ARG- 9,LABEL-9
02804	17	07262	39995	02340	CZ5	BTM	TLU1,TBLA1+9
02816	44	02836	07346	02350		BNF	Q1 ,SW35
02828	49	02848		02360		B7	ZAP1
02836	44	02952	07358	02370	Q1	BNF	BADNEW,SW36
02848	31	00059	09919	02380	ZAP1	TR	59,LABEL-9
02860	26	00099	02670	02390		TF	99,FIND+6
02872	45	02972	02670	02400	HOE	BNR	CHL21,FIND+6,11
02884	27	09936	00099	02410		BT	LBPROC,99
02896	44	02780	09972	02430		BNF	E10,SW21
02908	26	07244	09926	02440		TF	ARG,LABEL-2
02920	17	07286	17216	02450		BTM	TLU,TBLD
02932	44	03016	07346	02460		BNF	E18,SW35
02944	49	03028		02470		B7	SAFE
02952	17	02132	00009	02480	BADNEW	BTM	ERROR9,09,10
02964	49	02848		02490		B7	ZAP1
02972	14	02670	00021	02500	CHL21	CM	FIND+6,21,610
02984	47	02780	01100	02510		BNH	E10
02996	11	02670	00002	02520		AM	FIND+6,2
03008	49	02872		02530		B7	HOE
03016	17	02132	00018	02540	E18	BTM	ERROR9,18,10
03028	26	00079	09926	02550	SAFE	TF	79,LABEL-2
03040	32	07602	00000	02560		SF	SW30
03052	17	07286	17826	02570		BTM	TLU,TBLA
03064	44	03260	07346	02580		BNF	TUOF,SW35
03076	14	09935	00033	02590	COMPEQ	CM	LBPROC-1,33,610
03088	47	02780	01200	02600		BNE	E10
03100	11	09935	00002	02610		AM	LBPROC-1,2
03112	27	09936	09935	02620	PRM3	BT	LBPROC,LBPROC-1
03124	44	02780	09972	02640		BNF	E10,SW21
03136	44	03204	09960	02650		BNF	NONN,SW20
03148	45	03304	09935	02660	PRM2	BNR	COMP1,LBPROC-1,11
03160	14	02687	00002	02670		CM	DOCNT,2,10

LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS AND REMARKS
03172	47	02780	01300	02680		BL	E10
03184	46	03396	01200	02690		BE	SETM3
03196	49	03408		02700		B7	FPROC
03204	26	07244	09926	02710	NONN	TF	ARG,LABEL-2
03216	32	07602	00000	02720		SF	SW30
03228	32	07510	00000	02730		SF	SW32
03240	17	07286	17826	02740		BTM	TLU,TBLA
03252	49	03148		02750		B7	PRM2
03260	12	07285	00001	02760	TUDF	SM	TLU-1,1
03272	33	07285	00000	02770		CF	TLU-1,,6
03284	44	03076	16138	02775		BNF	COMPEQ ,SW38
03296	49	02780		02780		B7	E10
03304	14	09935	00023	02790	COMP1	CM	LBPROC-1,23,610
03316	47	02780	01200	02800		BNE	E10
03328	11	02687	00001	02810		AM	DOCNT,1,10
03340	14	02687	00004	02820		CM	DOCNT,4,10
03352	46	02780	01200	02830		BE	E10
03364	11	09935	00002	02840		AM	LBPROC-1,2
03376	45	03112	09935	02850		BNR	PRM3,LBPROC-1,11,,1244
03388	49	02780		02860		B7	E10
03396	26	00099	07256	02870	SETM3	TF	99,CLEAR
03408	32	01174	00000	02880	FPROC	SF	SW49
03420	33	15378	00000	02890	DOEND	CF	SWTR
03432	44	03468	01966	02900		BNF	DOEND1,SW12
03444	17	02132	00008	02910		BTM	ERROR9,8,10
03456	33	01174	00000	02920		CF	SW49
03468	44	03492	01566	02930	DOEND1	BNF	CF500,SWTRE
03480	17	02132	00039	02940		BTM	ERROR9,39,10
03492	33	01186	00000	02950	CF500	CF	SW500
03504	33	02166	00000	02960		CF	ERROR
03516	44	03536	04372	02970		BNF	NOTYP1,SW1
03528	49	01234		02980		B7	STORE
03536	44	03560	01286	02990	NOTYP1	BNF	STTST,NSEEK
03548	17	02132	00005	03000		BTM	ERROR9,5,10
03560	44	03628	01874	03004	STTST	BNF	SW12,S3
03572	17	02132	00002	03006	CONTER	BTM	ERROR9,02,10
03584	33	04372	00000	03008		CF	SW1
03596	33	01874	00000	03010		CF	S3
03608	33	01286	00000	03012		CF	NSEEK
03619		00002		03014	NPFR	DC	2,0,*
03620	49	05826		03016		B7	IOPROC+24
03628	44	03676	01966	03020	TSW12	BNF	NEDO,SW12
03640	13	01496	00010	03030		MM	NESM,010,9
03652	11	00099	17216	03040		AM	99,TBLD
03664	25	00099	07246	03050		TD	99,RM,6
03676	44	01234	01174	03060	NEDO	BNF	STORE,SW49
03688	33	01174	00000	03070		CF	SW49
03700	16	07400	08290	03080		TFM	REC+6,RESET
03712	26	07244	00079	03090		TF	ARG,79
03724	32	07602	00000	03100		SF	SW30
03736	17	07286	17216	03110		BTM	TLU,TBLD
03748	31	07235	00059	03120		TR	ARG-9,59
03760	32	07602	00000	03130		SF	SW30
03772	17	07286	17056	03140		BTM	TLU,TBLB
03784	11	01496	00001	03150		AM	NESM,1,10
03796	16	07400	07974	03160		TFM	REC+6,COMPAR
03808	49	01234		03170		B7	STORE
03816	16	09935	00425	03230	TYPEXX	TFM	LBPROC-1,INPUT+20
03828	49	05766		03240		B7	PUNCH+12
03836	16	03619	00000	03249	FRMT	TFM	NPFR,,10
03848	24	00805	07256	03250		C	STNO+8,CLEAR
03860	47	03884	01200	03260		BNE	Z1
03872	17	02132	00029	03270		BTM	ERROR9,29,10
03884	33	01286	00000	03271	Z1	CF	NSEEK
03896	16	03938	00417	03280		TFM	FMAT1+6,INPUT+12
03908	16	04123	00418	03290		TFM	FMAT2+11,INPUT+13
03920	16	04118	00416	03300		TFM	FMAT2+6,INPUT+11
03932	14	00417	00000	03310	FMAT1	CM	INPUT+12,,10
03944	46	04112	01200	03320		BE	FMAT2
03956	14	03938	00024	03321		CM	FMAT1+6,24,610
03968	46	04248	01200	03322		BE	NPFF
03980	14	03938	00004	03323		CM	FMAT1+6,04,610
03992	46	04268	01200	03324		BE	NPFS
04004	14	03938	00048	03330		CM	FMAT1+6,48,610
04016	46	04144	01200	03340		BE	FMAT3
04028	11	03938	00002	03350	FORMA	AM	FMAT1+6,2
04040	11	04118	00002	03360		AM	FMAT2+6,2
04052	11	04123	00002	03370		AM	FMAT2+11,2
04064	45	03932	03938	03380	FMAT1X	BNR	FMAT1,FMAT1+6,11
04076	12	03938	00002	03390		SM	FMAT1+6,2
04088	45	04288	03938	03400		BNR	Z2 ,FMAT1+6,11
04100	17	02166	00029	03400	E29	BTM	ERROR,29,1011
04112	31	00416	00418	03420	FMAT2	TR	INPUT+11,INPUT+13
04124	49	04064		03430		B7	FMAT1X
04132	11	04574	00001	03440		AM	EDIT2+10,1,9
04144	27	04420	03938	03450	FMAT3	BT	EDIT,FMAT1+6
04156	11	04574	00001	03460		AM	EDIT2+10,1,9
04168	13	04574	00002	03470		MM	EDIT2+10,2,10

,,,UNLABELED STATEMENT FOLLOWING  
 ,,,TRANSFER STATEMENT  
 ,,,CONTINUATION ERROR  
 ,,,IF DO STATEMENT,HOLD INDEX AND  
 ,,,LABEL  
 ,,,CHECK TYPE  
 ,,,CHECK FORMAT  
 ,,,FORMAT ERROR  
 ,,,FORMAT CONTINUATION ENTERS HERE  
 ,,,IS THIS HOLLERITH FIELD

LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS AND REMARKS
04180	21	03938	00099	03480		A	FMAT1+6,99
04192	21	04118	00099	03490		A	FMAT2+6,99
04204	21	04123	00099	03500		A	FMAT2+11,99
04216	24	03938	00552	03510		C	FMAT1+6,552
04228	46	04100	01100	03520		BH	E29
04240	49	04064		03530		B7	FMAT1X
04248	11	03619	00001	03531	NPF	AM	NPFR,1,10
04260	49	04028		03532		B7	FORMA
04268	12	03619	00001	03533	NPFS	SM	NPFR,1,10
04280	49	04028		03534		B7	FORMA
04288	14	03619	00000	03535	Z2	CM	NPFR,0,10
04300	46	04324	01200	03536		BE	Z21
04312	32	01286	00000	03537		SF	NSEEK
04324	14	03938	00004	03540	Z21	CM	FMAT1+6,4,610
04336	46	04384	01200	03550		BE	FMAT4
04348	14	03938	00023	03560		CM	FMAT1+6,23,610
04360	47	04100	01200	03570		BNE	E29
04372	32	04372	00000	03580	SWI	SF	SWI
04384	44	04614	08678	03590	FMAT4	BNF	NO2,SW2
04396	16	09935	00417	03594		TFM	LBPROC-1,INPUT+12
04408	49	04662	00000	03600		B	FMATRP+12
04420	12	04419	00002	03610	EDIT	SM	EDIT-1,2
04432	16	04574	00000	03620		TFM	EDIT2+10,,9
04444	16	04486	04574	03630		TFM	EDIT1+30,EDIT2+10
04456	14	04419	00070	03640	EDIT1	CM	EDIT-1,70,610
04468	47	04564	01300	03650		BL	EDIT2
04480	25	04574	04419	03660		TD	EDIT2+10,EDIT-1,11
04492	12	04419	00002	03670		SM	EDIT-1,2
04504	14	04419	00417	03680		CM	EDIT-1,417
04516	47	04564	01300	03690		BL	EDIT2
04528	12	04486	00001	03700		SM	EDIT1+30,1
04540	14	04486	04571	03710		CM	EDIT1+30,EDIT2+7
04552	47	04456	01200	03720		BNE	EDIT1
04564	32	04572	00000	03730	EDIT2	SF	EDIT2+8
04576	14	04574	00062	03740		CM	EDIT2+10,62,9
04588	47	10518	01100	03750		BNH	BB2
04600	17	02166	00029	03760	E43	BTM	ERROR,29,1011
04612	42			03770		BB2	
04614	16	09935	00429	03820	NO2	TFM	LBPROC-1,INPUT+24
04626	14	09935	00024	03830		CM	LBPROC-1,24,610
04638	47	04100	01200	03840		BNE	E29
04650	11	09935	00002	03850	FMATRP	AM	LBPROC-1,2
04662	33	04830	00000	03860		CF	SW200
04674	14	09935	00004	03870		CM	LBPROC-1,4,610
04686	46	05574	01200	03880		BE	FMATE2
04698	14	09935	00021	03890		CM	LBPROC-1,21,610
04710	46	04862	01200	03900		BE	FMATTC
04722	14	09935	00023	03910		CM	LBPROC-1,23,610
04734	46	05210	01200	03920		BE	TFRM
04746	14	09935	00020	03930	SW201	CM	LBPROC-1,20,610
04758	46	04100	01200	03940		BE	E29
04770	14	09935	00021	03950		CM	LBPROC-1,21,610
04782	46	04650	01200	03960		BE	FMATRP
04794	14	09935	00070	03970	Z3	CM	LBPROC-1,70,610
04806	47	04882	01300	03980		BL	MLM1
04818	32	04830	00000	03990		SF	SW200
04828		00002		04000	FMATSZ	DC	2,0,*-1
04830	11	09935	00002	04010	SW200	AM	LBPROC-1,2
04842	11	04828	00001	04020		AM	FMATSZ,1
04854	49	04794		04030		B7	Z3
04862	11	09935	00002	04040	FMATTC	AM	LBPROC-1,2
04874	49	05542		04050		B7	FMATET
04882	14	04828	00003	04060	MLM1	CM	FMATSZ,03,10
04894	47	04918	01300	04070		BL	MLM
04906	17	02132	00041	04080		BTM	ERROR9,41,10
04918	15	04828	00000	04090	MLM	TDM	FMATSZ,0
04930	14	09935	00048	04100		CM	LBPROC-1,48,610,H
04942	46	05106	01200	04110		BE	FMATH
04954	14	09935	00046	04120		CM	LBPROC-1,46,610,F
04966	46	05242	01200	04130		BE	FMATF
04978	14	09935	00049	04140		CM	LBPROC-1,49,610,I
04990	46	05606	01200	04150		BE	FMATI
05002	14	09935	00045	04160		CM	LBPROC-1,45,610,E
05014	46	05242	01200	04170		BE	FMATF
05026	14	09935	00067	04180		CM	LBPROC-1,67,610,X
05038	46	05662	01200	04190		BE	FMATX
05050	14	09935	00041	04200		CM	LBPROC-1,41,610,A
05062	46	05402	01200	04210		BE	FMATA
05074	14	09935	00024	04220		CM	LBPROC-1,24,610,(
05086	47	04100	01200	04230		BNE	E29
05098	49	04650		04240		B7	FMATRP
05106	44	04600	04830	04250	FMATH	BNF	E43,SW200
05118	27	04420	09935	04260		BT	EDIT,LBPROC-1
05130	11	04574	00001	04270		AM	EDIT2+10,1,10
05142	13	04574	00002	04280		MM	EDIT2+10,2,10
05154	21	09935	00099	04290		A	LBPROC-1,99
05166	45	05186	09935	04300		BNR	Z4 ,LBPROC-1,11
05178	49	04600		04310		B7	E43

,,,DOES FORMAT END WITH A RIGHT  
 ,,,PARENTHESIS  
 ,,,IF IT ENDS WITH A COMMA, INDICATE  
 ,,,CONTINUATION SHOULD FOLLOW.

,,,CHECK SIZE OF HOLLERITH FIELD

,,,CHECK H-TYPE FORMAT

LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS AND REMARKS
05186	14	09935	00023	04320	Z4	CM	LBPROC-1,23,610
05198	47	04662	01200	04330		BNE	FMATRP+12
05210	11	09935	00002	04340	TFRM	AM	LBPROC-1,2
05222	45	04662	09935	04350		BNR	FMATRP+12, LBPROC-1,11
05234	49	02534		04360		B7	END
05242	11	09935	00002	04370	FMATF	AM	LBPROC-1,2
05254	27	09936	09935	04380		BT	LBPROC, LBPROC-1
05266	44	04100	09960	04400		BNF	E29, SW20
05278	44	05298	09972	04410		BNF	FMATF2, SW21
05290	49	04100		04420		B7	E29
05298	12	09935	00002	04430	FMATF2	SM	LBPROC-1,2
05310	14	09935	00003	04440		CM	LBPROC-1,3,610
05322	46	04100	01200	04450		BE	E29
05334	11	09935	00002	04460		AM	LBPROC-1,2
05346	14	09935	00023	04470	FMATR	CM	LBPROC-1,23,610
05358	47	05494	01200	04480		BNE	HERE
05370	11	09935	00002	04490		AM	LBPROC-1,2
05382	45	04746	09935	04500		BNR	SW201, LBPROC-1,11
05394	49	02534		04510		B7	END
05402	11	09935	00004	04520	FMATA	AM	LBPROC-1,4
05414	14	09935	00070	04530		CM	LBPROC-1,70,610
05426	46	04600	01300	04540		BNL	E43
05438	12	09935	00002	04550		SM	LBPROC-1,2
05450	14	09935	00075	04560		CM	LBPROC-1,75,610
05462	46	04600	01100	04570		BH	E43
05474	11	09935	00002	04580		AM	LBPROC-1,2
05486	49	05346		04590		B7	FMATR
05494	14	09935	00021	04600	HERE	CM	LBPROC-1,21,610
05506	46	04650	01200	04610		BE	FMATRP
05518	14	09935	00004	04620		CM	LBPROC-1,4,610
05530	47	04600	01200	04630		BNE	E43
05542	14	09935	00023	04640	FMATET	CM	LBPROC-1,23,610
05554	47	04662	01200	04650		BNE	FMATRP+12
05566	49	05210		04660		B7	TFRM
05574	11	09935	00002	04670	FMATE2	AM	LBPROC-1,2
05586	45	05542	09935	04680		BNR	FMATET, LBPROC-1,11
05598	49	02534		04690		B7	END
05606	11	09935	00002	04700	FMATI	AM	LBPROC-1,2
05618	27	09936	09935	04710		BT	LBPROC, LBPROC-1
05630	44	04100	09960	04730		BNF	E29, SW20
05642	44	04100	09972	04740		BNF	E29, SW21
05654	49	05346		04750		B7	FMATR
05662	11	09935	00002	04760	FMATX	AM	LBPROC-1,2
05674	44	04100	04830	04770		BNF	E29, SW200
05686	49	05346		04780		B7	FMATR
05694	45	14886	00427	04790	PAUSE	BNR	E20, INPUT+22
05706	49	02534		04800		B7	END
05714	16	09935	00429	04810	REREAD	TFM	LBPROC-1, INPUT+24
05726	49	05778		04820		B7	PUNCH+24
05734	16	09935	00425	04830	READ	TFM	LBPROC-1, INPUT+20
05746	49	05778		04840		B7	PUNCH+24
05754	16	09935	00427	04850	PUNCH	TFM	LBPROC-1, INPUT+22
05766	32	05766	00000	04860	SW54	SF	SW54
05778	32	05778	00000	04870	SW52	SF	SW52
05790	16	06317	00000	04880		TFM	NP, 0, 10
05802	45	05934	09935	04890	IOPROC	BNR	Z5, LBPROC-1,11
05814	17	02166	00021	04900		BTM	ERROR, 21, 10
05826	44	05846	04372	04910		BNF	CF524, SW1
05838	49	02534		04920		B7	END
05846	33	05778	00000	04930	CF524	CF	SW52
05858	33	05766	00000	04940		CF	SW54
05870	14	06317	00000	04950		CM	NP, 0, 10
05882	47	02534	01200	04960		BNE	END
05894	33	01286	00000	04970		CF	NSEEK
05906	49	02534		04980		B7	END
05914	17	02132	00023	04990	IOB1	BTM	ERROR9, 23, 10
05926	49	06118		05000		B7	IODX
05934	44	06014	08678	05010	Z5	BNF	NTST5, SW2
05946	14	09935	00024	05012	IOD1	CM	LBPROC-1, 24, 610
05958	47	06162	01200	05014		BNE	IOE
05970	11	06317	00001	05016		AM	NP, 1, 10
05982	11	09935	00002	05018	ALP	AM	LBPROC-1, 2
05994	45	05946	09935	05020	CONTIO	BNR	IOD1, LBPROC-1, 11
06006	49	05814		05024		B7	IOPROC+12
06014	14	09935	00070	05030	NTST5	CM	LBPROC-1, 70, 610
06026	47	05914	01300	05040		BL	IOB1
06038	27	09936	09935	05050		BT	LBPROC, LBPROC-1
06050	44	05914	09960	05070		BNF	IOB1, SW20
06062	44	05914	09972	05080		BNF	IOB1, SW21
06074	17	16582	06086	05090		BTM	NONAME, **12
06086	45	06118	09935	05100		BNR	IODX, LBPROC-1, 11
06098	44	05814	05778	05110		BNF	IOPROC+12, SW52
06110	49	05826		05120		B7	IOPROC+24
06118	14	09935	00023	05130	IODX	CM	LBPROC-1, 23, 610
06130	46	06482	01200	05140		BE	CONTST
06142	17	02132	00026	05150		BTM	ERROR9, 26, 10
06154	49	05982		05160		B7	ALP
06162	27	09936	09935	05230	IOE	BT	LBPROC, LBPROC-1

LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS AND REMARKS
06174	44	06558	09960	05250		BNF	Y1 ,SW20
06186	49	05814		05260		B7	IOPROC+12
06194	26	07244	09926	05270	Y2	TF	ARG,LABEL-2
06206	44	06230	10020	05280		BNF	Y3 ,SW24
06218	11	09935	00002	05290		AM	LBPROC-1,2
06230	45	06250	09935	05300	Y3	BNR	Y4 ,LBPROC-1,11
06242	49	06274		05310		B7	IOIA
06250	14	09935	00033	05320	Y4	CM	LBPROC-1,33,610
06262	46	06670	01200	05330		BE	ION
06274	44	06294	10020	05340	IOIA	BF	IOG,SW24
06286	49	06430					
06294	44	06374	05766	05350		BNF	IOI,SW54
06306	32	07602	00000	05360		SF	SW30
06316				05370		DORG	*-1
06317		00002		05380	NP	DC	2,0
06318	32	07510	00000	05390		SF	SW32
06330	17	07286	±7826	05400		BTM	TLU,TBL
06342	44	06430	16114	05410		BNF	IOG,SW 7
06354	17	02132	00031	05420	ER31	BTM	ERRC 9,31,10
06366	49	06430		05430		B7	IOG
06374	32	07602	00000	05440	IOI	SF	SW30
06386	17	07286	±7826	05450		BTM	TLU,TBLA
06398	44	06418	16114	05460		BNF	VDEF35,SW37
06410	49	06354		05470		B7	ER31
06418	44	06450	07346	05480	VDEF35	BNF	VDEF,SW35
06430	45	06526	09935	05490	IOG	BNR	IOH ,LBPROC-1,11
06442	49	05826		05500		B7	IOPROC+24
06450	12	07285	00001	05510	VDEF	SM	TLU-1,1
06462	33	07285	00000	05520		CF	TLU-1,,6
06474	49	06430		05530		B7	IOG
06482	11	09935	00002	05540	CONTST	AM	LBPROC-1,2
06494	45	05946	09935	05550		BNR	IOD1,LBPROC-1,11
06506	32	04372	00000	05560	SS1	SF	SW1
06518	49	05826		05570		B7	IOPROC+24
06526	14	09935	00023	05580	IOH	CM	LBPROC-1,23,610
06538	46	06482	01200	05590		BE	CONTST
06550	49	05814		05600		B7	IOPROC+12
06558	44	06194	10056	05610	Y1	BNF	Y2 ,SW48
06570	17	02132	00040	05620		BTM	ERROR9,40,10
06582	14	09935	00004	05630	IOF	CM	LBPROC-1,4,610
06594	46	06638	01200	05640		BE	Y5
06606	11	09935	00002	05650		AM	LBPROC-1,2
06618	45	06582	09935	05660		BNR	IOF,LBPROC-1,11
06630	49	05826		05670		B7	IOPROC+24
06638	11	09935	00002	05680	Y5	AM	LBPROC-1,2
06650	45	06526	09935	05690		BNR	IOH,LBPROC-1,11
06662	49	05826		05700		B7	IOPROC+24
06670	14	06317	00001	05710	ION	CM	NP,1,10
06682	47	06818	01200	05720		BNE	IO28
06694	32	07602	00000	05730		SF	SW30
06706	17	07286	±7826	05740		BTM	TLU,TBLA
06718	44	06762	07346	05750		BNF	CUIO,SW35
06730	17	07286	±7216	05760	TDOL	BTM	TLU,TBLD
06742	44	06794	07346	05770		BNF	IO18,SW35
06754	49	06806		05780		B7	Y6
06762	12	07285	00001	05790	CUIO	SM	TLU-1,1
06774	33	07285	00000	05800		CF	TLU-1,,6
06786	49	06730		05810		B7	TDOL
06794	17	02132	000±8	05820	IO18	BTM	ERROR9,18,10
06806	44	06838	10020	05830	Y6	BNF	Y7 ,SW24
06818	17	02166	00028	05840	IO28	BTM	ERROR,28,10
06830	49	05826		05850		B7	IOPROC+24
06838	44	06818	09972	05860	Y7	BNF	IO28,SW21
06850	16	06961	00000	05870		TFM	IO28UE+11,,10
06862	11	09935	00002	05880	IONB	AM	LBPROC-1,2
06874	27	09936	09935	05890		BT	LBPROC,LBPROC-1
06886	44	06906	10020	05910		BNF	Y8 ,SW24
06898	49	06818		05920		B7	IO28
06906	44	06818	09972	05930	Y8	BNF	IO28,SW21
06918	44	06938	09960	05940		BNF	IO28U,SW20
06930	49	06986		05950		B7	IONA
06938	26	07244	09926	05960	IO28U	TF	ARG,LABEL-2
06950	32	07602	00000	05970	IO28UE	SF	SW30
06962	32	07510	00000	05980		SF	SW32
06974	17	07286	±7826	05990		BTM	TLU,TBLA
06986	11	06961	00001	06000	IONA	AM	IO28UE+11,1,10
06998	45	07050	09935	06010		BNR	J1 ,LBPROC-1,11
07010	49	06818		06020		B7	IO28
07018	11	09935	00002	06030	COTST2	AM	LBPROC-1,2
07030	45	06874	09935	06040		BNR	IONB+12,LBPROC-1,11
07042	49	06506		06050		B7	SS1
07050	14	09935	00023	06060	J1	CM	LBPROC-1,23,610
07062	46	07018	01200	06070		BE	COTST2
07074	14	06961	00002	06080		CM	IO28UE+11,2,10
07086	47	07122	01300	06090		BL	E28
07098	14	06961	00003	06100		CM	IO28UE+11,3,10
07110	47	07134	01100	06110		BNH	J2
07122	17	02132	00028	06120	E28	BTM	ERROR9,28,10

,,HAS THIS VARIABLE BEEN DIMENSIONED

,,IS THIS STATEMENT CONTINUED ON NEXT  
,,CARD,,IS A DO INDEX BEING MODIFIED WITHIN  
,,THE LOOP

,,CLEAR UNDEFINED FLAG ON THIS LABEL

LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS AND REMARKS
07134	14	09935	00084	06130	J2	CM	LBPROC-1,4,610
07146	46	07190	01200	06140		BE	JNPT
07158	49	06818		06150		B7	IO28
07166	14	09935	00084	06160	J3	CM	LBPROC-1,4,610
07178	47	06526	01200	06170		BNE	IOH
07190	12	06317	00081	06180	JNPT	SM	NP,1,10
07202	11	09935	00002	06190		AM	LBPROC-1,2
07214	45	07166	09935	06200		BNR	J3 ,LBPROC-1,11
07226	49	05826		06210		B7	IOPROC+24
07234		00002		06220	RECM	DC	2,0'
07244		00010		06230	ARG	DC	10,0
07245		00001		06240		DC	1,1'
07246		00001		06250	RM	DC	1,1'
07256		00010		06260	CLEAR	DC	10,0
07261		00005		06264		DS	5
07262	26	07285	07261	06270	TLU1	TF	TLU-1,*-1
07274	32	07274	00000	06274	A1	SF	A1
07286	16	07304	07237	06280	TLU	TFM	CFLG+6,ARG-7
07298	33	00000	00000	06290	CFLG	CF	
07310	11	07304	00002	06300		AM	CFLG+6,2
07322	14	07304	07245	06310		CM	CFLG+6,ARG+1
07334	47	07298	01200	06320		BNE	CFLG
07346	32	07346	00000	06330	SW35	SF	SW35
07358	33	07358	00000	06340	SW36	CF	SW36
07370	33	07370	00000	06350	SW46	CF	SW46
07382	33	16114	00000	06360		CF	SW37
07394	45	07974	07285	06370	REC	BNR	COMPAR,TLU-1,11
07406	44	07854	07602	06380	OUTTLU	BNF	TSW31,SW30
07418	44	07486	07346	06390		BNF	BRBK,SW35
07430	49	07554		06400		B7	PUT
07438	44	07486	16138	06410	T38	BNF	BRBK,SW38
07450	12	07285	00002	06420		SM	TLU-1,2
07462	32	07285	00000	06430		SF	TLU-1,,6
07474	11	07285	00002	06440		AM	TLU-1,2
07486	33	07602	00000	06450	BRBK	CF	SW30
07498	33	07498	00000	06460	SW31	CF	SW31
07510	33	07510	00000	06470	SW32	CF	SW32
07522	33	16138	00000	06480		CF	SW38
07534	33	07274	00000	06490		CF	A1
07546	42	00000	00000	06500	BB	BB	
07553				06510		DDRG	*-4
07554	44	07578	07274	06520	PUT	BNF	PUTR,A1
07566	12	07285	00018	06530		SM	TLU-1,18
07578	11	07285	00009	06550	PUTR	AM	TLU-1,9
07590	45	07610	07285	06560		BNR	J4 ,TLU-1,11
07602	49	08482		06570	SW30	B7	STE
07610	44	07774	07274	06580	J4	BNF	J4R,A1
07622	11	07285	00009	06590		AM	TLU-1,9
07634	33	07235	00000	06600		CF	ARG-9
07646	26	07285	07244	06610		TF	TLU-1,ARG,6
07658	12	07285	00011	06620		SM	TLU-1,11
07670	33	07285	00000	06630		CF	TLU-1,,6
07682	11	07285	00002	06640		AM	TLU-1,2
07694	32	07285	00000	06650		SF	TLU-1,,6
07706	11	07285	00009	06660		AM	TLU-1,9
07718	32	07235	00000	06670		SF	ARG-9
07730	44	07846	07510	06680		BNF	FIN,SW32
07742	32	07285	00000	06690		SF	TLU-1,,6
07754	12	07285	00010	06700		SM	TLU-1,10
07766	49	07486		06710		B7	BRBK
07774	11	07285	00001	06720	J4R	AM	TLU-1,1
07786	26	07285	07245	06730		TF	TLU-1,ARG+1,6
07798	44	07438	07510	06740		BNF	T38,SW32
07810	12	07285	00001	06750		SM	TLU-1,1
07822	32	07285	00000	06760		SF	TLU-1,,6
07834	11	07285	00001	06770		AM	TLU-1,1
07846	49	07486		06780	FIN	B7	BRBK
07854	44	07486	07498	06790	TSW31	BNF	BRBK,SW31
07866	44	07886	07346	06800		BNF	J5 ,SW35
07878	49	07486		06810		B7	BRBK
07886	26	07960	07285	06820	J5	TF	MOVE+6,TLU-1
07898	12	07960	00010	06830		SM	MOVE+6,10
07910	45	07954	07285	06840		BNR	MOVE,TLU-1,11
07922	25	07960	07246	06850		TD	MOVE+6,RM,6
07934	32	07370	00000	06860		SF	SW46
07946	49	07486		06870		B7	BRBK
07954	31	00000	07285	06880	MOVE	TR	,TLU-1,11
07966	49	07486		06890		B7	BRBK
07974	44	07998	07274	06900	COMPAR	BNF	COMPR,A1
07986	12	07285	00009	06910		SM	TLU-1,9
07998	11	07285	00001	06930	COMPR	AM	TLU-1,1
08010	24	07236	07285	06940		C	ARG-8 ,TLU-1,11
08022	47	08334	01200	06950		BNE	RESET1
08034	11	07285	00007	06960		AM	TLU-1,7
08046	44	08218	07285	06970		BNF	ADD1,TLU-1,11
08058	33	07285	00000	06980		CF	TLU-1,,6
08070	11	07285	00001	06990		AM	TLU-1,1
08082	24	07244	07285	07000		C	ARG,TLU-1,11

LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS AND REMARKS
08094	47	08174	01200	07010		BNE	RESETU
08106	12	07285	00001	07020		SM	TLU-1,1
08118	32	07285	00000	07030		SF	TLU-1,,6
08130	11	07285	00002	07040		AM	TLU-1,2
08142	33	07346	00000	07050		CF	SW35
08154	32	16114	00000	07060		SF	SW37
08166	49	07406		07070		B7	OUTTLU
08174	12	07285	00001	07080	RESETU	SM	TLU-1,1
08186	32	07285	00000	07090		SF	TLU-1,,6
08198	11	07285	00002	07100		AM	TLU-1,2
08210	49	07394		07110		B7	REC
08218	11	07285	00001	07120	ADD1	AM	TLU-1,1
08230	44	08378	07285	07130		BNF	NOFLG,TLU-1,11
08242	33	07285	00000	07140		CF	TLU-1,,6
08254	24	07244	07285	07150		C	ARG,TLU-1,11
08266	32	07285	00000	07160		SF	TLU-1,,6
08278	46	08402	01200	07170		BE	EQUAL
08290	44	08314	07274	07180	RESET	BNF	RESETR,A1
08302	12	07285	00011	07190		SM	TLU-1,11
08314	11	07285	00001	07210	RESETR	AM	TLU-1,1
08326	49	07394		07220		B7	REC
08334	44	08358	07274	07230	RESET1	BNF	RES1R,A1
08346	12	07285	00011	07240		SM	TLU-1,11
08358	11	07285	00009	07260	RES1R	AM	TLU-1,9
08370	49	07394		07270		B7	REC
08378	24	07244	07285	07280	NOFLG	C	ARG,TLU-1,11
08390	47	08290	01200	07290		BNE	RESET
08402	33	07346	00000	07300	EQUAL	CF	SW35
08414	44	08438	07285	07310		BNF	FIX,TLU-1,11
08426	32	07358	00000	07320		SF	SW36
08438	44	08462	07274	07330	FIX	BNF	FIXR,A1
08450	12	07285	00011	07340		SM	TLU-1,11
08462	11	07285	00001	07360	FIXR	AM	TLU-1,1
08474	49	07406		07370		B7	OUTTLU
08482	44	07486	02652	07380	STE	BNF	BRBK,SW13
08494	33	02652	00000	07390		CF	SW13
08506	16	02131	00032	07400		TFM	ERROR9-1,32,10
08518	15	02567	00009	07410		TDM	P3+1,9
08530	16	02572	08550	07420		TFM	P3+6,E32B
08542	49	02132		07430		B7	ERROR9
08550	15	02567	00002	07440	E32B	TDM	P3+1,2
08562	49	07486	08634	07450		B	BRBK ,TOPT2
08575		00002		07460	DCPT2	DC	2,0
08583		00008		07470		DC	8,79380020
08588		00005	±2394	07480	DSA	ARITH	
08589		00001		07490		DC	1,1
08590	31	01253	00038	07500	CLPT2	TR	DCF-6 ,38
08602	31	00038	08569	07504		TR	38 ,DCPT2-6
08614	15	00022	00009	07510		TDM	22 ,9
08626	49	00000		07515		B7	
08634	27	00882	00881	07520	TOPT2	BT	RBCHK ,RBCHK-1
08646	31	00038	01253	07524		TR	38 ,DCF-6
08658	49	13034		07530		B7	FINISH
08666	16	09935	00417	07540	CID	TFM	LBPROC-1,INPUT+12
08678	32	08678	00000	07550	SW2	SF	SW2
08690	33	04372	00000	07560		CF	SW1
08702	49	05802		07570		B7	IOPROC
08710	33	04372	00000	07580	CFRMT	CF	SW1
08722	32	08678	00000	07590		SF	SW2
08734	49	03884		07600		B7	Z1
08742	33	01566	00000	07610	BGTR	CF	SWTRE
08754	45	08774	00437	07620		BNR	BGTRC,INPUT+32
08766	49	02534		07630		B7	END
08774	14	00437	00045	07640	BGTRC	CM	INPUT+32,45,10
08786	46	02534	01200	07650		BE	END
08798	14	00437	00046	07660		CM	INPUT+32,46,10
08810	46	02534	01200	07670		BE	END
08822	17	02166	00019	07680	BTM	BTM	ERROR,19,10
08834	49	02534		07690		B7	END
08845		00005		07700		DS	5
08846	45	08870	09935	07710	SGPRSB	BNR	BBTT,LBPROC-1,11
08858	17	02166	00015	07720	E15	BTM	ERROR,15,10
08870	27	09936	09935	07730	BBTT	BT	LBPROC,LBPROC-1
08882	45	08858	09935	07740		BNR	E15,LBPROC-1,11
08894	44	08858	09960	07760		BNF	E15,SW20
08906	44	08858	09972	07770		BNF	E15,SW21
08918	49	08845		07780		B7	SGPRSB-1,,6
08926	24	09916	07256	07790	BGSG	C	OPSEG,CLEAR
08938	47	09062	01200	07800		BNE	E1
08950	16	09935	00441	07810		TFM	LBPROC-1,INPUT+36
08962	17	08846	08974	07820		BTM	SGPRSB,BGSGP
08974	26	09916	09926	07830	BGSGP	TF	OPSEG,LABEL-2
08986	26	07244	09926	07840		TF	ARG,LABEL-2
08998	17	07262	39995	07860	CZ10	BTM	TLU1,TBLA1+9
09010	44	09042	07346	07870		BNF	TBS36,SW35
09022	17	02132	00004	07880	E4	BTM	ERROR9,4,10
09034	49	02534		07890		B7	END
09042	44	02534	07358	07900	TBS36	BNF	END,SW36

,,,MATCH HAS BEEN FOUND AND LABEL WAS  
,,,DIMENSIONED

,,,LABEL FOUND IN TABLE

,,,SYMBOL TABLE EXCEEDED

,,,DCF DIAG PART 2

,,,CHECK CONTINUATION I-0

,,,CHECK CONTINUATION FORMAT

,,,CHECK BEGIN TRACE

,,,SEGMENT + PROCEDURE SUBROUTINE

,,,CHECK BEGIN SEGMENT

LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS AND REMARKS
09054	49	09022		07910		B7	E4
09062	17	02132	00001	07920	E1	BTM	ERRDR9,1,10
09074	49	02534		07930		B7	END
09082	33	01566	00000	07940	BGPR	CF	SWTRE
09094	24	09262	07256	07950		C	OPPROC,CLEAR
09106	47	09062	01200	07960		BNE	E1
09118	16	09935	00445	07970		TFM	LBPROC-1,INPUT+40
09130	17	08846	09142	07980		BTM	SGPRSB ,BGPRP
09142	26	07244	09926	07990	BGPRP	TF	ARG,LABEL-2
09154	26	09262	09926	08000		TF	OPPROC,LABEL-2
09166	32	07602	00000	08010		SF	SW30
09178	17	07262	09995	08030	CZ11	BTM	TLU1,TBLA1+9
09190	44	09210	07346	08040		BNF	PROC1,SW35
09202	49	02534		08050		B7	END
09210	11	07285	00010	08060	PROC1	AM	TLU-1,10
09222	33	07285	00000	08070		CF	TLU-1,,6
09234	44	09888	07358	08080		BNF	ERR3,SW36
09246	49	02534		08090		B7	END
09262		00010		08100	OPPROC	DC	10,0
09264	32	09264	00000	08110	CLSG	SF	CLSG
09276	16	09935	00439	08120		TFM	LBPROC-1,INPUT+34
09288	17	08846	09300	08130	CLSG1	BTM	SGPRSB,CLSGP
09300	26	07244	09926	08140	CLSGP	TF	ARG,LABEL-2
09312	32	07602	00000	08150		SF	SW30
09324	32	07510	00000	08160		SF	SW32
09336	17	07262	09995	08180	CZ12	BTM	TLU1,TBLA1+9
09348	44	15366	09540	08190		BNF	END2,EXCPR
09360	33	09540	00000	08200		CF	EXCPR
09372	49	02534		08210		B7	END
09380	32	01610	00000	08220	ENDSG	SF	SEGFLG
09392	16	09935	00437	08230		TFM	LBPROC-1,INPUT+32
09404	17	08846	09416	08240		BTM	SGPRSB ,ENDSGP
09416	24	09916	09926	08250	ENDSGP	C	OPSEG,LABEL-2
09428	47	09062	01200	08260		BNE	E1
09440	26	09916	07256	08270		TF	OPSEG,CLEAR
09452	33	01566	00000	08280	ENDTR	CF	SWTRE
09464	49	02534		08290		B7	END
09472	16	09935	00441	08300	ENDPR	TFM	LBPROC-1,INPUT+36
09484	17	08846	09496	08310		BTM	SGPRSB ,ENDPRP
09496	24	09262	09926	08320	ENDPRP	C	OPPROC,LABEL-2
09508	47	09062	01200	08330		BNE	E1
09520	26	09262	07256	08340		TF	OPPROC,CLEAR
09532	49	09452		08350		B7	ENDTR
09540	16	09935	00449	08360	EXCPR	TFM	LBPROC-1,INPUT+44
09552	32	09540	00000	08370		SF	EXCPR
09564	49	09288		08380		B7	CLSG1
09572	16	09935	00429	08390	RETURN	TFM	LBPROC-1,INPUT+24
09584	17	08846	09596	08400		BTM	SGPRSB ,RETURP
09596	24	09262	09926	08410	RETURP	C	OPPROC,LABEL-2
09608	47	09062	01200	08420		BNE	E1
09620	49	02534		08430		B7	END
09628	33	01566	00000	08440	SEGMT	CF	SWTRE
09640	26	09916	07256	08450		TF	OPSEG,CLEAR
09652	32	01610	00000	08460		SF	SEGFLG
09664	44	09022	09264	08470		BNF	E4,CLSG
09676	45	09696	00431	08480		BNR	SEG1,INPUT+26
09688	49	08858		08490		B7	E15
09696	16	09935	00431	08500	SEG1	TFM	LBPROC-1,INPUT+26
09708	27	09936	09935	08510	SEG2	BT	LBPROC,LBPROC-1
09720	44	08858	09960	08530		BNF	E15,SW20
09732	44	08858	09972	08540		BNF	E15,SW21
09744	26	07244	09926	08550		TF	ARG,LABEL-2
09756	32	07602	00000	08560		SF	SW30
09768	17	07262	09995	08580	CZ13	BTM	TLU1,TBLA1+9
09780	44	09844	07346	08590		BNF	SEG3,SW35
09792	45	09812	09935	08600	SEG4	BNR	ADSEG,LBPROC-1,11
09804	49	02534		08610		B7	END
09812	11	09935	00002	08620	ADSEG	AM	LBPROC-1,2
09824	45	09708	09935	08630		BNR	SEG2,LBPROC-1,11
09836	49	02534		08640		B7	END
09844	11	07285	00010	08650	SEG3	AM	TLU-1,10
09856	33	07285	00000	08660		CF	TLU-1,,6
09868	44	09888	07358	08670		BNF	ERR3,SW36
09880	49	09792		08680		B7	SEG4
09888	17	02132	00003	08690	ERR3	BTM	ERRDR9,3,10
09900	49	09792		08700		B7	SEG4
09916		00010		08710	OPSEG	DC	10,0
09928		00012		08720	LABEL	DC	12,0
09929		00001		08730		DC	1,'
09934		00005		08740		DC	5,0
09936	26	09928	07256	08750	LBPROC	TF	LABEL,CLEAR
09948	16	09971	00001	08760		TFM	NCHAR,1,10
09960	33	09960	00000	08770	SW20	CF	SW20
09970				08780		DORG	*-1
09971		00002		08790	NCHAR	DC	2,0
09972	33	09972	00000	08800	SW21	CF	SW21
09982				08810		DORG	*-1
09983		00002		08820	NSUB	DC	2,0



LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS AND REMARKS
09984	33	09984	00000	08830	SW22	CF	SW22
09994				08840		DORG	*-1
09995		00002		08850	NCHAR1	DC	2,0
09996	33	09996	00000	08860	SW23	CF	SW23
10008	33	10678	00000	08870		CF	SW99
10020	33	10020	00000	08880	SW24	CF	SW24
10032	33	12258	00000	08890		CF	DIMFLG
10044	33	10044	00000	08900	SW47	CF	SW47
10056	33	10056	00000	08910	SW48	CF	SW48
10068	45	10100	09935	08920		BNR	J15 ,LBPROC-1,11
10080	16	02165	00012	08930	E12	TFM	ERROR-1,12,10
10092	49	02166		08940		B7	ERROR
10100	14	09935	00070	08950	J15	CM	LBPROC-1,70,610
10112	46	10260	01300	08960		BNL	SET20
10124	14	09935	00003	08970		CM	LBPROC-1,03,610
10136	46	10248	01200	08980		BE	SET22
10148	14	09935	00055	08990		CM	LBPROC-1,55,610
10160	46	10272	01100	09000		BH	SCAN
10172	14	09935	00049	09010		CM	LBPROC-1,49,610
10184	46	10228	01300	09020		BNL	FXD
10196	14	09935	00034	09030		CM	LBPROC-1,34,610
10208	47	10080	01100	09040		BNH	E12
10220	49	10272		09050		B7	SCAN
10228	32	09972	00000	09060	FXD	SF	SW21
10240	49	10272		09070		B7	SCAN
10248	32	09984	00000	09080	SET22	SF	SW22
10260	32	09960	00000	09090	SET20	SF	SW20
10272	16	10290	09918	09100	SCAN	TFM	STOR+6,LABEL-10
10284	26	00000	09935	09110	STOR	TF	,LBPROC-1,11
10296	11	09935	00002	09120	GOBK	AM	LBPROC-1,2
10308	45	10606	09935	09130		BNR	CHL33,LBPROC-1,11
10320	44	10340	09960	09140	DONE	BNF	J16 ,SW20
10332	49	10364		09150		B7	J17
10340	14	09971	00006	09160	J16	CM	NCHAR,6,10
10352	46	10080	01300	09170		BNL	E12
10364	14	09971	00001	09180	J17	CM	NCHAR,1,10
10376	46	10586	01200	09190		BE	TTSW22
10388	44	10432	09960	09200	GONE	BNF	WIPE,SW20
10400	44	10420	09984	09210		BNF	ST21,SW22
10412	49	10432		09220		B7	WIPE
10420	32	09972	00000	09230	ST21	SF	SW21
10432	16	10450	09919	09240	WIPE	TFM	CLF+6,LABEL-9
10444	33	00000	00000	09250	CLF	CF	
10456	11	10450	00002	09260		AM	CLF+6,2
10468	14	10450	09929	09270		CM	CLF+6,LABEL+1
10480	47	10444	01200	09280		BNE	CLF
10492	44	10506	09960	09290		BNF	*+14,SW20
10504	42			09294		BB2	
10506	44	10520	10678	09300		BNF	SUBN,SW99
10518	42			09310	BB2	BB2	
10520	32	10520	00000	09320	SUBN	SF	SUBN
10532	49	12018		09330		B7	FFNC
10540	33	10520	00000	09340	SURFIN	CF	SUBN
10552	44	10566	07346	09350		BNF	*+14,SW35
10564	42			09354		BB2	
10566	16	02165	00040	09360		TFM	ERROR-1,40,10
10578	49	02166		09370		B7	ERROR
10586	44	10388	09984	09380	TTSW22	BNF	GONE,SW22
10598	49	10722		09390		B7	E11
10606	14	09935	00033	09400	CHL33	CM	LBPROC-1,33,610
10618	46	10898	01100	09410		BH	AN
10630	14	09935	00003	09420		CM	LBPROC-1,03,610
10642	46	10710	01200	09430		BE	TSW22
10654	14	09935	00024	09440		CM	LBPROC-1,24,610
10666	47	10786	01200	09450		BNE	PMTEST
10678	32	10678	00000	09460	SW99	SF	SW99
10690	44	11066	09960	09470		BNF	INTA,SW20
10702	49	10722		09480		B7	E11
10710	44	10742	09984	09490	TSW22	BNF	ST22,SW22
10722	16	02165	00011	09500	E11	TFM	ERROR-1,11,10
10734	49	02166		09510		B7	ERROR
10742	32	09984	00000	09520	ST22	SF	SW22
10754	44	10080	09960	09530		BNF	E12,SW20
10766	44	10998	10044	09540	TST27	BNF	STOR1,SW47
10778	49	10296		09550		B7	GOBK
10786	14	09935	00010	09560	PMTEST	CM	LBPROC-1,10,610
10798	46	10866	01200	09570		BE	TSW23
10810	14	09935	00020	09580		CM	LBPROC-1,20,610
10822	46	10866	01200	09590		BE	TSW23
10834	14	09935	00013	09600		CM	LBPROC-1,13,610
10846	47	10320	01200	09610		BNE	DONE
10858	49	10080		09620		B7	E12
10866	44	10320	09996	09630	TSW23	BNF	DONE,SW23
10878	33	09996	00000	09640		CF	SW23
10890	49	10766		09650		B7	TST27
10898	14	09935	00070	09660	AN	CM	LBPROC-1,70,610
10910	46	10766	01300	09670		BNL	TST27
10922	44	10998	09960	09680		BNF	STOR1,SW20

LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS AND REMARKS
10934	14	09935	00045	09690		CM	LBPROC-1,45,610
10946	47	10722	01200	09700		BNE	E11
10958	44	10978	09996	09710		BNF	ST23,SW23
10970	49	10722		09720		B7	E11
10978	32	09996	00000	09730	ST23	SF	SW23
10990	49	10766		09740		B7	TST27
10998	11	09971	00001	09750	STOR1	AM	NCHAR,1,10
11010	14	09971	00006	09760		CM	NCHAR,6,10
11022	46	12362	01100	09770		BH	ISNUM
11034	11	10290	00002	09780		AM	STOR+6,2
11046	26	10290	09935	09790		TF	STOR+6,LBPROC-1,611
11058	49	10296		09800		B7	GOBK
11066	16	07285	±7826	09810	INTA	TFM	TLU-1,TBLA
11078	25	09927	07246	09820		TD	LABEL-1,RM
11090	31	07235	09917	09830		TR	ARG- 9,LABEL-11
11102	15	07547	00009	09840		TDM	BB+1,9
11114	16	07552	±1994	09850		TFM	BB+6,OTLU
11126	49	07286		09860		B7	TLU
11134	16	11940	±1202	09870	FUDGE	TFM	BNCH+6,RETUR
11146	49	11226		09880		B7	SW29
11154	44	12278	16114	09890	SUBSCR	BNF	E27,SW37
11166	32	10020	00000	09900		SF	SW24
11178	32	11178	00000	09910	SW28	SF	SW28
11190	16	09983	00000	09920		TFM	NSUB,0,10
11202	44	10320	11178	09930	RETUR	BNF	DONE,SW28
11214	33	11226	00000	09940		CF	SW29
11226	16	09995	00000	09950	SW29	TFM	NCHAR1,0,10
11238	26	07244	07256	09960		TF	ARG,CLEAR
11250	16	11456	07236	09970		TFM	PUT1+6,ARG-8
11262	33	11286	00000	09980		CF	SW27
11274	11	09935	00002	09990		AM	LBPROC-1,2
11286	45	11318	09935	10000	SW27	BNR	CENUM,LBPROC-1,11
11298	16	02165	000±3	10010	E13	TFM	ERROR-1,13,10
11310	49	02166		10020		B7	ERROR
11318	14	09935	00070	10030	CENUM	CM	LBPROC-1,70,610
11330	46	11386	01300	10040		BNL	TNCH
11342	14	09935	00033	10050		CM	LBPROC-1,33,610
11354	47	11574	01100	10060		BNH	SPEC
11366	44	11450	11286	10070		BNF	PUT1,SW27
11378	49	11298		10080		B7	E13
11386	14	09995	00000	10090	TNCH	CM	NCHAR1,0,10
11398	46	11430	01200	10100		BE	ST27
11410	44	11450	11286	10110		BNF	PUT1,SW27
11422	49	11474		10120		B7	INCR
11430	32	11286	00000	10130	ST27	SF	SW27
11442	49	11474		10140		B7	INCR
11450	26	00000	09935	10150	PUT1	TF	,LBPROC-1,11
11462	11	11456	00002	10160		AM	PUT1+6,2
11474	11	09995	00001	10170	INCR	AM	NCHAR1,1,10
11486	44	11530	11286	10180		BNF	ALTEST,SW27
11498	14	09995	00004	10190		CM	NCHAR1,4,10
11510	46	11298	01100	10200		BH	E13
11522	49	11554		10210		B7	OFF29
11530	14	09995	00005	10220	ALTEST	CM	NCHAR1,5,10
11542	46	11298	01100	10230		BH	E13
11554	33	11226	00000	10240	OFF29	CF	SW29
11566	49	11274		10250		B7	SW27-12
11574	14	09935	00023	10260	SPEC	CM	LBPROC-1,23,610
11586	46	11750	01200	10270		BE	NS
11598	14	09935	00004	10280		CM	LBPROC-1,04,610
11610	46	11738	01200	10290		BE	ST28
11622	14	09935	000±0	10300		CM	LBPROC-1,10,610
11634	46	11670	01200	10310		BE	T29
11646	14	09935	00020	10320		CM	LBPROC-1,20,610
11658	47	11298	01200	10330		BNE	E13
11670	11	09935	00002	10340	T29	AM	LBPROC-1,2
11682	14	09935	00070	10350		CM	LBPROC-1,70,610
11694	47	11298	01300	10360		BL	E13
11706	12	09935	00002	10370		SM	LBPROC-1,2
11718	44	11942	11226	10380		BNF	ST29,SW29
11730	49	11298		10390		B7	E13
11738	33	11178	00000	10400	ST28	CF	SW28
11750	11	09983	00001	10410	NS	AM	NSUB,1,10
11762	14	09983	00002	10420		CM	NSUB,2,10
11774	46	11974	01100	10430		BH	E16
11786	44	11806	11286	10440	TSSW27	BNF	FXTTEST,SW27
11798	49	11934		10450		B7	BNCH
11806	14	07236	00055	10460	FXTTEST	CM	ARG- 8,55,10
11818	46	11298	01100	10470		BH	E13
11830	14	07236	00049	10480		CM	ARG- 8,49,10
11842	47	11298	01300	10490		BL	E13
11854	15	07547	00009	10500		TDM	BB+1,9
11866	16	07552	±1922	10510		TFM	BB+6,OPTBLC
11878	32	07602	00000	10520		SF	SW30
11890	32	07510	00000	10530		SF	SW32
11902	16	07285	±7826	10540		TFM	TLU-1,TBLA
11914	49	07286		10550		B7	TLU
11922	15	07547	00002	10560	OPTBLC	TDM	BB+1,2

LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS AND REMARKS
11934	49	11202		10570	BNCH	B7	RETUR
11942	32	11226	00000	10580	ST29	SF	SW29
11954	16	11940	±1134	10590		TFM	BNCH+6,FUDGE
11966	49	11786		10600		B7	TSSW27
11974	16	02165	000±6	10610	E16	TFM	ERROR-1,16,10
11986	49	02166		10620		B7	ERROR
11994	15	07547	00002	10630	OTLU	TDM	BB+1,2
12006	44	11154	07346	10640		BNF	SUBSCR,SW35
12018	26	07244	09926	10650	FFNC	TF	ARG,LABEL-2
12030	16	12060	07243	10660		TFM	FF2+6,ARG-1
12042	16	12072	07244	10670		TFM	FF1+6,ARG
12054	32	07243	00000	10680	FF2	SF	ARG-1,,2
12066	14	07244	00000	10690	FF1	CM	ARG,0,210
12078	47	12122	01200	10700		BNE	FF3
12090	12	12072	00002	10710		SM	FF1+6,2
12102	12	12060	00002	10720		SM	FF2+6,2
12114	49	12054		10730		B7	FF2
12122	14	12072	00046	10740	FF3	CM	FF1+6,46,610
12134	47	12158	01200	10750		BNE	LUSUB
12146	16	12072	00000	10760		TFM	FF1+6,0,610
12158	15	07547	00009	10770	LUSUB	TDM	BB+1,9
12170	16	07552	±2202	10780		TFM	BB+6,TBLFB
12182	16	07285	±6676	10790		TFM	TLU-1,TBLF
12194	49	07286		10800		B7	TLU
12202	15	07547	00002	10810	TBLFB	TDM	BB+1,2
12214	44	12234	10520	10820		BF	SUBFIN,SUBN
12226	49	10540					
12234	44	12342	07346	10830		BNF	SET48,SW35
12246	44	12278	15962	10840		BNF	E27,SW73
12258	32	12258	00000	10850	DIMFLG	SF	DIMFLG
12270	49	10388		10860		B7	GONE
12278	16	02131	00027	10870	E27	TFM	ERROR9-1,27,10
12290	16	02572	±2322	10880		TFM	P3+6,GONE1
12302	15	02567	00009	10890		TDM	P3+1,9
12314	49	02132		10900		B7	ERROR9
12322	15	02567	00002	10910	GONE1	TDM	P3+1,2
12334	49	11166		10920		B7	SUBSCR+12
12342	32	10056	00000	10930	SET48	SF	SW48
12354	49	10388		10940		B7	GONE
12362	44	10080	09960	10950	ISNUM	BNF	E12,SW20
12374	32	10044	00000	10960		SF	SW47
12386	49	10296		10970		B7	GOBK
12394	33	12442	00000	10980	ARITH	CF	SW61
12402				10990		DORG	*-3
12403		00002		11000	DC1	DC	2,0
12405		00002		11010	NEXP	DC	2,0
12406	14	00417	00070	11020		CM	INPUT+12,70,10
12418	47	12442	01300	11030		BL	SW61
12430	17	02166	00030	11040	E30	BTM	ERROR,30,1011
12442	14	00417	00041	11050	SW61	CM	INPUT+12,41,10
12454	47	12430	01300	11060		BL	E30
12466	17	09936	00417	11070		BTM	LBPROC,INPUT+12
12478	44	12622	10056	11090		BNF	TST24,SW48
12490	17	02132	00040	11100		BTM	ERROR9,40,10
12502	32	12442	00000	11110	E31	SF	SW61,,5
12514	32	12514	00000	11120	SW65	SF	SW65
12526	44	12862	12514	11130	SW63	BNF	ISE,SW65
12538	11	09935	00002	11140		AM	LBPROC-1,2
12550	27	09936	09935	11150		BT	LBPROC,LBPROC-1
12562	44	12582	09960	11170		BNF	K1 ,SW20
12574	49	12502		11180		B7	E31
12582	44	12602	10056	11190	K1	BNF	K2 ,SW48
12594	49	12502		11200		B7	E31
12602	44	12642	10020	11210	K2	BNF	K31,SW24
12614	49	12502		11220		B7	E31
12622	44	12738	10020	11230	TST24	BNF	T12,SW24
12634	49	12526		11240		B7	SW63
12642	45	12666	09935	11250	K31	BNR	K3,LBPROC-1,11
12654	17	02166	00030	11260		BTM	ERROR,30,1011
12666	14	09935	00023	11270	K3	CM	LBPROC-1,23,610
12678	46	12750	01200	11280		BE	T
12690	14	09935	00004	11290		CM	LBPROC-1,4,610
12702	46	12726	01200	11300		BE	K32
12714	17	02166	00030	11310		BTM	ERROR,30,1011
12726	11	09935	00002	11320	K32	AM	LBPROC-1,2
12738	33	12514	00000	11330	T12	CF	SW65
12750	26	07244	09926	11340	T	TF	ARG,LABEL-2
12762	32	07602	00000	11350		SF	SW30
12774	17	07286	±7826	11360		BTM	TLU,TBLA
12786	44	12810	16114	11370		BNF	TSW35,SW37
12798	17	02132	00031	11380		BTM	ERROR9,31,10
12810	44	12830	07346	11390	TSW35	BNF	CLFGUD,SW35
12822	49	12526		11400		B7	SW63
12830	12	07285	00001	11410	CLFGUD	SM	TLU-1,1
12842	33	07285	00000	11420		CF	TLU-1,,6
12854	49	12526		11430		B7	SW63
12862	44	12886	10020	11440	ISE	BNF	K5,SW24
12874	11	09935	00002	11450		AM	LBPROC-1,2

,,CHECK ARITHMETIC STATEMENTS

LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS AND REMARKS
12886	14	09935	00033	11460	K5	CM	LBPROC-1,33,610
12898	47	12430	01200	11470		BNE	E30
12910	16	13840	±2430	11480		TFM	L24+18,E30
12922	33	12922	00000	11490	SW64	CF	SW64
12934	32	12934	00000	11500	SW66	SF	SW66
12946	33	12946	00005	11510	SW62	CF	SW62,5
12958	33	12526	00000	11520		CF	SW63
12970	16	12525	00000	11530		TFM	SW63-1,0
12982	16	12957	00000	11540		TFM	SW62+11,0
12994	33	12521	00000	11550		CF	SW63-5
13006	33	12953	00000	11560		CF	SW62+7
13018	16	12405	00000	11570		TFM	NEXP,0,10
13030	16	13309	±2526	11580		TFM	MODE+11,SW63
13042	11	09935	00002	11590	RET	AM	LBPROC-1,2
13054	16	13236	±2958	11600		TFM	CNTRS+6,SW62+12
13066	45	13086	09935	11610		BNR	K6 ,LBPROC-1,11
13078	49	12430		11620		B7	E30
13086	14	09935	00040	11630	K6	CM	LBPROC-1,40,610
13098	46	13250	01100	11640		BH	TEN
13110	14	09935	00003	11650		CM	LBPROC-1,03,610
13122	46	13250	01200	11660		BE	TEN
13134	14	09935	000±0	11670		CM	LBPROC-1,10,610
13146	46	13042	01200	11680		BE	RET
13158	14	09935	00020	11690		CM	LBPROC-1,20,610
13170	46	13042	01200	11700		BE	RET
13182	14	09935	00024	11710		CM	LBPROC-1,24,610
13194	47	12430	01200	11720		BNE	E30
13206	44	13042	12922	11730		BNF	RET,SW64
13218	22	13236	12405	11740		S	CNTRS+6,NEXP
13230	11	00000	00001	11750	CNTRS	AM	,1,10
13242	49	13042		11760		B7	RET
13250	27	09936	09935	11770	TEN	BT	LBPROC,LBPROC-1
13262	44	13318	12946	11790		BNF	ST62,SW62
13274	44	13362	12934	11800		BNF	ST66,SW66
13286	44	14086	09972	11810		BNF	FMOD,SW21
13298	44	14098	00000	11820	MODE	BNF	E33
13310	49	14110		11830		B7	TWELVE
13318	32	12946	00000	11840	ST62	SF	SW62
13330	44	14110	09972	11850		BNF	TWELVE,SW21
13342	32	12526	00000	11860		SF	SW63
13354	49	14110		11870		B7	TWELVE
13362	32	12934	00000	11880	ST66	SF	SW66
13374	44	13418	09972	11890		BNF	TST,SW21
13386	12	13309	00001	11900		SM	MODE+11,1
13398	32	13309	00000	11910		SF	MODE+11,,6
13410	49	14110		11920		B7	TWELVE
13418	44	13442	13309	11930	TST	BNF	K7 ,MODE+11,11
13430	17	02132	00033	11940		BTM	ERROR9,33,10
13442	12	13309	00001	11950	K7	SM	MODE+11,1
13454	49	14110		11960		B7	TWELVE
13462	44	13506	10020	11970	K8	BNF	K9,SW24
13474	11	09935	00002	11980		AM	LBPROC-1,2
13486	44	13506	12442	11990		BNF	K9 ,SW61
13498	49	12502		12000		B7	E31
13506	44	13526	09960	12010	K9	BNF	NNM,SW20
13518	49	13618		12020		B7	NTST
13526	26	07244	09926	12030	NNM	TF	ARG,LABEL-2
13538	32	07602	00000	12040		SF	SW30
13550	32	07510	00000	12050		SF	SW32
13562	17	07286	±7826	12060		BTM	TLU,TBLA
13574	44	13594	10020	12070		BF	NTST,SW24
13586	49	13618					
13594	44	13618	16114	12080		BNF	NTST,SW37
13606	17	02132	00031	12090		BTM	ERROR9,31,10
13618	22	13236	12405	12100	NTST	S	CNTRS+6,NEXP
13630	45	13650	09935	12110		BNR	K10 ,LBPROC-1,11
13642	49	02534		12120		B7	END
13650	44	13722	12922	12130	K10	BNF	CMPR,SW64
13662	43	13722	13236	12140		BD	CMPR,CNTRS+6,11
13674	11	13309	00001	12150		AM	MODE+11,1
13686	12	12405	00001	12160		SM	NEXP,1,10
13698	46	13802	01200	12170		BZ	OFF64
13710	11	13236	00001	12180		AM	CNTRS+6,1
13722	14	09935	00004	12190	CMPR	CM	LBPROC-1,04,610
13734	47	13822	01200	12200		BNE	L24
13746	32	13782	00000	12210		SF	K11
13758	44	13782	12922	12220		BNF	K11 ,SW64
13770	12	13236	00001	12230		SM	CNTRS+6,1,610
13782	11	09935	00002	12240	K11	AM	LBPROC-1,2
13794	49	13630		12250		B7	NTST+12
13802	33	12922	00000	12260	OFF64	CF	SW64
13814	49	13722		12270		B7	CMPR
13822	14	09935	00024	12280	L24	CM	LBPROC-1,24,610
13834	46	12430	01100	12290		BH	E30
13846	44	13882	13782	12300		BNF	L241,K11
13858	33	13782	00000	12310		CF	K11
13870	46	12430	01200	12320		BE	E30
13882	14	09935	000±4	12330	L241	CM	LBPROC-1,14,610

LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS AND REMARKS
13894	46	13962	01200	12340		BE	SETUP
13906	14	09935	00023	12350		CM	LBPROC-1,23,610
13918	46	12430	01200	12360		BE	E30
13930	14	09935	00003	12370		CM	LBPROC-1,03,610
13942	46	12430	01200	12380		BE	E30
13954	49	13042		12390		B7	RET
13962	11	09935	00002	12400	SETUP	AM	LBPROC-1,2
13974	45	13994	09935	12410		BNR	K12 ,LBPROC-1,11
13986	49	12430		12420		B7	E30
13994	14	09935	00014	12430	K12	CM	LBPROC-1,14,610
14006	47	13054	01200	12440		BNE	RET+12
14018	32	12922	00000	12450		SF	SW64
14030	33	12934	00000	12460		CF	SW66
14042	11	12405	00001	12470		AM	NEXP,1,10
14054	14	12405	00005	12480		CM	NEXP,5,10
14066	46	12430	01100	12490		BH	E30
14078	49	13042		12500		B7	RET
14086	44	14110	13309	12510	FMOD	BNF	TWELVE,MODE+11,11
14098	17	02132	00033	12520	E33	BTM	ERROR9,33,10
14110	44	13462	10056	12530	TWELVE	BNF	K8 ,SW48
14122	16	12403	00001	12540	AFPR	TFM	DC1,1,10
14134	16	14176	13618	12550		TFM	BIX+18,NTST
14146	32	12514	00000	12560		SF	SW65
14158	11	09935	00002	12570	BIX	AM	LBPROC-1,2
14170	44	13618	12514	12580		BNF	NTST,SW65
14182	45	14202	09935	12590		BNR	BIX9,LBPROC-1,11
14194	49	12430		12600		B7	E30
14202	14	09935	00024	12610	BIX9	CM	LBPROC-1,24,610
14214	47	14246	01200	12620		BNE	PL
14226	11	12403	00001	12630		AM	DC1,1,10
14238	49	14158		12640		B7	BIX
14246	14	09935	00020	12650	PL	CM	LBPROC-1,20,610
14258	46	14158	01200	12660		BE	BIX
14270	14	09935	00010	12670		CM	LBPROC-1,10,610
14282	46	14158	01200	12680		BE	BIX
14294	27	09936	09935	12686		BT	LBPROC,LBPROC-1
14306	44	14326	12922	12688		BF	PL12 ,SW64
14318	49	14350					
14326	44	14382	09972	12691		BNF	FMOD1,SW21
14338	44	14394	13309	12692		BNF	E33T,MODE+11,11
14350	33	12922	00000	12706	PL12	CF	SW64
14362	44	14414	10056	12710		BNF	K14 ,SW48
14374	49	14146		12720		B7	AFPR+24
14382	44	14350	13309	12721	FMOD1	BNF	PL12,MODE+11,11
14394	17	02132	00033	12722	E33T	BTM	ERROR9,33,10
14406	49	14350		12723		B7	PL12
14414	44	14458	10020	12730	K14	BNF	CC,SW24
14426	11	09935	00002	12740	COOL	AM	LBPROC-1,2
14438	44	14458	12442	12750		BNF	CC ,SW61
14450	49	12502		12760		B7	E31
14458	45	14478	09935	12770	CC	BNR	*+20,LBPROC-1,11
14470	49	12430		12780		B7	E30
14478	14	09935	00023	12790		CM	LBPROC-1,23,610
14490	46	14686	01200	12800		BE	THIRT
14502	14	09935	00004	12810		CM	LBPROC-1,04,610
14514	46	14806	01200	12820		BE	DECCNT
14526	14	09935	00024	12830		CM	LBPROC-1,24,610
14538	46	12430	01300	12840		BNL	E30
14550	14	09935	00003	12850		CM	LBPROC-1,03,610
14562	46	12430	01200	12860		BE	E30
14574	14	09935	00014	12870		CM	LBPROC-1,14,610
14586	47	14686	01200	12880		BNE	THIRT
14598	11	09935	00002	12890		AM	LBPROC-1,2
14610	45	14630	09935	12900		BNR	CCN32,LBPROC-1,11
14622	49	12430		12910		B7	E30
14630	14	09935	00014	12920	CCN32	CM	LBPROC-1,14,610
14642	47	14674	01200	12922		BNE	SUBTT
14654	32	12922	00000	12924		SF	SW64
14666	49	14686		12930		B7	THIRT
14674	12	09935	00002	12940	SUBTT	SM	LBPROC-1,2
14686	44	14706	09960	12950	THIRT	BNF	K15 ,SW20
14698	49	14158		12960		B7	BIX
14706	26	07244	09926	12970	K15	TF	ARG,LABEL-2
14718	32	07602	00000	12980		SF	SW30
14730	32	07510	00000	12990		SF	SW32
14742	17	07286	17826	13000		BTM	TLU,TBLA
14754	44	14774	10020	13010		BF	BIX,SW24
14766	49	14158					
14774	44	14158	16114	13020		BNF	BIX,SW37
14786	17	02132	00031	13030		BTM	ERROR9,31,10
14798	49	14158		13040		B7	BIX
14806	12	12403	00001	13050	DECCNT	SM	DC1,1,10
14818	47	14426	01200	13060		BNZ	COOL
14830	33	12514	00000	13070		CF	SW65
14842	49	14686		13080		B7	THIRT
14850	16	15261	00000	13090	IF	TFM	NSN,0,10
14862	16	09935	00425	13100		TFM	LBPROC-1,INPUT+20
14874	45	14906	09935	13110		BNR	K16 ,LBPROC-1,11

,,CHECK IF STATEMENTS

LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS AND REMARKS
14886	17	02166	00020	13120	E20	BTM	ERROR,20,1011 ,,,STATEMENT IS UNRECOGNIZABLE
14898	49	01234		13130		B7	STORE
14906	14	09935	00004	13140	K16	CM	LBPROC-1,04,610
14918	47	15042	01200	13150		BNE	CREEP
14930	11	09935	00002	13160		AM	LBPROC-1,2
14942	45	14962	09935	13170		BNR	K17 ,LBPROC-1,11
14954	49	14886		13180		B7	E20
14962	14	09935	00070	13190	K17	CM	LBPROC-1,70,610
14974	46	15342	01300	13200		BNL	PNUM
14986	14	09935	00043	13210		CM	LBPROC-1,43,610
14998	47	14874	01200	13220		BNE	IF+24
15010	32	01534	00000	13230		SF	SWC
15022	11	09935	00002	13240		AM	LBPROC-1,2
15034	49	15294		13250		B7	AFC
15042	11	09935	00002	13260	CREEP	AM	LBPROC-1,2
15054	49	14874		13270		B7	IF+24
15062	14	09935	00043	13280	PNUMT	CM	LBPROC-1,43,610
15074	47	15118	01200	13290		BNE	PNUM2
15086	32	01534	00000	13300		SF	SWC
15098	11	09935	00002	13310		AM	LBPROC-1,2
15110	49	15190		13320		B7	AFC1
15118	27	09936	09935	13330	PNUM2	BT	LBPROC,LBPROC-1
15130	44	15354	09960	13350		BNF	E36,SW20
15142	44	15354	09972	13360		BNF	E36,SW21
15154	14	09971	00004	13370		CM	NCHAR,4,10
15166	46	15354	01100	13380		BH	E36
15178	17	16582	±5190	13390		BTM	NONAME,*+12
15190	45	15270	09935	13400	AFC1	BNR	OOT,LBPROC-1,11
15202	14	15261	00002	13410		CM	NSN,2,10
15214	47	15354	01300	13420		BL	E36
15226	16	13840	±5366	13430		TFM	L24+18,END2
15238	16	09935	00421	13440		TFM	LBPROC-1,INPUT+16
15250	33	12442	00000	13450		CF	SW61
15260				13460		DORG	*-1
15261		00002		13470	NSN	DC	2,0
15262	49	12922		13480		B7	SW64
15270	14	15261	00002	13490	OOT	CM	NSN,2,10
15282	46	15354	01300	13500		BNL	E36
15294	14	09935	00023	13510	AFC	CM	LBPROC-1,23,610
15306	47	15354	01200	13520		BNE	E36
15318	11	15261	00001	13530		AM	NSN,1,10
15330	11	09935	00002	13540		AM	LBPROC-1,2
15342	45	15062	09935	13550	PNUM	BNR	PNUMT,LBPROC-1,11
15354	17	02166	00036	13560		E36	BTM ERROR,36,10
15366	32	15378	00000	13570	END2	SF	SWTR
15378	44	02546	01966	13580	SWTR	BNF	END+12,SW12
15390	17	02166	00008	13590		BTM	ERROR,8,10 ,,,DO LOOP ENDS WITH A TRANSFER
15402	49	02546		13600		B7	END+12 ,,,STATEMENT
15410	16	09935	00425	13610	GOTO	TFM	LBPROC-1,INPUT+20
15422	45	15466	09935	13620		BNR	AB3 ,LBPROC-1,11
15434	17	02166	00086	13630	SW70	BTM	ERROR,06,10
15446	33	15434	00000	13640		CF	SW70
15458	49	15366		13650		B7	END2
15466	14	09935	00024	13660	AB3	CM	LBPROC-1,24,610
15478	47	15514	01200	13670		BNE	GOTOX
15490	32	15434	00000	13680		SF	SW70
15502	11	09935	00002	13690		AM	LBPROC-1,2
15514	27	09936	09935	13700	GOTOX	BT	LBPROC,LBPROC-1 ,,,CHECK GO TO STATEMENTS
15526	44	15434	09960	13720		BNF	SW70,SW20
15538	44	15434	09972	13730		BNF	SW70,SW21
15550	14	09971	00004	13740		CM	NCHAR,4,10
15562	46	15434	01100	13750		BH	SW70
15574	17	16582	±5586	13760		BTM	NONAME,*+12
15586	44	15838	15434	13770		BNF	GOTOE,SW70
15598	45	15618	09935	13780		BNR	AB4 ,LBPROC-1,11
15610	49	15434		13790		B7	SW70
15618	14	09935	00023	13800	AB4	CM	LBPROC-1,23,610
15630	46	15502	01200	13810		BE	GOTOX-12
15642	14	09935	00004	13820		CM	LBPROC-1,4,610
15654	47	15434	01200	13830		BNE	SW70
15666	33	15434	00000	13840		CF	SW70
15678	11	09935	00002	13850		AM	LBPROC-1,2
15690	45	15710	09935	13860		BNR	AB5 ,LBPROC-1,11
15702	49	15434		13870		B7	SW70
15710	14	09935	00023	13880	AB5	CM	LBPROC-1,23,610
15722	47	15434	01200	13890		BNE	SW70
15734	11	09935	00002	13900		AM	LBPROC-1,2
15746	27	09936	09935	13910		BT	LBPROC,LBPROC-1
15758	44	15434	09972	13930		BNF	SW70,SW21
15770	44	15790	09960	13940		BNF	GOTOJ,SW20
15782	49	15434		13950		B7	SW70
15790	26	07244	09926	13960	GOTOJ	TF	ARG,LABEL-2
15802	32	07602	00000	13970		SF	SW30
15814	32	07510	00000	13980		SF	SW32
15826	17	07286	±7826	13990		BTM	TLU,TBLA
15838	45	15434	09935	14000	GOTOE	BNR	SW70,LBPROC-1,11
15850	49	15446		14010		B7	SW70+12
15858	14	00419	00056	14020	DIMENS	CM	INPUT+14,56,10 ,,,CHECK DIMENSION STATEMENTS

LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS AND REMARKS
15870	46	02780	01200	14030		BE	E10
15882	16	09935	00435	14040		TFM	LBPROC-1,INPUT+30
15894	16	15917	00000	14050		TFM	NDS,0,10
15906	32	15906	00000	14060	SW71	SF	SW71
15916				14070		DORG	*-1
15917		00002		14080	NDS	DC	2,0
15918	49	15962		14090		B7	SW73
15926	16	09935	00429	14100	COMMON	TFM	LBPROC-1,INPUT+24
15938	44	16094	01186	14110		BNF	E22,SW500
15950	32	15950	00000	14120	SW501	SF	SW501
15962	32	15962	00000	14130	SW73	SF	SW73
15974	45	16006	09935	14140		BNR	AB6 ,LBPROC-1,11
15986	17	02132	00037	14150	E37	BTM	ERROR9,37,10
15998	49	16302		14160		B7	END1
16006	14	09935	00024	14170	AB6	CM	LBPROC-1,24,610
16018	47	16050	01200	14180		BNE	GTLB
16030	49	15986		14190		B7	E37
16038	11	09935	00002	14200		AM	LBPROC-1,2
16050	27	09936	09935	14210	GTLB	BT	LBPROC,LBPROC-1
16062	44	16546	10056	14230		BNF	NO48,SW48
16074	17	02132	00040	14240		BTM	ERROR9,40,10
16086	49	16186		14250		B7	SW74
16094	17	02132	00022	14260	E22	BTM	ERROR9,22,10
16106	49	15962		14270		B7	SW73
16114	26	07244	09926	14280	SW37	TF	ARG,LABEL-2
16126	32	07602	00000	14290		SF	SW30
16138	71	16138	12258	14300	SW38	MF	SW38,DIMFLG
16150	17	07286	17826	14310		BTM	TLU,TBLA
16162	44	16558	07346	14320		BNF	E38,SW35
16174	44	16370	10678	14330		BNF	COM3,SW99
16186	32	16186	00000	14340	SW74	SF	SW74
16198	11	09935	00002	14350		AM	LBPROC-1,2
16210	49	15974		14360		B7	SW73+12
16218	44	16114	16186	14370	NO24	BNF	SW37,SW74
16230	44	16290	09960	14380		BNF	E42,SW20
16242	44	16290	09972	14390		BNF	E42,SW21
16254	11	15917	00001	14400		AM	NDS,1,10
16266	14	15917	00002	14410		CM	NDS,2,10
16278	47	16390	01100	14420		BNH	FINUP
16290	17	02166	00014	14430	E42	BTM	ERROR,14,10
16302	33	15906	00000	14440	END1	CF	SW71
16314	33	16186	00000	14450		CF	SW74
16326	33	15962	00000	14460		CF	SW73
16338	44	03492	15950	14470		BNF	CF500,SW501
16350	33	15950	00000	14480		CF	SW501
16362	49	03504		14490		B7	CF500+12
16370	44	16390	15906	14500	COM3	BF	E37,SW71
16382	49	15986					
16390	45	16410	09935	14510	FINUP	BNR	AB7 ,LBPROC-1,11
16402	49	16302		14520		B7	END1
16410	14	09935	00004	14530	AB7	CM	LBPROC-1,04,610
16422	47	16482	01200	14540		BNE	CMTST
16434	44	15986	16186	14550		BNF	E37,SW74
16446	16	15917	00000	14560		TFM	NDS,0,10
16458	33	16186	00000	14570		CF	SW74
16470	11	09935	00002	14580		AM	LBPROC-1,2
16482	45	16502	09935	14590	CMTST	BNR	AB8 ,LBPROC-1,11
16494	49	16302		14600		B7	END1
16502	14	09935	00023	14610	AB8	CM	LBPROC-1,23,610
16514	47	15986	01200	14620		BNE	E37
16526	11	09935	00002	14630		AM	LBPROC-1,2
16538	49	15974		14640		B7	SW73+12
16546	44	16218	10020	14650	NO48	BNF	NO24,SW24
16558	17	02132	00038	14660	E38	BTM	ERROR9,38,10
16570	49	16302		14670		B7	END1
16581		00005		14680		DC	5,0
16582	26	07244	09926	14690	NONAME	TF	ARG,LABEL-2
16594	32	07602	00000	14700		SF	SW30
16606	32	07510	00000	14710		SF	SW32
16618	17	07262	39995	14730	CZ8	BTM	TLU1,TBLA1+9
16630	24	07244	00805	14740		C	ARG,STNO+8
16642	47	16581	01200	14750		BNE	NONAME-1,,6
16654	17	02132	00016	14760		BTM	ERROR9,16,10
16666	49	16581	00000	14770		B	NONAME-1,,6
16674				14780		DORG	*-3
16674		00002		14790	NSRS	DSC	2,0
16676		00001		14800	TBLF	DC	1,'
17055		00379		14810		DS	10*37+9
17056		00001		14820	TBLB	DC	1,'
17215		00159		14830		DS	10*15+9
17216		00001		14840	TBLD	DC	1,'
17825		00609		14850		DS	10*60+9
17826		00001		14860	TBLA	DC	1,'
39986				14870		DORG	TBLA+22160
39986		00001		14880	TBLA1	DC	1,'
16676				14890		DORG	TBLF
16676	27	00882	00881	14900		BT	RBCHK,RBCHK-1
16688	47	16932	00200	14910	START	BNC2	NOPRTR

,,,CHECK COMMON STATEMENTS

,,,COMMON STATEMENT NOT FIRST STATEMENT  
,,,IN PROGRAM,,,TRANSFER STATEMENT TRANSFERS  
,,,TO ITSELF.

,,,HOLDS SUB NAMES

,,,HOLDS OPEN DO LABELS

,,,HOLDS OPEN DO INDEXES

,,,HOLDS VARIABLE NAMES

,,,HOLDS STATEMENT, SEGMENT AND  
,,,PROCEDURE LABELS

LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS AND REMARKS
16700	25	01259	00402	14920	CZ	TD	DCF,402 ,,,INITIALIZE TO CORE SIZE AND DISK
16712	25	16917	00401	14940		TD	DCSUBS ,401
16724	25	08575	00401	14950		TD	DCPT2 ,401
16736	25	01061	00400	14960		TD	CZ1+7,400
16748	25	01109	00400	14970		TD	CZ2+7,400
16760	25	01152	00400	14980		TD	CZ3+2,400
16772	25	01849	00400	14990		TD	CZ4+7,400
16784	25	02811	00400	15000		TD	CZ5+7,400
16796	25	16625	00400	15010		TD	CZ8+7,400
16808	25	09005	00400	15020		TD	CZ10+7,400
16820	25	09185	00400	15030		TD	CZ11+7,400
16832	25	09343	00400	15040		TD	CZ12+7,400
16844	25	09775	00400	15050		TD	CZ13+7,400
16856	32	01186	00000	15060		SF	SW500
16868	32	02652	00000	15070		SF	SW13
16880	31	00038	16911	15080		TR	38 ,DCSUBS-6
16892	15	00022	00009	15090		TDM	22 ,9
16904	49	00000	01018	15100		B	,CSYMT9-12
16917		00002		15110	DCSUBS	DC	2,0
16925		00008		15120		DC	8,79582005
16930		00005	±6674	15130		DSA	NSRS
16931		00001		15140		DC	1,'
16932	16	02355	00041	15150	NOPRTR	TFM	CRD1+1,41,10 ,,,INITIALIZE FOR PUNCH OUTPUT
16944	16	02367	00041	15160		TFM	CRD1+13,41,10
16956	15	02459	00004	15170		TDM	PRA1+9,4
16968	16	00919	00041	15180		TFM	HWERR+1,41,10
16980	49	16700		15190		B7	CZ
				15200	*		
				15210	*		DIAGNOSTICIAN 2 CALLED IN BY CLPT2
				15220	*		
12394				15230		DORG	ARITH ,,,BEGIN PART 2
12398		00005		15240		DS	5
12400	26	00413	07256	15250	TBLPRT	TF	INPUT+8,CLEAR,2 ,,,ROUTINE TO PRINT TABLES
12412	11	12406	00010	15260		AM	TBLPRT+6,10
12424	14	12406	00573	15270		CM	TBLPRT+6,INPUT+168
12436	47	12400	01300	15280		BL	TBLPRT
12448	16	12406	00413	15290		TFM	TBLPRT+6,INPUT+8
12460	31	00564	07233	15300		TR	INPUT+159,RECM-1
12472	44	12540	13334	15310		BNF	GL9,J13
12484	33	12484	00000	15320	J11	CF	J11
12496	26	00417	13489	15330		TF	INPUT+12,DOXXX+12
12508	32	01162	00000	15340		SF	FLAG
12520	49	12940		15350		B7	TBPRT0
12528	32	12484	00000	15360	GL	SF	J11
12540	11	12399	00009	15370	GL9	AM	TBLPRT-1,9
12552	26	09926	12399	15380	GL10	TF	LABEL-2,TBLPRT-1,11
12564	44	12744	09926	15390		BNF	J8 ,LABEL-2
12576	44	12848	13008	15400		BNF	GSN,SWPF
12588	44	12788	12764	15410		BNF	J9,SWUDT
12600	26	00425	13475	15420		TF	INPUT+20,UNDEF+20
12612	32	01162	00000	15430		SF	FLAG
12624	49	12940		15440		B7	TBPRT0
12632	26	00563	07256	15450	UNDB1	TF	INPUT+158,CLEAR,2
12644	12	12638	00010	15460		SM	UNDB1+6,10
12656	14	12638	00403	15470		CM	UNDB1+6,INPUT-2
12668	47	12632	01200	15480		BNE	UNDB1
12680	16	12638	00563	15490		TFM	UNDB1+6,INPUT+158
12692	44	12764	13334	15500		BNF	SWUDT,J13
12704	44	12528	12484	15510		BNF	GL,J11
12716	49	12848		15520		B7	GSN
12724	44	12540	07274	15530	TA1	BNF	GL9,A1
12736	49	12552		15540		B7	GL10
12744	44	12788	13008	15550	J8	BNF	J9,SWPF
12756	49	12848		15560		B7	GSN
12764	44	12848	12764	15570	SWUDT	BNF	GSN,SWUDT
12776	33	12764	00000	15580		CF	SWUDT
12788	33	09926	00000	15590	J9	CF	LABEL-2
12800	26	1303±	09926	15600		TF	STADD+11,LABEL-2,6
12812	11	13031	00020	15610		AM	STADD+11,20
12824	14	13031	00573	15620		CM	STADD+11,573
12836	46	12940	01200	15630		BE	TBPRT0
12848	44	12880	07274	15640	GSN	BNF	GSNR,A1
12860	12	12399	00010	15650		SM	TBLPRT-1,10
12872	49	12892		15660		B7	GSNR+12
12880	11	12399	00001	15670	GSNR	AM	TBLPRT-1,1
12892	45	12724	12399	15680		BNR	TA1,TBLPRT-1,11
12904	14	13031	00413	15690		CM	STADD+11,INPUT+8
12916	46	13008	01200	15700		BE	SWPF
12928	16	12994	±2996	15710		TFM	J90+6,SWPF1
12940	16	13031	00413	15720	TBPRT0	TFM	STADD+11,INPUT+8
12952	47	12976	03400	15730	J91	BNI	J10,03400
12964	34	00000	00971	15740		J912	SKIP ,1
12976	39	00405	00900	15750	J10	PRA	INPUT
12988	49	12632		15760	J90	B7	UNDB1
12996	16	12994	±2632	15770		SWPF1	TFM J90+6,UNDB1
13008	33	13008	00000	15780		SWPF	CF SWPF
13020	33	07274	00413	15790		STADD	CF A1,INPUT+8,7
13032	42			15800		BB2	



LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS AND REMARKS
13034	25	13439	00401	15820	FINISH	TD	DCCOMP ,401 ,,,INITIALIZE FOR CORE SIZE AND DRIVE
13046	25	13173	00400	15830		TD	CZ6+7,400
13058	25	13229	00400	15840		TD	CZ7+7,400
13070	47	13494	00200	15850		BNC2	NPRT2
13082	14	00417	00045	15860	FINSI	CM	INPUT+12,45,10
13094	47	13538	01200	15870		BNE	DATA
13106	±4	00419	00055	15872		CM	INPUT+14 ,55 ,20
13118	47	13538	01200	15874		BNE	DATA
13130	45	13538	00423	15876		BNR	DATA ,INPUT+18
13142	44	13166	01966	15880		BNF	CZ6 ,SW12
13154	17	02132	00008	15890		BTM	ERROR9,8,10
13166	45	13186	39995	15900	CZ6	BNR	J12,TBLA1+9
13178	49	13234		15910		B7	FIB
13186	32	12764	00000	15920	J12	SF	SWUDT
13198	32	13008	00000	15930		SF	SWPF
13210	32	07274	00000	15940		SF	A1
13222	17	12400	39986	15950	CZ7	BTM	TBLPRT,TBLA1 ,,,PRINT UNDEFINED LABELS
13234	45	13254	17826	15960	FIB	BNR	PTBLA,TBLA
13246	49	13314		15970		B7	FINA
13254	32	13008	00000	15980	PTBLA	SF	SWPF
13266	32	12764	00000	15990		SF	SWUDT
13278	26	13469	13493	16000		TF	UNDEF+14,SMBLS+2 ,,,PRINT UNDEFINED SYMBOLS
13290	33	13466	00000	16010		CF	UNDEF+11
13302	17	12400	±7826	16020		BTM	TBLPRT,TBLA
13314	45	13334	17056	16030	FINA	BNR	J13 ,TBLB
13326	49	13358		16040		B7	TIGER
13334	32	13334	00000	16050	J13	SF	J13
13346	17	12400	±7056	16060		BTM	TBLPRT,TBLB ,,,PRINT OPEN DOS
13358	31	00038	13433	16070	TIGER	TR	38 ,DCCOMP-6
13370	16	00068	00299	16080		TFM	68 ,299
13382	26	00570	01381	16100		TF	570,STNXT
13394	44	13414	01162	16110		BNF	C4D1,FLAG
13406	49	00000		16120		B7	0
13414	32	00039	00000	16130	C4D1	SF	39 ,,,INDICATE NO ERRORS HAVE BEEN FOUND
13426	49	00000	00760	16140		B	,760
13439		00002		16150	DCCOMP	DC	2,0
13453		00014		16155		DC	14 ,7940016000572'
13455		00011	X2	16160	UNDEF	DAC	11,UNDEF LABLS
13477		00007	X2	16170	DOXXX	DAC	7,OPEN DO
13491		00002	X2	16180	SMBLS	DAC	2,SM
13494	16	12953	00041	16190	NPRT2	TFM	J91+1,41,10 ,,,INITIALIZE FOR PUNCH OUTPUT
13506	15	12985	00004	16200		TDM	J10+9,4
13518	16	12965	00041	16210		TFM	J912+1,41,10
13530	49	13082		16220		B7	FINSI
13538	16	09935	00425	16230	DATA	TFM	LBPROC-1,INPUT+20 ,,,CHECK DATA STATEMENT
13550	32	13550	00000	16240	DTFLG	SF	DTFLG
13562	11	09935	00002	16250		AM	LBPROC-1,2
13574	45	13618	09935	16260		BNR	MOON1,LBPROC-1,11
13586	44	13654	13550	16270	MOON2	BNF	E41,DTFLG
13598	16	01596	±3082	16280	ENDATA	TFM	BRANCH+18,FINSI
13610	49	01234		16290		B7	STORE
13618	44	13926	13550	16300	MOON1	BNF	THCON,DTFLG
13630	27	09936	09935	16310		BT	LBPROC,LBPROC-1
13642	44	13674	09960	16320		BNF	FXLC,SW20
13654	17	02132	00035	16330	E41	BTM	ERROR9,35,10
13666	49	13598		16340		B7	ENDATA
13674	71	13674	09972	16350	FXLC	MF	FXLC,SW21
13686	44	13818	10678	16360		BNF	REGLAB,SW99
13698	44	13718	10056	16370		BF	E40D,SW48
13710	49	14226					
13718	44	14318	11286	16380		BNF	E24,SW27
13730	11	09935	00002	16390		AM	LBPROC-1,2
13742	33	13550	00000	16400	CDATF	CF	DTFLG
13754	49	14090		16410		B7	BNR
13762	14	09935	00021	16420	SLSH1	CM	LBPROC-1,21,610
13774	47	13654	01200	16430		BNE	E41
13786	11	09935	00002	16440		AM	LBPROC-1,2
13798	45	13618	09935	16450		BNR	MOON1,LBPROC-1,11
13810	49	13586		16460		B7	MOON2
13818	26	07244	09926	16470	REGLAB	TF	ARG,LABEL-2
13830	17	07286	±7826	16480		BTM	TLU,TBLA
13842	44	13862	16114	16490		BF	E31D,SW37
13854	49	14246					
13862	44	13882	07346	16500		BNF	CUDFF,SW35
13874	49	13742		16510		B7	CDATF
13882	12	07285	00001	16520	CUDFF	SM	TLU-1,1
13894	33	07285	00000	16530		CF	TLU-1,,6
13906	11	07285	00001	16540		AM	TLU-1,1
13918	49	13742		16550		B7	CDATF
13926	26	13976	09935	16555	THCON	TF	THCO+6,LBPROC-1
13938	11	13976	00002	16560		AM	THCO+6,2
13950	45	13970	13976	16565		BNR	THCO,THCO+6,11
13962	49	13654		16570		B7	E41
13970	14	00000	00048	16580	THCO	CM	,48,10
13982	47	14110	01200	16590		BNE	NUMB1
13994	14	09935	00075	16600		CM	LBPROC-1,75,610
14006	46	14266	01100	16610		BH	E34
14018	16	14089	00000	16620		TFM	HOLCON,0,10

LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS AND REMARKS
14030	25	14089	09935	16630		TD	HOLCON, LBPROC-1,11
14042	11	14089	00002	16640		AM	HOLCON,2,10
14054	13	14089	00002	16650		MM	HOLCON,2,9
14066	21	09935	00099	16660		A	LBPROC-1,99
14078	32	13550	00000	16670	STDT	SF	DTFLG
14088				16680		DORG	*-1
14089		00002		16690	HOLCON	DC	2,0
14090	45	13762	09935	16700	BNR	BNR	SLSH1, LBPROC-1,11
14102	49	13654		16710		B7	E41
14110	14	09935	00010	16720	NUMB1	CM	LBPROC-1,10,610
14122	46	13654	01200	16730		BE	E41
14134	14	09935	00020	16740		CM	LBPROC-1,20,610
14146	47	14170	01200	16750		BNE	PROCL
14158	11	09935	00002	16760		AM	LBPROC-1,2
14170	27	09936	09935	16770	PROCL	BT	LBPROC, LBPROC-1
14182	44	13654	09960	16780		BNF	E41, SW20
14194	44	14286	09972	16790		BNF	TFXL, SW21
14206	44	14298	13674	16800		BNF	E33D, FXLC
14218	49	14078		16810		B7	STDT
14226	17	02132	00040	16820	E40D	BTM	ERROR9,40,10
14238	49	13598		16830		B7	ENDATA
14246	17	02132	00031	16840	E31D	BTM	ERROR9,31,10
14258	49	13598		16850		B7	ENDATA
14266	17	02132	00034	16860	E34	BTM	ERROR9,34,10
14278	49	13598		16870		B7	ENDATA
14286	44	14078	13674	16880	TFXL	BNF	STDT, FXLC
14298	17	02132	00033	16890	E33D	BTM	ERROR9,33,10
14310	49	13598		16900		B7	ENDATA
14318	17	02132	00024	16910	E24	BTM	ERROR9,24,10
14330	49	13730		16920		B7	CDATF-12
16688				16930		DEND	START

## LABELS IN C4D COMPILER I

ASCAN---COMPILES THE INSTRUCTIONS FOR ALL ARITHMETIC EXPRESSIONS. EACH OF THE CLASS A ARITHMETIC SUBROUTINES SPECIFIES THE ARITHMETIC OPERATION TO BE PERFORMED ON A VARIABLE FOUND IN FAC (THE FLOATING ACCUMULATOR) BY A SECOND VARIABLE. FOR THIS REASON, AT THE BEGINNING OF EVERY ARITHMETIC STATEMENT WILL BE A TRANSMIT FIELD TO FAC FROM THE INITIAL VARIABLE ADDRESS. ARITHMETIC IS PERFORMED BY A BRANCH AND TRANSMIT TO THE APPROPRIATE CLASS A SUBROUTINE THE VALUE OF THE SECOND OR SUBSEQUENT VARIABLE.

BEGI---CAUSES A NEW STATEMENT TO BE READ FROM THE DISK WORKING STORAGE FOR COMPILATION. THE NEW STATEMENT IS OUTPUT WITH ITS OBJECT-TIME REFERENCED ADDRESS EITHER UNTO A CARD OR ONTO THE PRINTER. IF A NUMBERED STATEMENT, THE NUMBER IS STRIPPED AND THEN CONTROL IS SENT TO THE TYPE OF STATEMENT AS PREVIOUSLY DETERMINED IN THE SCAN SECTION OF THE SYSTEM.

BEGIN---INITIALIZES AND RESETS INDICATORS IN PREPARATION FOR THE PROCESSING OF A STATEMENT AND CHECKS TO SEE IF THE SYMBOL TABLE AT OBJECT TIME WILL OVERLAP THE MAINLINE PROGRAM AT OBJECT TIME.

BEGPRU---CONVERTS THE BEGIN PROCEDURE STATEMENT TO IN-LINE INSTRUCTIONS. FIRST, A BRANCH AROUND THE PROCEDURE, AND SECONDLY, THE BRANCH WHICH CONSTITUTES THE EXIT FROM THE PROCEDURE. A TRANSMIT FIELD INSTRUCTION WHICH IS THE FIRST EXECUTED INSTRUCTION IN THE PROCEDURE AND FILLS THE EXIT BRANCH ADDRESS, IMMEDIATELY FOLLOWS THE BRANCH INSTRUCTIONS.

BEGSEG---IS REFERENCED BY THE BEGIN SEGMENT STATEMENT AFTER THE SEGMENT NUMBER IS OBTAINED BY ..GETNO.. . THE CORE INSTRUCTION ADDRESS ..L.. IS RESET TO THE STARTING POINT OF THE SEGMENT. THE SECTOR INCREMENT IS PLACED INTO THE SYMBOL TABLE FROM ..DCF + 5.. . EXIT IS TO ..BEGIN.. .

BEGTR---IS ENTERED BY THE BEGIN TRACE STATEMENT. IT SETS THE TRACE SWITCH ..TRX.. AND IF A TRACE FORMAT IS PART OF THE BEGIN TRACE STATEMENT, THE IN-LINE INSTRUCTION, TRM TRFL + 11, ESTABLISHES THE TRM FORMAT FOR THE TRACE OUTPUT.

BEREC---BEGINS THE THREE IN-LINE INSTRUCTIONS WHICH ARE COMPILED FOR THE BEGIN PROCEDURE STATEMENT-BRANCH, BRANCH, AND TRANSMIT FIELD. THE INITIAL BRANCH IS A BRANCH AROUND THE PROCEDURE STATEMENTS. THE SECOND BRANCH IS THE BRANCH TO THE STATEMENT FOLLOWING THE EXECUTE PROCEDURE. THE TRANSMIT FIELD MOVES THE RETURN ADDRESS FROM THE SYMBOL TABLE TO THE PRECEDING BRANCH INSTRUCTION.

BUFBAS---IS THE 100-DIGIT BUFFER USED FOR THE ACCUMULATION OF IN-LINE INSTRUCTIONS.

CALLSG---IS REFERENCED FROM THE CALL SEGMENT STATEMENT AFTER OBTAINING THE SEGMENT NUMBER, THE INSTRUCTION BRANCH AND TRANSMIT IMMEDIATE TO ..CALSR.. WITH A 0 ADDRESS OF THE SYMBOL TABLE LOCATION OF THE NUMBERED SEGMENT ENDING IN 6 IS GENERATED.

CCAL---IS THE SUBROUTINE THAT CALLS THE EXECUTIVE INTO CORE AND TRANSMITS CONTROL BACK TO THE EXECUTIVE. IT IS MOVED TO CORE LOCATION

ZERO AND EXECUTED FROM THAT LOCATION. IT IS THE EQUIVALENT OF A COLD START.

CEND---IS ENTERED FOR THE COMPILATION OF THE END STATEMENT. AFTER SETTING THE END SWITCH, COMPILE 2 IS READ INTO CORE IF NOT PREVIOUSLY READ BY THE COMPILATION OF A DATA STATEMENT. THE NUMBER OF SECTORS FROM THE BEGINNING OF THE PROGRAM ON DISK TO THE BEGINNING OF THE SYMBOL TABLE ON THE DISK, THE NEXT UNUSED CORE ADDRESS, THE OBJECT TIME ADDRESS OF THE NEXT AVAILABLE SYMBOL TABLE ENTRY AND THE ADDRESS OF THE FIRST SYMBOL IN THE SYMBOL TABLE ARE COLLECTED AND OUTPUT TO THE DISK ALONG WITH THE 80 DIGIT USED FUNCTION TABLE INTO THE FIRST SECTOR OF THE OBJECT PROGRAM LOCATION. THIS CONTROL SECTOR IS USED AT OBJECT LOAD TIME TO DEFINE THE EXTENT OF THE SYMBOL TABLE, THE CORE ADDRESS FOR RELOCATING THE CALLED SUBROUTINES AND DEFINING THE SUBROUTINES CALLED.

CEXP---IS USED WHEN \*\* IS ENCOUNTERED DENOTING EXPONENTIATION. DIGITS ARE PLACED IN THE USED FUNCTION TABLE AT ..USEDFS-4.. AND AT ..USEDFS-6.. TO CALL THE ALOG AND EXP RELOCATABLE SUBROUTINES WHICH ARE USED WHEN THE \*\* IS SPECIFIED.

CFCT---COMPILES INSTRUCTIONS WHEN RELOCATABLE SUBROUTINE NAMES HAVE BEEN ENCOUNTERED IN THE ARITHMETIC STATEMENT.

CFXN---IS THE SUBROUTINE WHICH DECIPHERS A NUMERIC LABEL FROM THE INPUT BUFFER ..CHI.. WHICH IS IN ALPHA MODE AND PLACES THE NUMBER IN NUMERIC MODE IN ..SYM.. . EXITS FROM ..CFXN.. ARE EITHER TO ..SMTLU.. SYMBOL TABLE LOOK-UP OR A RETURN TO THE CALLING SUBROUTINE.

CODE---PLACES THE VARIABLE NAMES INTO THE INSTRUCTIONS, ..INST1.. AND ..INST2.. TO BE ASSOCIATED WITH THE PREVIOUSLY SELECTED SUBROUTINE ENTRY ADDRESSES WHICH HAVE BEEN PLACED IN THE P ADDRESS OF THE INSTRUCTIONS.

COMM---IS ENTERED BY THE COMMON STATEMENT AND PLACES NAMES OF SUBSCRIPTED VARIABLES AND NON-SUBSCRIPTED VARIABLES INTO THE SYMBOL TABLE IN THE SEQUENCE SPECIFIED BY THE COMMON STATEMENT. SUBSCRIPTED VARIABLES WILL HAVE TWO SYM TAB LOCATIONS ASSIGNED - SEE ..DIM...

COMP---IS USED IN SYMBOL TABLE LOOKUP FOR MATCHING A GIVEN SYMBOL WITH THE ENTRIES IN THE SYMBOL TABLE.

CONTRL---PLACES THE NUMERIC REFERENCE OR ARGUMENT AS THE Q FIELD OF A CONTROL INSTRUCTION. IF SWITCH 2 IS OFF, ANY PRINTER CONTROL OPERATION WILL BE BYPASSED.

CRAM---IS THE 10-DIGIT FIELD WHICH INITIALIZES THE SYMBOL TABLE. -0000000\*\*

CSORN---SUBROUTINE DECIPHERS LABELS FROM THE INPUT BUFFER ..CHI.. TO DETERMINE WHETHER THEY ARE NUMBERS, FLOATING POINT VARIABLE NAMES, OR FIXED POINT VARIABLE NAMES. THE RESULTING LABEL OR NUMBER IS PLACED IN ..SYM.. .

DATA---IS ENTERED ON ENCOUNTERING A DATA STATEMENT. IT CALLS THE COMPILE 2 SECTION OF THE COMPILER FROM DISK AND PROCEEDS TO PLACE CONSTANTS ONTO THE DISK TO BE PLACED ONTO THE SYMBOL TABLE AT LOAD TIME.

DCF---IS THE DISK CONTROL FIELD USED TO PLACE A STRING OF 100 DIGITS OF COMPILED INSTRUCTIONS OR SYMBOL TABLE ENTRY CONSTANTS INTO THE PROGRAM

AREA OF THE DISK.

DIM---IS ENTERED BY THE DIMENSION STATEMENT AND PLACES NAMES OF SUBSCRIPTED VARIABLES INTO THE SYMBOL TABLE. EVERY SUBSCRIPTED LABEL WILL HAVE TWO SYMBOLS ALLOCATED AT COMPILE TIME. THE FIRST (HIGH CORE) POSITION WILL CONTAIN THE NAME OF THE VARIABLE. THE SECOND LOCATION WILL CONTAIN THE CORE ADDRESS AT OBJECT RUN TIME OF THE LAST ELEMENT OF THE ARRAY AND THE WIDTH OF THE ARRAY IF DOUBLE DIMENSIONED. EXIT IS TO ..BEGIN.. .

DO---THE STATEMENT NUMBER INDICATING THE TERMINATION OF THE DO IS FIRST OBTAINED THROUGH THE SUBROUTINE ..CFXN.. . A FIELD IN THE SYMBOL TABLE LOCATION ASSOCIATED WITH THIS STATEMENT NUMBER IS DECREMENTED PRODUCING A COUNT OF THE NUMBER OF DOS TO BE TERMINATED BY THIS STATEMENT. THEN THE INDEX OF THE DO IS OBTAINED THROUGH SUBROUTINE ..CSORN.. . THE INSTRUCTION FOR INITIALIZING THE DO INDEX IS ESTABLISHED AND AT ..ELL.. WE BEGIN DETERMINING WHETHER THE INITIAL, TERMINAL AND INCREMENT VALUES OF THE INDEX ARE CONSTANTS OR VARIABLES. FINALLY, A FOUR-ADDRESS STRING IS DEVELOPED IN ..DSADD.. WHICH CONSISTS OF 1)THE INDEX, 2)THE RETURN CORE LOCATION, 3)THE TERMINAL VALUE OF THE INDEX AND 4)INCREMENT OF THE INDEX. THIS 20-DIGIT STRING IS MOVED TO THE TOP OF THE SYMBOL TABLE (LOW NUMBERED CORE) AND WILL OVERLAY TWO SYMBOL TABLE LOCATIONS UNTIL THE TERMINAL DO STATEMENT IS ENCOUNTERED AND COMPILED. EXIT IS TO ..BEGIN.. .

EDCF---IDENTIFIES THE DISK CONTROL FIELD FOR THE COMPILE 2 SECTION OF THE COMPILER.

ENDPRO---GENERATES A BRANCH TO THE EXIT FROM THE PROCEDURE AND ESTABLISHES THE ADDRESS OF THE END OF THE PROCEDURE.

ENDSEG---IS ENTERED FROM THE END SEGMENT STATEMENT. IT SETS AN EARLY TERMINATION TO THE SEGMENT ..SEG.. SUBROUTINE BEFORE BRANCHING THERETO.

ENDTR---END OF TRACE, TURNS OFF THE TRACE SWITCH.

EQ2---EQ2,EQ3,AND EQ4 DETERMINE WHETHER AN ARITHMETIC OPERATOR OTHER THAN THE EQUAL SIGN IS USED IN A STATEMENT. IF NOT, THE STATEMENT WILL BE COMPILED AS A SINGLE TRANSMIT FIELD INSTRUCTION.

EXPRUC---IS ENTERED FROM THE EXECUTE PROCEDURE CONVERTING IT TO A BRANCH AND TRANSMIT IMMEDIATE WITH THE ADDRESS OF THE NEXT MAINLINE INSTRUCTION TO THE PROCEDURE LOCATION IN THE SYMBOL TABLE. THERE THE OBJECT TIME STARTING LOCATION OF THE PROCEDURE IS FOUND.

EXREC---IS THE INSTRUCTION BRANCH AND TRANSMIT FIELD IMMEDIATE TO THE SYMBOL TABLE LOCATION OF THE PROCEDURE, WHICH IS COMPILED IN-LINE FOR THE EXECUTE PROCEDURE STATEMENT. THIS INSTRUCTION IS UNIQUELY  
17XXXX2XXXXX

FCTEND---IDENTIFIES THE FIRST SYMBOL TABLE ADDRESS (LOWER NUMBERED CORE) AFTER THE FUNCTION NAMES.

FLNUHB---IS USED FOR CONVERTING THE ALPHA FORM OF FLOATING POINT NUMBERS TO THE INTERNAL ..EXCESS 50.. NUMERIC FORM. THIS SUBROUTINE EXITS TO SYMBOL TABLE LOOK-UP EXCEPT WHEN REFERENCED IN A DATA STATEMENT.

FORMAT---FIRST, THE OBJECT TIME CORE ADDRESS OF THE FORMAT STRING IS PLACED IN THE SYMBOL TABLE. AT ..FSCAN.., WE DECIPHER THE CHARACTERS IN THE FORMAT STATEMENT.

FXNUMB---CONVERTS THE ALPHAMERIC FIXED POINT NUMBERS TO NUMERIC MODE FOR THE NUMBERS IN ARITHMETIC EXPRESSIONS. NUMBERS WHICH ARE USED AS LABELS ARE NOT HANDLED IN THIS SUBROUTINE BUT RATHER IN ..CFXN..

GETNO---IS A SUBROUTINE WHICH OBTAINS THE NUMERIC LABEL FOR PROCEDURES AND SEGMENTS.

GOTO---IF THE TEST FOR A COMPUTED GOTO IS NOT SATISFIED-----WE UTILIZE THE SUBROUTINE ..CFXN.. TO OBTAIN SYMBOL TABLE LOCATION OF THE NUMBERED STATEMENT WHICH IS REFERENCED. THIS SYMBOL LOCATION IS THEN PLACED IN A BRANCH INSTRUCTION AND COMPILED AS 8 DIGITS IN-LINE. EXIT IS TO ..BEGIN... IF THE GOTO IS A COMPUTED GOTO, THE ..GOTORC.. RECORD IS PLACED IN ..PHI.. AND WE PROCEED TO, BY MEANS OF ..CFXN.. SUBROUTINE, ACCUMULATE A STRING OF SYMBOL TABLE ADDRESSES ASSOCIATED WITH THE STATEMENT NUMBERS REFERENCED IN THE COMPUTED GOTO STATEMENT. AT THE END OF THE STRING OF STATEMENT NUMBERS, THE INDEX IS FOUND BY THE SUBROUTINE ..CSORN.. AND THE ..GOTORC.. ADDRESSES ARE MODIFIED FOR CORE LOCATION AND THE ADDRESS OF THE INDEX. THE STRING IS OUTPUT BY ..PUTPHI... EXIT IS TO ..BEGIN.. .

GOTORC---IS THE IN-LINE SEQUENCE OF INSTRUCTIONS COMPILED FOR A COMPUTED GOTO. IT PROVIDES THE CHECKING OF THE MAGNITUDE OF THE INDEX AND ALSO THAT THE INDEX HAS BEEN DEFINED.

IDCF---IS THE DISK CONTROL FIELD UTILIZED FOR OBTAINING SCANNED SOURCE STATEMENTS FROM WORKING STORAGE ON THE DISK.

IF---IS ENTERED BY EACH IF STATEMENT. AFTER SETTING THE IF SWITCH, THE ..ASCAN.. SUBROUTINE IS ENTERED FOR COMPILING THE ARGUMENT OF THE IF. ON CONCLUDING THE COMPILATION OF THE ARGUMENT, THE SUBROUTINE ..TEN.. IS ENTERED FOR COMPILING THE NECESSARY BRANCH INSTRUCTIONS TO THE NUMBERED STATEMENTS. IF THE CONTINUATION CHARACTER IS USED, THIS SIMPLY ELIMINATES ONE OF THE BRANCH INSTRUCTIONS FOLLOWING THE COMPILATION OF THE IF ARGUMENT. EXIT IS TO ..BEGIN.. .

INITL---INITIALIZES THE DISK CONTROL FIELDS AND MEMORY SENSITIVE AREAS IN THE COMPILER.

INST1,INST2---ARE THE COMPILER LOCATIONS IN WHICH OBJECT TIME INSTRUCTIONS ARE ASSEMBLED.

IO1---IS ENTERED FOLLOWING THE SELECTION OF ONE OF THE I/O STATEMENTS READ, REREAD, PRINT, PUNCH, TYPE. IN IT, THE FORMAT NUMBER IS OBTAINED BY THE SUBROUTINE ..CFXN.. AND ITS SYMTAB ADDRESS IS OUTPUT TO THE INSTRUCTION STRING.

IO2---SETS THE EXIT FROM THE I/O SUBROUTINE WHEN THE END OF THE I/O LIST HAS BEEN ENCOUNTERED. IT PRODUCES THE IN-LINE INSTRUCTION IDENTIFYING THE END OF THE LIST WITH A Q FIELD OF 2 DIGITS -0.. EXIT IS TO ..BEGIN..

IO3---PROVIDES TESTING FOR THE IMPLIED DO IN THE I/O LIST AND OUTPUTS THE VARIABLE ADDRESSES WHEN SUCH AN IMPLIED DO IS NOT PRESENT.

IO4---PROVIDES THE STACKING OF THE ADDRESSES OF THE VARIABLES WITHIN THE  
 IMPLIED DO UNTIL THE INDEX OF THE IMPLIED DO BECOMES AVAILABLE, AT WHICH  
 TIME WE BRANCH TO ..D01.. FOR THE INITIALIZING OF THE DO. THE EXIT FROM  
 DO BRINGS US TO ..I05.. WHERE THE STACKED VARIABLE ADDRESSES ARE OUTPUT  
 AND TERMINATED WITH THE BRANCH TO ..TD01... EACH VARIABLE IN THE I/O  
 LIST PRODUCES AN INSTRUCTION BRANCH AND TRANSMIT IMMEDIATE TO LOOK, THE  
 VARIABLE ADDRESS.

L---IS THE OBJECT TIME CORE ADDRESS FOR EACH INSTRUCTION AND IS INCREMENTED  
 AS COMPILED INSTRUCTIONS ARE MOVED INTO ..BUFAS...

LAST---IS A READ BACK CHECK AT THE TIME THE COMPILER IS INITIALLY READ INTO  
 CORE.

LSTC---THIS SUBROUTINE PERMITS THE OUTPUT OF REFERENCED SOURCE STATEMENTS  
 TO EITHER CARDS OR THE PRINTER.

LSTPG---CAUSES THE ENTIRE PROGRAM TO BE LISTED ON THE PRINTER IF THE  
 DIAGNOSTICIAN HAS FOUND ERRORS IN THE PROGRAM.

LSTT---THIS SUBROUTINE PERMITS THE OUTPUT OF ERROR MESSAGES TO EITHER THE  
 PRINTER OR THE TYPEWRITER.

MEMCAP---IS SET IN THE INITIALIZATION OF THE COMPILER AND IDENTIFIES THE  
 MEMORY CAPACITY OF THE COMPUTER.

MOUN7---INITIALIZES THE SYMBOL TABLE FROM ..FCTEND.. AT THE HIGH END OF  
 CORE DOWN TO THE POSITION ..LAST+12.. THE CHARACTERISTIC FIELD IN THE  
 SYMBOL TABLE IS -000000##. THE LAST POSITION IN THE SYMBOL TABLE WILL  
 BE RECOGNIZED BY ## BEING REPLACED BY 0#.

MUSEPC---THIS SUBROUTINE OUTPUTS THE MESSAGE SYN TAB FULL WHEN ATTEMPTING  
 TO PUT ANOTHER SYMBOL INTO THE SYMBOL TABLE AND THERE IS NOT ADEQUATE  
 SPACE IN THE SYMBOL TABLE OR WHEN A 20 DIGIT DO RECORD IS TO BE PLACED  
 AT THE END OF THE SYMBOL TABLE--THAT IS, IN LOW CORE--BUT OTHER SYMBOLS  
 OCCUPY THE NEXT AVAILABLE LOCATIONS. THE EXIT FROM THIS SUBROUTINE IS  
 ..BEGIN.. WHICH PERMITS THE FURTHER COMPILATION OF ADDITIONAL STATE-  
 MENTS, HOWEVER, THE REFERENCED CORE ADDRESS OF INSTRUCTIONS THEREAFTER  
 WILL NOT BE CORRECT.

PAUSE---COMPILES TO A BRANCH AND TRANSMIT IMMEDIATE TO ..DTR... THE  
 Q ADDRESS OF THE PAUSE INSTRUCTION WILL BE A 5-DIGIT FIELD OF ZEROS  
 (-0000).

PHI---IS A BUFFER AREA IN WHICH FORMAT STRINGS AND COMPUTED GOTO INSTRUCT-  
 IONS ARE COMPILED PRIOR TO BEING PLACED ON THE DISK. ITS LENGTH IS 400  
 DIGITS.

PUTETB---PROVIDES FOR THE STACKING OF VARIABLE ADDRESSES PRIOR TO THEIR USE  
 IN THE STRING OF ARITHMETIC OPERATIONAL INSTRUCTIONS.

PUTPHI---IS THE SUBROUTINE USED FOR OUTPUTTING FORMAT STRINGS AND ALSO THE  
 COMPUTED GOTO STRING. ..PUTX.. UTILIZES ..PUTPHI.. IN PART FOR THE  
 OUTPUTTING OF INSTRUCTIONS. WHEN A STRING OF 100 DIGITS HAS BEEN  
 DEVELOPED IN ..BUFAS..., THIS IS MOVED TO THE DISK BY ..PDK...AND  
 ..BUFAS.. IS RESET TO TAKE THE NEXT STRING.

PUT1 AND PUT2---SUBROUTINES EXAMINE AN INSTRUCTION AS DEVELOPED IN

..INST1.. AND ..INST2.. TO DETERMINE IF ANY SUBSCRIPTION IS REQUIRED IN THE INSTRUCTION. IF SO, THE SUBSCRIBING INSTRUCTIONS ARE MOVED INTO ..OUT.., THE INSTRUCTION IS MOVED INTO ..OUT+60.. AND THE NECESSARY ADDRESS MODIFICATION IS ACCOMPLISHED ULTIMATELY BRANCHING TO ..PUTX.. WHERE THE INSTRUCTION WITH ANY ADDRESS MODIFICATION REQUIRED FOR THE SUBSCRIPTION IS PUT INTO THE OUTPUT STRING ..BUFAS...

SCRIPT---SUBROUTINE IS ENTERED TO INTERPRET THE SUBSCRIPT OF A SUBSCRIBED VARIABLE. IF THE SUBSCRIPT IS NUMERIC, THE OBJECT-TIME CORE ADDRESS IS ADJUSTED CORRESPONDINGLY. IF THE SUBSCRIPT IS A VARIABLE, THEN A 15-DIGIT RECORD IDENTIFYING THE WIDTH OF THE ARRAY, THE FIRST INDEX AND THE SECOND INDEX IS LOCATED AT THE TOP OF ..PHI.. (A BUFFER AREA) FOR USE LATER BY THE SUBROUTINES ..PUT1.. OR ..PUT2...

SEG---IS REFERENCED FROM THE SEGMENT STATEMENT AFTER SETTING THE SEG EXIT BRANCH. THE END INSTRUCTION IS PLACED IN ..OUT.. AND OUTPUT AS AN IN-LINE INSTRUCTION. SHOULD THE END SEGMENT OR THE SEGMENT STATEMENT EVER BE EXECUTED AT OBJECT TIME, THE RESULT WILL BE AS THOUGH THE END STATEMENT HAD BEEN EXECUTED. THE LAST CORE LOCATION OF THE SEGMENT OR UNSEGMENTED PORTION IS COMPARED WITH THE LAST CORE LOCATION OF ANY PREVIOUS SEGMENTS AND THE GREATER OF THESE PLACED IN ..LMAX.. WHICH LATER WILL BE USED FOR LOCATING THE RELOCATABLE SUBROUTINES AT OBJECT LOAD TIME. ANY REMAINING INSTRUCTIONS IN THE COMPILED INSTRUCTION STRING ..BUFAS.. ARE OUTPUT TO THE DISK, AND FINALLY, IF THIS IS A SEGMENT STATEMENT, THE OBJECT TIME CORE ADDRESS IS MOVED INTO THE SYMBOL TABLE OF EACH DEFINED SEGMENT. THIS SUBROUTINE EXITS TO ..BEGIN...

SMTLU---SUBROUTINE IS ENTERED WHEN A VARIABLE NAME HAS BEEN PLACED IN ..SYM.. AND IT IS DESIRED TO OBTAIN THE OBJECT TIME CORE ADDRESS ASSOCIATED WITH THIS LABEL. IF THE LABEL IS IN THE SYMBOL TABLE, ITS ADDRESS IS RECOVERABLE FROM ..SMCNT... IF THE VARIABLE IS NOT IN THE SYMBOL TABLE, IT WILL BE PLACED IN THE NEXT AVAILABLE LOCATION AND ITS ADDRESS AT OBJECT RUNNING TIME WILL AGAIN BE FOUND IN ..SMCNT... THE ADDRESS ..SMTLU1+11.. IS THE COMPILE TIME ADDRESS OF THIS VARIABLE IN THE SYMBOL TABLE.

SMTST---TESTS TO SEE IF THE SYMBOL IN ..SYM.. IS A NAME IN THE FUNCTION TABLE, AND IF SO, A DIGIT IS PLACED IN THE USED FUNCTION TABLE ..USEDFS.. FOR THE CALLING OF RELOCATABLE SUBROUTINE AT LOAD TIME.

SSB---IN THE ..ASCAN.. SUBROUTINE IS ADDRESSED WHEN THE EQUAL SIGN HAS BEEN DETECTED AND PROVIDES FOR THE STORING OF THE COMPUTED RESULT TO CONCLUDE THE ARITHMETIC STATEMENT. NOTE, THE MODE OF THE VARIABLE IN ..INST1.. AND ..INST2.. IS DENOTED BY THE DIGIT IN ..INST +14... A ZERO IN THIS POSITION DENOTES A FLOATING POINT VARIABLE. A DIGIT IN THIS POSITION DENOTES A FIXED POINT VARIABLE. ALSO, A FLAG IN POSITION ..INST +12.. WILL OCCUR IF THE VARIABLE IS A SUBSCRIBED VARIABLE. IN ..INST +13.. WILL BE THE NUMBER OF THE SUBSCRIPT. THIS WILL BE USED IN ..PUT1.. AND ..PUT2.. TO DETERMINE WHICH SUBSCRIPT MODIFICATION IS REQUIRED FOR THE VARIABLE IN QUESTION.



STOP---COMPILES TO A BRANCH AND TRANSMIT IMMEDIATE TO ..DTRB... THE  
Q FIELD WILL BE A 4-DIGIT FIELD OF THE NUMBERED STOP.

SUBI---IS THE SET OF SUBSCRIBING INSTRUCTIONS WHICH ARE USED IN ..PUT1..  
AND ..PUT2.. AND WHICH GO IN-LINE DEPENDING ON THE SINGLE OR DOUBLE  
SUBSCRIBED VARIABLE REQUIREMENTS.

SYM---IS THE LOCATION WHERE ALL SYMBOLS---VARIABLE NAMES, NUMERIC LABELS AND  
CONSTANTS---ARE LOCATED PRIOR TO THEIR ASSOCIATION WITH AN ADDRESS IN  
THE SYMBOL TABLE.

TESTDO---AFTER EVERY NON-TRANSFER STATEMENT IS COMPILED THE DO SWITCH IS  
HEREIN TESTED TO DETERMINE IF THE STATEMENT WERE NUMBERED AND IF IT WERE  
A TERMINAL DO STATEMENT. IF SO THE LAST 20-DIGIT RECORD PLACED BY  
..DO.. IS CALLED INTO ..OUT.. AND THE TERMINAL DO STATEMENTS ARE  
COMPLETED FROM THIS RECORD. THESE STATEMENTS RESIDE IN THE COMPILER  
UNDER THE NAME ..DURCRD... THE 20 DIGIT RECORD IS RESTORED TO THE CON-  
VENTIONAL -00000000#-00000000## FIELDS AND THE SUBROUTINE CONCLUDES WITH  
A TEST TO DETERMINE IF THE STATEMENT TERMINATES MORE THAN ONE DO STATE-  
MENT. THE SUBROUTINE EXITS TO ..BEGIN...

TFSAVE---PROVIDES FOR TEMPURARY STORAGE OF PARTIALLY COMPILED RESULTS.

TRIT---CAUSES THE FINAL INSTRUCTION OF A STATEMENT STRING TO PERMIT TRACING  
AT OBJECT TIME RUNNING.

TRY---BRANCHES TO THE INITIALIZATION OF THE SYMBOL TABLE AFTER ALL RE-  
LOCATABLE SUBROUTINE NAMES HAVE BEEN STORED IN THE SYMBOL TABLE.

USEDFS---IS A STRING OF 80 DIGITS TO PERMIT IDENTIFICATION OF THE 37  
POSSIBLE SUBROUTINES WHICH MAY BE REFERENCED IN THE SOURCE PROGRAMS.

## LABELS IN COMPILE II

COMPILE 2 IS BROUGHT INTO CORE FROM THE DISK BY THE END STATEMENT OR BY THE DATA STATEMENT. BOTH THE END AND THE DATA STATEMENTS CAUSE THE END INSTRUCTION TO BE COMPILED AND THE FINAL LIST OF INSTRUCTIONS TO BE PLACED ONTO THE DISK AS THE TERMINAL SECTOR OF THE PROGRAM INSTRUCTIONS. FOLLOWING THESE PROGRAM SECTORS ON THE DISK WILL BE SECTORS CONTAINING THE BRANCH POINTS OF THE SYMBOL TABLE AND CONSTANTS WHICH HAVE BEEN ENTERED INTO THE SYMBOL TABLE.

DATLP---PLACES CONSTANTS INTO THE VARIABLE LOCATIONS IN THE SYMBOL TABLE ACCORDING TO THE DEFINITIONS PROVIDED IN THE DATA STATEMENT. EXIT FROM THIS SUBROUTINE IS TO..BEGIN...

DCFDT---IS THE DISK CONTROL FIELD OF THE DISK TABLE (PROGRAM INDEX) WHICH IS ADJUSTED TO INDICATE THE SATISFACTORY COMPILATION OF EACH PROGRAM. NOTE, THE INITIAL TRANSMIT DIGITS ARE EXECUTED AT SYSTEM LOAD TIME AND ADJUST THE SUBROUTINE PACKAGE FOR MEMORY SIZE AND SYSTEM DISK DEFINITION

OST---INITIALIZES THE SUBROUTINE FOR OUTPUTTING THE REFERENCED SYMBOL TABLE AND ALSO PLACING THE CONSTANTS AND BRANCH POINTS UNTO THE DISK.

SADR---FILLS THE OBJECT TIME CORE ADDRESS OF THE SYMBOL.

SHTBO---LOCATES THE END OF THE SYMBOL TABLE AND DEVELOPS THE SECTOR WHICH CONTAINS THE SECTOR INCREMENT TO THE SYMBOL TABLE, THE NEXT CORE LOCATION FOLLOWING THE LONGEST SEGMENT, THE END (LOW CORE) OF THE SYMBOL TABLE, THE BEGINNING (HIGH CORE) OF THE SYMBOL TABLE, AND THE END (LOW CORE) OF THE COMMON AREA. THESE ADDRESSES ARE FOLLOWED BY THE USED FUNCTION TABLE AND THIS ENTIRE SECTOR IS LOCATED IMMEDIATELY BEFORE THE FIRST SECTOR OF THE COMPILED PROGRAM.

SSV---HANDLES THE ADDRESSES OF SUBSCRIPTED VARIABLES.

TPRO---TESTS NUMERIC LABELS TO DETERMINE WHETHER THEY ARE STATEMENT NUMBERS, SEGMENT NUMBERS, FORMAT NUMBERS, OR PROCEDURE NUMBERS.

UPDKH---AFTER TESTING TO SEE THAT NO OVERLAP OCCURRED AND THE SYMBOL TABLE WAS NOT FILLED, THIS UPDATES THE PROGRAM INDEX OF THE EXECUTIVE TO PERMIT THE RUNNING OR HOLDING OF THE COMPILED PROGRAM.

WDSK---WRITES A SECTOR OF CONSTANTS AND BRANCH POINTS ONTO THE DISK. THIS SEGMENT HAS THE FORMAT A 5-DIGIT ADDRESS AND A 10-DIGIT FIELD REPEATED 6 TIMES.

LABELS IN THE CLASS A SUBROUTINES

ADCK---CHECKS THE DEFINITION OF THE ARGUMENT OF AN ..IF.. STATEMENT AND  
SETS THE HIGH POS AND EQUAL ZERO MACHINE INDICATORS.

AOUT---IS THE ENTRY POINT FOR OUTPUTTING A VARIABLE UNDER THE ..A.. SPECI-  
FICATION.

BSEGA---CONTAINS THE SECTOR ADDRESS-60000 OF THE FIRST SECTOR OF THE  
COMPILED PROGRAM AND IS USED TO LOCATE THE BEGINNING SECTOR OF SEGMENTS  
WITHIN EACH PROGRAM.

BSTBG---IS THE ADDRESS FOLLOWING THE LAST SYMBOL PLACED INTO THE SYMBOL  
TABLE.

CALSR---IS THE ENTRY POINT FOR CALLING INTO CORE A NEW SEGMENT AND IS EX-  
ECUTED FOR THE ..CALL SEGMENT.. STATEMENT.

CARD---BLANKS THE REMAINING OF 80 COLUMNS IN THE I/O BUFFER IN PREPARATION  
FOR THE OUTPUT OF THE BUFFER ONTO A CARD.

COMBEG---IS THE ADDRESS WHICH IDENTIFIES THE LOCATION OF THE FIRST VARIABLE  
IN THE SYMBOL TABLE AFTER THE RELOCATABLE FUNCTION NAMES.

DCFER---IS THE DISK CONTROL FIELD OF THE ERROR SECTION OF THE SUBROUTINES.

DTRB---CAUSES ANY TRACED VARIABLES REMAINING IN THE I/O BUFFER TO BE OUTPUT  
PRIOR TO THE EXECUTION OF A ..PAUSE, STOP OR END.. STATEMENT.

ERMA---CONTAINS THE ADDRESS OF THE FIRST DIGIT OF THE ERROR MESSAGE TO BE  
OUTPUT WHEN BRANCHING TO ..ERR..

ERU---IS THE ENTRY POINT FOR THE ERROR MESSAGE ..UFLO.. --UNDERFLOW.

ERR---CAUSES THE PRESET ERROR MESSAGE TO BE OUTPUT BY MEANS OF READING INTO  
CORE THE ERROR SECTION OF THE SUBROUTINES.

ERRUR---CONVERTS AN F SPEC TO AN E SPECIFICATION IF THE NUMBER IS TOO  
LARGE TO BE OUTPUT UNDER THE F SPEC.

ESMA---IS THE LOCATION OF THE ADDRESS OF THE ..STOP OR END.. MESSAGE.

ETYPE---IS THE ENTRY POINT FOR OUTPUTTING A NUMBER UNDER THE ..E.. SPECI-  
FICATION.

FAD---IS THE SUBROUTINE ENTRY POINT FOR FLOATING ADDITION.

FAXB---IS THE ENTRY POINT FOR RAISING A QUANTITY TO A POSITIVE FLOATING  
POINT VARIABLE OR CONSTANT.

FAXBN---IS THE ENTRY POINT FOR RAISING A QUANTITY TO A NEGATIVE FLOATING  
POINT VARIABLE OR CONSTANT.

FAXI---IS THE ENTRY POINT FOR RAISING A QUANTITY TO A POSITIVE FIXED  
POINT VARIABLE OR CONSTANT.

FAXIN---IS THE ENTRY POINT FOR RAISING A QUANTITY TO A NEGATIVE FIXED POINT  
VARIABLE OR CONSTANT.

FDV---IS THE ENTRY POINT FOR FLOATING POINT DIVISION.

FDVR---IS THE ENTRY POINT FOR REVERSED FLOATING DIVIDE.

FIX---IS THE ENTRY POINT FOR CONVERTING A FLOATING POINT VALUE TO THE FIXED  
POINT MODE.

FLOAT---IS THE ENTRY POINT FOR CONVERTING A FIXED POINT NUMBER TO THE  
FLOATING POINT MODE.

FMP---IS THE ENTRY POINT FOR FLOATING POINT MULTIPLICATION.

FSB---IS THE ENTRY POINT FOR FLOATING POINT SUBTRACTION.

FTYPE---IS THE ENTRY POINT FOR THE OUTPUT UNDER THE F SPECIFICATION.

FXA---IS THE ENTRY POINT FOR FIXED POINT ADDITION.

FXD---IS THE ENTRY POINT FOR FIXED POINT DIVIDE.

FXDR---IS THE ENTRY POINT FOR FIXED POINT REVERSED DIVISION.

FXM---IS THE ENTRY POINT FOR FIXED POINT MULTIPLICATION.

FXS---IS THE ENTRY POINT FOR FIXED POINT SUBTRACTION.

HTYPE---IS THE ENTRY POINT FOR THE I/O OF ..HOLLERITH.. CONSTANTS IN THE ..FORMAT.. STRING.

INCHI---THIS SUBROUTINE IS A RECORD TRANSMITTED TO ZERO AS THE LAST SUBROUTINE EXECUTED PRIOR TO OBJECT TIME RUNNING. IT INITIALIZES ..INOUT.. (THE INPUT-OUTPUT BUFFER) LOCATED AT 404 THROUGH 693 TO -#-#-#-#...

INPUT---IS THE ENTRY POINT FOR THE INPUT OF F,E,I AND A TYPE SPECIFICATIONS.

ISETYP---CHECKS TO SEE IF THE VARIABLE OUTPUT WAS AN ..ETYPE.., AND IF SO, DEVELOPS THE EXPONENT TO FOLLOW THE NUMERIC VALUE.

ITYPE---PLACES ALL FIXED POINT NUMBERS IN THE I/O BUFFER. A FLAG AT ..FAC-1.. IS THE 2 DIGIT EXPONENT FOR AN ..ETYPE.. VARIABLE. A FLAG AT ..FAC-3.. IDENTIFIES THE ADDRESS FOR TRACED OUTPUT.

IXCK---CHECKS THE DEFINITION WITHIN RANGE OF THE INDEX OF A COMPUTED ..GOTO.. STATEMENT.

LNKFLG---PROVIDES THE ENTRY TO THE EXECUTIVE WHEN AN ASTERISK CONTROL CARD HAS BEEN READ BY A PROGRAM UNDER EXECUTION. CONTROL IS TRANSFERRED TO THE EXECUTIVE FOR THE PROCESSING OF THE CONTROL CARD.

LOOK---IS THE ENTRY POINT FOR EACH VARIABLE IN AN I/O LIST AFTER THE FORMAT HAS BEEN PRE-SET BY THE I/O DEFINITION.

LTPAR---SETS THE IDENTITY OF THE BEGINNING OF A ..FORMAT..

NUMBR---IS THE ENTRY POINT FOR THE INPUT OR OUTPUT OF NUMBERS UNDER THE F,E,I OR A TYPE SPECS.

POST---RESETS THE I/O SUBROUTINE FOR A NEW LINE FOR INPUT OR OUTPUT.

PRBS---WILL CONTAIN THE SECTOR ADDRESS -60000, OF THE BEGINNING OF PROGRAM STORAGE AS ALLOCATED AT SYSTEM LOAD. THIS WILL BE USED TO PREVENT DATA SECTORS FROM BEING WRITTEN ONTO THE DISK IN THE PROGRAM STORAGE AREA.

PRTR---IS THE ENTRY POINT FOR THE ..PRINT.. STATEMENT AND ESTABLISHES THE FORMAT FOR THE OUTPUT LIST.

RACD---IS THE ENTRY POINT FOR THE ..READ.. STATEMENT AND ESTABLISHES THE FORMAT FOR THE INPUT LIST.

READ---IS THE ACTUAL INPUT-OUTPUT INSTRUCTION.

RSST---IS AN ADDRESS AVAILABLE IN THE FORMAT STRING TO PERMIT A REPETITION OF ONE OR MORE FORMAT SPECIFICATIONS A DESIGNATED NUMBER OF TIMES. IT OCCURS IN THE FORMAT STRING CORRESPONDING TO THE RIGHT PARENTHESIS OF A MULTIPLE FORMAT SPECIFICATION.

RTPAR---RESETS THE ..FORMAT.. STRING TO REPEAT THE ..FORMAT.. AND ALSO EXECUTES THE I/O WHICH HAS BEEN THUS FAR COMPLETED.

RVSGN---REVERSES THE SIGN OF THE VARIABLE IN ..FAC..

SETONE---PROVIDES FOR SETTING ..FAC.. TO FLOATING POINT POSITIVE ONE.

SLASH---IS AN ADDRESS IN THE FORMAT STRING WHICH WILL TERMINATE A LINE OF INPUT-OUTPUT AND INITIALIZE THE I/O STRING FOR A NEW LINE.

STFMT---CHECKS TO SEE IF ANY TRACED VARIABLES ARE IN THE I/O BUFFER AND OUTPUTS THESE VARIABLES, IF THEY EXIST, PRIOR TO THE EXECUTION OF AN INPUT OR OUTPUT STATEMENT.

TIGER---IS THE NORMAL EXIT TO THE EXECUTIVE FROM A RUNNING PROGRAM FOLLOWING THE EXECUTION OF AN ..END.. OR A ..STOP.. STATEMENT.

TRFL---IS THE ENTRY POINT WHEN A FLOATING POINT VARIABLE MAY BE TRACED.

TRFM---IS A FIELD WHICH REPLACES ..READ.. WHEN THE I/O BUFFER CONTAINS 4 TRACED VARIABLES FOR THE OUTPUT OF THESE TRACED VARIABLES.

TRFMT---IS THE FORMAT STRING UTILIZED WHEN TRACED VARIABLES ARE OUTPUT TO CARDS.

TRFX---IS THE ENTRY POINT WHEN A FIXED POINT VARIABLE IS TO BE TRACED.

TRUT---CAUSES THE OUTPUT OF THE I/O BUFFER IF AN OUTPUT STATEMENT HAS BEEN COMPLETED OR RETURNS TO THE MAINLINE PROGRAM IF A SINGLE VARIABLE HAS JUST BEEN PUT INTO THE I/O BUFFER BY TRACING.

TVAR---TESTS THE VARIABLE IN THE ADDRESSED SUBROUTINE AND ALSO THE VARIABLE IN ..FAC.. FOR DEFINITION.

UDV---SETS THE ERROR MESSAGE WHEN A VARIABLE IS UNDEFINED.

WACD---IS THE ENTRY POINT FOR THE ..PUNCH.. STATEMENT AND ESTABLISHES THE FORMAT FOR THE OUTPUT LIST.

WATYE---IS THE ENTRY POINT FOR THE ..TYPE.. STATEMENT AND ESTABLISHES THE FORMAT FOR THE OUTPUT LIST.

WRITE---DETERMINES WHETHER THE I/O BUFFER MUST BE CLEARED FOR CARD OUTPUT OR WHETHER A RECORD MARK IS TO BE PLACED AT THE END OF THE OUTPUT IN THE BUFFER FOR TRANSFER TO THE TYPEWRITER OR PRINTER.

XTYPE---IS THE ENTRY POINT FOR THE X SPECIFICATION, SPECIFYING A NUMBER OF COLUMNS TO BE SKIPPED.

ZERFAC---IS THE ENTRY POINT FOR ZEROING THE FLOATING ACCUMULATOR.

LABELS IN THE ERROR SECTION OF THE CLASS A SUBROUTINES.

CDINS---BEGINS THE 3 STATEMENTS FOR THE OUTPUTTING OF THE SYMBOL TABLE TO CARDS.

D43BUF---IS THE BUFFER FROM WHICH THE SYMBOL TABLE IS OUTPUT FOLLOWING AN ERROR. THIS BUFFER IS FILLED BY A READ TO THE DISK AND A READ. FROM THE DISK TO THE BUFFER PRIOR TO THE OUTPUT.

DPEND---DETERMINES WHEN THE END OF THE SYMBOL TABLE HAS BEEN OUTPUT AND RETURNS CONTROL TO THE EXECUTIVE.

ERR1---DETERMINES WHETHER THE MESSAGE TO BE OUTPUT IS A ..STOP.. OR..END.. IN WHICH CASE CONTROL RETURNS TO THE EXECUTIVE.

ERR2---IS THE ENTRY POINT WHEN AN ERROR HAS BEEN DETECTED AT RUN TIME. THE ERROR MESSAGE IS ESTABLISHED FOR OUTPUT TO BE FOLLOWED BY THE ENTIRE SYMBOL TABLE IF SWITCH 3 IS ON.

PERR---PREPARES THE MESSAGE TO BE OUTPUT TO A CARD.

PRTER---OUTPUTS THE MESSAGE TO THE PRINTER IF SWITCH 2 IS ON.

TERR---CAUSES THE MESSAGE TO BE OUTPUT TO THE TYPEWRITER WHEN SWITCH 2 IS OFF.



12590 CEXPD 12630  
12720 CFCT 11060 12930  
12830 CFCTA 12750 12850 12870  
12880 CFCTB 12760  
12940 CFCTC 12830  
00870 CFM 00800  
01760 CFXN 00780 01860 01870 01910 01940 03930 04560 04950 05030 06030 06110 06730 06850 07440 07500  
07840 08670 08730 09420 09870 10080 11820 14200  
00140 CHI 00150 00420 00560 00570 00600 00620 00630 00630 00640 00730 00740 00740 01790 01800 01800  
01810 01830 01850 02290 02320 02360 02380 02410 02460 02470 02470 02490 02590 02720 02740  
02740 02760 02800 02800 02850 02890 02900 02900 02930 03010 03010 03020 03080 03110 03140  
03180 03180 03190 03200 03200 03210 03240 03250 03250 03460 03490 03490 03820 03820 03830  
03870 03890 03920 03920 03980 04530 04530 04540 04930 04930 05010 05010 05800 05930 05990  
05990 06000 06100 06100 06160 06190 06190 06260 06270 06540 06680 06710 06720 06720 06840  
06840 06990 06990 07030 07050 07300 07300 07340 07340 07370 07430 07430 07460 07470 07470  
07530 07530 07590 07650 07650 07720 07720 07770 07770 07820 07820 07900 07940 07950 07950  
07970 07990 07990 08020 08120 08120 08130 08160 08360 08360 08440 08440 08450 08470 08490  
08510 08570 08590 08610 08630 08660 08660 08720 08720 08840 08870 08990 09320 09320 09430  
09450 09470 09560 09560 09690 09690 09710 09790 09790 09860 09860 10050 10050 10060 10110  
10170 10170 10420 10640 10680 10710 10730 10760 10780 10800 10820 10840 10910 10910 10930  
10950 10950 11290 11300 11310 11310 11330 11480 11480 11900 11920 11940 12740 12740 13610  
13620 13630 14370 14370 14380 14380 14410 14450 14450 14470 14490 14490 14570 14640 15670  
23390 CL 23450  
12350 CMDA 12290 12300  
12320 CMDB 12350 12370  
03110 CMPAR 03040  
20390 CMPLT 19820 19920 20000 23660  
12250 CMULT 11160  
11570 CODA 11540  
11650 CODD 11610  
11520 CODE 10480 11680 12190 12280 12390 12720  
03790 COLECT 03430 03640 03960  
16380 COMBEG 28010 28020 28030 28040 28050 28100 28240 28340  
07300 COMM 00070 07220 14120  
11770 COMMON 11740 11780 12070 12590 12610 12790 12820 12840 12940 12950 12970  
06660 COMP 01900 01930 02010 02020 02030 02040 02070 02080 02150 02170 02550 06950  
13620 COMPA 00660 00670 00690 00700 00710 00720 00760 00860 00890 14040  
06070 COMPUT 06010 06160  
09320 CONFMT 00060  
15350 CONGO 14560 14560 14740 14740 15280 15320  
05010 CONTRL 00080 04910 04940  
24370 COS  
21260 COUNT 21120 21240 21570 21580 21590 22250 22260 22270 22320 22330 22340 22350  
06580 CRAM 00290 05100 05220 05250 07870  
02440 CS 02400 02420 02810 03850 07320 07350 07660  
02320 CSORN 01940 02300 03600 06200 06880 07000 08040 08150 10670 14430 14520  
12180 CSUB 11120  
12230 CSUBA 12200  
25010 CTAB 24370  
20680 CTR 20050 20080  
18330 CZ1 15950  
18350 CZ2 15960 23890 24160  
18670 CZ3 15970  
18680 CZ4 15980  
07250 DATA 00110 07290 14130  
14380 DATLP 14570  
14890 DBUF 14610 14800 14830 14950 15600 15620  
24220 DCDWN 23900  
06470 DCF 00360 01630 01660 01680 01700 01730 05650 13700 13720 14230 14310 14320 14340 14350 15410  
15440 15460 15480 15530 15710 15720  
15880 DCFDT 15690 15700 15760 15840  
22420 DCFER 16000 22510  
04450 DCFEX 00020 13660  
17660 DCFSG 15990 20790 20820 20830 20880 20890 20930 20940 20940 20950 20960 20970 20980 22510  
23250 DEC 22670  
28180 DERR 28680 28730  
07330 DIM 00080  
07450 DIMA 07400  
07570 DIMB 07380 07410 07680  
07670 DIMC 07480  
07650 DIMD 07590  
07580 DIMONT 07360 07420 07540 07550 07610 07670 07680  
16200 DIVDIG 18020  
28820 DKCF 28450 28470 28610 28630 28640 28700 28830 28840 28850  
04380 DKOLM 06370  
07360 DMM 02120  
01750 DMPBR 05890 05910  
13530 DMSWCH 02120 07310 07330 07600 07630  
06840 DO 00080  
05390 DORCRD 05130 05800 08270 14410  
13550 DOSWCH 00820 05120  
06890 DD1 08170  
07090 DD2 07620 08090 08190  
24270 DPEND 23940  
07170 DSADO 06920 06970 06980 07060 07080 07130 08280 15720 15730 15740 15820  
24150 DSTPR 23640 23870  
27640 DTAB 27530 27550  
19360 DTRB 04990 19360 19390 23710  
28420 DUMMY 28490 28770 28780 28790 28800  
01630 DUMP 01540 05900  
18020 DVRND 17970 17990





18660	FAXB1	18370																			
17780	FAXI	13360	17730	17740	17760	17800	17830	18180													
17730	FAXIN	13370	17750																		
18160	FAXI1	17820	17840																		
06620	FCTEND	00280	02180	13690	13760	13780	13790	13850	13870	14270											
17940	FDV	13470	17910	17970	17990	18010	18030	18060													
17910	FDVR	13470	17850	17920	26820	26840															
18110	FDV1	18070																			
16830	FILL	16780	25960																		
09220	FINISH	09200																			
18750	FIX	13380	13380																		
17560	FIXER	18820																			
20280	FIXFLG	21350																			
12980	FIX1	11590																			
13380	FIX2	12980	13050																		
18820	FIX3	18790																			
22840	FL	22620	22880	23180																	
20460	FLAGS	20190	20470	20480	20490	20500	20510	20520													
13540	FLAGSW	03520	04060	10860	10880	10960	11270	11340	11710	12030	12110	12160	12310	12360	12780	12860					
		12890	12960																		
02950	FLNUMB																				
18950	FLOAT	13400	13400																		
13000	FLOAT1	11640																			
13400	FLOAT2	13000																			
17430	FLTONE	17850	18690	24890	26160	26820	29900														
05440	FL1	02630	02690																		
18430	FMP	13460	13460	18090	18120	18160	18190	18360	18460	18470	18600										
18560	FMP1	18490	18510																		
18590	FMP2	18100	18130	18550																	
09780	FMTSP	08430																			
17440	FNINES																				
13030	FOF	10490	10550																		
08360	FORMAT	00050																			
13900	FRECK	13840																			
16330	FSB	13450	16360	16470	16490	16650	16800	16900	16920	18970											
08440	FSCAN	08480	08500	08540	08810	09020	09160	09330	09370	09380	09410	09520	09760								
13510	FSTSW	09820	10660	10750	10870	10900	10980	11190													
22290	FTYPE	21540																			
20520	FTYPEX	21750	22370																		
23050	FX	22880																			
17070	FXA	13490	17090																		
17220	FXD	13490	17190	17240	17270																
17190	FXDR	13490																			
13340	FXEXP	11630																			
17120	FXM	13490	13490	17140																	
02620	FXNUMB	02860																			
02350	FXORFL	02330	02430	02620	03280	03510	13350														
17020	FXS	13490	17040																		
05450	FX1	00450	02450	06930																	
17450	FZERIC	16860	21390	22540	22550	24800	25160	25930	26240	27170	27200	27620									
04530	GETNO	04470	04600	04610	04710	05600	05680	05950													
04880	GGG	06020																			
15370	GOER	15390	15510																		
03720	GORE	00470	03480	03540	03700																
05990	GOTO	00090																			
04830	GOTORC	06080																			
09300	GPHBG	06240																			
05110	GPT1	04920	04960	05050	05710																
04510	GPXTD	04690																			
04750	GPX8	06050																			
09640	HCONT1	09570																			
09700	HCONT2	09550	09670																		
09690	HCONT3	09740																			
09730	HCONT4	09620	09700																		
16250	HDER	16230																			
04100	HDWRER	00200	14130																		
04390	HERRM	04100																			
21810	HOHO	21670																			
09420	HOLL	08580																			
09670	HOLL1	09550	09620																		
09600	HOL1	09440																			
09530	HOL2	09460																			
21200	HR	21150																			
21110	HTYPE	09540																			
20470	HTYPEX	21090	21130																		
06510	IDCF	00480	00500	00520	00540	08850	13650														
09790	IF	00060																			
10320	IFRC	10010	10030																		
09850	IFSS	03350																			
10330	IFSSRC	09850																			
13560	IFSWCH	00450	09830																		
13580	IMAGE	14330	15370	15390	15510	15520	15570														
15410	IMOUT	14330	14330	15590	15590																
16110	INCHI	16090																			
25750	INIT	25710																			
13650	INITL	00180	00260	00310	00330																
16180	INOUT	16110	16130	19170	19280	19310	19870	20180	20210	20290	20360	20550	20600	21220	21640	21890					
		29050	29060	29110																	
22540	INPUT	21360																			
06420	INST1	00910	04900	04910	04940	05020	05090	05100	05690	05700	06700	06710	06750	06760	06760	06770					
		09930	09940	09960	09990	10500	10520	10580	10580	10590	10610	10610	10620	11200	11230	11240					









LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS	AND	REMARKS
				00000	**	C4D-PDQ COMPILER + SUBROUTINES			1/20/67
00404				00010		DORG	404		
00404	25	05552	00401	00020		TD	DCFEX,401		
00416	49	18012		00030		B7	18012		
00572				00040		DORG	572		
00576		00005	01092	00050		DSA	BEG1,FORMAT		
00581		00005	0186						
00586		00005	01270						
00591		00005	09778	00060	CCFMT	DSA	CONFMT	,I03-24	,ASCAN ,IF
00596		00005	02426						
00601		00005	01772						
00606		00005	08354	00070		DSA	BEGTR,BEGSEG,BEGPRO,COMM,CALLSG		
00611		00005	06782						
00616		00005	05732						
00621		00005	09022						
00626		00005	06874						
00631		00005	06274	00080		DSA	TESTDO,CONTRL,DIM,DO,CEND,ENDTR		
00636		00005	06142						
00641		00005	09054						
00646		00005	08536						
00651		00005	08950						
00656		00005	08516						
00661		00005	06934	00090		DSA	ENDSEG,ENDPRO,EXPROC,GOTO,PAUSE		
00666		00005	05836						
00671		00005	05568						
00676		00005	07190						
00681		00005	06036						
00686		00005	09570	00100		DSA	PRINT,PUNCH,RDCD,RERED,XRETURN,SEG		
00691		00005	09550						
00696		00005	09518						
00701		00005	09466						
00706		00005	05848						
00711		00005	06954						
00716		00005	06068	00110		DSA	STOP	,TYPE	,DATA
00721		00005	09498						
00726		00005	08962						
00729		00008	X2	00120	OVERL	DAC	8,OVERLAP	,	
00759		00016		00130		DC	16	,0	
00761		00081	X2	00140	CHI	DAS	81		
00760				00150		DORG	CHI-1		
00760	16	00070	00299	00160	LAST	TFM	70	,299	
00772	36	00044	00703	00170		RN	44	,703	
00784	47	15898	01900	00180		BNI	INITL	,1900	
00796	43	00816	00070	00190		BD	**20	,70	,11
00808	49	05134		00200		B7	HDWRER		
00816	25	00069	00070	00210		TD	69	,70	,11
00828	46	00840	00600	00220		BI	**12	,600	
00840	46	00852	01600	00230		BI	**12	,1600	
00852	46	00864	01700	00240		BI	**12	,1700	
00864	49	00000	00000	00250		B			
00876	15	15910	00000	00260	MOON7	TDM	INITL+12	,	
00882		00001		00270		DSC	1	,8	,*-5
00888	26	00906	07868	00280		TF	**18	,FCTEND	
00900	26	00000	07851	00290		TF		,CRAM	
00912	12	00906	00000	00300		SM	*-6	,10	,10
00924	45	00900	15910	00310		BNR	**24	,INITL+12	
00935		00001		00320		DSC	1	,8	,*
00936	15	15910	00000	00330		TDM	INITL+12	,	
00942		00001		00340		DSC	1	,8	,*-5
00948	26	08890	00906	00350		TF	EMM+6	,MOON7+30	
00960	11	07719	00001	00360		AM	DCF+5	,1	,10
00972	16	05085	00001	00370	BEGIN	TFM	SUBN,1,10		
00984	14	07856	99999	00380		CM	L	,99999	
00995		00000		00390	LSMCNT	DS		,*	
00996	47	01056	01100	00400		BNH	**60		
01008	44	01056	01044	00410		BNF	**48	,SKPPCH	
01020	26	00761	01723	00420		TF	CHI,AVOID		
01032	17	05332	00729	00430		BTM	LSTC	,OVERL	
01044	33	01044	00000	00440	SKPPCH	CF	SKPPCH	,	,0
01056	26	05258	06661	00450		TF	IFSWCH	,FX1-3	
01068	16	04586	07884	00460		TFM	PUTETB+6	,PHI+12	
01080	16	04776	08332	00470		TFM	GORE+66	,TOP	
01092	11	07733	00002	00480	BEG1	AM	IDCF+5	,2	,10
01104	15	05132	00009	00490		TDM	ROCK+22	,9	
01116	36	07728	00702	00500		RN	IDCF,702		
01128	47	01160	03600	00510		BNI	**32	,3600	
01140	34	07728	00701	00520		K	IDCF	,701	
01152	49	01104		00530		B7	BEG1+12		
01160	36	07728	00703	00540		RN	IDCF	,703	
01172	17	05110	01116	00550		BTM	ROCK	,BEG1+24	
01184	73	00755	07856	00560	ADF	TNF	CHI-6	,L	
01196	11	00908	00356	00570		AM	LAD	,CHI-405	,9
01208	26	01330	00908	00580		TF	LSTO+30	,LAD	
01220	46	01252	00200	00590		BC2	**32		
01232	39	00745	00400	00600		WACD	CHI-16		
01244	49	01300		00610		B7	LSTO		
01252	16	05237	00745	00620		TFM	LSTT-1	,CHI-16	
01264	73	00911	00932	00630		TNF	CHI+150,CHI+171		

LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS AND REMARKS
01276	26	00913	01723	00640		TF	CHI+152,AVOID
01288	27	05288	05287	00650		BT	LSTP ,LSTP-1
01300	33	00917	00000	00660	LSTO	CF	COMPA-1
01312	32	00918	00000	00670		SF	COMPA
01324	31	00908	01720	00680		TR	LAD ,AVOID-3 ,6
01336	14	00918	00586	00690		CM	COMPA ,CCFMT ,711
01348	46	00918	01200	00700		BE	COMPA , ,6
01360	14	00918	00591	00710		CM	COMPA ,CCFMT+5 ,711
01372	46	00918	01200	00720		BE	COMPA , ,6
01384	43	01416	00761	00730		BD	*+32 ,CHI
01396	31	00760	00762	00740		TR	CHI-1 ,CHI+1
01408	49	01384		00750		B7	*-24
01416	44	00918	00919	00760		BNF	COMPA ,STNSW ,6
				00770	*		STATEMENT NUMBER
01428	17	02486	01440	00780	BTM	CFXN,*+12,7	
01440	26	01462	02778	00790	TF	*+22,SMTLU1+10	
01452	44	01520	00005	00800	BNF	CFM ,5	
				00810	*		END OF DO
01464	15	05257	00007	00820	TDM	DOSWCH,7,11	
01476	26	06543	02778	00830	TF	SLOT+5 ,SMTLU1+10	
01488	26	06573	07856	00840	TF	SLOT+35 ,L	
01500	26	06567	02778	00850	TF	SLOT+29 ,SMTLU1+10	
01512	49	00918		00860	B7	COMPA , ,6	
01520	26	01537	02778	00870	CFM	TF *+17 ,SMTLU1+10	
01532	26	00004	07856	00880	TF	4 ,L	
01544	49	00918		00890	B7	COMPA , ,56	
				00900			*OUTPUT ROUTINES
01552	16	01607	07678	00910	PUT1	TFM PUT2+35,INST1	
01564	49	01584		00920	B7	PUT2+12,,5	
01572	16	01607	07698	00930	PUT2	TFM PUT2+35,INST2	
01584	31	00000	06666	00940	TR	OUT ,SUBI	
01596	31	00060	00000	00950	TR	OUT+60	
01608	26	01638	01607	00960	TF	*+30 ,*-1	
01620	11	01638	00011	00970	AM	*+18 ,11	,10
01632	16	00000	00060	00980	TFM	,FAC	
01644	43	01700	00072	00990	BD	*+56 ,OUT+72	
01656	43	01700	00073	01000	BD	*+44 ,OUT+73	
01668	16	02133	00012	01010	TFM	PUTX-1,12,10	
01680	31	00000	00060	01020	TR	OUT ,OUT+60	
01692	49	02134		01030	B7	PUTX	
01700	44	01668	00072	01040	BNF	*-32 ,OUT+72	
01712	33	00073	00000	01050	CFM	OUT+73	
01721		00002		01060	DC	2 ,30, *-2	
01723		00002		01070	DC	2 ,1, *	
01724	13	00073	00015	01080	MM	OUT+73 ,15, ,10	
01736	16	01771	08333	01090	TFM	*+35, TOP+1	
01748	22	01771	00099	01100	S	*+23,99	
01760	31	00081	00000	01110	TR	OUT+81	
01772	26	00047	00071	01120	TF	OUT+47 ,OUT+71	
01784	44	01808	02142	01130	BNF	*+24 ,PUTX+8	
01796	26	00047	00066	01140	TF	OUT+47 ,OUT+66	
01808	45	01936	00090	01150	BNR	BL2 ,OUT+90	
01820	26	00059	00089	01160	BL1	TF OUT+59 ,OUT+89	
01832	31	00000	00036	01170	TR	OUT ,OUT+36	
01844	26	00006	07856	01180	TF	OUT+6 ,L	
01856	11	00006	00035	01190	AM	OUT+6 ,35	
01868	44	01892	02142	01200	BNF	*+24 ,PUTX+8	
01880	12	00006	00005	01210	SM	OUT+6 ,5, ,10	
01892	26	00018	00006	01220	TF	OUT+18 ,OUT+6	
01904	12	00018	00001	01230	SM	OUT+18 ,1, ,10	
01916	16	02133	00036	01240	TFM	PUTX-1,36,10	
01928	49	02134		01250	B7	PUTX	
01936	44	01956	00094	01260	BL2	BNF *+20 ,OUT+94	
01948	49	01820		01270	B7	BL1	
01956	16	02133	00072	01280	TFM	PUTX-1,72,10	
01968	21	00042	07856	01290	A	OUT+42 ,L	
01980	21	00054	07856	01300	A	OUT+54 ,L	
01992	26	00006	00094	01310	TF	OUT+6 ,OUT+94	
02004	26	00011	00084	01320	TF	OUT+11 ,OUT+84	
02016	26	00035	00089	01330	TF	OUT+35 ,OUT+89	
02028	44	02064	02142	01340	BNF	*+36 ,PUTX+8	
02040	12	00042	00005	01350	SM	OUT+42 ,5, ,10	
02052	12	00054	00005	01360	SM	OUT+54 ,5, ,10	
02064	44	02134	00035	01370	BNF	PUTX ,OUT+35	
02076	12	00042	00012	01380	SM	OUT+42 ,12	
02088	12	00054	00012	01390	SM	OUT+54 ,12	
02100	31	00024	00036	01400	TR	OUT+24 ,OUT+36	
02112	16	02133	00060	01410	TFM	PUTX-1,60,10	
02124	49	02134	00000	01420	B	PUTX	
02134				01430	DORG	*-1	
02134	33	02134	00000	01440	PUTX	*	
02146	26	02167	02133	01450	CF	PUTPHI-1,PUTX-1	
02158	49	02192	00000	01460	B	PUTPHI+24	
02168				01470	DORG	*-1	
02168	32	02134	00000	01480	PUTPHI	SF PUTX	
02180	25	00012	01723	01490	TD	OUT+12 ,AVOID	
02192	12	02167	00001	01500	SM	PUTPHI-1,1,10	
02204	46	02218	01300	01510	BNL	*+14	



LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS AND REMARKS
02216	42			01520		BB2	
02218	14	02284	07842	01530		CM	PUTTD+6 ,BUFBAS+100
02230	46	02334	01300	01540		BNL	DUMP
02242	44	02278	02134	01550		BNF	PUTTD ,PUTX
02254	25	00000	07872	01560		TD	OUT ,PHI
02266	31	07872	07873	01570		TR	PHI,PHI+1
02278	25	07742	00000	01580	PUTTD	TD	BUFBAS ,OUT ,2
02290	31	00000	00001	01590		TR	OUT ,OUT+1
02302	11	07856	00001	01600		AM	L ,1 ,10
02314	11	02284	00001	01610		AM	PUTTD+6 ,1 ,10
02326	49	02192		01620		B7	PUTPHI+24
02334	14	07719	79125	01630	DUMP	CM	DCF+5 ,79125
02346	46	07630	01300	01640		BNL	PGOL
02358	15	05132	00009	01650		TDM	ROCK+22 ,9
02370	38	07714	00702	01660	WDK	WN	DCF ,702
02382	47	02414	03600	01670		BNL	**32 ,3600
02394	34	07714	00701	01680		K	DCF ,701
02406	49	02370		01690		B7	*-36
02414	36	07714	00703	01700		RN	DCF ,703
02426	16	05109	02370	01710		TFM	ROCK-1 ,WDK
02438	46	05122	01900	01720		BI	RDCK+12 ,1900
02450	11	07719	00001	01730		AM	DCF+5 ,1 ,10
02462	16	02284	07742	01740		TFM	PUTTD+6 ,BUFBAS
02474	49	02242	00000	01750	DMPBR	B	PUTTD-36
02486	16	08339	00000	01760	CFXN	TFM	SYM-4,,8
02498	16	02528	08339	01770		TFM	**30,SYM-4
02510	11	02528	00001	01780		AM	**18,1,10
02522	25	08340	00761	01790		TD	SYM-3,CHI
02534	31	00760	00762	01800		TR	CHI-1 ,CHI+1
02546	45	02566	00761	01810		BNR	**20,CHI
02558	49	02614		01820		B7	**56
02566	14	00761	00000	01830		CM	CHI,,10
02578	46	02534	01200	01840		BE	*-44
02590	14	00761	00069	01850		CM	CHI,69,10
02602	46	02510	01100	01860		BH	CFXN+24
02614	26	02637	02528	01870		TF	**23,CFXN+42
02626	26	08343	00000	01880		TF	SYM
02638	32	08340	00000	01890		SF	SYM-3
02650	16	02919	08350	01900		TFM	SMTST+11 ,COMP-3
02662	44	02688	02484	01910		BNF	**26 ,CFXN-2
02674	42			01920		BB2	
02676	16	02919	08351	01930		TFM	SMTST+11 ,COMP-2
02688	26	03123	02485	01940		TF	CSORN-1 ,CFXN-1 ,7
02700	26	02827	07862	01950	SMTLU	TF	SMCNT,MEMCAP-1
02712	26	02778	07861	01960		TF	SMTLU1+10,MEMCAP-2
02724	49	02768		01970		B7	SMTLU1
02732	12	02826	00001	01980	SMLLOOP	SM	SMCNT-1,1,10
02744	12	02778	00001	01990		SM	SMTLU1+10,1,10
02756	33	02919	00000	02000		CF	SMTST+11 , ,6
02768	26	08353	00009	02010	SMTLU1	TF	COMP,9
02780	44	02828	08349	02020		BNF	SMNOT,COMP-4
02792	26	02826	08352	02030		TF	SMCNT-1,COMP-1
02804	15	08349	00000	02040		TDM	COMP-4,0
02816	49	02732	99999	02050		B	SMLLOOP,99999,7
02827		00000		02060	SMCNT	DS	,*
02828	45	02908	08353	02070	SMNOT	BNR	SMTST,COMP
02840	45	07482	08352	02080		BNR	NOSPCE,COMP-1
02852	26	02869	02778	02090		TF	**17,SMTLU1+10
02864	26	00009	08343	02100		TF	9,SYM
02876	26	00995	02827	02110		TF	LSCMCNT ,SMCNT
02888	43	09086	05255	02120		BD	DMM,DMSWCH
02900	49	05030		02130		B7	PUTETA-12
02908	44	02732	00000	02140	SMTST	BNF	SMLLOOP
02920	24	08353	08343	02150		C	COMP,SYM
02932	47	02732	01200	02160		BNE	SMLLOOP
02944	31	08345	04609	02170		TR	COMP-8,ETAC-7
02956	24	02779	07868	02180		C	SMTLU1+11,FCTEND
02968	47	05006	01100	02190		BNH	PUTETA-36
02980	25	03002	02826	02200		TD	**22,SMCNT-1
02992	43	03016	00200	02210		BD	**24,200
03004	11	02826	00001	02220		AM	SMCNT-1,1,10
03016	16	03070	07529	02230		TFM	**54 ,USEDIFS-99
03028	26	03063	02826	02240		TF	**35,SMCNT-1
03040	32	03062	00000	02250		SF	**22
03052	11	03070	00000	02260		AM	**18,
03064	15	07529	00001	02270		TDM	USEDIFS-99 ,1
03076	15	02827	00000	02280		TDM	SMCNT,0
03088	16	00761	00046	02290		TFM	CHI,46,10
03100	16	03123	03358	02300		TFM	CSORN-1 ,SS6
03112	49	05042	00000	02310		B	PUTETA
03124	14	00761	00003	02320	CSORN	CM	CHI,3,10
03136	15	03159	00000	02330		TDM	FXORFL
03148	46	03536	01200	02340		BE	NUMBER
03159		00001		02350	FXORFL	DS	1 ,*
03160	14	00761	00070	02360		CM	CHI,70,10
03172	46	03536	01300	02370		BNL	NUMBER
03184	14	00761	00048	02380		CM	CHI,48,10
03196	46	03216	01100	02390		BH	**20

LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS AND REMARKS
03208	49	03252		02400		B7	CS
03216	14	00761	00055	02410		CM	CHI,55,10
03228	46	03252	01100	02420		BH	CS
03240	15	03159	00002	02430		TDM	FXORFL,2
03252	16	03282	08335	02440	CS	TFM	SALT+6 ,SYM-8
03264	26	08344	06663	02450		TF	SYM+1 ,FX1-1
03276	26	08335	00761	02460	SALT	TF	SYM-8,CHI
03288	31	00760	00762	02470		TR	CHI-1 ,CHI+1
03300	11	03282	00002	02480		AM	SALT+6,2,10
03312	14	00761	00040	02490		CM	CHI,40,10
03324	46	04276	01300	02500		BNL	SYMCHK
03336	33	08342	00000	02510		CF	SYM-1
03348	33	08340	00000	02520		CF	SYM-3
03360	33	08338	00000	02530		CF	SYM-5
03372	33	08336	00000	02540		CF	SYM-7
03384	16	02919	08344	02550	EXSYM	TFM	SMTST+11 ,COMP-9
03396	44	02700	03320	02560		BNF	SMTLU ,SALT+44
03408	31	03312	03428	02570		TR	SALT+36 ,SALT1
03420	49	03512		02580		B7	NUMBER-24
03428	14	00761	00040	02590	SALT1	CM	CHI ,40 ,10
03440	46	04276	01300	02600		BNL	SYMCHK
03451		00001		02610		DC	1 ,*,
03452	15	03159	00002	02620	FXNUMB	TDM	FXORFL ,2
03464	26	08333	06654	02630		TF	SYM-10 ,FL1
03476	26	03499	03762	02640		TF	**23,NUMB1+6
03488	26	08344	00000	02650		TF	SYM+1
03500	32	08334	00000	02660		SF	SYM-9
03512	32	08343	00000	02670		SF	SYM
03524	49	03384	00000	02680		B	EXSYM
03536	26	08343	06654	02690	NUMBER	TF	SYM ,FL1
03548	16	03535	03888	02700		TFM	NUMBER-1,NUMB3
03560	16	03762	08334	02710		TFM	NUMB1+6 ,SYM-9
03572	14	00761	00070	02720		CM	CHI,70,10
03584	47	03804	01200	02730		BNE	NUMB
03596	31	00760	00762	02740		TR	CHI-1,CHI+1
03608	49	03572		02750		B7	*-36
03616	14	00761	00048	02760	NUMB4	CM	CHI ,48 ,10
03628	47	03708	01200	02770		BNE	NUMB6
03640	25	03693	08334	02780		TD	SALT2+9 ,SYM-9
03652	31	03312	03684	02790		TR	SALT+36 ,SALT2
03664	31	00760	00762	02800		TR	CHI-1 ,CHI+1
03676	49	03252		02810		B7	CS
03684	12	03693	00001	02820	SALT2	SM	**9 ,1 ,810
03696	46	03276	01100	02830		BH	SALT
03707		00001		02840		DC	1 ,*,
03708	14	00761	00069	02850	NUMB6	CM	CHI ,69 ,10
03720	47	03452	01100	02860		BNH	FXNUMB
03732	14	03762	08343	02870		CM	NUMB1+6,SYM
03744	46	03768	01100	02880		BH	NUMB1+12
03756	25	00000	00761	02890	NUMB1	TD	,CHI
03768	31	00760	00762	02900		TR	CHI-1,CHI+1
03780	11	03762	00001	02910		AM	NUMB1+6,1
03792	41	08333	00001	02920	NUMB5	AM	SYM-10 ,1 ,010
03804	14	00761	00003	02930	NUMB	CM	CHI,3,10
03816	47	03616	01200	02940		BNE	NUMB4
03828	26	03990	03762	02950	FLNUMB	TF	NUMB2+6,NUMB1+6
03840	14	08333	00051	02960		CM	SYM-10 ,51 ,10
03852	46	03876	01200	02970		BE	**24
03864	16	03535	03996	02980		TFM	NUMBER-1,NUMB2+12
03876	26	03930	03535	02990		TF	VARBR+6,NUMBER-1
03888	12	08333	00001	03000	NUMB3	SM	SYM-10 ,1 ,10
03900	31	00760	00762	03010		TR	CHI-1,CHI+1
03912	14	00761	00070	03020		CM	CHI,70,10
03924	46	00000	01200	03030	VARBR	BE	
03936	47	04016	01100	03040		BNH	CMPAR
03948	16	03930	03996	03050		TFM	VARBR+6,NUMB2+12
03960	14	03990	08343	03060		CM	NUMB2+6 ,SYM
03972	46	03996	01100	03070		BH	NUMB2+12
03984	25	00000	00761	03080	NUMB2	TD	,CHI
03996	11	03990	00001	03090		AM	NUMB2+6,1
04008	49	03900		03100		B7	NUMB3+12
04016	14	00761	00045	03110	CMPAR	CM	CHI,45,10
04028	47	04208	01200	03120		BNE	PLUS+12
04040	26	04206	03802	03130		TF	PLUS+10,NUMB5+10
04052	14	00763	00020	03140		CM	CHI+2,20,10
04064	47	04100	01300	03150		BL	**36
04076	47	04112	01200	03160		BNE	**36
04088	15	04197	00002	03170		TDM	PLUS+1,2
04100	31	00760	00762	03180		TR	CHI-1,CHI+1
04112	25	04207	00763	03190		TD	PLUS+11,CHI+2
04124	31	00760	00764	03200		TR	CHI-1,CHI+3
04136	14	00761	00069	03210		CM	CHI,69,10
04148	47	04196	01100	03220		BNH	PLUS
04160	22	04206	04207	03230		S	PLUS+10,PLUS+11
04172	25	04207	00761	03240		TD	PLUS+11,CHI
04184	31	00760	00762	03250		TR	CHI-1,CHI+1
04196	11	08333	00000	03260	PLUS	AM	SYM-10
04208	26	08343	08341	03270		TF	SYM ,SYM-2

LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS AND REMARKS
04220	15	03159	00000	03280		TDM	FXORFL,0
04232	32	08343	00000	03290		SF	SYM
04244	43	03524	08336	03300		BD	NUMBER-12 ,SYM-7
04256	16	08335	00000	03310		TFM	SYM-8 , ,10
04268	49	03524		03320		B7	NUMBER-12
04276	14	03282	08345	03330	SYMCHK	CM	SALT+6,SYM+2
04288	47	03276	01200	03340		BNE	SALT
04300	49	11840		03350		B7	IFSS
04308	15	05254	00002	03360	SCRIPT	TDM	SBSWCH,2
04320	31	04599	04608	03370		TR	ETAN,ETAC-8
04332	26	04603	02827	03380		TF	ETAN+4,SMCNT
04344	11	04602	00001	03390		AM	ETAN+3,1,10
04356	26	04390	02778	03400		TF	**34,SMTLU1+10
04368	12	04390	00001	03410		SM	**22,1,10
04380	26	00004	00004	03420		TF	OUT+4 ,4
04392	17	04794	04404	03430		BTM	COLECT,**12
04404	31	00005	05264	03440		TR	OUT+5 ,SYMB5B-4
04416	22	04602	04997	03450		S	ETAN+3,NOMB
04428	14	00761	00023	03460		CM	CHI,23,10
04440	46	04618	01200	03470		BE	TWODIM
04452	44	04710	00009	03480	QUERY	BNF	GORE ,OUT+9
04464	31	00760	00762	03490		TR	CHI-1,CHI+1
04476	15	05254	00000	03500		TDM	SBSWCH
04488	25	04606	03159	03510		TD	ETAN+7,FXORFL
04500	43	05074	05256	03520		BD	PETA,FLAGSW
04512	11	04586	00038	03530		AM	PUTETB+6 ,18 ,10
04524	24	04586	04776	03540		C	PUTETB+6 ,GORE+66
04536	47	04568	01100	03550		BNH	**32
04548	26	05393	05381	03560		TF	ERFMT+10 ,ERIODLS+10
04560	49	10742		03570		B7	TRAN+24
04568	12	04586	00009	03580		SM	PUTETB+6 ,9 ,10
04580	31	00000	04599	03590	PUTETB	TR	,ETAN
04592	49	03123	00000	03600		B	CSORN-1 , ,6
04599		00000		03610	ETAN	DS	,*-4
04607		00004		03620		DS	4
04616		00009		03630	ETAC	DC	9,1
04618	17	04794	04630	03640	TWODIM	BTM	COLECT,**12
04630	31	00010	05264	03650		TR	OUT+10 ,SYMB5B-4
04642	23	00004	04997	03660		M	OUT+4 ,NOMB
04654	32	00096	00000	03670		SF	96
04666	22	04602	00099	03680		S	ETAN+3,99
04678	21	04602	00004	03690		A	ETAN+3 ,OUT+4
04690	44	04710	00014	03700		BNF	GORE ,OUT+14
04702	49	04452		03710		B7	QUERY
04710	11	05085	00001	03720	GORE	AM	SUBN,1,10
04722	26	04605	05085	03730		TF	ETAN+6,SUBN
04734	13	05085	00035	03740		MM	SUBN,15,10
04746	16	04776	08333	03750		TFM	**30,TOP+1
04758	22	04776	00099	03760		S	**18,99
04770	31	00000	00001	03770		TR	,OUT+1
04782	49	04464	00000	03780		B	QUERY+12
04794	15	04987	00003	03790	COLECT	TDM	FAGR+1,3
04806	16	05268	00000	03800		TFM	SYMB5B,0,711
04818	16	04997	00000	03810		TFM	NOMB,,8
04830	31	00760	00762	03820		TR	CHI-1,CHI+1
04842	14	00761	00069	03830		CM	CHI,69,10
04854	46	04962	01100	03840		BH	FAGR-24
04866	17	03252	00002	03850		BTM	CS,2,10
04878	26	05268	02827	03860		TF	SYMB5B,SMCNT
04890	14	00761	00040	03870		CM	CHI,10,10
04902	46	04950	01200	03880		BE	**48
04914	14	00761	00020	03890		CM	CHI,20,10
04926	47	04998	01200	03900		BNE	FAGR+12
04938	15	04987	00002	03910		TDM	FAGR+1,2
04950	31	00760	00762	03920		TR	CHI-1,CHI+1
04962	17	02486	00000	03930		BTM	CFXN,,10
04974	26	04997	08343	03940		TF	NOMB,SYM
04986	33	04997	00000	03950	FAGR	CF	NOMB
04998	49	04793		03960		B7	COLECT-1 , ,6
04997		00000		03970	NOMB	DS	,FAGR+11
05006	14	00761	00024	03980		CM	CHI,24,10
05018	46	04308	01242	03990		BE	SCRIPT,42
05030	43	05028	05254	04000		BD	*-2,SBSWCH
05042	31	04599	04608	04010	PUTETA	TR	ETAN,ETAC-8
05054	26	04603	02827	04020		TF	ETAN+4,SMCNT
05066	49	04488		04030		B7	QUERY+36
05074	32	04606	00000	04040	PETA	SF	ETAN+7
05085		00002		04050	SUBN	DC	2 ,0 ,*
05086	15	05256	00000	04060		TDM	FLAGSW,0
05098	49	04512	00000	04070		B	PUTETB-68
05110	47	05120	01942	04080	ROCK	BNI	**10 ,1942
05122	43	05166	00299	04090		BD	ROCK1 ,299
05134	17	05238	05481	04100	HDWRER	BTM	LSTT ,HERRM
05146	48	00049	09290	04110		H	49 ,CDAT ,5
05158	49	07642		04120		B7	CEXEC
05166	25	05132	05133	04130	ROCK1	TD	ROCK+22 ,ROCK+23 ,11
05178	46	05190	00600	04140		BI	**12 ,600
05190	46	05202	00700	04150		BI	**12 ,700

LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS	AND REMARKS
05202	46	05214	01600	04160		BI	**12	,1600
05214	46	05226	01700	04170		BI	**12	,1700
05226	49	05109	00000	04180		B	ROCK-1	,6
05238	46	05288	00200	04190	LSTT	BC2	LSTP	
05250	34	00000	00102	04200	BA	RCTY		
05262	34	00000	00102	04210		RCTY		
05268		00000		04220	SYMBSB	DS		,*-5
05269		00001		04230		DC	1	,',*-4
05274	39	05237	00100	04240		WATY	LSTT-1	,6
05286	42			04250		BB2		,0
05288	39	05237	00900	04260	LSTP	WA	LSTT-1,900	,6
05300	47	05324	03400	04270		BNI	**24,3400	
05312	34	00000	00971	04280		K		,971
05324	42	00000	00000	04290		BB		
05332				04300		DORG	**3	
05332	26	05237	05331	04310	LSTC	TF	LSTT-1	,LSTC-1
05344	46	05288	00200	04320		BC2	LSTP	
05356	39	05237	00400	04330		WACD	LSTT-1	,6
05368	42			04340		BB2		
05371		00006	X2	04350	ERIOIS	DAC	6	,IOLIST
05383		00016	X2	04360	ERFMT	DAC	16	,FORMAT TOO LONG'
05415		00017	X2	04370	ERRMSS	DFAC	17	, SYM TAB FULL'
05449		00016	X2	04380	DKOLM	DAC	16	,NO ROOM ON FILE'
05481		00014	X2	04390	HERRM	DAC	14	,HDWR ERR COMP'
05508	34	00044	00701	04400	CCAL	K	44	,701
05520	32	00000	00000	04410		SF		
05532	36	00044	00702	04420		RN	44	,702
05544	49	12994	00000	04430		B	12994	,6,NORM
05552				04440		DORG	**3	
05552		00001		04450	DCFEX	DC	1	,0
05566		00014		04460		DC	14	,7980412500500'
05568	17	05640	05580	04470	EXPROC	BTM	GETNO,**12	
05580	31	00000	06769	04480		TR	OUT	,EXREC
05592	26	00005	02826	04490		TF	OUT+5	,SMCNT-1
05604	21	00011	07856	04500		A	OUT+11	,L
05616	17	02134	00012	04510	GPXTD	BTM	PUTX,12,10	
05628	49	06274	00000	04520		B	TESTDO	
05640	31	00760	00762	04530	GETNO	TR	CHI-1,CHI+1	
05652	14	00761	00069	04540		CM	CHI,69,10	
05664	47	05640	01100	04550		BNH	**24	
05676	17	02486	05688	04560		BTM	CFXN,**12	
05688	26	05717	02778	04570		TF	**29	,SMTLU1+10
05700	12	05717	00001	04580		SM	**17,1,10	
05712	26	00009	08343	04590	ADM1	TF	9	,SYM
05724	49	05639		04600		B7	GETNO-1	,6
05732	17	05640	05744	04610	BEGPRO	BTM	GETNO,**12	
05744	31	00000	06728	04620		TR	OUT	,BEREC
05756	21	00005	02826	04630		A	OUT+5	,SMCNT-1
05768	17	02134	00016	04640		BTM	PUTX,16,10	
05780	26	05797	02778	04650		TF	**17,SMTLU1+10	
05792	26	00004	07856	04660		TF	4	,L
05804	21	00006	07856	04670		A	OUT+6	,L
05816	26	00010	02826	04680		TF	OUT+10	,SMCNT-1
05828	49	05616		04690		B7	GPXTD	
05836	32	05848	00000	04700	ENDPRO	SF	XETURN	
05848	17	05640	05860	04710	XETURN	BTM	GETNO,**12	
05860	31	00000	06736	04720		TR	OUT	,BEREC+8
05872	26	05894	02778	04730		TF	**22,SMTLU1+10	
05884	21	00006	00004	04740		A	OUT+6	,4
05896	17	02134	00008	04750	GPX8	BTM	PUTX,8,10	
05908	44	00972	05848	04760		BNF	BEGIN,XETURN	
05920	33	05848	00000	04770		CF	XETURN	
05932	26	05949	05717	04780		TF	**17	,ADM1+5
05944	26	00004	07856	04790		TF	4	,L
05956	49	00972	00000	04800		B	BEGIN	
05963				04810		DORG	**4	
05965		00003		04820		DC	3	,68
05966	17	03690	00030	04830	GOTORC	BTM	IXCK,30,711	
05978	17	03758	00000	04840		BTM	IXMX	,9
05990	13	00009	00004	04850		MM	9	,4,10
06002	11	00099	00067	04860		AM	99	,67
06014	26	00065	00099	04870		TF	65	,99,011
06026	49	00000		04880	GGG	B7		
06034		00002		04890		DC	2	,'
06036	16	07689	00000	04900	PAUSE	TFM	INST1+11	
06048	26	07685	06135	04910		TF	INST1+7	,CONTRL-7
06060	49	06250		04920		B7	GPT1-12	
06068	31	00760	00768	04930	STOP	TR	CHI-1	,CHI+7
06080	26	07685	00135	04940		TF	INST1+7	,CONTRL-7
06092	17	02486	00000	04950		BTM	CFXN,,10	
06104	49	06238		04960		B7	GPT1-24	
06112	47	00024	00200	04970	BR2	BNC2	24	,2
06127		00004		04980		DC	4	,'
06128	17	03594	00000	04990	ENDINS	BTM	DTRB	,0710
06141		00002		05000		DC	2,'	
06142	31	00760	00774	05010	CONTRL	TR	CHI-1	,CHI+13
06154	16	07679	00034	05020		TFM	INST1+1,34,10	
06166	17	02486	00000	05030		BTM	CFXN,,10	

LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS	AND REMARKS
06178	14	08343	00900	05040		CM	SYM	,900 ,8
06190	47	06238	01300	05050		BL	GPT1-24	
06202	31	07698	06112	05060		TR	INST2	,BR2
06214	21	07704	07856	05070		A	INST2+6	,L
06226	27	01572	01571	05080		BT	PUT2	,PUT2-1
06238	26	07689	08343	05090		TF	INST1+11	,SYM
06250	31	07690	07847	05100		TR	INST1+12	,CRAM-4
06262	27	01552	01551	05110	GPT1	BT	PUT1	,PUT1-1
06274	44	00972	05257	05120	TESTDO	BNF	BEGIN	,DOSWCH
06286	31	00000	06582	05130		TR	OUT	,DORCRD
06298	12	08890	00020	05140		SM	EMM+6,20	
06310	26	06333	08890	05150		TF	**23,EMM+6	
06322	31	00064	00000	05160		TR	OUT+64	
06334	26	06352	06333	05170		TF	**18,*-1	
06346	15	00000	00000	05180		TDM		
06357		00001		05190		DC	1,',*	
06358	11	06352	00010	05200		AM	*-6,10	
06370	26	06388	06352	05210		TF	**18,*-18	
06382	26	00000	07851	05220		TF	,CRAM	
06394	11	06388	00010	05230		AM	*-6,10	
06406	26	06424	06388	05240		TF	**18,*-18	
06418	26	00000	07851	05250		TF	,CRAM	
06430	26	00011	00083	05260	TD01	TF	OUT+11,OUT+83	
06442	26	00018	00068	05270		TF	OUT+18,OUT+68	
06454	26	00023	00083	05280		TF	OUT+23,OUT+83	
06466	26	00042	00068	05290		TF	OUT+42,OUT+68	
06478	26	00035	00078	05300		TF	OUT+35,OUT+78	
06490	26	00047	00078	05310		TF	OUT+47,OUT+78	
06502	26	00054	00073	05320		TF	OUT+54,OUT+73	
06514	17	02134	00060	05330		BTM	PUTX,60,10	
06526	41	10146	00000	05340		NOP	ID6	
06538	11	00005	00001	05350	SLOT	AM	5	,1 ,10
06550	47	06286	01300	05360		BN	TESTDO+12	
06562	16	00004	00000	05370		TFM	4	
06574	49	00972		05380		B7	BEGIN	
06582	17	07610	00000	05390	DORCRD	BTM	ADCK,,01	
06594	21	00000	00000	05400		A	,,012	
06606	17	07610	00000	05410		BTM	ADCK,,01	
06629		00012		05420		DC	12,240000000000	
06642		00013		05430		DC	13,470000001100'	
06654		00012		05440	FL1	DC	12	,510000000000
06664		00010		05450	FX1	DC	10	,-1
06666	13	00000	00000	05460	SUBI	MM	,,27	
06678	32	00096	00000	05470		SF	96	
06690	21	00099	00000	05480		A	99,,27	
06702	16	00071	00000	05490		TFM	71,,27	
06714	22	00070	00099	05500		S	70,99,27	
06726		00001		05510		DC	1,'	
06728	49	00010		05520	BEREC	B7	10,,25	
06736	49	00008		05530		B7	8,,26	
06744	26	00002	00001	05540		TF	2,1,26	
06756	17	07610	00000	05550		BTM	ADCK	
06768		00001		05560		DC	1,'	
06769		00001		05570	EXREC	DC	1,1	
06775		00006		05580		DC	6,700002	
06781		00006		05590		DC	6,00012'	
06782	17	05640	06794	05600	BEGSEG	BTM	GETNO	,*+12
06794	16	01185	00073	05610		TFM	ADF+1	,73 ,10
06806	26	06828	02778	05620		TF	**22	,SMTLU1+10
06818	26	07856	00005	05630		TF	L	,5
06830	26	06847	00517	05640		TF	**17	,ADM1+5
06842	26	00005	07719	05650		TF	5	,DCF+5
06854	22	06848	00570	05660		S	*-6	,NEXTP ,6
06866	49	00972		05670		B7	BEGIN	
06874	17	05640	06886	05680	CALLSG	BTM	GETNO	,*+12
06886	31	07678	06918	05690		TR	INST1	,CALSRC
06898	26	07688	02826	05700		TF	INST1+10	,SMCNT-1
06910	49	06262		05710		B7	GPT1	
06918	17	04840	00000	05720	CALSRC	BTM	CALSR	
06928				05730		DORG	*-1	
06933		00006		05740		DC	6	,6000'
06934	16	07124	00972	05750	ENDSEG	TFM	ESEGBR+6	,BEGIN ,SET SEG EXIT
06946	49	06966		05760		B7	SEG+12	
06954	16	07124	07126	05770	SEG	TFM	ESEGBR+6	,ESEGBR+8
06966	31	00000	06128	05780		TR	OUT,ENDINS	
06978	16	01185	00041	05790		TFM	ADF+1	,41 ,10
06990	26	00755	06605	05800		TF	CHI-6,DORCRD+23	
07002	26	00013	00403	05810		TF	OUT+13	,403
07014	17	02134	00014	05820		BTM	PUTX	,14 ,10
07026	14	07856	00000	05830		CM	L	
07037		00000		05840	LMAX	DS		,*
07038	47	07062	01300	05850		BL	**24	
07050	26	07037	07856	05860		TF	LMAX	,L
07062	14	02284	07742	05870		CM	PUTTD+6	,BUFBAS ,OUT LAST TO DISK
07074	46	07118	01200	05880		BE	ESEGBR	
07086	16	02480	07106	05890		TFM	DMPBR+6	,ESEGBR-12
07098	49	02334		05900		B7	DUMP	
07106	16	02480	02242	05910		TFM	DMPBR+6	,PUTTD-36

LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS AND REMARKS
07118	49	07126		05920	ESEGBR	B7	**8
07126	45	07146	00763	05930	BNR	**20	,CHI+2
07138	49	00972		05940	B7	BEGIN	
07146	17	05640	07158	05950	BTM	GETNO	,**12
07158	26	07175	02778	05960	TF	**17	,SMTLU1+10
07170	26	00005	07856	05970	TF	5	,L
07182	49	07126		05980	B7	ESEGBR+8	
07190	31	00760	00768	05990	GOTO	TR	CHI-1,CHI+7
07202	14	00761	00024	06000	CM	CHI,24,10	
07214	46	07270	01200	06010	BE	COMPUT	
07226	31	00000	06026	06020	TR	OUT	,GGG
07238	17	02486	07250	06030	BTM	CFXN,**12	
07250	26	00005	02826	06040	TF	OUT+5	,SMCNT-1
07262	49	05896	00000	06050	B	GPX8	
07270				06060	DORG	**3	
07270	16	07336	07943	06070	COMPUT	TFM	KK+6,PHI+71
07282	31	07869	05963	06080	TR	PHI-3,GOTORC-3	
07294	15	05254	00001	06090	TDM	SBSWCH,1	
07306	31	00760	00762	06100	TR	CHI-1,CHI+1	
07318	17	02486	07330	06110	BTM	CFXN	,**12
07330	26	00000	02826	06120	KK	TF	,SMCNT-1
07342	11	07871	00004	06130	AM	PHI -1,4,10	
07354	11	07336	00004	06140	AM	KK+6,4,10	
07366	11	07895	00001	06150	AM	PHI+23	,1,10
07378	43	07294	00760	06160	BD	COMPUT+24,CHI-1	
07390	21	07926	07856	06170	A	PHI+54	,L
07402	21	07919	07856	06180	A	PHI+47	,L
07414	31	00760	00764	06190	TR	CHI-1,CHI+3	
07426	17	03124	07438	06200	BTM	CSORN,**12	
07438	15	05254	00000	06210	TDM	SBSWCH,0	
07450	22	07883	07856	06220	S	PHI+11,L	
07462	26	07902	02827	06230	TF	PHI+30	,SMCNT
07474	49	11250		06240	B7	GPHBG	
07482	43	00972	07540	06250	NOSPC	BD	,NSPC
07494	31	00760	05414	06260	TR	CHI-1	,ERRMSS-1
07506	16	05237	00761	06270	TFM	LSTT-1	,CHI
07518	27	05238	05237	06280	BT	LSTT	,LSTT-1
07530	15	07540	00001	06290	TDM	NSPC	,1
07540		00000		06300	NSPC	DS	,*-1
07542	49	00972	00000	06310	B	BEGIN	
07549				06320	DORG	**4	
07588		00040		06330	DC	40	,0
07589		00040		06340	DSC	40	,0
07628		00000		06350	USEDFS	DS	,*
07629		00001		06360	DC	1,'	
07630	17	05238	05449	06370	PGOL	BTM	LSTT,DKOLM
07642	31	00000	05508	06380	CEXEC	TR	,CCAL
07654	49	00000	00000	06390	BRINST	B	,0
07664		00001		06400	DC	1	,',*-1
07666	41	00000	00000	06410	NOP		,,,,,
07678	26	00060	00000	06420	INST1	TF	FAC
07693		00004		06430	DC	4,'	
07697		00004		06440	DS	4	
07698	27	00892	00000	06450	INST2	BT	FAD
07713		00004		06460	DC	4,'	
07714		00001		06470	DCF	DC	1,0
07719		00005		06480	DS	5	
07722		00003		06490	DC	3	,1
07727		00005	07742	06500	DSA	BUFBAS	
07728		00001		06510	IDCF	DC	1,0
07733		00005		06520	DC	5	,59998
07736		00003		06530	DC	3	,2
07741		00005	00760	06540	DSA	CHI-1	
07742		00001		06550	BUFBAS	DS	1
07841		00099		06560	DS	99	
07850		00009		06570	DC	9,'	
07851		00001		06580	GRAM	DC	1,'
07856		00005		06590	L	DC	5,7650
07857		00001		06600	DC	1,'	
07863		00006		06610	MEMCAP	DC	6,19999'
07868		00005		06620	FCTEND	DS	5
07872		00004		06630	PHI	DS	4
08342		00470		06640	DS	470	
08343		00001		06650	SYMP	DS	1
08353		00010		06660	COMP	DS	10
08354	32	08366	00000	06670	BEGTR	SF	TRX
08366	43	08386	00781	06680	TRX	BD	**20,CHI+20
08378	49	01092		06690	B7	BEG1	
08386	31	07678	08502	06700	TR	INST1	,TRFMF
08398	25	07685	00781	06710	TD	INST1+7	,CHI+20
08410	31	00760	00788	06720	TR	CHI-1	,CHI+27
08422	17	02486	00000	06730	BTM	CFXN	,10
08434	32	08342	00000	06740	SF	SYM-1	
08446	26	07689	08343	06750	TF	INST1+11	,SYM
08458	71	07689	07688	06760	MF	INST1+11	,INST1+10
08470	32	07685	00000	06770	SF	INST1+7	
08482	27	01552	01551	06780	BT	PUT1	,PUT1-1
08494	49	01092		06790	B7	BEG1	

LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS AND REMARKS
08502	16	03381	01500	06800	TRFMF	TFM	TRFL+11 ,1500
08514		00001		06810		DC	1 ,'
08516	33	08366	00000	06820	ENDTR	CF	TRX
08528	49	01092		06830		B7	BEG1
08536	31	00760	00764	06840	DO	TR	CHI-1,CHI+3
08548	17	02486	08560	06850		BTM	CFXN,**12
08560	26	08577	02778	06860		TF	**17,SMTLU1+10
08572	12	00005	00001	06870		SM	5 ,1 ,10
08584	17	03124	08596	06880		BTM	CSORN,**12
08596	31	00000	06744	06890	DO1	TR	OUT,EXEC-25
08608	26	00006	02827	06900		TF	OUT+6 ,SMCNT
08620	26	00023	02827	06910		TF	OUT+23,SMCNT
08632	26	08919	02827	06920		TF	DSADO ,SMCNT
08644	26	08343	06664	06930		TF	SYM ,FX1
08656	15	05254	00002	06940		TDM	SBSWCH ,2
08668	16	02919	08344	06950		TFM	SMTST+11 ,COMP-9
08680	27	02700	02699	06960		BT	SMTLU ,SMTLU-1
08692	26	08934	02827	06970		TF	DSADO+15 ,SMCNT
08704	16	08758	08919	06980		TFM	KAY+6,DSADO
08716	31	00760	00762	06990	ELL	TR	CHI-1,CHI+1
08728	17	03124	08740	07000		BTM	CSORN ,**12
08740	11	08758	00005	07010		AM	**18,5
08752	26	00000	02827	07020	KAY	TF	,SMCNT
08764	14	00761	00004	07030		CM	CHI ,04 ,10
08776	46	08800	01200	07040		BE	**24
08788	45	08716	00763	07050		BNR	ELL,CHI+2
08800	26	00011	08924	07060		TF	OUT+11 ,DSADO+5
08812	17	02134	00024	07070		BTM	PUTX,24,10
08824	26	08924	07856	07080		TF	DSADO+5,L
08836	41	10006	00000	07090	DO2	NOP	IO5
08848	26	08883	08890	07100		TF	**35 ,EMM+6
08860	11	08883	00019	07110		AM	**23 ,19 ,10
08872	45	07482	00000	07120		BNR	NOSPCE
08884	31	00000	08915	07130	EMM	TR	,DSADO-4
08896	11	08890	00020	07140		AM	*-6,20
08908	49	00972	00000	07150		B	BEGIN
08915				07160		DORG	**4
08919		00005	00000	07170	DSADO	DSA	0,0,0,0
08924		00005	00000				
08929		00005	00000				
08934		00005	00000				
08935		00001		07180		DC	1 ,'
08936		00001		07190	EDCF	DC	1 ,0
08941		00005		07200		DC	5 ,79561
08944		00003		07210		DC	3 ,20
08949		00005	09022	07220		DSA	COMM
08950	15	08960	00001	07230	CEND	TDM	ENDSW ,1 ,11
08960		00000		07240	ENDSW	DS	,*-1
08962	15	05132	00009	07250	DATA	TDM	ROCK+22 ,9
08974	34	08936	00701	07260		K	EDCF ,701
08986	36	08936	00702	07270		RN	EDCF ,702
08998	36	08936	00703	07280		RN	EDCF ,703
09010	17	05110	08974	07290		BTM	ROCK ,DATA+12
09022	31	00760	00772	07300	COMM	TR	CHI-1 ,CHI+11
09034	15	05255	00004	07310		TDM	DMSWCH ,4 ,11
09046	49	03252		07320		B7	CS
09054	15	05255	00004	07330	DIM	TDM	DMSWCH,4
09066	31	00760	00778	07340		TR	CHI-1,CHI+17
09078	49	03252		07350		B7	CS
09086	26	09345	02827	07360	DMM	TF	DIMONT,SMCNT
09098	14	00761	00024	07370		CM	CHI ,24 ,10
09110	47	09346	01200	07380		BNE	DIMB+12
09122	12	02778	00001	07390		SM	SMTLU1+10,1,10
09134	26	09199	02778	07400		TF	DIMA+5,SMTLU1+10
09146	26	09339	02778	07410		TF	DIMB+5,SMTLU1+10
09158	11	09344	00001	07420		AM	DIMONT-1,1,10
09170	31	00760	00762	07430		TR	CHI-1 ,CHI+1
09182	17	02486	00000	07440		BTM	CFXN,0,10
09194	26	19994	08343	07450	DIMA	TF	19994,SYM
09206	14	00761	00004	07460		CM	CHI ,4 ,10
09218	31	00760	00762	07470		TR	CHI-1 ,CHI+1
09230	46	09422	01200	07480		BE	DIMC
09242	26	08353	08343	07490		TF	SYM+10,SYM
09254	17	02486	00000	07500		BTM	CFXN,,10
09266	23	08353	08343	07510		M	SYM+10,SYM
09278	32	00096	00000	07520		SF	96
09290	31	00760	00762	07530		TR	CHI-1 ,CHI+1
09302	22	09344	00099	07540		S	DIMONT-1,99
09314	44	09334	09344	07550		BNF	**20,DIMONT-1
09326	49	09446		07560		B7	ABORT
09334	16	19999	00000	07570	DIMB	TFM	19999,
09345		00000		07580	DIMONT	DS	,*
09346	45	09402	00763	07590		BNR	DIMD,CHI+2
09358	44	09382	05255	07600		BNF	**24 ,DMSWCH
09370	26	08847	09345	07610		TF	ENDCOM ,DIMONT
08847		00000		07620	ENDCOM	DS	,DO2+11
09382	15	05255	00000	07630		TDM	DMSWCH
09394	49	00972		07640		B7	BEGIN

LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS AND REMARKS
09402	31	00760	00762	07650	DIMD	TR	CHI-1 ,CHI+1
09414	49	03252		07660		B7	CS
09422	22	09344	08343	07670	DIMC	S	DIMONT-1,SYM
09434	44	09334	09344	07680	BNF		DIMB,DIMONT-1
09446	16	07641	05415	07690	ABORT	TFM	PGOL+11,ERRMSS
09458	49	07630		07700		B7	PGOL
09466	16	07704	03850	07710	RERED	TFM	INST2+6 ,RERD
09478	31	00760	00772	07720		TR	CHI-1 ,CHI+11
09490	49	09594		07730		B7	IO1
09498	16	07704	03886	07740	TYPE	TFM	INST2+6 ,WATYE
09510	49	09530		07750		B7	RDCD+12
09518	16	07704	03790	07760	RDCD	TFM	INST2+6,RACD
09530	31	00760	00768	07770		TR	CHI-1 ,CHI+7
09542	49	09594		07780		B7	IO1
09550	16	07704	03982	07790	PUNCH	TFM	INST2+6 ,WACD
09562	49	09582		07800		B7	IO1-12
09570	16	07704	03922	07810	PRINT	TFM	INST2+6 ,PRTR
09582	31	00760	00770	07820		TR	CHI-1 ,CHI+9
09594	16	07699	00027	07830	IO1	TFM	INST2+1,27,10
09606	17	02486	09618	07840	BTM		CFXN,**12
09618	26	09640	02826	07850	TF		**22,SMCNT-1
09630	16	07709	00006	07860	TFM		INST2+11,6
09642	31	07710	07847	07870	TR		INST2+12 ,CRAM-4
09654	27	01572	01571	07880	BT		PUT2,PUT2-1
09666	26	07704	10184	07890	TF		INST2+6,IOINST+6
09678	45	09722	00763	07900	IO2	BNR	IO2+44 ,CHI+2
09690	16	07712	00000	07910	TFM		INST2+14 ,
09702	27	01572	01571	07920	BT		PUT2 ,PUT2-1
09714	49	06274		07930	B7		TESTDD
09722	14	00761	00023	07940	CM		CHI,23,10
09734	31	00760	00762	07950	IO7	TR	CHI-1 ,CHI+1
09746	47	09678	01200	07960	BNE		IO2
09758	45	09802	00763	07970	BNR		IO3 ,CHI+2
09770	49	01092		07980	B7		BEG1
09778	31	00760	00772	07990	TR		CHI-1 ,CHI+11
09790	41	09942	00000	08000	NOP		IO4+48
09802	15	05254	00000	08010	IO3	TDM	SBSWCH
09814	14	00761	00024	08020	CM		CHI ,24 ,10
09826	46	09894	01200	08030	BE		IO4
09838	17	03124	09850	08040	BTM		CSORN,**12
09850	31	07705	04586	08050	TR		INST2+7 ,PUTETB+6 ,11
09862	27	01572	01571	08060	BT		PUT2,PUT2-1
09874	12	04586	00009	08070	SM		PUTETB+6,9
09886	49	09678		08080	B7		IO2
09894	15	08837	00009	08090	IO4	TDM	DO2+1 ,9
09906	15	09791	00009	08100	TDM		IO3-11 ,9
09918	16	04586	07893	08110	TFM		PUTETB+6 ,PHI+21
09930	31	00760	00762	08120	TR		CHI-1 ,CHI+1
09942	45	09962	00763	08130	BNR		**20 ,CHI+2
09954	49	01092		08140	B7		BEG1
09962	17	03124	09974	08150	BTM		CSORN ,**12
09974	14	00761	00033	08160	CM		CHI ,33 ,10
09986	46	08596	01200	08170	BE		DO1
09998	49	09930		08180	B7		IO4+36
10006	15	08837	00001	08190	IO5	TDM	DO2+1 ,1
10018	15	09791	00001	08200	TDM		IO3-11 ,1
10030	16	10053	07902	08210	TFM		**23 ,PHI+30
10042	31	07705	00000	08220	TR		INST2+7
10054	27	01572	01571	08230	BT		PUT2 ,PUT2-1
10066	11	10053	00009	08240	AM		IO5+47 ,9 ,10
10078	24	10053	04586	08250	C		IO5+47 ,PUTETB+6
10090	47	10042	01300	08260	BL		IO5+36
10102	31	00000	06582	08270	TR		OUT ,DORCRD
10114	31	00064	08915	08280	TR		OUT+64,DSADD-4
10126	15	06527	00009	08290	TDM		SLOT-11 ,9
10138	49	06430		08300	B7		TDO1
10146	15	06527	00001	08310	IO6	TDM	SLOT-11 ,1
10158	16	05085	00001	08320	TFM		SUBN ,1 ,10
10170	49	09734		08330	B7		IO7
10178	47	04122	00000	08340	IOINST	BTM	LOOK , ,0
10186				08350	DORG		**3
10186	31	00760	00770	08360	FORMAT	TR	CHI-1 ,CHI+9
10198	26	10215	02778	08370	TF		**17,SMTLUL+10
10210	26	00005	07856	08380	TF		5 ,L
10222	26	10239	10215	08390	TF		**17 ,*-7
10234	11	00005	00006	08400	AM		5 ,6 ,10
10246	16	11041	00000	08410	TFM		RPPR1+11 , ,10
10258	16	10840	07878	08420	TFM		TRANS+18,PHI+6
10270	31	07869	11761	08430	TR		PHI-3,FMTSP-10
10282	31	00760	00762	08440	FSCAN	TR	CHI-1,CHI+1
10294	45	10314	00763	08450	BNR		**20 ,CHI+2
10306	49	01092		08460	B7		BEG1
10314	14	00761	00023	08470	CM		CHI,23,10
10326	46	10282	01200	08480	BE		FSCAN
10338	14	00761	00000	08490	CM		CHI,,10
10350	46	10282	01200	08500	BE		FSCAN
10362	14	00761	00024	08510	CM		CHI,24,10
10374	47	10418	01200	08520	BNE		SWLP



LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS AND REMARKS
10386	16	10845	04784	08530		TFM	TRANS+23,LTPAR
10398	16	10864	±0282	08540		TFM	TRNSBR+6,FSCAN
10410	49	10718		08550		B7	TRAN
10418	47	10894	01100	08560	SWLP	BNH	PUNCT
10430	14	00761	00069	08570		CM	CHI,69,10
10442	46	11378	01100	08580		BH	HOLL
10454	25	10841	00761	08590		TD	TRANS+19,CHI
10466	16	10669	00000	08600		TFM	EFIND,,9
10478	14	00761	00041	08610		CM	CHI ,41 ,10
10490	46	10538	01200	08620		BE	TIER
10502	14	00761	00049	08630		CM	CHI,49,10
10514	46	10538	01200	08640		BE	TIER
10526	16	10669	00000	08650		TFM	EFIND,,10
10538	31	00760	00762	08660	TIER	TR	CHI-1,CHI+1
10550	17	02486	00000	08670		BTM	CFXN,00,10
10562	27	10868	10867	08680		BT	WIDTST ,WIDTST-1
10574	26	11311	08343	08690		TF	RPFMT+21 ,SYM
10586	16	10845	00000	08700		TFM	TRANS+23,00,10
10598	44	10658	10668	08710		BNF	PRETRN,EFIND-1
10610	31	00760	00762	08720		TR	CHI-1,CHI+1
10622	17	02486	00000	08730		BTM	CFXN,,10
10634	32	08342	00000	08740		SF	SYM-1
10646	26	10845	08343	08750		TF	TRANS+23,SYM
10658	33	10842	00000	08760	PRETRN	CF	TRANS+20
10669		00002		08770	EFIND	DS	2,*
10670	33	10844	00000	08780		CF	TRANS+22
10682	32	10845	00000	08790		SF	TRANS+23
10694	32	10841	00000	08800		SF	TRANS+19
10706	16	10864	±0294	08810		TFM	TRNSBR+6,FSCAN+12
10718	14	10840	08337	08820	TRAN	CM	TRANS+18 ,PHI+465
10730	47	10822	01100	08830		BNH	TRANS
10742	31	00730	05382	08840		TR	CHI-31 ,ERFMT-1
10754	36	07728	00700	08850		RN	IDCF ,700
10766	31	01330	01722	08860		TR	LSTD+30 ,AVOID-1 ,6
10778	17	05332	00731	08870		BTM	LSTC ,CHI-30
10790	46	07642	00200	08880		BC2	CEXEC
10802	27	05250	05249	08890		BT	BA,BA-1
10814	49	07642		08900		B7	CEXEC
10822	11	10840	00005	08910	TRANS	AM	**18,5,10
10834	16	07878	00000	08920		TFM	PHI+6
10846	21	07871	10833	08930		A	PHI-1,TRANS+11
10858	49	00000	00000	08940	TRNSBR	B	
10868				08950		DORG	*-1
10868	32	08342	00000	08960	WIDTST	SF	SYM-1
10880	26	10843	08343	08970		TF	TRANS+21,SYM
10892	42			08980		BB2	
10894	14	00761	04221	08990	PUNCT	CM	CHI ,4221 ,10
10906	47	10950	01200	09000		BNE	**44
10918	16	10845	04370	09010		TFM	TRANS+23,SLASH
10930	16	10864	±0282	09020		TFM	TRNSBR+6,FSCAN
10942	49	10718		09030		B7	TRAN
10950	41	00000	00000	09040		NOP	
10962	12	11041	00001	09050		SM	RPPR1+11 ,1 ,10
10974	47	11122	01100	09060		BNH	RPR
10986	16	10845	04226	09070		TFM	TRANS+23 ,RSST
10998	16	10864	±1018	09080		TFM	TRNSBR+6 ,RPPR1-12
11010	49	10718		09090		B7	TRAN
11018	11	10840	00002	09100		AM	TRANS+18 ,2 ,10
11030	16	10840	00000	09110	RPPR1	TFM	TRANS+18 , ,610
11042	11	07871	00002	09120		AM	PHI-1 ,2 ,10
11054	12	11089	07872	09130		SM	RPPR2+11 ,PHI
11066	21	11089	07856	09140		A	RPPR2+11 ,L
11078	16	10845	00000	09150	RPPR2	TFM	TRANS+23 ,
11090	16	10864	±0282	09160		TFM	TRNSBR+6 ,FSCAN
11102	16	11041	00000	09170		TFM	RPPR1+11 , ,10
11114	49	10718		09180		B7	TRAN
11122	16	10845	04728	09190	RPR	TFM	TRANS+23 ,RTPAR
11134	16	10864	±1154	09200		TFM	TRNSBR+6,FINISH
11146	49	10718		09210		B7	TRAN
11154	16	11184	07872	09220	FINISH	TFM	**30,PHI
11166	21	11184	07871	09230		A	**18,PHI-1
11178	31	00000	07659	09240		TR	,BRINST+5
11190	25	11213	07871	09250		TD	**23,PHI-1
11202	43	11226	00210	09260		BD	**24,210
11214	11	07871	00001	09270		AM	PHI-1,1,10
11226	26	07878	07856	09280		TF	PHI+6,L
11238	21	07878	07871	09290		A	PHI+6,PHI-1
11250	27	02168	07871	09300	GPHBG	BT	PUTPHI ,PHI-1
11262	49	00972		09310		B7	BEGIN
11270	31	00760	00772	09320	CONFMT	TR	CHI-1 ,CHI+11
11282	49	10294		09330		B7	FSCAN+12 , ,5
11290	16	10717	±1334	09340	RPFMT	TFM	TRAN-1 ,RPT1
11302	32	08342	00000	09350		SF	SYM-1
11314	26	11313	08343	09360		TF	*-1 ,SYM
11326	49	10294		09370		B7	FSCAN+12
11334	16	10717	±0294	09380	RPT1	TFM	TRAN-1 ,FSCAN+12
11346	12	11313	00001	09390		SM	RPFMT+23 ,1 ,10
11358	46	10718	01100	09400		BH	TRAN

LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS AND REMARKS
11370	49	10294		09410		B7	FSCAN+12
11378	17	02486	00000	09420	HOLL	BTM	CFXN,,10
11390	14	00761	00067	09430		CM	CHI,67,10
11402	46	11574	01200	09440		BE	HOL1
11414	14	00761	00048	09450		CM	CHI,48,10
11426	46	11506	01200	09460		BE	HOL2
11438	14	00761	00024	09470		CM	CHI ,24 ,10
11450	47	11290	01200	09480		BNE	RPFMT
11462	32	08342	00000	09490		SF	SYM-1
11474	26	11041	08343	09500		TF	RPPR1+11 ,SYM
11486	26	11089	10840	09510		TF	RPPR2+11 ,TRANS+18
11498	49	10282		09520		B7	FSCAN
11506	27	10868	10867	09530	HOL2	BT	WIDTST ,WIDTST-1
11518	16	10845	05172	09540		TFM	TRANS+23,HTYPE
11530	16	11665	±1686	09550		TFM	HOLL1+11,HCONT2
11542	31	00760	00762	09560		TR	CHI-1,CHI+1
11554	16	10864	±1618	09570		TFM	TRNSBR+6,HCONT1
11566	49	10718	00000	09580		B	TRAN
11574				09590		DORG	*-3
11574	27	10868	10867	09600	HOL1	BT	WIDTST ,WIDTST-1
11586	16	10845	05136	09610		TFM	TRANS+23 ,XTYPE
11598	16	11665	±1742	09620		TFM	HOLL1+11 ,HCONT4+24
11610	49	11554		09630		B7	*-56
11618	16	10833	00002	09640	HCONT1	TFM	TRANS+11,2,10
11630	32	08342	00000	09650		SF	SYM-1
11642	26	10845	08343	09660		TF	TRANS+23,SYM
11654	16	10864	±1686	09670	HOLL1	TFM	TRNSBR+6,HCONT2
11666	49	10718		09680		B7	TRAN
11674	31	00760	00762	09690	HCONT3	TR	CHI-1,CHI+1
11686	16	10864	±1718	09700	HCONT2	TFM	TRNSBR+6,HCONT4
11698	26	10845	00761	09710		TF	TRANS+23,CHI
11710	49	10718		09720		B7	TRAN
11718	12	08343	00001	09730	HCONT4	SM	SYM,1,10
11730	46	11674	01100	09740		BP	HCONT3
11742	16	10833	00005	09750		TFM	TRANS+11,5,10
11754	49	10282	00000	09760		B	FSCAN
11761				09770		DORG	*-4
11771		00011		09780	FMTSP	DC	11,74900000'
11772	31	00760	00766	09790	IF	TR	CHI-1,CHI+5
11784	16	08092	00049	09800		TFM	CHI+220,49,10
11796	16	12435	00049	09810		TFM	OMM1,49,10
11808	15	05253	00001	09820		TDM	FSTSW,1
11820	32	05258	00000	09830		SF	IFSWCH
11832	49	12438		09840		B7	ASCAN+12
11840	31	00000	12388	09850	IFSS	TR	OUT ,IFSSRC
11852	31	00760	00772	09860		TR	CHI-1 ,CHI+11
11864	17	02486	00000	09870		BTM	CFXN , ,10
11876	32	08342	00000	09880		SF	SYM-1
11888	26	00009	08343	09890		TF	OUT+9 ,SYM
11900	16	12191	00024	09900		TFM	THAT+11 ,24 ,10
11912	49	12060		09910		B7	ELEVEN-12
11920	26	11943	04586	09920	TEN	TF	*+23,PUTETB+6
11932	31	07685	00000	09930		TR	INST1+7
11944	26	07684	15822	09940		TF	INST1+6 ,TFFAC-4
11956	31	07698	15800	09950		TR	INST2,RVINST
11968	44	11988	07691	09960		BNF	*+20,INST1+13
11980	49	12000		09970		B7	*+20
11988	27	01552	01551	09980		BT	PUT1,PUT1-1
12000	44	12024	07692	09990		BNF	*+24,INST1+14
12012	27	01572	01571	10000		BT	PUT2,PUT2-1
12024	31	00000	12412	10010		TR	OUT ,IFRC+36
12036	17	02134	000±2	10020		BTM	PUTX ,12 ,10
12048	31	00000	12376	10030		TR	OUT ,12FRC
12060	16	12126	00005	10040		TFM	KKK+6 ,OUT+5
12072	31	00760	00762	10050	ELEVEN	TR	CHI-1 ,CHI+1 ,2
12084	14	00761	00069	10060		CM	CHI ,69 ,10
12096	47	12212	01100	10070		BNH	NEXTIF
12108	17	02486	±1210	10080		BTM	CFXN ,*+12
12120	26	00000	02826	10090	KKK	TF	,SMCNT-1
12132	11	12126	000±2	10100		AM	KKK+6 ,12 ,10
12144	45	12072	00763	10110		BNR	ELEVEN ,CHI+2
12156	44	12180	00001	10120		BNF	THAT ,OUT+1
12168	12	12191	00004	10130		SM	*+23 ,4 ,10
12180	17	02134	00036	10140	THAT	BTM	PUTX ,36 ,10
12192	16	12191	00036	10150		TFM	*-1 ,36 ,10
12204	49	00972		10160		B7	BEGIN
12212	31	00760	00762	10170	NEXTIF	TR	CHI-1 ,CHI+1 , , ROUTINE FOR CONTINUES
12224	12	12191	000±2	10180		SM	THAT+11 ,12 ,10
12236	44	12280	00008	10190		BNF	ARIIF ,OUT+8
12248	43	12180	12125	10200		BD	THAT ,KKK+5 , , SENSE SWITCH C CHECK
12260	15	00001	00007	10210		TDM	OUT+1 ,7
12272	49	12144		10220		B7	THAT-36
12280	15	00025	00006	10230	ARIIF	TDM	OUT+25 ,6 ,11 , ARITH C ROUTINE
12292	44	12324	00002	10240		BNF	M1 ,OUT+2
12304	44	12344	00014	10250		BNF	M01 ,OUT+14
12316	49	12180		10260		B7	THAT
12324	31	00000	00012	10270	M1	TR	OUT ,OUT+12
12336	49	12356		10280		B7	*+20

LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS AND REMARKS
12344	31	00012	00024	10290	M01	TR	OUT+12 ,OUT+24
12356	33	00001	00000	10300		CF	OUT+1
12368	49	12144		10310		B7	THAT-36
12376	47	00000	01300	10320	IFRC	BL	, ,1
12388	46	00000	01200	10330	IFSSRC	BE	, ,1
12400	49	00000	01100	10340		B	,01100 ,1
12412	17	07610	00060	10350		BTM	ADCK,FAC
12424		00001		10360		DC	1 ,'
12426	16	12435	00000	10370	ASCAN	TFM	OMM1,00,10
12435		00002		10380	OMM1	DC	2 ,0 ,*-2
12438	16	14707	00000	10390		TFM	ACC,,9
12450	16	13484	08092	10400		TFM	POTOMH+6,PHI+220
12462	16	04586	07884	10410		TFM	POTETB+6,PHI+12
12474	45	12718	00763	10420	S	BNR	SSA,CHI+2
12486	14	12435	00033	10430		CM	OMM1,33,10
12498	46	12542	01200	10440		BE	SSB
12510	14	12435	00024	10450		CM	OMM1,-24,10
12522	46	12558	01200	10460		BE	**36
12534	49	13238		10470		B7	SS
12542	17	13738	00000	10480	SSB	BTM	CODE,,10
12554	44	15410	05252	10490		BNF	FOF ,EQSW
12566	43	12634	07692	10500		BD	**68 ,INST1+14
12578	43	12614	07712	10510		BD	**36 ,INST2+14
12590	44	12654	07690	10520	EQ2	BNF	EQ3 ,INST1+12
12602	44	12686	07710	10530		BNF	EQ4 ,INST2+12
12614	33	05252	00000	10540		CF	EQSW
12626	49	15410		10550		B7	FOF
12634	43	12590	07712	10560		BD	EQ2 ,INST2+14
12646	49	12614		10570		B7	*-32
12654	31	07680	07685	10580	EQ3	TR	INST1+2 ,INST1+7
12666	31	07685	07705	10590		TR	INST1+7 ,INST2+7
12678	49	15634		10600		B7	ZOT+12
12686	26	07684	07689	10610	EQ4	TF	INST1+6 ,INST1+11
12698	26	07689	07709	10620		TF	INST1+11 ,INST2+11
12710	49	15622		10630		B7	ZOT
12718	14	00761	00040	10640	SSA	CM	CHI,40,10
12730	47	12766	01100	10650		BNH	**36
12742	15	05253	00000	10660		TDM	FSTSW
12754	17	03124	12474	10670		BTM	CSORN,S
12766	14	00761	00033	10680		CM	CHI ,33 ,10
12778	46	13358	01200	10690		BE	SS6
12790	33	05252	00000	10700		CF	EQSW
12802	14	00761	00010	10710		CM	CHI,10,10
12814	46	12990	01200	10720		BE	SS001
12826	14	00761	00020	10730		CM	CHI,20,10
12838	46	12978	01200	10740		BE	SS4
12850	15	05253	00000	10750		TDM	FSTSW
12862	14	00761	00004	10760		CM	CHI,4,10
12874	46	13142	01200	10770		BE	SSC
12886	14	00761	00021	10780		CM	CHI,21,10
12898	46	13286	01200	10790		BE	SS1
12910	14	00761	00014	10800		CM	CHI,14,10
12922	46	13054	01200	10810		BE	SS3
12934	14	00761	00024	10820		CM	CHI,24,10
12946	46	13110	01200	10830		BE	SS5
12958	14	00761	00003	10840		CM	CHI,3,10
12970	49	12742		10850		B7	SSA+24
12978	15	05256	00005	10860	SS4	TDM	FLAGSW,5
12990	43	13022	05253	10870	SS001	BD	**32 ,FSTSW
13002	15	05256	00000	10880		TDM	FLAGSW,0
13014	49	13238		10890		B7	SS
13022	15	05253	00000	10900		TDM	FSTSW,0
13034	31	00760	00762	10910		TR	CHI-1,CHI+1
13046	49	12474		10920		B7	S
13054	14	00763	00014	10930	SS3	CM	CHI+2,14,10
13066	47	13286	01200	10940		BNE	SS1
13078	31	00760	00762	10950		TR	CHI-1 ,CHI+1
13090	15	05256	00005	10960		TDM	FLAGSW,5
13102	49	13334		10970		B7	SS2
13110	15	05253	00001	10980	SS5	TDM	FSTSW,1
13122	11	14707	00001	10990		AM	ACC,1,10
13134	49	13454		11000		B7	POTOMG
13142	14	12435	00024	11010	SSC	CM	OMM1,24,10
13154	46	13690	01200	11020		BE	SSCA
13166	14	12435	00024	11030		CM	OMM1,-24,10
13178	46	13622	01200	11040		BE	SSCB
13190	14	12435	00046	11050		CM	OMM1,46,10
13202	46	15058	01200	11060		BE	CFCT
13214	14	12435	00049	11070		CM	OMM1,49,10
13226	46	11920	01200	11080		BE	TEN
13238	14	12435	00010	11090	SS	CM	OMM1,10,10
13250	46	13894	01200	11100		BE	CADD
13262	14	12435	00020	11110		CM	OMM1,20,10
13274	46	14466	01200	11120		BE	CSUB
13286	14	12435	00021	11130	SS1	CM	OMM1,21,10
13298	46	14562	01200	11140		BE	CDIV
13310	14	12435	00014	11150		CM	OMM1,14,10
13322	46	14542	01200	11160		BE	CMULT

LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS AND REMARKS
13334	14	12435	000±4	11170	SS2	CM	OMM1,-14,10
13346	46	14686	01200	11180		BE	CEXP
13358	15	05253	00001	11190	SS6	TDM	FSTSW,1
13370	16	07679	00026	11200	TFSAVE	TFM	INST1+1 ,26 ,10
13382	26	13417	04586	11210		TF	**35,PUTETB+6
13394	12	13417	00089	11220		SM	**23,9,10
13406	31	07680	00000	11230		TR	INST1+2
13418	15	07690	00000	11240		TDM	INST1+12,0
13430	44	13454	07686	11250		BNF	PUTOMG,INST1+8
13442	44	13554	07688	11260		BNF	TFSV1 ,INST1+10
13454	43	13522	05256	11270	PUTOMG	BD	**68,FLAGSW
13466	11	13484	00002	11280		AM	**18,2
13478	26	00000	00761	11290	PUTOMH	TF	,CHI
13490	26	12435	00761	11300		TF	OMM1,CHI
13502	31	00760	00762	11310		TR	CHI-1,CHI+1
13514	49	12474		11320		B7	S
13522	32	00761	00000	11330		SF	CHI
13534	15	05256	00000	11340		TDM	FLAGSW
13546	49	13466		11350		B7	PUTOMG+12
13554	16	07689	00060	11360	TFSV1	TFM	INST1+11 ,FAC
13566	27	01552	01551	11370		BT	PUT1,PUT1-1
13578	26	13608	13417	11380		TF	**30,TFSAVE+47
13590	11	13608	00088	11390		AM	**18,8,10
13602	32	00000	00000	11400		SF	
13614	49	13122		11410		B7	SS5+12
13622	31	07685	04586	11420	SSCB	TR	INST1+7 ,PUTETB+6 ,11
13634	44	13666	07692	11430		BNF	**32,INST1+14
13646	33	07692	00000	11440		CF	INST1+14
13658	49	13678		11450		B7	**20
13666	32	07692	00000	11460		SF	INST1+14
13678	31	04586	07685	11470		TR	PUTETB+6 ,INST1+7 ,6
13690	31	00760	00762	11480	SSCA	TR	CHI-1,CHI+1
13702	12	13484	00082	11490		SM	PUTOMH+6,2,10
13714	26	12435	13484	11500		TF	OMM1 ,PUTOMH+6 ,11
13726	49	12474	00000	11510		B	S
13738	26	07684	15822	11520	CODE	TF	INST1+6 ,TFFAC-4
13750	16	07699	00027	11530		TFM	INST2+1,27,10
13762	26	13809	04586	11540		TF	CODA+11,PUTETB+6
13774	31	07705	04586	11550		TR	INST2+7 ,PUTETB+6 ,11
13786	12	13809	00089	11560		SM	**23,9,10
13798	31	07685	00000	11570	CODA	TR	INST1+7
13810	43	13836	07712	11580		BD	**26,INST2+14
13822	43	15354	07692	11590		BD	FIX1 ,INST1+14
13834	42			11600		BB2	
13836	43	13880	07692	11610		BD	CODD,INST1+14
13848	14	12435	000±4	11620		CM	OMM1,-14,10
13860	46	15726	01200	11630		BE	FXEXP
13872	49	15374		11640		B7	FLOAT1
13880	11	14001	00040	11650	CODD	AM	OP ,40 ,10
13892	42			11660		BB2	
13894	16	14001	±5831	11670	CADD	TFM	OP,AFAD
13906	17	13738	00080	11680		BTM	CODE,,10
13918	44	14366	07692	11690		BNF	CADDH,INST1+14
13930	44	14422	07712	11700		BNF	CADDK,INST2+14
13942	15	05256	00003	11710		TDM	FLAGSW,3
13954	44	14326	07711	11720		BNF	CADDB,INST2+13
13966	31	07705	07685	11730	CADDI	TR	INST2+7,INST1+7
13978	16	14003	000±4	11740	CADDK	TFM	COMMON+1,41,1011
13990	26	07704	00000	11750	C	TF	INST2+6
14001		00005		11760	OP	DS	5 ,*
14002	41	01552	01551	11770	COMMON	NOP	PUT1,PUT1-1
14014	44	14038	14003	11780		BNF	**24,COMMON+1
14026	27	01572	01571	11790		BT	PUT2,PUT2-1
14038	12	04586	000±8	11800		SM	PUTETB+6,18,10
14050	26	08343	14707	11810		TF	SYM,ACC
14062	16	02485	±4082	11820		TFM	CFXN-1 ,**20
14074	49	02676		11830		B7	SMTLU-24
14082	26	14112	04586	11840		TF	**30,PUTETB+6
14094	11	14112	00086	11850		AM	**18,6,10
14106	32	00000	00000	11860		SF	
14118	12	13484	00082	11870		SM	PUTOMH+6,2,10
14130	26	14153	13484	11880		TF	**23,PUTOMH+6
14142	26	12435	00000	11890		TF	OMM1
14154	14	00761	00084	11900		CM	CHI,4,10
14166	46	13142	01200	11910		BE	SSC
14178	45	14198	00763	11920		BNR	**20,CHI+2
14190	49	12486		11930		B7	S+12
14198	14	00763	000±4	11940		CM	CHI+2,14,10
14210	46	13078	01200	11950		BE	SS3+24
14222	14	12435	00024	11960		CM	OMM1,24,10
14234	46	13454	01200	11970		BE	PUTOMG
14246	14	12435	00024	11980		CM	OMM1,-24,10
14258	46	13454	01200	11990		BE	PUTOMG
14270	14	12435	00033	12000		CM	OMM1,33,10
14282	46	13454	01200	12010		BE	PUTOMG
14294	49	12474		12020		B7	S
14302	15	05256	00004	12030	CADDL	TDM	FLAGSW,4
14314	11	14001	00085	12040		AM	OP,5,10

LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS AND REMARKS
14326	44	14346	07691	12050	CADDB	BNF	CADD0,INST1+13
14338	49	13978		12060		B7	CADDC
14346	16	14003	00027	12070	CADD0	TFM	COMMON+1,27,1011
14358	49	13990		12080		B7	C
14366	44	14446	07712	12090	CADDH	BNF	CADDJ+12,INST2+14
14378	44	14434	07711	12100		BNF	CADDJ,INST2+13
14390	15	05256	00004	12110		TDM	FLAGSW,4
14402	11	14001	00085	12120		AM	OP,5,10
14414	49	13966		12130		B7	CADDI
14422	44	14302	07711	12140	CADDK	BNF	CADDL,INST2+13
14434	11	14001	00085	12150	CADDJ	AM	OP,5,10
14446	15	05256	00000	12160		TDM	FLAGSW,
14458	49	13954		12170		B7	CADDI-12
14466	16	14001	±5831	12180	CSUB	TFM	OP,AFAD
14478	17	13738	00080	12190		BTM	CODE,,10
14490	44	14522	07712	12200		BNF	CSUBA,INST2+14
14502	33	07712	00000	12210		CF	INST2+14
14514	49	13918		12220		B7	CADD+24
14522	32	07712	00000	12230	CSUBA	SF	INST2+14
14534	49	13918		12240		B7	CADD+24
14542	16	14001	±5841	12250	CMULT	TFM	OP,AFMP
14554	49	14574		12260		B7	CDIV+12
14562	16	14001	±5851	12270	CDIV	TFM	OP,AFDV
14574	17	13738	00000	12280		BTM	CODE
14586	44	14654	07692	12290		BNF	CMDA,INST1+14
14598	44	14666	07712	12300		BNF	CMDA+12,INST2+14
14610	15	05256	00000	12310		TDM	FLAGSW
14622	44	14326	07711	12320	CMDB	BNF	CADD0,INST2+13
14634	11	14001	00085	12330		AM	OP,5,10
14646	49	13966		12340		B7	CADDI
14654	44	14610	07712	12350	CMDA	BNF	CMDB-12,INST2+14
14666	15	05256	00005	12360		TDM	FLAGSW,5
14678	49	14622		12370		B7	CMDB
14686	16	14001	±5861	12380	CEXP	TFM	OP,AFXP
14698	17	13738	00080	12390		BTM	CODE,,10
14707		00003		12400	ACC	DS	3 ,*-2
14710	15	07624	00001	12410		TDM	USED0FS-4 ,1
14722	15	07622	00001	12420		TDM	USED0FS-6 ,1
14734	44	14758	07712	12430		BNF	**+24,INST2+14
14746	11	14001	00085	12440		AM	OP,5,10
14758	44	14886	07711	12450		BNF	CEXPA,INST2+13
14770	31	15041	07685	12460		TR	TEMP,INST1+7
14782	16	07692	00000	12470		TFM	INST1+14,,8
14794	26	07684	07709	12480		TF	INST1+6 ,INST2+11
14806	16	07689	00060	12490		TFM	INST1+11 ,FAC
14818	27	01552	01551	12500		BT	PUT1,PUT1-1
14830	31	07685	15041	12510		TR	INST1+7,TEMP
14842	26	07684	15822	12520		TF	INST1+6 ,TFFAC-4
14854	44	14962	07691	12530		BNF	CEXPB,INST1+13
14866	27	01552	01551	12540		BT	PUT1,PUT1-1
14878	49	14898		12550		B7	CEXPA+12
14886	44	14962	07691	12560	CEXPA	BNF	CEXPB,INST1+13
14898	44	14942	07692	12570		BNF	CEXPC,INST1+14
14910	26	07689	15811	12580		TF	INST1+11,RVINST+11
14922	16	14003	00027	12590	CEXP0	TFM	COMMON+1,27,1011
14934	49	13990		12600		B7	C
14942	16	14003	0004±	12610	CEXP0	TFM	COMMON+1,41,1011
14954	49	13990		12620		B7	C
14962	44	14922	07692	12630	CEXPB	BNF	CEXP0,INST1+14
14974	31	15041	07698	12640		TR	TEMP,INST2
14986	26	07710	15812	12650		TF	INST2+12,RVINST+12
14998	27	01552	01551	12660		BT	PUT1,PUT1-1
15010	27	01572	01571	12670		BT	PUT2,PUT2-1
15022	31	07698	15041	12680		TR	INST2,TEMP
15034	49	14942		12690		B7	CEXP0
15041		00001		12700	TEMP	DS	1
15056		00015		12710		DS	15
15058	17	13738	00080	12720	CFCT	BTM	CODE,,10
15070	26	07704	07689	12730		TF	INST2+6,INST1+11
15082	31	00760	00762	12740		TR	CHI-1 ,CHI+1
15094	44	15186	07712	12750		BNF	CFCTA,INST2+14
15106	44	15242	07711	12760		BNF	CFCTB,INST2+13
15118	44	15142	07692	12770		BNF	**+24,INST1+14
15130	15	05256	00002	12780		TDM	FLAGSW,2
15142	16	14003	00027	12790		TFM	COMMON+1,27,1011
15154	31	07678	15800	12800		TR	INST1,RVINST
15166	31	07705	15818	12810		TR	INST2+7 ,TFFAC-8
15178	49	14002		12820		B7	COMMON
15186	44	15310	07711	12830	CFCTA	BNF	CFCTC,INST2+13
15198	16	14003	0004±	12840		TFM	COMMON+1,41,1011
15210	44	15166	07692	12850		BNF	CFCTA-20,INST1+14
15222	15	05256	00002	12860		TDM	FLAGSW,2
15234	49	15166		12870		B7	CFCTA-20
15242	44	15266	07692	12880	CFCTB	BNF	**+24,INST1+14
15254	15	05256	00002	12890		TDM	FLAGSW,2
15266	26	07684	15822	12900		TF	INST1+6 ,TFFAC-4
15278	31	07685	07705	12910		TR	INST1+7,INST2+7
15290	27	01552	01551	12920		BT	PUT1,PUT1-1

LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS AND REMARKS
15302	49	15142		12930		B7	CFCT+84
15310	16	14003	0004+	12940	CFCTC	TFM	COMMON+1,41,1011
15322	44	14002	07692	12950		BNF	COMMON,INST1+14
15334	15	05256	00002	12960		TDM	FLAGSW,2
15346	49	14002		12970		B7	COMMON
15354	16	15445	±5768	12980	FIX1	TFM	TWAGS+11 ,FIX2
15366	49	15386		12990		B7	**20
15374	16	15445	±5784	13000	FLOAT1	TFM	TWAGS+11 ,FLOAT2
15386	16	15479	00027	13010		TFM	SSBCD+13,27,10
15398	33	05252	00000	13020		CF	EQSW
15410	31	15041	07685	13030	FOF	TR	TEMP,INST1+7
15422	31	07685	07705	13040		TR	INST1+7,INST2+7
15434	31	07698	15768	13050	TWAGS	TR	INST2,FIX2
15446	44	15466	07691	13060		BNF	**20,INST1+13
15458	49	15478		13070		B7	**20
15466	27	01552	01551	13080	SSBCD	BT	PUT1,PUT1-1
15478	41	01572	01571	13090		NOP	PUT2,PUT2-1
15490	41	00000	00000	13100		NOP	
15502	44	15538	07692	13110		BNF	**36,INST1+14
15514	31	07698	15800	13120		TR	INST2,RVINST
15526	27	01572	01571	13130		BT	PUT2,PUT2-1
15538	31	07685	15041	13140		TR	INST1+7,TEMP
15550	31	15717	07685	13150		TR	TRAREC+1 ,INST1+7
15562	26	07684	07689	13160		TF	INST1+6 ,INST1+11
15574	16	07689	00060	13170		TFM	INST1+11 ,FAC
15586	16	15479	00041	13180		TFM	SSBCD+13 ,41
15598	44	15622	08366	13190		BNF	ZOT ,TRX
15610	44	15666	05252	13200		BNF	TRIT ,EQSW
15622	32	02142	00000	13210	ZOT	SF	PUTX+8
15634	27	01552	01551	13220		BT	PUT1 ,PUT1-1
15646	33	02142	00000	13230		CF	PUTX+8
15658	49	06274		13240		B7	TESTDD
15666	31	07678	15710	13250	TRIT	TR	INST1 ,TRAREC-6
15678	43	15634	07692	13260		BD	ZOT+12 ,INST1+14
15690	16	07684	03370	13270		TFM	INST1+6 ,TRFL
15702	49	15634	00000	13280		B	ZOT+12
15710				13290		DORG	*-3
15711		00002		13300		DC	2,17
15716		00005	03334	13310	TRAREC	DSA	TRFX
15721		00005		13320		DC	5,-90500
15725		00004		13330		DC	4,'
15726	16	14001	±5761	13340	FXEXP	TFM	OP,**35
15738	15	03159	00000	13350		TDM	FXORFL
15750	49	14734	02130	13360		B	CEXP+48,FAXI,7
15766		00005	02070	13370		DSA	FAXIN
15768	27	03054	03053	13380	FIX2	BT	FIX ,FIX-1
15783		00004		13390		DC	4,'
15784	27	03230	03229	13400	FLOAT2	BT	FLOAT ,FLOAT-1
15799		00004		13410		DC	4,'
15800	27	01806	01805	13420	RVINST	BT	RVSGN,RVSGN-1,0
15815		00004		13430		DC	4,'
15826		00011		13440	TFFAC	DC	11 ,2600060000'
15831		00005	00892	13450	AFAD	DSA	FAD ,FSB
15836		00005	00832				
15841		00005	02762	13460	AFMP	DSA	FMP ,FMP
15846		00005	02762				
15851		00005	02270	13470	AFDV	DSA	FDV ,FDVR
15856		00005	02234				
15861		00005	02626	13480	AFXP	DSA	FAXB ,FAXBN
15866		00005	02566				
15871		00005	01558	13490		DSA	FXA,FXS,FXM,FXM,FXD,FXDR
15876		00005	01508				
15881		00005	01608				
15886		00005	01608				
15891		00005	01718				
15896		00005	01682				
05252		00000		13500	EQSW	DS	,BA+2
05253		00000		13510	FSTSW	DS	,BA+3
05254		00000		13520	SBSWCH	DS	,BA+4
05255		00000		13530	DMSWCH	DS	,BA+5
05256		00000		13540	FLAGSW	DS	,BA+6
05257		00000		13550	DOSWCH	DS	,BA+7
05258		00000		13560	IFSWCH	DS	,BA+8
07914		00000		13570	RHD	DS	,PHI+42
08078		00000		13580	IMAGE	DS	,PHI+206
08332		00000		13590	TOP	DS	,PHI+460
00000		00000		13600	OUT	DS	,0
00908		00000		13610	LAD	DS	,CHI+147
00918		00000		13620	COMPA	DS	,CHI+157
00919		00000		13630	STNSW	DS	,CHI+158
00570		00000		13640	NEXTP	DS	,570
15898	25	07728	00402	13650	INITL	TD	IDCF ,402
15910	25	05552	00401	13660		TD	DCFEX ,401
15922	44	16232	00039	13670		BNF	LSTPG ,39
15934	25	07858	00400	13680		TD	MEMCAP-5 ,400
15946	26	07868	07862	13690		TF	FCTEND,MEMCAP-1
15958	25	07714	00401	13700		TD	DCF ,401
15970	25	08936	00401	13710		TD	EDCF ,401

LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS	AND REMARKS
15982	26	07719	00570	13720		TF	DCF+5	,NEXTP
15994	25	16206	00401	13730		TD	SRDCF	,401
16006	36	16206	00702	13740		RN	SRDCF	,702
16018	14	16253	00080	13750		CM	NO	,10
16030	26	08847	07868	13760	TRY	TF	ENDCOM	,FCTEND
16042	46	00876	01200	13770		BE	MOON7	
16054	26	07868	16263	13780		TF	FCTEND	,SRN
16066	12	07867	00081	13790		SM	FCTEND-1	,1
16078	26	16229	16263	13800		TF	CCC+8	,SRN
16090	16	16125	16222	13810		TFM	SNL+11	,CCC+1
16102	11	16125	00082	13820		AM	SNL+11	,2
16114	43	16102	00000	13830	SNL	BD	*-12	
16126	31	16125	16194	13840		TR	SNL+11	,FRECK
16138	26	07868	16229	13850		TF	FCTEND	,CCC+8
16150	31	16254	16264	13860		TR	SRN-9	,SRN+1
16162	12	07867	00081	13870		SM	FCTEND-1	,1
16174	12	16253	00081	13880		SM	NO	,1
16186	49	16030		13890		B7	TRY	
16194	46	00000	00000	13900	FRECK	BI		
16205		00001		13910		DC	1,',*	
16206		00001		13920	SRDCF	DC	1	,0
16214		00008		13930		DC	8	,79582005
16219		00005	16252	13940		DSA	CCC+31	
16221		00006	X2	13950	CCC	DAC	6,AAAAAA	
16253		00000		13960	NO	DS		,CCC+32
16263		00000		13970	SRN	DS		,CCC+42
16232	47	07642	00200	13980	LSTPG	BNC2	CEXEC	
16244	34	00000	00971	13990		K		,971
16256	26	01306	16298	14000		TF	LSTO+6	,BLST+6
16268	16	01185	00041	14010		TFM	ADF+1	,41
16280	49	01092	00000	14020		B	BEG1	
16292	49	16304	00000	14030	BLST	B	LSTST	,0
16304	14	00918	00651	14040	LSTST	CM	COMPA	,CCFMT+65
16316	34	00000	00951	14050		K		,951
16328	47	01092	01200	14060		BNE	BEG1	
16340	49	07642	00000	14070		B	CEXEC	
				14080	*			
				14090	*			COMPILE II
				14100	*			READ INTO CORE BY DATA/END
				14110	*			
				14120		DORG	COMM	
09022				14130		TF	DATA+6	,HDWRER+23
09034	14	07124	00972	14140		CM	ESEGBR+6	,BEGIN
09046	46	09082	01200	14150		BE	SKEM	
09058	31	00000	06128	14160		TR	OUT	,ENDINS
09070	17	02134	00012	14170		BTM	PUTX	,12
09082	16	07124	09102	14180	SKEM	TFM	ESEGBR+6	,SMTBO
09094	49	06966		14190		B7	SEG+12	
09102	16	02485	09134	14200	SMTBO	TFM	CFXN-1	,*+32
09114	16	08343	00999	14210		TFM	SYM	,999
09126	49	02676		14220		B7	SMTLU-24	
09134	26	07746	07719	14230		TF	BUFBAS+4	,DCF+5
09146	22	07746	00570	14240		S	BUFBAS+4	,NEXTP
09158	26	07751	07037	14250		TF	BUFBAS+9	,LMAX
09170	26	07756	02827	14260		TF	BUFBAS+14	,SMCNT
09182	26	07761	07868	14270		TF	BUFBAS+19	,FCTEND
09194	31	07762	07549	14280		TR	BUFBAS+20	,USEDIFS-79
09206	26	07766	08847	14290		TF	BUFBAS+24	,ENDCOM
09218	22	07628	07628	14300		S	USEDIFS	,USEDIFS
09230	26	07037	07719	14310		TF	LMAX	,DCF+5
09242	26	07719	00570	14320		TF	DCF+5	,NEXTP
09254	27	10458	10457	14330		BT	IMOUT	,IMOUT-1
09266	16	07727	08078	14340		TFM	DCF+13	,IMAGE
09278	26	07719	07037	14350		TF	DCF+5	,LMAX
09290	43	09562	08960	14360	CDAT	BD	OST	,ENDSW
09302	31	00760	00768	14370		TR	CHI-1	,CHI+7
09314	31	00760	00762	14380	DATLP	TR	CHI-1	,CHI+1
09326	15	05254	00000	14390		TDM	SBSWCH	
09338	16	01185	00041	14400		TFM	ADF+1	,41
09350	26	00755	06605	14410		TF	CHI-6,DORCRD+23	
09362	16	09495	00033	14420		TFM	SFDAT+1	,33
09374	17	03124	09386	14430		BTM	CSORN	,*+12
09386	26	09705	04603	14440		TF	OCADR	,ETAN+4
09398	31	00760	00762	14450		TR	CHI-1	,CHI+1
09410	15	05254	00004	14460		TDM	SBSWCH	,4
09422	14	00761	00020	14470		CM	CHI	,20
09434	47	09470	01200	14480		BNE	*+36	
09446	31	00760	00762	14490		TR	CHI-1	,CHI+1
09458	16	09495	00041	14500		TFM	SFDAT+1	,41
09470	16	03530	09494	14510		TFM	NUMBER-6	,*+24
09482	17	03124	09494	14520		BTM	CSORN	,*+12
09494	33	08343	00000	14530	SFDAT	CF	SYM	
09506	25	08344	00403	14540		TD	SYM+1	,403
09518	31	00089	08334	14550		TR	89	,SYM-9
09530	27	10386	10385	14560		BT	CONGO	,CONGO-1
09542	45	09314	00765	14570		BNR	DATLP	,CHI+4
09554	49	00972		14580		B7	BEGIN	
09562	26	09681	07862	14590	OST	TF	TADR	,MEMCAP-1

LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS	AND	REMARKS
09574	26	09705	07862	14600		TF	OCADR		,MEMCAP-1
09586	16	09900	07914	14610		TFM	DBUF+6		,RHO
09598	31	08178	07550	14620		TR	PHI+306		,USEDIFS-78
09610	31	08254	07551	14630		TR	PHI+382		,USEDIFS-77
09622	31	07872	00744	14640		TR	PHI		,CHI-17
09634	25	08344	00403	14650		TD	SYM+1		,403
09646	31	07886	08305	14660	RET	TR	PHI+14		,PHI+433
09658	16	09741	09988	14670		TFM	SADR-1		,RETURN+10
09670	26	08343	00000	14680		TF	SYM		,
09681		00000		14690	TADR	DS			,*
09682	44	10010	08343	14700		BNF	NONCON		,SYM
09694	33	08343	00000	14710		CF	SYM		
09705		00000		14720	OCADR	DS			,*
09706	31	00089	08334	14730		TR			,SYM-9
09718	27	10386	10385	14740		BT	CONGO		,CONGO-1
09730	26	07891	00000	14750		TF	PHI+19		
09742	73	07883	09705	14760	SADR	TNF	PHI+11		,OCADR
09754	44	09882	07886	14770		BNF	TDS		,PHI+14
09766	26	09800	09680	14780	OVAR	TF	**34		,TADR-1
09778	12	09800	00001	14790		SM	**22		,1
09790	44	09894	00005	14800		BNF	DBUF		,5
09802	26	09824	09800	14810		TF	**22		,*-2
09814	44	09834	00006	14820		BNF	SSV		,6
09826	49	09894		14830		B7	DBUF		
09834	12	09680	00001	14840	SSV	SM	TADR-1		,1
09846	26	09705	09681	14850		TF	OCADR		,TADR
09858	16	09888	07907	14860		TFM	TDS+6		,PHI+35
09870	26	08343	09705	14870		TF	SYM		,OCADR
09882	73	07907	08343	14880	TDS	TNF	PHI+35		,SYM
09894	31	07914	07872	14890	DBUF	TR	RHO		,PHI
09906	11	09900	00040	14900		AM	*-6		,40
09918	14	09900	08074	14910		CM	*-18		,RHO+160
09930	16	09888	07907	14920		TFM	TDS+6		,PHI+35
09942	47	09978	01200	14930		BNE	RETURN		
09954	17	05332	07915	14940		BTM	LSTC		,RHO+1
09966	16	09900	07914	14950		TFM	DBUF+6		,RHO
09978	12	09704	00001	14960	RETURN	SM	OCADR-1		,1
09990	12	09680	00001	14970		SM	TADR-1		,1
10002	49	09646		14980		B7	RET		
10010	16	09888	07903	14990	NONCON	TFM	TDS+6		,PHI+31
10022	44	10066	08341	15000		BNF	NONACC		,SYM-2
10034	14	08343	00999	15010		CM	SYM		,999
10046	46	10632	01200	15020		BE	ENDP		
10058	49	09742		15030		B7	SADR		
10066	44	10612	08340	15040	NONACC	BNF	VAR		,SYM-3
10078	16	09741	00221	15050		TFM	SADR-1		,TPSN
10090	26	10124	09680	15060	TPRO	TF	**34		,TADR-1
10102	12	10124	00001	15070		SM	**22		,1
10114	44	10198	00006	15080		BNF	TPRO1		,6
10126	26	10148	10124	15090		TF	**22		,*-2
10138	24	08343	00009	15100		C	SYM		,9
10150	47	10198	01200	15110		BNE	TPRO1		
10162	27	10234	10233	15120		BT	BGO		,BGO-1
10174	12	09680	00001	15130		SM	TADR-1		,1
10186	12	09704	00001	15140		SM	OCADR-1		,1
10198	27	10234	10233	15150	TPRO1	BT	BGO		,BGO-1
10210	49	09730	00000	15160		B	SADR-12		
10218				15170		DORG	*-3		
10221		00004		15180	TPSN	DC	4		,6255
10225		00004		15190		DC	4		,4654
10229		00004		15200		DC	4		,6247
10233		00004		15210		DC	4		,5759
10234	31	00089	07654	15220	BGO	TR	89		,BRINST
10246	26	10268	09680	15230		TF	**22		,TADR-1
10258	44	10314	00001	15240		BNF	BGO1		,1
10270	26	10292	10268	15250		TF	**22		,*-2
10282	26	00095	00005	15260		TF	95		,5
10294	11	09741	00004	15270		AM	SADR-1		,4
10306	49	10386		15280		B7	CONGO		
10314	26	10336	09680	15290	BGO1	TF	**22		,TADR-1
10326	26	00095	00004	15300		TF	95		,4
10338	33	00091	00000	15310		CF	91		
10350	47	10386	01200	15320		BNE	CONGO		
10362	26	00097	00095	15330		TF	97		,95
10374	16	09741	00233	15340		TFM	SADR-1		,TPSN+12
10386	26	00088	09705	15350	CONGO	TF	88		,OCADR
10398	33	00084	00000	15360		CF	84		
10410	31	08078	00084	15370	GOER	TR	IMAGE		,84
10422	11	10416	00015	15380		AM	*-6		,15
10434	14	10416	08168	15390		CM	GOER+6		,IMAGE+90
10446	47	10456	01342	15400		BL	**10		,42
10458	14	07719	79125	15410	IMOUT	CM	DCF+5		,79125
10470	46	07630	01300	15420		BNL	PGOL		
10482	15	05132	00009	15430	WDSK	TDM	ROCK+22		,9
10494	38	07714	00702	15440		WN	DCF		,702
10506	47	10538	03600	15450		BNI	**32		,3600
10518	34	07714	00701	15460		K	DCF		,701
10530	49	10494		15470		B7	*-36		



LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS AND REMARKS
10538	36	07714	00703	15480	RN	DCF	,703
10550	16	05109	10494	15490	TFM	ROCK-1	,WDSK+12
10562	46	05122	01900	15500	BI	ROCK+12	,1900
10574	16	10416	08078	15510	TFM	GOER+6,IMAGE	
10586	25	08078	00403	15520	TD	IMAGE	,403
10598	11	07719	00001	15530	AM	DCF+5	,1
10610	42			15540	BB2		,10
10612	26	07895	08343	15550	VAR	TF	PHI+23 ,SYM
10624	49	09742		15560	B7	SADR	
10632	45	10652	08078	15570	ENDP	BNR	**20 ,IMAGE
10644	49	10664		15580	B7	**20	
10652	27	10458	10457	15590	BT	IMOUT	,IMOUT-1
10664	14	09900	07914	15600	CM	DBUF+6	,RHO
10676	46	10712	01200	15610	BE	UPDKM	
10688	31	09900	08211	15620	TR	DBUF+6	,PHI+339 ,6
10700	17	05332	07915	15630	BTM	LSTC	,RHO+1
10712	16	07548	07642	15640	UPDKM	TFM	NSPC+8 ,CEXEC
10724	43	07494	07540	15650	BD	NOSPC+12,NSPC	
10736	16	05237	00729	15660	TFM	LSTT-1,OVERL	
10748	26	00761	01723	15670	TF	CHI,AVOID	
10760	44	07518	01044	15680	BNF	NOSPC+36	,SKPPCH
10772	25	10984	00401	15690	TD	DCFDT	,401
10784	34	10984	00701	15700	K	DCFDT	,701
10796	26	05268	07719	15710	TF	SYMB SB	,DCF+5
10808	26	08919	07719	15720	TF	DSADO	,DCF+5
10820	22	08919	07037	15730	S	DSADO	,LMAX
10832	32	08917	00000	15740	SF	DSADO-2	
10844	15	05132	00009	15750	TDM	ROCK+22	,9
10856	36	10984	00702	15760	RN	DCFDT	,702
10868	17	05110	10856	15770	BTM	ROCK	,*-12
10880	26	10910	00585	15780	TF	**30	,585
10892	11	10910	00001	15790	AM	**18	,1
10904	26	00000	05269	15800	TF		,SYMB SB+1
10916	12	10910	00018	15810	SM	*-6	,18
10928	26	10910	08919	15820	TF	*-18	,DSADO ,6
10940	15	05132	00009	15830	TDM	ROCK+22	,9
10952	38	10984	00702	15840	WN	DCFDT	,702
10964	17	05110	10952	15850	BTM	ROCK	,*-12
10976	49	07642	00000	15860	B	CEXEC	
10984				15870	DORG	*-3	
10984		00001		15880	DC	1	,0
10997		00013		15890	DC	13	,7980404000500
				15900	*		
				15910	*		
				15920	*	C4D-PDQ SUBROUTINES	5-4-65
				15930	*		
00404				15940	DORG	404	
00404	25	02696	00400	15950	TD	CZ1+2	,400
00416	25	02720	00400	15960	TD	CZ2+2	,400
00428	25	03016	00400	15970	TD	CZ3+2	,400
00440	25	03028	00400	15980	TD	CZ4+2	,400
00452	25	02046	00401	15990	TD	DCFSG,401	
00464	25	06517	00401	16000	TD	DCFER-5,401	
00476	25	02030	00401	16010	TD	CALL+44,401	
00488	26	01067	00185	16020	TF	PRBS	,185
00500	49	18000	00000	16030	B	18000	
00550				16040	DORG	550	
00550	36	00044	00703	16050	TIGEX	RN	44 ,703
00562	49	00710		16060	B7	ROWCK	
00570	26	00700	00023	16070	TF	BSEGA	,23
00582	16	00820	05036	16080	TFM	ROWBR+6	,SKDK
00594	31	00000	00614	16090	TR		,INCHI
00606	49	00000		16100	B7		
00614	26	00405	00061	16110	INCHI	TF	INOUT ,61 ,2
00626	11	00006	00002	16120	AM	6	,2 ,10
00638	14	00006	00693	16130	CM	6	,INOUT+288
00650	47	00000	01300	16140	BL		
00662	49	07650	00000	16150	B	7650,,03	
00675		00002		16160	DC	2	,'
00404				16170	DORG	404	
00405		00146 X2		16180	INOUT	DAS	146
00700		00005		16190	BSEGA	DS	5
00709		00009		16200	DIVDIG	DC	9 ,011223344
00710	47	00570	01900	16210	ROWCK	BNI	TIGEX+20 ,1900
00722	43	00766	00299	16220	BD	ROWCK1	,299
00734	39	00749	00100	16230	WATY	HDR	
00746	48	00000	00000	16240	H		
00749		00005 X2		16250	HDR	DAC	5 ,HDR' ,*-8
00758	49	01954		16260	B7	TIGER	
00766	25	00732	00733	16270	ROWCK1	TD	ROWCK+22 ,ROWCK+23 ,11
00778	46	00790	00600	16280	BI	**12	,600
00790	46	00802	01600	16290	BI	**12	,1600
00802	46	00814	01700	16300	BI	**12	,1700
00814	49	00000		16310	ROWBR	B7	
00830		00010		16320	DS	10	
00832	26	00891	00831	16330	FSB	TF	FAD-1 ,*-1 , SUBTRACT
00844	32	00891	00000	16340	SF	FAD-1	
00855		00000		16350	BSTBG	DS	,*

LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS	AND REMARKS
00856	44	00892	00831	16360		BNF	FAD ,FSB-1	,, REVERSE SIGN
00868	33	00891	00000	16370		CF	FAD-1	
00879		00000		16380	COMBEG	DS		,*
00880	41	00000	00000	16390		NOP		
00892	16	06570	00891	16400	FAD	TFM	RT+6 ,*-1	
00904	49	06532		16410		B7	TVAR	
00912	15	01127	00005	16420	TDM	ADCT2-36		,5
00924	16	01314	00061	16430	TFM	FAD3+30		,FAC+1
00936	24	00052	00883	16440	C	FAC-8		,FAD-9
00948	46	01164	01200	16450	BE	FAD1-36		
00960	46	01008	01300	16460	BNL	**+48		
00972	26	00831	00060	16470	TF	FSB-1	,FAC	,, LARGER OPERAND TO FAC
00984	26	00060	00891	16480	TF	FAC	,FAD-1	
00996	26	00891	00831	16490	TF	FAD-1	,FSB-1	
01008	22	00883	00052	16500	S	FAD-9	,FAC-8	,, COMPUTE RIGHT SHIFT
01020	14	00883	00000	16510	CM	FAD-9		,1011
01032	47	01488	01300	16520	BL	ENDD		,, EXIT ON SHIFT OVER 8
01044	26	01211	01163	16530	TF	FAD1+11	,ADCT2	
01056	32	01207	00000	16540	SF	FAD1+7		
01067		00000		16550	PRBS	DS		,*
01068	21	01211	00883	16560	A	FAD1+11	,FAD-9	
01080	28	00891	00891	16570	LD	FAD-1	,FAD-1	
01092	44	01116	00099	16580	BNF	**+24	,99	
01104	32	01211	00000	16590	SF	FAD1+11		,6
01116	15	00061	00005	16600	TDM	FAC+1	,5	
01128	28	00060	00060	16610	LD	FAC	,FAC	
01140	44	01164	00099	16620	BNF	**+24	,99	
01152	32	00061	00892	16630	SF	FAC+1	,FAD	,5
01163		00000		16640	ADCT2	DS		,*
01164	26	00831	00052	16650	TF	FSB-1	,FAC-8	,, SAVE EXPONENT AND
01176	16	00052	00000	16660	TFM	FAC-8	,0	,10, EXPAND FIELDS
01188	15	00883	00000	16670	TDM	FAD-9	,0	,11
01200	21	00060	00891	16680	FAD1	A	FAC	,27, ADD WITH SHIFT
01212	25	00099	01206	16690	TD	99	,FAD1+6	,11
01224	14	00060	00000	16700	CM	FAC		,10
01236	26	01211	01271	16710	TF	FAD1+11	,ADCT1	
01248	46	01376	01200	16720	BE	ZERFAC		
01260	33	00060	00891	16730	CF	FAC	,FAD-1	,5
01271		00000		16740	ADCT1	DS		,*
01272	46	01284	01400	16750	BV	**+12		
01284	43	01396	00052	16760	FAD3	BD	FAD2 ,FAC-8	,, BRANCH FOR CARRY
01296	43	01440	00053	16770	BD	ENDD-48	,FAC-7	,, NORMALIZING LOOP
01308	31	00061	01354	16780	TR	FAC+1	,FILL	
01320	31	00053	00054	16790	TR	FAC-7	,FAC-6	
01332	12	00831	00001	16800	BN	FSB-1	,1	,10, CORRECT EXPONENT
01344	46	01296	01300	16810	BNN	**+48		,, TEST FOR UNDERFLOW
01355		00001		16820	DC	1		,*
01354		00000		16830	FILL	DS		,*-1
01356	16	03285	05148	16840	ERO	TFM	ERMA ,UNFLM-1	
01368	49	06588		16850	B7	ERR		
01376	26	00060	01868	16860	ZERFAC	TF	FAC ,FZEREC-9	,, ZERO RESULT
01388	49	01488		16870	B7	ENDD		
01396	11	00060	00005	16880	FAD2	AM	FAC ,5	,10, ROUND
01408	26	00060	00059	16890	TF	FAC	,FAC-1	,, SHIFT FOR CARRY
01420	11	00831	00001	16900	AM	FSB-1	,1	,10
01432	49	01284		16910	B7	FAD3		
01440	26	00052	00831	16920	TF	FAC-8	,FSB-1	
01452	46	06588	01400	16930	BV	ERR		
01464	44	01488	00099	16940	BNF	**+24	,99	
01476	32	00060	00000	16950	SF	FAC		
01488	49	01496		16960	ENDD	B7	**+8	
01496	42	00000	00000	16970	BB	BB		
				16980	*			
				16990	*			
				17000	*			
				17010	*			
				17020				
01508	16	06570	01507	17020	FXS	TFM	RT+6 ,*-1	
01520	49	06532		17030		B7	TVAR	
01528	22	00060	01507	17040	S	FAC	,FXS-1	
01540	49	01488	00000	17050	B	ENDD		
01556		00005		17060	DS	5		
01558	16	06570	01557	17070	FXA	TFM	RT+6 ,*-1	
01570	49	06532		17080		B7	TVAR	
01578	21	00060	01557	17090	A	FAC	,FXA-1	
01590	49	01488	00000	17100	B	ENDD		
01606		00005		17110	DS	5		
01608	16	06570	01607	17120	FXM	TFM	RT+6 ,*-1	
01620	49	06532		17130		B7	TVAR	
01628	23	00060	01607	17140	M	FAC	,FXM-1	
01640	32	00090	00000	17150	SF	90		
01652	26	00060	00099	17160	TF	FAC,99		
01664	49	01488	00000	17170	B	ENDD		
01680		00005		17180	DS	5		
01682	26	01717	00060	17190	FXDR	TF	FXD-1,FAC	
01694	26	00060	01681	17200	TF	FAC,*-13		
01706	41	00000	00000	17210	NOP			
01718	16	06570	01717	17220	FXD	TFM	RT+6 ,*-1	
01730	49	06532		17230		B7	TVAR	

LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS	AND	REMARKS
01738	14	01717	00000	17240	CM	FXD-1	,		,10
01750	46	06588	01200	17250	BE	ERR			
01762	28	00099	00060	17260	LD	99,FAC			
01774	29	00090	01717	17270	D	90	,FXD-1		
01786	26	00060	00089	17280	TF	FAC	,89		
01798	49	01488		17290	B7	ENDD	,		,5
				17300	*				
				17310	*				
				17320	*	NEGATION ROUTINE			
				17330	*				
01806	44	01476	00060	17340	RVSGN	BNF	ENDD-12,FAC		
01818	33	00060	00000	17350	CF	FAC			
01830	49	01488	00000	17360	B	ENDD			
01837				17370	DDRG	**4			
				17380	*				
				17390	*				
				17400	*	SYMBOLS AND CONSTANTS			
				17410	*				
00060		00000		17420	FAC	DS	,60		
01846		00010		17430	FLTONE	DC	10,5110000000		
01858		00012		17440	FNINES	DC	12,999999999999		
01877		00019		17450	FZERIC	DC	19,'		
01888		00011		17460	LOG10	DC	11,2302585093		
01902		00014		17470	ONE	DC	14,10000000000000		
01907		00005		17480		DC	5,99995		
01910		00003		17490		DC	3,0		
01916		00006		17500		DC	6,999500		
01918		00002		17510		DC	2,0		
01925		00007		17520		DC	7,9950331		
01926		00001		17530		DC	1,0		
01934		00008		17540	LOG11	DC	8,95310180		
01943		00009		17550	LOG2	DC	9,693147181		
01953		00010		17560	FIXER	DC	10,5810000000		
01954	16	02028	±2994	17570	TIGER	TFM	CALL+42	,12994	,711,NORMAL
01966	31	00000	01986	17580	TR		,CALL		
01978	49	00000		17590	B7				
01986	34	00044	00701	17600	CALL	K	44	,701	
01998	32	00000	00000	17610	SF				
02010	36	00044	00702	17620	RN	44	,702		
02022	49	12999	00000	17630	LNKFLG	B	12999	,	,6
02030				17640	DDRG	**3			
02045		00016		17650	ABNDCF	DC	16	,79804125005000'	
02046		00001		17660	DCFSG	DC	1	,0	
02059		00013		17670		DC	13	,20000000	
				17680	*				
				17690	*				
				17700	*	EXPONENTIATION ROUTINES			
				17710	*				
02069		00010		17720	DS	10			
02070	26	02129	02069	17730	FAXIN	TF	FAXI-1	,*-1	
02082	32	02129	00000	17740	SF	FAXI-1			
02094	44	02118	02069	17750	BNF	**24	,FAXIN-1		
02106	33	02129	00000	17760	CF	FAXI-1			
02118	41	00000	00000	17770	NOP				
02130	16	06570	02129	17780	FAXI	TFM	RT+6	,*-1	
02142	49	06532		17790	B7	TVAR			
02150	14	02129	00000	17800	CM	FAXI-1	,		,10
02162	46	03034	01200	17810	BE	SETONE			
02174	46	02494	01100	17820	BP	FAXI1			
02186	33	02129	00000	17830	CF	FAXI-1			
02198	16	01494	02494	17840	TFM	ENDD+6	,FAXI1		
02210	26	02233	01846	17850	TF	FDVR-1,FLTONE			
02222	41	00000	00000	17860	NOP				
				17870	*				
				17880	*				
				17890	*	FLOATING DIVIDE AND REVERSE DIVIDE			
				17900	*				
02234	26	02269	00060	17910	FDVR	TF	FDV-1,FAC,,	INTERCHANGE OPERANDS	
02246	26	00060	02233	17920	TF	FAC,FDVR-1			
02258	41	00000	00000	17930	NOP				
02270	16	06570	02269	17940	FDV	TFM	RT+6	,*-1	
02282	49	06532		17950	B7	TVAR			
02290	32	00053	00000	17960	SF	FAC-7			
02302	25	02369	02262	17970	TD	DVRND+11	,FDV-8,,ROUNDING		
02314	28	00091	00060	17980	LD	91,FAC			
02326	43	02346	02262	17990	BD	DVRND-12	,FDV-8		
02338	49	06588		18000	B7	ERR			
02346	32	02262	00000	18010	SF	FDV-8			
02358	25	00092	00700	18020	DVRND	TD	92	,DIVDIG-9	
02370	29	00091	02269	18030	D	91,FDV-1,,	DIVIDE		
02382	46	01376	01200	18040	BE	ZERFAC			
02394	25	00099	00091	18050	TD	99,91,,	SAVE SIGN		
02406	22	00052	02261	18060	S	FAC-8,FDV-9,,	SUBTRACT EXPONENTS		
02418	43	02462	00083	18070	BD	FDV1,83			
02430	32	00084	00000	18080	SF	84,,,	LEADING ZERO		
02442	16	02753	00050	18090	TFM	FMP-9,50,10,	SET EXP ADJUST		
02454	49	02934		18100	B7	FMP2-12			
02462	26	00060	00090	18110	FDV1	TF	FAC,90,,	NON-ZERO LEADING DIGIT	

LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS AND REMARKS
02474	16	02753	00051	18120		TFM	FMP-9,51,10, SET EXP ADJUST
02486	49	02946		18130		B7	FMP2,,, GO TO TEST AND END
				18140	*		
				18150	*		
02494	26	02761	00060	18160	FAX11	TF	FMP-1,FAC
02506	16	01494	02518	18170		TFM	ENDD+6,*,+12,,SET RETURN ADDRESS
02518	12	02129	00001	18180		SM	FAXI-1,1,10
02530	46	02762	01100	18190		BP	FMP
02542	16	01494	01496	18200		TFM	ENDD+6, BB,, RESTORE COMMON EXIT
02554	42	00000	00000	18210		BB	
02566	26	02625	02565	18220	FAXBN	TF	FAXB-1 ,*-1
02578	32	02625	00000	18230		SF	FAXB-1
02590	44	02614	02565	18240		BNF	**24 ,FAXBN-1
02602	33	02625	00000	18250		CF	FAXB-1
02614	41	00000	00000	18260		NOP	
02626	16	06570	02625	18270	FAXB	TFM	RT+6 ,*-1
02638	49	06532		18280		B7	TVAR
02646	11	02625	00000	18290		AM	FAXB-1 , ,10
02658	46	03034	01200	18300		BE	SETONE
02670	11	00060	00000	18310		AM	FAC , ,10
02682	46	01376	01200	18320		BE	ZERFAC
02694	26	19929	00060	18330	CZ1	TF	LTAB-1 ,FAC
02706	16	01494	02726	18340		TFM	ENDD+6,*,+20,,SET RETURN ADDRESS
02718	49	19930		18350	CZ2	B7	LTAB
02726	26	02761	02625	18360		TF	FMP-1,FAXB-1
02738	16	01494	03002	18370		TFM	ENDD+6,FAXB1,,SET RETURN ADDRESS
02750	41	00000	00000	18380		NOP	
				18390	*		
				18400	*		
				18410	*		FLOATING MULTIPLY
				18420	*		
02762	16	06570	02761	18430	FMP	TFM	RT+6 ,*-1
02774	49	06532		18440		B7	TVAR
02782	32	00053	00000	18450		SF	FAC-7
02794	32	02754	00000	18460		SF	FMP-8
02806	23	00060	02761	18470		M	FAC,FMP-1,, MULTIPLY
02818	46	01376	01200	18480		BE	ZERFAC
02830	43	02910	00084	18490		BD	FMP1,84,, TEST LEADING DIGIT
02842	11	00093	00005	18500		AM	93,5,, ROUND PRODUCT
02854	43	02922	00084	18510		BD	FMP1+12,84,, BRANCH IF CARRY
02866	32	00085	00000	18520		SF	85
02878	12	00052	00051	18530		SM	FAC-8,51,10, ADJUST EXPONENT
02890	26	00060	00092	18540		TF	FAC,92
02902	49	02946		18550		B7	FMP2
02910	11	00092	00005	18560	FMP1	AM	92,5,, ROUND PRODUCT
02922	12	00052	00050	18570		SM	FAC-8,50,10, ADJUST EXPONENT
02934	26	00060	00091	18580		TF	FAC,91
02946	46	02958	01400	18590	FMP2	BV	**12
02958	21	00052	02753	18600		A	FAC-8 ,FMP-9
02970	33	00053	00000	18610		CF	FAC-7
02982	46	01452	01300	18620		BNN	ENDD-36
02994	49	01356		18630		B7	ERO
				18640	*		
				18650	*		
03002	16	01494	01496	18660	FAXB1	TFM	ENDD+6, BB,, RESTORE COMMON EXIT
03014	26	19949	00060	18670	CZ3	TF	ETAB-1 ,FAC
03026	49	19950		18680	CZ4	B7	ETAB
03034	26	00060	01846	18690	SETONE	TF	FAC,FLTONE
03046	49	01488		18700		B7	ENDD , ,5
				18710	*		
				18720	*		
				18730	*		FIX A FLOATING POINT NUMBER
				18740	*		
03054	14	00052	00058	18750	FIX	CM	FAC-8 ,58 ,10
03066	45	03086	00060	18760		BNR	**20 ,FAC
03078	49	06576		18770		B7	UDV
03086	46	06588	01100	18780		BH	ERR
03098	47	03130	01200	18790		BNE	FIX3
03110	16	00052	00000	18800		TFM	FAC-8,00,10
03122	49	01488		18810		B7	ENDD
03130	26	00891	01953	18820	FIX3	TF	FAD-1 ,FIXER
03142	15	01127	00000	18830		TDM	ADCT2-36 ,0
03154	16	01494	03198	18840		TFM	ENDD+6,*,+44,,SET RETURN ADDRESS
03166	44	00924	00060	18850		BNF	FAD+32 ,FAC
03178	32	00891	00000	18860		SF	FAD-1
03190	49	00924		18870		B7	FAD+32
03198	16	01494	01496	18880		TFM	ENDD+6, BB,, RESTORE COMMON EXIT
03210	12	00053	00581	18890		SM	FAC-7 ,581 ,9
03222	49	01488		18900		B7	ENDD , ,5
				18910	*		
				18920	*		
				18930	*		FLOAT A FIXED POINT NUMBER
				18940	*		
03230	45	03250	00060	18950	FLOAT	BNR	**20 ,FAC
03242	49	06576		18960		B7	UDV
03250	16	00831	00060	18970		TFM	FSB-1 ,60 ,10
03262	28	00062	00060	18980		LD	FAC+2 ,FAC
03274	33	00053	05680	18990		CF	FAC-7 ,OFLM-1 ,7

LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS	AND REMARKS
03285		00000		19000	ERMA	DS		,*
03286	16	00052	00000	19010		TFM	FAC-8	,10
03298	16	01314	00063	19020		TFM	FAD3+30	,FAC+3
03310	14	00062	00000	19030		CM	FAC+2,,10	
03322	49	01248	00000	19040		B	FAD1+48	
				19050	* TRACE SUBROUTINE			
03334	16	03518	91500	19060	TRFX	TFM	TRFMT+5	,91500 ,711
03346	26	03369	03333	19070		TF	TRFL-1	,TRFX-1
03358	49	03382	00000	19080		B	TRFL+12	
03370	16	03518	51500	19090	TRFL	TFM	TRFMT+5	,51508 ,711
03382	26	03369	00060	19100		TF	TRFL-1	,FAC ,6
03394	47	03404	00442	19110		BN1	**10	,442
03406	44	03478	04158	19120		BNF	TR1	,TRCX
03418	26	04158	04030	19130		TF	TRCX	,STFMT
03430	26	04475	03551	19140		TF	TYP	,TRFM+9
03442	47	03466	00200	19150		BNC2	**24	
03454	15	04475	00009	19160		TDM	TYP	,9 ,11
03466	16	04424	00405	19170		TFM	NEXT	,INOUT
03478	16	04121	03369	19180	TR1	TFM	LOOK-1	,TRFL-1 ,711
03490	31	04761	04233	19190		TR	RTPARX	,RSST+7
03502	49	04122	00000	19200		B	LOOK	
03509				19210		DORG	**4	
03513		00005	04784	19220	TRFMT	DSA	LTPAR	
03518		00005		19230		DC	5	,-90500
03523		00005		19240		DC	5	,-90500
03528		00005	04226	19250		DSA	RSST	
03530		00002		19260		DC	2	,3
03535		00005	03513	19270		DSA	TRFMT	,RTPAR
03540		00005	04728					
03542	39	00405	00400	19280	TRFM	WACD	INOUT	, ,0
03552				19290		DORG	**1	
03554		00003		19300	OTSV	DC	3	,137
03555		00005	00405	19310		DSSA	INOUT	
03560		00004		19320		DSC	4	,4'
03569		00006		19330	PINS	DS	6	
03570	16	03285	05374	19340	ERIN	TFM	ERMA	,INVAR-1 ,07
03582	49	06588	00000	19350		B	ERR	
03594	44	03626	03592	19360	DTRB	BNF	STOPSR	,DTRB-2
03606	16	07597	05720	19370		TFM	ESMA	,ENDM
03618	49	06588		19380		B7	ERR	
03626	44	03658	03590	19390	STOPSR	BNF	PAUSS	,DTRB-4
03638	16	07597	05146	19400		TFM	ESMA	,STM
03650	49	06588		19410		B7	ERR	
03658	47	01954	00300	19420	PAUSS	BNC3	TIGER	
03670	48	00000	00000	19430		H		
03673		00005	X2	19440	UDVM	DAC	5,UNDV',**8	
03682	42	00000	00000	19450		BB		
03690				19460		DORG	**3	
03690	45	03710	03689	19470	IXCK	BNR	**20,IXCK-1,11	
03702	49	06576		19480		B7	UDV	
03710	14	03689	00000	19490		CM	IXCK-1,,610	
03722	46	01496	01100	19500		BH	BB	
03734	16	03285	05690	19510	IXERR	TFM	ERMA	,IXERM-1
03746	49	06588	00000	19520		B	ERR	
03758	24	03689	03757	19530	IXMX	C	IXCK-1	,IXMX-1 ,6
03770	46	03734	01100	19540		BH	IXERR	
03782	42	00000	00000	19550		BB		
03790				19560		DORG	**3	
				19570	*			
				19580	*			
				19590	*			
				19600	*			
				19610	IN/OUT SUBROUTINES			
03790	15	03562	00005	19610	RACD	TDM	OTSV+8	,5 ,0
03802	26	03569	03790	19620		TF	PINS	,RACD
03814	33	04018	00000	19630		CF	LTX	
03825		00000		19640	BOX	DS		,*
03826	16	03554	00237	19650		TFM	OTSV	,237 ,9
03838	49	04030	00000	19660		B	STFMT	
03850	16	03554	00241	19670	RERD	TFM	OTSV	,241 ,09
03862	26	03569	03850	19680		TF	PINS	,RERD
03874	49	04030	00000	19690		B	STFMT	
03886	15	03562	00001	19700	WATYE	TDM	OTSV+8	,1 ,011
03898	26	03569	03886	19710		TF	PINS	,WATYE
03910	49	04006	00000	19720		B	STFMT-24	
03922	15	03562	00001	19730	PRTR	TDM	OTSV+8	,1 ,011
03934	26	03569	03922	19740		TF	PINS	,PRTR
03946	47	03970	00200	19750		BNC2	**24	
03958	15	03562	00009	19760		TDM	OTSV+8	,9 ,11
03970	49	04006	00000	19770		B	STFMT-24	
03982	15	03562	00004	19780	WACD	TDM	OTSV+8	,4 ,0
03994	26	03569	03982	19790		TF	PINS	,WACD
04006	16	03554	00039	19800		TFM	OTSV	,39 ,10
04018	32	04018	03508	19810	LTX	SF	LTX	,TRFMT-5 ,7
04030	16	04564	04054	19820	STFMT	TFM	CMPLT+6	,**24
04042	44	04382	04158	19830		BNF	SLASH+12	,TRCX
04054	71	04762	04018	19840		MF	LTPARX	,LTX
04066	26	04475	03562	19850		TF	TYP	,OTSV+8
04078	26	04158	03569	19860		TF	TRCX	,PINS

LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS	AND	REMARKS
04090	16	04424	00405	19870		TFM	NEXT		,INOUT
04102	16	04761	00000	19880		BFM	RTPARX		, ,9
04114	42	00000	00000	19890		BB			
04122				19900		DORG	*-3		
				19910					* ROUTINE THAT DECIPHERS FORMAT SPECIFICATIONS
04122	16	04564	04646	19920	LOOK	TFM	CMPLT+6		,POST
04134	11	04157	00005	19930		AM	**23,5		
04146	26	04576	00000	19940		TF	BRNCH+6		
04157		00000		19950	PINFMT	DS	,*		
04158	16	04615	00034	19960	TRCX	TFM	STOWX	,34	,01011
04170	44	04570	04576	19970		BNF	BRNCH,BRNCH+6		
				19980					* IF NO FLAG,NUMERIC SPEC. OTHER WISE ( / ) X H
04182	44	05368	04120	19990		BNF	NUMBR		,LOOK-2
04194	16	04564	01496	20000		TFM	CMPLT+6		,BB
04206	44	01496	04466	20010		BNF	BB		,OUTD
04218	49	04406		20020		B7	WRITE		
04226	11	04157	00002	20030	RSST	AM	PINFMT	,2	,810
04235		00001		20040		DC	1	,'	,*-2
04238	12	04760	00001	20050		SM	CTR	,1	,10
04250	46	04286	01100	20060		BH	RSAD		
04262	46	04318	01200	20070		BE	ERP		
04274	26	04760	04157	20080		TF	CTR		,PINFMT ,11
04286	11	04157	00005	20090	RSAD	AM	PINFMT	,5	,10
04298	26	04157	04157	20100		TF	PINFMT		,PINFMT ,11
04310	49	04122		20110		B7	LOOK		
04318	11	04157	00005	20120	ERP	AM	PINFMT	,5	,10
04330	49	04122		20130		B7	LOOK		
04338	47	04502	03400	20140	EOL	BNI	JEAN,3400		
04350	34	00000	00971	20150		K	,971		
04362	49	04502		20160		B7	JEAN		
04370	44	04466	04466	20170	SLASH	BNF	READ		,OUTD
04382	14	04424	00405	20180		CM	NEXT,INOUT		
04394	46	04578	01200	20190		BE	FLAGS-36		
04406	44	04672	04475	20200	WRITE	BNF	CARD		,TYP
04418	16	00405	00000	20210		TFM	INOUT,,10		
04429		00001		20220		DC	1,','		
04424		00000		20230	NEXT	DS			,*-5
04430	25	04443	04475	20240		TD	**13		,TYP
04442	49	04466	00000	20250		B	READ		
04454	34	00005	00102	20260		RCTY	00005		, ,25689, P IS 10005 TO PRINT +
04464		00001		20270		DC	1,','*-1		
04455		00000		20280	FIXFLG	DS	,*-10		
04466	39	00405	00000	20290	READ	WA	INOUT		
04466		00000		20300	OUTD	DS			,READ
04475		00000		20310	TYP	DS			,READ+9
04478	25	04491	04475	20320		TD	**13,TYP		
04490	49	04338	00000	20330		B	EOL		
04502	44	04522	04466	20340	JEAN	BNF	**20,OUTD		
04514	49	04546		20350		B7	**32		
04522	14	00405	00034	20360		CM	INOUT	,14	,10
04534	46	01966	01200	20370		BE	TIGER+12		
04546	32	04762	00000	20380		SF	LTPARX		
04558	49	04646	00000	20390	CMPLT	B	POST		
04570	49	00000	00000	20400	BRNCH	B	,,1		
04577				20410		DORG	*-4		
04577		00001		20420		DC	1,'		
04578	44	04672	04475	20430		BNF	CARD		,TYP
04590	25	04603	04475	20440		TD	**13		,TYP
04602	49	04634	00000	20450		B	POST-12		
04614	34	00000	00102	20460	FLAGS	RCTY			
04614		00000		20470	HTYPEX	DS			,FLAGS
04615		00000		20480	STOWX	DS			,FLAGS+1
04617		00000		20490	SIGN	DS			,FLAGS+3
04618		00000		20500	ETYPEX	DS			,FLAGS+4
04619		00000		20510	ITYPEX	DS			,FLAGS+5
04621		00000		20520	FTYPEX	DS			,FLAGS+7
04626	49	04646		20530		B7	POST		
04634	34	00000	00951	20540		K			,951
04646	16	04424	00405	20550	POST	TFM	NEXT		,INOUT
04658	44	04122	04761	20560		BNF	LOOK		,RTPARX
04670	42			20570		BB2			
04672	16	04424	00000	20580	CARD	TFM	NEXT		, ,610
04684	11	04424	00002	20590		AM	NEXT	,2	,10
04696	14	04424	00567	20600		CM	NEXT		,INOUT+162
04708	47	04672	01300	20610		BN	CARD		
04720	49	04466		20620		B7	READ		
04728	26	04157	03825	20630	RTPAR	TF	PINFMT,BOX		
04740	44	04370	04120	20640		BNF	SLASH		,LOOK-2
04752	32	04761	00000	20650		SF	RTPARX		
04762		00000		20660	LTPARX	DS			,*-1
04761		00000		20670	RTPARX	DS			,*-2
04760		00002		20680	CTR	DC	2		,*-3
04764	44	01496	04466	20690		BNF	BB		,OUTD
04776	49	04382		20700		B7	SLASH+12		
04784	26	03825	04157	20710	LTPAR	TF	BOX,PINFMT		
04796	44	04816	04762	20720		BNF	**20		,LTPARX
04808	49	04122		20730		B7	LOOK		
04816	44	04466	04466	20740		BNF	READ		,OUTD

LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS AND REMARKS
04828	49	04122	00000	20750		B	LOOK
				20760	*		
				20770	*		
				20780	*		CALL SEGMENT
04840	26	02059	04839	20790	CALSR	TF	DCFSG+13 ,CALSR-1 ,11,COREADDR
04852	26	04887	04839	20800		TF	SAD+11 ,CALSR-1
04864	12	04886	00001	20810		SM	SAD+10 ,1
04876	26	02051	00000	20820	SAD	TF	DCFSG+5 , ,7
04888	21	02051	00700	20830		A	DCFSG+5 ,BSEGA
04900	15	00732	00009	20840		TDM	ROWCK+22 ,9
04912	49	05048		20850		B7	RDDK
04920	16	00716	04940	20860	RCK	TFM	ROWCK+6 ,**20
04932	49	00710		20870		B7	ROWCK
04940	32	02047	00000	20880		SF	DCFSG+1
04952	13	02051	00050	20890		MM	DCFSG+5 ,50 ,10
04964	26	00090	00095	20900		TF	90 ,95
04976	11	00090	00001	20910		AM	90 ,1 ,10
04988	21	00090	00090	20920		A	90 ,90
05000	22	02051	00092	20930		S	DCFSG+5 ,92
05012	22	02057	02051	20940		S	DCFSG+11 ,DCFSG+5
05024	26	02051	00092	20950		TF	DCFSG+5 ,92
05036	34	02046	00701	20960	SKDK	K	DCFSG ,701
05048	36	02046	00700	20970	RDDK	RN	DCFSG ,700
05060	36	02046	00701	20980		RN	DCFSG ,701
05072	46	04920	03800	20990		BI	RCK ,3800
05084	47	04920	03700	21000		BNI	RCK ,3700
05096	16	00716	05116	21010		TFM	ROWCK+6 ,SEGIN
05108	49	00710		21020		B7	ROWCK
05116	26	05134	04839	21030	SEGIN	TF	**18 ,CALSR-1 ,11
05128	49	04839		21040		B7	CALSR-1 , ,6
				21050	*		
				21060	*		
				21070	*	COMBINED	HTYPE AND XTYPE
05136	16	05267	05159	21080	XTYPE	TFM	TF+11,**23
05148	33	04614	00000	21090		CF	HTYPEX,,10
05160	44	05244	04615	21100		BNF	SKIP,STOWX
05172	11	04157	00002	21110	HTYPE	AM	PINFMT ,2 ,10
05184	26	05347	04157	21120		TF	COUNT ,PINFMT ,11
05196	44	05244	04614	21130	LOOP	BNF	SKIP,HTYPEX
05208	11	04157	00002	21140		AM	PINFMT,2,10
05220	44	05276	04466	21150		BNF	HR ,OUTD
05232	26	05267	04157	21160		TF	TF+11,PINFMT
05244	44	05288	04466	21170	SKIP	BNF	XR ,OUTD
05256	26	04424	00000	21180	TF	TF	NEXT , ,6
05268	49	05288		21190		B7	XR
05276	26	04157	04424	21200	HR	TF	PINFMT ,NEXT ,611
05288	11	04424	00002	21210	XR	AM	NEXT ,2 ,10
05300	14	04424	00693	21220		CM	NEXT ,INOUT+288
05312	46	03570	01100	21230		BH	ERIN
05324	12	05347	00001	21240		SM	COUNT ,1 ,10
05336	46	05196	01100	21250		BP	LOOP
05347		00000		21260	COUNT	DS	,*
05348	44	05676	04615	21270		BNF	STOW,STOWX
05360	49	04122		21280		B7	LOOK , ,5
05368	33	04576	00000	21290	NUMBR	CF	BRNCH+6
05380	32	04573	00000	21300		SF	BRNCH+3
05391		00000		21310	EXP	DS	,*
05392	32	04575	00000	21320		SF	BRNCH+5
05403		00001		21330		DC	1,','*
05402		00000		21340	SAVE	DS	,*-1
05404	31	04615	04455	21350		TR	SIGN-2,FIXFLG
05416	44	06608	04466	21360		BNF	INPUT ,OUTD
				21370	*THE FOLLOWING ROUTINES PREPARE		
				21380	*NUMERIC DATA FOR OUTPUT		
05428	31	00061	01875	21390		TR	FAC+1 ,FZEREC-2
05440	26	00060	04122	21400		TF	FAC ,LOOK-1 ,11
05452	45	05472	00060	21410		BNR	**20 ,FAC
05464	49	06576		21420		B7	UDV
05472	14	04572	00099	21430		CM	BRNCH+2,99,1011
05484	46	06130	01200	21440		BE	ITYPE
05496	14	04572	00094	21450		CM	BRNCH+2 ,94 ,1011
05508	46	05940	01100	21460		BH	ADUT
				21470	* STORE SIGN FOR E OR F,SAVE EXPONENT		
05520	26	05402	00052	21480		TF	SAVE ,FAC-8
05532	12	05402	00050	21490		SM	SAVE ,50 ,10
05544	44	05568	00060	21500		BNF	**24 ,FAC
05556	16	04617	00020	21510		TFM	SIGN,20,10
05568	16	05392	00003	21520		TFM	EXP+1 ,3 ,9
05580	14	04572	00095	21530		CM	BRNCH+2,95,1011
05592	47	06382	01300	21540		BL	FTYPE
05604	32	04618	00000	21550	ETYPE	SF	ETYPEX
05616	16	05391	00000	21560		TFM	EXP , ,10
05628	26	05347	04574	21570		TF	COUNT,BRNCH+4
05640	22	05347	04576	21580		S	COUNT,BRNCH+6
05652	12	05347	00006	21590		SM	COUNT,6,10
05664	46	05136	01100	21600	TIE	BP	XTYPE
				21610	* ROUTINE TO STORE DIGITS IN OUTPUT BAND		
05676	26	04424	04617	21620	STOW	TF	NEXT ,SIGN ,6

LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS	AND REMARKS
05688	11	04424	00002	21630		AM	NEXT,2,10	
05700	14	04424	00693	21640		CM	NEXT ,INOUT+288	
05712	46	03570	01100	21650		BH	ERIN	
05724	12	05391	00001	21660		SM	EXP,1,10	
05736	47	05884	01300	21670		BN	HOHO	
05748	15	00052	00007	21680		TDM	FAC-8 ,7 ,11	
05760	33	00053	00000	21690	N50X	CF	FAC-7	
05772	44	05828	04619	21700		BNF	B ,ITYPEX	
05784	26	04617	00053	21710		TF	SIGN ,FAC-7	
05796	31	00053	00054	21720		TR	FAC-7 ,FAC-6	
05808	15	00062	00000	21730		TDM	FAC+2	
05820	49	05676		21740		B7	STOW	
05828	44	05784	04621	21750	B	BNF	N50X+24,FTYPEX	
				21760		*	INSERT ZEROS AFTER DEC. IF EXP SMALL	
05840	11	05402	00001	21770		AM	SAVE,1,10	
05852	46	05784	01100	21780		BP	N50X+24	
05864	16	04617	00070	21790		TFM	SIGN,70,10	
05876	49	05676		21800		B7	STOW	
05884	44	06070	04619	21810	HOHO	BNF	ISETYP,ITYPEX	
05896	33	04619	00000	21820		CF	ITYPEX	
05908	16	04617	00003	21830		TFM	SIGN,3,10	
05920	26	05391	04576	21840		TF	EXP,BRNCH+6	
05932	49	05676		21850		B7	STOW	
05940	32	00051	00000	21860	AOUT	SF	FAC-9	
05952	26	04424	00052	21870		TF	NEXT ,FAC-8 ,6	
05964	11	04424	00002	21880		AM	NEXT ,2 ,10	
05976	14	04424	00693	21890		CM	NEXT,INOUT+288	
05988	46	03570	01100	21900		BH	ERIN	
06000	31	00051	00053	21910		TR	FAC-9 ,FAC-7	
06012	12	04574	00001	21920		SM	BRNCH+4 ,1 ,10	
06024	47	05940	01200	21930		BNE	AOUT	
06036	42			21940		BB2		
06038	44	01376	04121	21950	TROT	BNF	ZERFAC ,LOOK-1	
06050	16	04121	03368	21960		TFM	LOOK-1 ,TRFL-2	
06062	49	04122		21970		B7	LOOK	
				21980		*	EXIT TO ISETYP AFTER PASS1 OF I TYPE,	
				21990		*	AND 2ND PASS E,F,D TYPE	
06070	44	06038	04618	22000		ISETYP	BNF TROT ,ITYPEX	
				22010		*	TACK ON EXPONENT	
06082	31	00059	05401	22020		TR	FAC-1 ,SAVE-1	
06094	16	04574	00003	22030		TFM	BRNCH+4,3,10	
06106	16	04424	00045	22040		TFM	NEXT ,45 ,610	
06118	11	04424	00002	22050		AM	NEXT,2,10	
				22060		*	NDW ENTER I TYPE TO FILE AWAY EXPONENT	
06130	16	04619	00000	22070	ITYPE	TFM	SIGN+2 ,0000 ,8, Q IS 1000 TO PRINT + SIGN	
06142	44	06178	00060	22080		BNF	**36 ,FAC	
06154	16	04617	00020	22090		TFM	SIGN,20,10	
06166	33	00060	00000	22100		CF	FAC	
06178	44	06222	00059	22110		BNF	**44 ,FAC-1	
06190	31	00053	00059	22120		TR	FAC-7 ,FAC-1	
06202	16	05392	00023	22130		TFM	EXP+1 ,23 ,9	
06214	49	06338		22140		B7	A+12	
06222	44	06266	00057	22150		BNF	**44 ,FAC-3	
06234	31	00053	00057	22160		TR	FAC-7 ,FAC-3	
06246	16	05392	00043	22170		TFM	EXP+1 ,43 ,911	
06258	49	06338		22180		B7	A+12	
06266	26	00065	00063	22190		TF	FAC+5 ,FAC+3	
06278	16	05392	00003	22200		TFM	EXP+1 ,103 ,9	
06290	43	06338	00053	22210		BD	**48 ,FAC-7	
06302	31	00053	00054	22220		TR	FAC-7 ,FAC-6	
06314	12	05391	00001	22230		SM	EXP,1,10	
06326	45	06290	00056	22240	A	BNR	*-36 ,FAC-4	
06338	26	05347	04574	22250		TF	COUNT,BRNCH+4	
06350	12	05347	00001	22260		SM	COUNT,1,10	
06362	22	05347	05391	22270		S	COUNT,EXP	
06374	49	05664		22280		B7	TIE	
06382	26	05391	05402	22290	FTYPE	TF	EXP,SAVE	
06394	44	06418	05402	22300		BNF	**24,SAVE	
06406	16	05391	00000	22310		TFM	EXP,10	
06418	26	05347	04574	22320		TF	COUNT,BRNCH+4	
06430	12	05347	00002	22330		SM	COUNT,2,10	
06442	22	05347	04576	22340		S	COUNT,BRNCH+6	
06454	22	05347	05391	22350		S	COUNT,EXP	
06466	47	06498	01300	22360		BN	ERROR	
06478	32	04621	00000	22370		SF	FTYPEX	
06490	49	05664		22380		B7	TIE	
				22390		*	CHANGE TO E TYPE	
06498	16	04576	00008	22400	ERROR	TFM	BRNCH+6,8,10	
06510	49	05604		22410		B7	ETYPE	
06522		00006		22420	DCFER	DC	6 ,79591	
06525		00003		22430		DC	3 ,9	
06530		00005	05116	22440		DSA	SEGIN	
06531		00001		22450		DC	1,1	
06532	45	06552	06570	22460	TVAR	BNR	**20 ,RT+6 ,11	
06544	49	06576		22470		B7	UDV	
06552	11	06570	00021	22480		AM	RT+6 ,21 ,10	
06564	45	00000	00060	22490	RT	BNR	,FAC	
06576	16	03285	03672	22500	UDV	TFM	ERMA ,UDVM-1	



LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS	AND	REMARKS
06588	31	02046	06517	22510	ERR	TR	DCFSG		,DCFER-5
06600	49	04900		22520		B7	RCK-20		
				22530					
06608	31	00040	01859	22540		TR	FAC-20		,FZEREC-18
06620	31	00058	01860	22550		TR	FAC-2		,FZEREC-17
06632	16	07233	00033	22560		TFM	DX+1		,33
06644	14	04572	00091	22570		CM	BRNCH+2		,91
06656	46	07442	01200	22580		BE	AIN		
06668	26	06953	06760	22590		TF	AX+1		,LP+8
06680	14	04572	00099	22600		CM	BRNCH+2		,99
06692	46	06716	01200	22610		BE	**+24		
06704	32	06953	00000	22620		SF	FL		
06716	16	07243	00000	22630		TFM	EX+4		
06728	16	07037	00041	22640		TFM	EX1+1		,41
06740	16	06946	00050	22650		TFM	TD+6		,FAC-10
06752	14	04424	11003	22660	LP	CM	NEXT		,11003
06764	46	07378	01200	22670		BE	DEC		
06776	14	04424	00020	22680		CM	NEXT		,20
06788	46	07258	01200	22690		BE	NEG		
06800	14	04424	00010	22700		CM	NEXT		,10
06812	46	07346	01200	22710		BE	POS		
06824	14	04424	00045	22720		CM	NEXT		,45
06836	46	07346	01200	22730		BE	POS		
06848	14	04424	00070	22740		CM	NEXT		,70
06860	47	06904	01100	22750		BNH	DX1		
06872	32	06952	00000	22760		SF	AX		
06884	32	07232	00000	22770		SF	DX		
06896	49	06928		22780		B7	TD-12		
06904	44	06964	06952	22790	DX1	BNF	NXIN		,AX
06916	44	07422	07232	22800		BNF	UDZ		,DX
06928	11	06946	00001	22810		AM	TD+6		,1
06940	25	00000	04424	22820	TD	TD			,NEXT
06952	11	07035	00001	22830	AX	AM	INT		,1
06953		00000		22840	FL	DS			,AX+1
06964	11	04424	00002	22850	NXIN	AM	NEXT		,2
06976	12	04574	00001	22860		SM	BRNCH+4		,1
06988	46	06752	01100	22870		BP	LP		
07000	44	07184	06953	22880		BNF	FX		,FL
07012	14	06946	07242	22890		CM	TD+6		,EX+3
07024	46	03570	01100	22900		BH	ERIN		
07035		00000		22910	INT	DS			,*
07036	21	07035	06946	22920	EX1	A	INT		,TD+6
07048	22	07035	04576	22930		S	INT		,BRNCH+6
07060	22	07035	07231	22940		S	INT		,DZ
07072	46	07084	01400	22950		BV	**+12		
07084	11	07035	00050	22960		AM	INT		,50
07096	46	03570	01400	22970		BV	ERIN		
07108	43	07140	00051	22980		BD	**+32		,FAC-9
07120	16	07035	00000	22990		TFM	INT		,*
07132	49	07152		23000		B7	**+20		
07140	47	03570	01300	23010		BN	ERIN		
07152	26	00050	07035	23020		TF	FAC-10		,INT
07164	26	00060	00058	23030		TF	FAC		,FAC-2
07176	49	07220		23040		B7	SETSF		
07184	14	06946	00060	23050	FX	CM	TD+6		,FAC
07196	46	03570	01100	23060		BH	ERIN		
07208	26	00060	06946	23070		TF	FAC		,TD+6
07220	32	00051	00000	23080	SETSF	SF	FAC-9		,*
07231		00000		23090	DZ	DS			,*
07232	33	00060	00000	23100	DX	CF	FAC		
07239		00000		23110	EX	DS			,*-4
07244	26	04121	00060	23120		TF	LOOK-1		,FAC
07256	42			23130		BB2			
07258	44	07326	06952	23140	NEG	BNF	STSF		,AX
07270	16	07037	00022	23150		TFM	EX1+1		,22
07282	16	06946	07239	23160		TFM	TD+6		,EX
07294	15	06952	00004	23170		TDM	AX		,4
07306	44	03570	06953	23180		BNF	ERIN		,FL
07318	49	06964		23190		B7	NXIN		
07326	15	07233	00002	23200	STSF	TDM	DX+1		,2
07338	49	06964		23210		B7	NXIN		
07346	44	06964	06952	23220	POS	BNF	NXIN		,AX
07358	15	07036	00002	23230		TDM	EX1		,2
07370	49	07282		23240		B7	NEG+24		
07378	16	04576	00000	23250	DEC	TFM	BRNCH+6		,*
07390	14	06953	00041	23260		CM	AX+1,41,10		
07402	46	03570	01200	23270		BE	ERIN		
07414	49	07294		23280		B7	NEG+36		
07422	11	07231	00001	23290	UDZ	AM	DZ		,1
07434	49	06964		23300		B7	NXIN		
07442	16	04576	00006	23310	AIN	TFM	BRNCH+6		,6
07454	22	04576	04574	23320		S	BRNCH+6		,BRNCH+4
07466	31	00051	00053	23330		TR	FAC-9		,FAC-7
07478	26	00060	04424	23340		TF	FAC		,NEXT
07490	33	00059	00000	23350		CF	FAC-1		
07502	11	04424	00002	23360		AM	NEXT		,2
07514	12	04574	00001	23370		SM	BRNCH+4		,1
07526	46	07466	01100	23380		BH	AIN+24		

LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS AND REMARKS
07538	12	04576	00001	23390	CL	SM	BRNCH+6 ,1 ,10
07550	47	07220	01100	23400		BNH	SETSF
07562	31	00051	00053	23410		TR	FAC-9 ,FAC-7
07574	16	00060	00000	23420		TFM	FAC , ,10
07586	33	00059	00000	23430		CF	FAC-1
07597		00000		23440	ESMA	DS	,*
07598	49	07538	00000	23450		B	CL
07610	45	07630	07609	23460	ADCK	BNR	**+20,ADCK-1,11
07622	49	06576		23470		B7	UDV
07630	11	07609	00000	23480		AM	ADCK-1,,610
07642	42			23490		BB2	
				23500	*		
				23510	*		
				23520	*		
				23530	*		ERROR SUB AND SYMTAB DUMP
				23540		DORG	404
00404				23550		TD	D43OUT ,402
00416	25	05788	00402	23560		TD	D43IN ,402
00428	49	18000		23570		B7	18000
05116				23580		DORG	SEGIN
05116	49	05220		23590		B7	ERBEG
05125		00011	X2	23600		DAC	11 , STOP
05146		00001		23610	STM	DC	1 ,0
05149		00005	X2	23620	UNFLM	DAC	5 ,UFLO'
05159		00031	X2	23630	ERM	DAC	31,SEGMENT SYMTAB ADDR
05220	26	00716	05802	23640	ERBEG	TF	ROWCK+6 ,DSTPR+6
05232	49	00710		23650		B7	ROWCK
05240	26	04564	05598	23660		TF	CMPLT+6,TERR+6,8
05252	44	04406	04158	23670		BNF	WRITE ,TRCX
05264	44	05556	07593	23680	ERR1	BNF	ERR2,ESMA-4
05276	26	05178	07597	23690		TF	ERM+19 ,ESMA ,11
05288	44	05312	05156	23700		BNF	**+24 ,ERM-3 ,STOP SETS THIS
05300	73	05175	03593	23710		TNF	ERM+16 ,DTRB-1
05312	33	05248	00000	23720		CF	ERR1-16
05324	47	05592	00200	23730		BNC2	TERR
05336	39	05159	00900	23740	PRTER	PRA	ERM
05348	44	05384	05248	23750		BNF	PERR ,ERR1-16 ,ENDSTOP
05360	47	05384	00300	23760		BNC3	PERR
05372	48	00000	00000	23770		H	
05375		00005	X2	23780	INVAR	DAC	5,ERIO',*-8
05384	33	05287	00000	23790	PERR	CF	ERR1+23
05396	15	05247	00000	23795		TDM	ERM+88 ,
05408	22	05372	05372	23800		S	PERR-12 ,PERR-12
05420	39	05159	00400	23830		WACD	ERM
05432	44	01954	05248	23840		BNF	TIGER ,ERR1-16
05444	47	01954	00300	23850		BNC3	TIGER
05456	12	00855	00099	23860		SM	BSTBG,99
05468	46	05796	00200	23870		BC2	DSTPR
05480	11	00855	00030	23880		AM	BSTBG,30
05492	26	05780	02723	23890		TF	D43OUT+12 ,CZ2+5
05504	31	05880	05524	23900		TR	DCDWN,CDINS
05516	49	05820		23910		B7	D43SK
05524	38	05638	00400	23920	CDINS	WNCD	D43LOC-4
05536	12	05780	00007	23930		SM	D43OUT+12,7,8
05548	49	05940		23940		B7	DPEND
05555		00001		23950		DC	1,'
05556	73	05205	04886	23960	ERR2	TNF	ERM+46 ,SAD+10
05568	31	05210	03285	23970		TR	ERM+51 ,ERMA ,11
05580	31	05218	05650	23980		TR	ERM+59,IR2-1
05592	34	05264	00102	23990	TERR	RCTY	ERR1 , ,2
05604	39	05159	00100	24000		WATY	ERM
05616	47	05348	00200	24010		BNC2	PRTER+12
05628	49	05336		24020		B7	PRTER
05637		00001	X2	24060		DAC	1, ,
05647		00010		24070		DNB	10
05642		00006		24080	D43LOC	DC	6,0,*-5
05648		00001		24082	D43BUF	DS	1
05651		00015	X2	24084	IR2	DAC	15,, NEXT INSTR--'
05681		00005	X2	24086	OFLM	DAC	5,OFLO'
05691		00005	X2	24088	IXERM	DAC	5 ,IXER'
05701		00010	X2	24090		DAC	10 ,END
05720		00001		24100	ENDM	DC	1 ,0
05748				24108		DORG	D43BUF+100
05767		00020		24109		DNB	20
05768		00014		24110	D43OUT	DSC	14,06000000100000
05782		00009		24120	D43IN	DSC	9,060000001
05795		00005	05648	24130		DSA	D43BUF
05796	34	05240	00953	24150	DSTPR	SPIM	ERBEG+20 ,3 ,2
05808	26	05779	02722	24160		TF	D43OUT+11 ,CZ2+4
05820	34	05768	00701	24170	D43SK	K	D43OUT,701
05832	26	05641	05780	24180	D43LOP	TF	D43LOC-1,D43OUT+12
05844	33	05638	00000	24190		CF	D43LOC-4
05856	38	05768	00702	24200		WN	D43OUT,702
05868	36	05782	00702	24210		RN	D43IN,702
05880	47	05904	03400	24220	DCDWN	BNI	D43PR,03400
05892	34	00000	00971	24230		SKIP	,1
05904	35	05638	00900	24240	D43PR	PRD	D43LOC-4
05916	34	00000	00951	24250		SPIM	,1

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LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS AND REMARKS
05928	12	05779	00001	24260		SM	D43OUT+11,1,9
05940	24	05780	00854	24270	DPEND	C	D43OUT+12,BSTBG-1
05952	46	05832	01100	24280		BH	D43LOP
05964	49	01954		24290		B7	TIGER
				24300	*		
				24310	*	C4D RELOCATABLE SUBROUTINES APRIL 29, 1965	
				24320	*		
				24330	*		
				24340	*	SINE AND COSINE	
				24350	*		
05000				24360		DORG	5000
05000	26	00060	19989	24370	COS	TF	FAC,CTAB-1
05012	25	05228	00004	24380		TDM	SIN1,4,0,11
05024	49	05060	00000	24390		B	SIN+24,,0
05036	26	00060	19969	24400	SIN	TF	FAC,STAB-1
05048	25	05228	00002	24410		TDM	SIN1,2,0
05060	33	00099	00000	24420		CF	99
05072	45	05096	00060	24430		BNR	**24,FAC,0
05084	49	06576	00000	24440		B	UDV
05096	14	00052	00047	24450		CM	FAC-8,47,10
05108	47	05612	01300	24460		BL	SIN2,,0, BRANCH FOR SMALL ARG.
05120	26	05203	00042	24470		TFM	**83,42,09
05132	21	05203	00052	24480		A	**71,FAC-8,0
05144	43	05588	05201	24490		BD	ERRTR ,**57 ,01
05156	32	00053	00000	24500		SF	FAC-7
05168	16	00079	00000	24510		TFM	79,0
05180	23	05658	00060	24520		M	SIN2P,FAC,0
05192	26	00060	00000	24530		TF	FAC,, X IN FIXED-POINT REVS
05204	44	05228	00099	24540		BNF	**24,99,0
05216	32	00060	00000	24550		SF	FAC
05228	42	00060	05671	24560	SIN1	NOP	FAC,SIN25,1, BECOMES ADD FOR SINE
05240	33	00060	00000	24570		CF	FAC
05252	15	00047	00000	24580		TDM	FAC-13,0,11
05264	21	00060	00060	24590		A	FAC,FAC,, X IN HALF REVOLUTIONS
05276	22	00060	01902	24600		S	FAC,ONE
05288	33	00060	00000	24610		CF	FAC
05300	21	00060	00060	24620		A	FAC,FAC
05312	22	00060	01902	24630		S	FAC,ONE,, X IN RIGHT ANGLES
05324	25	00099	00060	24640		TD	99,FAC
05336	43	05624	00047	24650		BD	SIN2+12,FAC-13,0
05348	32	00048	00000	24660		SF	FAC-12
05360	23	00057	00057	24670		M	FAC-3,FAC-3
05372	26	00040	00088	24680		TF	FAC-20,88,, X SQUARED
05384	26	05431	05704	24690		TFM	**47,SINC7,017
05396	16	00070	15149	24700		TFM	FAC+10,15149
05408	23	00040	00070	24710		M	FAC-20,FAC+10
05420	26	00070	00000	24720		TF	FAC+10,, LOOP TO EVALUATE
05432	22	00070	00090	24730		S	FAC+10,90,, HASTINGS APPROX.
05444	22	05431	00008	24740		SM	*-13,8,07
05456	44	05408	00083	24750		BNF	*-48,83,0
05468	23	00060	00070	24760		M	FAC,FAC+10
05480	43	05624	00078	24770		BD	SIN2+12,78,0, RESULT = 1
05492	46	01376	01200	24780		BZ	ZERFAC , , , RESULT = 0
05504	26	00073	00099	24790		TF	FAC+13,99
05516	25	00074	01877	24800		TD	FAC+14,FZERIC
05528	16	00052	00050	24810		TFM	FAC-8,50,10
05540	43	01464	00053	24820		BD	ENDD-24,FAC-7
05552	12	00052	00001	24830		SM	FAC-8,1,10, LOOP TO NORMALIZE
05564	31	00053	00054	24840		TR	FAC-7,FAC-6
05576	49	05540	00000	24850		B	*-36,0
05588	16	03285	05706	24860	ERRTR	TFM	ERMA,TRIG-1,1
05600	49	06588	00000	24870		B	ERR
05612	44	01488	05228	24880	SIN2	BNF	ENDD,SIN1,1
05624	26	00060	01846	24890		TF	FAC,FLTONE
05636	49	01464	00000	24900		B	ENDD-24
05643				24910		DORG	*-4
05658		00016		24920	SIN2P	DC	16,159154943092,, CONSTANTS
05671		00013		24930	SIN25	DC	13,-25000000000000
05680		00009		24940		DC	9,157079632
05688		00008		24950		DC	8,64596371
05689		00001		24960		DC	1,0
05696		00007		24970		DC	7,7968968
05698		00002		24980		DC	2,0
05704		00006		24990	SINC7	DC	6,467377
05707		00005	X2	25000	TRIG	DAC	5,TRIG'
19990		00000		25010	CTAB	DS	,19990
19970		00000		25020	STAB	DS	,19970
				25030	*		
				25040	*		
				25050	*	EXPONENTIAL TO BASE E	
				25060	*		
05000				25070		DORG	5000
05000	45	05024	19949	25080		BNR	**24,ETAB-1,0
05012	49	06576	00000	25090		B	UDV
05024	28	00060	19949	25100		LD	FAC ,ETAB-1 , , GET ARGUMENT, SAVE SIGN
05036	14	00055	53112	25110		CM	FAC-5,53112
05048	46	05516	01300	25120		BNL	EXP2,,0, EXPONENT TOO LARGE
05060	14	00052	00042	25130		CM	FAC-8,42,10

LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS AND REMARKS
05072	47	03034	01100	25140		BNH	SETONE,,, SMALL EXPONENT
05084	32	00053	00000	25150		SF	FAC-7
05096	26	00098	01877	25160		TF	98,FZEREC
05108	16	05138	00140	25170		TFM	**30,140,09
05120	22	05138	00052	25180		S	**18,FAC-8,0
05132	21	00000	00060	25190		A	,FAC,, FIX ARGUMENT
05144	16	00052	00050	25200		TFM	FAC-8,50,9
05156	11	00052	00001	25210		AM	FAC-8,1,10, LOOP TO SET EXPONENT
05168	22	00091	01888	25220		S	91,LOG10
05180	46	05156	01300	25230		BNN	*-24,,0
05192	44	05252	00099	25240		BNF	**60 ,99 ,0
05204	32	00052	00000	25250		SF	FAC-8 ,,, COMPLEMENT NEGATIVE
05216	11	00052	00101	25260		AM	FAC-8 ,101 ,9, ARGUMENT
05228	33	00091	00000	25270		CF	91
05240	49	05264	00000	25280		B	**24 , ,0
05252	21	00091	01888	25290		A	91,LOG10,, CORRECT OVERDRAFT
05264	32	00051	00000	25300		SF	FAC-9
05276	26	00063	01899	25310		TF	FAC+3 ,ONE-3
05288	16	05359	00063	25320		TFM	EXP1-1 ,FAC+3,010,INITIALIZE LOOP
05300	16	05347	01943	25330		TFM	EXP1-13,LOG2,07
05312	16	05342	00091	25340		TFM	EXP1-18,91,010
05324	49	05420	00000	25350		B	EXP1+60 , ,0
05336	22	00091	01943	25360		S	91 ,LOG2
05348	21	00063	00063	25370		A	FAC+3 ,FAC+3
05360	43	05336	00082	25380	EXPI	BD	*-24,82,0, LOOP TO ELIMINATE DIGIT
05372	12	05359	00001	25390		SM	EXP1-1,1,010
05384	12	05347	00009	25400		SM	EXP1-13,9,010
05396	12	05342	00001	25410		SM	EXP1-18,1,010
05408	31	00082	00083	25420		TR	82,83,, STEP FOR NEXT DIGIT
05420	32	00082	00000	25430		SF	82
05432	45	05360	00093	25440		BNR	EXP1,93,0
05444	26	00048	00086	25450		TF	48 ,86
05456	23	00062	00048	25460		M	FAC+2 ,48
05468	21	00062	00090	25470		A	FAC+2 ,90 ,,, MULTIPLY BY 1+X
05480	11	00061	00005	25480		AM	FAC+1,5,10
05492	33	00053	00000	25490		CF	FAC-7
05504	49	01488	00000	25500		B	ENDD
05516	44	06588	00099	25510	EXP2	BNF	ERR,99 ,,, LARGE ARGUMENT
05528	49	01356	00000	25520		B	ER0
05535				25530		DORG	*-4
19950		00000		25540	ETAB	DS	,19950
				25550	*		
				25560	*		
				25570	*		NATURAL LOGARITHM
				25580	*		
05000				25590		DORG	5000
05000	45	05024	19929	25600	ALOG	BNR	**24,LTAB-1,0
05012	49	06576	00000	25610		B	UDV
05024	26	00050	19929	25620		TF	FAC-10,LTAB-1
05036	14	00050	00000	25630		CM	FAC-10,0,711
05048	47	05540	01100	25640		BNP	ELOG,,0
05060	12	00042	00050	25650		SM	FAC-18,50,10
05072	23	01888	00042	25660		M	LOG10,FAC-18
05084	26	00065	00099	25670		TF	FAC+5,99,, LOG OF CHARACTERISTIC
05096	32	00043	00000	25680		SF	FAC-17
05108	28	00097	00050	25690		LD	97,FAC-10
05120	14	00091	00050	25700	LOOP1	CM	91,50,10, LOOP TILL OVER 0.5
05132	46	05180	01300	25710		BNL	INIT,,0, ANSWER BUILDS UP IN FAC+5
05144	21	00097	00097	25720		A	97,97,
05156	22	00065	01943	25730		S	FAC+5,LOG2
05168	49	05120	00000	25740		B	LOOP1,,0
05180	16	05222	00091	25750	INIT	TFM	LOG1+6,91,010, INITIALIZE LOOP
05192	16	05251	00098	25760		TFM	LOG1+35,98,010
05204	16	05263	01934	25770		TFM	LOG1+47,LOG11,07
05216	14	00000	99990	25780	LOG1	CM	,99990,7, LOOP TILL OVER 0.9999
05228	46	05276	01300	25790		BNL	STEP,,0, FIRST 1.1, THEN 1-01, ETC
05240	21	00099	00000	25800		A	99,,
05252	22	00065	00000	25810		S	FAC+5
05264	49	05216	00000	25820		B	LOG1,,0
05276	11	05222	00001	25830	STEP	AM	LOG1+6,1,010,STEP 1.1 TO 1.01, ETC.
05288	12	05251	00001	25840		SM	LOG1+35,1,010
05300	12	05263	00009	25850		SM	LOG1+47,9,07
05312	46	05216	01400	25860		BV	LOG1,,0, NO OVERLOW AT END
05324	21	00065	00098	25870		A	FAC+5,98
05336	22	00065	01898	25880		S	FAC+5,ONE-4,,LOG X = X-1
05348	16	00052	00054	25890		TFM	FAC-8,54,10
05360	33	00099	00065	25900		TD	99,FAC+5,, SAVE SIGN
05372	25	00065	00000	25910		CF	FAC+5
05384	46	01376	01200	25920		BZ	ZERFAC,,, TEST FOR ZERU
05396	25	00066	01877	25930		TD	FAC+6,FZEREC
05408	43	05468	00054	25940	NORMAL	BD	LOGR,FAC-6,0
05420	31	00054	00055	25950		TR	FAC-6,FAC-5,,NORMALIZING LOOP
05432	25	00065	01354	25960		TD	FAC+5,FILL
05444	12	00052	00001	25970		SM	FAC-8,1,10
05456	49	05408	00000	25980		B	NORMAL,,0
05468	11	00062	00005	25990	LOGR	AM	FAC+2,5,10, ROUND RESULT
05480	33	00053	00000	26000		CF	FAC-7
05492	43	01464	00053	26010		BD	ENDD-24,FAC-7,, TEST FOR CARRY

LOCTN	QP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS AND REMARKS
05504	12	00052	00001	26020		SM	FAC-8,1,10
05516	31	00053	00054	26030		TR	FAC-7,FAC-6
05528	49	01464	00000	26040		B	ENDD-24
05540	46	06588	01200	26050	ELDG	BE	ERR
05552	16	03285	05572	26060		TFM	ERMA ,ERLNM-1 ,1
05564	49	06588	00000	26070		B	ERR
05571				26080		DORG	*-4
05573		00005	X2	26090	ERLNM	DAC	5 ,ERLN'
19930		00000		26100	LTAB	DS	,19930
				26110	*		
				26120	*		
				26130	*		
				26140	*		SQUARE ROOT
				26150		DORG	5000
05000				26160	SQRT	TR	FAC-16,FLTONE-5
05012	45	05036	19909	26170		BNR	**24,QTAB-1,0
05024	49	06576	00000	26180		B	UDV
05036	21	00071	19909	26190		A	FAC+11,QTAB-1
05048	46	01376	01200	26200		BE	ZERFAC
05060	47	05336	01300	26210		BN	NSQR , ,0
05072	13	00063	00050	26220		MM	FAC+3,50,10
05084	11	00098	00255	26230		AM	98,255,9
05096	25	00080	01877	26240		TD	FAC+20 ,FZEREC
05108	15	00072	00005	26250		TDM	FAC+12 ,5
05120	16	00063	00000	26260		TFM	FAC+3,0,9
05132	43	05168	00098	26270		BD	**36,98,0
05144	26	00073	00072	26280		TF	FAC+13 ,FAC+12
05156	15	00062	00000	26290		TDM	FAC+2
05168	16	05186	00065	26300		TFM	**18,FAC+5,010
05180	21	00000	00053	26310	SQRT1	A	,FAC-7
05192	43	05228	00062	26320		BD	SQRT2,FAC+2,0
05204	12	00053	00002	26330		SM	FAC-7,2,10
05216	49	05180	00000	26340		B	SQRT1,,0
05228	26	05246	05186	26350	SQRT2	TF	**18,SQRT1+6,01
05240	22	00000	00053	26360		S	,FAC-7
05252	11	05186	00001	26370		AM	SQRT1+6,1,010
05264	31	00043	00044	26380		TR	FAC-17,FAC-16
05276	33	00060	00000	26390		CF	FAC
05288	32	00061	00000	26400		SF	FAC+1
05300	45	05180	00072	26410		BNR	SQRT1,FAC+12,0
05312	26	00052	00097	26420		TF	FAC-8,97
05324	49	01488	00000	26430		B	ENDD
05336	16	03285	05356	26440	NSQR	TFM	ERMA ,SQERM-1 ,1
05348	49	06588	00000	26450		B	ERR
05355				26460		DORG	*-4
05357		00005	X2	26470	SQERM	DAC	5 ,NSQR'
19910		00000		26480	QTAB	DS	,19910
				26490	*		
				26500	*		
				26510	*		ABSOLUTE VALUE
				26520	*		
				26530		DORG	5000
05000				26540		BNR	**24,ATAB-1,0
05012	49	06576	00000	26550		B	UDV
05024	28	00060	19889	26560	ABS	LD	FAC,ATAB-1
05036	42			26570		BB2	
19890		00000		26580	ATAB	DS	,19890
				26590	*		
				26600	*		
				26610	*		ABSOLUTE VALUE OF AN INTEGER
				26620	*		
				26630		DORG	5000
05000				26640	NABS	BNR	**24,NTAB-1,0
05012	49	06576	00000	26650		B	UDV
05024	28	00060	19869	26660		LD	FAC,NTAB-1
05036	42			26670		BB2	
19870		00000		26680	NTAB	DS	,19870
				26690	*		
				26700	*		
				26710	*		ARCTANGENT SUBROUTINE
				26720	*		
				26730		DORG	5000
05000				26740		BNR	**24,TTAB-1,0
05012	49	06576	00000	26750		B	UDV
05024	28	00060	19849	26760	ATAN	LD	FAC,TTAB-1,, GET ARGUMENT AND
05036	25	05635	00099	26770		TD	ATAN+11,99,0, SAVE SIGN
05048	14	00052	00043	26780		CM	FAC-8,43,10
05060	47	01464	01300	26790		BL	ENDD-24
05072	14	00052	00051	26800		CM	FAC-8,51,10
05084	47	05132	01300	26810		BL	ATAN1,,0
05096	26	02233	01846	26820		TF	FDVR-1,FLTONE
05108	26	01495	05696	26830		TF	ENDD+7,ATAN1B+1,1,SET RETURN ADDR
05120	49	02234	00000	26840		B	FDVR,,, GET RECIPROCAL
05132	18	00084	00000	26850	ATAN1	LDM	84,0,10
05144	16	05198	00142	26860		TFM	**54,142,09
05156	22	05198	00052	26870		S	**42,FAC-8,0
05168	43	05204	05196	26880		BD	**36,**28,01
05180	32	00053	00000	26890		SF	FAC-7

LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS AND REMARKS
05192	21	00000	00060	26900		A	,FAC,, FIX ARGUMENT
05204	26	00068	00099	26910		TF	FAC+8,99
05216	14	00057	00000	26920		CM	FAC-3
05228	46	05552	01200	26930		BZ	ATAN3+24,,0
05240	±6	05299	000±1	26940		TFM	ATAN2+11,11,010
05252	±6	05539	05723	26950		TFM	ATAN3+11,ATAN2-11,017
05264	±2	05299	00001	26960		SM	ATAN2+11,1,010
05276	±1	05539	000±1	26970		AM	ATAN3+11,11,010
05288	14	00085	00000	26980	ATAN2	CM	85
05300	47	05264	01300	26990		BL	*-36,,0, LOOP TO BRACKET ARG.
05312	23	00065	05299	27000		M	FAC+5,*-13,1
05324	32	00086	00000	27010		SF	86
05336	11	00087	000±0	27020		AM	87,10,10, 1 + AX
05348	26	00050	00094	27030		TF	FAC-10,94
05360	28	00091	00064	27040		LD	91,FAC+4
05372	29	00081	05299	27050		S	81,ATAN2+11,1, X-A
05384	22	00090	00050	27060		D	90,FAC-10,, Y = (X-A)/(1+AX)
05396	26	00079	00090	27070		TF	79,90,, ARGUMENT LESS THAN 0.1
05408	23	00076	00076	27080		M	76,76
05420	26	00050	00092	27090		TF	FAC-10,92,, Y SQUARED
05432	13	00048	±9786	27100		MM	FAC-12,19786
05444	26	00064	05723	27110		TF	FAC+4,ATANC2,1
05456	22	00064	00094	27120		S	FAC+4,94,, EVALUATE POLYNOMIAL
05468	23	00064	00050	27130		M	FAC+4,FAC-10
05480	26	00064	05716	27140		TF	FAC+4,ATANC1,1
05492	22	00064	00092	27150		S	FAC+4,92
05504	23	00064	00079	27160		M	FAC+4,79
05516	26	00064	01871	27170		TF	FAC+4,FZERIC-6
05528	21	00064	00000	27180	ATAN3	A	FAC+4,, ATAN(A)
05540	21	00065	00091	27190		A	FAC+5,91,, ATAN(X)
05552	25	00069	01877	27200		TD	FAC+9,FZERIC
05564	44	05624	01495	27210		BNF	ATAN4,ENDD+7,0
05576	16	01494	01496	27220		TFM	ENDD+6,BB
05588	33	01495	00000	27230		CF	ENDD+7
05600	22	00064	05707	27240		S	FAC+4,ATANP2,1,COMPLEMENT RESULT
05612	33	00064	00000	27250		CF	FAC+4
05624	15	00099	00000	27260	ATAN4	TDM	99
05636	16	00052	00051	27270		TFM	FAC-8,51,10
05648	43	01464	00053	27280		BD	ENDD-24,FAC-7
05660	31	00053	00054	27290		TR	FAC-7,FAC-6,,NORMALIZE
05672	12	00052	00001	27300		SM	FAC-8,1,10
05684	49	05648	05132	27310		B	*-36 ,ATAN1,01
05695		00000		27320	ATAN1B	DS	,*
05707		00012		27330	ATANP2	DC	12,157079632679
05716		00009		27340	ATANC1	DC	9,9999999996
05723		00007		27350	ATANC2	DC	7,3333253
05734		00011		27360	ATANT	DC	11,78539816340
05745		00011		27370		DC	11,73281510179
05756		00011		27380		DC	11,67474094222
05767		00011		27390		DC	11,61072596439
05778		00011		27400		DC	11,54041950027
05789		00011		27410		DC	11,46364760900
05800		00011		27420		DC	11,38050637711
05811		00011		27430		DC	11,29145679448
05822		00011		27440		DC	11,19739555985
05833		00011		27450		DC	11,9966865249
05844		00011		27460		DC	11,0
19850		00000		27470	TTAB	DS	,19850
				27480	*		
				27490	*		
				27500	*		DROP RIGHT HALF (TRUNCATION)
				27510	*		
05000				27520		DORG	5000
05000	45	05024	19829	27530	BNR	**24,DTAB-1,0	
05012	49	06576	00000	27540	B	UDV	
05024	28	00060	19829	27550	LD	FAC ,DTAB-1	
05036	14	00052	00050	27560	CM	FAC-8 ,50 ,10	
05048	47	01376	01100	27570	BNH	ZERFAC	
05060	14	00052	00058	27580	CM	FAC-8 ,58 ,10	
05072	46	01464	01300	27590	BNL	ENDD-24	
05084	±6	05114	00003	27600	TFM	**30 ,3 ,07	
05096	±1	05114	00052	27610	A	**18 ,FAC-8 ,0	
05108	31	00000	01869	27620	TR	,FZERIC-8	
05120	49	01464	00000	27630	B	ENDD-24	
19830		00000		27640	DTAB	DS	,19830
				27650	*		
				27660	*		
				27670	*		PSEUDO RANDOM INTEGER
				27680	*		
05000				27690		DORG	5000
05000	44	05108	05023	27700	BNF	MULT,**23,01	
05012	33	05023	00000	27710	CF	**11,,011	
05024	45	05048	19809	27720	BNR	**24,PTAB-1,0	
05036	49	06576	00000	27730	B	UDV	
05048	13	19809	00005	27740	MM	PTAB-1,05,10	
05060	43	05084	00099	27750	BD	MOVE,99,0	
05072	11	19809	00001	27760	AM	PTAB-1,01,10	
05084	±6	05206	19809	27770	MOVE	TF	NR, PTAB-1,0

LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS AND REMARKS	
05096	33	05202	00000	27780		CF	NR-4,,0	
05108	23	05196	05206	27790	MULT	M	F,NR,,01	
05120	32	00090	00000	27800		SF	90	
05132	26	05206	00099	27810		TF	NR,99,0	
05144	26	00060	00094	27820		TF	FAC,94	
05156	16	00055	00000	27830		TFM	FAC-5,0	
05168	33	00056	00000	27840		CF	FAC-4	
05180	49	01488		27850		B7	ENDD	
05196		00010		27860	F	DC	10,8212890627	
05206		00010		27870	NR	DC	10,0	
19810		00000		27880	PTAB	DS	,19810	
				27890	*			
				27900	*			
				27910	*	MOVE	(TRANSFERS RECORDS TO AND FROM DISK, ALSO USED TO SEE A CYLINDER)	
				27920	*			
				27930	*			
				27940	*			
05000				27950		DDRG	5000	
05000	45	05024	19789	27960	BNR	MVENT,MTAB-1,0		
05012	49	06576	00000	27970	B	UDV		
05024	44	05108	05031	27980	MVENT	BNF	MVENT2,AFTINI,017	
05031		00000		27990	AFTINI	DS	,MVENT+7	
05036	33	05031	00000	28000		CF	AFTINI,,0	
05048	21	05227	00879	28010	A	XXX1+11,COMBEG,0		
05060	21	05299	00879	28020	A	ALR+11,COMBEG,0		
05072	21	05383	00879	28030	A	XXX2+11,COMBEG,0		
05084	21	05443	00879	28040	A	XXX3+11,COMBEG,0		
05096	21	05635	00879	28050	A	XXX4+11,COMBEG,0		
05108	45	05132	05227	28060	MVENT2	BNR	**24,XXX1+11,0111	
05120	49	06576	00000	28070	B	UDV		
05132	45	05156	05383	28080	BNR	**24,XXX2+11,0111		
05144	49	06576	00000	28090	B	UDV		
05156	45	05180	00879	28100	BNR	**24,COMBEG,011		
05168	49	06576	00000	28110	B	UDV		
05180	45	05204	05299	28120	BNR	**24,ALR+11,0111		
05192	49	06576	00000	28130	B	UDV		
05204	26	05973	05993	28140	TF	CA,TNDG1,01,	CHECK FOR ZERO OR NEG FIRST RECORD	
05216	22	05973	00020	28150	XXX1	S	CA,20,0711,	(FIRST RECORD) IN Q ADDRESS
05228	47	05288	01100	28160	BNH	ALR,,0		
05240	49	05264	00000	28170	B	OUTMV,,0		
05252	16	05977	04449	28180	DERR	TFM	MOVEM+2,4449,08	
05264	16	03285	05974	28190	OUTMV	TFM	ERMA ,MOVEM-1 ,1	
05276	49	06588	00000	28200	B	ERR		
05288	21	05973	00030	28210	ALR	A	CA,30,0711,	(LAST RECORD) IN Q ADDRESS
05299		00000		28220	LR	DS	,*	
05300	47	05264	01100	28230	BNH	OUTMV,,0,	CHECK LAST REC GRTR 0 AND FIRST OR=1S	
05312	23	05973	00879	28240	M	CA,COMBEG,011,	CHECK FOR REC LENGTH GREATER THAN ZERO	
05324	47	05264	01100	28250	BNH	OUTMV,,0		
05336	32	00096	00000	28260	SF	96,,7		
05347		00000		28270	NXCYL	DS	,*	
05348	14	00098	00200	28280	CM	98,200,9		
05360	46	05264	01100	28290	BH	OUTMV,,0		
05372	26	05965	00010	28300	XXX2	TF	SA,10,0711,	(MAX NO. RECORDS) IN Q ADDRESS
05383		00000		28310	MNR	DS	,*	
05384	27	05965	05299	28320	S	SA,LR,0111,		
05396	47	05264	01300	28330	BL	OUTMV,,0		
05408	43	05264	00879	28340	BD	OUTMV,COMBEG,011,	CHECK NO WDS/REC IS MULTIPLE OF 10	
05420	26	05968	00098	28350	TF	SC,98,0,	SECTOR COUNT	
05432	23	05383	00001	28360	XXX3	M	MNR,1,06711,	(RECORD LENGTH) IN Q ADDRESS
05443		00000		28370	RL	DS	,*	
05444	24	00099	01067	28380	C	99,PRBS		
05456	46	05264	01100	28390	BH	OUTMV,,0		
05468	23	05443	05965	28400	M	RL,SA,016		
05480	32	00095	00000	28410	SF	95,,,	DUMMY CONTAINS SAVED SECTOR ADDRESS	
05491		00000		28420	DUMMY	DS	,*	
05492	26	05965	00099	28430	TF	SA,99,0		
05504	11	05965	60000	28440	AM	SA,60000,07,		
05516	25	05960	00402	28450	TD	DKCF,402,0		
05528	43	05564	19789	28460	BD	AA1,MTAB-1,0		
05540	34	05960	00701	28470	K	DKCF,00701,0		
05552	49	01376	00000	28480	B	ZERFAC		
05564	26	05491	05965	28490	AA1	TF	DUMMY,SA,01	
05576	13	05965	00050	28500	MM	SA,50,010		
05588	11	00095	00801	28510	AM	95,1,9		
05600	26	05345	00095	28520	TF	NXCYL-2,95,0		
05612	21	05345	00095	28530	A	NXCYL-2,95,0,	1ST SECTOR ADDRESS, NEXT CYLINDER	
05624	16	05973	00039	28540	XXX4	TFM	CA,39,0711	
05636	22	05971	05968	28550	S	CA-2,SC,01,	CORE ADDRESS	
05648	47	05264	01100	28560	BNH	OUTMV,,0		
05660	24	05973	00855	28570	C	CA,BSTBG,0		
05672	47	05264	01100	28580	BNH	OUTMV,,0		
05684	16	00099	00000	28590	TFM	99,0,1011		
05696	44	05732	19789	28600	ROW	BNF	AA2,MTAB-1,0	
05708	36	05960	00702	28610	RN	DKCF,00702,0		
05720	49	05756	00000	28620	B	AA3,,0		
05732	38	05960	00702	28630	AA2	WN	DKCF,00702,0	
05744	36	05960	00703	28640	RN	DKCF,00703,0		
05756	46	05780	03900	28650	AA3	BI	AA4,03900,0,	ANY INDICATOR CHECK

LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS AND REMARKS
05768	49	01376	00000	28660		B	ZERFAC
05780	47	05840	03600	28670	AA4	BNI	BOF,03600,0, WRONG ADDRESS CHECK
05792	44	05252	00099	28680		BNF	DERR,99,0
05804	33	00099	00000	28690		CF	99
05816	34	05960	00701	28700	BSK	K	DKCF,00701,0
05828	49	05696	00000	28710		B	ROW,,0
05840	47	05888	03700	28720	BOF	BNI	NOHDW,03700,0, WRONG LENGTH REC/READ BACK CHECK
05852	44	05252	00098	28730		BNF	DERR,98,0
05864	33	00098	00000	28740		CF	98
05876	49	05696	00000	28750		B	ROW,,0
05888	26	05965	05347	28760	NOHDW	TF	SA,NXCYL,01
05900	22	05491	05347	28770		S	DUMMY,NXCYL,01
05912	32	05489	00000	28780		SF	DUMMY-2,,0
05924	21	05968	05491	28790		A	SC,DUMMY,01
05936	22	05971	05491	28800		S	CA-2,DUMMY,01
05948	49	05816	00000	28810		B	BSK,,0
05960		00014		28820	DKCF	DSS	14
05965		00000		28830	SA	DS	,DKCF+5
05968		00000		28840	SC	DS	,DKCF+8
05973		00000		28850	CA	DS	,DKCF+13
05975		00005	X2	28860	M0VEM	DAC	5,TASK'
05993		00010		28870	TNDV1	DC	10,1,
19790		00000		28880	MTAB	DS	,19790
				28890	*		
				28900	*		
				28910	*	MOD(N/M)	EVALUATES N MOD M
				28920	*		
05000				28930		DORG	5000
05000	26	00060	00099	28940		TF	60,99
05012	42			28950		BB2	
				28960	*		
				28970	*		
				28980	*	SAVE	(TO SAVE AND RETRIEVE INPUT INFO FOR LATER REREAD)
				28990	*		
05000				29000		DORG	5000
05000	45	05024	19749	29010	BNR	SAVE1,SVTAB,0	
05012	49	06576	00000	29020	B	UDV	
05024	44	05084	19749	29030	SAVE1	BNF	RETRV,SVTAB,0
05036	33	05038	00000	29040	SAVES	CF	**2,,02
05048	26	00565	04429	29050		TF	INOUT+160,NEXT+5
05060	31	05134	00404	29060		TR	STORE,INOUT-1,0
05072	42	00000	00000	29070	SMSST	BB	
05084	44	05120	05038	29080	RETRV	BNF	RETR1,SAVES+2,01
05096	16	03285	05074	29090		TFM	ERRA,SAVEM-1,1
05108	49	06588	00000	29100		B	ERR
05120	31	00404	05134	29110	RETR1	TR	INOUT-1,STORE,1
05132	42			29120		BB2	
05134		00160		29130	STORE	DSS	160
05295		00002		29140		DC	2,0'
05075		00005	X2	29150	SAVEM	DAC	5,SAVE',SMSST+3
19749		00000		29160	SVTAB	DS	,19749
				29170	*		
				29180	*		
				29190	*	LINK	
				29200	*		
05000				29210		DORG	5000
05000	45	05024	19729	29220	BNR	**24 ,LKTAB-1 ,0	
05012	49	06576	00000	29230	B	UDV	
05024	32	02022	00000	29240	SF	LNKFLG	
05036	26	00425	19729	29250		TF	425 ,LKTAB-1
05048	16	02038	00073	29260		TFM	ABND CF-7 ,073 ,9
05060	16	02028	04656	29270		TFM	ABND CF-17 ,4656 ,711
05072	49	01966		29280		B7	TIGER+12
19730		00000		29290	LKTAB	DS	,19730
				29300	*		
				29310	*		
				29320	*	NFIL	SUBROUTINE TO CONVERT INTEGER TO ALPHAMERIC
				29330	*		
05000				29340		DORG	5000
05000	45	05024	19709	29350	BNR	NFILA , NFTAB ,0	
05012	49	06576	00000	29360	B	UDV	
05024	14	19704	00000	29370	NFILA	CM	NFTAB-5 , 0 , 7
05036	46	05204	01100	29380	BP	NFILE	, ,0
05048	32	19705	00000	29390	NFILB	SF	NFTAB-4 , , 7
05060	26	05059	19709	29400		TF	NFILB+11, NFTAB ,0
05072	73	19709	05059	29410	TNF	NFTAB	, NFILB+11, 1
05084	43	05144	19701	29420	NFILC	BD	NFIELD , NFTAB-8 ,0 10
05096	15	19700	00000	29430		TDM	NFTAB-9 , 0 , 5
05108	11	05095	00002	29440	AM	NFILC+11, 2	,0 10
05120	11	05102	00002	29450	AM	NFILC+18, 2	,0 10
05132	43	05084	05102	29460	BD	NFILC	, NFILC+18,01
05144	32	19700	00000	29470	NFIELD	SF	NFTAB-9
05156	26	00060	19709	29480		TF	FAC , NFTAB
05168	16	05095	19701	29490	TFM	NFILC+11, NFTAB-8	,0 10
05180	16	05102	19700	29500	TFM	NFILC+18, NFTAB-9	,0 10
05192	42	00000	00000	29510		BB	
05195		00005	X2	29520	DAC	5,NFIL',*-8	



LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS AND REMARKS
05204	16	03285	05194	29530	NFILE	TFM	ERMA , *-10 , 17
05216	49	06588		29540		B7	ERR
19709		00000		29550	NFTAB	DS	,19709
				29560	*		
				29570	*		
				29580	*	NUPL	MODIFY PAGE AND LINE CONTROL
				29590	*		
05000				29600		DORG	5000
05000	45	05024	19689	29610	BNR	NUPLA	, NUTAB ,0
05012	49	06576	00000	29620	B	UDV	
05024	43	05072	19689	29630	NUPLA	BD	NUPLB , NUTAB ,0
05036	43	05120	19688	29640		BD	NUPLC , NUTAB-1 ,0
05048	16	03285	05160	29650		TFM	ERMA , NUPLD-1 ,17
05060	49	06588	00000	29660		B	ERR
05072	44	05098	19689	29670	NUPLB	BNF	**26 , NUTAB ,0
05084	15	04339	00007	29680		TDM	EOL+1,7
05096	42			29690		BB2	
05098	15	04339	00009	29700		TDM	EOL+1,9
05110	42			29710		BB2	
05119				29720		DORG	**8
05120	44	05146	19689	29730	NUPLC	BNF	**26 , NUTAB ,0
05132	15	04477	00000	29740		TDM	READ+11, 0
05144	42			29750		BB2	
05146	15	04477	00001	29760		TDM	READ+11, 1
05158	42			29770		BB2	
05161		00005	X2	29780	NUPLD	DAC	5,NUPL'
19689		00000		29790	NUTAB	DS	,19689
				29800	*		SGN 10 C4D SUBROUTINE
				29810	*		THE ARGUMENT OF SGN IS EXAMINED AND CAUSES
				29820	*		FAC = 1. IF POSITIVE
				29830	*	OR	FAC = 0. IF ZERO
				29840	*	OR	FAC = -1. IF NEGATIVE
19810		00000		29850	SGNTAB	DS	,19810
				29860	*		LOCATED TO REPLACE PSEUDO RANDOM INTEGER
05000				29870		DORG	5000
05000	45	05024	19809	29880	BNR	**24	,SGNTAB-1 ,0
05012	49	06576	00000	29890	B	UDV	
05024	26	00060	01846	29900	TF	FAC	,FLTONE
05036	14	19809	00000	29910	CM	SGNTAB-1	, ,10
05048	46	01376	01200	29920	BE	ZERFAC	
05060	47	01476	01300	29930	BL	ENDD-12	
05072	42	00000	00000	29940		BB	
05074				29950		DORG	*-9
00972				29960		DEND	BEGIN

LABELS IN THE FORTRAN LABEL INDEXER

A---CONTAINS ADDRESS OF TOP OF STATEMENT NUMBER TABLE.

AA---IN THE ..PUTV..ROUTINE, CHECKS FOR END OF VARIABLE NAME, SKIPS IMBEDDED  
BLANKS, SETS DEFINING FLAG IN ..SCAN.., TRANSMITS VARIABLE SYMBOL RANGE  
TO ..SYMCK.. AND EXITS TO ..SYMCK...

ADTO---IN THE ..EQCHK.. ROUTINE, INCREMENTS LOCATION ..ADR.. IN INPUT  
BUFFER (CHI) WHEN CHECKING THE TYPE OF STATEMENT BY SPECIAL CHARACTER.  
ENTERED FROM ..LPAR.. AND ..A3... EXIT TO ..A1...

AD5--- IN THE OUTPUT SECTION, ADDS 5 TO LOCATION BEING CHECKED IN SYMBOL  
TABLE ..VA+35.. BEFORE CHECKING FOR DEFINITION DIGIT AT ..VA+24..  
BECAUSE OF PREVIOUS CHECK FOR NEXT LABEL.

ARITH---HANDLES ARITHMETIC STATEMENTS SETTING REFERENCE DEFINITION  
INDICATOR ..REDEI.. FOR LEFT AND RIGHT OF EQUAL SIGN. EXIT TO  
..PUTTST...

ASTMSG---ALPHA MESSAGE---\* OTHER CARDS WHERE VARIABLES ARE DEFINED--OUTPUT  
IN ..CALSYS.. BEFORE BRINGING THE EXECUTIVE IN.

A1---IN THE ..EQCHK..ROUTINE, CHECKS FOR END OF SOURCE STATEMENT WHILE  
CHECKING TYPE OF STATEMENT BY SPECIAL CHARACTERS. EXITS TO ..LPAR..  
OR ..ETEST...

A2---IN THE ..EQCHK.. ROUTINE, CHECKS IF LEFT PARENTHESIS OR COMMA IS FIRST  
SPECIAL CHARACTER. EXITS TO ..A3.. FOR LEFT PARENTHESIS, TO ..COMIO..  
FOR COMMA.

A3---IN THE ..EQCHK.. ROUTINE, CHECKS FOR EQUAL SIGN, EXIT TO ..DOTEST..  
OR IF LEFT PARENTHESIS FOLLOWED BY EQUAL SIGN, EXIT TO ..ARITH..

BA2---PUTS AVOID ..0\*.. AT END OF SOURCE STATEMENT.

BEG---BEGINNING OF LABEL INDEXER PROPER. SETS FLAG DEFINING BLANK FIELD  
..BLK.. IN THE BLANK RECORD ..BLK1...

BLK---BLANK FIELD OF 10 DIGITS.

BLK1---BLANK RECORD OF 80 ALPHA CHARACTERS, 160 DIGITS.

BRS---IN THE ..SYMCK.. ROUTINE, PUTS SEQUENCE NUMBER ..SEON.. AND REFERENCE  
DEFINITION INDEX ..REDEI.. INTO THE SYMBOL TABLE. RESTORES DIGIT  
COVERED BY MOVING THE SYMBOL TABLE FOR ENTRY AND RETURNS TO MAINLINE  
SECTION.

BRV---IN THE ..SYMCK.. ROUTINE, ENTERS LABEL INTO SYMBOL TABLE. EXITS TO  
..BRS...

BTREF---SETS ..REDEI.. TO REFERENCE CARD. EXITS TO ..STATNO.. WITH RETURN  
TO ..READ...

CALSYS---OUTPUTS ..ASTMSG.. AND CALLS SYSTEM EXECUTIVE.

CFLAG---SETS UP ..FLAG.. TO CLEAR FLAGS IN THE FIRST N POSITIONS OF THE  
INPUT BUFFER ..CHI.. FOR A COMPARE. N IS TRANSMITTED WITH THE CALL.

CHI--- THE INPUT BUFFER. 100 ALPHA CHARACTERS.

CKDEC---IN THE ..PUTTST.. ROUTINE, CHECKS FOR DECIMAL AND MOVES FIRST  
CHARACTER OUT OF BUFFER AREA ..CHI... EXIT TO ..CNUM.. FOR DECIMAL.

EXIT TO ..PUTTST+24.. FOR NON-DECIMAL.

CKNUM---IN THE ..PUTTST.. ROUTINE, CHECKS FOR NUMERIC, MOVES FIRST CHARACTER OUT OF BUFFER AREA ..CHI.. AND EXITS TO ..PUTTST+24.. FOR NUMERIC. EXITS TO ..PUTV.. FOR NON-NUMERIC.

CKNV---IN THE ..STATNO.. ROUTINE, CHECKS FOR NUMERIC. EXITS TO ..INT.. FOR NUMERIC. MOVES FIRST CHARACTER OUT OF BUFFER AREA AND EXITS TO ..STATNO.. FOR NON-NUMERIC.

CLOUT---IN THE ..OUTP.. ROUTINE, BLANKS THE OUTPUT BUFFER ..OUT.. AND RETURNS TO MAIN LINE.

CLSCAN---MOVES LEADING BLANKS OUT OF BUFFER AREA ..CHI.. AND CHECKS FOR ..DATA.. STATEMENT. EXIT TO ..NO DATA.. OR ..DATAACK...

CNT---USED FOR COUNTING OR TEMPORARY STORAGE OF 2 DIGITS.

CNUM---IN THE ..PUTTST.. SUBROUTINE. CHECKS FOR END OF STATEMENT. IF NOT, EXIT TO ..CNUM1.., OTHERWISE, TO ..PUTTST+42.. INDIRECT. ..PUTTST+42.. IS NORMALLY ..READ.. BUT IN THE CASE OF AN--IF--, IT IS ALTERED TO ..IFRET...

CNUM1---IN THE ..PUTTST.. SUBROUTINE. IF NUMBER, EXIT TO ..NUMB.., IF --E--, MOVE--E-- AND SIGN OUT AND THEN EXIT TO ..PUTTST+24.., OTHERWISE EXIT TO ..CKNUM+24...

COM---IN COMMON I/O ROUTINE ..RESTO... IF COMMA, EXIT TO ..RESTO+12... IF RIGHT PARENTHESIS, EXIT TO ..ECHK... IF LEFT PARENTHESIS, EXIT TO ..RESTO+12...

COMA---IN ..DOTEST.. ROUTINE. CHECKS FOR A COMMA BEFORE LEFT PARENTHESIS INDICATING A --DD--. IF LEFT PARENTHESIS, EXIT TO ..ARITH... IF COMMA, SET ..REDEI.. TO REFERENCE AND EXIT TO ..STATNO.. WITH RETURN TO ..ARITH.., OTHERWISE, EXIT TO ..DOTEST+24...

COMAIO---DETERMINES TYPE OF STATEMENT BY FIRST LETTER. --C-- COMMON EXIT TO ..READ.., --R-- READ EXIT TO ..INPUT.., --S-- SEGMENT EXIT TO ..SEGLST.., OTHERWISE OUTPUT STATEMENT SO SET ..REDEI.. TO REFERENCE AND EXIT TO ..STATNO.. AND RETURN TO SET ..REST.. TO REFERENCE AND EXIT TO ..RESTU...

CONT---EXIT TO ..NUM.. FOR NON-CONTINUATION CARD. EXIT TO ..READ.. FOR CONTINUATION OF FORMAT. ANY OTHER CONTINUATION, MOVE CHARACTERS TO NON-NUMBER AND EXIT TO ..RESTO...

CSYS---RECORD CONTAINING INSTRUCTIONS AND DISK CONTROL FIELD FOR CALLING SYSTEM EXECUTIVE.

CTST---CHECKS FIRST LETTER OF STATEMENT FOR --C--. NOT EQUAL, EXIT TO ..TRA.., OTHERWISE, CHECK SECOND CHARACTER FOR AN --O--. IF EQUAL, EXIT TO ..READ... IT IS A CONTINUE OR CONTROL.

DATA---SETS ..REDEI.. TO DEFINITION, MOVES --DATA,-- OUT OF BUFFER AREA AND EXITS TO ..PUTTST.. TO GET VARIABLE INTO SYMBOL TABLE. ON RETURN, ALL SUBSCRIPTS AND DATA ARE SKIPPED TO SECOND SLASH THEN NEXT VARIABLE IS PULLED ..PUTTST.., ETC. FINAL EXIT IS TO ..READ.. THROUGH DETECTION OF END OF STATEMENT IN ..PUTTST...

DATAACK---COMPARE THE FIRST 5 CHARACTERS IN THE BUFFER ..CHI.. TO --DATA,--.

EXIT TO ..DATA.. IF EQUAL, EXIT TO ..NODATA.. IF UNEQUAL.

DATASP---ALPHA CONSTANT --DATA,-- USED IN ..DATAACK...

DCF---DISK CONTROL FIELD USED FOR READING SOURCE STATEMENTS FROM DISK.

DCFS---DISK CONTROL FIELD USED FOR READING SYSTEM EXECUTIVE FROM DISK.

DOTEST---ROUTINE FOR TESTING FOR --DO--. EXIT TO ..ARITH.. IF FIRST CHARACTER IS NOT A --D--, OTHERWISE EXIT TO ..COMA...

DWN---CONTAINS THE SIZE OF THE SYMBOL TABLE SHIFT FOR EACH TIME THROUGH ..SYMCK.. 15 FOR A NEW ENTRY OR 5 FOR THE ENTRY OF A SEQUENCE NUMBER ONLY.

E---EXIT TO ..VAROT1+24.. TO PICK UP MULTIPLE DEFINITION OF LAST VARIABLE IN SYMBOL TABLE THE FIRST TIME THROUGH. THE SECOND TIME THROUGH, EXIT IS TO ..EOUT...

ECHK---IN THE I/O ROUTINE ..RESTO.. CHECKS TO SEE IF THERE ARE ANY MORE VARIABLES IN THE LIST. IF NONE LEFT EXIT TO ..READ.., IF ONLY ONE EXIT TO ..RESTO.., IF MORE THAN ONE EXIT TO ..SPCHA...

END---PUTS BLANK FIELD AT THE END OF THE SYMBOL TABLE TO ALLOW IDENTIFICATION OF THE END IN OUTPUT.

EOUT---OUTPUTS LAST LINE FOR BOTH VARIABLES AND STATEMENT NUMBERS. EXITS TO ..VAROT.. FOR STATEMENT NUMBER, TO ..EOUT+12.. FOR VARIABLE.

EQCHK---ROUTINE FOR CHECKING TYPE OF STATEMENT BY ARRANGEMENT OF SPECIAL CHARACTERS, 1ST - COMMON OR I/O EXIT TO ..COMIO.. THEN= ARITHMETIC EXIT TO ..ARITH.. = 1ST IS ARITHMETIC OR DO EXIT TO ..DOTEST.. NO, OR= EXIT TO ..ETEST.. FOR FURTHER CHECKING. SETS FORMAT INDICATOR ..ETEST.. TO NON FORMAT SETS LEFT PAR INDICATOR ..A2.. OFF.

ETEST---CHECKS FIRST LETTER OF STATEMENT FOR --E-- IF LOW EXIT TO ..CTST.. IF HIGH EXIT TO ..ITEST.. IF --E-- CHECKS FOR AVOID IN 4TH POSITION IF NO, EXIT TO ..TRAC.. IF YES, EXIT TO ..END..

FIF---CONTAINS ADDRESS..FIF+6.. OF STATEMENT NUMBER IN TEMPORARY AREA.

FIN---IN ..FLAG.. ROUTINE CHECKS FOR DONE. IF DONE, BRANCH BACK. IF NOT, RETURN TO ..FLAG+12.. AND CONTINUE.

FINISH---IN..STATNO.. ROUTINE MOVES STATEMENT NUMBER 6 FROM TEMPORARY AREA INTO ..SCAN.. AND CLEARS FLAGS. SETSUP ..SYMCK.. FOR STATEMENT NUMBER CHECK AND EXITS TO ..SYMCK...

FLAG---RESTORES FLAGS IF ENTERED FROM ..RFLAG.. OR CLEARS FLAGS IF ENTERED FROM ..CFLAG.. IN THE INPUT BUFFER ..CHI...

FRMFS---CHECKS FOR EXACT SPELLING OF FORMAT. EXIT TO ..NOMFR.. IF NOT FORMAT. SET FORMAT INDICATOR ..FTEST.. AND EXIT TO ..READ.. FOR FORMAT.

FRMTSP---ALPHA SPELLING OF FORMAT.

FTEST---MOVES BLANK OUT OF INPUT BUFFER ..CHI... EXIT TO ..LARRY...

GO---INCREASES DISK CONTROL FIELD FOR NEXT READ. EXIT TO ..STER.. IF INVALID STATEMENT. IF COMMENT CARD, OUTPUTS FIRST EXIT TO ..READ.. EXIT TO ..SEQ.. FOR NON-COMMENT.

HDWR---ALPHA MESSAGE- HDWR ERR LAB INDX

HDWRE---OUTPUT HARDWARE ERROR..HDWR.. AND CALLS SYSTEM.

HTYP---HANDLES HOLLERITH FIELDS IN THE DATA STATEMENT. SKIPS OVER THE  
CHARACTERS IN HOLLERITH DATA.

IF---PLACES AVOID AFTER LAST RT. PAR. AND SETS RETURN FROM ..PUTTST.. TO BE  
..IFRET.. EXITS TO ..STOPIF...

IFRET---RESTORES RETURN IN ..PUTTST.., MOVES AVOID OUT OF BUFFER ..CHI..  
EXITS TO ..IFS...

IFS---PULLS STATEMENT NUMBERS FROM-IF- BY WAY OF ..STATNO.. EXIT IS THROUGH  
..STATNO.. TO ..READ...

INPUT---SETS UP ..RESTO.. ROUTINE FOR INPUT STATEMENTS AND PULLS FORMAT  
NUMBER, EXIT TO ..RESTO...

INT---IN..STATNO.. ROUTINE. INITIALIZES TEMPORARY ADDRESS ..FIF+6.. AND  
..SCAN.. AND CHECKS FOR END OF STATEMENT NUMBER. EXIT TO ..FINISH..  
FOR END OF STATEMENT NUMBER OTHERWISE TO ..FIF...

ITEST---COMPARES FOR -I- AS FIRST CHARACTER. EXIT TO ..RTEST.. IF HIGH.  
TO ..IF.. IF EQUAL. OTHERWISE -GO TO- EXIT TO ..BTREF.. IF COMPUTED  
-GO TO- PULL STATEMENT NUMBERS OF COMPUTED GO TO AND INDEX WITH EXIT  
TO ..READ...

LEADBL---PUTS ADDRESS OF FIRST NON-BLANK CHARACTER IN ..LEADBL+23... EXIT  
TO ..READ.. FOR BLANK CARD. OTHERWISE EXIT TO ..CLSCAN...

LIN2---SETS RETURN TO ..LIN3.. FOR SECOND TIME THROUGH ENTRY IN TABLE IN  
..SQ...

LIN3---ENTERED AFTER SECOND TIME THROUGH TABLE ENTRY. OUTPUTS FIRST PART  
OF OUTPUT AND SETS UP FOR OUTPUT OF MULTIPLE DEFINITION LINE. EXIT  
TO ..LIN4+12...

LIN4---OUTPUTS MULTIPLE DEFINITION LINES WHEN FULL. EXIT TO ..SQ1...

LPAR---IN..EQCHK.. ROUTINE CHECKS FOR LEFT PAR.

MEM---CONTAINS CORE SIZE

NODATA---RESTORES FLAGS IN BUFFER AFTER ..DATAACK.. WHEN NOT A DATA STATEMENT.

NONFR---RESTORES FLAGS IN BUFFER AFTER ..FRMTS.. WHEN NOT-FORMAT-.

NUM---CHECKS FOR LEADING STATEMENT NUMBER. IF NONE, EXIT TO ..EQCHK..  
OTHERWISE PULL STATEMENT NUMBER AND EXIT TO ..FTEST...

NUMB---IN ..PUTTST.. ROUTINE MOVES NUMBER OUT OF BUFFER, IF END OF  
STATEMENT EXIT TO ..PUTTST+36.. OTHERWISE EXIT TO ..CNUM...

OK---IN ..SYMCK.. ROUTINE, MOVES DOWN SYMBOL TABLE TO MAKE ROOM FOR ENTRY.

OUT---OUTPUT BUFFER.

OUTAD---CONTAINS ADDRESS IN SYMBOL TABLE BEING LOOKED AT DURING BREAKDOWN  
FOR OUTPUT.

OUTP---OUTPUT ROUTINE, OUTPUTS..OUT.. AND THEN FILLS ..OUT.. WITH BLANKS.  
CHECKS FOR PAGE OVERFLOW.

PRI---IN ..OUTP.. ROUTINE PUTS RECORD MARK AFTER LAST CHARACTER AND PRINTS  
LINE.

PRINT---IN ..OUTP.. ROUTINE CHECKS FOR PAGE OVERFLOW.

PUT---IN ..SYMCK.. ROUTINE, ENTRY POINT FOR NEW ENTRY AT BOTTOM OF TABLE.

PUTTST---ROUTINE TO PULL VARIABLES AND SKIP OVER FIXED AND FLOATING POINT  
NUMBERS.

PUTV---PART OF ..PUTTST.. ROUTINE TO HANDLE VARIABLES. IN COMBINATION WITH  
 ..AA.. PUTS VARIABLE IN ..SCAN.. AND EXITS TO ..SYMCK...

PUT1---IN ..SYMCK.. IS BRANCH POINT FOR PUTTING SEQUENCE NUMBER IN TABLE  
 WHERE LABEL IS ALREADY IN TABLE.

PUT2---IN ..SYMCK.. HANDLES ACTUAL ADJUSTMENT OF SYMBOL TABLE ADDRESSES.  
 EXITS TO ..BRV.. FOR LABEL AND SEQUENCE NUMBER, TO ..BRS.. FOR  
 SEQUENCE NUMBER ONLY.

PUT3---IN ..SYMCK.. SETS UP FOR MOVING SYMBOL TABLE, IF NECESSARY.

READ---READS SOURCE STATEMENT FROM DISK AND CHECKS FOR HARDWARE ERROR.  
 EXIT TO ..GO.. IF NO ERROR, EXIT TO ..HWRE.. IF ERROR.

REDEI---REFERENCED, DEFINED INDICATOR. 1 INDICATES THAT THE USE OF  
 STATEMENT NUMBER OR VARIABLE IS DEFINITION, 0 INDICATES A REFERENCE  
 USE.

REST---CONTAINS THE NORMAL CONDITION OF THE ..REDEI.. FOR HANDLING I/O  
 STATEMENTS.

RESTO---IN-I/O ROUTINE THIS RESTORES THE ..REDEI.. TO ITS NORMAL STATE AFTER  
 THE HANDLING OF A SPECIAL CASE, SUCH AS SUBSCRIPTS WHICH ARE  
 REFERENCED IN A ..READ.. STATEMENT THAT HAS DEFINED AS ITS NORMAL  
 STATE.

RFLAG---SETS UP ..FLAG.. TO RESTORE FLAGS IN THE FIRST N POSITIONS OF THE  
 INPUT BUFFER ..CHI.. AFTER A COMPARE. N IS TRANSMITTED WITH THE CALL.

RTEST---CHECKS FIRST LETTER OF STATEMENT FOR AN --R--. EQUAL EXIT TO  
 ..BTREF.. FOR READ STATEMENT WITH NO LIST. IF A --P-- EXIT TO  
 ..BTREF.. FOR PRINT OR PUNCH WITH NO LIST. IF --T-- EXIT TO ..BTREF..  
 FOR TYPE WITH NO LIST. IF --S-- EXIT TO ..SEGLST.. FOR SEGMENT  
 STATEMENT. OTHERWISE GO TO ..READ...

SCAN---WILL CONTAIN STATEMENT NUMBER OR VARIABLE WHEN ENTERING ..SYMCH.. TO  
 CHECK SYMBOL TABLE.

SEGLST---SETS ..REDEI.. TO DEFINED FOR SEGMENT STATEMENT AND STARTS LOOP TO  
 PULL SEGMENT NUMBERS IN ..STATNO...

SEQ---BRANCH POINT FOR NON-COMMENT CARD FROM ..GO...

SEQN---CONTAINS CARD SEQUENCE NUMBER.

SHIFT---IN HOLLERITH ROUTINE ..HTYP.. THIS MOVES ..CHI.. DOWN BY ONE  
 CHARACTER.

SPCHA---IN COMMON I/O ROUTINE ..RESTO.. CHECKS FOR AN EQUAL SIGN. IF NON-  
 SPECIAL CHARACTER EXIT TO ..ECHK+12... IF AN EQUAL SIGN SET UP ..REDEI..  
 FOR IMPLIED DO INDEX DEFINITION AND EXIT TO ..RESTO+12.. OTHERWISE  
 EXIT TO ..RESTO...

SQ---IN OUTPUT ROUTINE HANDLES SEQUENCE NUMBER OUTPUT. CHECKS FOR END OF  
 TABLE IN SEARCH. 1ST TIME THROUGH CHECKS FOR REFERENCES. 2ND TIME  
 THROUGH CHECKS FOR MULTIPLE DEFINITIONS.

SQ1---PUTS SEQUENCE NUMBER IN OUTPUT AREA.

STATNO---START OF SUBROUTINE TO SEARCH SYMBOL TABLE FOR ENTRY AND ENTER  
 EITHER LABEL OR SEQUENCE NUMBER OR BOTH.

STER---WRITES ERROR MESSAGE ..STERR.. AND CALLS SYSTEM.

STERR---ALPHA MESSAGE- NO INDEX, \*HOLD SHOULD FOLLOW \*CODE.

STNAD---CONTAINS THE ADDRESS OF THE BOTTOM OF THE STATEMENT NUMBER SYMBOL TABLE.

STNO---BRANCH POINT FOR OUTPUT OF STATEMENT NUMBERS. CHECKS FOR END OF TABLE.

STOPIF---PUTS AVOID IN PLACE OF LAST ) IN IF STATEMENT FOR PULLING VARIABLES AND ALTERS ..PUTTST.. TO RETURN TO ..IFRET.. ON HITTING AVOID.

SUB---SUBTRACTS 14 FROM ..SYMCK+11.. TO BYPASS LAST LABEL CHECKED AND ONE SEQUENCE NUMBER IN TABLE FOR FURTHER CHECKING.

SYMCK---CHECKS FOR LABEL ENTRY WHILE SEARCHING TABLES.

S2---BRANCH POINT. ALSO SUBTRACTS 5 TO SKIP OVER SEQUENCE NUMBERS IN SEARCH OF TABLE.

TEST---COMPARES ..SCAN.. TO LABEL IN TABLE. IF MATCH EXIT TO ..PUT1.. TO ENTER SEQUENCE NUMBER. BECAUSE OF ORDERING CAN EITHER CONTINUE SEARCH ..SUB.. OR ENTER LABEL ..PUT3...

TRA---EXIT TO ..READ.. IF FIRST CHARACTER IS A --D--. IF --A-- EXIT TO ..BTREF.. ACCEPT WITH NO LIST. IF --T-- IS 6TH CHARACTER EXIT TO ..READ.. BEGIN TRACE. IF 6TH CHARACTER IS --P-- EXIT TO ..STATNO.. FOR BEGIN PROCEDURE OTHERWISE EXIT TO ..BTREF.. FOR BEGIN SEGMENT.

TRAC---IF 4TH CHARACTER IS A --T-- EXIT TO ..READ.. FOR END TRACE. OTHERWISE TO ..BTREF.. FOR END SEGMENT, EXECUTE PROCEDURE, OR END PROCEDURE.

VA---CHECKS FOR 1ST DEFINITION IN OUTPUT SECTION EXIT TO ..VDEF.. IF FOUND. EXIT TO ..VDEF+24.. IF END OF TABLE OR NEXT LABEL REACHED.

VAR---ALPHA MESSAGE FOR OUTPUT.

VARAD---CONTAINS ADDRESS OF BOTTOM OF VARIABLE SYMBOL TABLE.

VAROT---ADJUSTS OUTPUT SECTION FOR OUTPUT OF VARIABLES.

VAROT1---RETURN IN OUTPUT SECTION TO START ON NEXT LABEL.

VDEF---PUTS 1ST DEFINITION IN OUTPUT BUFFER AND SAVES ADDRESS TO START SEARCH FOR MULTIPLE DEFINITION.

V1---PUTS LABEL IN OUTPUT BUFFER, BLANKS LEADING ZEROS, AND RESTORES COUNT FOR OUTPUT OF SEQUENCE NUMBERS.

ZEREND---ZEROS TOP OF CORE FOR SYMBOL TABLES, ADJUSTS FOR CORE SIZE, AND SEEKS FOR 1ST SOURCE CARD.







LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS AND REMARKS
				00000	*		FORTRAN LABEL INDEXER 1/20/67
00404				00010		DORG	404
00404	25	06578	00401	00012		TD	DCFS+1 ,401
00416	49	18012		00014		B7	18012
00069		00000		00016	RCKT	DS	,69
00424	16	00069	00299	00020		TFM	RCKT ,299
00436	27	00456	00455	00030		BT	ROCK ,ROCK-1
00448	49	00632		00040		B7	BEG ,5
00456	36	00044	00703	00050	ROCK	RN	44 ,703
00468	47	00478	01942	00060		BNI	**+10 ,1942
00480	43	00556	00069	00070		BD	ROCK1 ,RCKT ,11
00492	34	00000	00102	00100	HDWRE	RCTY	
00504	39	06465	00100	00110		WATY	HDWR
00516	49	05726		00112		B7	CALSYS
00524	34	00000	00102	00114	STER	RCTY	
00536	39	06501	00100	00116		WATY	STERR
00548	49	05726		00118		B7	CALSYS
00556	25	00068	00069	00121	ROCK1	TD	RCKT-1 ,RCKT ,11
00568	46	00580	00600	00122		BI	**+12 ,600
00580	46	00592	01600	00123		BI	**+12 ,1600
00592	46	00604	01700	00124		BI	**+12 ,1700
00604	49	00000	00832	00125		B	,READ+32
00617		00002		00126	DCF	DC	2,0
00622		00005		00127		DC	5,59998
00625		00003		00128		DC	3,2
00630		00005	06132	00129		DSA	CHI-1
00631		00001				DC	1,1
00632	32	05970	00000	00130	BEG	SF	BLK1-1
00643		00000		00140	MEM	DS	,*
00644	25	00658	00400	00150		TD	ZEREND+2,400
00656	26	39999	06019	00160	ZEREND	TF	39999,BLK1+48
00668	32	01228	00000	00170		SF	CONT
00680	25	00617	00402	00180		TD	DCF,402
				00200	*		ADJUST FOR CORE SIZE
00692	25	00639	00400	00210		TD	MEM-4,400
00704	11	00640	00010	00220		AM	MEM-3,10,10
00716	26	03477	00643	00230		TF	OUTAD,MEM
00728	12	00643	00085	00240		SM	MEM,5,10
00740	26	03489	00643	00250		TF	A+11,MEM
00752	26	03453	00643	00260		TF	STNAD,MEM
00764	12	00643	00085	00270		SM	MEM,5,10
00776	26	03465	00643	00280		TF	VARAD,MEM
				00290	*		READ SOURCE CARD
00788	31	00038	00611	00300		TR	38 ,DCF-6
00800	15	00068	00009	00310	READ	TDM	RCKT-1 ,9
00812	11	00049	00082	00320		AM	49 ,2 ,10
00824	49	00024		00330		B7	24
00832	27	00456	00455	00340		BT	ROCK ,ROCK-1
00844	44	00524	06234	00390		BNF	STER,CHI+101
00856	32	00800	00000	00400		SF	READ
				00410	*		CHECK FOR COMMENT CARD
00868	14	06133	00043	00420		CM	CHI ,43 ,10
00880	47	00952	01200	00430		BNE	SEQ
00892	44	00800	01228	00440		BNF	READ ,CONT
				00450	*		OUTPUT 1ST COMMENT
00904	33	01228	00000	00460		CF	CONT
00916	31	06276	06114	00470		TR	CHI+143,BLK1+143
00928	17	05786	00940	00480		BTM	OUTP,**+12
00940	17	05786	00800	00500		BTM	OUTP,READ
00952	33	01229	00000	00510	SEQ	CF	CONT+1
				00520	*		SET SW. IF DIGIT IN COL. 6
00964	14	06143	00080	00530		CM	CHI+10 , ,10
00976	46	01000	01200	00540		BE	BA2
00988	32	01229	00000	00550		SF	CONT+1
				00560	*		PUT SEQUENCE NO. IN SEQN
				00570	*		PUT AVOID AT END
01000	11	06280	05729	00580	BA2	AM	CHI+147,CHI-404
01012	16	06280	00080	00590		TFM	CHI+147 , ,610
01023		00001		00600		DC	1 , ,*
				00610	*		FIND FIRST CHARC.
01024	16	01047	06133	00620	LEADBL	TFM	**+23 ,CHI
01036	43	01088	00000	00630		BD	CLSCAN ,
01048	45	01068	06133	00640		BNR	**+20 ,CHI
				00650	*		BRANCH TO READ IF BLANK CARD
01060	49	00800	00000	00660		B	READ
01068				00670		DORG	**+3
01068	11	01047	00082	00680		AM	LEADBL+23 ,2 ,10
01080	49	01036	00000	00690		B	LEADBL+12
01088				00700		DORG	**+3
01088	12	01047	00081	00710	CLSCAN	SM	LEADBL+23 ,1 ,10
				00720	*		MOVE OUT LEAD BLANKS
01100	31	06132	01047	00730		TR	CHI-1 ,LEADBL+23 ,11
				00740	*		1ST CHARC. A -D-
01112	14	06133	00044	00750		CM	CHI ,44 ,10
01124	47	01228	01200	00760		BNE	CONT
				00770	*		GO CLEAR FLAGS FOR COMPARE
01136	17	03982	00084	00780		BTM	CFLAG,4,10
01148	44	01168	06140	00790		BNF	DATAK,CHI+7

LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS	AND	REMARKS
01160	49	01216	00000	00800		B	NODATA		
01168				00810		DORG	*-3		
01168	24	06141	06355	00820	DATA	C	CHI+8,DATASP		
01180	47	01216	01200	00830		BNE	NODATA		
				00840	*		RESTORE FLAGS		
01192	17	04018	00004	00850		BTM	RFLAG,4,10		
01204	49	02072	00000	00860		B	DATA		
				00870	*		NOT A DATA STATEMENT		
01216	17	04018	00004	00880	NODATA	BTM	RFLAG,4,10		
				00890	*		IS IT A CONTINUATION CARD		
01228	44	01296	01229	00900	CONT	BNF	NUM ,CONT+1		
				00910	*		CONTINUE		
				00920	*		IGNORE IF CONT. OF FORMAT		
01240	44	00800	01344	00930		BNF	READ ,FTEST		
				00940	*		MOVE CONT. DIGITS OUT (1-6)		
01252	31	06132	06134	00950		TR	CHI-1 ,CHI+1		
01264	14	06133	00070	00960		CM	CHI ,70		,10
01276	46	01252	01300	00970		BNL	*-24		
01288	49	01848	00000	00980		B	RESTO		
01296				00990		DORG	*-3		
				01000	*		IS THERE A ST. NO. 1ST		
01296	14	06133	00070	01010	NUM	CM	CHI ,70		,10
01308	47	01504	01300	01020		BL	EQCHK		
01320	15	06451	00001	01030		TDM	REDEI ,1		
				01040	*		PULL THE ST. NO.		
01332	17	03196	01344	01050		BTM	STATNO ,FTEST		
01344	14	06133	00000	01060	FTEST	CM	CHI ,10		
01356	47	01380	01200	01070		BNE	LARRY		
01368	31	06132	06134	01080		TR	CHI-1,CHI+1		
01380	14	06133	00046	01090	LARRY	CM	CHI,46,10		
01392	47	01504	01200	01100		BNE	EQCHK		
				01110	*		IS IT FORMAT		
01404	17	03982	00005	01120		BTM	CFLAG ,5		,10
01416	44	01436	06142	01130		BNF	FRMTS ,CHI+9		
01428	49	01492	00000	01140		B	NONFR		
				01150		DORG	*-3		
01436				01160	FRMTS	C	CHI+10 ,FRMTSP		
01436	24	06143	06345	01170		BNE	NONFR		
01448	47	01492	01200	01180		BTM	RFLAG ,5		,10
01460	17	04018	00005	01190		CF	FTEST		
01472	33	01344	00000	01200	*		IGNORE FORMAT		
				01210		B	READ		
01484	49	00800	00000	01220		DORG	*-3		
01492				01230	NONFR	BTM	RFLAG ,5		,10
01492	17	04018	00005	01240	*				
				01250	*		CHECK TYPE OF STATEMENT		
				01260	*		BY SPECIAL CHARC.		
01504	32	01344	00000	01270	EQCHK	SF	FTEST		
01516	16	06446	06133	01280		TFM	ADR ,CHI		
01528	32	01616	00000	01290		SF	A2		
01540	45	01560	06446	01300	A1	BNR	LPAR ,ADR		,11
				01310	*		NO , OR =		
01552	49	02292	00000	01320		B	ETEST		
01560				01330		DORG	*-3		
01560	14	06446	00024	01340	LPAR	CM	ADR ,24		,610
01572	47	01616	01200	01350		BNE	A2		
01584	33	01616	00000	01360		CF	A2		
01596	11	06446	00002	01370	ADTO	AM	ADR ,2		,10
01608	49	01540	00000	01380		B	A1		
				01390		DORG	*-3		
01616	44	01652	01616	01400	A2	BNF	A3 ,A2		
01628	14	06446	00023	01410		CM	ADR ,23		,610
				01420	*		, 1ST - COMMON OR I/O		
01640	46	01696	01200	01430		BE	COMIO		
01652	14	06446	00033	01440	A3	CM	ADR ,33		,610
01664	47	01596	01200	01450		BNE	ADTO		
				01460	*		( THEN = IS ARITHMETIC		
01676	44	04142	01616	01470		BNF	ARITH ,A2		
				01480	*		= 1ST IS ARITH OR DO		
01688	49	02396	00000	01490		B	DOTEST		
01696				01500		DORG	*-3		
				01510	*				
				01520	*				
01696	14	06133	00044	01530	COMIO	CM	CHI ,44		,10
				01540	*		C - COMMON - IGNORE		
01708	47	00800	01300	01550		BL	READ		
01720	14	06133	00059	01560		CM	CHI ,59		,10
				01570	*		R - READ		
01732	46	01812	01200	01580		BE	INPUT		
01744	14	06133	00062	01590		CM	CHI ,62		,10
				01600	*		S - SEGMENT		
01756	46	03064	01200	01610		BE	SEGLST		
				01620	*		OTHERWISE OUTPUT		
01768	15	06451	00000	01630		TDM	REDEI		
01780	17	03196	01792	01640		BTM	STATNO ,**12		
				01650	*		O IN REST SETS REF. AS NORMAL		
01792	15	01811	00000	01660		TDM	REST		
01804	49	01848	00000	01670		B	RESTO		

LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS	AND	REMARKS
01812				01680		DORG	*-3		
01811		00000		01690	REST	DS		,	*
01812	15	06451	00000	01700	INPUT	TDM	REDEI		
01824	17	03196	01836	01710		BTM	STATNO		,**12
				01720	*	1	IN REST SETS	DEF.	AS NORMAL
01836	15	01811	00001	01730		TDM	REST		,1
01848	25	06451	01811	01740	RESTO	TD	REDEI		,REST
01860	17	03526	01872	01750		BTM	PUTTST		,**12
01872	45	01892	06133	01760		BNR	COM		,CHI
01884	49	00800	00000	01770		B	READ		
01892				01780		DORG	*-3		
				01790	*	NEXT SP.	CHAC.	A	,
01892	14	06133	00023	01800	COM	CM	CHI	,23	,10
01904	46	01860	01200	01810		BE	RESTO+12		
				01820	*	IF LOW IT IS	A RT.	PAR.	
01916	47	01936	01300	01830		BL	ECHK		
				01840	*	IF NOT LOW IT IS	A LFT.	PAR.	
				01850	*	FOR SUBSCRIPT BECAUSE IT IS			
				01860	*	FIRST SP.	CHARAC.		
01928	49	01860	00000	01870		B	RESTO+12		
01936				01880		DORG	*-3		
				01890	*	SEE IF NEXT SP.	CHAC.		
				01900	*	IS AN =			
01936	16	06446	06135	01910	ECHK	TFM	ADR		,CHI+2
01948	11	06446	00002	01920		AM	ADR		,2
01960	45	02004	06446	01930		BNR	SPCHA		,ADR
01972	14	06446	06137	01940		CM	ADR		,CHI+4
01984	46	01848	01100	01950		BP	RESTO		
01996	49	00800	00000	01960		B	READ		
02004				01970		DORG	*-3		
02004	14	06446	00041	01980	SPCHA	CM	ADR		,41
02016	46	01948	01300	01990		BNL	ECHK+12		,610
02028	14	06446	00033	02000		CM	ADR		,33
02040	47	01848	01200	02010		BNE	RESTO		
				02020	*	IF NEXT SP.	CHAC.	IS AN =	
				02030	*	SET UP FOR DEF.	OF INDEX		
02052	15	06451	00001	02040		TDM	REDEI		,1
02064	49	01860	00000	02050		B	RESTO+12		
02072				02060		DORG	*-3		
				02070	*	DATA STATEMENT			
02072	15	06451	00001	02080	DATA	TDM	REDEI		,1
02084	31	06132	06142	02090		TR	CHI-1		,CHI+9
				02100	*	PULL VARIABLE NAME			
02096	17	03526	02108	02110		BTM	PUTTST		,**12
				02120	*	SKIP OVER SUBSCRIPT +			
				02130	*	DATA TO 2ND SLASH			
02108	14	06133	00021	02140		CM	CHI		,21
02120	47	02272	01200	02150		BNE	SHIFT		
02132	44	02164	02072	02160		BNF	HTYP-36		,DATA
02144	33	02072	00000	02170		CF	DATA		
02156	49	02096	00000	02180		B	DATA+24		
02164				02190		DORG	*-3		
02164	32	02072	00000	02200		SF	DATA		
				02210	*	IS IT H TYPE DATA			
02176	14	06137	00048	02220		CM	CHI+4		,48
02188	47	02272	01200	02230		BNE	SHIFT		
				02240	*	SKIP OVER H FIELD			
02200	12	06135	00070	02250	HTYP	SM	CHI+2		,70
02212	21	06135	06135	02260		A	CHI+2		,CHI+2
02224	11	06135	00003	02270		AM	CHI+2		,3
02236	16	02271	06133	02280		TFM	**+35		,CHI
02248	21	02271	06135	02290		A	**+23		,CHI+2
02260	31	06132	00000	02300		TR	CHI-1		,
02272	31	06132	06134	02310	SHIFT	TR	CHI-1		,CHI+1
02284	49	02108	00000	02320		B	DATA+36		
02292				02330		DORG	*-3		
02292	14	06133	00045	02340	ETEST	CM	CHI		,45
02304	47	02524	01300	02350		BL	CTST		
02316	46	02688	01100	02360		BH	ITEST		
				02370	*	E - END IF AVOID IN CHI+6			
02328	45	02348	06139	02380		BNR	TRAC		,CHI+6
02340	49	04774	00000	02390		B	END		
02348				02400		DORG	*-3		
				02410	*	END TRACE - IGNORE			
02348	14	06139	00063	02420	TRAC	CM	CHI+6		,63
02360	46	00800	01200	02430		BE	READ		
				02440	*	OTHERWISE END SEGMENT			
				02450	*	OR EXECUTE PROCEDURE			
				02460	*	OR END PROCEDURE			
02372	15	06451	00000	02470	BTREF	TDM	REDEI		,0
02384	17	03196	00800	02480		BTM	STATNO		,READ
				02490	*	IF D CHECK FOR DO			
02396	14	06133	00044	02500	DOTEST	CM	CHI		,44
02408	47	04142	01200	02510		BNE	ARITH		
02420	11	06446	00002	02520		AM	ADR		,2
02432	45	02452	06446	02530		BNR	COMA		,ADR
02444	49	04142	00000	02540		B	ARITH		
02452				02550		DORG	*-3		

LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS AND REMARKS
				02560	*	IF , BEFORE ( IT IS A DO	
02452	14	06446	00024	02570	COMA	CM ADR ,24	,610
02464	46	04142	01200	02580		BE ARITH	
02476	14	06446	00023	02590		CM ADR ,23	,610
02488	47	02420	01200	02600		BNE DOTEST+24	
02500	15	06451	00000	02610		TDM REDEI ,0	
02512	17	03196	04142	02620		BTM STATNO ,ARITH	
02524	14	06133	00043	02630	CTST	CM CHI ,43	,10
02536	47	02580	01200	02640		BNE TRA	
02548	14	06135	00056	02650		CM CHI+2 ,56	,10
				02660	*	IGNORE CONTINUE OR CONTROL	
02560	46	00800	01200	02670		BE READ	
				02680	*	OTHERWISE - CALL SEGMENT	
02572	49	02372	00000	02690		B BTREF	
02580				02700		DORG *-3	
				02710	*	IGNORE DIMENSION	
02580	46	00800	01100	02720	TRA	BH READ	
02592	14	06133	00041	02730		CM CHI ,41	,10
				02740	*	ACCEPT WITH NO LIST	
02604	46	02372	01200	02750		BE BTREF	
02616	14	06143	00063	02760		CM CHI+10 ,63	,10
				02770	*	BEGIN TRACE - IGNORE	
02628	46	00800	01200	02780		BE READ	
02640	14	06143	00057	02790		CM CHI+10 ,57	,10
				02800	*	BEGIN SEGMENT	
02652	47	02372	01200	02810		BNE BTREF	
				02820	*	BEGIN PROCEDURE	
02664	15	06451	00001	02830		TDM REDEI ,1	
02676	17	03196	00800	02840		BTM STATNO ,READ	
02688	14	06133	00049	02850	ITEST	CM CHI ,49	,10
02700	46	03088	01100	02860		BH RTEST	
02712	46	02820	01200	02870		BE IF	
02724	14	06141	00024	02880		CM CHI+8 ,24	,10
				02890	*	GO TO S	
02736	47	02372	01200	02900		BNE BTREF	
				02910	*	GO TO (S1,S2),N	
02748	15	06451	00000	02920		TDM REDEI	
02760	17	03196	02772	02930		BTM STATNO ,**+12	
02772	14	06133	00084	02940		CM CHI ,04	,10
02784	47	02760	01200	02950		BNE *-24	
02796	15	06451	00000	02960		TDM REDEI	
02808	17	03526	00800	02970		BTM PUTTST ,READ	
02820	31	06132	06136	02980	IF	TR CHI-1 ,CHI+3	
02832	16	06448	00060	02990		TFM CNT ,	,10
02844	16	06446	06133	03000		TFM ADR ,CHI	
02856	14	06446	00024	03010		CM ADR ,24	,610
02868	47	02892	01200	03020		BNE **24	
02880	11	06448	00081	03030		AM CNT ,1	,10
02892	14	06446	00084	03040		CM ADR ,04	,610
02904	47	02940	01200	03050		BNE **36	
02916	12	06448	00081	03060		SM CNT ,1	,10
02928	46	02960	01200	03070		BE STOPIF	
02940	11	06446	00082	03080		AM ADR ,2	,10
02952	49	02856	00000	03090		B IF+36	
02960				03100		DORG *-3	
				03110	*	PUT AVOID IN FOR CLOSING )	
02960	26	06446	01023	03120	STOPIF	TF ADR,BA2+23,6	
02972	11	06446	00081	03130		AM ADR ,1	,10
02984	26	03039	06446	03140		TF IFS-1 ,ADR	
				03150	*	ALTER PUTTST FOR RETURN	
02996	16	03568	03016	03160		TFM PUTTST+42 ,IFRET	
03008	49	04166	00000	03170		B ARITH+24	
03016				03180		DORG *-3	
				03190	*	RESTORE PUTTST	
03016	16	03568	00800	03200	IFRET	TFM PUTTST+42 ,READ	
03028	31	06132	06134	03210		TR CHI-1 ,CHI+1	
				03220	*	PULLS STRING OF ST. NO.	
03040	15	06451	00000	03230	IFS	TDM REDEI	
03052	17	03196	03052	03240		BTM STATNO ,IFS+12	
				03250	*	PULLS STRING OF SEG. NO.	
03064	15	06451	00001	03260	SEGLST	TDM REDEI ,1	
03076	17	03196	03052	03270		BTM STATNO ,IFS+12	
03088	14	06133	00059	03280	RTEST	CM CHI ,59	,10
				03290	*	READ WITH NO LIST	
03100	46	02372	01200	03300		BE BTREF	
03112	14	06133	00057	03310		CM CHI ,57	,10
				03320	*	PRINT OR PUNCH WITH NO LIST	
03124	46	02372	01200	03330		BE BTREF	
03136	14	06133	00063	03340		CM CHI ,63	,10
				03350	*	TYPE WITH NO LIST	
03148	46	02372	01200	03360		BE BTREF	
03160	14	06133	00062	03370		CM CHI,62,10	
03172	46	03064	01200	03380		BE SEGLST	
03184	49	00800	00000	03390		B READ	
				03400	*		
				03410	*	SUBROUTINE TO PULL ST. NO.	
				03420	*		
03196	45	03216	06133	03430	STATNO	BNR CKNV ,CHI	

LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS	AND REMARKS
03208	49	00800	00000	03440		B	READ	
03216				03450		DORG	*-3	
				03460	*	SKIP	OVER NON-NUMERICS	
03216	14	06133	00070	03470	CKNV	CM	CHI	,70 ,10
03228	46	03270	01300	03480		BNL	INT	
03240	31	06132	06134	03490		TR	CHI-1	,CHI+1
03252	49	03196	00000	03500		B	STATNO	
03260				03510		DORG	*-3	
				03520	*	INITIALIZE		
03269		00010		03525	NUMR	DC	10	,0
03270	16	03356	03260	03530	INT	TFM	FIF+6	,NUMR-9 ,10
03282	26	03269	05979	03540		TF	NUMR	,BLK
03294	26	06461	05979	03550		TF	SCAN	,BLK
03306	45	03326	06133	03560		BNR	FIF-24	,CHI
03318	49	03394	00000	03570		B	FINSH	
03326				03580		DORG	*-3	
03326	14	06133	00070	03590		CM	CHI	,70 ,10
03338	47	03394	01300	03600		BL	FINSH	
				03610	*	PUT ST. NO. IN	50	
03350	25	03260	06133	03620	FIF	TD	NUMR-9	,CHI
03362	11	03356	00001	03630		AM	*-6	,1 ,10
03374	31	06132	06134	03640		TR	CHI-1	,CHI+1
03386	49	03306	00000	03650		B	INT+36	
03394				03660		DORG	*-3	
				03670	*	PUT ST. NO. IN	SCAN	
03394	32	03260	00000	03680	FINSH	SF	NUMR-1	
03406	26	06462	03356	03690		TF	SCAN+1	,FIF+6 ,11
03418	32	06458	00000	03700		SF	SCAN-3	,7
				03710	*	ADDRESSES REFERENCE	BOTTOM	
				03720	*	OF TABLES		
03430	33	06461	00000	03730		CF	SCAN	,7
03442	33	06460	00000	03740		CF	SCAN-1	,7
				03750	*	ADDRESS OF ST. NO. TABLE		
03453		00005		03760	STNAD	DC	5	,38985 ,*
03454	33	06459	00000	03770		CF	SCAN-2	,7
				03780	*	ADDRESS OF VARIABLE	TABLE	
03465		00005		03790	VARAD	DC	5	,38980 ,*
03466	33	06457	00000	03800		CF	SCAN-4	
03477		00005		03810	OUTAD	DC	5	,39000 ,*
				03820	*	SET RANGE TO BE	CHECKED IN SYM. TAB. LOOKUP	
03478	16	04201	00000	03830	A	TFM	SYMCK+11,	
03490	26	04221	03453	03840		TF	S2-1	,STNAD
				03850	*	TRANSFER RETURN	ADDRESS	
03502	26	04189	03195	03860		TF	SYMCK-1	,STATNO-1
03514	49	04190	00000	03870		B	SYMCK	
				03880	*			
				03890	*	SUBROUTINE TO PULL	FX. PT., FLT. PT. + VARIABLES	
				03900	*			
03526	26	04189	03525	03910	PUTTST	TF	SYMCK-1	,PUTTST-1
03538	26	06461	05979	03920		TF	SCAN	,BLK
03550	45	03570	06133	03930		BNR	CKDEC-24	,CHI
03562	49	00800	00000	03940		B	READ	
03570				03950		DORG	*-3	
03570	14	06133	00041	03960		CM	CHI	,41 ,10
03582	46	03750	01300	03970		BNL	CKNUM	
				03980	*	CHECK FOR	DECIMAL	
03594	14	06133	00003	03990	CKDEC	CM	CHI	,03 ,10
03606	31	06132	06134	04000		TR	CHI-1	,CHI+1
03618	47	03550	01200	04010		BNE	PUTTST+24	
				04020	*	FLT. PT. NO. BECAUSE	OF DECIMAL	
03630	45	03650	06133	04030	CNUM	BNR	CNUM1,CHI	
03642	49	03560		04040		B7	PUTTST+42,,6	
03650	14	06133	00070	04050	CNUM1	CM	CHI,70,10	
03662	46	03718	01300	04060		BNL	NUMB	
03674	14	06133	00045	04070		CM	CHI	,45 ,10
03686	47	03774	01200	04080		BNE	CKNUM+24	
03698	31	06132	06136	04090		TR	CHI-1	,CHI+3
03710	49	03550	00000	04100		B	PUTTST+24	
03718				04110		DORG	*-3	
03718	31	06132	06134	04120	NUMB	TR	CHI-1	,CHI+1
03730	45	03630	06133	04130		BNR	CNUM	,CHI
03742	49	03562	00000	04140		B	PUTTST+36	
03750				04150		DORG	*-3	
03750	14	06133	00070	04160	CKNUM	CM	CHI	,70 ,10
				04170	*	LETTER - GO TO	PUT VARIABLE	
03762	47	03794	01300	04180		BL	PUTV	
03774	31	06132	06134	04190		TR	CHI-1	,CHI+1
03786	49	03550	00000	04200		B	PUTTST+24	
03794				04210		DORG	*-3	
				04220	*			
				04230	*	VARIABLE		
03794	16	03812	06453	04240	PUTV	TFM	**+18	,SCAN-8
03806	26	00000	06133	04250		TF		,CHI
03818	12	03812	00001	04260		SM	*-6	,1 ,10
03830	33	03812	00000	04270		CF	*-18	,6
03842	11	03812	00003	04280		AM	*-30	,3 ,10
03854	31	06132	06134	04290		TR	CHI-1	,CHI+1
03866	45	03886	06133	04300		BNR	AA	,CHI

LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS	AND	REMARKS
03878	49	03934	00000	04310		B	AA+48		
03886				04320		DORG	*-3		
03886	14	06133	00041	04330	AA	CM	CHI	,41	,10
03898	46	03806	01300	04340		BNL	PUTV+12		
03910	14	06133	00000	04350		CM	CHI	,	,10
03922	46	03854	01200	04360		BE	PUTV+60		
03934	32	06452	00000	04370		SF	SCAN-9		
				04380	*	SET	RANGE FOR SYM. TAB. LOOKUP		
03946	26	04201	03453	04390		TF	SYMCK+11	,STNAD	
03958	26	04221	03465	04400		TF	S2-1	,VARAD	
03970	49	04190	00000	04410		B	SYMCK		
				04420	*				
				04430	*	SUBROUTINE	TO CLEAR FLAGS FOR COMPARE		
03982	16	04043	00033	04440	CFLAG	TFM	FLAG+13	,33	,10
03994	26	04017	03981	04450		TF	RFLAG-1	,CFLAG-1	
04006	49	04030	00000	04460		B	FLAG		
				04470	*				
				04480	*	SUBROUTINE	TO RESTORE FLAGS AFTER COMPARE		
04018	16	04043	00032	04490	RFLAG	TFM	FLAG+13	,32	,10
04030	16	04048	06134	04500	FLAG	TFM	*+18	,CHI+1	
04042	41	00000	00000	04510		NOP			
04054	11	04048	00001	04520		AM	FLAG+18	,1	,10
04066	45	04104	04048	04530		BNR	FIN	,FLAG+18	,11
04078	12	04048	00001	04540		SM	FLAG+18	,1	,10
04090	32	04048	00000	04550		SF	FLAG+18	,	,6
04102	42	00000	00000	04560		BB			
04104				04570		DORG	*-9		
04104	11	04048	00001	04580	FIN	AM	FLAG+18	,1	,10
04116	12	04017	00001	04590		SM	RFLAG-1	,1	,10
04128	46	04042	01100	04600		BP	FLAG+12		
04140	42	00000	00000	04610		BB			
04142				04620		DORG	*-9		
				04630	*	SET	INDICATOR TO DEF. FOR LEFT OF =		
04142	15	06451	00001	04640	ARITH	TDM	REDEI	,1	
04154	17	03526	04166	04650		BTM	PUTTST	,*+12	
				04660	*	SET	INDICATOR TO REFERENCE FOR RIGHT OF =		
04166	15	06451	00000	04670		TDM	REDEI		
04178	49	04154	00000	04680		B	*-24		
				04690	*				
				04700	*	SUBROUTINE	TO CHECK SYMBOL TABLE		
				04710	*	AND	MAKE ENTRIES		
04190	44	04210	00000	04720	SYMCK	BNF	S2-12		
				04730	*	FLAG	INDICATES LABEL ENTRY		
04202	49	04254	00000	04740		B	TEST		
04210				04750		DORG	*-3		
04210	14	04201	00000	04760		CM	SYMCK+11		
				04770	*	CHECK	FOR BOTTOM OF RANGE		
				04780	*	IF	THERE PUT IT IN TABLE		
04222	46	04354	01200	04790	S2	BE	PUT		
04234	12	04201	00005	04800		SM	SYMCK+11	,5	,10
04246	49	04190	00000	04810		B	SYMCK		
04254				04820		DORG	*-3		
04254	11	04201	00009	04830	TEST	AM	SYMCK+11	,9	,10
04266	24	04201	06461	04840		C	SYMCK+11	,SCAN	,6
				04850	*	LABEL	IN TABLE, ENTER SEQ. NO.		
04278	46	04374	01200	04860		BE	PUT1		
				04870	*	CHECK	MORE		
04290	47	04334	01300	04880		BN	SUB		
				04890	*	BECAUSE	OF ORDERING PUT LABEL IN HERE		
04302	16	06450	00015	04900		TFM	DWN	,15	,10
				04910	*	SET	BRANCH FOR ENTRY OF LABEL + SEQ. NO.		
04314	16	04632	04634	04920		TFM	PUT2+42	,BRV	
04326	49	04410	00000	04930		B	PUT3		
04334				04940		DORG	*-3		
04334	12	04201	00014	04950	SUB	SM	SYMCK+11	,14	,10
04346	49	04190	00000	04960		B	SYMCK		
04354				04970		DORG	*-3		
04354	12	04201	00001	04980	PUT	SM	SYMCK+11	,1	,10
04366	49	04302	00000	04990		B	TEST+48		
04374				05000		DORG	*-3		
04374	16	04632	04682	05010	PUT1	TFM	PUT2+42	,BRS	
				05020	*	SET	BRANCH FOR ENTRY OF SEQ. NO. ONLY		
04386	16	06450	00005	05030		TFM	DWN	,5	,10
04398	12	04201	00010	05040		SM	SYMCK+11	,10	
				05050	*				
				05060	*	MOVE	SYM. TAB. TO MAKE ROOM FOR ENTRY		
04410	25	04053	04201	05070	PUT3	TD	FLAG+23	,SYMCK+11	,11
				05080	*	PUT	RECORD MARK IN FOR MOVE		
04422	25	04201	01023	05090		TD	SYMCK+11,BA2+23,6		
04434	11	04201	00001	05100		AM	SYMCK+11	,1	,10
				05110	*	IS	IT ADDED AT BOTTOM OF VAR. TAB.		
04446	24	04201	03465	05120		C	SYMCK+11	,VARAD	
				05130	*	YES	- EXTEND RANGE - NO MOVE		
04458	46	04602	01200	05140		BE	PUT2+12		
04470	26	04560	03465	05150		TF	OK+6	,VARAD	
04482	22	04560	06450	05160		S	OK+6	,DWN	
				05170	*	CHECK	FOR OVERLAP		
04494	14	04560	06771	05180		CM	OK+6	,VAR+90	

LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS	AND	REMARKS
04506	46	04554	01100	05190		BP	OK		
04518	15	04743	00001	05200		TDM	BRS+61	,1	
04530	73	06151	06304	05210		TNF	OUT+18	,SEQN	
04542	17	05786	04554	05220		BTM	OUTP	,**12	
				05230	*	MOVE	SYM. TAB.		
04554	31	00000	03465	05240	OK	TR	,VARAD	,11	
				05250	*	ADJUST	PROPER SYM. TAB. ADDRESSES		
04566	24	04201	03453	05260		C	SYMCK+11	,STNAD	
04578	47	04602	01300	05270		BN	PUT2+12		
				05280	*	ACTUAL	ADJUSTMENT		
04590	22	03453	06450	05290	PUT2	S	STNAD	,DWN	
04602	22	03465	06450	05300		S	VARAD	,DWN	
04614	12	04201	00001	05310		SM	SYMCK+11	,1	,10
				05320	*	BR TO	BRV - LABEL + SEQ. NO.		
				05330	*	BR TO	BRV - SEQ. NO. ONLY		
04626	49	00000	00000	05340		B			
04634				05350		DORG	**3		
				05360	*	ENTER	LABEL		
04634	26	04201	06461	05370	BRV	TF	SYMCK+11	,SCAN	,6
04646	12	04201	00009	05380		SM	SYMCK+11	,9	,10
04658	32	04201	00000	05390		SF	SYMCK+11	,	,6
04670	12	04201	00001	05400		SM	SYMCK+11	,1	,10
				05410	*	ENTER	SEQ. NO.		
04682	26	04201	06304	05420	BRS	TF	SYMCK+11	,SEQN	,6
04694	12	04201	00004	05430		SM	SYMCK+11	,4	,10
				05440	*	ENTER	INDICATOR OF REFERENCE OR DEFINITION		
04706	25	04201	06451	05450		TD	SYMCK+11	,REDEI	,6
04718	12	04201	00001	05460		SM	SYMCK+11	,1	,10
				05470	*	RESTORE	DIGIT COVERED BY		
				05480	*	RECORD	MARK FOR MOVING SYM. TAB.		
04730	25	04201	04053	05490		TD	SYMCK+11	,FLAG+23	,6
				05500	*	BRANCH	BACK (NOP IN CASE OF OVERLAP)		
04742	49	04189	00000	05510		B	SYMCK-1	,	,6
04754	25	04743	00009	05520		TD	BRS+61	,9	
04766	49	04798	00000	05530		B	END+24		
04774				05540		DORG	**3		
04774	32	01228	00000	05550	END	SF	CONT		
				05560	*	PUT	BLANKS AT END OF SYM. TAB.		
04786	26	04816	03461	05570		TF	**30	,VARAD	
04798	12	04816	00001	05580		SM	**18	,1	,10
04810	26	00000	05984	05590		TF	,BLK+5		
				05600	*	BREAK	PAGE		
04822	31	06132	05970	05610		TR	CHI-1,BLK1-1		
04834	31	06132	06356	05620		TR	OUT-1	,STN-1	
04846	17	05786	04858	05630		BTM	OUTP,**12		
04858	12	03477	00005	05650		SM	OUTAD	,5	,10
04870	49	04974	00000	05660		B	STNO		
04878				05670		DORG	**3		
				05680	*	ADJUST	FOR OUTPUT OF VARIABLES		
04878	12	03477	00005	05690	VAROT	SM	OUTAD	,5	,10
04890	17	05786	04902	05700		BTM	OUTP	,**12	
04902	16	05251	00026	05710		TFM	V1+61	,26	,10
04914	16	04985	03465	05720		TFM	STNO+11	,VARAD	
04926	16	05725	05726	05730		BTM	EOUT+11	,EOUT+12	
04938	17	05786	04950	05740		TFM	OUTP,**12		
04950	31	06132	06680	05760		TR	OUT-1	,VAR-1	
04962	17	05786	04974	05770		BTM	OUTP,**12		
04974	24	03477	03453	05790	STNO	C	OUTAD	,STNAD	
				05800	*	END	OF TABLE		
04986	47	05694	01100	05810		BNP	E		
04998	12	03477	00000	05820	VAROT1	SM	OUTAD	,10	,10
				05830	*	NO	FLAG IT IS A SEQ. NO.		
05010	44	05506	03477	05840		BNF	SQ	,OUTAD	,11
05022	16	06448	00002	05850		TFM	CNT	,12	,10
05034	16	05656	06181	05860		TFM	SQ1+6	,OUT+48	
				05870	*	1ST	TIME ON LABEL GO TO V1		
05046	44	05190	04878	05880		BNF	V1	,VAROT	
05058	26	03477	05201	05890		TF	OUTAD	,V1+11	
05070	33	04878	00000	05900		CF	VAROT		
05082	16	05560	05114	05910		TFM	SQ+54	,LIN2	
05094	15	05567	00049	05920		TDM	SQ+61	,49	
05106	49	05506	00000	05930		B	SQ		
05114				05940		DORG	**3		
05114	16	05560	05134	05950	LIN2	BFM	SQ+54	,LIN3	
05126	49	04998	00000	05960		B	VAROT1		
05134				05970		DORG	**3		
05134	17	05786	05146	05980	LIN3	BTM	OUTP	,**12	
05146	16	06173	00004	05990		TFM	OUT+40	,14	,10
05158	16	05560	05578	06000		TFM	SQ+54	,SQ+72	
05170	11	03477	00004	06010		AM	OUTAD	,4	,10
05182	49	05626	00000	06020		B	LIN4+12		
05190				06030		DORG	**3		
05190	32	04878	00000	06040	V1	SF	VAROT		
05202	17	05786	05214	06050		BTM	OUTP	,**12	
05214	16	05560	04998	06060		TFM	SQ+54	,VAROT1	
05226	15	05567	00041	06070		TDM	SQ+61	,41	
05238	11	03477	00009	06080		AM	OUTAD	,9	,10
				06090	*	PUT	LABEL IN OUTPUT AREA		

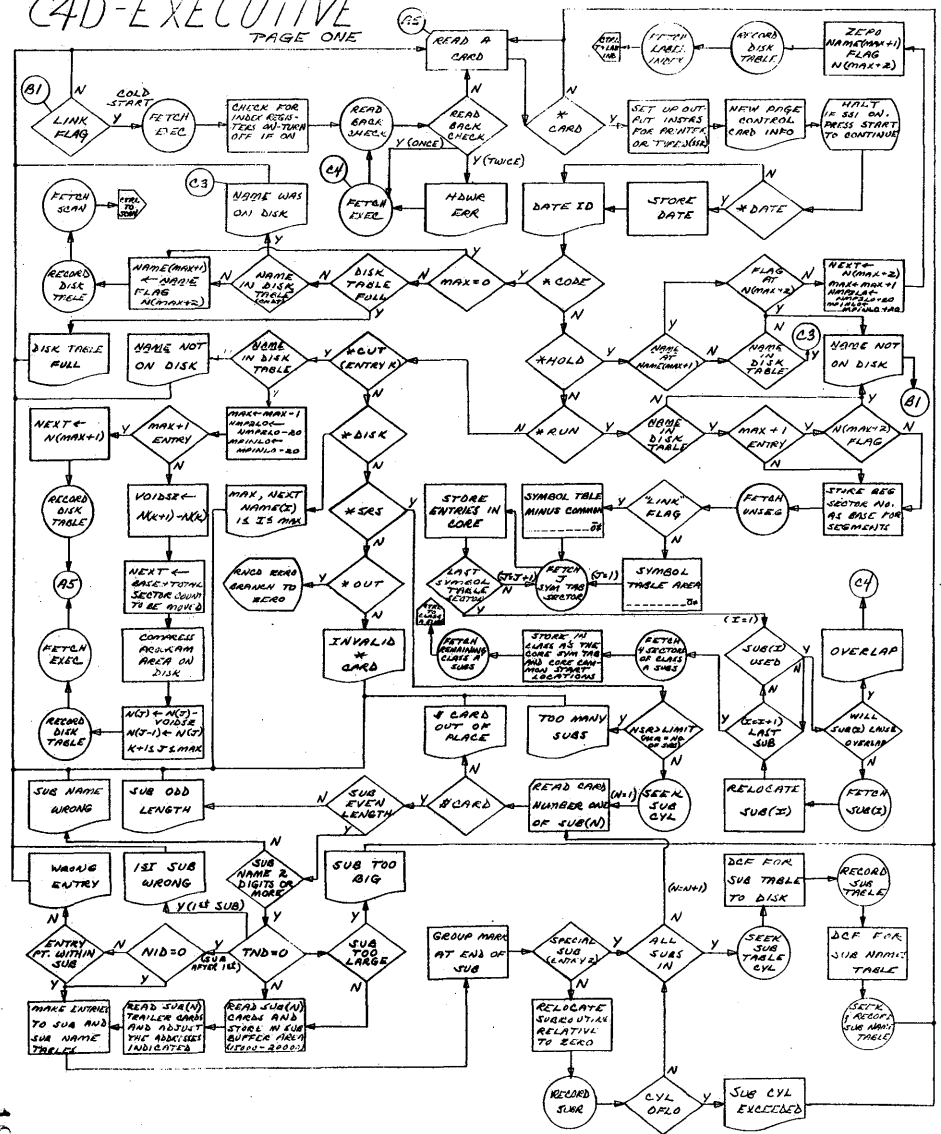


LOCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS AND REMARKS
05250	73	06161	03477	06100	TNF	OUT+28	,OUTAD ,11
05262	16	06173	00000	06110	TFM	OUT+40	
05274	16	05297	06141	06120	TFM	**23	,OUT+8
05286	43	05346	00000	06130	*	BLANK LEADING ZEROS	
05298	16	05297	00000	06140	BD	VA	
05310	11	05297	00002	06150	TFM	**1	, ,610
05322	14	05297	06161	06160	AM	**13	,2 ,10
05334	47	05286	01200	06170	CM	**25	,OUT+28
05346	26	05381	03477	06180	BNE	**48	
05358	12	05381	00044	06190	*	FIND FIRST DEFINITION IF ANY	
05370	43	05458	00000	06200	VA	TF	**35 ,OUTAD
05382	24	05381	04985	06210	SM	VA+35	,14 ,10
05394	47	05482	01100	06220	*	DIGIT - DEFINITION	
05406	12	05381	00040	06230	BD	VDEF	
05418	44	05438	05384	06240	C	VA+35	,STNO+11 ,11
05430	49	05482	00000	06250	*	NEG - NO DEFINITION (END OF TABLE)	
05438	11	05381	00005	06260	BNP	VDEF+24	
05450	49	05370	00000	06270	SM	VA+35	,10 ,10
05458	11	05381	00004	06280	BNF	AD5	,VA+35 ,11
05470	73	06139	05384	06290	*	FLAG - NO DEFINITION (NEXT LABEL)	
05482	12	03477	00049	06300	B	VDEF+24	
05494	26	05201	03477	06310	DORG	**3	
05506	11	03477	00040	06320	AD5	AM	VA+35 ,5 ,10
05518	24	03477	04985	06330	B	VA+24	
05530	47	05694	01100	06340	DORG	**3	
05542	12	03477	00005	06350	*	PUT 1ST DEF. SEQ. NO. TO LEFT	
05554	43	04998	03477	06360	*	OF LABEL	
05566	41	04998	00000	06370	VDEF	AM	VA+35 ,4 ,10
05578	11	03477	00004	06380	TNF	OUT+6	,VA+35 ,11
05590	12	06448	00001	06390	SM	OUTAD	,19 ,10
05602	47	05650	01200	06400	*	SAVE ADDRESS TO START LOOKING	
05614	17	05786	05626	06410	*	FOR MULTIPLE DEF.	
05626	16	06448	00041	06420	TF	V1+11	,OUTAD ,
05638	16	05656	06181	06430	*	1ST LOOK FOR REF. - 2ND MULT. DEF.	
05650	73	00000	03477	06440	SQ	AM	OUTAD ,10 ,10
05662	11	05656	00040	06450	C	OUTAD	,STNO+11 ,11
05674	12	03477	00004	06460	*	NEG - END OF TABLE	
05686	49	04998	00000	06470	BNP	E	
05694	44	05714	04878	06480	SM	OUTAD	,5 ,10
05706	49	05022	00000	06490	*	2ND TIME BD TO LIN2	
05714	17	05786	04878	06500	BD	VAROT1	,OUTAD ,11
05726	17	05786	05738	06510	*	2ND TIME BR TO VAROT1	
05738	31	06132	06594	06520	NOP	VAROT1	
05750	17	05786	05762	06530	AM	OUTAD	,4 ,10
05762	31	00038	06572	06540	SM	CNT	,1 ,10
05774	49	00000	00000	06550	BNE	SQ1	
05786	46	05818	00200	06560	*	LINE FULL OUTPUT IT	
05798	39	06133	00400	06570	LIN4	BTM	OUTP ,**12
05810	49	05950	00000	06580	TFM	CNT	,11 ,10
05818	47	05842	03400	06590	TFM	SQ1+6	,OUT+48
05830	34	00000	00971	06600	*	PUT SEQ. NO. IN OUTPUT AREA	
05842	16	05865	06290	06610	SQ1	TNF	,OUTAD ,11
05854	43	05914	00000	06620	AM	**6	,10 ,10
05866	14	05865	06132	06630	SM	OUTAD	,4 ,10
05878	46	05914	01200	06640	B	VAROT1	
05890	12	05865	00002	06650	DORG	**3	
05902	49	05854	00000	06660	*	2ND TIME GO TO EOUT	
05914	11	05865	00003	06670	E	BNF	EOUT ,VAROT
05926	25	05865	01023	06680	*	1ST TIME GO TO GET MULT. DEF.	
05938	39	06133	00900	06690	B	VAROT1+24	
05950	31	06132	05970	06700	DORG	**3	
				06710	*	FOR VARIABLE RETURN IS TO EOUT+12	
				06720	EOUT	BTM	OUTP ,VAROT
				06730	*	BREAK PAGE FOR NEXT PROG.	
				06740	CALSYS	BTM	OUTP,**12
				06750	TR	OUT-1,ASTMSG-1	
				06760	BTM	OUTP,**12	
				06770	TR	38	,DCFS-5
				06780	B	0	
				06790	*	OUTPUT SUBROUTINES	
				06800	OUTP	BC2	PRINT
				06810	WACD	OUT	
				06820	B	CLOUT	
				06830	DORG	**3	
				06840	PRINT	BNI	PRI,03400
				06850	K	,00971	
				06860	*	PUT RECDRD MARK AFTER LAST CHARC.	
				06870	PRI	TFM	**23,OUT+157
				06880	BD	**60	
				06890	CM	**1	,OUT-1
				06900	BE	**36	
				06910	SM	**25	,2 ,10
				06920	B	**48	
				06930	AM	**49	,3 ,10
				06940	TD	**61,BA2+23,6	
				06950	WAPR	OUT	
				06960	CLOUT	TR	OUT-1,BLK1-1
				06970	*	RETURN	

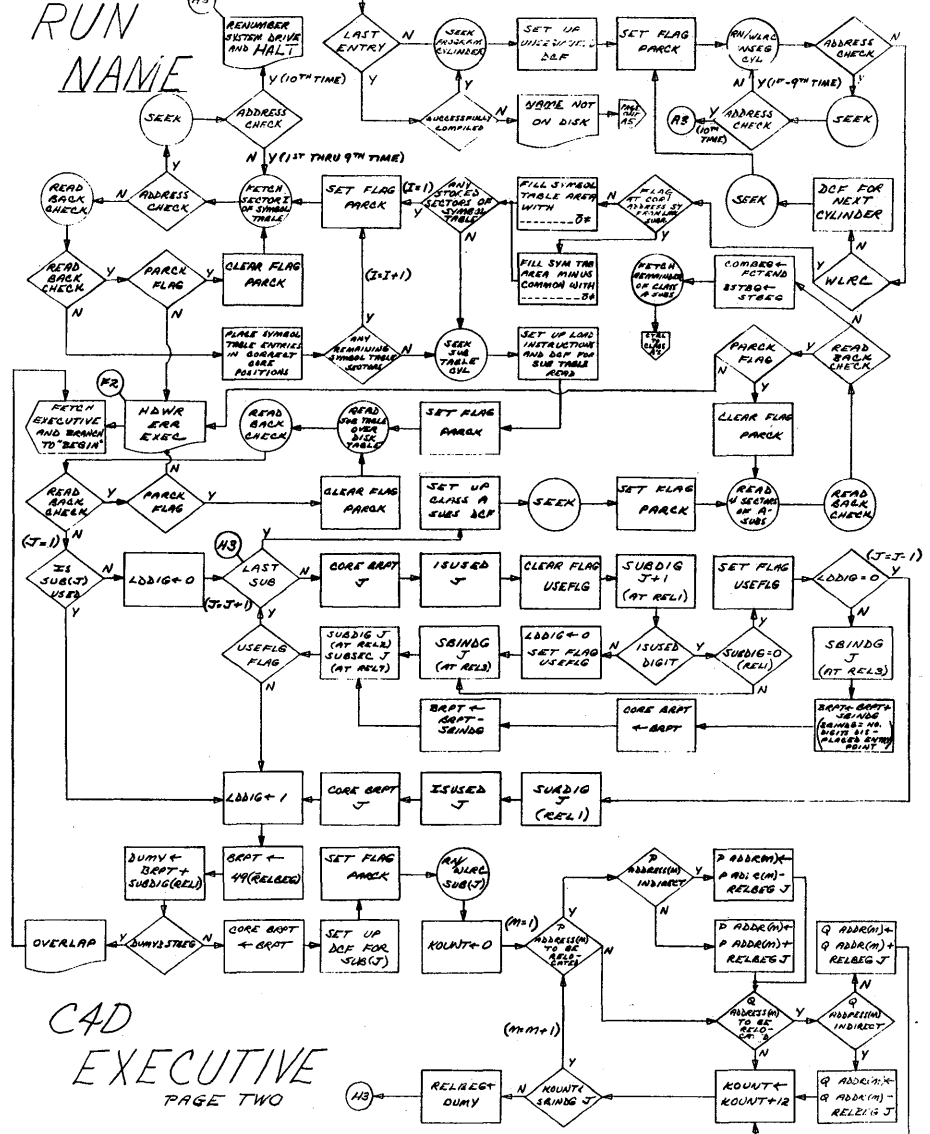
LUCTN	OP	P/L	Q	PG/LN	LABEL	MNEM	OPERANDS AND REMARKS
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05970				06990		DDRG	*-3
05971		00050	X2	07000	BLK1	DAC	50,
06071		00030	X2	07010		DAC	30,
06131		00001	X2	07020		DAC	1 ,'
05979		00010		07030	BLK	DS	10 ,BLK1+8
06133		00100	X2	07040	CHI	DAS	100
06133		00000		07050	OUT	DS	,CHI
06304		00000		07060	SEQN	DS	,CHI+171
06333		00001	X2	07070		DAC	1 ,'
06345		00012		07080	FRMTSP	DC	12 ,465659544163
06355		00010		07090	DATASP	DC	10,4441634123
06357		00043	X2	07100	STN	DAC	43,CARD NO.- LABEL NO.-REFERENCE CARD NUMBERS'
06446		00005		07110	ADR	DS	5
06448		00002		07120	CNT	DS	2
06450		00002		07130	DWN	DS	2 ,
06451		00001		07140	REDEI	DS	1
06461		00010		07150	SCAN	DS	10
06463		00002		07160		DS	2
06465		00018	X2	07170	HDWR	DAC	18,HDWR ERR LAB INDX'
06501		00036	X2	07180	STERR	DAC	36,NO INDEX, *HOLD SHOULD FOLLOW *CODE'
06576		00005		07230		DC	5 , -12994
06577		00016		07240	DCFS	DSC	16 ,7980012900100'
06595		00043	X2	07290	ASTMSG	DAC	43, * OTHER CARDS WHERE VARIABLES ARE DEFINED'
06681		00043	X2	07300	VAR	DAC	43,CARD NO.- VAR. NAME-REFERENCE CARD NUMBERS'
00000				07310		DEND	

# CAD-EXECUTIVE

PAGE ONE



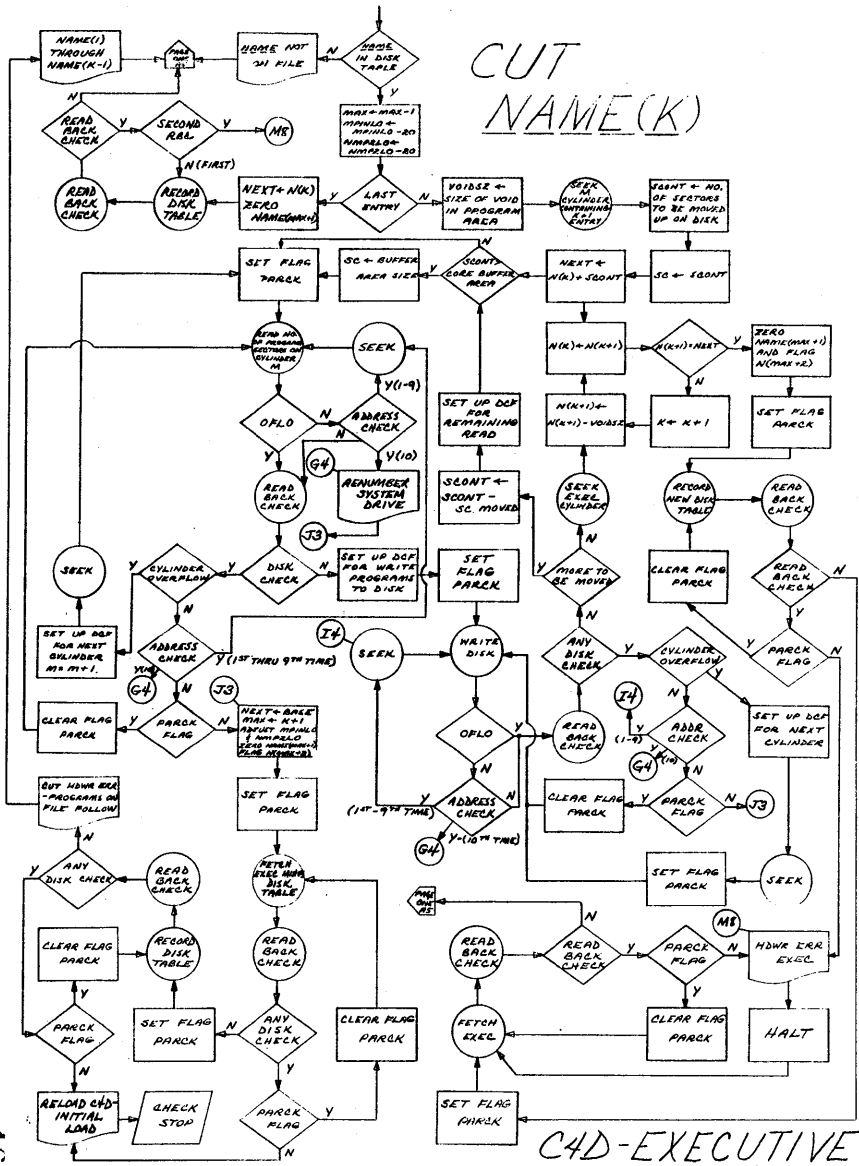
# RUN NAME



# CAD EXECUTIVE

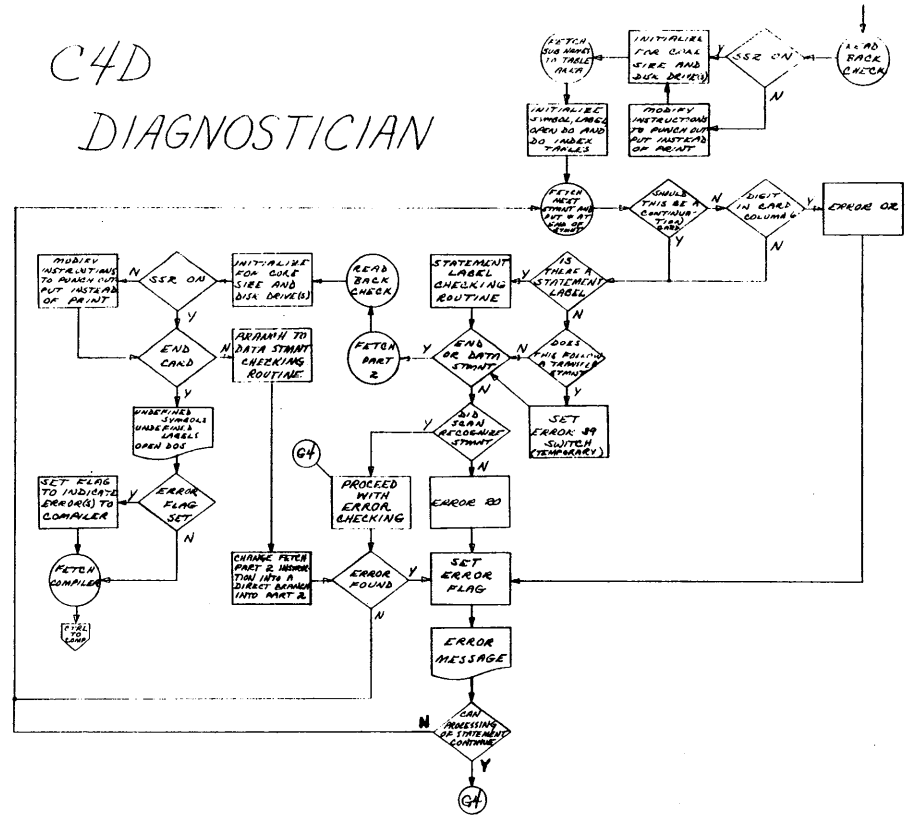
PAGE TWO

# CUT NAME(K)

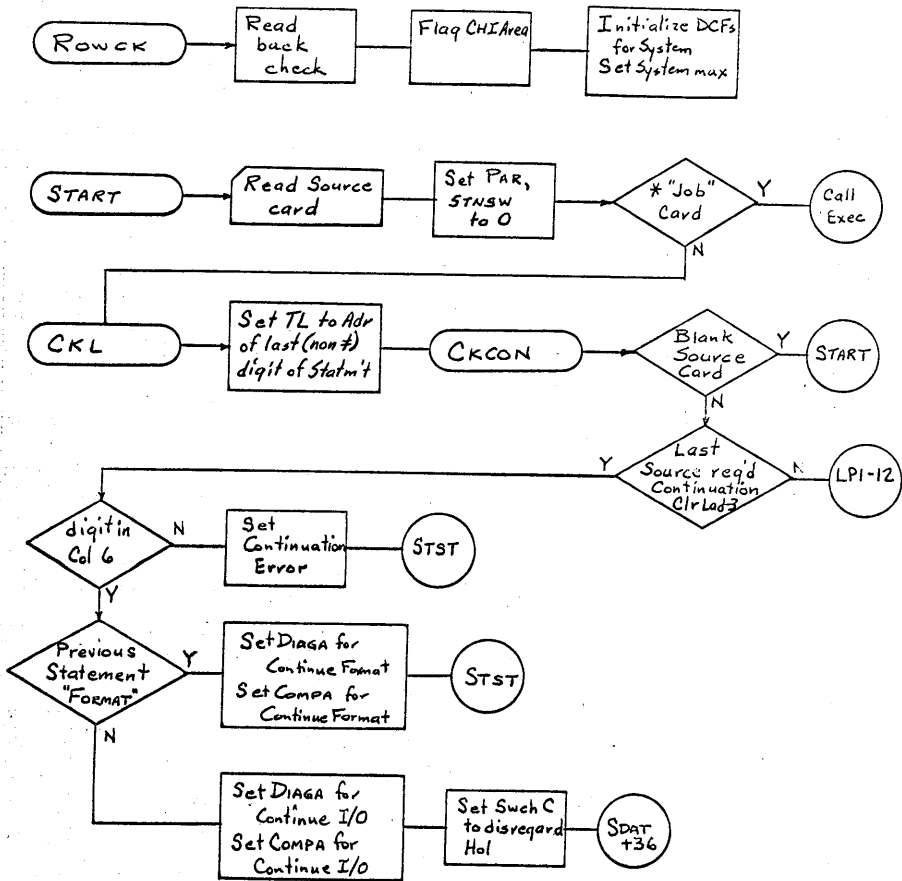


C4D-EXECUTIVE  
PAGE THREE

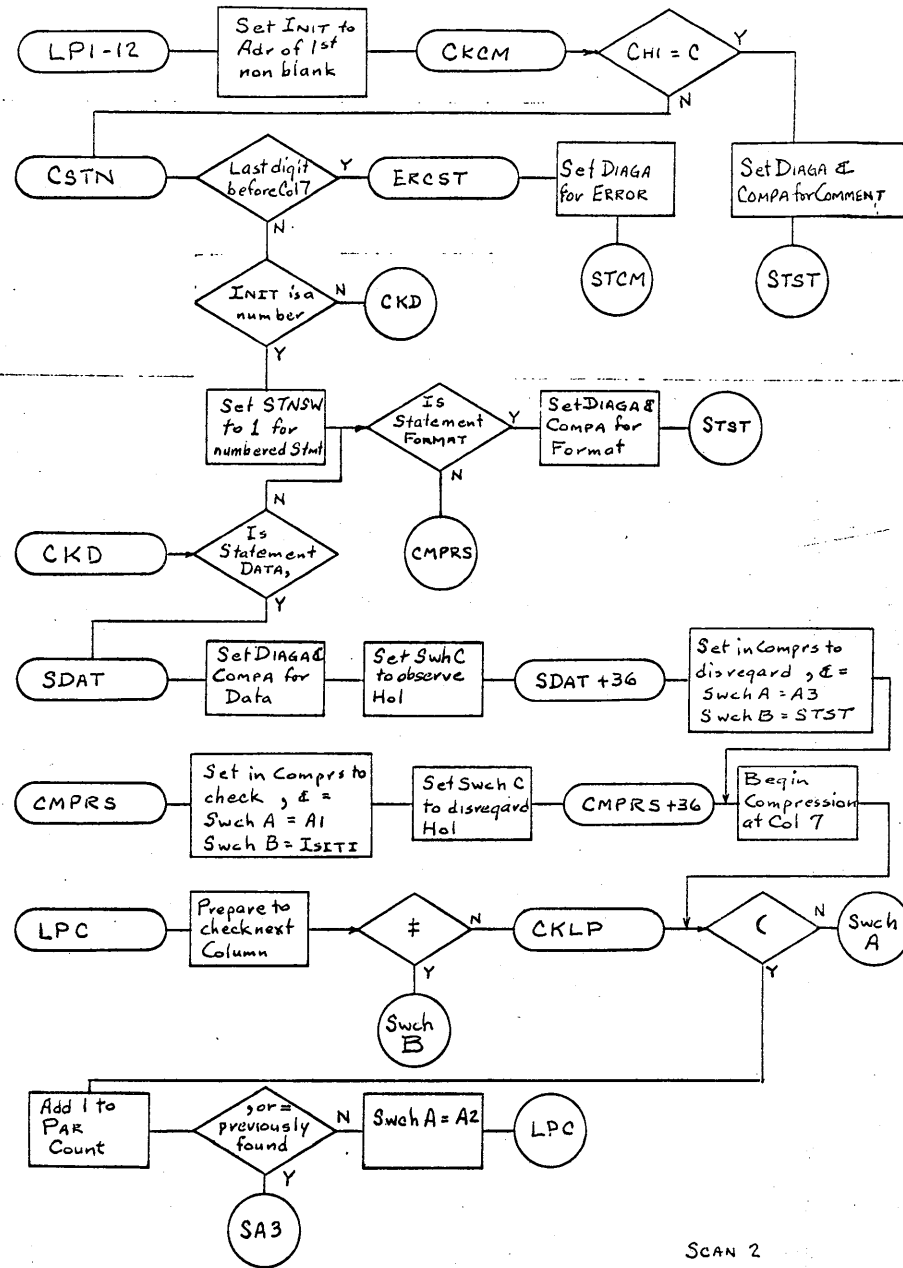
# C4D DIAGNOSTICIAN



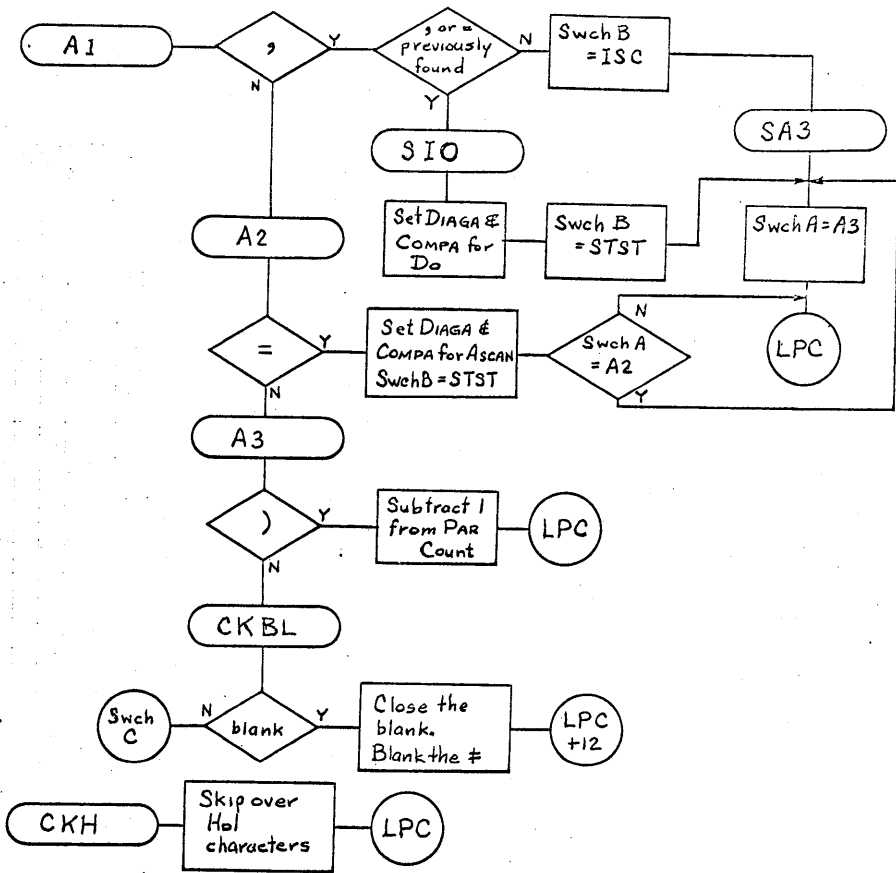
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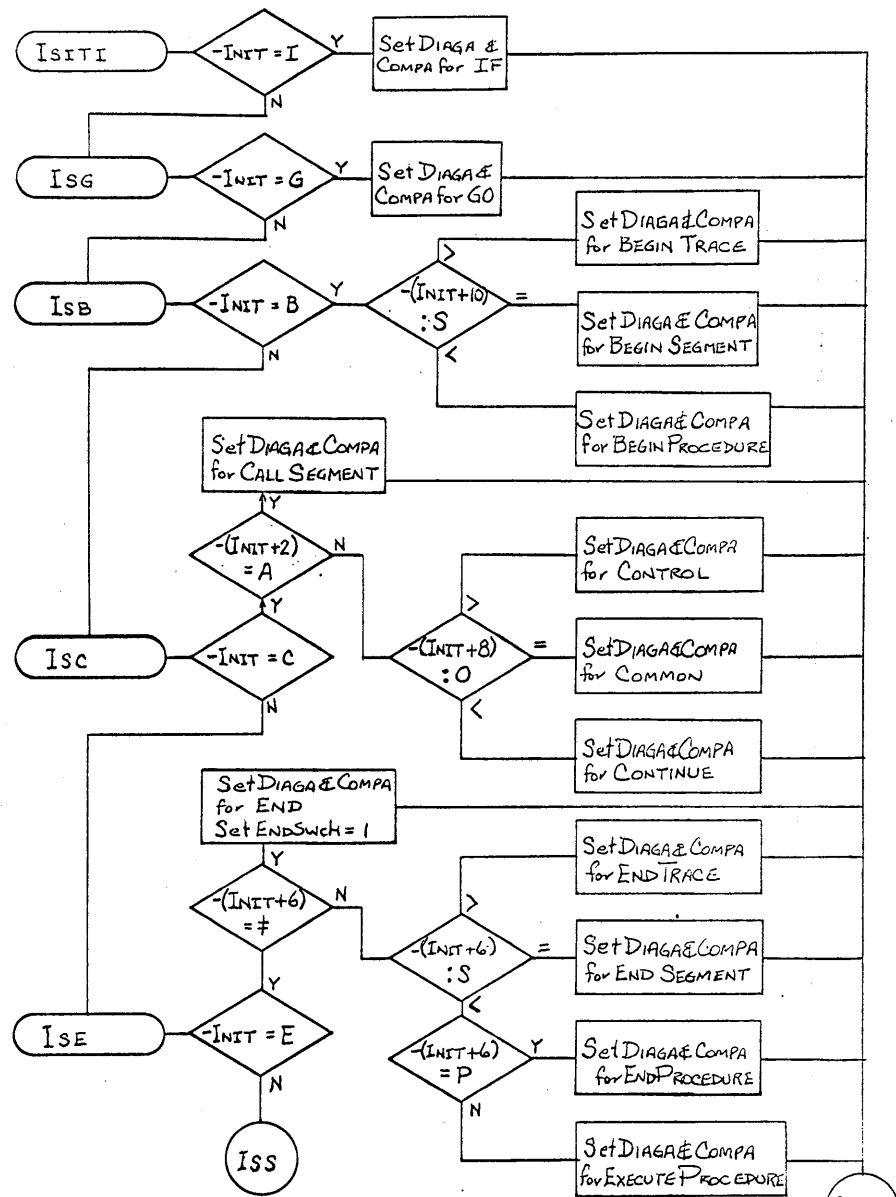
SCAN 1



SCAN 2

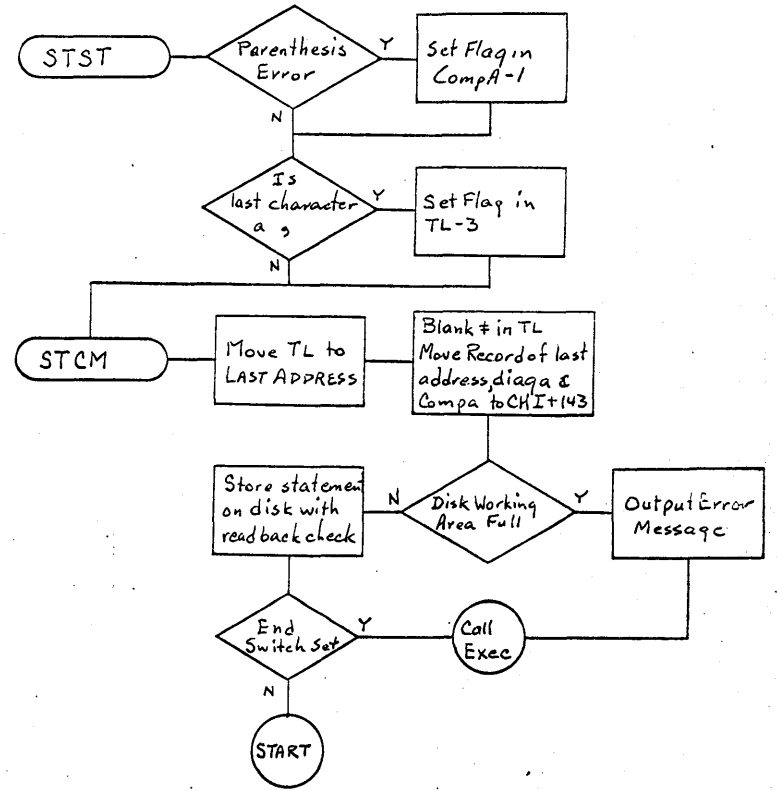
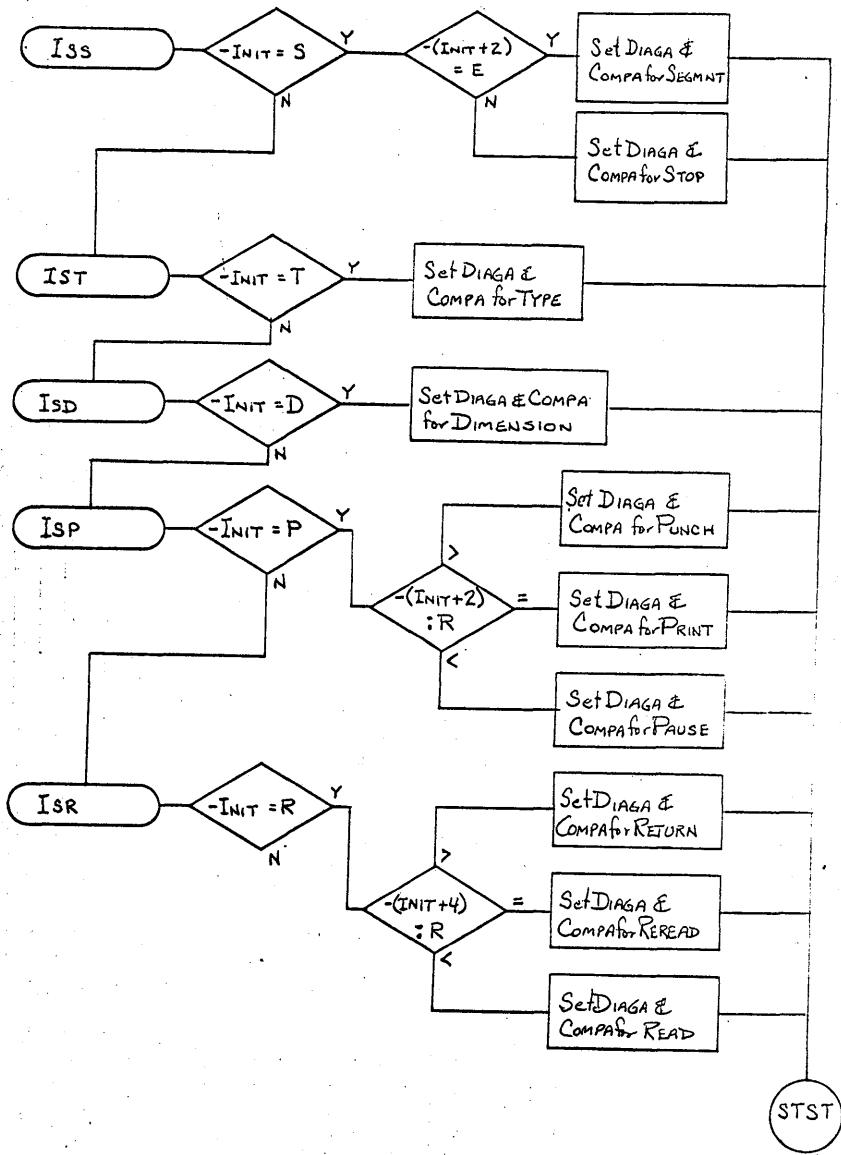


SCAN 3

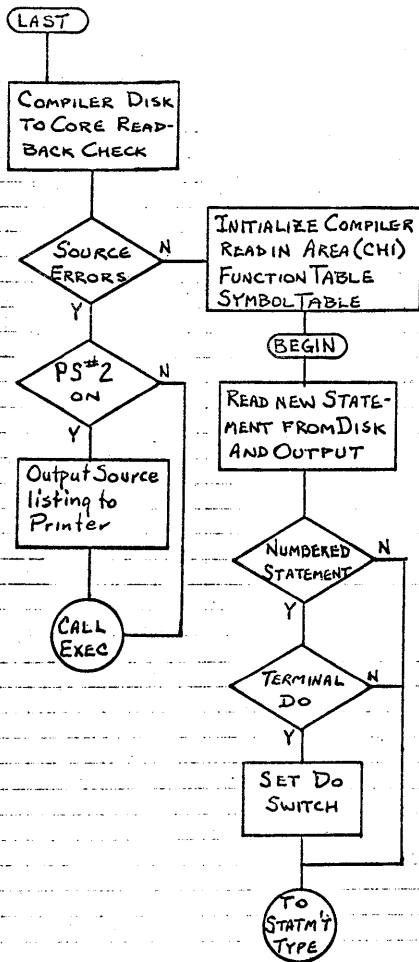


STST

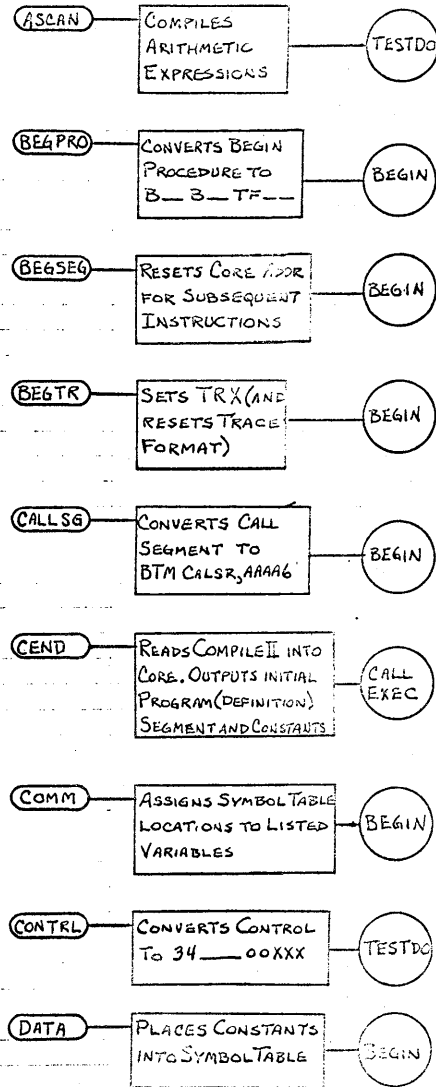
SCAN 4



# C4D COMPILER

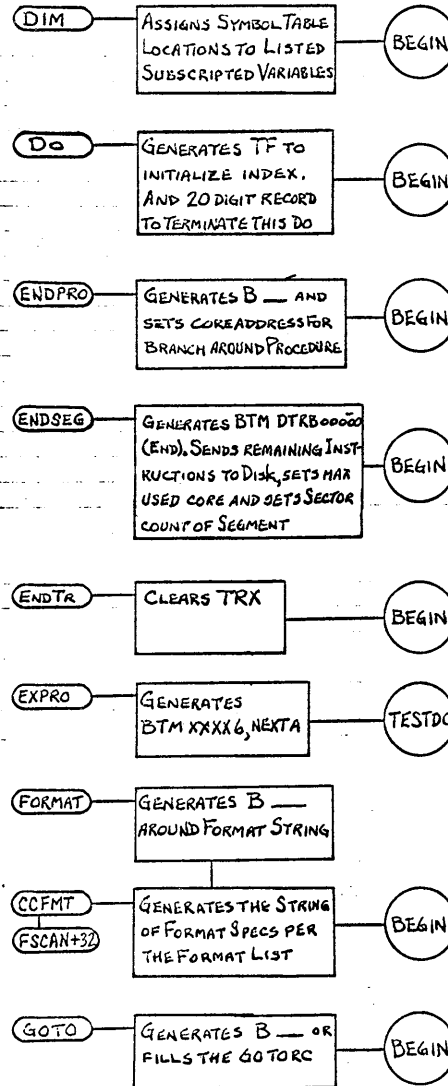


## STATEMENT TYPES

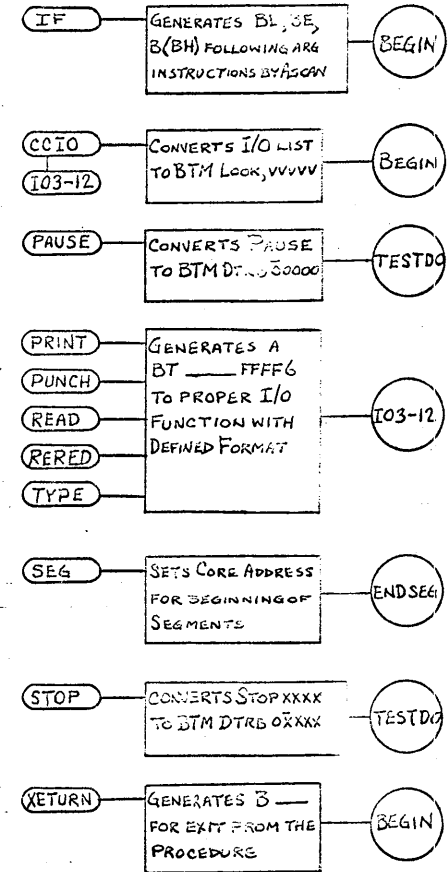


COMPILE 1

## STATEMENT TYPES



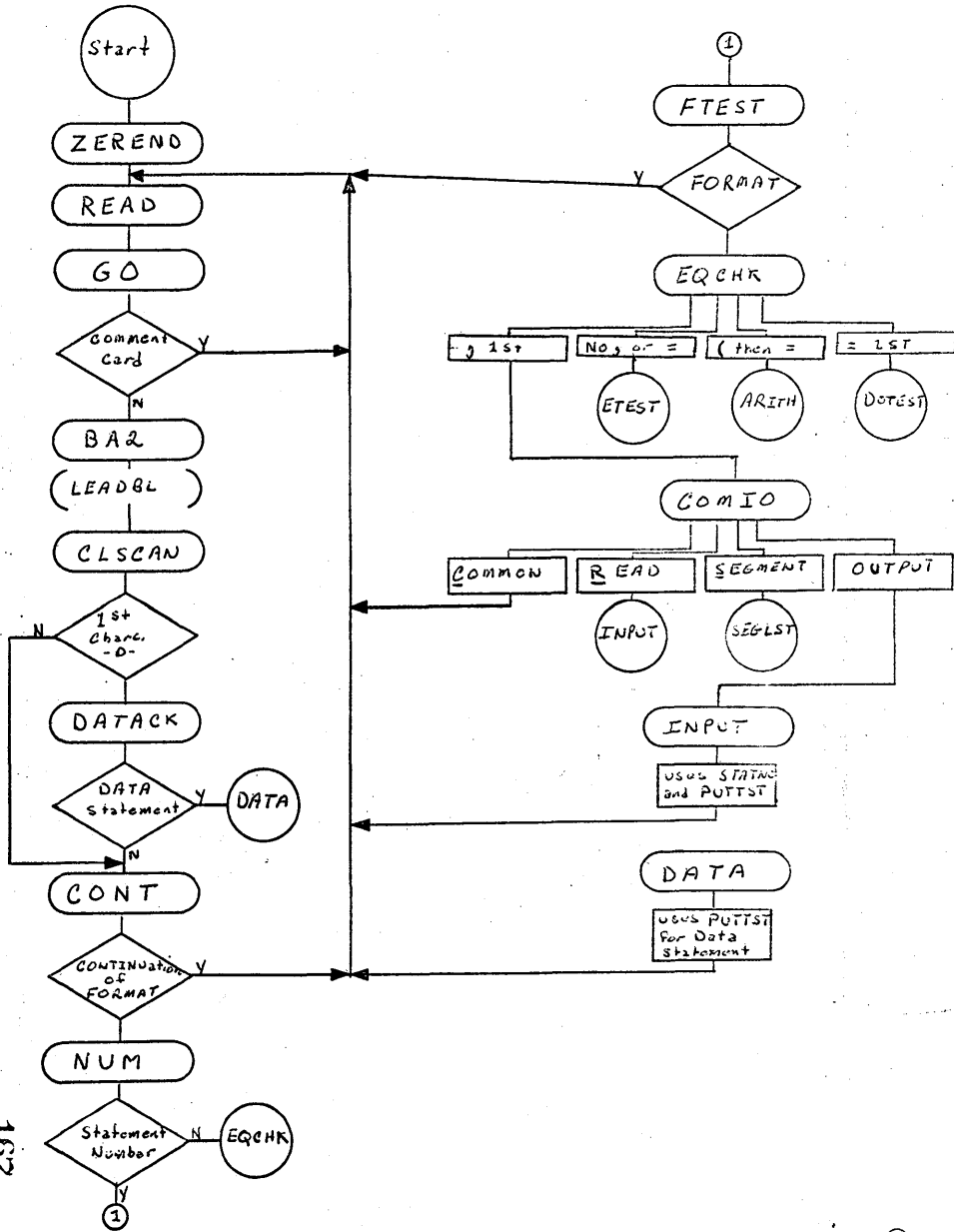
## STATEMENT TYPES



COMPILE 2

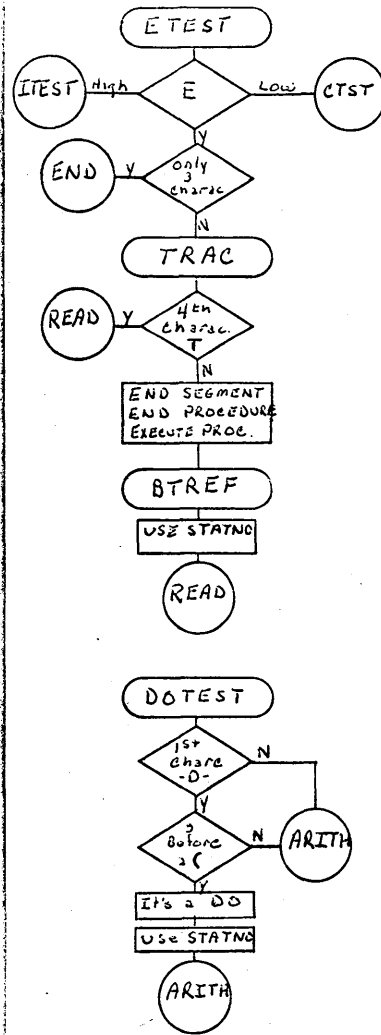


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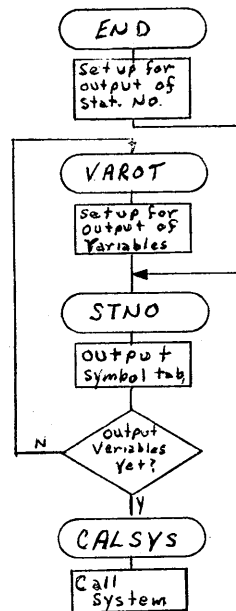
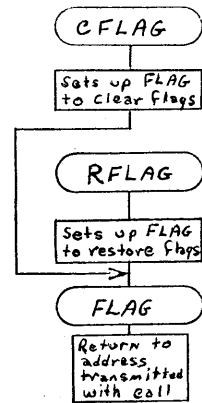
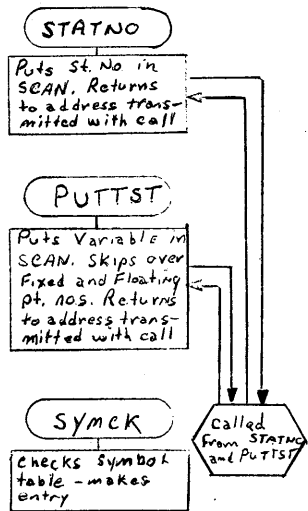
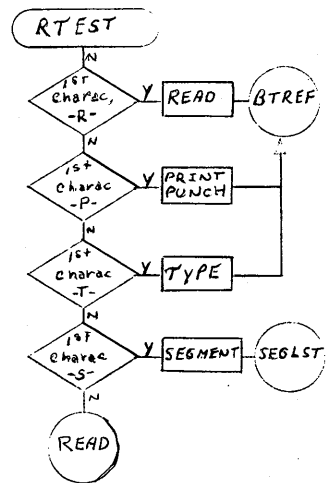
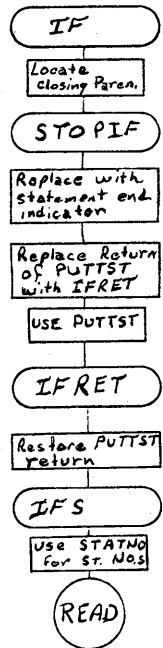
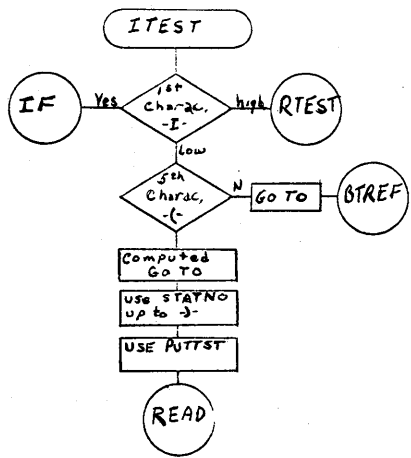


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2



2





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## C4D TEST DECK

THE TEST DECK WAS DESIGNED TO ILLUSTRATE MOST OF THE FEATURES OF C4D. THE PROGRAMS DIAGS, FMTLG AND UDV ARE EXAMPLES OF DIAGNOSTICS IN THE PRE-COMPILE, COMPILER, AND RUN PHASES, RESPECTIVELY. TEST1 AND TEST 2 MAKE USE OF THE RELOCATABLE SUBROUTINES AND TEST INTEGER AND FLOATING POINT ARITHMETIC. TEST1 IS SEGMENTED SO THAT IT WILL FIT IN A 20K MACHINE.

C4D TEST DECK JANUARY 20, 1967

```

*CODE TEST1#
COMMON NWORD,MAXNR,NFST,NLAST,NBUF(10),XBUF(10),NAMET
DIMENSION AMULT(5,5),BMULT(5,5),YNV(5,5),CNV(5),NAME(5)
CONTROL102
TYPE 12
READ 6,K
REREAD 2,I,X
PRINT 9,I,X,J
CALL SEGMENT 9000
1 FORMAT(5F15.8)
2 FORMAT(I15,F15.8,I15)
6 FORMAT (I15)
8 FORMAT(5E15.8)
9 FORMAT(5HHD ,3A5)
10 FORMAT( 5(I5,F5.1)/5(I5,F5.1))
12 FORMAT(4LHTURN SENSE SWITCH 4 ON FOR TRACE IN TEST2)
SEGMENT 9000,9100,9150,9200
BEGIN SEGMENT 9000
PRINT 9005
NWORD =10
MAXNR=2
NFST=1
NLAST=2
9001 N=MOVE(0)
DO 9002 I=1,10
NBUF(I) =I
9002 XBUF(I)=I
N=MOVE(1)
DO 9003 I=1,10
NBUF(I)=0
9003 XBUF(I)=0.
K=MOVE(-1)
9004 PRINT 10,(NBUF(I),XBUF(I),I=1,10)
DO 9101 I=1,NNV
DO 9101 J=1,NNV
XI=I
XJ=J
YNV(I,J)=1./(XI+XJ-1.)
9101 BMULT(I,J)=YNV(I,J)
CALL SEGMENT9100
9005 FORMAT(/52HSEGMENT 9000 TESTS DISK DATA STORAGE UNDER THE MOVE ,
1 7HROUTINE/)
END SEGMENT 9000
BEGIN SEGMENT 9100
PRINT 9102
EXECUTE PROCEDURE 5100
CALL SEGMENT 9150
BEGIN PROCEDURE 5100
C INVERTS MATRIX -YNV- OF ORDER -NNV- IF -YNV- IS SINGULAR THE
C ERROR MESSAGE INVERT IS PRINTED AND THE VARIABLE -NOSOL- IS
C SET TO ZERO OTHERWISE -NOSOL- IS SET TO ONE AND THE INVERSE
C IS STORED IN -YNV- MAIN PROGRAM MUST DIMENSION CNV(NNV)
C YNV(NNV,NNV) AND NAME(NNV)
NOSOL=1
DO 5101 INV=1,NNV
5101 NAME(INV)=INV
DO 5113 INV=1,NNV
CMAX=0.
JNV=INV
DO 5103 KNV=INV,NNV
IF (ABSF(CMAX)-ABSF(YNV(INV,KNV))) C,5103,5103
JNV=KNV
CMAX=YNV(INV,KNV)
5103 CONTINUE
IF (CMAX) 5106, C,5106
PRINT 5105
NOSOL=0
RETURN 5100
5105 FORMAT (6HINVERT)
5106 IF (INV=JNV) C,5109,C
KNV=NAME(JNV)
NAME(INV)=NAME(JNV)
NAME(JNV)=KNV
DO 5108 LNV=1,NNV
TNV=YNV(LNV,INV)
YNV(LNV,INV)=YNV(LNV,JNV)
5108 YNV(LNV,JNV)=TNV
5109 YNV(INV,INV)=1.
DO 5110 JNV=1,NNV
5110 YNV(INV,JNV)=YNV(INV,JNV)/CMAX
DO 5113 JNV=1,NNV

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IF (INV-JNV) C,5113,C
TNV=YNV(JNV,INV)
YNV(JNV,INV)=0.
DO 5112 KNV=1,NNV
5112 YNV(JNV,KNV)=YNV(JNV,KNV)-TNV*YNV(INV,KNV)
5113 CONTINUE
DO 5119 MNV=1,NNV
IF (NAME(MNV)-MNV) C,5119,C
5114 DO 5115 JNV=1,NNV
5115 CNV(JNV)=YNV(MNV,JNV)
JJNV=MNV+1
DO 5116 JNV=JJNV,NNV
IF (NAME(JNV)-MNV) 5116,5117,5116
5116 CONTINUE
5117 NAME(JNV)=NAME(MNV)
DO 5118 KNV=1,NNV
YNV(MNV,KNV)=YNV(JNV,KNV)
5118 YNV(JNV,KNV)=CNV(KNV)
5119 NAME(MNV)=MNV
END PROCEDURE 5100
9102 FORMAT(/43HSEGMENT 9100 INVERTS A NEAR-SINGULAR MATRIX/)
END SEGMENT 9100
BEGIN SEGMENT 9150
PRINT 9152
MMULT = NNV
KMULT = NNV
NMULT = NNV
EXECUTE PROCEDURE 5200
DO 9151 I=1,NNV
9151 PRINT 1,(AMULT(I,J),J=1,NNV)
CALL SEGMENT 9200
BEGIN PROCEDURE 5200
MULTIPLIES MATRIX -BMULT- BY MATRIX -YNV- AND STORES PRODUCT
C IN -AMULT-. SIZE OF BMULT IS -MMULT-*KMULT- AND SIZE OF
C CMULT IS -KMULT-*NMULT-. MAIN PROGRAM MUST DEFINE VALUES
C OF -MMULT-, -KMULT-, -NMULT-, AND DIMENSION MATRICES AS
C FOLLOWS- AMULT(MMULT,NMULT), BMULT(MMULT,KMULT), AND
C CMULT(KMULT,NMULT). THE USE OF THE VECTOR FORM OF
C THESE ARRAYS IN THE PROCEDURE IS PERMISSIBLE IN C4D
MN = MMULT * NMULT
MK = MMULT * KMULT
DO 5202 IMULT = 1,MMULT
KJ = 1
DO 5202 IJ = IMULT,MN,MMULT
SMULT = 0.
DO 5201 IK = IMULT,MK,MMULT
SMULT = SMULT + BMULT(IK)* YNV(KJ)
5201 KJ = KJ + 1
5202 AMULT(IJ) = SMULT
END PROCEDURE 5200
9152 FORMAT(/54HSEGMENT 9150 MULTIPLIES THE MATRIX BY ITS INVERSE AND ,
1 19HDISPLAYS THE RESULT/35HNOTE THE ERROR FROM PROPAGATION OF ,
2 9HROUND OFF/)
END SEGMENT 9150
BEGIN SEGMENT 9200
PRINT 9202
DO 9201 I=1,10
EXECUTE PROCEDURE 6000
9201 XBUF(I)=SND
PRINT 8,(XBUF(I),I=1,10)
N=LINK(NAMET)
BEGIN PROCEDURE 6000
C GENERATES A STANDARD NORMAL DEVIATE -SND-
SUSND=0
DO 6001 J=1,12
SNDX=NPRF(IBEG)
6001 SUSND=SUSND+SNDX
SND = 0.00001*SUSND - 5.99994
END PROCEDURE 6000
9202 FORMAT(/51HSEGMENT 9200 GENERATES STANDARD NORMAL DEVIATES BY ,
1 23HSUMMING RANDOM INTEGERS/)
END SEGMENT 9200
DATA,NNV/5/ NAMET/5HTEST2/ IBEG/4321/J/2HHO/
END
*HOLD TEST1#
*CODE TEST2#
COMMON NWORD,MAXNR,NFST,NLAST,NBUF(10),XBUF(10),NAMET
DIMENSION E(10),F(10),G(10),FUNCT(10)
DIMENSION VALUE(10),ARG(10)
DIMENSION CNT(4)
1 FORMAT(5F15.8)
2 FORMAT(I15,F15.8,I15)
3 FORMAT(5I15)
4 FORMAT(/5A5/)
5 FORMAT(/,
0 10X,1HX,10X,6HSIN(X),10X,6HCOS(X),10X,6HTAN(X)/10X,1HX,10X,
1 6HEXP(X),10X,7HEXP(-X)/10X,1HX,10X,6HLOG(X),9X,8HLOG10(X)/10X,
2 1HX,10X,7HSQRT(X)/10X,1HX,10X,7HATAN(X),7X,13HLOG10(TAN(X))//)
7 FORMAT(/13H THIS IS THE ,A3,25H OF THE 4 LOOPS OF DO 130/)
8 FORMAT(5E15.8)
CONTROL 971
PRINT 9301,NAMET
9301 FORMAT(A5, 18H TESTS SUBROUTINES/)

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```

BEGIN TRACE F15.3
N = 19
DO11I=2,6
K = MOD(N/I)
11 X = K * 1
END TRACE
20 READ1,XZERO,XMAX,DELX
PRINT 5
200 X=XZERO
30 X1=SIN(X)
X2=COSF(-X)
X3=SIN(X)/(COS(X))
X4=EXP(X)
X5=EXP(-X)
X6 =ALOGF(X)
X7=X6/A
X8=SQRT(X)
X9=ATAN(X)
X10=ALOG(X3)/A
PRINT1,X,X1,X2,X3
PRINT1,X,X4,X5
PRINT1,X,X6,X7
PRINT1,X,X8
PRINT1,X,X9,X10
IF(X-XMAX) 40,50,50
40 X=X+DELX
GO TO 30
50 READ1,A,B,C,D
READ 4,NLH1,NLH2,NLH3,NLH4,NLH5
PRINT4,NLH1,NLH2,NLH3,NLH4,NLH5
A1=A+B-C+D
A2=A*B*C*D
A3=A/B
A4=A*(-B)
A5=A/(-B)
A6=A*(B+2.)*C
A7=(A*B)/(C*D)
A8=A/C*B/D
PRINT1,A1,A2,A3,A4
PRINT1,A5,A6,A7,A8
D6=A*(I1)
D7=A*(-I1)
Z=Z*0.5
PRINT1,D6,D7,Z
DO 60 I=1,10,5
READ 8,F(I),F(I+1),F(I+2),F(I+3),F(I+4)
60 CONTINUE
DU 29 J=1,10,2
READ1,G(J),G(J+1)
29 CONTINUE
DO 61 I=1,10,5
E(I)=(SIN(F(I))**2)+(COS(F(I))**2)
DO 55 J=1,10,3
F(I)=J
PRINT1,F(I)
K=G(J)
PRINT1,E(I)
PRINT 2,J,G(J),K
55 CONTINUE
61 CONTINUE
DU 47 J=1,10,2
READ1,ARG(J),ARG(J+1)
47 CONTINUE
DO 48 L=1,10,5
READ1,VALUE(L),VALUE(L+1),VALUE(L+2),
1VALUE(L+3),VALUE(L+4)
48 CONTINUE
DU 49 L=1,10,5
READ1,FUNCT(L),FUNCT(L+1),FUNCT(L+2),FUNCT(L+3),FUNCT(L+4)
49 CONTINUE
DO 63 J=1,10
DO 70 L=1,10
IF(ARG(J)-VALUE(L)) 70,65,70
65 PRINT1,ARG(J),FUNCT(L)
70 CONTINUE
63 CONTINUE
CONTROL 953
DO 130 M=1,4
PRINT7,CNT(M)
DU TO (90,100,110,120),M
90 D1=SIN(A)*COS(B)
100 D2=SIN(A)**(COS(B))
110 D3=SQRTF((SINF(A)**2.)+(COSF(A)**2.))
120 PRINT1,A,(B,D1,D2,D3)
EXECUTE PROCEDURE 300
130 CONTINUE
READ 4,NXH1,NXH2
CONTROL102
PRINT4,NXH1,NXH2,NLH4,NLH5
READ3,I2,I3,I4
I5=I2+I3+I4
I6=I5-I4
I7=I2*I3

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I8=I2*I3*I4
I9=I4/I3
C NOTE -I- IS DEFINED BY DO 61 I=1,10,5
J1=I2+I3+(I3*I4)/I
PRINT3,I2,I3,I4
PRINT3,I5,I6,I7,I8,I9,J1
STOP555
BEGIN PROCEDURE 300
C A TO NEAREST 1/16, B TO NEAREST INTEGER, D2 TO NEAREST 0.0001
A1=0.0625*DRH(A*16.+5)
A2=DRH(B+.5)
D2=0.0001*DRH(D2*10000.+5)
PRINT1,A1,A2,D1,D2
END PROCEDURE 300
DATA,I1/2/2/0./CNT(1)/3H1ST /CNT(2)/3H2ND /CNT(3)/3H3RD/
DATA,CNT(4)/3H4TH /A/2.3025851/X/0./
END
*HOLD TEST2#
*CODE DIAGS#
COMMON A,A
DIMENSION Y(2)
RETURN 3
END SEGMENT 1
ICONTINUATION CARD FIRST CARD OF STATEMENT
DO 12 J=1,
STOP
A=COS(1)
B=NABS(J)
3 READ 4,A,B,C,D,E
3 F=E
BEGIN SEGMENT 5
I=J+1)
GO TO 1212121
2 GO TO J
118 I=1
DO 18 I=1,2
DO 19 J=1,3
18 CONTINUE
DO 123 JK=1,4
123 GO TO 3
8 DO 8 JL=1,5
DO 1,I=1,2
A=1..2
NOW = JEANNIE
DIMENSION ZX(12)
ZX(6)=0.
DIMENSION P(1,2,3)
DIMENSION R(K)
EQUIVALENCE (A,B)
CALL BAA(A)-B
1 GO TO 1
9 I=1
C=1
DO 4 I=1,N
BEGIN TRACE A3.2
BEGIN TRACE 15.7
N=2*I
4 CONTINUE
ACCEPT 3,A
READ 3,(ZX(I)I=1,3)
COMMON X
PRINT J,K
END SEGMENT 5
11 FORMAT(15)
DO 22 M=1,KQ
L(L)=A
READ 3,(ZX(N),N=1,8*)
7878 FURMAT (I3)I4
279 FURMAT (3H I3)
EXECUTE PROCEDURE 3000
CALL SEGMENT 8000
IT=A-B
A=A--B**C+( )
Y=10.
A=B-J
4533 IF(GARBAGEPAILISQUITEFULL)4,5
DIMENSION DD((2))
DIMENSION Y(3)
GO TO 4
J=1
DIMENSION COSF (20)
ABSF(5)=2.
100 FDRMAT(100F2.0)
DATA,A/1/
DATA,A/6HABCDEF/
DATA,X/1.
DATA,I/1HAB/
DATA,Y(I)/3.0/
DATA,A/
END
*RUN DIAGS#
*CODE UDV 217 #
I=I+1

```

```

END
*RUN  UDV  217  #
*CODE  FMTLG#
      READ 1,I
      1  FORMAT(50H
      1      50H
      2      50H
      3      50H
      4      50H
      END
      ,
      ,
      ,
      ,
      ,116)
*RUN  TEST1#
      4856000000      .005600000
      .400000000      .800000000
      1.11100000      2.22200000      .20000000
      3.33300000      4.44400000

```

FLOATING POINT ARITHMETIC

.11000000E 01	.22000000E 01	.33000000E 01	.14000000E 01	.15000000E 01
.00000000E-50	.17000000E 01	.18000000E 01	.19000000E 01	.20000000E 01
2.10000000	2.20000000			
3.30000000	2.40000000			
2.50000000	2.60000000			
2.70000000	2.80000000			
2.90000000	3.00000000			
5.00000000	10.00000000			
24.00000000	11.00000000			
39.00000000	17.00000000			
44.00000000	41.00000000			
50.00000000	1.00000000			
1.00000000	2.00000000	3.00000000	4.00000000	5.00000000
6.00000000	7.00000000	8.00000000	9.00000000	10.00000000
1.10000000	2.10000000	3.10000000	4.10000000	5.10000000
6.10000000	7.10000000	8.10000000	9.10000000	10.10000000

INTEGER

```

      22          11          33
*CUT  TEST1#
*CUT  TEST2#
*DISK #
*CODE  MLM
      DIMENSION A(10),B(50),C(100),M(100),G(200,20)
      I=1
      J=2
      END

```

'DATE SYSTEM LOAD  
SYSTEM LOAD

This is the output obtained by running the  
Test Deck with output to the Printer.

'DISK  
SYSTEM LOAD  
000  
64000



```

08652 JNV=KNV 0061
08664 CMAX=YNV(INV,KNV) 0062
08736 5103 CONTINUE 0063
08796 IF(CMAX)5106,C,5106 0064
08844 PRINT5105 0065
08868 NOSOL=0 0066
08880 RETURN5100 0067
08888 5105 FORMAT(6HINVERT) 0068
08924 5106 IF(INV-JNV)C,5109,C 0069
08972 KNV=NAME(INV) 0070
09008 NAME(INV)=NAME(JNV) 0071
09080 NAME(JNV)=KNV 0072
09116 D05108LNV=1,NNV 0073
09140 TNV=YNV(LNV,INV) 0074
09212 YNV(LNV,INV)=YNV(LNV,JNV) 0075
09356 5108 YNV(LNV,JNV)=TNV 0076
09488 5109 YNV(INV,INV)=1. 0077
09560 D05110JNV=1,NNV 0078
09584 5110 YNV(INV,JNV)=YNV(INV,JNV)/CMAX 0079
09800 D05113JNV=1,NNV 0080
09824 IF(INV-JNV)C,5113,C 0081
09872 TNV=YNV(JNV,INV) 0082
09942 YNV(JNV,INV)=0. 0083
10016 D05112KNV=1,NNV 0084
10040 5112 YNV(JNV,KNV)=YNV(JNV,KNV)-TNV*YNV(INV,KNV) 0085
10340 5113 CONTINUE 0086
10460 D05119MNV=1,NNV 0087
10484 IF(NAME(MNV)-MNV)C,5119,C 0088
10556 5114 D05115JNV=1,NNV 0089
10580 5115 CNV(JNV)=YNV(MNV,JNV) 0090
10748 JJNV=MNV+1 0091
10784 D05116JNV=JJNV,NNV 0092
10808 IF(NAME(JNV)-MNV)5116,5117,5116 0093
10900 5116 CONTINUE 0094
10960 5117 NAME(JNV)=NAME(MNV) 0095
11032 D05118KNV=1,NNV 0096
11056 YNV(MNV,KNV)=YNV(JNV,KNV) 0097
11200 5118 YNV(JNV,KNV)=CNV(KNV) 0098
11368 5119 NAME(MNV)=MNV 0099
11464 ENDPROCEDURE5100 0100
11472 9102 FORMAT(/43HSEGMENT 9100 INVERTS A NEAR-SINGULAR MATRIX/) 0101
11592 ENDSEGMENT9100 0102
BEGINSEGMENT9150 0103
PRINT9152 0104
MMULT=NNV 0105
KMULT=NNV 0106
NMULT=NNV 0107
EXECUTEPROCEDURE5200 0108
D09151I=1,NNV 0109
9151 PRINT1,(AMULT(I,J),J=1,NNV) 0110
CALLSEGMENT9200 0111
BEGINPROCEDURE5200 0112
MULTIPLIES MATRIX -BMULT- BY MATRIX -YNV- AND STORES PRODUCT 0113
IN -AMULT-. SIZE OF BMULT IS -MMULT-*KMULT- AND SIZE OF 0114
CMULT IS -KMULT-*NMULT-. MAIN PROGRAM MUST DEFINE VAL 0115
OF -MMULT-, -KMULT-, -NMULT-, AND DIMENSION MATRICES AS 0116
FOLLOWS- AMULT(MMULT,NMULT), BMULT(MMULT,KMULT),AND 0117
CMULT(KMULT,MMULT). THE USE OF THE VECTOR FORM OF 0118
THESE ARRAYS IN THE PROCEDURE IS PERMISSIBLE IN C4D0119
MN=MMULT*NMULT 0120
MK=MMULT*KMULT 0121
D05202IMULT=1,MMULT 0122
KJ=1 0123
D05202IJ=IMULT,MN,MMULT 0124

```

```

08724 SMULT=0. 0125
08736 D05201IK=IMULT,MK,MMULT 0126
08760 SMULT=SMULT+BMULT(IK)*YNV(KJ) 0127
08856 5201 KJ=KJ+1 0128
08952 5202 AMULT(IJ)=SMULT 0129
09108 ENDPROCEDURE5200 0130
09116 9152 FORMAT(/54HSEGMENT 9150 MULTIPLIES THE MATRIX BY ITS INVERSE AND , 0131
09116 1 19HDISPLAYS THE RESULT/35HNOTE THE ERROR FROM PROPAGATION OF , 0132
09116 2 9HROUND OFF/) 0133
09410 ENDSEGMENT9150 0134
BEGINSEGMENT9200 0135
PRINT9202 0136
D09201I=1,10 0137
EXECUTEPROCEDURE6000 0138
9201 XBUF(I)=SND 0139
PRINT8,(XBUF(I),I=1,10) 0140
N=LINK(NAMET) 0141
BEGINPROCEDURE6000 0142
C GENERATES A STANDAKD NORMAL DEVIATE -SND- 0143
SUSND=0 0144
D06001J=1,12 0145
SNDX=NPRF(1BEG) 0146
6001 SUSND=SUSND+SNDX 0147
SND=0.00001*SUSND-5.99994 0148
ENDPROCEDURE6000 0149
9202 FORMAT(/51HSEGMENT 9200 GENERATES STANDARD NORMAL DEVIATES BY , 0150
1 23HSUMMING RANDUM INTEGERS/) 0151
ENDSEGMENT9200 0152
DATA,NNV/5/NAMET/5HTEST2/1BEG/4321/J/2HHO/ 0153
END 0154

```

```

39999 COS 39989 COSF 39979 SIN 39969 SINF
39959 EXP 39949 EXPF 39939 ALOG 39929 ALOGF
39919 SQRT 39909 SQRTF 39899 ABS 39889 ABSF
39879 NABS 39869 NABSF 39859 ATAN 39849 ATANF
39839 DRH 39829 DRHF 39819 NPR 39809 NPRF
39799 MOVE 39789 MOVEF 39779 MOD 39769 MODF
39759 SAVE 39749 SAVEF 39739 LINK 39729 LINKF
39719 NFIL 39709 NFILF 39699 NUPL 39689 NUPLF
39679 NWORD 39669 MAXNR 39659 NFST 39649 NLAST
39639 NBUF 39549 XBUF 39449 NAMET 39439 AMULT 39189
39179 BMULT 38939 YNV 38689 CNV 38679 CNV 38639 NAME 38589
38579 FM 0012 38569 FM 0006 38559 K 38549 FM 0002
38539 I 38529 X 38519 FM 0009 38509 J
38489 SG 9000 38479 FM 0001 38469 FM 0008 38459 FM 0010
38439 SG 9100 38419 SG 9150 38399 SG 9200 38389 FM 9005
38379 0000000010 38369 0000000002 38359 0000000001 38349 SN 9001
38339 N 38329 0000000000 38319 000 38309 SN 9002
38299 SN 9003 38289 SN 9004 38279 SN 9101 38269 NNV
38259 XI 38249 XJ 38239 5110000000 38229 001
38219 FM 9102 38199 PR 5100 38189 NOSOL 38179 SN 5101
38169 INV 38159 SN 5113 38149 CMAX 38139 JNV
38129 SN 5103 38119 KNV 38109 SN 5106 38099 FM 5105
38089 SN 5109 38079 SN 5108 38069 LNV 38059 TNV
38049 SN 5110 38039 SN 5112 38029 SN 5119 38019 MNV
38009 SN 5114 37999 SN 5115 37989 JJNV 37979 SN 5116
37969 SN 5117 37959 SN 5118 37949 FM 9152 37939 MMULT
37929 KMULT 37919 NMULT 37899 PR 5200 37889 SN 9151
37879 MN 37869 MK 37859 SN 5202 37849 IMULT
37839 KJ 37829 IJ 37819 SMULT 37809 SN 5201
37799 IK 37789 FM 9202 37779 SN 9201 37759 PR 6000
37749 SND 37739 SUSND 37729 SN 6001 37719 0000000012
37709 SNDX 37699 1BEG 37689 4610000000 37679 5159999400

```

'HOLD TEST1  
SYSTEM LOAD

C INVERTS MATRIX -YINV- OF ORDER -NNV- IF -YINV- IS SINGULAR THE

CARD NO.- LABEL NO.-REFERENCE CARD NUMBERS

0009	1	0110		
0010	2	0006		
0011	6	0005		
0012	8	0140		
0013	9	0007		
0014	10	0032		
0015	12	0004		
0047	100	0100	0067	0045
0055	101	0054		
0068	103	0060	0060	0059
0069	103	0065		
0076	106	0064	0064	
0077	108	0073		
0079	109	0079		
0085	110	0078		
0086	112	0084		
0089	114	0081	0080	0056
0090	115	0089		
0094	116	0093	0093	0092
0095	117	0093		
0098	118	0096		
0099	119	0088	0087	
0112	200	0130	0108	
0128	201	0126		
0129	202	0124	0122	
0142	6000	0149	0138	
0147	6001	0145		
0016	9000	0042	0017	0008
0023	9001			
0026	9002	0024		
0030	9003	0028		
0032	9004			
0040	9005	0018		
0016	9100	0102	0043	0039
0038	9101	0034	0033	
0101	9102	0044		
0016	9150	0134	0103	0046
0110	9151	0109		
0131	9152	0104		
0016	9200	0152	0135	0111
0139	9201	0137		
0150	9202	0136		

CARD NO.- VAR. NAME-REFERENCE CARD NUMBERS

0129	ABSF	0060	0060																	
0038	AMULT	0110																		
0062	BMULT	0127																		
	C MAX	0079	0064	0060																
0090	CNV	*0057																		
0140	I	0098																		
		0140	0139	0110	0038	0038	0037	0035	0032	0032	0030	0029								
		0026	0026	0025	0025	0007														
		*0137	0109	0033	0032	0028	0024	0006												

0153	IBEG	0146																					
0124	IJ	0129																					
0126	IK	0127																					
0122	IMULT	0126	0124																				
0056	INV	0085	0083	0082	0081	0079	0079	0077	0077	0075	0074	0071											
		0070	0069	0062	0060	0059	0058	0055	0055														
0153	J	*0054																					
		0110	0038	0038	0037	0036	0007																
0091	JNV	*0145	0110	0034																			
0092	JNV	0098	0097	0095	0093	0090	0090	0085	0085	0083	0082	0081											
		0079	0079	0076	0075	0072	0071	0069															
		*0089	0080	0078	0061	0058																	
0031	K	*0005																					
0128	KJ	0128	0127																				
0106	KMULT	*0123																					
0096	KNV	0121																					
		0098	0098	0097	0097	0085	0085	0085	0072	0062	0061	0060											
		*0084	0070	0059																			
0073	LINK	0141																					
0020	LNV	0076	0075	0075	0074																		
0121	MAXNR																						
0105	MK	0126																					
0120	MMULT	0126	0124	0122	0121	0120																	
0087	MN	0124																					
	MNV	0099	0099	0097	0095	0093	0091	0090	0088	0088													
	MUVE	0031	0027	0023																			
0141	N	*0027	0023																				
0099	NAME	0095	0093	0088	0071	0070																	
		*0095	0072	0071	0055																		
0153	NAMET	0141																					
0029	NBUF	0032																					
		*0025																					
0021	NFST																						
0022	NLAST																						
0107	NMULT	0120																					
0153	NNV	0109	0107	0106	0105	0096	0092	0089	0087	0084	0080	0078											
		0073	0059	0056	0054	0034	0033																
		*0110																					
0066	NOSDL	*0053																					
		0146																					
0019	NPRF																						
0127	NWORD	0129	0127																				
	SMULT	*0125																					
0148	SND	0139																					
0146	SNDX	0147																					
0147	SUSND	0148	0147																				
		*0144																					
0082	TNV	0085	0076																				
		*0074																					
0006	X	0007																					
0139	XBUF	0140	0032																				
		*0030	0026																				
0035	XI	0037																					
0036	XJ	0037																					
0098	YNV	0127	0097	0090	0085	0085	0082	0079	0075	0074	0062	0060											
		0038																					
		*0097	0085	0083	0079	0077	0076	0075	0037														

\* OTHER CARDS WHERE VARIABLES ARE DEFINED



## CODE TEST2

## SYSTEM LOAD

```

07650 COMMONWORD,MAXNR,NFST,NLAST,NBUF(10),XBUF(10),NAMET 0001
07650 DIMENSIONE(10),F(10),G(10),FUNCT(10) 0002
07650 DIMENSIONVALUE(10),ARG(10) 0003
07650 DIMENSIONCNT(4) 0004
07650 1 FORMAT(5F15.8) 0005
07692 2 FORMAT(115,F15.8,I15) 0006
07724 3 FORMAT(5I15) 0007
07766 4 FORMAT(/5A5/) 0008
07818 5 FORMAT(//) 0009
07818 0 10X,1HX,10X,6HSIN(X),10X,6HCOS(X),10X,6HTAN(X)/10X,1HX,10X, 0010
07818 1 6HEXP(X),10X,7HEXP(-X)/10X,1HX,10X,6HLOG(X),9X,8HLOG10(X)/10X, 0011
07818 2 1HX,10X,7HSQRT(X)/10X,1HX,10X,7HATAN(X),7X,13HLOG10(TAN(X))/) 0012
08240 7 FORMAT(/3H THIS IS THE ,A3,25H OF THE 4 LOOPS OF DO 130/) 0013
08362 8 FORMAT(5E15.8) 0014
08404 CONTROL971 0015
08428 PRINT9301,NAMET 0016
08464 9301 FORMAT(A5,18H TESTS SUBROUTINES/) 0017
08534 BEGINTRACEF15.3 0018
08546 N=19 0019
08558 DO11I=2,6 0020
08582 K=MOD(N/I) 0021
08630 11 X=K*1 0022
08738 ENDTRACE 0023
08738 20 READ1,XZERU,XMAX,DELX 0024
08798 PRINT5 0025
08822 200 X=XZERO 0026
08834 30 X1=SIN(X) 0027
08858 X2=COSF(-X) 0028
08906 X3=SIN(X)/(COS(X)) 0029
08966 X4=EXP(X) 0030
08990 X5=EXP(-X) 0031
09038 X6=ALOGF(X) 0032
09062 X7=X6/A 0033
09098 X8=SQRT(X) 0034
09122 X9=ATAN(X) 0035
09146 X10=ALOG(X3)/A 0036
09182 PRINT1,X,X1,X2,X3 0037
09254 PRINT1,X,X4,X5 0038
09314 PRINT1,X,X6,X7 0039
09374 PRINT1,X,X8 0040
09422 PRINT1,X,X9,X10 0041
09482 IF(X-XMAX)40,50,50 0042
09500 40 X=XDELX 0043
09560 GOTO30 0044
09594 50 READ1,A,B,C,D 0045
09666 READ4,NLH1,NLH2,NLH3,NLH4,NLH5 0046
09750 PRINT4,NLH1,NLH2,NLH3,NLH4,NLH5 0047
09834 A1=A+B-C+D 0048
09894 A2=A*B*C*D 0049
09954 A3=A/B 0050
09990 A4=A**(-B) 0051
10026 A5=A/(-B) 0052
10074 A6=A**(B+2.)*C 0053
10158 A7=(A*B)/(C*D) 0054
10242 A8=A/C*B/D 0055
10302 PRINT1,A1,A2,A3,A4 0056
10374 PRINT1,A5,A6,A7,A8 0057
10446 D6=A**(I1) 0058
10482 D7=A**(-I1) 0059
10518 Z=Z**0.5 0060

10554 PRINT1,D6,D7,Z 0061
10614 DO60I=1,10,5 0062
10638 READ8,F(I),F(I+1),F(I+2),F(I+3),F(I+4) 0063
10842 60 CONTINUE 0064
10902 DO29J=1,10,2 0065
10926 READ1,G(J),G(J+1) 0066
11022 29 CONTINUE 0067
11082 DO61I=1,10,5 0068
11106 E(I)=(SIN(F(I))**2)+(COS(F(I))**2) 0069
11262 DO55J=1,10,3 0070
11286 F(I)=J 0071
11346 PRINT1,F(I) 0072
11406 K=G(J) 0073
11466 PRINT1,E(I) 0074
11526 PRINT2,J,G(J),K 0075
11610 55 CONTINUE 0076
11670 61 CONTINUE 0077
11730 DO47J=1,10,2 0078
11754 READ1,ARG(J),ARG(J+1) 0079
11850 47 CONTINUE 0080
11910 DO48L=1,10,5 0081
11934 READ1,VALUE(L),VALUE(L+1),VALUE(L+2), 0082
12054 1VALUE(L+3),VALUE(L+4) 0083
12138 48 CONTINUE 0084
12198 DO49L=1,10,5 0085
12222 READ1,FUNCT(L),FUNCT(L+1),FUNCT(L+2),FUNCT(L+3),FUNCT(L+4) 0086
12426 49 CONTINUE 0087
12486 DO63J=1,10 0088
12510 DO70L=1,10 0089
12534 IF(ARG(J)-VALUE(L))70,65,70 0090
12650 65 PRINT1,ARG(J),FUNCT(L) 0091
12746 70 CONTINUE 0092
12806 63 CONTINUE 0093
12866 CONTROL953 0094
12890 DO130M=1,4 0095
12914 PRINT7,CNT(M) 0096
12974 GOTO(90,100,110,120),M 0097
13058 90 D1=SIN(A)*COS(B) 0098
13118 100 D2=SIN(A)**(COS(B)) 0099
13202 110 D3=SQRTF((SINF(A)**2.)+(COSF(A)**2.)) 0100
13298 120 PRINT1,A,B,D1,D2,D3 0101
13382 EXECUTEPROCEDURE300 0102
13394 130 CONTINUE 0103
13454 READ4,NXH1,NXH2 0104
13502 CONTROL102 0105
13514 PRINT4,NXH1,NXH2,NLH4,NLH5 0106
13586 READ3,I2,I3,I4 0107
13646 I5=I2+I3+I4 0108
13694 I6=I5-I4 0109
13730 I7=I2*I3 0110
13766 I8=I2*I3*I4 0111
13814 I9=I4/I3 0112
13850 C NOTE -1- IS DEFINED BY DO 61 I=1,10,5 0113
13890 J1=I2+I3+(I3*I4)/I 0114
13946 PRINT3,I2,I3,I4 0115
14006 PRINT3,I5,I6,I7,I8,I9,J1 0116
14102 STOP555 0117
14114 BEGINPROCEDURE300 0118
14142 A TO NEAREST 1/16, B TO NEAREST INTEGER, D2 TO NEAREST 0.0001 0119
14142 C A1=0.0625*DRH(A*16.+5) 0120
14214 A2=DRH(A+5) 0121
14262 D2=0.0001*DRH(D2*10000.+5) 0122
14334 PRINT1,A1,A2,D1,D2 0123
14406 ENDPROCEDURE300 0124

```





'CODE DIAGS  
SYSTEM LOAD

```

ERR 38 : COMMON,A                                0001
ERR 01 : RETURN3                                0003
ERR 01 : ENDSEGMENT1                            0004
ERR 02 : 1CONTINUATIONCARDFIRSTCARDOFSTATEMENT 0005
ERR 10 : DO12J=1,                               0006
ERR 02 : DO12J=1,                               0006
ERR 02 : STOP                                   0007
ERR 33 : A=COS(1)                               0008
ERR 03 : 3 F=E                                  0011
ERR 04 : BEGINSEGMENT5                          0012
ERR 05 : I=J+1)                                0013
ERR 06 : GOTO1212121                             0014
ERR 07 : 2 GOTOJ                                0015
ERR 08 : 18 CONTINUE                             0019
ERR 08 : 123 GOTO3                               0021
ERR 09 : 8 DO8JL=1,5                             0022
ERR 10 : DO1,I=1,2                               0023
ERR 11 : A=1..2                                  0024
ERR 12 : NOW=JEANNIE                             0025
ERR 13 : ZX(B)=0.                                0027
ERR 14 : DIMENSIONP(1,2,3)                       0028
ERR 14 : DIMENSIONR(K)                           0029
ERR 15 : EQUIVALENCE(A,B)                         0030
ERR 15 : CALLBAA(A)-B                             0031
ERR 16 : 1 GOTO1                                  0032
ERR 17 : C=1                                      0034
ERR 18 : DO4I=1,N                                 0036
ERR 19 : BEGINTRACEA3.2                           0037
ERR 19 : BEGINTRACE15.7                           0037
ERR 20 : ACCEPT3,A                                0040
ERR 21 : READ3,(ZX(I)I=1,3)                       0041
ERR 22 : COMMONX                                  0042
ERR 14 : COMMONX                                  0042
ERR 23 : PRINTJ,K                                 0043
ERR 26 : PRINTJ,K                                 0043
ERR 12 : PRINTJ,K                                 0043
ERR 25 : 11 FORMAT(I5)                             0045
ERR 30 : L(L)=A                                   0047
ERR 28 : READ3,(ZX(N),N=1,8*)                     0048
ERR 29 : 7878 FORMAT(I3)I4                         0049
ERR 29 : 279 FORMAT(3H I3)                         0050
ERR 30 : IT=A-B                                   0053
ERR 30 : A=A--B**C+( )                            0054
ERR 31 : Y=10.                                    0055
ERR 33 : A=B-J                                    0056
ERR 36 : 4533 IF(GARBAGEPAILISQUITEFULL)4,5      0057
ERR 14 : DIMENSIONDD((2))                          0058
ERR 38 : DIMENSIONY(3)                            0059
ERR 39 : J=1                                       0061
ERR 40 : DIMENSIONCUSF(20)                         0062
ERR 40 : ABSF(5)=2.                                0063
ERR 12 : ABSF(5)=2.                                0063
ERR 41 : 100 FORMAT(100F2.0)                       0064
ERR 33 : DATA,A/1/                                0065
ERR 34 : DATA,A/6HABCDEF/                          0066
ERR 35 : DATA,X/1.                                0067
ERR 35 : DATA,I/1HAB/                              0068
ERR 24 : DATA,Y(I)/3.0/                           0069
ERR 35 : DATA,A/                                  0070
UNDEF LABLS

```

```

3000      8000      5
UNDEF SMBS
KQ
OPEN DO      8      22
19

```

COMMON,A	0001
DIMENSIONY(2)	0002
RETURNS	0003
ENDSEGMENT1	0004
1CONTINUATIONCARDFIRSTCARDOFFSTATEMENT	0005
DO12J=1,	0006
STOP	0007
A=COS(1)	0008
B=NABS(J)	0009
3 READ4,A,B,C,D,E	0010
3 F=E	0011
BEGINSEGMENT5	0012
I=J+1)	0013
GOTO1212121	0014
2 GOTOJ	0015
118 I=1	0016
DO18I=1,2	0017
DO19J=1,3	0018
18 CONTINUE	0019
DO123JK=1,4	0020
123 GOTO3	0021
8 DO8JL=1,5	0022
DO1,I=1,2	0023
A=1..2	0024
NOW=JEANNIE	0025
DIMENSIONZX(12)	0026
ZX(B)=0.	0027
DIMENSIONP(1,2,3)	0028
DIMENSIONR(K)	0029
EQUIVALENCE(A,B)	0030
CALLBAA(A)-B	0031
1 GOTO1	0032
9 I=1	0033
/	
C=1	0034
DO4I=1,N	0035
BEGINTRACEA3.2	0036
BEGINTRACE15.7	0037
N=2*I	0038
4 CONTINUE	0039
ACCEPT3,A	0040
READ3,(ZX(I)I=1,3)	0041
COMMONX	0042
PRINTJ,K	0043
ENDSEGMENT5	0044
11 FORMAT(15)	0045
DO22M=1,KQ	0046
L(L)=A	0047
READ3,(ZX(N),N=1,8*)	0048
7878 FORMAT(13)I4	0049
279 FORMAT(3H I3)	0050
EXECUTEPROCEDURE3000	0051
CALLSEGMENT8000	0052
1T=A-B	0053
A=A--B**C+()	0054
Y=10.	0055
A=B-J	0056
4533 IF(GARBAGEPAILISQUITEFULL)4,5	0057
DIMENSIONDD(2)	0058
DIMENSIONY(3)	0059
GOTO4	0060
J=1	0061
DIMENSIONCUSF(20)	0062
ABSF(5)=2.	0063
100 FORMAT(100F2.0)	0064
DATA,A/1/	0065

DATA,A/6HABCDEF/  
DATA,X/1.  
DATA,I/1HAB/  
DATA,Y(I)/3.0/  
DATA,A/  
END

0066  
0067  
0068  
0069  
0070  
0071

\*RUN DIAGS  
SYSTEM LOAD  
DIAGS NOT ON FILE



'CODE FMTLG  
SYSTEM LOAD

07650 READ1,I  
07686 1 FORMAT(50H  
07686 1 50H  
07686 2 50H  
07686 3 50H  
07686 4 50H  
FORMAT TOO LONG 4 50H

0001  
; 0002  
; 0003  
; 0004  
; 0005  
;I16) 0006  
;I16)

'RUN TEST1  
SYSTEM LOAD

HO HO HO HO

SEGMENT 9000 TESTS DISK DATA STORAGE UNDER THE MOVE ROUTINE

1	1.0	2	2.0	3	3.0	4	4.0	5	5.0
6	6.0	7	7.0	8	8.0	9	9.0	10	10.0

SEGMENT 9100 INVERTS A NEAR-SINGULAR MATRIX

SEGMENT 9150 MULTIPLIES THE MATRIX BY ITS INVERSE AND DISPLAYS THE RESULT  
NOTE THE ERROR FROM PROPAGATION OF ROUND OFF

.99998000	.00030000	-.00100000	.00400000	-.00140000
-.00001000	.99990000	-.00050000	.00200000	.00010000
-.00000900	-.00010000	.99970000	.00200000	.00060000
-.00000400	.00000000	-.00070000	1.00300000	-.00020000
.00000800	.00000000	-.00080000	.00110000	.99960000

SEGMENT 9200 GENERATES STANDARD NORMAL DEVIATES BY SUMMING RANDOM INTEGERS

-.87734000E 00	-.59061000E 00	-.83801000E 00	-.18343800E 01	-.59712000E 00
.57057000E 00	.89262000E 00	.13486900E 01	-.16082000E 00	.20585000E 00



TEST2 TESTS SUBROUTINES

1 3863	1.000 3861	1 3863	1.000 3861
3 3863	3.000 3861	4 3863	4.000 3861
1 3863	1.000 3861		

X	SIN(X)	COS(X)	TAN(X)
X	EXP(X)	EXP(-X)	
X	LOG(X)	LOG10(X)	
X	SQRT(X)	LOG10(TAN(X))	
X	ATAN(X)		

.40000000	.38941834	.92106099	.42279322
.40000000	1.49182470	.67032004	
.40000000	-.91629073	-.39794000	
.40000000	-.63245553		
.40000000	.38050637	-.37387198	
.60000000	.56464247	.82533561	.68413681
.60000000	1.82211880	.54881163	
.60000000	-.51082562	-.22184874	
.60000000	.77459667		
.60000000	.54041950	-.16485704	
.80000000	.71735609	.69670670	1.02963850
.80000000	2.22554090	.44932896	
.80000000	-.22314355	-.09691001	
.80000000	.89442719		
.80000000	.67474094	.01268477	

FLOATING POINT ARITHMETIC

4.44400000	36.56516000	.50000000	.79144978
-.50000000	5.19804550	.16666666	.16666666
1.23432100	.81016201	.00000000	
1.00000000			
1.00000000			
1	2.10000000	2	
4.00000000			
1.00000000			
4	2.40000000	2	
7.00000000			
1.00000000			
7	2.70000000	2	
10.00000000			
1.00000000			
10	3.00000000	3	
1.00000000			
1	2.10000000	2	
4.00000000			
1.00000000			
4	2.40000000	2	
7.00000000			
1.00000000			
7	2.70000000	2	
10.00000000			
1.00000000			
10	3.00000000	3	
5.00000000	5.10000000		
10.00000000	10.10000000		
1.00000000	1.10000000		

THIS IS THE 1ST OF THE 4 LOOPS OF DO 130

1.11100000	2.22200000	-.54319181	1.06872570	1.00000000
1.12500000	2.00000000	-.54319181	1.06870000	

THIS IS THE 2ND OF THE 4 LOOPS OF DO 130

1.11100000	2.22200000	-.54319181	1.06872570	1.00000000
1.12500000	2.00000000	-.54319181	1.06870000	

THIS IS THE 3RD OF THE 4 LOOPS OF DO 130

1.11100000	2.22200000	-.54319181	1.06870000	1.00000000
1.12500000	2.00000000	-.54319181	1.06870000	

THIS IS THE 4TH OF THE 4 LOOPS OF DO 130

1.11100000	2.22200000	-.54319181	1.06870000	1.00000000
1.12500000	2.00000000	-.54319181	1.06870000	

INTEGER ARITHMETIC

22	11	33		
66	33	242	7986	3
66				

STOP 0555

'CUT TEST1  
SYSTEM LOAD

'CUT TEST2  
SYSTEM LOAD

'DISK  
SYSTEM LOAD  
000  
64000

'CODE MLM  
SYSTEM LOAD  
07650 DIMENSIONA(10),B(50),C(100),M(100),G(200,20)  
SYM TAB FULL

0001