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                    ASMBL 1
                    REORD 1,00
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THE BURROUGHS ALGEBRAIC COMPILER (BALGOL)
J. ERDWINN, J. MERNER, F. CROWDER, J. SPERONI, D. KNUTH
MAY 1, 1961

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14 0    0000  OT     DEFN  1              OUTPUT TAPE UNIT
15 0    0000  T      DEFN  2              PROGRAM TAPE UNIT
16 0    0000  PNTR   DEFN  2              PRINTER UNIT
17 0    0000  LODOX  DEFN  69
18 0    0000  LODOV  DEFN  71
19 0    0000  MSIZE  DEFN  4999           SIZE OF MEMORY
20 0    0000         LOCN  0
21 0    0000  BUF    DEFN  *
22 0    0000         BUN   LOD
23 0    0001         BUN   STORE

25 0    0002  LOD    MRW 4 T              TAPE LOADING ROUTINE
26 0    0003         CLB                        FOR FIRST PHASE
27 0    0004  *A     MNC 5 0,T,10
28 0    0005         LDB   *+1
29 0    0006         CLA   999
30 0    0007  *B     ADD - 0
31 0    0008         DBB   B-,1
32 0    0009         BZA   C+
33 0    0010         SPO   E+,4           SUM CHECK NONZERO
34 0    0011         MPB 4 T,10            CAUSES TYPEOUT AND HALT
35 0    0012         F424  9669,0,9669
36 0    0013         LDB   B-             PRESS START TO TRY AGAIN
37 0    0014         BUN   A-
38 0    0015  *C     DFL   *+1,11,1       FIVE TIMES
39 0    0016  *G     F424  4000,42,B-     TEN BLOCKS
40 0    0017         IBB   *+1,999        999 LOCATIONS PER BLOCK
41 0    0018         STB   B-,04
42 0    0019         BRP   A-
43 0    0020         BUN   46
44 0    0021  *E     CNST  $$CHECK SUM ERROR$$
45 0    0025         LOCN  46
46 0    0046  *D     LDB   Z+             READ LAST BLOCK INTO THE
47 0    0047         MNC 5 0,T,1           END OF MEMORY
48 0    0048         LDB   *+1            (THIS HOLDS PATCHES AND
49 0    0049         CLA   99              CORRECTIONS, IF ANY)
50 0    0050  *Z     ADD - MSIZE-99
51 0    0051         DBB   *-1,1          SUM CHECK IT, TOO
52 0    0052         BZA   D+
53 0    0053         SPO   E-,4
54 0    0054         MPB 4 T,1
55 0    0055         F424  9669,00,9669
56 0    0056         BUN   D-
57 0    0057  *D     DFL   G-,11,5
58 0    0058         STA   B-,04
59 0    0059         BOF   STACK

                                          TAPE STORING ROUTINE.
62 0    0060  STORE  MRW 4 T
63 0    0061  *B     LDB   *+1            REWRITES COMPILER FROM CORE
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  2 30 0      0230          HLT    0
  2 31 0      0231          HLT    0
  2 32 0      0232          HLT    0
  2 33 0      0233          HLT    0
  2 34 0      0234          HLT    0
  2 35 0      0235          HLT    0
  2 36 0      0236          HLT    0
  2 37 0      0237          HLT    0
  2 38 0      0238    V1    HLT    0       V-OPERANDS ARE SET UP BY GENERATOR
  2 39 0      0239    V2    HLT    0         AND USED BY ASSEMBLER
  2 40 0      0240    V3    HLT    0
  2 41 0      0241    V4    F244   21,XONE,0          CONSTANT 1
  2 42 0      0242    V5    F244   20,FONE,0          CONSTANT 1.0
  2 43 0      0243    V6    F244   21,XZERO,0         CONSTANT 0
  2 44 0      0244    V7    F244   20,FZERO,0         CONSTANT 0.0
  2 45 0      0245    V8    F244   40,LALE,0
  2 46 0      0246    V9    HLT
  2 47 0      0247    V10   F244   21,XTWO,0          CONSTANT 2
  2 48 0      0248    V11   F244   20,FTWO,0          CONSTANT 2.0
-02 49 0      0249    VARB  HLT    MSIZE   LAST LOCATION USED FOR TARGET VARIABLES,ETC.
  2 50 0      0250    VIMAG HLT    0       CURRENT V-OPERAND
  2 51 0      0251    V     DEFN   V1-1

                                           SWITCHES SET BY TRANSLATOR
  2 54 0      0251    SW2   HLT    0       PROCESSING SCALE FACTOR
  2 55 0      0252    SW3   HLT    0       DECIMAL POINT SENSED IN CONSTANT
  2 56 0      0253    SW6   HLT    0       WE MIGHT WANT IMPLIED MULTIPLICATION
  2 57 0      0254    ALPHA HLT    1       CONTROL OF ITERATION LIST
  2 58 0      0255    DELTA HLT    0       CONTROLS WHAT TO DO AT NEXT SEMICOLON
  2 59 0      0256    EPSLN HLT    0       NUMBER OF EXTERNAL THINGS
  2 60 0      0257    KAPPA HLT    0       EMPTY SUBSCRIPTS HAVE APPEARED
  2 61 0      0258    PHI   HLT    0       IGNORE NEXT LEFT PARENTHESIS
  2 62 0      0259    PSI   HLT    0       NEXT FORWARD REFERENCE IS INCREMENTED
  2 63 0      0260    CHI   HLT    0       MONITOR LABELS IN CURRENT PROGRAM
  2 64 0      0261    CHI3  HLT    0       MONITOR LABELS OUTSIDE OF PROCEDURES
  2 65 0      0262    OMEGA HLT    0       FOR MODE IN ASSIGNMENT GENERATOR
  2 66 0      0263    FNSW  HLT    0       PROCESSING FUNCTION DECLARATION
  2 67 0      0264    PARSW HLT    0       PROCESSING PROCEDURE OR FUNCTION PARAMETERS
  2 68 0      0265    TAG   HLT    0       IDENTIFIER IS A LABEL
  2 69 0      0266    XI    HLT    0       LAST INSTRUCTION ASSEMBLED WAS CLT10
  2 70 0      0267    LAMDA HLT    0       OTHERWISE HAS APPEARED IN EITHER IF CASE
-02 71 0      0268    PI    HLT    0       PUT FORWARD REFERENCE OPERATORS ON EXEC STACK
  2 72 0      0269    IOTA  HLT    0       ARRAY NOT YET DECLARED
  2 73 0      0270    OMCRN HLT    0       IGNORE NEXT SEMICOLON

                                           STACKS IN ASSOCIATIVE MEMORY
  2 76 0      0271    AVAIL F424   0000,0,0        FREED-UP LOCATIONS
  2 77 0      0272    FUNS  F424   FUNS,0,0        CONTROL OF PROCEDURE,FUNCTION CALLS
  2 78 0      0273    OP    F424   OP,0,0          OPERATORS WAITING TO BE USED
  2 79 0      0274    ARAS  F424   ARAS,0,0        INCREMENT WORDS FOR ARRAY
  2 80 0      0275    DIMS  F424   DIMS,0,0        ARRAY DIMENSIONS
  2 81 0      0276    EXEC  F424   EXEC,0,0        FORWARD REFERENCES TO FOR LOOP
  2 82 0      0277    FV    F424   FV,0,0          FOR VARIABLE
  2 83 0      0278    MULS  F424   MULS,0,0        DIMENSIONS
002 84 0      0279    MODE  F424   MODE,0,NRMMD    MODE TRANSLATOR IS IN (INITIALLY NORMAL)
  2 85 0      0280    MULT  F424   MULT,0,0        MULS STACK BACKWARDS
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2 86 0      0281   OPRND F424   OPRND,0,0      OPERANDS WAITING TO BE USED
2 87 0      0282   PAREF F424   PAREF,0,0      REFERENCE TO PROCEDURE PARAMETERS
2 88 0      0283   PR1   F424   PR3,0,0       PREFIXES OUTSIDE OF PROCEDURES
2 89 0      0284   PR3   F424   PR3,0,0       CURRENT PREFIXES
2 90 0      0285   RV    F424   RV,0,0        FOR VARIABLE (BACKWARDS)
2 91 0      0286   SAVET F424   SAVET,0,0     TEMP STORAGE CELLS SAVED
2 92 0      0287   SETUP F424   SETUP,0,0     REFERENCE TO A PROCEDURE PARAMETER
2 93 0      0288   TEMPS F424   TEMPS,0,0     TEMP STORAGE CELLS AVAILABLE
2 94 0      0289   XVP   F424   XVP,0,0       ARRAYS IN MULTIPLE INDEXING
2 95 0      0290   DUMBS F424   DUMBS,0,0     LEVELS WHERE DUMP CARD APPEARS


2 98 0      0291   OPTAB DEFN   *             TABLE OF OPERATION SYMBOLS
2 99 0      0291   CRA   F2443  0,GCRA,1      00 INPUT OR OUTPUT
3 00 0      0292   CRB   F2441  01,GCRB,1     01 EQUAL
3 01 0      0293   CRC   F2442  00,GCRC,1     02 FUNCTION CALL COMMA
3 02 0      0294   DOT   F2440  12,0048,1     03 . MULTIPLICATION
3 03 0      0295   RPAR  F2440  00,0000,3     04 ) RIGHT PARENTHESIS
3 04 0      0296   CRD   F2441  41,GCRD,1     05 MOD COMMA
3 05 0      0297   CRE   F2443  00,GCRE,1     06 EITHER
3 06 0      0298   CRF   F2441  00,GCRF,1     07 ARRAY DECLARATION
3 07 0      0299   CRG   F2442  00,GCRG,1     08 ARRAY DECLARATION
3 08 0      0300   CRH   F2442  00,GCRH,1     09 SWITCH
3 09 0      0301   PLUS  F2440  10,0000,1     10 + ADDITION
3 10 0      0302   CRI   F2443  00,GCRI,1     11 INPUT OR OUTPUT
3 11 0      0303   CRJ   F2442  00,GCRJ,1     12 INPUT LABEL COMMA
3 12 0      0304   SMCLN F2446  00,SEMI,5     13 $ SEMICOLON
3 13 0      0305   EXPN  F2441  14,GEXPN,1    14 * EXPONENTIATION
3 14 0      0306   CRK   F2443  00,GCRK,1     15 OUTPUT LABEL COMMA
3 15 0      0307   TEMP1 CNST   0              NOT USED
3 16 0      0308   CRM   F2443  00,GCRM,1     17 MONITOR
3 17 0      0309   CRN   F2441  00,GCRN,1     18 PARAMETRIC ARRAY
3 18 0      0310   CRO   F2441  41,GCRO,1     19 FUNCTION CALL
3 19 0      0311   HYPH  F2443  14,GHYPH,1    20 - NEGATION
3 20 0      0312   SOLD  F2440  11,0024,1     21 / DIVISION
3 21 0      0313   CRP   F2443  00,GCRP,1     22 PROCEDURE
3 22 0      0314   KOMA  F2446  00,COMMA,5    23 , COMMA
3 23 0      0315   LPAR  F2440  00,0000,2     24 ( LEFT PARENTHESIS
3 24 0      0316   CRQ   F2443  00,GCRQ,1     25 PROCEDURE
3 25 0      0317   CRR   F2441  40,GCRR,1     26 ARRAY
3 26 0      0318   CRS   F2443  00,GCRS,1     27 SUBROUTINE
3 27 0      0319   CRT   F2442  00,GCRT,1     28 GO TO
3 28 0      0320   CRU   F2442  00,GCRU,1     29 UNTIL
3 29 0      0321   CRV   F2443  00,GCRV,1     30 SEGMENT
3 30 0      0322   CRW   F2443  00,GCRW,1     31 OTHERWISE
3 31 0      0323   CRX   F2443  00,GCRX,1     32 FOR
3 32 0      0324   SBST  F2446  00,EQUL,5     33 = ASSIGNMENT
3 33 0      0325   CRY   F2442  00,GCRY,1     34 FIX
3 34 0      0326   CRZ   F2442  00,GCRZ,1     35 STOP
3 35 0      0327   TEMP3 CNST   0              NOT USED
3 36 0      0328   BREF  F2445  00,0000,1     37 BACKWARD REFERENCE
3 37 0      0329   TOP   CNST   0              NOT USED
3 38 0      0330   CWEND F2446  00,END,1      39 END
3 39 0      0331   CWNDX F2446  00,NDXMD,4    40 ARRAY CALL
3 40 0      0332   CWARD F2446  00,ARDEC,1    41 ARRAY DECLARATION
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  3 41 0      0333    CWEMP  F2446 00,EMPTY,5     42 EMPTY SUBSCRIPT
  3 42 0      0334    CWLAB  F2446 00,LABMD,4     43 LABEL IN DECLARATION
  3 43 0      0335    CWAPM  F2446 00,ARAPM,1     44 ARRAY PARAMETER
  3 44 0      0336    CWCLN  F2446 00,FUNMD,4     45 FUNCTION,PROCEDURE CALL
  3 45 0      0337    BOR    F2440 22,0203,1      46 BOOLEAN OR
  3 46 0      0338    OPIF   F2442 00,GIF,1       47 IF
  3 47 0      0339    RGEQ   F2448 01,0024,1      48 GEQ
  3 48 0      0340    RLEQ   F2448 01,0012,1      49 LEQ
  3 49 0      0341    OPMAX  F2440 00,0100,1      50 MAX
  3 50 0      0342    OPMIN  F2440 00,0112,1      51 MIN
  3 51 0      0343    CROY   F2443 22,GCROY,1     52 TRACE

                                                  VARIOUS MODES
  3 54 0      0344    ARAMD  F244   0,ARACM,ARRAY ARRAY DECLARATION MODE
  3 55 0      0345    ARFMD  F244   0,ARFCM,ARFCM ARRAY-FILL MODE
  3 56 0      0346    DCLMD  DEFN   *             TYPE DECLARATION MODES
  3 57 0      0346    INTMD  F244   0,DCLCM,INTG  INTEGER DECLARATION MODE
  3 58 0      0347    FLTMD  F244   0,DCLCM,FLTG  FLOATING DECLARATION MODE
003 59 0      0348    FORMD  F244   1,FORCM,FOR   FOR MODE (PROCESSING ITERATION LIST)
  3 60 0      0349    FRMMD  F2449  0,FRMCM,FRMT  FORMAT DECLARATION MODE
  3 61 0      0350    FUNMD  F244   0,FUNCM,COLON FUNCTION MODE (SETTING UP PARAMETERS)
  3 62 0      0351    INNMD  F2449  1,PUTCM,INPUT INPUT DECLARATION MODE
  3 63 0      0352    MAXMD  F244   0,MAXCM,NORM  MAX MODE
  3 64 0      0353    MINMD  F244   0,MINCM,NORM  MIN MODE
  3 65 0      0354    MODMD  F244   0,MODCM,NORM  MOD MODE
  3 66 0      0355    NDXMD  F244   0,NDXCM,INDEX INDEX MODE (PROCESSING SUBSCRIPTS)
  3 67 0      0356    NRMMD  F2441  10,0,0        NORMAL MODE
  3 68 0      0357    OUTMD  F2449  1,PUTCM,OUTPT OUTPUT DECLARATION MODE
  3 69 0      0358    PRCMD  F244   0,PRCCM,PROCD PROCEDURE DECLARATION MODE
  3 70 0      0359    SWMD   F244   0,SWCM,SWTCH  SWITCH MODE
  3 71 0      0360    FNCMD  F244   0,PRCCM,FUNC  FUNCTION DECLARATION MODE
003 72 0      0361    LABMD  F2442  0,LABCM,LABEL LABEL MODE (OUTSIDE OF I-O,FORMAT MODES)
  3 73 0      0362    EXTMD  F2449  1,FRMCM,EXTRN EXTERNAL MODE
  3 74 0      0363    MEMMD  F2447  1,ARACM,MEMST TRACE MODE

                                                  RESERVED WORDS
  3 77 0      0364    SUBGN  F4246  7001,0,SUBR
  3 78 0      0365           CNST   $SUBROUTINE$
  3 79 0      0367    UNTGN  F4246  7001,0,UNTIL  (DO A SLA 4 ON THESE CODES
  3 80 0      0368           CNST   $UNTIL$         TO GET THEIR TRUE SIGNIFICANCE)
  3 81 0      0369    INPGN  F4246  7004,0,INNMD
  3 82 0      0370           CNST   $INPUT$
  3 83 0      0371    RETGN  F4246  7001,0,RETN
  3 84 0      0372           CNST   $RETURN$
  3 85 0      0374    IFGN   F4246  7691,0,IF
  3 86 0      0375           CNST   $IF$
  3 87 0      0376    IMPGN  F4240  7001,20,1209
  3 88 0      0377           CNST   $IMPL$
  3 89 0      0378    ORGN   F4246  7001,0,OR
  3 90 0      0379           CNST   $OR$
  3 91 0      0380    GOGN   F4246  7001,0,GO
  3 92 0      0381           CNST   $GO$
  3 93 0      0382    OUTGN  F4246  7004,0,OUTMD
  3 94 0      0383           CNST   $OUTPUT$
  3 95 0      0385    EITGN  F4246  7001,0,ETHR
  3 96 0      0386           CNST   $EITHER$
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3 97 0      0388    BOOGN  F4246  7004,0,INTMD
3 98 0      0389           CNST   $BOOLEAN$
3 99 0      0391    COMGN  F4246  7001,0,COMNT
4 00 0      0392           CNST   $COMMENT$
4 01 0      0394    LEQGN  F4248  7001,01,12
4 02 0      0395           CNST   $LEQ$
4 03 0      0396    FORMG  F4246  7004,0,FRMMD
4 04 0      0397           CNST   $FORMAT$
4 05 0      0399    MINGN  F4246  7404,0,MINMD
4 06 0      0400           CNST   $MIN$
4 07 0      0401    NFQGN  F4248  7001,01,6
4 08 0      0402           CNST   $NEQ$
4 09 0      0403    FLOGN  F4246  7004,0,FLTMD
4 10 0      0404           CNST   $FLOATING$
4 11 0      0406    INTGN  F4246  7004,0,INTMD
4 12 0      0407           CNST   $INTEGER$
4 13 0      0409    FORGN  F4246  7004,0,FORMD
4 14 0      0410           CNST   $FOR$
4 15 0      0411    PROGN  F4246  7004,0,PRCMD
4 16 0      0412           CNST   $PROCEDURE$
4 17 0      0414    MAXGN  F4246  7404,0,MAXMD
4 18 0      0415           CNST   $MAX$
4 19 0      0416    FINGN  F4246  7001,0,FINSH
4 20 0      0417           CNST   $FINISH$
4 21 0      0419    PCSGN  F4242  7401,41,GPCS
4 22 0      0420           CNST   $PCS$
4 23 0      0421    SEGGN  F4246  7001,0,SGMT
4 24 0      0422           CNST   $SEGMENT$
4 25 0      0424    OVEGN  F4246  7001,0,OVRLY
4 26 0      0425           CNST   $OVERLAY$
4 27 0      0427    ENTGN  F4246  7001,0,ENTER
4 28 0      0428           CNST   $ENTER$
4 29 0      0429    GTRGN  F4248  7001,01,18
4 30 0      0430           CNST   $GTR$
4 31 0      0431    ARRGN  F4246  7004,0,ARAMD
4 32 0      0432           CNST   $ARRAY$
4 33 0      0433    OTHGN  F4246  7005,0,WISE
4 34 0      0434           CNST   $OTHERWISE$
4 35 0      0436    FUNGN  F4246  7004,0,FNCMD
4 36 0      0437           CNST   $FUNCTION$
4 37 0      0439    NOTGN  F4242  7001,24,GBNOT
4 38 0      0440           CNST   $NOT$
4 39 0      0441    LSSGN  F4248  7001,01,30
4 40 0      0442           CNST   $LSS$
4 41 0      0443    MONGN  F4246  7001,0,MONT
4 42 0      0444           CNST   $MONITOR$
4 43 0      0446    SWIGN  F4246  7004,0,SWMD
4 44 0      0447           CNST   $SWITCH$
4 45 0      0449    STOGN  F4246  7001,0,STOP
4 46 0      0450           CNST   $STOP$
4 47 0      0451    FIXGN  F244   06,FIX,0
4 48 0      0452    GSEG   F244   14,SEGGN,0
4 49 0      0453    GNARR  F244   10,ARRGN,0
4 50 0      0454    ANDGN  F4240  7001,23,0200
4 51 0      0455           CNST   $AND$
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   4 52 0      0456   EXTGN  F4246  7004,0,EXTMD
   4 53 0      0457          CNST   $EXTERNAL$
   4 54 0      0459   REAL   F4246  7004,00,FLTMD
   4 55 0      0460          CNST   $REAL $
   4 56 0      0461   DUMPE  F4246  7001,0,DUMP
   4 57 0      0462          CNST   $DUMP$
   4 58 0      0463   MEMRY  F4246  7004,0,MEMMD
   4 59 0      0464          CNST   $TRACE$
   4 60 0      0465   STAX   F2446  73,0199,0      THERE ARE MORE RESERVED WORD CODES
   4 61 0      0466          CNST   $STATEMENT$    SCATTERED THROUGH TABSC


   4 64 0      0468   TABSC  F4248  8888,30,R1          AA
  04 65 0      0469          F4248  8888,30,R1          AN      TABLE OF ADMISSIBLE
 004 66 0      0470          F4248  8888,30,R3          A)      CHARACTER PAIRS AND
 004 67 0      0471          F4248  8888,30,R2          A(      CORRESPONDING R-ROUTINES
   4 68 0      0472          F4248  8888,30,R17         A.      IN SCANNER
   4 69 0      0473          F4248  8888,30,R3          A$
   4 70 0      0474          F4248  8888,30,R3          A,
   4 71 0      0475          F4248  8888,30,R3          A*
   4 72 0      0476          F4248  8888,30,R11         A-
   4 73 0      0477          F4248  8888,30,R3K         AP      A=ALPHA
   4 74 0      0478          F4248  8888,30,R4          NA      N=NUMBER
 004 75 0      0479          F4248  8888,30,R5          NN      P=PLUS,DIVIDE,OR EQUALS
   4 76 0      0480          F4248  8888,30,R6          N)
   4 77 0      0481          F4248  8888,30,R19         N(
   4 78 0      0482          F4248  8888,30,R20         N.
   4 79 0      0483          F4248  8888,30,R6          N$
   4 80 0      0484          F4248  8888,30,R6          N,
   4 81 0      0485          F4248  8888,30,R22         N*
   4 82 0      0486          F4248  8888,30,R18         N-
   4 83 0      0487          F4248  8888,30,R6          NP
   4 84 0      0488          F4248  8888,30,R7P         )A
   4 85 0      0489          F4248  8888,30,R21         )N
   4 86 0      0490          F4248  8888,30,R8          ))
   4 87 0      0491          F4248  8888,30,R10         )(
   4 88 0      0492          F4248  8888,30,R8          ).
   4 89 0      0493          F4248  8888,30,R8          )$
   4 90 0      0494          F4248  8888,30,R8          ),
   4 91 0      0495          F4248  8888,30,R8          )*
   4 92 0      0496          F4248  8888,30,R12         )-
   4 93 0      0497          F4248  8888,30,R8          )P
   4 94 0      0498          F4248  8888,30,R7          (A
   4 95 0      0499          F4248  8888,30,R23         (N
   4 96 0      0500          F4248  8888,30,R25         ()
   4 97 0      0501          F4248  8888,30,R8          ((
   4 98 0      0502          F244   14,COMGN,0          (. ILLEGAL
   4 99 0      0503          F4248  8888,30,R26         ($
   5 00 0      0504          F4248  8888,30,R25         (,
   5 01 0      0505          F244   06,LEQGN,0         (* ILLEGAL
   5 02 0      0506          F4248  8888,30,R8          (-
   5 03 0      0507          F4248  8888,30,R9          (P
   5 04 0      0508          F4248  8888,30,R7          .A
   5 05 0      0509          F4248  8888,30,R23         .N
   5 06 0      0510          F244   06,NEQGN,0         .) ILLEGAL
   5 07 0      0511          F4248  8888,30,R8          .(
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5 08 0      0512          F244  14,INTGN,TABSC+72      ., ILLEGAL
5 09 0      0513          F244  18,PROGN,0            .$ ILLEGAL
5 10 0      0514          F244  12,FINGN,*+1          ., ILLEGAL
5 11 0      0515          F244  06,PCSGN,FIXGN        .* ILLEGAL
5 12 0      0516          F4248 8888,30,R8            .-
5 13 0      0517          F4248 8888,30,R9            .P
5 14 0      0518          F4248 8888,30,R7            $A
5 15 0      0519          F4248 8888,30,R23           $N
5 16 0      0520          F4248 8888,30,R27           $)
5 17 0      0521          F4248 8888,30,R8            $(
5 18 0      0522          F244  20,SUBGN,0            $. ILLEGAL
5 19 0      0523          F4248 8888,30,R26           $$
5 20 0      0524    SIGGN F4242 7401,41,GSIGN         $, ILLEGAL
5 21 0      0525          CNST  $SIGN$                $* ILLEGAL
5 22 0      0526          F4248 8888,30,R8            $-
5 23 0      0527          F4248 8888,30,R9            $P
5 24 0      0528          F4248 8888,30,R7            ,A
5 25 0      0529          F4248 8888,30,R23           ,N
5 26 0      0530          F4248 8888,30,R25           ,)
5 27 0      0531          F4248 8888,30,R8            ,(
5 28 0      0532    EQIGN F4240 7001,21,0206          ,. ILLEGAL
5 29 0      0533          CNST  $EQIV$                ,$ ILLEGAL
5 30 0      0534          F4248 8888,30,R25           ,,
5 31 0      0535          F244  08,SIGGN,0            ,* ILLEGAL
5 32 0      0536          F4248 8888,30,R8            ,-
5 33 0      0537          F4248 8888,30,R9            ,P
5 34 0      0538          F4248 8888,30,R7            *A
5 35 0      0539          F4248 8888,30,R23           *N
5 36 0      0540          F2441 10,FONE,TABSC+82      *) ILLEGAL
5 37 0      0541          F4248 8888,30,R8            *(
5 38 0      0542    TOGN  F4246 7001,0,TO             *. ILLEGAL
5 39 0      0543          CNST  $TO$                  *$ ILLEGAL
5 40 0      0544    BEGGN F4240 7002,0,0              *, ILLEGAL
5 41 0      0545          CNST  $BEGIN$               ** ILLEGAL
5 42 0      0546          F4248 8888,30,R8            *-
5 43 0      0547          F4248 8888,30,R9            *P
5 44 0      0548          F4248 8888,30,R7            -A
5 45 0      0549          F4248 8888,30,R23           -N
5 46 0      0550          F244  10,FLOAT,0            -) ILLEGAL
5 47 0      0551          F4248 8888,30,R8            -(
5 48 0      0552    ENDGN F4246 7001,0,END            -. ILLEGAL
5 49 0      0553          CNST  $END$                 -$ ILLEGAL
5 50 0      0554    ABSGN F4242 7401,41,GABSF         -, ILLEGAL
5 51 0      0555          CNST  $ABS$                 -* ILLEGAL
5 52 0      0556    GEQGN F4248 7001,01,0024          -- ILLEGAL
5 53 0      0557          CNST  $GEQ$                 -P ILLEGAL
5 54 0      0558          F4248 8888,30,R7            PA
5 55 0      0559          F4248 8888,30,R23           PN
5 56 0      0560          F2440 08,STOGN,0            P) ILLEGAL
5 57 0      0561          F4248 8888,30,R8            P(
5 58 0      0562    MODGN F4246 7404,0,MODMD          P. ILLEGAL
5 59 0      0563          CNST  $MOD$                 P$ ILLEGAL
5 60 0      0564    EQLGN F4248 7001,01,0             P, ILLEGAL
5 61 0      0565          CNST  $EQL$                 P* ILLEGAL
5 62 0      0566          F4248 8888,30,R8            P-
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  5 63 0      0567          F4248 8888,30,R9          PP


  5 66 0      0568    VOCAB DEFN  *                   TABLE OF 220 OPERATIONS WE CAN DO
  5 67 0      0568    CADV1 CNST  00000100001   01
  5 68 0      0569    CADV2 CNST  00000100002   02
  5 69 0      0570    CADX1 CNST  00000100004   03
  5 70 0      0571    CADF1 CNST  00000100005   04
  5 71 0      0572    CADL1 CNST  60000100001   05
  5 72 0      0573    CSUV1 CNST  00000110001   06      SIGN OF 0,1, OR 3..
  5 73 0      0574    CSUV2 CNST  00000110002   07      ADDRESS I IS TO BE REPLACED BY
  5 74 0      0575    ADDV1 CNST  00000120001   08      V(I)  AND IF V(I) IS AN
  5 75 0      0576    ADDV2 CNST  00000120002   09      ARRAY WE MUST ALSO COMPUTE
  5 76 0      0577    ADDL1 CNST  60000120001   10      ITS SUBSCRIPT AND LOAD B
  5 77 0      0578    FADV1 CNST  00000220001   11
  5 78 0      0579    FADV2 CNST  00000220002   12
  5 79 0      0580    SUBV1 CNST  00000130001   13      SIGN OF 1.. DONT RELEASE
  5 80 0      0581    SUBV2 CNST  00000130002   14      TEMPORARY STORAGE CELL.
005 81 0      0582    SUBX1 CNST  00000130004   15      IF V(I) IS AN ARRAY DONT RELEASE
  5 82 0      0583    FSUV1 CNST  00000230001   16      THE INCREMENT WORD
  5 83 0      0584    FSUV2 CNST  00000230002   17
  5 84 0      0585    MULV1 CNST  00000140001   18
-05 85 0      0586    MULV2 CNST  00000140002   19      SIGN OF 3.. THIS IS A PSEUDO-OP.
 05 86 0      0587    FMUV1 CNST  00000240001   20      WE GET READY TO CALCULATE V(I)
  5 87 0      0588    FMUV2 CNST  00000240002   21      BUT DONT ACTUALLY FINISH
  5 88 0      0589    DIVV1 CNST  00000150001   22
  5 89 0      0590    DIVV2 CNST  00000150002   23
 05 90 0      0591    FDVV1 CNST  00000250001   24      SIGN OF 4..  ADDRESS IS ABSOLUTE
 05 91 0      0592    SHIFT CNST  40000000000   25      SIGN OF 5..  SAME, B-MODIFIED
  5 92 0      0593    CFAV1 CNST  10000180001   26
  5 93 0      0594    CFAV2 CNST  10000180002   27
005 94 0      0595    EXTV1 CNST  00000170001   28      SIGN OF 6..  ADDRESS IS RELATIVE
  5 95 0      0596    EXTV2 CNST  00000170002   29      TO LOCATION
  5 96 0      0597    STAV1 CNST  00000400001   30
  5 97 0      0598    STAV2 CNST  00000400002   31
  5 98 0      0599    STAT1 CNST  10000400001   32      SIGN OF 7,8, OR 9..
  5 99 0      0600    STAT2 CNST  10000400002   33      ADDRESS IS BLANKED OUT
  6 00 0      0601    STAL2 CNST  61110400002   34
  6 01 0      0602    STAI  CNST  40410400000   35
-6 02 0       0603    STAAB CNST  50000400000   36      SIGN OF 8.. FORWARD REFERENCE
  6 03 0      0604    BUNV1 CNST  00000300001   37      IS PUT ON STACK
 06 04 0      0605    BUNV2 CNST  00000300002   38      SIGN OF 9..  SAME, INCREMENTED
  6 05 0      0606    BUNV3 CNST  00000300003   39
  6 06 0      0607    BUNZ  CNST  70000300300   40
  6 07 0      0608    BUNBZ CNST  50000300000   41
  6 08 0      0609    BUNI  CNST  40000300000   42
  6 09 0      0610    BUN3V CNST  00000300003   43
  6 10 0      0611    BUNL2 CNST  60000300002   44
  6 11 0      0612    BSALN CNST  60001330003   45
  6 12 0      0613    BSALP CNST  60000330003   46
  6 13 0      0614    BZAL2 CNST  60000360002   47
  6 14 0      0615    BZAL3 CNST  60000360003   48
  6 15 0      0616    BZAL4 CNST  60000360004   49
  6 16 0      0617    BNZAF CNST  30101369999   50
  6 17 0      0618    NOPZ  CNST  70000010000   51
  6 18 0      0619    NOPV1 CNST  00000010001   52
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  6 19 0      0620    NOPV2  CNST   00000010002    53
  6 20 0      0621    NOPAV  F424   0,01,TOP-V     54
  6 21 0      0622    SLT10  CNST   40001490010    55
  6 22 0      0623    SLTZ   CNST   40001490000    56
  6 23 0      0624    SLT30  CNST   40001490030    57
  6 24 0      0625    SRT10  CNST   40001480010    58
  6 25 0      0626    SRTZ   CNST   40001480000    59
  6 26 0      0627    SLA9   CNST   40000490009    60
  6 27 0      0628    LDBI   CNST   40000420000    61
  6 28 0      0629    LDBLO  CNST   60000420000    62
  6 29 0      0630    LBCV1  CNST   00001420001    63
  6 30 0      0631    DLBV2  CNST   04400280002    64
  6 31 0      0632    LSA0   CNST   40000430000    65
  6 32 0      0633    LSA1   CNST   40001430000    66
  6 33 0      0634    LSA9   CNST   40009430000    67
  6 34 0      0635    STPZ   CNST   70000440000    68
  6 35 0      0636    STPV2  CNST   00000440002    69
  6 36 0      0637    STPV3  CNST   00000440003    70
  6 37 0      0638    BCSL2  CNST   60000380002    71
  6 38 0      0639    CLA    CNST   40001450002    72
  6 39 0      0640    IBBI   CNST   40002200000    73
  6 40 0      0641    LDRV1  CNST   00000410001    74
  6 41 0      0642    HLTZ   CNST   40137007310    75
  6 42 0      0643    CAAV1  CNST   00001100001    76
  6 43 0      0644    CSAV1  CNST   00001110001    77
  6 44 0      0645    NDXV1  CNST   30000000001    78
  6 45 0      0646    NDXV2  CNST   30000000002    79
  6 46 0      0647    BCHL2  CNST   60000340002    80
  6 47 0      0648    BCLL2  CNST   60001340002    81
  6 48 0      0649    BCUL2  CNST   60011350002    82
  6 49 0      0650    ADDX1  CNST   00000120004    83
  6 50 0      0651    CLLV2  CNST   00000460002    84
  6 51 0      0652    BZAFR  CNST   80000369999    85
  6 52 0      0653    BSAFN  CNST   80001339999    86
  6 53 0      0654    BSAFP  CNST   80000339999    87
  6 54 0      0655    BUNFR  CNST   80000309999    88
  6 55 0      0656    STPA   F4244  0,44,LODOX     89
  6 56 0      0657    BUNA   F4244  0,30,LODOV     90
  6 57 0      0658    BF1LR  CNST   60101360002    91
  6 58 0      0659    BUNFB  CNST   90000309999    92
  6 59 0      0660    STPFR  CNST   80000449999    93
  6 60 0      0661    STAT3  CNST   10000400003    94
  6 61 0      0662    LDBV9  CNST   00000420009    95
  6 62 0      0663    CSUV4  CNST   00000110004    96
  6 63 0      0664    CLRO   CNST   40002450000    97
  6 64 0      0665    BOF2   CNST   61111310002    98

                                                  MACRO-OPERATION TABLES
  6 67 0      0666           LOCN   *              OP V1 V2 RESULT
  6 68 0      0666    GTAB0  CNST   10900000000     + A  V  X  ADDV2      X=FIXED
  6 69 0      0667           CNST   11400000000     + A  V- X  SUBV2      F=FLOATING
 06 70 0      0668           CNST   31400000000     + A- V  X- SUBV2      A=IN ACCUMULATOR
006 71 0      0669           CNST   30900000000     + A- V- X- ADDV2      V=NOT IN ACCUMULATOR
  6 72 0      0670           CNST   10800000000     + V  A  X  ADDV1      -=NEGATED
  6 73 0      0671           CNST   31300000000     + V  A- X- SUBV1
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6 74 0    0672    CNST  11300000000  + V- A  X  SUBV1
6 75 0    0673    CNST  30800000000  + V- A- X- ADDV1
6 76 0    0674    CNST  10109000000  + V  V  X  CADV1 ADDV2
6 77 0    0675    CNST  10708000000  + V  V- X  CSUV2 ADDV1
6 78 0    0676    CNST  10213000000  + V- V  X  CADV2 SUBV1
6 79 0    0677    CNST  10713000000  + V- V- X  CSUV2 SUBV1
6 80 0    0678    CNST  21200000000  + A  V  F  FADV2
6 81 0    0679    CNST  21700000000  + A  V- F  FSUV2
6 82 0    0680    CNST  41700000000  + A- V  F- FSUV2
6 83 0    0681    CNST  41200000000  + A- V- F- FADV2
6 84 0    0682    CNST  21100000000  + V  A  F  FADV1
6 85 0    0683    CNST  41600000000  + V  A- F- FSUV1
6 86 0    0684    CNST  21600000000  + V- A  F  FSUV1
6 87 0    0685    CNST  41100000000  + V- A- F- FADV1
6 88 0    0686    CNST  20112000000  + V  V  F  CADV1 FADV2
6 89 0    0687    CNST  20711000000  + V  V- F  CSUV2 FADV1
6 90 0    0688    CNST  20216000000  + V- V  F  CADV2 VSUV1
6 91 0    0689    CNST  20716000000  + V- V- F  CSUV2 FSUV1
6 92 0    0690    CNST  13202582200  / A  V  X  STAT1 CADV2 SRT10 DIVV1
6 93 0    0691    CNST  13207582200  / A  V- X  STAT1 CSUV2 SRT10 DIVV1
6 94 0    0692    CNST  13207582200  / A- V  X  STAT1 CSUV2 SRT10 DIVV1
6 95 0    0693    CNST  13202582200  / A- V- X  STAT1 CADV2 SRT10 DIVV1
6 96 0    0694    CNST  15822000000  / V  A  X  SRT10 DIVV1
6 97 0    0695    CNST  35822000000  / V  A- X- SRT10 DIVV1
6 98 0    0696    CNST  35822000000  / V- A  X- SRT10 DIVV1
6 99 0    0697    CNST  15822000000  / V- A- X  SRT10 DIVV1
7 00 0    0698    CNST  10258220000  / V  V  X  CADV2 SRT10 DIVV1
7 01 0    0699    CNST  10758220000  / V  V- X  CSUV2 SRT10 DIVV1
7 02 0    0700    CNST  10758220000  / V- V  X  CSUV2 SRT10 DIVV1
7 03 0    0701    CNST  10258220000  / V- V- X  CADV2 SRT10 DIVV1
7 04 0    0702    CNST  23202972400  / A  V  F  STAT1 CADV2 CLR   FDVV1
7 05 0    0703    CNST  23207972400  / A  V- F  STAT1 CSUV2 CLR   FDVV1
7 06 0    0704    CNST  23207972400  / A- V  F  STAT1 CSUV2 CLR   FDVV1
7 07 0    0705    CNST  23202972400  / A- V- F  STAT1 CADV2 CLR   FDVV1
7 08 0    0706    CNST  29724000000  / V  A  F  CLR   FDVV1
7 09 0    0707    CNST  49724000000  / V  A- F- CLR   FDVV1
7 10 0    0708    CNST  49724000000  / V- A  F- CLR   FDVV1
7 11 0    0709    CNST  29724000000  / V- A- F  CLR   FDVV1
7 12 0    0710    CNST  20297240000  / V  V  F  CADV2 CLR   FDVV1
7 13 0    0711    CNST  20797240000  / V  V- F  CSUV2 CLR   FDVV1
7 14 0    0712    CNST  20797240000  / V- V  F  CSUV2 CLR   FDVV1
7 15 0    0713    CNST  20297240000  / V- V- F  CADV2 CLR   FDVV1
7 16 0    0714    CNST  11955000000  • A  V  X  MULV2 SLT10
7 17 0    0715    CNST  31955000000  • A  V- X- MULV2 SLT10
7 18 0    0716    CNST  31955000000  • A- V  X- MULV2 SLT10
7 19 0    0717    CNST  11955000000  • A- V- X  MULV2 SLT10
7 20 0    0718    CNST  11855000000  • V  A  X  MULV1 SLT10
7 21 0    0719    CNST  31855000000  • V  A- X- MULV1 SLT10
7 22 0    0720    CNST  31855000000  • V- A  X- MULV1 SLT10
7 23 0    0721    CNST  11855000000  • V- A- X  MULV1 SLT10
7 24 0    0722    CNST  10218550000  • V  V  X  CADV2 MULV1 SLT10
7 25 0    0723    CNST  10718550000  • V  V- X  CSUV2 MULV1 SLT10
7 26 0    0724    CNST  10718550000  • V- V  X  CSUV2 MULV1 SLT10
7 27 0    0725    CNST  10218550000  • V- V- X  CADV2 MULV1 SLT10
7 28 0    0726    CNST  22100000000  • A  V  F  FMUV2
7 29 0    0727    CNST  42100000000  • A  V- F- FMUV2
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  7 30 0      0728          CNST  42100000000  . A- V  F- FMUV2
  7 31 0      0729          CNST  22100000000  . A- V- F  FMUV2
  7 32 0      0730          CNST  22000000000  . V  A  F  FMUV1
  7 33 0      0731          CNST  42000000000  . V  A- F- FMUV1
  7 34 0      0732          CNST  42000000000  . V- A  F- FMUV1
  7 35 0      0733          CNST  22000000000  . V- A- F  FMUV1
  7 36 0      0734          CNST  20220000000  . V  V  F  CADV2 FMUV1
  7 37 0      0735          CNST  20720000000  . V  V- F  CSUV2 FMUV1
  7 38 0      0736          CNST  20720000000  . V- V  F  CSUV2 FMUV1
  7 39 0      0737          CNST  20220000000  . V- V- F  CADV2 FMUV1

  7 41 0      0738    GTAB1 CNST  52780020000 MAX A  V     CFAV2 BCHL2 CADV2
007 42 0      0739          CNST  53207268001 MAX A  V-    STAT1 CSUV2 CFAV1 BCHL2 CADV1
007 43 0      0740          CNST  53206278002 MAX A- V     STAT1 CSUV1 CFAV2 BCHL2 CADV2
  7 44 0      0741          CNST  62781020000 MAX A- V- -  CFAV2 BCLL2 CADV2
  7 45 0      0742          CNST  52680010000 MAX V  A     CFAV1 BCHL2 CADV1
007 46 0      0743          CNST  53307268001 MAX V  A-    STAT2 CSUV2 CFAV1 BCHL2 CADV1
007 47 0      0744          CNST  53306278002 MAX V- A     STAT2 CSUV1 CFAV2 BCHL2 CADV2
  7 48 0      0745          CNST  62681010000 MAX V- A- -  CFAV1 BCLL2 CADV1
  7 49 0      0746          CNST  50127800200 MAX V  V     CADV1 CFAV2 BCHL2 CADV2
  7 50 0      0747          CNST  50726800100 MAX V  V-    CSUV2 CFAV1 BCHL2 CADV1
  7 51 0      0748          CNST  50627800200 MAX V- V     CSUV1 CFAV2 BCHL2 CADV2
  7 52 0      0749          CNST  60127800200 MAX V- V- -  CADV1 CFAV2 BCHL2 CADV2
  7 53 0      0750          CNST  52781020000 MIN A  V     CFAV2 BCLL2 CADV2
007 54 0      0751          CNST  53207268101 MIN A  V-    STAT1 CSUV2 CFAV1 BCLL2 CADV1
007 55 0      0752          CNST  53206278102 MIN A- V     STAT1 CSUV1 CFAV2 BCLL2 CADV2
  7 56 0      0753          CNST  62780020000 MIN A- V- -  CFAV2 BCHL2 CADV2
  7 57 0      0754          CNST  52681010000 MIN V  A     CFAV1 BCLL2 CADV1
007 58 0      0755          CNST  53307268101 MIN V  A-    STAT2 CSUV2 CFAV1 BCLL2 CADV1
007 59 0      0756          CNST  53306278102 MIN V- A     STAT2 CSUV1 CFAV2 BCLL2 CADV2
  7 60 0      0757          CNST  62680010000 MIN V- A- -  CFAV1 BCHL2 CADV1
  7 61 0      0758          CNST  50127810200 MIN V  V     CADV1 CFAV2 BCLL2 CADV2
  7 62 0      0759          CNST  50726810100 MIN V  V-    CSUV2 CFAV1 BCLL2 CADV1
  7 63 0      0760          CNST  50627810200 MIN V- V     CSUV1 CFAV2 BCLL2 CADV2
  7 64 0      0761          CNST  60127810200 MIN V- V- -  CADV1 CFAV2 BCLL2 CADV2

  7 67 0      0762    GTAB2 CNST  12900000000 AND A  V  X  EXTV2
  7 68 0      0763          CNST  12800000000 AND V  A  X  EXTV1
  7 69 0      0764          CNST  10129000000 AND V  V  X  CADV1 EXTV2
  7 70 0      0765          CNST  17991020000 OR  A  V  X  NDXV2 B1AL2 CADV2
  7 71 0      0766          CNST  17891010000 OR  V  A  X  NDXV1 B1AL2 CADV1
  7 72 0      0767          CNST  10278910100 OR  V  V  X  NDXV1 B1AL2 CADV1
  7 73 0      0768          CNST  10915650000 EQV A  V  X  ADDV2 SUBX1 LSA0
  7 74 0      0769          CNST  10815650000 EQV V  A  X  ADDV1 SUBX1 LSA0
  7 75 0      0770          CNST  10109156500 EQV V  V  X  CADV1 ADDV2 SUBX1 LSA0
  7 76 0      0771          CNST  12782030000 IMP A  V  X  CFAV2 BCUL2 CADX1
  7 77 0      0772          CNST  17883910100 IMP V  A  X  NDXV1 ADDX1 B1AL2 CADV1
  7 78 0      0773          CNST  10127820300 IMP V  V  X  CADV1 CFAV2 BCUL2 CADX1

  7 81 0      0774    GTAB3 CNST  14872440300 EQL    ()    BZAL3 CLA   BUNL2 CADX1
  7 82 0      0775          CNST  14872440300 EQL  - ()    BZAL3 CLA   BUNL2 CADX1
  7 83 0      0776          CNST  14788000000 EQL    IF    BZAL2 BUNFR
  7 84 0      0777          CNST  14788000000 EQL  - IF    BZAL2 BUNFR
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  7 85 0      0778          CNST  18500000000 EQL    UN   BZAFR
  7 86 0      0779          CNST  18500000000 EQL  - UN   BZAFR
  7 87 0      0780          CNST  14703000000 NEQ    ()   BZAL2 CADX1
  7 88 0      0781          CNST  14703000000 NEQ  - ()   BZAL2 CADX1
  7 89 0      0782          CNST  18500000000 NEQ    IF   BZAFR
  7 90 0      0783          CNST  18500000000 NEQ  - IF   BZAFR
  7 91 0      0784          CNST  14788000000 NEQ    UN   BZAL2 BUNFR
  7 92 0      0785          CNST  14788000000 NEQ  - UN   BZAL2 BUNFR
007 93 0      0786          CNST  14945724403 LEQ    ()   BZAL4 BMAL3 CLA   BUNL2 CADX1
007 94 0      0787          CNST  14946724403 LEQ  - ()   BZAL4 BPAL3 CLA   BUNL2 CADX1
  7 95 0      0788          CNST  14787000000 LEQ    IF   BZAL2 BPAFR
  7 96 0      0789          CNST  14786000000 LEQ  - IF   BZAL2 BMAFR
  7 97 0      0790          CNST  18586000000 LEQ    UN   BZAFR BMAFR
  7 98 0      0791          CNST  18587000000 LEQ  - UN   BZAFR BPAFR
007 99 0      0792          CNST  14945034472 GTR    ()   BZAL4 BMAL3 CADX1 BUNL2 CLA
008 00 0      0793          CNST  14946034472 GTR  - ()   BZAL4 BPAL3 CADX1 BUNL2 CLA
  8 01 0      0794          CNST  18586000000 GTR    IF   BZAFR BMAFR
  8 02 0      0795          CNST  18587000000 GTR  - IF   BZAFR BPAFR
  8 03 0      0796          CNST  14787000000 GTR    UN   BZAL2 BPAFR
  8 04 0      0797          CNST  14786000000 GTR  - UN   BZAL2 BMAFR
008 05 0      0798          CNST  14946724403 GEQ    ()   BZAL4 BPAL3 CLA   BUNL2 CADX1
008 06 0      0799          CNST  14945724403 GEQ  - ()   BZAL4 BMAL3 CLA   BUNL2 CADX1
  8 07 0      0800          CNST  14786000000 GEQ    IF   BZAL2 BMAFR
  8 08 0      0801          CNST  14787000000 GEQ  - IF   BZAL2 BPAFR
  8 09 0      0802          CNST  18587000000 GEQ    UN   BZAFR BPAFR
  8 10 0      0803          CNST  18586000000 GEQ  - UN   BZAFR BMAFR
 08 11 0      0804          CNST  14946034472 LSS    ()   BZAL4 BPAL3 CADX1 BUNL2 CLA
-08 12 0      0805          CNST  14945034472 LSS  - ()   BZAL4 BMAL3 CADX1 BUNL2 CLA
  8 13 0      0806          CNST  18587000000 LSS    IF   BZAFR BPAFR
  8 14 0      0807          CNST  18586000000 LSS  - IF   BZAFR BMAFR
  8 15 0      0808          CNST  14786000000 LSS    UN   BZAL2 BMAFR
  8 16 0      0809          CNST  14787000000 LSS  - UN   BZAL2 BPAFR

  8 18 0      0810  COMP    DEFN  *-2      IJ-PAIRS FOR ARITH GENERATOR
008 19 0      0810          LOCN  *                V1  V2  X=FIX F=FLT A=ACC V=OPRND C=CONST
  8 20 0      0810          CNST  3000000000       XA  XV
  8 21 0      0811          CNST  1133000000       XA  FV
  8 22 0      0812          CNST  2630000000       XA  XC
  8 23 0      0813          CNST  1126330000       XA  FC
  8 24 0      0814  TEMP2   CNST  0000000000       (IMPOSSIBLE CASE)
  8 25 0      0815          CNST  7284007200       (IMPOSSIBLE CASE)
  8 26 0      0816          CNST  1224213400       FA  XV
  8 27 0      0817          CNST  3300000000       FA  FV  I=1 OR I=2..
  8 28 0      0818          CNST  2623330000       FA  XC  J=1 FLOAT V(I)
  8 29 0      0819          CNST  2633000000       FA  FC  J=2 STORE V(I) IN TEMP
  8 30 0      0820          CNST  3100000000       XV  XA  J=3 FLOAT CONSTANT V(I)
008 31 0      0821          CNST  2214113300       XV  FA  J=4 BRING V(I) INTO A REGISTER
008 32 0      0822          CNST  3200000000       XV  XV  J=5 CALC CONST OP CONSTS I=TYPE
008 33 0      0823          CNST  1411330000       XV  FV  J=6 CHECK IF V(I)=SPECIAL CONST
  8 34 0      0824          CNST  2632000000       XV  XC
  8 35 0      0825          CNST  1411263300       XV  FC
  8 36 0      0826          CNST  2134000000       FV  XA  I=3..
  8 37 0      0827          CNST  3400000000       FV  FA  J=0 V1 IS IN A. FIXED
  8 38 0      0828          CNST  2421340000       FV  XV  J=1 V2 IS IN A. FIXED
  8 39 0      0829          CNST  3500000000       FV  FV  J=2 NEITHER IN A. FIXED
  8 40 0      0830          CNST  2623350000       FV  XC  J=3 V1 IS IN A.FLOATING
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  8 41 0      0831          CNST  2635000000    FV  FC  J=4 V2 IS IN A,FLOATING
 08 42 0      0832          CNST  1631000000    XC  XA  J=5 NEITHER IS IN A, FLOATING
  8 43 0      0833          CNST  1613340000    XC  FA
  8 44 0      0834          CNST  1632000000    XC  XV
  8 45 0      0835          CNST  1613350000    XC  FV
  8 46 0      0836          CNST  1532000000    XC  XC
  8 47 0      0837          CNST  1325350000    XC  FC
  8 48 0      0838          CNST  2116340000    FC  XA
  8 49 0      0839          CNST  1634000000    FC  FA
  8 50 0      0840          CNST  2421163400    FC  XV
  8 51 0      0841          CNST  1635000000    FC  FV
  8 52 0      0842          CNST  2325350000    FC  XC
  8 53 0      0843          CNST  2535000000    FC  FC


                                SECTION B. THE SCANNER CO-ROUTINE.

  8 58 0      0844  SCAN    BUN   SCN1          EXIT-ENTRANCE LINE
  8 59 0      0845  SCN10   CAD   CWEMP
  8 60 0      0846  SCN5    STP   SCAN
  8 61 0      0847          BUN   EXCTR         GO TO EXECUTOR CO-ROUTINE.
  8 62 0      0848  SCN1    LDR   S2
  8 63 0      0849          STR   S1            MOVE SCANNING WINDOWS TO RIGHT
  8 64 0      0850          LDR   K2             ACROSS SOURCE STRING
  8 65 0      0851          STR   K1
  8 66 0      0852  SCN2    STP   INPTX
  8 67 0      0853          BUN   INPT          GET NEXT CHARACTER FROM CARD
  8 68 0      0854  SCN3    DEFN  *
  8 69 0      0854  STFOL   CLB
008 70 0      0855          CAD   CHAR          SET K2 TO THE CODE FOR THIS CHARACTER
  8 71 0      0856          DBB   0,9999
  8 72 0      0857          BFA   C+,91,8       NUMBER 1
  8 73 0      0858          CFA   FORTY,02      ALPHA  0
  8 74 0      0859          BCH   D+                )  2
  8 75 0      0860          DBB   0,9999            (  3
  8 76 0      0861          BFA   C+,02,04          .  4
  8 77 0      0862          DBB   0,9999            $  5
  8 78 0      0863          BFA   C+,02,24          ,  6
  8 79 0      0864          DBB   0,9999            *  7
  8 80 0      0865          BFA   C+,02,03          -  8
  8 81 0      0866          DBB   0,9999        BLANK 10
  8 82 0      0867          BFA   C+,02,13      OTHER  9
  8 83 0      0868          DBB   0,9999
  8 84 0      0869          BFA   C+,02,23
  8 85 0      0870          DBB   0,9999
  8 86 0      0871          BFA   C+,02,14
  8 87 0      0872          DBB   0,9999
  8 88 0      0873          BFA   C+,02,20
  8 89 0      0874          BFA   B+,02,34
  8 90 0      0875          DBB   0,9998
  8 91 0      0876          BFA   C+,02,00
  8 92 0      0877  *D      DBB   C+,1
008 93 0      0878  *B      DFL   CHAR,02,14    CHANGE CRAZY MINUS SIGN TO REGULAR ONE
  8 94 0      0879  *C      STB   K2
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  8 96 0      0880   SCN4  LDR   CHAR
  8 97 0      0881         STR   S2
  8 98 0      0882         CAD   K1
  8 99 0      0883         BFA   A+,02,10        BRANCH IF EITHER
  9 00 0      0884         CAD   K2                SCANNED CHARACTER IS BLANK
  9 01 0      0885         BFA   B+,02,10
  9 02 0      0886         CAD   K1              OTHERWISE INDEX INTO TABLE AND
  9 03 0      0887         SLA   1                 BRANCH TO PROPER R-ROUTINE
  9 04 0      0888         ADD   K2
  9 05 0      0889         STA   TEMP
  9 06 0      0890         LDB   TEMP
  9 07 0      0891         CAD - TABSC
  9 08 0      0892         BFA - TABSC,45,88
  9 09 0      0893         CLL   K2
  9 10 0      0894         IFL   K2,00,10        IF THE PAIR IS ILLEGAL,
  9 11 0      0895         STP   WEMX            WRITE ERROR MESSAGE
  9 12 0      0896         BUN   WEM,SCN4        IMPROPER CHARACTER PAIR
  9 13 0      0897         CNST  30103050000
  9 14 0      0898   *A    CAD   K2
  9 15 0      0899         BZA   R13             BLANK ALPHA ... TO R13
  9 16 0      0900         BFA   R24,02,01      BLANK NUMBER ... TO R24
  9 17 0      0901         BUN   SCN1            BLANK OTHER ... TO SCN1 AGAIN
  9 18 0      0902   *B    CAD   K1
  9 19 0      0903         BZA   C+              IF RIGHT CHARACTER IS BLANK,
 -9 20 0      0904         BUN   R15               GET THE NEXT NONBLANK CHARACTER
  9 21 0      0905   SCN11 DEFN  *
  9 22 0      0905   *C    STP   PASSX
 09 23 0      0906         BUN   PASS            THEN COMPLETE THE PROCESSING OF THE
 +9 24 0      0907         CFA   FORTY,02           LEFTHAND SYMBOL IN THE CASES OF
  9 25 0      0908         BCL   SCN3            ALPHA-ALPHA, ALPHA-NUMBER
  9 26 0      0909   SCN8  STP   CLASX
  9 27 0      0910         BUN   CLASS
  9 28 0      0911   SCN6  CLL   K1
009 29 0      0912         IFL   K1,00,10        BLANK OUT LEFTHAND SYMBOL AND RECYCLE
  9 30 0      0913         BUN   SCN3
  9 31 0      0914   SCN7  CLL   K2
 09 32 0      0915         IFL   K2,00,10        BLANK OUT BOTH SYMBOLS AND RECYCLE
  9 33 0      0916         BUN   SCN1


  9 36 0      0917   *B    IFL   SW1,62,29
  9 37 0      0918   R1    CLL   K2              AA AN
  9 38 0      0919   SW1   HLT   SCN1
  9 39 0      0920         LBC   K               THIS CHARACTER IS PART OF
  9 40 0      0921         CAD   S2              AN IDENTIFIER
  9 41 0      0922         SLA - 8               STORE IT IN SYMBL AREA
  9 42 0      0923         DLB   K,94,0
  9 43 0      0924         ADL - SYMBL
  9 44 0      0925         IFL   K,02,2
009 45 0      0926         BOF   B-              IF IDENTIFIER IS MORE THAN 50 CHARACTERS
  9 46 0      0927   *A    BUN   SCN1              IN LENGTH, TRUNCATE IT TO 50


  9 49 0      0928   R2    STP   ALPLX           A(
  9 50 0      0929         BUN   ALPLU           WE HAVE MANY CASES TO EXAMINE.
  9 51 0      0930         CFR   PRCMD,64        LOOKUP IDENTIFIER FIRST
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  9 52 0      0931          LDB   FUNS
  9 53 0      0932          CAD - 0
  9 54 0      0933          BCU   D+
  9 55 0      0934          BSA   A+,0          IF IN PROCEDURE MODE, CHECK
  9 56 0      0935          DLB   L,64,00        SEMICOLON COUNT
  9 57 0      0936          BSA   C+,3
009 58 0      0937          IFL - 0,11,5        THE PRESENT SYMBOL IS A PARAMETRIC ARRAY
009 59 0      0938          STP   FRMEX         SEND ITS NAME AND AN ARRAY-PARAMETER
  9 60 0      0939          BUN   FRME           OPERATOR TO THE EXECUTOR
  9 61 0      0940          CAD   CWAPM
  9 62 0      0941          BUN   SCN5
  9 63 0      0942    *A    IFL - 0,12,10
009 64 0      0943          DLB   L,64,0        THE PRESENT SYMBOL IS THE NAME OF THE
  9 65 0      0944          LDR - 0              PROCEDURE BEING DECLARED
  9 66 0      0945          BFR   B+,11,0
  9 67 0      0946          STB - 0,11
  9 68 0      0947          STP   WEMX
  9 69 0      0948          BUN   WEM,A-+1      IF IT OCCURRED BEFORE,
  9 70 0      0949          CNST  30608100000   DUPLICATE PROCEDURE NAME
  9 71 0      0950    *B    IFL - 0,11,8
  9 72 0      0951          CAD   LOCN          SET SEMICOLON COUNT TO 1
  9 73 0      0952          STA - 0,64
  9 74 0      0953    R2P   STP   FRMEX         SEND NAME TO EXECUTOR
  9 75 0      0954          BUN   FRME
  9 76 0      0955          BUN   SCN1
 09 77 0      0956    *C    DFL - 0,11,1        THE PRESENT SYMBOL IS THE NAME OF
009 78 0      0957          STP   FRMEX          A PARAMETRIC FUNCTION OR PROCEDURE
  9 79 0      0958          BUN   FRME
-09 80 0      0959    *E    LDR   SC7           PASS CHARACTERS UNTIL MATCHING RIGHT
-09 81 0      0960          BUN   PRCNT          PARENTHESIS IS FOUND AND GO TO SCN7
  9 82 0      0961    *D    CFR   FUNMD,64
  9 83 0      0962          BCU   F+
009 84 0      0963          BSA   F+,1           IF CALLING A FUNCTION,CHECK $ COUNT
 09 85 0      0964          STP   FRMEX         IF THIS COUNT IS 1,WE DONT KNOW YET
009 86 0      0965          BUN   FRME           WHETHER OR NOT THE PRESENT SYMBOL IS
009 87 0      0966          LDB   FUNS           A PARAMETRIC ARRAY, BUT IF THE COUNT
  9 88 0      0967          CAD - 0              IS 2 OR 3 WE KNOW IT IS A
  9 89 0      0968          DLB   L,64,00        PARAMETRIC ARRAY OR PROCEDURE
  9 90 0      0969          LDR - 0
  9 91 0      0970          BSA   G+,2
  9 92 0      0971          BFR   E-,11,6
  9 93 0      0972          BFR   E-,11,4
  9 94 0      0973          BFR   E-,11,8       IF IT ISNT,
  9 95 0      0974    *T    STP   WEMX
  9 96 0      0975          BUN   WEM,E-
  9 97 0      0976          CNST  30111130000   IMPROPER FUNCTION ARGUMENT
  9 98 0      0977    *G    BFR   H+,11,5
  9 99 0      0978          BUN   T-
010 00 0      0979    *F    DLB   L,64,00
010 01 0      0980          CAD - 0
010 02 0      0981          CFR   DCLMD,64      IF IN TYPE DECLARATION,
010 03 0      0982          BCE   E-             SKIP TO NEXT MATCHING RIGHT PARENTHESIS
010 04 0      0983          BFA   J+,11,0
010 05 0      0984          BFA   K+,11,0
010 06 0      0985    *I    STP   FRMEX         IF SYMBOL WAS CLASSIFIED BEFORE AND
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010 07 0      0986          BUN   FRME          IS NOT A LABEL, SEND IT TO THE EXECUTOR.
010 08 0      0987          DLB   L,64,00
010 09 0      0988          LDR - 0             THEN LOOK SEE WHAT KIND IT IS
010 10 0      0989          BFR   R19P,11,1     IF VARIABLE INSERT DOT
010 11 0      0990          BFR   M+,11,4       IF LIBRARY ROUTINE, INSERT FUNC CALL OP
010 12 0      0991          BFR   H+,11,5       IF ARRAY, SEE BELOW
010 13 0      0992          BFR   SCN1,11,9     IF LABEL, EXIT
010 14 0      0993          BFR   SCN1,11,7     IF RESERVED WORD, EXIT
010 15 0      0994          BFR   M+,12,98      IF EXT PROCEDURE,INSERT FUNC CALL OP
010 16 0      0995    *P    CFR   LEVEL,02      IS IT THE NAME OF THE PRESENT
010 17 0      0996          BCE   E-             PROCEDURE BEING DECLARED
010 18 0      0997    *M    CAD   CWCLN
010 19 0      0998          BUN   SCN5
010 20 0      0999    *H    LDB - 0             IF AN ARRAY, MOVE THE MULTIPLIERS TO
010 21 0      1000          SLT   0             THE DIMENSION STACK
010 22 0      1001          ADD   XZERO+1
010 23 0      1002          BSA   *+2,1
010 24 0      1003          LDB - 0             (IF NOT PARAMETRIC,SKIP OVER THE
010 25 0      1004          IBB   Q+,9999        TOTAL-LENGTH ENTRY)
010 26 0      1005    *R    CAD - 1             (IF ITS ONLY 1-DIMENSIONAL, WE
010 27 0      1006          STA   TEMP           LEAVE THE DIMENSION STACK ALONE)
010 28 0      1007          STP   INSX,DIMS
010 29 0      1008          BUN   INS
010 30 0      1009          LDB   TEMP
010 31 0      1010          DBB   R-,1
010 32 0      1011    *Q    CAD   CWNDX         SEND INDEX OP TO EXECUTOR
010 33 0      1012          BUN   SCN5
010 34 0      1013    *J    CFR   ARAMD,64      IF WE HAVE A NEW SYMBOL, AND WE ARENT
010 35 0      1014          DLB   L,64,00       PROCESSING AN ARRAY DECLARATION,
010 36 0      1015          BCE   S+             ITS A VARIABLE
010 37 0      1016          IFL - 0,11,1
010 38 0      1017          BUN   I-
010 39 0      1018    *S    IFL - 0,11,5        IN ARRAY DECLARATION, MARK THE PRESENT
010 40 0      1019          STP   FRMEX          SYMBOL AS AN ARRAY AND SEND IT AND AN
010 41 0      1020          BUN   FRME           ARRAY-DECLARATION OPERATOR TO EXECUTOR
010 42 0      1021          CAD   CWARD
010 43 0      1022          BUN   SCN5
010 44 0      1023    *K    SLT   0             IF IT IS A LABEL, THE MODE MUST
010 45 0      1024          BSA   N+,9          BE A DECLARATION OF SOME KIND
010 46 0      1025          STP   WFMX
010 47 0      1026          BUN   WFM,I-        ELSE, MISPLACED LABEL
010 48 0      1027          CNST  31517000000
010 49 0      1028    *N    STA - 0
010 50 0      1029          CFR   FRMMD,64
010 51 0      1030          BCU   *+2
010 52 0      1031          DFL   M+,62,29      I-O DECLARATION
010 53 0      1032          DLB   LOCN,64,00
010 54 0      1033          STB   IOPUS,04      STORE 1ST LOCATION IN IOPUS
010 55 0      1034          STP   TRTGX
010 56 0      1035          BUN   TRTG2         SEND A LABEL OPERATOR TO THE EXECUTOR
010 57 0      1036          IFL   ALEPH,62,6
010 58 0      1037          CAD   CWLAB
010 59 0      1038    *M    BUN   SCN5          IN FORMAT DECLARATION SEND THE
010 60 0      1039          IFL   M-,62,29       LABEL ITSELF TO EXECUTOR INSTEAD
010 61 0      1040          STP   FRMEX
010 62 0      1041          BUN   FRME
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010 63 0      1042   SC7   BUN   SCN7


010 66 0      1043   R3K   LDR   SYMBL          AP
010 67 0      1044         CFR   STOGN+1,00     IN THE STATEMENT STOP +E,  + IS REDUNDANT
010 68 0      1045         BCE   SCN11
010 69 0      1046   R3    BUN   A+             A) AS A, A*
010 70 0      1047         IFL   *-1,62,29
010 71 0      1048         CAD   RR2            IF WE ARE WORKING ON A PREFIX,
010 72 0      1049         SLS   2
010 73 0      1050         STA   TEMP3,12       CALCULATE SL-FIELD FOR COMPARISON
010 74 0      1051         CAD   K
010 75 0      1052         SLA   8
010 76 0      1053         STA   TEMP3,21
010 77 0      1054         SLA   1
010 78 0      1055         STA   TEMP3,11
010 79 0      1056         DFL   TEMP3,22,22
010 80 0      1057         CAD   SSC            PUT PREFIX CODE INTO PR3-STACK
010 81 0      1058         SLA   4               IN ALPHABETICAL ORDERING
010 82 0      1059         STA   TEMP3,64
010 83 0      1060         LDB   SSC
010 84 0      1061         CAD   SYMBL
010 85 0      1062         STA   - 0
010 86 0      1063         IFL   SSC,00,1
010 87 0      1064         LDR   *+1
010 88 0      1065         LDB   PR3
010 89 0      1066   *C    STR   TEMP2
010 90 0      1067         STR   TEMP1
010 91 0      1068         IBB   B+,9999
010 92 0      1069         LDR   - 1
010 93 0      1070         STR   TEMP
010 94 0      1071         DLB   TEMP,64,0
010 95 0      1072         CFA   - 0
010 96 0      1073         BCH   D+
010 97 0      1074   *B    LDB   TEMP2
010 98 0      1075         CAD   TEMP3
010 99 0      1076         STP   INSX
011 00 0      1077         BUN   INS1
011 01 0      1078         BUN   SCN1
011 02 0      1079   *D    LDR   TEMP1
011 03 0      1080         LDB   TEMP
011 04 0      1081         BUN   C-
011 05 0      1082   *A    STP   CLASX          FINISH PROCESSING IDENTIFIER OR
011 06 0      1083         BUN   CLASS           NUMERIC LABEL
011 07 0      1084         BUN   SCN1
011 08 0      1085   SW5   DEFN  R3


011 11 0      1085   R4    STP   WINDX          NA
011 12 0      1086         BUN   WIND1,SCN8     FINISH UP CONSTANT
011 13 0      1087         IFL   SW6,00,1       SET UP IMPLIED MULTIPLICATION
011 14 0      1088         BUN   R13


011 17 0      1089   R5    DFL   D,22,1         NN
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011 18 0      1090          CAD   SYMBL
011 19 0      1091          SLS   1
011 20 0      1092          STA   SYMBL          BUILD CONSTANT
011 21 0      1093          LDR   S2
011 22 0      1094          STR   SYMBL,01
011 23 0      1095          BUN   SCN1


011 26 0      1096    R6    STP   WINDX          N) N$ N, NP
011 27 0      1097          BUN   WIND1,R3
011 28 0      1098          BUN   SCN1           FINISH WORKING ON CONSTANT
011 29 0      1099    NTAG  CNST  20000000010


011 32 0      1100    R7P   IFL   SW6,00,1       )A            IMPLIED MULTIPLICATION
011 33 0      1101    R7    STP   OPRTX,R13      (A .A $A .A -A *A PA
011 34 0      1102          BUN   OPRT           SEND OPERATOR TO EXECUTOR,GO TO R13


011 37 0      1103    R8    STP   OPRTX,SCN1     MANY E.G. )) (-
011 38 0      1104          BUN   OPRT           SEND LEFTHAND OP TO EXECUTOR


011 41 0      1105    R9    LDR   S2             (P .P $P .P *P PP
011 42 0      1106          BFR   SCN2,02,10
011 43 0      1107          CLL   SW2            THE RIGHTHAND SYMBOL MUST BE A
011 44 0      1108          STP   WEMX            REDUNDANT PLUS SIGN
011 45 0      1109          BUN   WEM,SCN7
011 46 0      1110          CNST  31518200000    MISPLACED ARITHMETIC OPERATION


011 49 0      1111    R10   CAD   RPAR           )(
011 50 0      1112          STP   SCAN
011 51 0      1113          BUN   EXCTR          ) TO EXECUTOR
011 52 0      1114          BUN   R19P           IMPLIED MULTIPLICATION


011 55 0      1115    R11   STP   ALPLX          A-
011 56 0      1116          BUN   ALPLU          LEFTHAND SYMBOL MUST BE A SIMPLE VARIABLE
011 57 0      1117          BFA   D+,11,0
011 58 0      1118          BFA   C+,11,1
011 59 0      1119          BFA   R2P,11,7       OR A RESERVED WORD
011 60 0      1120          CLL   TAG
011 61 0      1121          STP   WEMX
011 62 0      1122          BUN   WEM,C+
011 63 0      1123          CNST  30122240000    IMPROPER VARIABLE SYMBOL
011 64 0      1124    *D    IFL   0,11,1
011 65 0      1125    *C    STP   FRMEX
011 66 0      1126          BUN   FRMF
011 67 0      1127    R11P  CAD   PLUS           INSERT PLUS SIGN SO EXECUTOR
011 68 0      1128          BUN   SCN5           ALWAYS THINKS MINUS IS UNARY OPERATOR


011 72 0      1129    R12   STP   OPRTX,R11P     )-
011 73 0      1130          BUN   OPRT           ) TO EXECUTOR, INSERT + SIGN
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011 77 0     1131   R13   CLL   K              BLANK A
011 78 0     1132         STB   SW1,62
011 79 0     1133         IFL   SW1,62,01      PREPARE TO BUILD AN IDENTIFIER
011 80 0     1134         LDB   SBL
011 81 0     1135         CLL   SYMBL
011 82 0     1136         RTF   SYMBL,9
011 83 0     1137         BUN   R1


011 86 0     1138   R15   STP   PASSX          SKIP OVER BLANKS
011 87 0     1139         BUN   PASS
011 88 0     1140         BUN   SCN3


011 91 0     1141   R17   STP   PASSX          A.
011 92 0     1142         BUN   PASS           GET NEXT NONBLANK CHARACTER
011 93 0     1143         BFA   R17Q,02,03
011 94 0     1144         STP   CLASX          IF NOT A COLON CLASSIFY
011 95 0     1145         BUN   CLASS          LEFT IDENTIFIER
011 96 0     1146   R17P  LDR   S2             MOVE WINDOW TO THE RIGHT
011 97 0     1147         STR   S1             AND CONTINUE SCANNING
011 98 0     1148         LDR   K2
011 99 0     1149         STR   K1
012 00 0     1150         BUN   SCN3
012 01 0     1151   R17R  LDR   NTAG
012 02 0     1152         STR   K              MARK NUMBER AS LABEL
012 03 0     1153   R17Q  STP   PASSX          GET NEXT NONBLANK CHARACTER
012 04 0     1154         BUN   PASS
012 05 0     1155         BFA   C+,02,03
012 06 0     1156         IFL   TAG,00,1       COLON IS DETECTED
012 07 0     1157         STP   ALPLX
012 08 0     1158         BUN   ALPLU          LOOK UP IDENTIFIER
012 09 0     1159         STP   TRTGX
012 10 0     1160         BUN   TRTG           PROCESS LABEL
012 11 0     1161         BUN   SCN6           RETURN
012 12 0     1162   *C    LDB   K
012 13 0     1163         DBB   R17Q,12        THREE DOTS DETECTED
012 14 0     1164         CLL   S2             TREAT AS COLON IF IDENTIFIER IS
012 15 0     1165         IFL   S2,00,90       OVER FIVE CHARACTERS. SET RIGHT
012 16 0     1166         CLL   K2             CHARACTER AS SPECIAL CODE 90 FOR PREFIXES
012 17 0     1167         DFL   R3,62,29       SET PREFIX SWITCH
012 18 0     1168         BUN   R1             PROCESS AS IDENTIFIER


012 21 0     1169   R18   STP   WINDX          N-
012 22 0     1170         BUN   WINDU          PROCESS CONSTANT
012 23 0     1171         BUN   P11P           AND INSERT + SIGN


012 26 0     1172   R19   STP   WINDX          N(
012 27 0     1173         BUN   WIND1,R2       PROCESS CONSTANT
012 28 0     1174   R19P  CAD   DOT            IF NOT A LABEL, INSERT IMPLIED MULT
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012 29 0      1175          BUN   SCN5


012 32 0      1176    R20   STP   INPTX          N.
012 33 0      1177          BUN   INPT
012 34 0      1178          LDR   CHAR           IF THE NEXT CHARACTER IS A DOT,WE HAVE
012 35 0      1179          BFR   R17R,02,03      A STATEMENT LABEL.
012 36 0      1180          BFR   C+,91,08       OTHERWISE IF ITS NOT NUMBERIC
012 37 0      1181    *A    STP   WINDX           WE FINISH MAKING UP THE CONSTANT
012 38 0      1182          BUN   WINDU           AND CONTINUE
012 39 0      1183          BUN   R17P
012 40 0      1184    *C    CAA   SW2            OTHERWISE WE HAVE A FLOATING CONSTANT
012 41 0      1185          ADA   SW3
012 42 0      1186          BZA   E+
012 43 0      1187    *D    STP   WEMX           ERROR CONDITIONS ARE N.N.N OR N**N.N
012 44 0      1188          BUN   WEM,A-
012 45 0      1189          CNST  31526280000    MISPLACED DECIMAL POINT
012 46 0      1190    *E    CLL   D
012 47 0      1191          IFL   D,22,58        RECORD DECIMAL POINT AND CONTINUE
012 48 0      1192          IFL   SW3,00,1        SCANNING AND BUILDING CONSTANT
012 49 0      1193          STR   S2
012 50 0      1194          LDR   XONE+1
012 51 0      1195          STR   K2
012 52 0      1196          BUN   R5


012 55 0      1197    R21   CAD   RPAR           )N
012 56 0      1198          STP   SCAN
012 57 0      1199          BUN   EXCTR          ) TO EXECUTOR
012 58 0      1200          CAD   DOT
012 59 0      1201          STP   SCAN           . TO EXECUTOR
012 60 0      1202          BUN   EXCTR
012 61 0      1203          BUN   R24


012 65 0      1204    R22   STP   PASSX          N*
012 66 0      1205          BUN   PASS
012 67 0      1206          BFA   B+,02,14       CHECK FOR SECOND ASTERISK
012 68 0      1207          BUN   A-             IF NOT * MEANS EXPONENTIATE
012 69 0      1208    *B    LDB   SW3            START SCALE FACTOR
012 70 0      1209          DBB   G+,1
012 71 0      1210          CLL   D              IF MANTISSA HAD NO DECIMAL POINT
012 72 0      1211          IFL   D,22,58         MANUFACTURE ONE
012 73 0      1212          IFL   SW3,00,01
012 74 0      1213    *G    STP   WNDSX          PROCESS MANTISSA
012 75 0      1214          BUN   WINDS
012 76 0      1215    *B    LDR   SYMBL
012 77 0      1216          STR   FP
012 78 0      1217          IFL   SW2,00,1
012 79 0      1218          STP   PASSX
012 80 0      1219          BUN   PASS           EXAMINE NEXT NONBLANK CHARACTER
012 81 0      1220          BFA   D+,02,20
012 82 0      1221          BFA   D+,02,34       WE MUST HAVE **N  **-N  OR  **+N
012 83 0      1222          BFA   E+,02,10
012 84 0      1223    *C    BFA   F+,91,08
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012 85 0      1224          STP   WEMX
012 86 0      1225          BUN   WEM,A-
012 87 0      1226          CNST  30129300000   IMPROPER SCALE FACTOR
012 88 0      1227    *D    IFL   SW4,61,1      RECORD SIGN
012 89 0      1228    *E    STP   PASSX
012 90 0      1229          BUN   PASS
012 91 0      1230          BUN   C-
012 92 0      1231    *F    STA   S2            PREPARE TO PROCESS SCALE FACTOR
012 93 0      1232          DFL   K2,02,6
012 94 0      1233          BUN   R24P          R23 IS LOCATED BY OPRT

012 97 0      1234    R24   CLL   SW2           BLANK N
012 98 0      1235          STB   SW4,61
012 99 0      1236          CAD   S2
013 00 0      1237    R24P  CLL   SYMBL        PREPARE TO BUILD A CONSTANT
013 01 0      1238          CLL   D
013 02 0      1239          CLL   SW3
013 03 0      1240          STA   SYMBL,01
013 04 0      1241          BUN   SCN1

013 07 0      1242    R25   STP   OPRTX,SCN10  (, ,, , ) ()
013 08 0      1243          BUN   OPRT          INSERT THE EMPTY OPERATOR

013 11 0      1244    R26   STP   OPRTX,*+2     ($ $$
013 12 0      1245          BUN   OPRT
013 13 0      1246          LDB   FUNS
013 14 0      1247          IFL - 0,12,10       INCREASE THE SEMICOLON COUNT
013 15 0      1248          CAD - 0
013 16 0      1249          IFL   OMCRN,00,1
013 17 0      1250          RSA   SCN1,2
013 18 0      1251          IFL   TAG,00,1
013 19 0      1252          BUN   SCN1

013 22 0      1253    R27   DEFN  SCN1          $)

013 25 0      1253    TRTG2 DFL   ALEPH,62,6    TRTG2 ENTRANCE -- SUPPRESS MONITORING
013 26 0      1254    TRTG  CLL   TAG
013 27 0      1255          DLB   L,64,0        DEFINE A LABEL
013 28 0      1256          CAD - 0
013 29 0      1257          BFA   TRTG1,64,0    IT HAD BETTER BE UNDEFINED
013 30 0      1258          BFA   COMNT,12,67   OR THE WORD COMMENT
013 31 0      1259          STP   WEMX
013 32 0      1260          BUN   WEM,NU        DUPLICATE LABEL
013 33 0      1261          CNST  30617000000
013 34 0      1262    *E    BPA   T+
013 35 0      1263          LDR   DUMPR         PUT OUT CODE FOR DUMP ROUTINE
013 36 0      1264          STR   V3            IF THIS LABEL WAS SPECIFIED ON TRACE CARD
013 37 0      1265          LDR   MEMRY+1
013 38 0      1266          STR   EXPLN
013 39 0      1267          STP   CONVX
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013 40 0      1268          BUN   CONV3
013 41 0      1269          BUN   TRTG1
013 42 0      1270    *T    STP   FXUPX
013 43 0      1271          BUN   FXUP
013 44 0      1272    TRTG1 DLB   L,64,0          FIX ALL FORWARD REFERENCES TO THIS LABEL
013 45 0      1273          STP   REMX
013 46 0      1274          BUN   REM1,E-
013 47 0      1275    *D    DLB   L,64,00
013 48 0      1276          CAD   LOCN            THE NEW DEFINITION IS LOCN
013 49 0      1277          STA - 0,64
013 50 0      1278    NU    BUN   B+
013 51 0      1279          STR   ASMBX           IF THIS IS A SUBROUTINE LABEL,
013 52 0      1280          BUN   ASMBL,NOPZ       INSERT A NOP INSTRUCTION
013 53 0      1281          IFL   NU,62,29
013 54 0      1282    *B    LDR   LOCNP           IF THIS IS A SEGMENT NUMBER,
013 55 0      1283    ZUTA  F424  0001,01,LOCN     RESTORE LOCN
013 56 0      1284    *R    CAD   CHI             IF MONITOR STATEMENT HASNT APPEARED,EXIT
013 57 0      1285    ALEPH BZA   TRTGX
013 58 0      1286          DLB   V8,64,0
013 59 0      1287          STP   LIBRX           BRING IN THE LABEL PROCESSOR ROUTINE
013 60 0      1288          BUN   LIBRF
013 61 0      1289          DLB   L,64,0
013 62 0      1290          STB   MNTR,04
013 63 0      1291          CAD   L               IF THIS IS A NUMERIC LABEL
013 64 0      1292          BSA   *+2,0           ATTACH A MINUS SIGN TO IT
013 65 0      1293          IFL - 1,12,10          AS A SIGNAL TO THE LABEL PROCESSOR
013 66 0      1294          STP   CONVX
013 67 0      1295          BUN   CONV
013 68 0      1296    MNTR  CAA   *               IF LABEL IS REQUESTED FOR MONITORING,
013 69 0      1297    MU    NOP   TRTGX
013 70 0      1298          BSA   *+3,2
013 71 0      1299          BSA   *+2,6           PREPARE TO MONITOR ALL ASSIGNMENT
013 72 0      1300    TRTGX BUN   *               STATEMENTS IN ITS SCOPE
013 73 0      1301          STP   CMPLX
013 74 0      1302          BUN   WMG,CRM         COMPILE CIRCL-M (THIS WILL COME UP
013 75 0      1303          IFL   MU,62,29        WHEN THE SCOPE OF THE LABEL IS ENDED)
013 76 0      1304          BUN   TRTGX


013 79 0      1305    PASS  STP   INPTX           GET NEXT NONBLANK CHARACTER FROM CARD
013 80 0      1306          BUN   INPT
013 81 0      1307          BZA   INPT
013 82 0      1308    PASSX BUN   *


013 85 0      1309    WIND1 LDB   TAG             FINISH PROCESSING CONSTANT.
013 86 0      1310          DBB   E+,1            IF TAG IS ON, IT IS A NUMERIC LABEL
013 87 0      1311    WINDU STP   WNDSX
013 88 0      1312          BUN   WINDS           OTHERWISE MAKE A CONSTANT OUT OF IT
013 89 0      1313          STP   NMBRX
013 90 0      1314          BUN   NMBR


013 93 0      1315    ERME  DLB   L,64,00         SEND CODED SYMBOL TO EXECUTOR
013 94 0      1316          CAD - 0
013 95 0      1317          BFA   A+,I1,7
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013 96 0      1318          STA   L,22
013 97 0      1319          BFA   C+,11,6
013 98 0      1320    *D    CAD   L                IF IT ISNT A RESERVED WORD,
013 99 0      1321          EXT   BOF2             MARK IT AS AN OPERAND
014 00 0      1322    *B    STP   SCAN
014 01 0      1323          BUN   EXCTR
014 02 0      1324    FRMEX BUN   *
014 03 0      1325    *A    SLA   4                RESERVED WORD - SLA4 FOR PROPER CODE
014 04 0      1326          BUN   B-
014 05 0      1327    *C    IFL   L,11,2           FUNCTION CODE IS 6 IN SCANNER,
014 06 0      1328          BUN   D-                              8 IN EXECUTOR
014 07 0      1329    *F    LDR   NTAG
014 08 0      1330          STR   K
014 09 0      1331          LDB   WINDX
014 10 0      1332          DLB - 9999,44,0
014 11 0      1333          BUN - 0


014 14 0      1334    WINDS CLL   RR0              PUT CONSTANT INTO FINAL FORM
014 15 0      1335          CAD   SW3
014 16 0      1336          BZA   E+
014 17 0      1337          CAD   SYMBL            IF DECIMAL POINT WAS SENSED,
014 18 0      1338    *G    BFA   F+,23,0          TRUNCATE CONSTANT TO EIGHT SIGNIFICANT
014 19 0      1339          IFL   D,22,01                         DIGITS
014 20 0      1340          SRS   1
014 21 0      1341          BUN   G-
014 22 0      1342    *F    SRT   10
014 23 0      1343          CAD   D
014 24 0      1344          STR   D,08             ATTACH EXPONENT
014 25 0      1345          FAD   D
014 26 0      1346          STA   SYMBL            NORMALIZE
014 27 0      1347    WNDSX BUN   *
014 28 0      1348    *E    CAD   SW2
014 29 0      1349          BZA   D+
014 30 0      1350    SW4   CAA   SYMBL            IF SCALE FACTOR TO BE ADDED,
014 31 0      1351          BFA   B+,88,0          MAKE SURE IT IS IN THE PROPER RANGE
014 32 0      1352    *A    STP   WEMX
014 33 0      1353          BUN   WEM,C+
014 34 0      1354          CNST  33436373800      CONSTANT OUT OF RANGE
014 35 0      1355    *B    SLA   8
014 36 0      1356          ADA   FP
014 37 0      1357          BOF   A-
014 38 0      1358          BPA   WNDSX-1
014 39 0      1359    SVAR  DEFN  *
014 40 0      1359    *C    CLA                    IF UNDERFLOW OR TOO BIG USE ZERO
014 41 0      1360          BUN   WNDSX-1
014 42 0      1361    *D    IFL   RR0,22,1         SET TYPE OF FIXED POINT CONSTANT
014 43 0      1362          BUN   WNDSX
014 44 0      1363    WINDX DEFN  FRMEX


014 47 0      1363    INSRT ADD   LL0              PUT A NEW SYMBOL INTO MEMORY
014 48 0      1364          EXT   NN
014 49 0      1365          ADD   SCT
014 50 0      1366          STA   L,04
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014 51 0      1367          LDR   SSC
014 52 0      1368          SLT   4
014 53 0      1369          STR   L,64
014 54 0      1370          CAD   D2D3
014 55 0      1371          STA   L,23
014 56 0      1372          SRA   2
014 57 0      1373          STA   B+,43
014 58 0      1374          BFA   D+,42,00
014 59 0      1375    *E    LDB   L                 IF IT DOESNT FIT INTO THE SCRAMBLE
014 60 0      1376          LDR - 0                 TABLE, PUT IT INTO ASSOCIATIVE MEMORY
014 61 0      1377          CAD   L
014 62 0      1378          BFR   C+,00,0
014 63 0      1379          STP   INSX
014 64 0      1380          BUN   INS1
014 65 0      1381    *C    STA - 0,67
014 66 0      1382    *A    LDB   SSC
014 67 0      1383          IFL   *+1,43,19
014 68 0      1384    *B    RTF   RR0,0             MOVE NAME INTO SSC AREA
014 69 0      1385          STB   SSC
014 70 0      1386          LDR   SSC
014 71 0      1387          CFR   MAMAX,04          CHECK IF MEMORY EXCEEDED
014 72 0      1388          BCH   FULL
014 73 0      1389          DLB   L,64,0
014 74 0      1390          CLL - 0
014 75 0      1391    INSRX BUN   *
014 76 0      1392    *D    IFL   B-,21,1           50-CHARACTER IDENTIFIER WORRIES
014 77 0      1393          BUN   E-


014 80 0      1394    ALPLU CAD   K               LOOKUP IDENTIFIER OR NUMERIC LABEL
014 81 0      1395          SLA   8
014 82 0      1396          STA   D2D3,23          CONTROL ROUTINE
014 83 0      1397    D2D3  CAA   SYMBL
014 84 0      1398          SRT   10                SCRAMBLE FIRST PART OF SYMBOL
014 85 0      1399          DIV   NN                BY TAKING ITS REMAINDER MOD 99
014 86 0      1400          STR   LL0
014 87 0      1401          LDR   PARSW
014 88 0      1402          CAD   FNSW
014 89 0      1403          BZR   E+
014 90 0      1404          LDR   DICT+3
014 91 0      1405          BZA   B+
014 92 0      1406          STP   SRCHX             COLLECTING FUNCTION PARAMETERS
014 93 0      1407          BUN   SRCH1             USE TYPE AS SPECIFIED IN TYPE DECLRATNS
014 94 0      1408          BUN   X+
014 95 0      1409    *B    STR   RR2,21            COLLECTING PROCEDURE PARAMETERS
014 96 0      1410          CAD   KC                MARK TYPE AS UNSPECIFIED
014 97 0      1411          STP   INSRX
014 98 0      1412          BUN   INSRT             PUT PARAMETER INTO TABLE AT KC LEVEL
014 99 0      1413          LDR   RR2
015 00 0      1414          STR - 0,21
015 01 0      1415          LDR   TAG
015 02 0      1416          BZR   ALPX1
015 03 0      1417          BUN   Y+
015 04 0      1418    *E    BZA   D+                PROCESSING A FUNCTION DECLARATION
015 05 0      1419          CAD   KC                IS THE IDENTIFIER A PARAMETER
015 06 0      1420          STP   SRCHX
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015 07 0      1421          BUN   SRCH
015 08 0      1422          BUN   D+              IF NOT TREAT AS NORMAL
015 09 0      1423   *J     LDR   SW6
015 10 0      1424          BZR   ALPX1
015 11 0      1425          LDR   L               INSERT IMPLIED MULTIPLICATION
015 12 0      1426          STR   LP              IF REQUIRED
015 13 0      1427          CAD   DOT
015 14 0      1428          STP   SCAN
015 15 0      1429          BUN   EXCTR
015 16 0      1430          LDR   LP
015 17 0      1431          STR   L
015 18 0      1432          CLL   SW6
015 19 0      1433   ALPX1  LDB   MODE            ON EXIT, PUT MODE IN R REGISTER
015 20 0      1434          LDR - 0                       SYMBL CODE IN A REGISTER
015 21 0      1435          DLB   L,64,0
015 22 0      1436          BFR   W+,12,70
015 23 0      1437          CAD - 0
015 24 0      1438   ALPLX  BUN   *
015 25 0      1439   *D     STP   SRCHX           NORMAL CASE
015 26 0      1440          BUN   SRCH1           SEARCH FOR THIS IDENTIFIER
015 27 0      1441          BUN   F+
015 28 0      1442   THI    NOP   FRME            IF PROCESSING MONITOR LIST,EXIT TO FRME
015 29 0      1443          BFR   J-,22,74        IF ITS AN INTRINSIC FUNCTION GO TO J-
015 30 0      1444          BFR   ALPX1-1,11,7    IF ANOTHER RESERVED WORD,EXIT
015 31 0      1445          BFR   G+,11,9         IS IT A LABEL
015 32 0      1446   *L     BFR   H+,22,83        IS IT A PROCEDURE NAME
015 33 0      1447          BFR   Z+,21,3         IS ITS TYPE UNSPECIFIED
015 34 0      1448          STP   LIBRX           IF IT IS A NEW LIBRARY PROCEDURE,
015 35 0      1449          BFR   LIBRF,11,3      ADD IT TO THE LIBRARY
015 36 0      1450          BUN   J-              OTHERWISE CHEK IMPLIED MULTIPLICATION
015 37 0      1451   *F     CAD   LEVEL
015 38 0      1452   PEH    BZA   M+                SYMBOL NOT FOUND
015 39 0      1453   L9     CLA   9               INSIDE PROCEDURE
015 40 0      1454          STP   SRCHX
015 41 0      1455          BUN   SRCH
015 42 0      1456          BUN   K+              MAYBE ITS A RESERVED WORD
015 43 0      1457          BFR   J-,22,74
015 44 0      1458          BFR   ALPX1-1,11,7
015 45 0      1459          BFR   J-,11,4         OR A PROCEDURE, LIBRARY FUNCTION NAME
015 46 0      1460          BFR   L-,11,3
015 47 0      1461          BFR   L-,11,8
015 48 0      1462   *K     CAD   LEVEL           IF WE HAVE A BONA FIDE NEW SYMBOL,
015 49 0      1463   *M     STP   INSRX           ADD IT TO THE TABLE
015 50 0      1464          BUN   INSRT
015 51 0      1465   *Z     LDR   TAG
015 52 0      1466          BZR   H+
015 53 0      1467   *Y     DFL - 0,11,1          MAKE IT A LABEL, IF IT APPEARS IN
015 54 0      1468          BUN   ALPX1-1         THAT CONTEXT
015 55 0      1469   *X     CAD   KC
015 56 0      1470          BUN   M-
015 57 0      1471   *G     CLL   SW6
015 58 0      1472   *H     LDB   MODE            OTHERWISE IF IN TYPE DECLARATION MODE
015 59 0      1473          LDR - 0                SET ITS TYPE
015 60 0      1474          CFR   DCLMD,64
015 61 0      1475          BCU   N+
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015 62 0      1476          CAD   RR2
015 63 0      1477          DLB   L,64,0
015 64 0      1478          STA - 0,21
015 65 0      1479          BUN   ALPX1
015 66 0      1480    *N    CAD   SYMBL          GIVEN A NEW SYMBOL, LETS ASSIGN
015 67 0      1481          LDB   PR3             A TYPE FOR IT
015 68 0      1482    *A2   IBB   F+,9999        LOOK IN PREFIX STACK FOR
015 69 0      1483          LDR - 1               FIRST PREFIX WHICH APPLIES
015 70 0      1484          STR   TEMP
015 71 0      1485          DLB   TEMP,64,0
015 72 0      1486          STR   *+1,22
015 73 0      1487          CFA - 0,22
015 74 0      1488          LDB   TEMP
015 75 0      1489          BCU   A2-
015 76 0      1490          CAD   TEMP
015 77 0      1491          SRS   2
015 78 0      1492    *P    DLB   L,64,0
015 79 0      1493          STA - 0,21
015 80 0      1494          BUN   J-              IF NONE FITS, SET OTHERWISE TYPE
015 81 0      1495    *F    CAD   RR3
015 82 0      1496          BUN   P-
015 83 0      1497    *W    CAD 8 *
015 84 0      1498          STB   JCROY,04
015 85 0      1499          CLL   TAG             LABEL ON A TRACE CARD SENSED
015 86 0      1500          STP   INSX
015 87 0      1501          BUN   INS1            PUT CODE REFERENCE ON ITS FIXUP STACK
015 88 0      1502          STP   CMPLX
015 89 0      1503          BUN   WMG,CROY
015 90 0      1504          IFL   CHI,00,1
015 91 0      1505          BUN   SCN1


015 94 0      1506    NMBR  CAD   SYMBL          SEE IF CONSTANT HAS APPEARED BEFORE.
015 95 0      1507          LDR   RR0             EITHER SEARCH FLOATING POINT ONES
015 96 0      1508    RHO   NOP   C+              OR INTEGER ONES
015 97 0      1509          DLB   V6,64,00
015 98 0      1510          BFR   *+2,21,1
015 99 0      1511          DLB   V7,64,00
016 00 0      1512    *A    CFA - 1
016 01 0      1513          BCE   B+
016 02 0      1514          STB   E+,04
016 03 0      1515          LDB - 0
016 04 0      1516          IBB   D+,9999
016 05 0      1517          IBB   A-,1
016 06 0      1518    *D    LDB   SSC
016 07 0      1519    *E    STB   *,04            ENTER NEW CONSTANT IN TABLE
016 08 0      1520          RTF   RR0,2
016 09 0      1521          STB   SSC
016 10 0      1522          IFL - 9998,11,2
016 11 0      1523          IBB   *+1,9998
016 12 0      1524    *B    STB   L               CONSTANT IN TABLE
016 13 0      1525          CAD   L
016 14 0      1526          SLA   4
016 15 0      1527          STA   L,64
016 16 0      1528          DLB   L,64,0
016 17 0      1529    NMBRX BUN   *
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016 18 0      1530   *C     CFR    V2,21          IN ARRAY FILL
016 19 0      1531          BCH    FLTCM          CHANGE TO PROPER TYPE, IF NECESSARY
016 20 0      1532          BCL    FIXCM
016 21 0      1533          DFL    RHO,62,29
016 22 0      1534          STA    V1
016 23 0      1535          STP    TSTOX          REVERSE ITS SIGN IF NECESSARY
016 24 0      1536          BUN    TSTOP
016 25 0      1537          LDR    V1
016 26 0      1538          CAD    ABASE
016 27 0      1539          IFL    ABASE,04,1
016 28 0      1540          STP    WRITX          COMPILE IT
016 29 0      1541          BUN    WRIT3
016 30 0      1542          BUN    WINDX



016 35 0      1543   CLASS  STP    ALPLX          PROCESS AND CLASSIFY SYMBOL
016 36 0      1544          BUN    ALPLU
016 37 0      1545          BFA    FRME,11,7
016 38 0      1546          CFR    DCLMD,64
016 39 0      1547          BCE    SCN1           EXIT IF IN A TYPE DECLARATION
016 40 0      1548          LDB    TAG
016 41 0      1549          BFA    E+,11,0        OTHERWISE IT MUST BE A
016 42 0      1550          BFA    C+,11,1        LABEL OR SIMPLE VARIABLE
016 43 0      1551          BFA    D+,11,9
016 44 0      1552          DBB    P+,1
016 45 0      1553   *Q     STP    WEMX
016 46 0      1554          BUN    WEM,FRME
016 47 0      1555          CNST   30122240000    IMPROPER VARIABLE SYMBOL
016 48 0      1556   *C     IBB    FRME,9999
016 49 0      1557   *P     STP    WEMX
016 50 0      1558          BUN    WEM,A+
016 51 0      1559          CNST   30117240000    IMPROPER LABEL SYMBOL
016 52 0      1560   *D     DBB    A+,1
016 53 0      1561          BUN    Q-
016 54 0      1562   *B     CFR    FUNMD,64       MAKE UNASSIGNED SYMBOL
016 55 0      1563          BCU    X+             INTO EITHER A SIMPLE VARIABLE
016 56 0      1564          LDB    FUNS
016 57 0      1565          CAD -  0              OR, IF IN LABEL PART OF A PROCEDURE
016 58 0      1566          BSA    Y+,3           CALL, INTO A LABEL
016 59 0      1567   *X     DLB    L,64,0
016 60 0      1568          IFL -  0,11,1
016 61 0      1569   *A     CLL    TAG
016 62 0      1570          BUN    FRME           EXIT TO FRME ROUTINE IN ANY EVENT
016 63 0      1571   *Y     DLB    L,64,0
016 64 0      1572          IFL -  0,11,9
016 65 0      1573          BUN    FRME
016 66 0      1574   CLASX  DEFN   FRMEX



016 69 0      1574   THETA  DEFN   *
016 70 0      1574   INPT   NOP    INP3           GET NEXT CHARACTER, FROM FV-STACK
016 71 0      1575   INP1   DLB    SCNCT,94,00        OR FROM CARD. NORMALLY FROM CARD
016 72 0      1576          CAD -  IMAGE          BRING IN ALPHA WORD
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016 73 0      1577          LDB   SCNCT
016 74 0      1578          SLA - 0                ISOLATE NEXT DIGIT PAIR
016 75 0      1579   CCCNT  DBB   D+,144           CHECK FOR END OF CARD
016 76 0      1580   ZETA   BFA   E+,00,00
016 77 0      1581          SRA   8
016 78 0      1582          IFL   SCNCT,05,02
016 79 0      1583   *F     STA   CHAR,02
016 80 0      1584   BETA   BUN   INPTX
016 81 0      1585          SLA   4                IF PROCESSING FOR STATEMENT
016 82 0      1586          STP   INSX,RV          WE PUT CHARACTERS INTO RV-STACK
016 83 0      1587          BUN   INS
016 84 0      1588          BFA   *+3,62,33
016 85 0      1589          CAD   CHAR
016 86 0      1590   INPTX  BUN   *
016 87 0      1591   *B     CAD   FV               IF BETA ON AND WE HAVE JUST PUT IN
016 88 0      1592          LDB   RV               AN EQUAL SIGN,
016 89 0      1593          STB   FV,04            RV STACK HAS CHARACTERS IN BACKWARDS$
016 90 0      1594          LDR - 0                TRANSFER THEM TO FV-STACK IN RIGHT ORDER
016 91 0      1595          STA - 0,04
016 92 0      1596          STR   RV,04            UNTIL RV-STACK IS EMPTY
016 93 0      1597          BFR   *+2,04,00
016 94 0      1598          BUN   B-
016 95 0      1599   *C     IFL   BETA,62,29
016 96 0      1600          CAD   CHAR
016 97 0      1601          BUN   INPTX
016 98 0      1602   *D     CNC 4 IMAGE+15,1       READ A NEW CARD
016 99 0      1603          BCS   *+2,4
017 00 0      1604   RITE   CWR 4 IMAGE+15,22,4 PRINT IT UNLESS PCS(4) DOWN
017 01 0      1605          CLL   SCNCT
017 02 0      1606   CCBEG  IFL   SCNCT,00,02     START IN COLUMN 2
017 03 0      1607          BUN   INP1
017 04 0      1608   *E     IFL   SCNCT,00,10
017 05 0      1609          STA   SCNCT,01         HIGH SPEED IGNORING OF SUCCESSIVE
017 06 0      1610          BUN   F-               BLANK COLUMNS UNLESS ZETA SWITCH IS ON
017 07 0      1611   INP3   LDB   STFOL
017 08 0      1612          CAD - 0                PULL CHARACTERS OUT OF FV (FOR-VARIABLE)
017 09 0      1613          SRA   4                 STACK
017 10 0      1614          STA   CHAR,02
017 11 0      1615          IBB   RUNXX,9999
017 12 0      1616          LDR - 1
017 13 0      1617          STR   STFOL,04
017 14 0      1618          BUN   INPTX


017 17 0      1619   IMAGE  HLT   0
017 18 0      1620          CNST  $BURROUGHS ALGEBRAIC COMPILER - STANDARD VERSION$
017 19 0      1630          CNST  $ 4/1/61$$
017 20 0      1632          CNST  0,0,0
017 21 0      1635          LOCN  IMAGE+16


017 24 0      1635   SRCH1  CAD   LEVEL
017 25 0      1636   SRCH   ADD   LLO
017 26 0      1637          EXT   NN               LOOK FOR SYMBOL IN TABLE
017 27 0      1638          ADD   SCT
017 28 0      1639          STA   L
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017 29 0      1640   *B     LDB   L
017 30 0      1641          IBB   SRCHX,9999
017 31 0      1642   *C     CAD - 1
017 32 0      1643          STA   L                FIRST COMPARE LENGTHS
017 33 0      1644          CFA   D2D3,23          (AND WHETHER OR NOT A NUMERIC LABEL)
017 34 0      1645          BCU   B-
017 35 0      1646          SRA   4
017 36 0      1647          STA   TEMP
017 37 0      1648          IFL   TEMP,63,9
017 38 0      1649          STA   A+,04
017 39 0      1650          IFL   A+,04,1
017 40 0      1651          DLB   TEMP,54,1
017 41 0      1652          BRP   A+
017 42 0      1653          LDB   L9
017 43 0      1654   *A     CAD - *                IF LENGTHS AGREE, COMPARE THE REST
017 44 0      1655          CFA - SYMBL,00
017 45 0      1656          BCU   B-
017 46 0      1657          DBB   A-,1
017 47 0      1658          IFL   SRCHX,04,1       EXIT TO ONE BIGGER LOCATION
017 48 0      1659          DLB   L,64,0           IF SYMBOL IS FOUND
017 49 0      1660          LDR - 0
017 50 0      1661   SRCHX  BUN   *

017 53 0      1662   R23    STP   OPRTX,R24        IN ,N $N ,N *N -N PN

017 56 0      1663   OPRT   LDB   OPRTX
017 57 0      1664          DLB - 9998,44,0
017 58 0      1665          STB   SCAN,04
017 59 0      1666          LDB   S1               SEND S1 OPERATOR TO EXECUTOR
017 60 0      1667          CAD - OPTAB
017 61 0      1668          BUN   EXCTR
017 62 0      1669   OPRTX  DEFN  SCAN

017 68 0      1669   WEM    CLL   MSG              WRITE ERROR MESSAGE
017 69 0      1670          LDB   C+
017 70 0      1671          RTF   MSG,6            CLEAR MESSAGE BUFFER
017 71 0      1672          CLL   TEMP
017 72 0      1673   WEMX   CAD   *
017 73 0      1674   *E     CLR   0000
017 74 0      1675          SRT   8
017 75 0      1676          BFA   F+,00,0
017 76 0      1677          STA   E-,04
017 77 0      1678          STR   TEMP3
017 78 0      1679   *H     IFL   E-,04,1
017 79 0      1680          LDB   E-
017 80 0      1681          LDR - DICT-2           GET DICTIONARY ENTRY
017 81 0      1682   *C     CLA   MSG+1
017 82 0      1683          LBC   TEMP
017 83 0      1684          SLT   2                TRANSFER CHARACTERS
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017 84 0      1685          BFA   B+,00,00        ONE AT A TIME INTO
017 85 0      1686          SLA - 8               BUFFER AREA
017 86 0      1687          DLB   TEMP,94,00
017 87 0      1688          LSA   0
  7 88 0      1689          ADL - MSG
017 89 0      1690          IFL   TEMP,05,02
017 90 0      1691          BUN   C-
017 91 0      1692    *B    BSA   H-,3
017 92 0      1693          IFL   TEMP,05,02     PUT SPACE BETWEEN WORDS
017 93 0      1694          CAD   TEMP3
017 94 0      1695          BUN   E-
017 95 0      1696    *F    BCS   *+2,4
017 96 0      1697          BUN   *+2
017 97 0      1698          CWR 4 IMAGE+15,22,4
017 98 0      1699          CWR 4 MSG+6,42    -
017 99 0      1700          LDB   WEMX            RETURN TO PROGRAM,
018 00 0      1701          DLB - 9999,44,0       ATTEMPT TO CONTINUE ON
018 01 0      1702          CAD   V4              PUT V4 (CODE FOR CONSTANT 1)
018 02 0      1703          BUN - 0               IN A REGISTER ON EXIT



018 06 0      1704    NEWT  CAD   TEMPS          RECORD CURRENT SET OF TEMPORARY
018 07 0      1705          SLA   4               STORAGE CELLS IN SAVET STACK
018 08 0      1706          CLL   TEMPS           AND MARK THE TEMPS STACK EMPTY
018 09 0      1707          BUN   INS



018 12 0      1708    INS2  CAD   LOCN
  8 13 0      1709    INS   LDB   INSX            INSERT RA(67) INTO ASSOCIATIVE MEMORY
018 14 0      1710          DLB - 9998,44,0       LOCATION PRECEDING (RB)
018 15 0      1711    INS1  STB   A+,04
018 16 0      1712          LDR   AVAIL           NORMALLY THIS MEANS ON TOP OF THE
018 17 0      1713          BFR   B+,04,00         STACK NAMED BY THE B REGISTER OR
018 18 0      1714    *C    LDR - 0               BY THE 44-FIELD OF THE STP
018 19 0      1715          LDB   AVAIL
018 20 0      1716          STA - 0,67
018 21 0      1717          CAD - 0
018 22 0      1718          STR - 0,04
018 23 0      1719    *A    STB   *,04
018 24 0      1720          STA   AVAIL,04
018 25 0      1721    INSX  BUN   *
018 26 0      1722    NEWTX DEFN  INSX
018 27 0      1722    *B    LDR   MAMAX           IF AVAIL STACK IS EMPTY, TRY TO
018 28 0      1723          CFR   SSC,04          INCREASE THE SIZE OF
018 29 0      1724          STR   AVAIL,04        ASSOCIATIVE MEMORY
018 30 0      1725          STR   D+,04
018 31 0      1726          DFL   MAMAX,00,1
018 32 0      1727    *D    CLL   *
018 33 0      1728          BCH   C-              IF NO ROOM IS LEFT, GIVE UP
018 34 0      1729    FULL  STP   WEMX
018 35 0      1730          BUN   WEM,EXO
018 36 0      1731          CNST  33941430000     COMPILER CAPACITY EXCEEDED


  8 39 0      1732    REM2  CLL   SER
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018 40 0      1733   REM    LDB    REMX          REMOVE INFORMATION FROM
018 41 0      1734          DLB  - 9998,44,0      ASSOCIATIVE MEMORY LOCATION FOLLOWING
018 42 0      1735   REM1   STB    A+,04         (RB) ... NORMALLY THIS MEANS PULL OFF
018 43 0      1736          LDB  - 0              TOP OF STACK NAMED BY THE B REGISTER
018 44 0      1737          CAD  - 0              OR NAMED IN 44-FIELD OF STP INSTRUCTION
018 45 0      1738   REMX   IBB    *,9999
018 46 0      1739          DBB    *+1,9999       IF THE STACK IS EMPTY, EXIT
018 47 0      1740          LDR    AVAIL          OTHERWISE MARK LOCATION AVAILABLE
018 48 0      1741          STB    AVAIL,04       FOR FUTURE USE
018 49 0      1742          STR  - 0,04
018 50 0      1743   *A     STA    *,04           EXIT WITH THE REMOVED QUANTITY IN
018 51 0      1744          LDB    REMX           REGISTER A, TO THE LOCATION SPECIFIED
018 52 0      1745          DLB  - 9999,44,0      IN THE 44-FIELD OF THE BUN INSTRUCTION
018 53 0      1746          BUN  - 0

018 55 0      1747   ASSN1  CAD    VARB           ASSIGN A PLACE FOR A VARIABLE,
018 56 0      1748          SLA    4              OR CONSTANT, OR TEMP STORAGE,
018 57 0      1749          STA  - 0,64           IF ITS NOT IN MEMORY ALREADY
018 58 0      1750          DFL    VARB,04,1
018 59 0      1751   ASSN   CAD  - 0
018 60 0      1752          BFA    ASSN1,64,0
018 61 0      1753   ASSNX  BUN    *

018 63 0      1754   CONV   CAD  - 0              PUT OUT MONITOR CODING
018 64 0      1755          LDR    DICT+16
018 65 0      1756          STR    EXPLN
018 66 0      1757          LDR    V8
018 67 0      1758          STB    STPV3,44       FOR A LABEL, TO THE LABEL PROCESSOR
018 68 0      1759          BFA    F+,11,9
018 69 0      1760          LDR    MONGN+1
018 70 0      1761          STR    EXPLN
018 71 0      1762          LDR    MNTRE          OTHERWISE TO THE MONITOR ROUTINE
018 72 0      1763          STA    STPV3,21       PUT TYPE IN THE STP INSTRUCTION
018 73 0      1764          BFA    F+,11,1
018 74 0      1765          BFA    F+,11,8        MONITOR FUNCTION NAMES
018 75 0      1766          LDB    VIMAG            (ARRAY NAME IS IN VIMAG)
018 76 0      1767   *F     STR    V3
018 77 0      1768          CAD  - 1
018 78 0      1769          STA    SYMBL
018 79 0      1770          STB    RR0,21         MAKE UP A CONSTANT WITH THE
018 80 0      1771          STP    NMBRX          LEADING ALPHABETIC CHARACTERS
018 81 0      1772          BUN    NMBR           (OR NUMERIC LABEL QUANTITY)
018 82 0      1773          STP    ASSNX
018 83 0      1774          BUN    ASSN
018 84 0      1775          SLA    2
018 85 0      1776   CONV3  STA    BUN3V,44       PUT ADDRESS OF THIS CONSTANT
018 86 0      1777          CAD    G2             IN BUN INSTRUCTION
018 87 0      1778          BUN    INTRP

                                                  SECTION C.  THE EXECUTOR CO-ROUTINE

018 91 0      1779   MAXCM  CAD    OPMAX
018 92 0      1780          BUN    EXIT
018 93 0      1781   MINCM  CAD    OPMIN
018 94 0      1782   EXIT   STP    CMPLX
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018 95 0      1783          BUN    CMPL
018 96 0      1784   NORM   STP    EXCTR          NORMAL EXIT TO THE
018 97 0      1785          BUN    SCAN            SCANNER CO-ROUTINE
018 98 0      1786   ANALZ  STA    TEMP,64        AT THIS POINT WE USUALLY GO TO
018 99 0      1787          DLB    TEMP,64,0      COMPL(THE COMPILER) BUT SOME SPECIAL
019 00 0      1788          BFA    A+,01,1         CASES OCCUR
019 01 0      1789          BFA    B+,01,4
019 02 0      1790          BFA    C+,01,5
019 03 0      1791          BUN    EXIT
019 04 0      1792   *A     BSA  - 0,6            SPECIAL CONTROL OPERATOR, BRANCH
019 05 0      1793          BUN    EXIT            DIRECTLY TO IT
019 06 0      1794   *B     CAD  - 0
019 07 0      1795   ANALY  STA    INSX,04        SET UP MODE FIRST, THEN GO DIRECTLY
019 08 0      1796          DLB    MODE,44,0
019 09 0      1797          BUN    INS1
019 10 0      1798   *C     STB    D+,04
019 11 0      1799          LDB    MODE           PICK UP MODE FIRST, THEN GO DIRECTLY
019 12 0      1800          CAD  - 0
019 13 0      1801   *D     BUN    *
019 14 0      1802   EXCTR  BUN    ANALZ          EXIT-ENTRANCE LINE


019 18 0      1803   COMMA  BSA    A+,1           COMMA FOUND. WE CANT BE IN NORMAL MODE
019 19 0      1804          DLB  - 0,64,0
019 20 0      1805   COMMX  F4241  6273,30,0      BRANCH TO THE COMMA-GENERATOR
019 21 0      1806   *A     STP  - WEMX             SPECIFIED BY THIS MODE.
019 22 0      1807          BUN    WEM,NLRB
019 23 0      1808          CNST   31545000000     MISPLACED COMMA

019 26 0      1809   MODCM  STP    CMPLX          MOD COMMA IS THOUGHT OF AS )CRD(
019 27 0      1810          BUN    RIGHT
019 28 0      1811          STP    CMPLX
019 29 0      1812          BUN    WMG,CRD
019 30 0      1813          CAD    LPAR
019 31 0      1814          BUN    EXIT


019 34 0      1815   OVRLY  CAA    G12            GENERATE STP,BUN
019 35 0      1816          STP    INTRX
019 36 0      1817          BUN    INTRP          FOLLOWED BY N  (THE SEGMENT NUMBER)


019 39 0      1818   GO     IFL    TAG,00,1       SET UP TO EXPECT A LABEL
019 40 0      1819          CAD    CRT            AND COMPILE A CIRCLE-T OPERATOR
019 41 0      1820          BUN    EXIT


019 44 0      1821   TO     DEFN   NORM           IGNORE THE WORD TO

019 46 0      1821   SWTCH  STP    CMPLX          SET UP TO PROCESS A SWITCH STATEMENT
019 47 0      1822          BUN    LEFT           SWITCH E,(L,...,L)
019 48 0      1823          IFL    DELTA,00,5
019 49 0      1824          DFL    SWCM,62,29
019 50 0      1825          CAD    CRH
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019 51 0      1826          BUN   EXIT

019 53 0      1827    SWCM  BUN   GO              IF PROC. THE LABELS. ACT LIKE GO TO
019 54 0      1828          IFL   SWCM,62,29
019 55 0      1829          STP   NULSX
019 56 0      1830          BUN   NULSB           OTHERWISE,EVALUATE E, AND LBC E.
019 57 0      1831          STP   ASMBX
019 58 0      1832          BUN   ASMBL,BUNFB
019 59 0      1833          CLL   DEX             THEN COMPILE -BUN FORWARD AND
019 60 0      1834          BUN   GO              ACT LIKE GO TO


019 63 0      1835    UNTIL IFL   PSI,00,01
019 64 0      1836          CAD   LOCN
019 65 0      1837          STA   BREF,64
019 66 0      1838          STP   CMPLX           PUT OUT A BACKWARD REFERENCE OPERATOR,
019 67 0      1839          BUN   WMG,BREF       TO THE PRESENT LOCATION
019 68 0      1840          CAD   CRU             COMPILE A CIRCLE-U OPERATION
019 69 0      1841    *A    IFL   DELTA,22,1
019 70 0      1842          BUN   EXIT


019 73 0      1843    IF    CAD   OPIF            IF AND UNTIL  TURN ON SWITCH
019 74 0      1844          BUN   A-              WHICH CHANGES = SIGN INTO EQL


019 77 0      1845    ETHR  STP   CMPLX           EITHER IS JUST A CIRCLE E OPERATOR
019 78 0      1846          BUN   WMG,CRE         AND A LEFT PARENTHESIS
019 79 0      1847          STP   CMPLX
019 80 0      1848          BUN   LEFT
019 81 0      1849          IFL   PSI,00,1
019 82 0      1850          BUN   NORM


019 85 0      1851    OR    STP   EXCTR
019 86 0      1852          BUN   SCAN
019 87 0      1853          STA   SMBL
019 88 0      1854          BFA   A+,92,69
019 89 0      1855          STP   CMPLX           OR,    NOT OR IF.
019 90 0      1856          BUN   WMG,BOR         COMPILE A BOOLEAN OR
019 91 0      1857    *B    CAD   SMBL
019 92 0      1858          BUN   EXIT
019 93 0      1859    *A    STP   CMPLX           OR IF.
019 94 0      1860          BUN   RIGHT           THIS ) MATCHES THE EITHER
019 95 0      1861          STP   ASMBX
019 96 0      1862          BUN   ASMBL,BUNFR     PUT OUT A BUN FORWARD
019 97 0      1863          STP   CMPLX
019 98 0      1864          BUN   LEFT            AND ANOTHER EITHER
019 99 0      1865          IFL   PSI,00,1
020 00 0      1866          BUN   IF              AND THEN THE IF


020 03 0      1867    WISE  CFA   DCLMD,64        OTHERWISE SENSED.
020 04 0      1868          BCE   B+
020 05 0      1869    *A    STP   CMPLX           IF IN  EITHER IF  CONTEXT,
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020 06 0      1870          BUN   RIGHT          ACT LIKE  OR IF
020 07 0      1871          STP   ASMBX
020 08 0      1872          BUN   ASMBL,BUNFR
020 09 0      1873          IFL   DELTA,00,4
020 10 0      1874          CAD   CRW
020 11 0      1875          BUN   EXIT           THEN PUT OUT CIRCLE-W OPERATOR.
020 12 0      1876    *B    LDR   RR2
020 13 0      1877          STR   RR3            IF IN TYPE DECLARATION, SET
020 14 0      1878          LDB   LEVEL          RR3 TO CURRENT TYPE
020 15 0      1879          DBB   NORM,1         AND IF OUTSIDE OF PROCEDURE DECLARATIONS,
020 16 0      1880          STR   RR1            PUT IT INTO RR1 ALSO.
020 17 0      1881          BUN   NORM

020 20 0      1882    ENTER IFL   TAG,00,1
020 21 0      1883          STP   EXCTR
020 22 0      1884          BUN   SCAN
020 23 0      1885          STP   LINKX          LINK TO SUBROUTINE
020 24 0      1886          BUN   LINK2
020 25 0      1887          BUN   NORM

020 28 0      1888    STOP  STP   CMPLX          COMPILE CIRCLE Z
020 29 0      1889          BUN   WMG,CRZ
020 30 0      1890    SCT   CLA   SCRTB          AND AN ACCUMULATOR SYMBOL.
020 31 0      1891          BUN   EXIT

020 34 0      1892    RETN  STP   VSUBX          RETURN.   SEE VSUB.
020 35 0      1893          BUN   VSUB
020 36 0      1894          BUN   NORM

020 39 0      1895    COMNT CLL   TAG            COMMENT.
020 40 0      1896          STP   INPTX
020 41 0      1897          CAD   CHAR           BYPASS CHARACTERS
020 42 0      1898          BFA   SCN7,02,13     UNTIL WE SEE A SEMICOLON
020 43 0      1899          BUN   INPT

020 46 0      1900    FOR   STP   CMPLX          CIRCLE X - WILL GENERATE THE FINAL BUN
020 47 0      1901          BUN   WMG,CRX
020 48 0      1902          STP   CMPLX
020 49 0      1903          BUN   LEFT
020 50 0      1904          DFL   BETA,62,29     SET TO STORE NEXT CHARACTERS
020 51 0      1905          CAD   CHAR           AWAY (UP UNTIL THE = SIGN)
020 52 0      1906          SLA   4
020 53 0      1907          STP   INSX,RV
020 54 0      1908          BUN   INS
020 55 0      1909          CLL   ALPHA
020 56 0      1910          IFL   ALPHA,01,1     ALPHA TELLS WHAT KIND OF
020 57 0      1911          BUN   C+              ITERATION LIST ELEMENT WE HAVE

020 60 0      1912    FORCM CLL   PI             COMMA IN ITERATION LIST.
020 61 0      1913          LDR   ALPHA
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020 62 0      1914          BFR   A+,01,1
020 63 0      1915          BFR   B+,01,2
020 64 0      1916          DFL   ALPHA,01,2
020 65 0      1917          CLL   PHI             THE V=(E1,E2,E3),  CASE.
020 66 0      1918          STP   FSUBX           ASSEMBLE STP,BUN
020 67 0      1919          BUN   FSUB2           RUN BACK THE V=
020 68 0      1920          BUN   C+
020 69 0      1921    *B    STP   SEMIX           THE V=(E1,E2,  CASE
020 70 0      1922          BUN   SEMIC           FINISH INCREMENTATION OF V
020 71 0      1923          STP   REMX,EXEC
020 72 0      1924          BUN   REM,*+2
020 73 0      1925    G1    F424  6141,0,*
020 74 0      1926          STP   FXUPX           FIX UP BUN INSTRUCTION
020 75 0      1927          BUN   FXUP
020 76 0      1928          STP   CMPLX           COMPILE AN UNTIL OPERATOR
020 77 0      1929          BUN   WMG,CRU
020 78 0      1930          IFL   PI,00,1
020 79 0      1931          DFL   DELTA,01,2
020 80 0      1932          IFL   ALPHA,01,1
020 81 0      1933          CAD   TOP             AND THE LEQ OR GEQ RELATION
020 82 0      1934          BUN   EXIT
020 83 0      1935    *A    LDB   MODE
020 84 0      1936          LDR   0
020 85 0      1937          BFR   B+,22,2
020 86 0      1938          IFL   ALPHA,00,1      THE V=(E1,  CASE.
020 87 0      1939          STP   CMPLX
020 88 0      1940          BUN   RIGHT           ASSEMBLE V=E1, STP, BUN
020 89 0      1941          STP   QSUBX
020 90 0      1942          BUN   QSUB
020 91 0      1943          STP   FSUBX           RUN BACK V=V
020 92 0      1944          BUN   FSUB1
020 93 0      1945          STP   RUNX
020 94 0      1946          BUN   RUN
020 95 0      1947          STP   EXCTR
020 96 0      1948          BUN   SCAN
020 97 0      1949          CFA   HYPH            REMEMBER IF E2 BEGINS WITH
020 98 0      1950          LDR   RLEQ            THE CHARACTER MINUS
020 99 0      1951          BCU   *+2
021 00 0      1952          LDR   RGEQ
021 01 0      1953          STR   TOP
021 02 0      1954          STA   SMBL            COMPILE +, AND THEN CONTINUE SCANNING
021 03 0      1955          STP   CMPLX
021 04 0      1956          BUN   WMG,PLUS
021 05 0      1957          CAD   SMBL
021 06 0      1958          BUN   EXIT
021 07 0      1959    *B    STP   QSUBX           THE V=E1, CASE.
021 08 0      1960          BUN   QSUB
021 09 0      1961          STP   FSUBX           ASSEMBLE V=E1, STP, BUN
021 10 0      1962          BUN   FSUB1           SCAN V= AGAIN
021 11 0      1963    *C    CLL   DELTA
021 12 0      1964          IFL   DELTA,00,3
021 13 0      1965          BUN   NORM


021 16 0      1966    SEMI  BSA   C+,2            SEMICOLON GENERATOR.
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021 17 0      1967            LDB   OMCRN          CHECKS FIRST FOR LABEL MODE.
021 18 0      1968            CLL   OMCRN          EXIT IF EXPECTING A SEMICOLON
021 19 0      1969            DRB   NORM,1
021 20 0      1970            CFA   FUNMD,64
021 21 0      1971            BCE   A+             CHECK FOR FUNCTION OR PROCEDURE CALL
021 22 0      1972            CFA   PRCMD,64
021 23 0      1973            BCE   B+
021 24 0      1974            LDB   DELTA          OTHERWISE BRANCH ACCORDING TO THE
021 25 0      1975            BUN - *+1             SETTING OF DELTA
021 26 0      1976            BUN   DEL0           DELTA UNSET
021 27 0      1977            BUN   DEL1           FOR STATEMENT,AFTER (E1,E2,E3)
021 28 0      1978            BUN   DEL2           THIS LOCATION IS WASTED
021 29 0      1979            BUN   DEL3           FOR STATEMENT, AFTER E
021 30 0      1980            BUN   DEL4           AFTER OTHERWISE,SEGMENT,SUBROUTINE,ETC.
021 31 0      1981  DEL5      STP   CMPLX          DECLARATION (E.G., INTEGER, FORMAT)
021 32 0      1982            BUN   RIGHT
021 33 0      1983            BUN   DEL0
021 34 0      1984  *B        STP   YSUBX          PROCESS PARAMETER
021 35 0      1985            BUN   YSUB1
021 36 0      1986  *B        CAD - 0              INCREASE SEMICOLON COUNT
021 37 0      1987            IFL - 0,12,10
021 38 0      1988            BSA   *+2,2
021 39 0      1989            BUN   NORM
021 40 0      1990  MEMST     IFL   TAG,00,1       IF IT WAS 2,SET TO EXPECT LABELS.
021 41 0      1991            BUN   NORM
021 42 0      1992  *A        STP   PRSBX,CRC      COMPILE A PARAMETER CALL OP
021 43 0      1993    -       BUN   PRSB
021 44 0      1994            LDB   FUNS
021 45 0      1995            BUN   B-
021 46 0      1996  DEL1      STP   CMPLX          FINISH FOR LIST
021 47 0      1997            BUN   RIGHT
021 48 0      1998            CLL   PI
021 49 0      1999            BUN   Q+             (SEE Q+ BELOW)
021 50 0      2000  *E        BFA   DEL4,11,0
021 51 0      2001            STP   WEMX
021 52 0      2002            BUN   WEM,DEL4
021 53 0      2003            CNST  34661000000    EXTRA OPERAND
021 54 0      2004  *F        STP   WEMX
021 55 0      2005            BUN   WEM,A+
021 56 0      2006            CNST  30147000000    IMPROPER SUBSCRIPT
021 57 0      2007  DEL0      STP   SEMIX          SEMICOLON IS  )(
021 58 0      2008            BUN   SEMIC
021 59 0      2009  DEL4      STP   REMX,OPRND     ARE THERE ANY OPERANDS ON THE STACK
021 60 0      2010            BUN   REM,E-         IF SO THEY HAD BETTER BE ACCUM SYMBOLS
021 61 0      2011  *A        STP   REMX,DIMS      ARE THERE ANY DIMENSIONS LEFT
021 62 0      2012            BUN   REM,F-         WE HOPE NOT
021 63 0      2013  *A        CLL   SER
021 64 0      2014            CLL   DEX            IF EVERYTHING IS COPACETIC,
021 65 0      2015            CLL   PI             CLEAR ALL SWITCHES IN SIGHT,
021 66 0      2016            CLL   PSI            IN PREPARATION FOR A NEW STATEMENT
021 67 0      2017            CLL   DELTA
021 68 0      2018            CLL   TAG
021 69 0      2019            BUN   NORM
021 70 0      2020  *C        STP   DECNX
021 71 0      2021            BUN   DECN
021 72 0      2022            BUN   DEL5
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021 73 0      2023    DEL2  DEFN  *
021 74 0      2023    DEL3  STP   QSUBX          ASSEMBLE STP,BUN IN FOR LOOP
021 75 0      2024          BUN   QSUB
021 76 0      2025    *Q    IFL   PSI,00,01      ASSEMBLE BUN AROUND THE LOOP
021 77 0      2026          STP   ASMBX
021 78 0      2027          BUN   ASMBL,BUNFR
021 79 0      2028          STP   CMPLX          COMPILE INPUT OR OUTPUT, IF THIS
021 80 0      2029    UPSLN F424  CRA,01,WMG     FOR APPEARED THERE.
021 81 0      2030    *F    STP   REMX,EXEC      FIX UP ALL THE BUNS TO THIS FOR LOOP
021 82 0      2031          BUN   REM,C+
021 83 0      2032    *A    STP   DECNX          DROP THE FOR MODE
021 84 0      2033          BUN   DECN
021 85 0      2034          CLL   PHI
021 86 0      2035    *B    STP   REMX,FV        RELEASE THE SYMBOLS FROM THE
021 87 0      2036          BUN   REM,B-         FOR-VARIABLE STACK
021 88 0      2037          BUN   DEL4           THEN DO LIKE A REGULAR SEMICOLON.
021 89 0      2038    *C    STP   FXUPX
021 90 0      2039          BUN   FXUP
021 91 0      2040          BUN   E-

021 94 0      2041    INPUT CAD   CRJ
021 95 0      2042          BUN   A+

021 98 0      2043    OUTPT CAD   CRK            ASSEMBLE BUN FORWARD
021 99 0      2044    *A    STA   STSV
022 00 0      2045    *B    STP   ASMBX
022 01 0      2046          BUN   ASMBL,BUNFR
022 02 0      2047          IFL   TAG,00,1
022 03 0      2048          BUN   NLRB

022 06 0      2049    PUTCM STP   NULSX          COMMA BETWEEN TWO INPUT OR
022 07 0      2050          BUN   NULSB          OUTPUT DECLARATIONS
022 08 0      2051          BUN   B-

022 11 0      2052    LABEL STP   ASMBX          ASSEMBLE  BUN 0000
022 12 0      2053          BUN   ASMBL,BUNZ     AS THE FIRST INSTRUCTION OF A DECLARATION
022 13 0      2054          IFL   UPSLN,62,29
022 14 0      2055          STP   CMPLX
022 15 0      2056          BUN   WMG,CRI        COMPILE CIRCLE I, CIRCLE A
022 16 0      2057          CAD   CRA
022 17 0      2058          BUN   EXIT

022 20 0      2059    LABCM DEFN  *
022 21 0      2059    *A    STP   PRSBX,CRA      COMPILE CIRCLE A
022 22 0      2060          BUN   PRSB           (INPUT OR OUTPUT)

022 25 0      2061    NLRB  CLL   DEX
022 26 0      2062          BUN   NORM           MARK B REGISTER UNKNOWN
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022 29 0      2063   FRMT   STP   ASMBX          FORMAT. ASSEMBLE RUN AROUND.
022 30 0      2064          RUN   ASMBL,RUNFR
022 31 0      2065          IFL   DELTA,00,5
022 32 0      2066          STP   CMPLX
022 33 0      2067          RUN   LEFT


022 36 0      2068   FRMCM  IFL   TAG,00,1       PROCESS FORMAT STRING.
022 37 0      2069          STP   EXCTR
022 38 0      2070          RUN   SCAN
022 39 0      2071          BFA   LEFT,02,02     (THIS IS A LITTLE SCANNER)
022 40 0      2072          CLL   DESCR
022 41 0      2073   *L     STP   INSX,DIMS      BEGIN NEST
022 42 0      2074          RUN   INS2
022 43 0      2075          LDB   DIMS
022 44 0      2076          CAD   DESCR
022 45 0      2077          SLS   8
022 46 0      2078          STA   - 0,23
022 47 0      2079   *A     CLL   INSTR
022 48 0      2080   *B     CLL   DESCR
022 49 0      2081          STP   PASSX
022 50 0      2082          RUN   PASS
022 51 0      2083          BFA   L-,02,24       LEFT PARENTHESIS
022 52 0      2084          BFA   N+,91,8        NUMERIC
022 53 0      2085          BFA   D+,02,03       DOT
022 54 0      2086          BFA   C+,02,23       COMMA
022 55 0      2087          BFA   S+,02,14       STAR
022 56 0      2088          BFA   R+,02,04       RIGHT PARENTHESIS
022 57 0      2089          SRT   2
022 58 0      2090          CAD   DESCR
022 59 0      2091          SLT   7
022 60 0      2092          STA   INSTR,55       INSERT NUMBER(33 FIELD)ALPHA(52FIELD)
022 61 0      2093          RUN   B-
022 62 0      2094   *N     SRT   1              BUILD NUMBER
022 63 0      2095          CAD   DESCR
022 64 0      2096          SLT   1
022 65 0      2097          STA   DESCR
022 66 0      2098          RUN   PASS
022 67 0      2099   *D     CAD   DESCR          INSERT NUMBER IN 83-FIELD
022 68 0      2100          SLA   2
022 69 0      2101          STA   INSTR,83
022 70 0      2102          RUN   B-
022 71 0      2103   *R     DFL   L+,62,29
022 72 0      2104   *C     CAD   DESCR          INSERT NUMBER IN EITHER 02 OR 83 FIELD
022 73 0      2105          LDR   INSTR
022 74 0      2106          BZR   L+             (OR DO NOTHING - AFTER *)
022 75 0      2107          BFR   F+,83,0
022 76 0      2108          STA   INSTR,02
022 77 0      2109   *R     STP   WRITX
022 78 0      2110          RUN   WRIT2
022 79 0      2111          LDB   DIMS
022 80 0      2112          IRB   NORM,9999
022 81 0      2113   *L     RUN   A-
022 82 0      2114          IFL   L-,62,29       RIGHT PARENTHESIS.  GET
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022 83 0      2115          STP   REMX,DIMS     LOCATION OF MATCHING LEFT PARENTHESIS
022 84 0      2116          BUN   REM,*+2
022 85 0      2117    G2    F&24  7043,0,*
022 86 0      2118          SRS   4
022 87 0      2119          LSA   1
022 88 0      2120          STA   INSTR
022 89 0      2121          BUN   R-
022 90 0      2122    *S    DFL   ZETA,62,35    ALPHANUMERIC STRINGS.
022 91 0      2123    *S    CLL   IOPUS
022 92 0      2124          CLL   INSTR
022 93 0      2125    *B    STP   INPTX
022 94 0      2126          BUN   INPT          TRANSFER FIVE CHARACTERS
022 95 0      2127          DLB   IOPUS,04,2    AT A TIME, UP TO AND
022 96 0      2128          SLA - 0             INCLUDING THE NEXT ASTERISK.
022 97 0      2129          ADL   INSTR
022 98 0      2130          CAD   CHAR
022 99 0      2131          BFA   C+,02,14
023 00 0      2132          DBB   INPT,9992
023 01 0      2133          IFL   INSTR,12,20
023 02 0      2134          STP   WRITX
023 03 0      2135          BUN   WRIT2
023 04 0      2136          BUN   S-
023 05 0      2137    *C    IFL   INSTR,12,30
023 06 0      2138          IFL   ZETA,62,35
023 07 0      2139          BUN   R-
023 08 0      2140    *F    SLA   2
023 09 0      2141          STA   INSTR,83
023 10 0      2142          BUN   R-


023 13 0      2143    SGMT  CAA   PREV          SEGMENT BEGINNING.
023 14 0      2144          ADA   BUF+98        IF BUFFER NOT EMPTY, DUMP IT
023 15 0      2145          BZA   *+3
023 16 0      2146          STP   WRITX
023 17 0      2147          BUN   WRIT5
023 18 0      2148          IFL   BUF,64,1      INCREASE SEGMENT NUMBER
023 19 0      2149          CAD   BUF
023 20 0      2150          EXT   BCUL2
023 21 0      2151          STA   BUF
023 22 0      2152          SLA   4
023 23 0      2153          ADD   LOCN
023 24 0      2154          STP   INSX,FUNS     STORE SEG NO,LOCN IN FUN-STACK
023 25 0      2155          BUN   INS
023 26 0      2156          IFL   TAG,00,1
023 27 0      2157          IFL   DELTA,04,4
023 28 0      2158          CAD   LOCN          FIX UP FORWARD REFERENCES TO THIS
023 29 0      2159          LDR   BUF            SEGMENT NUMBER
023 30 0      2160          STR   LOCN
023 31 0      2161          STA   LOCNP
023 32 0      2162          STP   EXCTR
023 33 0      2163          BUN   SCAN
023 34 0      2164          IFL   ZUTA,62,39
023 35 0      2165          STP   TRTGX
023 36 0      2166          BUN   TRTG
023 37 0      2167          DFL   ZUTA,62,39
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023 38 0      2168          CAD   CRV          COMPILE CIRCLE V,WHICH
023 39 0      2169          BUN   EXIT         WILL FINISH THE SEGMENT.


023 42 0      2170    END   STP   CMPLX        THE WORD END.
023 43 0      2171          BUN   RIGHT
023 44 0      2172    *A    IFL   TAG,00,1
023 45 0      2173          STP   EXCTR        SCAN UNTIL WE REACH
023 46 0      2174          BUN   SCAN
023 47 0      2175          CFA   CWEND,67     END,RIGHT PAREN,SEMICOLON,OR COMMA.
023 48 0      2176          BCE   END
023 49 0      2177          CFA   RPAR
023 50 0      2178          BCE   END
023 51 0      2179          CFA   SMCLN
023 52 0      2180          BCE   ANALZ
023 53 0      2181          CFA   KOMA,67
023 54 0      2182          BCU   A-
023 55 0      2183          CLL   TAG
023 56 0      2184          BUN   ANALZ


023 59 0      2185    FINSH STP   CMPLX        FINISH.
023 60 0      2186          BUN   RIGHT        THIS RIGHT PARENTHESIS SHOULD MATCH
023 61 0      2187          MLS 4 T            THE LEFT PAREN TO WHICH WE
023 62 0      2188          MNC 4 400,T,0      INITIALIZED THE OPERATOR STACK
023 63 0      2189          BUN   800


023 66 0      2190    EQUL  CFA   ARAMD,64
023 67 0      2191          BCE   B+
023 68 0      2192    *A    CAD   CRB          = IN STATEMENT.
023 69 0      2193          BUN   EXIT         REPLACE BY CIRCLE B OP.
023 70 0      2194    *B    STP   NULSX        IF = APPEARS IN ARRAY DECLARATION,
023 71 0      2195          BUN   NULSB        GO INTO ARRAY-FILL MODE.
023 72 0      2196          CAD   ARFMD
023 73 0      2197          BUN   ANALY


023 76 0      2198    INDEX STP   INSX,AVAIL   INDEX OP IS INSERTED BETWEEN A AND (
023 77 0      2199          BUN   INS          OF A(I). IT BEGINS PROCESSING SUBSCRIPTS.
023 78 0      2200          STR   A+,04        FIRST FIND SOME AVAILABLE LOCATION
023 79 0      2201          STR   B+,04        IN ASSOC MEMORY. THIS WILL BE CALLED
023 80 0      2202          SLT   14           THE INCREMENT WORD FOR THIS ARRAY.
023 81 0      2203          STP   INSX,ARAS    IN ARAS- AND OPERAND-STACKS WE PUT A
023 82 0      2204          BUN   INS          REFERENCE TO THIS INCREMENT WORD, WHICH
023 83 0      2205          LDB   OPRND        IS INITIALIZED TO    V 5 R 0000 AAAA
023 84 0      2206          DLB - 0,64,0       V=0 NORMAL  V=1 CALL BY NAME V=2 MONITOR
023 85 0      2207          LDR - 0            R=0 FLOATING   R=1 FIXED
023 86 0      2208    *A    STR   *,23         AAAA=LOCATION OF OTHER INFORMATION
023 87 0      2209    *B    STB   *,08
023 88 0      2210          LDB   OPRND
023 89 0      2211          STA - 0,64
023 90 0      2212          STP   CMPLX        PUT CIRCLE-R OPERATOR ONTO THE STACK,
023 91 0      2213          BUN   WMG,CRR      ALSO A LEFT PARENTHESIS
023 92 0      2214          STP   CMPLX
023 93 0      2215          BUN   LEFT
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023 94 0      2216          CAD   V6
023 95 0      2217          STP   CMPLX          FURTHERMORE,INSERT THE CHARACTERS  0 +
023 96 0      2218          BUN   VRBL           INTO THE INPUT STRING
023 97 0      2219          CAD   PLUS
023 98 0      2220          IFL   PHI,00,1       FINALLY, SET UP TO IGNORE THE LEFT
023 99 0      2221          BUN   EXIT           PARENTHESIS WE LL GET NEXT FROM SCANNER.


024 02 0      2222   NDXCM  STP   PRSBX,CRY      COMMA IN SUBSCRIPT POSITION.
024 03 0      2223          BUN   PRSB           FINISH EVALUATING SUBSCRIPT,MAKE SURE
024 04 0      2224          STP   SPERX          IT IS FIXED POINT.
024 05 0      2225          BUN   SPERO          MULTIPLY IT BY THE PROPER DIMENSION
024 06 0      2226          STP   CMPLX
024 07 0      2227          BUN   WMG,PLUS       INSERT PLUS OPERATOR
024 08 0      2228          CAD   PAR
024 09 0      2229          BFA   A+,11,2
024 10 0      2230          BUN   B+
024 11 0      2231   *A     DLB   PAR,64,0       IF THE DIMENSION WAS A CONSTANT,
024 12 0      2232          LDR - 1              THE INCREMENT WORD CONTAINS SOME INCREMNT
024 13 0      2233          STR   TEMP1          WE HAVE SUPPRESSED FROM THE TARGET CODE,
024 14 0      2234          LDB   ARAS           AND WE MULTIPLY IT BY THE DIMENSION
024 15 0      2235          DLB - 0,64,0         AND REPLACE IT IN THE INCREMENT WORD.
024 16 0      2236          CAD - 0
024 17 0      2237          EXT   EX42
024 18 0      2238          MUL   TEMP1
024 19 0      2239          STR - 0,64
024 20 0      2240   *B     LDB   ARAS
024 21 0      2241          LDR - 0              IF AN EMPTY SUBSCRIPT APPEARED,
024 22 0      2242          BFR   NORM,22,0      PUT THIS DIMENSION ON MULT STACK
024 23 0      2243   INSXX  STP   INSX,MULT
024 24 0      2244          BUN   INS
024 25 0      2245          BUN   NORM


024 28 0      2246   SPERO  STP   CMPLX          MULTIPLY PREVIOUS RESULT BY
024 29 0      2247          BUN   WMG,DOT        THE NEXT DIMENSION
024 30 0      2248          IFL   CMPLX,04,6
024 31 0      2249          STP   REMX,DIMS
024 32 0      2250          BUN   REM,VRBL1      IF THERE IS NO NEXT DIMENSION,
024 33 0      2251          STP   WEMX
024 34 0      2252          BUN   WEM,VRBL1
024 35 0      2253          CNST  30147000000    USE 1,AND SAY IMPROPER SUBSCRIPT
024 36 0      2254   SPERX  BUN   *


024 39 0      2255   DECN   LDB   MODE           DECREASE PARENTHESIS COUNT ON THIS MODE
024 40 0      2256          DLB - 0,22,1
024 41 0      2257   DECNX  DBR   *,100          AND IF IT IS NOW ZERO, PULL OFF THE
024 42 0      2258          STP   REMX,MODE      TOP OF THE MODE STACK
024 43 0      2259          BUN   REM,*+2
024 44 0      2260   G5     F424  0552,0,*
024 45 0      2261          CFA   NDXMD,64
024 46 0      2262          LDB   DECNX          IF WE FINISHED THE SUBSCRIPTS OF AN ARRAY
024 47 0      2263          BCU - 0              WE GO THROUGH MORE MANIPULATIONS
024 48 0      2264   MLTS   LDB   ARAS           OTHERWISE WE EXIT.
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024 49 0    2265          DLB - 0,64,0        NOW WE FINISH PROCESSING ARRAY SBSCRIPTS
024 50 0    2266          STB   P+,04
024 51 0    2267          STB   Q+,04
024 52 0    2268          LDB - 0
024 53 0    2269          STB   R+,04         THE FINAL DIMENSION TO MULTIPLY BY
024 54 0    2270          CLA                 IS EITHER THE CONSTANT  1
024 55 0    2271          ADD - 0
024 56 0    2272          BSA   A+,1
024 57 0    2273          LDR   V4
024 58 0    2274          STR   PAR
024 59 0    2275          BUN   B+
024 60 0    2276    *A    STP   CMPLX         OR A PARAMETER TO THE PROCEDURE
024 61 0    2277          BUN   LEFT
024 62 0    2278          STP   SPERX
024 63 0    2279          BUN   SPERO         MULTIPLY BY IT.
024 64 0    2280          STP   CMPLX
024 65 0    2281          BUN   RIGHT
024 66 0    2282    *B    STP   REMX,ARAS     PULL OFF TOP OF ARRAY STACK
024 67 0    2283          BUN   REM,*+2
024 68 0    2284    G3    F424  6742,0,*
024 69 0    2285          SRT   10
024 70 0    2286    *P    CAD   *             INCR WORD/64 IS CHANGED FROM THE
024 71 0    2287          EXT   BCUL2         INCREMENT TO THE BASE ADDRESS PLUS THE
024 72 0    2288    *R    ADD   *             INCREMENT (MOD 100001
024 73 0    2289    *Q    STA   *,64
024 74 0    2290          BFR   G+,22,0
024 75 0    2291          CAD   PAR           IF AN EMPTY SUBSCRIPT HAS APPEARED,
024 76 0    2292          STP   INSX,MULT
024 77 0    2293          BUN   INS           PUT LAST DIMENSION ONTO MULT-STACK
024 78 0    2294          STP   USUBX,CRN     WITH THE OTHERS
024 79 0    2295          BUN   USUB          PUT OUT THE RECALCULATED BASE ADDRESS
024 80 0    2296    *K    STP   REMX,VULT      AS A PARAMETER
024 81 0    2297          BUN   REM,I+        SET MULS TO MULT STACK IN REVERSE ORDER
024 82 0    2298    *C    STP   REMX,MULS
024 83 0    2299          BUN   REM,*+2       FORGET TOP ENTRY OF MULS, IT IS ZERO
024 84 0    2300    G4    F424  6938,0,*
024 85 0    2301    *A    IFL   KAPPA,00,1
024 86 0    2302          STP   PRSBX,CRC     STORE THE PARAMETER.
024 87 0    2303          BUN   PRSB
024 88 0    2304    *F    STP   REMX,MULS
024 89 0    2305          BUN   REM,J+
024 90 0    2306    *D    IFL   KAPPA,00,1    WE ARE FINISHED. PULL SPURIOUS + OPERATOR
024 91 0    2307          STP   REMX,OP       (WE GET AN EXTRA ONE FOR EACH
024 92 0    2308          BUN   REM,NORM       EMPTY SUBSCRIPT)
024 93 0    2309    TWL   HLT   12
024 94 0    2310    *J    BFA   E+,66,0
024 95 0    2311          STP   CMPLX         MULTIPLY TOGETHER ALL DIMENSIONS
024 96 0    2312          BUN   VRBL          BETWEEN EMPTY SUBSCRIPT POSITIONS
024 97 0    2313          STP   CMPLX
024 98 0    2314          BUN   WMG,DOT
024 99 0    2315          BUN   F-
025 00 0    2316    *I    STP   INSX,MULS
025 01 0    2317          BUN   INS
025 02 0    2318          BUN   K-
025 03 0    2319    *E    STP   REMX,OP       REMOVE EXTRA + SIGN AND STORE
025 04 0    2320          BUN   REM,A-         COMPUTED MULTIPLIER
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025 05 0      2321   NN     HLT    99
025 06 0      2322   *G     LDB    MODE
025 07 0      2323          CAD -  0                IF NO EMPTY SUBSCRIPTS OCCURRED
025 08 0      2324          CFA    FUNMD,64          BUT IT IS A NAME CALL ANYWAY,
025 09 0      2325          BCU    NORM             WE PUT IT IN AS A NAME PARAMETER.
025 10 0      2326          LDB    FUNS
025 11 0      2327          CAD -  0
025 12 0      2328          STP    USUBX,CRN
025 13 0      2329          BSA    USUB,2
025 14 0      2330          BUN    NORM


025 17 0      2331   EMPTY  CFA    PRCMD,64          EMPTY SUBSCRIPT POSITION OPERATOR
025 18 0      2332          BCU    A+
025 19 0      2333          LDB    SSC               IF IT IS SENSED WHILE COLLECTING
025 20 0      2334          CLL -  0                 NEW PROCEDURE PARAMETERS,
025 21 0      2335          DFL -  0,12,10
025 22 0      2336          DFL -  0,23,39           CREATE A PSEUDO SIMPLE VARIABLE
025 23 0      2337          CAD    SSC               FOR THIS SUBSCRIPT MULTIPLIER
025 24 0      2338          SLA    4
025 25 0      2339          ADD -  0
025 26 0      2340          STP    INSX,OPRND        PUT IT INTO THE OPERAND STACK
025 27 0      2341          BUN    INS
025 28 0      2342   ARMS   STP    INSX,ARMS         AND INTO THE LIST OF MULTIPLIERS
025 29 0      2343          BUN    INS                FOR THIS ARRAY
025 30 0      2344          IFL    SSC,00,1
025 31 0      2345          IFL    KAPPA,00,1
025 32 0      2346          BUN    NORM
025 33 0      2347   *A     CFA    NDXMD,64          OTHERWISE CHECK THAT THIS EMPTY POSITION
025 34 0      2348          BCU    B+                OCCURS IN AN ARRAY PARAMETER
025 35 0      2349          LDB -  0                 WHILE CALLING A PROCEDURE
025 36 0      2350          LDR -  0
025 37 0      2351          CFR    FUNMD,64
025 38 0      2352          BCU    B+
025 39 0      2353          LDB    FUNS
025 40 0      2354          CAD -  0
025 41 0      2355          BSA    B+,3
025 42 0      2356          STP    REMX,OP
025 43 0      2357          BUN    REM,E+
025 44 0      2358   *B     STP    WEMX
025 45 0      2359          BUN    WEM,NORM
025 46 0      2360          CNST   30149475000       IMPROPER EMPTY SUBSCRIPT POSITION
025 47 0      2361   *F     LDB    ARAS
025 48 0      2362          IFL -  0,22,1            RECORD IT IN ARAS
025 49 0      2363   SRL    CLA    SYMBL+1           AND PUT MARKER ON MULT STACK.
025 50 0      2364          BUN    INSXX


025 53 0      2365   COLON  CLL    KAPPA             BEGINNING OF FUNCTION CALL
025 54 0      2366          LDB    OPRND
025 55 0      2367          DLB -  0,64,0
025 56 0      2368          CAD -  0                 PUT NAME OF FUNCTION WERE CALLING
025 57 0      2369          STA    A+,64              ONTO FUN-STACK
025 58 0      2370          CAD    A+
025 59 0      2371          STP    INSX,FUNS
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025 60 0      2372          BUN   INS
025 61 0      2373          CAD   CRO           COMPILE A CIRCLE-O
025 62 0      2374          BUN   EXIT
025 63 0      2375    *A    F4241 0,0,0


025 66 0      2376    FUNCM STP   PRSBX,CRC     COMMA IN PROCEDURE,FUNCTION CALL
025 67 0      2377          BUN   PRSB
025 68 0      2378          BUN   NORM          STORE THE PARAMETER


025 71 0      2379    DUMP  CAD   LEVEL
025 72 0      2380          SLA   4
025 73 0      2381          STP   INSX,DUMBS    PUT RECORD ON DUMB STACK,FOR OVERLAY
025 74 0      2382          BUN   INS
025 75 0      2383          DFL   S+,61,4
025 76 0      2384          DLB   LOCN,64,0
025 77 0      2385          DBB   MONT,300      MAKE SURE LOCN IS AT LEAST 300
025 78 0      2386          STP   ASMBX
025 79 0      2387          BUN   ASMBL,BUNZ
025 80 0      2388          STB   LOCN,64
025 81 0      2389          IFL   LOCN,44,3
025 82 0      2390    MONT  DFL   THI,62,71     MONITOR STATEMENT.
025 83 0      2391          IFL   TAG,00,1
025 84 0      2392          IFL   CHI,00,1      PREPARE FOR NUMERIC LABELS
025 85 0      2393          STP   EXCTR
025 86 0      2394          BUN   SCAN          GET NEXT ITEM FROM SCANNER.
025 87 0      2395          CFA   SMCLN
025 88 0      2396          BCU   *+5           IF IT IS A SEMICOLON WE EXIT
025 89 0      2397          DFL   THI,62,29
025 90 0      2398          STB   S+,61
025 91 0      2399          CLL   TAG
025 92 0      2400          BUN   ANALZ
025 93 0      2401          BFA   *+2,01,0      IF IT IS NOT AN OPERAND WE RECYCLE
025 94 0      2402          BUN   MONT+1
025 95 0      2403          DLB   L,64,0
025 96 0      2404          LDR - 0
025 97 0      2405          BFR   *+2,21,3
025 98 0      2406          DFL - 0,22,87       MARK OPERAND AS MONITORED,UNCLASSIFIED
025 99 0      2407    *S    BUN   A+,0299
026 00 0      2408          DFL - 0,12,60       OR IF PROCESSING DUMP,
026 01 0      2409          LDB   DUMBS         AS A VARIABLE TO BE DUMPED
026 02 0      2410          IFL - 0,45,1
026 03 0      2411          BUN   MONT+1
026 04 0      2412    *A    DFL - 0,12,80
026 05 0      2413          LDB   ARTHG
026 06 0      2414          STP   LIBRX         PUT MONITOR SUBROUTINE INTO PROGRAM
026 07 0      2415          BUN   LIBRF
026 08 0      2416          BUN   MONT+1


026 11 0      2417    SUBR  IFL   TAG,00,1      SUBROUTINE
026 12 0      2418          DFL   NU,62,29
026 13 0      2419          IFL   DELTA,00,4
026 14 0      2420          STP   ASMBX
026 15 0      2421          BUN   ASMBL,BUNFR   COMPILE BUN FORWARD
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026 16 0      2422          STP   INSX,FUNS      PUT LOCN INTO FUNS
026 17 0      2423          BUN   INS2           (RETURN WILL LOOK AT THIS)
026 18 0      2424          STP   EXCTR
026 19 0      2425          BUN   SCAN           GET NAME OF SUBROUTINE FROM SCANNER
026 20 0      2426          STP   TRTGX
026 21 0      2427          BUN   TRTG           DEFINE IT
026 22 0      2428          STP   NEWTX,SAVET
026 23 0      2429          BUN   NEWT           SAVE TEMP STORAGES
026 24 0      2430          CAD   CRS
026 25 0      2431          BUN   EXIT           COMPILE CIRCLE S.


026 28 0      2432    EXTRN STP   EXCTR          EXTERNAL.
026 29 0      2433          BUN   SCAN
026 30 0      2434          IFL   EPSLN,00,1
026 31 0      2435          STA   V2
026 32 0      2436          IFL   TAG,00,1
026 33 0      2437          DFL   PEH,62,6         DONT LOOK ON LEVEL ZERO WHEN DOING
026 34 0      2438          STP   EXCTR            A DECLARATION
026 35 0      2439          BUN   SCAN           GET NAME FROM SCANNER
026 36 0      2440          IFL   PEH,62,6
026 37 0      2441          DLB   V2,64,0        IS IT AN EXT STATEMENT OR EXT PROCEDURE
026 38 0      2442          DBB   A+,PRCMD
026 39 0      2443          STP   TRTGX          EXTERNAL STATEMENT
026 40 0      2444          BUN   TRTG2          DEFINE IT
026 41 0      2445          CAD   BUF            RECORD ITS SEGMENT NUMBER
026 42 0      2446          SRT   4
026 43 0      2447          DLB   L,64,0         (THE OVERLAY WILL FIX UP ANY
026 44 0      2448          STA - 0,04           FORWARD REFERENCES TO IT USING THIS
026 45 0      2449          IFL   ALEPH,62,6     SEGMENT NUMBER)
026 46 0      2450          STP   ASMBX
026 47 0      2451          BUN   ASMBL,BUNZ     COMPILE BUN FORWARD
026 48 0      2452          BUN   NORM
026 49 0      2453    *A    DLB   L,64,0         EXTERNAL PROCEDURE
026 50 0      2454          STB - 0,66           MARK AS 83 CODE.
026 51 0      2455          IFL - 0,22,83
026 52 0      2456          LDR   NRM            SCAN OFF THE PARAMETERS.


026 55 0      2457    PRCNT STR   C+,04          (R/04 IS EXIT LINE)
026 56 0      2458          CLL   V2
026 57 0      2459          STP   INPTX          BYPASS PARTS OF CARD
026 58 0      2460          BUN   INPT           UNTIL WE HAVE AN EXTRA RIGHT PARENTHESIS
026 59 0      2461          BFA   B+,02,04
026 60 0      2462          BFA   A+,02,24
026 61 0      2463          BUN   INPT
026 62 0      2464    *A    IFL   V2,00,?
026 63 0      2465    *B    DFL   V2,00,1
026 64 0      2466          BRP   INPT
026 65 0      2467    *C    BUN   *


026 68 0      2468    PROCD CLL   RR3            WORD PROCEDURE SENSED.
026 69 0      2469          LDR   VARB
026 70 0      2470          STR   FRSTP,04       SET FRSTP TO LOCATION OF 1ST PARAMETER
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026 71 0      2471          LDR   PR3
026 72 0      2472          STR   PR1          SAVE PREFIX LIST
026 73 0      2473          CLL   PR3
026 74 0      2474          LDR   CHI
026 75 0      2475          CLL   CHI          SHUT OFF LABEL PROCESSING
026 76 0      2476          STR   CHI3
026 77 0      2477          STP   XSUBX        INITIALIZE DECLARATION
026 78 0      2478          BUN   XSUB         (THIS PART COMMON TO PROC AND FUNCTION)
026 79 0      2479          STA   LEVEL        SET LEVEL = KC
026 80 0      2480          STB   - 0,21
026 81 0      2481          IFL   - 0,21,3     MARK TYPE OF THIS PROCEDURE UNSPECIFIED
026 82 0      2482    NRM   BUN   NORM


026 85 0      2483    FUNC  STP   XSUBX        WORD FUNCTION SENSED.
026 86 0      2484          BUN   XSUB         DO INITIAL STEPS
026 87 0      2485          DFL   - 0,11,2     SET TAU DIGIT = 6
026 88 0      2486          IFL   FNSW,00,1
026 89 0      2487          CAD   TOP          COMPILE NAME OF THIS FUNCTION
026 90 0      2488          BUN   EXIT


026 93 0      2489    PRCCM STP   YSUBX        RECORD PARAMETER
026 94 0      2490          BUN   YSUB1
026 95 0      2491          BUN   NORM


026 98 0      2492    ARAPM LDB   OPRND        ARRAY NAME APPEARS AS PARAMETER
026 99 0      2493          CAD   - 0
027 00 0      2494          SLT   2
027 01 0      2495          STA   ARMS,44      PUT NAME INTO ARMS
027 02 0      2496          STP   YSUBX
027 03 0      2497          BUN   YSUB2        MARK IT AS PARAMETER
027 04 0      2498          BUN   NORM


027 07 0      2499    INTG  CLL   RR2          INTEGER DECLARATION
027 08 0      2500          IFL   RR2,21,1     SET TYPE = FIXED
027 09 0      2501          BUN   ARRAY


027 12 0      2502    BOOL  DEFN  INTG         BOOLEAN DECLARATION (SAME)


027 15 0      2502    FLTG  CLL   RR2          FLOATING,REAL. SET TYPE = FLOATING
027 16 0      2503    ARRAY IFL   DELTA,00,5
027 17 0      2504          STP   CMPLX        ARRAY DECLARATION
027 18 0      2505          BUN   LEFT


027 21 0      2506    DCLCM BUN   NORM         DECLARATIONS ARE HANDLED BY SCANNER


027 24 0      2507    ARDEC IFL   IOTA,00,1    START TO DECLARE AN ARRAY, JUST AFTER A(
027 25 0      2508          CAD   XONE+1       OF A(I,J,K,L) IS SENSED
027 26 0      2509          STA   ARRI         INITIALIZE ARRI,ARRL TO 1
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027 27 0      2510          STA   ARRL
027 28 0      2511          CAD   CRF
027 29 0      2512          BUN   EXIT


027 32 0      2513    ARACM STP   NULSX       ARRAY DECLARATION COMMA SENSED
027 33 0      2514          BUN   NULSB       TREAT AS )( BUT PRESERVE ARRAY MODE
027 34 0      2515          LDB   IOTA
027 35 0      2516          IBB   NORM,9999   IF THIS IS A COMMA BETWEEN DIMENSIONS,
027 36 0      2517          CAD   CRG         IT IS A CIRCLE-G OPERATOR
027 37 0      2518          BUN   EXIT


027 40 0      2519    ARFCM IFL   RHO,62,29   ARRAY FILL IS ALL HANDLED BY SCANNER
027 41 0      2520          BUN   NORM        (IN UNUSUAL WAY) SEE NUMBER SUBROUTINE



027 46 0      2521    SEMIC STP   CMPLX       SEMICOLON IS THOUGHT OF AS )(
027 47 0      2522          BUN   RIGHT
027 48 0      2523          STP   CMPLX       THIS INNOCENT-LOOKING THING MAY CAUSE
027 49 0      2524          BUN   LEFT        ALL SORTS OF THINGS TO HAPPEN.
027 50 0      2525    SEMIX BUN   *


027 53 0      2526    QSUB  STP   CMPLX       FINISH SETTING V=F
027 54 0      2527          BUN   RIGHT
027 55 0      2528          STP   ASMBX       ASSEMBLE STP FORWARD
027 56 0      2529          BUN   ASMBL,STPFR
027 57 0      2530          CLL   DEX
027 58 0      2531          IFL   PI,00,1
027 59 0      2532          STP   ASMBX       BUN FORWARD
027 60 0      2533          BUN   ASMBL,BUNFR
027 61 0      2534          CLL   PI
027 62 0      2535    QSUBX BUN   *


027 65 0      2536    RUN   LDR   K2          INTERRUPT NORMAL SCANNING.
027 66 0      2537          STR   K3,04
027 67 0      2538          LDR   S2          RUN BACK THE VARIABLE PART
027 68 0      2539          STR   S3,04       OF THE FOR STATEMENT AGAIN
027 69 0      2540          LDR   SCAN
027 70 0      2541          STR   SCNXX,04
027 71 0      2542          LDR   FV
027 72 0      2543          STR   STFOL,04
027 73 0      2544          IFL   THETA,62,29
027 74 0      2545          BUN   SCN7
027 75 0      2546    RUNXX DFL   THETA,62,29  AFTER THE = SIGN COMES,
027 76 0      2547          LDR   K3          RESTORE NORMAL SCANNING PROCEDURE.
027 77 0      2548          STR   K2,04
027 78 0      2549          LDR   S3
027 79 0      2550          STR   S2,04
027 80 0      2551          LDR   SCNXX
027 81 0      2552          STR   SCAN,04
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027 82 0      2553   RUNX   BUN    *


027 85 0      2554   FSUB1  STP    REMX,OPRND
027 86 0      2555          BUN    REM2,*+2          PULL LEFT PARENTHESIS
027 87 0      2556   G6     F424   7039,0,*
027 88 0      2557          STP    CMPLX
027 89 0      2558          BUN    LEFT              PUT ANOTHER ONE ON
027 90 0      2559   FSUB2  CLL    DEX
027 91 0      2560          STP    RUNX              RUN BACK V =
027 92 0      2561          BUN    RUN
027 93 0      2562          STP    CMPLX
027 94 0      2563          BUN    WMG,CRB
027 95 0      2564   FSUBX  BUN    *

                                                    THROW AWAY TOP OF STACK,SUBSTITUTE CRN
027 98 0      2565   USUB   STP    REMX,OP
027 99 0      2566          BUN    REM,PRSB
028 00 0      2567   G8     F424   1053,0,*


028 03 0      2568   PRSB   LDB    PRSBX
028 04 0      2569          DLB -  9998,44,0         PRSB SENDS SPECIFIED OPERATOR TO COMPILER
028 05 0      2570          CAD -  0
028 06 0      2571          STP    CMPLX             AND THEN DOES NULSB
028 07 0      2572          BUN    WMG1
028 08 0      2573   NULSB  LDB    MODE              NULSB IS A SEMICOLON WHICH PROTECTS
028 09 0      2574          IFL -  0,22,1            THE MODE STACK
028 10 0      2575          STP    SEMIX
028 11 0      2576          BUN    SEMIC
028 12 0      2577          LDB    MODE
028 13 0      2578          DFL -  0,22,1
028 14 0      2579   PRSBX  BUN    *
028 15 0      2580   USUBX  DEFN   PRSBX
028 16 0      2580   NULSX  DEFN   PRSBX


028 19 0      2580   OLDT   STP    REMX,TEMPS        THROW OUT ALL TEMP STORAGES
028 20 0      2581          BUN    REM,OLDT          CURRENTLY BEING USED, THEY CANT
028 21 0      2582   *A     STP    REMX,SAVET         BE USED ANY MORE
028 22 0      2583          BUN    REM,*+2
028 23 0      2584   G7     F424   1565,0,*          REINSTATE OLD SET
028 24 0      2585          SRA    4
028 25 0      2586          STA    TEMPS,04
028 26 0      2587          BUN    GENRX


028 29 0      2588   GETMP  STP    REMX,TEMPS        SET AN AVAILABLE TEMP STORAGE CELL
028 30 0      2589          BUN    REM,GETMX
028 31 0      2590          CAD    VARB              EITHER FROM TEMPS STACK
028 32 0      2591          SLA    4                 OR A NEW ONE,IF THAT STACK HAS BEEN
028 33 0      2592          DFL    VARB,04,1         CLEANED OUT.
028 34 0      2593   GETMX  BUN    GETMX


028 37 0      2594   XSUB   STP    ASMBX             COMMON PART OF BEGINNING OF PROCEDURE
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028 38 0      2595          BUN   ASMBL,BUNFR   AND FUNCTION DECLARATIONS
028 39 0      2596          STP   INSX,FUNS     FIRST COMPILE FORWARD REFERENCE AROUND
028 40 0      2597          BUN   INS2
028 41 0      2598          STP   NEWTX,SAVET   PUT LOCN ONTO FUN-STACK
028 42 0      2599          BUN   NEWT          STASH AWAY CURRENT SET OF TEMP STORAGE
028 43 0      2600          STP   EXCTR
028 44 0      2601          BUN   SCAN          GET NAME OF PROCEDURE FROM SCANNER
028 45 0      2602          STA   TOP
028 46 0      2603          STP   CMPLX         COMPILE CIRCLE-P OPERATOR
028 47 0      2604          BUN   WMG,CRP
028 48 0      2605          IFL   PARSW,00,1
028 49 0      2606          IFL   KC,00,1
028 50 0      2607          STP   CMPLX         AND A LEFT PARENTHESIS
028 51 0      2608          BUN   LEFT
028 52 0      2609          STP   CMPLX         AND A CIRCLE Q
028 53 0      2610          BUN   WMG,CRQ
028 54 0      2611          CAD   VARB
028 55 0      2612          SRT   4
028 56 0      2613          STR   NOPAV,44      ASSEMBLE
028 57 0      2614          STP   ASMBX           (LOC OF PARAMETER 1) NOP  0000
028 58 0      2615          BUN   ASMBL,NOPAV
028 59 0      2616          IFL   PHI,00,1
028 60 0      2617          DLB   L,64,0
028 61 0      2618          CAD   KC            RECORD NUMBER OF THIS PROCEDURE
028 62 0      2619          STA - 0,04
028 63 0      2620          DFL - 0,82,1
028 64 0      2621   XSUBX  BUN   *


028 67 0      2622   YSUB1  LDB   KAPPA         COLLECTING PARAMETERS
028 68 0      2623          CLL   KAPPA
028 69 0      2624          DBB   A+,1         HAVE EMPTY SUBSCRIPTS APPEARED
028 70 0      2625          LDB   FUNS          OR DO WE HAVE A CALL BY VALUE
028 71 0      2626          CAD - 0
028 72 0      2627          BSA   A+,1
028 73 0      2628   YSUB2  DLB   L,64,00      -IF NOT,
028 74 0      2629          IFL - 0,12,10       MARK PARAMETER AS CALL BY NAME
028 75 0      2630          LDB   FUNS
028 76 0      2631          CAD - 0
028 77 0      2632          BSA   *+2,3
028 78 0      2633          BUN   *+2
028 79 0      2634          IFL   TAG,00,1      PUT TAG ON AFTER 2ND SEMICOLON
028 80 0      2635          SRA   4
028 81 0      2636          LSA   0
028 82 0      2637          STP   INSX,PAREF    PUT CALL BY NAME PARAMETERS ONTO
028 83 0      2638          BUN   INS           PAREF STACK.WE WILL USE THIS
028 84 0      2639          CAD - 0
028 85 0      2640          SLA   4             LATER TO FIX UP REFERENCES TO THEM
028 86 0      2641          STA - 0             SHIFT LINK FIELD AROUND(SHREWD MOVE)
028 87 0      2642   PRESW  F4241 1210,01,0     IN PAREF LINK FIELD IS 64-FIELD
028 88 0      2643   *A     STP   REMX,OPRND
028 89 0      2644          BUN   REM,*+2
028 90 0      2645   FUR    HLT   4
028 91 0      2646          SRA   4             ASSIGN PARAMETER LOCATION
028 92 0      2647          STA   *+3,04
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028 93 0      2648            CAD   VARB
028 94 0      2649            SLA   4
028 95 0      2650            STA   *,64
028 96 0      2651            DLB   TOP,64,0        KEEP COUNT OF NUMBER OF
028 97 0      2652            DFL - 0,82,99         PARAMETERS FOR FUTURE CHECKING
028 98 0      2653            DFL   VARB,04,1
028 99 0      2654            LDB   FUNS            KEEP COUNT OF NUMBER OF
029 00 0      2655            IFL - 0,22,1          PARAMETERS IN FUNS.
029 01 0      2656    YSUBX   BUN   *



029 06 0      2657    CMPL    BFA   VRBL,01,0       THIS HERE IS THE COMPILER
029 07 0      2658            BFA   WMG1,01,1
029 08 0      2659            BFA   LEFT,01,2       CHECK KIND OF QUANTITY..
029 09 0      2660    RIGHT   STP   REMX,OP         OPERAND,OPERATOR,LEFT PAREN, OR RIGHT PAR
029 10 0      2661            BUN   REM,E+          PROCESS RIGHT PARENTHESIS..
029 11 0      2662            STP   WEMX
029 12 0      2663            BUN   WEM,LEFT
029 13 0      2664            CNST  34652540000     (EXTRA RIGHT PARENTHESIS)
029 14 0      2665    *E      CFA   LPAR,67
029 15 0      2666            BCE   B+              DO ALL OPERATIONS OUTSTANDING SINCE
029 16 0      2667            STP   GENRX           LAST LEFT PARENTHESIS
029 17 0      2668            BUN   GENR
029 18 0      2669            BUN   RIGHT
029 19 0      2670    *B      STP   DECNX           CHANGE PARENTHESIS COUNT
029 20 0      2671            BUN   DECN            ON THIS MODE
029 21 0      2672    CMPLX   BUN   *
029 22 0      2673    VRBL1   STA   PAR
029 23 0      2674    VRBL    STP   INSX,OPRND      PROCESS OPERAND..
029 24 0      2675            BUN   INS             SIMPLY PUT IT ON OPERAND STACK
029 25 0      2676            BUN   CMPLX
029 26 0      2677    LEFT    LDB   PHI             PROCESS LEFT PARENTHESIS..
029 27 0      2678            CLL   PHI
029 28 0      2679            DBB   CMPLX,1         EXIT, IF EXPECTING A LEFT PARENTHESIS
029 29 0      2680            LDB   MODE
029 30 0      2681            IFL - 0,22,1          INCREASE PARENTHESIS COUNT ON THIS MODE
029 31 0      2682    FORTY   CLA   40
029 32 0      2683            BUN   A+              AND INSERT LEFT PARENTHESIS IN OP STACK
029 33 0      2684    WMG     LDB   CMPLX
029 34 0      2685            DLB - 9999,44,0       PROCESS OPERATOR..
029 35 0      2686            CAD - 0
029 36 0      2687    WMG1    LDB   OP
029 37 0      2688            LDR - 0
029 38 0      2689            BFR   A+,66,0         IF TOP OF OPERATOR STACK IS A LEFT
029 39 0      2690            STA   SAVOP           PARENTHESIS,
029 40 0      2691            CFA - 0,22            OR HIERARCHY OF NEW OP IS HIGHER THAN
029 41 0      2692            BCH   A+              THAT OF THE TOP OF THE OP STACK,
029 42 0      2693            BCL   B+              MERELY PLACE NEW OP ONTO THE STACK.
029 43 0      2694            BSA   *+2,0
029 44 0      2695            BUN   A+              ON EQUAL HIERARCHY DO THE SAME
029 45 0      2696            BFA   *+2,31,0        EXCEPT ON ORDINARY BINARY OPERATIONS
029 46 0      2697            BUN   A+
029 47 0      2698            LDB   OPRND           FOR THESE, CHECK IF EITHER THE
029 48 0      2699            LDR - 0               LAST OR THE SECOND-LAST OPERAND IS IN
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029 49 0      2700          BFR   B+,11,0          THE ACCUMULATOR, AND IF SO
029 50 0      2701          LDB - 0                PERFORM THE OPERATION IMMEDIATELY
029 51 0      2702          LDR - 0
029 52 0      2703          BFR   B+,11,0
029 53 0      2704   *A     STP   INSX,OP
029 54 0      2705          BUN   INS
029 55 0      2706   *C     BUN   CMPLX
029 56 0      2707   *B     STP   REMX,OP          IN THE CASE OF LOWER HIERARCHY,
029 57 0      2708          BUN   REM,*+2          EXECUTE THE LAST OPERATOR
029 58 0      2709   NPCN   NOP   0
029 59 0      2710          STP   GENRX            GO TO ITS GENERATOR
029 60 0      2711          BUN   GENR
029 61 0      2712          CAD   SAVOP
029 62 0      2713          BUN   WMG1             AND RECYCLE


029 65 0      2714   ASMBL  LDB   ASMBX            THE ASSEMBLER.
029 66 0      2715          DLB - 9999,44,0
029 67 0      2716   ASMBZ  CAD - 0
029 68 0      2717   ASMBY  CLL   INSTR
029 69 0      2718          CLL   INSTP
029 70 0      2719          STA   INSTR,00
029 71 0      2720          STA   INSTP,00
029 72 0      2721          STA   G
029 73 0      2722          LDR   XI
029 74 0      2723          BZR   A+
029 75 0      2724          CLL   XI               OMIT SLT10 INSTRUCTION, IF STA OR SRT10
029 76 0      2725          BFA   B+,62,40               FOLLOWS
029 77 0      2726          CFA   SRT10,07
029 78 0      2727          BCU   A+
029 79 0      2728          DFL   LOCN,64,1
029 80 0      2729          BUN   ASMBX
029 81 0      2730   *B     DFL   LOCN,64,1
029 82 0      2731          IFL   INSTR,41,1       (CHANGE STA TO STR)
029 83 0      2732          IFL   INSTP,41,1
029 84 0      2733   *A     CFA   +9999999999
029 85 0      2734          BCH   C+
029 86 0      2735          LDB   INSTR            ASSEMBLE WITH V(I) IF THE
029 87 0      2736          LDR - V                SIGN IS 0,1,2, OR 3
029 88 0      2737          BFR   D+,11,5
029 89 0      2738   *E     STP   LASMX            IN ORDINARY CASES, GO TO THE
029 90 0      2739          BUN   LASMB             LITTLE ASSEMBLER.
029 91 0      2740          BUN   ASMBX
029 92 0      2741   *D     DLB - V,64,0           WHOOPS, ITS AN ARRAY NAME.
029 93 0      2742          LDR - 0                WE PROBABLY HAVE TO GET ITS INDEX
029 94 0      2743          STA   GP               IN REGISTER B
029 95 0      2744          BFR   F+,11,7          IF THE ARRAY HAS ALREADY BEEN INDEXED,
029 96 0      2745          BFR   F-,11,5          SKIP THIS PHASE. IF THE SUBSCRIPT IS
029 97 0      2746          IFL - 0,11,1           CONSTANT,GO TO LITTLE ASSEMBLER
029 98 0      2747          STB   TEMP
029 99 0      2748          LDB - 0                GET THE SUBSCRIPT VALUE
030 00 0      2749          CAD - 0                IT CANT BE AN ACCUMULATOR SYMBOL
030 01 0      2750          DLB - 0,64,0
030 02 0      2751          LDR - 0
030 03 0      2752          BFA   Q+,11,3          IS IT A TEMP STORAGE
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030 04 0      2753          BFR   Q+,11,6        IS IT ANOTHER ARRAY
030 05 0      2754          STP   ASSNX          OTHERWISE PREPARE A PLACE FOR IT IN
030 06 0      2755          BUN   ASSN           MEMORY
030 07 0      2756          CFA   DEX,67         IF IT HASNT YET BEEN ASSIGNED
030 08 0      2757          STA   DEX,67
030 09 0      2758          BCU   G+             IS THE INDEX IN THE B REGISTER
030 10 0      2759          LDB   TEMP
030 11 0      2760          STP   REMX           IF SO,REMOVE REFERENCE TO  IT
030 12 0      2761          BUN   REM1,F+
030 13 0      2762    G99   F424  9629,0,0
030 14 0      2763    *Q    CLL   DEX            SET CONTENTS OF REGISTER B TO UNKNOWN
030 15 0      2764    *G    LDB   TEMP           HERES A TRICKY PART.
030 16 0      2765          STP   REMX           PUT THE SUBSCRIPT  ONTO THE XVP STACK
030 17 0      2766          BUN   REM1,*+2       IF IT IS ANOTHER ARRAY WHICH MUST BE
030 18 0      2767          BUN   H+             CALLED,KEEP THIS UP UNTIL WE GET
030 19 0      2768          STP   INSX,XVP       TO A NON-ARRAY.
030 20 0      2769          BUN   INS
030 21 0      2770          DLB - 0,64,0
030 22 0      2771          BFA   H+,11,3
030 23 0      2772          CAD - 0
030 24 0      2773          BFA   REM1,11,6
030 25 0      2774    *H    CAD   LDBV9
030 26 0      2775    *H    STA   INSTR          COMPILE A SERIES OF  LDB S
030 27 0      2776          CLL   G              UNTIL THE INDEX IS FINALLY IN REGISTER B
030 28 0      2777          STP   REMX,XVP
030 29 0      2778          BUN   REM,I+
030 30 0      2779    *F    CAD   INSTP          THE INSTRUCTION IS TO BE B-MODIFIED
030 31 0      2780          LSA   1
030 32 0      2781          STA   INSTR
030 33 0      2782          LDR   GP
030 34 0      2783          STR   G
030 35 0      2784          BUN   E-             GO TO THE LITTLE ASSEMBLER
030 36 0      2785    *I    STA   V9
030 37 0      2786          STP   LASMX
030 38 0      2787          BUN   LASMB
030 39 0      2788          CSU   LDBV9
030 40 0      2789          BUN   H-
030 41 0      2790    *C    BSA   G4P,4          ABSOLUTE MACHINE ADDRESS
030 42 0      2791          BSA   G6P,6          ADDRESS RELATIVE TO THIS LOCATION
030 43 0      2792          BSA   G7P,7          ADDRESS TO BE BLANKED OUT
030 44 0      2793          BSA   G8P,8          FORWARD REFERENCE ADDRESS
030 45 0      2794          IFL   INSTR,12,10    (B-MODIFICATION ON SIGNS OF 5 OR 9)
030 46 0      2795          BSA   G8P,9          B-MODIFIED FORWARD REFERENCE
030 47 0      2796    GEXIT STP   WRITX
030 48 0      2797          BUN   WRIT2
030 49 0      2798    ASMRX BUN   *
030 50 0      2799    G4P   LDR   INSTR          SET FLAG IF THIS IS SLT10 INSTRUCTION
030 51 0      2800          CFR   SLT10,07
030 52 0      2801          BCU   GEXIT
030 53 0      2802          IFL   XI,00,1
030 54 0      2803          BUN   GEXIT
030 55 0      2804    G6P   CAD   LOCN
030 56 0      2805          SRA   4
030 57 0      2806          ADA   INSTR
030 58 0      2807          STA   INSTR,04
030 59 0      2808          BUN   GEXIT
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030 60 0      2809   G8P   CAD   LOCN
030 61 0      2810         LSA   4
030 62 0      2811         LDR   PSI
030 63 0      2812         BZR   *+2
030 64 0      2813         LSA   7              INCREMENTED FORWARD REFERENCE
030 65 0      2814         DLB   OP,44,0
030 66 0      2815         LDR   PI             PUT FORWARD REFERENCE OPERATOR
030 67 0      2816         BZR   *+2            ONTO EITHER OPERATOR STACK, OR
030 68 0      2817         DLB   EXEC,44,0      (THE STP,BUN 5 OF FOR) ONTO EXEC-STACK
030 69 0      2818         STP   INSX
030 70 0      2819         BUN   INS1
030 71 0      2820   G7P   IFL   WRTSW,41,4
030 72 0      2821         BUN   GEXIT


030 75 0      2822   LASMB LDB   INSTR          LITTLE ASSEMBLER.
030 76 0      2823         LDR - V
030 77 0      2824         DLB - V,64,0         ASSEMBLE AN OPERAND FOR ME
030 78 0      2825         CAD - 0
030 79 0      2826         STA   VIMAG          WHAT KIND OF AN OPERAND
030 80 0      2827         BFR   T3,11,3         A TEMP STORAGE
030 81 0      2828         BFR   T1,11,1         A SIMPLE VARIABLE
030 82 0      2829         BFR   T2,11,2         A CONSTANT
030 83 0      2830         BFR   T4,11,4         A LIBRARY,EXTERNAL PROCEDURE
030 84 0      2831         BFR   T5,11,5         AN ARRAY
030 85 0      2832         BFR   T4,11,8         A PROCEDURE OR FUNCTION
030 86 0      2833   T9    LDR - 1
030 87 0      2834         BFR   *+2,11,0
030 88 0      2835         STR   EXPLN
030 89 0      2836         STP   INSX           A LABEL
030 90 0      2837         BFA   H+,64,0        IF IT HASNT BEEN DEFINED YET,
030 91 0      2838         BUN   T4             RECORD PLACE FOR FORWARD REFERENCE
030 92 0      2839   T1    BSA   T4+1,8         IS IT A DIMENSION PARAMETER
030 93 0      2840         LDR - 1
030 94 0      2841         BUN   *+2
030 95 0      2842   T2    LDR   DICT+33
030 96 0      2843         STR   EXPLN
030 97 0      2844         STP   ASSNX          ASSIGN PLACE FOR VARIABLE OR CONSTANT
030 98 0      2845         BFA   ASSN1,64,0      IF NOT THERE ALREADY
030 99 0      2846         BUN   T4+1
031 00 0      2847   T3    CLL   VIMAG
031 01 0      2848         STR   VIMAG,00       FREE UP TEMP STORAGE CELL FOR
031 02 0      2849         CAD   G              FUTURE USE UNLESS G = 1 OR 3
031 03 0      2850         BSA   LASMX,3
031 04 0      2851         BSA   T4-2,1
031 05 0      2852         SLT   10
031 06 0      2853         STP   INSX,TEMPS
031 07 0      2854         BUN   INS
031 08 0      2855         CAD   TCONS
031 09 0      2856         STA   EXPLN
031 10 0      2857   T4    CAD   VIMAG          INSERT NEW ADDRESS INTO INSTRUCTION
031 11 0      2858         SRA   4
031 12 0      2859         STA   INSTR,04
031 13 0      2860         STP   INSX
031 14 0      2861         BSA   H+,9           EXTERNAL THING,INSERT FORWARD REFERENCE
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031 15 0      2862   *F     ADD   XZERO+1
031 16 0      2863          BSA   B+,1
031 17 0      2864          CAD   G
031 18 0      2865          BSA   LASMX-1,3      G=3 MEANS THIS IS ONLY AN INDEX PSEUDO-OP
031 19 0      2866   *G     STP   WRITX
031 20 0      2867          BUN   WRIT2
031 21 0      2868          CLL   EXPLN
031 22 0      2869   LASMX  BUN   *
031 23 0      2870   *B     EXT   EXO            CHECK IF THIS ADDRESS IS A
031 24 0      2871          SUB   FRSTP          NAME PARAMETER WHICH MUST BE FIXED
031 25 0      2872          SLA   8              UP AT RUNNING TIME
031 26 0      2873          LDB   PAREF
031 27 0      2874   *E     CFA - 0,22
031 28 0      2875          BCE   H+
031 29 0      2876          DLB - 0,64,0
031 30 0      2877          BUN   E-
031 31 0      2878   T5     LDR   G              ARRAY - IF G NEQ 1 OR 3
031 32 0      2879          BFR   T4,12,10       RETURN THE INCREMENT WORD TO
031 33 0      2880          BFR   T4,12,30         AVAILABLE STORAGE, WE ARE DONE WITH IT
031 34 0      2881          CAD   AVAIL
031 35 0      2882          STB   AVAIL
031 36 0      2883          STA - 0,04
031 37 0      2884          LDB   VIMAG
031 38 0      2885          CAD - 1
031 39 0      2886          BUN   T4-1
031 40 0      2887   *H     CAA   BUF
031 41 0      2888          SLA   4
031 42 0      2889          EXT   GTABO+5
031 43 0      2890          ADD   LOCN
031 44 0      2891          BUN   INS1
031 45 0      2892   TCONS  CNST  STEMP$



031 49 0      2893   WRIT2  CAD   LOCN           WRITE SUBROUTINE - PUTS INSTRUCTION
031 50 0      2894          SRA   4                INTO OUTPUT BUFFER.
031 51 0      2895          IFL   LOCN,64,1       WRIT2 ENTRY - PUT INSTRUCTION OUT FOR
031 52 0      2896          LDR   INSTR            LOCATION LOCN AND INCREMENT LOCN
031 53 0      2897   WRIT3  STA   WRTF,04        WRIT3 ENTRY - LOCATION IS IN RA(04)
031 54 0      2898          SUB   PREV           AND INSTRUCTION IS IN REGISTER R
031 55 0      2899          LDB   CNTRI
031 56 0      2900          BFA   F+,04,0
031 57 0      2901          SUB   XONE+1         DOES THIS LOCATION EQUAL THE PREVIOUS ONE
031 58 0      2902          BFA   F+,04,0        (IF SO WE WILL ERASE THE PREVIOUS ONE)
031 59 0      2903          STB   LRTF,04        OR IS IT ONE HIGHER
031 60 0      2904          CAL   WRTF           IF NOT,WE WILL PUT OUT A NEW RECORD TRANS
031 61 0      2905          STA - BUF+1
031 62 0      2906          IFL   CNTRI,00,1
031 63 0      2907   *F     LDB   LRTF
031 64 0      2908          IFL - BUF+1,32,1     THE 32-FIELD CONTAINS THE NUMBER OF
031 65 0      2909   WRIT7  IFL   CNTRI,00,1     SEQUENTIAL WORDS TO LOAD
031 66 0      2910          LDB   CNTRI
031 67 0      2911   *E     STR - BUF
031 68 0      2912          STR   DESCR
031 69 0      2913          BCS   *+2,2
031 70 0      2914          BUN   *+2
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031 71 0      2915   WRTSW CWR 4 EXPLN,12      IF PCS(2) PUBLISH THIS ON 407
031 72 0      2916         STB   *-1,41
031 73 0      2917         LDR   WRTF
031 74 0      2918         STR   PREV,04
031 75 0      2919   WRIT6 LDR   CNTRI        IS THE BUFFER FULL NOW
031 76 0      2920         CFR   CNTRF
031 77 0      2921         BCL   WRITX        IF NOT, EXIT
031 78 0      2922   WRIT5 LBC   NN           IF SO, CALCULATE CHECK SUM
031 79 0      2923   *C    CLA   BUF+2
031 80 0      2924         SUB - BUF+99
031 81 0      2925         IBB   *-1,1
031 82 0      2926         BOF   *+1
031 83 0      2927         STA   BUF+99
031 84 0      2928         MOW 4 BUF,OT,1      WRITE ONE BLOCK
031 85 0      2929         IFL   BUF,00,1
031 86 0      2930         CLL   CNTRI
031 87 0      2931         CLL   CNTRF         INITIALIZE FOR NEXT BLOCK
031 88 0      2932         IFL   CNTRF,00,96
031 89 0      2933   WRIT4 CLL   BUF+1
031 90 0      2934         LDB   C-
031 91 0      2935         RTF   BUF+1,98
031 92 0      2936   WRITX BUN   *


031 96 0      2937   GENXK STB   V1,12         MARK V1 AS IN A-REGISTER
031 97 0      2938   GENXV CAD   V1           V1 = RESULT
031 98 0      2939   GENXX STP   INSX,OPRND    PUT RESULT OF SOME GENERATED QUANTITY
031 99 0      2940         BUN   INS           IN OPERAND STACK AND RECORD IN
032 00 0      2941         LDB   OPRND         SER THE POSITION WHERE STORED
032 01 0      2942         LDR - 0             IF IT IS AN ACCUMULATOR SYMBOL.
032 02 0      2943         BFR   A+,11,0
032 03 0      2944         BUN   GENRX         (HINT..SER IS USED TO CONTROL PLACEMENT
032 04 0      2945   *A    STB   SER           INTO TEMP STORAGE)
032 05 0      2946   GENRX BUN   *
032 06 0      2947         CAD   BUNZ
032 07 0      2948   GENXY STP   ASMBX         ASSEMBLE FINAL INSTRUCTION AND EXIT.
032 08 0      2949         BUN   ASMBY
032 09 0      2950         BUN   GENRX


032 12 0      2951   GENR  STA   OPRTN         GENERATORS.BRANCH ACCORDING TO KIND OF OP
032 13 0      2952         BSA   GEN2,2        UNARY OP
032 14 0      2953         BSA   GEN3,3        NULLARY OP
032 15 0      2954         BSA   GFWRF,4       FORWARD REFERENCE
032 16 0      2955         BSA   GBWRF,5       BACKWARD REFERENCE
032 17 0      2956         BSA   GFWRF,7       INCREMENTED FORWARD REFERENCE
032 18 0      2957         STP   OBTNX         BINARY OP
032 19 0      2958         BUN   OBTN1         GET V1 OPERAND
032 20 0      2959         STP   OBTNX
032 21 0      2960         BUN   OBTN2         GET V2 OPERAND
032 22 0      2961         CAD   OPRTN
032 23 0      2962         BSA   GEN3,1        SPECIAL BINARY OP
032 24 0      2963         BSA   GRELN,8       RELATIONAL OP
032 25 0      2964         BFA   A+,64,0
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032 26 0      2965   GENAG STP   ARTHX          PLUS TIMES OR DIVIDE, ETC.
032 27 0      2966         BUN   ARTHG
032 28 0      2967         CAD   ACCUM
032 29 0      2968         BUN   GENXX
032 30 0      2969   *A    LDB   MODE           GIVEN A PLUS OPERATION WHICH TAKES
032 31 0      2970         CAD - 0              PLACE ON PARENTHESIS LEVEL ONE OF AN
032 32 0      2971         CFA   TEST,67        ARRAY SUBSCRIPT AND WHERE ONE OF THE
032 33 0      2972         BCU   GENAG          TWO OPERANDS IS A FIXED POINT CONSTANT
032 34 0      2973         CAD   V1
032 35 0      2974         BFA   B+,22,21       IF ALL THIS IS TRUE WE DONT COMPILE
032 36 0      2975         LDR   V2             EXTRA INSTRUCTIONS, WE ADD IT TO THE
032 37 0      2976         BFR   *+2,22,21      BASE ADDRESS OF THE ARRAY.
032 38 0      2977         BUN   GENAG
032 39 0      2978         STR   V1
032 40 0      2979         STA   V2
032 41 0      2980         SLT   10
032 42 0      2981   *B    DLB   V1,64,0
032 43 0      2982         LDR - 1              UNLESS THE CONSTANT IS BIGGER THAN  +1
032 44 0      2983         SRT   0              IN WHICH CASE WE COULD GET INTO TROUBLE
032 45 0      2984         CFR   XONE+1         LOADING B WITH A NEGATIVE QUANTITY.
032 46 0      2985         BCH   GENAG
032 47 0      2986         LDB   ARAS           IF THE ARRAY IS A CALL-BY-NAME
032 48 0      2987         DLB - 0,64,0         WITHIN A PROCEDURE WE CANT DO THIS
032 49 0      2988   GENDX SRT   0              INCREMENTATION EITHER
032 50 0      2989         CLA
032 51 0      2990         ADD - 0
032 52 0      2991         BSA   GENAG,1
032 53 0      2992         SLT   10             ADD THIS TO THE INCREMENT WORD (MOD10000)
032 54 0      2993         SLA   4
032 55 0      2994         ADA - 0
032 56 0      2995         STA - 0,64
032 57 0      2996   GENX2 CAD   V2
032 58 0      2997         BUN   GENXX          PUT OPERAND FOR UNARY OP INTO V1
032 59 0      2998   GEN2  STP   OBTNX
032 60 0      2999         BUN   OBTN1          OPRTN/64 IS THE NAME OF THE GENERATOR
032 61 0      3000   GEN3  DLB   OPRTN,64,0      FOR THIS OPERATOR
032 62 0      3001         BUN - 0
032 63 0      3002   TEST  F244  1,NDXCM,0



032 67 0      3003   GREL2 STP   WEMX
032 68 0      3004         BUN   WEM,*+2
032 69 0      3005         CNST  30167200000    IMPROPER ASSIGNMENT OPERATION
032 70 0      3006         CLL   OPRTN          CHANGE OPERATION TO EQL
032 71 0      3007   GRELN CSU   V1             RELATIONS  EQL,GTR, ETC.
032 72 0      3008         STA   V1
032 73 0      3009         CAD   OPRTN
032 74 0      3010         STA   OPRTM
032 75 0      3011         DFL   YETH,62,10     CHANGE TO FIXED POINT SUBTRACT OPERATION
032 76 0      3012         CLL   OPRTN
032 77 0      3013         STB   BOF,61
032 78 0      3014         STP   ARTHX
032 79 0      3015         BUN   ARTHG
032 80 0      3016         IFL   YETH,62,10
032 81 0      3017         BSA   *+2,0
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032 82 0      3018          IFL   OPRTM,64,1
032 83 0      3019          BFA   D+,11,0        IF RESULT IS NOT IN REGISTER A,GET IT
032 84 0      3020          LSA   0
032 85 0      3021          STA   V1
032 86 0      3022          STP   CADX
032 87 0      3023          BUN   CAD1           ASSEMBLE  BOF *+2  IF NECESSARY
032 88 0      3024   *D     STP   ASMBX
032 89 0      3025   BOF    BUN   ASMBL,BOF2
032 90 0      3026   *D     LDB   OP             CHECK HOW WE ARE USING THIS RELATION
032 91 0      3027          LDR - 0
032 92 0      3028          BFR   A+,67,00       IS IT IN A BOOLEAN EXPRESSION
032 93 0      3029          IFL   OPRTM,64,2
032 94 0      3030          CFR   OPIF,67        IS IT IN AN IF CLAUSE
032 95 0      3031          BCE   C+
032 96 0      3032          IFL   OPRTM,64,2     IS IT IN AN UNTIL CLAUSE
032 97 0      3033          CFR   CRU,67
032 98 0      3034          BCE   C+
032 99 0      3035          STP   WEMX           IF NOT IT IS AN IMPROPER
033 00 0      3036          BUN   WEM,CMPLX            RELATIONAL OPERATION
033 01 0      3037          CNST  30157200000
033 02 0      3038   *A     STP   INTRX
033 03 0      3039          BUN   B+
033 04 0      3040          BUN   GENXX
033 05 0      3041   *C     CAD   AVAIL          REMOVE IF OR UNTIL FROM OP STACK
033 06 0      3042          STB   AVAIL,04
033 07 0      3043          STA - 0
033 08 0      3044          STR   OP,04
033 09 0      3045          STP   INTRX
033 10 0      3046          BUN   B+
033 11 0      3047   GREL1  CLL   PSI            IF, UNTIL FINISHED..  MAKE A COMPOUND
033 12 0      3048          IFL   PHI,00,01      STATEMENT.
033 13 0      3049          BUN   CMPLX
033 14 0      3050   *B     DLB   OPRTM,64,0
033 15 0      3051          CAD - GTAB3
033 16 0      3052          BUN   INTRP


033 19 0      3053   GEXPN  CAD   V1             POWER GENERATOR.  V2*V1
033 20 0      3054          CFA   V10,67          IF V1 IS 2
033 21 0      3055          BCE   Q+
033 22 0      3056          LDR   V2             OR 2.0 WITH V2 FLOATING.
033 23 0      3057          CFA   V11,67
033 24 0      3058          BCU   *+2            WE WILL MAKE THIS INTO A MULTIPLY
033 25 0      3059          BFR   Q+,21,0        OTHERWISE IF V1 IS NEGATED
033 26 0      3060          BSA   A+,0
033 27 0      3061          STP   ACCX           EMPTY THE A-REGISTER
033 28 0      3062          BUN   ACC3
033 29 0      3063          STP   CADX           AND CAD V1, SRT 10.
033 30 0      3064          BUN   CAD1
033 31 0      3065   *B     CAD   SRT10
033 32 0      3066          BUN   C+             ELSE, IF IT IS IN THE A REGISTER, SRT 10.,
033 33 0      3067   *A     BFA   B-,11,0
033 34 0      3068          CAD   LDRV1          IN OTHER CASES, LDR V1
033 35 0      3069   *C     STP   ASMBX
033 36 0      3070          BUN   ASMBY          THEN CAD  V2
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033 37 0      3071            STP   CADX
033 38 0      3072            BUN   CAD2          SEPARATE FOUR CASES
033 39 0      3073   *D       CLB                  FIX TO FIX = 0
033 40 0      3074           CAD   V1             FIX TO FLT = 1
033 41 0      3075           BFA   *+2,21,1       FLT TO FIX = 2
033 42 0      3076           IBB   *+1,1          FLT TO FLT = 3
033 43 0      3077           CAD   V2
033 44 0      3078           BFA   *+2,21,1
033 45 0      3079           IBB   *+1,2
033 46 0      3080           STB   D-,04          GENERATE STP BUN TO APPROPRIATE SUBRUTINE
033 47 0      3081           LDR -  NUTBL           SET UP TO PRINT THE NAME
033 48 0      3082           STP   LINKX
033 49 0      3083           IBB   LINK-1,EXPF
033 50 0      3084           LDB   D-             COMPUTE TYPE OF RESULT
033 51 0      3085           CAD -  EXPA
033 52 0      3086   EXPA    BUN   GENXX,0100
033 53 0      3087   *Q      CAA   V2
033 54 0      3088           STA   V2             THE SQUARE CASE
033 55 0      3089           STA   V1
033 56 0      3090           BFA   T+,11,2
033 57 0      3091           STP   ACCX           FREE A REGISTER
033 58 0      3092           BUN   ACC3
033 59 0      3093           CAD   V2             IF V2 WAS IN THE A REGISTER, IT WILL
033 60 0      3094           BFA   T+,11,0        HAVE BEEN STORED OUT
033 61 0      3095           CSA   CADV1          OTHERWISE WE WANT TO CADV1 AND PREVENT
033 62 0      3096           STP   ASMBX          DOUBLE-INDEXING IF V1 IS AN ARRAY
033 63 0      3097           BUN   ASMBY
033 64 0      3098           STB   V1,11
033 65 0      3099   *T      CAD   DOT            MULTIPLY V2.V2
033 66 0      3100           STA   OPRTN
033 67 0      3101           BUN   GENAG
033 68 0      3102   NUTBL   CNST  $FX*FX$
033 69 0      3103           CNST  $FX*FL$
033 70 0      3104           CNST  $FL*FX$
033 71 0      3105           CNST  $FL*FL$


033 74 0      3106   GABSF   STP   TSTOX          ABSOLUTE VALUE.
033 75 0      3107           BUN   TSTOP           LOOK SEE IF ITS  -ABS
033 76 0      3108           LDB   *+3
033 77 0      3109           LDR   V1
033 78 0      3110           BFR   *+2,11,0         V1 IN MEMORY, ABS    CAA V1
033 79 0      3111           DBB   LSA0,LSA0-CAAV1  V1 IN MEMORY,-ABS    CSA V1
033 80 0      3112           BCU   *+2              V1 IN ACCUM,  ABS    LSA 0
033 81 0      3113           DBB   0,9999           V1 IN ACCUM, -ABS    LSA 1
033 82 0      3114           STP   ASMBX
033 83 0      3115           BUN   ASMBZ
033 84 0      3116           BUN   GENXK



033 89 0      3117   GHYPH   LDB   OPRND          MINUS OPERATOR
033 90 0      3118   EX42    CNST  10013110000    SIMPLY REVERSE SIGN DIGIT OF
033 91 0      3119           STA -  0             NEXT ITEM IN OPERAND STACK
033 92 0      3120           BUN   GENRX
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033 95 0      3121   GBNOT LDR   V1              BOOLEAN NOT.
033 96 0      3122         CAD   G7
033 97 0      3123         BFR   GEN4,22,01
033 98 0      3124         STP   ACCX            IF V1 NOT IN A-REGISTER,
033 99 0      3125         BUN   ACC4             STORE A-REGISTER IF NECESSARY
034 00 0      3126         CAD   V1
034 01 0      3127         BSA   E+,1            CHECK THAT V1 IS BOOLEAN
034 02 0      3128         BFA   E+,21,0
034 03 0      3129   *F    CAD   G11             CAD =1=, SUB V1.
034 04 0      3130   GEN4  STP   INTRX
034 05 0      3131         BUN   INTRP
034 06 0      3132         BUN   GENXK           IF V1 IS IN THE ACCUMULATOR,
034 07 0      3133   *E    STP   WEMX            SUB=1=, LSA 0
034 08 0      3134         BUN   WEM,E-
034 09 0      3135         CNST  30159610000     IMPROPER BOOLEAN OPERAND


034 12 0      3136   GIF   LDR   BZAFR           IF AND UNTIL
034 13 0      3137   GIF1  STR   T+
034 14 0      3138         CAD   V1
034 15 0      3139         BFA   F+,21,0         CHECK V1 BOOLEAN
034 16 0      3140         BSA   F+,1
034 17 0      3141   *A    STP   CADX            BRING IT INTO A REGISTER
034 18 0      3142         BUN   CAD1
034 19 0      3143         STP   ASMBX           ASSEMBLE  BFA FORWARD,01,0 (IF)
034 20 0      3144         BUN   ASMBL,T+              OR  BFA FORWARD,01,1 (UNTIL)
034 21 0      3145         BUN   GREL1           MAKE COMPOUND STATEMENT
034 22 0      3146   *E    STP   WEMX
034 23 0      3147         BUN   WEM,A-
034 24 0      3148         CNST  30159610000     IMPROPER BOOLEAN OPERAND
034 25 0      3149   *T    HLT   0


034 28 0      3150   GPCS  STP   ACCX            PCS GENERATOR
034 29 0      3151         BUN   ACC4            FREE A REGISTER
034 30 0      3152         STP   FIXEX           BRING V1 FIXED POINT INTO A
034 31 0      3153         BUN   FIXER           UNLESS ITS A CONSTANT
034 32 0      3154         BFA   A+,11,2         THEN GENERATE SLA 0009
034 33 0      3155         CAD   +6034037172                 STA *+2,11
034 34 0      3156         BUN   GEN4                        CAD  +1
034 35 0      3157   *A    DLB   V1,64,00                    BCS *+2,0
034 36 0      3158         CAD - 1                           CLA
034 37 0      3159         SLA   9               OR IF IT WAS A CONSTANT GENERATE
034 38 0      3160         STA   BCSL2,11        MERELY THE LAST THREE OF THESE
034 39 0      3161         CAD   +0371720000
034 40 0      3162   *B    BUN   GEN4


034 43 0      3163   GSIGN STP   TSTOX           SIGN(V1)
034 44 0      3164         BUN   TSTOP
034 45 0      3165         STP   CADX            BRING V1 INTO A-REGISTER
034 46 0      3166         BUN   CAD1
034 47 0      3167         SRT   10            GENERATE   BZA *+4
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034 48 0      3168          CAD   +4959045600              SRT 0
034 49 0      3169          BFR   B+,21,0                  CAD =1,0= OR =1=
034 50 0      3170          CAD   +4959035600              SLT 0
034 51 0      3171    GEN5  DEFN  *
034 52 0      3171    *B    STP   INTRX
034 53 0      3172          BUN   INTRP
034 54 0      3173          BUN   GENXV


034 57 0      3174    GFWRF STP   FXUPX          FIX UP FORWARD REFERENCE
034 58 0      3175          BUN   FXUP
034 59 0      3176          BUN   GENRX


034 62 0      3177    GBWRF DLB   OPRTN,64,00    BUN TO BACKWARD REFERENCE
034 63 0      3178          STB   BUNI,04
034 64 0      3179          CAD   BUNI
034 65 0      3180          BUN   GENXY

034 67 0      3181    GCRA  STP   REMX,OPRND     OBTAIN V1.
034 68 0      3182          BUN   REM,*+2
034 69 0      3183          BUN   GENRX
034 70 0      3184          STA   V1
034 71 0      3185          CLL   SER            BRANCH TO GCRJ(INPUT)OR GCRK(OUTPUT)
034 72 0      3186          DLB   STSV,64,0
034 73 0      3187          BUN - 0

034 75 0      3188    GCRB  DLB   DELTA,22,0     =  OPERATOR
034 76 0      3189          DBB   GRFL2,1        OR DID HE MEAN EQL
034 77 0      3190          LDB   OP
034 78 0      3191          CAD - 0
034 79 0      3192          CFA   CRB,64         CHECK FOR MULTIPLE ASSIGNMENT
034 80 0      3193          BCE   A+             OR A FOR STATEMENT, WHERE WE
034 81 0      3194          LDB   MODE           CANT DO  STR  INSTEAD OF  STA
034 82 0      3195          CAD - 0
034 83 0      3196          CFA   FORMD,64
034 84 0      3197          BCU   *+3
034 85 0      3198          IFL   OMEGA,00,1
034 86 0      3199    *A    CLL   XI
034 87 0      3200          CAD   V2             LEFTHAND OPERAND CANNOT BE
034 88 0      3201          BFA   Z+,11,0        ACCUMULATOR SYMBOL
034 89 0      3202          BSA   Z+,1           OR NEGATED
034 90 0      3203          BFA   Z+,11,2        OR A CONSTANT
034 91 0      3204          BFA   Z+,11,9        OR A LABEL
034 92 0      3205          BFA   Z+,11,3        OR A TEMP STORAGE
034 93 0      3206          CAD   V1
034 94 0      3207          BFA   S+,21,3        (CLL IN MULTIPLE ASSIGNMENT)
034 95 0      3208          BFA   A+,11,2        IS RHS A CONSTANT.
034 96 0      3209    *V    STP   CADX           IF NOT, GET RHS INTO ACCUMULATOR
034 97 0      3210          BUN   CAD1
034 98 0      3211          LDR   V2
034 99 0      3212          CFR   V1,21
035 00 0      3213          STR   V1,21          DO THE TYPES AGREE
035 01 0      3214          BCE   C+             IF NOT, LINK EITHER TO
035 02 0      3215          BFR   Y+,21,0        FIX OR FLOAT ROUTINE
035 03 0      3216          DLB   FIXGN,64,0
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035 04 0      3217          BUN   X+
035 05 0      3218    *Y    DLB   TABSC+32,64,0
035 06 0      3219    *X    STP   LINKX
035 07 0      3220          BUN   LINK1
035 08 0      3221    *C    CAA   G13
035 09 0      3222    *B    LDR   V2              ASSEMBLE STA V2
035 10 0      3223          BFR   W+,11,8         UNLESS FUNCTION DECLARATION OR PROCEDURE
035 11 0      3224    *K    STP   INTRX           NAME
035 12 0      3225          BUN   INTRP
035 13 0      3226          LDR   MU              IF WE ARE IN SCOPE OF A LABEL REQUESTED
035 14 0      3227          BFR   W+,62,01        FOR MONITORING, OR THE VARIABLE
035 15 0      3228    *M    DLB   V2,64,0         ASSIGNED IS SO REQUESTED,
035 16 0      3229          STP   CONVX           ASSEMBLE LINK TO MONITOR SUBROUTINE
035 17 0      3230          BUN   CONV
035 18 0      3231          BUN   E+
035 19 0      3232    *W    DLB   V2,64,00
035 20 0      3233          CAA - 0
035 21 0      3234          BSA   M-,2
035 22 0      3235          BSA   M-,6
035 23 0      3236    *E    CLL   OMEGA
035 24 0      3237          BUN   GENXV
035 25 0      3238    *A    CFA   V7,64            IF WE ARE SETTING SOMETHING TO A
035 26 0      3239          BCE   S+              NONZERO CONSTANT,
035 27 0      3240          CFA   V6,64
035 28 0      3241          BCE   S+
035 29 0      3242    *D    CFA   V2,21           MATCH THE TYPES
035 30 0      3243          BCF   V-
035 31 0      3244          BFA   U+,21,0
035 32 0      3245          STP   FLTCX
035 33 0      3246          BUN   FLTCN
035 34 0      3247          BUN   T+
035 35 0      3248    *U    STP   FIXCX
035 36 0      3249          BUN   FIXCN
035 37 0      3250    *T    STA   V1,00
035 38 0      3251          BUN   A-
035 39 0      3252    *S    CAD   COMP+7           SOMETHING = 0
035 40 0      3253          LDB   OMEGA
035 41 0      3254          LDR   V2              SEVERAL CASES TO CONSIDER
035 42 0      3255          STB   V1,23
035 43 0      3256          IFL   V1,21,3
035 44 0      3257          DRB   K-,1            CLA, CLL V2  IN FOR STATEMENT
035 45 0      3258          SLA   6
035 46 0      3259          BFR   K-,11,8         CLA IN PROCEDURE OR FUNCTION CASE
035 47 0      3260          SLA   6
035 48 0      3261          BUN   K-              CLL V2 OTHERWISE
035 49 0      3262    *Z    STB   V1,21
035 50 0      3263          STP   WEMX
035 51 0      3264          BUN   WEM,E-
035 52 0      3265          CNST  30167720000     IMPROPER ASSIGNMENT STATEMENT



035 57 0      3266    GCRC  STP   PMTRX
035 58 0      3267          BUN   PMTR            ASSEMBLE THE PARAMETER-OBTAINING INSTRUC-
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035 59 0      3268          LDB   OPRND                          TION
035 60 0      3269          CAD - 0
035 61 0      3270          CFA   DFX,67          DOES REGISTER B CONTAIN THE FIRST
035 62 0      3271          BCE   A+              PARAMETER LOCATION
035 63 0      3272          STA   DFX
035 64 0      3273          STA   V2              IF NOT, ASSEMBLE A DLB V2,44,0
035 65 0      3274          STP   ASMBX
035 66 0      3275          BUN   ASMBL,DLBV2
035 67 0      3276    *A    LDB   FUNS
035 68 0      3277          CAD - 0
035 69 0      3278          BSA   *+2,3           TURN TAG ON IF WE HAVE PASSED THE
035 70 0      3279          BUN   *+2              2ND SEMICOLON
035 71 0      3280          IFL   TAG,00,1
035 72 0      3281          SRA   8
035 73 0      3282          LSA   0
035 74 0      3283          SUA   GTAB0           WHAT PARAMETER NUMBER IS THIS
035 75 0      3284          STA   STAAB,04        (FIRST 0000,THEN 9999, THEN 9998,ETC.)
035 76 0      3285          IFL - 0,22,1
035 77 0      3286          CAD   STAAB
035 78 0      3287          BUN   GENXY


035 81 0      3288    GCRD  STP   TSTOX           MOD OPERATION  MOD(V2,V1)
035 82 0      3289          BUN   TSTOP
035 83 0      3290          CSU   V2              IF  -MOD  CHANGE SIGN OF V2.
035 84 0      3291          BCU   *+2
035 85 0      3292          STA   V2
035 86 0      3293          EXT   V1
035 87 0      3294          BFA   E+,21,0         CHECK THAT V1,V2 BOTH INTEGER
035 88 0      3295    *F    LDR   V1
035 89 0      3296          CFR   V10,66          IF V1 IS THE CONSTANT 2 OR -2 WE HAVE
035 90 0      3297          BCE   Z+              A SPECIAL CASE
035 91 0      3298    *F    STP   ACCX
035 92 0      3299          BFR   ACC1,11,0       PUT V1 IN MEMORY
035 93 0      3300    *C    STP   CADX
035 94 0      3301          BUN   CAD2            BRING V2 INTO ACCUMULATOR
035 95 0      3302          DLB   V1,64,0
035 96 0      3303          CSA - 1               CHECK IF V1 IS A CONSTANT,POWER OF TEN
035 97 0      3304          CLL   SYMBL
035 98 0      3305          BZA   E+
035 99 0      3306    -     SRT   1
036 00 0      3307          ADL   SYMBL
036 01 0      3308          BFR   *-2,11,0
036 02 0      3309          SLT   1
036 03 0      3310          CFA   XONE+1,00
036 04 0      3311          CAD   +5822570000
036 05 0      3312          BCU   GEN4            IF NOT,GENERATE SRT10,DIV V1, SLT 30
036 06 0      3313          CLL   RR0
036 07 0      3314          STP   FLTCX           OTHERWISE GENERATE EXTRACT
036 08 0      3315          BUN   FLTC1           WITH THE CONSTANT -1 OR -11 OR -111,ETC.
036 09 0      3316          STA   V1,64
036 10 0      3317          CAD   *+1
036 11 0      3318          BUN   GEN4,2800
036 12 0      3319    *E    STP   WEMX
036 13 0      3320          BUN   WEM,GENXX
036 14 0      3321          CNST  30113376911     IMPROPER ARGUMENT OF MOD FUNCTION
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036 15 0      3322   *Z     STP   ACCX
036 16 0      3323          BUN   ACC3          IF IT IS MOD 2, GENERATE
036 17 0      3324          CAD   G99           CSU =1=  EXT V2
036 18 0      3325          BUN   GEN4


036 21 0      3326   GCRE   LDB   LAMDA         EITHER IF FINISHING.
036 22 0      3327          CLL   LAMDA         IF OTHERWISE APPEARED, DO NOTHING
036 23 0      3328          DBB   GENRX,1       IF NO OTHERWISE APPEARED,
036 24 0      3329          CAD   NOPZ          PUT OUT A NOP INSTRUCTION
036 25 0      3330          BUN   GENXY


036 28 0      3331   GCRF   CLL   IOTA          FINISH DECLARING SOME ARRAY
036 29 0      3332          DLB   V1,64,0       V1 IS FIRST DIMENSION,V2 IS ARRAY NAME
036 30 0      3333          CSU - 1
036 31 0      3334          MUL   ARRI
036 32 0      3335          SLT   10
036 33 0      3336   *B     LDR   MULS
036 34 0      3337          ADL   VARB          RESERVE SPACE FOR THIS ARRAY
036 35 0      3338          STA   TEMP
036 36 0      3339   *A     CAD   VARB
036 37 0      3340          ADD   XONE+1
036 38 0      3341          STA   ABASE,04      PUT BEGINNING LOCATION IN ABASE
036 39 0      3342          SUB   ARRL
036 40 0      3343          ADA   GTAB0         COMPUTE BASE ADDRESS (MOD 10000)
036 41 0      3344          SLA   4
036 42 0      3345          DLB   V2,64,0
036 43 0      3346          STA - 0,64          MOVE LIST OF MULTIPLIERS
036 44 0      3347          STR - 0,04          TO THIS ARRAY NAME
036 45 0      3348          CAA   TEMP
036 46 0      3349          SLA   4             PUT TOTAL LENGTH OF ARRAY ON TOP
036 47 0      3350          CLL   MULS          OF MULTIPLIER LIST
036 48 0      3351          BUN   LNGTH


036 51 0      3352   GCRG   DLB   V1,64,0       MIDDLE OF ARRAY DECLARATION
036 52 0      3353          CAD - 1
036 53 0      3354          MUL   ARRL          IF GIVEN  ARRAY  A(I,J,K,L)
036 54 0      3355          STR   ARRL
036 55 0      3356          IFL   ARRL,00,1     ARRL IS SET TO ((J+1)K+1)L+1
036 56 0      3357          CAD - 1
036 57 0      3358          MUL   ARRI
036 58 0      3359          STR   ARRI
036 59 0      3360          CAD   V1            ARRI IS SET TO JKL
036 60 0      3361          LDB   B-
036 61 0      3362   LNGTH  LDR   V1            ALL DIMENSIONS MUST BE
036 62 0      3363          BER   A+,22,21      FIXED POINT CONSTANTS
036 63 0      3364          STP   WEMX
036 64 0      3365          BUN   WEM,GENRX
036 65 0      3366          CNST  30163640000   IMPROPER ARRAY DECLARATION
036 66 0      3367   *A     STP   INSX
036 67 0      3368          BUN   INS1          J,K,L GO TO MULTIPLIER STACK
036 68 0      3369          BUN   GENRX
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036 71 0      3370   GCRH  STP   XSTX          MAKE V1 INTEGRAL,IN MEMORY
036 72 0      3371         BUN   XST
036 73 0      3372         CAD   LBCV1         GENERATE LBC V1
036 74 0      3373         BUN   GENXY


036 77 0      3374   GCRI  CAA   G3            GENERATE LSA 9,BUN IOPUS
036 78 0      3375         DFL   UPSLN,62,29
036 79 0      3376         BUN   A+


036 82 0      3377   GCRJ  CAD   V1
036 83 0      3378         BFA   E+,11,0
036 84 0      3379         BFA   E+,11,2       CHECK FOR VALID INPUT EXPRESSION
036 85 0      3380         BSA   E+,1
036 86 0      3381         CAA   COMMX
036 87 0      3382         BUN   A+


036 90 0      3383   GCRK  STP   CADX          BRING EXPRESSION INTO A-REGISTER
036 91 0      3384         BUN   CAD1
036 92 0      3385   *B    CAD   G10
036 93 0      3386   *A    LDR   IOPUS         GENERATE LDB *  IBB IOPUS,2
036 94 0      3387         CLL   DEX
036 95 0      3388         STR   BUNI,04
036 96 0      3389         STR   IBBI,04
036 97 0      3390         LDR   V1
036 98 0      3391         STR   LDRL0,21
036 99 0      3392         STP   INTRX
037 00 0      3393         BUN   INTRP
037 01 0      3394         BUN   GENRX
037 02 0      3395   *F    STP   WEMX
037 03 0      3396         BUN   WEM,P-        IMPROPER INPUT DECLARATION
037 04 0      3397         CNST  30170640000


037 07 0      3398   GCRM  DFL   MU,62,29      END OF SCOPE OF MONITORED LABEL
037 08 0      3399         BUN   GENRX


037 11 0      3400   GCRN  STP   FIXFX         MAKE SURE V1 IS INTEGER
037 12 0      3401         BUN   FIXER         EITHER A CONSTANT OR IN A REGISTER
037 13 0      3402         BFA   A+,11,2
037 14 0      3403         CAA   G8            IF NOT A CONSTANT, ADD *+1 NOP V2
037 15 0      3404         BUN   GEN5
037 16 0      3405   *A    STB   V1,11         IF A CONSTANT, ADD OR SUBTRACT ITS
037 17 0      3406         DLB   V1,64,0       VALUE FROM THE ASSIGNMENT OF V2,MOD 10000
037 18 0      3407         LDR - 1
037 19 0      3408         SRT   0
037 20 0      3409         SLT   14
037 21 0      3410         EXT   EX42          (-11110000)
037 22 0      3411         DLB   V2,64,00
037 23 0      3412         ADA - 0
037 24 0      3413         STA - 0,64
037 25 0      3414         CAA   G9            CAD *+1, NOP V2
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037 26 0      3415    *B      BUN     GEN5


037 29 0      3416    GCRO    STP     PMTRX           LAST PARAMETER TO FUNCTION IS V1
037 30 0      3417            BUN     PMTR
037 31 0      3418            CLL     DEX
037 32 0      3419            STP     REMX,FUNS
037 33 0      3420            BUN     REM,*+2
037 34 0      3421    G9      F424    0553,0,*
037 35 0      3422            STA     BUNV2,22
037 36 0      3423            DLB     V2,64,0         CHECK THAT PROPER
037 37 0      3424            LDR -   1                 NUMBER OF ARGUMENTS
037 38 0      3425            STR     EXPLN             HAS APPEARED
037 39 0      3426            LDR -   0
037 40 0      3427            BFR     B+,12,98
037 41 0      3428            SLT     6
037 42 0      3429            BFA     A+,51,4
037 43 0      3430            CFR     BUNV2,22
037 44 0      3431            BCE     B+
037 45 0      3432            BFR     B+,22,0
037 46 0      3433            STP     WEMX
037 47 0      3434            BUN     WEM,*+2
037 48 0      3435            CNST    30113370800     IMPROPER ARGUMENT OF PROCEDURE
037 49 0      3436    *B      CAD     G4              GENERATE STP V2, BUN V2
037 50 0      3437            STP     INTRX
037 51 0      3438            BUN     INTRP
037 52 0      3439            STB     V2,11
037 53 0      3440            CLL     TAG
037 54 0      3441            BUN     GENX2
037 55 0      3442    *A      SLT     2
037 56 0      3443            BFR     B-,21,3
037 57 0      3444            CFR     V1,21           IF ARGUMENT TO LIBRARY FUNCTION
037 58 0      3445            BCE     B-              IS WRONG TYPE, CONVERT IT.
037 59 0      3446            DLB     TABSC+82,64,0
037 60 0      3447            BFR     *+2,21,0
037 61 0      3448            DLB     FIXGN,54,0
037 62 0      3449            STP     LINKX
037 63 0      3450            BUN     LINK1
037 64 0      3451            BUN     B-


037 67 0      3452    *E      BFA     GCRP,11,0
037 68 0      3453            STP     WEMX
037 69 0      3454            BUN     WEM,GCRP
037 70 0      3455            CNST    34661000000
037 71 0      3456    GCRP    STP     REMX,OPRND      END OF PROCEDURE OR FUNCTION DECLARATION
037 72 0      3457            BUN     REM,E-          CHECK FOR EXTRA OPERANDS
037 73 0      3458    *A      STP     REMX,FUNS
037 74 0      3459            BUN     REM2,*+2        PULL NAME OF THIS OFF FUN-STACK
037 75 0      3460    G10     F424    6273,0,*
037 76 0      3461            LDR     FNSW
037 77 0      3462            BZR     A+
037 78 0      3463            SRA     4
037 79 0      3464            STA     LDBI,4          RETURN FROM FUNCTION
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037 80 0      3465          STP   VSUBX
037 81 0      3466          BUN   VSUB1
037 82 0      3467    *D    CLL   FNSW          BRING BACK OLD TEMP STORAGE CELLS
037 83 0      3468          BUN   OLDT          AND EXIT
037 84 0      3469    *A    STP   REMX,PR3       FORGET ALL PREFIXES DEFINED IN THIS
037 85 0      3470          BUN   REM,A-        PROCEDURE
037 86 0      3471          LDR   RR1
037 87 0      3472          STR   RR3           BRING IN OTHERWISE TYPE OF MAIN PROGRAM
037 88 0      3473          LDR   PR1
037 89 0      3474          STR   PR3           BRING IN PREFIXES OF MAIN PROGRAM
037 90 0      3475          LDR   CHI3
037 91 0      3476          STR   CHI           BRING IN MONITOR STATUS OF MAIN PROGRAM
037 92 0      3477          LDR   PAREF
037 93 0      3478          BFR   H+,04,00
037 94 0      3479    *C    CAD   PLOC          IF PARAMETERS OF OUTPUT TYPE HAVE
037 95 0      3480          STP   FXUPX         OCCURRED, FIX UP THE INSTRUCTION
037 96 0      3481          BUN   FXUP          TO BUN TO THIS PART OF THE PROCEDURE
037 97 0      3482          CAD   FRSTP
037 98 0      3483          SLA   4
037 99 0      3484          STA   IRSTP
038 00 0      3485    *E    LDB   PAREF
038 01 0      3486          IBB   F+,9999
038 02 0      3487          CAD - 1
038 03 0      3488          IBB   *+1,1         REMOVE LIST OF REFERENCES TO THIS
038 04 0      3489          STA   SETUP,04      PARAMETER, MAKE IT THE SETUP STACK
038 05 0      3490          SRA   4
038 06 0      3491          LDR   AVAIL
038 07 0      3492          STB   AVAIL
038 08 0      3493          STR - 0
038 09 0      3494          STA   PAREF,04
038 10 0      3495          BSA   G+,1          (THE FIRST PARAMETER MAY ALREADY BE
038 11 0      3496    .     EXT   BCUL2         IN REGISTER A)
038 12 0      3497          SUB   IRSTP         CAD PARAMETER
038 13 0      3498          STA   VEE,64
038 14 0      3499          STP   ASMBX
038 15 0      3500          BUN   ASMBL,X+
038 16 0      3501    *G    STP   REMX,SETUP    GENERATE ALL  STA ----,04
038 17 0      3502          BUN   REM,*+2       FOR THIS PARAMETER
038 18 0      3503          BUN   F-
038 19 0      3504          SRA   4
038 20 0      3505          STA   STAI,04
038 21 0      3506          STP   ASMBX
038 22 0      3507          BUN   ASMBL,STAI
038 23 0      3508          BUN   G-
038 24 0      3509    *F    CAD   PLOC          ASSEMBLE TO BUN TO THE
038 25 0      3510          SRA   4             BEGINNING OF THE PROCEDURE
038 26 0      3511          STA   BUNI,04
038 27 0      3512          IBL   BUNI,04,01
038 28 0      3513          STP   ASMBX
038 29 0      3514          BUN   ASMBL,BUNI
038 30 0      3515    *H    CLL   LEVEL         EXIT, WE ARE THROUGH WITH THE PROCEDURE
038 31 0      3516          BUN   D-
038 32 0      3517    VEE   F2448 11,0,0
038 33 0      3518    *W    F244  11,VEE,0
038 34 0      3519    *X    F424  0,10,%--V
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038 37 0      3520    GCRQ   IFL    PRFSW,62,25     PROCESS LAST PARAMETER.  MARK IT
038 38 0      3521           STP    YSUBX           AS IN ACCUMULATOR IF ITS A CALL BY NAME
038 39 0      3522           BUN    YSUB1
038 40 0      3523           DFL    PRFSW,62,25     WE HAVE JUST FINISHED COLLECTING
038 41 0      3524           CLL    TAG             FUNCTION OR PROCEDURE PARAMETERS
038 42 0      3525           STA    V3
038 43 0      3526           IFL    V3,11,3
038 44 0      3527           STP    ASMBX           STORE LAST PARAMETER
038 45 0      3528           BUN    ASMBL,STAT3
038 46 0      3529    *C     CLL    PARSW
038 47 0      3530           LDB    FNSW
038 48 0      3531           DBB    GENRX,1         EXIT IF A FUNCTION DECLARATION
038 49 0      3532           LDR    PAREF
038 50 0      3533           BFR    D+,04,00        IF CALL BY NAME, PARAMETERS HAVE
038 51 0      3534           CAD    LOCN            APPEARED, ASSEMBLE BUN INSTRUCTION
038 52 0      3535           STA    PLOC            WHICH WILL GO TO THE INITIALIZATION PART
038 53 0      3536           STP    ASMBX
038 54 0      3537           BUN    ASMBL,BUNZ
038 55 0      3538    *D     IFL    DELTA,04,4
038 56 0      3539           BUN    GENRX


038 59 0      3540    GCRR   STP    XSTX            V1 IS LAST ARRAY SUBSCRIPT
038 60 0      3541           BUN    XST             MAKE SURE IT IS FIXED POINT AND
038 61 0      3542           DLR    V1,64,0         NOT IN REGISTER A
038 62 0      3543           LDR - 1                NOW COMES VERY TRICKY CODING.
038 63 0      3544           DLB    V2,64,00        IF THE SUBSCRIPT IS A CONSTANT,
038 64 0      3545           CAD    V1              SIMPLY CALCULATE THE ADDRESS
038 65 0      3546           BFA    GENDX,22,21
038 66 0      3547           IFL - 0,11,1           OTHERWISE SET INCREMENT WORD TO A 6
038 67 0      3548           STP    INSX            AND SET UP A LINK TO V1
038 68 0      3549           BUN    INS1            NOW INC WD/64=BASE ADDR. /04=AAAA
038 69 0      3550           BUN    GENX2           AAAA/67=V1     /04=ARRAY INFORMATION


038 72 0      3551    GCRS   STP    REMX,FUNS       FINISH SUBROUTINE DECLARATION.  REMOVE
038 73 0      3552           BUN    REM,OLDT        LOCATION FROM FUNS, REMOVE TEMP STORAGES.
038 74 0      3553    G11    F424   0313,0,*


038 77 0      3554    GCRT   CAD    BUNV1           GENERATE BUN V1
038 78 0      3555           BUN    GENXY


038 81 0      3556    GCRU   LDR    BNZAF
038 82 0      3557           BUN    GIF1            UNTIL SIMILAR TO IF


038 85 0      3558    GCRV   LDR    LOCN            END OF SEGMENT
038 86 0      3559           CFR    LCMAX,64
038 87 0      3560           BCL    *+2
038 88 0      3561           STR    LCMAX,64        SET LCMAX TO GREATEST LOCN
038 89 0      3562           STP    REMX,FUNS       USED IN SEGMENTS
038 90 0      3563           BUN    REM,*+2
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038 91 0      3564    G12   F424  8990,0,*
038 92 0      3565          STA   LOCN,64        RESET LOCN TO BEGINNING OF SEGMENT
038 93 0      3566          LSA   8
038 94 0      3567          SRA   4              OUTPUT CONTROL WORD FOR LOADER
038 95 0      3568          BUN   GFWRF



038 99 0      3569    GCRW  IFL   LAMDA,00,1     RECORD THAT OTHERWISE HAS OCCURRED
039 00 0      3570          BUN   GENRX


039 03 0      3571    GCRX  DEFN  GENXY-1


039 06 0      3571    GCRY  CAD   V1             MAKE SURE A SUBSCRIPT IS FIXED POINT
039 07 0      3572          STP   FIXEX
039 08 0      3573          BFA   FIXER,21,0
039 09 0      3574          BUN   GENXV


039 12 0      3575    GCRZ  STP   CADX           STOP
039 13 0      3576          BUN   CAD1           THERE WILL BE AN ACCUMULATOR
039 14 0      3577    *A    CAD   HLTZ           SYMBOL PRESENT, IF THE STATEMENT
039 15 0      3578          BUN   GENXY          WAS SIMPLY STOP$
                                                 GENERATE CAD V1     HLT


039 19 0      3579    GCROY DLB   *+2,44,0       TRACE
039 20 0      3580          STP   LIBRX
039 21 0      3581          RUN   LIBRF,DMPER
039 22 0      3582          IFL   TAG,00,1
039 23 0      3583          STP   REMX,OPRND
039 24 0      3584          BUN   REM,*+2
039 25 0      3585          BUN   GENRX          IF LABEL ONLY,EXIT
039 26 0      3586          STA   TEMP           IF LABEL(N), PUT N ON STACK
039 27 0      3587          DLB   TEMP,64,0
039 28 0      3588          CAD - 1
039 29 0      3589          SLA   6
039 30 0      3590    JCROY LDB   *
039 31 0      3591          STA - 0,44
039 32 0      3592          BUN   GENRX


039 35 0      3593    OPTN1 STP   REMX,OPRND
039 36 0      3594          BUN   REM,*+2        GET   TOP OF OPERAND STACK
039 37 0      3595          BUN   E+              AND PLACE IT IN V1
039 38 0      3596          STA   V1
039 39 0      3597          BUN   A+


039 42 0      3598    OPTN2 STP   REMX,OPRND     GET TOP OF OPERAND STACK AND PLACE IT IN
039 43 0      3599          BUN   REM,C+         V2
039 44 0      3600    *E    STP   WEMX
039 45 0      3601          BUN   WEM,GENRX
039 46 0      3602          CNST  3716100000C    MISSING OPERAND
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039 47 0      3603    *C     STA   V2
039 48 0      3604    *A     BFA   B+,11,0          IF AN ACCUMULATOR SYMBOL WAS
039 49 0      3605           BUN   OBTNX            REMOVED, SET SER TO ZERO
039 50 0      3606    *B     CLL   SER
039 51 0      3607    OBTNX  BUN   *


039 54 0      3608    PMTR   LDR   KAPPA            SELECTIVELY BRING PARAMETER INTO A REG.
039 55 0      3609           BZR   A+               HAVE EMPTY SUBSCRIPTS APPEARED
039 56 0      3610           CLL   KAPPA
039 57 0      3611    *B     STP   CADX
039 58 0      3612           BUN   CAD1             IF SC, ASSEMBLE CAD V1 AND EXIT
039 59 0      3613           BUN   PMTRX
039 60 0      3614    *A     LDR   FUNS
039 61 0      3615           CAD - 0                IF BEFORE THE FIRST SEMICOLON,
039 62 0      3616           BSA   B-,1             ASSEMBLE CAD V1 AND EXIT
039 63 0      3617           STP   ACCX
039 64 0      3618           BUN   ACC4
039 65 0      3619           CAD   V1               OTHERWISE WE HAVE A CALL BY NAME
039 66 0      3620           BFA   PMTRX,11,0       FREE THE A-REGISTER
039 67 0      3621           BSA   C+,0
039 68 0      3622    *E     STP   WEMX
039 69 0      3623           BUN   WEM,*+2
039 70 0      3624           CNST  301111130000     IMPROPER FUNCTION ARGUMENT
039 71 0      3625           STA   V1
039 72 0      3626    *C     CAA   65
039 73 0      3627           STP   INTRX            ASSEMBLE  CAD *+1, NOP V1
039 74 0      3628           BUN   INTRP
039 75 0      3629    PMTRX  BUN   *


039 78 0      3630    ACC    DEFN  *-1
039 79 0      3630    ACC1   BUN   C+               ACC1.. PLACE V1 IN TEMP STORAGE
039 80 0      3631    ACC2   STP   GETMX            ACC2.. PLACE V2 IN TEMP STORAGE
039 81 0      3632           BUN   GETMP
039 82 0      3633           STA   V2,64
039 83 0      3634           IFL   V2,11,3
039 84 0      3635           CAD   STAT2
039 85 0      3636           BUN   ASMBY
039 86 0      3637    *C     STP   GETMX
039 87 0      3638           BUN   GETMP
039 88 0      3639           STA   V1,64
039 89 0      3640           IFL   V1,11,3
039 90 0      3641           CAD   STAT1
039 91 0      3642           BUN   ASMBY
039 92 0      3643    ACCX   DEFN  ASMBX
039 93 0      3643    ACC3   LDR   V1               ACC3.. FREE THE A REGISTER
039 94 0      3644           BFR   C-,11,0          IF V1 IS IN A, DO ACC1
039 95 0      3645           LDR   V2
039 96 0      3646           BFR   ACC2,11,0        IF V2 IS IN A, DO ACC2
039 97 0      3647    ACC4   LDB   SER              ELSE DO ACC4
039 98 0      3648           IOR   ACCX,9999        ACC4.. IF THE A-REGISTER IS IN USE
039 99 0      3649           STP   GETMX            WITH OTHER OPERANDS BESIDES THE CURRENT
040 00 0      3650           BUN   GETMP            ONE(S), STORE IT INTO TEMP
040 01 0      3651           LDB   SER
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040 02 0      3652          STA - 0,64          AND MODIFY THE STACK ACCORDINGLY
040 03 0      3653          IFL - 0,11,3
040 04 0      3654          LDR - 0
040 05 0      3655          STR   V3
040 06 0      3656          CAD   STAT3
040 07 0      3657          CLL   SFR
040 08 0      3658          BUN   ASMBY


040 11 0      3659  CAD2    LDB   XTWO+1         CAD V2
040 12 0      3660          BUN   CAD
040 13 0      3661  CAD1    LDB   XONE+1         CAD V1
040 14 0      3662  CAD     CAD - V
040 15 0      3663          STB   ZHE,04        BRING V(RB) INTO A REGISTER
040 16 0      3664          BFA   CADX,11,0
040 17 0      3665          STP   ACCX          IF ITS NOT THERE ALREADY, FREE
040 18 0      3666          BUN   ACC4          THE ACCUMULATOR
040 19 0      3667          LDB   ZHE
040 20 0      3668          CAD - V             COMPILE CAD OR CSU  V1 OR V2
040 21 0      3669          BSA   B+,1
040 22 0      3670          CAD - CADV1-1
040 23 0      3671  *D      STP   ASMBX
040 24 0      3672          BUN   ASMBY
040 25 0      3673  *C      LDB   ZHE
040 26 0      3674          STB - V,12
040 27 0      3675          CAD - V
040 28 0      3676  CADX    BSA   *,0
040 29 0      3677          STP   ACCX          TO REVERSE SIGN OF A-REGISTER, STORE
040 30 0      3678          BUN - ACC           IT THEN COMPILE CSU INSTRUCTION
040 31 0      3679          LDB   ZHE
040 32 0      3680  *B      CAD - CSUV1-1
040 33 0      3681          BUN   D-


040 36 0      3682  XST     CAD   V1
040 37 0      3683          STP   FIXFX         FIX V1 IF IT IS AN INTEGER
040 38 0      3684          BFA   FIXER,21,0
040 39 0      3685          STP   ACCX
040 40 0      3686          BFA   ACC1,11,0     STORE V1 IF IT IS IN REGISTER A
040 41 0      3687  XSTX    BUN   *


040 44 0      3688  FIXER   CAD   V1
040 45 0      3689          BFA   A+,11,2
040 46 0      3690          STP   CADX
040 47 0      3691          BUN   CAD1          CHANGE V1 TO INTEGER FORM
040 48 0      3692          BFA   FIXFX,21,1
040 49 0      3693          DLR   FIXGN,64,00
040 50 0      3694          STP   LINKX         LINK TO FIX ROUTINE
040 51 0      3695          BUN   LINK1
040 52 0      3696          IFL   V1,21,1
040 53 0      3697          CAD   V1
040 54 0      3698  FIXFX   BUN   *
040 55 0      3699  *A      BFA   FIXFX,21,1    IF V1 IS A CONSTANT,
040 56 0      3700          STP   FIXCX         CHANGE IT WITH FIXCN
040 57 0      3701          BUN   FIXCN
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040 58 0      3702            STA   V1,00
040 59 0      3703            BUN   FIXEX-1


040 62 0      3704    TSTOP   STP   ACCX          STORE A IF IT IS IN USE WITH
040 63 0      3705            BUN   ACC4          NON-CURRENT OPERAND(S)
040 64 0      3706            LDB   OP
040 65 0      3707            LDR - 0             IF NEXT ITEM IN OPERATION STACK
040 66 0      3708            CFR   HYPH,67       IS A MINUS, REMOVE IT AND REVERSE
040 67 0      3709            BCU   TSTOX         THE SIGN OF V1
040 68 0      3710            STP   REMX,OP
040 69 0      3711            BUN   REM,*+2
040 70 0      3712    G13     F424  3100,0,0
040 71 0      3713            CSU   V1
040 72 0      3714            STA   V1
040 73 0      3715    TSTOX   BUN   *


040 76 0      3716    FLTCN   STA   TEMP          CONVERT CONSTANT FROM INTEGER
040 77 0      3717            DLB   TEMP,64,00     TO FLOATING POINT FORM
040 78 0      3718            CAD - 1
040 79 0      3719    FLTCM   CLL   RR0
040 80 0      3720            CLL   SYMBL
040 81 0      3721            BFA   B+,00,0
040 82 0      3722            IFL   SYMBL,22,61
040 83 0      3723    ZHE     CLR
040 84 0      3724            SRT   3
040 85 0      3725    *A      SLT   1             NORMALIZE
040 86 0      3726            DFL   SYMBL,22,1
040 87 0      3727            BFA   A-,31,00
040 88 0      3728            STA   SYMBL,08
040 89 0      3729    FLTC1   DEFN  *
040 90 0      3729    *B      STP   NMBRX         PUT INTO TABLE
040 91 0      3730            BUN   NMBR
040 92 0      3731            CAD - 0
040 93 0      3732            STA   L,23
040 94 0      3733            CAD   L
040 95 0      3734    FLTCX   BUN   *


040 98 0      3735    FIXCN   STA   TEMP          CONVERT FLOATING POINT CONSTANT
040 99 0      3736            DLB   TEMP,64,00     INTO INTEGER FORM
041 00 0      3737            CAD - 1
041 01 0      3738    FIXCM   CLL   RR0
041 02 0      3739            IFL   RR0,21,1
041 03 0      3740            CFA   +6099999999
041 04 0      3741            BCH   E+
041 05 0      3742    S3      CLR
041 06 0      3743            SRT   8
041 07 0      3744            STA   TEMP
041 08 0      3745            CFA   *+1,02
041 09 0      3746            CLA   51
041 10 0      3747            BCL   C+
041 11 0      3748            DLB   TEMP,04,50    UNNORMALIZE (CLEVERLY)
041 12 0      3749            SLT - 0
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041 13 0      3750   *C     STA   SYMBL
041 14 0      3751          BUN   B-
041 15 0      3752   *E     STP   WEMX
041 16 0      3753          BUN   WEM,FIXCM
041 17 0      3754          CNST  33436373800   CONSTANT OUT OF RANGE
041 18 0      3755   FIXCX  DEFN  FLTCX


041 21 0      3755   ARTHG  CLB   MONTR         ARITHMETIC SEQUENCE GENERATOR
041 22 0      3756          LDR   V2
041 23 0      3757          BFR   A+,11,0       CODE..  0  ACCUMULATOR FLOATING
041 24 0      3758          DBB   0,9996                1  ACCUMULATOR FIXED
041 25 0      3759          BFR   A+,11,2               2  (OTHER)     FLOATING
041 26 0      3760          IBB   0,9998                3  (OTHER)     FIXED
041 27 0      3761   *A     BFR   B+,21,1               4  CONSTANT    FLOATING
041 28 0      3762          DBB   0,9999                5  CONSTANT    FIXED
041 29 0      3763   *B     LDR   V1
041 30 0      3764          BFR   C+,11,0
041 31 0      3765          DBB   0,9976
041 32 0      3766          BFR   C+,11,2       CALCULATE 6 TIMES CODE(V1) PLUS CODE(V2)
041 33 0      3767          IBB   0,9988
041 34 0      3768   *C     BFR   D+,21,1
041 35 0      3769          DBB   0,9994
041 36 0      3770   *D     LDR - COMP          INDEX WITH THIS VALUE TO GET FANCY
041 37 0      3771          STR   ARTHM         COMP TABLE ENTRY, WHICH CONSISTS OF
041 38 0      3772   ARTHA  LDR   ARTHM         IJ-PAIRS, LIKE AN INTERPRETIVE
041 39 0      3773   K3     CLA                 SYSTEM PROGRAM
041 40 0      3774          SLT   2
041 41 0      3775          STR   ARTHM         TAKE IJ-PAIRS FROM LEFT TO RIGHT
041 42 0      3776          STA   J,01
041 43 0      3777          BFA   ARTHC,91,3    TO ARTHC IF THIS IS THE LAST ENTRY
041 44 0      3778          SRT   1
041 45 0      3779          STA   I
041 46 0      3780          LDB   I
041 47 0      3781          BFR   J1,11,1       FLOAT OPERAND V(I)
041 48 0      3782          BFR   J2,11,2       STORE V(I) IN TEMP
041 49 0      3783          BFR   J3,11,3       FLOAT CONSTANT V(I)
041 50 0      3784          BFR   J4,11,4       BRING V(I) INTO A REGISTER
041 51 0      3785          BFR   J5,11,5       COMPUTE SUM,PRODUCT,ETC. OF CONSTANTS
041 52 0      3786          BUN   J6            CHECK FOR SPECIAL CASES IN CONSTANTS
041 53 0      3787   J1     DLB   TABSC+82,64,0
041 54 0      3788          STP   LINKX         CALL IN FLOAT SUBROUTINE
041 55 0      3789          BUN   LINK1
041 56 0      3790          LDB   I
041 57 0      3791          STB - V,21          FLOAT V(I)
041 58 0      3792          BUN   ARTHA
041 59 0      3793   J2     STP   ACCX          STORE V(I) IN TEMP
041 60 0      3794          BUN - ACC
041 61 0      3795          BUN   ARTHA
041 62 0      3796   J3     CAD - V             FLOAT THE CONSTANT V(I)
041 63 0      3797          STP   FLTCX
041 64 0      3798          BUN   FLTCN
041 65 0      3799          LDB   I
041 66 0      3800          STA - V,00
041 67 0      3801          BUN   ARTHA
041 68 0      3802   J4     STP   ACCX          FREE THE A REGISTER.
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041 69 0      3803          BUN   ACC3
041 70 0      3804          LDB   I
041 71 0      3805          STP   CADX          BRING V(I) IN
041 72 0      3806          BUN   CAD
041 73 0      3807          BUN   ARTHA
041 74 0      3808    J5    DLB   V1,64,00
041 75 0      3809          LDR   V1            GET CONSTANTS V1,V2
041 76 0      3810          CAD - 1
041 77 0      3811          SLT   0
041 78 0      3812          STA   TEMP2
041 79 0      3813          DLB   V2,64,00
041 80 0      3814          LDR   V2
041 81 0      3815          CAD - 1
041 82 0      3816          SLT   0
041 83 0      3817          STA   TEMP1
041 84 0      3818          LDR   OPRTN
041 85 0      3819          CAD   I
041 86 0      3820          CLL   RR0           I SPECIFIES WHETHER FLOATING OR FIXED
041 87 0      3821          BFA   X+,01,1
041 88 0      3822          CAD   TEMP1
041 89 0      3823          CFR   PLUS,67
041 90 0      3824          BCU   A+            COMPUTE V2 OP V1
041 91 0      3825          FAD   TEMP2         FAD
041 92 0      3826          BUN   ARTHB
041 93 0      3827    *A    CFR   DOT,67
041 94 0      3828          BCU   B+
041 95 0      3829          FMU   TEMP2         FMU
041 96 0      3830          BUN   ARTHB
041 97 0      3831    *B    CFR   SOLD,67
041 98 0      3832          BCU   ARTHA
041 99 0      3833    SCNXX CLR                 CLR,FDV
042 00 0      3834          FDV   TEMP2
042 01 0      3835          BUN   ARTHB
042 02 0      3836    *X    IFL   RR0,21,1
042 03 0      3837          CAD   TEMP1
042 04 0      3838          CFR   PLUS,67
042 05 0      3839          BCU   A+
042 06 0      3840          ADD   TEMP2         ADD
042 07 0      3841          BUN   ARTHB
042 08 0      3842    *A    CFR   DOT,67
042 09 0      3843          BCU   B+
042 10 0      3844          MUL   TEMP2         MUL,SLT10
042 11 0      3845          SLT   10
042 12 0      3846          BZR   ARTHB
042 13 0      3847          BUN   V+
042 14 0      3848    *B    CFR   SOLD,67
042 15 0      3849          BCU   ARTHA
042 16 0      3850          SRT   10
042 17 0      3851          DIV   TEMP2         SRT 10,DIV
042 18 0      3852    ARTHB BOF   V+
042 19 0      3853    *A    STA   SYMBL,00      CHECK IF OUT OF RANGE
042 20 0      3854          STA   ACCUM         PUT COMPUTED CONSTANT INTO TABLE
042 21 0      3855          STP   NMBRX
042 22 0      3856          BUN   NMBR
042 23 0      3857          CAA - 0
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042 24 0      3858          STA   ACCUM,00
042 25 0      3859          LDR   L                AND INTO ACCUM
042 26 0      3860          STR   ACCUM,64
042 27 0      3861          CAD   ACCUM
042 28 0      3862          BUN   ARTHX            AND EXIT
042 29 0      3863    *V    STP   WEMX
042 30 0      3864          BUN   WEM,A-
042 31 0      3865          CNST  33436373800      CONSTANT OUT OF RANGE.  USE =1=
042 32 0      3866    J6    CAD - V
042 33 0      3867          DLB - V,64,0           V(I) IS A CONSTANT.
042 34 0      3868          LDR - 1                CHECK IF IT IS A SPECIAL ONE
042 35 0      3869          BZR   A+               IS IT ZERO
042 36 0      3870          CFR   FONE+1
042 37 0      3871          BCE   D+               IS IT 1.0
042 38 0      3872    *Q    CAB
042 39 0      3873          DBB   0,9999           IS IT 10,100,1000,....,1000000000
042 40 0      3874          SLT   19
042 41 0      3875          BFA   *-2,11,0
042 42 0      3876          SLT   1
042 43 0      3877          CFR   XONE+1,00
042 44 0      3878          BCU   ARTHA
042 45 0      3879          IBB   D+,9998          IS IT 1
042 46 0      3880          CAD   V1
042 47 0      3881          EXT   V2
042 48 0      3882          BFA   ARTHA,21,0
042 49 0      3883          LDR   OPRTN
042 50 0      3884          DBB   0,9999
042 51 0      3885          STB   SHIFT,06
042 52 0      3886          BFR   Q+,62,48         CHECK IF OP IS MUL OR DIV
042 53 0      3887          BFR   T+,62,24
042 54 0      3888          BUN   ARTHA
042 55 0      3889    *Q    IFL   SHIFT,62,1       IF SO,  SLA
042 56 0      3890    *T    IFL   SHIFT,62,48        OR    SRA
042 57 0      3891          LBC   I
042 58 0      3892          STP   CADX
042 59 0      3893          DBB   CAD,9997
042 60 0      3894          STP   ASMBX
042 61 0      3895          BUN   ASMBL,SHIFT
042 62 0      3896          BUN   C+
042 63 0      3897    *A    IFL   BOF,61,1          (SUPPRESS BOF *+2 IN RELATIONS)
042 64 0      3898    *A    LDR   OPRTN            IF ITS ZERO, AND WE ARE ADDING,
042 65 0      3899          BFR   C+,65,0          OR ONE AND WE ARE MULTIPLYING,
042 66 0      3900          BFR   M+,62,48         THE RESULT IS THE OTHER OPERAND
042 67 0      3901          BUN   ARTHA            IF ZERO AND MULTIPLYING, THE RESULT
042 68 0      3902    *D    LDR   OPRTN            IS ZERO.
042 69 0      3903          CFR   DOT,67
042 70 0      3904          BCU   ARTHA
042 71 0      3905    *C    LBC   I
042 72 0      3906          CAD - V3
042 73 0      3907    *M    STA   ACCUM
042 74 0      3908          BUN   ARTHX
042 75 0      3909    ARTHC STP   ACCX             FINISH OF ARITHMETICS.
042 76 0      3910          BUN   ACC4             FIRST FREE A REGISTER IF NECESSARY
042 77 0      3911          CAD   OPRTN
042 78 0      3912          SRA   4
042 79 0      3913          EXT   NN
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042 80 0      3914          STA   TEMP1
042 81 0      3915          STA   TEMP2
042 82 0      3916          CAD   V2              COMPUTE OPERATION CODE
042 83 0      3917          SRS   10              PLUS SIGN OF V2
042 84 0      3918          ADL   TEMP2           PLUS TWICE SIGN OF V1
042 85 0      3919          CAD   V1
042 86 0      3920          SRS   10
042 87 0      3921          ADL   TEMP2
042 88 0      3922          ADL   TEMP2
042 89 0      3923          CAD   OPRTN
042 90 0      3924          BFA   A+,41,0         ADD,MULTIPLY, DIVIDE OPS
042 91 0      3925          BFA   B+,41,1         MAX, MIN OPS
042 92 0      3926          CAD   J               AND,OR,EQIV,IMPL OPS.
042 93 0      3927          ADL   TEMP2
042 94 0      3928          CSU   V1              CHECK FOR VALID BOOLEAN OPERANDS
042 95 0      3929          BPA   E+
042 96 0      3930          EXT   V2
042 97 0      3931          BMA   E+
042 98 0      3932          BFA   H+,21,1
042 99 0      3933  *E      STP   WEMX
043 00 0      3934          BUN   WEM,*+2
043 01 0      3935          CNST  30159610000     IMPROPER BOOLEAN OPERAND
043 02 0      3936  *H      LDB   TEMP2
043 03 0      3937  *K      CAD - GTAB2
043 04 0      3938          BUN   I+
043 05 0      3939  *A      CAD   J               INDEX INTO APPROPRIATE GTAB TABLE
043 06 0      3940          ADD   J
043 07 0      3941          ADL   TEMP2
043 08 0      3942          ADL   TEMP2
043 09 0      3943          LDB   TEMP2
043 10 0      3944          CAD - GTAB0
043 11 0      3945  YETH    BUN   I+,9988          (IN RELATION CASE,CHANGE FLOATING
043 12 0      3946          IBB   I+-1,GTAB0-GTAB1     TO FIXED)
043 13 0      3947  *B      CAD   J
043 14 0      3948          MUL   FUR
043 15 0      3949          DIV   TWL
043 16 0      3950          SLT   10
043 17 0      3951          ADL   TEMP2
043 18 0      3952          LDB   TEMP2
043 19 0      3953          CAD - GTAB1           THIS TABLE ENTRY CAUSES THE ASSEMBLER
043 20 0      3954  *I      STP   INTRX           TO PRODUCE ALL CODE NECESSARY FOR
043 21 0      3955          BUN   INTRP           THE BINARY OPERATOR.
043 22 0      3956  ARTHX   BUN   *


043 25 0      3957  LINK1   LDR - 1
043 26 0      3958          STR   EXPLN
043 27 0      3959  LINK    CAD - 0
043 28 0      3960          STP   LIBRX           MAKE SURE LIBRARY ROUTINE IS IN STORAGE
043 29 0      3961          BUN   LIBRF
043 30 0      3962          STB   V3
043 31 0      3963          IFL   V3,51,4
043 32 0      3964          CAD   V3
043 33 0      3965          SLA   4
043 34 0      3966  LINK2   STA   V3
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043 35 0      3967            CAA   G6              COMPILE  STP, BUN INSTRUCTIONS
043 36 0      3968            STP   INTRX
043 37 0      3969            BUN   INTRP
043 38 0      3970            CLL   DEX             MARK B REGISTER UNKNOWN
043 39 0      3971    LINKX   BUN   *


043 42 0      3972    VSUB    LDB   FUNS
043 43 0      3973            DLB - 0,64,00         RETURN..   COMPILE  LDB ()
043 44 0      3974            STB   LDBI,04                            BUN - 0
043 45 0      3975    VSUB1   CAD   G1


043 48 0      3976    INTRP   STP   ASMBX           GENERATE SERIES OF INSTRUCTIONS
043 49 0      3977            STA   A+              FROM VOCABULARY TABLE.
043 50 0      3978            LDR   A+
043 51 0      3979    *B      CLA   *
043 52 0      3980            SLT   2
043 53 0      3981            STR   A+
043 54 0      3982            BFA   C+,02,00
043 55 0      3983            BFA   ACC1,02,32      POSSIBLY GENERATE A STORE INTO
043 56 0      3984            BFA   ACC2,02,33      TEMP STORAGE
043 57 0      3985            STA   B-,04
043 58 0      3986            LDB   B-
043 59 0      3987            CAD - VOCAB-1
043 60 0      3988            BUN   ASMBY
043 61 0      3989    *A      HLT   *
043 62 0      3990    *C      BSA   INTRX,0         AFTER THIS IS DONE, AND IF THE
043 63 0      3991            LDR   V1              RESULT IS IN THE ACCUMULATOR,
043 64 0      3992            STR   ACTBL+4,21
043 65 0      3993            STR   ACTBL+5,21
043 66 0      3994            SRS   10
043 67 0      3995            STA   B-,04           SET ACCUM TO THE CURRENT RESULT
043 68 0      3996            LDB   B-
043 69 0      3997            CAD - ACTBL-1
043 70 0      3998            STA   ACCUM
043 71 0      3999    INTRX   BUN   *
043 72 0      4000    ACTBL   CNST  00100000000     1 FIXED - TRUE SIGN
043 73 0      4001            CNST  00000000000     2 FLOATING - TRUE SIGN
043 74 0      4002            CNST  10100000000     3 FIXED - OPPOSITE SIGN
043 75 0      4003            CNST  10000000000     4 FLOATING - OPPOSITE SIGN
043 76 0      4004            CNST  00000000000     5 TYPE OF V1 - TRUE SIGN
043 77 0      4005            CNST  10000000000     6 TYPE OF V1 - REVERSED SIGN
043 78 0      4006    CONVX   DEFN  INTRX
043 79 0      4006    VSUBX   DEFN  INTRX


043 82 0      4006    LIBRF   CAD - 0               PUT LIBRARY SUBROUTINE INTO TARGET
043 83 0      4007    LIBRX   BFA   LIBRX,11,4      PROGRAM IF IT HASNT BEEN PUT THERE
043 84 0      4008            SRA   4               ALREADY.
043 85 0      4009            EXT   EXC
043 86 0      4010            SUB   VARB
043 87 0      4011            STA   VARB,04
043 88 0      4012            SLT   4
043 89 0      4013            STA - 0,64
043 90 0      4014            IFL - 0,64,1
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043 91 0      4015          IFL - 0,11,1
043 92 0      4016          BUN   LIBRF


043 95 0      4017    FXUP  LDB   LRTF          COMPILE TO SET A PREVIOUS FORWARD
043 96 0      4018          LDR   LOCN          REFERENCE TO THE PRESENT LOCATION
043 97 0      4019          STA   DESCR
043 98 0      4020          SRT   4
043 99 0      4021          STR   DESCR,04
044 00 0      4022          STA   WRTF,04
044 01 0      4023          BSA   *+2,7
044 02 0      4024          BUN   *+2
044 03 0      4025          IFL   DESCR,00,1    IF SIGN IS SEVEN, WE MEAN THE
044 04 0      4026          LDR   DESCR         PRESENT LOCATION PLUS 1
044 05 0      4027          BCS   *+2,2
044 06 0      4028          BUN   *+3
044 07 0      4029          BSA   *+2,8
044 08 0      4030          CWR 4 DESCR,52      IF PCS(2)$ PRINT THIS
044 09 0      4031          CFA   PREV,04
044 10 0      4032          BCH   A+            IF WE CAN FIX UP THE INSTRUCTION WHILE
044 11 0      4033          CAD - BUF+1         IT SITS IN THE OUTPUT BUFFER, WE WILL
044 12 0      4034          BFA   A+,04,0       DO IT DIRECTLY
044 13 0      4035          CFA   WRTF,04
044 14 0      4036          BCH   A+
044 15 0      4037          SUB   WRTF
044 16 0      4038          SLA   6
044 17 0      4039          STA   *+1,44
044 18 0      4040          DBB   *+1,0
044 19 0      4041          STR - BUF+2,04
044 20 0      4042          BUN   FXUPX
044 21 0      4043    *A    DFL   CNTRF,00,1    OTHERWISE WE PUT OUT A FIX UP
044 22 0      4044          LDB   CNTRF         CODE FOR THE LOADING ROUTINE
044 23 0      4045          STR - BUF+3
044 24 0      4046          BUN   WRITS
044 25 0      4047    FXUPX DEFN  WRITX
044 26 0      4047    PREV  DEFN  BUF+99


044 30 0      4047    XZERO F244  21,0,XONE      THE FIRST FEW CONSTANTS
044 31 0      4048          CNST  0000000000
044 32 0      4049    FZERO F244  20,0,FONE
044 33 0      4050          CNST  0000000000
044 34 0      4051    XONE  F244  21,0,XTWO
044 35 0      4052          CNST  0000000001
044 36 0      4053    FONE  F244  20,0,FTWO
044 37 0      4054          CNST  5110000000
044 38 0      4055    XTWO  F244  21,0,0
044 39 0      4056          CNST  0000000002
044 40 0      4057    FTWO  F244  20,0,0
044 41 0      4058          CNST  5120000000
044 42 0      4059    LALF  F244  30,100,20
044 43 0      4060    FCTIN F244  16,FUNGN,0
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044 46 0      4061   LOC   DEFN  *
044 47 0      4061         LOCN  *+7
044 48 0      4068   SCRTB F244  08,REAL,0      SCRAMBLE TABLE FOR IDENTIFIERS
044 49 0      4069         HLT   0
044 50 0      4070         HLT   0              THIS TABLE IS INITIALIZED TO
044 51 0      4071         HLT   0              THE RESERVED WORDS
044 52 0      4072         F244  04,GOGN,0
044 53 0      4073         HLT   0
044 54 0      4074         HLT   0
044 55 0      4075         F244  12,OUTGN,0
044 56 0      4076         HLT   0
044 57 0      4077         HLT   0
044 58 0      4078         HLT   0
044 59 0      4079         HLT   0
044 60 0      4080         HLT   0
044 61 0      4081         HLT   0
044 62 0      4082         HLT   0
044 63 0      4083         F244  08,IMPGN,TABSC+67
044 64 0      4084         F244  04,ORGN,0
044 65 0      4085         HLT   0
044 66 0      4086         HLT   0
044 67 0      4087         F244  08,EQIGN,0
044 68 0      4088         F244  04,TOGN,0
044 69 0      4089         F244  08,DUMPF,0
044 70 0      4090         HLT   0
044 71 0      4091         HLT   0
044 72 0      4092         HLT   0
044 73 0      4093         HLT   0
044 74 0      4094         HLT   0
044 75 0      4095         HLT   0
044 76 0      4096         HLT   0
044 77 0      4097         HLT   0
044 78 0      4098         HLT   0
044 79 0      4099         HLT   0
044 80 0      4100         HLT   0
044 81 0      4101         HLT   0
044 82 0      4102         HLT   0
044 83 0      4103         HLT   0
044 84 0      4104         HLT   0
044 85 0      4105         HLT   0
044 86 0      4106         HLT   0
044 87 0      4107         HLT   0
044 88 0      4108         F244  10,BEGGN,TABSC+92
044 89 0      4109         F244  06,ANDGN,0
044 90 0      4110         HLT   0
044 91 0      4111         HLT   0
044 92 0      4112         HLT   0
044 93 0      4113         F244  06,ENDGN,0
044 94 0      4114         F244  06,ABSGN,0
044 95 0      4115         HLT   0
044 96 0      4116         HLT   0
044 97 0      4117         HLT   0
044 98 0      4118         HLT   0
044 99 0      4119         F244  06,GEQGN,0
045 00 0      4120         F2440 12,EITGN,0
```

```
045 01 0      4121            F244   10,MEMRY,0
045 02 0      4122            F244   14,BOOGN,TABSC+34
045 03 0      4123            F244   06,MODGN,GSFG
045 04 0      4124            HLT    0
045 05 0      4125            F244   06,EQLGN,TABSC+37
045 06 0      4126            F244   12,FORMG,0
045 07 0      4127            F244   06,MINGN,TABSC+42
045 08 0      4128            HLT    0
045 09 0      4129            F244   16,FLOGN,TABSC+44
045 10 0      4130            F244   06,FORGN,TABSC+45
045 11 0      4131            F244   06,MAXGN,TABSC+46
045 12 0      4132            HLT    0
045 13 0      4133            HLT    0
045 14 0      4134            HLT    0
045 15 0      4135            HLT    0
045 16 0      4136            HLT    0
045 17 0      4137            F244   10,ENTGN,0
045 18 0      4138            F244   06,GTRGN,GNARR
045 19 0      4139            HLT    0
045 20 0      4140            HLT    0
045 21 0      4141            F244   18,OTHGN,FCTIN
045 22 0      4142            HLT    0
045 23 0      4143            F244   06,NOTGN,0
045 24 0      4144            F244   18,STAX,0
045 25 0      4145            HLT    0
045 26 0      4146            F244   06,LSSGN,0
045 27 0      4147            F244   14,MONGN,0
045 28 0      4148            F244   14,OVEGN,0
045 29 0      4149            F244   16,EXTGN,0
045 30 0      4150            HLT    0
045 31 0      4151            HLT    0
045 32 0      4152            HLT    0
045 33 0      4153            F244   12,SWIGN,TABSC+54
045 34 0      4154            F244   10,UNTGN,0
045 35 0      4155            HLT    0
045 36 0      4156            HLT    0
045 37 0      4157            HLT    0
045 38 0      4158            F244   10,INPGN,0
045 39 0      4159            HLT    0
045 40 0      4160            F244   12,RETGN,0
045 41 0      4161            HLT    0
045 42 0      4162            HLT    0
045 43 0      4163            F244   04,IFGN,0
045 44 0      4164            HLT    0
045 45 0      4165            HLT    0
045 46 0      4166            HLT    0
045 47 0      4167            HLT    0


045 50 0      4168    SSC     HLT    SCNT
045 51 0      4169    LOCN    F244   0,0200,0
045 52 0      4170    SYS     DEFN   *
045 53 0      4170    EXPF    F244   31,100,20      SOME LIBRARY ROUTINES
045 54 0      4171            F244   30,100,30
045 55 0      4172            F244   30,100,40      THE 64-FIELDS OF THESE CODES
```

```
045 56 0      4173            F244   30,100,50      ARE FIXED UP TO THE NUMBER
045 57 0      4174    FIX     F244   31,100,60      OF LOCATIONS USED BY THE ROUTINES,
045 58 0      4175            CNST   $FIX$          BY THE LIBRARY PROCESSOR.
045 59 0      4176    FLOAT   F244   30,100,71
045 60 0      4177            CNST   $FLOAT$
045 61 0      4178    MONTR   F244   30,100,80
045 62 0      4179    MAMAX   HLT    MSIZE
045 63 0      4180    MNTRE   F244   40,MONTR,0
045 64 0      4181    ERROR   F244   30,100,90
045 65 0      4182    DMPER   F244   30,100,100
045 66 0      4183    DUMPR   F244   40,DMPER,0
045 67 0      4184    SCNT    DEFN   *              THE BEGINNING OF ASSOCIATIVE MEMORY

045 69 0      4184            LOCN   4600
045 70 0      4600    STACK   CRF 4  FR1+28,21,RLO INITIALIZATION OF THE PROGRAM
045 71 0      4601            MRW 4  OT
045 72 0      4602            CLL    BUF
045 73 0      4603            LDB    WRIT4          CLEAR OUTPUT BUFFER
045 74 0      4604            RTF    BUF,99
045 75 0      4605            CRF 4  FR2+28,51      LOAD FORMAT BANDS
045 76 0      4606            CWF 4  FR6+28,32       FORWARD REFERENCES
045 77 0      4607            CWF 4  FR3+28,12       OUTPUT INSTRUCTIONS
045 78 0      4608            CWF 4  FR4+28,42       ERROR MESSAGES
045 79 0      4609            CWF 4  FR5+28,22       ALGOL STATEMENTS
045 80 0      4610            CWF 4  FR7+28,52       FIXUPS
045 81 0      4611            MOW 4  4200,OT,4      WRITE LOADING ROUTINE
045 82 0      4612            BCS    SCN2,4
045 83 0      4613            CWR 4  IMAGE+15,22,3 UNLESS BCS(4),PRINT COMPILER TITLE
045 84 0      4614            RUN    SCN2           THE PROGRAM STARTS AT SCAN2

045 87 0      4615    FR1     FBGR   INPUT,T2Z1B4A,15(T5A)
045 88 0      4644    FR2     FBGR   INPUT,16(P5A)
045 89 0      4673    FR3     FBGR   PRINT,49B,TZZZZZZNNNN,BBB,SBNNNNBNNBNNNN,BT5A,44B
045 90 0      4702    FR6     FBGR   PRINT,49B,TZZZZZZNNNN,BBB,SBNNNNBNNBZZZZ,5BT5A,44B
045 91 0      4731    FR7     FBGR   PRINT,49B,TZZZZZZNNNN,BBB,T6Z10BNNNN,50B
045 92 0      4760    FR4     FBGR   PRINT,7(T5A),85B
045 93 0      4789    FR5     FBGR   PRINT,16(T5A),40B

045 99 0      4818            LOCN   LOC
046 00 0      4061            FINI   1
              4061                   +0371720000
              4062                   +6099999999
              4063                   +5822570000
              4064                   +9999999999
              4065                   +6034037172
              4066                   +4959035600
              4067                   +4959045600
```

```
.00.0    0100    EXP    DEFN  100
.00.0    0200    ERROR  DEFN  200
.00.0    0000    SINH   CLR
.00.0    0001           CFA 6 EXP+71,00
.00.0    0002           BCH 8 C+
.00.0    0003           CFA 8 +5050000000,00
.00.0    0004           BCL 8 A+
.00.0    0005           STP 6 EXP
.00.0    0006           BUN 6 EXP+2
.00.0    0007           STA 6 ERROR+48       A
.00.0    0008           CSU 6 ERROR+51       =1.0=
.00.0    0009           FDV 6 ERROR+48       A
.00.0    0010           FAD 6 ERROR+48       A
.00.0    0011           FMU 8 +5050000000
.00.0    0012    *B     LDB 8 SINH
.00.0    0013           BUN - 0
.00.0    0014    *A     STA 6 ERROR+48       A
.00.0    0015           FMU 6 ERROR+48       A
.00.0    0016           STA 6 ERROR+49       B
.00.0    0017           FMU 8 +4719841270
.00.0    0018           FAD 8 +4883333333
.00.0    0019           FMU 6 ERROR+49       B
.00.0    0020           FAD 8 +5016666667
.00.0    0021           FMU 6 ERROR+49       B
.00.0    0022           FMU 6 ERROR+48       A
.00.0    0023           FAD 6 ERROR+48       A
.00.0    0024           BUN 8 B-
.00.0    0025    *C     LDB 8 SINH
.00.0    0026           LDR 8 $SINH$
.00.0    0027           BUN 6 ERROR
.00.0    0028           FINI  SINH
           28                  $SINH
          029                  +4719841270
         0030                  +4883333333
         0031                  +5050000000
         0032                  +5016666667
```

```
.00.0       THE MONITOR SUBROUTINE
.00.0  0100  ERROR DEFN  100
.00.0  0000  MONTR BCS   *,10
.00.0  0001        STB 6 ERROR+49       B
.00.0  0002        LDB 8 E+
.00.0  0003        BOF 6 ERROR+21
.00.0  0004        STA 6 ERROR+48       A
.00.0  0005        LDB 8 MONTR
.00.0  0006        BCS 8 D+,10
.00.0  0007        DLB - 9999,44,0
.00.0  0008        LDR - 0
.00.0  0009        STR 8 OUT
.00.0  0010        LDB 8 MONTR
.00.0  0011        CLL 8 OUT+3
.00.0  0012        CLL 8 OUT+4
.00.0  0013        STB 8 OUT+1,64
.00.0  0014        CAD - 9997
.00.0  0015        BPA 8 *+2
.00.0  0016        SUB 6 ERROR+49       B
.00.0  0017        STA 8 B+,04
.00.0  0018  *E    CLA 8 MONTR+4
.00.0  0019  *B    ADD   *
.00.0  0020        LDR - 9998
.00.0  0021        BFR 8 A+,21,0
.00.0  0022        STA 8 OUT+2
.00.0  0023        BPA 8 C+
.00.0  0024        IFL 8 OUT+1,42,20
.00.0  0025  *C    CWR 8 OUT+4,32
.00.0  0026  *D    CAD 6 ERROR+48       A
.00.0  0027        STB 8 *+2,04
.00.0  0028        LDB 6 ERROR+49       B
.00.0  0029        BUN   *
.00.0  0030  *A    SRT   8
.00.0  0031        STR 8 OUT+2
.00.0  0032        BSA 8 *+2,0
.00.0  0033        IFL 8 OUT+1,42,20
.00.0  0034        LSA   0
.00.0  0035        BFR 8 *+2,88,0
.00.0  0036        SUB 8 +50
.00.0  0037        IFL 8 OUT+3,02,23
.00.0  0038        IFL 8 OUT+1,62,03
.00.0  0039        STA 8 OUT+4,01
.00.0  0040        SLA   1
.00.0  0041        STA 8 OUT+4,89
.00.0  0042        IFL 8 OUT+4,91,8
.00.0  0043        IFL 8 OUT+4,71,8
.00.0  0044        BUN 8 C-
.00.0  0045  OUT   CNST  0
.00.0  0046        CNST  $=     $
.00.0  0047        CNST  0
.00.0  0048        CNST  0
.00.0  0049        CNST  0
.00.0  0050        FINI  MONTR
       0050              +0        50
```

```
.00.0      0100   SINH   DEFN  100
.00.0      0200   COSH   DEFN  200
.00.0      0300   ERROR  DEFN  300
.00.0      0000   TANH   NOP
.00.0      0001          STA 8 X
.00.0      0002          LDR 8 TANH2
.00.0      0003          CFA 8 +5250000000.00
.00.0      0004          BCH 8 B+
.00.0      0005          STP 6 COSH
.00.0      0006          BUN 6 COSH+2
.00.0      0007          STA 8 COSHX
.00.0      0008          BZA 8 A+
.00.0      0009          CAD 8 X
.00.0      0010          STP 6 SINH
.00.0      0011          BUN 6 SINH
.00.0      0012          FDV 8 COSHX
.00.0      0013   *A     LDB 8 TANH
.00.0      0014          BUN - 0
.00.0      0015   *B     CAD 6 ERROR+51        =1.0=
.00.0      0016          LDR 8 X
.00.0      0017          SLT   0
.00.0      0018          BUN 8 A-
.00.0      0019   X      CNST  0
.00.0      0020   COSHX  CNST  0
.00.0      0021   TANH2  HLT 8 TANH1
.00.0      0022   TANH1  CNST  $TANH$
.00.0      0023          FINI  TANH
           0023                +5250000000
```

```
.00.0      0100    EXP    DEFN  100
.00.0      0200    ERROR  DEFN  200
.00.0      0000    COSH   NOP
.00.0      0001           LDR 8 COSH2
.00.0      0002           LSA   0
.00.0      0003           STP 6 EXP
.00.0      0004           BUN 6 EXP+2
.00.0      0005           BZA 8 A+
.00.0      0006           STA 6 ERROR+48       A
.00.0      0007           CAD 6 ERROR+51       =1.0=
.00.0      0008           FDV 6 ERROR+48       A
.00.0      0009           FAD 6 ERROR+48
.00.0      0010           FMU 8 +5050000000
.00.0      0011    *A     LDB 8 COSH
.00.0      0012           BUN - 0
.00.0      0013    COSH2  HLT 8 COSH1
.00.0      0014    COSH1  CNST  $COSH$
.00.0      0015           FINI  COSH
            015                 +5050000000
```

```
 00 0  0100   ERROR DEFN  100
 00 0  0000   TRACE BCS   *,9
 00 0  0001         DLB 8 Y+,44,0
 00 0  0002   HOLD  BOF 6 ERROR+21
 00 0  0003   TR1   LDB 8 TRACE
 00 0  0004         STA 8 HOLD0
 00 0  0005         CAD - 9999
 00 0  0006         STA 8 HOLD,44
 00 0  0007         BFA 8 Y+,44,0
 00 0  0008   *A    CAD - 1
 00 0  0009         CFA 8 TR1,04
 00 0  0010         BCU 8 *+2
 00 0  0011         IBB 8 A-,2
 00 0  0012         ADA 8 HOLD
 00 0  0013         BOF 8 *+1
 00 0  0014   *Y    F4247 3,44,0
 00 0  0015         BFA   1,44,0
 00 0  0016   *Z    LDB 8 TRACE
 00 0  0017         CAD 8 HOLD0
 00 0  0018         BUN - 0
 00 0  0019   HOLD0 CNST  0
 00 0  0020         FINI  TRACE
```

```
.00.0   0100   ERROR DEFN  100
.00.0   0200   SQRT  DEFN  200
.00.0   0000   ROMXX F4247 3.1.0
.00.0   0001         DLB  8 *-1.44.0
.00.0   0002         BOF  6 ERROR+21
.00.0   0003         LDR  8 ROM2
.00.0   0004         STR  8 B+.04
.00.0   0005         CFA  6 ERROR+51.00    =1.0=
.00.0   0006         BCH  8 B+
.00.0   0007         BFA  8 E+.22.51
.00.0   0008         BZA  8 F+
.00.0   0009         STA  6 ERROR+48       A
.00.0   0010         FMU  6 ERROR+48       A
.00.0   0011         SLT    2
.00.0   0012         STR  8 E+.02
.00.0   0013         LBC  8 E+
.00.0   0014         SRT  - 51
.00.0   0015         SUB  8 +1000000000
.00.0   0016         SLT    10
.00.0   0017         SUB  6 ERROR+47       =5(11)=
.00.0   0018         SUB  6 ERROR+47
.00.0   0019         SLT    10
.00.0   0020         BOF  8 *+2
.00.0   0021         F4248 51.12.+1
.00.0   0022         DLB  8 *-1.44.0
.00.0   0023   *D    BFA  8 C+.11.0
.00.0   0024         STB  8 E+.04
.00.0   0025         LDR  8 E+
.00.0   0026         SLT    18
.00.0   0027   *G    LDB  8 ROMXX
.00.0   0028         BUN  6 SQRT+2
.00.0   0029   *C    SLT    1
.00.0   0030         DBB  8 D-.1
.00.0   0031   *F    LSA    1
.00.0   0032   *F    FAD  6 ERROR+51       =1.0=
.00.0   0033         BUN  8 G-
.00.0   0034   *B    LDR  8 ROM1
.00.0   0035         LDB  8 ROMXX
.00.0   0036         BUN  6 ERROR+7
.00.0   0037   ROM1  CNST   $ROMXX$
.00.0   0038   ROM2  HLT  8 ROM1
.00.0   0039   ROM3  CAD  8 +5115707963
.00.0   0040         LDR  6 ERROR+48       A
.00.0   0041         BZR  - 0
.00.0   0042         SLT    0
.00.0   0043         BUN  - 0
.00.0   0044         FINI   ROMXX
        0044                +1000000000
        0045                +00       01
        0046                +5115707963
```

```
.00.0          THE LABEL PROCESSING SUBROUTINE
.00.0     0100 ERROR DEFN  100
.00.0     0000 LABEL BCS   *.8
.00.0     0001       LDB 8 NUMLB
.00.0     0002       BOF 6 ERROR+21
.00.0     0003       LDB 8 LABEL
.00.0     0004       DLB - 9998.44.1
.00.0     0005       STB 8 HOLD
.00.0     0006       LDB 8 LABEL
.00.0     0007       DLB - 9999.44.0
.00.0     0008       STA 8 HOLD1
.00.0     0009       CAD - 0
.00.0     0010       STA 6 ERROR+49       B
.00.0     0011       SRT   10
.00.0     0012       STP 8 NUMLX
.00.0     0013       BSA 8 NUMLB.1
.00.0     0014       STA 6 ERROR+43       OUT+7
.00.0     0015       STR 6 ERROR+44       OUT+8
.00.0     0016       CAA 8 HOLD
.00.0     0017       SUB 8 +10000
.00.0     0018       SRT   10
.00.0     0019       STP 8 NUMLX
.00.0     0020       BUN 8 NUMLB
.00.0     0021       STR 6 ERROR+45.08    OUT+9
.00.0     0022 *I    BUN 8 *+1
.00.0     0023       IFL 6 ERROR+45.22.24    OUT+9
.00.0     0024       IFL 6 ERROR+46.22.04    OUT+10
.00.0     0025       IFL 8 I-.04.3
.00.0     0026       BCS 8 PRINT.7
.00.0     0027 EXIT  LDB 8 LABEL
.00.0     0028       CAD 8 HOLD1
.00.0     0029       BUN - 0
.00.0
.00.0     0030 PRINT STB 6 ERROR+48       A
.00.0     0031       LDB 8 *+2
.00.0     0032       RTF 6 ERROR+24.1     ZERO
.00.0     0033       RTF 6 ERROR+36.5
.00.0     0034       CWR 6 ERROR+46.42    OUT+10
.00.0     0035       LDB 6 ERROR+48       A
.00.0     0036       BUN 8 EXIT
.00.0
.00.0
.00.0     0037 NUMLB F4248 8001.45.LABEL+3
.00.0     0038       SLA   1
.00.0     0039       SLT   1
.00.0     0040       SUB 8 +80
.00.0     0041       IFL 8 NUMLB.11.8
.00.0     0042       BOF 8 NUMLB+1
.00.0     0043       IFL 8 *-1.11.5
.00.0     0044       BOF 8 A+
.00.0     0045       STA 6 ERROR+50       C
.00.0     0046       BUN 8 NUMLB
.00.0     0047 *A    SRT   10
.00.0     0048       CAD 6 ERROR+50       C
.00.0     0049 NUMLX BUN   *
```

```
▲00▲0      0050           FINI  LABEL
             50    HOLD1
             51    HOLD
            0052                 +0000010000
             053                 +000      80
```

```
.00.0       0000    ENTIR CRB
.00.0       0001          CFA 8 +5810000000.22
.00.0       0002          BCH 8 A+
.00.0       0003          SRT   0
.00.0       0004          BPA 8 B+
.00.0       0005          LSA   0
.00.0       0006          FAD 8 +5099999999
.00.0       0007    *B    FAD 8 +5810000000
.00.0       0008          FSU 8 +5810000000
.00.0       0009          SLT   0
.00.0       0010    *A    LDB 8 ENTIR
.00.0       0011          BUN - 0
.00.0       0012          FINI  ENTIR
            0012                +5099999999
            0013                +5810000000
```

```
.00.0      0100    ERROR DEFN  100
.00.0      0000    ATAN  CRB
.00.0      0001          LDB 8 ATAN
.00.0      0002          CFA 6 ERROR+51.00    =1.0=
.00.0      0003          STA 6 ERROR+48       A
.00.0      0004          STB 8 C+.44
.00.0      0005          BCL 8 B+
.00.0      0006          DFL 8 C+.44.1
.00.0      0007          F4248 5010.10.+5099999999
.00.0      0008          FDV 6 ERROR+48       A
.00.0      0009    *B    CFA 8 *-2.00
.00.0      0010          BCL 8 A+
.00.0      0011          SLA   2
.00.0      0012          STA 6 ERROR+48       A
.00.0      0013          MUL 6 ERROR+48       A
.00.0      0014          STA 6 ERROR+49       B
.00.0      0015          MUL 8 +0049017591
.00.0      0016          ADD 8 +0565030980
.00.0      0017          MUL 6 ERROR+49       B
.00.0      0018          ADD 8 +1453567135
.00.0      0019          MUL 6 ERROR+49       B
.00.0      0020          ADD 8 +1000000000
.00.0      0021          STA 6 ERROR+50       C
.00.0      0022          CAD 8 +0008561189
.00.0      0023          MUL 6 ERROR+49       B
.00.0      0024          ADD 8 +0280504541
.00.0      0025          MUL 6 ERROR+49       B
.00.0      0026          ADD 8 +1120234014
.00.0      0027          MUL 6 ERROR+49       B
.00.0      0028          ADD 8 +1000000000
.00.0      0029          MUL 6 ERROR+48       A
.00.0      0030          SRT   2
.00.0      0031          DIV 6 ERROR+50       C
.00.0      0032          STA 6 ERROR+50       C
.00.0      0033          IFL 6 ERROR+50.11.5
.00.0      0034          CAD 6 ERROR+50       C
.00.0      0035    *C    IBR - 0.0
.00.0      0036          CAD 8 +5115707963
.00.0      0037          LDR 6 ERROR+48       A
.00.0      0038          SLT   0
.00.0      0039          FSU 6 ERROR+50       C
.00.0      0040          BUN - 1
.00.0      0041    *A    STA 6 ERROR+48       A
.00.0      0042          FMU 6 ERROR+48       A
.00.0      0043          STA 6 ERROR+49       B
.00.0      0044          FMU 8 -5014281428
.00.0      0045          FAD 8 +5020000000
.00.0      0046          FMU 6 ERROR+49       B
.00.0      0047          FSU 8 +5033333333
.00.0      0048          FMU 6 ERROR+49       B
.00.0      0049          FMU 6 ERROR+48       A
.00.0      0050          FAD 6 ERROR+48       A
.00.0      0051          STA 6 ERROR+50       C
.00.0      0052          BUN 8 C-
.00.0      0053          FINI  ATAN
```

053	+1000000000
0054	+5099999999
0055	+5033333333
0056	+5020000000
0057	+0280504541
0058	-5014281428
0059	+1453567135
0060	+0049017591
0061	+0008561189
0062	+1120234014
-063	+0565030980
0064	+5115707963

```
.00.0      0100   ATAN  DEFN  100
.00.0      0200   ROMXX DEFN  200
.00.0      0300   ERROR DEFN  300
.00.0      0000   ACOS  NOP
.00.0      0001         STA 8 X
.00.0      0002         LDB 8 ACOS
.00.0      0003         BZA 6 ROMXX+39
.00.0      0004         LDR 8 ACOS2
.00.0      0005         STP 6 ROMXX
.00.0      0006         BUN 6 ROMXX+4
.00.0      0007         FDV 8 X
.00.0      0008         STP 6 ATAN
.00.0      0009         BUN 6 ATAN
.00.0      0010         LDB 8 ACOS
.00.0      0011         LDR 8 X
.00.0      0012         SLT   0
.00.0      0013         BPA - 0
.00.0      0014         FAD 8 +5131415927
.00.0      0015         BUN - 0
.00.0      0016   ACOS2 HLT 8 ACOS1
.00.0      0017   ACOS1 CNST  $ACOS$
.00.0      0018   X     CNST  0
.00.0      0019         FINI  ACOS
           0019               +5131415927
```

```
.00.0   0100   ATAN   DEFN  100
.00.0   0200   ROMXX  DEFN  200
.00.0   0300   ERROR  DEFN  300
.00.0   0000   ASIN   NOP
.00.0   0001          STA 6 ERROR+48      A
.00.0   0002          LDR 8 ASIN2
.00.0   0003          STP 6 ROMXX
.00.0   0004          BUN 6 ROMXX+4
.00.0   0005          LDB 8 ASIN
.00.0   0006          BZA 6 ROMXX+39
.00.0   0007          STA 6 ERROR+49      B
.00.0   0008          CAD 6 ERROR+48      A
.00.0   0009          FDV 6 ERROR+49      B
.00.0   0010          BUN 6 ATAN+2
.00.0   0011   ASIN2  HLT 8 ASIN1
.00.0   0012   ASIN1  CNST  $ASIN$
.00.0   0013          FINI  ASIN
```

```
.00.0       0100    SIN     DEFN  100
.00.0       0200    COS     DEFN  200
.00.0       0300    ERROR   DEFN  300
.00.0       0000    TAN     CRB
.00.0       0001            STA 8 X
.00.0       0002            LDR 8 TAN2
.00.0       0003            STP 6 SIN
.00.0       0004            BUN 6 COS+4
.00.0       0005            BZA 8 A+
.00.0       0006            STA 8 COSX
.00.0       0007            CAD 8 X
.00.0       0008            STP 6 SIN
.00.0       0009            BUN 6 SIN
.00.0       0010            FDV 8 COSX
.00.0       0011            LDB 8 TAN
.00.0       0012            BUN - 0
.00.0       0013    *A      LDR 8 X
.00.0       0014            CFA 8 *+1.22
.00.0       0015            F424- 5801.34.0
.00.0       0016            LDB 8 TAN
.00.0       0017            LDR 8 TAN1
.00.0       0018            BUN 6 ERROR
.00.0       0019    X       CNST  0
.00.0       0020    COSX    CNST  0
.00.0       0021    TAN1    CNST  $TAN$
.00.0       0022    TAN2    HLT 8 TAN1
.00.0       0023            FINI  TAN
```

```
 00 0  0100   SIN   DEFN  100
 00 0  0000   COS   CRB
 00 0  0001         LDR 8 COS
 00 0  0002         STR 6 SIN,04
 00 0  0003         LDR 8 COS2
 00 0  0004         FAD 8 +5078539816
 00 0  0005         FAD 8 +5078539816
 00 0  0006         BUN 6 SIN+2
 00 0  0007   COS2  HLT 8 COS1
 00 0  0008   COS1  CNST  $COS$
 00 0  0009         FINI  COS
          9               +5078539816
```

```
.00.0      0100    ERROR DEFN  100
.00.0      0000    SIN   CRB
.00.0      0001          LDR 8 SIN2
.00.0      0002          STR 8 F+.04
.00.0      0003          CLL 6 ERROR+48      A
.00.0      0004          FMU 8 +5031830989
.00.0      0005          SLT   2
.00.0      0006          STR 8 EXP+02
.00.0      0007          LDB 8 EXP
.00.0      0008          IBB 8 A+.9949
.00.0      0009          DBB 8 B+.7
.00.0      0010          SLT - 18
.00.0      0011          STA 6 ERROR+48      A
.00.0      0012          CAD 8 *+1
.00.0      0013          SLT   50
.00.0      0014    *A    SLT   18
.00.0      0015          STA 6 ERROR+50      C
.00.0      0016          FAD 6 ERROR+50      C
.00.0      0017          CFA 6 ERROR+51.00   =1.0=
.00.0      0018          BCL 8 D+
.00.0      0019          LSA   0
.00.0      0020          FSU 8 +5120000000
.00.0      0021          SLT   0
.00.0      0022    *D    STA 6 ERROR+50      C
.00.0      0023          FMU 6 ERROR+50      C
.00.0      0024          STA 6 ERROR+49      B
.00.0      0025          FMU 8 +4715148419
.00.0      0026          FAD 8 -4846737656
.00.0      0027          FMU 6 ERROR+49      B
.00.0      0028          FAD 8 +4979689679
.00.0      0029          FMU 6 ERROR+49      B
.00.0      0030          FAD 8 -5064596371
.00.0      0031          FMU 6 ERROR+49      B
.00.0      0032          FAD 8 +5057079632
.00.0      0033          FMU 6 ERROR+50      C
.00.0      0034          FAD 6 ERROR+50      C
.00.0      0035          STA 6 ERROR+50      C
.00.0      0036          CAD 6 ERROR+47      =5(11)=
.00.0      0037          MUL 6 ERROR+48      A

.00.0      0038          CAD 6 ERROR+50      C
.00.0      0039          LDB 8 SIN
.00.0      0040          BZR - 0
.00.0      0041          CSU 6 ERROR+50      C
.00.0      0042          BUN - 0
.00.0      0043    *B    LDB 8 SIN
.00.0      0044    *F    LDR 8 SIN1
.00.0      0045          BUN 6 ERROR+14
.00.0      0046    SIN2  HLT 8 SIN1
.00.0      0047    SIN1  CNST  $SIN$
.00.0      0048    EXP         0
.00.0      0049          FINI  SIN
           0049                +5120000000
           0050                -5064596371
           0051                -4846737656
```

0052	+4979689679
0053	+5031830989
0054	+5057079632
0055	+4715148419

```
.00.0     0100   FLOAT DEFN  100
.00.0     0200   FLFL  DEFN  200
.00.0     0300   ERROR DEFN  300
.00.0     0000   FXFL  CLB
.00.0     0001         LDB 8 FXFL
.00.0     0002         STR 6 FLFL.04
.00.0     0003         STR 6 ERROR+50      C
.00.0     0004         STR 6 ERROR+49      B
.00.0     0005         STP 6 FLOAT
.00.0     0006         BUN 6 FLOAT
.00.0     0007         BUN 6 FLFL+2
.00.0     0008         FINI  1
```

```
.00.0      0100   ERROR DEFN  100
.00.0      0000   FXFX  CLB
.00.0      0001         LDB 8 FXFX
.00.0      0002         BZA 8 F+
.00.0      0003         STR 6 ERROR+49        B
.00.0      0004         STA 6 ERROR+48        A
.00.0      0005         CLL 6 ERROR+50        C
.00.0      0006         IFL 6 ERROR+50,00,1
.00.0      0007   *A    CAD 6 ERROR+47        =5(11)=
.00.0      0008         MUL 6 ERROR+49        B
.00.0      0009         STA 6 ERROR+49        B
.00.0      0010         BZR 8 B+
.00.0      0011         CAD 6 ERROR+50        C
.00.0      0012         MUL 6 ERROR+48        A
.00.0      0013         STR 6 ERROR+50        C
.00.0      0014         BZA 8 B+
.00.0      0015         BUN 8 A+
.00.0      0016   *B    LDR 6 ERROR+49        B
.00.0      0017         BZR 8 C+
.00.0      0018         CAD 6 ERROR+48        A
.00.0      0019         MUL 6 ERROR+48        A
.00.0      0020         STR 6 ERROR+48        A
.00.0      0021         BZA 8 A-
.00.0      0022   *A    CAD 6 ERROR+49        B
.00.0      0023         BMA 8 E+
.00.0      0024         LDR 8 $FXFX$
.00.0      0025         BUN 6 ERROR
.00.0      0026   *C    CAD 6 ERROR+50        C
.00.0      0027         BFR 8 D+,12,10
.00.0      0028         BUN - 0
.00.0      0029   *D    LDR 8 +1
.00.0      0030         CLA
.00.0      0031         DIV 6 ERROR+50        C
.00.0      0032         BUN - 0
.00.0      0033   *F    CFR 6 ERROR+24        ZERO
.00.0      0034         BCH - 0
.00.0      0035         LDR 8 $FXFX$
.00.0      0036         BUN 6 ERROR+7
.00.0      0037   *E    CLA
.00.0      0038         BUN - 0
.00.0      0039         FINI  FXFX
           0039               +0          1
             40               $FXFX
```

```
.00.0      0100   ERROR DEFN  100
.00.0      0000   FLFX  F4247 3.01.*
.00.0      0001         DLB  8 *-1.44.0
.00.0      0002         BCF  6 ERROR+21
.00.0      0003         STR  6 ERROR+49      B
.00.0      0004         STA  6 ERROR+48      A
.00.0      0005         LDB  8 FLFX
.00.0      0006         BZA  8 A+
.00.0      0007         CAD  6 ERROR+51      =1.0=
.00.0      0008         BZR  - 0
.00.0      0009         STA  6 ERROR+50      C
.00.0      0010   *B    CAD  6 ERROR+47      =5(11)=
.00.0      0011         MUL  6 ERROR+49      B
.00.0      0012         STA  6 ERROR+49      B
.00.0      0013         BZR  8 C+
.00.0      0014         CAD  6 ERROR+50      C
.00.0      0015         FMU  6 ERROR+48      A
.00.0      0016         STA  6 ERROR+50      C
.00.0      0017   *C    LDR  6 ERROR+49      B
.00.0      0018         BZR  8 D+
.00.0      0019         CAD  6 ERROR+48      A
.00.0      0020         FMU  6 ERROR+48      A
.00.0      0021         STA  6 ERROR+48      A
.00.0      0022         BUN  8 B-
.00.0      0023   *D    BOF  8 F+
.00.0      0024         BFR  8 E+.12.10
.00.0      0025         BUN  - 0
.00.0      0026   *E    CAD  6 ERROR+51      =1.0=
.00.0      0027         FDV  6 ERROR+50      C
.00.0      0028         BUN  - 0
.00.0      0029   *A    CFR  6 ERROR+24      =0=
.00.0      0030         BCH  - 0
.00.0      0031         LDR  8 $FLFX$
.00.0      0032         BUN  6 ERROR+7
.00.0      0033   *F    CLA
.00.0      0034         BFR  - 0.12.10
.00.0      0035         LDR  8 $FLFX$
.00.0      0036         BUN  6 ERROR
.00.0      0037         FINI   1
             37                $FLFX
```

```
 00 0  0100   ERROR DEFN  100
 00 0  0200   LOG   DEFN  200
 00 0  0300   EXP   DEFN  300
 00 0  0400   FIX   DEFN  400
 00 0  0000   FLFL  F4247 6,1,0
 00 0  0001         STR 6 ERROR+50       C
 00 0  0002         STB 8 A+,41
 00 0  0003         STA 6 ERROR+48       A
 00 0  0004         DLB 8 FLFL,44,0
 00 0  0005         BOF 6 ERROR+21
 00 0  0006   *C    LDB 8 FLFL
 00 0  0007         BZA 8 D+
 00 0  0008         BMA 8 E+
 00 0  0009   *F    STP 6 LOG
 00 0  0010         BUN 6 LOG
 00 0  0011         FMU 6 ERROR+50       C
 00 0  0012         BOF 8 G+
 00 0  0013         CFA 8 +5311282666
 00 0  0014         BCH 8 Y+
 00 0  0015         STP 6 EXP
 00 0  0016         BUN 6 EXP
 00 0  0017   *A    LSA   0
 00 0  0018   *Z    LDB 8 FLFL
 00 0  0019         BUN - 0
 00 0  0020   *D    CFR 6 ERROR+24       =0=
 00 0  0021         BCH - 0
 00 0  0022         BUN 8 X+
 00 0  0023   *E    SOH
 00 0  0024         SLT   10
 00 0  0025         STP 6 FIX
 00 0  0026         BUN 6 FIX
 00 0  0027         SOR
 00 0  0028         BZR 8 I+
 00 0  0029   *X    LDB 8 FLFL
 00 0  0030         LDR 8 $FLFL$
 00 0  0031         BUN 6 ERROR+7
 00 0  0032   *I    SLS   10
 00 0  0033         RND
 00 0  0034         SRS   4
 00 0  0035         STA 8 A-,41
 00 0  0036         CAA 6 ERROR+48       A
 00 0  0037         BUN 8 F-
 00 0  0038   *Y    LDR 8 $FLFL$
 00 0  0039         LDB 8 FLFL
 00 0  0040         BUN 6 ERROR
 00 0  0041   *C    CAD 6 ERROR+48       A
 00 0  0042         MUL 6 ERROR+50       C
 00 0  0043         BPA 8 Y-
 00 0  0044         CLA
 00 0  0045         BUN 8 Z-
 00 0  0046         FINI  1
         46               $FLFL
       0047               +5311282666
```

```
.00.0   0100   ERROR DEFN  100
.00.0   0000   LOG   CRB
.00.0   0001         BMA 8 F+
.00.0   0002         BZA 8 F+
.00.0   0003         SRT   2
.00.0   0004         STA 8 EXP.42
.00.0   0005         SLT   4
.00.0   0006         CFA 8 CP1+
.00.0   0007         BCL 8 SMALL
.00.0   0008         CFA 8 CP2+
.00.0   0009         BCH 8 SMALL
.00.0   0010         SRT   1
.00.0   0011         ADD 8 +316227766
.00.0   0012         STA 6 ERROR+48       A
.00.0   0013         SUB 8 +632455532
.00.0   0014   *CP1   F4246 1014.15.ERROR+48
.00.0   0015         STA 6 ERROR+48       A
.00.0   0016         MUL 6 ERROR+48       A
.00.0   0017         STA 6 ERROR+49       B
.00.0   0018         MUL 8 +0410597044
.00.0   0019         ADD 8 +0057228327
.00.0   0020         MUL 6 ERROR+49       B
.00.0   0021         ADD 8 +0250341093
.00.0   0022         MUL 6 ERROR+49       B
.00.0   0023         ADD 8 +0282433571
.00.0   0024         MUL 6 ERROR+49       B
.00.0   0025         ADD 8 +0400193033
.00.0   0026         MUL 6 ERROR+49       B
.00.0   0027         ADD 8 +0666661710
.00.0   0028         MUL 6 ERROR+49       B
.00.0   0029         ADD 8 +2000000037
.00.0   0030         MUL 6 ERROR+48       A
.00.0   0031         ADD 8 +1151292547
.00.0   0032   *A    BFA 8 D+.22.00
.00.0   0033   *CP2  F424  9858.48.1
.00.0   0034         IBB 8 A-.1
.00.0   0035   *D    STA 9 RGN.08
.00.0   0036   *B    CAD 8 EXP
.00.0   0037         FSU 8 +5251000000
.00.0   0038         BCL 8 *+2
.00.0   0039         FAD 6 ERROR+51       =1.0=
.00.0   0040         FMU 8 +5123025851
.00.0   0041         FAD 9 RGN
.00.0   0042         LDB 8 LOG
.00.0   0043         BUN - 0
.00.0   0044   SMALL BFA 8 A+.11.1
.00.0   0045         SRT   1
.00.0   0046         SUB 8 +2000000000
.00.0   0047   *A    FAD 8 +1000000000
.00.0   0048         BZA 8 E+
.00.0   0049         STA 6 ERROR+48       A
.00.0   0050         IFL 6 ERROR+48.22.39
.00.0   0051         CAD 6 ERROR+48       A
.00.0   0052         FMU 8 -5025000000
.00.0   0053         FAD 8 +5033333333
```

```
.00.0   0054            FMU  6 ERROR+48        A
.00.0   0055            FAD  8 -5050000000
.00.0   0056            FMU  6 ERROR+48        A
.00.0   0057            FMU  6 ERROR+48        A
.00.0   0058            FAD  6 ERROR+48        A
.00.0   0059    *E      STA  8 RGN+3
.00.0   0060            IBB  8 B=*3
.00.0   0061    *F      LDR  8 $LOG$
.00.0   0062            LDB  8 LOG
.00.0   0063            BUN  6 ERROR+7
.00.0   0064    RGN     CNST   4900000000
.00.0   0065                   5000000000
.00.0   0066                   5100000000
.00.0   0067                   00         0
.00.0   0068    EXP            5200000000
.00.0   0069            FINI   LOG
         069                   +1000000000
        -070                   +2000000000
        0071                   +5033333333
        0072                   +5123025851
        0073                   +0316227766
        0074                   +0057228327
        0075                   +0632455532
        0076                   +0400193033
        0077                   -5025000000
          78                   $LOG
        0079                   +0666661710
        0080                   +2000000037
        0081                   +0410597044
        0082                   -5050000000
        0083                   +5251000000
        0084                   +0250341093
        0085                   +0282433571
        0086                   +1151292547
```

```
.00.0   0100   ERROR DEFN  100
.00.0   0000   EXP   CLR
.00.0   0001         LDR 8 EXP2
.00.0   0002         STR 8 E+.04
.00.0   0003         STA 8 EXP.12
.00.0   0004         CFA 8 +5311282665.00
.00.0   0005         BCH 8 B+
.00.0   0006         SLT   2
.00.0   0007         STR 8 *+1.02
.00.0   0008         CLR
.00.0   0009         LDB 8 *-1
.00.0   0010         MUL 8 +4342944819
.00.0   0011         IBB 8 *+3.9949
.00.0   0012         SLT - 1
.00.0   0013         LBC 8 *-1
.00.0   0014         SLT   8
.00.0   0015         STR 8 TS.22
.00.0   0016         IFL 8 TS.22.51
.00.0   0017         SLT   12
.00.0   0018         CLR
.00.0   0019         IBB 8 *+2.10
.00.0   0020         SLT - 1
.00.0   0021         SLT   10
.00.0   0022         STA 6 ERROR+50      C
.00.0   0023         MUL 6 ERROR+50      C
.00.0   0024         STA 6 ERROR+48      A
.00.0   0025         MUL 8 -17159
.00.0   0026         ADD 8 -4893282
.00.0   0027         MUL 6 ERROR+48      A
.00.0   0028         ADD 8 -169203872
.00.0   0029         MUL 6 ERROR+48      A
.00.0   0030         ADD 8 -995711477
.00.0   0031         MUL 6 ERROR+50      C
.00.0   0032         STA 6 ERROR+50      C
.00.0   0033         STA 6 ERROR+49      B
.00.0   0034         CAD 8 +417304
.00.0   0035         MUL 6 ERROR+48      A
.00.0   0036         ADD 8 +35418755
.00.0   0037         MUL 6 ERROR+48      A
.00.0   0038         ADD 8 +529087016
.00.0   0039         MUL 6 ERROR+48      A
.00.0   0040         ADD 8 +864864000
.00.0   0041         ADL 6 ERROR+49      B
.00.0   0042         SUB 6 ERROR+50      C
.00.0   0043         SRT   3
.00.0   0044         DIV 6 ERROR+49      B
.00.0   0045         ADA 8 TS
.00.0   0046         DFL 8 EXP.12.10
.00.0   0047         LDB 8 EXP
.00.0   0048         BRP 8 A+
.00.0   0049         BUN - 0
.00.0   0050   *A    STA 6 ERROR+50      C
.00.0   0051         CAD 8 +5099999999
.00.0   0052         F4248 9999.41.*
```

```
.00.0   0053            FDV  6 ERROR+50       C
.00.0   0054            BUN  - 0
.00.0   0055    *B      LDB  8 EXP
.00.0   0056            BMA  8 C+
.00.0   0057    *E      LDR  8 EXP1
.00.0   0058            BUN  6 ERROR
.00.0   0059    *C      CLA
.00.0   0060            BUN  - 0
.00.0   0061    TS      CNST   0
.00.0   0062    EXP2    HLT  8 EXP1
.00.0   0063    EXP1    CNST   $EXP$
.00.0   0064            FINI   1
        0064                   +5099999999
        0065                   +0035418755
        0066                   +4342944819
        0067                   +0000417304
        0068                   +0864864000
        0069                   +0529087016
        0070                   -0169203872
        0071                   +5311282665
        0072                   -0000017159
        0073                   -0004893282
        0074                   -0995711477
```

```
 00.0      0100   ERROR DEFN  100
 00.0      0000   SQRT  CLB
 00.0      0001         LDB 8 SQRT
 00.0      0002         BZA - 0
 00.0      0003         BMA 8 A+
 00.0      0004         STA 8 A.08
 00.0      0005         STA 8 EXP.23
 00.0      0006         CAD 6 ERROR+47        =5(11)=
 00.0      0007         MUL 8 EXP
 00.0      0008         SUB 8 +2550000000
 00.0      0009         STA 8 EXP.23                  ,
 00.0      0010         CFA 8 EXP.31
 00.0      0011         BCE 8 *+3
 00.0      0012         BMA 8 *+2
 00.0      0013         IFL 8 EXP.22.1
 00.0      0014         CAD 8 -4916450338
 00.0      0015         FMU 8 A
 00.0      0016         FAD 8 +5041117101
 00.0      0017         FMU 8 A
 00.0      0018         FAD 8 +5062697923
 00.0      0019         STA 6 ERROR+49        B
 00.0      0020         CAD 8 A
 00.0      0021         FDV 6 ERROR+49        B
 00.0      0022         FAD 6 ERROR+49        B
 00.0      0023         FMU 8 +5050000000
 00.0      0024         STA 6 ERROR+49        B
 00.0      0025         CAD 8 A
 00.0      0026         FDV 6 ERROR+49        B
 00.0      0027         FAD 6 ERROR+49        B
 00.0      0028         ADD 8 EXP
 00.0      0029         BCE 8 B+
 00.0      0030         FMU 8 +5015811388
 00.0      0031         BUN - 0
 00.0      0032   *B    FMU 8 +5050000000
 00.0      0033         BUN - 0
 00.0      0034   *A    LDR 8 $SQRT$
 00.0      0035         BUN 6 ERROR+7
 00.0      0036   A     CNST  5110000000
 00.0      0037   EXP   CNST  0
 00.0      0038         FINI  1
           0038               -4916450338
           0039               +5015811388
           0040               +2550000000
           0041               +5050000000
             42               $SQRT
           0043               +5041117101
           0044               +5062697923
```

```
.00.0          THE LIBRARY ERROR SUBROUTINE
.00.0    0000  ERROR DEFN  *
.00.0    0000  ERA   STP 8 C+
.00.0    0001        BUN 8 A+
.00.0    0002  MSGA  CNST  $RESULT OUT OF RANGE IN    $
.00.0    0007  ERB   STP 8 C+
.00.0    0008        BUN 8 A+
.00.0    0009  MSGB  CNST  $RESULT UNDEFINED FOR      $
.00.0    0014  ERC   STP 8 C+
.00.0    0015        BUN 8 A+
.00.0    0016  MSGC  CNST  $RESULT ILL-DEFINED FOR    $
.00.0    0021  ERD   CLL 8 OUT+5
.00.0    0022        STP 8 C+
.00.0    0023        BUN 8 A++2
.00.0    0024  Z     CNST  0
.00.0    0025  MSGD  CNST  $ ARITHMETIC OVERFLOW$
.00.0    0029  *A    STR 8 OUT+5
.00.0    0030        CAR
.00.0    0031        STB 8 B+.04
.00.0    0032        LDB 8 OUT1
.00.0    0033  *C    RTF   *.5
.00.0    0034        CWR 8 OUT+10.42
.00.0    0035  *B    BUN   *
.00.0    0036  OUT   CNST  0.0.0.0.0.0.0.0.0.0
.00.0    0047  H     CNST  5000000000
.00.0    0048  A     CNST  0
.00.0    0049  B     CNST  0
.00.0    0050  C     CNST  0
.00.0    0051  ONE   CNST  5110000000
.00.0    0052  OUT1  HLT 8 OUT
.00.0    0053        FINI  ERROR
```

```
.00.0   0000          REORD 0,0
.00.0   0000   READ   F4247 SW,1,*
.01.0   0001          STA 8 X,04
.02.0   0002          STA 8 Y,04
.03.0   0003          IFL 8 Y,04,1
.04.0   0004          STP 8 U
.05.0   0005          BUN 8 X
.06.0   0006          LDB 8 SW
.07.0   0007          CLL - 0
.08.0   0008          CLL 8 S6
.09.0   0009   A      CDR 0 M+16,1
.10.0   0010          CLL 8 I
.11.0   0011          IFL 8 I,05,2
.12.0   0012          LDB 8 SW
.13.0   0013          IBB 8 B,9999
.14.0   0014          DLB 8 S6,64,0
.15.0   0015          CAD   M+1
.16.0   0016          IBB 8 AC,9999
.17.0   0017   B      DLB 8 I,94,0
.18.0   0018          CAD - M+1
.19.0   0019          LDB 8 I
.20.0   0020          SLA - 0
.21.0   0021          IFL 8 I,05,2
.22.0   0022          LDR 8 S6
.23.0   0023          BFR 8 AD,00,0
.24.0   0024          DBB 8 A,160
.25.0   0025          DLB 8 S6,44,0
.26.0   0026          BFA 8 K,22,13
.27.0   0027          SRA   8
.28.0   0028          SLA - 0
.29.0   0029          ADL 8 N
.30.0   0030          DFL 8 S6,41,2
.31.0   0031          BRP 8 B
.32.0   0032          CAD 8 N
.33.0   0033          STP 8 U
.34.0   0034          BUN 8 X
.35.0   0035   *B     DFL 8 S6,52,12
.36.0   0036          BUN 8 B
.37.0   0037   AD     DBB 8 A,162
.38.0   0038          BFA 8 G,11,8
.39.0   0039          BFA 8 P,22,03
.40.0   0040          BFA 8 Q,22,20
.41.0   0041          BFA 8 Q,22,34
.42.0   0042          BFA 8 C,22,23
.43.0   0043          BFA 8 B-,22,13
.44.0   0044          BFA 8 A+,22,14
.45.0   0045   O      LDB 8 S3
.46.0   0046          IBB 8 B,9999
.47.0   0047          STP 8 U
.48.0   0048          BUN 8 W
.49.0   0049          BUN 8 B
.50.0   0050   *A     IFL 8 I,94,16
.51.0   0051          BUN 8 O
.52.0   0052   K      CLL 8 S6
```

```
 .53.0      0053          CAD  8 N
 .54.0      0054          STP  8 U
 .55.0      0055          IBB  8 X.9992
 .56.0      0056          BUN  8 B
 .57.0      0057    C     IFL  8 S5.00.1
 .58.0      0058          STP  8 U
 .59.0      0059          BUN  8 W
 .60.0      0060          IFL  8 S2.00.1
 .61.0      0061          BUN  8 B
 .62.0      0062    Q     IFL  8 S1.00.1
 .63.0      0063          BUN  8 B
 .64.0      0064    P     LDR  8 T
 .65.0      0065          STR  8 D.22
 .66.0      0066          IFL  8 S4.00.1
 .67.0      0067          BUN  8 B
 .68.0      0068    G     SLA  0 1
 .69.0      0069          LDR  8 N
 .70.0      0070          SLT  0 1
 .71.0      0071          STR  8 N
 .72.0      0072          DFL  8 D.22.1
 .73.0      0073          IFL  8 S3.00.1
 .74.0      0074          BUN  8 B
 .75.0      0075    W     LDR  8 S2
 .76.0      0076          BZR  8 E
 .77.0      0077          CAD  8 N
 .78.0      0078          SLA  0 8
 .79.0      0079          ADD  8 R
 .80.0      0080          STA  8 N
 .81.0      0081          CAD  8 F
 .82.0      0082          LDB  8 S1
 .83.0      0083          DBB  8 H.1
 .84.0      0084          FMU  8 N
 .85.0      0085          BUN  8 J
 .86.0      0086    H     FDV  8 N
 .87.0      0087    J     LDB  8 S5
 .88.0      0088          DBB  8 L.1
 .89.0      0089    X     STP  0 *
 .90.0      0090    Y     BUN  0 *
 .91.0      0091          BSA  8 Z.9
 .92.0      0092          STB  8 Y.04
 .93.0      0093    V     LDB  8 S
 .94.0      0094          CLL  8 D
 .95.0      0095          RTF  8 D.7
 .96.0      0096    U     BUN  0 *
 .97.0      0097    L     STA  8 F
 .98.0      0098          BUN  8 V
 .99.0      0099    Z     LDB  8 READ
1.00.0      0100          CLL  8 SW
1.01.0      0101          BUN  - 0
1.02.0      0102    E     CAD  8 N
1.03.0      0103          LDB  8 S4
1.04.0      0104          IBB  8 S.9999
1.05.0      0105          ADD  8 D
1.06.0      0106          FAD  8 D
1.07.0      0107    S     LDB  8 S1
1.08.0      0108          IBB  8 J.9999
```

```
1.09.0      0109            LSA 0 1
1.10.0      0110            BUN 8 J
1.11.0      0111    AC      CFA 8 ST1.08
1.12.0      0112            BCU 8 B
1.13.0      0113            LDR   M+2
1.14.0      0114            CFR 8 ST2.00
1.15.0      0115            BCU 8 B
1.16.0      0116            LDB 8 SW
1.17.0      0117            IFL - 0.00.1
1.18.0      0118            BUN 8 Z
1.19.0      0119    T       CNST  +5800000000
1.20.0      0120    ST1     CNST  $5SENT$
1.21.0      0121    ST2     CNST  $INEL $
1.22.0      0122    R       CNST  +5110000000
1.23.0      0123    SW      HLT 0 0
1.24.0      0124    D       HLT 0 0
1.25.0      0125    S1      HLT 0 0
1.26.0      0126    S2      HLT 0 0
1.27.0      0127    S3      HLT 0 0
1.28.0      0128    S4      HLT 0 0
1.29.0      0129    S5      HLT 0 0
1.30.0      0130    N       HLT 0 0
1.31.0      0131    S6      HLT 0 0
1.32.0      0132    F       HLT 0 0
1.33.0      0133    I       HLT 0 0
1.34.0      0100    M       DEFN  100
1.35.0      0134            FINI  1
```

```
.00.0          THE WRITE PROCEDURE
.00.0  0000            REORD
 00.0  0100    ERROR   DEFN  100
.01.0  0000            LOCN  0
.02.0  0125    ZOUT    DEFN  125
.03.0  0126    ALPHA   DEFN  126
.04.0  0127    BETA    DEFN  127
.05.0  0128    GAMMA   DEFN  128
.06.0  0129    WIDTH   DEFN  129
.07.0  0130    OP      DEFN  130
.08.0  0131    DEC     DEFN  131
.09.0  0132    NEXTN   DEFN  132
.10.0  0133    DELTA   DEFN  133
.11.0  0134    THISN   DEFN  134
.12.0  0000    WRITE   CNST  0100010000
.13.0  0001            STA 8 FORMT.04
.14.0  0002            LDB 8 *+2
.15.0  0003            RTF 8 SIGN2.1
.16.0  0004            RTF   101.30
.17.0  0005            LDB 8 WRITE
.18.0  0006            STB 8 XIT.04
.19.0  0007            LDR - 9999
.20.0  0008            LSA   9.7557
.21.0  0009            BFR 8 I+.22.00
.22.0  0010            LDB   100
.23.0  0011            STP - 0
.24.0  0012            BFR - 1.22.01
.25.0  0013    *1      STA   NEXTN
.26.0  0014            STB 8 OUT.04
.27.0  0015            LDR   OP
.28.0  0016            BZR 8 OVTST
.29.0  0017            CAD   THISN
.30.0  0018            CLL   DELTA
.31.0  0019            BFR 8 FF.52.46
.32.0  0020            BFR 8 XX.52.67
.33.0  0021            BFR 8 II.52.49
.34.0  0022            BFR 8 SS.52.62
.35.0  0023            BFR 8 AA.52.41
.36.0  0024            BUN 8 ERR
.37.0  0025    AA      LDR 8 NNINE
.38.0  0026    *A      DFL   WIDTH.0.1
.39.0  0027            STP 8 EXIT1
.40.0  0028            BUN 8 SUBR2
.41.0  0029            CAD   WIDTH
.42.0  0030            BZA 8 CYCLE
.43.0  0031            BFR 8 D+.22.99
.44.0  0032            SLT   10
.45.0  0033            BUN 8 A-
.46.0  0034    OVTST   LDB 8 WRITE+1
.47.0  0035            BOF 6 ERROR+21
.48.0  0036    FORMT   CAD   9999
.49.0  0037            IFL 8 FORMT.04.1
.50.0  0038            BPA 8 0+
.51.0  0039            LDR 8 NNINE
```

```
 .52.0      0040           BMA  8 R+
 .53.0      0041    *C     BFA  8 FORMT,22,14
 .54.0      0042           STP  8 EXIT1
  55.0      0043    NNINE  F4248 9900,30,SUBR2
 .56.0      0044           BFR  8 FORMT,22,99
 .57.0      0045           SLT    10
 .58.0      0046           BUN  8 C-
 .59.0      0047    BB     CAD    WIDTH
 .60.0      0048           ADL    ZOUT
 .61.0      0049           ADL    ZOUT
 .62.0      0050    CYCLE  CAD    OP
 .63.0      0051           BFA  8 OVTST,33,00
 .64.0      0052    *0     BFA  8 *+2,33,00
 .65.0      0053           SUB  8 +0010000000
 .66.0      0054           STA    OP
 .67.0      0055           STA    DEC,02
 .68.0      0056    I2     SRT    2
 .69.0      0057           STA    WIDTH,03
 .70.0      0058           BFA  8 BB,72,42
 .71.0      0059           BFA  8 WW,72,66
 .72.0      0060           BFA  8 PP,72,57
 .73.0      0061           BFA  8 TT,72,63
 .74.0      0062           BFA  8 CC,72,43
 .75.0      0063           BFA  8 FORMT,03,00
 .76.0      0064    *D     CAD    NEXTN
 .77.0      0065           STA    THISN
 .78.0      0066           BSA  8 BB,9
 .79.0      0067    OUT    BUN    9999
 .80.0      0068    *R     LDB  8 FORMT
 .81.0      0069           BFA  8 Z+,66,00
 .82.0      0070           SLT    3
 .83.0      0071           BFR  8 S+,03,00
 .84.0      0072    *B     SUB  8 +0010000000
 .85.0      0073           BFA  8 I9999,33,00
 .86.0      0074           DFL  - 9999,63,1
 .87.0      0075    *A     LDR  - 9999
 .88.0      0076           STR  8 FORMT,04
 .89.0      0077           BUN  8 FORMT
 .90.0      0078    *S     STA  - 9999,33
 .91.0      0079           BUN  8 B-
 .92.0      0080    I9999. CAD  - 9999
 .93.0      0081    I03    SRT    3
 .94.0      0082           STA  - 9999,68
 .95.0      0083           BUN  8 FORMT
 .96.0      0084    *Z     CAD    NEXTN
 .97.0      0085    XIT    BSA    9999,9
 .98.0      0086           BUN  8 A=
 .99.0      0087    CC     CWR    124,51
1.00.0      0088    WW     SRT    3
1.01.0      0089           STR  8 *+1,31
1.02.0      0090           CWR    124,52
1.03.0      0091    *C     LDB  8 *+2
1.04.0      0092           RTF  8 SIGN2,1
 .05.0      0093           RTF    101,24
 .06.0      0094           BUN  8 CYCLE
1.07.0      0095    PP     CWR    124,51
```

```
1.08.0      0096              BUN  8 C-
1.09.0      0097    TT        BFA  8 A+,03,0
1.10.0      0098              SPO  8 B+,1
1.11.0      0099              ADA  8 I9999
1.12.0      0100              BUN  8 TT
1.13.0      0101    *B        CNST   21602020202
1.14.0      0102    *A        CAD    ZOUT
1.15.0      0103              BZA  8 CYCLE
1.16.0      0104              ADD  8 I8
1.17.0      0105              SRT    4
1.18.0      0106              STR  8 *+1,32
1.19.0      0107              SPO    101,99
1.20.0      0108              BUN  8 C-
1.21.0      0109    I1        LDB  8 I10
1.22.0      0110              BZA  8 Q+
1.23.0      0111    *C        BFA  8 I51,11,0
1.24.0      0112    *S        STA    THISN
1.25.0      0113    I80       CAR    80
1.26.0      0114    MAJOR     STB    GAMMA
1.27.0      0115              CLL    ALPHA
1.28.0      0116              STA    ALPHA,04
1.29.0      0117              STR    BETA
1.30.0      0118              CAD    THISN
1.31.0      0119    I10       SRS    10
1.32.0      0120    I23       LSA    1,23
1.33.0      0121              ADD    WIDTH
1.34.0      0122              SUB    GAMMA
1.35.0      0123              BMA  8 ERR
1.36.0      0124    H0        ADL    ZOUT
1.37.0      0125    H50       F424   5000,19,ZOUT
1.38.0      0126              CAD    THISN
1.39.0      0127              LDR  8 I20
1.40.0      0128              STP  8 EXIT1
1.41.0      0129              BMA  8 SUBR1
1.42.0      0130              DFL    GAMMA,00,1
1.43.0      0131              BRP  8 F+
1.44.0      0132              LDR    BETA
1.45.0      0133              BZR  8 CYCLE
1.46.0      0134              LDR  8 I23
1.47.0      0135              STP  8 EXIT1
1.48.0      0136              BUN  8 SUBR1
1.49.0      0137              CAD    BETA
1.50.0      0138              SUB  8 H50
1.51.0      0139              LDB  8 I2
1.52.0      0140              CLL    WIDTH
1.53.0      0141              IFL    WIDTH,00,3
1.54.0      0142              BUN  8 S=
1.55.0      0143    *F        DFL    ALPHA,00,1
1.56.0      0144              LDR    ALPHA
1.57.0      0145              BZR  8 H+
1.58.0      0146              LDR    DELTA
1.59.0      0147              BZR  8 I+
1.60.0      0148              DFL    DELTA,00,1
1.61.0      0149              LDR  8 I80
1.62.0      0150              BUN  8 SUBR1
```

```
1.63.0      0151   *M     LDR 8 I03
1.64.0      0152          BUN 8 SUBR1
1.65.0      0153   *I     CAD   THISN
1.66.0      0154          LDR 8 I8
1.67.0      0155   I1     SLT   1
1.68.0      0156          STA   THISN
1.69.0      0157   SUBR1  SLT   18
1.70.0      0158   SUBR2  SRT   8
1.71.0      0159          LBC   ZOUT
1.72.0      0160          SLA - 8
1.73.0      0161          DLB   ZOUT,94,0
1.74.0      0162          DBB 8 EXIT1,24
1.75.0      0163   I20    LSA   0,20
1.76.0      0164          ADD - 125
1.77.0      0165          STA - 125,00
1.78.0      0166          IFL   ZOUT,00,2
1.79.0      0167   EXIT1  BUN   9999
1.80.0      0168   *Q     DBB 8 I80,9
1.81.0      0169   I51    SLA   51
1.82.0      0170          DBB 8 C-,1
1.83.0      0171   XX     CLR   7557
1.84.0      0172   I8     SRT   8
1.85.0      0173          CFA 8 +50,04
1.86.0      0174          STR   THISN
1.87.0      0175          BCL 8 D+
1.88.0      0176   *E     STA 8 TEMP,04
1.89.0      0177          DFL 8 TEMP,04,49
1.90.0      0178          LDB 8 TEMP
1.91.0      0179          CAD   OP
1.92.0      0180          SRT   4
1.93.0      0181          STR 8 B+,42
1.94.0      0182          CAD 8 TEMP
1.95.0      0183   TEMP   CLR   9999
1.96.0      0184   *B     IBB 8 MAJOR,0000
1.97.0      0185   *D     LSA   0,7557
1.98.0      0186          SUB 8 +50
1.99.0      0187          STA   DELTA,02
2.00.0      0188          CFR   OP,02
2.01.0      0189          BCE 8 *+3
2.02.0      0190   *F     CAD 8 +50
2.03.0      0191          BUN 8 E-
2.04.0      0192          CAD 8 I51
2.05.0      0193          STA   THISN,11
2.06.0      0194          BUN 8 E-
2.07.0      0195   FF     DFL   WIDTH,03,4
2.08.0      0196          BRP 8 A+
2.09.0      0197          BUN 8 ERR1
2.10.0      0198          CAD 8 +5000000000
2.11.0      0199   *A     BZA 8 *-1
2.12.0      0200          CLR   7557
2.13.0      0201          STA 8 H0,22
2.14.0      0202          SRT   8
2.15.0      0203          STR   THISN
2.16.0      0204          SRS   10
2.17.0      0205          ADD   OP
2.18.0      0206          EXT 8 I51
```

```
2.19.0      0207            CFA    WIDTH.03
2.20.0      0208            BCL 8  C+
2.21.0      0209    ERR1    IFL    WIDTH.0.4
2.22.0      0210    ERR     CAD    WIDTH
2.23.0      0211            ADL    ZOUT
2.24.0      0212            ADL    ZOUT
2.25.0      0213            DFL    ZOUT.0.2
2.26.0      0214            LDR 8  I14
2.27.0      0215            STP 8  EXIT1
2.28.0      0216            BUN 8  SUBR1
2.29.0      0217            BUN 8  CYCLE
2.30.0      0218    *C      LDR 8  H0
2.31.0      0219    *E      CAD 8  I1
2.32.0      0220    *D      LDB    DEC
2.33.0      0221            IBB 8  MAJOR.1
2.34.0      0222    SS      CLR    7557
2.35.0      0223            SRT    8
2.36.0      0224            STR    THISN
2.37.0      0225    I14     LSA    0.14
2.38.0      0226            SUB 8  +50
2.39.0      0227            CLR    7557
2.40.0      0228            BMA 8  A+
2.41.0      0229    *C      CFA    OP.02
2.42.0      0230            BCH 8  ERR
2.43.0      0231            ADD 8  I1
2.44.0      0232            BUN 8  D-
2.45.0      0233    *A      STA    DELTA.00
2.46.0      0234            BUN 8  E-
2.47.0      0235    SIGN2   CNST   20000000000
2.48.0      0236            FINI   WRITE
            0236                   +5000000000
            0237                   +0010000000
            0238                   +000      50
```

```
 00.0    0100   ERROR DEFN  100
 00.0    0000   FIX   CRB
 00.0    0001         SRT   8
 00.0    0002         STA 8 A+.04
 00.0    0003         LDB 8 A+
 00.0    0004   *A    CLA
 00.0    0005         IBB 8 B+.9949
 00.0    0006         DBB 8 C+.10
 00.0    0007         SLT - 11
 00.0    0008   *B    LDB 8 FIX
 00.0    0009         BUN - 0
 00.0    0010   *C    IOM 8 D+
 00.0    0011         LDR 8 $FIX$
 00.0    0012         LDB 8 FIX
 00.0    0013         BUN 6 ERROR
 00.0    0014   *D    CLR
 00.0    0015         BUN 8 B-
 00.0    0016         FINI  FIX
           16                $FIX
```

```
0000 0000    FLOAT CRB
0000 0001    *B    BFA 8 A+*22*00
0000 0002          SRA   1
0000 0003          IBB 8 B-*1
0000 0004    *A    SRT   8
0000 0005          CAD 9 C+
0000 0006          SLT   8
0000 0007          FAD 8 D+
0000 0008          LDB 8 FLOAT
0000 0009          BUN -*0
0000 0010    *C    CNST  58
0000 0011                +59
0000 0012                +60
0000 0013    *D          +3800000000
0000 0014          FINI  FLOAT
```