

001064 IDENT TOKPROC  
PROGRAM LENGTH

## BLOCKS

000000 002064 ABSOLUTE# ABSOLUTE  
000000 001064 PROGRAM# LOCAL

## ENTRY POINTS

000000 TOKENIZ

## EXTERNAL SYMBOLS

|         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|
| CALLENT | BUFFPNT | CHARPNT | CURRTOK | DEFLT8  | FORCE   | INBUFF  | INPUTA  |
| LASTTOK | LOOKUP  | NSRCADR | PROTECT | READF   | RESTREG | SAVEREG | SD.STRB |
| SD.SYMT | SD.TOK  | SETMIN  | SRCADR  | SRCFILE | STARB   | STARL   | STATE   |
| THISTOK | TOKBASE | CALLINT |         |         |         |         |         |
|         | EXT     | CALLENT |         |         |         |         |         |
|         | ENTRY   | TOKENIZ |         |         |         |         |         |

```

FILLBUFF MACRO
-      XJ      SAVEREG
      VFD      30/0
      SA2      INPUTA
      SB1      INBUFF
      SX6      A5-B1
      SX5      X5
      IX2      X2+X5
      IX6      X6+X2
      SA6      A2
      XJ      READF      READ IN DATA
-      VFD      30/0
      XJ      RESTREG
-      VFD      30/0
      SA5      INBUFF      START A5
      OR      X5,EOI
      ENDM

#
0000020 ASCII0 EQU 16
#
SYS      MACRO      P
      XJ      B
-      VFD      30/0
      ENDM

#
CALL     MACRO ADDR,RET,REG
XX      MICRO 1,,SREGS
      IFC EQ,SREGS,1
XX      MICRO 1,,SB7S
      IFC NE,SRETSS,2
      S+XXX# RET
      IFPP
      IFEQ $,59,2
      S+XXX# ++1
      IFPP
      IFLT $,29,2
      S+XXX# ++1
      IFPP
      S+XXX# ++2
      ENDDIF
      JP ADDR
      ENDM
#

```

|        |              |          |          |             |                           |
|--------|--------------|----------|----------|-------------|---------------------------|
| 000000 | 5150000000 X | TOKENIZ  | SA5      | RUFFPNT     |                           |
|        | 5120000000 X |          | SA2      | TOKBASE     | BASE OF TOKEN AREA        |
| 000001 | 7170000014   |          | SA7      | 12          |                           |
|        | 73620        |          | SA6      | X2          |                           |
|        | 53550        |          | SA5      | X5          | START A5/X5               |
| 000002 | 5170000000 X |          | SA7      | STATE       | SET STATE TO 12           |
|        | 5160000000 X |          | SA6      | THISTOK     | INITIALIZE TOKEN POINTERS |
| 000003 | 5160000000 X |          | SA6      | CURRTOK     |                           |
|        | 5120000000 X |          | SA2      | CHARPNT     |                           |
| 000004 | 5130000000 X |          | SA3      | NSRCADR     |                           |
|        | 10633        |          | BA6      | X3          |                           |
|        | 76700        |          | SA7      | R0          |                           |
| 000005 | 5160000000 X |          | SA6      | SRCADR      | ** SET NEW SOURCE ADDRESS |
|        | 6140000000   |          | SB4      | S.OTHER     |                           |
| 000006 | 43065        |          | MX0      | 60-7        |                           |
|        | 63220        |          | SB2      | X2          |                           |
|        | 0620000010 + |          | PL       | R2,TESTWORD |                           |
| 000007 | 6120000061   |          | SB2      | 49          |                           |
|        | 5055000001   |          | SA5      | A5+1        |                           |
| 000010 | 0355001063 + | TESTWORD | OR       | X5,ENDASM   | ** SENSE END OF ASSEMBLY  |
|        | 0365000030 + |          | DF       | X5,GETTOK   |                           |
| 000011 |              |          | FILLBUFF |             |                           |
| 000020 | 0200000030 + |          | JP       | GETTOK      | START GOING               |

|        |              |         |          |                                           |
|--------|--------------|---------|----------|-------------------------------------------|
|        |              | *       | A5,X5,B2 | STRING DESCRIPTION                        |
|        |              | *       | X0       | 7 BIT HOLE                                |
|        |              | *       | B4       | TOKEN CLASS OF LAST TOKEN MADE            |
| 000021 | 5120000000 X | NEXTTOK | SA2      | CURRTOK                                   |
|        | 5110000000 X |         | SA1      | THISTOK                                   |
| 000022 | 5140000000 X |         | SA4      | LASTTOK                                   |
|        | 73620        |         | SX6      | X2                                        |
|        | 54610        |         | SA6      | A1                                        |
| 000023 | 73710        |         | SX7      | X1                                        |
|        | 54740        |         | SA7      | A4                                        |
|        | 5120000000 X |         | SA2      | STATE                                     |
| 000024 | 43666        |         | MX6      | 60-MSK.ACT                                |
|        | 5232000760 + |         | SA3      | X2+TOKSTATE-1 .. PICK UP STATE TABLE WORD |
|        | 22343        |         | LA3      | X3,B4 .. INDEX BY TOKEN CLASS             |
| 000025 | 15636        |         | BX6      | -X6*X3                                    |
|        | 5236000776 + |         | SA3      | X6+ACTIONS                                |
|        | 73630        |         | SX6      | X3 PULL APART ACTION WORD                 |
| 000026 | 54620        |         | SA6      | A2 STORE NEW STATE                        |
|        | 21336        |         | AX3      | 30                                        |
|        | 63430        |         | SB4      | X3                                        |
| 000027 | 0240000000   |         | JP       | B4 CALL ACTION                            |
| 000030 | 23225        | GETTOK  | AX2      | X5,B2 GET CHARACTER                       |
|        | 15220        |         | BX2      | -X0*X2                                    |
|        | 5232000561 + |         | SA3      | X2+CHARTABL                               |
| 000031 | 20316        |         | LA3      | CT.CLASS GET CLASSIFICATION BITS          |
|        | 43462        |         | MX4      | 60-MSK.CLAS                               |
|        | 15434        |         | BX4      | -X4*X3                                    |
|        | 63340        |         | SB3      | X4                                        |
| 000032 | 0230000021 + |         | JP       | B3+NEXTTOK                                |



|        |                      |          |          |                |                                            |
|--------|----------------------|----------|----------|----------------|--------------------------------------------|
| 000033 | 53310                | ROUNDOP  | SA3      | X1             |                                            |
|        | 7160000014           |          | SX6      | 12             |                                            |
|        | 20660                |          | LX6      | 48             |                                            |
| 000034 | 36663                |          | IX6      | X6+X3          | MAKE OLD ARITH OPERATION ROUND             |
|        | 53640                |          | SA6      | X4             | REPLACE OVER . TOKEN                       |
|        | 0200000037 +         |          | JP       | DELETE.        | DELETE OLD ARITH TOKEN                     |
| 000035 |                      | DOUBLEOP | BSS      | 0              |                                            |
| 000035 | 5234000000           | FLOATOP  | SA3      | X4+0           | GET LAST TOKEN                             |
|        | 7160000004           |          | SX6      | 4              |                                            |
| 000036 | 20660                |          | LX6      | 48             |                                            |
|        | 36663                |          | IX6      | X6+X3          |                                            |
|        | 5063000000           |          | SA6      | A3+0           | MAKE INT TO FLOAT OR FLOAT TO DOUBLE       |
| 000037 | 73610                | DELETE.  | SX6      | X1             |                                            |
|        | 73740                |          | SA7      | X4             |                                            |
|        | 54610                |          | SA6      | A1             | REPLACE POINTERS BACK TO ORIGINAL          |
|        | 54740                |          | SA7      | A4             |                                            |
| 000040 | 5160000000 X         |          | SA6      | CURRTOK        |                                            |
|        | 0200000030 +         |          | JP       | GETTOK         |                                            |
| 000041 | 7160002032           | MODOP    | SX6      | T.MOD          |                                            |
|        | 20660                |          | LX6      | 48             |                                            |
|        | 53640                |          | SA6      | X4             |                                            |
| 000042 | 0200000037 +         |          | JP       | DELETE.        | REMOVE TOP BACK SLASH                      |
| 000043 | 53240                | GTLEQ    | SA2      | X4             | GET RELATIONAL OPERATOR                    |
|        | 76610                |          | SX6      | B1             |                                            |
|        | 20660                |          | LX6      | 48             |                                            |
|        | 36662                |          | IX6      | X6+X2          |                                            |
| 000044 | 54620                |          | SA6      | A2             | STORE UPDATE RELATIONAL OPERATOR           |
|        | 0200000037 +         |          | JP       | DELETE.        | DELETE = TOKEN                             |
| 000045 | 5055000001           | COMMENTL | SA5      | A5+1           | ..SKIP REST OF LINE                        |
|        | 0325000045 +         |          | PL       | X5.4           | ..SEARCH FOR NEW LINE FLAG                 |
| 000046 | 0355000047 +         | CHECKCOM | ON       | X5.4+1         | .. IGNORE END OF INFORMATION AT THIS POINT |
|        | 0375000053 +         |          | ID       | X5.FILLCOM     | ..FILL BUFFER AT END                       |
| 000047 | 6120000061           |          | SX2      | 7*7            |                                            |
|        | 73640                |          | SA6      | X4             |                                            |
|        | 54610                |          | SA6      | A1             | ..RESTORE CURRTOK ON TOP OF .              |
| 000050 | 5160000000 X         |          | SA6      | CURRTOK        |                                            |
|        | 53210                |          | SA2      | X1             | ..CHECK IF < OR >                          |
|        | 21260                |          | AX2      | 48             |                                            |
| 000051 | 7222775723           |          | SX2      | X2-T.QUAL      |                                            |
|        | 0312000030 +         |          | NZ       | X2.GETTOK      | .. .< OR > MEANS CONTINUATION LINE         |
| 000052 | 6122000007           |          | SX2      | B2+7           | .. ADVANCE BEFORE FIRST CHARACTER          |
|        | 0200000540 +         |          | JP       | SETLINE        | .. .. MEANS SKIP REST OF LINE              |
| 000053 |                      | FILLCOM  | FILLBUFF |                |                                            |
| 000062 | 0325000045 +         |          | PL       | X5.COMMENTL    | .. DOES NOT WORK FOR COMMENTS              |
|        | 0200000046 +         |          | JP       | CHECKCOM       | .. ON END STATEMENTS                       |
| 000063 | 53210                | CHKSTAR  | SA2      | X1             | .. CHECK IF STAR TOKEN                     |
|        | 21260                |          | AX2      | 48             |                                            |
|        | 7222775763           |          | SX2      | X2-T.STAR      |                                            |
| 000064 | 7110000066 +         |          | SX1      | DUMMY.         |                                            |
|        | 5140000000 X         |          | SA4      | TOKBASE        |                                            |
| 000065 | 0302000045 +         |          | ZR       | X2.COMMENTL    |                                            |
|        | 0200000030 +         |          | JP       | GETTOK         |                                            |
| 000066 | 20540000000000000000 | DUMMY.   | VFD      | 12/T.QUAL,48/0 |                                            |

|        |            |   |         |     |            |                               |
|--------|------------|---|---------|-----|------------|-------------------------------|
| 000067 | 53240      |   | FORCING | SA2 | X4         |                               |
|        | 21260      |   |         | AX2 | 48         |                               |
|        | 6170000030 | + |         | SB7 | GETTOK     |                               |
| 000070 | 73640      |   |         | SX6 | X4         |                               |
|        | 54610      |   |         | SA6 | A1         |                               |
|        | 5160000000 | X |         | SA6 | CURRTOK    |                               |
| 000071 | 7232775765 |   |         | SX3 | X2-T.PLUS  |                               |
|        | 0303000000 | X |         | ZR  | X3, FORCE  | .. SENSE +:                   |
| 000072 | 7232775764 |   |         | SA3 | X2-T.MINUS |                               |
|        | 0303000000 | X |         | ZR  | X3, SETMIN | .. SENSE -:                   |
| 000073 | 0200001060 | + |         | JP  | FORCERR    | .. SENSE FORCING ERROR        |
| 000074 | 53240      |   | LABEL   | SA2 | X4         | .. GET LABEL TOKEN            |
|        | 73640      |   |         | SX6 | X4         |                               |
|        | 6170000077 | + |         | SB7 | LABEL2     |                               |
| 000075 | 54610      |   |         | SA6 | A1         |                               |
|        | 63620      |   |         | SB6 | X2         | .. GET SYM TAB PTR            |
|        | 5160000000 | X |         | SA6 | CURRTOK    |                               |
| 000076 | 0200000000 | X |         | JP  | FORCE      | .. FORCE UPPER                |
| 000077 | 5120000000 | X | LABEL2  | SA2 | SD.SYMT    |                               |
|        | 21244      |   |         | AX2 | 36         | .. GET START                  |
|        | 53226      |   |         | SA2 | X2+B6      | .. GET ENTRY                  |
| 000100 | 5130000000 | X |         | SA3 | SRCADR     | .. GET SOURCE PTR             |
|        | 21266      |   |         | AX2 | 54         |                               |
|        | 20336      |   |         | LX3 | 30         |                               |
| 000101 | 5140000000 | X |         | SA4 | SRCFILE    | .. GET FILE NUMBER            |
|        | 20463      |   |         | LX4 | 21+30      |                               |
|        | 12643      |   |         | BX6 | X4+X3      |                               |
| 000102 | 7222777774 |   |         | SX2 | X2-TY.TOK  |                               |
|        | 5140000000 | X |         | SA4 | STARB      | .. GET BLOCK NUMBER           |
| 000103 | 0312001061 | + |         | NZ  | X2, ILLDEF | .. SENSE ILLEGAL REDEFINITION |
|        | 5130000000 | X |         | SA3 | STARL      |                               |
| 000104 | 12663      |   |         | BX6 | X6+X3      | .. FORM SHORT VALUE           |
|        | 20422      |   |         | LX4 | 18         |                               |
|        | 12664      |   |         | BX6 | X6+X4      | .. ADD BLOCK NUMBER TO OFFSET |
|        | 54621      |   |         | SA6 | A2+B1      | .. STORE SECOND WORD          |
| 000105 | 54220      |   |         | SA2 | A2         | .. SET CELL TYPE              |
|        | 43706      |   |         | MX7 | 6          |                               |
|        | 7160000002 |   |         | SX6 | TY.CELL    |                               |
| 000106 | 20666      |   |         | LX6 | 54         |                               |
|        | 15227      |   |         | BX2 | -X7*X2     |                               |
|        | 12662      |   |         | BX6 | X6+X2      |                               |
|        | 54620      |   |         | SA6 | A2         | .. REPLACE FIRST WORD         |
| 000107 | 0200000030 | + |         | JP  | GETTOK     |                               |
| 000110 | 53240      |   | CHKPNT  | SA2 | X4         | .. GET MINUS TOKEN            |
|        | 53310      |   |         | SA3 | X1         | .. GET GREATER TOKEN          |
|        | 20214      |   |         | LX2 | 12         |                               |
|        | 20314      |   |         | LX3 | 12         |                               |
| 000111 | 7222775764 |   |         | SX2 | X2-T.MINUS |                               |
|        | 7233775737 |   |         | SX3 | X3-T.GT    |                               |
| 000112 | 0312000115 | + |         | NZ  | X2, SET1   |                               |
|        | 0313000115 | + |         | NZ  | X3, SET1   |                               |
| 000113 | 7160002061 |   |         | SX6 | T.POINT    |                               |
|        | 20660      |   |         | LX6 | 48         |                               |

|        |              |              |      |     |         |                   |
|--------|--------------|--------------|------|-----|---------|-------------------|
|        |              | 54620        |      | SA6 | A2      |                   |
| 000114 | 0200000037 + |              |      | JP  | DELETE. |                   |
| 000115 | 7160000001   |              | SET1 | SA6 | 1       | •• SET TO STATE 1 |
|        |              | 5160000000 X |      | SA6 | STATE   |                   |
| 000116 | 0200000030 + |              |      | JP  | GETTOK  |                   |

|        |              | #        | 10 MICROSECONDS PER CHARACTER |                     |
|--------|--------------|----------|-------------------------------|---------------------|
| 000117 | 7160000010   | NT.IDENT | SA6                           | 8                   |
|        | 6130000070   |          | SB3                           | 8*7                 |
| 000120 | 5140000000 X | IDENTIF  | SA4                           | SD.STRB             |
|        | 63440        |          | SB4                           | X4                  |
|        | 21422        |          | AX4                           | 18                  |
| 000121 | 63540        |          | SB5                           | X4                  |
| 000122 | 20607        | IDLOOP   | LX6                           | 7                   |
|        | 12662        |          | BX6                           | X6+X2               |
|        | 6133777770   |          | SB3                           | B3-7                |
| 000123 | 6122777770   |          | SB2                           | B2-7                |
|        | 0720000131 + |          | NG                            | B2.ENDW             |
| 000124 | 23225        | IDNXT    | AX2                           | B2.X5               |
|        | 15220        |          | BX2                           | -X0*X2              |
|        | 5232000561 + |          | SA3                           | X2+CHARTABL         |
|        |              | #        | LX3                           | CT.ID               |
| 000125 | 0323000143 + |          | PL                            | X3.ENDID            |
|        | 0703000122 + |          | GT                            | B3,B0,IDLOOP        |
| 000126 | 0645001044 + |          | GE                            | B4,B5,SBFULL        |
|        | 6130000070   |          | SB3                           | 8*7                 |
| 000127 | 56640        |          | SA6                           | B4                  |
|        | 66441        |          | SB4                           | B4+B1               |
|        | 7160000010   |          | SA6                           | 8                   |
| 000130 | 0200000122 + |          | JP                            | IDLOOP              |
| 000131 | 6120000061   | ENDW     | SB2                           | 7*7                 |
|        | 5055000001   |          | SA5                           | A5+1                |
| 000132 | 0355000133 + |          | OR                            | X5,*+1              |
|        | 0365000124 + |          | DF                            | X5.IDNXT            |
| 000133 |              |          | FILLBUFF                      |                     |
| 000142 | 0200000124 + |          | JP                            | IDNXT               |
| 000143 | 22636        | ENDID    | LX6                           | X6.B3               |
|        | 43701        |          | MX7                           | 1                   |
|        | 0645001045 + |          | GE                            | B4,B5,SBFULL2       |
| 000144 | 13667        |          | BX6                           | X6-X7               |
|        | 56640        |          | SA6                           | B4                  |
|        | 54440        |          | SA4                           | A4                  |
|        | 53140        |          | SA1                           | X4                  |
| 000145 | 6170000146 + |          | SB7                           | GOTHASHT            |
|        | 0200000000 X |          | JP                            | LOOKUP              |
| 000146 | 5120000000 X | GOTHASHT | SA2                           | SD.SYMT             |
|        | 21244        |          | AX2                           | 36                  |
|        | 36224        |          | IX2                           | X2+X4               |
| 000147 | 53320        |          | SA3                           | X2                  |
|        | 21336        |          | AX3                           | 30                  |
|        | 43755        |          | MX7                           | 45                  |
|        | 15737        |          | BX7                           | -X7*X3              |
| 000150 | 0317000153 + |          | NZ                            | X7,GETBOX           |
| 000151 | 7170002004   | SENDID   | SA7                           | T.ID                |
|        | 20760        |          | LX7                           | 48                  |
|        | 12647        |          | BX6                           | X4+X7               |
| 000152 | 6140000006   |          | SB4                           | S.ID                |
|        | 0200000227 + |          | JP                            | HAVETOKA            |
| 000153 | 5110000000 X | GETBOX   | SA1                           | PROTECT             |
|        |              |          |                               | GET PROTECTION FLAG |

0311000154 +  
000154 76700  
54710  
0200000151 +

\*  
NOSUBST

NZ x1,NOSUBST  
CODE GOES HERE FOR TOKEN BOX EXTRACTION  
SX7 B0  
SA7 A1 CLEAR PROTECTION FLAG  
JP SENDID \*\* RETURN TOKEN VALUE

|        |              |        |          |                  |                                        |
|--------|--------------|--------|----------|------------------|----------------------------------------|
| 000155 | 612277770    | NT,REG | SB2      | B2-7             | .. MOVE TO DIGIT                       |
|        | 0720000176 + |        | NG       | B2,FILLR1        |                                        |
| 000156 | 23325        | REG1   | AX3      | X5,B2            | .. EXTRACT REGISTER NUMBER             |
|        | 15330        |        | BX3      | -X0*X3           |                                        |
|        | 5243000561 + |        | SA4      | X3+CHARTABL      |                                        |
| 000157 | 20403        |        | LX4      | CT.OCT           | .. CHECK IF IT IS AN OCTAL DIGIT       |
|        | 0324000171 + |        | PL       | X4,REGID2        | .. NOT A DIGIT                         |
| 000160 | 612277770    |        | SB2      | B2-7             |                                        |
|        | 0720000210 + |        | NG       | B2,FILLR2        |                                        |
| 000161 | 23425        | REG2   | AX4      | X5,B2            | .. CHECK IF NEXT CHARACTER IS SEP      |
|        | 15440        |        | BX4      | -X0*X4           |                                        |
|        | 5244000561 + |        | SA4      | X4+CHARTABL      |                                        |
| 000162 | 0334000166 + |        | NG       | X4,REGID         | .. NOT A NON IDENTIFIER                |
|        | 5242000561 + |        | SA4      | X2+CHARTABL      |                                        |
| 000163 | 20416        |        | LX4      | CT.CHAR-MSK.CHAR |                                        |
|        | 43714        |        | MX7      | MSK.CHAR         | .. GET TOKEN TYPE TO X4 TOP 12 BITS    |
|        | 7233777757   |        | SX3      | X3-ASCII0        | .. CONVERT TO OCTAL DIGIT              |
| 000164 | 11474        |        | BX4      | X7*X4            | .. MASK OUT TOKEN                      |
|        | 12643        |        | BX6      | X4*X3            | .. ADD REGISTER NUMBER                 |
|        | 6140000060   |        | SB4      | S.OTHER          |                                        |
| 000165 | 0200000227 + |        | JP       | HAVETOKA         |                                        |
| 000166 | 7222002000   | REGID  | SX2      | X2+BS7           |                                        |
|        | 20207        |        | LX2      | 7                |                                        |
|        | 12623        |        | BX6      | X2+X3            |                                        |
| 000167 | 6130000052   |        | SB3      | 6*7              |                                        |
|        | 73240        |        | SX2      | X4               | .. READY NEXT CHARACTER                |
| 000170 | 0200000120 + |        | JP       | IDENTIF          |                                        |
| 000171 | 7262002000   | REGID2 | SX6      | X2+BS7           | .. ADD GOING MARKER TO FIRST CHARACTER |
|        | 6130000061   |        | SB3      | 7*7              |                                        |
| 000172 | 20471        |        | LX4      | 60=CT.OCT+CT.ID  |                                        |
|        | 0324000174 + |        | PL       | X4,ONELET        | .. SENSE ONE LETTER A,B,X              |
|        | 73230        |        | SX2      | X3               | .. READY NEXT CHARACTER                |
| 000173 | 0200000120 + |        | JP       | IDENTIF          |                                        |
| 000174 | 5140000000 X | ONELET | SA4      | SD,STRB          |                                        |
|        | 63440        |        | SB4      | X4               |                                        |
|        | 21422        |        | AX4      | 18               |                                        |
| 000175 | 63540        |        | SB5      | X4               |                                        |
|        | 0200000143 + |        | JP       | ENDID            |                                        |
| 000176 | 5055000001   | FILLR1 | SA5      | A5+1             |                                        |
|        | 6120000061   |        | SB2      | 7*7              |                                        |
| 000177 | 0355000200 + |        | OR       | X5,*+1           |                                        |
|        | 0365000156 + |        | DF       | X5,REG1          |                                        |
| 000200 |              |        | FILLBUFF |                  |                                        |
| 000207 | 0200000156 + |        | JP       | REG1             |                                        |
| 000210 | 5055000001   | FILLR2 | SA5      | A5+1             |                                        |
|        | 6120000061   |        | SB2      | 7*7              |                                        |
| 000211 | 0355000212 + |        | OR       | X5,*+1           |                                        |
|        | 0365000161 + |        | DF       | X5,REG2          |                                        |
| 000212 |              |        | FILLBUFF |                  |                                        |
| 000221 | 0200000161 + |        | JP       | REG2             |                                        |

165  
4014  
420

|        |              |  |          |          |                                             |
|--------|--------------|--|----------|----------|---------------------------------------------|
| 000222 | 20314        |  | *        |          |                                             |
|        | 43460        |  | NT.CHAR  | LX3      | CT.CHAR-CT.CLASS GET TOKEN VALUE FROM TABLE |
|        | 15634        |  |          | MX4      | 60-MSK.CHAR                                 |
|        | 20660        |  |          | BX6      | -X4*X3 GET CHAR TYPE                        |
| 000223 | 20311        |  |          | LX6      | 48                                          |
|        | 43266        |  |          | LX3      | CT.SET-CT.CHAR                              |
|        | 15232        |  |          | MX2      | 60-MSK.SET                                  |
|        | 63420        |  |          | BX2      | -X2*X3                                      |
| 000224 | 6122777770   |  | HAVEYOK  | SB4      | X2                                          |
|        | 0620000227 + |  |          | SB2      | R2-7                                        |
| 000225 | 5055000001   |  |          | PL       | R2.HAVETOKA                                 |
|        | 6120000061   |  |          | SA5      | A5+1                                        |
| 000226 | 0355000231 + |  |          | SB2      | 7*7                                         |
|        | 0375000231 + |  |          | OK       | X5.FILLBUFF                                 |
| 000227 | 5110000000 X |  | HAVETOKA | ID       | X5.FILLBUFF                                 |
|        | 7271000001   |  |          | SA1      | CURRTOK                                     |
| 000230 | 53610        |  |          | SA7      | X1+1                                        |
|        | 54710        |  |          | SA6      | X1                                          |
|        | 0200000021 + |  |          | SA7      | A1                                          |
| 000231 |              |  |          | JP       | NEXTTOK                                     |
| 000240 | 0200000227 + |  | FILLRUFF | FILLBUFF |                                             |
|        |              |  |          | JP       | HAVETOKA                                    |

|        |              |          |          |             |                                    |
|--------|--------------|----------|----------|-------------|------------------------------------|
| 000241 | 511000000 X  | NT.QUOTE | SA1      | CURRTOK     | GET TOKEN ROX POINTER              |
|        | 7160002005   |          | SX6      | T.STR       |                                    |
| 000242 | 20660        |          | LX6      | 48          |                                    |
|        | 53610        |          | SA6      | X1          | STORE BANNER                       |
|        | 67401        |          | SB4      | -B1         | ..START CHARACTER COUNTER          |
|        | 66510        |          | SB5      | R1          | ..RESET ESCAPE SWITCH              |
| 000243 | 6130000070   | STRINGL  | SB3      | R#7         |                                    |
|        | 7160000000   |          | SX6      | 0           | START X6                           |
| 000244 | 0520000247 + | STRINGT  | NZ       | R2,NOTENDW3 |                                    |
|        | 6120000070   |          | SB2      | R#7         |                                    |
| 000245 | 5055000001   |          | SA5      | A5+1        |                                    |
|        | 0355000255 + |          | OR       | X5,ENDBUFF3 |                                    |
| 000246 | 0375000255 + |          | ID       | X5,ENDBUFF3 |                                    |
| 000247 | 6122777770   | NOTENDW3 | SB2      | R2-7        |                                    |
|        | 23225        |          | AX2      | X5,B2       |                                    |
|        | 15220        |          | BX2      | -X0*X2      |                                    |
| 000250 | 5232000561 + |          | SA3      | X2+CHARTABL |                                    |
|        | 20302        |          | LX3      | CT.STR      | CHECK IF IN STRING                 |
|        | 66441        |          | SB4      | R4+B1       | INCREMENT CHARACTER COUNT          |
| 000251 | 0450000252 + |          | ZK       | R5,*+1      | ..SKIP CHARACTER AFTER ESCAPE CHAR |
|        | 0323000266 + |          | PL       | X3,ENDSTR   |                                    |
| 000252 | 6155000001   | GOSTR    | SB5      | R5+1        | ..RESET/SET SWITCH                 |
|        | 20607        |          | LX6      | 7           | ..PREPARE X6 FOR NEXT CHARACTER    |
|        | 12662        |          | BX6      | X6+X2       | ADD CHARACTER TO STRING            |
| 000253 | 6133777770   |          | SB3      | R3-7        |                                    |
|        | 0703000244 + |          | GI       | R3,STRINGT  |                                    |
| 000254 | 5066000001   |          | SA6      | A6+1        |                                    |
|        | 0200000243 + |          | JP       | STRINGL     |                                    |
| 000255 |              | ENDBUFF3 | FILLBUFF |             |                                    |
| 000264 | 0200000247 + |          | JP       | NOTENDW3    |                                    |
| 000265 | 67501        | SETSW    | SB5      | -B1         | ..PREPARE B5 FOR SET AT GOSTR      |
|        | 0200000252 + |          | JP       | GOSTR       |                                    |
| 000266 | 7232777604   | ENDSTR   | SX3      | X2-173B     | ..CHECK FOR ESCAPE CHARACTER       |
|        | 0303000265 + |          | ZK       | X3,SETSW    | ..NOT END OF STRING IF ESCAPE      |
| 000267 | 22636        |          | LX6      | B3,X6       | .. LEFT JUSTIFY STRING             |
|        | 54661        |          | SA6      | A6+B1       |                                    |
|        | 76740        |          | SX7      | R4          |                                    |
|        | 53210        |          | SA2      | X1          | GET NUMBER OF WORDS                |
| 000270 | 12772        |          | BX7      | X7+X2       |                                    |
|        | 74661        |          | SX6      | A6+B1       |                                    |
|        | 54720        |          | SA7      | A2          |                                    |
|        | 54610        |          | SA6      | A1          | INCREMENT CURR TOK                 |
| 000271 | 0200000273 + |          | JP       | NT,ADVB2    | .. SKIP TRAILING QUOTE MARK        |



|        |              |         |                                        |
|--------|--------------|---------|----------------------------------------|
|        |              | #       | SKIP CHARACTER; TOKEN CLASS = OTHER    |
| 000272 | 0122777770   | NT.SKP2 | SB2 R2-7 ••SKIP ESCAPE AND BLANK COUNT |
| 000273 | 0122777770   | NT.ADV2 | SB2 R2-7                               |
|        | 6140000060   |         | SB4 S.OTHER                            |
| 000274 | 0620000021 + |         | PL R2.NEXTTOK                          |
|        | 5055000001   |         | SA5 A5+1                               |
| 000275 | 0122000070   |         | SB2 R2+8*7                             |
|        | 0375000277 + |         | ID X5.NT.FILL                          |
| 000276 | 0345000021 + |         | IR X5.NEXTTOK                          |
| 000277 |              | NT.FILL | FILLBUFF                               |
| 000306 | 0200000021 + |         | JP NEXTTOK                             |

```

000307 76600
        66700
          76700
            66300
000310 23225
        15220
          5232000561 +
000311 20301
        0323000330 +
          20703
000312 22316
        7222777757
          66771
000313 20603
        12772
          36663
            36662
000314 21203
        63323
          6122777770
000315 0620000310 +
          5055000001
000316 6120000061
          0375000320 +
000317 0345000310 +
000320
000327 0200000310 +

```

```

*
NT.NUM
NUML
NUMF
NUML
13 MICROSECONDS PER DIGIT
SX6      R0
SB7      R0
SA7      R0
SB3      R0
AX2      X5,B2
BX2      -X0*X2
SA3      CHARTABL+X2
LX3      CT.DIG      POSITION DIGIT BIT
PL       X3,ENDNUM  NOT DIGIT
LX7      3           *8
LX3      X6,B1       *2
SX2      X2=ASCII0  CONVERT TO 0-9
SB7      B7+B1
LX6      3           *8
BX7      X7+X2      SUMM OCTAL
IX6      X6+X3      *10
IX6      X6+X2      SUM DECIMAL
AX2      3           /8
SB3      B3+X2      IF NOT OCTAL, B3=B3+1
SB2      B2-7
PL       B2,NUML
SA5      A5+1
SB2      7*7
IU       X5,NUMF
IR       X5,NUML
FILLBUFF
JP       NUML

```

# BEGINNING OF NUMBER STATE MACHINE

```

*
*
*
*
*
*
*
*
*
000330 66630
        6130000007
          43371
000331 23225
        15220
          6122777770
000332 5242000561 +
          7212777757
000333 20435
        15443
          5244000465 +
000334 22434
        15440
          15243
            21403

```

```

ENDNUM
NSMG
NSMT+X4
AX4
3
SB6      B3           * SAVE NON OCTAL DIGIT COUNT
SB3      1*7         * SET B3 TO INITIAL STATE (1)
MX3      57
AX2      X5,B2       * EXTRACT NEXT CHARACTER
BX2      -X0*X2
SB2      B2-7
SA4      X2+CHARTABL
SX1      X2=ASCII0  * GET DIGIT VALUE
LX4      CT.NSMC    * POSITION NSM CLASS BITS
BX4      -X3*X4     * XTRACT BITS
SA4      NSMT+X4    * GET STATE MACHINE WORD FOR THIS INPUT
LX4      X4,B3
BX4      -X0*X4     * EXTRACT STATE-INPUT ENTRY
BX2      -X3*X4     * EXTRACT NEXT STATE FILED
AX4      3           * OBTAIN ACTION FILED

```

|        |              |         |     |           |                                  |
|--------|--------------|---------|-----|-----------|----------------------------------|
| 000335 | 63540        |         | SB5 | X4        | * ACTION INDEX                   |
|        | 624277770    |         | SB4 | X2-7      |                                  |
|        | 20203        |         | LX2 | 3         | * TIMES 8                        |
| 000336 | 67404        |         | SB4 | -B4       | * TIMES -1                       |
|        | 63324        |         | SB3 | X2+B4     | * TIMES 7                        |
|        | 0250000337 + |         | JP  | R5+NSMA   | * CALL ACTION                    |
| 000337 |              | NSMA    | BSS | 0         | * START OF ACTION VECTOR         |
| 000337 | 27606        | NSM.1   | PX6 | X6        | * X6 = FLOAT X6                  |
|        | 24606        |         | NX6 | X6        |                                  |
|        | 0200000371 + |         | JP  | NSML      |                                  |
| 000340 | 0200000404 + | NSM.2   | JP  | TAKEOCTL  |                                  |
| 000341 | 73710        | NSM.3   | SA7 | X1        | * START DIGIT ACCUMULATOR        |
|        | 0200000371 + |         | JP  | NSML      |                                  |
| 000342 | 22217        | NSM.4   | LX2 | X7,B1     | * TIMES 2                        |
|        | 20703        |         | LX7 | 3         | * TIMES 8                        |
|        | 36772        |         | IX7 | X7+X2     | * TIMES 10                       |
|        | 36771        |         | IX7 | X7+X1     | * ADD IN NEW DIGIT               |
| 000343 | 0200000371 + | NSM.0   | JP  | NSML      |                                  |
| 000344 | 0200000407 + | NSM.5   | JP  | TAKEDEC   |                                  |
| 000345 | 6160000427 + | NSM.6   | SB6 | ONETENTH  | * START FRACTIONAL POWERS OF TEN |
| 000346 | 27101        | NSM.7   | PX1 | X1        | * X1 = FLOAT X1                  |
|        | 24101        |         | NX1 | X1        |                                  |
|        | 56460        |         | SA4 | R6        | * GET CURRENT DIGIT EXPONENT     |
|        | 66661        |         | SB6 | R6+B1     | * ADVANCE CURRENT DIGIT POINTER  |
| 000347 | 40114        |         | FX1 | X1*X4     | * SCALE INCOMING DIGIT           |
|        | 30661        |         | FX6 | X6*X1     | ADD TO SUM                       |
|        | 0200000371 + |         | JP  | NSML      |                                  |
| 000350 | 66610        | NSM.8   | SB6 | R1        |                                  |
|        | 0200000371 + |         | JP  | NSML      |                                  |
| 000351 | 27606        | NSM.9   | PX6 | X6        | * X6 = FLOAT X6                  |
|        | 24606        |         | NX6 | X6        |                                  |
|        | 0200000350 + |         | JP  | NSM.8     |                                  |
| 000352 | 0200000421 + | NSM.10  | JP  | NSMR      |                                  |
|        | 0000344 +    | NSM.11  | EQU | NSM.5     |                                  |
| 000353 | 0200000425 + | NSM.12  | JP  | NSMERR    | * SYNTAX ERROR                   |
| 000354 | 0200000411 + | NSM.13  | JP  | AEXP      | * APPLY EXPONENT AND RETURN      |
| 000355 | 0200000364 + | NSM.14  | JP  | SCALE     | * APPLY SCALE AND RETURN         |
| 000356 | 5120000000 X | NSM.15  | SA2 | DEFLT8    | * GET DEFAULT BASE               |
|        | 0322000362 + |         | PL  | X2,DEFDEC | * SENSE DECIMAL DEFAULT          |
| 000357 | 10677        |         | BX6 | X7        |                                  |
|        | 6177777752   |         | SB7 | B7-21     |                                  |
| 000360 | 0560000425 + |         | NZ  | B6,NSMERR | * SENSE NON OCTAL DIGIT          |
|        | 0770000421 + |         | NG  | B7,NSMR   | * SENSE NOT TOO MANY DIGITS      |
| 000361 | 0000000000   | TOOLONG | PS  |           |                                  |
| 000362 | 6177777755   | DEFDEC  | SB7 | B7-18     |                                  |
|        | 0770000421 + |         | NG  | B7,NSMR   |                                  |
| 000363 | 0200000361 + |         | JP  | TOOLONG   |                                  |
| 000364 | 0760000366 + | SCALE   | NG  | B6,DSCALE | * SENSE DECIMAL NUMBER           |
|        | 63670        |         | SB6 | X7        | * GET BINARY SCALE FACTOR        |
|        | 22666        |         | LX6 | X6,B6     | * DO SCALING                     |
| 000365 | 0200000421 + |         | JP  | NSMR      |                                  |
| 000366 | 0307000421 + | DSCALE  | ZR  | X7,NSMR   | * SENSE SCALE COUNT EXHAUSTED    |
|        | 22216        |         | LX2 | X6,B1     | * TIMES 2                        |

|        |              |          |          |               |                                  |
|--------|--------------|----------|----------|---------------|----------------------------------|
|        |              | 20603    | LX6      | 3             | * TIMES 8                        |
| 000367 | 36662        |          | IX6      | X6+X2         | * TIMES 10                       |
|        | 727777776    |          | SX7      | X7-1          |                                  |
| 000370 | 0200000366 + |          | JP       | DSCALE        |                                  |
| 000371 | 0620000331 + | NSML     | PL       | B2,NSMG       | * SENSE INPUT WORD NOT EXHAUSTED |
|        | 5055000001   |          | SA5      | A5+1          |                                  |
| 000372 | 6120000061   |          | SB2      | 7*7           |                                  |
|        | 0355000374 + |          | OR       | X5,NSMF       |                                  |
| 000373 | 0365000331 + |          | DF       | X5,NSMG       | * LOOP IF GOOD WORD              |
| 000374 |              | NSMF     | FILLBUFF |               |                                  |
| 000403 | 0200000331 + |          | JP       | NSMG          |                                  |
| 000404 | 10677        | TAKEOCTL | BA6      | X7            |                                  |
|        | 0560000425 + |          | NZ       | B6,NSMERR     |                                  |
|        | 66610        |          | SB6      | B1            | * SET TO OCTAL                   |
| 000405 | 6177777752   |          | SB7      | B7-21         |                                  |
|        | 0770000371 + |          | NO       | B7,NSML       |                                  |
| 000406 | 0200000361 + |          | JP       | TOOLONG       |                                  |
| 000407 | 6177777755   | TAKEDEC  | SB7      | B7-18         |                                  |
|        | 0670000361 + |          | PL       | B7,TOOLONG    |                                  |
| 000410 | 67601        |          | SB6      | B1            |                                  |
|        | 0200000371 + |          | JP       | NSML          |                                  |
| 000411 | 76210        | AEXP     | SX2      | B1            |                                  |
|        | 27202        |          | IX2      | X2            |                                  |
|        | 24262        |          | NX2      | X2            |                                  |
| 000412 | 7277777741   | EXPL     | SX7      | X7-30         |                                  |
|        | 0337000415 + |          | NG       | X7,EXP2       |                                  |
| 000413 | 5110000462 + |          | SA1      | TENTABL+30    |                                  |
|        | 40221        |          | TX2      | X2*X1         |                                  |
| 000414 | 0200000412 + |          | JP       | EXPL          |                                  |
| 000415 | 5217000464 + | EXP2     | SA1      | TENTABL+X7+30 |                                  |
|        | 40221        |          | TX2      | X2*X1         |                                  |
| 000416 | 0660000420 + |          | PL       | B6,POSEXP     | * SENSE POSITIVE EXPONENT        |
|        | 40662        |          | TX6      | X6*X2         |                                  |
| 000417 | 0200000421 + |          | JP       | NSMR          |                                  |
| 000420 | 44662        | POSEXP   | TX6      | X6/X2         |                                  |
|        | 0200000421 + |          | JP       | NSMR          |                                  |
| 000421 | 5110000000 X | NSMR     | SA1      | CURRTOK       |                                  |
|        | 7170002006   |          | SX7      | T.NUM         |                                  |
| 000422 | 20760        |          | LX7      | 48            | **PREPARE TOKEN HEADER           |
|        | 53710        |          | SA7      | X1            |                                  |
|        | 53611        |          | SA6      | X1+B1         | **STORE VALUE AS SECOND SORD     |
|        | 74761        |          | SX7      | A6+B1         | **NEW CURRTOK VALUE              |
| 000423 | 54710        |          | SA7      | A1            |                                  |
|        | 6122000007   |          | SB2      | B2+7          |                                  |
| 000424 | 6140000060   |          | SB4      | S.OTHER       |                                  |
|        | 0200000021 + |          | JP       | NEXTTOK       |                                  |
| 000425 | 0000000000   | NSMERR   | PS       |               |                                  |

|        |                      |          |      |                               |
|--------|----------------------|----------|------|-------------------------------|
| 000426 | 17204000000000000000 | TENTABL  | DATA | 1.0                           |
| 000427 | 17146314631463146315 | ONETENTH | DATA | .1                            |
| 000430 | 17115075341217270244 |          | DATA | .01                           |
| 000431 | 17064061115645706520 |          | DATA | .001                          |
| 000432 | 17026433342726161031 |          | DATA | .0001                         |
| 000433 | 16775174265421615510 |          | DATA | .00001                        |
| 000434 | 16744143367561327534 |          | DATA | .000001                       |
| 000435 | 16706553762465362572 |          | DATA | .0000001                      |
| 000436 | 16655274616704302142 |          | DATA | .00000001                     |
| 000437 | 16624227013726233265 |          | DATA | .000000001                    |
| 000440 | 16566676337663536756 |          | DATA | .0000000001                   |
| 000441 | 16535376577702745445 |          | DATA | .00000000001                  |
| 000442 | 16504313631402267521 |          | DATA | .000000000001                 |
| 000443 | 16447022702320445664 |          | DATA | .0000000000001                |
| 000444 | 16415502233415204535 |          | DATA | .00000000000001               |
| 000445 | 16364401657475635261 |          | DATA | .000000000000001              |
| 000446 | 16327151262457542116 |          | DATA | .0000000000000001             |
| 000447 | 16273607365214433245 |          | DATA | .00000000000000001            |
| 000450 | 16244471135643511035 |          | DATA | .000000000000000001           |
| 000451 | 16207301711237333225 |          | DATA | .0000000000000000001          |
| 000452 | 16155716241031111021 |          | DATA | .00000000000000000001         |
| 000453 | 16124561664024072332 |          | DATA | .000000000000000000001        |
| 000454 | 16067434440040135367 |          | DATA | .0000000000000000000001       |
| 000455 | 16036026663200112623 |          | DATA | .00000000000000000000001      |
| 000456 | 16004653702463242165 |          | DATA | .000000000000000000000001     |
| 000457 | 15747571320753531757 |          | DATA | .0000000000000000000000001    |
| 000460 | 15716141100611273131 |          | DATA | .00000000000000000000000001   |
| 000461 | 15664747232155710740 |          | DATA | .000000000000000000000000001  |
| 000462 | 15627730366574501401 |          | DATA | .0000000000000000000000000001 |
| 000463 | 15576255136775232632 |          | DATA | 1.0E-29                       |
| 000464 | 15545044113775657025 |          | DATA | 1.0E-30                       |

|        | ACTION | MACRO        | P1,P2,P3,P4,P5,P6,P7,P8                        |
|--------|--------|--------------|------------------------------------------------|
|        |        | BSS          | 0                                              |
|        |        | M            | 01                                             |
|        |        | M            | 02                                             |
|        |        | M            | 03                                             |
|        |        | M            | 04                                             |
|        |        | M            | 05                                             |
|        |        | M            | 06                                             |
|        |        | M            | 07                                             |
|        |        | M            | 08                                             |
|        |        | VFO          | A/O                                            |
|        |        | ENDM         |                                                |
|        | M      | MACRO        | A,B                                            |
|        |        | VFO          | A/NSM.A-NSMA:3/B-1                             |
|        |        | ENDM         |                                                |
| 000465 | NSMT   | ACTION       | 15,10,14,10,10,12,12,13                        |
| 000466 |        | ACTION       | 12,(3,3),(4,3),(6,5),(7,5),(3,8),(3,8),(4,8)   |
| 000467 |        | ACTION       | (9,6),10,14,(8,6),(8,6),12,12,13               |
| 000470 |        | ACTION       | (1,4),10,14,12,12,12,12,13                     |
| 000471 |        | ACTION       | (2,2),10,14,12,12,12,12,13                     |
| 000472 |        | ACTION       | (5,2),10,14,12,12,12,12,13                     |
| 000473 |        | ACTION       | 15,10,14,10,10,(0,7),12,13                     |
| 000474 |        | ACTION       | 15,10,14,10,10,(11,7),12,13                    |
|        |        | NSM CLASSES: |                                                |
|        |        | 0            | OTHER                                          |
|        |        | 1            | DIGITS                                         |
|        |        | 2            |                                                |
|        |        | 3            |                                                |
|        |        | 4            |                                                |
|        |        | 5            |                                                |
|        |        | 6            |                                                |
|        |        | 7            |                                                |
|        |        | NSM STATES:  |                                                |
|        |        | 1            | AFTER INITIAL DIGIT STRING                     |
|        |        | 2            | AFTER B OR D; BEFORE SCALE                     |
|        |        | 3            | PROCESSING SCALE                               |
|        |        | 4            | AFTER .; BEFORE FRACTION                       |
|        |        | 5            | PROCESSING FRACTION                            |
|        |        | 6            | AFTER E; BEFORE EXPONENT                       |
|        |        | 7            | AFTER EXPONENT SIGN; BEFORE DIGITS OF EXPONENT |
|        |        | 8            | PROCESSING EXPONENT                            |

|        |              |               |     |               |                                       |
|--------|--------------|---------------|-----|---------------|---------------------------------------|
| 000475 | 5110000000 X | NT.LIST       | SA1 | SD.TOK        |                                       |
|        | 63510        |               | SB5 | X1            | .. GET TOP                            |
|        | 21122        |               | AX1 | 18            |                                       |
| 000476 | 63610        |               | SB6 | X1            |                                       |
|        | 7160000001   |               | SX6 | TS.LIST       |                                       |
|        | 20666        |               | LX6 | 54            |                                       |
| 000477 | 0456001041 + |               | EQ  | B5,B6,TSFULL1 |                                       |
|        | 5130000000 X |               | SA3 | CURRTOK       |                                       |
| 000500 | 73730        |               | SX7 | X3            |                                       |
|        | 20722        |               | LX7 | 18            |                                       |
|        | 12773        |               | BX7 | X7+X3         |                                       |
|        | 12667        |               | BX6 | X6+X7         |                                       |
| 000501 | 5120000000 X |               | SA2 | STATE         |                                       |
|        | 73731        |               | SX7 | X3+B1         |                                       |
|        | 56650        |               | SA6 | B5            | .. STORE FIRSST WORD                  |
| 000502 | 54730        |               | SA7 | A3            | .. NEW CURRTOK                        |
|        | 10722        |               | BX7 | X2            | .. GET OLD STATE                      |
|        | 7160002056   |               | SX6 | T.LP          | .. BEGIN LIST TOKEN                   |
| 000503 | 20660        |               | LX6 | 48            |                                       |
|        | 53630        |               | SA6 | X3            |                                       |
|        | 20760        |               | LX7 | 48            |                                       |
|        | 66551        |               | SB5 | B5+B1         |                                       |
| 000504 | 0456001042 + |               | EQ  | B5,B6,TSFULL2 |                                       |
|        | 56750        |               | SA7 | B5            | .. STORE SECOND WORD                  |
|        | 20122        |               | LX1 | 18            | .. REPOSITION STACK WORD              |
| 000505 | 76651        |               | SX6 | B5+B1         | .. NEW TOP                            |
|        | 12661        |               | BX6 | X6+X1         | .. ADD TO STACK WORD                  |
|        | 54610        |               | SA6 | A1            | .. RESTORE TO STACK TOP               |
| 000506 | 0200000273 + |               | JP  | NT.ADV2       | .. SKIP LEFT PAR                      |
| 000507 | 5110000000 X | *<br>NT.COMMA | SA1 | SD.TOK        |                                       |
|        | 5211777775   |               | SA1 | X1-2          | .. GET TOP ELEMENT                    |
| 000510 | 10611        |               | BX6 | X1            |                                       |
|        | 21664        |               | AX6 | 54            | .. CHHCK TYPE OF TOP ELEMENT          |
|        | 7266777776   |               | SX6 | X6-TS.LIST    |                                       |
| 000511 | 0316000222 + |               | NZ  | X6,NT.CHAR    | .. SENSE NOT IN A LIST                |
|        | 5130000000 X |               | SA3 | CURRTOK       |                                       |
| 000512 | 76710        |               | SX7 | B1            |                                       |
|        | 20744        |               | LX7 | 36            | .. PREPARE TO INCREMENT ELEMENT COUNT |
|        | 53410        |               | SA4 | X1            | .. GET WORD TO TAKE CHAIN             |
|        | 73630        |               | SX6 | X3            |                                       |
| 000513 | 20622        |               | LX6 | 18            |                                       |
|        | 36117        |               | IX1 | X1+X7         | .. INCREMENT ELEMENT COUNT            |
|        | 43752        |               | MX7 | 42            |                                       |
|        | 11771        |               | BX7 | X7+X1         |                                       |
| 000514 | 12773        |               | BX7 | X7+X3         | .. NEW WORD TO TAKE CHAIN (THIS ONE)  |
|        | 12664        |               | BX6 | X6+X4         | .. ADD THIS WORD ADDRESS TO CHAIN     |
|        | 54710        |               | SA7 | A1            | .. RESTORE TOP OF STACK               |
|        | 54640        |               | SA6 | A4            | .. REPLACE LAST ELEMENT BANNER        |
| 000515 | 21122        |               | AX1 | 18            |                                       |
|        | 7160002052   |               | SX6 | T.COMMA       |                                       |
|        | 20660        |               | LX6 | 48            |                                       |
| 000516 | 73110        |               | SX1 | X1            | .. ADDRESS OF LEFT PAREN              |

|        |              |            |     |            |                                      |
|--------|--------------|------------|-----|------------|--------------------------------------|
|        | 12616        |            | BX6 | X1+X6      |                                      |
|        | 6140000060   |            | SB4 | S.OTHER    |                                      |
| 000517 | 0200000224 + |            | JP  | HAVETOK    |                                      |
|        |              | *          |     |            |                                      |
| 000520 | 5140000000 X | NT.EI.LIST | SA4 | SD.TOK     |                                      |
|        | 5214777775   |            | SA1 | X4-2       | GET TOP ELEMENT                      |
| 000521 | 54211        |            | SA2 | A1+B1      | .. GET SECOND WORD                   |
|        | 10611        |            | BX6 | X1         |                                      |
|        | 21666        |            | AX6 | 54         |                                      |
|        | 21260        |            | AX2 | 48         |                                      |
| 000522 | 7266777776   |            | SX6 | X6-TS.LIST |                                      |
|        | 0316000222 + |            | NZ  | X6-NT.CHAR |                                      |
| 000523 | 53310        |            | SA3 | X1         | .. GET OLD CHAIN                     |
|        | 73720        |            | SX7 | X2         | .. GET OLD STATE                     |
|        | 5170000000 X |            | SA7 | STATE      | .. STORE OLD STATE                   |
| 000524 | 5120000000 X |            | SA2 | CURRTOK    |                                      |
|        | 10622        |            | BX6 | X2         |                                      |
|        | 20622        |            | LX6 | 18         |                                      |
| 000525 | 12663        |            | BX6 | X6+X3      |                                      |
|        | 54630        |            | SA6 | A3         | .. STORE WITH T.RP TOKEN ADDRESS     |
|        | 21122        |            | AX1 | 18         | .. GET T.LP POINTER                  |
|        | 73610        |            | SX6 | X1         |                                      |
| 000526 | 7170002057   |            | SX7 | T.RP       |                                      |
|        | 20760        |            | LX7 | 48         |                                      |
|        | 12667        |            | BX6 | X6+X7      | .. FORM T.RP TOKEN                   |
| 000527 | 53310        |            | SA3 | X1         | .. GET T.LP TOKEN                    |
|        | 21122        |            | AX1 | 18         |                                      |
|        | 53620        |            | SA6 | X2         | .. STORE T.RP TOKEN                  |
|        | 73110        |            | SA1 | X1         | .. GET ELEMENT COUNT                 |
| 000530 | 20144        |            | LX1 | 36         |                                      |
|        | 12731        |            | BX7 | X3+X1      | .. ADD NUM OF ELEMENTS TO T.LP TOKEN |
|        | 12772        |            | BX7 | X7+X2      | .. ADD ADDRESS OF T.RP TOKEN         |
|        | 76611        |            | SA6 | B1+B1      |                                      |
| 000531 | 54730        |            | SA7 | A3         | .. RESTORE T.LP TOKEN                |
|        | 37046        |            | LX6 | X4-X6      | .. DECREMENT STACK HEIGHT            |
|        | 73721        |            | SX7 | X2+B1      |                                      |
|        | 54720        |            | SA7 | A2         | .. NEW CURRTOK                       |
| 000532 | 54640        |            | SA6 | A4         |                                      |
|        | 6140000052   |            | SB4 | S.LIST     |                                      |
| 000533 | 0200000273 + |            | JP  | NT.ADV2    | .. SKIP OVER RP                      |



|        |              |          |          |             |                                            |
|--------|--------------|----------|----------|-------------|--------------------------------------------|
| 000534 | 7160000001   | NT.SHIEL | SX6      | 1           |                                            |
|        | 5160000000 X |          | SA6      | PROTECT     |                                            |
| 000535 | 6140000060   |          | SB4      | S.OTHER     |                                            |
|        | 0200000021 + |          | JP       | NEXTTOK     |                                            |
| 000536 | 6120000070   | NT.NFWL  | SB2      | B*7         | •• GO TO NEW LINE                          |
|        | 5055000001   |          | SA5      | A5+1        | •• GET NEXT BUFFER WORD                    |
| 000537 | 0375000551 + |          | ID       | X5,FILLNEWL |                                            |
| 000540 | 6120000000 X | SETLINE  | SB1      | INBUFF      |                                            |
|        | 75652        |          | SX6      | A5-B1       | •• GET BUFFER WORD INDEX                   |
| 000541 | 5120000000 X |          | SA2      | INPUTA      | •• GET FILE ADDRESS CORRESPONDING TO FIRST |
|        | 36662        |          | IA6      | X6+X2       | •• COMPUTE NEW SOURCE ADDRESS              |
| 000542 | 5160000000 X |          | SA6      | NSRCADR     | •• STORE NEW SOURCE ADDRESS                |
| 000543 | 5110000000 X | NT.END   | SA1      | CURRTOK     |                                            |
|        | 7160002053   |          | SX6      | T.SEMI      |                                            |
| 000544 | 20660        |          | LX6      | 48          |                                            |
|        | 53810        |          | SA6      | X1          |                                            |
|        | 76600        |          | SX6      | R0          | LAST TOKEN MARKER                          |
|        | 53811        |          | SA6      | X1+B1       |                                            |
| 000545 | 7172777770   |          | SA7      | B2-7        |                                            |
|        | 5170000000 X |          | SA7      | CHARPNT     |                                            |
| 000546 | 74650        |          | SX6      | A5          |                                            |
|        | 5160000000 X |          | SA6      | RUFFPNT     |                                            |
| 000547 | 5150000000 X |          | SA5      | TOKBASE     | •• TOKEN AREA POINTER                      |
|        | 5255000000   |          | SA5      | X5+0        | •• START A5-X5 FOR STATE MACHINE           |
| 000550 | 0200000000 X |          | JP       | EXCALLINT   |                                            |
| 000551 |              | FILLNEWL | FILLBUFF |             |                                            |
| 000560 | 0200000540 + |          | JP       | SETLINE     |                                            |

|        |         |                              |                                                  |
|--------|---------|------------------------------|--------------------------------------------------|
|        |         | MACRO                        | CHAR,XXX,CLASS,TOK,SETX                          |
|        |         | IFC                          | FQ,*SETX**                                       |
|        | SETY    | MICRO                        | 1,*,S.OTHER*                                     |
|        |         | ELSE                         |                                                  |
|        | SETY    | MICRO                        | 1,*,SETX*                                        |
|        |         | ENDIF                        |                                                  |
|        | +       | VFD                          | 1/ID,1/DIG,1/STR,1/OCT,MSK.CLAS/NT.CLASS-NEXTTOK |
|        |         | VFD                          | MSK.CHAR/TOK                                     |
|        | VFD     | MSK.BASE/BASE,MSK.SET/*SETY* |                                                  |
|        |         | ENDM                         |                                                  |
| 000561 |         | CHARTABL                     | BSS                                              |
|        | 0000012 | MSK.CLAS                     | EQU                                              |
|        | 0000014 | MSK.CHAR                     | EQU                                              |
|        | 0000003 | MSK.PASE                     | EQU                                              |
|        | 0000006 | MSK.SET                      | EQU                                              |
|        | 0000000 | ID                           | SET                                              |
|        | 0000000 | DIG                          | SET                                              |
|        | 0000000 | OCT                          | SET                                              |
|        | 0000001 | STR                          | SET                                              |
|        | 0000000 | BASE                         | SET                                              |
| 000561 |         | CHAR                         | ADVB2                                            |
|        | <       | CHAR                         | CHAR,T.EXCLAM                                    |
|        | =       | CHAR                         | MKBOX                                            |
|        | =       | CHAR                         | CHAR,T.NE                                        |
|        | \$      | CHAR                         | CHAR,T.QUAL                                      |
|        | %       | CHAR                         | CHAR,T.PERCNT                                    |
|        | ^       | CHAR                         | CHAR,T.AMPER                                     |
|        | 0000000 | STR                          | SET                                              |
|        | 0000001 | STR                          | SET                                              |
|        | 0000001 | STR                          | SET                                              |
|        | 0000006 | BASE                         | SET                                              |
|        | 0000000 | BASE                         | SET                                              |
|        | 0000007 | BASE                         | SET                                              |
|        | 0000003 | BASE                         | SET                                              |
|        | 0000000 | BASE                         | SET                                              |
|        | 0000001 | DIG                          | SET                                              |
|        | 0000001 | OCT                          | SET                                              |
|        | 0000001 | ID                           | SET                                              |
|        | 0000001 | BASE                         | SET                                              |
|        | 000010  | DUP                          | 8,1                                              |
|        | 0000000 | 01234567                     | CHAR                                             |
|        |         | 0CT                          | SET                                              |
|        | 8       | CHAR                         | NUM                                              |
|        | 9       | CHAR                         | NUM                                              |

|        |         |        |      |                        |
|--------|---------|--------|------|------------------------|
|        | 0000000 | DIG    | SET  | 0                      |
|        | 0000000 | ID     | SET  | 0                      |
|        | 0000000 | BASE   | SET  | 0                      |
|        |         | :      | CHAR | CHAR,T.COLON,S.COLON   |
|        |         | ;      | CHAR | END                    |
|        |         | ^      | CHAR | CHAR,T.LT,S.RELATE     |
|        |         | =      | CHAR | CHAR,T.EQ,S.EQUAL      |
|        |         | >      | CHAR | CHAR,T.GT,S.RELATE     |
|        |         | ?      | CHAR | CHAR,T.QUEST           |
| 000621 |         |        | BSS  | 0                      |
| 000621 |         |        | CHAR | SHIEL D                |
|        | 0000001 | ID     | SET  | 1                      |
|        |         | A      | CHAR | REG,T.AREG             |
|        | 0000004 | BASE   | SET  | 4                      |
|        |         | B      | CHAR | REG,T.BREG             |
|        | 0000000 | BASE   | SET  | 0                      |
|        |         | C      | CHAR | IDENT                  |
|        | 0000005 | BASE   | SET  | 5                      |
|        |         | D      | CHAR | IDENT                  |
|        | 0000002 | BASE   | SET  | 2                      |
|        |         | E      | CHAR | IDENT                  |
|        | 0000000 | BASE   | SET  | 0                      |
|        | 000022  |        | DUP  | 23-5,1                 |
|        |         | ALPHA  | CHAR | IDENT                  |
|        |         | X      | CHAR | REG,T.XREG             |
|        |         | Y      | CHAR | IDENT                  |
|        |         | Z      | CHAR | IDENT                  |
|        | 0000000 | ID     | SET  | 0                      |
|        |         | [      | CHAR | CHAR,T.LBRACK          |
|        |         | ]      | CHAR | CHAR,T.BKSLSH,S.BKSLSH |
|        |         | {      | CHAR | CHAR,T.RBRACK          |
|        |         | ↑      | CHAR | CHAR,T.UARROW          |
|        |         | ↓      | CHAR | CHAR,T.LARROW          |
| 000661 |         |        | BSS  | 2                      |
| 000661 |         | GRAVE. | CHAR | CHAR,T.UKNWN           |
|        | 0000001 | ID     | SET  | 1                      |
|        | 000032  |        | DUP  | 26,1                   |
|        |         | SMALL  | CHAR | IDENT                  |
|        | 0000000 | ID     | SET  | 0                      |
|        |         | LBRACE | CHAR | CHAR,T.UKNWN           |
|        |         | GATE   | CHAR | CHAR,T.UKNWN           |
|        |         | RBRACE | CHAR | CHAR,T.UKNWN           |
|        |         |        | CHAR | CHAR,T.UKNWN           |
|        |         | DEL    | CHAR | CHAR,T.UKNWN           |
|        |         |        | BSS  | 0                      |
| 000721 | 0000000 | STR    | SET  | 0                      |
|        | 000015  |        | DUP  | 155B-140B,1            |
|        |         |        | CHAR | CHAR,T.UKNWN           |
|        |         |        | CHAR | NEWL                   |
|        | 000015  |        | DUP  | 173B-156B,1            |
|        |         |        | CHAR | CHAR,T.UKNWN           |
|        |         | ESC    | CHAR | SKP2                   |
|        | 000004  |        | DUP  | 200B-174B,1            |

|         | *        | CHAR | CHAR,T.UNKWN      |
|---------|----------|------|-------------------|
| 0000000 | CT.ID    | EQU  | 0                 |
| 0000001 | CT.DIG   | EQU  | 1                 |
| 0000002 | CT.STR   | EQU  | 2                 |
| 0000003 | CT.OCT   | EQU  | 3                 |
| 0000016 | CT.CLASS | EQU  | CT.OCT+1+MSK.CLAS |
| 0000032 | CT.CHAR  | EQU  | CT.CLASS+MSK.CHAR |
| 0000035 | CT.NSMC  | EQU  | CT.CHAR+MSK.BASE  |
| 0000043 | CT.SET   | EQU  | CT.NSMC+MSK.SET   |

```

*WORD1
*BITS      55-60      ACTIVITY
*          37-54      C
*          19-36      B
*          1-18       A
*WORD2
*BITS      49-60      E
*          31-48      D
*          1-30       SOURCE ADDRESS (IF NEEDED)
*
*ACTIVITY   A          B          C          D          E
*LIST      CHAIN PTR  T.LP ADDR  ELEMNT NUM  OLD STATE
*CALL      OLD CURTOK SYMT OF NAME
*
0000000    TS.EMTY    EQU        0
0000001    TS.LIST    EQU        1
0000002    TS.FCN     EQU        2

```

|   |    |                                       |
|---|----|---------------------------------------|
| * | 1  | AFTER < OR >                          |
| * | 2  | AFTER + - * /                         |
| * | 3  | AFTER +. -. *. /. .                   |
| * | 4  | AFTER -                               |
| * | 5  | AFTER .                               |
| * | 6  | AFTER + - * / AT BEGINNING OF STMT    |
| * | 7  | AFTER IDENTIFIER AT BEGINNING OF STMT |
| * | 8  | AFTER IDENTIFIER                      |
| * | 9  | AFTER LIST OR TOKEN BOX               |
| * | 10 | NULL STATE                            |
| * | 11 | AFTER .+ .- .* ./                     |
| * | 12 | BEGINNING OF STATEMENT                |
| * | 13 | AFTER LABEL                           |

TOKPROC •• SYSTEM TOKEN PROCESSOR  
DEFINITION OF TOKEN CLASSES

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|         |          |     |     |
|---------|----------|-----|-----|
| 0000006 | S.ID     | EQU | 6#1 |
| 0000014 | S.ARITH  | EQU | 6#2 |
| 0000022 | S.PERIOD | EQU | 6#3 |
| 0000030 | S.RKSLSH | EQU | 6#4 |
| 0000036 | S.RELATE | EQU | 6#5 |
| 0000044 | S.EQUAL  | EQU | 6#6 |
| 0000052 | S.LIST   | EQU | 6#7 |
| 0000060 | S.OTHER  | EQU | 6#8 |
| 0000066 | S.COLON  | EQU | 6#9 |

```

RESET      MACRO
D1          SET      13
D2          SET      1
D3          SET      3
D4          SET      11
D5          SET      14
D6          SET      16
D7          SET      20
D8          SET      16
D9          SET      16
D10         SET      16
ENDM
GET         MACRO
            HFC
            RE,*A**,1
D=A        SET
            ENDM
MACRO
STATE,XX,C1,C2,C3,C4,C5,C6,C7,C8,C9,C10
GET        D1
GET        D2
GET        D3
GET        D4
GET        D5
GET        D6
GET        D7
GET        D8
GET        D9
GET        D10
VTO        6/D1,6/D2,6/D3,6/D4,6/D5
VTO        6/D6,6/D7,6/D8,6/D9,6/D10
RESET
ENDM

```

RESET

```

000761     TOKSTATE  BSS
000761     1         STATE  (6,15)
000762     2         STATE  (3,4),(5,35)
000763     3         STATE  (3,5)
000764     4         STATE  (4,12)
000765     5         STATE  (2,2),(3,8),(5,8)
000766     6         STATE  (3,4),(5,35)
000767     7         STATE  (3,28),(7,21),(9,18)
000770     8         STATE  (3,28),(7,21),(9,19)
000771     9         STATE  (9,22)
000772     10        STATE
000773     11        STATE  (1,6),(2,6),(3,7),(4,6),(5,6),(6,6)
000774     12        STATE  (1,10),(2,9)
000775     13        STATE  (1,10)

```

0000006 MSK.ACT EQU 6



3

|        | ACT.N   | MACRO                            | ACTION,N,NS,ACTION                |
|--------|---------|----------------------------------|-----------------------------------|
|        | +       | EQU<br>ORG<br>VFD<br>ENDM<br>BSS | N<br>ACTIONS+N<br>30/ACTION,30/NS |
| 000776 | ACTIONS |                                  | 0                                 |
| 000776 | 1       | ACTION                           | 2,GETTOK                          |
| 001000 | 2       | ACTION                           | 11,ROUNDOP                        |
| 001001 | 3       | ACTION                           | 5,GETTOK                          |
| 001002 | 4       | ACTION                           | 3,FLOATOP                         |
| 001003 | 5       | ACTION                           | 10,DOUBLEOP                       |
| 001004 | 6       | ACTION                           | 0,ERROR                           |
| 001005 | 7       | ACTION                           | 10,DELETE.                        |
| 001006 | 8       | ACTION                           | 10,COMMENTL                       |
| 001007 | 9       | ACTION                           | 6,CHKSTAR                         |
| 001010 | 10      | ACTION                           | 7,GETTOK                          |
| 001011 | 11      | ACTION                           | 4,GETTOK                          |
| 001012 | 12      | ACTION                           | 10,MODOP                          |
| 001013 | 13      | ACTION                           | 8,GETTOK                          |
| 001014 | 14      | ACTION                           | 1,GETTOK                          |
| 001015 | 15      | ACTION                           | 10,GTLTEQ                         |
| 001016 | 16      | ACTION                           | 10,GETTOK                         |
| 001017 | 17      | ACTION                           | 10,FORCING                        |
| 001020 | 18      | ACTION                           | 13,LABEL                          |
| 001021 | 19      | ACTION                           | 2,MKQUAL                          |
| 001022 | 20      | ACTION                           | 9,GETTOK                          |
| 001023 | 21      | ACTION                           | 0,CALL                            |
| 001024 | 22      | ACTION                           | 9,SPECIF                          |
| 001025 | 24      | ACTION                           | 12,GETTOK                         |
| 001027 | 25      | ACTION                           | 10,MKQUAL                         |
| 001030 | 26      | ACTION                           | 14,STKQUAL                        |
| 001031 | 27      | ACTION                           | 0,ERROR                           |
| 001032 | 28      | ACTION                           | 15,STRTQUAL                       |
| 001033 | 29      | ACTION                           | 15,DELETE.                        |
| 001034 | 30      | ACTION                           | 10,MKQUALC                        |
| 001035 | 31      | ACTION                           | 4,MKQUAL                          |
| 001036 | 32      | ACTION                           | 1,MKQUAL                          |
| 001037 | 33      | ACTION                           | 15,CALLSPCL                       |
| 001040 | 34      | ACTION                           | 11,MKQUAL.                        |

.. COMMENT AFTER

.. DELETE . AFTER

|         |          | LIST  | X  |        |    |
|---------|----------|-------|----|--------|----|
|         | SSSS     | XTEXT |    |        |    |
| 0000001 | TY.EQU   | EQU   | 1  | SSSS   | .1 |
| 0000000 | TY.SET   | EQU   | 0  | SSSS   | .1 |
| 0000003 | TY.TOK   | EQU   | 3  | SSSS   | .1 |
| 0000004 | TY.MAC   | EQU   | 4  | SSSS   | .1 |
| 0000002 | TY.CELL  | EQU   | 2  | SSSS   | .1 |
| 0000005 | TY.DS    | EQU   | 5  | SSSS   | .1 |
| 0000006 | TY.CTRL  | EQU   | 6  | SSSS   | .1 |
| 0000007 | TY.BASED | EQU   | 7  | SSSS   | .1 |
| 0000010 | TY.PARAM | EQU   | 8  | SSSS   | .1 |
| 0000011 | TY.AUTO  | EQU   | 9  | SSSS   | .1 |
| 0000012 | N.TYPES  | EQU   | 10 | SSSS   | .1 |
|         | *        |       |    | SSSS   | .1 |
| 0000001 | AX.PROC  | EQU   | 1  | SSSS   | .1 |
| 0000002 | AX.ARRAY | EQU   | 2  | SSSS   | .1 |
| 0000003 | AX.CONST | EQU   | 3  | SSSS   | .1 |
| 0000004 | AX.TEMP  | EQU   | 4  | SSSS   | .1 |
|         | *        |       |    | SSSS   | .1 |
| 0000000 | FLG.GLOB | EQU   | 0  | SSSS   | .1 |
| 0000001 | FLG.EFF  | EQU   | 1  | SSSS   | .1 |
|         | *        |       |    | SSSS   | .1 |
| 0000001 | W.FIXED  | EQU   | 1  | SSSS   | .1 |
| 0000002 | W.FLOAT  | EQU   | 2  | SSSS   | .1 |
| 0000003 | W.CHAR   | EQU   | 3  | SSSS   | .1 |
| 0000004 | W.BIT    | EQU   | 4  | SSSS   | .1 |
| 0000005 | W.POINT  | EQU   | 5  | SSSS   | .1 |
| 0000006 | W.EVENT  | EQU   | 6  | SSSS   | .1 |
| 0000007 | W.TASK   | EQU   | 7  | SSSS   | .1 |
| 0000010 | W.CODE   | EQU   | 8  | SSSS   | .1 |
| 0000011 | W.DBLE   | EQU   | 9  | SSSS   | .1 |
| 0000012 | W.CMPLX  | EQU   | 10 | SSSS   | .1 |
| 0000013 | W.LABEL  | EQU   | 11 | SSSS   | .1 |
|         | TOKENS   | XTEXT |    |        |    |
| 001041  | PRETOK   | BSS   | 0  | TOKENS | .1 |
| 002001  | ORG      | 2001B |    | TOKENS | .1 |
| 002001  | T.LSTELM | BSS   | 1  | TOKENS | .1 |
| 002002  | T.LIST   | BSS   | 1  | TOKENS | .1 |
| 002003  | T.BOX    | BSS   | 1  | TOKENS | .1 |
| 002004  | T.ID     | BSS   | 1  | TOKENS | .1 |
| 002005  | T.STB    | BSS   | 1  | TOKENS | .1 |
|         | *        |       |    | TOKENS | .1 |
| 002006  | T.INT    | BSS   | 0  | TOKENS | .1 |
| 002006  | T.FLOAT  | BSS   | 0  | TOKENS | .1 |
| 002006  | T.NUM    | BSS   | 1  | TOKENS | .1 |
| 002007  | T.AREG   | BSS   | 1  | TOKENS | .1 |
| 002010  | T.BREG   | BSS   | 1  | TOKENS | .1 |
| 002011  | T.XREG   | BSS   | 1  | TOKENS | .1 |
| 002012  | T.PLUS   | BSS   | 1  | TOKENS | .1 |
| 002013  | T.MINUS  | BSS   | 1  | TOKENS | .1 |
| 002014  | T.STAR   | BSS   | 1  | TOKENS | .1 |
| 002015  | T.SLASH  | BSS   | 1  | TOKENS | .1 |
| 002016  | T.FADD   | BSS   | 1  | TOKENS | .1 |

\* VALUE IS TOKEN BOX FOR ELEMENT  
 \* VALUE IS TOKEN BOX FOR LIST  
 \* VALUE IS TOKEN BOX TO SCAN NOW  
 \* VALUE IS HASH TABLE ADDRESS  
 \* VALUE IS NUMBER OF CHARS IN FOLLOWING STRING  
 \* VALUE IS IN NEXT WORD OF TOKEN STRING  
 \* VALUE IS IN NEXT WORD  
 \*\* CURRENTLY INTEGERS AND REALS ARE THE SAME  
 \* VALUE IS REGISTER NUMBER  
 \* VALUE IS REGISTER NUMBER  
 \* VALUE IS REGISTER NUMBER

|        |          |     |   |                              |        |    |
|--------|----------|-----|---|------------------------------|--------|----|
| 002017 | T.FSUB   | BSS | 1 |                              | TOKENS | .1 |
| 002020 | T.FMULT  | BSS | 1 |                              | TOKENS | .1 |
| 002021 | T.FDIV   | BSS | 1 |                              | TOKENS | .1 |
| 002022 | T.DADD   | BSS | 1 |                              | TOKENS | .1 |
| 002023 | T.DSUB   | BSS | 1 |                              | TOKENS | .1 |
| 002024 | T.DMULT  | BSS | 1 |                              | TOKENS | .1 |
| 002025 | T.DDIV   | BSS | 1 | * KLUDGE FOR TOKEN PROCESSOR | TOKENS | .1 |
| 002026 | T.RADD   | BSS | 1 |                              | TOKENS | .1 |
| 002027 | T.RSUB   | BSS | 1 |                              | TOKENS | .1 |
| 002030 | T.RMULT  | BSS | 1 |                              | TOKENS | .1 |
| 002031 | T.RDIV   | BSS | 1 |                              | TOKENS | .1 |
| 002032 | T.MOD    | BSS | 1 |                              | TOKENS | .1 |
| 002033 | T.LBRACK | BSS | 1 |                              | TOKENS | .1 |
| 002034 | T.RBRACK | BSS | 1 |                              | TOKENS | .1 |
| 002035 | T.BKSLSH | BSS | 1 |                              | TOKENS | .1 |
| 002036 | T.EQ     | BSS | 1 |                              | TOKENS | .1 |
| 002037 | T.NE     | BSS | 1 |                              | TOKENS | .1 |
| 002040 | T.GT     | BSS | 1 |                              | TOKENS | .1 |
| 002041 | T.GE     | BSS | 1 |                              | TOKENS | .1 |
| 002042 | T.LT     | BSS | 1 |                              | TOKENS | .1 |
| 002043 | T.LE     | BSS | 1 |                              | TOKENS | .1 |
| 002044 | T.AMBER  | BSS | 1 |                              | TOKENS | .1 |
| 002045 | T.EXCLAM | BSS | 1 |                              | TOKENS | .1 |
| 002046 | T.QUFST  | BSS | 1 |                              | TOKENS | .1 |
| 002047 | T.NARROW | BSS | 1 |                              | TOKENS | .1 |
| 002050 | T.LARROW | BSS | 1 |                              | TOKENS | .1 |
| 002051 | T.COLON  | BSS | 1 | .. *** OUTSIDE OF A LIST     | TOKENS | .1 |
| 002052 | T.COMMA  | BSS | 1 |                              | TOKENS | .1 |
| 002053 | T.SEMI   | BSS | 1 |                              | TOKENS | .1 |
| 002054 | T.QUAL   | BSS | 1 |                              | TOKENS | .1 |
| 002055 | T.BLCK   | BSS | 1 |                              | TOKENS | .1 |
| 002056 | T.LP     | BSS | 1 | .. STARTS A LITERAL LIST     | TOKENS | .1 |
| 002057 | T.RP     | BSS | 1 | .. ENDS A LITERAL LIST       | TOKENS | .1 |
| 002060 | T.PERCNT | BSS | 1 |                              | TOKENS | .1 |
| 002061 | T.POINT  | BSS | 1 |                              | TOKENS | .1 |
| 002062 | T.UNKNWN | BSS | 1 |                              | TOKENS | .1 |
| 002063 | T.UNKNWN | BSS | 1 |                              | TOKENS | .1 |
| 001041 |          | ORG |   | PRETOK                       | TOKENS | .1 |

EXT  
EXT  
EXT  
EXT  
EXT  
EXT  
EXT  
EXT

RUFFPNT,CHARPNT,CURRTOK,DEFLT  
FORCE,INBUFF,INPUTA,LASTTOK,LOOKUP  
NSRCADR,PROTECT,READF,RESTREG,SAVEREG  
SD,STRB,SD,SYMT,SD,TOK  
SETMIN  
SRCADR,SRCFILE,STARB,STARL,STATE  
THISTOK,TOKBASE

|        |                      |          |
|--------|----------------------|----------|
| 001041 | 00000000000000000000 | TSFULL1  |
| 001042 | 00000000000000000000 | TSFULL2  |
| 001043 | 00000000000000000000 | CALL     |
| 001044 | 00000000000000000000 | SBFULL   |
| 001045 | 00000000000000000000 | SBFULL2  |
| 001046 | 00000000000000000000 | ERROR    |
| 001047 | 00000000000000000000 | STKQUAL  |
| 001050 | 00000000000000000000 | MKQUAL   |
| 001051 | 00000000000000000000 | STRQUAL  |
| 001052 | 00000000000000000000 | MKQUALC  |
| 001053 | 00000000000000000000 | CALLSPCL |
| 001054 | 00000000000000000000 | MKQUAL.  |
| 001055 | 00000000000000000000 | EOI      |
| 001056 | 00000000000000000000 | NT.MKBOX |
| 001057 | 00000000000000000000 | SPECTF   |
| 001060 | 00000000000000000000 | FORCERR  |
| 001061 | 00000000000000000000 | ILLDEF   |
| 001062 | 00000000000000000000 | VAR      |
| 001063 | 00000000000000000000 | ENDASM   |
| 001064 |                      |          |

END

3869 STATEMENTS 305 SYMBOLS

NO FATAL: 1 NON-FATAL ERRORS IN TOKPROC

3 TYPE ERROR      DUPLICATE MACRO DEFINITION. NEW ONE OVERRIDES  
OCCURRED ON PAGES      29

|          |         |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|----------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ACTIONS  | 0000774 | PROGRAM*  | 4-00025, 29-00776, 29-01000, 29-01001, 29-01002, 29-01003, 29-01004, 29-01005, 29-01006, 29-01007, 29-01010, 29-01011, 29-01012, 29-01013, 29-01014, 29-01015, 29-01016, 29-01017, 29-01020, 29-01021, 29-01022, 29-01023, 29-01024, 29-01025, 29-01027, 29-01030, 29-01031, 29-01032, 29-01033, 29-01034, 29-01035, 29-01036, 29-01037, 29-01040                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| AEXP     | 0000411 | PROGRAM*  | 15-00354                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| ASCII0   | 0000020 |           | 10-00163, 14-00312, 14-00332                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| BASE     | 0000000 |           | 22-00561, 22-00562, 22-00563, 22-00564, 22-00565, 22-00566, 22-00567, 22-00570, 22-00571, 22-00572, 22-00573, 22-00574, 22-00575, 22-00576, 22-00577, 22-00600, 22-00601, 22-00602, 22-00603, 22-00604, 22-00605, 22-00606, 22-00607, 22-00610, 22-00611, 23-00612, 23-00613, 23-00614, 23-00615, 23-00616, 23-00617, 23-00620, 23-00621, 23-00622, 23-00623, 23-00624, 23-00625, 23-00626, 23-00627, 23-00630, 23-00631, 23-00632, 23-00633, 23-00634, 23-00635, 23-00636, 23-00637, 23-00640, 23-00641, 23-00642, 23-00643, 23-00644, 23-00645, 23-00646, 23-00647, 23-00650, 23-00651, 23-00652, 23-00653, 23-00654, 23-00655, 23-00656, 23-00657, 23-00660, 23-00661, 23-00662, 23-00663, 23-00664, 23-00665, 23-00666, 23-00667, 23-00670, 23-00671, 23-00672, 23-00673, 23-00674, 23-00675, 23-00676, 23-00677, 23-00700, 23-00701, 23-00702, 23-00703, 23-00704, 23-00705, 23-00706, 23-00707, 23-00710, 23-00711, 23-00712, 23-00713, 23-00714, 23-00715, 23-00716, 23-00717, 23-00720, 23-00721, 23-00722, 23-00723, 23-00724, 23-00725, 23-00726, 23-00727, 23-00730, 23-00731, 23-00732, 23-00733, 23-00734, 23-00735, 23-00736, 23-00737, 23-00740, 23-00741, 23-00742, 23-00743, 23-00744, 23-00745, 23-00746, 23-00747, 23-00750, 23-00751, 23-00752, 23-00753, 23-00754, 24-00755, 24-00756, 24-00757, 24-00760 |
| RUFFPNT  | 0000000 | EXTERNAL* | 3-00000, 21-00546                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| CALL     | 0001043 | PROGRAM*  | 29-01023                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| CALLINT  | 0000000 | EXTERNAL* | 21-00550                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| CALLSPCL | 0001053 | PROGRAM*  | 29-01037                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| CHARPNT  | 0000000 | EXTERNAL* | 3-00003, 21-00545                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| CHARTABL | 0000561 | PROGRAM*  | 4-00030, 8-00124, 10-00156, 10-00161, 10-00162, 12-00250, 14-00310, 14-00332                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| CHECKCOM | 0000046 | PROGRAM*  | 5-00062                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| CHKSTAR  | 0000063 | PROGRAM*  | 29-01007                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| COMMENTL | 0000045 | PROGRAM*  | 5-00062, 5-00065, 29-01006                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| CT.CHAR  | 0000032 |           | 10-00163, 11-00222, 11-00223, 24-00760                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| CT.CLASS | 0000016 |           | 4-00031, 11-00222, 24-00760                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| CT.DIG   | 0000001 |           | 14-00311                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| CT.ID    | 0000000 |           | 10-00172                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| CT.NSMC  | 0000035 |           | 14-00333, 24-00760                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| CT.OCT   | 0000003 |           | 10-00157, 10-00172, 24-00760                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| CT.SET   | 0000043 |           | 11-00223                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| CT.STR   | 0000002 |           | 12-00250                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| CURRTOK  | 0000000 | EXTERNAL* | 3-00003, 4-00021, 5-00040, 5-00050, 6-00070, 6-00075, 11-00227, 12-00241, 16-00421, 19-00477, 19-00511, 20-00524, 21-00543                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| DEFDEC   | 0000362 | PROGRAM*  | 15-00356                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| DEFLT8   | 0000000 | EXTERNAL* | 15-00356                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| DELETE.  | 0000037 | PROGRAM*  | 5-00034, 5-00042, 5-00044, 7-00114, 29-01005, 29-01033                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| DIG      | 0000000 |           | 22-00561, 22-00562, 22-00563, 22-00564, 22-00565, 22-00566, 22-00567, 22-00570, 22-00571, 22-00572, 22-00573, 22-00574, 22-00575, 22-00576, 22-00577, 22-00600, 22-00601, 22-00602, 22-00603, 22-00604, 22-00605, 22-00606, 22-00607, 22-00610, 22-00611, 23-00612, 23-00613, 23-00614, 23-00615, 23-00616, 23-00617, 23-00620, 23-00621, 23-00622, 23-00623, 23-00624, 23-00625, 23-00626, 23-00627, 23-00630, 23-00631, 23-00632, 23-00633, 23-00634, 23-00635, 23-00636, 23-00637, 23-00640, 23-00641, 23-00642, 23-00643, 23-00644, 23-00645, 23-00646, 23-00647, 23-00650, 23-00651, 23-00652, 23-00653, 23-00654, 23-00655, 23-00656, 23-00657, 23-00660, 23-00661, 23-00662, 23-00663, 23-00664, 23-00665, 23-00666, 23-00667, 23-00670, 23-00671, 23-00672, 23-00673, 23-00674, 23-00675, 23-00676, 23-00677, 23-00700, 23-00701, 23-00702, 23-00703, 23-00704, 23-00705, 23-00706, 23-00707, 23-00710, 23-00711, 23-00712,                                                                                                                                                                                                                                                                                                                                                                                            |

|          |         |           |                                                                                                                                                                                                                                                                                                                                                                                                        |
|----------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          |         |           | 23-00713, 23-00714, 23-00715, 23-00716, 23-00717, 23-00720, 23-00721, 23-00722, 23-00723,<br>23-00724, 23-00725, 23-00726, 23-00727, 23-00730, 23-00731, 23-00732, 23-00733, 23-00734,<br>23-00735, 23-00736, 23-00737, 23-00740, 23-00741, 23-00742, 23-00743, 23-00744, 23-00745,<br>23-00746, 23-00747, 23-00750, 23-00751, 23-00752, 23-00753, 23-00754, 24-00755, 24-00756,<br>24-00757, 24-00760 |
| DOUBLEOP | 0000035 | PROGRAM*  | 29-01003                                                                                                                                                                                                                                                                                                                                                                                               |
| DSCALE   | 0000366 | PROGRAM*  | 15-00364, 16-00370                                                                                                                                                                                                                                                                                                                                                                                     |
| DUMMY    | 0000066 | PROGRAM*  | 5-00064                                                                                                                                                                                                                                                                                                                                                                                                |
| D1       | 0000015 |           | 28-00761, 28-00762, 28-00763, 28-00764, 28-00765, 28-00766, 28-00767, 28-00770, 28-00771,<br>28-00772, 28-00773, 28-00774, 28-00775                                                                                                                                                                                                                                                                    |
| D10      | 0000020 |           | 28-00761, 28-00762, 28-00763, 28-00764, 28-00765, 28-00766, 28-00767, 28-00770, 28-00771,<br>28-00772, 28-00773, 28-00774, 28-00775                                                                                                                                                                                                                                                                    |
| D2       | 0000001 |           | 28-00761, 28-00762, 28-00763, 28-00764, 28-00765, 28-00766, 28-00767, 28-00770, 28-00771,<br>28-00772, 28-00773, 28-00774, 28-00775                                                                                                                                                                                                                                                                    |
| D3       | 0000003 |           | 28-00761, 28-00762, 28-00763, 28-00764, 28-00765, 28-00766, 28-00767, 28-00770, 28-00771,<br>28-00772, 28-00773, 28-00774, 28-00775                                                                                                                                                                                                                                                                    |
| D4       | 0000013 |           | 28-00761, 28-00762, 28-00763, 28-00764, 28-00765, 28-00766, 28-00767, 28-00770, 28-00771,<br>28-00772, 28-00773, 28-00774, 28-00775                                                                                                                                                                                                                                                                    |
| D5       | 0000016 |           | 28-00761, 28-00762, 28-00763, 28-00764, 28-00765, 28-00766, 28-00767, 28-00770, 28-00771,<br>28-00772, 28-00773, 28-00774, 28-00775                                                                                                                                                                                                                                                                    |
| D6       | 0000020 |           | 28-00761, 28-00762, 28-00763, 28-00764, 28-00765, 28-00766, 28-00767, 28-00770, 28-00771,<br>28-00772, 28-00773, 28-00774, 28-00775                                                                                                                                                                                                                                                                    |
| D7       | 0000024 |           | 28-00761, 28-00762, 28-00763, 28-00764, 28-00765, 28-00766, 28-00767, 28-00770, 28-00771,<br>28-00772, 28-00773, 28-00774, 28-00775                                                                                                                                                                                                                                                                    |
| D8       | 0000020 |           | 28-00761, 28-00762, 28-00763, 28-00764, 28-00765, 28-00766, 28-00767, 28-00770, 28-00771,<br>28-00772, 28-00773, 28-00774, 28-00775                                                                                                                                                                                                                                                                    |
| D9       | 0000020 |           | 28-00761, 28-00762, 28-00763, 28-00764, 28-00765, 28-00766, 28-00767, 28-00770, 28-00771,<br>28-00772, 28-00773, 28-00774, 28-00775                                                                                                                                                                                                                                                                    |
| ENDASM   | 0001063 | PROGRAM*  | 3-00010                                                                                                                                                                                                                                                                                                                                                                                                |
| ENDRUFF3 | 0000255 | PROGRAM*  | 12-00245, 12-00246                                                                                                                                                                                                                                                                                                                                                                                     |
| ENDID    | 0000143 | PROGRAM*  | 8-00125, 10-00175                                                                                                                                                                                                                                                                                                                                                                                      |
| ENDNUM   | 0000330 | PROGRAM*  | 14-00311                                                                                                                                                                                                                                                                                                                                                                                               |
| ENDSTR   | 0000266 | PROGRAM*  | 12-00251                                                                                                                                                                                                                                                                                                                                                                                               |
| ENDW     | 0000131 | PROGRAM*  | 8-00123                                                                                                                                                                                                                                                                                                                                                                                                |
| EOI      | 0001055 | PROGRAM*  | 3-00017, 5-00061, 8-00141, 10-00206, 10-00220, 11-00237, 12-00263, 13-00305, 14-00326,<br>16-00402, 21-00557                                                                                                                                                                                                                                                                                           |
| ERROR    | 0001046 | PROGRAM*  | 29-01004, 29-01031                                                                                                                                                                                                                                                                                                                                                                                     |
| EXPL     | 0000412 | PROGRAM*  | 16-00414                                                                                                                                                                                                                                                                                                                                                                                               |
| EXP2     | 0000415 | PROGRAM*  | 16-00412                                                                                                                                                                                                                                                                                                                                                                                               |
| FILLBUFF | 0000231 | PROGRAM*  | 11-00226, 11-00228                                                                                                                                                                                                                                                                                                                                                                                     |
| FILLCOM  | 0000053 | PROGRAM*  | 5-00046                                                                                                                                                                                                                                                                                                                                                                                                |
| FILLNEWL | 0000551 | PROGRAM*  | 21-00537                                                                                                                                                                                                                                                                                                                                                                                               |
| FILLR1   | 0000176 | PROGRAM*  | 10-00155                                                                                                                                                                                                                                                                                                                                                                                               |
| FILLR2   | 0000210 | PROGRAM*  | 10-00160                                                                                                                                                                                                                                                                                                                                                                                               |
| FLOATOP  | 0000035 | PROGRAM*  | 29-01002                                                                                                                                                                                                                                                                                                                                                                                               |
| FORCE    | 0000000 | EXTERNAL* | 6-00071, 6-00076                                                                                                                                                                                                                                                                                                                                                                                       |
| FORCERR  | 0001060 | PROGRAM*  | 6-00073                                                                                                                                                                                                                                                                                                                                                                                                |
| FORCING  | 0000067 | PROGRAM*  | 29-01017                                                                                                                                                                                                                                                                                                                                                                                               |
| GETBOX   | 0000153 | PROGRAM*  | 8-00150                                                                                                                                                                                                                                                                                                                                                                                                |
| GETTOK   | 0000030 | PROGRAM*  | 3-00010, 3-00020, 5-00040, 5-00051, 5-00065, 6-00067, 6-00107, 7-00116, 29-00777,<br>29-01001, 29-01010, 29-01011, 29-01013, 29-01014, 29-01016, 29-01022, 29-01026                                                                                                                                                                                                                                    |
| GOSTR    | 0000252 | PROGRAM*  | 12-00265                                                                                                                                                                                                                                                                                                                                                                                               |
| GOTHASHT | 0000146 | PROGRAM*  | 8-00145                                                                                                                                                                                                                                                                                                                                                                                                |



| NAME     | ADDRESS | TYPE      | DATA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|----------|---------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GTLTEW   | 0000043 | PROGRAM*  | 29-01015                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| HAVETOK  | 0000224 | PROGRAM*  | 20-00517                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| HAVETOKA | 0000227 | PROGRAM*  | 8-00152, 10-00165, 11-00224, 11-00240                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
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| ILLDEF   | 0001061 | PROGRAM*  | 6-00103                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| INBUFF   | 0000000 | EXTERNAL* | 3-00012, 3-00017, 5-00054, 5-00061, 8-00134, 8-00141, 10-00201, 10-00206, 10-00213, 10-00220, 11-00232, 11-00237, 12-00256, 12-00263, 13-00300, 13-00305, 14-00321, 14-00326, 16-00375, 16-00402, 21-00540, 21-00552, 21-00557                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| INPUTA   | 0000000 | EXTERNAL* | 3-00012, 5-00054, 8-00134, 10-00201, 10-00213, 11-00232, 12-00256, 13-00300, 14-00321, 16-00375, 21-00541, 21-00552                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| LABEL    | 0000074 | PROGRAM*  | 29-01020                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| LABEL2   | 0000077 | PROGRAM*  | 6-00074                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| LASTTOK  | 0000000 | EXTERNAL* | 4-00022                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| LOOKUP   | 0000000 | EXTERNAL* | 8-00145                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| MKQUAL   | 0001050 | PROGRAM*  | 29-01021, 29-01027, 29-01035, 29-01036                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| MKQUALC  | 0001052 | PROGRAM*  | 29-01034                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| MKQUAL:  | 0001054 | PROGRAM*  | 29-01040                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| MODOP    | 0000041 | PROGRAM*  | 29-01012                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
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| REG2     | 0000161 | PROGRAM*  | 10-00211, 10-00221                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
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| ROUNDOP  | 0000033 | PROGRAM*  | 29-01000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| SAVEREG  | 0000000 | EXTERNAL* | 3-00011, 5-00053, 8-00133, 10-00200, 10-00212, 11-00231, 12-00255, 13-00277, 14-00320, 16-00374, 21-00551                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| SRFULL   | 0001044 | PROGRAM*  | 8-00126                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| SRFULL2  | 0001045 | PROGRAM*  | 8-00143                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| SCALE    | 0000364 | PROGRAM*  | 15-00355                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| SD*STRB  | 0000000 | EXTERNAL* | 8-00120, 10-00174                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| SD*SYMT  | 0000000 | EXTERNAL* | 6-00077, 8-00146                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| SD*TOK   | 0000000 | EXTERNAL* | 19-00475, 19-00507, 20-00520                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| SENDIO   | 0000151 | PROGRAM*  | 9-00154                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| SETLINE  | 0000540 | PROGRAM*  | 5-00052, 21-00560                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| SFTMIN   | 0000000 | EXTERNAL* | 4-00072                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| SETSW    | 0000265 | PROGRAM*  | 12-00266                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| SFT1     | 0000115 | PROGRAM*  | 4-00112, 6-00112                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| SPECIF   | 0001057 | PROGRAM*  | 29-01024                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| SRCADR   | 0000000 | EXTERNAL* | 3-00005, 6-00100                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| SRCFILE  | 0000000 | EXTERNAL* | 4-00101                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| STARB    | 0000000 | EXTERNAL* | 6-00102                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| STARL    | 0000000 | EXTERNAL* | 6-00103                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| STATE    | 0000000 | EXTERNAL* | 3-00002, 4-00023, 7-00115, 19-00501, 20-00523                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| STKQUAL  | 0001047 | PROGRAM*  | 29-01030                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| STR      | 0000000 |           | 22-00561, 22-00562, 22-00563, 22-00564, 22-00565, 22-00566, 22-00567, 22-00570, 22-00571, 22-00572, 22-00573, 22-00574, 22-00575, 22-00576, 22-00577, 22-00600, 22-00601, 22-00602, 22-00603, 22-00604, 22-00605, 22-00606, 22-00607, 22-00610, 22-00611, 23-00612, 23-00613, 23-00614, 23-00615, 23-00616, 23-00617, 23-00620, 23-00621, 23-00622, 23-00623, 23-00624, 23-00625, 23-00626, 23-00627, 23-00630, 23-00631, 23-00632, 23-00633, 23-00634, 23-00635, 23-00636, 23-00637, 23-00640, 23-00641, 23-00642, 23-00643, 23-00644, 23-00645, 23-00646, 23-00647, 23-00650, 23-00651, 23-00652, 23-00653, 23-00654, 23-00655, 23-00656, 23-00657, 23-00660, 23-00661, 23-00662, 23-00663, 23-00664, 23-00665, 23-00666, 23-00667, 23-00670, 23-00671, 23-00672, 23-00673, 23-00674, 23-00675, 23-00676, 23-00677, 23-00700, 23-00701, 23-00702, 23-00703, 23-00704, 23-00705, 23-00706, 23-00707, 23-00710, 23-00711, 23-00712, 23-00713, 23-00714, 23-00715, 23-00716, 23-00717, 23-00720, 23-00721, 23-00722, 23-00723, 23-00724, 23-00725, 23-00726, 23-00727, 23-00730, 23-00731, 23-00732, 23-00733, 23-00734, 23-00735, 23-00736, 23-00737, 23-00740, 23-00741, 23-00742, 23-00743, 23-00744, 23-00745, 23-00746, 23-00747, 23-00750, 23-00751, 23-00752, 23-00753, 23-00754, 24-00755, 24-00756, 24-00757, 24-00760 |
| STRINGL  | 0000243 | PROGRAM*  | 12-00254                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| STRINGT  | 0000244 | PROGRAM*  | 12-00253                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| STRTQUAL | 0001051 | PROGRAM*  | 29-01032                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| S.APITH  | 0000014 |           | 22-00573, 22-00574, 22-00576, 22-00600                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| S.BKSLSH | 0000030 |           | 23-00655                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| S.COLON  | 0000066 |           | 23-00613                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| S.EQUAL  | 0000044 |           | 23-00616                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| S.ID     | 0000006 |           | 8-00152                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| S.LIST   | 0000052 |           | 20-00532                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

TOKPROC •• SYSTEM TOKEN PROCESSOR  
SYMBOLIC REFERENCE TABLE

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S.OTHER 0000060

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22-00564, 22-00565, 22-00566, 22-00567, 22-00570, 22-00571, 22-00572, 22-00575, 22-00601,  
22-00602, 22-00603, 22-00604, 22-00605, 22-00606, 22-00607, 22-00610, 22-00611, 23-00612,  
23-00614, 23-00620, 23-00621, 23-00622, 23-00623, 23-00624, 23-00625, 23-00626, 23-00627,  
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23-00641, 23-00642, 23-00643, 23-00644, 23-00645, 23-00646, 23-00647, 23-00650, 23-00651,  
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23-00717, 23-00720, 23-00721, 23-00722, 23-00723, 23-00724, 23-00725, 23-00726, 23-00727,  
23-00730, 23-00731, 23-00732, 23-00733, 23-00734, 23-00735, 23-00736, 23-00737, 23-00740,  
23-00741, 23-00742, 23-00743, 23-00744, 23-00745, 23-00746, 23-00747, 23-00750, 23-00751,  
23-00752, 23-00753, 23-00754, 24-00755, 24-00756, 24-00757, 24-00760

S.PERIOD 0000022

S.RELATE 0000036

TAKEDC 0000407

TAKEOCTL 0000404

TENTABL 0000426

TESTWORD 0000010

THISTOK 0000000

TOKBASE 0000000

TOKSTATE 0000761

TOOLONG 0000361

TSFULL1 0001041

TSFULL2 0001042

TS.LIST 0000001

TY.CELL 0000002

TY.TOK 0000003

T.AMPER 0002044

T.AREG 0002007

T.BKSLSH 0002035

T.BREG 0002010

T.COLON 0002051

T.COMMA 0002052

T.EQ 0002036

T.EXCLAM 0002045

T.GT 0002040

T.ID 0002004

T.LARROW 0002050

T.LBRACK 0002033

T.LP 0002056

T.LT 0002042

T.MINUS 0002013

T.MOD 0002032

T.NE 0002037

T.NUM 0002006

T.PERCNT 0002060

T.PLUS 0002012

T.POINT 0002061

T.QUAL 0002054

T.QUEST 0002046

T.RBRACK 0002034

PROGRAM\*

PROGRAM\*

PROGRAM\*

PROGRAM\*

EXTERNAL\*

EXTERNAL\*

PROGRAM\*

PROGRAM\*

PROGRAM\*

PROGRAM\*

22-00577

23-00615, 23-00617

15-00344

15-00340

16-00413, 16-00415

3-00006

3-00002, 4-00021

3-00000, 5-00064, 21-00547

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19-00477

19-00504

19-00476, 19-00510, 20-00522

6-00105

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22-00567

23-00622

23-00655

23-00623

23-00613

19-00515, 22-00575

23-00616

22-00562

6-00111, 23-00617

6-00151

23-00660

23-00654

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23-00615

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22-00564

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TOKPROC •• SYSTEM TOKEN PROCESSOR  
SYMBOLIC REFERENCE TABLE (PAGE-LOCATION)

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| T.RP     | 0002057 | 20-00526, 22-00572                                                                                                                                                                           |
| T.SEMI   | 0002053 | 21-00543                                                                                                                                                                                     |
| T.SLASH  | 0002015 | 22-00600                                                                                                                                                                                     |
| T.STAR   | 0002014 | 5-00063, 22-00573                                                                                                                                                                            |
| T.STR    | 0002005 | 12-00241                                                                                                                                                                                     |
| T.UARROW | 0002047 | 23-00657                                                                                                                                                                                     |
| T.UKNWN  | 0002062 | 23-00661, 23-00714, 23-00715, 23-00716, 23-00717, 23-00720, 23-00737, 23-00740, 23-00741, 23-00742, 23-00743, 23-00744, 23-00745, 23-00746, 23-00747, 23-00750, 23-00751, 23-00752, 23-00753 |
| T.UNKWN  | 0002063 | 23-00721, 23-00722, 23-00723, 23-00724, 23-00725, 23-00726, 23-00727, 23-00730, 23-00731, 23-00732, 23-00733, 23-00734, 23-00735, 24-00755, 24-00756, 24-00757, 24-00760                     |
| T.XREG   | 0002011 | 23-00651                                                                                                                                                                                     |