```
CLEAR STORAGE 1     ,008015,022026,030037,044,049,053053N000000N00001026                                  1
CLEAR STORAGE 2     L068116,105106,110117B101/I9I#071029C029056B026/B001/0991,001/001117I0?                2
BOOTSTRAP           ,008015,022029,036040,047054,061068,072/061039             ,0010011040                3

                         FORTRAN COMPILER -- VARIABLE PHASE ONE -- 13                              PAGE    1

 SEQ PG LIN  LABEL  OP    OPERANDS                                          SFX CT  LOCN  INSTRUCTION TYPE  CARD

 101               JOB   FORTRAN COMPILER -- VARIABLE PHASE ONE -- 13
 102               CTL   6611
 103         *
 104         * THE SOURCE PROGRAM IS SCANNED FOR VARIABLES.  SIMPLE
 105         * VARIABLES ARE MERELY TAGGED FOR LATER PROCESSING BY
 106         * VARIABLES PHASE FOUR.  SUBSCRIPTED VARIABLES WHOSE
 107         * SUBSCRIPTS ARE CONSTANTS ARE REPLACED BY THE OBJECT-
 108         * TIME ADDRESS OF THE ARRAY ELEMENT.  SUBSCRIPTED VARIABLES
 109         * WHOSE SUBSCRIPTS ARE VARIABLE ARE REPLACED BY THE
 110         * COMPUTATION REQUIRED AT OBJECT TIME TO DETERMINE THE
 111         * ARRAY ELEMENT SELECTED.  NON-SUBSCRIPTED ARRAY VARIABLES
 112         * APPEARING IN LISTS ARE REPLACED BY TWO MACHINE-LANGUAGE
 113         * ADDRESSES REPRESENTING THE LIMITS OF THE ARRAY.  NON-
 114         * SUBSCRIPTED ARRAY VARIABLES APPEARING ELSEWHERE ARE
 115         * REPLACED BY THE ADDRESS OF THE FIRST ELEMENT OF THE
 116         * ARRAY.
 117         *
 118         * ON ENTRY, 83 IS ONE BELOW THE GM BELOW THE BOTTOM OF
 119         * THE ARRAY TABLE AND X1 IS AT THE TOP OF THE FIRST (IN SORTED
 120         * ORDER) STATEMENT THAT'S NEITHER DIMENSION NOR EQUIVALENCE.
 121         *
 122         * ON EXIT THE CODE IS MOVED UP AGAINST THE ARRAY TABLE.
 123         *
 124         X1     EQU   89                                                    0089
 125         X2     EQU   94                                                    0094
 126         X3     EQU   99                                                    0099
 127         *
 128         * STUFF IN THE RESIDENT AREA
 129         *
 130         PHASID EQU   110  PHASE ID, FOR SNAPSHOT DUMPS                    0110
 131         GLOBER EQU   184  GLOBAL ERROR FLAG -- WM MEANS ERROR             0184
 132         SNAPSH EQU   333  CORE DUMP SNAPSHOT                              0333
 133         LOADNX EQU   700  LOAD NEXT OVERLAY                               0700
 134         CLEARL EQU   707  CS AT START OF OVERLAY LOADER                   0707
 135         LOADXX EQU   793  EXIT FROM OVERLAY LOADER                        0793
 136         *
 137               ORG   838                                                          0838
 138         LOADDD EQU   *&1          LOAD ADDRESS                            0838
 139     838 BEGINN MCW   83,X2                                             7  0838  M 083 094           4
 140     845        MCW   X2,TBLBOT  SAVE BOTTOM OF ARRAY TABLE             7  0845  M 094 O36           4
 141     852        SW    GM                                               4  0852  , N55               4
 142     856 NXTSTM BCE   DONE,0&X1,  NO MORE STATEMENTS?                   8  0856  B J38 0|0           4
 143     864        LCA   0&X1,PREFIX                                      7  0864  L 0|0 O46           4
 144     871        SAR   X1          TOP OF STATEMENT                     4  0871  Q 089               4
 145     875        SBR   X3                                               4  0875  H 099               5
 146     879        LCA   PREFIX,0&X2  PUSH UP BELOW ARRAY TABLE            7  0879  L O46 0!0           5
 147     886        SBR   X2          AND SAVE THE NEXT AVAILABLE          4  0886  H 094               5
```

```
SEQ PG LIN  LABEL  OP    OPERANDS                                    SFX CT  LOCN  INSTRUCTION TYPE  CARD
148    890         BCE   FORMAT,PREFIX-3,F  FORMAT STATEMENT?          8  0890  B M70 O43 F          5
149    898         SW    PREFIX-3                                     4  0898  , O43                5
150    902         MCW   PREFIX-3,*&8                                 7  0902  M O43 916            5
151    909         BCE   DATXFR,DATXFC,0  DATA TRANSFER STATEMENT?   8  0909  B J68 O53 0          6
152    917         CHAIN 6                                                                 MACRO
153                BCE                                                1  0917  B           GEN      6
154                BCE                                                1  0918  B           GEN      6
155                BCE                                                1  0919  B           GEN      6
156                BCE                                                1  0920  B           GEN      6
157                BCE                                                1  0921  B           GEN      6
158                BCE                                                1  0922  B           GEN      6
159         *
160         * NOT A DATA TRANSFER STATEMENT
161         *
162    923         MCW   NOP,SWICH1  TURN OFF DATA TRANSFER           7  0923  M O54 956            7
163    930         MCW   NOP,SWICH2    STATEMENT SWITCHES             7  0930  M O54 T32            7
164         *
165         * BACK HERE FOR EITHER DATA TRANSFER STATEMENT OR NOT
166         *
167    937  STMT   MCW   0&X1,CH    SKIP NUMERIC                      7  0937  M 0|0 O55            7
168    944         SAR   X1           AND NON-ZONED PUNCTUATION      4  0944  Q 089                7
169    948         BWZ   STMT,CH,2      CHARACTERS                   8  0948  V 937 O55 2          7
170    956  SWICH1 NOP   DATXF1     BRANCH IF DATA TRANSFER STATEMENT 4  0956  N K12                7
171    960  SKIPP  MCW   CH,*&8       SKIP @*-&.%),                  7  0960  M O55 974            8
172    967         BCE   STMT,PUNCT,0   PUNCTUATION                  8  0967  B 937 O63 0          8
173    975         CHAIN 7                                                                 MACRO
174                BCE                                                1  0975  B           GEN      8
175                BCE                                                1  0976  B           GEN      8
176                BCE                                                1  0977  B           GEN      8
177                BCE                                                1  0978  B           GEN      8
178                BCE                                                1  0979  B           GEN      8
179                BCE                                                1  0980  B           GEN      9
180                BCE                                                1  0981  B           GEN      9
181    982         BCE   FLTCON,CH,E  FLOATING-POINT CONSTANT?        8  0982  B K99 O55 E          9
182    990         BCE   GOTVAR,CH,}  GM (BOTTOM OF STMT)?           8  0990  B /19 O55 } GMARK    9
183    998         MCW   2&X1,CH2                                     7  0998  M 0|2 O64            9
184  1 005         MCW   CH2,*&8                                     7  1005  M O64 |19            9
185  1 012         BCE   GOTVAR,PUNCT2,0  #,}*@&-%)                  8  1012  B /19 N01 0         10
186  1 020         CHAIN 8                                                                 MACRO
187                BCE                                                1  1020  B           GEN     10
188                BCE                                                1  1021  B           GEN     10
189                BCE                                                1  1022  B           GEN     10
190                BCE                                                1  1023  B           GEN     10
191                BCE                                                1  1024  B           GEN     10
192                BCE                                                1  1025  B           GEN     10
193                BCE                                                1  1026  B           GEN     11
194                BCE                                                1  1027  B           GEN     11
195  1 028         BCE   GOTVAR,PREFIX-3,D  DO STATEMENT?             8  1028  B /19 O43 D          11
196  1 036  SYNTAX CS    332                                          4  1036  / 332                11
197  1 040         CS                                                 1  1040  /                    11
```

```
SEQ PG LIN  LABEL   OP    OPERANDS                                          SFX CT  LOCN  INSTRUCTION TYPE  CARD
198  1 041          SW    GLOBER      GLOBAL ERROR FLAG                        4  1041  , 184               11
199  1 045          MN    PREFIX,240  SEQUENCE NUMBER TO PRINT LINE            7  1045  D O46 240           11
200  1 052          MN                                                         1  1052  D                   12
201  1 053          MN                                                         1  1053  D                   12
202  1 054          MCW   ERROR9  VARIABLE SYNTAX ERROR                      4  1054  M P01               12
203  1 058          W                                                          1  1058  2                   12
204  1 059          BCV   OVFL1                                              5  1059  B |68 @             12
205  1 064          B     NOVFL1                                             4  1064  B |70               12
206  1 068  OVFL1   CC    1                                                  2  1068  F 1                 12
207  1 070  NOVFL1  BW    CW1S6,FLAG1  GO CLEAR FLAG 1 AND SET FLAG 6        8  1070  V Z38 N02 1         13
208  1 078          SBR   X1,1&X1                                            7  1078  H 089 0|1           13
209  1 085          SW    FLAG3                                              4  1085  , N04               13
210  1 089          B     SKP2P2  SKIP TO PUNCT2 PUNCTUATION                 4  1089  B /71               13
211            *
212  1 093  SUBER2  LCA   K0Q0,0&X2  0?0                                     7  1093  L P04 0!0           13
213  1 100          SBR   X2                                                 4  1100  H 094               13
214  1 104          SBR   X3,1&X1                                            7  1104  H 099 0|1           14
215  1 111          SBR   X1                                                 4  1111  H 089               14
216  1 115          B     VARFIN                                             4  1115  B U45               14
217            *
218            * X1 IS AT THE GM AT THE BOTTOM OF THE STATEMENT, OR ONE BELOW
219            * THE TOP (FIRST) CHARACTER OF A VARIABLE.
220            * MOVE STUFF ABOVE AND FIRST CHARACTER UP.
221            *
222  1 119  GOTVAR SW    1&X1                                               4  1119  , 0|1               14
223  1 123          LCA   0&X3,0&X2  MOVE UP STUFF ABOVE (BEFORE) VAR        7  1123  L 0?0 0!0           14
224  1 130          SBR   X2                                                 4  1130  H 094               14
225  1 134          CW    1&X1                                               4  1134  ) 0|1               14
226  1 138          SBR   X3,1&X1    X3 NOW AT TOP (BEGINNING) OF VARIABLE   7  1138  H 099 0|1           15
227  1 145          SBR   CHECK&6,2&X1                                       7  1145  H U74 0|2           15
228  1 152          MCW   SEMIC      REPLACE CHAR ABOVE VARIABLE OR GM        4  1152  M P05               15
229  1 156          BCE   ENDSTM,CH,}  END IF GM                           8  1156  B K43 O55 } GMARK   15
230  1 164          ZA    KP1,W2                                             7  1164  ? P06 P08           15
231            *
232 '          * COUNT CHARACTERS IN NAME
233            *
234  1 171  SKP2P2 MCW   0&X1,CH                                            7  1171  M 0|0 O55           16
235  1 178          SAR   X1                                                 4  1178  Q 089               16
236  1 182          MCW   CH,*&8                                             7  1182  M O55 /96           16
237  1 189          BCE   GOTP2,PUNCT2,0  #,}*@&-%)                        8  1189  B S16 N01 0         16
238  1 197          CHAIN 8                                                                  MACRO
239                 BCE                                                    1  1197  B           GEN     16
240                 BCE                                                    1  1198  B           GEN     16
241                 BCE                                                    1  1199  B           GEN     16
242                 BCE                                                    1  1200  B           GEN     17
243                 BCE                                                    1  1201  B           GEN     17
244                 BCE                                                    1  1202  B           GEN     17
245                 BCE                                                    1  1203  B           GEN     17
246                 BCE                                                    1  1204  B           GEN     17
247  1 205          A     KP1,W2                                             7  1205  A P06 P08           17
```

```
SEQ PG LIN  LABEL   OP    OPERANDS                                          SFX CT  LOCN  INSTRUCTION TYPE  CARD
 248  1 212          B     SKP2P2                                              4  1212  B /71               17
 249          *
 250  1 216  GOTP2   BW    SUBFN1,FLAG6                                        8  1216  V Z50 O00 1         18
 251  1 224          BW    SUBER2,FLAG3                                        8  1224  V |93 N04 1         18
 252  1 232          SW    2&X1       AT BOTTOM (LAST) CHAR OF TOKEN           4  1232  , 0|2               18
 253  1 236          SAR   SX1        SAVE 1&X1 AT PUNCT BELOW NAME            4  1236  Q P11               18
 254          *
 255          * LOOK FOR VARIABLE IN ARRAY TABLE.  X3 IS AT TOP (FIRST)
 256          * CHARACTER OF THE VARIABLE.  CH IS CHARACTER BELOW (AFTER)
 257          * THE VARIABLE.
 258          *
 259  1 240  LOOKUP MCW   TBLBOT,X1  GET BOTTOM OF ARRAY TABLE                 7  1240  M O36 089           18
 260  1 247          BCE   ASG,CH,#   GO TURN OFF SWICH2 IF ASSIGNMENT STMT    8  1247  B K54 O55 #         18
 261  1 255  LOOK2   BCE   NOTARR,2&X1,  AT END OF ARRAY TABLE?               8  1255  B T81 0|2           19
 262  1 263  MORE    MCM   2&X1                                               4  1263  P 0|2               19
 263  1 267          MN                                                      1  1267  D                   19
 264  1 268          MN                                                      1  1268  D                   19
 265  1 269          SAR   X1                                                4  1269  Q 089               19
 266  1 273          BCE   MORE,1&X1,|                                       8  1273  B S63 0|1 |         19
 267  1 281          C     0&X3,0&X1                                         7  1281  C 0?0 0|0           19
 268  1 288          BU    LOOK2                                             5  1288  B S55 /             20
 269  1 293          C     0&X1,0&X3                                         7  1293  C 0|0 0?0           20
 270  1 300          BU    LOOK2                                             5  1300  B S55 /             20
 271  1 305          C     0&X1    GET X1 DOWN TO                            4  1305  C 0|0               20
 272  1 309          CHAIN 3         OFFSET FIELD                                                MACRO
 273                 C                                                       1  1309  C                   GEN  20
 274                 C                                                       1  1310  C                   GEN  20
 275                 C                                                       1  1311  C                   GEN  20
 276  1 312          SAR   X1                                                4  1312  Q 089               21
 277  1 316          BW    SUBVR2,FLAG2  WORKING ON VARIABLE SUBSCRIPT?       8  1316  V X43 N03 1         21
 278  1 324          BCE   SUB,CH,%  SUBSCRIPTED                             8  1324  B V83 O55 %         21
 279          *
 280          * IN ARRAY TABLE, NOT SUBSCRIPTED
 281          *
 282  1 332  SWICH2 NOP   DATXF2  BRANCH IF DATA TRANSFER STATEMENT           4  1332  N T58               21
 283  1 336          LCA   9&X1,1&X2  ADDR OF LOW DIGIT OF FIRST ARRAY ELT    7  1336  L 0|9 0!1           21
 284  1 343          SBR   X2                                                4  1343  H 094               21
 285  1 347  LOOKFN MCW   SX1,X1                                             7  1347  M P11 089           22
 286  1 354          B     VARFIN                                            4  1354  B U45               22
 287          *
 288          * WHOLE ARRAY
 289          *
 290  1 358  DATXF2 LCA   9&X1,1&X2  ADDR OF LOW DIGIT OF FIRST ARRAY ELT    7  1358  L 0|9 0!1           22
 291  1 365          LCA   3&X1       ADDR OF LOW DIGIT OF LAST ARRAY ELT     4  1365  L 0|3               22
 292  1 369          SBR   X2                                                4  1369  H 094               22
 293  1 373          CW    4&X2       BETWEEN ADDRESSES                       4  1373  ) 0!4               22
 294  1 377          B     LOOKFN                                            4  1377  B T47               22
 295          *
 296          * NOT IN ARRAY TABLE.  X2 IS TWO BELOW THE PUNCTUATION BEFORE
 297          * THE VARIABLE OR PREFIX MOVED TO BE BELOW THE ARRAY TABLE.
```

```
                        FORTRAN COMPILER -- VARIABLE PHASE ONE -- 13                              PAGE    5

 SEQ PG LIN  LABEL  OP    OPERANDS                                          SFX CT  LOCN  INSTRUCTION TYPE  CARD

 298         *
 299  1 381  NOTARR MCW   SX1,X1                                               7  1381  M P11 089           23
 300  1 388         BW    SUBVR3,FLAG2  WORKING ON VARIABLE SUBSCRIPT?         8  1388  V X67 N03 1         23
 301  1 396         BCE   SUBNOT,CH,%                                         8  1396  B U87 O55 %         23
 302  1 404         LCA   KBUNDR,1&X2  BLANK, UNDERSCORE                      7  1404  L P13 0!1           23
 303  1 411         SBR   X2                                                  4  1411  H 094               23
 304  1 415  NOTAR2 LCA   0&X3,1&X2    MOVE VARIABLE UP                       7  1415  L 0?0 0!1           24
 305  1 422         SBR   X2                                                  4  1422  H 094               24
 306  1 426         CW    1&X2                                                4  1426  ) 0!1               24
 307  1 430         S     KP2,W2                                              7  1430  S P14 P08           24
 308  1 437         BM    SHORT,W2     VARIABLE NAME IS SHORT                 8  1437  V K80 P08 K         24
 309  1 445  VARFIN CW    1&X1                                                4  1445  ) 0|1               24
 310  1 449         SAR   X3                                                  4  1449  Q 099               24
 311  1 453  VARFN2 CW    1&X2                                                4  1453  ) 0!1               25
 312  1 457         CW    FLAG4,FLAG3                                         7  1457  ) N98 N04           25
 313  1 464         CW    FLAG5                                               4  1464  ) N99               25
 314  1 468  CHECK  BCE   STMT,0,;     SEMICOLON?                            8  1468  B 937 000 ;         25
 315  1 476         MCW   DOLLAR,X1                                           7  1476  M P15 089           25
 316  1 483         B     DONE                                                4  1483  B J38               25
 317         *
 318         * NOT IN ARRAY TABLE, BUT APPEARS TO BE SUBSCRIPTED
 319         *
 320  1 487  SUBNOT BCE   NOTAR2,1&X1,F  LAST CHAR OF VAR SAYS FUNCTION?      8  1487  B U15 0|1 F         26
 321  1 495         CS    332                                                 4  1495  / 332               26
 322  1 499         CS                                                        1  1499  /                   26
 323  1 500         SW    GLOBER                                              4  1500  , 184               26
 324  1 504         MN    PREFIX,240                                          7  1504  D O46 240           26
 325  1 511         MN                                                        1  1511  D                   26
 326  1 512         MN                                                        1  1512  D                   26
 327  1 513         MCW   ERROR6                                             4  1513  M P52               27
 328  1 517         W                                                         1  1517  2                   27
 329  1 518         BCV   OVFL2                                              5  1518  B V27 @             27
 330  1 523         B     NOVFL2                                              4  1523  B V29               27
 331  1 527  OVFL2  CC    1                                                   2  1527  F 1                 27
 332  1 529  NOVFL2 LCA   KPCT3Z,1&X2    %000                               7  1529  L P56 0!1           27
 333  1 536         SBR   X2                                                  4  1536  H 094               27
 334  1 540         MZ    SAVZON,3&X2                                         7  1540  Y P68 0!3           28
 335  1 547  GETEND BCE   ENDSUB,0&X1,)  END OF SUBSCRIPT?                    8  1547  B V71 0|0 )         28
 336  1 555         BCE   ENDST2,0&X1,}  END OF STATEMENT?                    8  1555  B K35 0|0 } GMARK   28
 337  1 563         SBR   X1                                                  4  1563  H 089               28
 338  1 567         B     GETEND                                              4  1567  B V47               28
 339  1 571  ENDSUB MN    0&X1  X1 NOW BELOW SUBSCRIPT                        4  1571  D 0|0               28
 340  1 575         SAR   X1                                                  4  1575  Q 089               28
 341  1 579         B     VARFN2                                              4  1579  B U53               29
 342         *
 343         * IN ARRAY TABLE AND SUBSCRIPTED
 344         *
 345  1 583  SUB    ZA    0&X1,W6  HIGH DIGIT OF FIRST ARRAY ELEMENT          7  1583  ? 0|0 P62           29
 346  1 590         SAR   X3       X3 NOW AT FIRST DIMENSION                  4  1590  Q 099               29
 347  1 594         SW    FLAG7    IN ARRAY TABLE AND SUBSCRIPTED             4  1594  , P79               29
```

```
                        FORTRAN COMPILER -- VARIABLE PHASE ONE -- 13                              PAGE    6

SEQ PG LIN  LABEL  OP    OPERANDS                                          SFX CT  LOCN  INSTRUCTION TYPE  CARD

348  1 598         ZA    0&X3,W5  FIRST DIMENSION TO W5                          7  1598  ? 0?0 P67           29
349  1 605         ZA    5&X1,PROD-7  ELEMENT SIZE                             7  1605  ? 0|5 N87           29
350  1 612         S     KP1,W6                                                7  1612  S P06 P62           30
351  1 619         MZ    8&X1,SAVZON  TYPE TAG OF ARRAY                        7  1619  Y 0|8 P68           30
352  1 626         MCW   SX1,X1   X1 BACK TO STATEMENT                        7  1626  M P11 089           30
353  1 633         LCA   KBDOLR,1&X2  BLANK, $ INDICATES SUBSCRIPT            7  1633  L P70 0!1           30
354  1 640         SBR   X2                                                   4  1640  H 094               30
355  1 644         MN    0&X1                                                  4  1644  D 0|0               30
356  1 648         SAR   X1                                                   4  1648  Q 089               31
357  1 652         SBR   X3                                                   4  1652  H 099               31
358  1 656  TSTCON BWZ   SUBMOR,0&X1,2  CONSTANT SUBSCRIPT?                   8  1656  V Y51 0|0 2         31
359  1 664         SBR   X1,2&X1                                              7  1664  H 089 0|2           31
360  1 671         LCA   KSTAR1,0&X1  STAR, 1 (1 IS PREV DIM WIDTH)          7  1671  L P72 0|0           31
361  1 678         B     SUBMOR                                                4  1678  B Y51               31
362         *
363         * CONTINUE VARIABLE SUBSCRIPT PROCESSING
364         *
365  1 682  SUBVAR LCA   KBUNDR,1&X2  BLANK, UNDERSCORE INDICATES VARIABLE     7  1682  L P13 0!1           32
366  1 689         SBR   X2                                                   4  1689  H 094               32
367         *
368         * GET DOWN TO THE BOTTOM OF THE VARIABLE
369         *
370  1 693  SKP2P3 MCW   0&X1,CH                                              7  1693  M 0|0 O55           32
371  1 700         SAR   X1                                                   4  1700  Q 089               32
372  1 704         MCW   CH,*&8                                               7  1704  M O55 X18           32
373  1 711         BCE   GOTP3,PUNCT3,0   -&),                               8  1711  B X26 P76 0         32
374  1 719         CHAIN 3                                                                  MACRO
375               BCE                                                        1  1719  B           GEN     32
376               BCE                                                        1  1720  B           GEN     33
377               BCE                                                        1  1721  B           GEN     33
378  1 722         B     SKP2P3                                               4  1722  B W93               33
379  1 726  GOTP3  SW    2&X1                                                 4  1726  , 0|2               33
380  1 730         SW                                                         1  1730  ,                   33
381  1 731         SAR   SX1                                                  4  1731  Q P11               33
382  1 735         SW    FLAG2  WORKING ON VARIABLE SUBSCRIPT                 4  1735  , N03               33
383  1 739         B     LOOKUP                                               4  1739  B S40               34
384         *
385  1 743  SUBVR2 LCA   9&X1,2&X2                                            7  1743  L 0|9 0!2           34
386  1 750         SBR   X2                                                   4  1750  H 094               34
387  1 754         CW    1&X2                                                 4  1754  ) 0!1               34
388  1 758         MN                                                         1  1758  D                   34
389  1 759         SAR   X2                                                   4  1759  Q 094               34
390  1 763         B     SUBVR4                                               4  1763  B X83               34
391         *
392         * MOVE SUBSCRIPT UP
393         *
394  1 767  SUBVR3 LCA   0&X3,1&X2                                            7  1767  L 0?0 0!1           35
395  1 774         LCA                                                        1  1774  L                   35
396  1 775         SBR   X2                                                   4  1775  H 094               35
397  1 779         CW    2&X2                                                 4  1779  ) 0!2               35
```

```
SEQ PG LIN  LABEL  OP    OPERANDS                                        SFX CT  LOCN  INSTRUCTION TYPE  CARD
398  1 783  SUBVR4 MCW   SX1,X1                                             7  1783  M P11 089           35
399  1 790         CW    2&X1                                              4  1790  ) 0|2               35
400  1 794         BCE   SHORT2,3&X2,_                                     8  1794  B K65 0!3 _         35
401  1 802         LCA   KBCOMM,1&X2  BLANK, COMMA                         7  1802  L P78 0!1           36
402  1 809         SBR   X2                                                4  1809  H 094               36
403  1 813         CW    FLAG2  DONE WORKING ON VARIABLE SUBSCRIPT         4  1813  ) N03               36
404  1 817         BCE   MORSUB,CH,,                                       8  1817  B M38 O55 ,         36
405  1 825         BCE   SUBFIN,CH,)                                       8  1825  B Z54 O55 )         36
406  1 833         MZ    CH,PROD-7                                         7  1833  Y O55 N87           36
407  1 840  SUBVR5 MCW   X1,X3                                             7  1840  M 089 099           37
408  1 847         B     TSTCON                                            4  1847  B W56               37
409         *
410         * CONTINUE SUBSCRIPT PROCESSING
411         *
412  1 851  SUBMOR SBR   X3,BIGWRK-2                                       7  1851  H 099 N03           37
413  1 858  SUBM2  MCW   0&X1,CH   MOVE SUBSCRIPT                          7  1858  M 0|0 O55           37
414  1 865         SAR   X1          TO BIGWRK PUTTING                     4  1865  Q 089               37
415  1 869         MCW   CH,2&X3       ITS CHARACTERS                     7  1869  M O55 0?2           37
416  1 876         SBR   X3              INTO FORWARD ORDER                4  1876  H 099               38
417  1 880         BWZ   SUBM2,0&X1,2  CONSTANT SUBSCRIPT?                 8  1880  V Y58 0|0 2         38
418  1 888         SBR   X1                                                4  1888  H 089               38
419  1 892         M     PROD-7,7&X3                                       7  1892  @ N87 0?7           38
420  1 899         BCE   SUBV1,1&X1,*   FIRST VARIABLE SUBSCRIPT?         8  1899  B Z92 0|1 *         38
421  1 907         A     7&X3,W6         ADD TO OFFSET FROM ARRAY BASE     7  1907  A 0?7 P62           38
422  1 914         BCE   SUBFIN,1&X1,)  DONE WITH SUBSCRIPTS?              8  1914  B Z54 0|1 )         39
423  1 922         BCE   MORSUB,1&X1,,  SECOND SUBSCRIPT?                  8  1922  B M38 0|1 ,         39
424  1 930         SW    FLAG1                                             4  1930  , N02               39
425  1 934         B     SYNTAX                                            4  1934  B |36               39
426         *
427  1 938  CW1S6  CW    FLAG1                                             4  1938  ) N02               39
428  1 942         SW    FLAG6                                             4  1942  , O00               39
429  1 946         B     SKP2P2                                            4  1946  B /71               39
430         *
431  1 950  SUBFN1 CW    FLAG6                                             4  1950  ) O00               40
432  1 954  SUBFIN NOP   W6-7                                             4  1954  N P55               40
433  1 958         SAR   X3                                                4  1958  Q 099               40
434  1 962         SW    FLAG4        MOVING VARIABLE SUBSCRIPT            4  1962  , N98               40
435  1 966         B     NORMLZ                                            4  1966  B !29               40
436  1 970  SUBFN2 LCA   DOLLAR,0&X2  MARK END OF SUBSCRIPT                7  1970  L P15 0!0           40
437  1 977         SBR   X2                                                4  1977  H 094               40
438  1 981         MZ    SAVZON,3&X2                                       7  1981  Y P68 0!3           41
439  1 988         B     VARFIN                                            4  1988  B U45               41
440         *
441         * FIRST VARIABLE SUBSCRIPT
442         *
443  1 992  SUBV1  CW    1&X1,FLAG7                                        7  1992  ) 0|1 P79           41
444  1 999         B     NORMLZ                                            4  1999  B !29               41
445  2 003         LCA   KBSTAR,0&X2                                       7  2003  L P81 0!0           41
446  2 010         SBR   X2                                                4  2010  H 094               41
447  2 014         CW    1&X2                                              4  2014  ) 0!1               41
```

```
SEQ PG LIN  LABEL  OP    OPERANDS                                        SFX CT  LOCN  INSTRUCTION TYPE  CARD
448  2 018         MCW   X1,X3                                             7  2018  M 089 099           42
449  2 025         B     SUBVAR                                           4  2025  B W82               42
450         *
451         * NORMALIZE OFFSET BETWEEN 0 AND 15999, STORE IT
452         * INTO CODE AT TOP OF CORE.
453         *
454  2 029  NORMLZ SBR   NORMLX&3                                          4  2029  H J37               42
455  2 033  NORMLP S     KP16K,7&X3     SUBTRACT 16000                    7  2033  S P86 0?7           42
456  2 040         BWZ   NORMLP,7&X3,B    UNTIL NEGATIVE                  8  2040  V !33 0?7 B         42
457  2 048  NORMLN A     KP16K,7&X3     ADD 16000                         7  2048  A P86 0?7           42
458  2 055         BM    NORMLN,7&X3      UNTIL POSITIVE                  8  2055  V !48 0?7 K         43
459  2 063         BW    CVTADR,FLAG4   MOVING VARIABLE SUBSCRIPT?         8  2063  V L35 N98 1         43
460  2 071  NORTRM SBR   X3,1&X3        TRIM LEADING                      7  2071  H 099 0?1           43
461  2 078         BCE   NORTRM,2&X3,0    ZEROES                          8  2078  B !71 0?2 0         43
462  2 086         SBR   X2,1&X2                                          7  2086  H 094 0!1           43
463  2 093         LCA   KB6                                              4  2093  L P92               44
464  2 097  NORREV MCW   2&X3,CH   MOVE NORMALIZED                        7  2097  M 0?2 O55           44
465  2 104         SAR   X3          OFFSET UP                           4  2104  Q 099               44
466  2 108         MCW   CH,0&X2       WHILE REVERSING                   7  2108  M O55 0!0           44
467  2 115         SBR   X2              THE DIGITS                        4  2115  H 094               44
468  2 119         BWZ   NORREV,1&X3,2                                    8  2119  V !97 0?1 2         44
469  2 127         MZ    KB1,1&X2  CLOBBER LAST DIGIT ZONE                7  2127  Y P87 0!1           45
470  2 134  NORMLX B     0-0                                              4  2134  B 000               45
471         *
472         * DONE
473         *
474  2 138  DONE   BSS   SNAPSH,C                                         5  2138  B 333 C             45
475  2 143         SBR   LOADXX&3,849                                     7  2143  H 796 849           45
476  2 150         SBR   CLEARL&3,GMWM                                    7  2150  H 710 Q13           45
477  2 157         LCA   VARBL2,PHASID                                    7  2157  L Q01 110           45
478  2 164         B     LOADNX                                           4  2164  B 700               46
479         *
480         * DATA TRANSFER INPUT/OUTPUT STATEMENT
481         *
482  2 168  DATXFR MCW   BRANCH,SWICH1  TURN ON DATA TRANSFER             7  2168  M Q02 956           46
483  2 175         MCW   BRANCH,SWICH2    STATEMENT SWITCHES              7  2175  M Q02 T32           46
484  2 182         MCW   PREFIX-3,*&8                                     7  2182  M O43 J96           46
485  2 189         BCE   RWT,RWTC,0  READ/WRITE (INPUT/OUTPUT) TAPE?      8  2189  B K04 Q06 0         46
486  2 197         CHAIN 3                                                                 MACRO
487                BCE                                                    1  2197  B           GEN     46
488                BCE                                                    1  2198  B           GEN     46
489                BCE                                                    1  2199  B           GEN     47
490  2 200         B     STMT  READ, PRINT OR PUNCH                       4  2200  B 937               47
491  2 204  RWT    SW    FLAG5                                            4  2204  , N99               47
492  2 208         B     STMT                                             4  2208  B 937               47
493  2 212  DATXF1 BCE   DATXRP,CH,)                                      8  2212  B K24 O55 )         47
494  2 220         B     SKIPP  GO SKIP PUNCTUATION                       4  2220  B 960               47
495  2 224  DATXRP MCW   BRANCH,SWICH2                                    7  2224  M Q02 T32           47
496  2 231         B     SKIPP  GO SKIP PUNCTUATION                       4  2231  B 960               48
497         *
```

```
SEQ PG LIN  LABEL  OP    OPERANDS                                    SFX CT  LOCN  INSTRUCTION TYPE  CARD

498         * BOTTOM (END) OF STATEMENT
499         *
500  2 235  ENDST2 MN    0&X2                                          4  2235  D 0!0              48
501  2 239         SAR   X2                                            4  2239  Q 094              48
502  2 243  ENDSTM LCA   GM,1&X2                                       7  2243  L N55 0!1          48
503  2 250         B     NXTSTM                                        4  2250  B 856              48
504         *
505         * SAW ASSIGNMENT OPERATOR (#)
506         *
507  2 254  ASG    MCW   NOP,SWICH2                                    7  2254  M O54 T32          48
508  2 261         B     LOOK2                                         4  2261  B S55              48
509         *
510         * MAKE SURE AT LEAST 3 CHARACTERS
511         *
512  2 265  SHORT2 LCA   KB2,1&X2                                      7  2265  L P88 0!1          49
513  2 272         SBR   X2                                            4  2272  H 094              49
514  2 276         B     SUBVR4                                        4  2276  B X83              49
515         *
516         * VARIABLE NAME IS SHORT -- WE NEED AT LEAST THREE SPACES
517         *
518  2 280  SHORT  LCA   KB1,0&X2                                      7  2280  L P87 0!0          49
519  2 287         SBR   X2                                            4  2287  H 094              49
520  2 291         CW    1&X2                                          4  2291  ) 0!1              49
521  2 295         B     VARFIN                                        4  2295  B U45              49
522         *
523         * LOOKS LIKE A FLOATING-POINT CONSTANT
524         *
525  2 299  FLTCON BCE   GOTVAR,2&X1,#                                 8  2299  B /19 0|2 #        50
526  2 307         BCE   GOTVAR,2&X1,@                                 8  2307  B /19 0|2 @        50
527  2 315         BWZ   STMT,2&X1,2                                   8  2315  V 937 0|2 2        50
528  2 323         BCE   STMT,2&X1,.                                   8  2323  B 937 0|2 .        50
529  2 331         B     GOTVAR                                        4  2331  B /19              50
530         *
531         * CONVERT BIGWRK TO MACHINE ADDRESS
532         *
533  2 335  CVTADR MCW   7&X3,W5B                                      7  2335  M 0?7 Q11          51
534  2 342         MN    W5B,SUBADR                                    7  2342  D Q11 N97          51
535  2 349         MN                                                  1  2349  D                  51
536  2 350         MN                                                  1  2350  D                  51
537  2 351         SAR   *&4                                           4  2351  Q L58              51
538  2 355         MCW   0-0,X3  THOUSANDS                            7  2355  M 000 099          51
539  2 362         MCW   K0        AND A ZERO TO X3                  4  2362  M Q12              51
540  2 366         A     X3      DOUBLE X3                           4  2366  A 099              52
541  2 370         MZ    ZONES&1&X3,SUBADR                           7  2370  Y O?3 N97          52
542  2 377         CW                                                1  2377  )                  52
543  2 378         SBR   *&7                                          4  2378  H L88              52
544  2 382         MZ    ZONES&X3,0-0                                7  2382  Y O?2 000          52
545  2 389         BCE   CVTAD2,2&X2,,                               8  2389  B M04 0!2 ,        52
546  2 397         SBR   X2,1&X2                                     7  2397  H 094 0!1          52
547  2 404  CVTAD2 LCA   SUBADR,1&X2                                  7  2404  L N97 0!1          53
```

```
                        FORTRAN COMPILER -- VARIABLE PHASE ONE -- 13                              PAGE   10

SEQ PG LIN  LABEL  OP    OPERANDS                                          SFX CT  LOCN  INSTRUCTION TYPE  CARD

548  2 411         SBR   X2                                                   4  2411  H 094               53
549  2 415         CW    1&X2                                                 4  2415  ) 0!1               53
550  2 419         MZ    SAVZON,2&X2                                          7  2419  Y P68 0!2           53
551  2 426         BW    VARFIN,FLAG7  IN ARRAY TABLE AND SUBSCRIPTED?        8  2426  V U45 P79 1         53
552  2 434         B     SUBFN2                                               4  2434  B Z70               53
553         *
554         * SAW A COMMA, HERE COMES ANOTHER SUBSCRIPT
555         *
556  2 438  MORSUB MZ    *-4,PROD-7                                           7  2438  Y M40 N87           54
557  2 445         M     W5,PROD-1                                            7  2445  @ P67 N93           54
558  2 452         MCM   PROD-5,PROD-11                                       7  2452  P N89 N83           54
559  2 459         S     PROD-7,W6                                            7  2459  S N87 P62           54
560  2 466         B     SUBVR5                                               4  2466  B Y40               54
561         *
562         * FORMAT STATEMENT -- JUST COPY IT
563         *
564  2 470  FORMAT LCA   0&X1,0&X2  COPY STMT BELOW ARRAY TABLE              7  2470  L 0|0 0!0           54
565  2 477         SBR   X2         SAVE NEXT 'TO' ADDRESS                   4  2477  H 094               55
566  2 481         C     0&X1       GET TO BOTTOM OF STATEMENT               4  2481  C 0|0               55
567  2 485         SAR   X1         SAVE TOP OF NEXT STATEMENT               4  2485  Q 089               55
568  2 489         B     NXTSTM                                               4  2489  B 856               55
569         *
570         * DATA
571         *
572  2 501  PUNCT2 DCW   @#,}*@&-%)@                                          9  2501                      55
573  2 502  FLAG1  DC    #1  SYNTAX ERROR AFTER FIRST SUBSCRIPT               1  2502                      55
574  2 503  FLAG2  DC    #1                                                   1  2503                      55
575  2 504  FLAG3  DC    #1                                                   1  2504                      55
576  2 505  BIGWRK DCW   #1                                                   1  2505                      55
577  2 554         DC    #49                                                 49  2554                      57
578  2 555  GM     DC    @}@                                                  1  2555              GMARK   57
579  2 561         DCW   @ERROR @                                             6  2561                      57
580  2 582         DCW   @ VARIABLE, STATEMENT @                             21  2582                      57
581  2 594  PROD   DCW   @           |@                                      12  2594                      58
582  2 597  SUBADR DCW   #3  SUBSCRIPT VARIABLE ADDRESS                       3  2597                      58
583  2 598  FLAG4  DC    #1  MOVING VARIABLE SUBSCRIPT                        1  2598                      58
584  2 599  FLAG5  DC    #1                                                   1  2599                      58
585  2 600  FLAG6  DC    #1                                                   1  2600                      58
586  2 602  ZONES  DCW   @ 9@                                                2  2602                      58
587  2 633         DCW   @9Z9R9I99ZZZRZIZ9RZRRRIR9IZIRIII@                  31  2633                      59
588  2 636  TBLBOT DCW   #3  BOTTOM OF THE ARRAY TABLE                        3  2636                      59
589  2 646  PREFIX DCW   #10                                                 10  2646                      60
590  2 653  DATXFC DCW   @3L5UP61@  CODES FOR DATA TRANSFER STATEMENTS       7  2653                      60
591  2 654  NOP    NOP                                                       1  2654  N                   60
592  2 655  CH     DCW   #1                                                   1  2655                      60
593  2 663  PUNCT  DCW   @@*-&.%),@  PUNCTUATION CHARACTERS                  8  2663                      60
594  2 664  CH2    DCW   #1                                                   1  2664                      60
595  2 701  ERROR9 DCW   @ERROR 9 - VARIABLE SYNTAX, STATEMENT @            37  2701                      61
596  2 704  K0Q0   DSA   0&X3                                                3  2704  0?0                 62
597  2 705  SEMIC  DCW   @;@  SEMICOLON                                      1  2705                      62
```

```
SEQ PG LIN  LABEL   OP    OPERANDS                                          SFX CT  LOCN  INSTRUCTION TYPE  CARD
598  2 706  KP1     DCW   &1                                                   1  2706                      62
599  2 708  W2      DCW   #2                                                   2  2708                      62
600  2 711  SX1     DCW   #3                                                   3  2711                      62
601  2 713  KBUNDR  DCW   @ _@  BLANK, UNDERSCORE                             2  2713                      62
602  2 714  KP2     DCW   &2                                                   1  2714                      62
603  2 715  DOLLAR  DCW   @$@                                                  1  2715                      63
604  2 752  ERROR6  DCW   @ERROR 6 - UNDEFINED ARRAY, STATEMENT @            37  2752                      63
605  2 756  KPCT3Z  DCW   @%000@                                               4  2756                      64
606  2 762  W6      DCW   #6                                                   6  2762                      64
607  2 767  W5      DCW   #5                                                   5  2767                      64
608  2 768  SAVZON  DCW   #1                                                   1  2768                      64
609  2 770  KBDOLR  DCW   @ $@                                                 2  2770                      64
610  2 772  KSTAR1  DCW   @*1@                                                 2  2772                      64
611  2 776  PUNCT3  DCW   @-&),@                                              4  2776                      64
612  2 778  KBCOMM  DCW   @ ,@                                                 2  2778                      65
613  2 779  FLAG7   DCW   #1  WM MEANS IN ARRAY TABLE AND SUBSCRIPTED          1  2779                      65
614  2 781  KBSTAR  DCW   @ *@                                                 2  2781                      65
615  2 786  KP16K   DCW   @1600?@                                             5  2786                      65
616  2 787  KB1     DCW   #1                                                   1  2787                      65
617  2 788  KB2     DC    #1                                                   1  2788                      65
618  2 792  KB6     DC    #4                                                   4  2792                      65
619  2 801  VARBL2  DCW   @VARBL TWO@                                         9  2801                      65
620  2 802  BRANCH  B                                                          1  2802  B                   65
621  2 806  RWTC    DCW   @1356@  READ/WRITE (INPUT/OUTPUT) TAPE CODES       4  2806                      66
622  2 811  W5B     DCW   #5                                                   5  2811                      66
623  2 812  K0      DCW   0                                                    1  2812                      66
624  2 813  GMWM    DCW   @}@                                                  1  2813            GMARK     66
625                 ORG   201                                                       0201
626    203          DSA   LOADDD    LOAD ADDRESS FOR CARD-TO-TAPE PROGRAM     3  0203  838                 67
627                 EX    BEGINN                                                    B 838                   68
628                 END                                                             / 000 080
```

FORTRAN COMPILER -- VARIABLE PHASE ONE -- 13 PAGE 12

SYMBOL	ADDRESS	SYMBOL	ADDRESS	SYMBOL	ADDRESS	SYMBOL	ADDRESS	SYMBOL	ADDRESS	SYMBOL	ADDRESS	SYMBOL	ADDRESS
ASG	2254	BEGINN	838	BIGWRK	2505	BRANCH	2802	CH	2655	CH2	2664	CHECK	1468
CLEARL	707	CVTAD2	2404	CVTADR	2335	CW1S6	1938	DATXF1	2212	DATXF2	1358	DATXFC	2653
DATXFR	2168	DATXRP	2224	DOLLAR	2715	DONE	2138	ENDST2	2235	ENDSTM	2243	ENDSUB	1571
ERROR6	2752	ERROR9	2701	FLAG1	2502	FLAG2	2503	FLAG3	2504	FLAG4	2598	FLAG5	2599
FLAG6	2600	FLAG7	2779	FLTCON	2299	FORMAT	2470	GETEND	1547	GLOBER	184	GM	2555
GMWM	2813	GOTP2	1216	GOTP3	1726	GOTVAR	1119	K0	2812	K0Q0	2704	KB1	2787
KB2	2788	KB6	2792	KBCOMM	2778	KBDOLR	2770	KBSTAR	2781	KBUNDR	2713	KP1	2706
KP16K	2786	KP2	2714	KPCT3Z	2756	KSTAR1	2772	LOADDD	838	LOADNX	700	LOADXX	793
LOOK2	1255	LOOKFN	1347	LOOKUP	1240	MORE	1263	MORSUB	2438	NOP	2654	NORMLN	2048
NORMLP	2033	NORMLX	2134	NORMLZ	2029	NORREV	2097	NORTRM	2071	NOTAR2	1415	NOTARR	1381
NOVFL1	1070	NOVFL2	1529	NXTSTM	856	OVFL1	1068	OVFL2	1527	PHASID	110	PREFIX	2646
PROD	2594	PUNCT	2663	PUNCT2	2501	PUNCT3	2776	RWT	2204	RWTC	2806	SAVZON	2768
SEMIC	2705	SHORT	2280	SHORT2	2265	SKIPP	960	SKP2P2	1171	SKP2P3	1693	SNAPSH	333
STMT	937	SUB	1583	SUBADR	2597	SUBER2	1093	SUBFIN	1954	SUBFN1	1950	SUBFN2	1970
SUBM2	1858	SUBMOR	1851	SUBNOT	1487	SUBV1	1992	SUBVAR	1682	SUBVR2	1743	SUBVR3	1767
SUBVR4	1783	SUBVR5	1840	SWICH1	956	SWICH2	1332	SX1	2711	SYNTAX	1036	TBLBOT	2636
TSTCON	1656	VARBL2	2801	VARFIN	1445	VARFN2	1453	W2	2708	W5	2767	W5B	2811
W6	2762	X1	89	X2	94	X3	99	ZONES	2602				